LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 9

2024

Bate Stamp Numbers
01228195 – 01230072

Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976–2024

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

VOLUME 9

2024

A.	Title:	Report (Cont'd) – Draft Final Year 1 Annual Remedial Action Operation Report (August 2022–July 2023), LHAAP-17 Burning Ground No.2/Flashing Area Group 2, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, March 2024
	Author(s):	Department of the Army
	Recipient:	Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	March 5, 2024
	Bate Stamp:	01228195–01228785

B.	Title:	Report – Draft Final Ninth Annual Remedial Action Operation Report, LHAAP-50, Former Sump Water Tank Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, March 2024
	Author(s):	Department of the Army
	Recipient:	Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	March 13, 2024
	Bate Stamp:	01228786–01230072

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

20220913

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		20220913_001	Perchlorate6850c.lcm	1x	☒		9/13/2022 8:56
2	null		20220913_002	Perchlorate6850c.lcm	1x	☒		9/13/2022 9:01
3	IB		20220913_003	Perchlorate6850c.lcm	1x	☒		9/13/2022 9:07
4	IB		20220913_004	Perchlorate6850c.lcm	1x	☒		9/13/2022 9:16
5	IB		20220913_005	Perchlorate6850c.lcm	1x	☒		9/13/2022 9:24
6	IB		20220913_006	Perchlorate6850c.lcm	1x	☒		9/13/2022 9:33
7	LODV		20220913_007	Perchlorate6850c.lcm	1x	☒	224622	9/13/2022 9:41
8	ICS		20220913_008	Perchlorate6850c.lcm	1x	☒		9/13/2022 9:58
9	PERCHLORATE7		20220913_009	Perchlorate6850c.lcm	1x	☒	224631	9/13/2022 10:06
10	E2200852-008x200K		20220913_010	Perchlorate6850c.lcm	200,000X	☒		9/13/2022 10:14
11	E2200852-009x200K		20220913_011	Perchlorate6850c.lcm	200,000X	☒		9/13/2022 10:23
12	E2200852-010x500		20220913_012	Perchlorate6850c.lcm	500X	☒		9/13/2022 10:31
13	E2200852-011x2K		20220913_013	Perchlorate6850c.lcm	2,000X	☒		9/13/2022 10:40
14	E2200852-012x20K		20220913_014	Perchlorate6850c.lcm	20,000X	☒		9/13/2022 10:48
15	E2200852-013x50K		20220913_015	Perchlorate6850c.lcm	50,000X	☒		9/13/2022 10:56
16	E2200852-014x100K		20220913_016	Perchlorate6850c.lcm	100,000X	☒		9/13/2022 11:05
17	E2200852-016x10		20220913_017	Perchlorate6850c.lcm	10X	☒		9/13/2022 11:13
18	E2200852-017x5K		20220913_018	Perchlorate6850c.lcm	5,000X	☒		9/13/2022 11:22
19	E2200852-019x10K		20220913_019	Perchlorate6850c.lcm	10,000X	☒		9/13/2022 11:30
20	PERCHLORATE7		20220913_020	Perchlorate6850c.lcm	1x	☒	224631	9/13/2022 11:38
21	E2200850-001		20220913_021	Perchlorate6850c.lcm	1x	☒		9/13/2022 11:47
22	E2200850-002		20220913_022	Perchlorate6850c.lcm	1x	☒		9/13/2022 11:55
23	E2200850-003		20220913_023	Perchlorate6850c.lcm	1x	☒		9/13/2022 12:04
24	E2200850-004		20220913_024	Perchlorate6850c.lcm	1x	☒		9/13/2022 12:12
25	E2200850-005		20220913_025	Perchlorate6850c.lcm	1x	☒		9/13/2022 12:20
26	E2200850-006		20220913_026	Perchlorate6850c.lcm	1x	☒		9/13/2022 12:29
27	PERCHLORATE7		20220913_027	Perchlorate6850c.lcm	1x	☒	224631	9/13/2022 12:37
28	E2200864-001		20220913_028	Perchlorate6850c.lcm	1x	☒		9/13/2022 12:45
29	E2200864-002DNU-IR		20220913_029	Perchlorate6850c.lcm	1x	☒	DNU-IR	9/13/2022 12:54
30	E2200864-003x100		20220913_030	Perchlorate6850c.lcm	100X	☒		9/13/2022 13:02
31	E2200864-004x1000		20220913_031	Perchlorate6850c.lcm	1,000X	☒		9/13/2022 13:11
32	E2200864-005x1000		20220913_032	Perchlorate6850c.lcm	1,000X	☒		9/13/2022 13:19
33	E2200864-006x5000		20220913_033	Perchlorate6850c.lcm	5,000X	☒		9/13/2022 13:27
34	IB		20220913_034	Perchlorate6850c.lcm	1x	☒		9/13/2022 13:36
35	E2200864-002		20220913_035	Perchlorate6850c.lcm	1x	☒		9/13/2022 13:44
36	PERCHLORATE7		20220913_036	Perchlorate6850c.lcm	1x	☒	224631	9/13/2022 13:52

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Bhate Environmental Associates, Inc. **Service Request:** E2200864
Project: LHAAP17 **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_027 **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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**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_033	**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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**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_044	**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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**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_055	**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: Bhate Environmental Associates, Inc. **Service Request:** E2200864
Project: LHAAP17 **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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**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_070	**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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**Date Analyzed:**	9/13/22

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\20220913\20220913_020	**Calibration ID:**	EC2200013
		Analysis Lot:	777303
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.3	0.1354	0.1394	3.0	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**Date Analyzed:**	9/13/22

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\20220913\20220913_027	**Calibration ID:**	EC2200013
		Analysis Lot:	777303
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.2	0.1354	0.1386	2.4	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**Date Analyzed:**	9/13/22

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\20220913\20220913_036	**Calibration ID:**	EC2200013
		Analysis Lot:	777303
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.3	0.1354	0.1392	2.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**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

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**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

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**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

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**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
17WW06_083122MS	EQ2200387-06	23,834*	3.65
17WW06_083122DMS	EQ2200387-07	23,263*	3.67

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**Date Analyzed:**	9/13/22 11:38

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20220913\20220913_020	**Lab Code:**	EQ2200405-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	777303
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	EQ2200405-02	173,766	3.87

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**Date Analyzed:**	9/13/22 12:37

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20220913\20220913_027	**Lab Code:**	EQ2200405-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	777303
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	EQ2200405-03	162,905	3.88
130_083122	E2200864-001	203,708	3.79
17WW01_083122	E2200864-003	141,120	3.87
17WW02_083122	E2200864-004	149,968	3.88
17WW02_083122_a	E2200864-005	152,537	3.88
17WW06_083122	E2200864-006	147,372	3.88
17WW03_083122	E2200864-002	225,998	3.70

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200864
Project:	LHAAP17	**Date Analyzed:**	9/13/22 13:52

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20220913\20220913_036	**Lab Code:**	EQ2200405-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	777303
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	EQ2200405-04	161,879	3.88

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

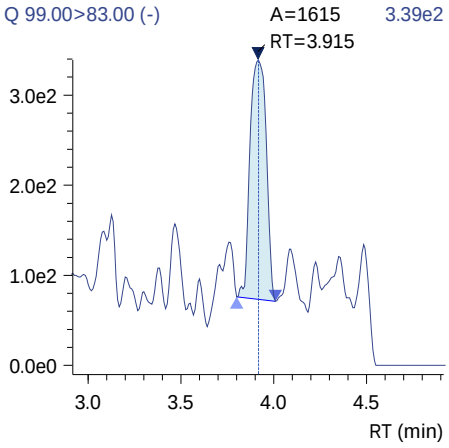
LODV

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	----	

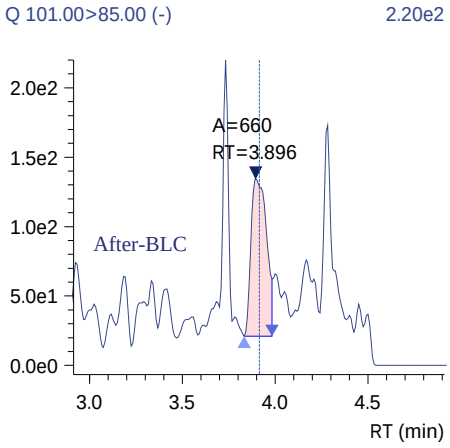
Perchlorate

Conc 0.0548



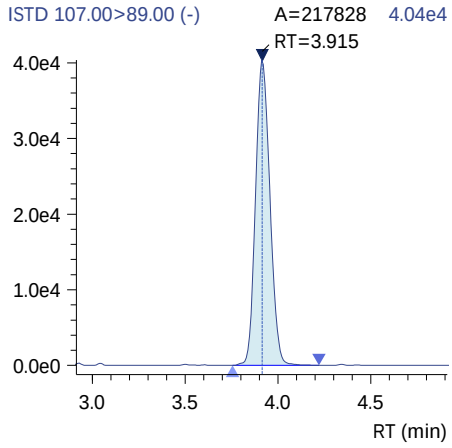
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

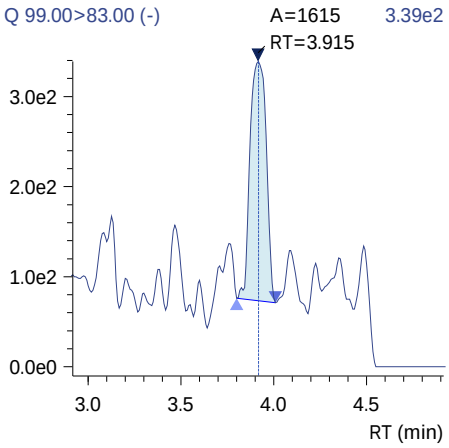
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Project File: I:\LCMS01\DATA\20220909\20220909.damlp

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

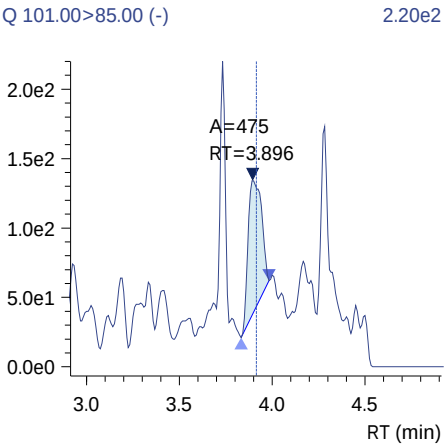
Perchlorate

Conc 0.0548



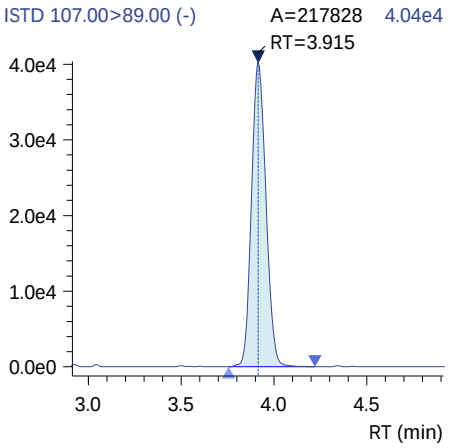
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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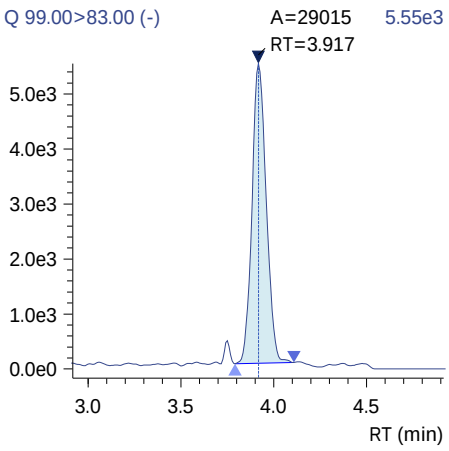
ICS

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	----	

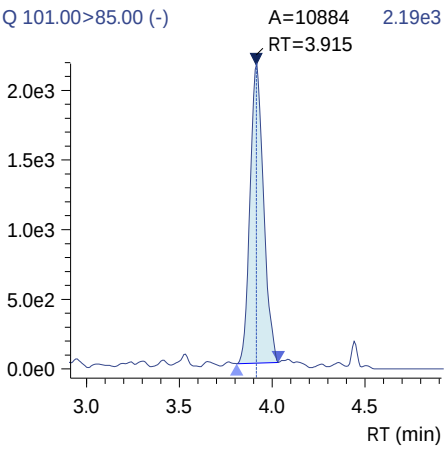
Perchlorate

Conc 1.0086



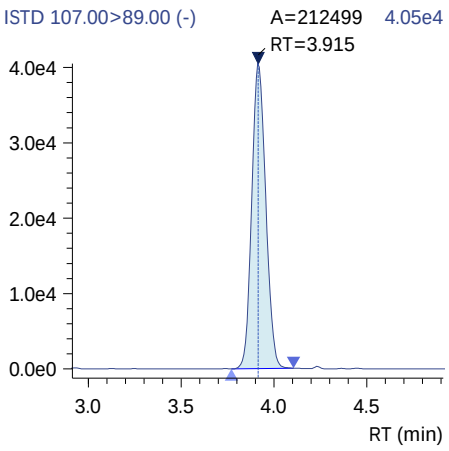
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

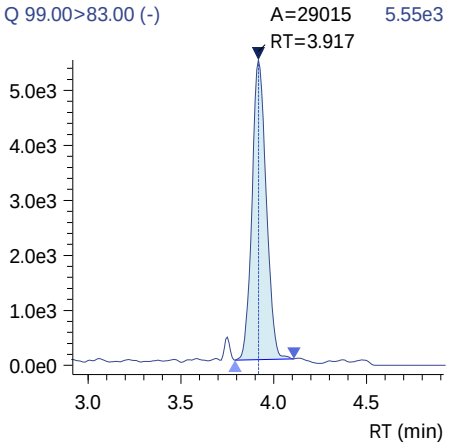
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ICS

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

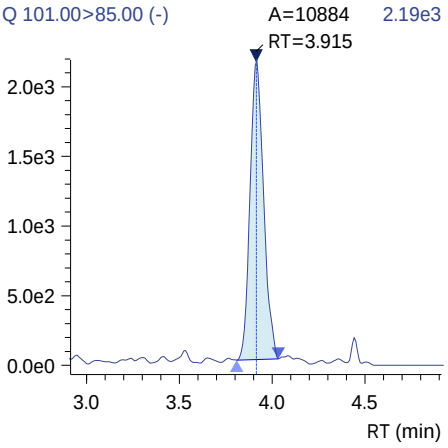
Perchlorate

Conc 1.0086



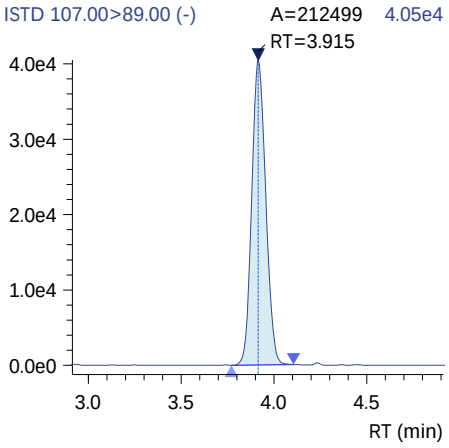
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

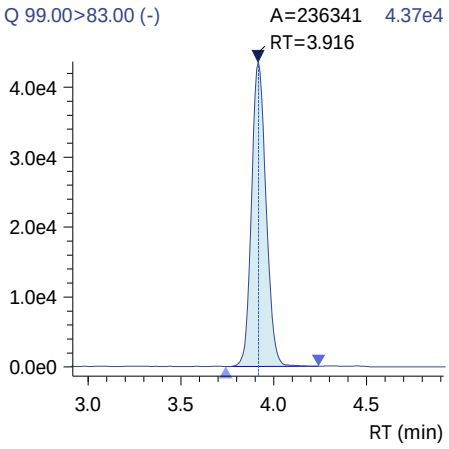
PERCHLORATE7

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	----	

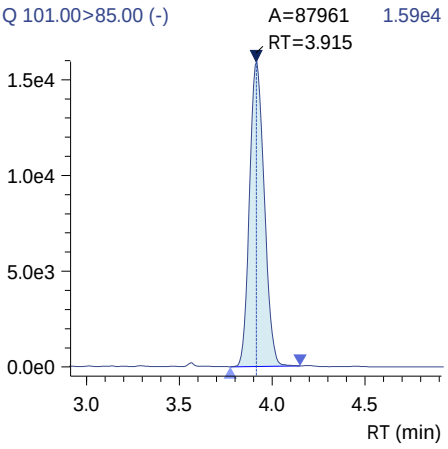
Perchlorate

Conc 10.3023



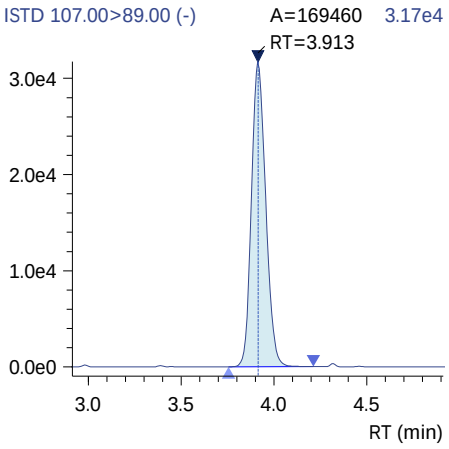
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

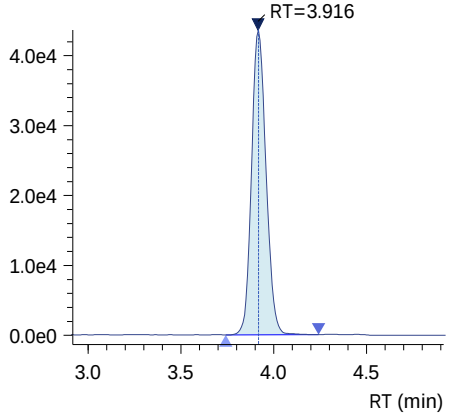
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 1:41:51 PM
Acquired by: System Administrator
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Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Perchlorate

Conc 10.3023

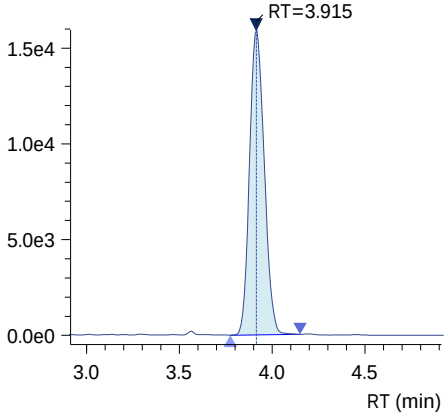
Q 99.00>83.00 (-) A=236341 4.37e4 RT=3.916



Perchlorate 2

Conc 0.0000

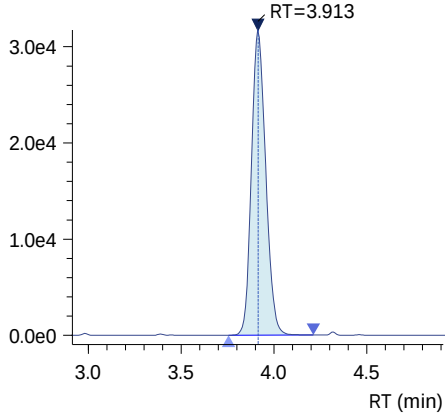
Q 101.00>85.00 (-) A=87961 1.59e4 RT=3.915



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=169460 3.17e4 RT=3.913



Insight Report

Printed at 9/12/2022 2:09:13 PM

EQ2200387-01

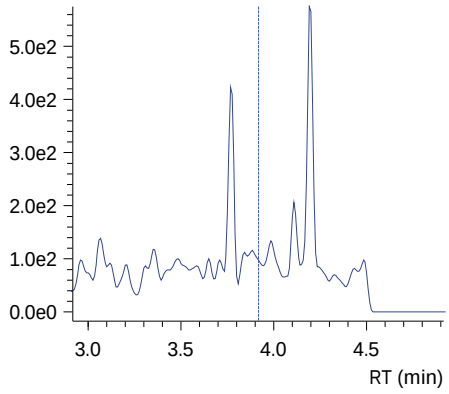
Sample ID: EQ2200387-01
Date Acquired: 9/9/2022 1:50:12 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_028.lcd
Vial: 24 | Inj. Volume: 25.0000uL | Tray: 6

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 ----

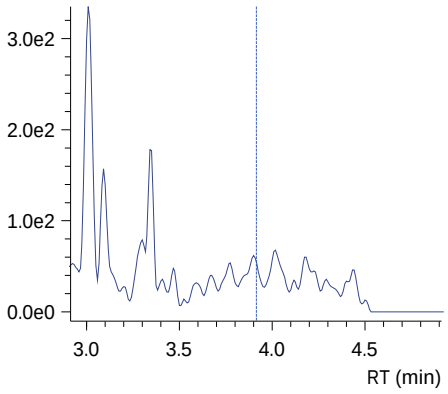
Q 99.00>83.00 (-) 5.75e2



Perchlorate 2

Conc ----

Q 101.00>85.00 (-) 3.35e2

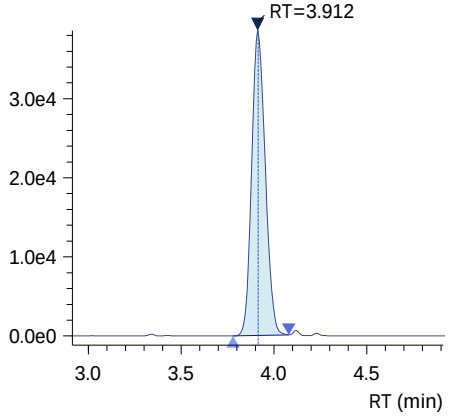


Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=196404 3.86e4

RT=3.912



Insight Report

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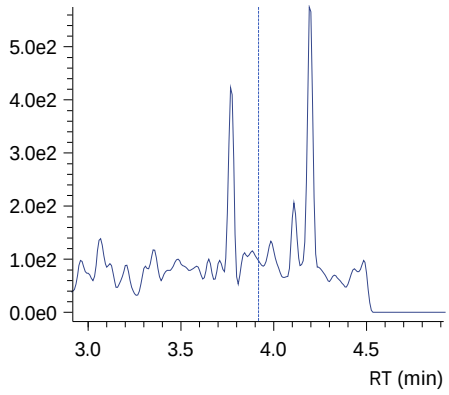
EQ2200387-01

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 ----

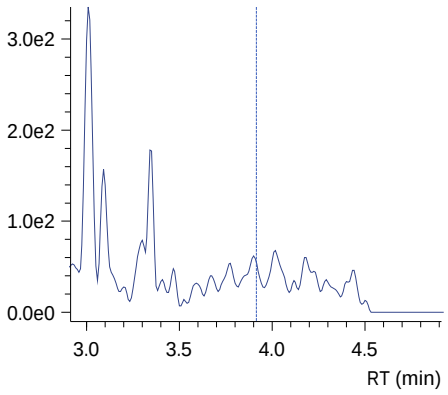
Q 99.00>83.00 (-) 5.75e2



Perchlorate 2

Conc ----

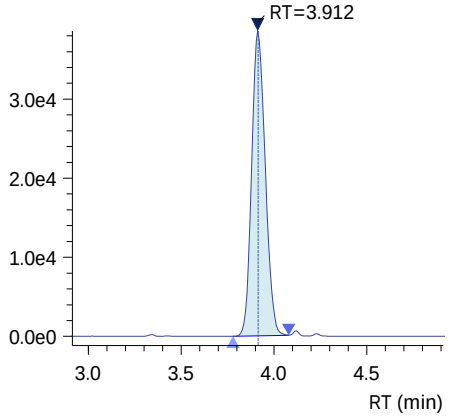
Q 101.00>85.00 (-) 3.35e2



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

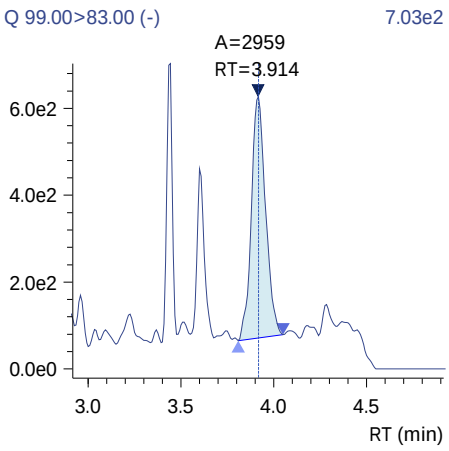
EQ2200387-02

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	----	

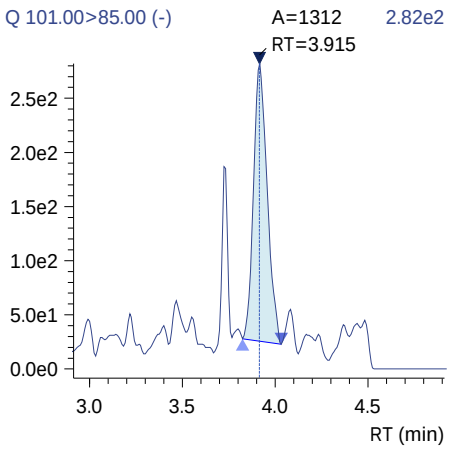
Perchlorate

Conc 0.1036



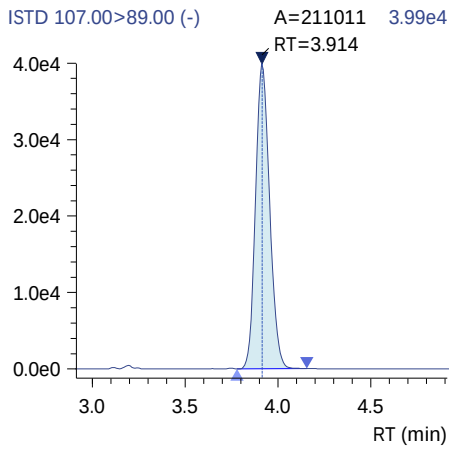
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

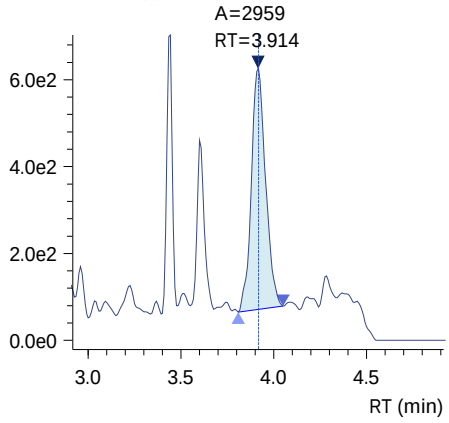
EQ2200387-02

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

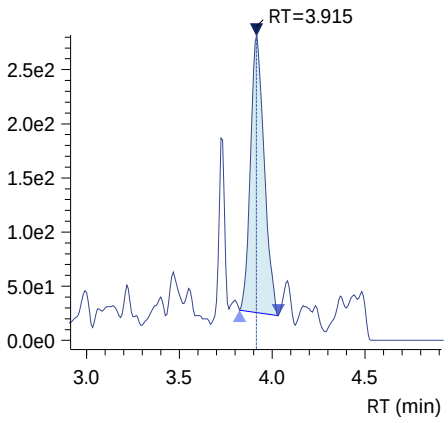
Q 99.00>83.00 (-) 7.03e2



Perchlorate 2

Conc 0.0000

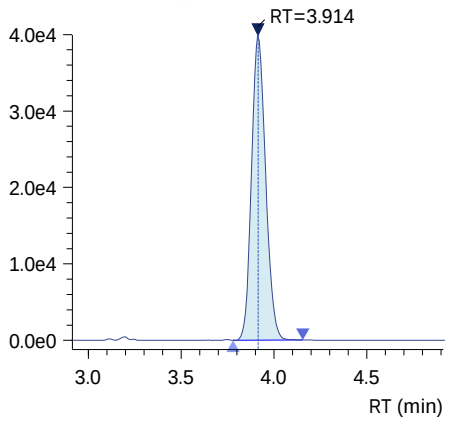
Q 101.00>85.00 (-) A=1312 2.82e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=211011 3.99e4



Insight Report

Printed at 9/12/2022 2:09:13 PM

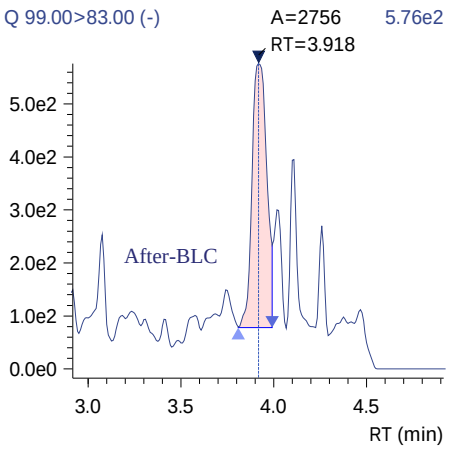
EQ2200387-03

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	----	

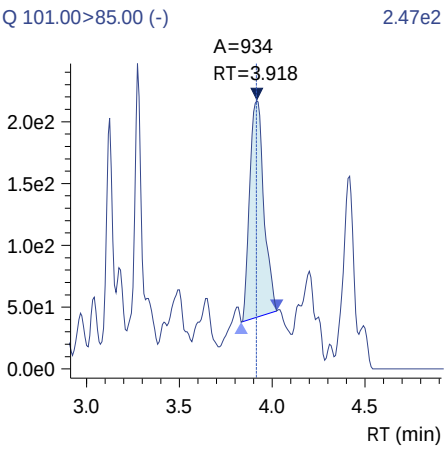
Perchlorate

Conc 0.0941



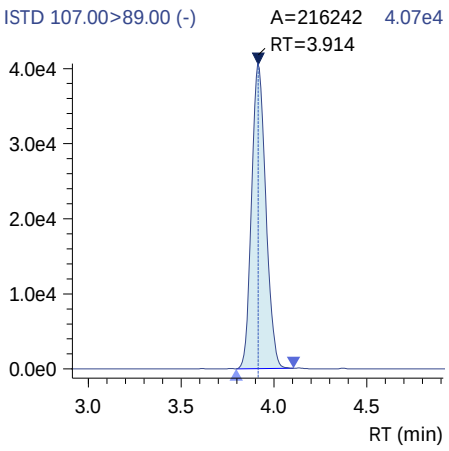
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

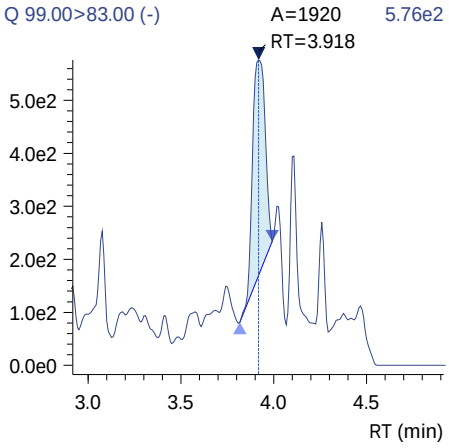
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EQ2200387-03

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

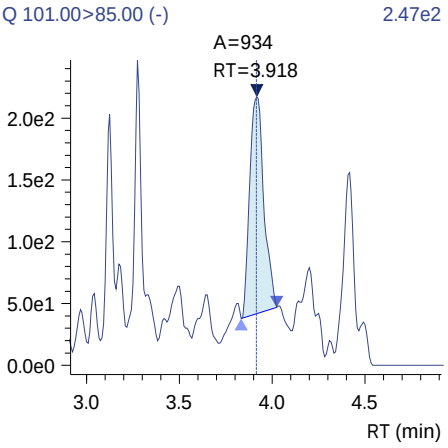
Perchlorate

Conc 0.0656



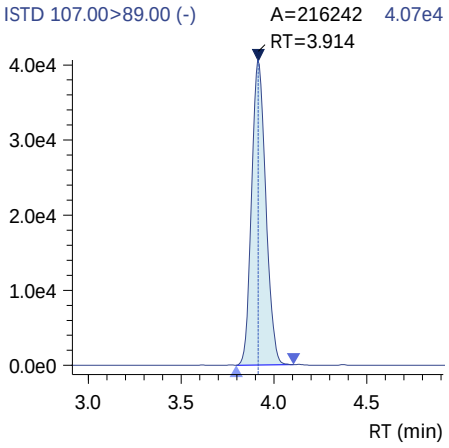
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

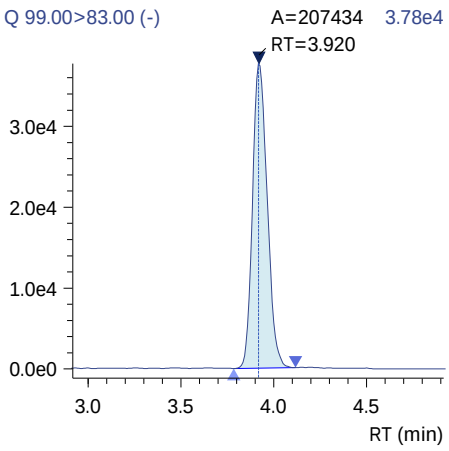
PERCHLORATE7

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	----	

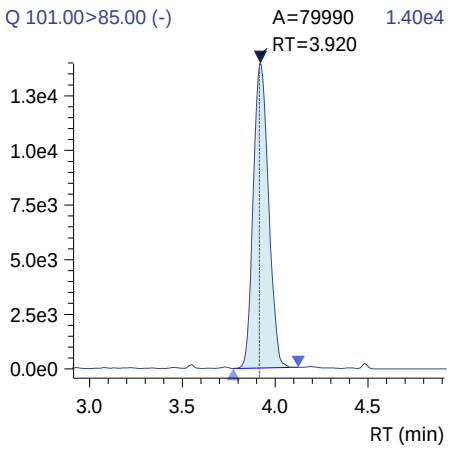
Perchlorate

Conc 10.5157



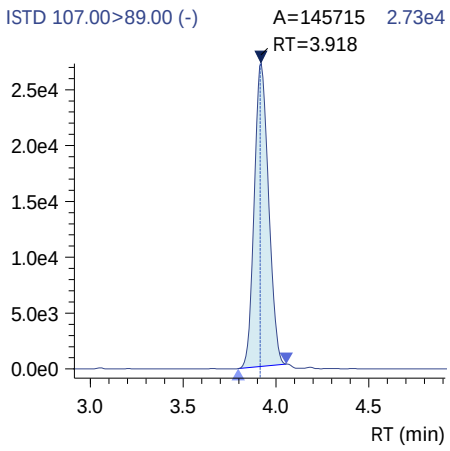
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

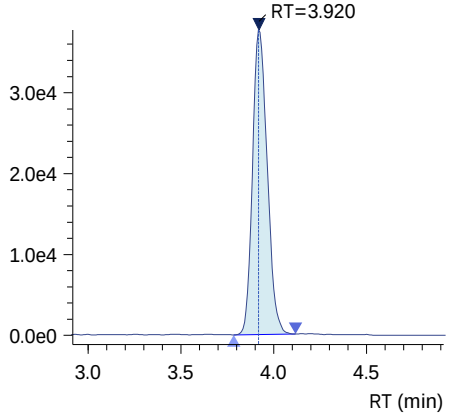
PERCHLORATE7

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

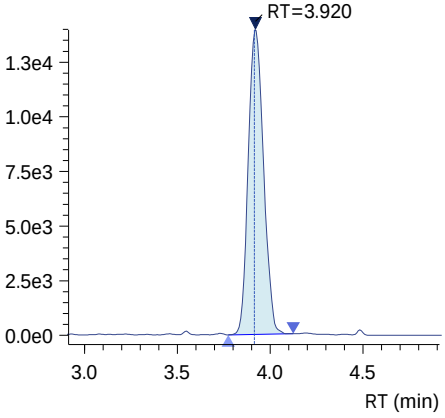
Q 99.00>83.00 (-) A=207434 3.78e4 RT=3.920



Perchlorate 2

Conc 0.0000

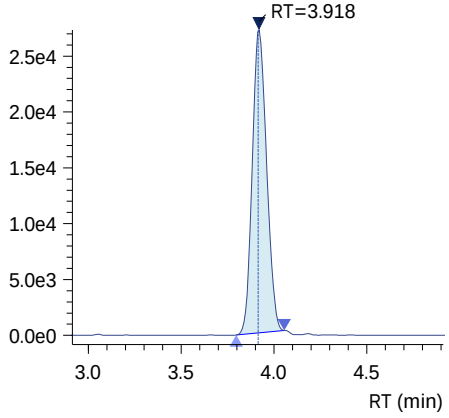
Q 101.00>85.00 (-) A=79990 1.40e4 RT=3.920



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=145715 2.73e4 RT=3.918



Insight Report

Printed at 9/12/2022 2:09:13 PM

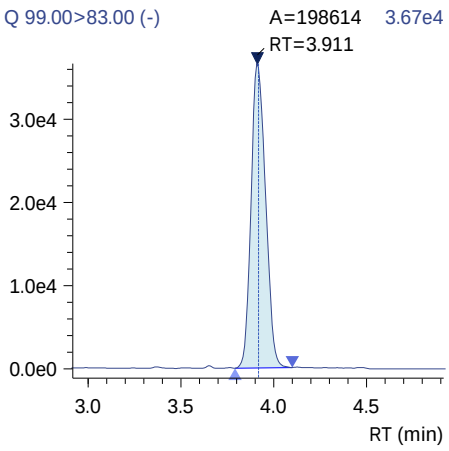
PERCHLORATE7

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	----	

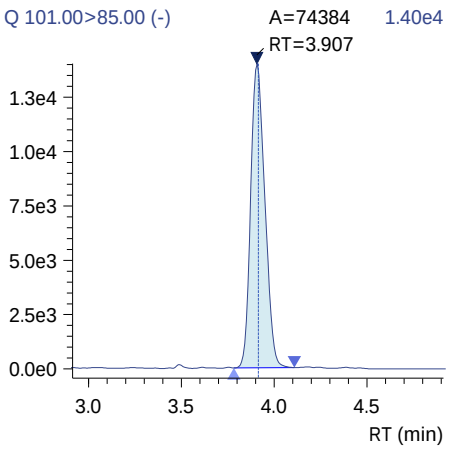
Perchlorate

Conc 10.3887



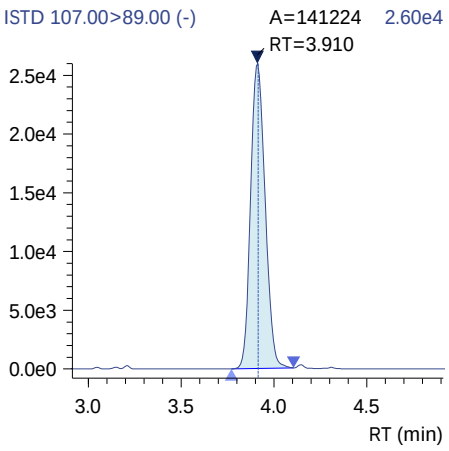
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

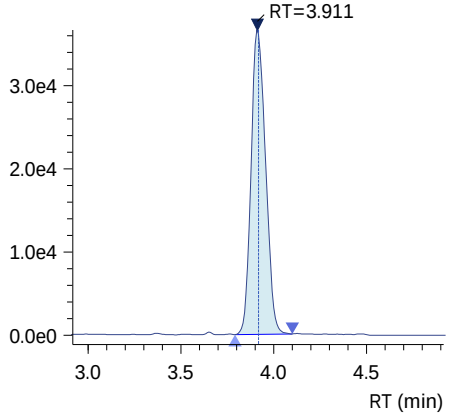
PERCHLORATE7

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

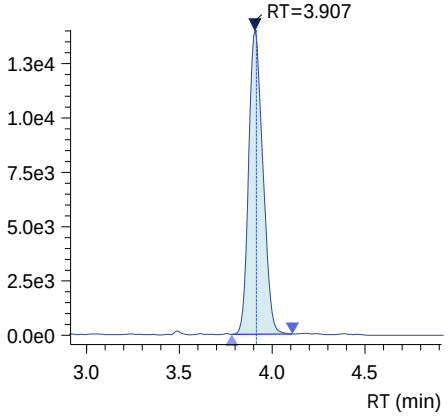
Q 99.00>83.00 (-) A=198614 3.67e4 RT=3.911



Perchlorate 2

Conc 0.0000

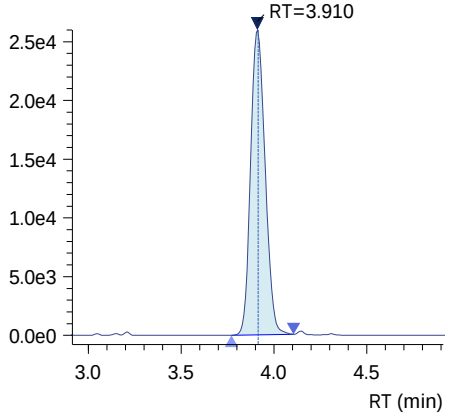
Q 101.00>85.00 (-) A=74384 1.40e4 RT=3.907



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

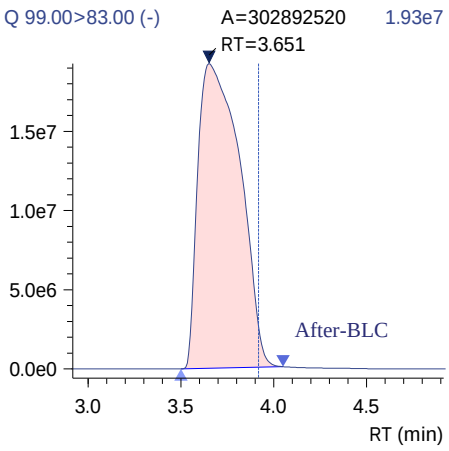
EQ2200387-06

Sample ID: EQ2200387-06
Date Acquired: 9/9/2022 8:19:24 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_064.lcd
Vial: 29 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.651	302892520	23834	93875.7228	ng/mL	38.97	27.04-50.23
Perchlorate 2	M	3.645	118031367	23834	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	M	3.648	23834	23834	1.0000	ng/mL	----	

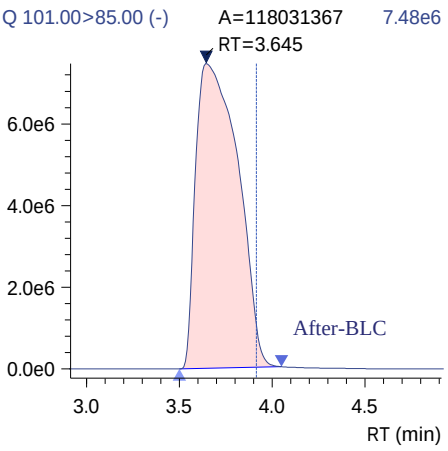
Perchlorate

Conc 93875.7228



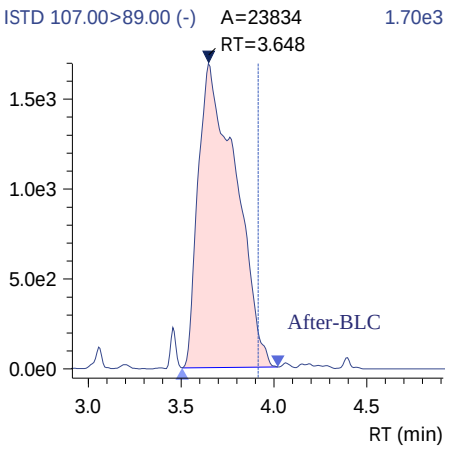
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

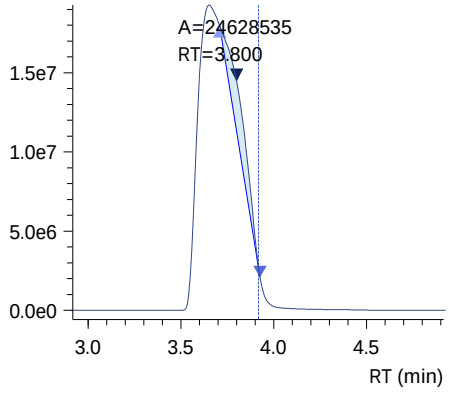
EQ2200387-06

Sample ID: EQ2200387-06
Date Acquired: 9/9/2022 8:19:24 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_064.lcd
Vial: 29 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc 338156.6900

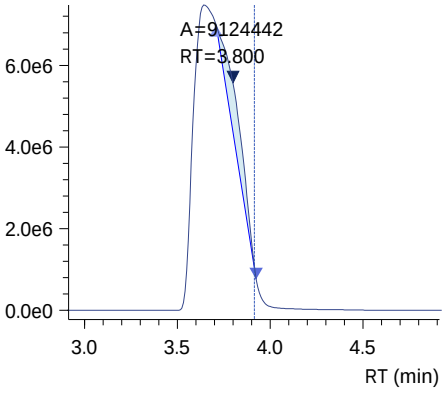
Q 99.00>83.00 (-) 1.93e7



Perchlorate 2

Conc 0.0000

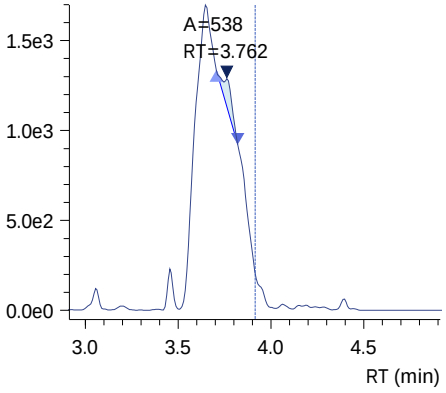
Q 101.00>85.00 (-) 7.48e6



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.70e3



Insight Report

Printed at 9/12/2022 2:09:13 PM

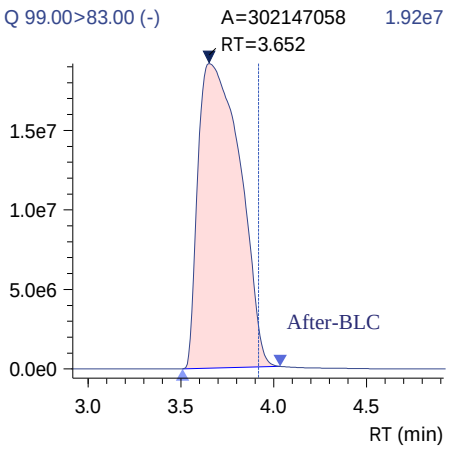
EQ2200387-07

Sample ID: EQ2200387-07
Date Acquired: 9/9/2022 8:27:47 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_065.lcd
Vial: 30 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.652	302147058	23263	95943.2288	ng/mL	39.02	27.04-50.23
Perchlorate 2	M	3.645	117899669	23263	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	M	3.665	23263	23263	1.0000	ng/mL	----	

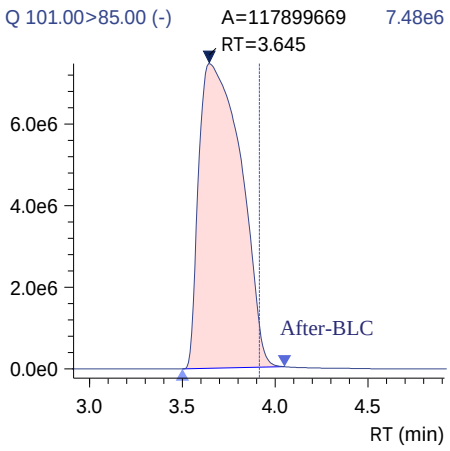
Perchlorate

Conc 95943.2288



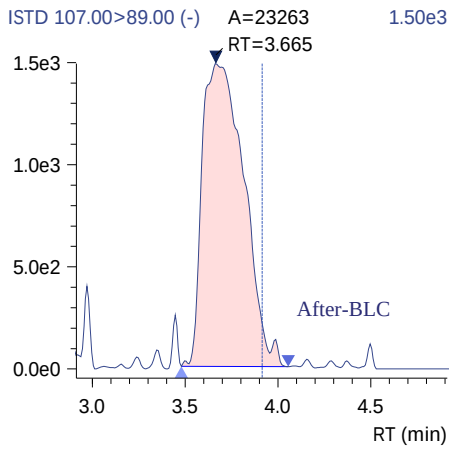
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

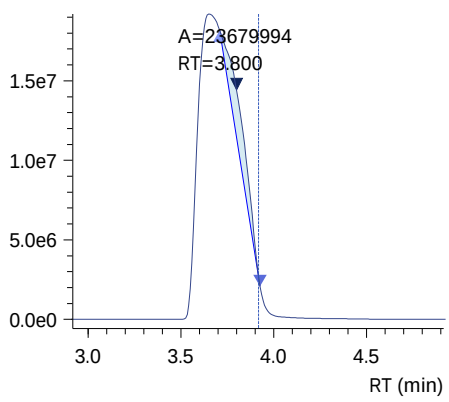
EQ2200387-07

Sample ID: EQ2200387-07
Date Acquired: 9/9/2022 8:27:47 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_065.lcd
Vial: 30 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc 887926.5503

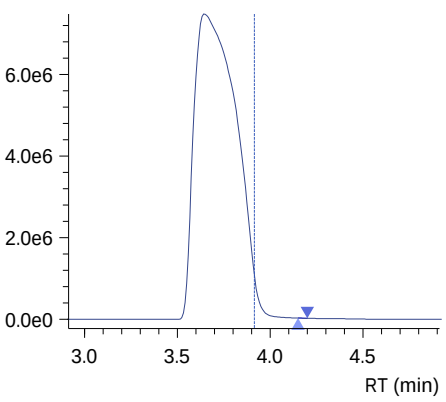
Q 99.00>83.00 (-) 1.92e7



Perchlorate 2

Conc ----

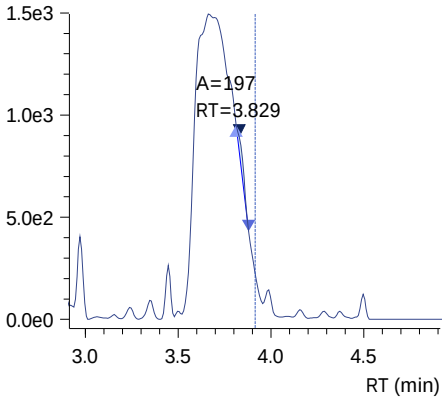
Q 101.00>85.00 (-) 7.48e6



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.50e3



Insight Report

Printed at 9/12/2022 2:09:13 PM

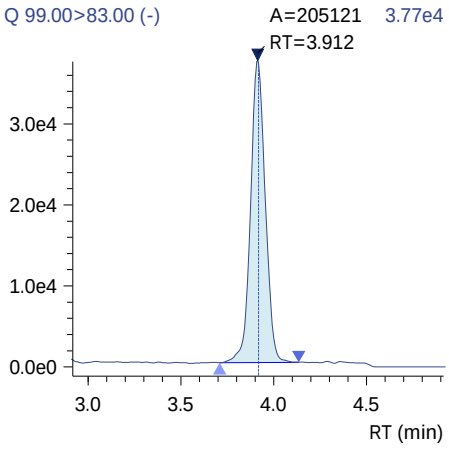
PERCHLORATE7

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	----	

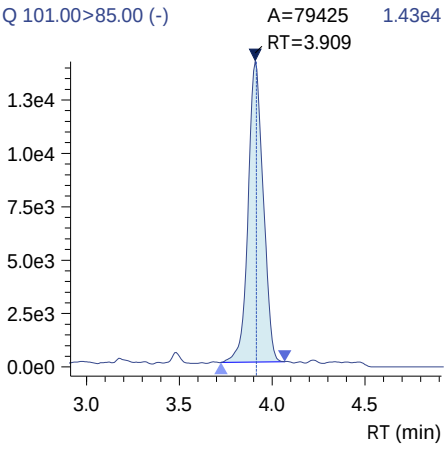
Perchlorate

Conc 10.7885



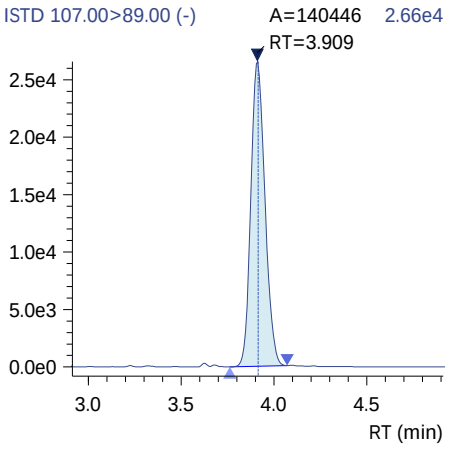
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

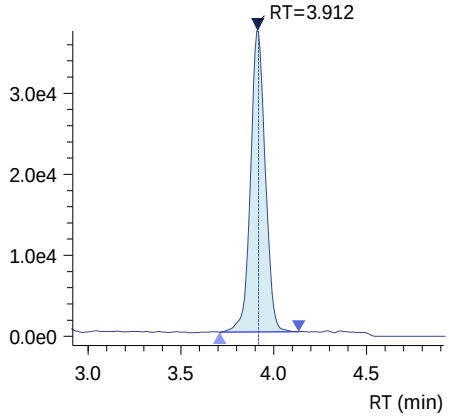
PERCHLORATE7

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

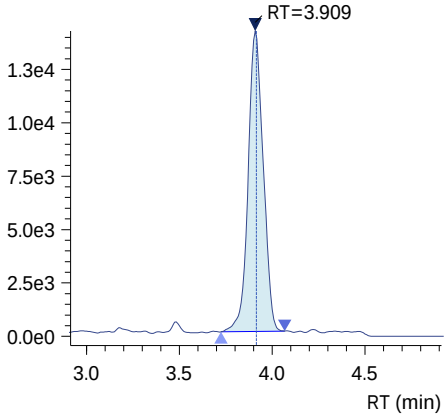
Q 99.00>83.00 (-) A=205121 3.77e4 RT=3.912



Perchlorate 2

Conc 0.0000

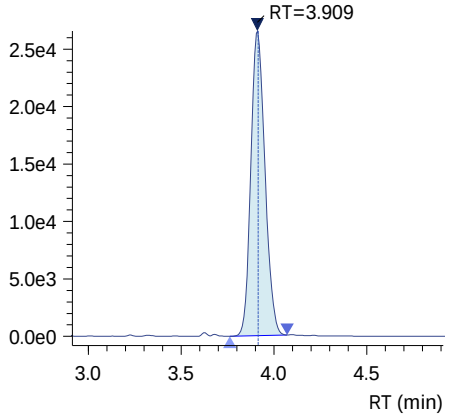
Q 101.00>85.00 (-) A=79425 1.43e4 RT=3.909



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=140446 2.66e4 RT=3.909



Insight Report

Printed at 9/16/2022 9:49:30 AM

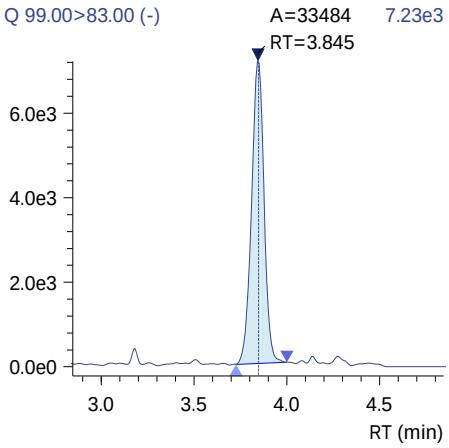
ICS

Sample ID: ICS
Date Acquired: 9/13/2022 9:58:11 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_008.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	3.845	33484	241845	1.0227	ng/mL	37.34	26.23-48.70
Perchlorate 2	Auto	3.841	12504	241845	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.840	241845	241845	1.0000	ng/mL	----	

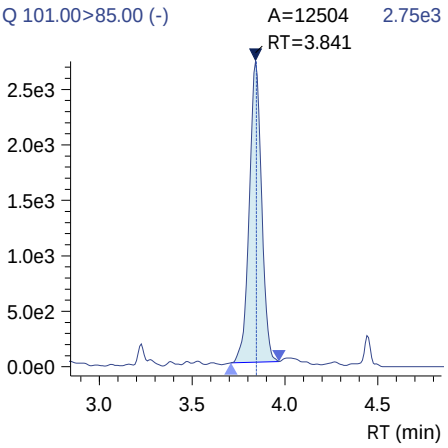
Perchlorate

Conc 1.0227



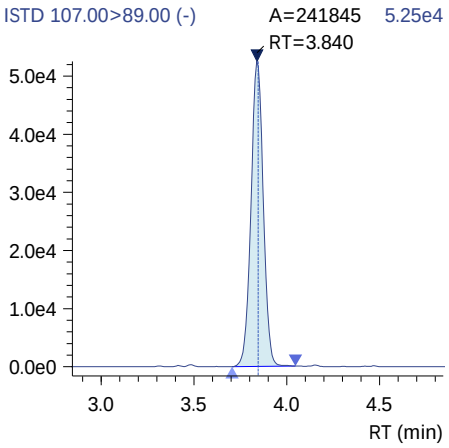
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

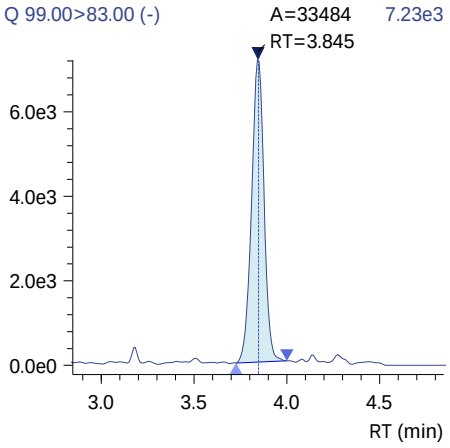
Printed at 9/16/2022 9:52:54 AM

ICS

Sample ID: ICS
Date Acquired: 9/13/2022 9:58:11 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_008.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 1

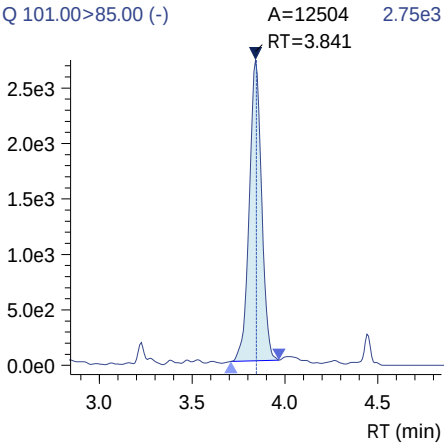
Perchlorate

Conc 1.0227



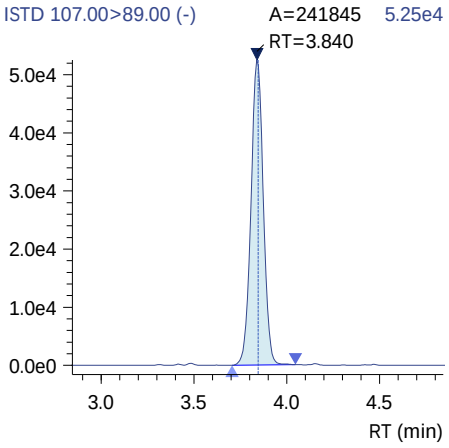
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/16/2022 9:49:30 AM

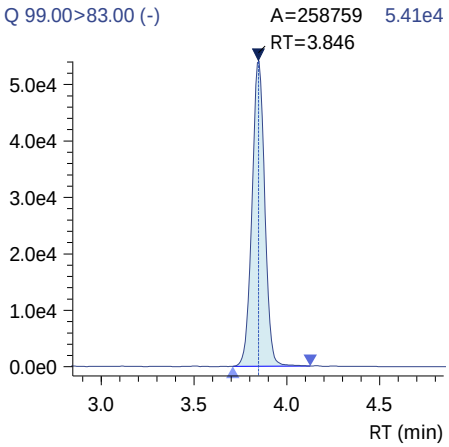
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/13/2022 10:06:33 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_009.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	3.846	258759	188200	10.1563	ng/mL	37.14	26.23-48.70
Perchlorate 2	Auto	3.845	96101	188200	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.844	188200	188200	1.0000	ng/mL	----	

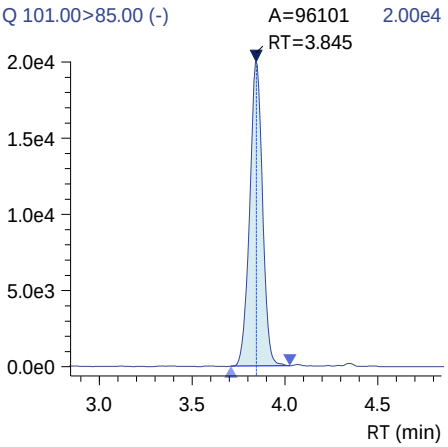
Perchlorate

Conc 10.1563



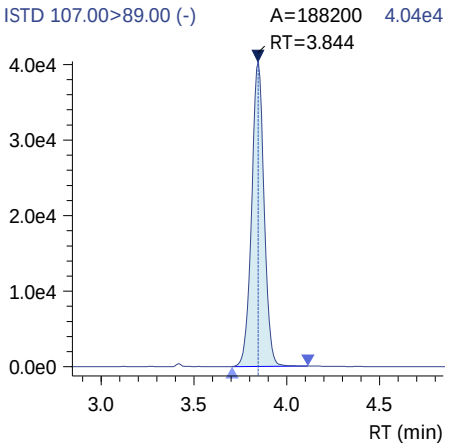
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

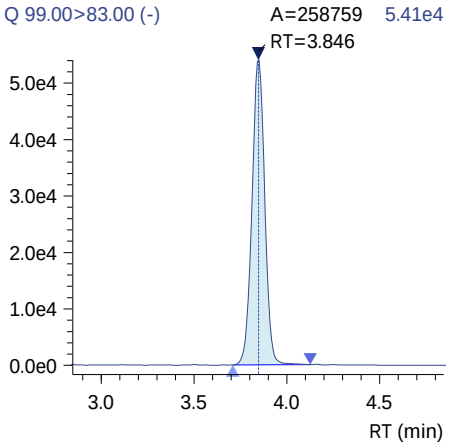
Printed at 9/16/2022 9:52:54 AM

PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/13/2022 10:06:33 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_009.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

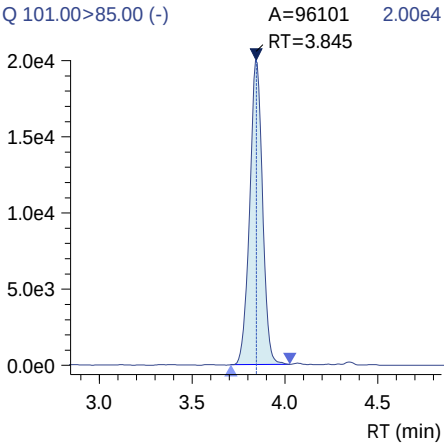
Perchlorate

Conc 10.1563



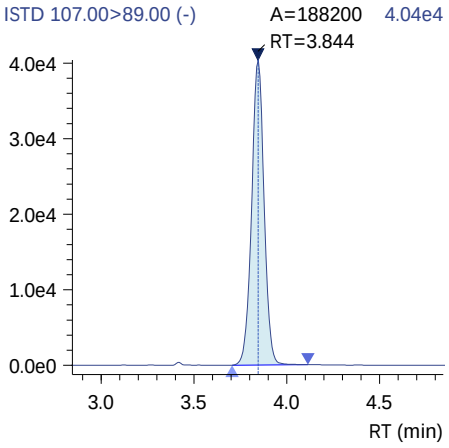
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/16/2022 9:49:30 AM

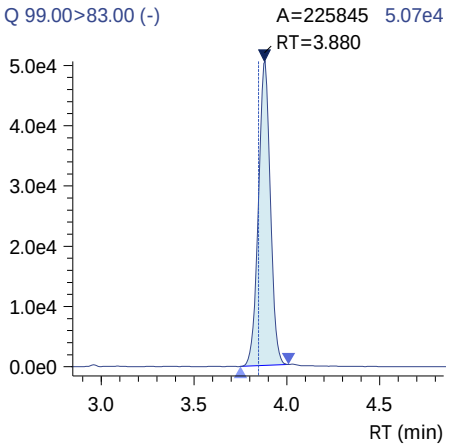
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/13/2022 12:37:31 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_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	3.880	225845	162905	10.2409	ng/mL	37.66	26.23-48.70
Perchlorate 2	Auto	3.877	85057	162905	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.876	162905	162905	1.0000	ng/mL	----	

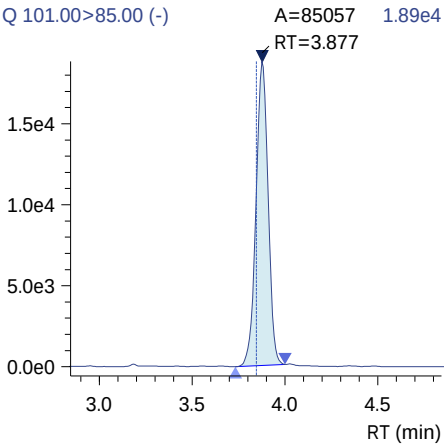
Perchlorate

Conc 10.2409



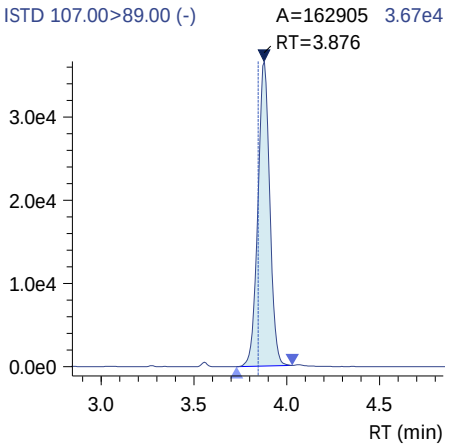
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/16/2022 9:52:54 AM

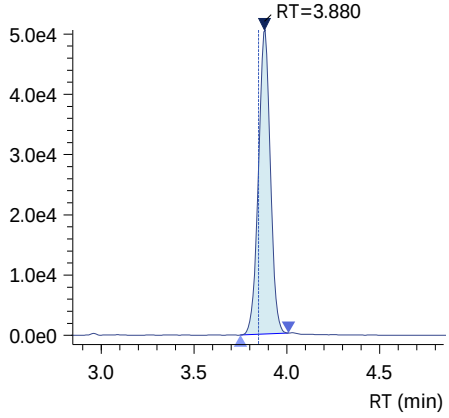
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/13/2022 12:37:31 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_027.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Perchlorate

Conc 10.2409

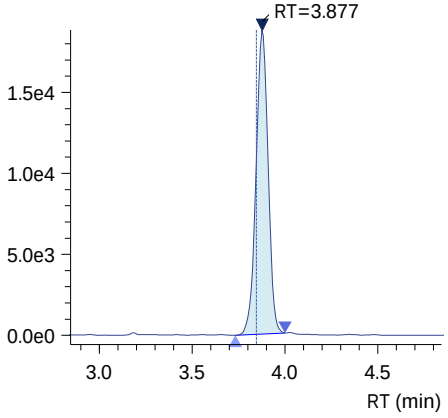
Q 99.00>83.00 (-) A=225845 5.07e4 RT=3.880



Perchlorate 2

Conc 0.0000

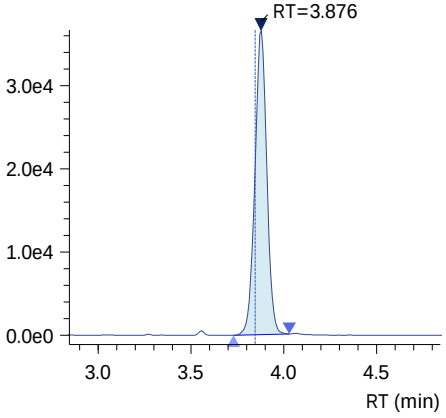
Q 101.00>85.00 (-) A=85057 1.89e4 RT=3.877



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=162905 3.67e4 RT=3.876



Insight Report

Printed at 9/16/2022 9:49:30 AM

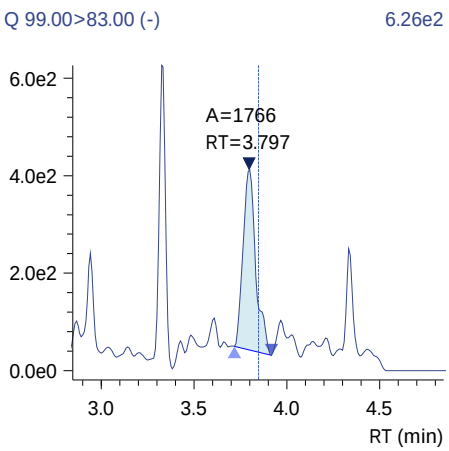
E2200864-001

Sample ID: E2200864-001
Date Acquired: 9/13/2022 12:45:53 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_028.lcd
Vial: 42 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.797	1766	203708	0.0640	ng/mL	34.26	26.23-48.70
Perchlorate 2	M	3.790	605	203708	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	M	3.791	203708	203708	1.0000	ng/mL	----	

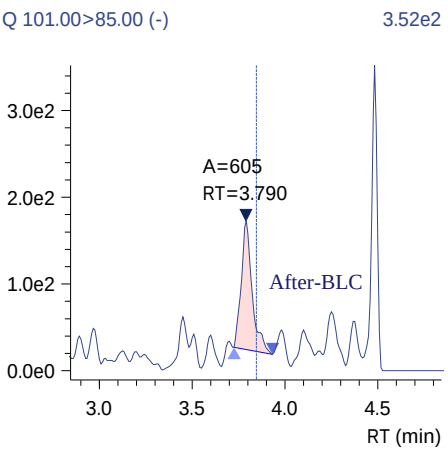
Perchlorate

Conc 0.0640



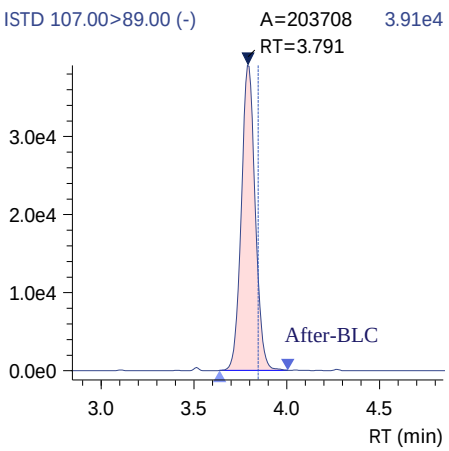
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/16/2022 9:52:54 AM

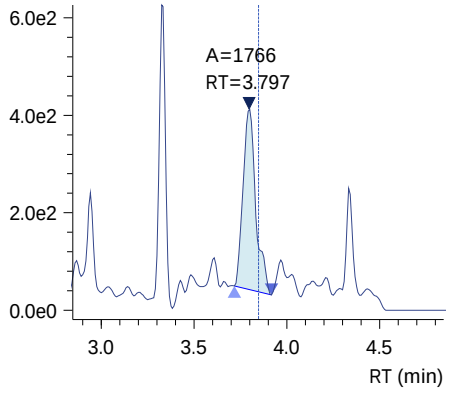
E2200864-001

Sample ID: E2200864-001
Date Acquired: 9/13/2022 12:45:53 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_028.lcd
Vial: 42 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc 0.0687

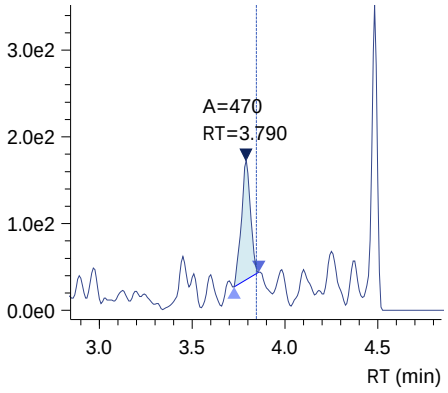
Q 99.00>83.00 (-) 6.26e2



Perchlorate 2

Conc 0.0000

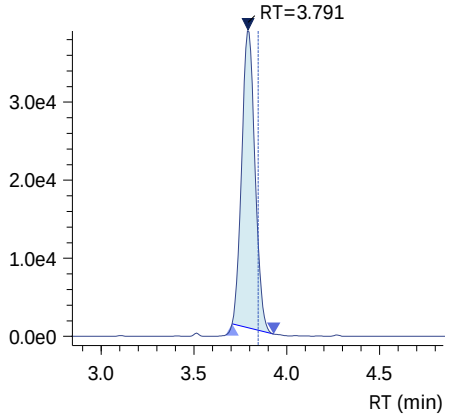
Q 101.00>85.00 (-) 3.52e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=189860 3.91e4



Insight Report

Printed at 9/16/2022 9:49:30 AM

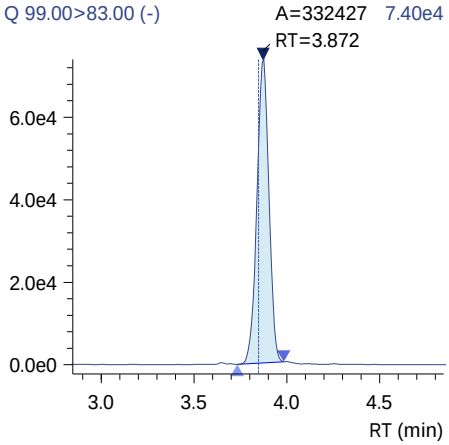
E2200864-003x100

Sample ID: E2200864-003x100
Date Acquired: 9/13/2022 1:02:40 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_030.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.872	332427	141120	17.4008	ng/mL	37.78	26.23-48.70
Perchlorate 2	Auto	3.870	125586	141120	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.869	141120	141120	1.0000	ng/mL	----	

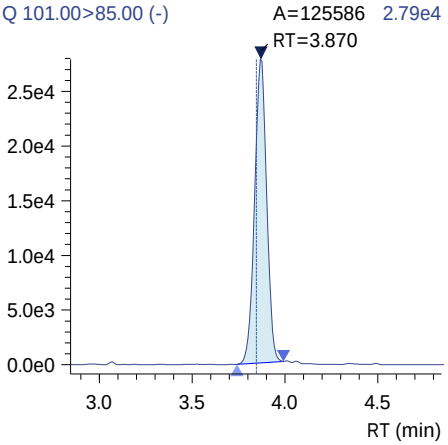
Perchlorate

Conc 17.4008



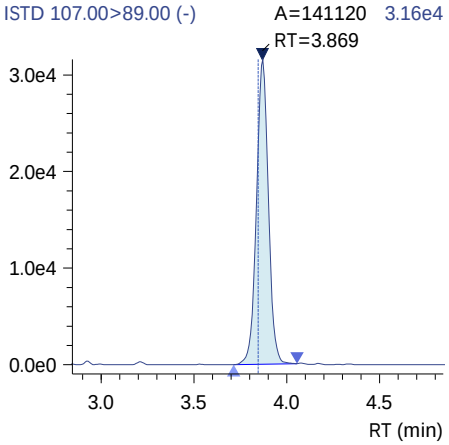
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

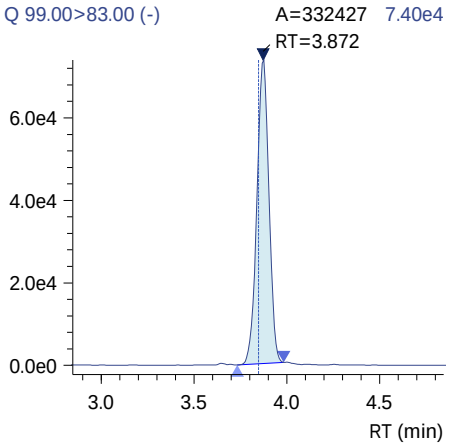
Printed at 9/16/2022 9:52:54 AM

E2200864-003x100

Sample ID: E2200864-003x100
Date Acquired: 9/13/2022 1:02:40 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_030.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 6

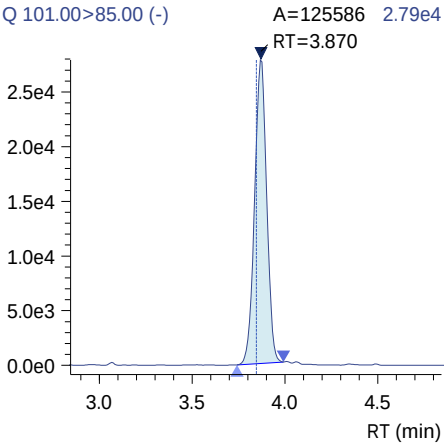
Perchlorate

Conc 17.4008



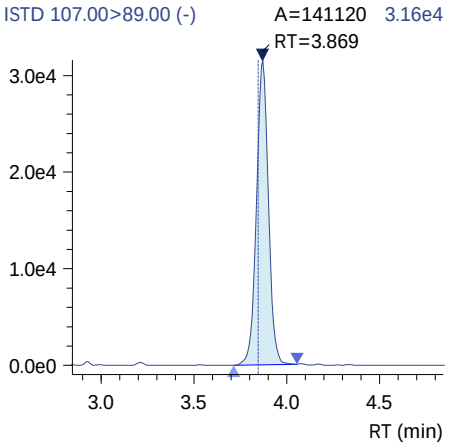
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/16/2022 9:49:30 AM

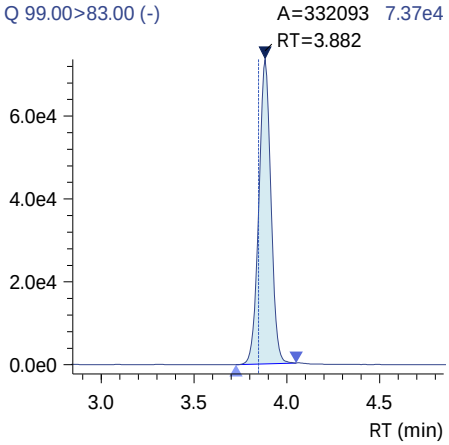
E2200864-004x1000

Sample ID: E2200864-004x1000
Date Acquired: 9/13/2022 1:11:04 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_031.lcd
Vial: 45 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.882	332093	149968	16.3577	ng/mL	39.09	26.23-48.70
Perchlorate 2	Auto	3.879	129804	149968	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.879	149968	149968	1.0000	ng/mL	----	

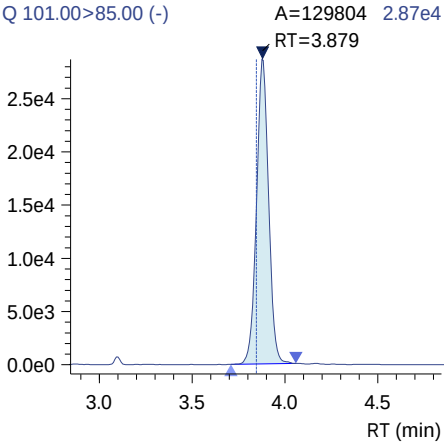
Perchlorate

Conc 16.3577



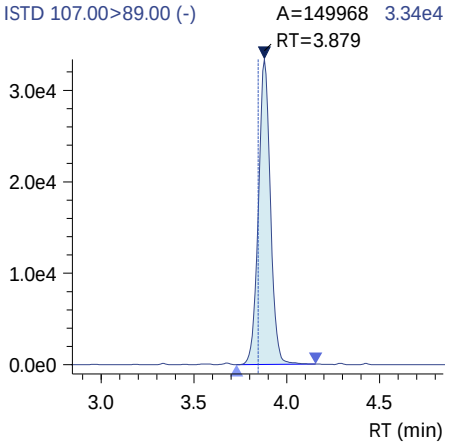
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/16/2022 9:52:54 AM

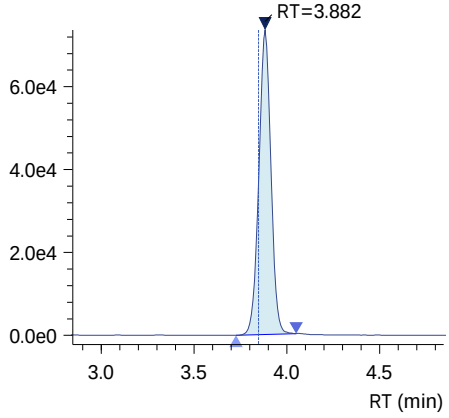
E2200864-004x1000

Sample ID: E2200864-004x1000
Date Acquired: 9/13/2022 1:11:04 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_031.lcd
Vial: 45 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc 16.3577

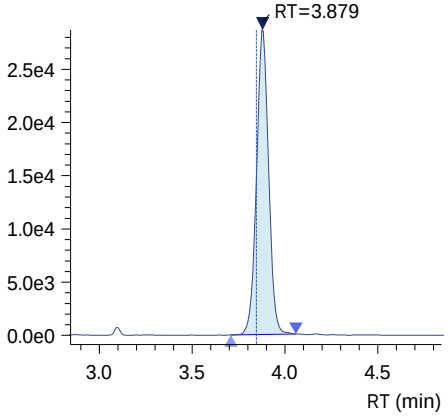
Q 99.00>83.00 (-) A=332093 7.37e4 RT=3.882



Perchlorate 2

Conc 0.0000

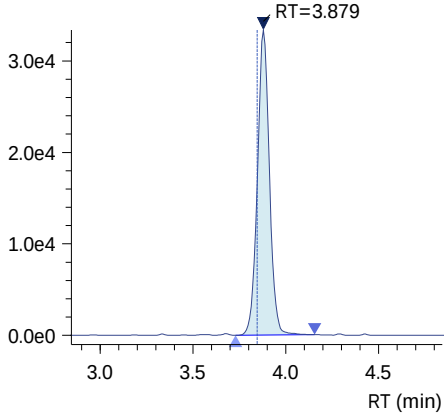
Q 101.00>85.00 (-) A=129804 2.87e4 RT=3.879



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=149968 3.34e4 RT=3.879



Insight Report

Printed at 9/16/2022 9:49:30 AM

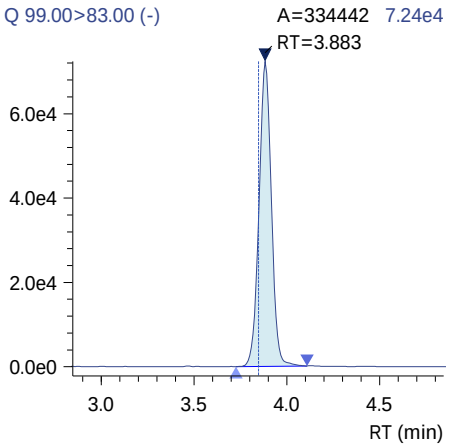
E2200864-005x1000

Sample ID: E2200864-005x1000
Date Acquired: 9/13/2022 1:19:24 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_032.lcd
Vial: 46 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.883	334442	152537	16.1960	ng/mL	38.20	26.23-48.70
Perchlorate 2	Auto	3.881	127765	152537	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.881	152537	152537	1.0000	ng/mL	----	

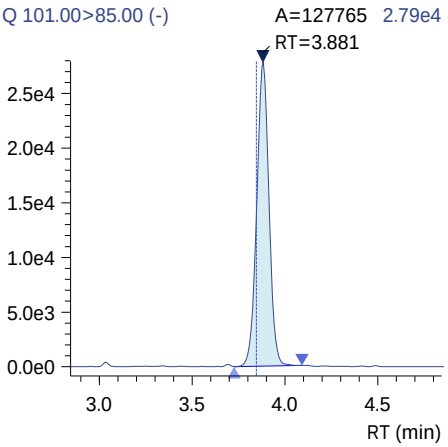
Perchlorate

Conc 16.1960



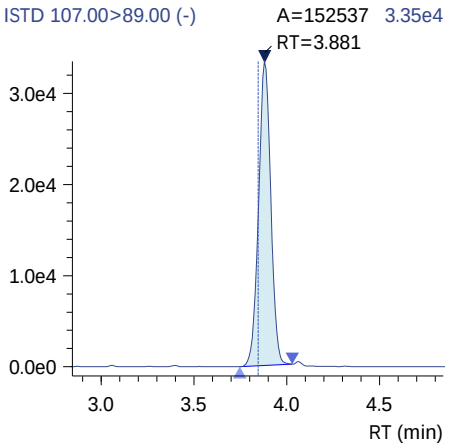
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

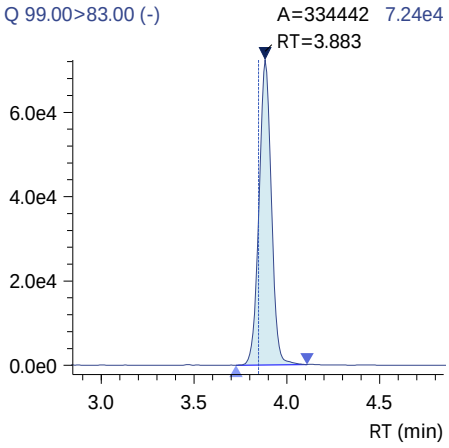
Printed at 9/16/2022 9:52:54 AM

E2200864-005x1000

Sample ID: E2200864-005x1000
Date Acquired: 9/13/2022 1:19:24 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_032.lcd
Vial: 46 | Inj. Volume: 25.0000uL | Tray: 6

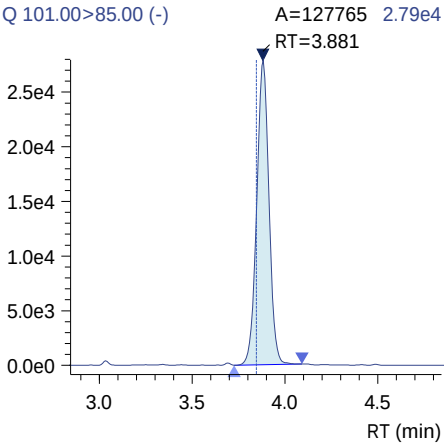
Perchlorate

Conc 16.1960



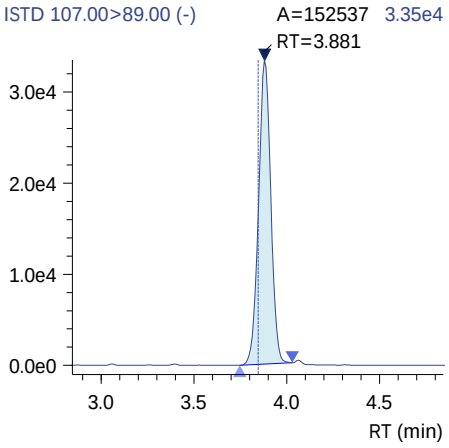
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/16/2022 9:49:30 AM

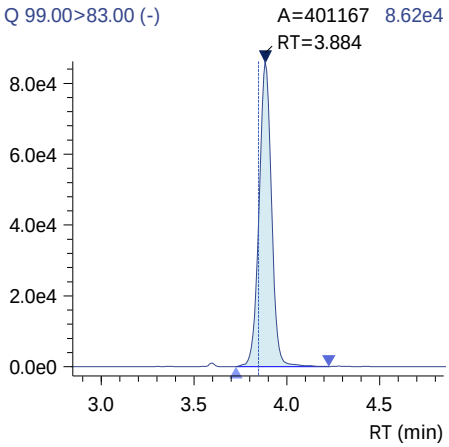
E2200864-006x5000

Sample ID: E2200864-006x5000
Date Acquired: 9/13/2022 1:27:48 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_033.lcd
Vial: 47 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.884	401167	147372	20.1081	ng/mL	37.07	26.23-48.70
Perchlorate 2	Auto	3.882	148707	147372	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.881	147372	147372	1.0000	ng/mL	----	

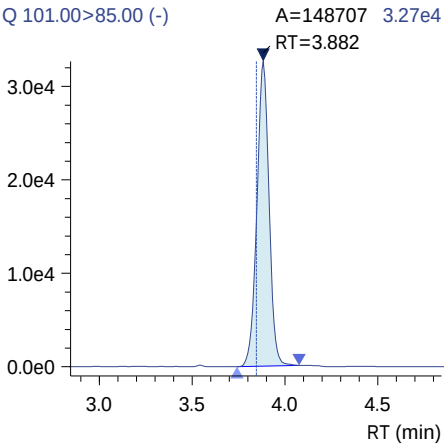
Perchlorate

Conc 20.1081



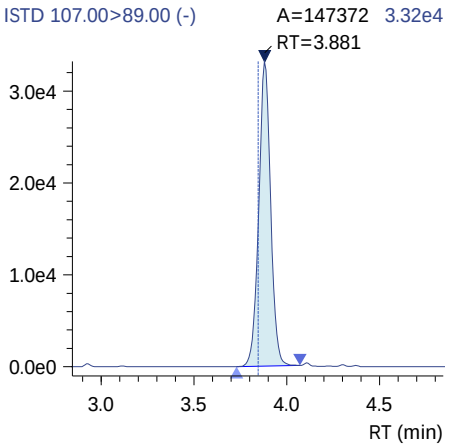
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/16/2022 9:52:54 AM

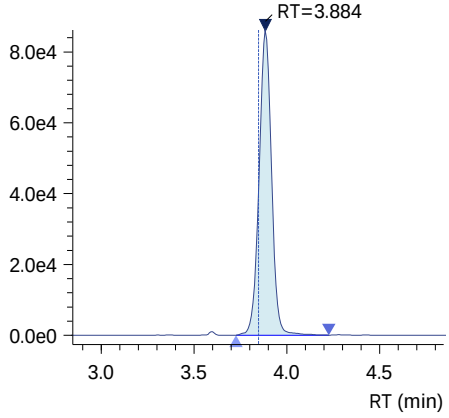
E2200864-006x5000

Sample ID: E2200864-006x5000
Date Acquired: 9/13/2022 1:27:48 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_033.lcd
Vial: 47 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc 20.1081

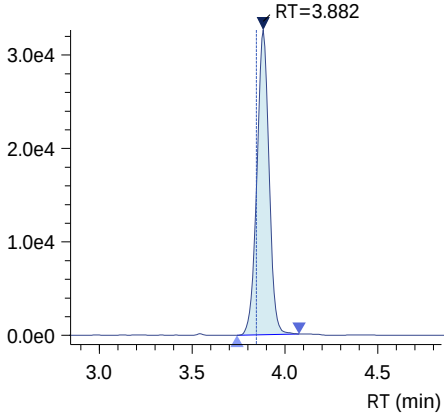
Q 99.00>83.00 (-) A=401167 8.62e4 RT=3.884



Perchlorate 2

Conc 0.0000

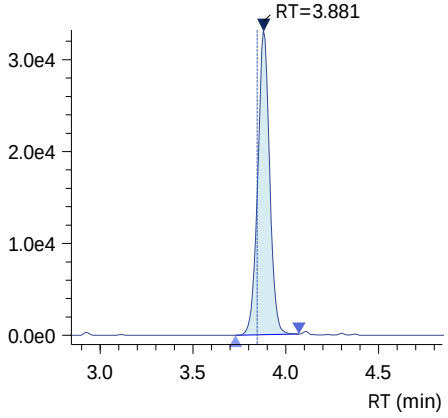
Q 101.00>85.00 (-) A=148707 3.27e4 RT=3.882



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=147372 3.32e4 RT=3.881



Insight Report

Printed at 9/16/2022 9:49:30 AM

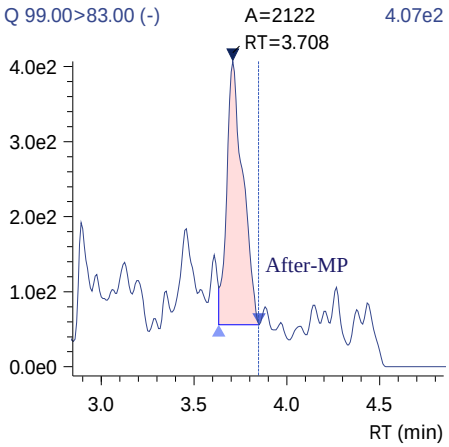
E2200864-002

Sample ID: E2200864-002
Date Acquired: 9/13/2022 1:44:36 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_035.lcd
Vial: 43 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.708	2122	225998	0.0694	ng/mL	31.06	26.23-48.70
Perchlorate 2	M	3.738	659	225998	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	M	3.704	225998	225998	1.0000	ng/mL	----	

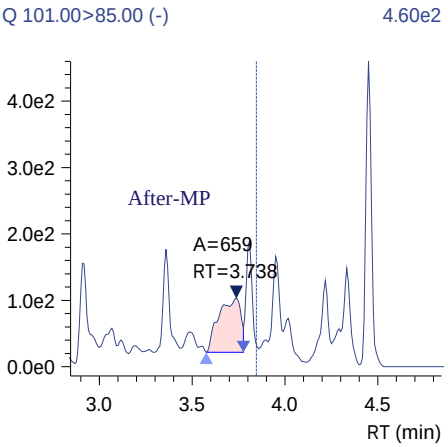
Perchlorate

Conc 0.0694



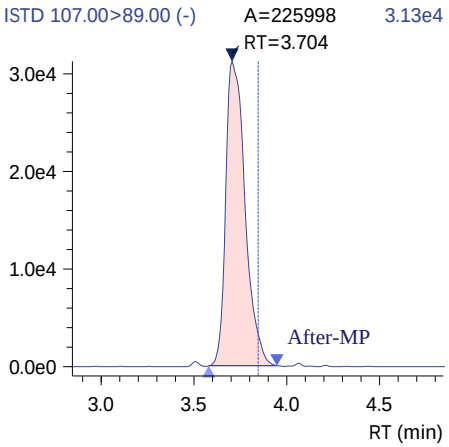
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/16/2022 9:52:54 AM

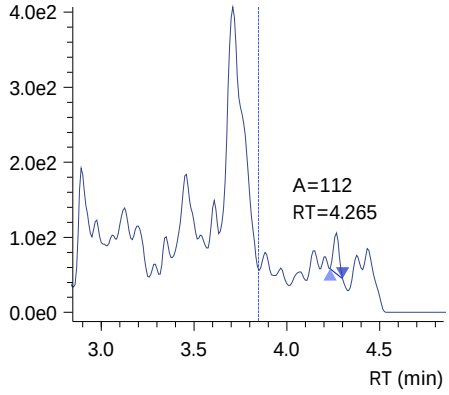
E2200864-002

Sample ID: E2200864-002
Date Acquired: 9/13/2022 1:44:36 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_035.lcd
Vial: 43 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc ----

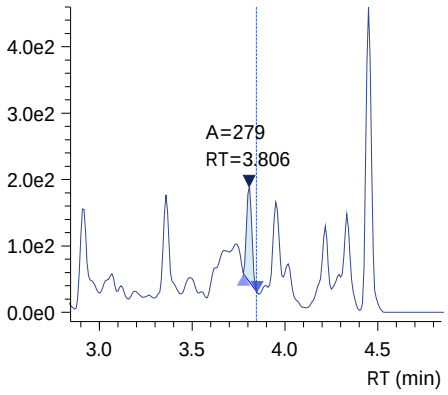
Q 99.00>83.00 (-) 4.07e2



Perchlorate 2

Conc 0.0000

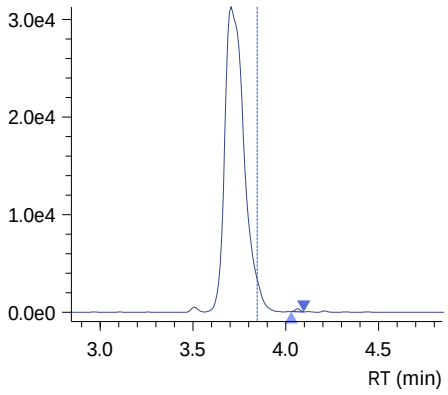
Q 101.00>85.00 (-) 4.60e2



Sodium Perchlorate-18O4_IS

Conc ----

ISTD 107.00>89.00 (-) 3.13e4



Insight Report

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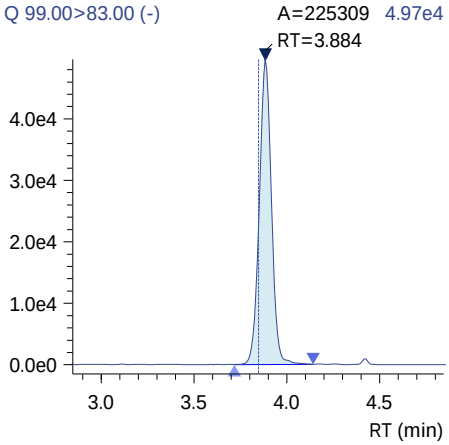
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/13/2022 1:52:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_036.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	3.884	225309	161879	10.2813	ng/mL	38.00	26.23-48.70
Perchlorate 2	Auto	3.882	85618	161879	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.880	161879	161879	1.0000	ng/mL	----	

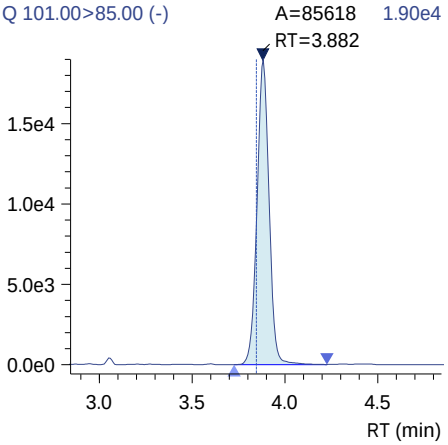
Perchlorate

Conc 10.2813



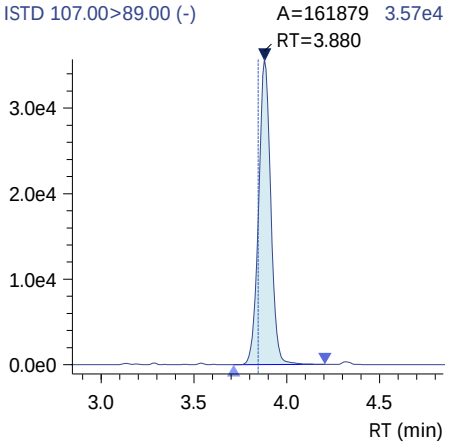
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/16/2022 9:52:54 AM

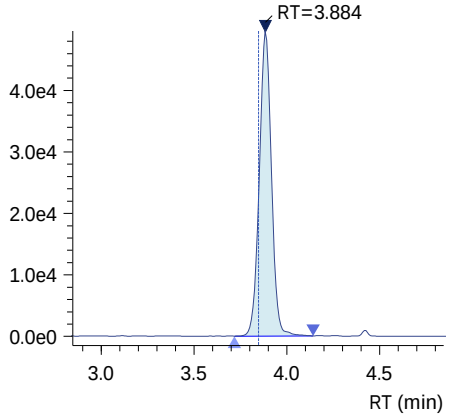
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/13/2022 1:52:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220913\20220913_036.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Perchlorate

Conc 10.2813

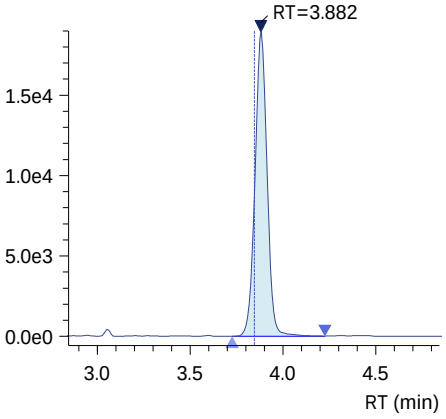
Q 99.00>83.00 (-) A=225309 4.97e4 RT=3.884



Perchlorate 2

Conc 0.0000

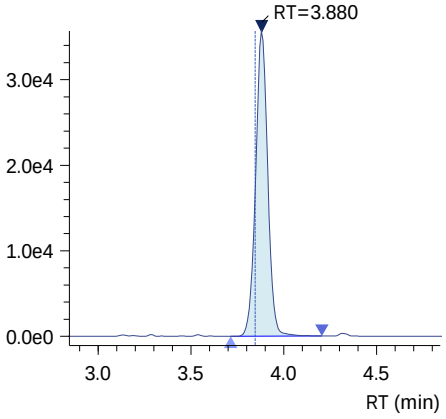
Q 101.00>85.00 (-) A=85618 1.90e4 RT=3.882



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=161879 3.57e4 RT=3.880



October 21, 2022 Service Request No:E2200974

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Suite 129
Lakewood, CO 80228

Laboratory Results for: LHAAP17

Dear Marcia,

Enclosed are the results of the sample(s) submitted to our laboratory October 08, 2022
For your reference, these analyses have been assigned our service request number **E2200974.**

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.

Please contact me if you have any questions. My extension is 2188. You may also contact me via email at James.Guin@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

James Guin

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:	Bhate Environmental Associates, Inc.	**Service Request No.:**	E2200974
Project:	LHAAP17	**Date Received:**	10/08/22
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

Six samples were received for analysis at ALS Environmental in Houston on 10/08/22.

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:

EQ2200467: 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 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: Bhate Environmental Associates, Inc. **Service Request:**E2200974
Project: LHAAP17

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2200974-001	130_100722	10/7/2022	0805
E2200974-002	17WW03_100722	10/7/2022	0845
E2200974-003	17WW01_100722	10/7/2022	0930
E2200974-004	17WW01_100722_a	10/7/2022	0930
E2200974-005	17WW02_100722	10/7/2022	0940
E2200974-006	17WW06_100722	10/7/2022	0950

Service Request Summary

Folder #: **E2200974**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 10/08/22
Internal Due Date: 10/24/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2200974-001	130_100722	Water	10/07/22 0805	**IV**
E2200974-002	17WW03_100722	Water	10/07/22 0845	**IV**
E2200974-003	17WW01_100722	Water	10/07/22 0930	**IV**
E2200974-004	17WW01_100722_a	Water	10/07/22 0930	**IV**
E2200974-005	17WW02_100722	Water	10/07/22 0940	**IV**
E2200974-006	17WW06_100722	Water	10/07/22 0950	**IV**

Service Request Summary

Folder #: **E2200974**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 10/08/22
Internal Due Date: 10/24/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	1	MS/MSD
Semivoa GCMS	ClO4 DOD/6850	5	IV DUE 10/31

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
Utah Department of Health Environmental Laboratory Certification	TX026932022-13	7/31/2023
Washington Department of Health	C819-2022	11/14/2022

Chain of Custody

ALS Environmental - Houston HRMS
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Phone (713)266-1599 Fax (713)266-0130
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bhate ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: of

Project/Phase No: MSC2020.0016.0002.0022

COC Number(1):

LIMS Number:

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 17

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	PERCHLORATE									Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
							Sample Analysis Requested (5)										Quality Assurance Samples (6)			
130_100722	07 OCT 2022	0805	-	N		WG	1	X												
17WW03_100722	07 OCT 2022	0845	-	N		WG	1	X												
17WW03_100722_MS	07 OCT 2022	0845	-	MS		WG	1	X												
17WW03_100722_MSD	07 OCT 2022	0845		SD		WG	1	X												
17WW01_100722	07 OCT 2022	0930		[illegible]		WG	1	X												
17WW01_100722_A	07 OCT 2022	0930	-	FD		WG	1	X												
17WW02_100722	07 OCT 2022	0940	-	N		WG	1	X												
17WW06_100722	07 OCT 2022	0950	-	N		WG	1	X												
			-																	
			-																	
			-																	

COMMENTS: Standard TAT

4981 2.1° ; 431 cf 0.2°

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	10/7/22	1130	1.	10/8/22	08:00
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Shipped No.:

Method of Shipment:

Fed Ex Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dane Wacasey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

ALS Environmental

Cooler Receipt Form

Project Chemist JG

Client/Project BHATE

Thermometer ID IR41

Date/Time Received: 10/8/22 Initials: PH

Date/Time Logged in: 10/10/22 Initials CG

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? 1-F

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?
9789 1448 9470		10/8/22	0806	PH	1.4	☒
						☐
						☐
						☐

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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Houston, TX 77099
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www.alsglobal.com

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

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 408147 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 10/14/22 08:47

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2200974-001	130_100722	.01	6850/ClO4 DOD			Water	10mL	
2	E2200974-002	17WW03_100722	.01	6850/ClO4 DOD			Water	10mL	
3	E2200974-003	17WW01_100722	.01	6850/ClO4 DOD			Water	10mL	
4	E2200974-004	17WW01_100722_a	.01	6850/ClO4 DOD			Water	10mL	
5	E2200974-005	17WW02_100722	.01	6850/ClO4 DOD			Water	10mL	
6	E2200974-006	17WW06_100722	.01	6850/ClO4 DOD			Water	10mL	
7	E2200988-001	LH18/24-SP650_101122_AIX	.01	6850/ClO4 DOD			Water	10mL	
8	E2200988-002	LH18/24-SP650_101122_BIX	.01	6850/ClO4 DOD			Water	10mL	
9	EQ2200467-01	MB		6850/ClO4 DOD			Liquid	10mL	
10	EQ2200467-02	LCS		6850/ClO4			Liquid	10mL	
11	EQ2200467-03	DLCS		6850/ClO4			Liquid	10mL	
12	EQ2200467-04	17WW03_100722 MS	.01	6850/ClO4 DOD			Liquid	10mL	
13	EQ2200467-05	17WW03_100722 DMS	.01	6850/ClO4 DOD			Liquid	10mL	
14	R2209422-006	2210031613B ST-7-544	.01	6850/ClO4			Water	10mL	
15	R2209422-013	2210031623B ST-7-453	.01	6850/ClO4			Water	10mL	
16	R2209491-019	2210041600B ST-7-779	.01	6850/ClO4			Water	10mL	
17	R2209491-023	2210041609B ST-7-970	.01	6850/ClO4			Water	10mL	
18	R2209637-008	2210051558B JER-1-563	.01	6850/ClO4			Water	10mL	
19	R2209637-016	2210051623B JER-1-483	.01	6850/ClO4			Water	10mL	

Spiking Solutions

Name: Perchlorate Intermediate Stock1 Inventory ID 222798 Logbook Ref: Perchlorate (1st Source) Expires On: 10/29/2022

EQ2200467-02	1.00µL	EQ2200467-02	1.00µL	EQ2200467-03	1.00µL	EQ2200467-03	1.00µL	EQ2200467-04	1.00µL	EQ2200467-05	1.00µL

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 225266 Logbook Ref: Perchlorate Internal Standard Expires On: 01/31/2023

E2200974-001	100.00µL	E2200974-002	100.00µL	E2200974-003	100.00µL	E2200974-004	100.00µL	E2200974-005	100.00µL	E2200974-006	100.00µL
E2200988-001	100.00µL	E2200988-002	100.00µL	EQ2200467-01	100.00µL	EQ2200467-01	100.00µL	EQ2200467-02	100.00µL	EQ2200467-02	100.00µL
EQ2200467-03	100.00µL	EQ2200467-03	100.00µL	EQ2200467-04	100.00µL	EQ2200467-05	100.00µL	R2209422-006	100.00µL	R2209422-013	100.00µL
R2209491-019	100.00µL	R2209491-023	100.00µL	R2209637-008	100.00µL	R2209637-016	100.00µL				

Preparation Materials

Water HPLC Grade	09/22/22 Water (225106)	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 Information Benchsheet

Prep Run#: 408147
Team: Semivoa GCMS/XMI

Prep WorkFlow: GenExt28Day
Prep Method: Method

Status: Prepped
Prep Date/Time: 10/14/22 08:47

Preparation Steps

Step: Preparation
Started: 10/14/22 08:47
Finished: 10/14/22 09:05
By: XMI
Comments

Comments: _____

Reviewed By: GR Date: 10/14/22

Chain of Custody

Relinquished By:		Date:		Extracts Examined
Received By:		Date:		Yes No

Analytical Results

ALS Environmental - Houston HRMS
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www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Collected:**	10/ 7/22 0805
Sample Matrix:	Water	**Date Received:**	10/ 8/22
Sample Name:	130_100722	**Units:**	µg/L
Lab Code:	E2200974-001	**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	**0.0750**	J	0.100	0.0500	0.0250	1	10/14/22	10/17/22 15:17	408147	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Collected:**	10/ 7/22 0845
Sample Matrix:	Water	**Date Received:**	10/ 8/22
Sample Name:	17WW03_100722	**Units:**	µg/L
Lab Code:	E2200974-002	**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	**0.0559**	J	0.100	0.0500	0.0250	1	10/14/22	10/20/22 12:51	408147	781822	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Collected:**	10/ 7/22 0930
Sample Matrix:	Water	**Date Received:**	10/ 8/22
Sample Name:	17WW01_100722	**Units:**	µg/L
Lab Code:	E2200974-003	**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	**24.2**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 15:34	408147	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Collected:**	10/ 7/22 0930
Sample Matrix:	Water	**Date Received:**	10/ 8/22
Sample Name:	17WW01_100722_a	**Units:**	µg/L
Lab Code:	E2200974-004	**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	**24.5**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 15:51	408147	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Collected:**	10/ 7/22 0940
Sample Matrix:	Water	**Date Received:**	10/ 8/22
Sample Name:	17WW02_100722	**Units:**	µg/L
Lab Code:	E2200974-005	**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	**19000**		100	50.0	25.0	1000	10/14/22	10/17/22 15:59	408147	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Collected:**	10/ 7/22 0950
Sample Matrix:	Water	**Date Received:**	10/ 8/22
Sample Name:	17WW06_100722	**Units:**	µg/L
Lab Code:	E2200974-006	**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	**104000**		500	250	125	5000	10/14/22	10/17/22 16:07	408147	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2200467-01	**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	10/14/22	10/17/22 14:18	408147	781288	

Accuracy & Precision

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

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Analyzed:**	10/17/22
Sample Matrix:	Water		

Lab Control Sample Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Units:**	µg/L
Prep Method:	Method	**Basis:**	NA
		Extraction Lot:	408147

	Lab Control Sample EQ2200467-02			Duplicate Lab Control Sample EQ2200467-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.106	0.100	106	0.119	0.100	119	84 - 119	12	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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200467-02	**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	**0.106**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 14:27	408147	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200467-03	**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	**0.119**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 14:35	408147	781288	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E22009
Project:	LHAAP17	**Date Collected:**	10/7/22
Sample Matrix:	Water	**Date Received:**	10/8/22
		Date Analyzed:	10/17/22

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	17WW03_100722	**Units:**	µg/L
Lab Code:	E2200974-002	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		17WW03_100722MS Matrix Spike EQ2200467-04			17WW03_100722DMS Duplicate Matrix Spike EQ2200467-05				
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**
Perchlorate	0.0559	0.142	0.100	86	0.140	0.100	84	84 - 119	1

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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Collected:**	10/ 7/22 0845
Sample Matrix:	Water	**Date Received:**	10/ 8/22
Sample Name:	17WW03_100722	**Units:**	µg/L
Lab Code:	EQ2200467-04	**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	**0.142**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 14:44	408147	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Collected:**	10/ 7/22 0845
Sample Matrix:	Water	**Date Received:**	10/ 8/22
Sample Name:	17WW03_100722	**Units:**	µg/L
Lab Code:	EQ2200467-05	**Basis:**	NA
Run Type:	Duplicate 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	**0.140**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 14:52	408147	781288	

Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
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www.alsglobal.com

20221013

1st Review: XMI
2nd Review: Kneir

ALS Environmental

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 10/13/2022
Cal. Std. xp: 1/31/2023
ICAL ID: EC2200014

Mobile Phases A:0.10% Formic Acid/Water 3210301-02 B:MeOH 224417

	Sample Name	File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	PERCHLORATE1	20221013_016	Perchlorate6850c.lcm	1x	☒	225390	10/13/2022 10:53
2	PERCHLORATE2	20221013_017	Perchlorate6850c.lcm	1x	☒	225392	10/13/2022 11:02
3	PERCHLORATE3	20221013_018	Perchlorate6850c.lcm	1x	☒	225393	10/13/2022 11:10
4	PERCHLORATE4	20221013_019	Perchlorate6850c.lcm	1x	☒	225394	10/13/2022 11:19
5	PERCHLORATE5	20221013_020	Perchlorate6850c.lcm	1x	☒	225395	10/13/2022 11:27
6	PERCHLORATE6	20221013_021	Perchlorate6850c.lcm	1x	☒	225396	10/13/2022 11:35
7	PERCHLORATE7	20221013_022	Perchlorate6850c.lcm	1x	☒	225398	10/13/2022 11:44
8	PERCHLORATE8	20221013_023	Perchlorate6850c.lcm	1x	☒	225400	10/13/2022 11:52
9	PERCHLORATE9	20221013_024	Perchlorate6850c.lcm	1x	☒	225401	10/13/2022 12:01
10	PERCHLORATE10	20221013_025	Perchlorate6850c.lcm	1x	☒	225402	10/13/2022 12:09
11	PERCHLORATEICV	20221013_026	Perchlorate6850c.lcm	1x	☒	225404	10/13/2022 12:17
12	LODV	20221013_027	Perchlorate6850c.lcm	1x	☒	DNU-IR	10/13/2022 12:26
13	MB	20221013_028	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 12:34
14	LCS	20221013_029	Perchlorate6850c.lcm	1x	☒	IDOC-DNU-IR	10/13/2022 12:42
15	DLCS	20221013_030	Perchlorate6850c.lcm	1x	☒	IDOC-DNU-IR	10/13/2022 12:51
16	IB	20221013_031	Perchlorate6850c.lcm	1x	☒		10/13/2022 12:59
17	IB	20221013_032	Perchlorate6850c.lcm	1x	☒		10/13/2022 13:08
18	IB	20221013_033	Perchlorate6850c.lcm	1x	☒		10/13/2022 13:16
19	null	20221013_034	Perchlorate6850c.lcm	1x	☒		10/13/2022 13:21
20	null	20221013_035	Perchlorate6850c.lcm	1x	☒		10/13/2022 13:27
21	IB	20221013_036	Perchlorate6850c.lcm	1x	☒		10/13/2022 14:02
22	IB	20221013_037	Perchlorate6850c.lcm	1x	☒		10/13/2022 14:10
23	LODV	20221013_038	Perchlorate6850c.lcm	1x	☒	225199	10/13/2022 14:19
24	PERCHLORATE7	20221013_039	Perchlorate6850c.lcm	1x	☒	225398	10/13/2022 14:27
25	MB	20221013_040	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 14:44
26	LCS	20221013_041	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 14:52
27	DLCS	20221013_042	Perchlorate6850c.lcm	1x	☒	IDOC-DNU-IR	10/13/2022 15:01
28	LCS	20221013_043	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 15:09
29	DLCS	20221013_044	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 15:17
30	MB WIPE-1013PREP	20221013_045	Perchlorate6850c.lcm	1x	☒	DNU-IR	10/13/2022 15:26
31	MB WIPE-1013PREP	20221013_046	Perchlorate6850c.lcm	1x	☒	DNU-IR	10/13/2022 14:35
32	PERCHLORATE7	20221013_047	Perchlorate6850c.lcm	1x	☒	225398	10/13/2022 15:34
33	IB	20221013_048	Perchlorate6850c.lcm	1x	☒		10/13/2022 15:43
34	IB	20221013_049	Perchlorate6850c.lcm	1x	☒		10/13/2022 15:51
35	null	20221013_050	Perchlorate6850c.lcm	1x	☒		10/13/2022 15:56
36	null	20221013_051	Perchlorate6850c.lcm	1x	☒		10/13/2022 16:02

Initial Calibration - Detailed Report

Calibration ID: EC2200014 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2200014-01	PERCHLORATE1	20221013_016	10/13/2022 10:53
02	EC2200014-02	PERCHLORATE2	20221013_017	10/13/2022 11:02
03	EC2200014-03	PERCHLORATE3	20221013_018	10/13/2022 11:10
04	EC2200014-04	PERCHLORATE4	20221013_019	10/13/2022 11:19
05	EC2200014-05	PERCHLORATE5	20221013_020	10/13/2022 11:27
06	EC2200014-06	PERCHLORATE6	20221013_021	10/13/2022 11:35
07	EC2200014-07	PERCHLORATE7	20221013_022	10/13/2022 11:44
08	EC2200014-08	PERCHLORATE8	20221013_023	10/13/2022 11:52
09	EC2200014-09	PERCHLORATE9	20221013_024	10/13/2022 12:01
10	EC2200014-10	PERCHLORATE10	20221013_025	10/13/2022 12:09

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 5.871** **Average RF = 0.1347**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1373	02	0.5000	0.1357	03	0.7000	0.1336	04	1.0000	0.1416
05	2.0000	0.1235	06	5.0000	0.1283	07	10.0000	0.1522	08	20.0000	0.1315
09	30.0000	0.1332	10	50.0000	0.1302						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.102	1.9	02	0.5000	0.504	0.7	03	0.7000	0.694	-0.8
04	1.0000	1.05	5.1	05	2.0000	1.83	-8.3	06	5.0000	4.76	-4.8
07	10.0000	11.3	13.0	08	20.0000	19.5	-2.4	09	30.0000	29.7	-1.1
10	50.0000	48.3	-3.3								

Initial Calibration Verification Summary Report

Calibration ID:	EC2200014	**Instrument ID:**	E-LCMS-01
Datafile ID:	20221013_026	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2200014-11	T	Average RF	10	10.918	ng/mL	9.2	<= 15

Insight Report

Printed at 10/24/2022 11:16:28 AM

Method File: I:\LCMS01\DATA\20221013ICAL\20221013ICAL.lcm
Project File: I:\LCMS01\DATA\20221013ICAL\10132022_ICAL.damlp

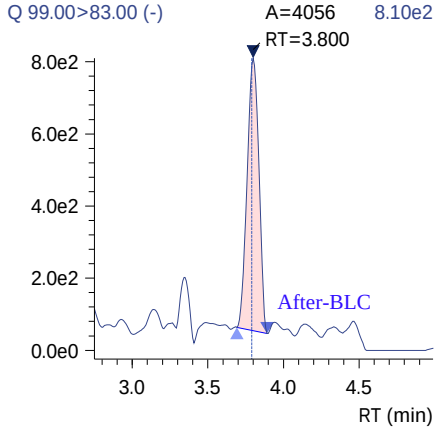
PERCHLORATE1

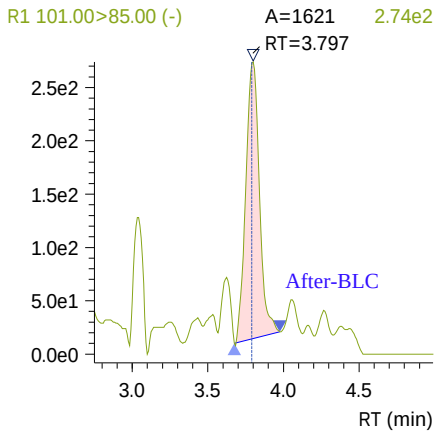
Sample ID: PERCHLORATE1
Date Acquired: 10/13/2022 10:53:53 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_016.lcd
Vial: 38 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.800	4056	295377	0.1019	ng/mL	101.00 >85.00	39.97	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	295377	295377	1.0000	ng/mL	----	----	

Perchlorate

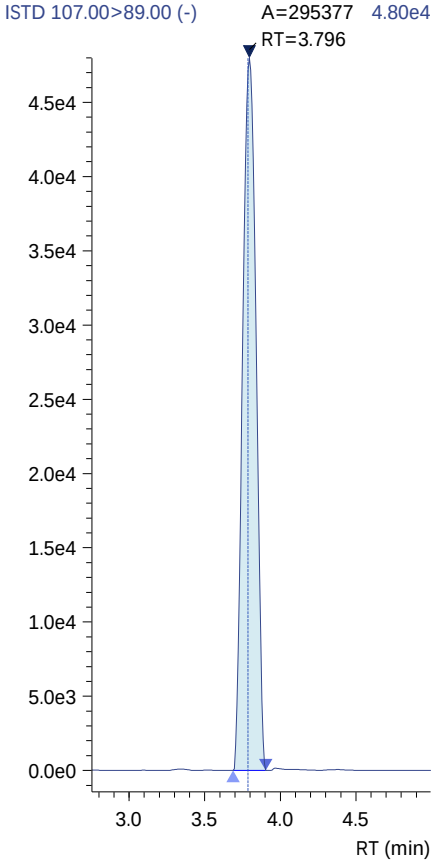
Conc 0.1019
R#1 39.97 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 9:43:49 AM

Method File: I:\LCMS01\DATA\20221013ICAL\20221013ICAL.lcm
Project File: I:\LCMS01\DATA\20221013ICAL\20221013ICAL.damlp

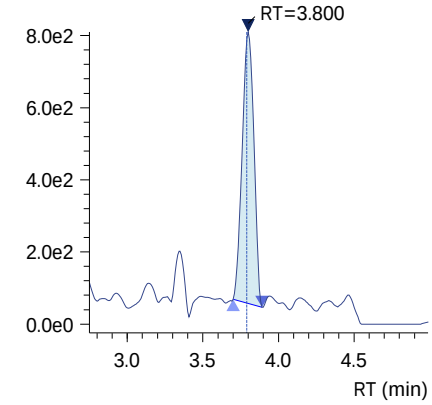
PERCHLORATE1

Sample ID: PERCHLORATE1
Date Acquired: 10/13/2022 10:53:53 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_016.lcd
Vial: 38 | Inj. Volume: 25.0000uL | Tray: 1

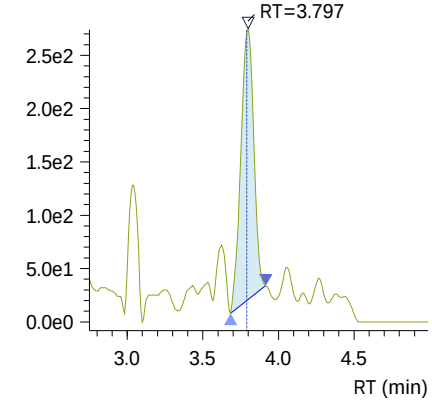
Perchlorate

Conc 0.1012
R#1 37.47 (33.91)

Q 99.00>83.00 (-) A=4022 8.10e2 RT=3.800



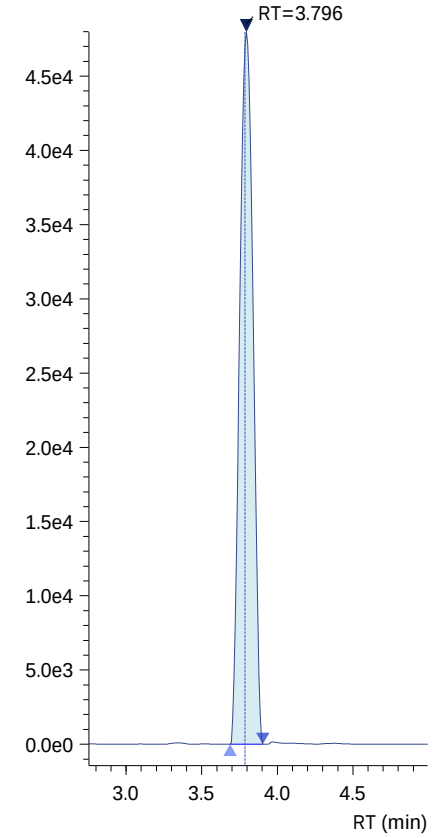
R1 101.00>85.00 (-) A=1507 2.74e2 RT=3.797



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=295377 4.80e4 RT=3.796



Insight Report

Printed at 10/24/2022 11:16:28 AM

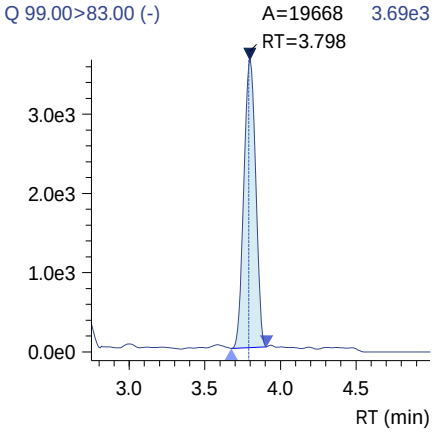
PERCHLORATE2

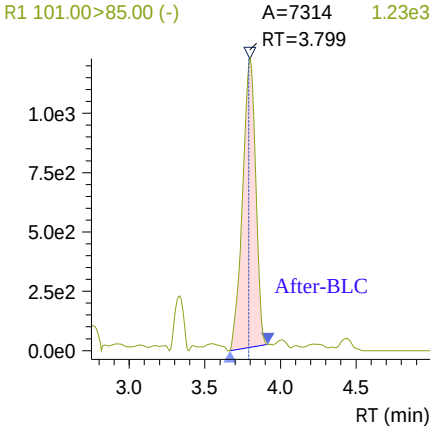
Sample ID: PERCHLORATE2
Date Acquired: 10/13/2022 11:02:18 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_017.lcd
Vial: 39 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.798	19668	289981	0.5035	ng/mL	101.00 >85.00	37.19	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	289981	289981	1.0000	ng/mL	----	----	

Perchlorate

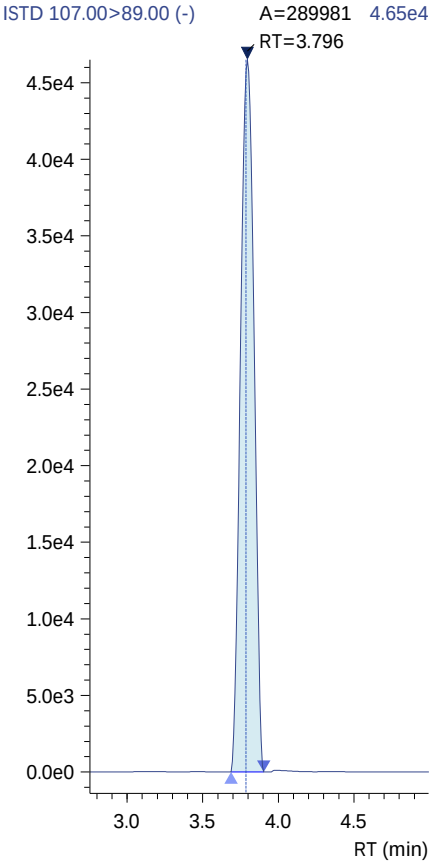
Conc 0.5035
R#1 37.19 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 9:43:49 AM

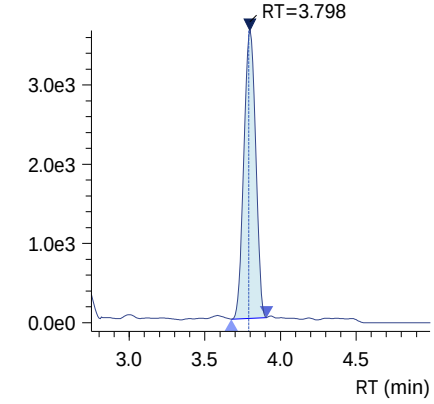
PERCHLORATE2

Sample ID: PERCHLORATE2
Date Acquired: 10/13/2022 11:02:18 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_017.lcd
Vial: 39 | Inj. Volume: 25.0000uL | Tray: 1

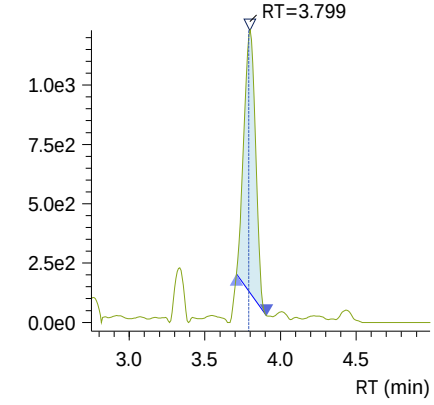
Perchlorate

Conc 0.5040
R#1 29.91 (33.91)

Q 99.00>83.00 (-) A=19668 3.69e3 RT=3.798



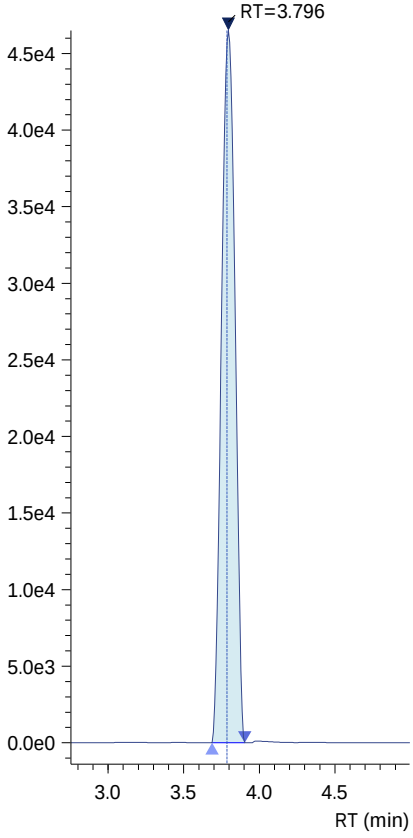
R1 101.00>85.00 (-) A=5882 1.23e3 RT=3.799



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=289981 4.65e4 RT=3.796



Insight Report

Printed at 10/24/2022 11:16:28 AM

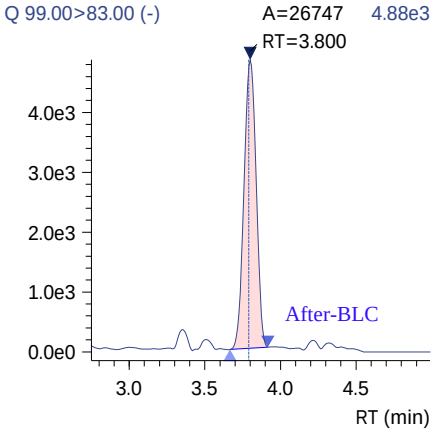
PERCHLORATE3

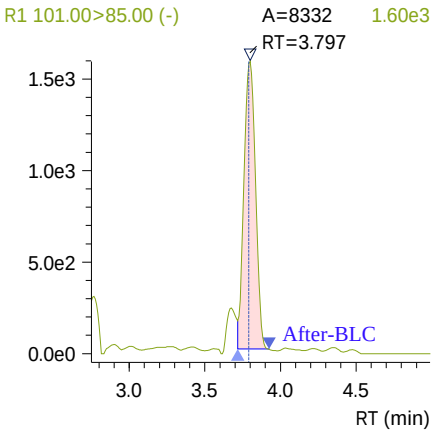
Sample ID: PERCHLORATE3
Date Acquired: 10/13/2022 11:10:43 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_018.lcd
Vial: 40 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.800	26747	286041	0.6942	ng/mL	101.00 >85.00	31.15	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	286041	286041	1.0000	ng/mL	----	----	

Perchlorate

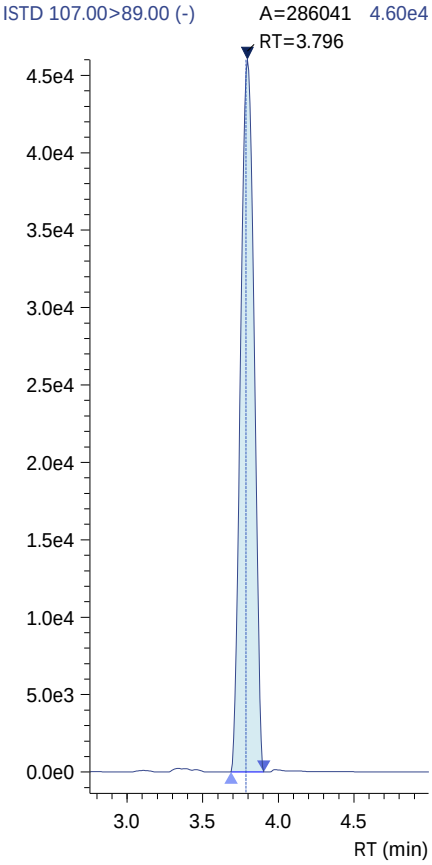
Conc 0.6942
R#1 31.15 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 9:43:49 AM

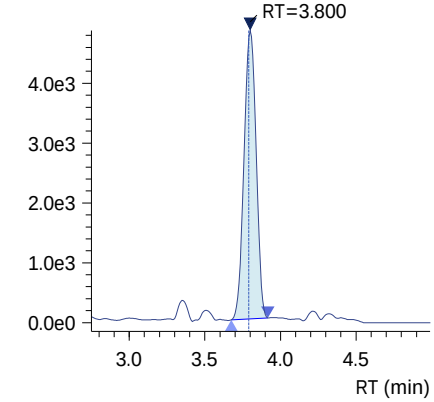
PERCHLORATE3

Sample ID: PERCHLORATE3
Date Acquired: 10/13/2022 11:10:43 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_018.lcd
Vial: 40 | Inj. Volume: 25.0000uL | Tray: 1

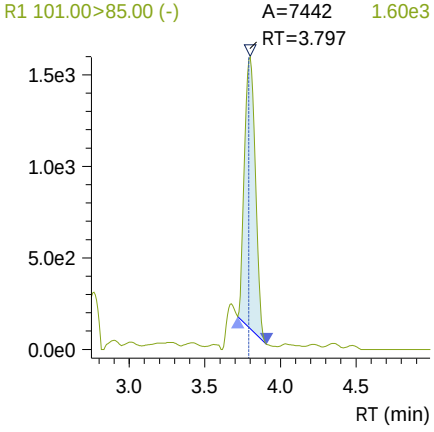
Perchlorate

Conc 0.6936
R#1 27.88 (33.91)

Q 99.00>83.00 (-) A=26697 4.88e3



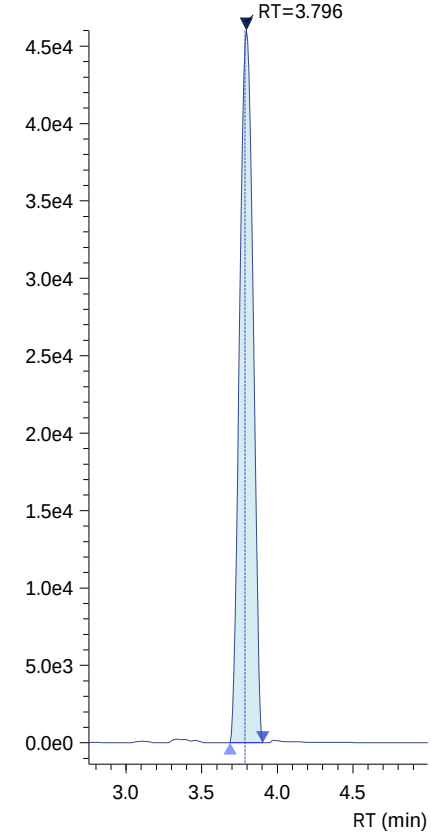
R1 101.00>85.00 (-) A=7442 1.60e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=286041 4.60e4



Insight Report

Printed at 10/24/2022 11:16:28 AM

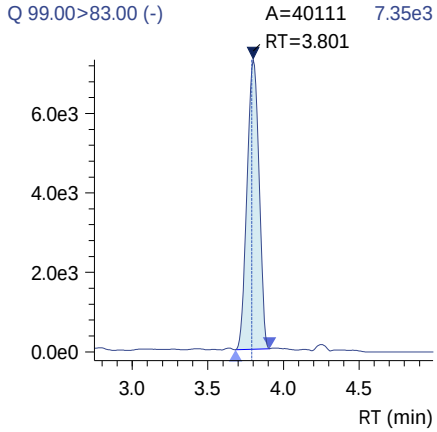
PERCHLORATE4

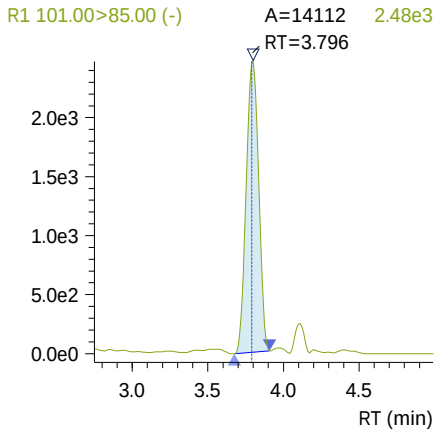
Sample ID: PERCHLORATE4
Date Acquired: 10/13/2022 11:19:07 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_019.lcd
Vial: 41 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.801	40111	283200	1.0514	ng/mL	101.00 >85.00	35.18	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.797	283200	283200	1.0000	ng/mL	----	----	

Perchlorate

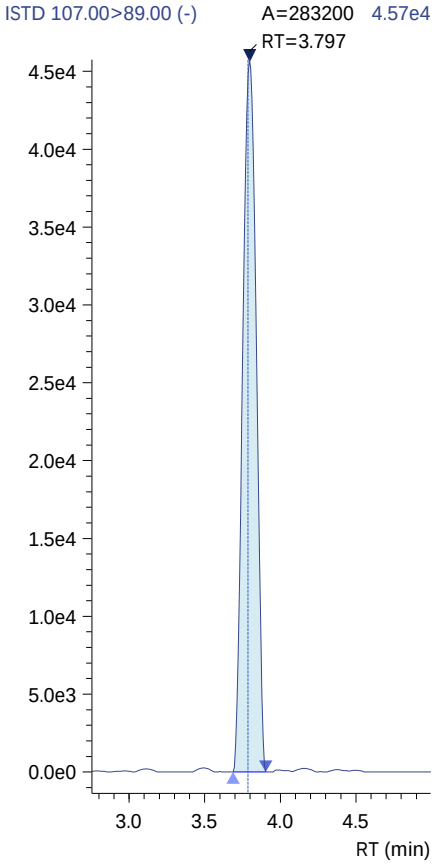
Conc 1.0514
R#1 35.18 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

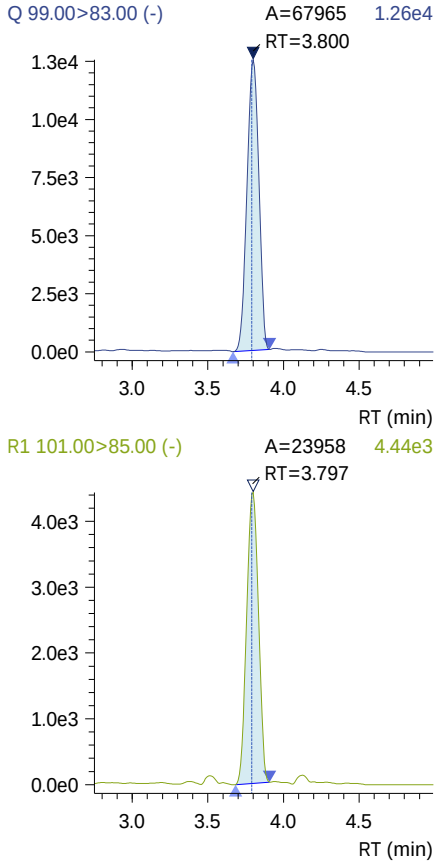
PERCHLORATE5

Sample ID: PERCHLORATE5
Date Acquired: 10/13/2022 11:27:29 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_020.lcd
Vial: 42 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.800	67965	275186	1.8335	ng/mL	101.00 >85.00	35.25	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	275186	275186	1.0000	ng/mL	----	----	

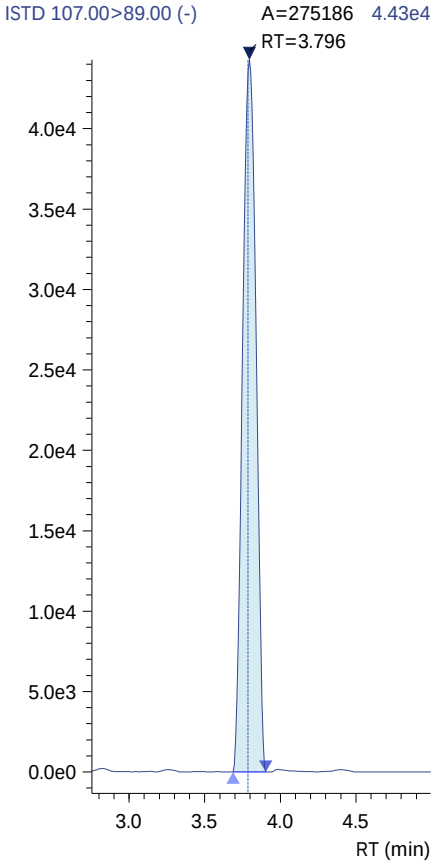
Perchlorate

Conc 1.8335
R#1 35.25 (34.20)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

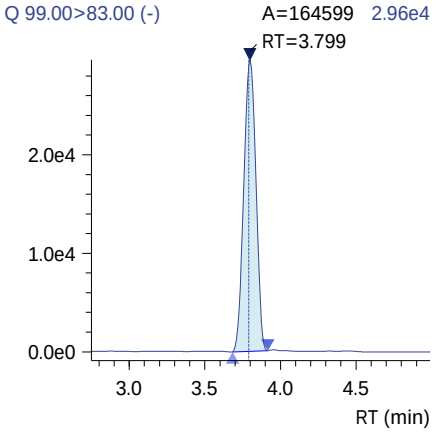
PERCHLORATE6

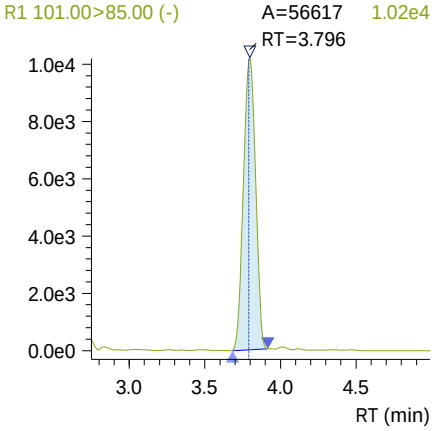
Sample ID: PERCHLORATE6
Date Acquired: 10/13/2022 11:35:51 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_021.lcd
Vial: 43 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.799	164599	256637	4.7613	ng/mL	101.00 >85.00	34.40	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	256637	256637	1.0000	ng/mL	----	----	

Perchlorate

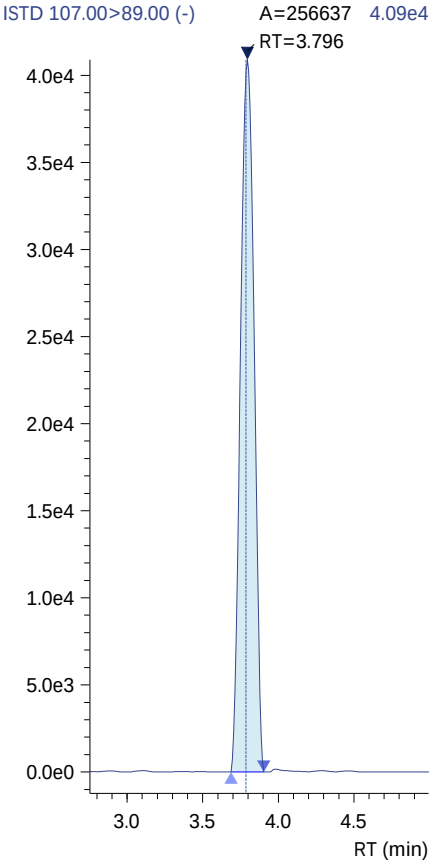
Conc 4.7613
R#1 34.40 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

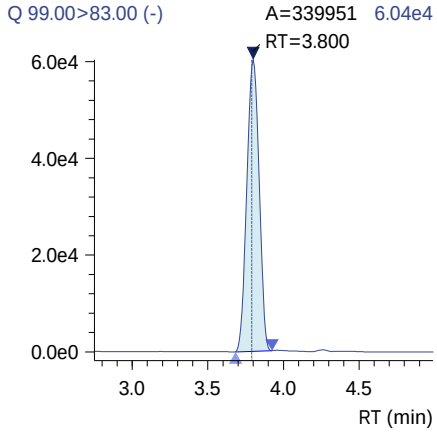
PERCHLORATE7

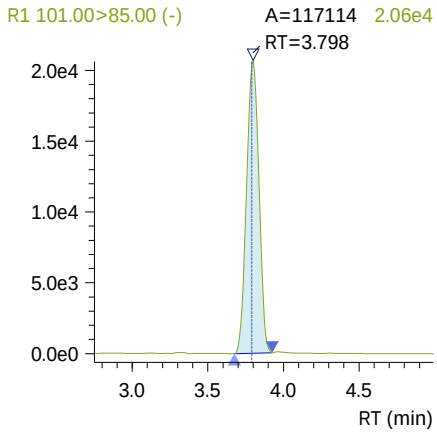
Sample ID: PERCHLORATE7
Date Acquired: 10/13/2022 11:44:14 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_022.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.800	339951	223356	11.2988	ng/mL	101.00 >85.00	34.45	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	223356	223356	1.0000	ng/mL	----	----	

Perchlorate

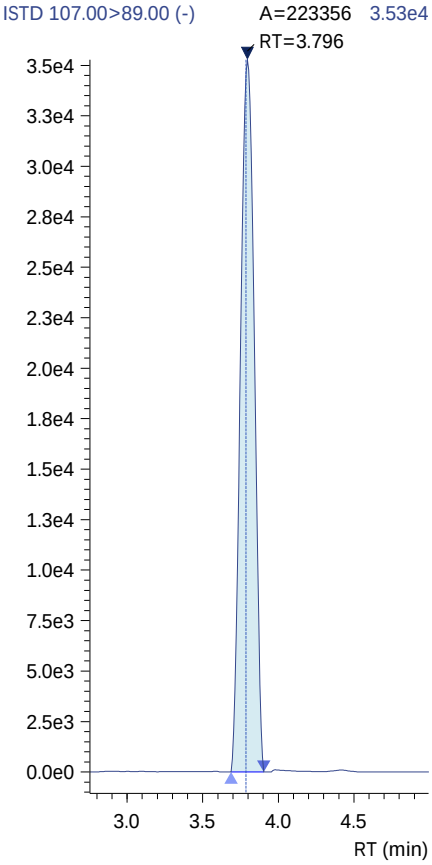
Conc 11.2988
R#1 34.45 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

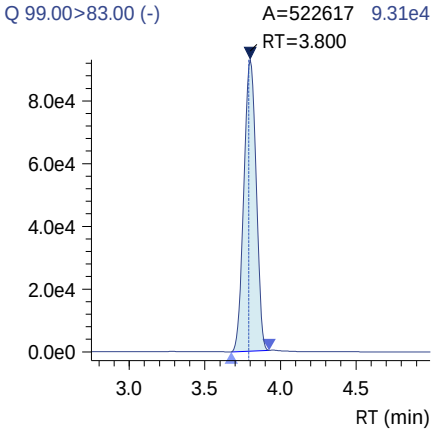
PERCHLORATE8

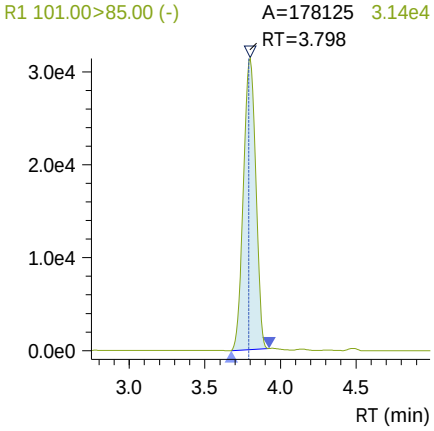
Sample ID: PERCHLORATE8
Date Acquired: 10/13/2022 11:52:37 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_023.lcd
Vial: 45 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.800	522617	198677	19.5 276	ng/mL	101.00 >85.00	34.08	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.797	198677	198677	1.0000	ng/mL	----	----	

Perchlorate

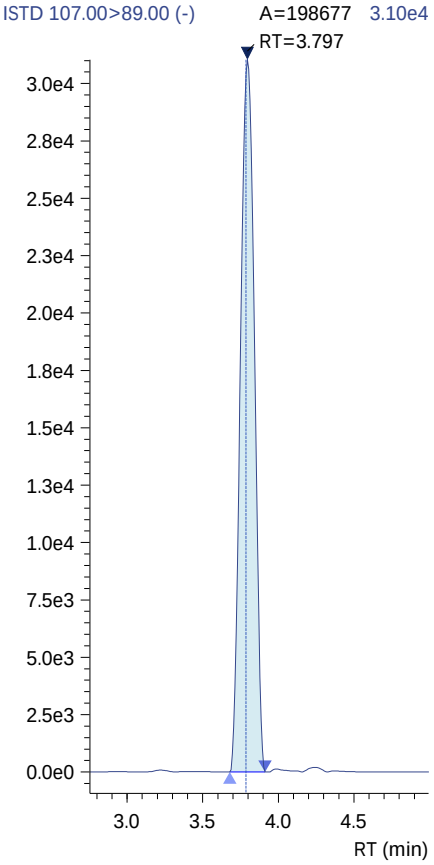
Conc 19.5276
R#1 34.08 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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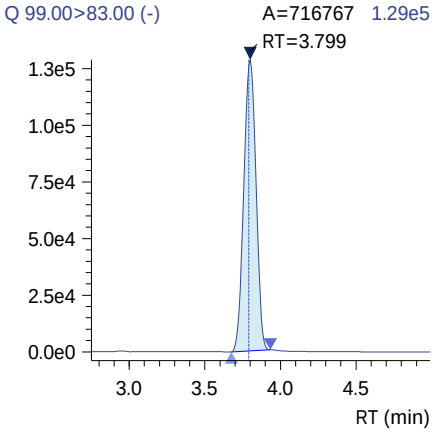
PERCHLORATE9

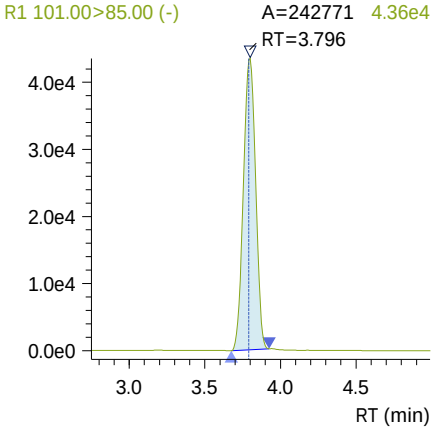
Sample ID: PERCHLORATE9
Date Acquired: 10/13/2022 12:01:03 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_024.lcd
Vial: 46 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.799	716767	179402	29.6596	ng/mL	101.00 >85.00	33.87	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.796	179402	179402	1.0000	ng/mL	----	----	

Perchlorate

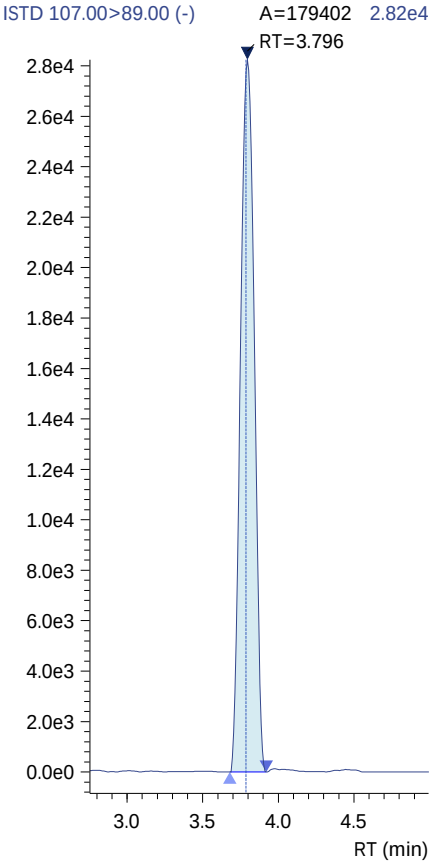
Conc 29.6596
R#1 33.87 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

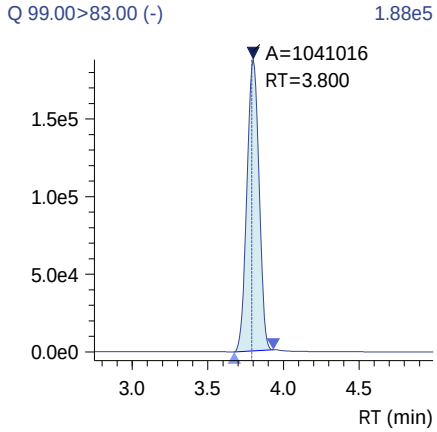
PERCHLORATE10

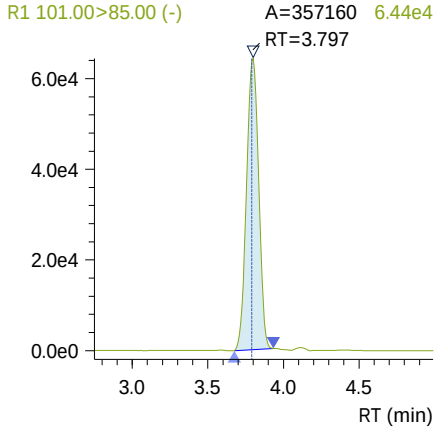
Sample ID: PERCHLORATE10
Date Acquired: 10/13/2022 12:09:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_025.lcd
Vial: 47 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.800	10410	159903	48.3	ng/mL	101.00	34.31	23.94
			16		299		>85.00		-44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	159903	159903	1.0000	ng/mL	----	----	

Perchlorate

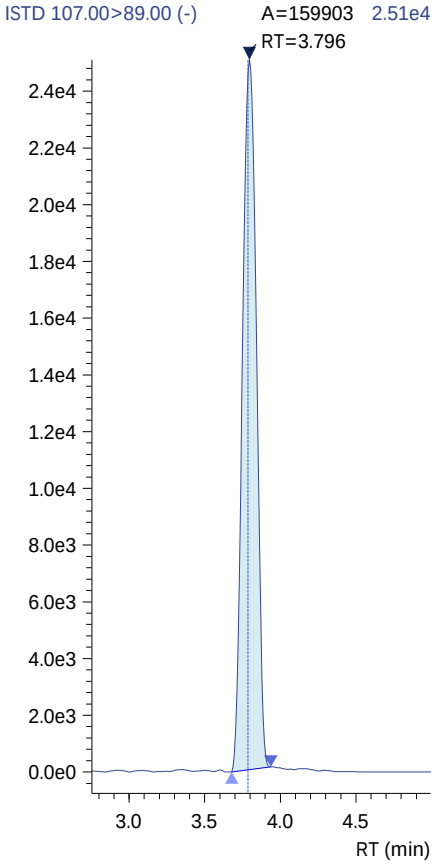
Conc 48.3299
R#1 34.31 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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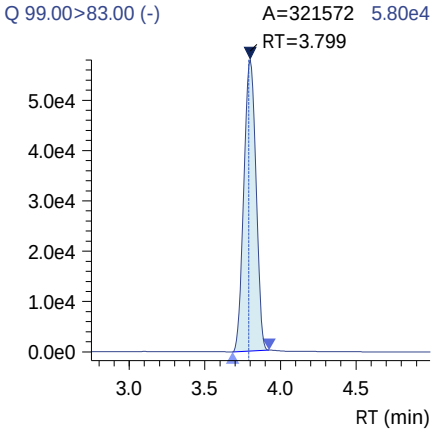
PERCHLORATEICV

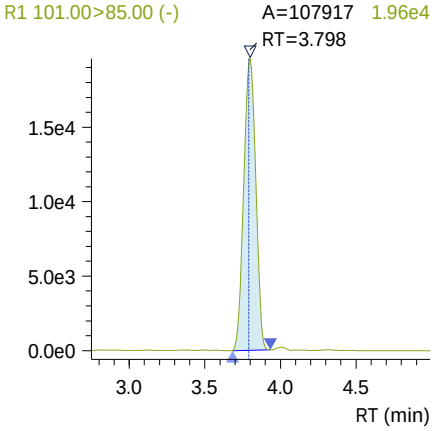
Sample ID: PERCHLORATEICV
Date Acquired: 10/13/2022 12:17:49 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_026.lcd
Vial: 48 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.799	321572	218649	10.9 180	ng/mL	101.00 >85.00	33.56	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.797	218649	218649	1.0000	ng/mL	----	----	

Perchlorate

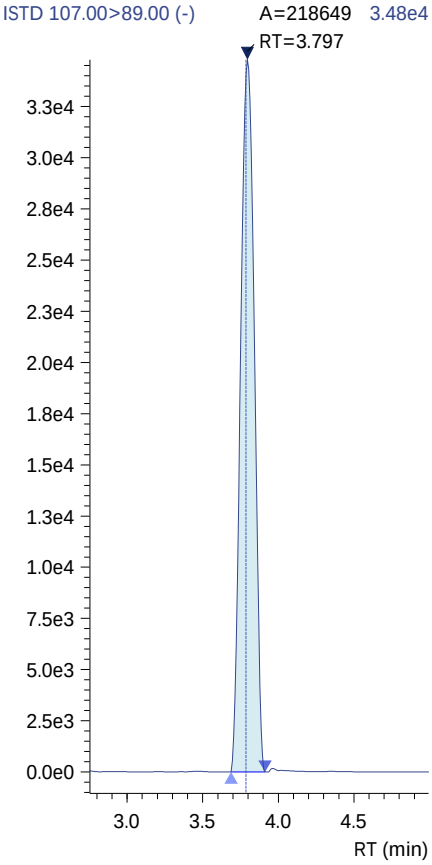
Conc 10.9180
R#1 33.56 (34.20)





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

20221017

1st Review: XMI
2nd Review: Kneir

ALS Environmental

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 10/13/2022
Cal. Std. xp: 1/31/2023
ICAL ID: EC2200014

Mobile Phases A:0.10% Formic Acid/Water 3210301-02 B:MeOH 224417

	Sample Name	File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	IB	20221017_006	Perchlorate6850c.lcm	1x	☒		10/17/2022 9:48
2	IB	20221017_007	Perchlorate6850c.lcm	1x	☒		10/17/2022 9:56
3	ICS	20221017_008	Perchlorate6850c.lcm	1x	☒	DNU-reinject	10/17/2022 10:05
4	LODV	20221017_009	Perchlorate6850c.lcm	1x	☒	225199	10/17/2022 10:13
5	ICS	20221017_010	Perchlorate6850c.lcm	1x	☒		10/17/2022 14:02
6	PERCHLORATE7	20221017_011	Perchlorate6850c.lcm	1x	☒	225398	10/17/2022 14:10
7	EQ2200467-01	20221017_012	Perchlorate6850c.lcm	1x	☒		10/17/2022 14:18
8	EQ2200467-02	20221017_013	Perchlorate6850c.lcm	1x	☒		10/17/2022 14:27
9	EQ2200467-03	20221017_014	Perchlorate6850c.lcm	1x	☒		10/17/2022 14:35
10	EQ2200467-04	20221017_015	Perchlorate6850c.lcm	1x	☒		10/17/2022 14:44
11	EQ2200467-05	20221017_016	Perchlorate6850c.lcm	1x	☒		10/17/2022 14:52
12	E2200988-001	20221017_017	Perchlorate6850c.lcm	1x	☒		10/17/2022 15:00
13	E2200988-002	20221017_018	Perchlorate6850c.lcm	1x	☒		10/17/2022 15:09
14	E2200974-001	20221017_019	Perchlorate6850c.lcm	1x	☒		10/17/2022 15:17
15	E2200974-002	20221017_020	Perchlorate6850c.lcm	1x	☒	DNU-reinject for IR	10/17/2022 15:25
16	E2200974-003	20221017_021	Perchlorate6850c.lcm	1x	☒		10/17/2022 15:34
17	PERCHLORATE7	20221017_022	Perchlorate6850c.lcm	1x	☒	225398	10/17/2022 15:42
18	E2200974-004	20221017_023	Perchlorate6850c.lcm	1x	☒		10/17/2022 15:51
19	E2200974-005	20221017_024	Perchlorate6850c.lcm	1000x	☒		10/17/2022 15:59
20	E2200974-006	20221017_025	Perchlorate6850c.lcm	5000x	☒		10/17/2022 16:07
21	R2209422-006	20221017_026	Perchlorate6850c.lcm	1x	☒		10/17/2022 16:16
22	R2209422-013	20221017_027	Perchlorate6850c.lcm	1x	☒		10/17/2022 16:24
23	R2209491-019	20221017_028	Perchlorate6850c.lcm	1x	☒		10/17/2022 16:33
24	R2209491-023	20221017_029	Perchlorate6850c.lcm	1x	☒		10/17/2022 16:41
25	R2209637-008	20221017_030	Perchlorate6850c.lcm	1x	☒		10/17/2022 16:49
26	R2209637-016	20221017_031	Perchlorate6850c.lcm	1x	☒		10/17/2022 16:58
27	E2200974-002	20221017_032	Perchlorate6850c.lcm	1x	☒	DNU-reinject for IR	10/17/2022 17:06
28	PERCHLORATE7	20221017_033	Perchlorate6850c.lcm	1x	☒	225398	10/17/2022 17:14
29	EQ2200469-01	20221017_034	Perchlorate6850c.lcm	1x	☒		10/17/2022 17:23
30	EQ2200469-02	20221017_035	Perchlorate6850c.lcm	1x	☒		10/17/2022 17:31
31	EQ2200469-03	20221017_036	Perchlorate6850c.lcm	1x	☒		10/17/2022 17:40
32	EQ2200469-04	20221017_037	Perchlorate6850c.lcm	1x	☒		10/17/2022 17:48
33	EQ2200469-05	20221017_038	Perchlorate6850c.lcm	1x	☒	DNU-reinject	10/17/2022 17:56
34	E2200993-001	20221017_039	Perchlorate6850c.lcm	1x	☒		10/17/2022 18:05
35	E2200993-002	20221017_040	Perchlorate6850c.lcm	200x	☒		10/17/2022 18:13
36	E2200993-003	20221017_041	Perchlorate6850c.lcm	200x	☒		10/17/2022 18:22
37	E2200993-004	20221017_042	Perchlorate6850c.lcm	10x	☒		10/17/2022 18:30
38	E2200993-005	20221017_043	Perchlorate6850c.lcm	1000x	☒		10/17/2022 18:38
39	PERCHLORATE7	20221017_044	Perchlorate6850c.lcm	1x	☒	225398	10/17/2022 18:47
40	E2200993-006	20221017_045	Perchlorate6850c.lcm	1000x	☒		10/17/2022 18:55
41	IB	20221017_046	Perchlorate6850c.lcm	1x	☒		10/17/2022 19:04
42	E2200993-007	20221017_047	Perchlorate6850c.lcm	1x	☒		10/17/2022 19:12
43	E2200994-001	20221017_048	Perchlorate6850c.lcm	1x	☒	DNU-reinject for IR	10/17/2022 19:20
44	E2200994-002	20221017_049	Perchlorate6850c.lcm	1x	☒		10/17/2022 19:29
45	E2200994-003	20221017_050	Perchlorate6850c.lcm	1x	☒		10/17/2022 19:37
46	E2200994-004	20221017_051	Perchlorate6850c.lcm	1x	☒		10/17/2022 19:46
47	E2200994-005	20221017_052	Perchlorate6850c.lcm	1x	☒		10/17/2022 19:54
48	E2200994-006	20221017_053	Perchlorate6850c.lcm	1x	☒		10/17/2022 20:02
49	E2200994-007	20221017_054	Perchlorate6850c.lcm	1x	☒		10/17/2022 20:11
50	PERCHLORATE7	20221017_055	Perchlorate6850c.lcm	1x	☒	225398	10/17/2022 20:19

20221017

1st Review: XMI
2nd Review: Kneir

ALS Environmental

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 10/13/2022
Cal. Std. xp: 1/31/2023
ICAL ID: EC2200014

Mobile Phases A:0.10% Formic Acid/Water 3210301-02 B:MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
51	E2200994-008		20221017_056	Perchlorate6850c.lcm	1x	☒		10/17/2022 20:28
52	E2200994-009		20221017_057	Perchlorate6850c.lcm	1x	☒		10/17/2022 20:36
53	E2200807-003		20221017_058	Perchlorate6850c.lcm	1x	☒		10/17/2022 20:44
54	E2200807-004		20221017_059	Perchlorate6850c.lcm	1x	☒		10/17/2022 20:53
55	PERCHLORATE7		20221017_060	Perchlorate6850c.lcm	1x	☒	225398	10/17/2022 21:01
56	IB		20221017_061	Perchlorate6850c.lcm	1x	☒		10/17/2022 21:09
57	IB		20221017_062	Perchlorate6850c.lcm	1x	☒		10/17/2022 21:18
58	null		20221017_063	Perchlorate6850c.lcm	1x	☒		10/17/2022 21:23
59	null		20221017_064	Perchlorate6850c.lcm	1x	☒		10/17/2022 21:29

20221020

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: Kneir

ICAL Date: 10/13/2022
Cal. Std. xp: 01/31/2023
ICAL ID: EC2200014

Mobile Phases : **A:**0.10% Formic Acid/Water 3210301-03 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	ICS		20221020_008	Perchlorate6850c.lcm	1x	☒		10/20/2022 12:25
2	LODV		20221020_009	Perchlorate6850c.lcm	1x	☒		10/20/2022 12:34
3	PERCHLORATE7		20221020_010	Perchlorate6850c.lcm	1x	☒		10/20/2022 12:42
4	E2200974-002		20221020_011	Perchlorate6850c.lcm	1x	☒		10/20/2022 12:51
5	EQ2200481-01		20221020_012	Perchlorate6850c.lcm	1x	☒		10/20/2022 12:59
6	EQ2200481-02		20221020_013	Perchlorate6850c.lcm	1x	☒		10/20/2022 13:07
7	EQ2200481-03		20221020_014	Perchlorate6850c.lcm	1x	☒		10/20/2022 13:16
8	IB		20221020_015	Perchlorate6850c.lcm	1x	☒		10/20/2022 15:53
9	PERCHLORATE7		20221020_016	Perchlorate6850c.lcm	1x	☒		10/20/2022 16:01
10	E2201006-001		20221020_017	Perchlorate6850c.lcm	1x	☒		10/20/2022 16:09
11	E2201006-002		20221020_018	Perchlorate6850c.lcm	1x	☒		10/20/2022 16:18
12	E2201006-003		20221020_019	Perchlorate6850c.lcm	1x	☒	DNU-Rejection for IRs	10/20/2022 16:26
13	E2201006-004		20221020_020	Perchlorate6850c.lcm	1x	☒	DNU-Rejection for IRs	10/20/2022 16:35
14	E2201006-005		20221020_021	Perchlorate6850c.lcm	1x	☒	DNU-Rejection for IRs	10/20/2022 16:43
15	E2201006-006		20221020_022	Perchlorate6850c.lcm	1x	☒	DNU-out of ICAL range	10/20/2022 16:51
16	IB		20221020_023	Perchlorate6850c.lcm	1x	☒		10/20/2022 17:04
17	E2201006-003		20221020_024	Perchlorate6850c.lcm	1x	☒		10/20/2022 17:12
18	E2201006-004		20221020_025	Perchlorate6850c.lcm	1x	☒		10/20/2022 17:20
19	E2201006-005		20221020_026	Perchlorate6850c.lcm	1x	☒		10/20/2022 17:29
20	PERCHLORATE7		20221020_027	Perchlorate6850c.lcm	1x	☒		10/20/2022 17:37
21	E2201006-007		20221020_028	Perchlorate6850c.lcm	1x	☒	DNU-out of ICAL range	10/20/2022 17:46
22	E2201007-001		20221020_029	Perchlorate6850c.lcm	1x	☒	DNU-out of ICAL range	10/20/2022 17:54
23	E2201010-001		20221020_030	Perchlorate6850c.lcm	1x	☒	DNU-CARRYOVER	10/20/2022 18:02
24	E2201010-002		20221020_031	Perchlorate6850c.lcm	1x	☒	DNU-CARRYOVER	10/20/2022 18:11
25	R2209723-007		20221020_032	Perchlorate6850c.lcm	1x	☒	DNU-CARRYOVER	10/20/2022 18:19
26	R2209866-007		20221020_033	Perchlorate6850c.lcm	1x	☒	DNU-CARRYOVER	10/20/2022 18:28
27	R2209866-014		20221020_034	Perchlorate6850c.lcm	1x	☒	DNU-CARRYOVER	10/20/2022 18:36
28	PERCHLORATE7		20221020_035	Perchlorate6850c.lcm	1x	☒	DNU-CARRYOVER	10/20/2022 18:44

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Analyzed:**	10/17/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	10/13/22
File ID:	I:\LCMS01\DATA\20221017\20221017_011	**Calibration ID:**	EC2200014
		Analysis Lot:	781288
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.7	0.1347	0.1438	6.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Analyzed:**	10/17/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	10/13/22
File ID:	I:\LCMS01\DATA\20221017\20221017_022	**Calibration ID:**	EC2200014
		Analysis Lot:	781288
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.7	0.1347	0.1442	7.0	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Analyzed:**	10/17/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	10/13/22
File ID:	I:\LCMS01\DATA\20221017\20221017_033	**Calibration ID:**	EC2200014
		Analysis Lot:	781288
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.8	0.1347	0.1456	8.1	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Analyzed:**	10/20/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	10/13/22
File ID:	I:\LCMS01\DATA\20221020\20221020_010	**Calibration ID:**	EC2200014
		Analysis Lot:	781822
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.7	0.1347	0.1447	7.4	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Analyzed:**	10/20/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	10/13/22
File ID:	I:\LCMS01\DATA\20221020\20221020_016	**Calibration ID:**	EC2200014
		Analysis Lot:	781822
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.9	0.1347	0.1464	8.7	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Analyzed:**	10/17/22 14:10

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20221017\20221017_011	**Lab Code:**	EQ2200476-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	781288
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	244,776	3.80
	Upper Limit ==>	367,164	5.80
	Lower Limit ==>	122,388	1.80
Associated Analyses			
Continuing Calibration Verification	EQ2200476-01	202,769	3.79
Method Blank	EQ2200467-01	261,791	3.79
Lab Control Sample	EQ2200467-02	254,441	3.79
Duplicate Lab Control Sample	EQ2200467-03	257,510	3.79
17WW03_100722MS	EQ2200467-04	262,093	3.69
17WW03_100722DMS	EQ2200467-05	258,622	3.69
130_100722	E2200974-001	236,667	3.73
17WW01_100722	E2200974-003	178,983	3.69

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Analyzed:**	10/17/22 15:42

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20221017\20221017_022	**Lab Code:**	EQ2200476-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	781288
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	244,776	3.80
	Upper Limit ==>	367,164	5.80
	Lower Limit ==>	122,388	1.80
Associated Analyses			
Continuing Calibration Verification	EQ2200476-02	192,577	3.79
17WW01_100722_a	E2200974-004	172,011	3.69
17WW02_100722	E2200974-005	160,496	3.79
17WW06_100722	E2200974-006	160,330	3.79

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Analyzed:**	10/17/22 17:14

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20221017\20221017_033	**Lab Code:**	EQ2200476-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	781288
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	244,776	3.80
	Upper Limit ==>	367,164	5.80
	Lower Limit ==>	122,388	1.80
Associated Analyses			
Continuing Calibration Verification	EQ2200476-03	183,794	3.79

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Analyzed:**	10/20/22 12:42

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20221020\20221020_010	**Lab Code:**	EQ2200482-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	781822
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	244,776	3.80
	Upper Limit ==>	367,164	5.80
	Lower Limit ==>	122,388	1.80
Associated Analyses			
Continuing Calibration Verification	EQ2200482-01	203,084	3.77
17WW03_100722	E2200974-002	232,559	3.67

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2200974
Project:	LHAAP17	**Date Analyzed:**	10/20/22 16:01

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20221020\20221020_016	**Lab Code:**	EQ2200482-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	781822
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	244,776	3.80
	Upper Limit ==>	367,164	5.80
	Lower Limit ==>	122,388	1.80
Associated Analyses			
Continuing Calibration Verification	EQ2200482-02	197,609	3.77

Results flagged with an asterisk (*) indicate values outside control criteria.

Insight Report

Printed at 10/19/2022 10:19:52 AM

Method File: I:\LCMS01\DATA\20221017\Perchlorate6850i-intensity 10172.lcm
Project File: I:\LCMS01\DATA\20221017\10172022.damlp

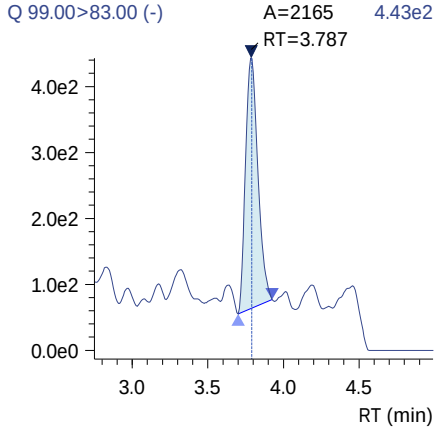
LODV

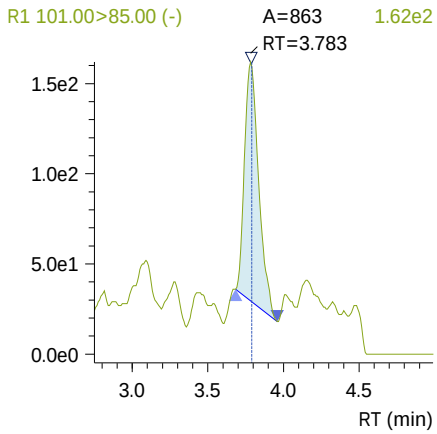
Sample ID: LODV
Date Acquired: 10/17/2022 10:13:23 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_009.lcd
Vial: 37 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.787	2165	280903	0.0572	ng/mL	101.00 >85.00	39.84	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.785	280903	280903	1.0000	ng/mL	----	----	

Perchlorate

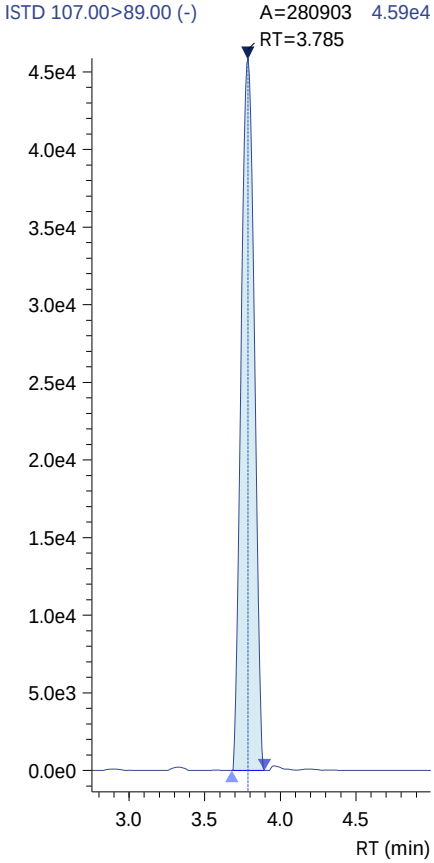
Conc 0.0572
R#1 39.84 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

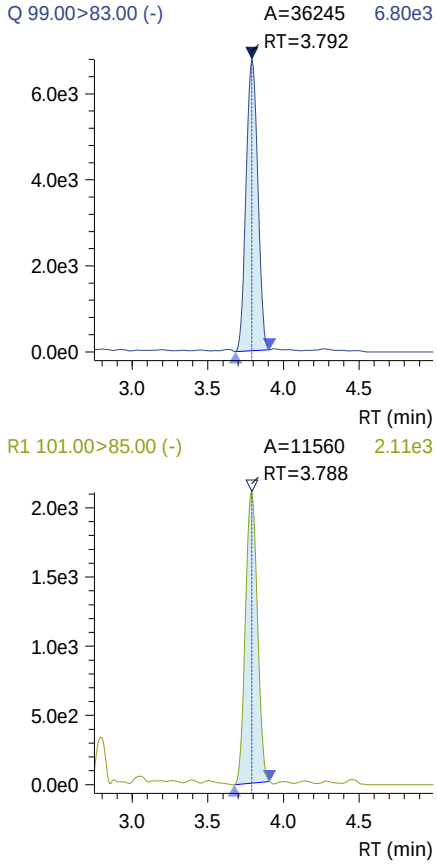
ICS

Sample ID: ICS
Date Acquired: 10/17/2022 2:02:11 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_010.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.792	36245	244852	1.0989	ng/mL	101.00 >85.00	31.89	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.787	2448 52	244852	1.0000	ng/mL	----	----	

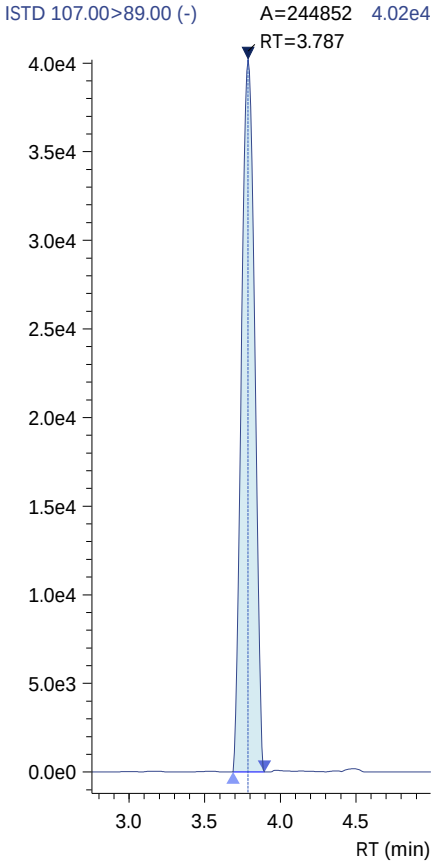
Perchlorate

Conc 1.0989
R#1 31.89 (34.61)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

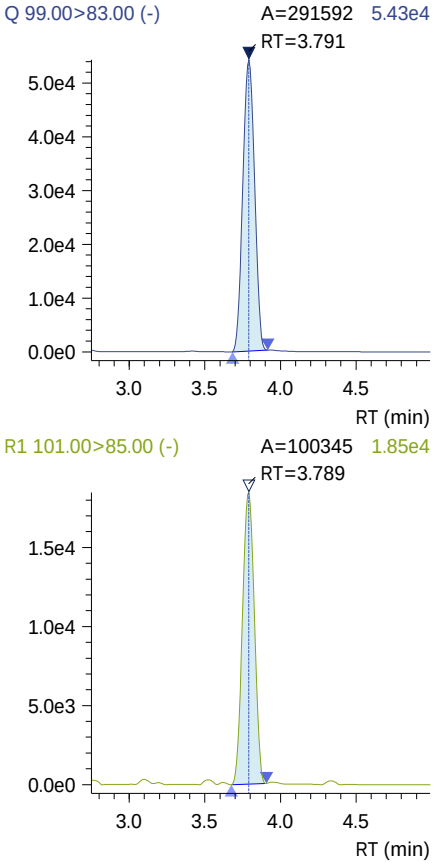
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 10/17/2022 2:10:33 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_011.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.791	2915 92	202769	10.6 755	ng/mL	101.00 >85.00	34.41	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.788	2027 69	202769	1.0000	ng/mL	----	----	

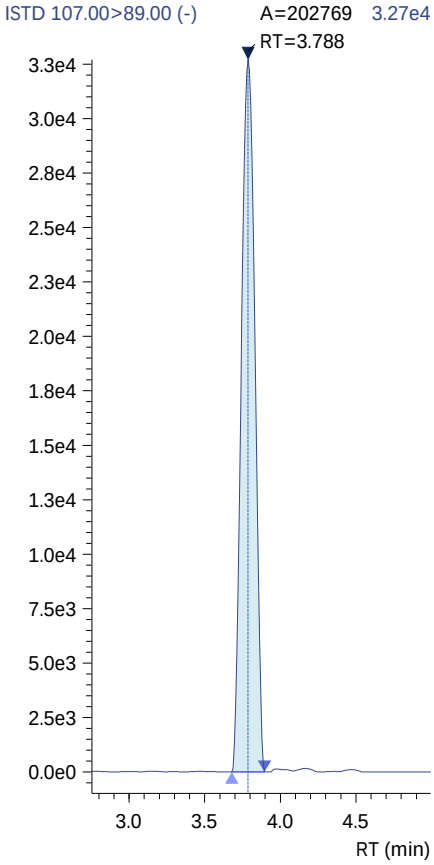
Perchlorate

Conc 10.6755
R#1 34.41 (34.61)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

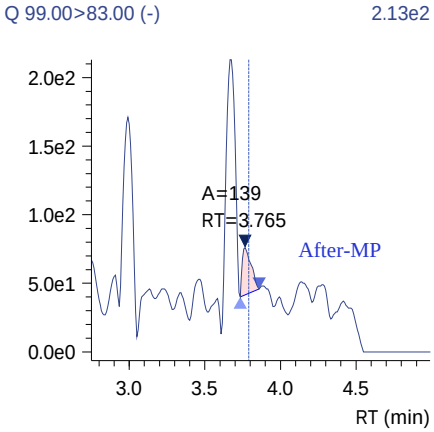
EQ2200467-01

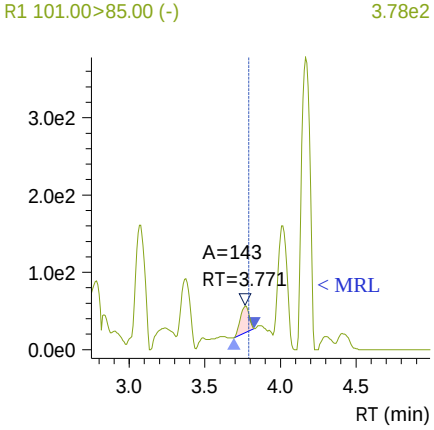
Sample ID: EQ2200467-01
Date Acquired: 10/17/2022 2:18:54 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_012.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.765	139	261791	0.0039	ng/mL	101.00 >85.00	102.89	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.787	261791	261791	1.0000	ng/mL	----	----	

Perchlorate

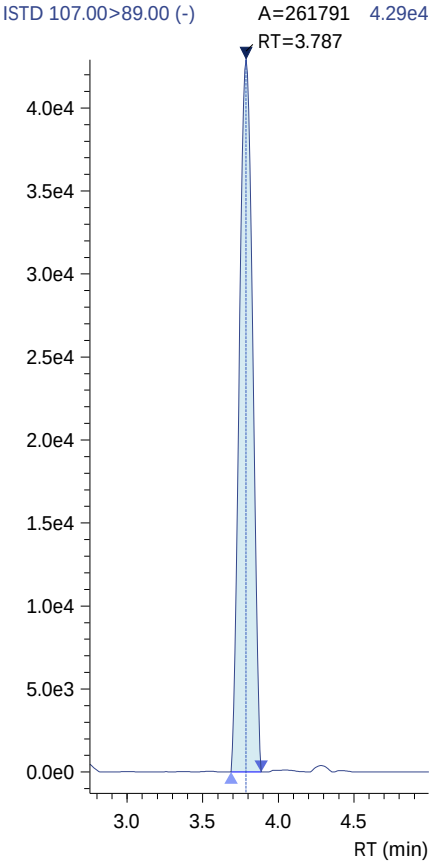
Conc 0.0039
R#1 102.89 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

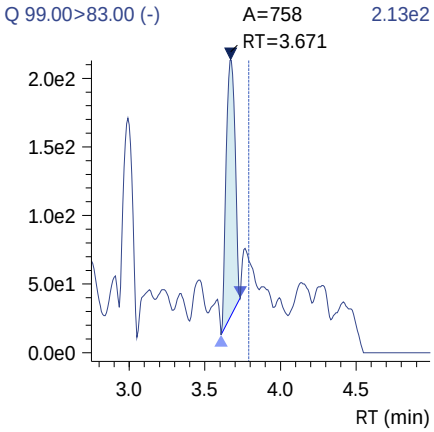
Printed at 10/19/2022 10:21:27 AM

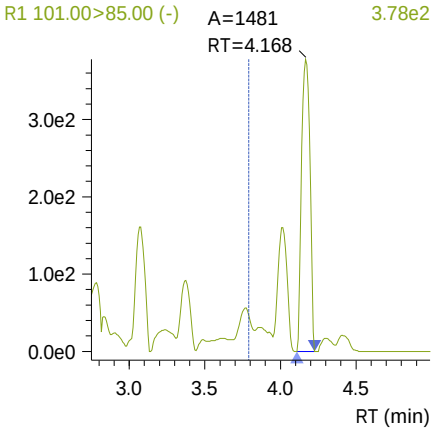
EQ2200467-01

Sample ID: EQ2200467-01
Date Acquired: 10/17/2022 2:18:54 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_012.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 3

Perchlorate

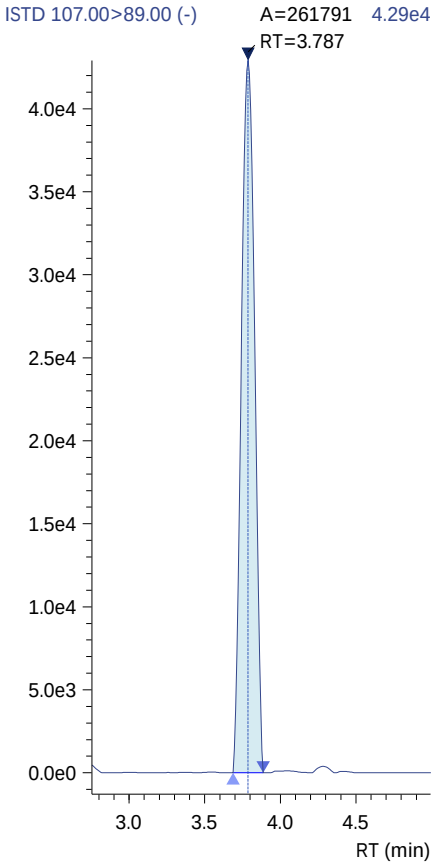
Conc 0.0215
R#1 0.00 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

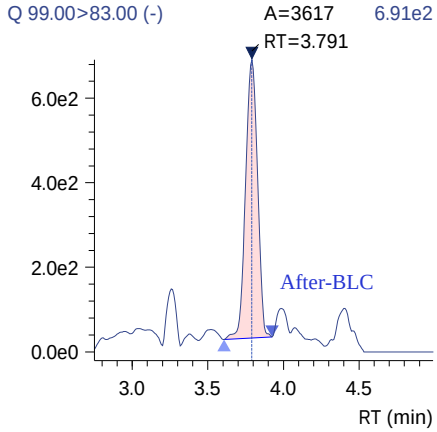
EQ2200467-02

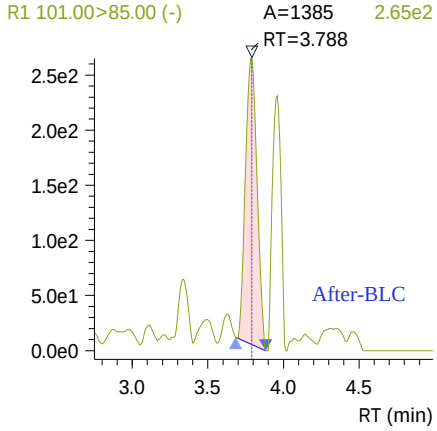
Sample ID: EQ2200467-02
Date Acquired: 10/17/2022 2:27:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_013.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.791	3617	254441	0.1055	ng/mL	101.00 >85.00	38.28	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.787	2544 41	254441	1.0000	ng/mL	----	----	

Perchlorate

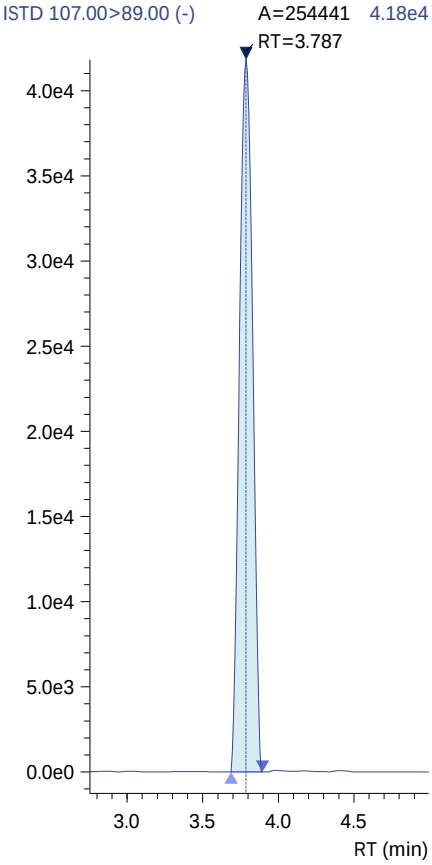
Conc 0.1055
R#1 38.28 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:21:27 AM

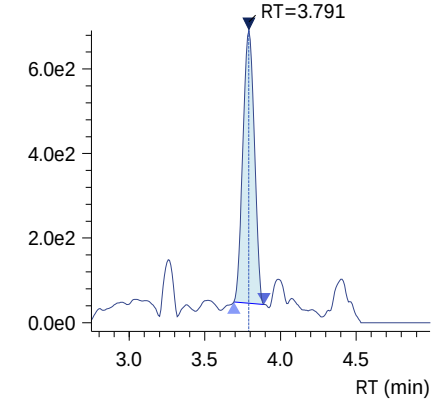
EQ2200467-02

Sample ID: EQ2200467-02
Date Acquired: 10/17/2022 2:27:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_013.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 3

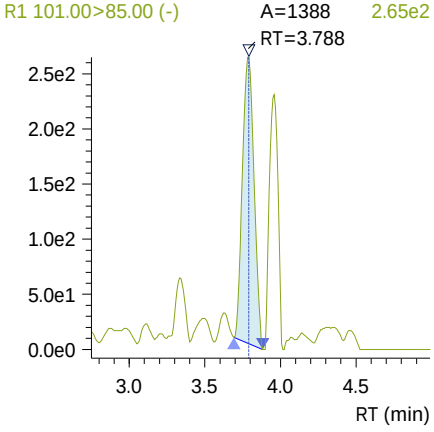
Perchlorate

Conc 0.0992
R#1 40.86 (34.61)

Q 99.00>83.00 (-) A=3396 6.91e2



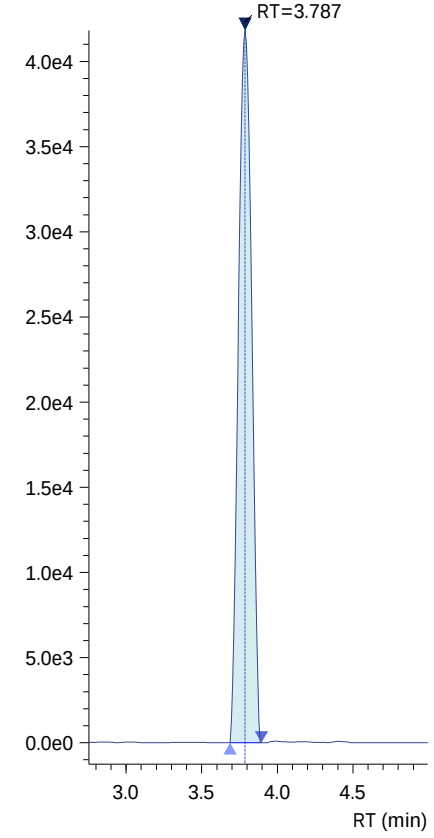
R1 101.00>85.00 (-) A=1388 2.65e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=254441 4.18e4



Insight Report

Printed at 10/19/2022 10:19:52 AM

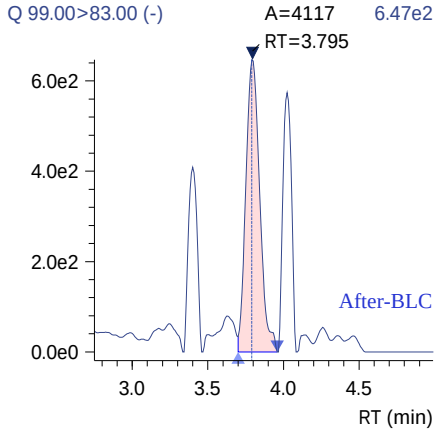
EQ2200467-03

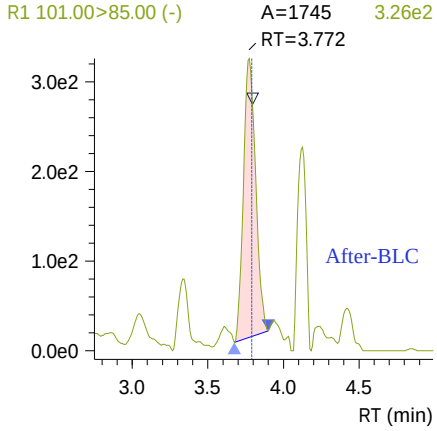
Sample ID: EQ2200467-03
Date Acquired: 10/17/2022 2:35:41 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_014.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.795	4117	257510	0.1187	ng/mL	101.00 >85.00	42.37	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.788	2575 10	257510	1.0000	ng/mL	----	----	

Perchlorate

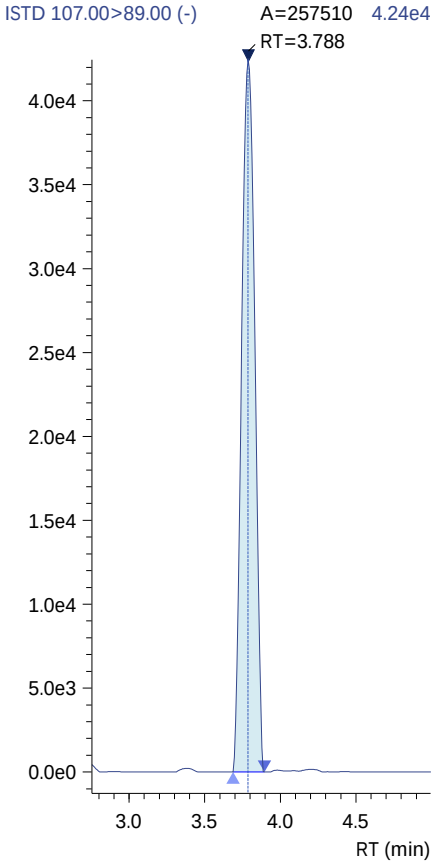
Conc 0.1187
R#1 42.37 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:21:27 AM

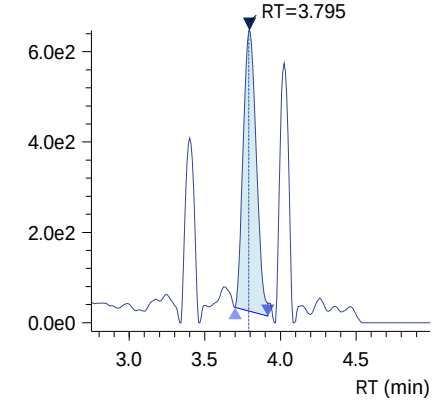
EQ2200467-03

Sample ID: EQ2200467-03
Date Acquired: 10/17/2022 2:35:41 PM
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Data File: I:\LCMS01\DATA\20221017\20221017_014.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 3

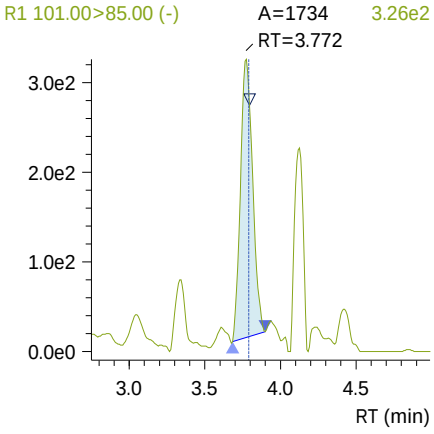
Perchlorate

Conc 0.1075
R#1 46.55 (34.61)

Q 99.00>83.00 (-) A=3725 6.47e2



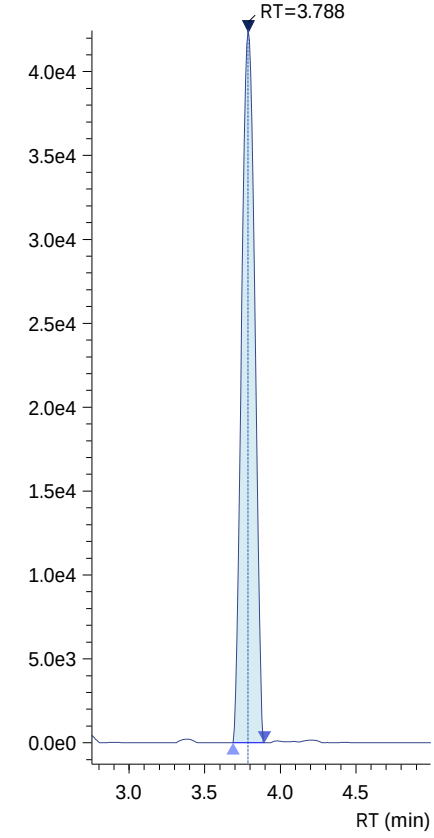
R1 101.00>85.00 (-) A=1734 3.26e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=257510 4.24e4



Insight Report

Printed at 10/19/2022 10:19:52 AM

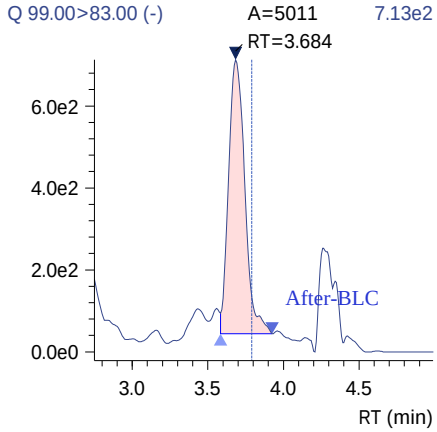
EQ2200467-04

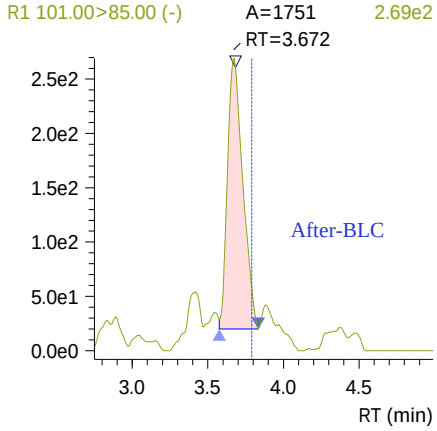
Sample ID: EQ2200467-04
Date Acquired: 10/17/2022 2:44:04 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_015.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.684	5011	262093	0.1419	ng/mL	101.00 >85.00	34.95	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.688	262093	262093	1.0000	ng/mL	----	----	

Perchlorate

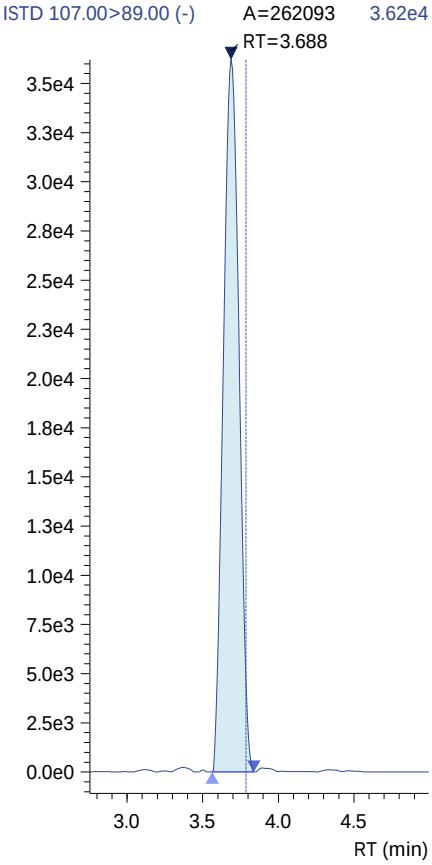
Conc 0.1419
R#1 34.95 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:21:27 AM

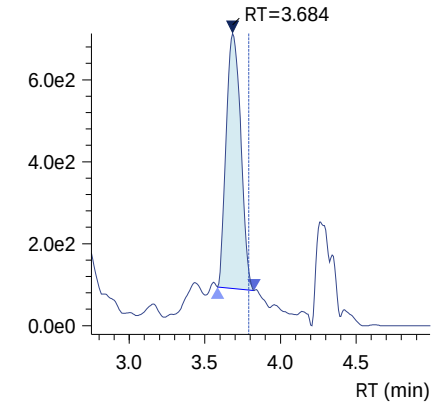
EQ2200467-04

Sample ID: EQ2200467-04
Date Acquired: 10/17/2022 2:44:04 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_015.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 3

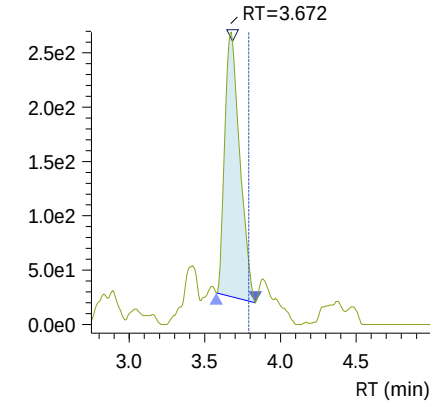
Perchlorate

Conc 0.1188
R#1 40.12 (34.61)

Q 99.00>83.00 (-) A=4191 7.13e2



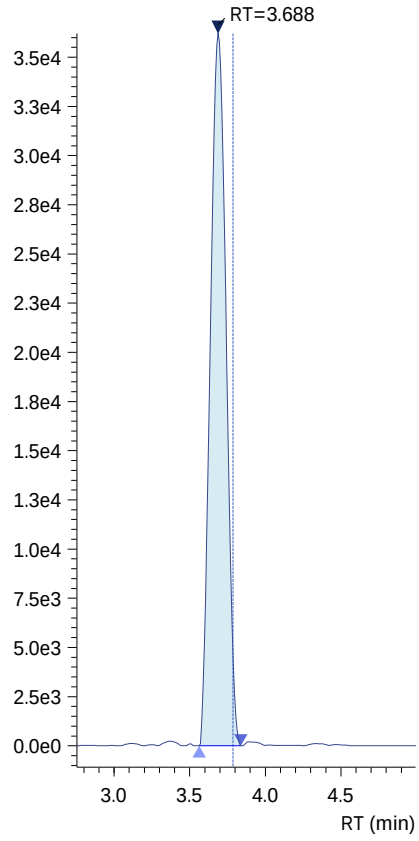
R1 101.00>85.00 (-) A=1682 2.69e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=262093 3.62e4



Insight Report

Printed at 10/19/2022 10:19:52 AM

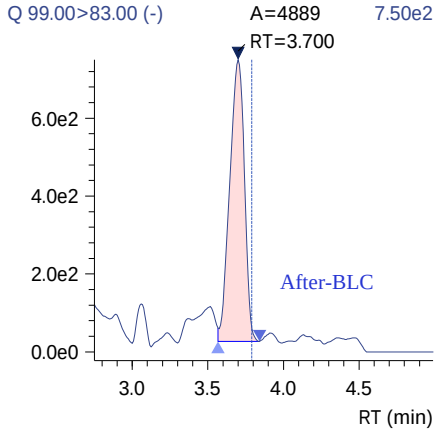
EQ2200467-05

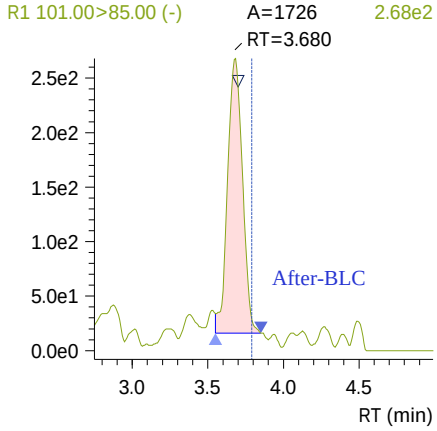
Sample ID: EQ2200467-05
Date Acquired: 10/17/2022 2:52:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_016.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.700	4889	258622	0.1403	ng/mL	101.00 >85.00	35.30	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.686	2586 22	258622	1.0000	ng/mL	----	----	

Perchlorate

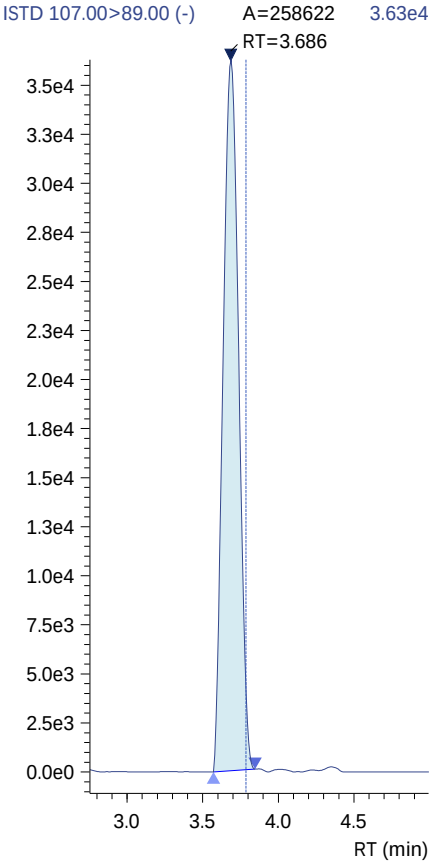
Conc 0.1403
R#1 35.30 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

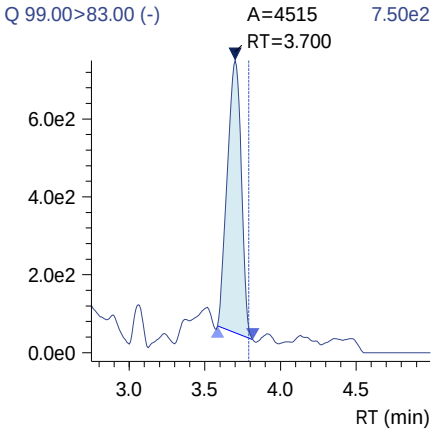
Printed at 10/19/2022 10:21:27 AM

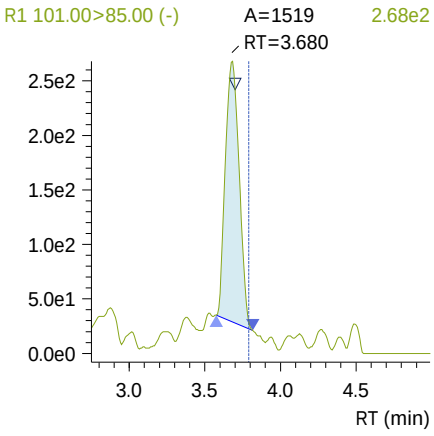
EQ2200467-05

Sample ID: EQ2200467-05
Date Acquired: 10/17/2022 2:52:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_016.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 3

Perchlorate

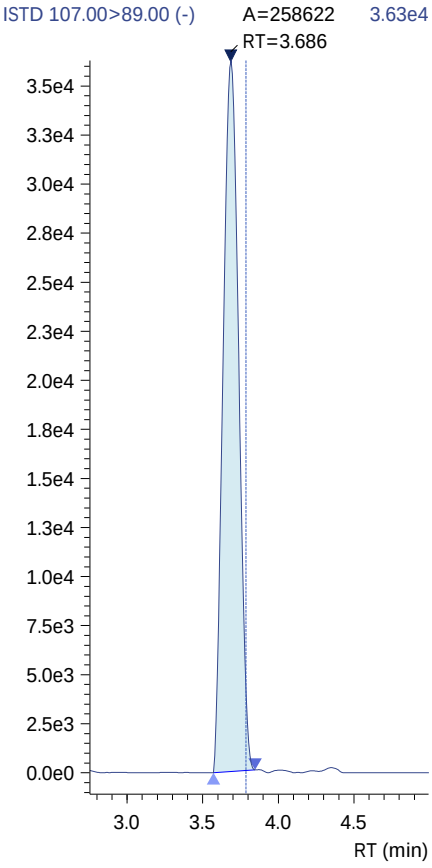
Conc 0.1297
R#1 33.64 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

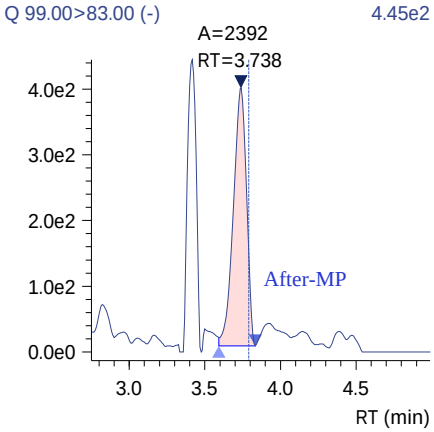
E2200974-001

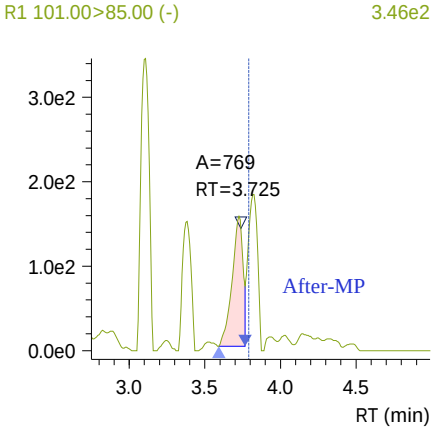
Sample ID: E2200974-001
Date Acquired: 10/17/2022 3:17:34 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_019.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.738	2392	236667	0.0750	ng/mL	101.00 >85.00	32.15	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.727	236667	236667	1.0000	ng/mL	----	----	

Perchlorate

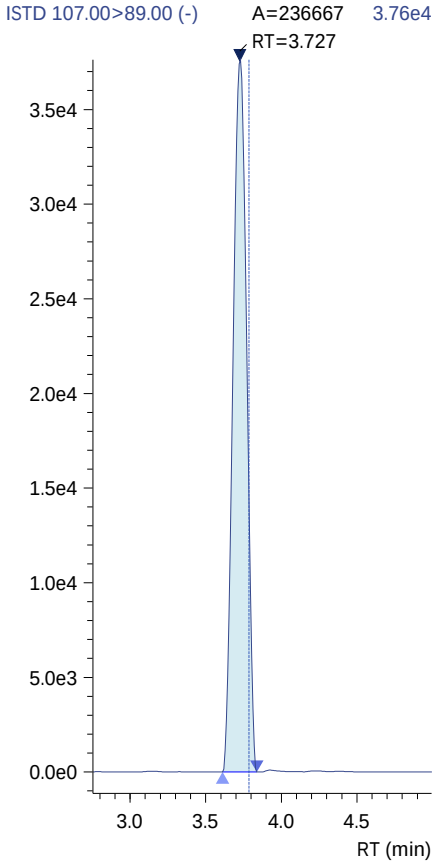
Conc 0.0750
R#1 32.15 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

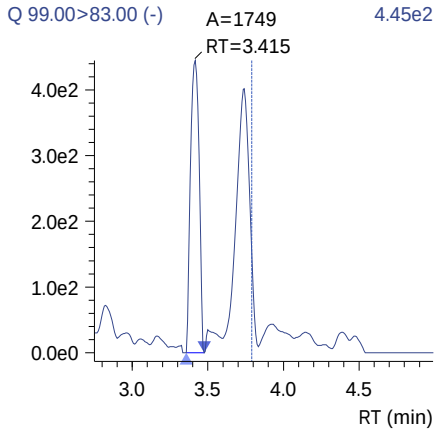
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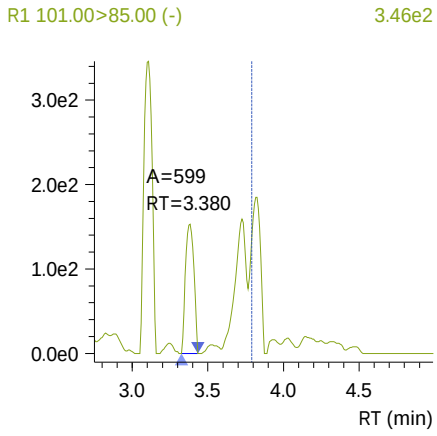
E2200974-001

Sample ID: E2200974-001
Date Acquired: 10/17/2022 3:17:34 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_019.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 3

Perchlorate

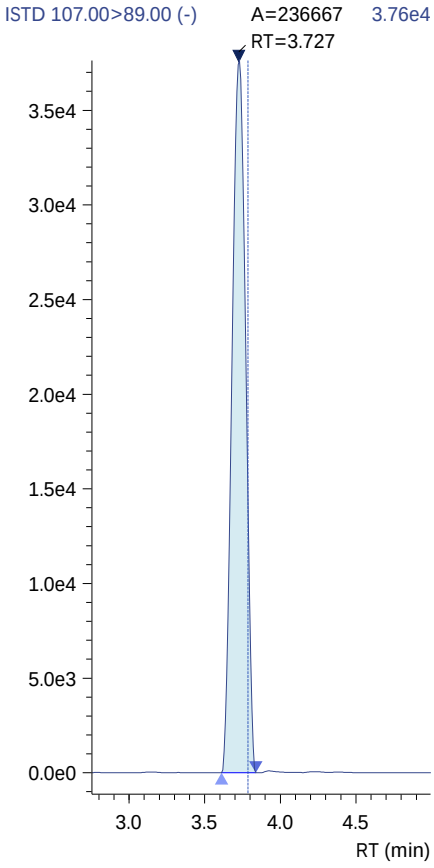
Conc ----
R#1 0.00 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

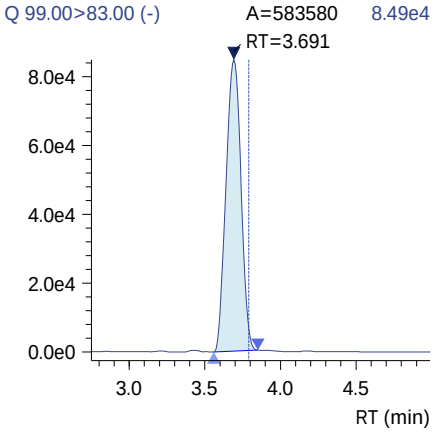
E2200974-003

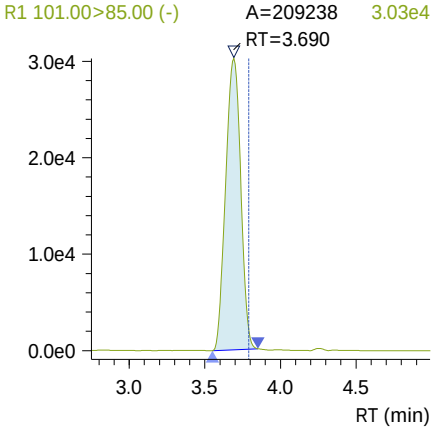
Sample ID: E2200974-003
Date Acquired: 10/17/2022 3:34:20 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_021.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.691	583580	178983	24.2049	ng/mL	101.00 >85.00	35.85	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.686	178983	178983	1.0000	ng/mL	----	----	

Perchlorate

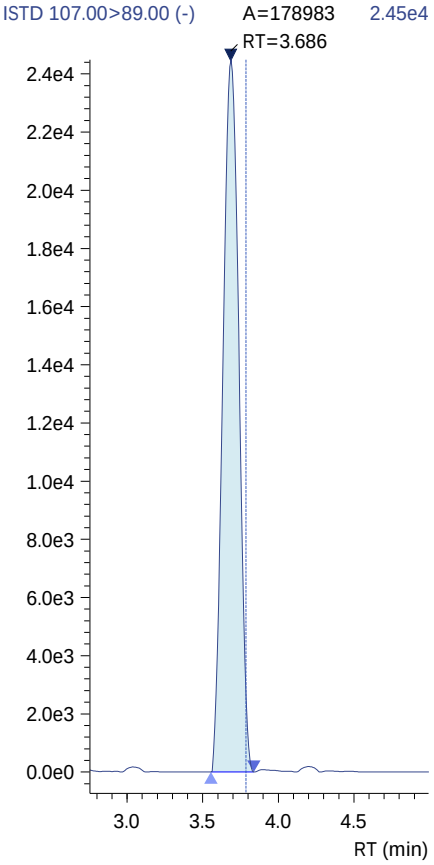
Conc 24.2049
R#1 35.85 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

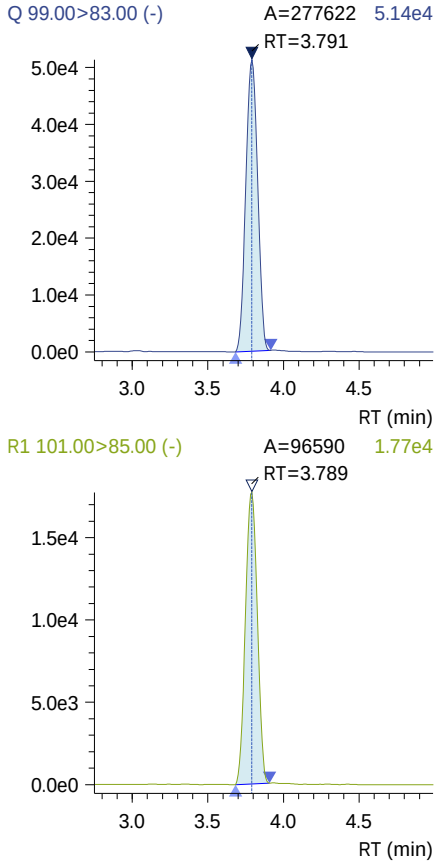
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 10/17/2022 3:42:42 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_022.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.791	2776 22	192577	10.7 020	ng/mL	101.00 >85.00	34.79	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.788	1925 77	192577	1.0000	ng/mL	----	----	

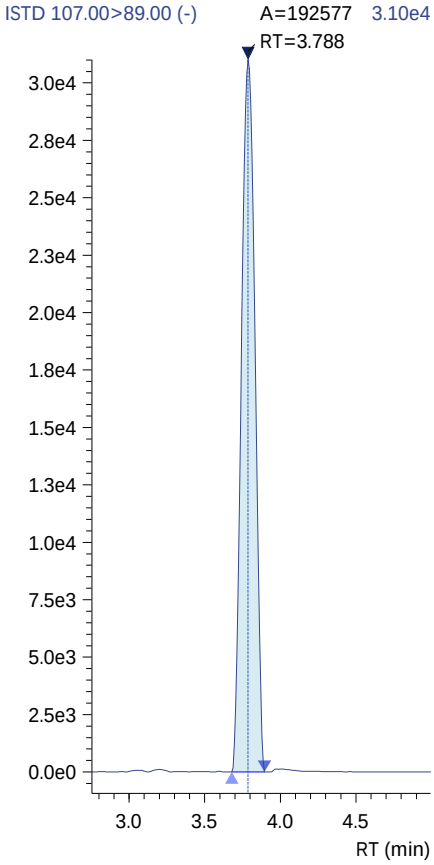
Perchlorate

Conc 10.7020
R#1 34.79 (34.61)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

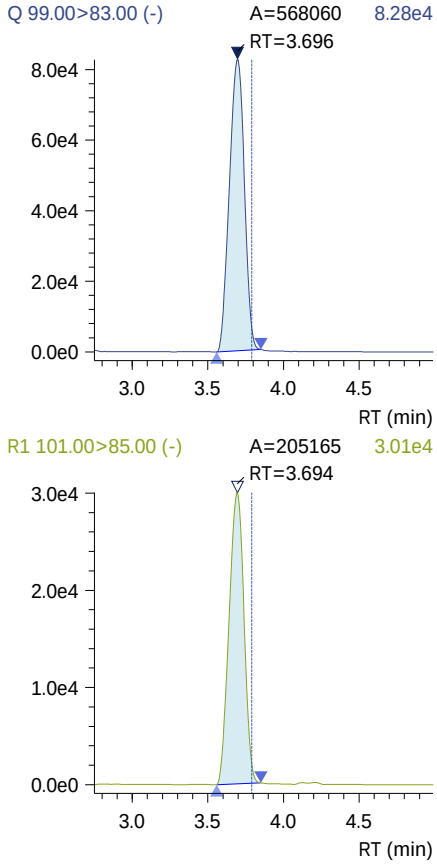
E2200974-004

Sample ID: E2200974-004
Date Acquired: 10/17/2022 3:51:07 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_023.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.696	5680 60	172011	24.5 162	ng/mL	101.00 >85.00	36.12	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.689	1720 11	172011	1.0000	ng/mL	---- 	----	

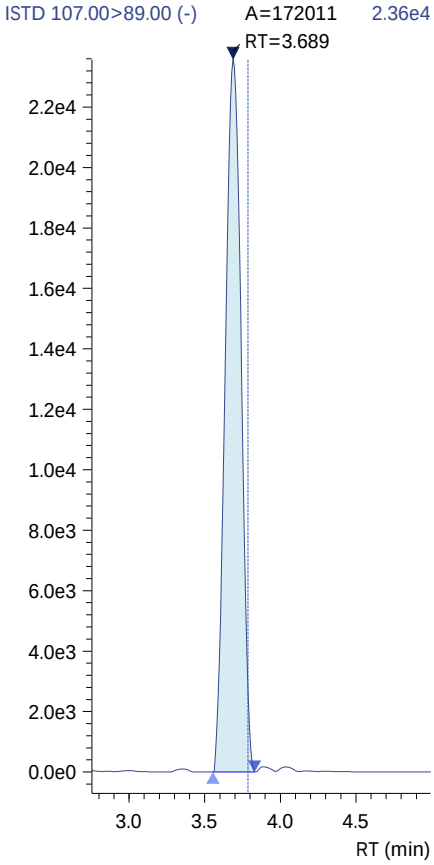
Perchlorate

Conc 24.5162
R#1 36.12 (34.61)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

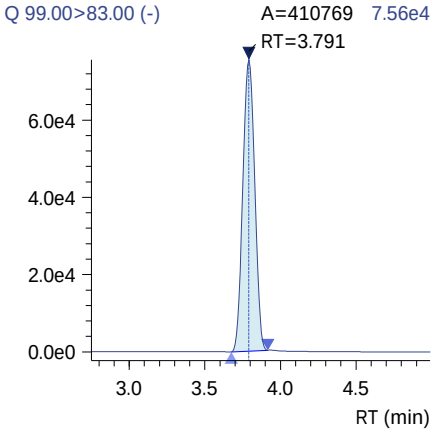
E2200974-005x1000

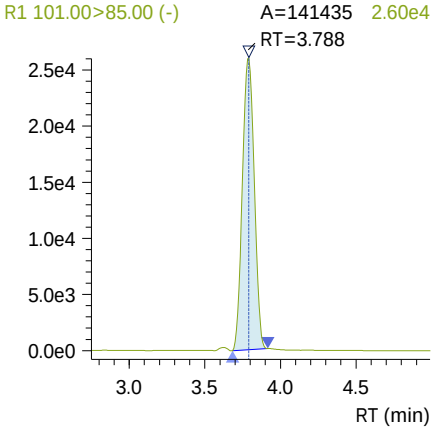
Sample ID: E2200974-005x1000
Date Acquired: 10/17/2022 3:59:29 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_024.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.791	4107 69	160496	18.9 997	ng/mL	101.00 >85.00	34.43	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.788	1604 96	160496	1.0000	ng/mL	----	----	

Perchlorate

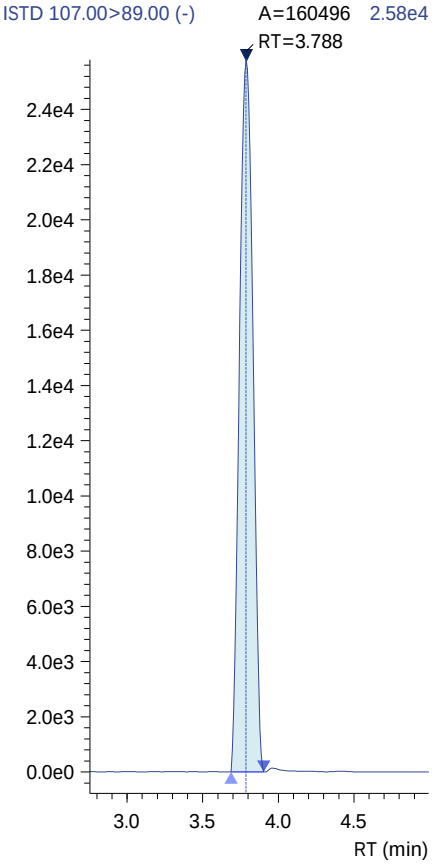
Conc 18.9997
R#1 34.43 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

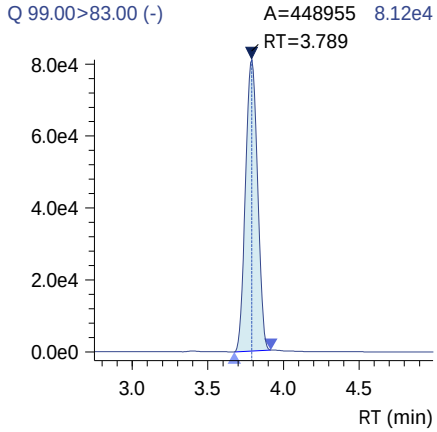
E2200974-006x5000

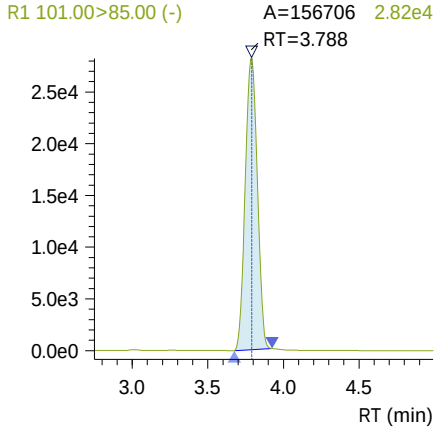
Sample ID: E2200974-006x5000
Date Acquired: 10/17/2022 4:07:55 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_025.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.789	4489 55	160330	20.7 874	ng/mL	101.00 >85.00	34.91	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.787	1603 30	160330	1.0000	ng/mL	----	----	

Perchlorate

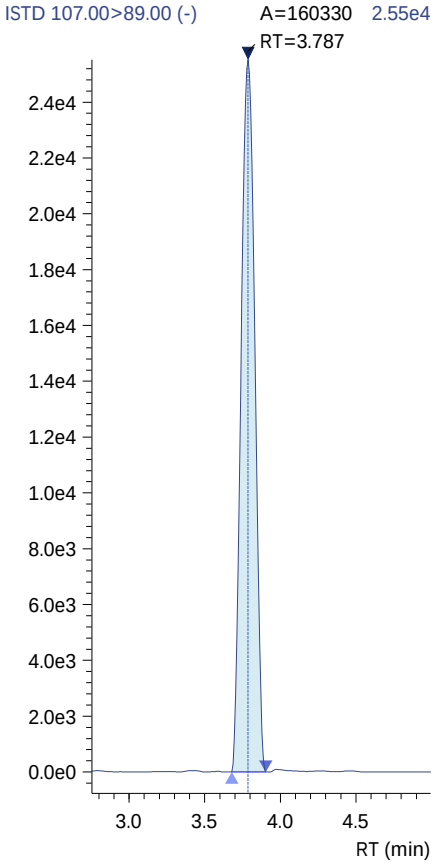
Conc 20.7874
R#1 34.91 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

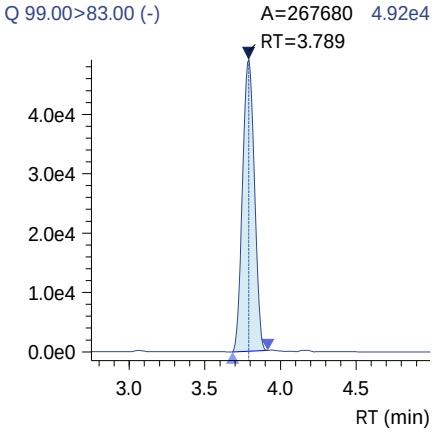
PERCHLORATE7

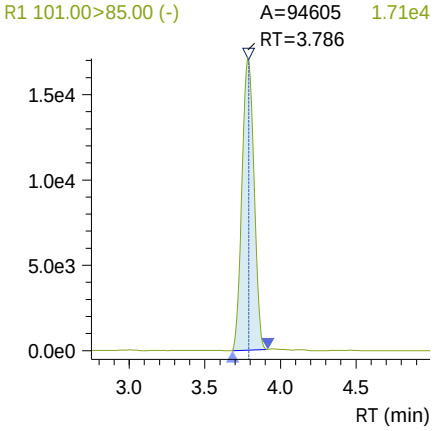
Sample ID: PERCHLORATE7
Date Acquired: 10/17/2022 5:14:57 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_033.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.789	2676 80	183794	10.8 118	ng/mL	101.00 >85.00	35.34	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.786	1837 94	183794	1.0000	ng/mL	----	----	

Perchlorate

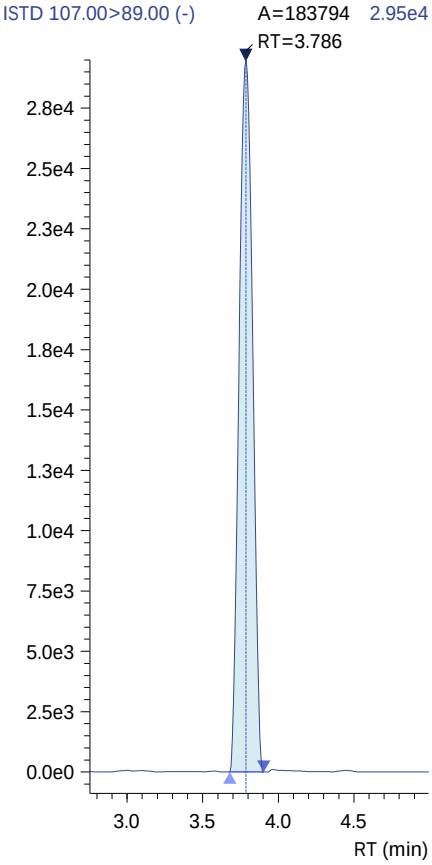
Conc 10.8118
R#1 35.34 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/21/2022 10:34:14 AM

Method File: I:\LCMS01\DATA\20221020\20221013ICAL.lcm
Project File: I:\LCMS01\DATA\20221020\20221020.damlp

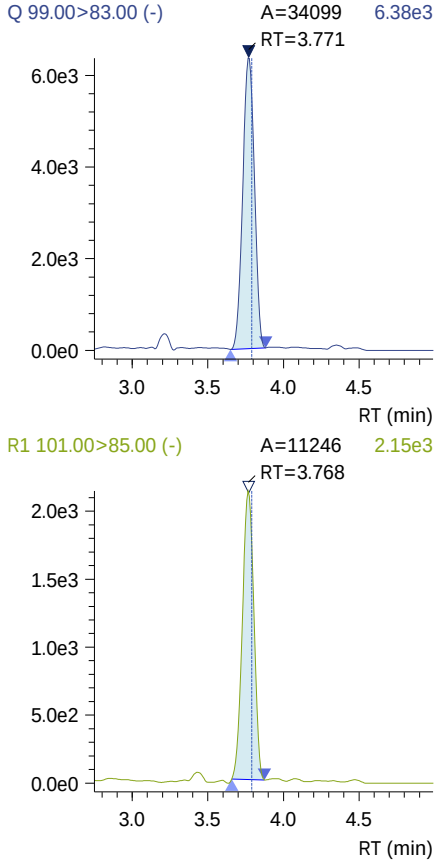
ICS

Sample ID: ICS
Date Acquired: 10/20/2022 12:25:52 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221020\20221020_008.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.771	34099	251892	1.0049	ng/mL	101.00 >85.00	32.98	23.53 -43.71
Sodium Perchlorate-18O4_IS	Auto	3.766	251892	251892	1.0000	ng/mL	----	----	

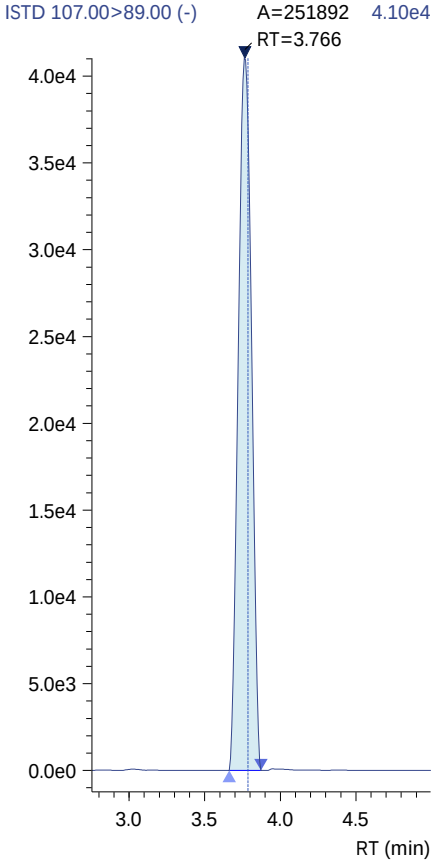
Perchlorate

Conc 1.0049
R#1 32.98 (33.62)



Sodium Perchlorate-18O4_IS

Conc 1.0000



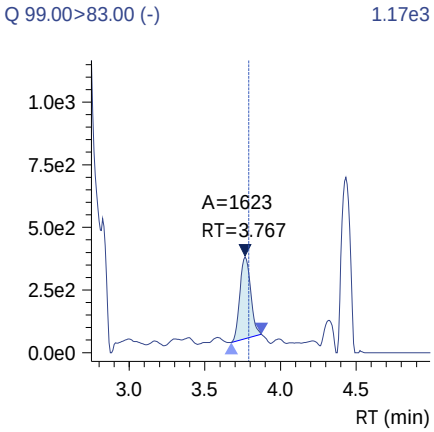
Insight Report

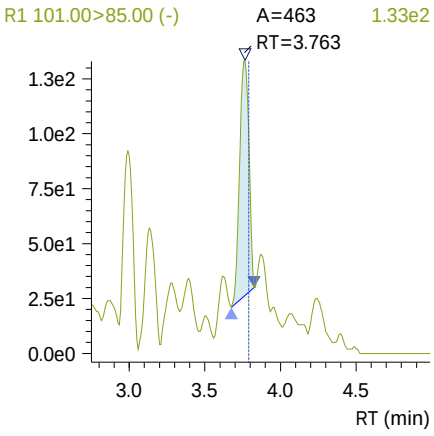
LODV

Sample ID: LODV
Date Acquired: 10/20/2022 12:34:16 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221020\20221020_009.lcd
Vial: 37 | Inj. Volume: 25.0000uL | Tray: 1

Perchlorate

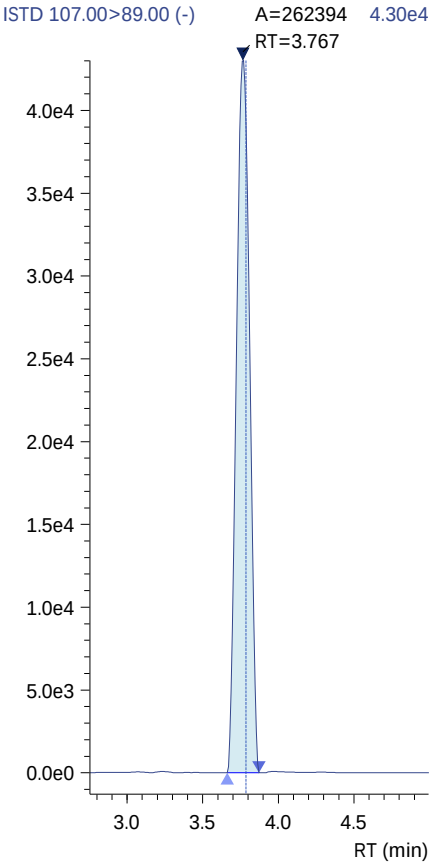
Conc 0.0460
R#1 28.54 (33.62)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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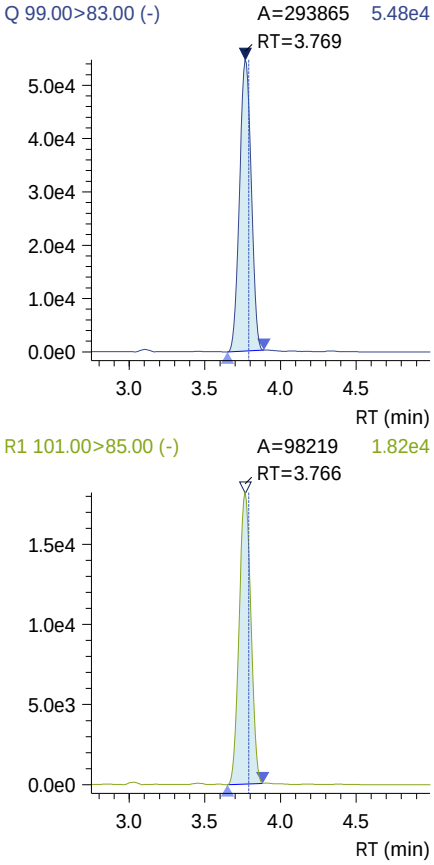
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 10/20/2022 12:42:40 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221020\20221020_010.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.769	2938 65	203084	10.7 420	ng/mL	101.00 >85.00	33.42	23.53 -43.71
Sodium Perchlorate-18O4_IS	Auto	3.766	2030 84	203084	1.0000	ng/mL	----	----	

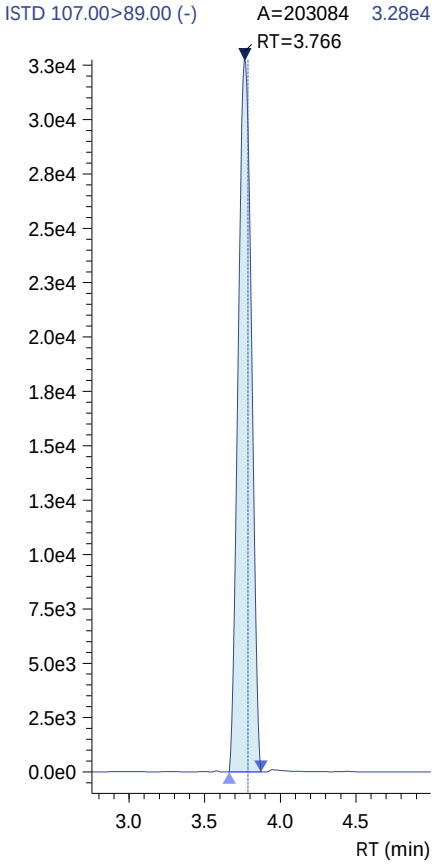
Perchlorate

Conc 10.7420
R#1 33.42 (33.62)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/21/2022 10:34:14 AM

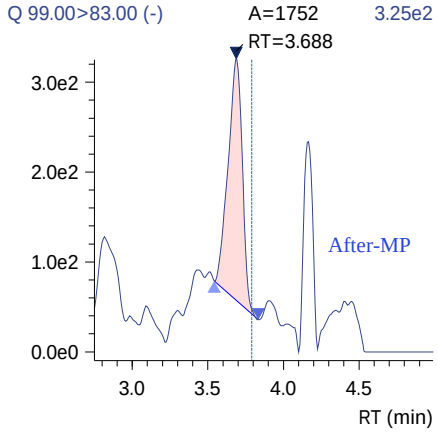
E2200974-002

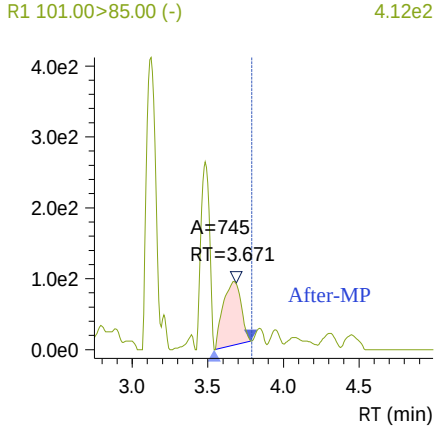
Sample ID: E2200974-002
Date Acquired: 10/20/2022 12:51:06 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221020\20221020_011.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.688	1752	232559	0.0559	ng/mL	101.00 >85.00	42.49	23.53 -43.71
Sodium Perchlorate-18O4_IS	Auto	3.674	232559	232559	1.0000	ng/mL	----	----	

Perchlorate

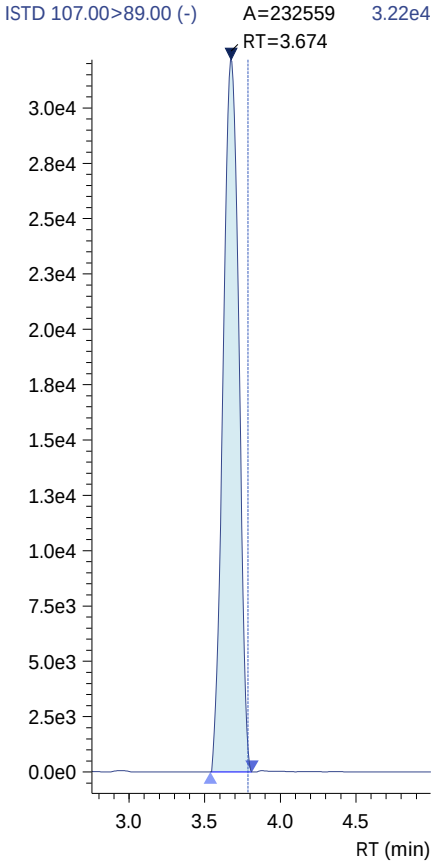
Conc 0.0559
R#1 42.49 (33.62)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/21/2022 3:41:55 PM

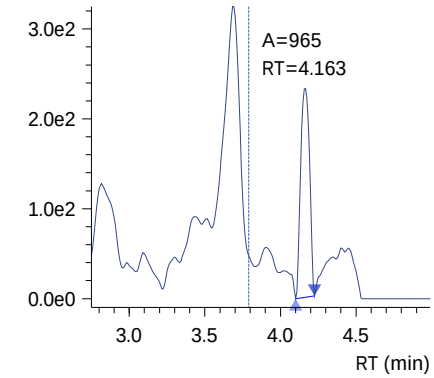
E2200974-002

Sample ID: E2200974-002
Date Acquired: 10/20/2022 12:51:06 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221020\20221020_011.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 3

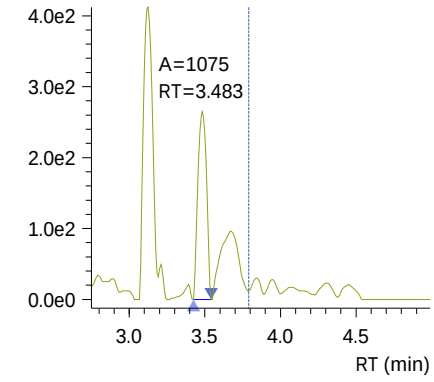
Perchlorate

Conc ----
R#1 0.00 (33.62)

Q 99.00>83.00 (-) 3.25e2



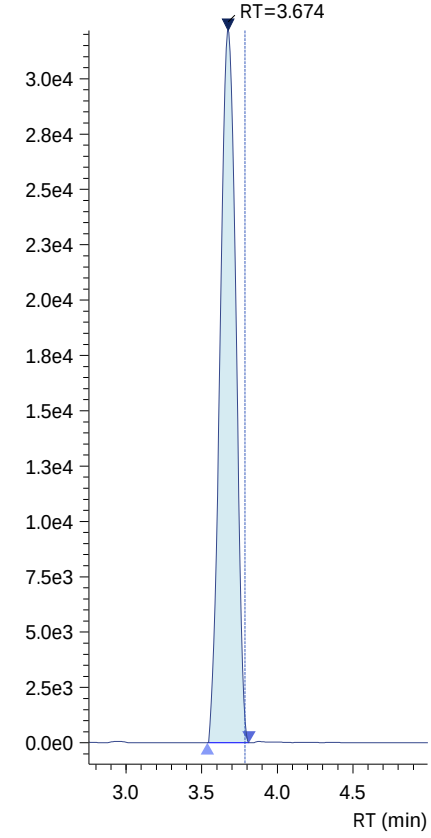
R1 101.00>85.00 (-) 4.12e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=232559 3.22e4



Insight Report

Printed at 10/21/2022 10:34:14 AM

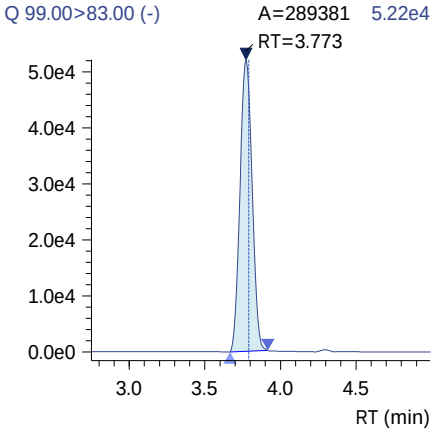
PERCHLORATE7

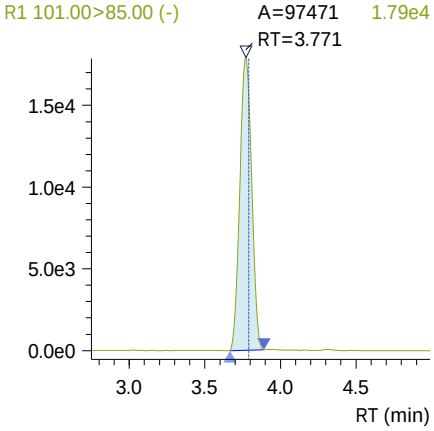
Sample ID: PERCHLORATE7
Date Acquired: 10/20/2022 4:01:28 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221020\20221020_016.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.773	289381	197609	10.8712	ng/mL	101.00 >85.00	33.68	23.53 -43.71
Sodium Perchlorate-18O4_IS	Auto	3.770	197609	197609	1.0000	ng/mL	----	----	

Perchlorate

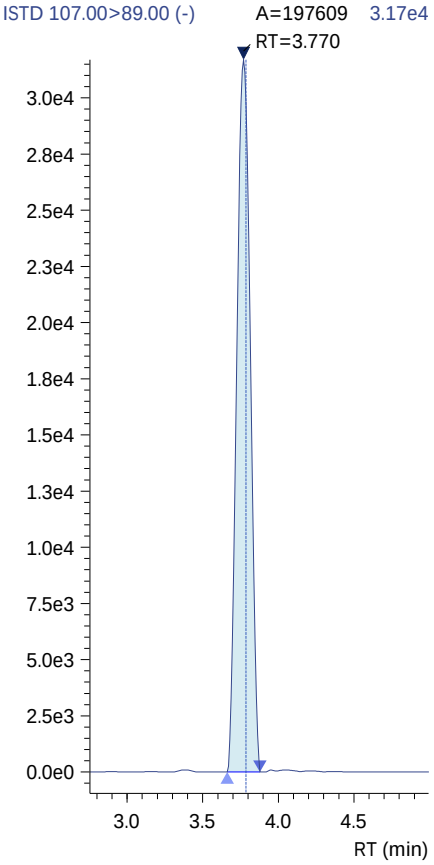
Conc 10.8712
R#1 33.68 (33.62)





Sodium Perchlorate-18O4_IS

Conc 1.0000



November 16, 2022 Service Request No:E2201101

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Suite 129
Lakewood, CO 80228

Laboratory Results for: LHAAP17

Dear Marcia,

Enclosed are the results of the sample(s) submitted to our laboratory November 11, 2022
For your reference, these analyses have been assigned our service request number **E2201101.**

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.

Please contact me if you have any questions. My extension is 2188. You may also contact me via email at James.Guin@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

James Guin

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:	Bhate Environmental Associates	**Service Request No.:**	E2201101
Project:	LHAAP17	**Date Received:**	11/11/22
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

Six samples were received for analysis at ALS Environmental in Houston on 11/11/22.

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:

EQ2200523: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu in addition to a MS/MSD for this extraction batch.

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: Bhate Environmental Associates, Inc. **Service Request:**E2201101
Project: LHAAP17

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2201101-001	130_111022	11/10/2022	0720
E2201101-002	17WW03_111022	11/10/2022	0805
E2201101-003	17WW03_111022_a	11/10/2022	0805
E2201101-004	17WW01_111022	11/10/2022	0845
E2201101-005	17WW02_111022	11/10/2022	0905
E2201101-006	17WW06_111022	11/10/2022	0910

Service Request Summary

Folder #: **E2201101**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 11/11/22
Internal Due Date: 11/18/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2201101-001	130_111022	Water	11/10/22 0720	**IV**
E2201101-002	17WW03_111022	Water	11/10/22 0805	**IV**
E2201101-003	17WW03_111022_a	Water	11/10/22 0805	**IV**
E2201101-004	17WW01_111022	Water	11/10/22 0845	**IV**
E2201101-005	17WW02_111022	Water	11/10/22 0905	**IV**
E2201101-006	17WW06_111022	Water	11/10/22 0910	**IV**

Service Request Summary

Folder #: **E2201101**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 11/11/22
Internal Due Date: 11/18/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	5	IV DUE 11/25
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	2368363	12/31/2023
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
Utah Department of Health Environmental Laboratory Certification	TX026932022-13	7/31/2023

Chain of Custody

ALS Environmental - Houston HRMS
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bhate ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: MSC2020.0016.0002.0022

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 17

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Sample Analysis Requested (5): Number of containers	PERCHLORATE	Quality Assurance Samples (6): Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
130_111022	10 NOV 2022	0720	-	N		WG	1	X				
130_111022_MS	10 NOV 2022	0720	-	MS		WG	1	X				
130_111022_MSD	10 NOV 2022	0720	-	SD		WG	1	X				
17WW03_111022	10 NOV 2022	0805		N		WG	1	X				
17WW03_111022_D	10 NOV 2022	0805		FD		WG	1	X				
17WW01_111022	10 NOV 2022	0845	-	N		WG	1	X				
17WW02_111022	10 NOV 2022	0905	-	N		WG	1	X				
17WW06_111022	10 NOV 2022	0910	-	N		WG	1	X				
			-									
			-									
			-									

COMMENTS: Standard TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	11/10/22	1330	1. NELSON	11/11/22	9:00
2.			2.		
3.			3.		

2.3

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

_____ Method of Shipment: _____

_____ Fed Ex _____ Airbill Number:

_____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dane Wacasey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

+R31 C/F -0.5

10450 Stancliff Road, Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Client: Bhate Date: 11/11/22 WO#:

Time Received: 9:00 Received by: BO#:

Matrices: Solid/Sludge Water Oil Wipes Hydrocarbon Liquid Other

Kit ID/Cooler ID	Trip Blank ID	Cooler Temp (C) Observed/Corrected	IR #	Temp BLK Present?
47768	-	2.3 / 1.8	31	Y N
		/		Y N
		/		Y N
		/		Y N
		/		Y N

Delivery Method: FedEx UPS Greyhound ALS Client Other

Date/Time of Unpacking: 11/12/22 8:00 Unpacked by: Nelson

Shipping container/cooler in good condition?	Yes	No	Not Present
Custody seals intact on shipping container/cooler?	Yes	No	Not Present
Custody seals intact on sample bottles?	Yes	No	Not Present
Chain of Custody present?	Yes	No	
Chain of Custody signed when relinquished and received?	Yes	No	
Chain of Custody - Sampler's name present?	Yes	No	
Chain of Custody agrees with sample labels?	Yes	No	
Samples in proper container/bottle?	Yes	No	
VOA/TX1005/1006 Solids in hermetically Sealed Vials:	Yes	No	No VOA/TX1005/1006 Solid
Sample containers intact?	Yes	No	
Sufficient sample volume for indicated test?	Yes	No	
All samples received within holding time?	Yes	No	
Container/Temp Blank temperature in compliance?	Yes	No	
Water - VOA vials have zero headspace?	Yes	No	N/A No VOA submitted
Non-VOA waters preserved with HCl, H2SO4, HNO3 are pH <2?			Yes No N/A
Waters preserved with NaOH/Ascorbic acid are pH>12?	Yes	No	N/A
pH adjusted?	Yes*	No	N/A *See Preservation Logbook

pH adjusted by: _____ pH Paper Lot: _____

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Houston, TX 77099
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www.alsglobal.com

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

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 409928 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 11/14/22 08:31

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2201095-001	LH18/24-SP650_110822_AIX	.01	6850/ClO4 DOD			Water	10mL	
2	E2201095-002	LH18/24-SP650_110822_BIX	.01	6850/ClO4 DOD			Water	10mL	
3	E2201101-001	130_111022	.01	6850/ClO4 DOD			Water	10mL	
4	E2201101-002	17WW03_111022	.01	6850/ClO4 DOD			Water	10mL	
5	E2201101-003	17WW03_111022_a	.01	6850/ClO4 DOD			Water	10mL	
6	E2201101-004	17WW01_111022	.01	6850/ClO4 DOD			Water	10mL	
7	E2201101-005	17WW02_111022	.01	6850/ClO4 DOD			Water	10mL	
8	E2201101-006	17WW06_111022	.01	6850/ClO4 DOD			Water	10mL	
9	EQ2200523-01	MB		6850/ClO4 DOD			Liquid	10mL	
10	EQ2200523-02	LCS		6850/ClO4 DOD			Liquid	10mL	
11	EQ2200523-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
12	EQ2200523-04	130_111022 MS	.01	6850/ClO4 DOD			Liquid	10mL	
13	EQ2200523-05	130_111022 DMS	.01	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Perchlorate Intermediate Stock1 Inventory ID 225386 Logbook Ref: Perchlorate (1st Source) Expires On: 01/31/2023

EQ2200523-02 1.00µL EQ2200523-03 1.00µL EQ2200523-04 1.00µL EQ2200523-05 1.00µL

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 225719 Logbook Ref: Perchlorate Internal Standard Expires On: 01/31/2023

E2201095-001 100.00µL E2201095-002 100.00µL E2201101-001 100.00µL E2201101-002 100.00µL E2201101-003 100.00µL E2201101-004 100.00µL
E2201101-005 100.00µL E2201101-006 100.00µL EQ2200523-01 100.00µL EQ2200523-02 100.00µL EQ2200523-03 100.00µL EQ2200523-04 100.00µL
EQ2200523-05 100.00µL

Preparation Materials

Water HPLC Grade 10/24/2022 Water (225656) 6850 Amber Glass screw vial 2mL Screw Top Vial (221308) 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 (221307)

Preparation Steps

Step: Preparation
Started: 11/14/22 08:31
Finished: 11/14/22 12:15
By: XMI
Comments

Preparation Information Benchsheet

Prep Run#: 409928
Team: Semivoa GCMS/XMI

Prep WorkFlow: GenExt28Day
Prep Method: Method

Status: Prepped
Prep Date/Time: 11/14/22 08:31

Comments:

Reviewed By: GR Date: 11/14/22

Chain of Custody

Relinquished By: Date:

Received By: Date:

Extracts Examined
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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2201101
Project:	LHAAP17	**Date Collected:**	11/10/22 0720
Sample Matrix:	Water	**Date Received:**	11/11/22
Sample Name:	130_111022	**Units:**	µg/L
Lab Code:	E2201101-001	**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	**0.463**		0.100	0.0500	0.0250	1	11/14/22	11/15/22 15:33	409928	785115	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2201101
Project:	LHAAP17	**Date Collected:**	11/10/22 0805
Sample Matrix:	Water	**Date Received:**	11/11/22
Sample Name:	17WW03_111022	**Units:**	µg/L
Lab Code:	E2201101-002	**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	**0.0271**	J	0.100	0.0500	0.0250	1	11/14/22	11/15/22 14:04	409928	785115	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2201101
Project:	LHAAP17	**Date Collected:**	11/10/22 0805
Sample Matrix:	Water	**Date Received:**	11/11/22
Sample Name:	17WW03_111022_a	**Units:**	µg/L
Lab Code:	E2201101-003	**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	ND	U	0.100	0.0500	0.0250	1	11/14/22	11/15/22 14:20	409928	785115	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2201101
Project:	LHAAP17	**Date Collected:**	11/10/22 0845
Sample Matrix:	Water	**Date Received:**	11/11/22
Sample Name:	17WW01_111022	**Units:**	µg/L
Lab Code:	E2201101-004	**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	**0.549**		0.100	0.0500	0.0250	1	11/14/22	11/15/22 14:28	409928	785115	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2201101
Project:	LHAAP17	**Date Collected:**	11/10/22 0905
Sample Matrix:	Water	**Date Received:**	11/11/22
Sample Name:	17WW02_111022	**Units:**	µg/L
Lab Code:	E2201101-005	**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	**17200**		100	50.0	25.0	1000	11/14/22	11/15/22 14:36	409928	785115	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2201101
Project:	LHAAP17	**Date Collected:**	11/10/22 0910
Sample Matrix:	Water	**Date Received:**	11/11/22
Sample Name:	17WW06_111022	**Units:**	µg/L
Lab Code:	E2201101-006	**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	**89900**		500	250	125	5000	11/14/22	11/15/22 14:44	409928	785115	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2201101
Project:	LHAAP17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2200523-01	**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	11/14/22	11/14/22 14:52	409928	785115	

Accuracy & Precision

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

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2201101
Project:	LHAAP17	**Date Analyzed:**	11/14/22 - 11/15/22
Sample Matrix:	Water		

Lab Control Sample Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Units:**	µg/L
Prep Method:	Method	**Basis:**	NA
		Extraction Lot:	409928

	Lab Control Sample EQ2200523-02			Duplicate Lab Control Sample EQ2200523-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.115	0.100	115	0.107	0.100	107	84 - 119	8	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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2201101
Project:	LHAAP17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200523-02	**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	**0.115**		0.100	0.0500	0.0250	1	11/14/22	11/14/22 15:09	409928	785115	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2201101
Project:	LHAAP17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200523-03	**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	**0.107**		0.100	0.0500	0.0250	1	11/14/22	11/15/22 11:06	409928	785115	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2201101
Project:	LHAAP17	**Date Collected:**	11/10/22
Sample Matrix:	Water	**Date Received:**	11/11/22
		Date Analyzed:	11/15/22

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	130_111022	**Units:**	µg/L
Lab Code:	E2201101-001	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		130_111022MS Matrix Spike EQ2200523-04				130_111022DMS Duplicate Matrix Spike EQ2200523-05					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.463	0.574	0.100	112	0.562	0.100	100	84 - 119	2	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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2201101
Project:	LHAAP17	**Date Collected:**	11/10/22 0720
Sample Matrix:	Water	**Date Received:**	11/11/22
Sample Name:	130_111022	**Units:**	µg/L
Lab Code:	EQ2200523-04	**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	**0.574**		0.100	0.0500	0.0250	1	11/14/22	11/15/22 13:39	409928	785115	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2201101
Project:	LHAAP17	**Date Collected:**	11/10/22 0720
Sample Matrix:	Water	**Date Received:**	11/11/22
Sample Name:	130_111022	**Units:**	µg/L
Lab Code:	EQ2200523-05	**Basis:**	NA
Run Type:	Duplicate 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	**0.562**		0.100	0.0500	0.0250	1	11/14/22	11/15/22 13:48	409928	785115	

Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
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20221013

1st Review: XMI
2nd Review: Kneir

ALS Environmental

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 10/13/2022
Cal. Std. xp: 1/31/2023
ICAL ID: EC2200014

Mobile Phases A:0.10% Formic Acid/Water 3210301-02 B:MeOH 224417

	Sample Name	File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	PERCHLORATE1	20221013_016	Perchlorate6850c.lcm	1x	☒	225390	10/13/2022 10:53
2	PERCHLORATE2	20221013_017	Perchlorate6850c.lcm	1x	☒	225392	10/13/2022 11:02
3	PERCHLORATE3	20221013_018	Perchlorate6850c.lcm	1x	☒	225393	10/13/2022 11:10
4	PERCHLORATE4	20221013_019	Perchlorate6850c.lcm	1x	☒	225394	10/13/2022 11:19
5	PERCHLORATE5	20221013_020	Perchlorate6850c.lcm	1x	☒	225395	10/13/2022 11:27
6	PERCHLORATE6	20221013_021	Perchlorate6850c.lcm	1x	☒	225396	10/13/2022 11:35
7	PERCHLORATE7	20221013_022	Perchlorate6850c.lcm	1x	☒	225398	10/13/2022 11:44
8	PERCHLORATE8	20221013_023	Perchlorate6850c.lcm	1x	☒	225400	10/13/2022 11:52
9	PERCHLORATE9	20221013_024	Perchlorate6850c.lcm	1x	☒	225401	10/13/2022 12:01
10	PERCHLORATE10	20221013_025	Perchlorate6850c.lcm	1x	☒	225402	10/13/2022 12:09
11	PERCHLORATEICV	20221013_026	Perchlorate6850c.lcm	1x	☒	225404	10/13/2022 12:17
12	LODV	20221013_027	Perchlorate6850c.lcm	1x	☒	DNU-IR	10/13/2022 12:26
13	MB	20221013_028	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 12:34
14	LCS	20221013_029	Perchlorate6850c.lcm	1x	☒	IDOC-DNU-IR	10/13/2022 12:42
15	DLCS	20221013_030	Perchlorate6850c.lcm	1x	☒	IDOC-DNU-IR	10/13/2022 12:51
16	IB	20221013_031	Perchlorate6850c.lcm	1x	☒		10/13/2022 12:59
17	IB	20221013_032	Perchlorate6850c.lcm	1x	☒		10/13/2022 13:08
18	IB	20221013_033	Perchlorate6850c.lcm	1x	☒		10/13/2022 13:16
19	null	20221013_034	Perchlorate6850c.lcm	1x	☒		10/13/2022 13:21
20	null	20221013_035	Perchlorate6850c.lcm	1x	☒		10/13/2022 13:27
21	IB	20221013_036	Perchlorate6850c.lcm	1x	☒		10/13/2022 14:02
22	IB	20221013_037	Perchlorate6850c.lcm	1x	☒		10/13/2022 14:10
23	LODV	20221013_038	Perchlorate6850c.lcm	1x	☒	225199	10/13/2022 14:19
24	PERCHLORATE7	20221013_039	Perchlorate6850c.lcm	1x	☒	225398	10/13/2022 14:27
25	MB	20221013_040	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 14:44
26	LCS	20221013_041	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 14:52
27	DLCS	20221013_042	Perchlorate6850c.lcm	1x	☒	IDOC-DNU-IR	10/13/2022 15:01
28	LCS	20221013_043	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 15:09
29	DLCS	20221013_044	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 15:17
30	MB WIPE-1013PREP	20221013_045	Perchlorate6850c.lcm	1x	☒	DNU-IR	10/13/2022 15:26
31	MB WIPE-1013PREP	20221013_046	Perchlorate6850c.lcm	1x	☒	DNU-IR	10/13/2022 14:35
32	PERCHLORATE7	20221013_047	Perchlorate6850c.lcm	1x	☒	225398	10/13/2022 15:34
33	IB	20221013_048	Perchlorate6850c.lcm	1x	☒		10/13/2022 15:43
34	IB	20221013_049	Perchlorate6850c.lcm	1x	☒		10/13/2022 15:51
35	null	20221013_050	Perchlorate6850c.lcm	1x	☒		10/13/2022 15:56
36	null	20221013_051	Perchlorate6850c.lcm	1x	☒		10/13/2022 16:02

Initial Calibration - Detailed Report

Calibration ID: EC2200014 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2200014-01	PERCHLORATE1	20221013_016	10/13/2022 10:53
02	EC2200014-02	PERCHLORATE2	20221013_017	10/13/2022 11:02
03	EC2200014-03	PERCHLORATE3	20221013_018	10/13/2022 11:10
04	EC2200014-04	PERCHLORATE4	20221013_019	10/13/2022 11:19
05	EC2200014-05	PERCHLORATE5	20221013_020	10/13/2022 11:27
06	EC2200014-06	PERCHLORATE6	20221013_021	10/13/2022 11:35
07	EC2200014-07	PERCHLORATE7	20221013_022	10/13/2022 11:44
08	EC2200014-08	PERCHLORATE8	20221013_023	10/13/2022 11:52
09	EC2200014-09	PERCHLORATE9	20221013_024	10/13/2022 12:01
10	EC2200014-10	PERCHLORATE10	20221013_025	10/13/2022 12:09

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 5.871** **Average RF = 0.1347**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1373	02	0.5000	0.1357	03	0.7000	0.1336	04	1.0000	0.1416
05	2.0000	0.1235	06	5.0000	0.1283	07	10.0000	0.1522	08	20.0000	0.1315
09	30.0000	0.1332	10	50.0000	0.1302						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.102	1.9	02	0.5000	0.504	0.7	03	0.7000	0.694	-0.8
04	1.0000	1.05	5.1	05	2.0000	1.83	-8.3	06	5.0000	4.76	-4.8
07	10.0000	11.3	13.0	08	20.0000	19.5	-2.4	09	30.0000	29.7	-1.1
10	50.0000	48.3	-3.3								

Initial Calibration Verification Summary Report

Calibration ID:	EC2200014	**Instrument ID:**	E-LCMS-01
Datafile ID:	20221013_026	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2200014-11	T	Average RF	10	10.918	ng/mL	9.2	<= 15

Insight Report

Printed at 10/24/2022 11:16:28 AM

Method File: I:\LCMS01\DATA\20221013ICAL\20221013ICAL.lcm
Project File: I:\LCMS01\DATA\20221013ICAL\10132022_ICAL.damlp

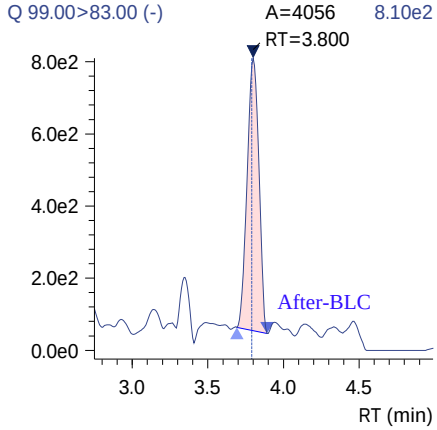
PERCHLORATE1

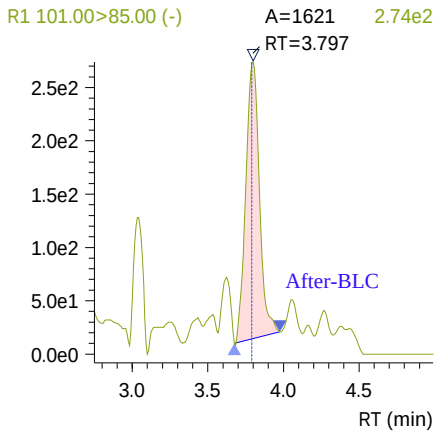
Sample ID: PERCHLORATE1
Date Acquired: 10/13/2022 10:53:53 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_016.lcd
Vial: 38 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.800	4056	295377	0.1019	ng/mL	101.00 >85.00	39.97	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	295377	295377	1.0000	ng/mL	----	----	

Perchlorate

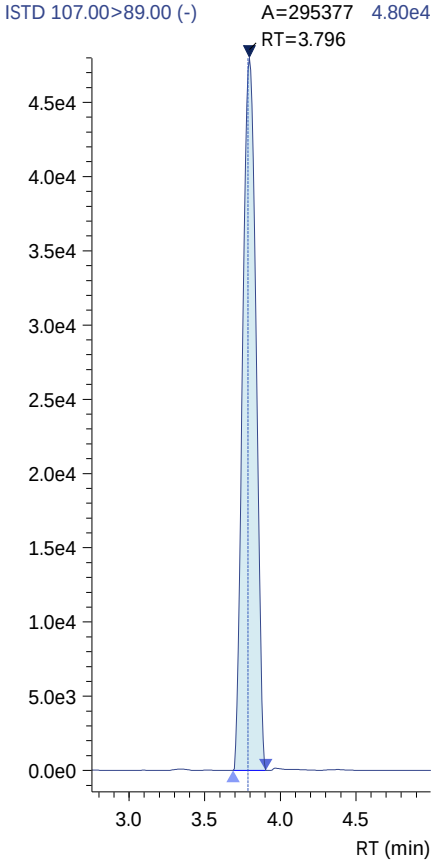
Conc 0.1019
R#1 39.97 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 9:43:49 AM

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Project File: I:\LCMS01\DATA\20221013ICAL\20221013ICAL.damlp

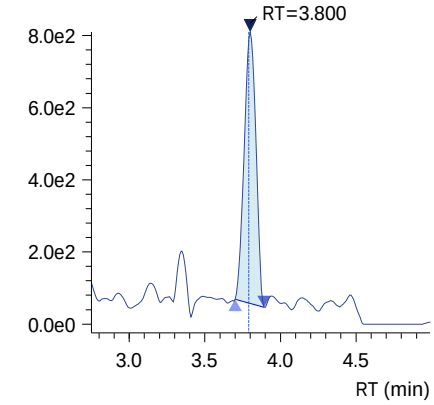
PERCHLORATE1

Sample ID: PERCHLORATE1
Date Acquired: 10/13/2022 10:53:53 AM
Acquired by: System Administrator
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Vial: 38 | Inj. Volume: 25.0000uL | Tray: 1

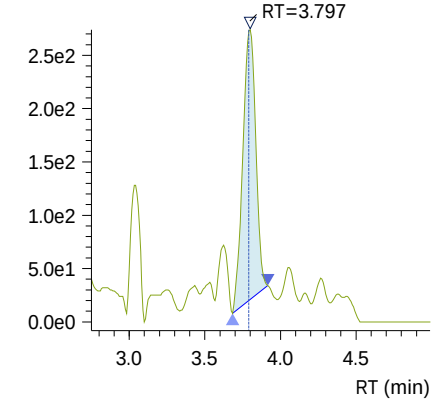
Perchlorate

Conc 0.1012
R#1 37.47 (33.91)

Q 99.00>83.00 (-) A=4022 8.10e2 RT=3.800



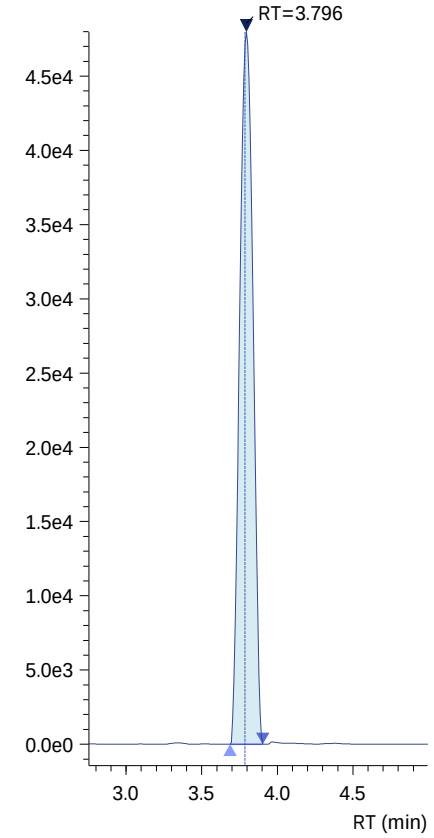
R1 101.00>85.00 (-) A=1507 2.74e2 RT=3.797



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=295377 4.80e4 RT=3.796



Insight Report

Printed at 10/24/2022 11:16:28 AM

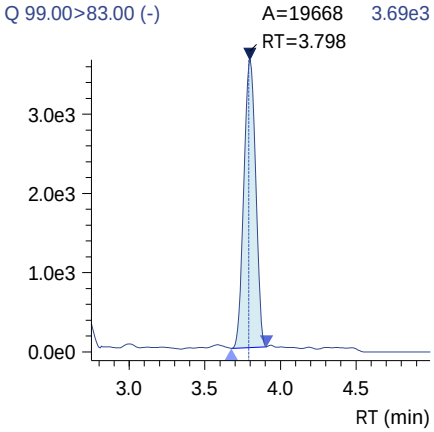
PERCHLORATE2

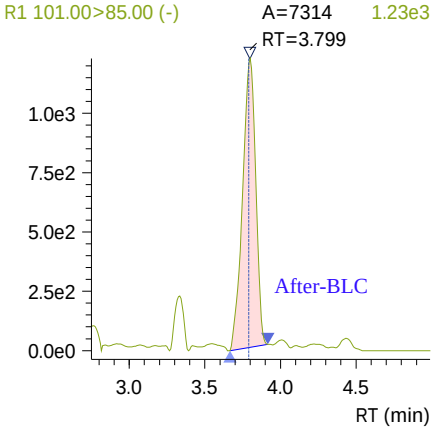
Sample ID: PERCHLORATE2
Date Acquired: 10/13/2022 11:02:18 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_017.lcd
Vial: 39 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.798	19668	289981	0.5035	ng/mL	101.00 >85.00	37.19	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	289981	289981	1.0000	ng/mL	----	----	

Perchlorate

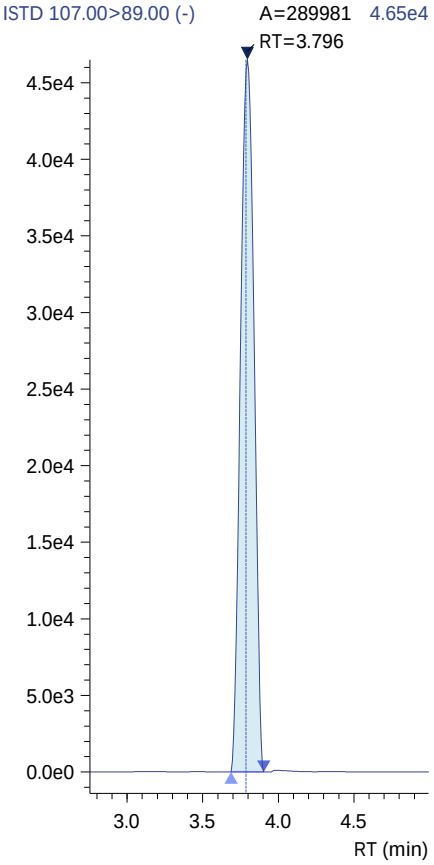
Conc 0.5035
R#1 37.19 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 9:43:49 AM

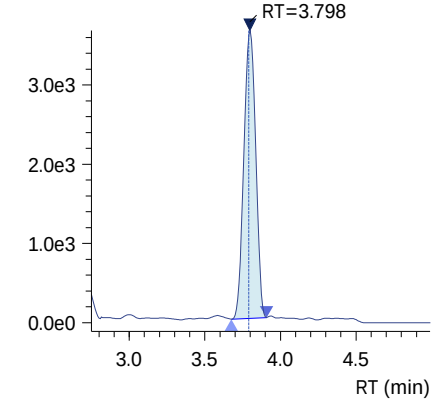
PERCHLORATE2

Sample ID: PERCHLORATE2
Date Acquired: 10/13/2022 11:02:18 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_017.lcd
Vial: 39 | Inj. Volume: 25.0000uL | Tray: 1

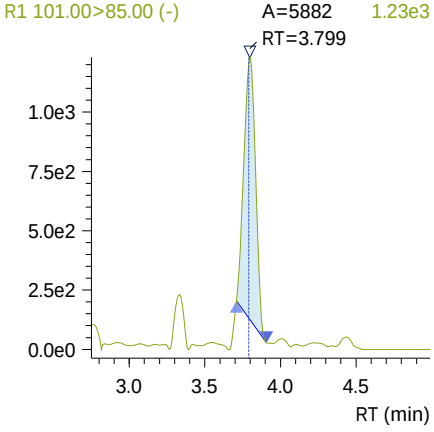
Perchlorate

Conc 0.5040
R#1 29.91 (33.91)

Q 99.00>83.00 (-) A=19668 3.69e3



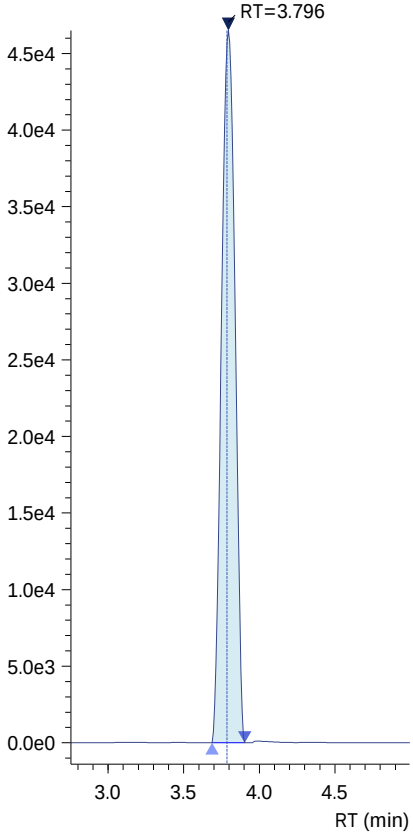
R1 101.00>85.00 (-) A=5882 1.23e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=289981 4.65e4



Insight Report

Printed at 10/24/2022 11:16:28 AM

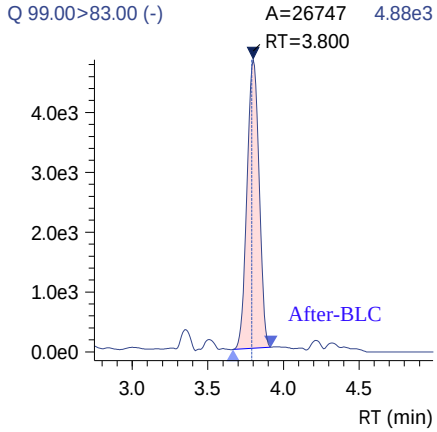
PERCHLORATE3

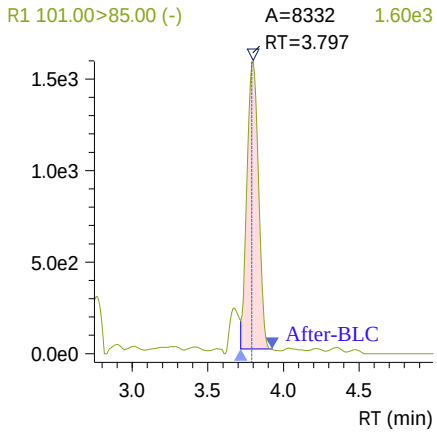
Sample ID: PERCHLORATE3
Date Acquired: 10/13/2022 11:10:43 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_018.lcd
Vial: 40 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.800	26747	286041	0.6942	ng/mL	101.00 >85.00	31.15	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	286041	286041	1.0000	ng/mL	----	----	

Perchlorate

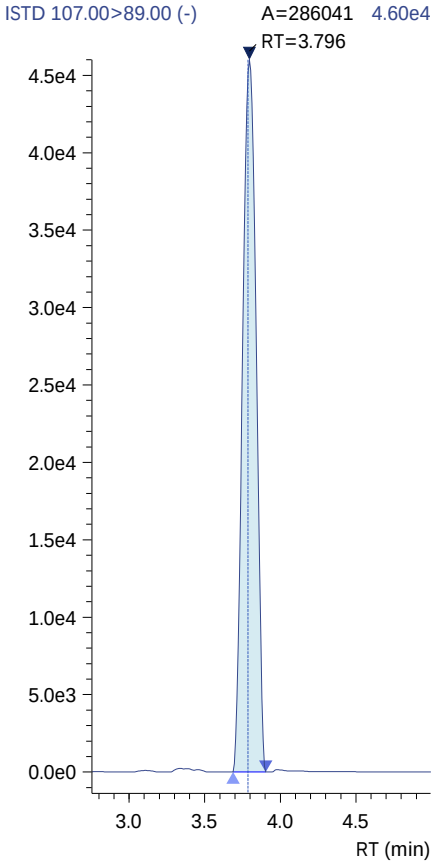
Conc 0.6942
R#1 31.15 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 9:43:49 AM

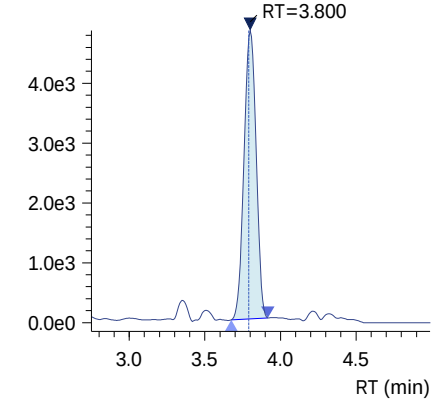
PERCHLORATE3

Sample ID: PERCHLORATE3
Date Acquired: 10/13/2022 11:10:43 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_018.lcd
Vial: 40 | Inj. Volume: 25.0000uL | Tray: 1

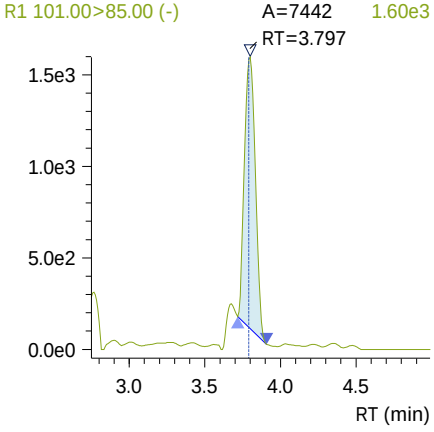
Perchlorate

Conc 0.6936
R#1 27.88 (33.91)

Q 99.00>83.00 (-) A=26697 4.88e3



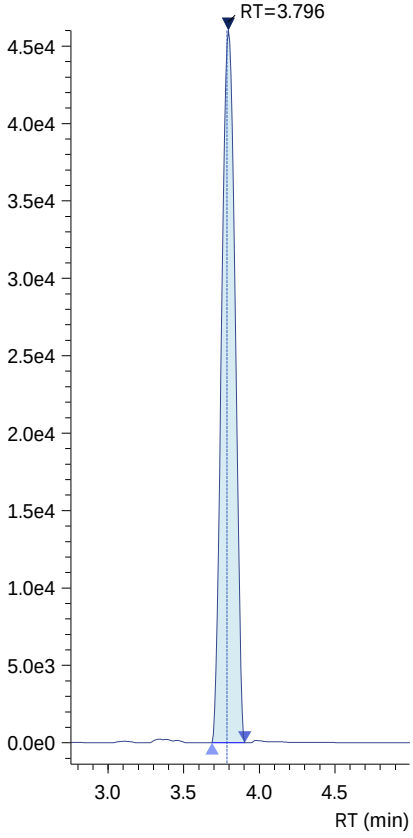
R1 101.00>85.00 (-) A=7442 1.60e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=286041 4.60e4



Insight Report

Printed at 10/24/2022 11:16:28 AM

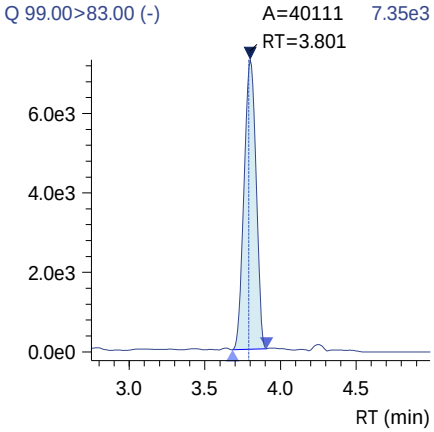
PERCHLORATE4

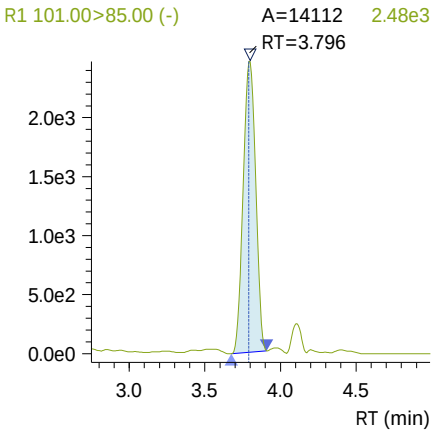
Sample ID: PERCHLORATE4
Date Acquired: 10/13/2022 11:19:07 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_019.lcd
Vial: 41 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.801	40111	283200	1.0514	ng/mL	101.00 >85.00	35.18	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.797	283200	283200	1.0000	ng/mL	----	----	

Perchlorate

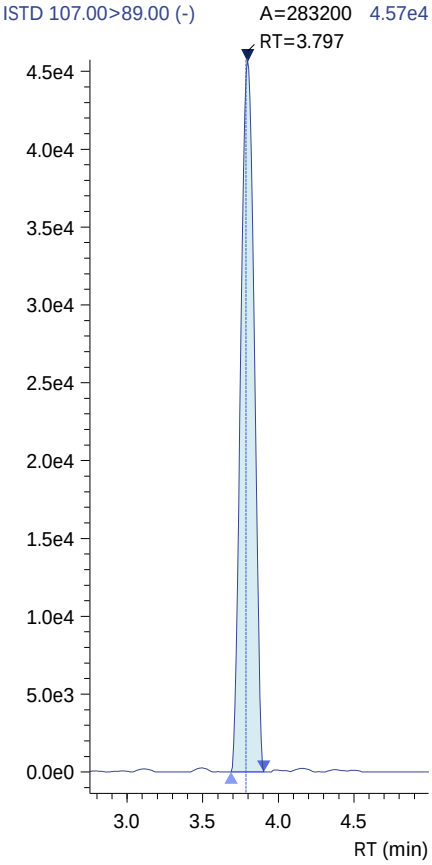
Conc 1.0514
R#1 35.18 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

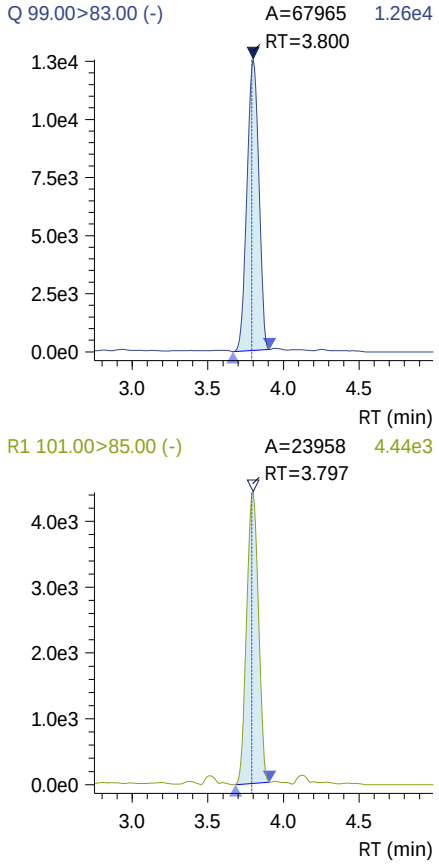
PERCHLORATE5

Sample ID: PERCHLORATE5
Date Acquired: 10/13/2022 11:27:29 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_020.lcd
Vial: 42 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.800	67965	275186	1.8335	ng/mL	101.00 >85.00	35.25	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	275186	275186	1.0000	ng/mL	----	----	

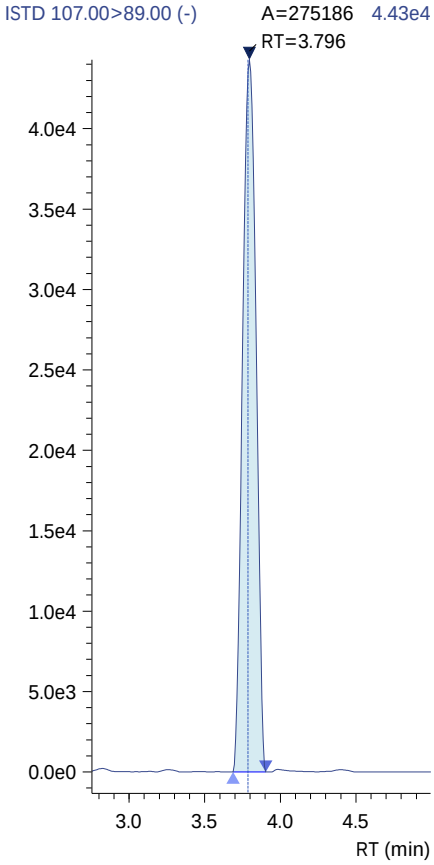
Perchlorate

Conc 1.8335
R#1 35.25 (34.20)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

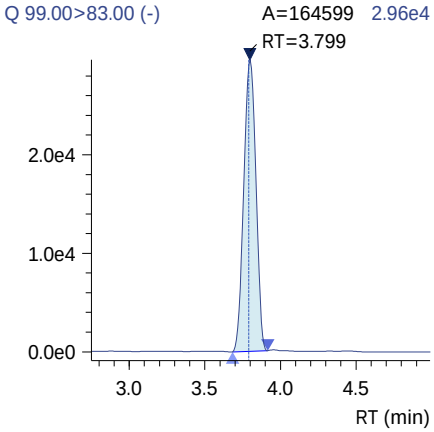
PERCHLORATE6

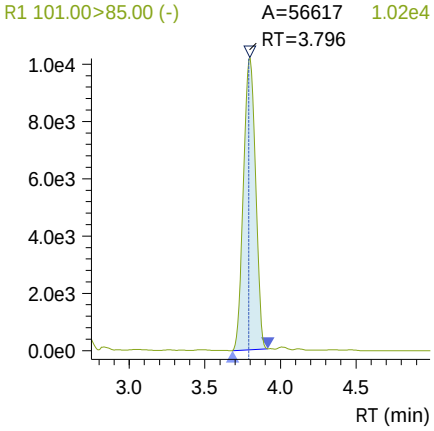
Sample ID: PERCHLORATE6
Date Acquired: 10/13/2022 11:35:51 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_021.lcd
Vial: 43 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.799	164599	256637	4.7613	ng/mL	101.00 >85.00	34.40	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	256637	256637	1.0000	ng/mL	----	----	

Perchlorate

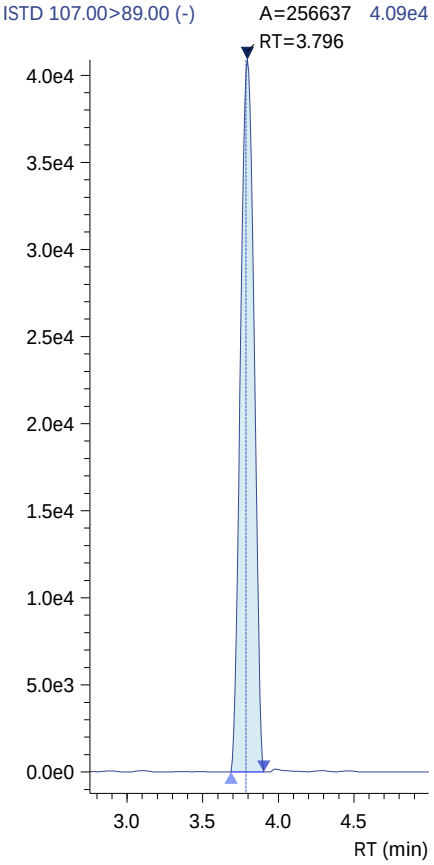
Conc 4.7613
R#1 34.40 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

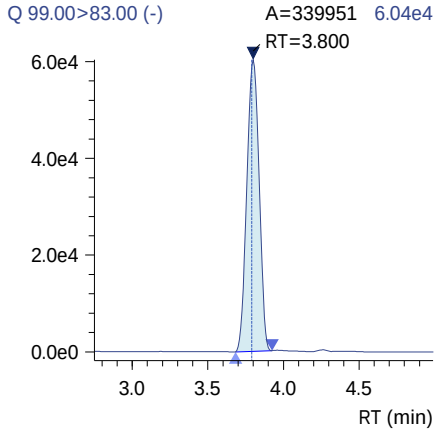
PERCHLORATE7

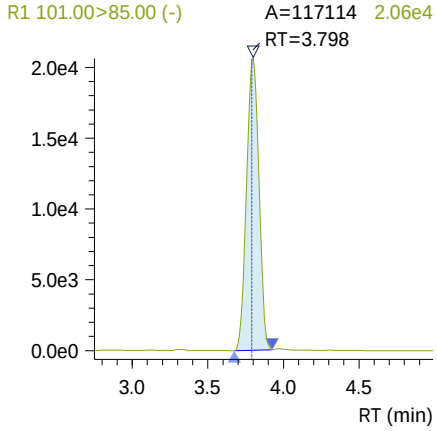
Sample ID: PERCHLORATE7
Date Acquired: 10/13/2022 11:44:14 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_022.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.800	339951	223356	11.2988	ng/mL	101.00 >85.00	34.45	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	223356	223356	1.0000	ng/mL	----	----	

Perchlorate

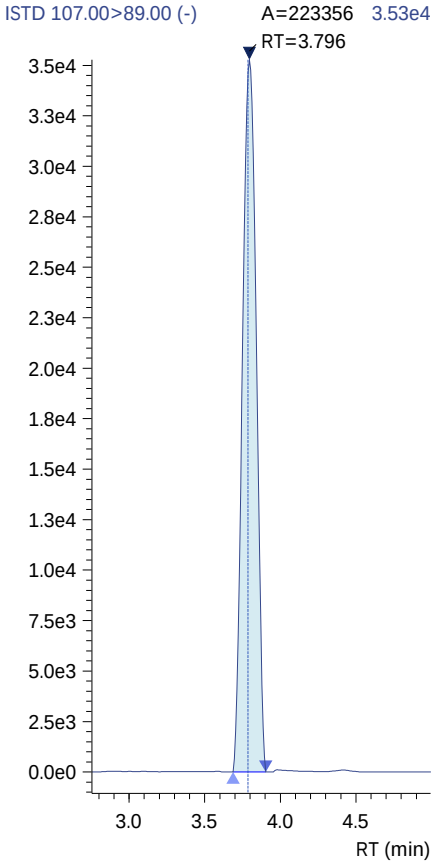
Conc 11.2988
R#1 34.45 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

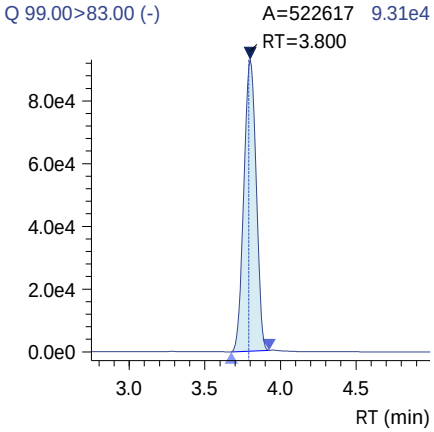
PERCHLORATE8

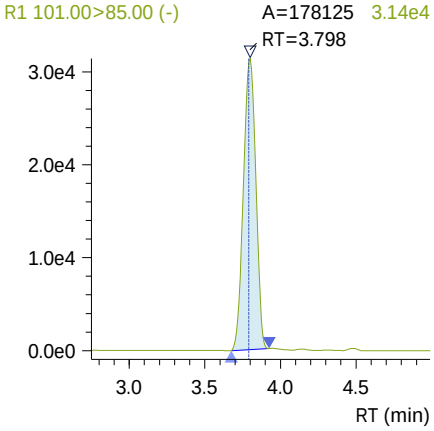
Sample ID: PERCHLORATE8
Date Acquired: 10/13/2022 11:52:37 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_023.lcd
Vial: 45 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.800	522617	198677	19.5	ng/mL	101.00	34.08	23.94
					276		>85.00		-44.46
Sodium Perchlorate -18O4_IS	Auto	3.797	198677	198677	1.0000	ng/mL	----	----	

Perchlorate

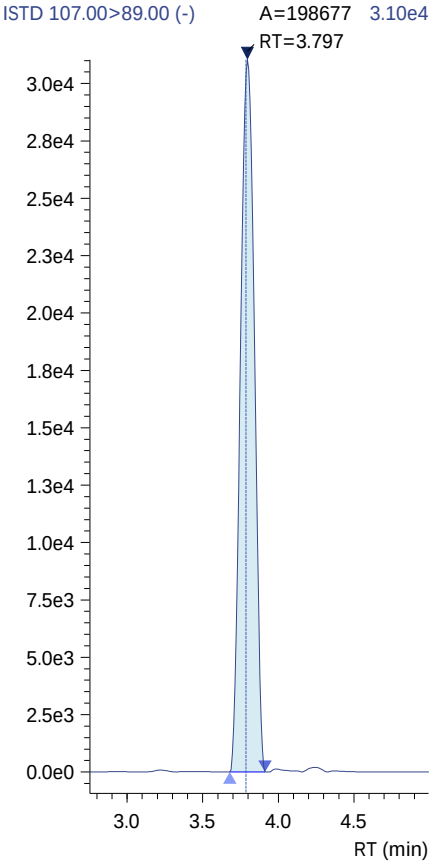
Conc 19.5276
R#1 34.08 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

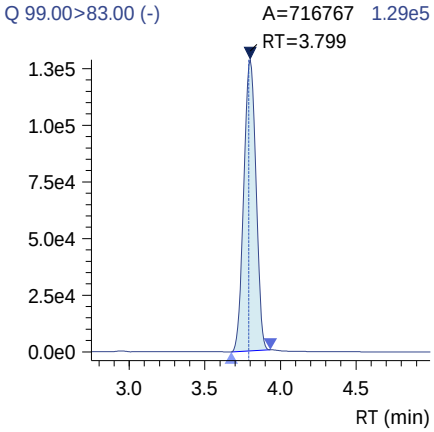
PERCHLORATE9

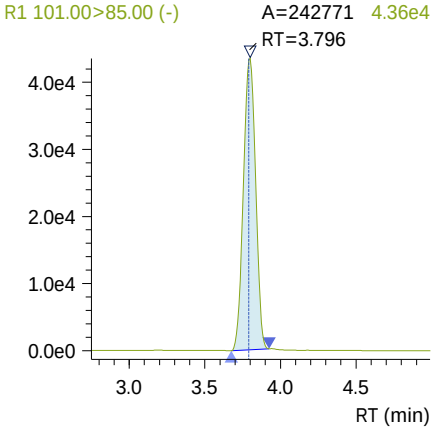
Sample ID: PERCHLORATE9
Date Acquired: 10/13/2022 12:01:03 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_024.lcd
Vial: 46 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.799	716767	179402	29.6596	ng/mL	101.00 >85.00	33.87	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.796	179402	179402	1.0000	ng/mL	----	----	

Perchlorate

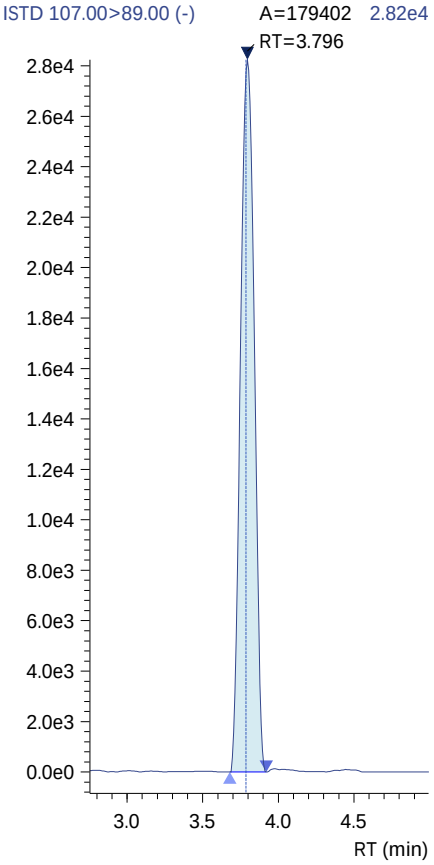
Conc 29.6596
R#1 33.87 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

PERCHLORATE10

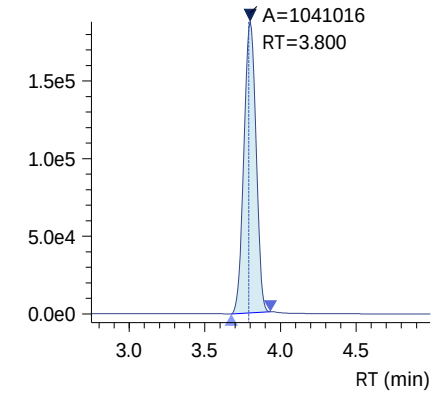
Sample ID: PERCHLORATE10
Date Acquired: 10/13/2022 12:09:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_025.lcd
Vial: 47 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.800	10410	159903	48.3	ng/mL	101.00	34.31	23.94
			16		299		>85.00		-44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	159903	159903	1.0000	ng/mL	----	----	

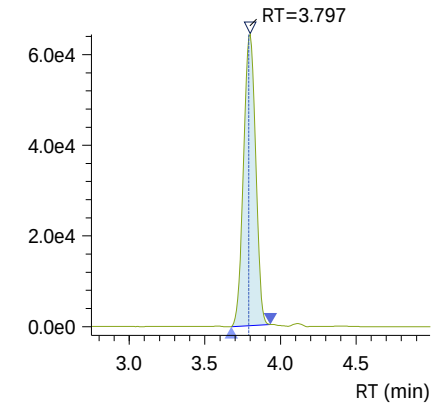
Perchlorate

Conc 48.3299
R#1 34.31 (34.20)

Q 99.00>83.00 (-) 1.88e5



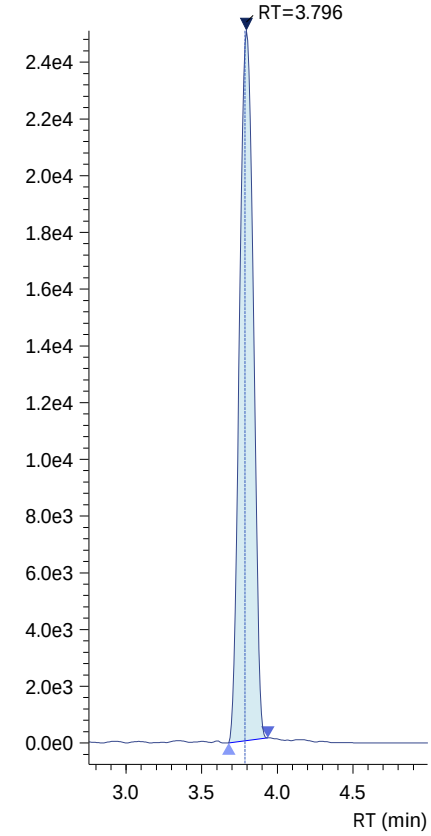
R1 101.00>85.00 (-) A=357160 6.44e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=159903 2.51e4



Insight Report

Printed at 10/24/2022 11:16:28 AM

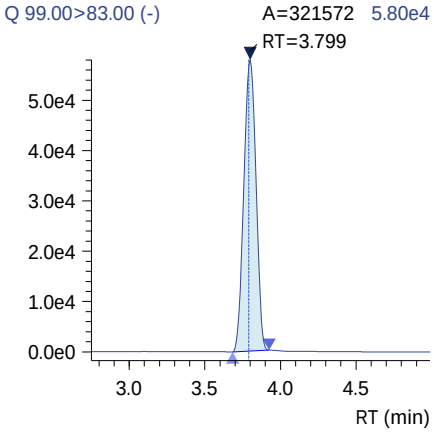
PERCHLORATEICV

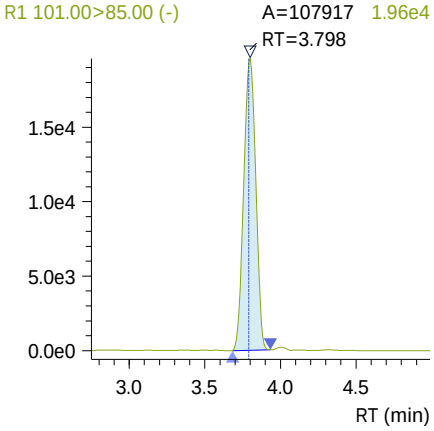
Sample ID: PERCHLORATEICV
Date Acquired: 10/13/2022 12:17:49 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_026.lcd
Vial: 48 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.799	321572	218649	10.9 180	ng/mL	101.00 >85.00	33.56	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.797	218649	218649	1.0000	ng/mL	----	----	

Perchlorate

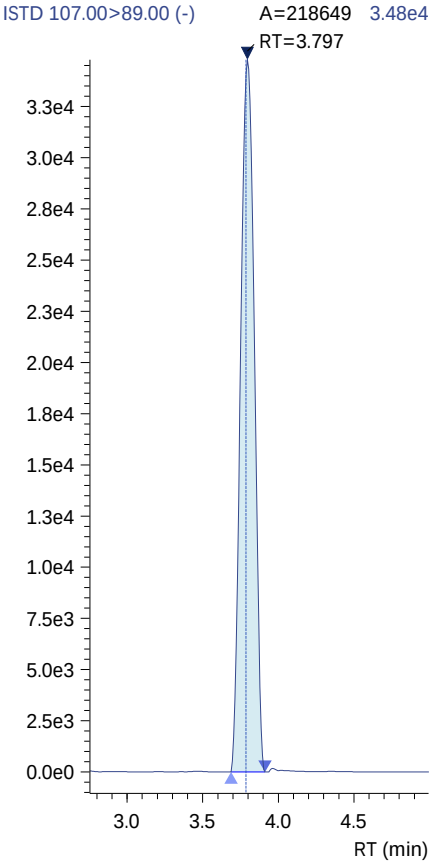
Conc 10.9180
R#1 33.56 (34.20)





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

20221115

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: Kneir

ICAL Date: 10/13/2022
Cal. Std. xp 01/31/2023
ICAL ID: EC2200014

Mobile Phases : **A:**0.10% Formic Acid/Water 3210301-05 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	IB		20221115_001	Perchlorate6850c.lcm	1x	☒		11/15/2022 10:01
2	LODV		20221115_002	Perchlorate6850c.lcm	1x	☒	DNU IS	11/15/2022 10:09
3	ICS		20221115_003	Perchlorate6850c.lcm	1x	☒		11/15/2022 10:17
4	LODV		20221115_004	Perchlorate6850c.lcm	1x	☒	225199	11/15/2022 10:25
5	CCV		20221115_005	Perchlorate6850c.lcm	1x	☒	225881	11/15/2022 10:34
6	IB		20221115_006	Perchlorate6850c.lcm	1x	☒		11/15/2022 10:42
7	EQ2200523-01		20221115_007	Perchlorate6850c.lcm	1x	☒	DNU IR	11/15/2022 10:50
8	EQ2200523-02		20221115_008	Perchlorate6850c.lcm	1x	☒	DNU IR	11/15/2022 10:58
9	EQ2200523-03		20221115_009	Perchlorate6850c.lcm	1x	☒		11/15/2022 11:06
10	EQ2200523-01		20221115_010	Perchlorate6850c.lcm	1x	☒		11/15/2022 12:09
11	EQ2200523-02		20221115_011	Perchlorate6850c.lcm	1x	☒		11/15/2022 12:58
12	IB		20221115_012	Perchlorate6850c.lcm	1x	☒		11/15/2022 13:07
13	E2201095-001		20221115_013	Perchlorate6850c.lcm	1x	☒		11/15/2022 13:15
14	E2201095-002		20221115_014	Perchlorate6850c.lcm	1x	☒		11/15/2022 13:23
15	CCV		20221115_015	Perchlorate6850c.lcm	1x	☒	225881	11/15/2022 13:31
16	EQ2200523-04		20221115_016	Perchlorate6850c.lcm	1x	☒		11/15/2022 13:39
17	EQ2200523-05		20221115_017	Perchlorate6850c.lcm	1x	☒		11/15/2022 13:48
18	E2201101-001		20221115_018	Perchlorate6850c.lcm	1x	☒	DNU IS	11/15/2022 13:56
19	E2201101-002		20221115_019	Perchlorate6850c.lcm	1x	☒		11/15/2022 14:04
20	E2201101-003		20221115_020	Perchlorate6850c.lcm	1x	☒		11/15/2022 14:20
21	E2201101-004		20221115_021	Perchlorate6850c.lcm	1x	☒		11/15/2022 14:28
22	E2201101-005		20221115_022	Perchlorate6850c.lcm	1x	☒	X1000	11/15/2022 14:36
23	E2201101-006		20221115_023	Perchlorate6850c.lcm	1x	☒	X5000	11/15/2022 14:44
24	CCV		20221115_024	Perchlorate6850c.lcm	1x	☒	225881	11/15/2022 15:01
25	E2201101-001		20221115_025	Perchlorate6850c.lcm	1x	☒		11/15/2022 15:33
26	CCV		20221115_026	Perchlorate6850c.lcm	1x	☒	225881	11/15/2022 15:42

Insight Report

Printed at 11/15/2022 4:22:58 PM

Method File: I:\LCMS01\DATA\20221115\20221013ICAL.lcm
Project File: I:\LCMS01\DATA\20221115\11152022.damlp

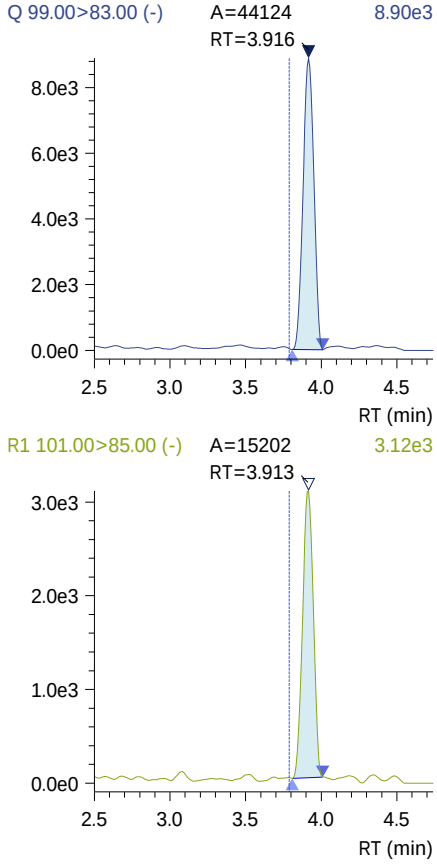
ICS

Sample ID: ICS
Date Acquired: 11/15/2022 10:17:45 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_003.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.916	44124	296672	1.1041	ng/mL	101.00 >85.00	34.45	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.913	296672	296672	1.0000	ng/mL	----	----	

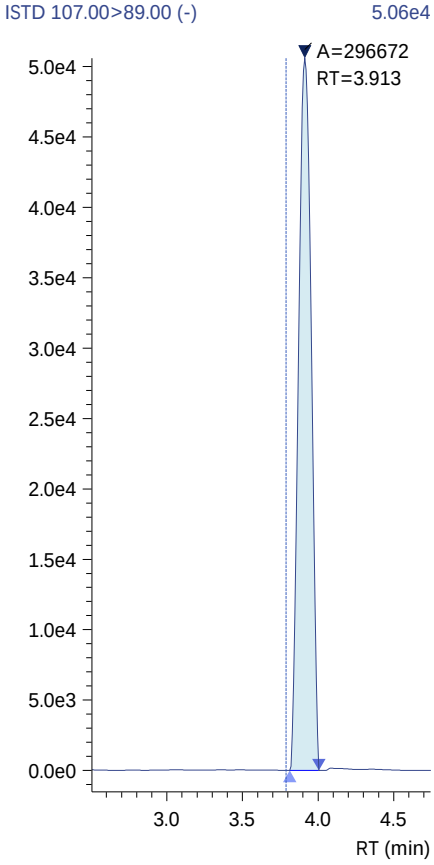
Perchlorate

Conc 1.1041
R#1 34.45 (32.82)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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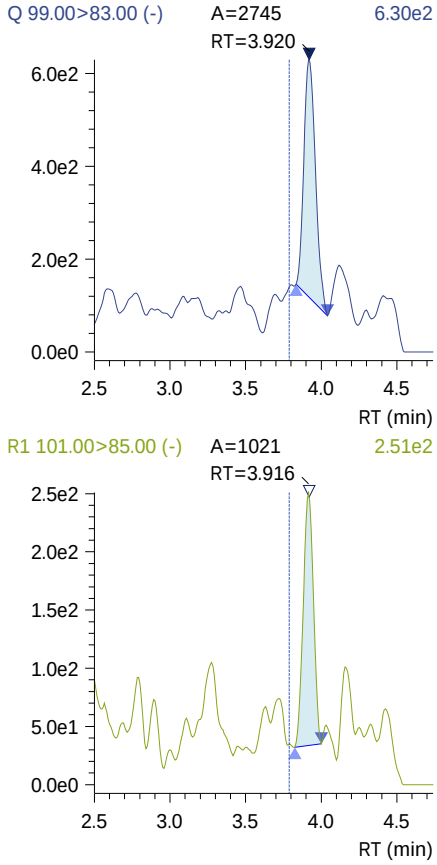
LODV

Sample ID: LODV
Date Acquired: 11/15/2022 10:25:53 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_004.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.920	2745	320081	0.0637	ng/mL	101.00 >85.00	37.20	22.97 -42.67
Sodium Perchlorate-18O4 _IS	Auto	3.916	3200 81	320081	1.0000	ng/mL	----	----	

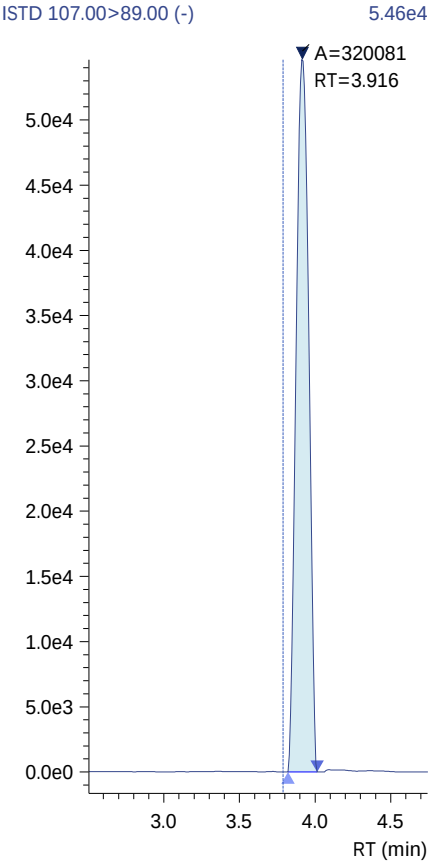
Perchlorate

Conc 0.0637
R#1 37.20 (32.82)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 11/15/2022 4:22:58 PM

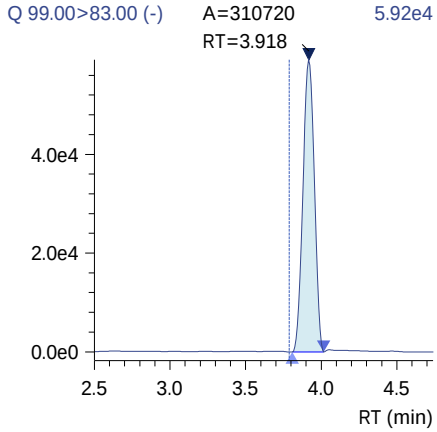
CCV

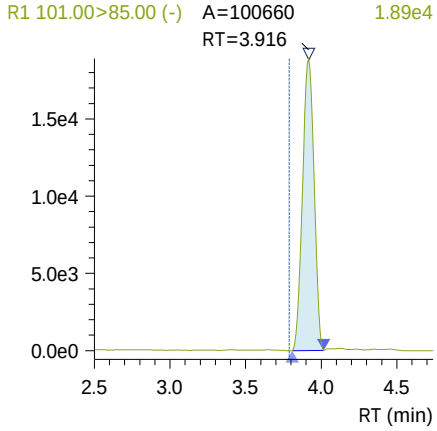
Sample ID: CCV
Date Acquired: 11/15/2022 10:34:00 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_005.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.918	3107 20	204425	11.2 836	ng/mL	101.00 >85.00	32.40	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.914	2044 25	204425	1.0000	ng/mL	----	----	

Perchlorate

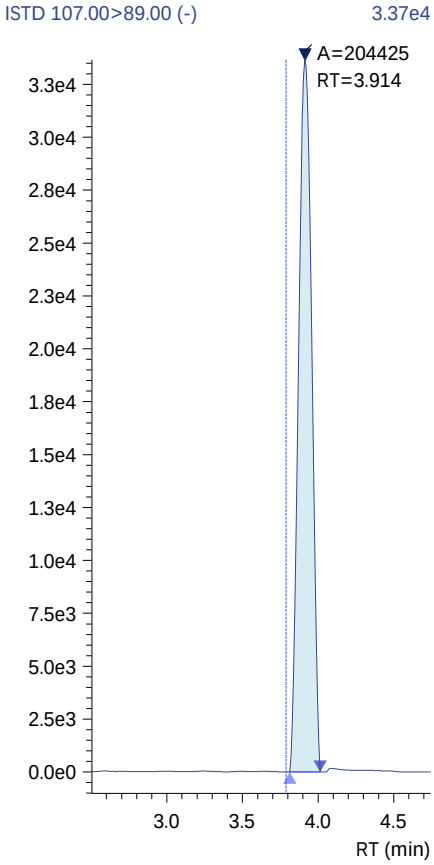
Conc 11.2836
R#1 32.40 (32.82)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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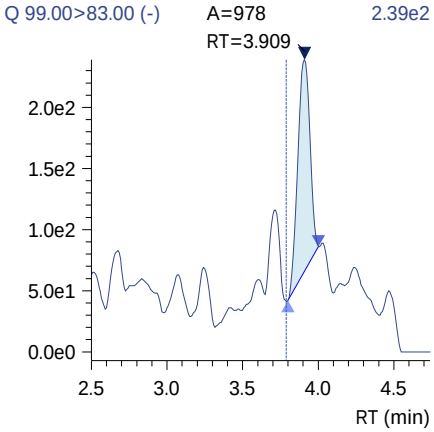
EQ2200523-01

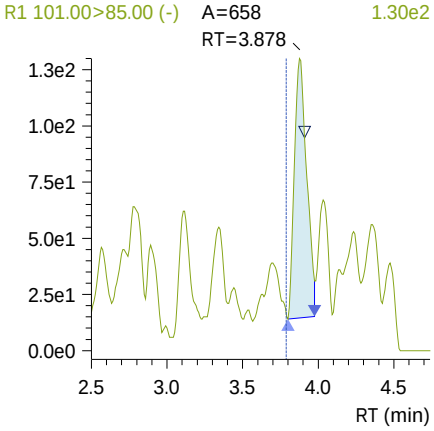
Sample ID: EQ2200523-01
Date Acquired: 11/15/2022 12:09:44 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_010.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.909	978	316153	0.0230	ng/mL	101.00 >85.00	67.28	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.915	316153	316153	1.0000	ng/mL	----	----	

Perchlorate

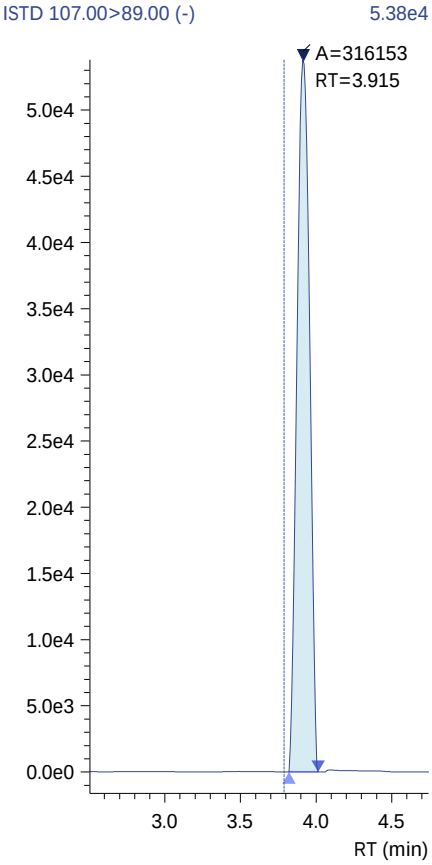
Conc 0.0230
R#1 67.28 (32.82)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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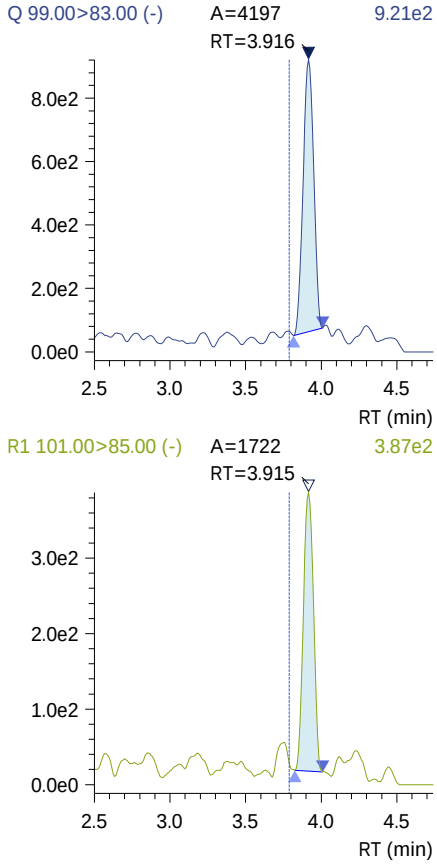
EQ2200523-02

Sample ID: EQ2200523-02
Date Acquired: 11/15/2022 12:58:47 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_011.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.916	4197	275904	0.1129	ng/mL	101.00 >85.00	41.03	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.916	275904	275904	1.0000	ng/mL	----	----	

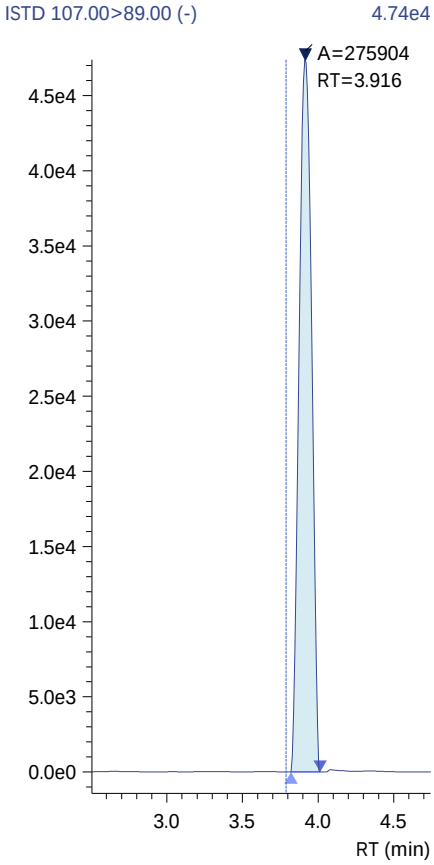
Perchlorate

Conc 0.1129
R#1 41.03 (32.82)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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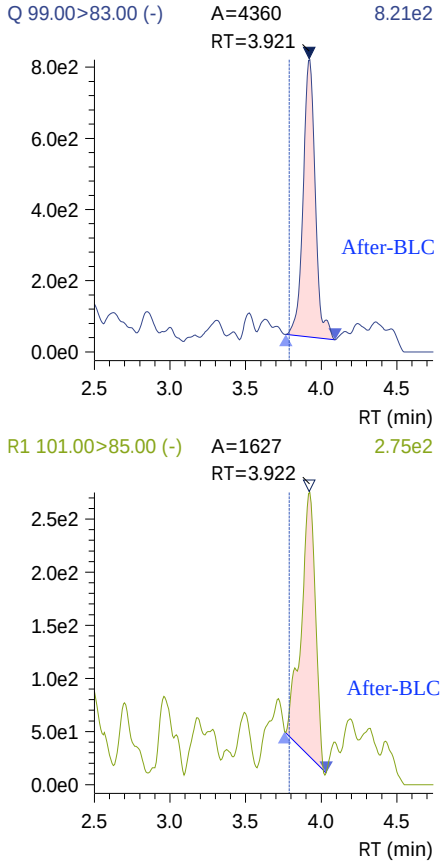
EQ2200523-03

Sample ID: EQ2200523-03
Date Acquired: 11/15/2022 11:06:44 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_009.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.921	4360	302652	0.1069	ng/mL	101.00 >85.00	37.32	22.97 -42.67
Sodium Perchlorate-18O4 _IS	Auto	3.915	3026 52	302652	1.0000	ng/mL	----	----	

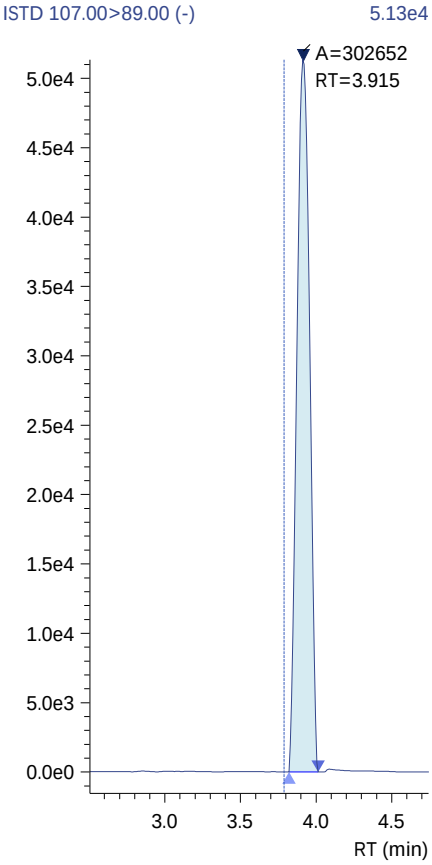
Perchlorate

Conc 0.1069
R#1 37.32 (32.82)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 11/15/2022 4:24:53 PM

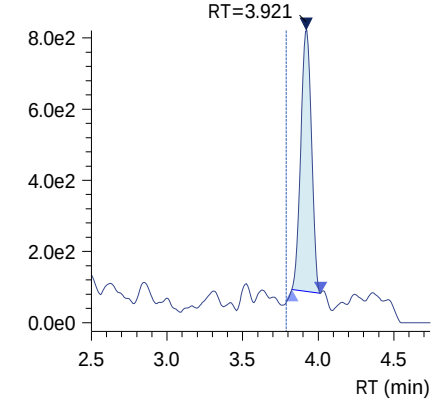
EQ2200523-03

Sample ID: EQ2200523-03
Date Acquired: 11/15/2022 11:06:44 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_009.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 2

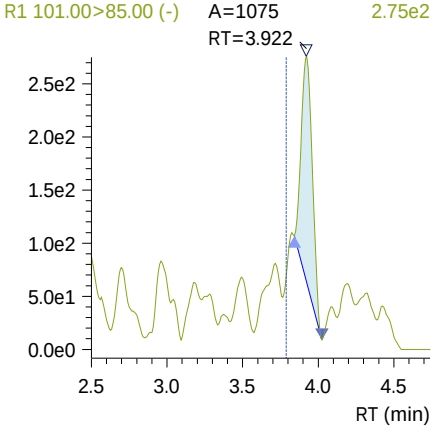
Perchlorate

Conc 0.0892
R#1 29.57 (32.82)

Q 99.00>83.00 (-) A=3634 8.21e2



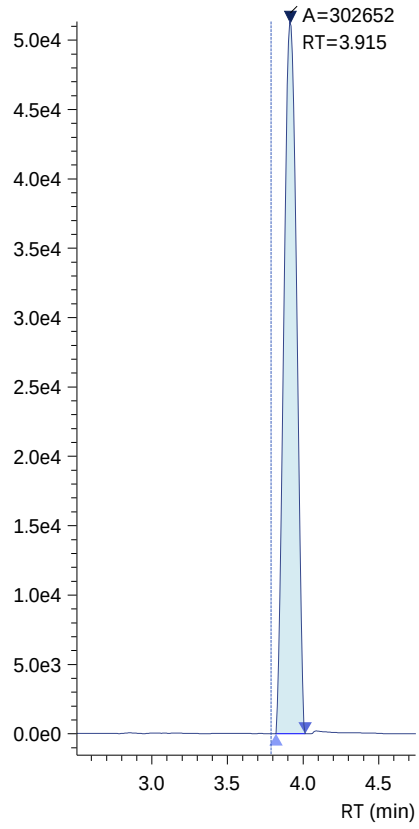
R1 101.00>85.00 (-) A=1075 2.75e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 5.13e4



Insight Report

Printed at 11/15/2022 4:22:58 PM

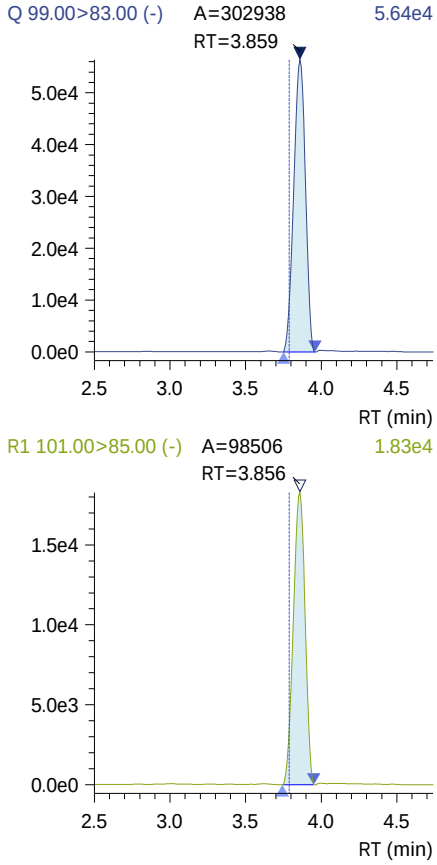
CCV

Sample ID: CCV
Date Acquired: 11/15/2022 1:31:49 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_015.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.859	3029 38	200145	11.2 363	ng/mL	101.00 >85.00	32.52	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.854	2001 45	200145	1.0000	ng/mL	----	----	

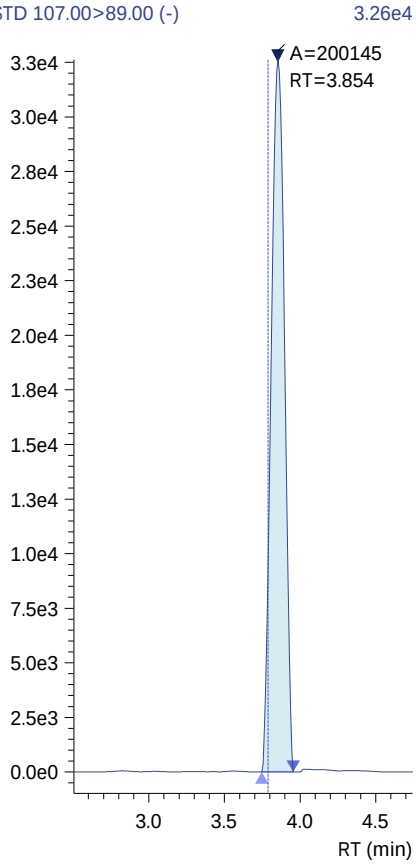
Perchlorate

Conc 11.2363
R#1 32.52 (32.82)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 11/15/2022 4:22:58 PM

EQ2200523-04

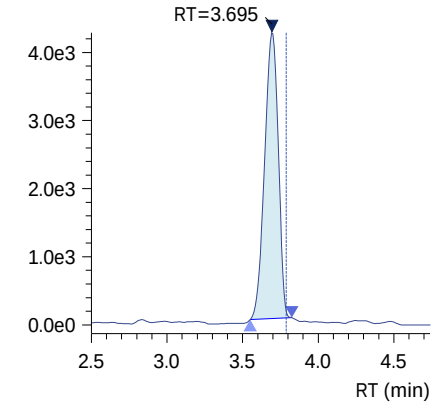
Sample ID: EQ2200523-04
Date Acquired: 11/15/2022 1:39:56 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_016.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.695	26336	340411	0.5743	ng/mL	101.00 >85.00	33.24	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.689	340411	340411	1.0000	ng/mL	----	----	

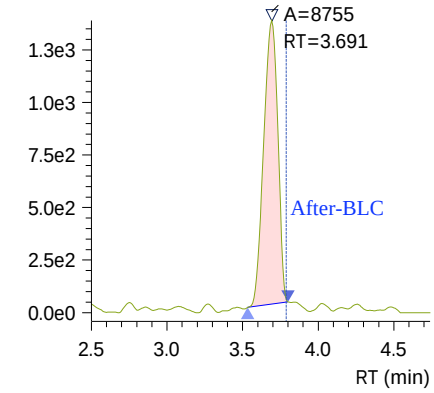
Perchlorate

Conc 0.5743
R#1 33.24 (32.82)

Q 99.00>83.00 (-) A=26336 4.29e3



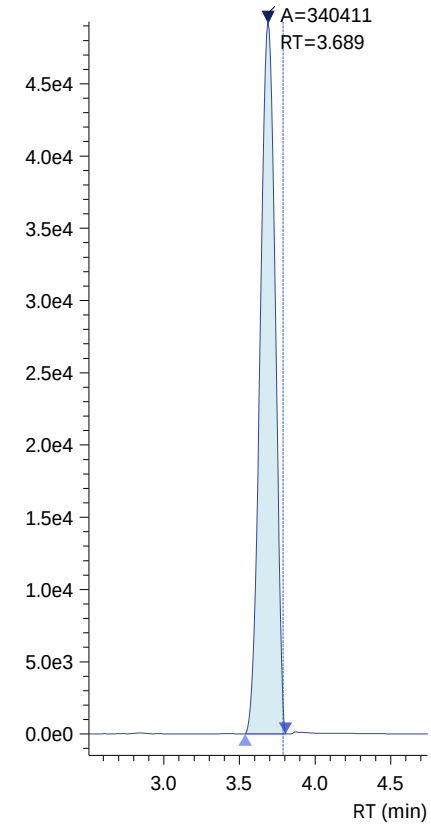
R1 101.00>85.00 (-) 1.39e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.93e4



Insight Report

Printed at 11/15/2022 4:24:53 PM

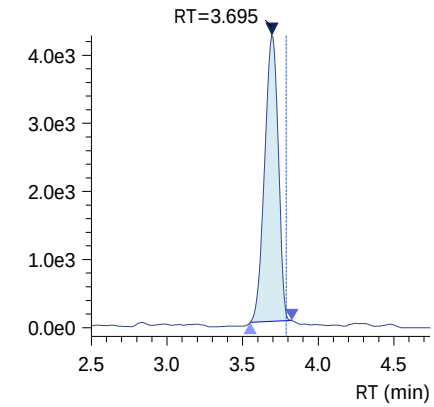
EQ2200523-04

Sample ID: EQ2200523-04
Date Acquired: 11/15/2022 1:39:56 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_016.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 2

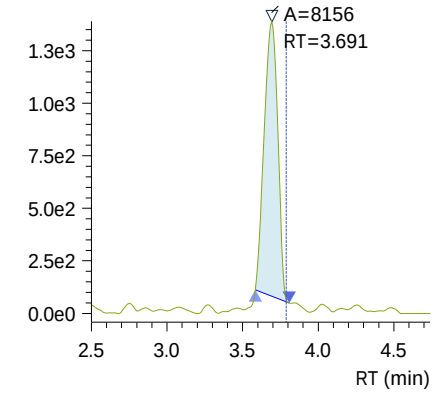
Perchlorate

Conc 0.5749
R#1 30.97 (32.82)

Q 99.00>83.00 (-) A=26336 4.29e3



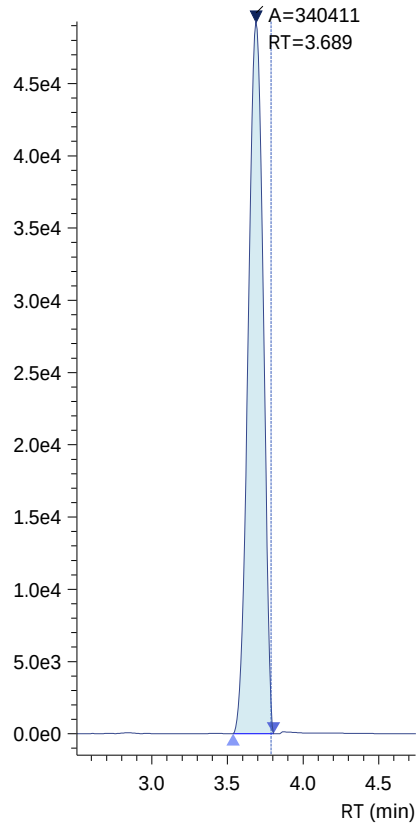
R1 101.00>85.00 (-) 1.39e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.93e4



Insight Report

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EQ2200523-05

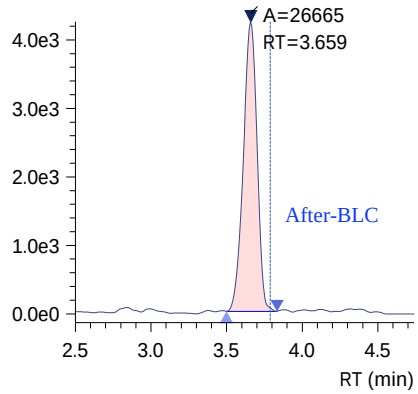
Sample ID: EQ2200523-05
Date Acquired: 11/15/2022 1:48:03 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_017.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.659	26665	352103	0.5622	ng/mL	101.00 >85.00	31.61	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.653	352103	352103	1.0000	ng/mL	----	----	

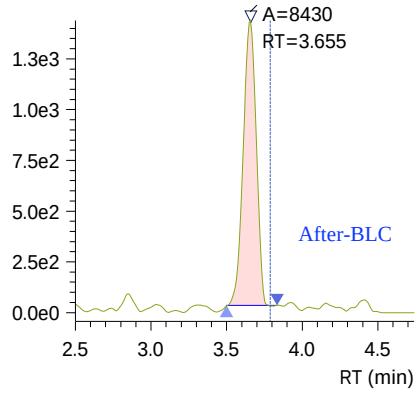
Perchlorate

Conc 0.5622
R#1 31.61 (32.82)

Q 99.00>83.00 (-) 4.27e3



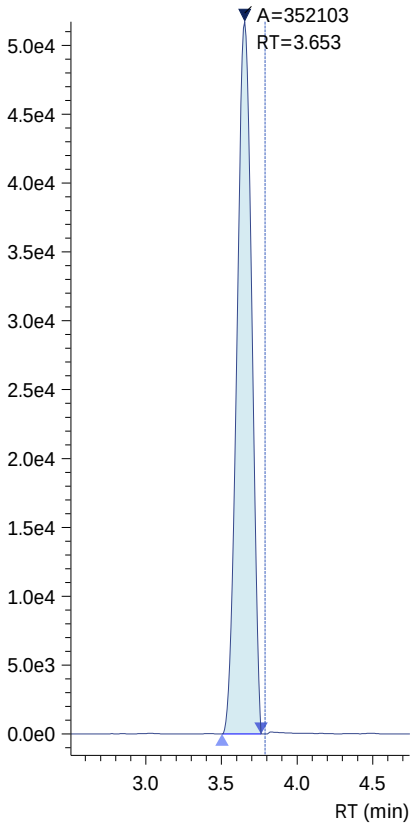
R1 101.00>85.00 (-) 1.44e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 5.17e4



Insight Report

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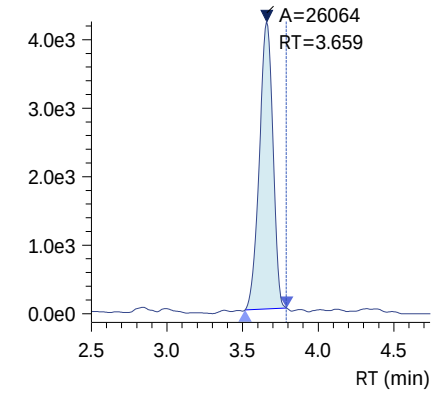
EQ2200523-05

Sample ID: EQ2200523-05
Date Acquired: 11/15/2022 1:48:03 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_017.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 2

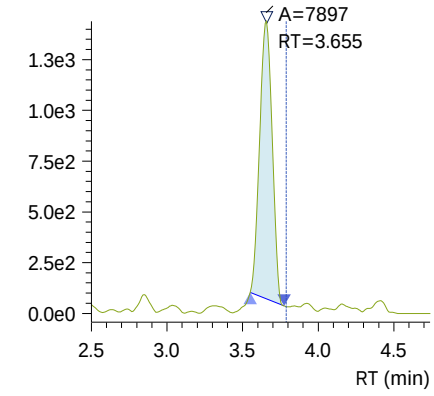
Perchlorate

Conc 0.5501
R#1 30.30 (32.82)

Q 99.00>83.00 (-) 4.27e3



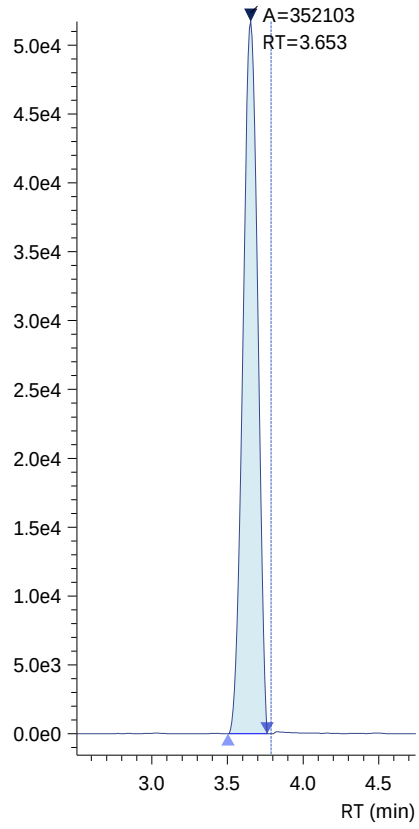
R1 101.00>85.00 (-) 1.44e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 5.17e4



Insight Report

Printed at 11/15/2022 4:22:58 PM

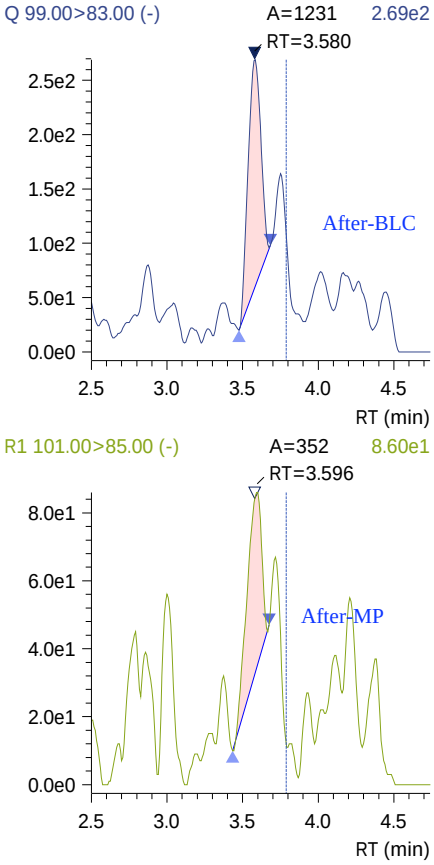
E2201101-002

Sample ID: E2201101-002
Date Acquired: 11/15/2022 2:04:21 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_019.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.580	1231	337694	0.0271	ng/mL	101.00 >85.00	28.61	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.586	337694	337694	1.0000	ng/mL	----	----	

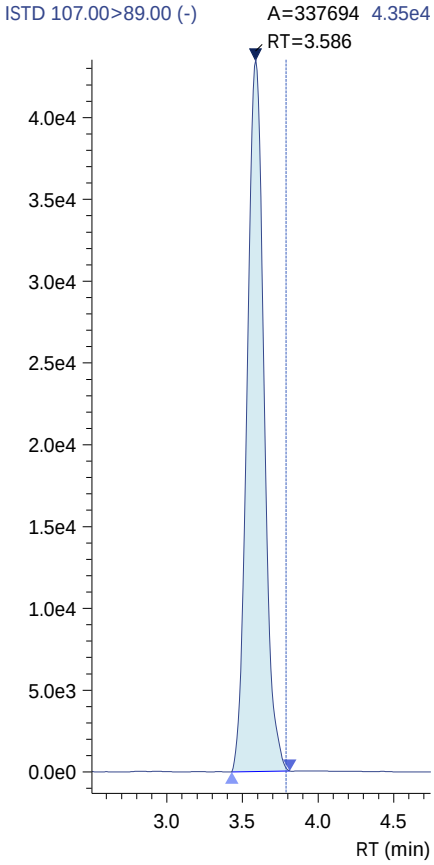
Perchlorate

Conc 0.0271
R#1 28.61 (32.82)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 11/15/2022 4:24:53 PM

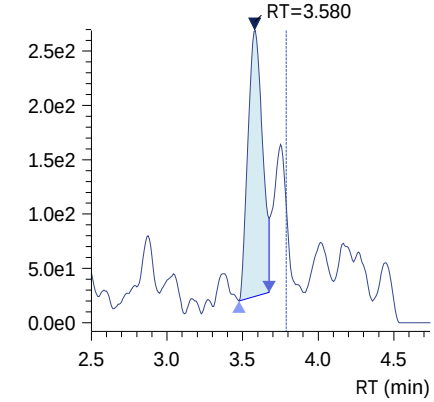
E2201101-002

Sample ID: E2201101-002
Date Acquired: 11/15/2022 2:04:21 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_019.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 2

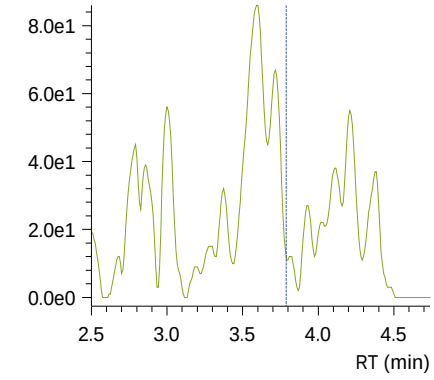
Perchlorate

Conc 0.0359
R#1 0.00 (32.82)

Q 99.00>83.00 (-) A=1632 2.69e2 RT=3.580



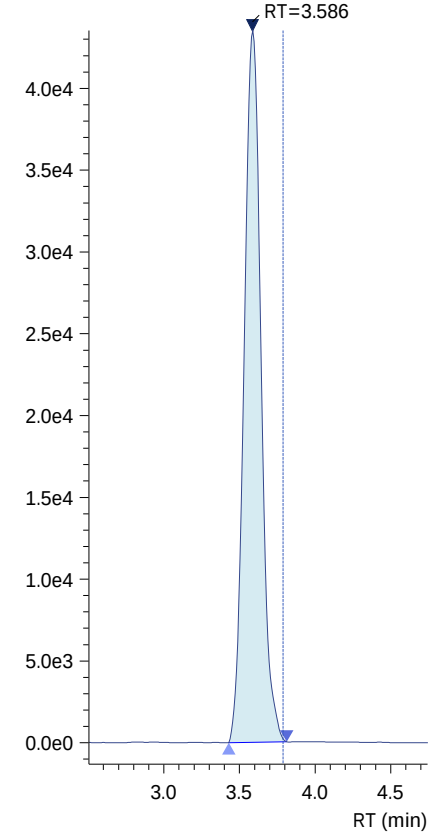
R1 101.00>85.00 (-) 8.60e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=337694 4.35e4 RT=3.586



Insight Report

Printed at 11/15/2022 4:22:58 PM

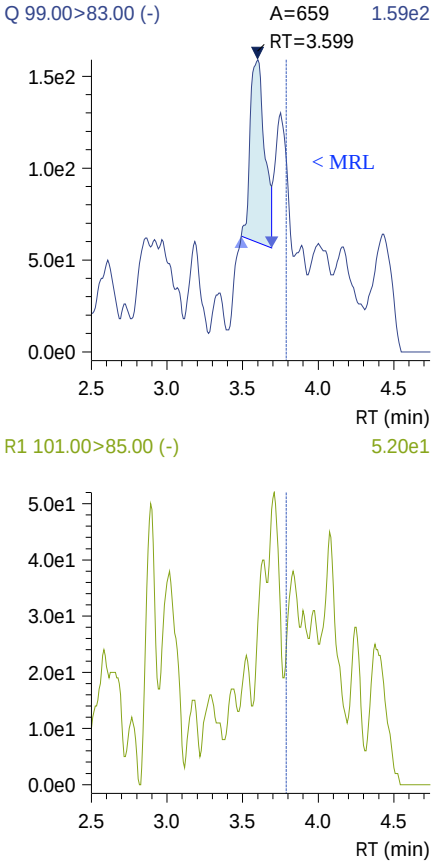
E2201101-003

Sample ID: E2201101-003
Date Acquired: 11/15/2022 2:20:35 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_020.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.599	659	334714	0.0146	ng/mL	101.00 >85.00	0.00	22.97 -42.67
Sodium Perchlorate-18O4 _IS	Auto	3.578	3347 14	334714	1.0000	ng/mL	----	----	

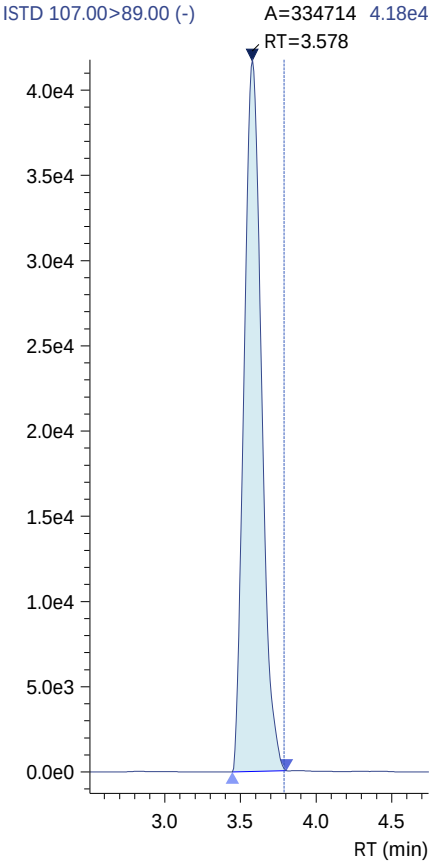
Perchlorate

Conc 0.0146
R#1 0.00 (32.82)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 11/15/2022 4:24:53 PM

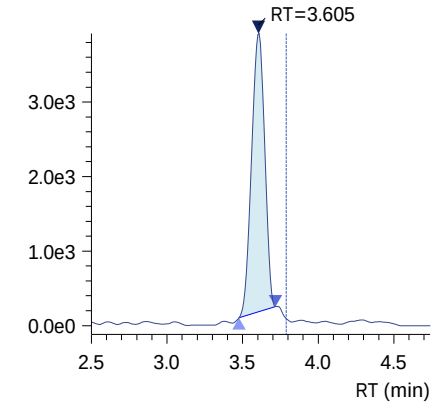
E2201101-004

Sample ID: E2201101-004
Date Acquired: 11/15/2022 2:28:42 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_021.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 2

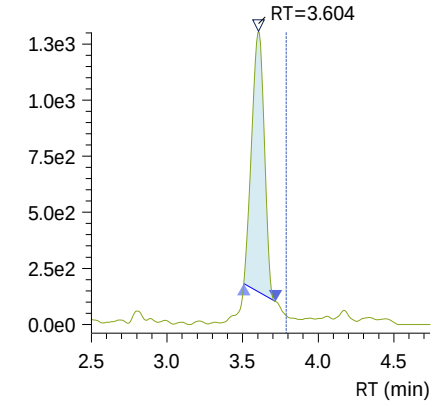
Perchlorate

Conc 0.4859
R#1 29.83 (32.82)

Q 99.00>83.00 (-) A=22670 3.92e3



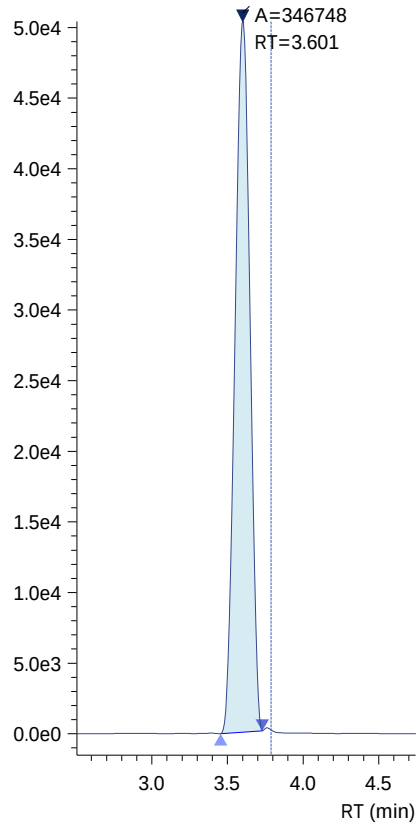
R1 101.00>85.00 (-) A=6763 1.30e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 5.04e4



Insight Report

Printed at 11/16/2022 10:22:01 AM

Method File: I:\LCMS01\DATA\20221115\20221013ICAL.lcm
Project File: I:\LCMS01\DATA\20221115\11152022.damlp

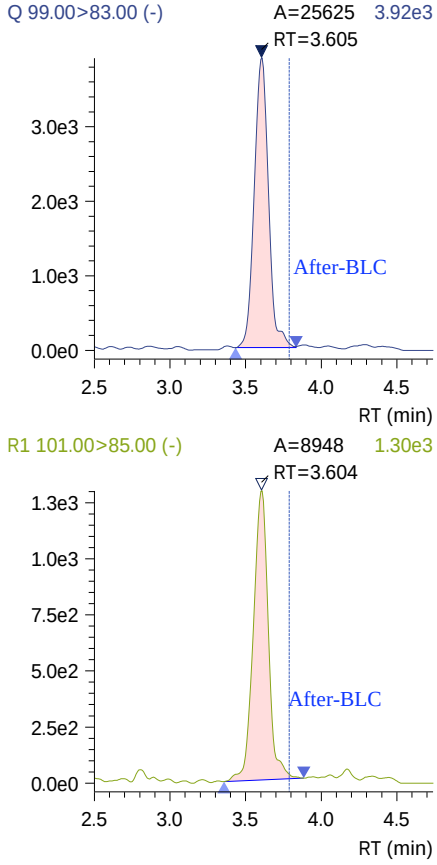
E2201101-004

Sample ID: E2201101-004
Date Acquired: 11/15/2022 2:28:42 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_021.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.605	25625	346748	0.5486	ng/mL	101.00 >85.00	34.92	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.601	346748	346748	1.0000	ng/mL	----	----	

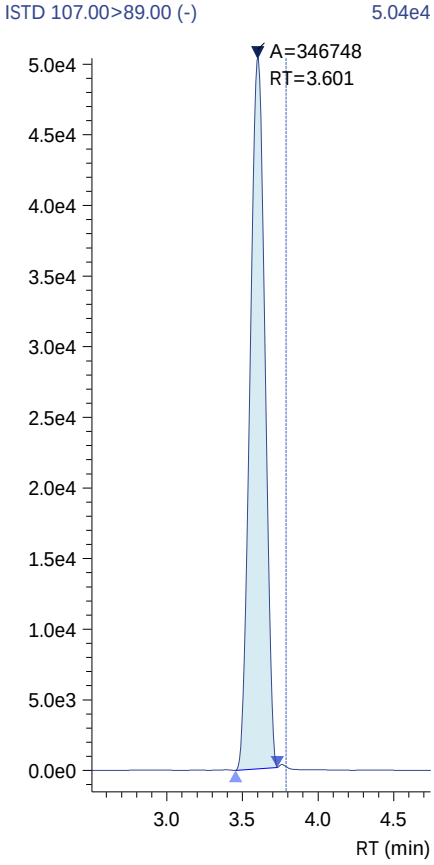
Perchlorate

Conc 0.5486
R#1 34.92 (32.82)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 11/15/2022 4:22:58 PM

E2201101-005x1k

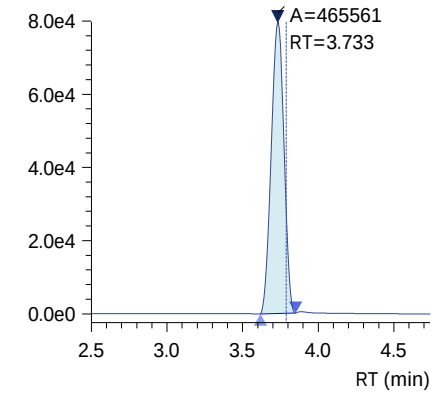
Sample ID: E2201101-005
Date Acquired: 11/15/2022 2:36:52 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_022.lcd
Vial: 12 | Inj. Volume: 25.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.733	4655 61	200593	17.2 296	ng/mL	101.00 >85.00	33.42	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.729	2005 93	200593	1.0000	ng/mL	----	----	

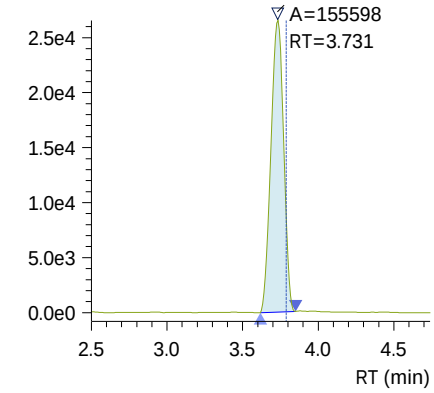
Perchlorate

Conc 17.2296
R#1 33.42 (32.82)

Q 99.00>83.00 (-) 7.98e4



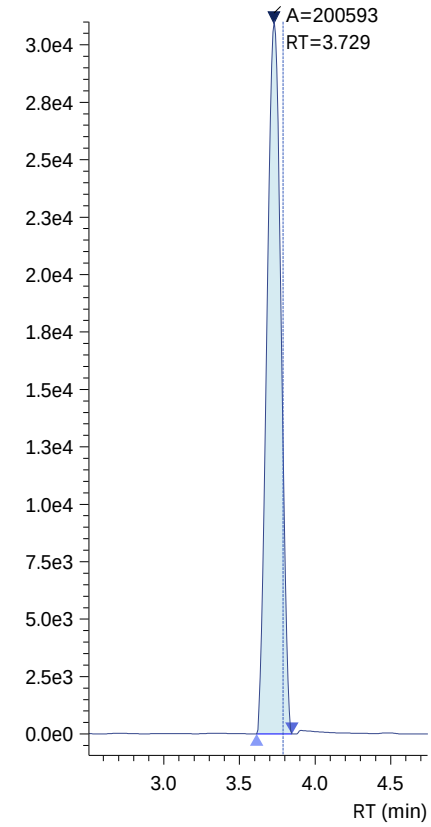
R1 101.00>85.00 (-) 2.66e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 3.10e4



Insight Report

Printed at 11/15/2022 4:22:58 PM

E2201101-006x5k

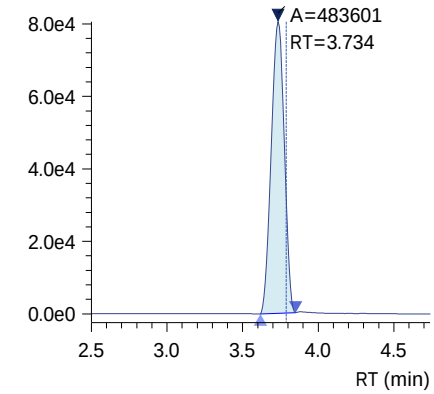
Sample ID: E2201101-006
Date Acquired: 11/15/2022 2:44:59 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_023.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.734	483601	199735	17.9741	ng/mL	101.00 >85.00	33.33	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.730	199735	199735	1.0000	ng/mL	----	----	

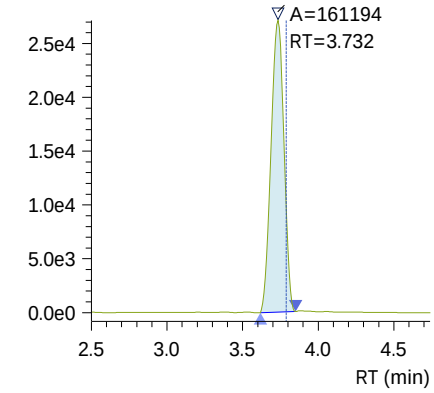
Perchlorate

Conc 17.9741
R#1 33.33 (32.82)

Q 99.00>83.00 (-) 8.06e4



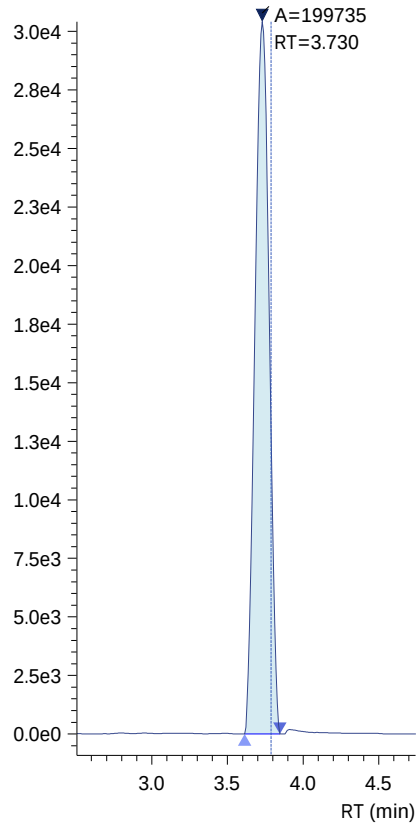
R1 101.00>85.00 (-) 2.71e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 3.04e4



Insight Report

Printed at 11/15/2022 4:22:58 PM

CCV

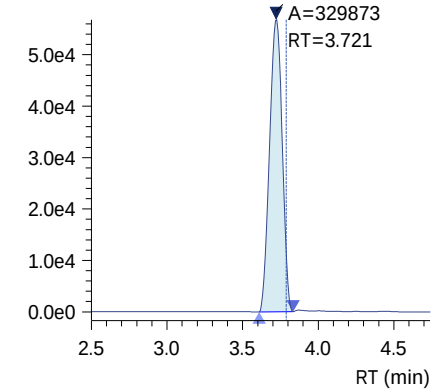
Sample ID: CCV
Date Acquired: 11/15/2022 3:01:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_024.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.721	3298 73	219823	11.1 401	ng/mL	101.00 >85.00	33.28	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.717	2198 23	219823	1.0000	ng/mL	----	----	

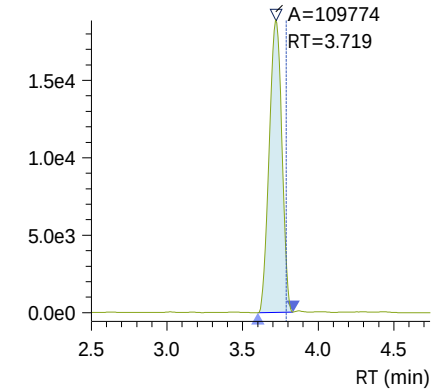
Perchlorate

Conc 11.1401
R#1 33.28 (32.82)

Q 99.00>83.00 (-) 5.68e4



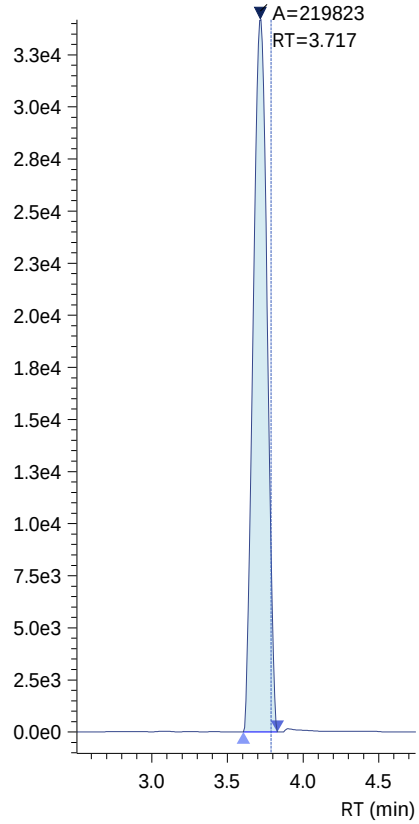
R1 101.00>85.00 (-) 1.89e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 3.42e4



Insight Report

Printed at 11/15/2022 4:22:58 PM

E2201101-001

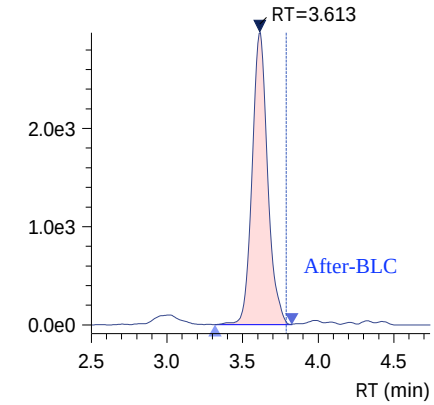
Sample ID: E2201101-001
Date Acquired: 11/15/2022 3:33:52 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_025.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.613	21385	343123	0.4627	ng/mL	101.00 >85.00	34.22	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.610	343123	343123	1.0000	ng/mL	----	----	

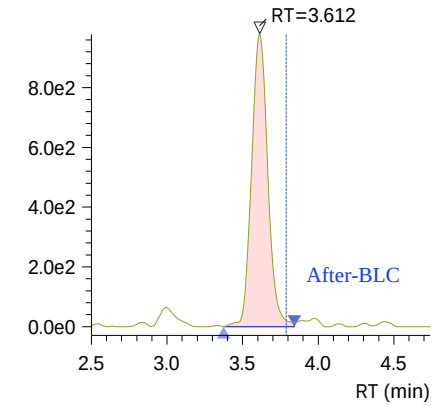
Perchlorate

Conc 0.4627
R#1 34.22 (32.82)

Q 99.00>83.00 (-) A=21385 2.98e3



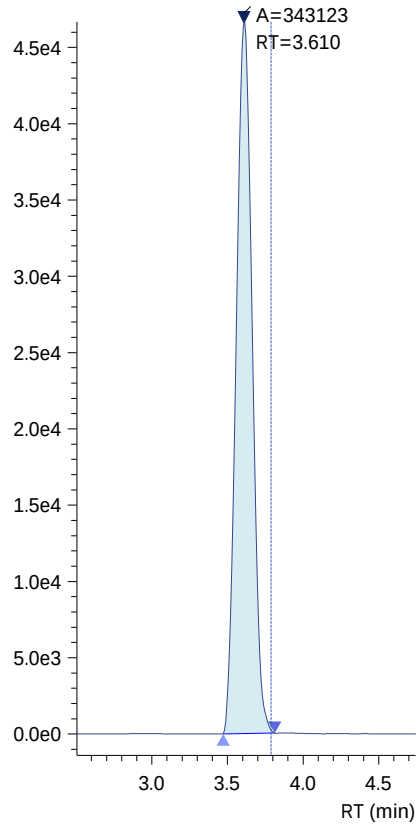
R1 101.00>85.00 (-) A=7319 9.78e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.67e4



Insight Report

Printed at 11/15/2022 4:24:53 PM

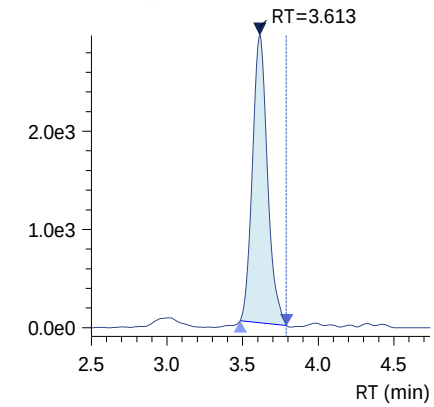
E2201101-001

Sample ID: E2201101-001
Date Acquired: 11/15/2022 3:33:52 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_025.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 2

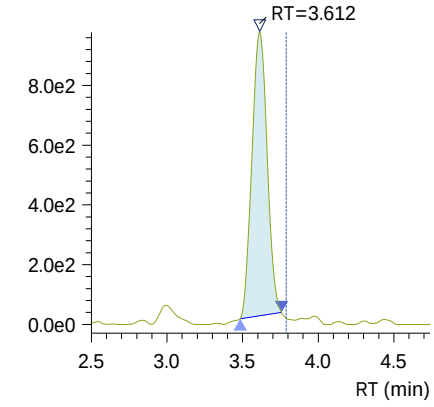
Perchlorate

Conc 0.4400
R#1 32.82 (32.82)

Q 99.00>83.00 (-) A=20315 2.98e3



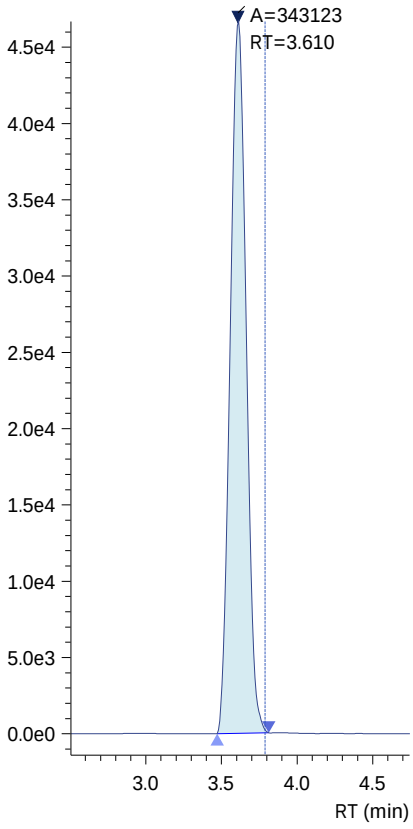
R1 101.00>85.00 (-) A=6667 9.78e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.67e4



Insight Report

Printed at 11/15/2022 4:22:58 PM

CCV

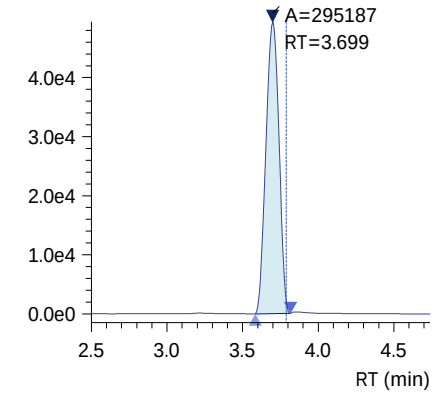
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Date Acquired: 11/15/2022 3:42:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221115\20221115_026.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.699	2951 87	191677	11.4 325	ng/mL	101.00 >85.00	33.08	22.97 -42.67
Sodium Perchlorate-18O4_IS	Auto	3.694	1916 77	191677	1.0000	ng/mL	----	----	

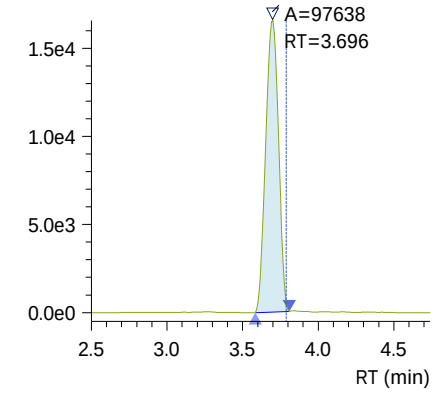
Perchlorate

Conc 11.4325
R#1 33.08 (32.82)

Q 99.00>83.00 (-) 4.95e4



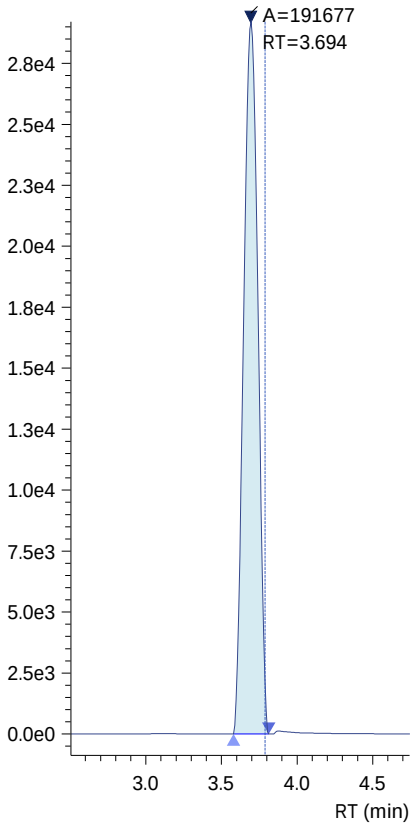
R1 101.00>85.00 (-) 1.66e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.92e4



January 31, 2023 Service Request No:E2300067

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Suite 129
Lakewood, CO 80228

Laboratory Results for: LHAAP / Site 17

Dear Marcia,

Enclosed are the results of the sample(s) submitted to our laboratory January 18, 2023
For your reference, these analyses have been assigned our service request number **E2300067.**

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.

Please contact me if you have any questions. My extension is 2188. You may also contact me via email at James.Guin@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

James Guin

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:	Bhate Environmental Associates	**Service Request No.:**	E2300067
Project:	LHAAP / Site 17	**Date Received:**	01/18/23
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

Six samples were received for analysis at ALS Environmental in Houston on 01/18/23.

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:

EQ2300067: 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 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: Bhate Environmental Associates, Inc. **Service Request:**E2300067
Project: LHAAP / Site 17

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2300067-001	130_011723	1/17/2023	0815
E2300067-002	17WW03_011723	1/17/2023	0855
E2300067-003	17WW03_011723_a	1/17/2023	0855
E2300067-004	17WW01_011723	1/17/2023	0935
E2300067-005	17WW02_011723	1/17/2023	0945
E2300067-006	17WW06_011723	1/17/2023	0950

Service Request Summary

Folder #: **E2300067**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP / Site 17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 01/18/23
Internal Due Date: 2/1/2023
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2300067-001	130_011723	Water	01/17/23 0815	**IV**
E2300067-002	17WW03_011723	Water	01/17/23 0855	**IV**
E2300067-003	17WW03_011723_a	Water	01/17/23 0855	**IV**
E2300067-004	17WW01_011723	Water	01/17/23 0935	**IV**
E2300067-005	17WW02_011723	Water	01/17/23 0945	**IV**
E2300067-006	17WW06_011723	Water	01/17/23 0950	**IV**

Service Request Summary

Folder #: **E2300067**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP / Site 17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 01/18/23
Internal Due Date: 2/1/2023
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

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	LA028-2023	12/31/2023
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	2368363	12/31/2023
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
Utah Department of Health Environmental Laboratory Certification	TX026932022-13	7/31/2023
Washington Department of Ecology	C819-22	11/14/2023

Chain of Custody

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bhate ENVIRONMENTAL CONSTRUCTION BY ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: of

Project/Phase No: MSC2020.0016.0002.0022

COC Number(1):

LIMS Number:

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 17

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	PERCHLORATE	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
130_011723	17 JAN 2023	0815	-	N		wg	1	X				
17ww03_011723	17JAN2023	0855	-	N		wg	1	X				
17ww03_011723_a	17 JAN 2023	0855	-	FD		wg	1	X				
17ww01_011723	17JAN2023	0935		N		wg	1	X				
17ww01_011723_ms	17JAN2023	0935		MS		wg	1	X				
17ww01_011723_msD	17JAN2023	0935	-	SD		wg	1	X				
17ww02_011723	17JAN2023	0945	-	N		wg	1	X				
17ww06_011723	17JAN2023	0950	-	N		wg	1	X				
			-									
			-									
			-									

Sample Analysis Requested (5) | Quality Assurance Samples (6)

COMMENTS: Standard TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	1/17/23	1430	1.	01182023	0915
2.			2.		1231
3.			3.		1.9 wr
			48581		-0.5c

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Shipped No.:

Method of Shipment:

Fed Ex Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dane Wacasey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

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Houston, TX 77099
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Client: h hope Date: 1/18/23 WO#:

Time Received: 0915 Received by: MB BO#: 88113

Matrices: Solid/Sludge (Water) Oil Wipes Hydrocarbon Liquid Other

Kit ID/Cooler ID	Trip Blank ID	Cooler Temp (C) Observed/Corrected	IR #	Temp BLK Present?
48581	-	1.9 / 1.4	31	(Y) N
		/		Y N
		/		Y N
		/		Y N
		/		Y N

Delivery Method: (FedEx) UPS Greyhound ALS Client Other

Date/Time of Unpacking: 1/18/23 Unpacked by:

Shipping container/cooler in good condition?	(Yes)	No	Not Present
Custody seals intact on shipping container/cooler?	(Yes)	No	Not Present
Custody seals intact on sample bottles?	Yes	No	(Not Present)
Chain of Custody present?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of Custody - Sampler's name present?	(Yes)	No	
Chain of Custody agrees with sample labels?	(Yes)	No	
Samples in proper container/bottle?	(Yes)	No	
VOA/TX1005/1006 Solids in hermetically Sealed Vials:	Yes	No	(No VOA/TX1005/1006 Solid)
Sample containers intact?	(Yes)	No	
Sufficient sample volume for indicated test?	(Yes)	No	
All samples received within holding time?	(Yes)	No	
Container/Temp Blank temperature in compliance?	(Yes)	No	
Water - VOA vials have zero headspace?	Yes	No	(N/A) No VOA submitted
Non-VOA waters preserved with HCl, H2SO4, HNO3 are pH <2?			Yes No (N/A)
Waters preserved with NaOH/Ascorbic acid are pH>12?	Yes	No	(N/A)
pH adjusted?	Yes*	No	(N/A) *See Preservation Logbook

pH adjusted by: _____ pH Paper Lot: _____

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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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10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 413591 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 1/26/23 15:25

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2300067-001	130_011723	.01	6850/ClO4 DOD			Water	10mL	
2	E2300067-002	17WW03_011723	.01	6850/ClO4 DOD			Water	10mL	
3	E2300067-003	17WW03_011723_a	.01	6850/ClO4 DOD			Water	10mL	
4	E2300067-004	17WW01_011723	.01	6850/ClO4 DOD			Water	10mL	
5	E2300067-005	17WW02_011723	.01	6850/ClO4 DOD			Water	10mL	
6	E2300067-006	17WW06_011723	.01	6850/ClO4 DOD			Water	10mL	
7	E2300068-005	RSA-135H-OVB-02	.01	6850/ClO4 DOD			Water	10mL	
8	E2300068-006	RSA-135H-OVB-03	.01	6850/ClO4 DOD			Water	10mL	
9	E2300068-007	RSA-135H-OVB-04	.01	6850/ClO4 DOD			Water	10mL	
10	E2300068-008	RSA-135H-OVB-05	.01	6850/ClO4 DOD			Water	10mL	
11	E2300068-009	RSA-FB-02-230123	.01	6850/ClO4 DOD			Water	10mL	
12	E2300068-010	RSA-EB-02-230123	.01	6850/ClO4 DOD			Water	10mL	
13	E2300078-001	16WW38-230120	.01	6850/ClO4 DOD			Ground Water	10mL	
14	E2300078-002	16WW38-230120-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
15	E2300078-003	16WW37-230120	.01	6850/ClO4 DOD			Ground Water	10mL	
16	E2300078-004	16WW51-230120	.01	6850/ClO4 DOD			Ground Water	10mL	
17	E2300078-005	16RW12-230120	.01	6850/ClO4 DOD			Ground Water	10mL	
18	E2300078-006	16RW12-2301-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
19	E2300078-007	16WW22-230120	.01	6850/ClO4 DOD			Ground Water	10mL	
20	E2300078-008	16WW56-230120	.01	6850/ClO4 DOD			Ground Water	10mL	
21	EQ2300030-01	MB		6850/ClO4 DOD			Liquid	10mL	
22	EQ2300030-02	LCS		6850/ClO4 DOD			Liquid	10mL	
23	EQ2300030-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
24	EQ2300030-04	17WW01_011723 MS	.01	6850/ClO4 DOD			Liquid	10mL	
25	EQ2300030-05	17WW01_011723 DMS	.01	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 226778 Logbook Ref: Perchlorate Internal Standard Expires On: 05/31/2023

E2300068-005	100.00µL	E2300068-006	100.00µL	E2300068-007	100.00µL	E2300068-008	100.00µL	E2300068-009	100.00µL	E2300068-010	100.00µL
EQ2300030-01	100.00µL	EQ2300030-02	100.00µL	EQ2300030-03	100.00µL	EQ2300030-04	100.00µL	EQ2300030-05	100.00µL		

Name: Perchlorate Intermediate Stock1 Inventory ID 227236 Logbook Ref: Perchlorate (1st Source) Expires On: 07/31/2023

EQ2300030-02	1.00µL	EQ2300030-03	1.00µL	EQ2300030-04	1.00µL	EQ2300030-05	1.00µL

Preparation Information Benchsheet

Prep Run#: 413591 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 1/26/23 15:25

Preparation Materials

Water HPLC Grade	01/04/2023 Water (226857)	6850 Amber Glass screw vial	2mL Screw Top Vial (221894)	6850 0.45um syringe filters	6850 Syringe Filters (224414)
6850 Pipette Tips 50-1000 uL	6850 Pipette Tips (221929)	6850 Luer-Lok Syringes	Luer-Lok Syringes (221305)		

Preparation Steps

Step: Preparation
Started: 1/26/23 15:25
Finished: 1/27/23 16:11
By: XMI
Comments

Comments: _____

Reviewed By: XMI Date: 01/26/23

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Analytical Results

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ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Collected:**	1/17/23 0815
Sample Matrix:	Water	**Date Received:**	1/18/23
Sample Name:	130_011723	**Units:**	µg/L
Lab Code:	E2300067-001	**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	**0.633**		0.100	0.0500	0.0250	1	1/26/23	1/27/23 15:45	413591	792859	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Collected:**	1/17/23 0855
Sample Matrix:	Water	**Date Received:**	1/18/23
Sample Name:	17WW03_011723	**Units:**	µg/L
Lab Code:	E2300067-002	**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	**0.0417**	J	0.100	0.0500	0.0250	1	1/26/23	1/30/23 11:07	413591	792992	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Collected:**	1/17/23 0855
Sample Matrix:	Water	**Date Received:**	1/18/23
Sample Name:	17WW03_011723_a	**Units:**	µg/L
Lab Code:	E2300067-003	**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	**0.0304**	J	0.100	0.0500	0.0250	1	1/26/23	1/30/23 11:13	413591	792992	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Collected:**	1/17/23 0935
Sample Matrix:	Water	**Date Received:**	1/18/23
Sample Name:	17WW01_011723	**Units:**	µg/L
Lab Code:	E2300067-004	**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	ND	U	0.100	0.0500	0.0250	1	1/26/23	1/27/23 16:08	413591	792859	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Collected:**	1/17/23 0945
Sample Matrix:	Water	**Date Received:**	1/18/23
Sample Name:	17WW02_011723	**Units:**	µg/L
Lab Code:	E2300067-005	**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	**13600**		100	50.0	25.0	1000	1/26/23	1/30/23 11:23	413591	792992	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Collected:**	1/17/23 0950
Sample Matrix:	Water	**Date Received:**	1/18/23
Sample Name:	17WW06_011723	**Units:**	µg/L
Lab Code:	E2300067-006	**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	**87000**		500	250	125	5000	1/26/23	1/30/23 11:29	413591	792992	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2300030-01	**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	1/26/23	1/27/23 15:12	413591	792859	

Accuracy & Precision

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

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/27/23
Sample Matrix:	Water		

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Units:**	µg/L
Prep Method:	Method	**Basis:**	NA
		Extraction Lot:	413591

	Lab Control Sample EQ2300030-02			Duplicate Lab Control Sample EQ2300030-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.0853	0.100	85	0.0873	0.100	87	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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2300030-02	**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	**0.0853**	J	0.100	0.0500	0.0250	1	1/26/23	1/27/23 15:23	413591	792859	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2300030-03	**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	**0.0873**	J	0.100	0.0500	0.0250	1	1/26/23	1/27/23 15:37	413591	792859	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Collected:**	1/17/23
Sample Matrix:	Water	**Date Received:**	1/18/23
		Date Analyzed:	1/27/23

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	17WW01_011723	**Units:**	µg/L
Lab Code:	E2300067-004	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		17WW01_011723MS			17WW01_011723DMS					
		Matrix Spike			**Duplicate Matrix Spike**					
		EQ2300030-04			EQ2300030-05					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	ND	0.0885	0.100	89	0.0899	0.100	90	84 - 119	2	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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Collected:**	1/17/23 0935
Sample Matrix:	Water	**Date Received:**	1/18/23
Sample Name:	17WW01_011723	**Units:**	µg/L
Lab Code:	EQ2300030-04	**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	**0.0885**	J	0.100	0.0500	0.0250	1	1/26/23	1/27/23 16:14	413591	792859	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Collected:**	1/17/23 0935
Sample Matrix:	Water	**Date Received:**	1/18/23
Sample Name:	17WW01_011723	**Units:**	µg/L
Lab Code:	EQ2300030-05	**Basis:**	NA
Run Type:	Duplicate 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	**0.0899**	J	0.100	0.0500	0.0250	1	1/26/23	1/27/23 16:20	413591	792859	

Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
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20221214

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: Kneir

ICAL Date: 12/14/2022
Cal. Std. xp: 01/31/2023
ICAL ID: EC2200016

Mobile Phases : **A:**0.10% Formic Acid/Water 3210301-08 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	IB		20221214_001	Perchlorate6850c.lcm	1x	☒		12/14/2022 15:12
2	ICS		20221214_002	Perchlorate6850c.lcm	1x	☒		12/14/2022 15:29
3	LODV		20221214_003	Perchlorate6850c.lcm	1x	☒		12/14/2022 15:35
4	PERCHLORATE1		20221214_004	Perchlorate6850c.lcm	1x	☒	226061	12/14/2022 15:40
5	PERCHLORATE2		20221214_005	Perchlorate6850c.lcm	1x	☒	226062	12/14/2022 15:46
6	PERCHLORATE3		20221214_006	Perchlorate6850c.lcm	1x	☒	226063	12/14/2022 15:51
7	PERCHLORATE4		20221214_007	Perchlorate6850c.lcm	1x	☒	226064	12/14/2022 15:57
8	PERCHLORATE5		20221214_008	Perchlorate6850c.lcm	1x	☒	226065	12/14/2022 16:02
9	PERCHLORATE6		20221214_009	Perchlorate6850c.lcm	1x	☒	226066	12/14/2022 16:09
10	PERCHLORATE7		20221214_010	Perchlorate6850c.lcm	1x	☒	225881	12/14/2022 16:15
11	PERCHLORATE8		20221214_011	Perchlorate6850c.lcm	1x	☒	226068	12/14/2022 16:20
12	PERCHLORATE9		20221214_012	Perchlorate6850c.lcm	1x	☒	226069	12/14/2022 16:25
13	PERCHLORATE10		20221214_013	Perchlorate6850c.lcm	1x	☒	226070	12/14/2022 16:31
14	PERCHLORATEICV		20221214_014	Perchlorate6850c.lcm	1x	☒	226067	12/14/2022 16:37

Initial Calibration - Detailed Report

Calibration ID: EC2200016 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2200016-01	PERCHLORATE1	20221214_004	12/14/2022 15:40
02	EC2200016-02	PERCHLORATE2	20221214_005	12/14/2022 15:46
03	EC2200016-03	PERCHLORATE3	20221214_006	12/14/2022 15:51
04	EC2200016-04	PERCHLORATE4	20221214_007	12/14/2022 15:57
05	EC2200016-05	PERCHLORATE5	20221214_008	12/14/2022 16:02
06	EC2200016-06	PERCHLORATE6	20221214_009	12/14/2022 16:09
07	EC2200016-07	PERCHLORATE7	20221214_010	12/14/2022 16:15
08	EC2200016-08	PERCHLORATE8	20221214_011	12/14/2022 16:20
09	EC2200016-09	PERCHLORATE9	20221214_012	12/14/2022 16:25
10	EC2200016-10	PERCHLORATE10	20221214_013	12/14/2022 16:31

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 2.927** **Average RF = 0.1567**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1615	02	0.5000	0.1479	03	0.7000	0.1579	04	1.0000	0.1573
05	2.0000	0.1505	06	5.0000	0.1573	07	10.0000	0.1541	08	20.0000	0.162
09	30.0000	0.1598	10	50.0000	0.1587						

Analyte

Perchlorate RSE = 2.93

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.103	3.1	02	0.5000	0.472	-5.6	03	0.7000	0.705	0.8
04	1.0000	1.00	0.4	05	2.0000	1.92	-3.9	06	5.0000	5.02	0.4
07	10.0000	9.83	-1.7	08	20.0000	20.7	3.4	09	30.0000	30.6	2.0
10	50.0000	50.6	1.3								

Initial Calibration Verification Summary Report

Calibration ID:	EC2200016	**Instrument ID:**	E-LCMS-01
Datafile ID:	20221214_014	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2200016-11	T	Average RF	10	9.359	ng/mL	-6.4	<= 15

Insight Report

Printed at 12/15/2022 10:55:51 AM

Method File: I:\LCMS01\DATA\20221013ICAL\20221013ICAL.lcm
Project File: I:\LCMS01\DATA\20221214\12142022 ICAL.damlp

PERCHLORATE1

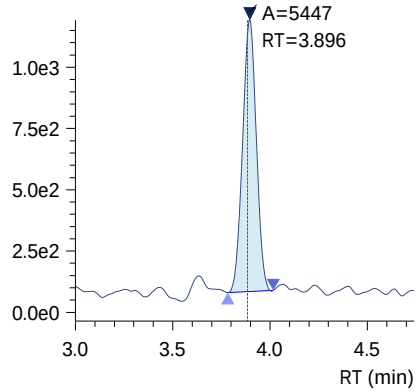
Sample ID: PERCHLORATE1
Date Acquired: 12/14/2022 3:40:29 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221214\20221214_004.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.896	5447	337240	0.1031	ng/mL	101.00 >85.00	35.31	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.889	337240	337240	1.0000	ng/mL	----	----	

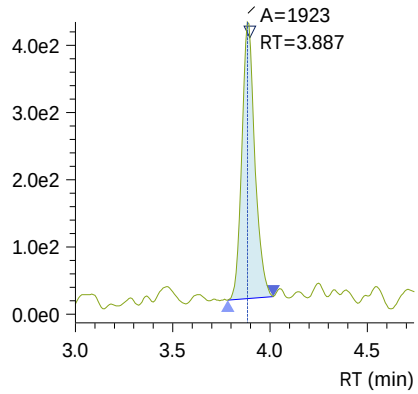
Perchlorate

Conc 0.1031
R#1 35.31 (34.02)

Q 99.00>83.00 (-) 1.19e3



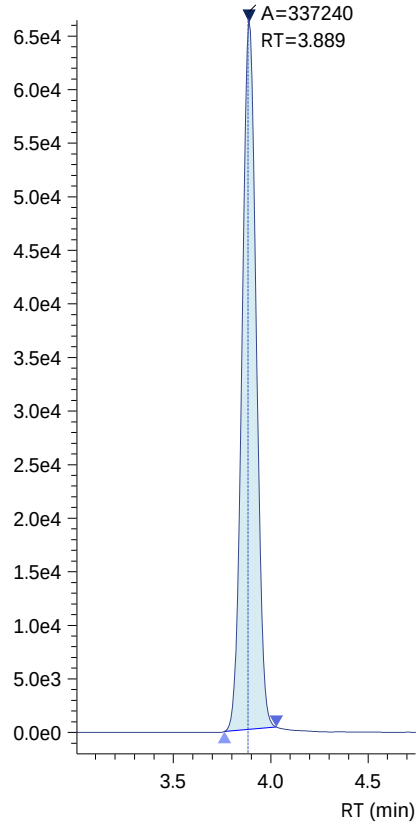
R1 101.00>85.00 (-) 4.35e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.65e4



Insight Report

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PERCHLORATE2

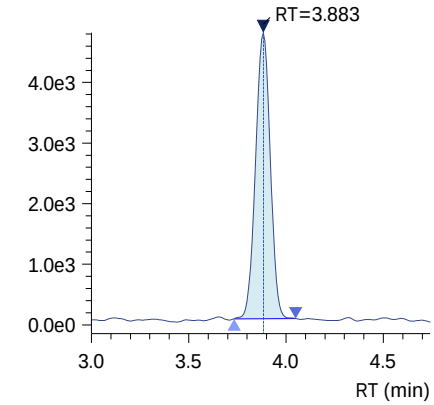
Sample ID: PERCHLORATE2
Date Acquired: 12/14/2022 3:46:03 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221214\20221214_005.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.883	24897	336620	0.4720	ng/mL	101.00 >85.00	33.26	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.878	336620	336620	1.0000	ng/mL	----	----	

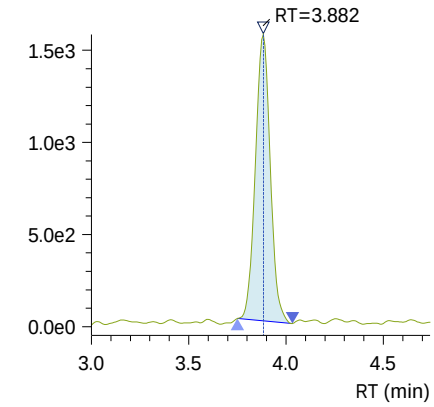
Perchlorate

Conc 0.4720
R#1 33.26 (34.02)

Q 99.00>83.00 (-) A=24897 4.82e3 RT=3.883



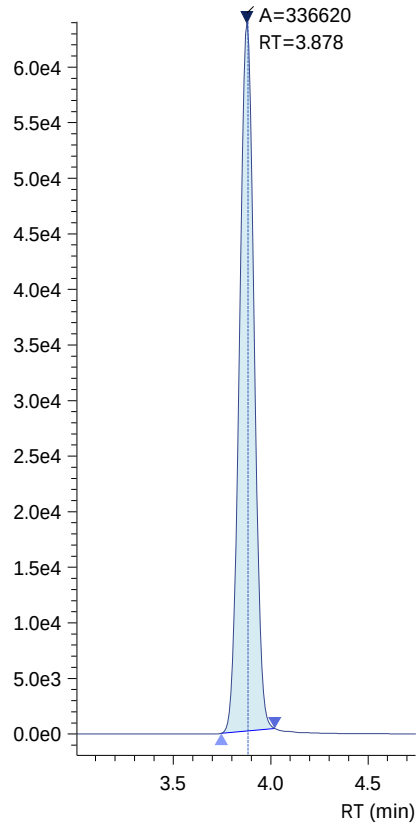
R1 101.00>85.00 (-) A=8281 1.59e3 RT=3.882



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.41e4 A=336620 RT=3.878



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PERCHLORATE3

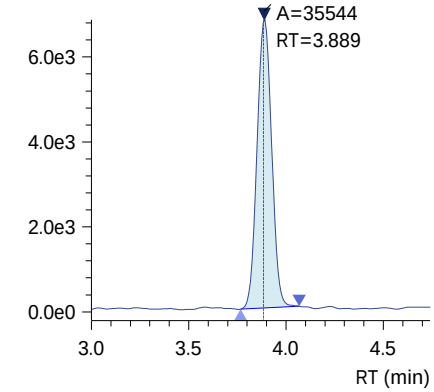
Sample ID: PERCHLORATE3
Date Acquired: 12/14/2022 3:51:33 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221214\20221214_006.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.889	35544	321596	0.7053	ng/mL	101.00 >85.00	35.09	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.885	321596	321596	1.0000	ng/mL	----	----	

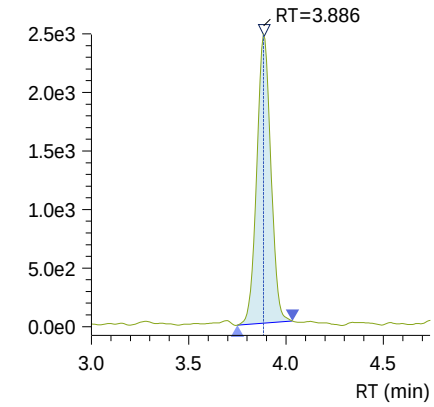
Perchlorate

Conc 0.7053
R#1 35.09 (34.02)

Q 99.00>83.00 (-) 6.88e3



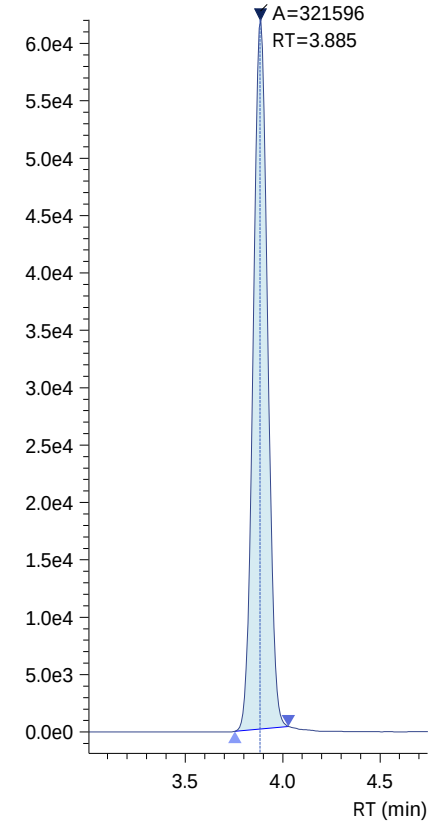
R1 101.00>85.00 (-) A=12471 2.50e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.21e4



Insight Report

Printed at 12/15/2022 10:55:51 AM

PERCHLORATE4

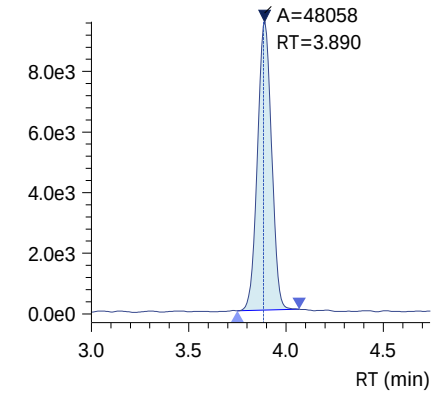
Sample ID: PERCHLORATE4
Date Acquired: 12/14/2022 3:57:06 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221214\20221214_007.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.890	48058	305584	1.0036	ng/mL	101.00 >85.00	33.87	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.886	305584	305584	1.0000	ng/mL	----	----	

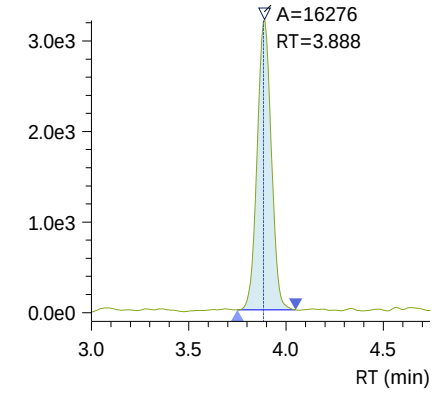
Perchlorate

Conc 1.0036
R#1 33.87 (34.02)

Q 99.00>83.00 (-) 9.64e3



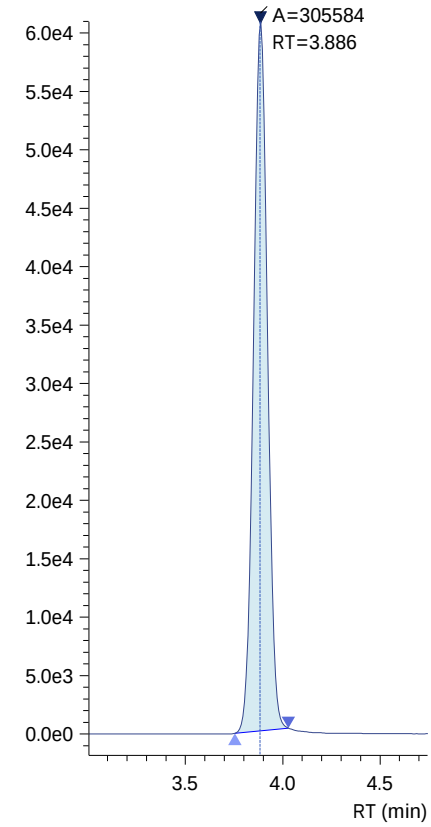
R1 101.00>85.00 (-) 3.23e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.10e4



Insight Report

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PERCHLORATE5

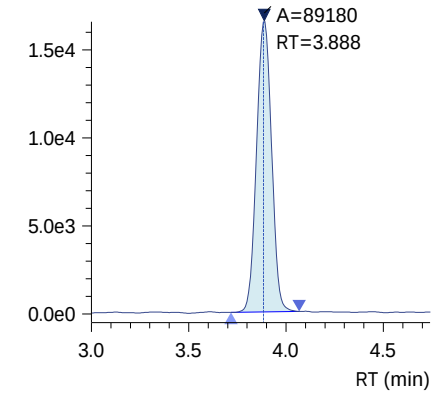
Sample ID: PERCHLORATE5
Date Acquired: 12/14/2022 4:02:38 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221214\20221214_008.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.888	89180	296200	1.9213	ng/mL	101.00 >85.00	32.32	23.94 -44.46
Sodium Perchlorate-18O4 _IS	Auto	3.885	296200	296200	1.0000	ng/mL	----	----	

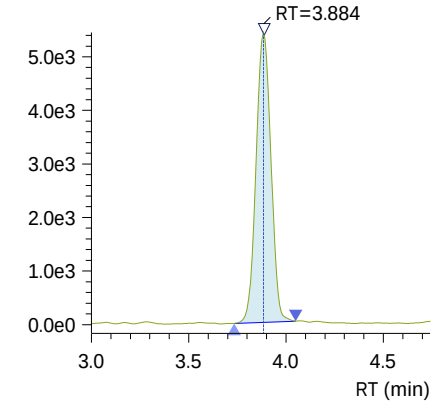
Perchlorate

Conc 1.9213
R#1 32.32 (34.02)

Q 99.00>83.00 (-) 1.66e4



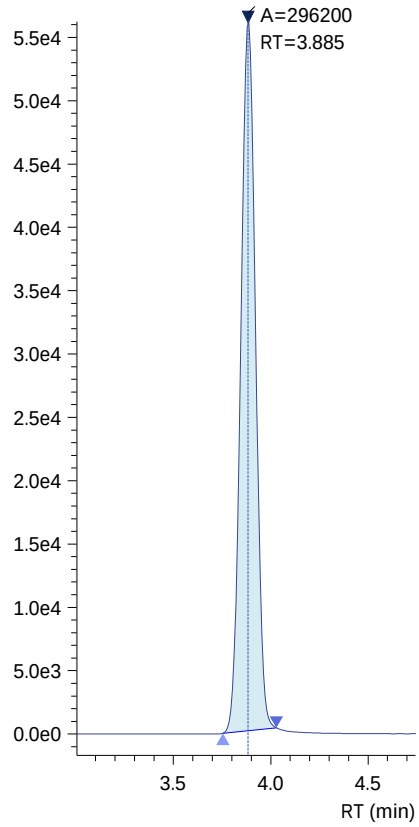
R1 101.00>85.00 (-) A=28822 5.45e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 5.62e4



Insight Report

Printed at 12/15/2022 10:55:51 AM

PERCHLORATE6

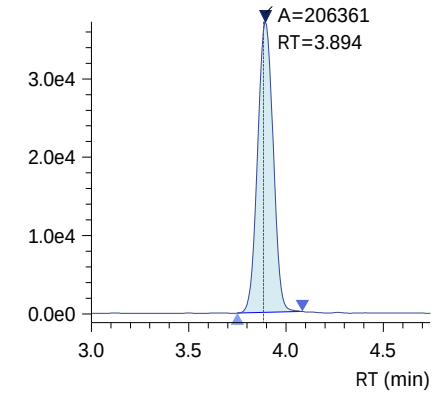
Sample ID: PERCHLORATE6
Date Acquired: 12/14/2022 4:09:28 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221214\20221214_009.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.894	206361	262312	5.0202	ng/mL	101.00 >85.00	33.93	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.889	262312	262312	1.0000	ng/mL	----	----	

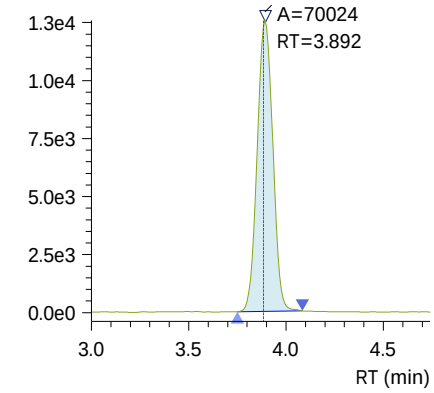
Perchlorate

Conc 5.0202
R#1 33.93 (34.02)

Q 99.00>83.00 (-) 3.73e4



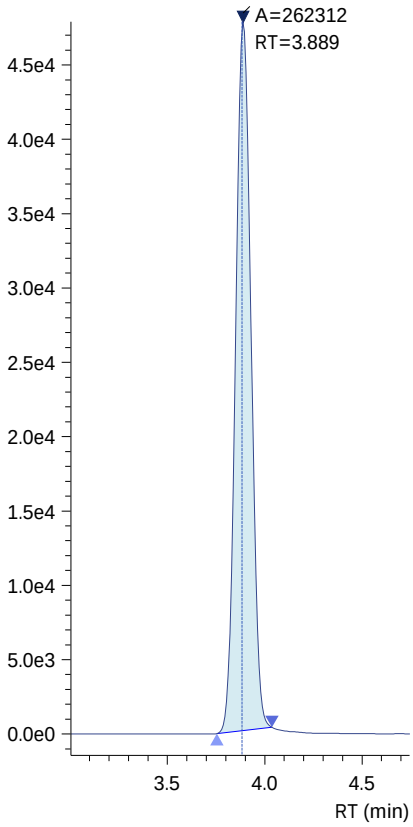
R1 101.00>85.00 (-) 1.26e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.79e4



Insight Report

Printed at 12/15/2022 10:55:51 AM

PERCHLORATE7

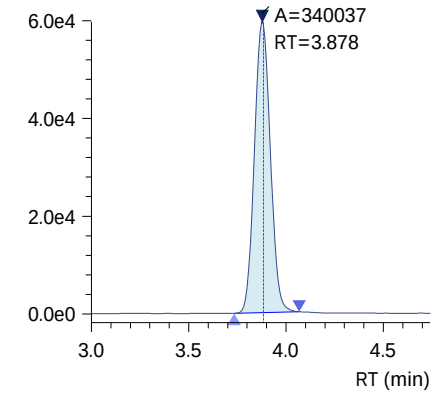
Sample ID: PERCHLORATE7
Date Acquired: 12/14/2022 4:15:00 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221214\20221214_010.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.878	340037	220702	9.8317	ng/mL	101.00 >85.00	34.05	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.875	220702	220702	1.0000	ng/mL	----	----	

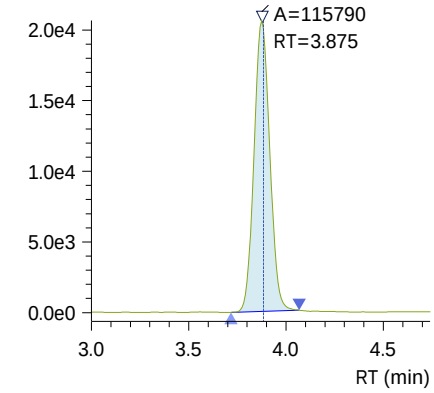
Perchlorate

Conc 9.8317
R#1 34.05 (34.02)

Q 99.00>83.00 (-) 5.98e4



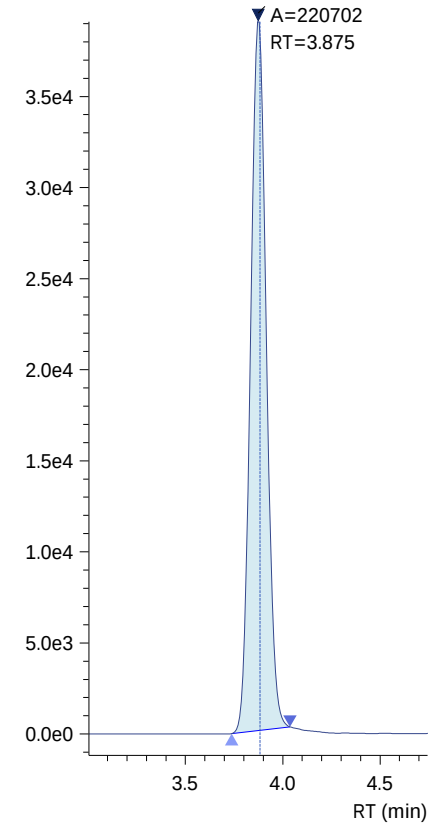
R1 101.00>85.00 (-) 2.07e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 3.91e4



Insight Report

Printed at 12/15/2022 10:55:51 AM

PERCHLORATE8

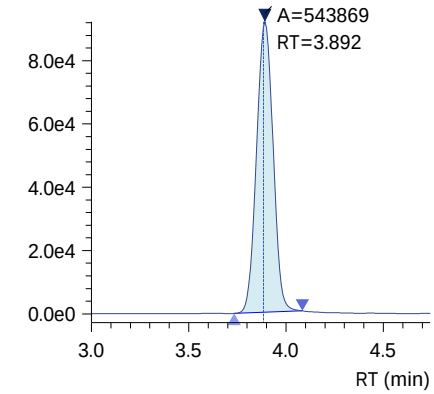
Sample ID: PERCHLORATE8
Date Acquired: 12/14/2022 4:20:30 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221214\20221214_011.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.892	5438 69	167819	20.6 806	ng/mL	101.00 >85.00	33.45	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.888	1678 19	167819	1.0000	ng/mL	----	----	

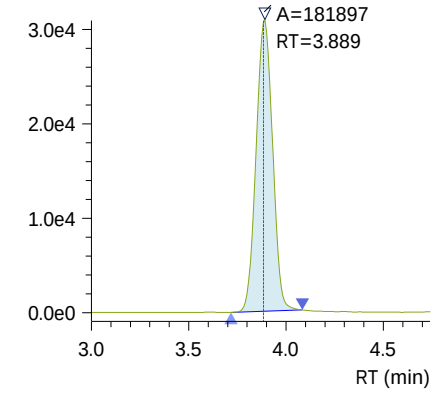
Perchlorate

Conc 20.6806
R#1 33.45 (34.02)

Q 99.00>83.00 (-) 9.23e4



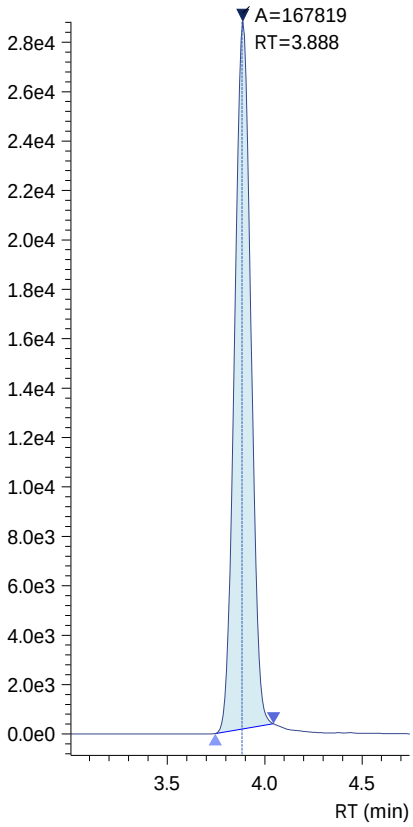
R1 101.00>85.00 (-) 3.09e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.88e4



Insight Report

Printed at 12/15/2022 10:55:51 AM

PERCHLORATE9

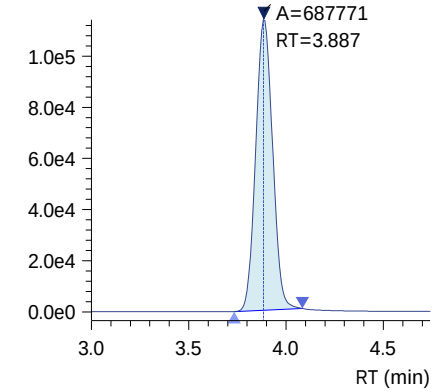
Sample ID: PERCHLORATE9
Date Acquired: 12/14/2022 4:25:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221214\20221214_012.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.887	687771	143493	30.5860	ng/mL	101.00 >85.00	33.79	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.883	143493	143493	1.0000	ng/mL	----	----	

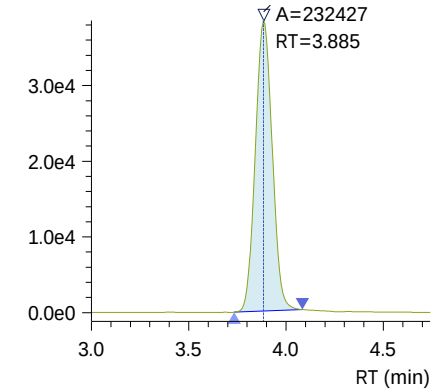
Perchlorate

Conc 30.5860
R#1 33.79 (34.02)

Q 99.00>83.00 (-) 1.14e5



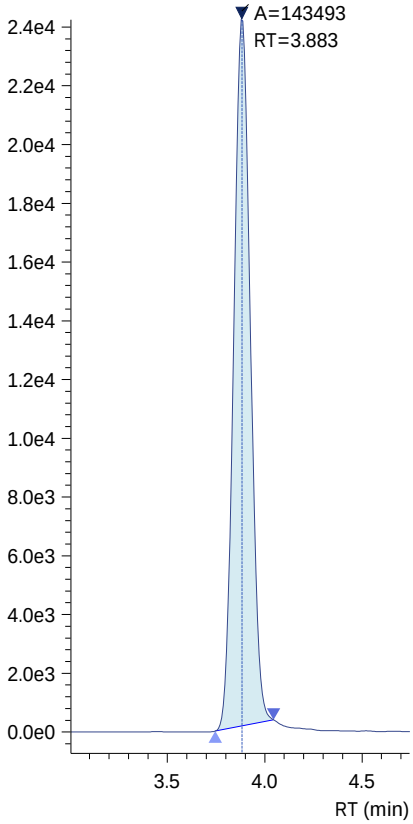
R1 101.00>85.00 (-) 3.86e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.43e4



Insight Report

Printed at 12/15/2022 10:55:51 AM

PERCHLORATE10

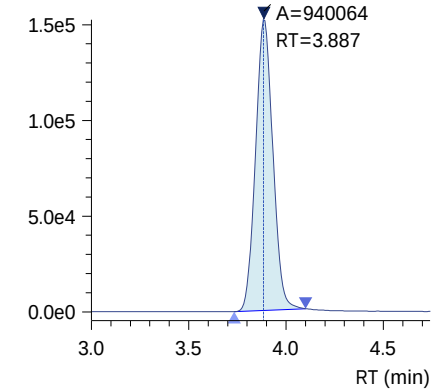
Sample ID: PERCHLORATE10
Date Acquired: 12/14/2022 4:31:28 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221214\20221214_013.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.887	9400 64	118445	50.6 464	ng/mL	101.00 >85.00	33.39	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.883	1184 45	118445	1.0000	ng/mL	----	----	

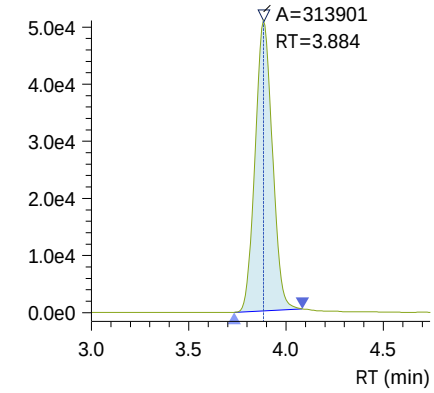
Perchlorate

Conc 50.6464
R#1 33.39 (34.02)

Q 99.00>83.00 (-) 1.53e5



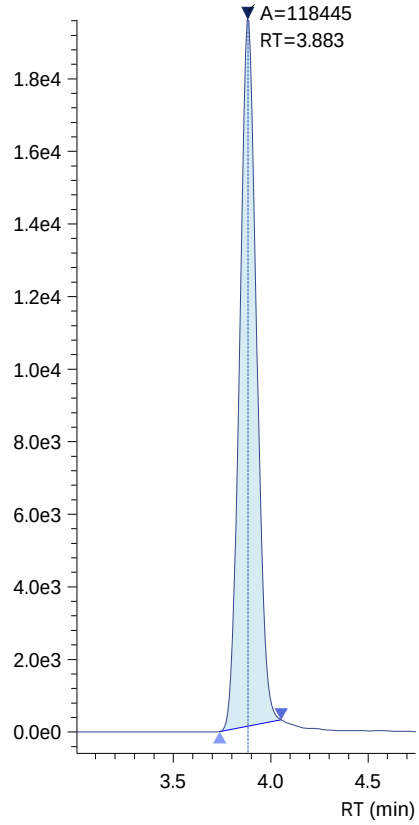
R1 101.00>85.00 (-) 5.12e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.96e4



Insight Report

Printed at 12/15/2022 10:55:51 AM

PERCHLORATEICV

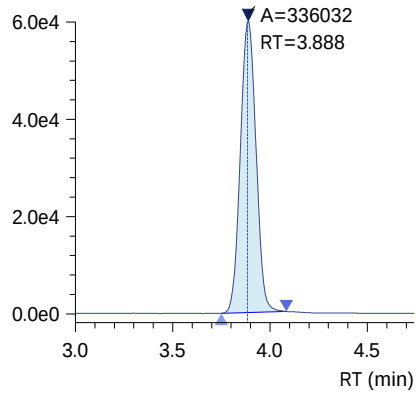
Sample ID: PERCHLORATEICV
Date Acquired: 12/14/2022 4:37:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221214\20221214_014.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.888	3360 32	229124	9.3588	ng/mL	101.00 >85.00	33.58	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.884	2291 24	229124	1.0000	ng/mL	----	----	

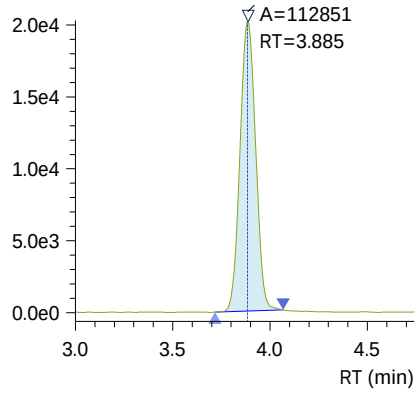
Perchlorate

Conc 9.3588
R#1 33.58 (34.02)

Q 99.00>83.00 (-) 6.01e4



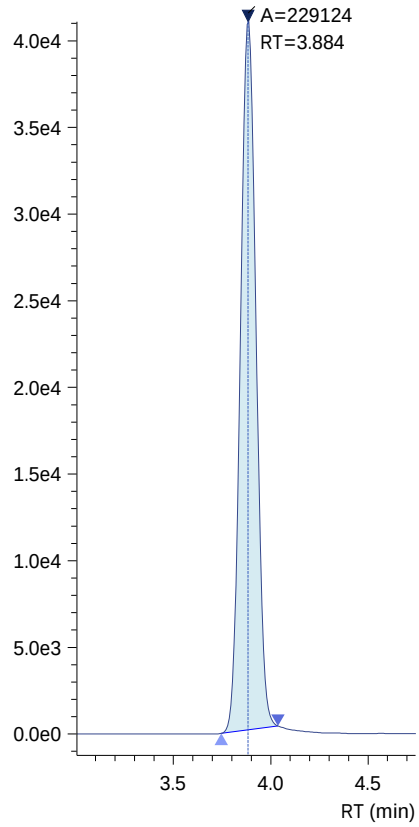
R1 101.00>85.00 (-) 2.03e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.11e4



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

20230127-792859

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: Kneir

ICAL Date: 12/14/2022
Cal. Std. xp: 01/31/2023
ICAL ID: EC2200016

Mobile Phases : A:0.10% Formic Acid/Water 3210303-02 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	ICS		20230127-033	Perchlorate6850c.lcm	1x	☒	32103024	1/27/2023 12:09
2	LODV		20230127-034	Perchlorate6850c.lcm	1x	☒	225199	1/27/2023 12:23
3	PERCHLORATE7		20230127-035	Perchlorate6850c.lcm	1x	☒	226067	1/27/2023 12:30
4	EQ2300029-01		20230127-036	Perchlorate6850c.lcm	1x	☒		1/27/2023 12:36
5	EQ2300029-02		20230127-037	Perchlorate6850c.lcm	1x	☒		1/27/2023 12:47
6	EQ2300029-03		20230127-038	Perchlorate6850c.lcm	1x	☒		1/27/2023 12:53
7	E2300060-001		20230127-039	Perchlorate6850c.lcm	1x	☒		1/27/2023 13:00
8	E2300060-002		20230127-040	Perchlorate6850c.lcm	1x	☒		1/27/2023 13:06
9	E2300060-003		20230127-041	Perchlorate6850c.lcm	1x	☒		1/27/2023 13:11
10	E2300060-005		20230127-042	Perchlorate6850c.lcm	1x	☒		1/27/2023 13:17
11	E2300060-006		20230127-043	Perchlorate6850c.lcm	1x	☒		1/27/2023 13:23
12	E2300060-007		20230127-044	Perchlorate6850c.lcm	1x	☒		1/27/2023 13:29
13	E2300060-008		20230127-045	Perchlorate6850c.lcm	1x	☒		1/27/2023 13:35
14	PERCHLORATE7		20230127-046	Perchlorate6850c.lcm	1x	☒	226067	1/27/2023 13:40
15	E2300060-009		20230127-047	Perchlorate6850c.lcm	1x	☒		1/27/2023 13:46
16	E2300060-010		20230127-048	Perchlorate6850c.lcm	1x	☒		1/27/2023 13:52
17	E2300065-001		20230127-049	Perchlorate6850c.lcm	1x	☒		1/27/2023 13:58
18	E2300065-004		20230127-050	Perchlorate6850c.lcm	1x	☒		1/27/2023 14:04
19	E2300065-005		20230127-051	Perchlorate6850c.lcm	1x	☒		1/27/2023 14:09
20	E2300065-007		20230127-052	Perchlorate6850c.lcm	1x	☒		1/27/2023 14:15
21	E2300065-008		20230127-053	Perchlorate6850c.lcm	1x	☒		1/27/2023 14:21
22	E2300065-009		20230127-054	Perchlorate6850c.lcm	1x	☒		1/27/2023 14:27
23	E2300057-001		20230127-055	Perchlorate6850c.lcm	1x	☒		1/27/2023 14:37
24	PERCHLORATE7		20230127-056	Perchlorate6850c.lcm	1x	☒	226067	1/27/2023 14:43
25	E2300060-004		20230127-057	Perchlorate6850c.lcm	100x	☒		1/27/2023 14:49
26	E2300065-002		20230127-058	Perchlorate6850c.lcm	500x	☒		1/27/2023 14:54
27	E2300065-003		20230127-059	Perchlorate6850c.lcm	500x	☒		1/27/2023 15:00
28	E2300065-006		20230127-060	Perchlorate6850c.lcm	10x	☒		1/27/2023 15:06
29	EQ2300030-01		20230127-061	Perchlorate6850c.lcm	1x	☒		1/27/2023 15:12
30	EQ2300030-02		20230127-062	Perchlorate6850c.lcm	1x	☒		1/27/2023 15:23
31	EQ2300030-03		20230127-063	Perchlorate6850c.lcm	1x	☒		1/27/2023 15:37
32	E2300067-001		20230127-064	Perchlorate6850c.lcm	1x	☒		1/27/2023 15:45
33	E2300067-002		20230127-065	Perchlorate6850c.lcm	1x	☒	DNU-IR	1/27/2023 15:51
34	E2300067-003		20230127-066	Perchlorate6850c.lcm	1x	☒	DNU-IR	1/27/2023 15:57
35	PERCHLORATE7		20230127-067	Perchlorate6850c.lcm	1x	☒	226067	1/27/2023 16:03
36	E2300067-004		20230127-068	Perchlorate6850c.lcm	1x	☒		1/27/2023 16:08
37	EQ2300030-04		20230127-069	Perchlorate6850c.lcm	1x	☒		1/27/2023 16:14
38	EQ2300030-05		20230127-070	Perchlorate6850c.lcm	1x	☒		1/27/2023 16:20
39	E2300068-005		20230127-071	Perchlorate6850c.lcm	1x	☒		1/27/2023 16:27
40	E2300068-006		20230127-072	Perchlorate6850c.lcm	1x	☒	DNU-OUT OF ICAL RANGE	1/27/2023 16:33

20230127-792859

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: Kneir

ICAL Date: 12/14/2022
Cal. Std. xp: 01/31/2023
ICAL ID: EC2200016

Mobile Phases : A:0.10% Formic Acid/Water 3210303-02 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
41	E2300068-007		20230127-073	Perchlorate6850c.lcm	1x	☒	DNU-OUT OF ICAL RANGE	1/27/2023 16:38
42	E2300068-008		20230127-074	Perchlorate6850c.lcm	1x	☒	DNU-CONFIRM PEAK	1/27/2023 16:44
43	E2300068-009		20230127-075	Perchlorate6850c.lcm	1x	☒		1/27/2023 16:50
44	E2300068-010		20230127-076	Perchlorate6850c.lcm	1x	☒		1/27/2023 16:56
45	PERCHLORATE7		20230127-077	Perchlorate6850c.lcm	1x	☒	226067	1/27/2023 17:02

20230130-792992

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: Kneir

ICAL Date: 12/14/2022
Cal. Std. xp: 01/31/2023
ICAL ID: EC2200016

Mobile Phases : A:0.10% Formic Acid/Water 3210303-02 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	ICS		20230130-002	Perchlorate6850c.lcm	1x	☒	32103024	1/30/2023 9:14
2	LODV		20230130-003	Perchlorate6850c.lcm	1x	☒	225199	1/30/2023 9:31
3	PERCHLORATE7		20230130-004	Perchlorate6850c.lcm	1x	☒	226067	1/30/2023 9:38
4	E2300068-008		20230130-005	Perchlorate6850c.lcm	1x	☒		1/30/2023 9:44
5	E2300078-001		20230130-006	Perchlorate6850c.lcm	1x	☒		1/30/2023 9:50
6	E2300078-002		20230130-007	Perchlorate6850c.lcm	1x	☒		1/30/2023 9:56
7	E2300078-003		20230130-008	Perchlorate6850c.lcm	1x	☒		1/30/2023 10:01
8	E2300078-004		20230130-009	Perchlorate6850c.lcm	1x	☒		1/30/2023 10:07
9	E2300078-005		20230130-010	Perchlorate6850c.lcm	1x	☒	DNU-IR	1/30/2023 10:13
10	E2300078-006		20230130-011	Perchlorate6850c.lcm	1x	☒		1/30/2023 10:19
11	E2300078-007		20230130-012	Perchlorate6850c.lcm	1x	☒		1/30/2023 10:24
12	E2300078-008		20230130-013	Perchlorate6850c.lcm	1x	☒		1/30/2023 10:30
13	E2300078-005		20230130-014	Perchlorate6850c.lcm	1x	☒		1/30/2023 10:56
14	PERCHLORATE7		20230130-015	Perchlorate6850c.lcm	1x	☒	226067	1/30/2023 11:02
15	E2300067-002		20230130-016	Perchlorate6850c.lcm	1x	☒		1/30/2023 11:07
16	E2300067-003		20230130-017	Perchlorate6850c.lcm	1x	☒		1/30/2023 11:13
17	E2300067-005		20230130-018	Perchlorate6850c.lcm	1000x	☒		1/30/2023 11:23
18	E2300067-006		20230130-019	Perchlorate6850c.lcm	5000x	☒		1/30/2023 11:29
19	E2300068-006		20230130-020	Perchlorate6850c.lcm	5x	☒		1/30/2023 11:35
20	E2300068-007		20230130-021	Perchlorate6850c.lcm	20x	☒		1/30/2023 11:41
21	EQ2300031-01		20230130-022	Perchlorate6850c.lcm	1x	☒		1/30/2023 11:47
22	EQ2300031-02		20230130-023	Perchlorate6850c.lcm	1x	☒		1/30/2023 11:52
23	EQ2300031-03		20230130-024	Perchlorate6850c.lcm	1x	☒		1/30/2023 12:07
24	PERCHLORATE7		20230130-025	Perchlorate6850c.lcm	1x	☒	226067	1/30/2023 12:30
25	EQ2300031-04		20230130-026	Perchlorate6850c.lcm	1x	☒		1/30/2023 12:36
26	EQ2300031-05		20230130-027	Perchlorate6850c.lcm	1x	☒		1/30/2023 12:42
27	E2300079-001		20230130-028	Perchlorate6850c.lcm	1x	☒		1/30/2023 12:48
28	E2300079-002		20230130-029	Perchlorate6850c.lcm	1x	☒		1/30/2023 12:53
29	E2300079-003		20230130-030	Perchlorate6850c.lcm	1x	☒		1/30/2023 12:59
30	E2300079-004		20230130-031	Perchlorate6850c.lcm	1x	☒		1/30/2023 13:05
31	E2300079-005		20230130-032	Perchlorate6850c.lcm	1x	☒		1/30/2023 13:11
32	E2300079-006		20230130-033	Perchlorate6850c.lcm	1x	☒	DNU-CONFIRM PEAK	1/30/2023 13:16
33	E2300081-001		20230130-034	Perchlorate6850c.lcm	1x	☒	DNU-CONFIRM PEAK	1/30/2023 13:22
34	E2300081-002		20230130-035	Perchlorate6850c.lcm	1x	☒		1/30/2023 13:28
35	PERCHLORATE7		20230130-036	Perchlorate6850c.lcm	1x	☒	226067	1/30/2023 13:34
36	E2300081-003		20230130-037	Perchlorate6850c.lcm	1x	☒		1/30/2023 13:40
37	E2300081-004		20230130-038	Perchlorate6850c.lcm	1x	☒	DNU-CONFIRM PEAK	1/30/2023 13:45
38	E2300079-006		20230130-039	Perchlorate6850c.lcm	1x	☒		1/30/2023 15:06
39	E2300081-001		20230130-040	Perchlorate6850c.lcm	1x	☒		1/30/2023 15:11
40	E2300082-001		20230130-041	Perchlorate6850c.lcm	1x	☒		1/30/2023 15:17

20230130-792992

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: Kneir

ICAL Date: 12/14/2022
Cal. Std. xp: 01/31/2023
ICAL ID: EC2200016

Mobile Phases : A:0.10% Formic Acid/Water 3210303-02 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
41	EQ2300031-06		20230130-042	Perchlorate6850c.lcm	1x	☒		1/30/2023 15:23
42	EQ2300031-07		20230130-043	Perchlorate6850c.lcm	1x	☒	DNU-IR	1/30/2023 15:29
43	E2300082-002		20230130-044	Perchlorate6850c.lcm	1x	☒		1/30/2023 15:34
44	E2300082-003		20230130-045	Perchlorate6850c.lcm	1x	☒		1/30/2023 15:40
45	E2300082-004		20230130-046	Perchlorate6850c.lcm	1x	☒		1/30/2023 15:46
46	PERCHLORATE7		20230130-047	Perchlorate6850c.lcm	1x	☒	226067	1/30/2023 15:52
47	EQ2300031-07		20230130-048	Perchlorate6850c.lcm	1x	☒		1/30/2023 15:58
48	E2300084-001		20230130-049	Perchlorate6850c.lcm	1x	☒		1/30/2023 16:03
49	E2300084-002		20230130-050	Perchlorate6850c.lcm	1x	☒		1/30/2023 16:09
50	E2300084-003		20230130-051	Perchlorate6850c.lcm	1x	☒		1/30/2023 16:15
51	E2300084-004		20230130-052	Perchlorate6850c.lcm	1x	☒		1/30/2023 16:21
52	R2300559-004		20230130-053	Perchlorate6850c.lcm	1x	☒		1/30/2023 16:26
53	R2300559-009		20230130-054	Perchlorate6850c.lcm	1x	☒		1/30/2023 16:32
54	E2300081-004		20230130-055	Perchlorate6850c.lcm	1x	☒		1/30/2023 16:38
55	PERCHLORATE7		20230130-056	Perchlorate6850c.lcm	1x	☒	226067	1/30/2023 17:01

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/27/23 12:30

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230127\20230127-035	**Lab Code:**	EQ2300038-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	792859
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	251,001	3.88
	Upper Limit ==>	376,502	5.88
	Lower Limit ==>	125,501	1.88
Associated Analyses			
Continuing Calibration Verification	EQ2300038-01	172,432	3.45

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/27/23 13:40

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230127\20230127-046	**Lab Code:**	EQ2300038-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	792859
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	251,001	3.88
	Upper Limit ==>	376,502	5.88
	Lower Limit ==>	125,501	1.88
Associated Analyses			
Continuing Calibration Verification	EQ2300038-02	183,149	3.45

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/27/23 14:43

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230127\20230127-056	**Lab Code:**	EQ2300038-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	792859
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	251,001	3.88
	Upper Limit ==>	376,502	5.88
	Lower Limit ==>	125,501	1.88
Associated Analyses			
Continuing Calibration Verification	EQ2300038-03	192,322	3.45
Method Blank	EQ2300030-01	219,169	3.45
Lab Control Sample	EQ2300030-02	218,154	3.46
Duplicate Lab Control Sample	EQ2300030-03	215,469	3.46
130_011723	E2300067-001	250,894	3.46

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/27/23 16:03

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230127\20230127-067	**Lab Code:**	EQ2300038-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	792859
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	251,001	3.88
	Upper Limit ==>	376,502	5.88
	Lower Limit ==>	125,501	1.88
Associated Analyses			
Continuing Calibration Verification	EQ2300038-04	164,585	3.46
17WW01_011723	E2300067-004	249,953	3.46
17WW01_011723MS	EQ2300030-04	253,343	3.46
17WW01_011723DMS	EQ2300030-05	250,055	3.46

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/27/23 17:02

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230127\20230127-077	**Lab Code:**	EQ2300038-05
Instrument ID:	E-LCMS-01	**Analysis Lot:**	792859
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	251,001	3.88
	Upper Limit ==>	376,502	5.88
	Lower Limit ==>	125,501	1.88
Associated Analyses			
Continuing Calibration Verification	EQ2300038-05	161,420	3.46

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/30/23 09:38

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230130\20230130-004	**Lab Code:**	EQ2300043-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	792992
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	251,001	3.88
	Upper Limit ==>	376,502	5.88
	Lower Limit ==>	125,501	1.88
Associated Analyses			
Continuing Calibration Verification	EQ2300043-01	197,571	3.46

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/30/23 11:02

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230130\20230130-015	**Lab Code:**	EQ2300043-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	792992
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	251,001	3.88
	Upper Limit ==>	376,502	5.88
	Lower Limit ==>	125,501	1.88
Associated Analyses			
Continuing Calibration Verification	EQ2300043-02	174,063	3.46
17WW03_011723	E2300067-002	238,769	3.46
17WW03_011723_a	E2300067-003	241,650	3.45
17WW02_011723	E2300067-005	163,453	3.45
17WW06_011723	E2300067-006	150,755	3.46

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/30/23 12:30

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230130\20230130-025	**Lab Code:**	EQ2300043-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	792992
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	251,001	3.88
	Upper Limit ==>	376,502	5.88
	Lower Limit ==>	125,501	1.88
Associated Analyses			
Continuing Calibration Verification	EQ2300043-03	194,356	3.45

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/30/23 13:34

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230130\20230130-036	**Lab Code:**	EQ2300043-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	792992
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	251,001	3.88
	Upper Limit ==>	376,502	5.88
	Lower Limit ==>	125,501	1.88
Associated Analyses			
Continuing Calibration Verification	EQ2300043-04	196,716	3.46

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/30/23 15:52

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230130\20230130-047	**Lab Code:**	EQ2300043-05
Instrument ID:	E-LCMS-01	**Analysis Lot:**	792992
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	251,001	3.88
	Upper Limit ==>	376,502	5.88
	Lower Limit ==>	125,501	1.88
Associated Analyses			
Continuing Calibration Verification	EQ2300043-05	180,587	3.45

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/30/23 17:01

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230130\20230130-056	**Lab Code:**	EQ2300043-06
Instrument ID:	E-LCMS-01	**Analysis Lot:**	792992
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	251,001	3.88
	Upper Limit ==>	376,502	5.88
	Lower Limit ==>	125,501	1.88
Associated Analyses			
Continuing Calibration Verification	EQ2300043-06	167,665	3.45

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/27/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	12/14/22
File ID:	I:\LCMS01\DATA\20230127\20230127-035	**Calibration ID:**	EC2200016
		Analysis Lot:	792859
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.0	0.1567	0.1572	0.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/27/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	12/14/22
File ID:	I:\LCMS01\DATA\20230127\20230127-046	**Calibration ID:**	EC2200016
		Analysis Lot:	792859
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.78	0.1567	0.1533	-2.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/27/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	12/14/22
File ID:	I:\LCMS01\DATA\20230127\20230127-056	**Calibration ID:**	EC2200016
		Analysis Lot:	792859
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.71	0.1567	0.1521	-2.9	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/27/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	12/14/22
File ID:	I:\LCMS01\DATA\20230127\20230127-067	**Calibration ID:**	EC2200016
		Analysis Lot:	792859
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.44	0.1567	0.1479	-5.6	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/27/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	12/14/22
File ID:	I:\LCMS01\DATA\20230127\20230127-077	**Calibration ID:**	EC2200016
		Analysis Lot:	792859
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.52	0.1567	0.1493	-4.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/30/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	12/14/22
File ID:	I:\LCMS01\DATA\20230130\20230130-004	**Calibration ID:**	EC2200016
		Analysis Lot:	792992
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.6	0.1567	0.1655	5.6	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/30/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	12/14/22
File ID:	I:\LCMS01\DATA\20230130\20230130-015	**Calibration ID:**	EC2200016
		Analysis Lot:	792992
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.2	0.1567	0.1593	1.7	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/30/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	12/14/22
File ID:	I:\LCMS01\DATA\20230130\20230130-025	**Calibration ID:**	EC2200016
		Analysis Lot:	792992
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.84	0.1567	0.1540	-1.7	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/30/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	12/14/22
File ID:	I:\LCMS01\DATA\20230130\20230130-036	**Calibration ID:**	EC2200016
		Analysis Lot:	792992
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.94	0.1567	0.1554	-0.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/30/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	12/14/22
File ID:	I:\LCMS01\DATA\20230130\20230130-047	**Calibration ID:**	EC2200016
		Analysis Lot:	792992
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.2	0.1567	0.1592	1.6	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300067
Project:	LHAAP / Site 17	**Date Analyzed:**	1/30/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	12/14/22
File ID:	I:\LCMS01\DATA\20230130\20230130-056	**Calibration ID:**	EC2200016
		Analysis Lot:	792992
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.92	0.1567	0.1551	-1.0	NA	± 15 %	Average RF

Insight Report

Printed at 1/30/2023 11:53:37 AM

Method File: I:\LCMS01\DATA\20230127\20230127-792859.lcm
Project File: I:\LCMS01\DATA\20230127\20230127-792859.damlp

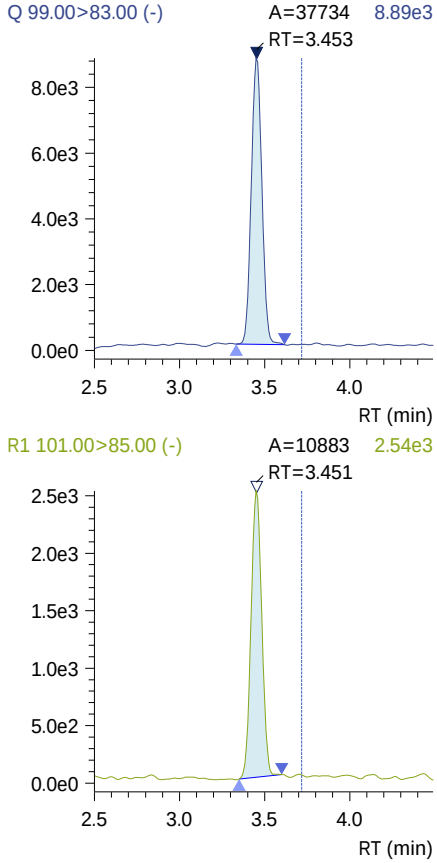
ICS

Sample ID: ICS
Date Acquired: 1/27/2023 12:09:43 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230127\20230127-033.lcd
Vial: 2 | Inj. Volume: .250000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.453	37734	241802	0.9958	ng/mL	101.00 >85.00	28.84	22.07 -40.99
Sodium Perchlorate-18O4_IS	Auto	3.451	241802	241802	1.0000	ng/mL	----	----	

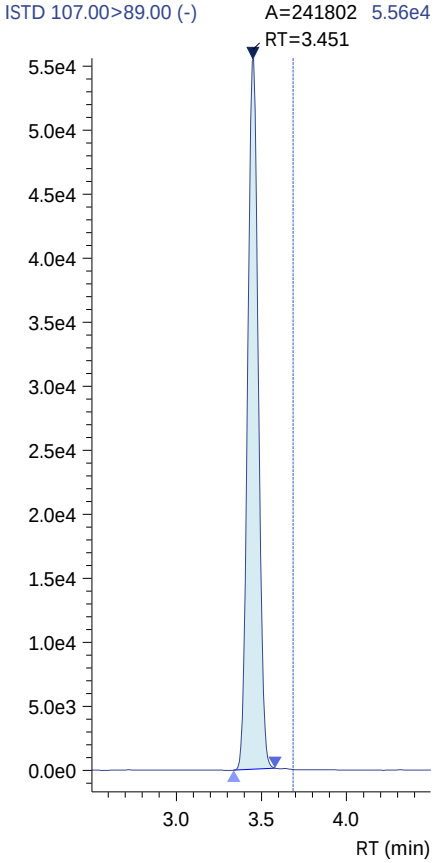
Perchlorate

Conc 0.9958
R#1 28.84 (31.53)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/30/2023 11:53:37 AM

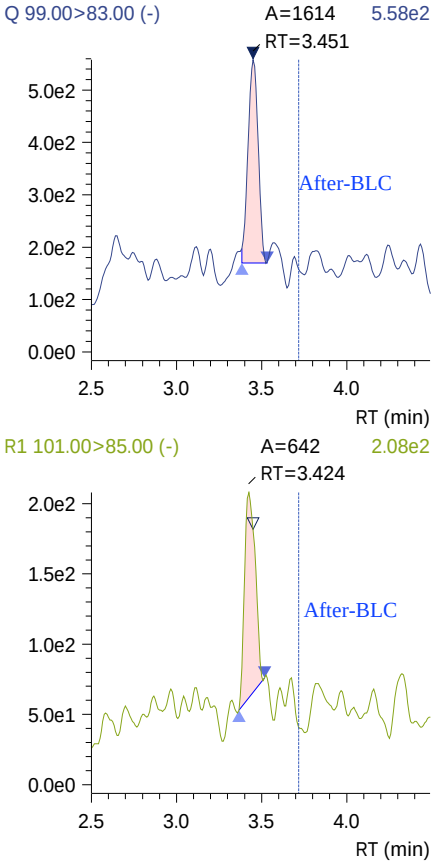
LODV

Sample ID: LODV
Date Acquired: 1/27/2023 12:23:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230127\20230127-034.lcd
Vial: 4 | Inj. Volume: .250000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.451	1614	220056	0.0468	ng/mL	101.00 >85.00	39.79	22.07 -40.99
Sodium Perchlorate-18O4_IS	Auto	3.447	220056	220056	1.0000	ng/mL	----	----	

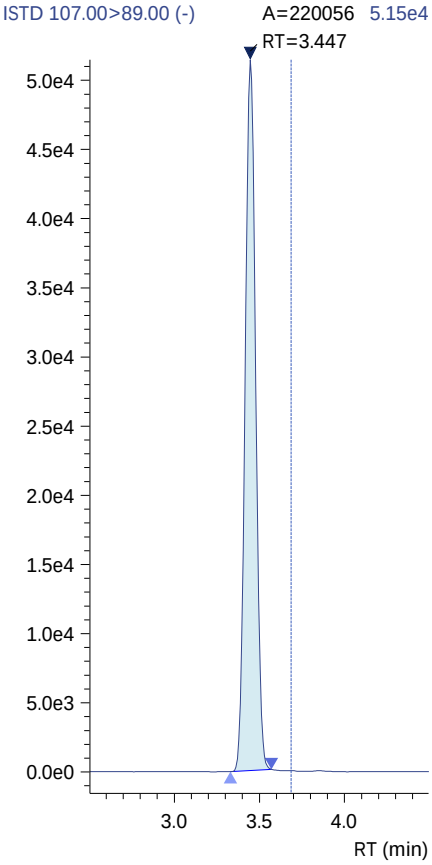
Perchlorate

Conc 0.0468
R#1 39.79 (31.53)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/30/2023 11:55:26 AM

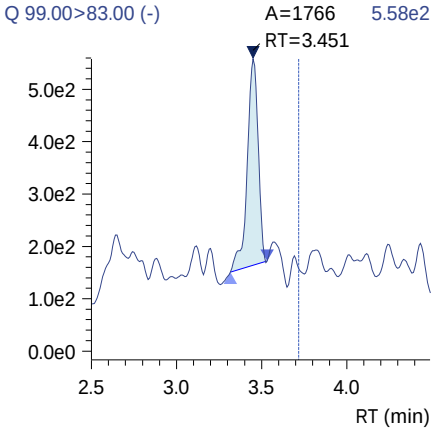
Method File: I:\LCMS01\DATA\20230127\20230127-792859.lcm
Project File: I:\LCMS01\DATA\20230127\20230127-792859.damlp

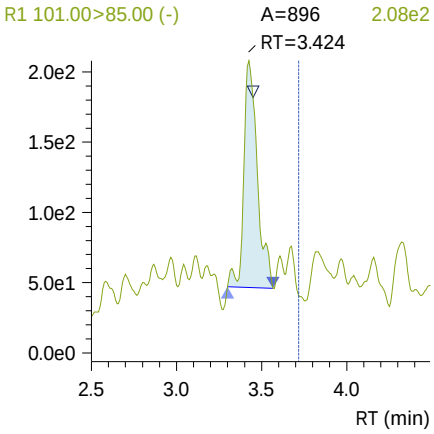
LODV

Sample ID: LODV
Date Acquired: 1/27/2023 12:23:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230127\20230127-034.lcd
Vial: 4 | Inj. Volume: .250000uL | Tray: 0

Perchlorate

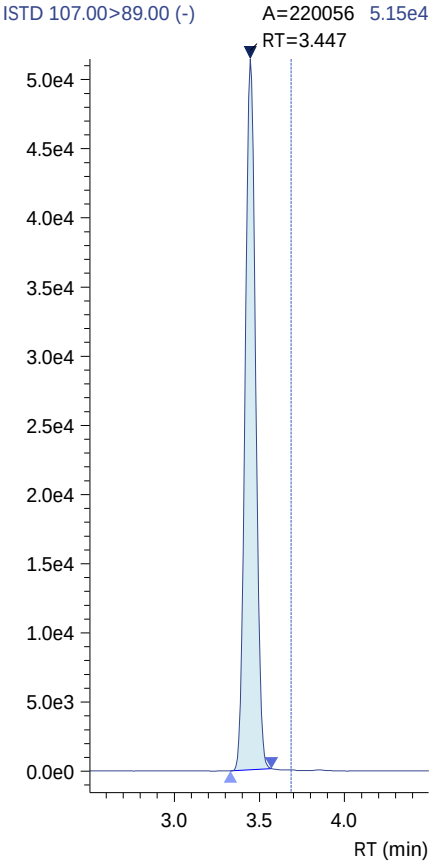
Conc 0.0512
R#1 50.72 (31.53)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/30/2023 11:53:37 AM

PERCHLORATE7

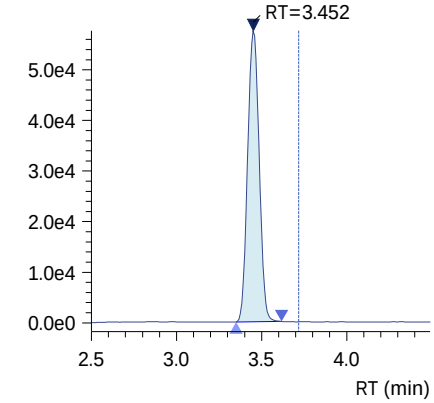
Sample ID: PERCHLORATE7
Date Acquired: 1/27/2023 12:30:18 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230127\20230127-035.lcd
Vial: 3 | Inj. Volume: .250000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.452	2710 15	172432	10.0 296	ng/mL	101.00 >85.00	32.53	22.07 -40.99
Sodium Perchlorate-18O4_IS	Auto	3.447	1724 32	172432	1.0000	ng/mL	----	----	

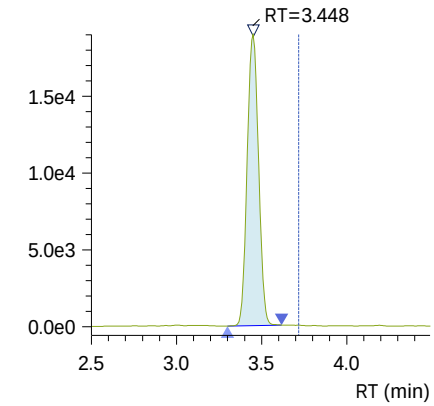
Perchlorate

Conc 10.0296
R#1 32.53 (31.53)

Q 99.00>83.00 (-) A=271015 5.77e4



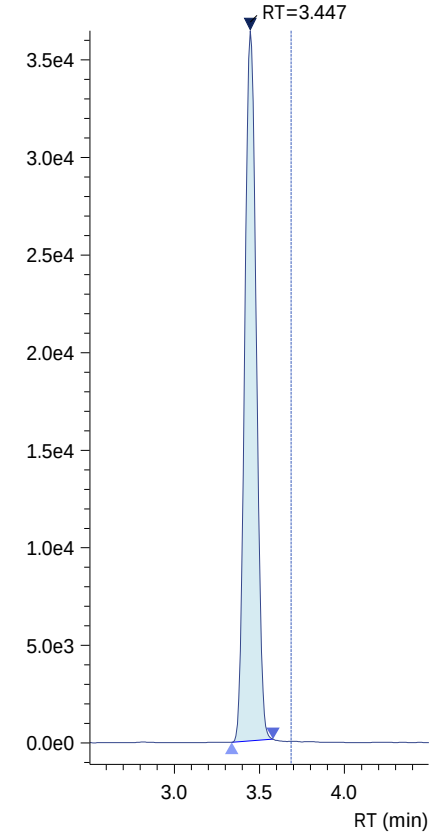
R1 101.00>85.00 (-) A=88176 1.90e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=172432 3.65e4



Insight Report

Printed at 1/30/2023 11:53:37 AM

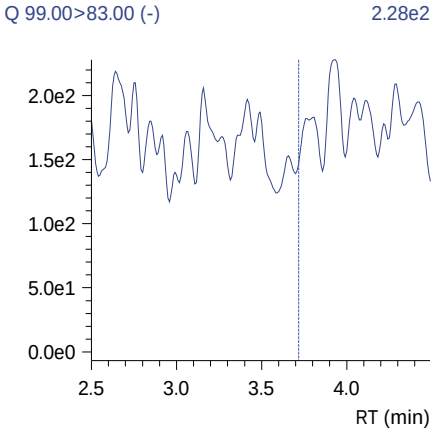
EQ2300030-01

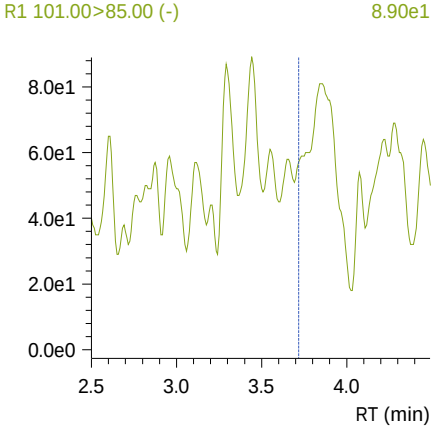
Sample ID: EQ2300030-01
Date Acquired: 1/27/2023 3:12:09 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230127\20230127-061.lcd
Vial: 36 | Inj. Volume: .250000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	219169	----	ng/mL	101.00 >85.00	0.00	22.07 -40.99
Sodium Perchlorate-18O4_IS	Auto	3.452	219169	219169	1.0000	ng/mL	----	----	

Perchlorate

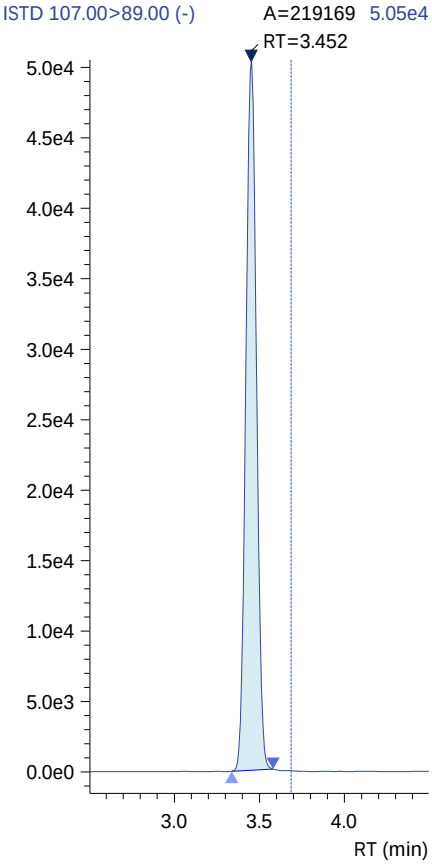
Conc ----
R#1 0.00 (31.53)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/30/2023 11:53:37 AM

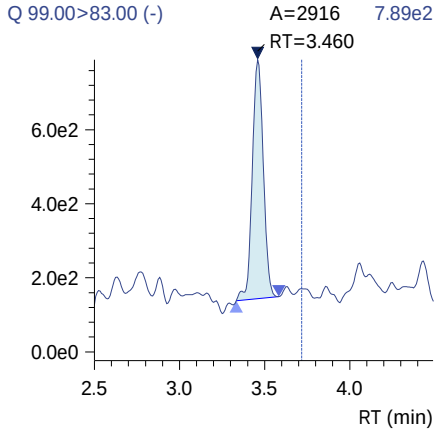
EQ2300030-02

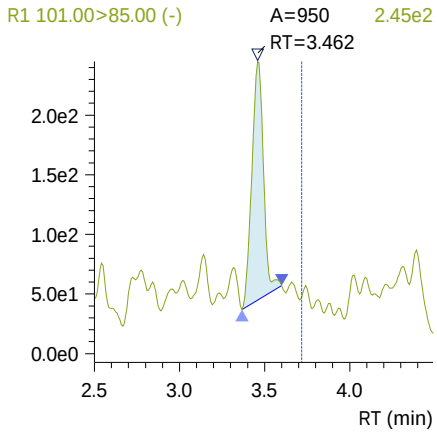
Sample ID: EQ2300030-02
Date Acquired: 1/27/2023 3:23:42 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230127\20230127-062.lcd
Vial: 38 | Inj. Volume: .250000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.460	2916	218154	0.0853	ng/mL	101.00 >85.00	32.58	22.07 -40.99
Sodium Perchlorate-18O4_IS	Auto	3.456	218154	218154	1.0000	ng/mL	----	----	

Perchlorate

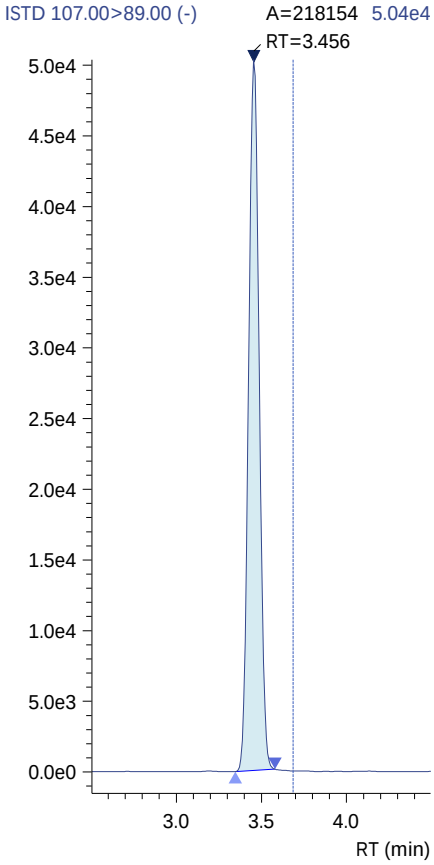
Conc 0.0853
R#1 32.58 (31.53)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/30/2023 11:53:37 AM

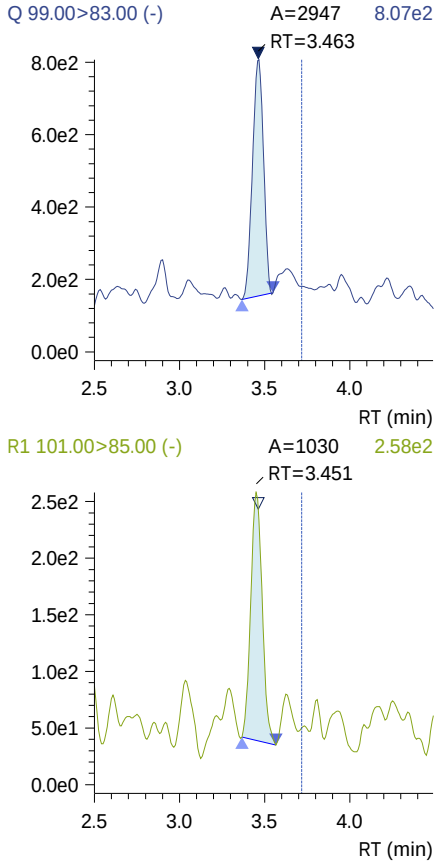
EQ2300030-03

Sample ID: EQ2300030-03
Date Acquired: 1/27/2023 3:37:14 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230127\20230127-063.lcd
Vial: 37 | Inj. Volume: .250000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.463	2947	215469	0.0873	ng/mL	101.00 >85.00	34.96	22.07 -40.99
Sodium Perchlorate-18O4_IS	Auto	3.455	215469	215469	1.0000	ng/mL	----	----	

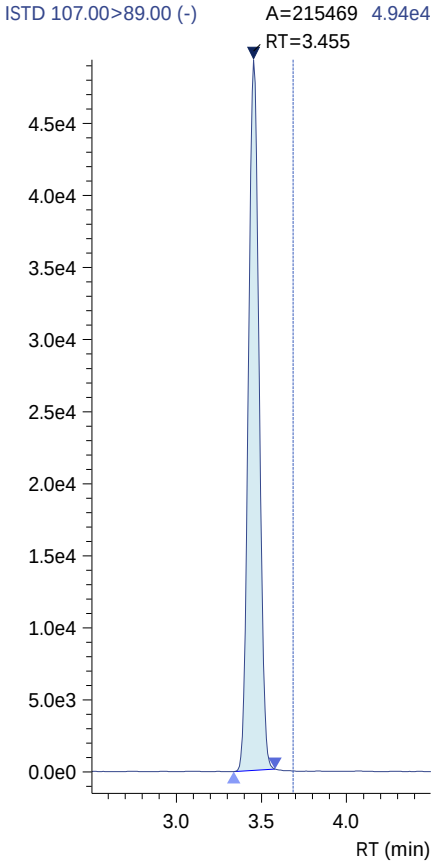
Perchlorate

Conc 0.0873
R#1 34.96 (31.53)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/30/2023 11:53:37 AM

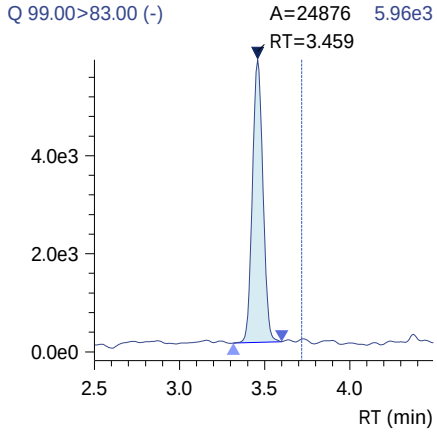
E2300067-001

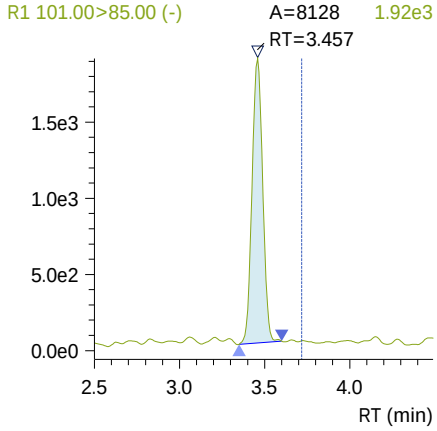
Sample ID: E2300067-001
Date Acquired: 1/27/2023 3:45:42 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230127\20230127-064.lcd
Vial: 53 | Inj. Volume: .250000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.459	24876	250894	0.6327	ng/mL	101.00 >85.00	32.67	22.07 -40.99
Sodium Perchlorate-18O4_IS	Auto	3.455	250894	250894	1.0000	ng/mL	----	----	

Perchlorate

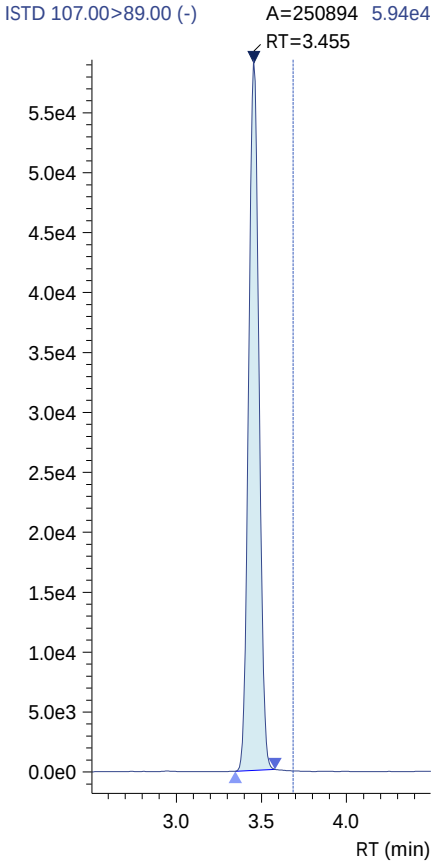
Conc 0.6327
R#1 32.67 (31.53)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/30/2023 11:53:37 AM

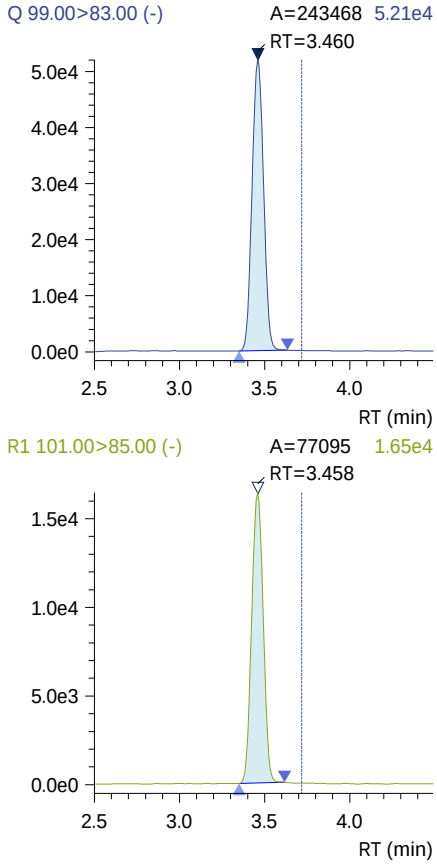
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 1/27/2023 4:03:04 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230127\20230127-067.lcd
Vial: 3 | Inj. Volume: .250000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.460	243468	164585	9.4398	ng/mL	101.00 >85.00	31.67	22.07 -40.99
Sodium Perchlorate-18O4_IS	Auto	3.455	164585	164585	1.0000	ng/mL	----	----	

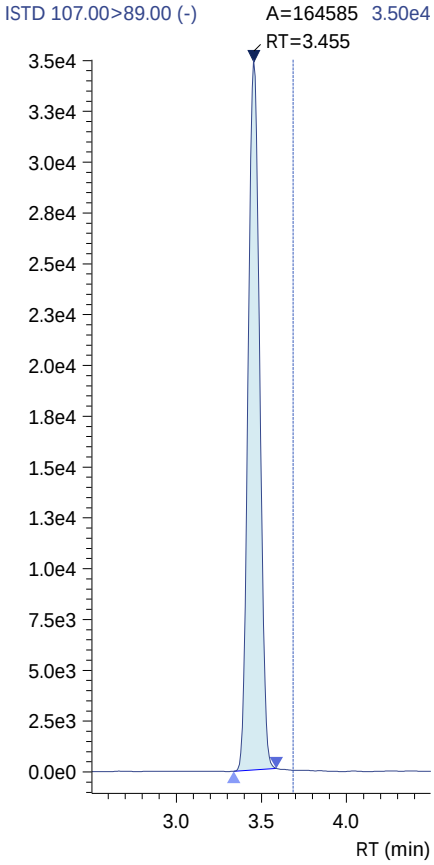
Perchlorate

Conc 9.4398
R#1 31.67 (31.53)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/30/2023 11:53:37 AM

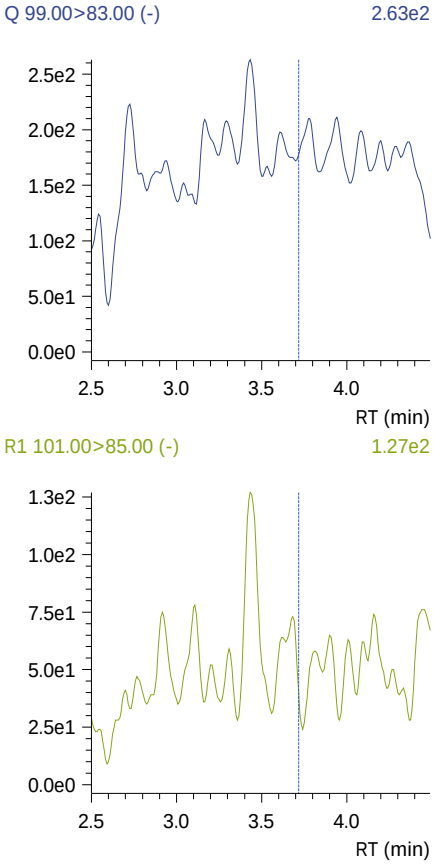
E2300067-004

Sample ID: E2300067-004
Date Acquired: 1/27/2023 4:08:52 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230127\20230127-068.lcd
Vial: 2 | Inj. Volume: .250000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	249953	----	ng/mL	101.00 >85.00	0.00	22.07 -40.99
Sodium Perchlorate-18O4_IS	Auto	3.457	249953	249953	1.0000	ng/mL	----	----	

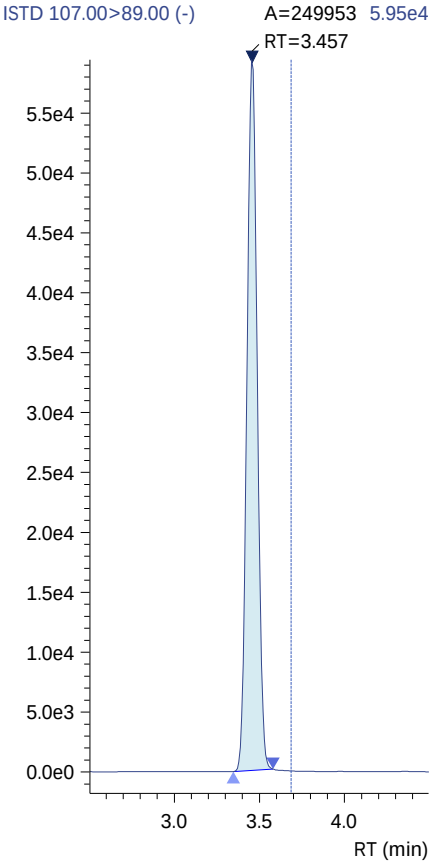
Perchlorate

Conc ----
R#1 0.00 (31.53)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/30/2023 11:53:37 AM

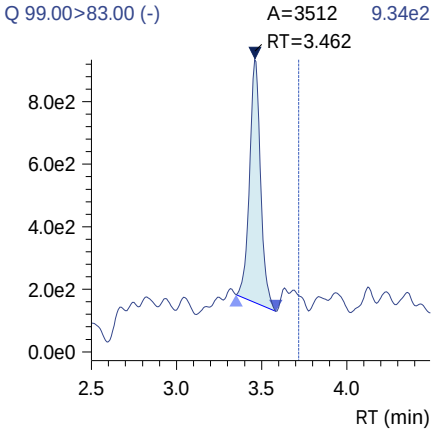
EQ2300030-04

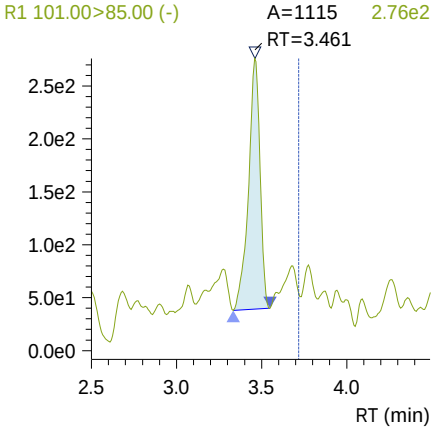
Sample ID: EQ2300030-04
Date Acquired: 1/27/2023 4:14:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230127\20230127-069.lcd
Vial: 28 | Inj. Volume: .250000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.462	3512	253343	0.0885	ng/mL	101.00 >85.00	31.75	22.07 -40.99
Sodium Perchlorate-18O4_IS	Auto	3.457	2533 43	253343	1.0000	ng/mL	----	----	

Perchlorate

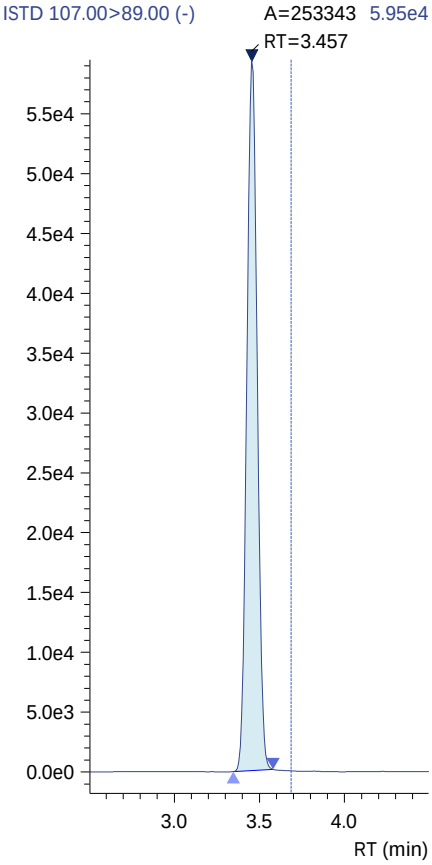
Conc 0.0885
R#1 31.75 (31.53)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/30/2023 11:53:37 AM

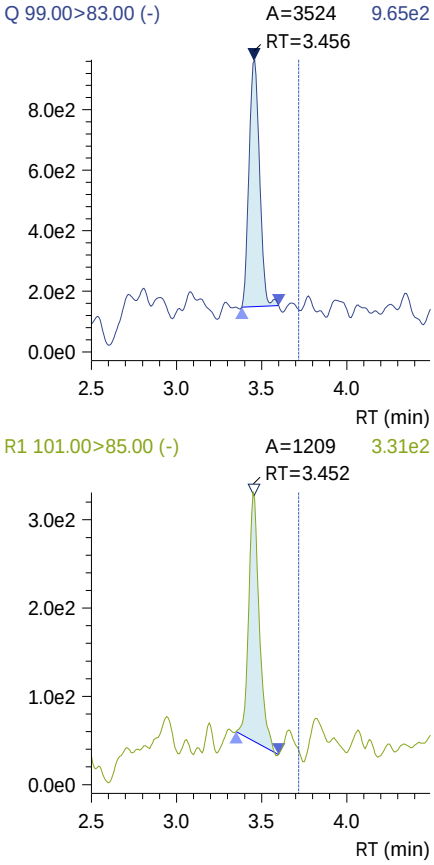
EQ2300030-05

Sample ID: EQ2300030-05
Date Acquired: 1/27/2023 4:20:27 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230127\20230127-070.lcd
Vial: 29 | Inj. Volume: .250000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.456	3524	250055	0.0899	ng/mL	101.00 >85.00	34.30	22.07 -40.99
Sodium Perchlorate-18O4_IS	Auto	3.455	2500 55	250055	1.0000	ng/mL	----	----	

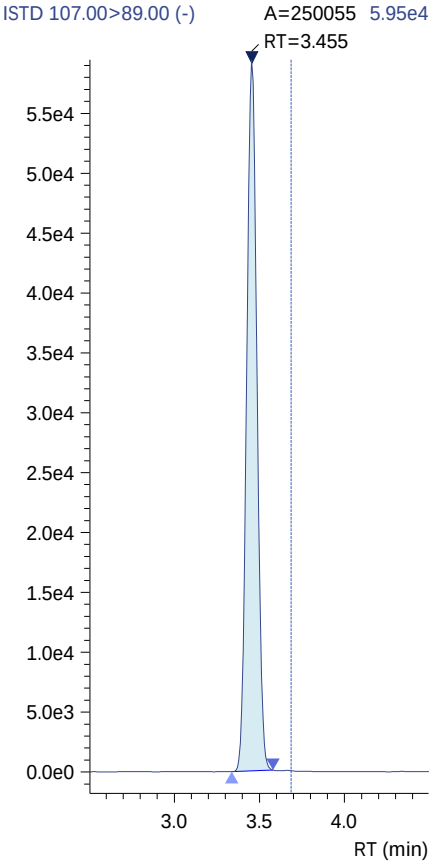
Perchlorate

Conc 0.0899
R#1 34.30 (31.53)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/30/2023 11:53:37 AM

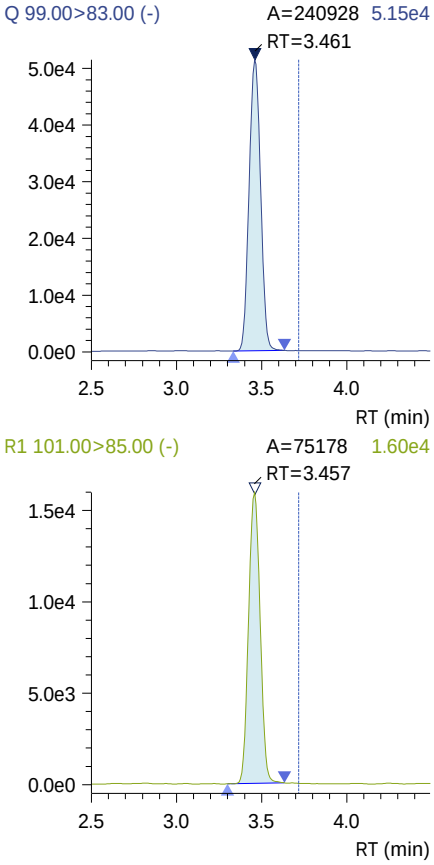
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 1/27/2023 5:02:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230127\20230127-077.lcd
Vial: 3 | Inj. Volume: .250000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.461	240928	161420	9.5244	ng/mL	101.00 >85.00	31.20	22.07 -40.99
Sodium Perchlorate-18O4_IS	Auto	3.455	161420	161420	1.0000	ng/mL	----	----	

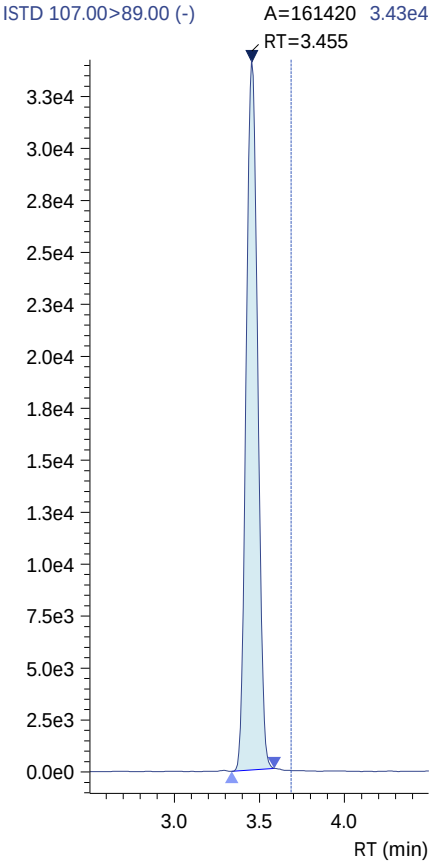
Perchlorate

Conc 9.5244
R#1 31.20 (31.53)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/31/2023 9:35:02 AM

Method File: I:\LCMS01\DATA\20230130\20230130.lcm
Project File: I:\LCMS01\DATA\20230130\20230130.damlp

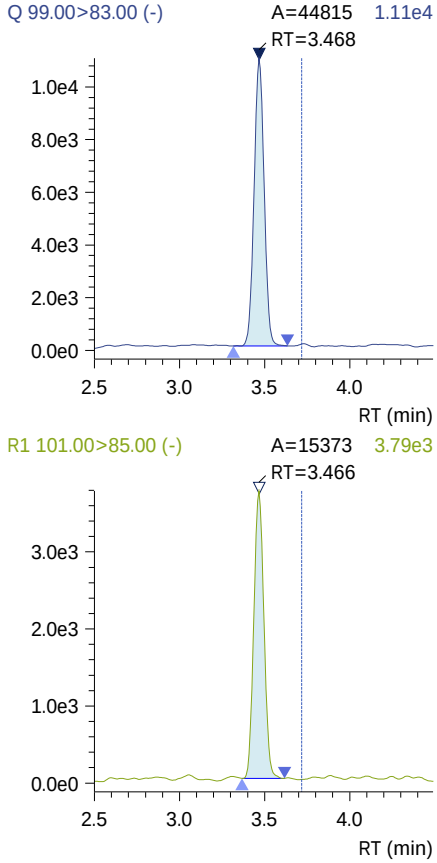
ICS

Sample ID: ICS
Date Acquired: 1/30/2023 9:14:40 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230130\20230130-002.lcd
Vial: 2 | Inj. Volume: .250000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.468	44815	257791	1.1115	ng/mL	101.00 >85.00	34.30	22.32 -41.46
Sodium Perchlorate-18O4_IS	Auto	3.464	257791	257791	1.0000	ng/mL	----	----	

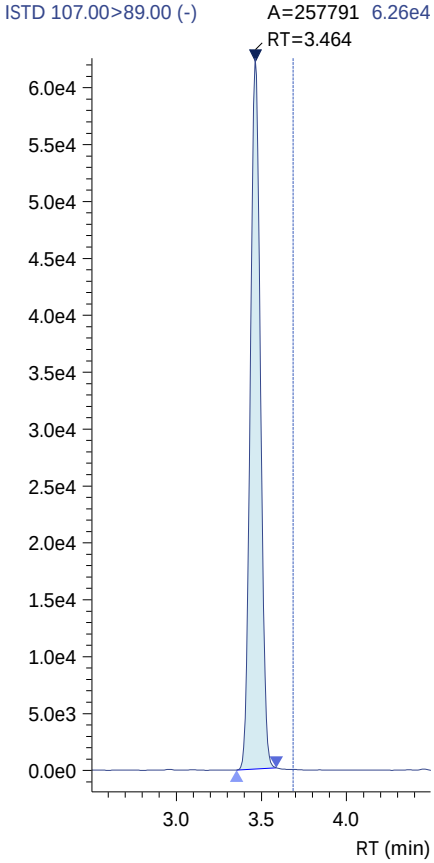
Perchlorate

Conc 1.1115
R#1 34.30 (31.89)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/31/2023 9:35:02 AM

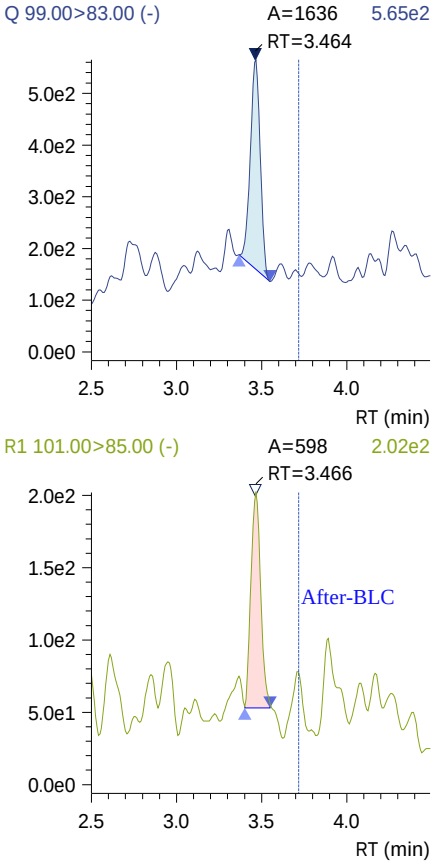
LODV

Sample ID: LODV
Date Acquired: 1/30/2023 9:31:55 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230130\20230130-003.lcd
Vial: 4 | Inj. Volume: .250000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.464	1636	217222	0.0481	ng/mL	101.00 >85.00	36.56	22.32 -41.46
Sodium Perchlorate-18O4_IS	Auto	3.461	2172 22	217222	1.0000	ng/mL	----	----	

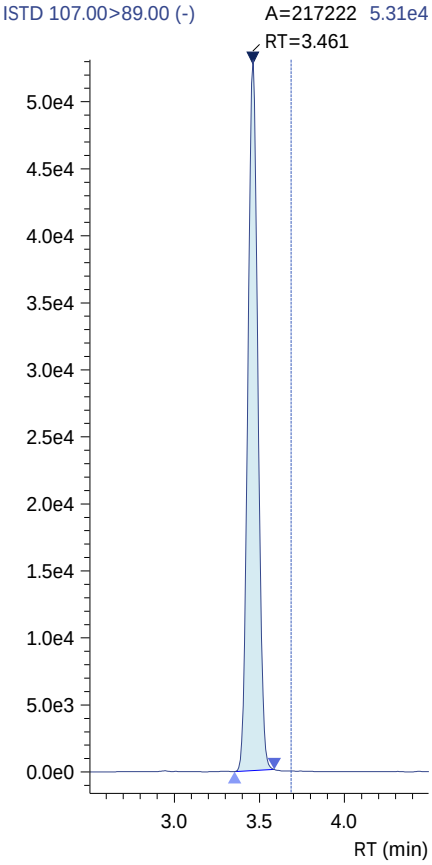
Perchlorate

Conc 0.0481
R#1 36.56 (31.89)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/31/2023 9:37:55 AM

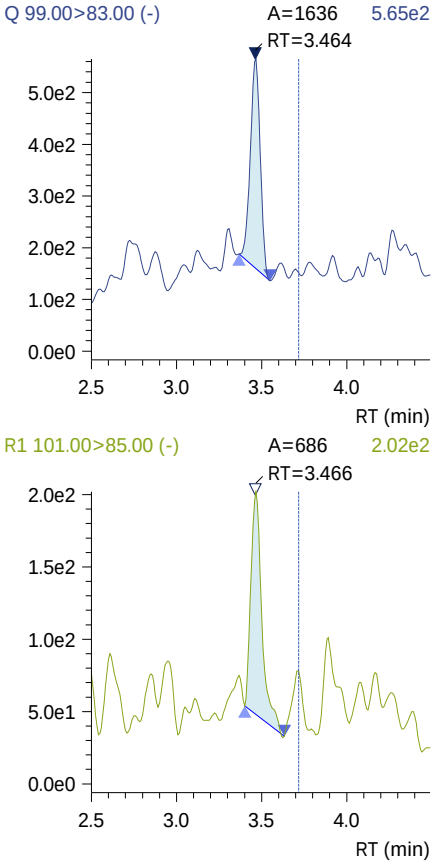
Method File: I:\LCMS01\DATA\20230130\20230130.lcm
Project File: I:\LCMS01\DATA\20230130\20230130.damlp

LODV

Sample ID: LODV
Date Acquired: 1/30/2023 9:31:55 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230130\20230130-003.lcd
Vial: 4 | Inj. Volume: .250000uL | Tray: 0

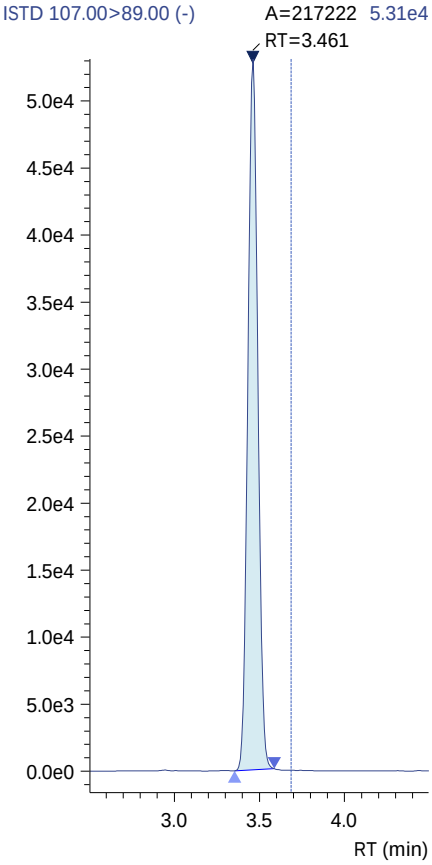
Perchlorate

Conc 0.0480
R#1 41.93 (31.89)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/31/2023 9:35:02 AM

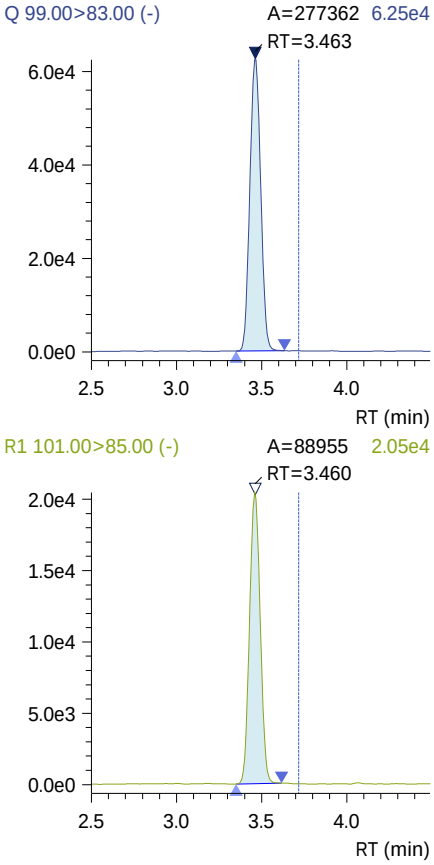
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 1/30/2023 11:02:07 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230130\20230130-015.lcd
Vial: 3 | Inj. Volume: .250000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.463	2773 62	174063	10.1 883	ng/mL	101.00 >85.00	32.07	22.32 -41.46
Sodium Perchlorate-18O4_IS	Auto	3.458	1740 63	174063	1.0000	ng/mL	----	----	

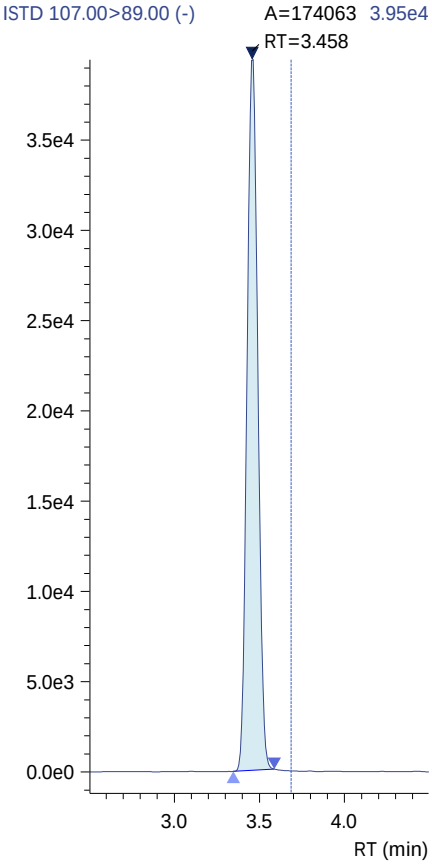
Perchlorate

Conc 10.1883
R#1 32.07 (31.89)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/31/2023 9:35:02 AM

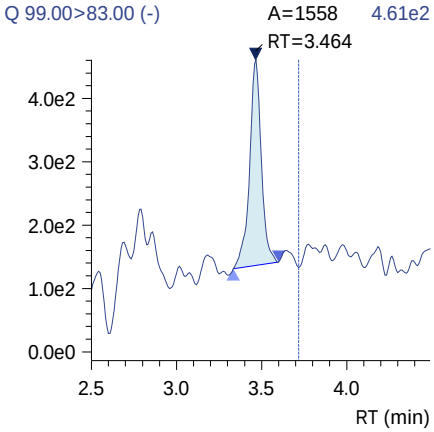
E2300067-002

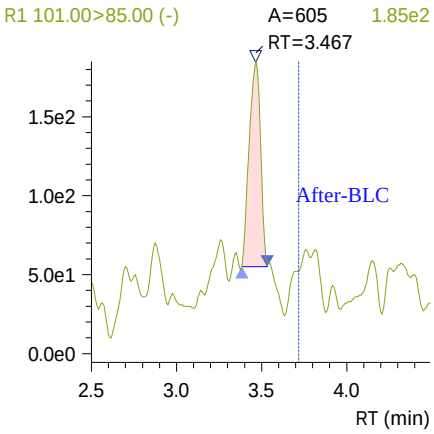
Sample ID: E2300067-002
Date Acquired: 1/30/2023 11:07:52 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230130\20230130-016.lcd
Vial: 54 | Inj. Volume: .250000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.464	1558	238769	0.0417	ng/mL	101.00 >85.00	38.81	22.32 -41.46
Sodium Perchlorate-18O4_IS	Auto	3.460	238769	238769	1.0000	ng/mL	----	----	

Perchlorate

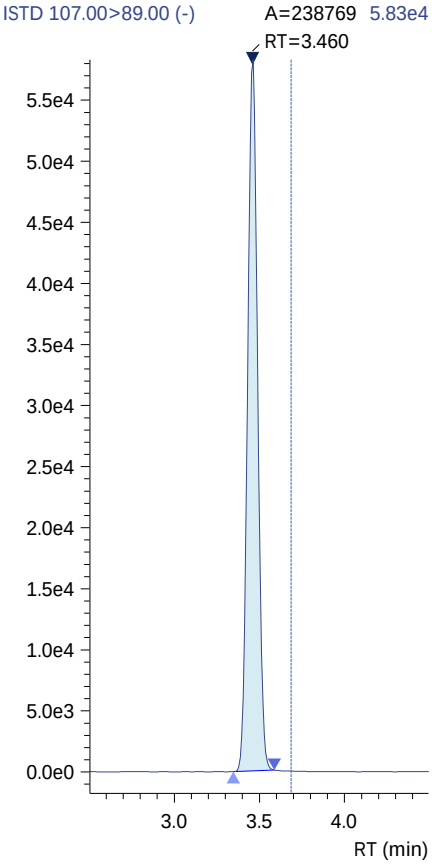
Conc 0.0417
R#1 38.81 (31.89)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/31/2023 9:37:55 AM

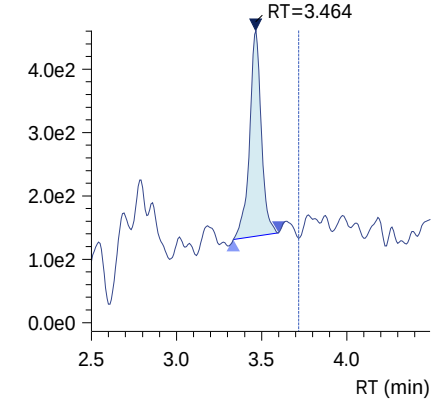
E2300067-002

Sample ID: E2300067-002
Date Acquired: 1/30/2023 11:07:52 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230130\20230130-016.lcd
Vial: 54 | Inj. Volume: .250000uL | Tray: 3

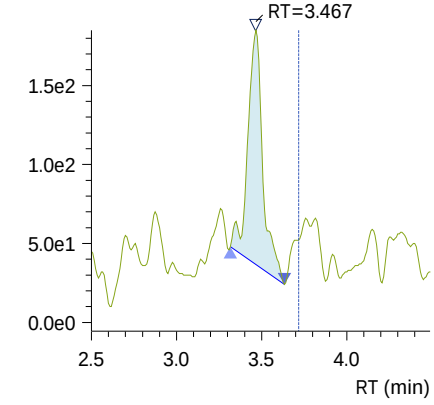
Perchlorate

Conc 0.0416
R#1 58.05 (31.89)

Q 99.00>83.00 (-) A=1558 4.61e2 RT=3.464



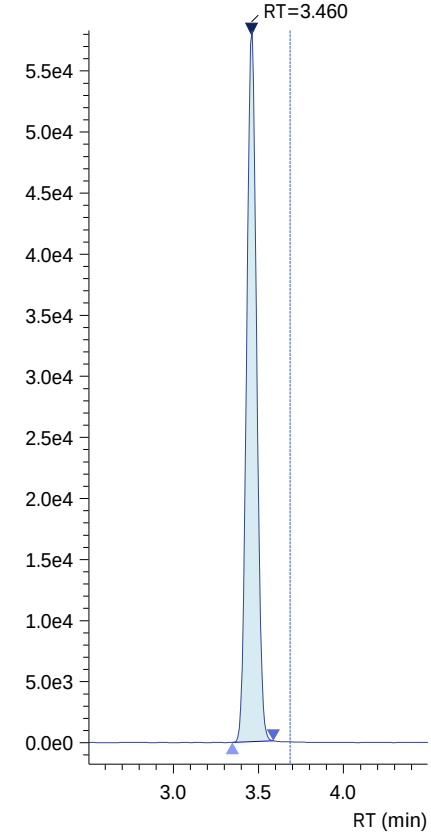
R1 101.00>85.00 (-) A=905 1.85e2 RT=3.467



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=238769 5.83e4 RT=3.460



Insight Report

Printed at 1/31/2023 9:35:02 AM

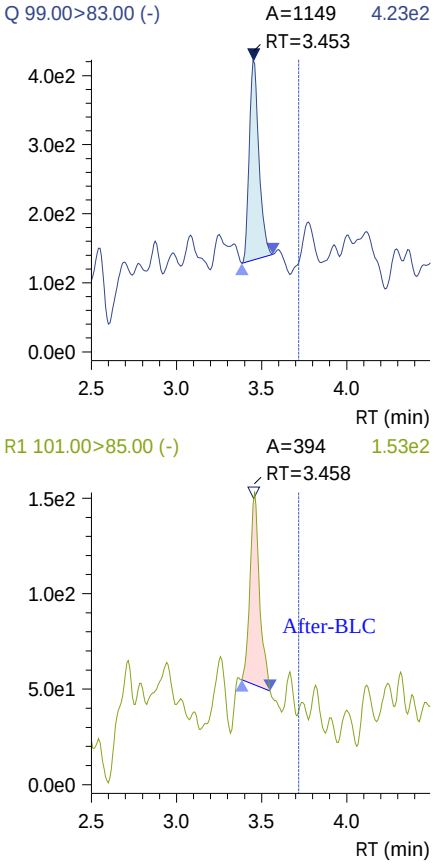
E2300067-003

Sample ID: E2300067-003
Date Acquired: 1/30/2023 11:13:37 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230130\20230130-017.lcd
Vial: 1 | Inj. Volume: .250000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.453	1149	241650	0.0304	ng/mL	101.00 >85.00	34.30	22.32 -41.46
Sodium Perchlorate-18O4_IS	Auto	3.453	241650	241650	1.0000	ng/mL	----	----	

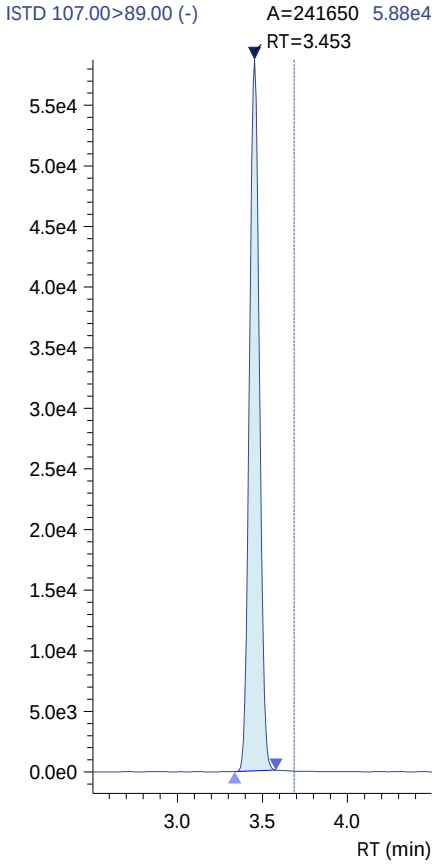
Perchlorate

Conc 0.0304
R#1 34.30 (31.89)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/31/2023 9:37:55 AM

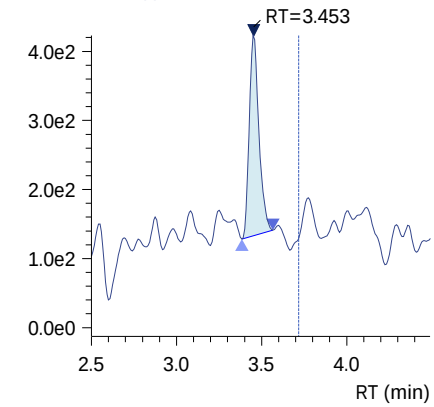
E2300067-003

Sample ID: E2300067-003
Date Acquired: 1/30/2023 11:13:37 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230130\20230130-017.lcd
Vial: 1 | Inj. Volume: .250000uL | Tray: 4

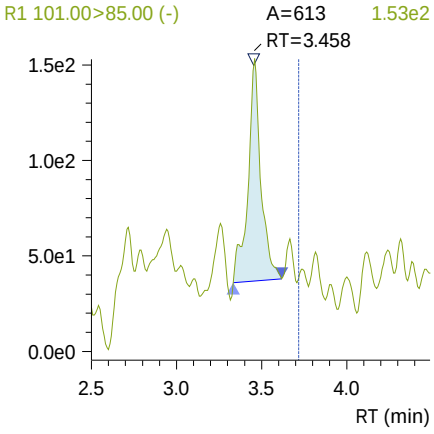
Perchlorate

Conc 0.0303
R#1 53.36 (31.89)

Q 99.00>83.00 (-) A=1149 4.23e2



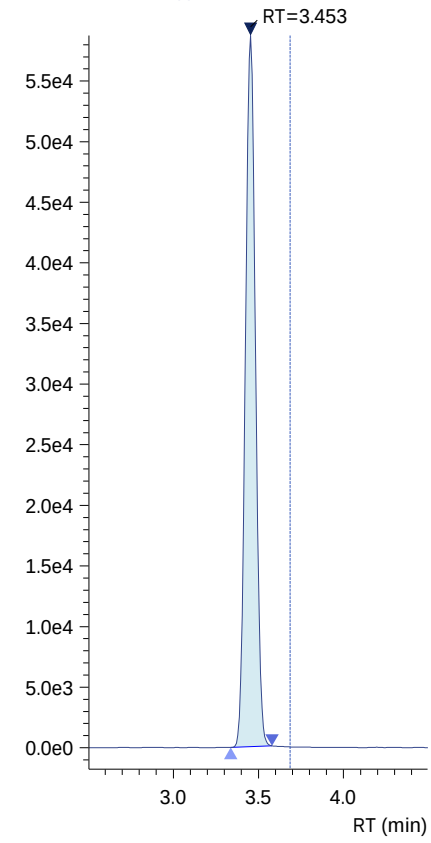
R1 101.00>85.00 (-) A=613 1.53e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=241650 5.88e4



Insight Report

Printed at 1/31/2023 9:35:02 AM

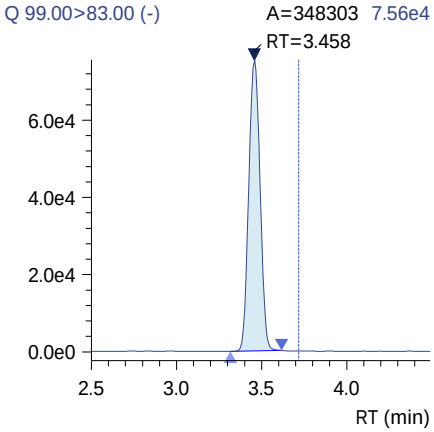
E2300067-005x1K

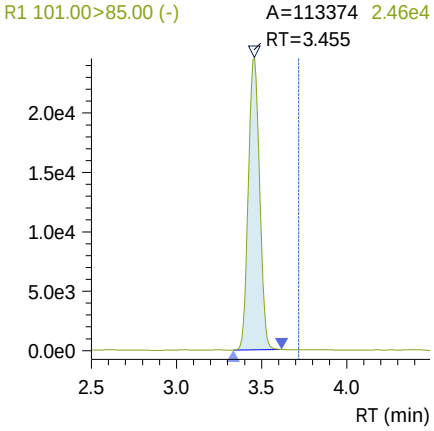
Sample ID: E2300067-005
Date Acquired: 1/30/2023 11:23:51 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230130\20230130-018.lcd
Vial: 24 | Inj. Volume: .250000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.458	348303	163453	13.6247	ng/mL	101.00 >85.00	32.55	22.32 -41.46
Sodium Perchlorate-18O4_IS	Auto	3.453	163453	163453	1.0000	ng/mL	----	----	

Perchlorate

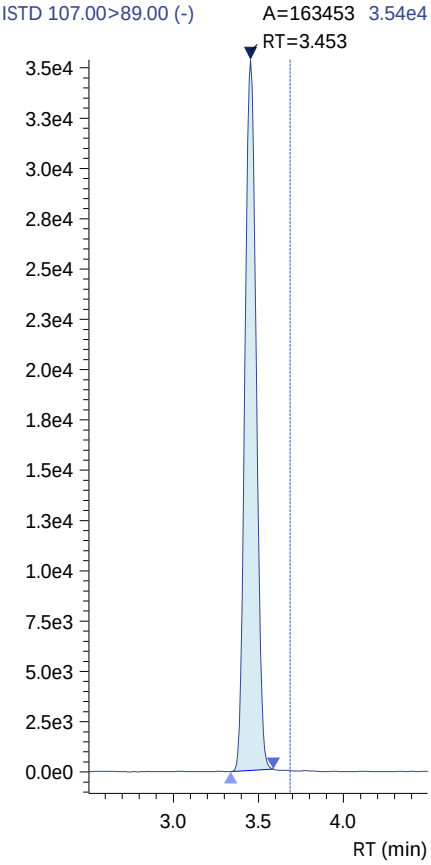
Conc 13.6247
R#1 32.55 (31.89)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/31/2023 9:35:02 AM

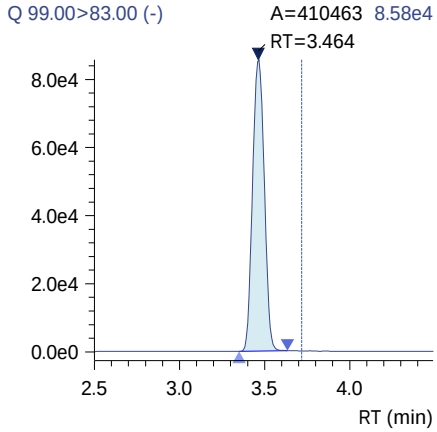
E2300067-006X5K

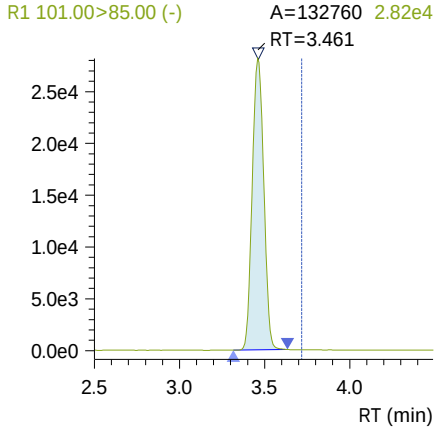
Sample ID: E2300067-006
Date Acquired: 1/30/2023 11:29:40 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230130\20230130-019.lcd
Vial: 25 | Inj. Volume: .250000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.464	4104 63	150755	17.4 086	ng/mL	101.00 >85.00	32.34	22.32 -41.46
Sodium Perchlorate-18O4_IS	Auto	3.458	1507 55	150755	1.0000	ng/mL	----	----	

Perchlorate

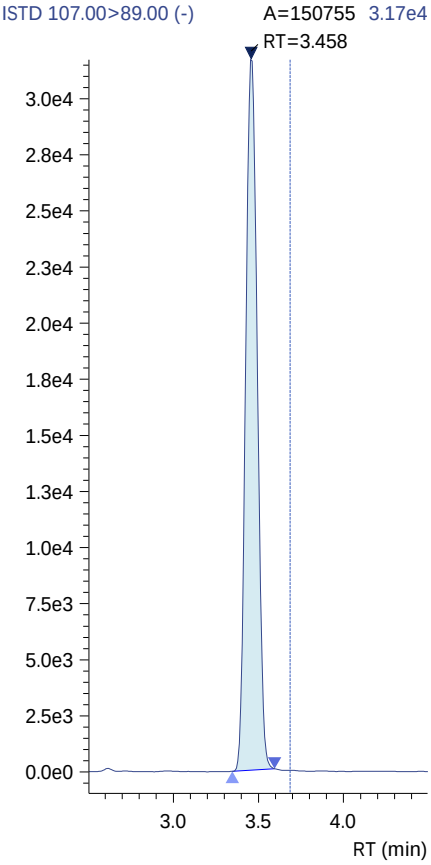
Conc 17.4086
R#1 32.34 (31.89)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 1/31/2023 9:35:02 AM

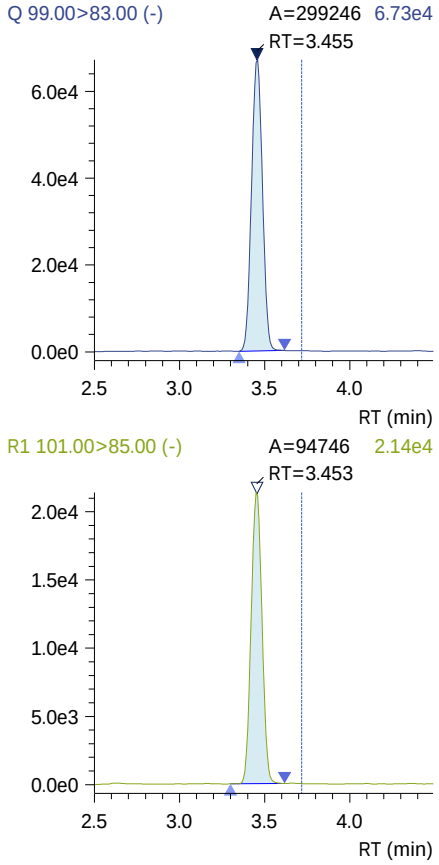
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 1/30/2023 12:30:40 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230130\20230130-025.lcd
Vial: 3 | Inj. Volume: .250000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.455	299246	194356	9.8445	ng/mL	101.00 >85.00	31.66	22.32 -41.46
Sodium Perchlorate-18O4_IS	Auto	3.450	194356	194356	1.0000	ng/mL	----	----	

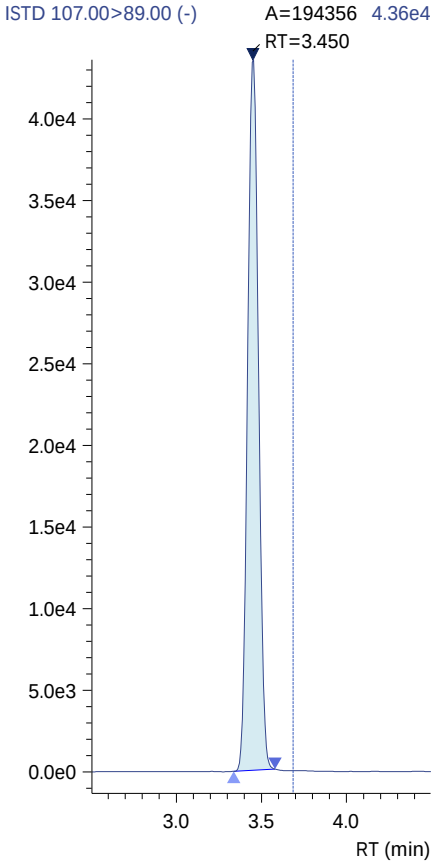
Perchlorate

Conc 9.8445
R#1 31.66 (31.89)



Sodium Perchlorate-18O4_IS

Conc 1.0000



February 17, 2023 Service Request No:E2300137

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Suite 129
Lakewood, CO 80228

Laboratory Results for: LHAAP / Site 17

Dear Marcia,

Enclosed are the results of the sample(s) submitted to our laboratory February 11, 2023
For your reference, these analyses have been assigned our service request number **E2300137.**

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.

Please contact me if you have any questions. My extension is 2188. You may also contact me via email at James.Guin@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

James Guin

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:	Bhate	**Service Request No.:**	E2300137
Project:	LHAAP	**Date Received:**	02/14/23
Sample Matrix:	W		

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

Six samples were received for analysis at ALS Environmental in Houston on 02/14/23.

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:

EQ2300068: 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 LCS, LCSD, MS, & MSD recoveries are within QC limits;

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: Bhate Environmental Associates, Inc. **Service Request:**E2300137
Project: LHAAP / Site 17

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2300137-001	130_021023	2/10/2023	0750
E2300137-002	17WW03_021023	2/10/2023	0835
E2300137-003	17WW01_021023	2/10/2023	0915
E2300137-004	17WW02_021023	2/10/2023	0925
E2300137-005	17WW06_021023	2/10/2023	0935
E2300137-006	17WW06_021023_a	2/10/2023	0935

Service Request Summary

Folder #: **E2300137**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP / Site 17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 02/11/23
Internal Due Date: 2/27/2023
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2300137-001	130_021023	Water	02/10/23 0750	**IV**
E2300137-002	17WW03_021023	Water	02/10/23 0835	**IV**
E2300137-003	17WW01_021023	Water	02/10/23 0915	**IV**
E2300137-004	17WW02_021023	Water	02/10/23 0925	**IV**
E2300137-005	17WW06_021023	Water	02/10/23 0935	**IV**
E2300137-006	17WW06_021023_a	Water	02/10/23 0935	**IV**

Service Request Summary

Folder #: **E2300137**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP / Site 17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 02/11/23
Internal Due Date: 2/27/2023
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

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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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	LA028-2023	12/31/2023
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	2368363	12/31/2023
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
Utah Department of Health Environmental Laboratory Certification	TX026932022-13	7/31/2023
Washington Department of Ecology	C819-22	11/14/2023

Chain of Custody

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Onate
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Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: ____ of ____

Project/Phase No: ~~NWO131.0150~~ MSC 2020.0016.0002.0022

COC Number(1): ____

LIMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 17

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Sample Analysis Requested (5): Number of containers	Perchlorate	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
130_021023	10 FEB 2023	0750	-	N		WG	1	X				
17WW03_021023	10 FEB 2023	0835	-	N		WG	1	X				
17WW01_021023	10 FEB 2023	0915	-	N		WG	1	X				
17WW02_021023	10 FEB 2023	0925		N		WG	1	X				
17WW02_021023_MS	10 FEB 2023	0925		MS		WG	1	X				
17WW02_021023_MSD	10 FEB 2023	0925	-	SD		WG	1	X				
17WW06_021023	10 FEB 2023	0935	-	N		WG	1	X				
17WW06_021023_a	10 FEB 2023	0935	-	FD		WG	1	X				
			-									
			-									
			-									

Quality Assurance Samples (6)

COMMENTS: STANDARD TAT

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received By (signed)	Date	Time	
1.	[signature]	2/10/23	1400	[signature]	2-11-23	1025	1.1°
2.							
3.							495641 1831

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed Ex ____ Airbill Number:

Analytical Lab: ALS 10450 Stanciff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONJA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-a)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

ALS Environmental

Cooler Receipt Form

Project Chemist DG

Client/Project RHATE

Thermometer ID IR41

Date/Time Received: 2-11-23 Initials: CG Date/Time Logged in: 2-11-23 Initials CG

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? 1-F

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?
5289 1995 2503		2-11-23	1025	CG	0.6	☑
						☐
						☐
						☐

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:

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www.alsglobal.com

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#: 414790 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 2/14/23 09:06

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2300137-001	130_021023	.01	6850/ClO4 DOD			Water	10mL	
2	E2300137-002	17WW03_021023	.01	6850/ClO4 DOD			Water	10mL	
3	E2300137-003	17WW01_021023	.01	6850/ClO4 DOD			Water	10mL	
4	E2300137-004	17WW02_021023	.02	6850/ClO4 DOD			Water	10mL	
5	E2300137-005	17WW06_021023	.01	6850/ClO4 DOD			Water	10mL	
6	E2300137-006	17WW06_021023_a	.01	6850/ClO4 DOD			Water	10mL	
7	E2300139-001	JD2300708*001	.01	6850/ClO4			Water	10mL	
8	E2300140-001	RSA-094-OVB-02	.01	6850/ClO4 DOD			Water	10mL	
9	E2300140-002	RSA-094-OVB-03	.01	6850/ClO4 DOD			Water	10mL	
10	E2300140-003	RSA-094-OVB-04	.01	6850/ClO4 DOD			Water	10mL	
11	EQ2300068-01	MB		6850/ClO4			Liquid	10mL	
12	EQ2300068-02	LCS		6850/ClO4			Liquid	10mL	
13	EQ2300068-03	DLCS		6850/ClO4			Liquid	10mL	
14	EQ2300068-06	LGAC-INT1-020623 MS	.13	6850/ClO4			Liquid	10mL	
15	EQ2300068-07	LGAC-INT1-020623 DMS	.13	6850/ClO4			Liquid	10mL	
16	EQ2300068-08	17WW03_021023 MS	.01	6850/ClO4 DOD			Liquid	10mL	
17	EQ2300068-09	17WW03_021023 DMS	.01	6850/ClO4 DOD			Liquid	10mL	
18	K2301520-001	LGAC-INF-020623	.04	6850/ClO4			Water	10mL	
19	K2301520-002	LGAC-INT1-020623	.13	6850/ClO4			Water	10mL	
20	K2301520-003	LGAC-INT2-020623	.04	6850/ClO4			Water	10mL	
21	R2300855-012	2301301503 600L-SB-23	.01	6850/ClO4			Water	10mL	
22	R2300938-004	2302031039C ST-2-466	.01	6850/ClO4			Water	10mL	
23	R2300941-012	2302031343 600L-SB-26	.01	6850/ClO4			Water	10mL	
24	R2300943-012	2302031448 600L-SB-21	.01	6850/ClO4			Water	10mL	
25	R2300945-012	2302041143 600L-SB-22	.01	6850/ClO4			Water	10mL	
26	R2300947-012	2302041613 600L-SB-20	.01	6850/ClO4			Water	10mL	
27	R2301091-012	2302061113 600L-SB-27	.01	6850/ClO4			Water	10mL	

Spiking Solutions

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 226778 Logbook Ref: Perchlorate Internal Standard Expires On: 05/31/2023

E2300137-001	100.00µL	E2300137-002	100.00µL	E2300137-003	100.00µL	E2300137-004	100.00µL	E2300139-001	100.00µL	E2300140-001	100.00µL
E2300140-002	100.00µL	E2300140-003	100.00µL	EQ2300068-01	100.00µL	EQ2300068-01	100.00µL	EQ2300068-02	100.00µL	EQ2300068-02	100.00µL
EQ2300068-03	100.00µL	EQ2300068-03	100.00µL	EQ2300068-06	100.00µL	EQ2300068-07	100.00µL	EQ2300068-08	100.00µL	EQ2300068-09	100.00µL
K2301520-001	100.00µL	K2301520-002	100.00µL	K2301520-003	100.00µL	R2300855-012	100.00µL	R2300938-004	100.00µL	R2300941-012	100.00µL

Preparation Information Benchsheet

Prep Run#: 414790 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 2/14/23 09:06

R2300943-012 100.00µL R2300945-012 100.00µL R2300947-012 100.00µL R2301091-012 100.00µL

Name: Perchlorate Intermediate Stock1 Inventory ID 227236 Logbook Ref: Perchlorate (1st Source) Expires On: 07/31/2023

EQ2300068-02 1.00µL EQ2300068-02 1.00µL EQ2300068-03 1.00µL EQ2300068-03 1.00µL EQ2300068-06 1.00µL EQ2300068-07 1.00µL
EQ2300068-08 1.00µL EQ2300068-09 1.00µL

Preparation Materials

Water HPLC Grade	01/04/2023 Water (226857)	6850 Amber Glass screw vial	2mL Screw Top Vial (221894)	6850 0.45um syringe filters	6850 Syringe Filters (224414)
6850 Pipette Tips 50-1000 uL	6850 Pipette Tips (221929)	6850 Luer-Lok Syringes	Luer-Lok Syringes (221305)		

Preparation Steps

Step: Preparation
Started: 2/14/23 09:06
Finished: 2/14/23 17:01
By: XMI
Comments

Comments: _____

Reviewed By: XMI Date: 2/14/23

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Analytical Results

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ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Collected:**	2/10/23 0750
Sample Matrix:	Water	**Date Received:**	2/11/23
Sample Name:	130_021023	**Units:**	µg/L
Lab Code:	E2300137-001	**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	**1.79**		0.100	0.0500	0.0250	1	2/14/23	2/15/23 13:54	414790	794597	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Collected:**	2/10/23 0835
Sample Matrix:	Water	**Date Received:**	2/11/23
Sample Name:	17WW03_021023	**Units:**	µg/L
Lab Code:	E2300137-002	**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	**0.0674**	J	0.100	0.0500	0.0250	1	2/14/23	2/15/23 13:59	414790	794597	

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Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Collected:**	2/10/23 0915
Sample Matrix:	Water	**Date Received:**	2/11/23
Sample Name:	17WW01_021023	**Units:**	µg/L
Lab Code:	E2300137-003	**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	**0.0491**	J	0.100	0.0500	0.0250	1	2/14/23	2/15/23 16:08	414790	794597	

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Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Collected:**	2/10/23 0925
Sample Matrix:	Water	**Date Received:**	2/11/23
Sample Name:	17WW02_021023	**Units:**	µg/L
Lab Code:	E2300137-004	**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	**15400**		100	50.0	25.0	1000	2/14/23	2/15/23 16:20	414790	794597	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Collected:**	2/10/23 0935
Sample Matrix:	Water	**Date Received:**	2/11/23
Sample Name:	17WW06_021023	**Units:**	µg/L
Lab Code:	E2300137-005	**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	**108000**		1000	500	250	10000	2/14/23	2/16/23 16:22	414790	794795	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Collected:**	2/10/23 0935
Sample Matrix:	Water	**Date Received:**	2/11/23
Sample Name:	17WW06_021023_a	**Units:**	µg/L
Lab Code:	E2300137-006	**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	**108000**		1000	500	250	10000	2/14/23	2/16/23 16:28	414790	794795	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2300068-01	**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	2/14/23	2/15/23 12:57	414790	794597	

Accuracy & Precision

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QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Analyzed:**	2/15/23
Sample Matrix:	Water		

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Units:**	µg/L
Prep Method:	Method	**Basis:**	NA
		Extraction Lot:	414790

	Lab Control Sample EQ2300068-02			Duplicate Lab Control Sample EQ2300068-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.0973	0.100	97	0.0929	0.100	93	84 - 119	5	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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2300068-02	**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	**0.0973**	J	0.100	0.0500	0.0250	1	2/14/23	2/15/23 13:15	414790	794597	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2300068-03	**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	**0.0929**	J	0.100	0.0500	0.0250	1	2/14/23	2/15/23 13:08	414790	794597	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Collected:**	2/10/23
Sample Matrix:	Water	**Date Received:**	2/11/23
		Date Analyzed:	2/15/23

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	17WW03_021023	**Units:**	µg/L
Lab Code:	E2300137-002	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		17WW03_021023MS				17WW03_021023DMS					
		Matrix Spike				**Duplicate Matrix Spike**					
		EQ2300068-08				EQ2300068-09					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.0674	0.172	0.100	105	0.166	0.100	98	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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Collected:**	2/10/23 0835
Sample Matrix:	Water	**Date Received:**	2/11/23
Sample Name:	17WW03_021023	**Units:**	µg/L
Lab Code:	EQ2300068-08	**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	**0.172**		0.100	0.0500	0.0250	1	2/14/23	2/15/23 16:42	414790	794597	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Collected:**	2/10/23 0835
Sample Matrix:	Water	**Date Received:**	2/11/23
Sample Name:	17WW03_021023	**Units:**	µg/L
Lab Code:	EQ2300068-09	**Basis:**	NA
Run Type:	Duplicate 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	**0.166**		0.100	0.0500	0.0250	1	2/14/23	2/15/23 16:48	414790	794597	

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

20230201-793296

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: Kneir

ICAL Date: 2/1/2023
Cal. Std. xp: 07/31/2023
ICAL ID: EC2300002

Mobile Phases : A:0.10% Formic Acid/Water 3210303-02 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	PERCHLORATE1		20230201-003	Perchlorate6850c.lcm	1x	☒	227245	2/1/2023 11:50
2	PERCHLORATE2		20230201-004	Perchlorate6850c.lcm	1x	☒	227246	2/1/2023 11:55
3	PERCHLORATE3		20230201-005	Perchlorate6850c.lcm	1x	☒	227247	2/1/2023 12:01
4	PERCHLORATE4		20230201-006	Perchlorate6850c.lcm	1x	☒	227248	2/1/2023 12:07
5	PERCHLORATE5		20230201-007	Perchlorate6850c.lcm	1x	☒	227249	2/1/2023 12:13
6	PERCHLORATE6		20230201-008	Perchlorate6850c.lcm	1x	☒	227250	2/1/2023 12:19
7	PERCHLORATE7		20230201-009	Perchlorate6850c.lcm	1x	☒	227251	2/1/2023 12:25
8	PERCHLORATE8		20230201-010	Perchlorate6850c.lcm	1x	☒	227252	2/1/2023 12:30
9	PERCHLORATE9		20230201-011	Perchlorate6850c.lcm	1x	☒	227253	2/1/2023 12:36
10	PERCHLORATE10		20230201-012	Perchlorate6850c.lcm	1x	☒	227254	2/1/2023 12:42
11	PERCHLORATEICV		20230201-013	Perchlorate6850c.lcm	1x	☒	227256	2/1/2023 12:48
12	LODV		20230201-014	Perchlorate6850c.lcm	1x	☒	225199	2/1/2023 12:54
13	ICS		20230201-015	Perchlorate6850c.lcm	1x	☒	32103024	2/1/2023 13:00
14	PERCHLORATE7		20230201-016	Perchlorate6850c.lcm	1x	☒	227251	2/1/2023 15:24
15	EQ2300047-01		20230201-017	Perchlorate6850c.lcm	1x	☒		2/1/2023 15:30
16	EQ2300047-02		20230201-018	Perchlorate6850c.lcm	1x	☒		2/1/2023 15:36
17	EQ2300047-03		20230201-019	Perchlorate6850c.lcm	1x	☒		2/1/2023 15:41
18	R2300589-005		20230201-020	Perchlorate6850c.lcm	1x	☒		2/1/2023 15:48
19	R2300589-010		20230201-021	Perchlorate6850c.lcm	1x	☒	DNU-BAD PEAK SHAPE	2/1/2023 15:54
20	R2300648-018		20230201-022	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:00
21	R2300648-025		20230201-023	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:06
22	PERCHLORATE7		20230201-024	Perchlorate6850c.lcm	1x	☒	227251	2/1/2023 16:17
23	E2300092-001		20230201-025	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:23
24	E2300092-002		20230201-026	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:29
25	E2300092-003		20230201-027	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:35
26	E2300092-004		20230201-028	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:41
27	E2300094-001		20230201-029	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:47
28	E2300094-002		20230201-030	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:52
29	E2300094-003		20230201-031	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:58
30	E2300094-004		20230201-032	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:04
31	E2300094-005		20230201-033	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:10
32	PERCHLORATE7		20230201-034	Perchlorate6850c.lcm	1x	☒	227251	2/1/2023 17:16
33	E2300096-001		20230201-035	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:21
34	E2300096-002		20230201-036	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:27
35	E2300096-003		20230201-037	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:33
36	E2300096-004		20230201-038	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:39
37	E2300096-005		20230201-039	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:45
38	E2300096-006		20230201-040	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:51
39	E2300096-007		20230201-041	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:56
40	PERCHLORATE7		20230201-042	Perchlorate6850c.lcm	1x	☒	227251	2/1/2023 18:02

Initial Calibration - Detailed Report

Calibration ID: EC2300002 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2300002-01	PERCHLORATE1	20230201-003	02/01/2023 11:50
02	EC2300002-02	PERCHLORATE2	20230201-004	02/01/2023 11:55
03	EC2300002-03	PERCHLORATE3	20230201-005	02/01/2023 12:01
04	EC2300002-04	PERCHLORATE4	20230201-006	02/01/2023 12:07
05	EC2300002-05	PERCHLORATE5	20230201-007	02/01/2023 12:13
06	EC2300002-06	PERCHLORATE6	20230201-008	02/01/2023 12:19
07	EC2300002-07	PERCHLORATE7	20230201-009	02/01/2023 12:25
08	EC2300002-08	PERCHLORATE8	20230201-010	02/01/2023 12:30
09	EC2300002-09	PERCHLORATE9	20230201-011	02/01/2023 12:36
10	EC2300002-10	PERCHLORATE10	20230201-012	02/01/2023 12:42

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 4.86** **Average RF = 0.1385**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1253	02	0.5000	0.13	03	0.7000	0.1346	04	1.0000	0.1399
05	2.0000	0.1406	06	5.0000	0.1404	07	10.0000	0.1416	08	20.0000	0.1407
09	30.0000	0.1447	10	50.0000	0.1477						

Analyte

Perchlorate RSE = 4.86

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.0904	-9.6	02	0.5000	0.469	-6.1	03	0.7000	0.680	-2.8
04	1.0000	1.01	0.9	05	2.0000	2.03	1.5	06	5.0000	5.07	1.3
07	10.0000	10.2	2.2	08	20.0000	20.3	1.5	09	30.0000	31.3	4.5
10	50.0000	53.3	6.6								

Initial Calibration Verification Summary Report

Calibration ID:	EC2300002	**Instrument ID:**	E-LCMS-01
Datafile ID:	20230201-013	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2300002-11	T	Average RF	10	10.538	ng/mL	5.4	<= 15

Insight Report

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Project File: I:\LCMS01\DATA\02012023\20230201.damlp

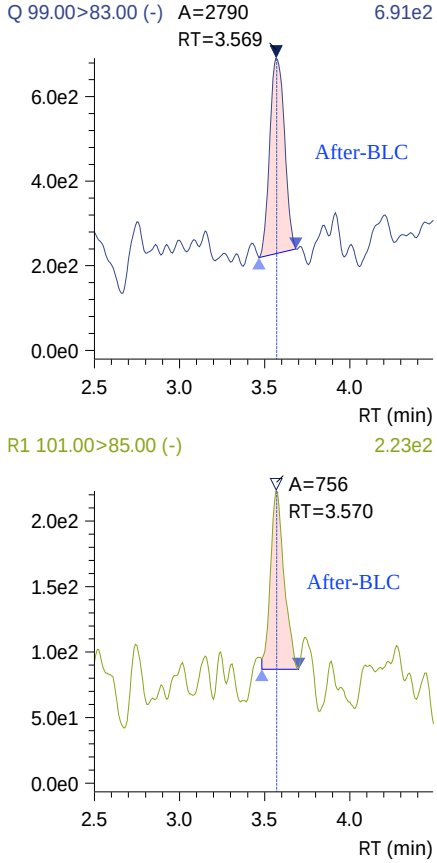
PERCHLORATE1

Sample ID: PERCHLORATE1
Date Acquired: 2/1/2023 11:50:11 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-003.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.569	2790	222693	0.0904	ng/mL	101.00 >85.00	27.11	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.568	222693	222693	1.0000	ng/mL	----	----	

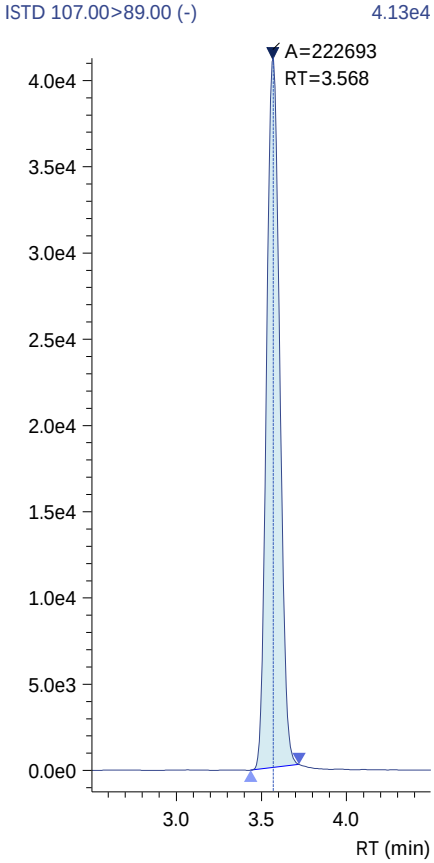
Perchlorate

Conc 0.0904
R#1 27.11 (31.99)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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Project File: I:\LCMS01\DATA\20230201\20230201ICAL.damIp

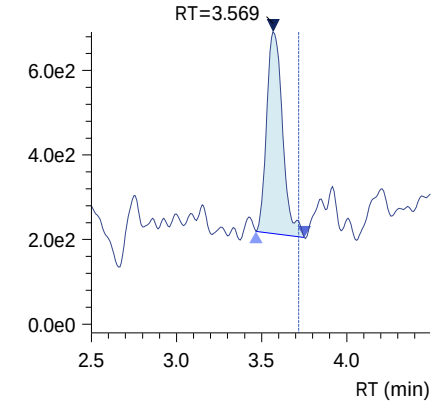
PERCHLORATE1

Sample ID: PERCHLORATE1
Date Acquired: 2/1/2023 11:50:11 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-003.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 1

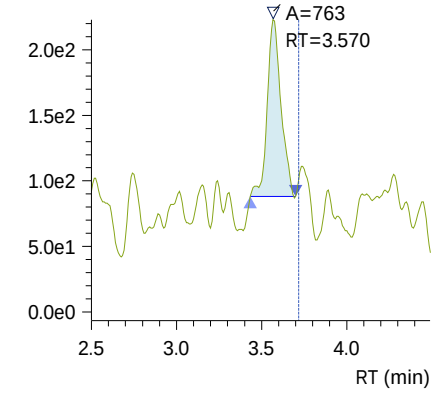
Perchlorate

Conc 0.0996
R#1 24.56 (34.45)

Q 99.00>83.00 (-) A=3105 6.91e2



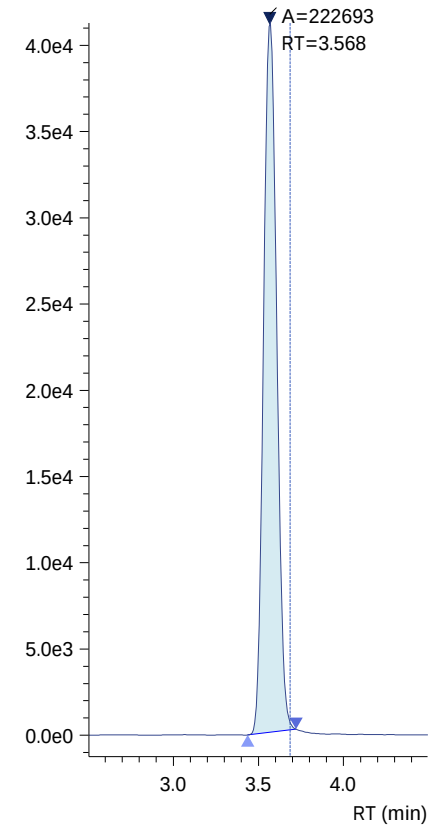
R1 101.00>85.00 (-) 2.23e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.13e4



Insight Report

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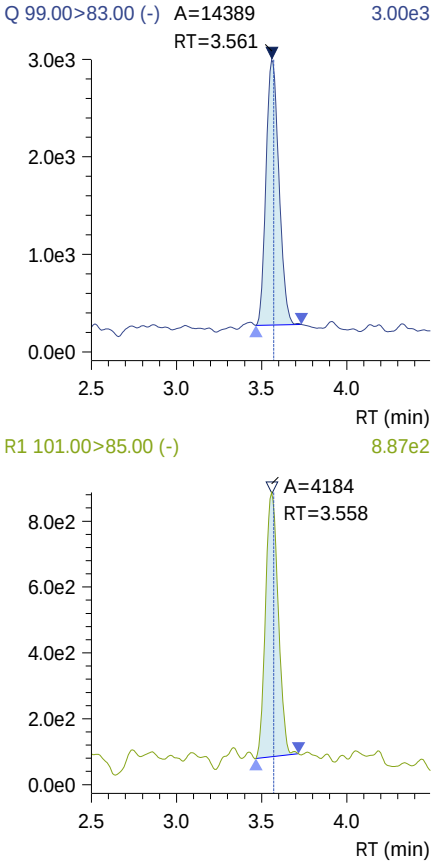
PERCHLORATE2

Sample ID: PERCHLORATE2
Date Acquired: 2/1/2023 11:55:59 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-004.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.561	14389	221291	0.4694	ng/mL	101.00 >85.00	29.08	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.558	221291	221291	1.0000	ng/mL	----	----	

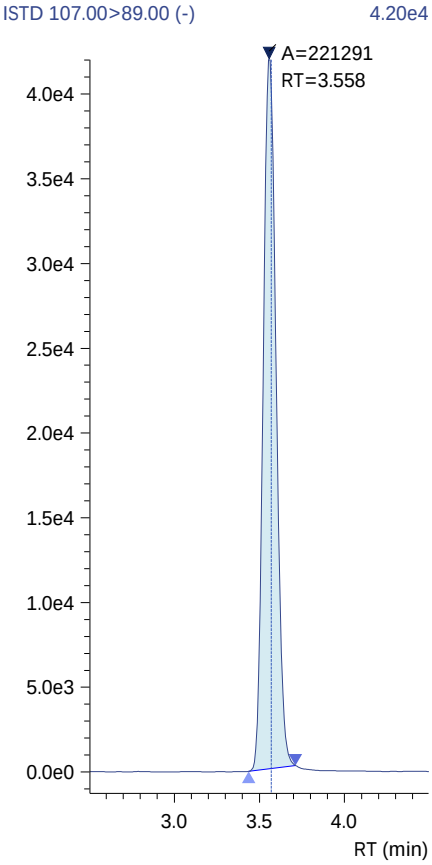
Perchlorate

Conc 0.4694
R#1 29.08 (31.99)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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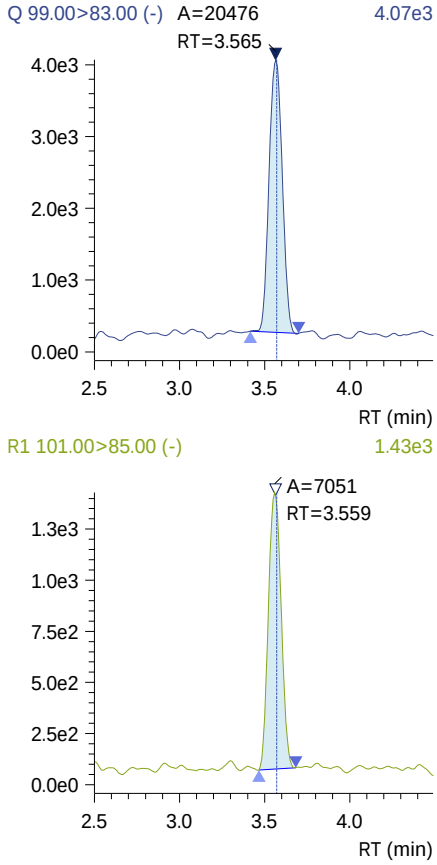
PERCHLORATE3

Sample ID: PERCHLORATE3
Date Acquired: 2/1/2023 12:01:49 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-005.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.565	20476	217325	0.6801	ng/mL	101.00 >85.00	34.44	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.559	2173 25	217325	1.0000	ng/mL	----	----	

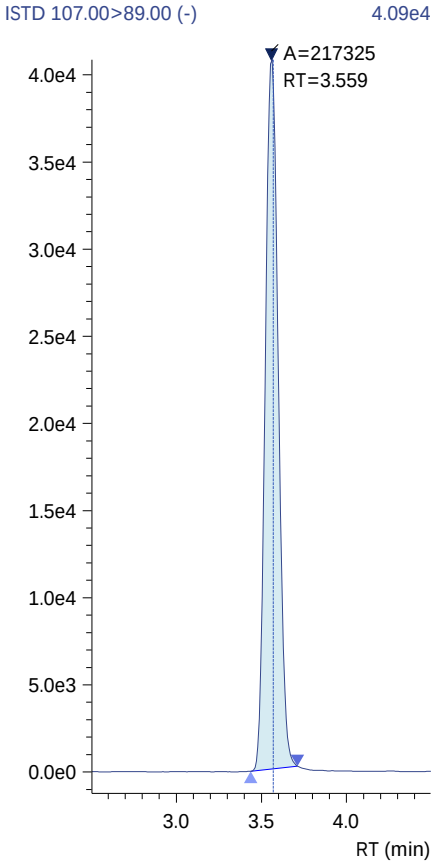
Perchlorate

Conc 0.6801
R#1 34.44 (31.99)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/1/2023 2:06:14 PM

PERCHLORATE4

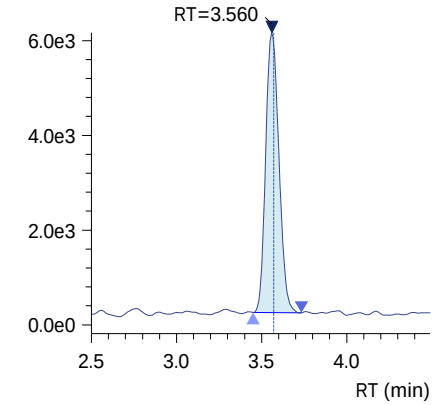
Sample ID: PERCHLORATE4
Date Acquired: 2/1/2023 12:07:38 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-006.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.560	31993	228763	1.0095	ng/mL	101.00 >85.00	30.65	24.11 -44.78
Sodium Perchlorate-18O4 _IS	Auto	3.557	2287 63	228763	1.0000	ng/mL	----	----	

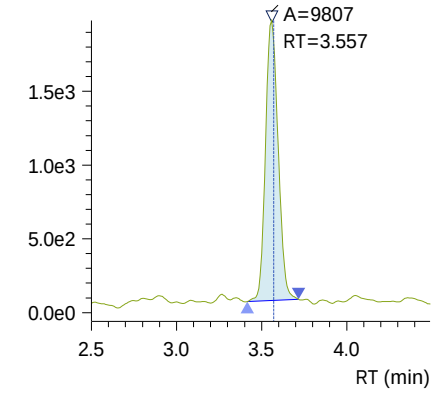
Perchlorate

Conc 1.0095
R#1 30.65 (31.99)

Q 99.00>83.00 (-) A=31993 6.17e3



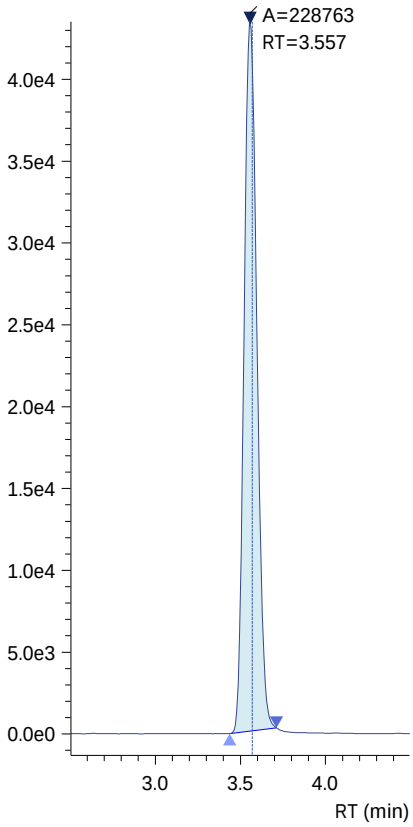
R1 101.00>85.00 (-) 1.98e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.35e4



Insight Report

Printed at 2/1/2023 2:06:14 PM

PERCHLORATE5

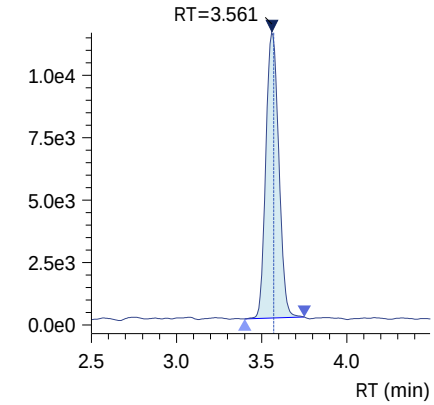
Sample ID: PERCHLORATE5
Date Acquired: 2/1/2023 12:13:29 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-007.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.561	60751	216066	2.0296	ng/mL	101.00 >85.00	32.70	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.557	216066	216066	1.0000	ng/mL	----	----	

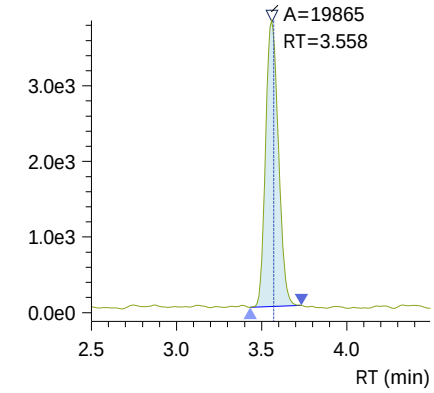
Perchlorate

Conc 2.0296
R#1 32.70 (31.99)

Q 99.00>83.00 (-) A=60751 1.17e4



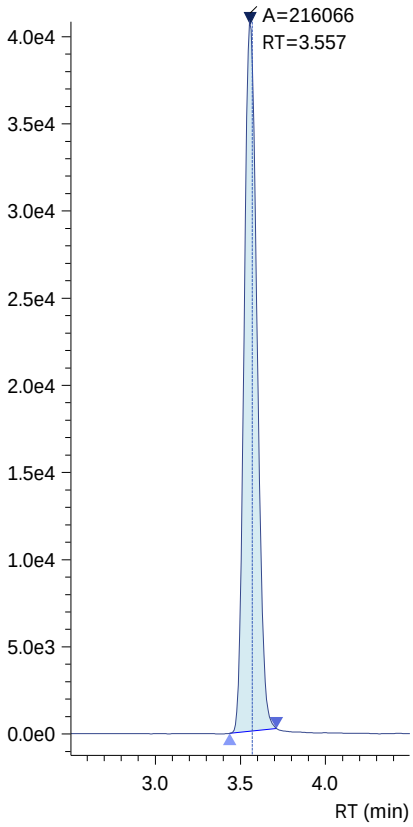
R1 101.00>85.00 (-) 3.87e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.09e4



Insight Report

Printed at 2/1/2023 2:06:14 PM

PERCHLORATE6

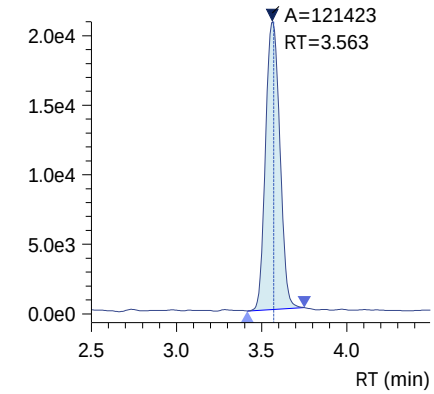
Sample ID: PERCHLORATE6
Date Acquired: 2/1/2023 12:19:20 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-008.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.563	1214 23	172986	5.0667	ng/mL	101.00 >85.00	32.55	24.11 -44.78
Sodium Perchlorate-18O4 _IS	Auto	3.558	1729 86	172986	1.0000	ng/mL	----	----	

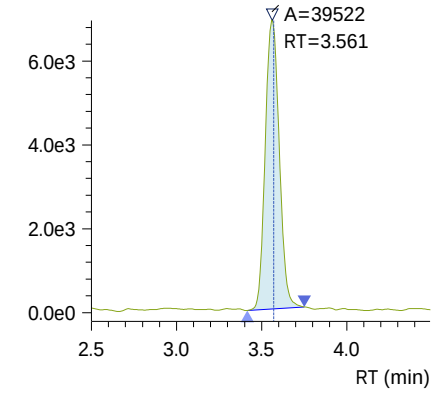
Perchlorate

Conc 5.0667
R#1 32.55 (31.99)

Q 99.00>83.00 (-) 2.10e4



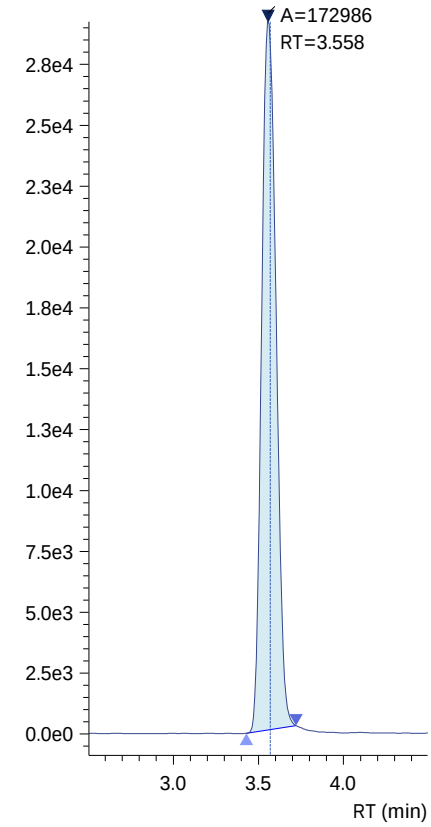
R1 101.00>85.00 (-) 6.97e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.93e4



Insight Report

Printed at 2/1/2023 2:06:14 PM

PERCHLORATE7

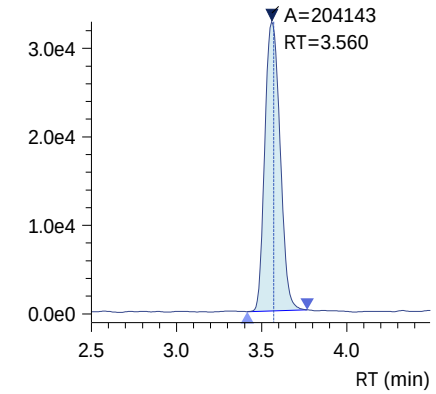
Sample ID: PERCHLORATE7
Date Acquired: 2/1/2023 12:25:10 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-009.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.560	2041 43	144196	10.2 192	ng/mL	101.00 >85.00	31.99	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.555	144196	144196	1.0000	ng/mL	----	----	

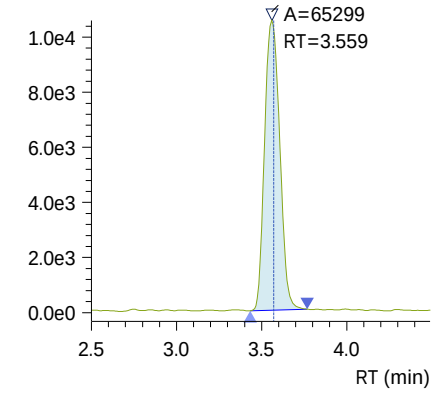
Perchlorate

Conc 10.2192
R#1 31.99 (31.99)

Q 99.00>83.00 (-) 3.30e4



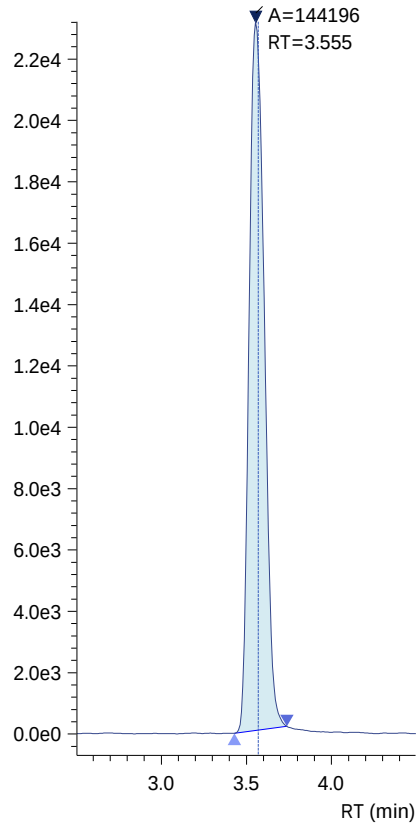
R1 101.00>85.00 (-) 1.06e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.32e4



Insight Report

Printed at 2/1/2023 2:06:14 PM

PERCHLORATE8

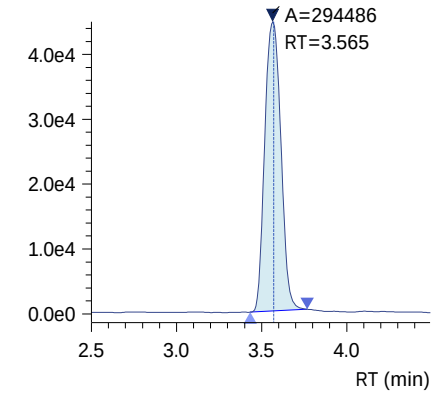
Sample ID: PERCHLORATE8
Date Acquired: 2/1/2023 12:30:57 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-010.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.565	294486	104680	20.3065	ng/mL	101.00 >85.00	32.66	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.557	104680	104680	1.0000	ng/mL	----	----	

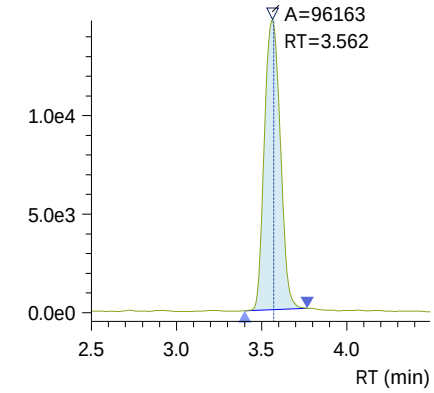
Perchlorate

Conc 20.3065
R#1 32.66 (31.99)

Q 99.00>83.00 (-) 4.50e4



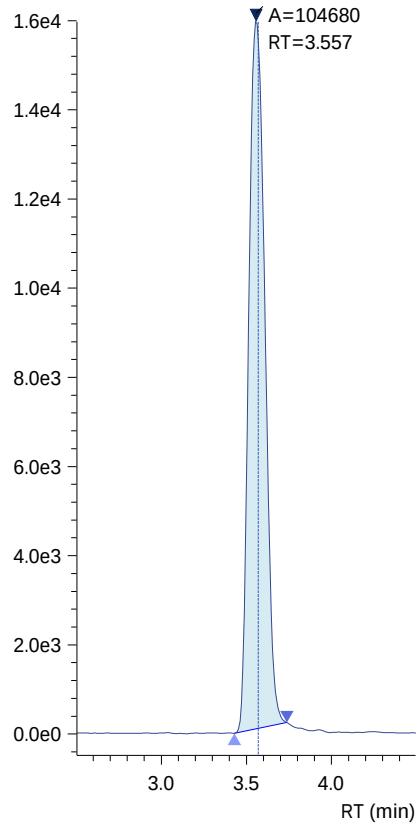
R1 101.00>85.00 (-) 1.48e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.60e4



Insight Report

Printed at 2/1/2023 2:06:14 PM

PERCHLORATE9

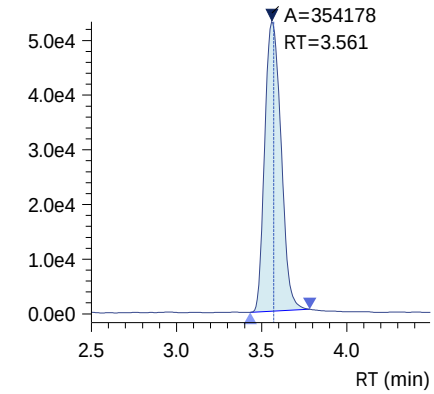
Sample ID: PERCHLORATE9
Date Acquired: 2/1/2023 12:36:45 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-011.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.561	3541	81577	31.3	ng/mL	101.00	31.89	24.11
			78		395		>85.00		-44.78
Sodium Perchlorate-18O4 _IS	Auto	3.557	81577	81577	1.0000	ng/mL	----	----	

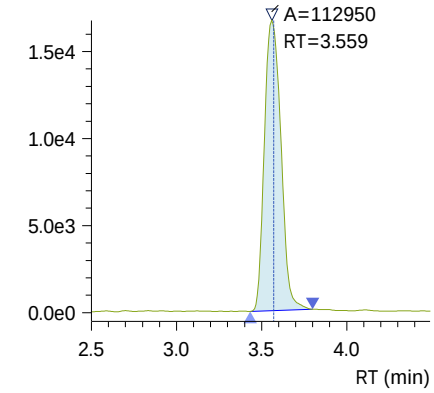
Perchlorate

Conc 31.3395
R#1 31.89 (31.99)

Q 99.00>83.00 (-) 5.34e4



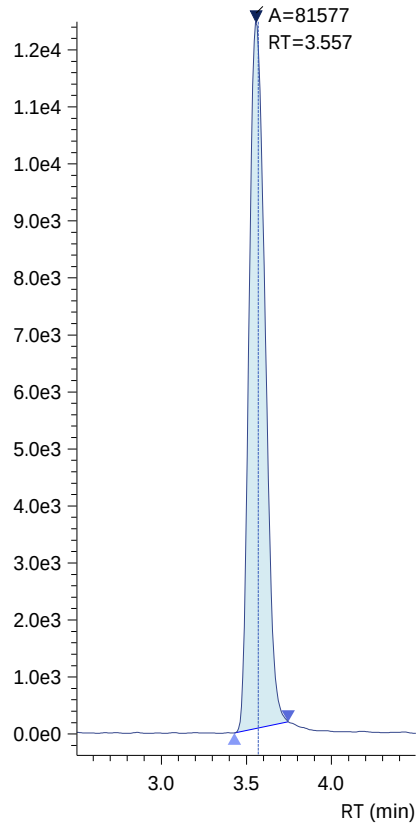
R1 101.00>85.00 (-) 1.68e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.25e4



Insight Report

Printed at 2/1/2023 2:06:14 PM

PERCHLORATE10

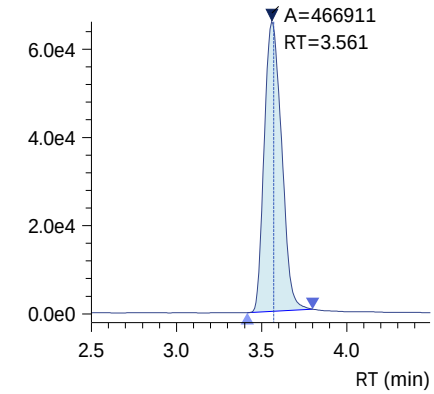
Sample ID: PERCHLORATE10
Date Acquired: 2/1/2023 12:42:34 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-012.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.561	4669	63237	53.2	ng/mL	101.00	32.40	24.11
			11		964		>85.00		-44.78
Sodium Perchlorate-18O4_IS	Auto	3.554	63237	63237	1.0000	ng/mL	----	----	

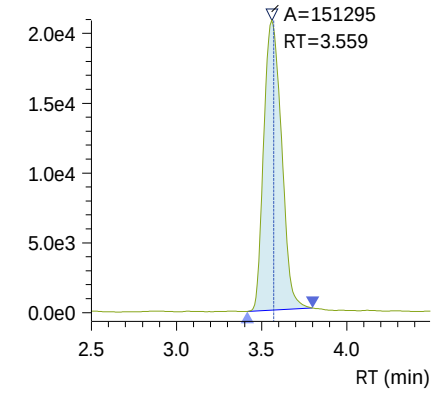
Perchlorate

Conc 53.2964
R#1 32.40 (31.99)

Q 99.00>83.00 (-) 6.62e4



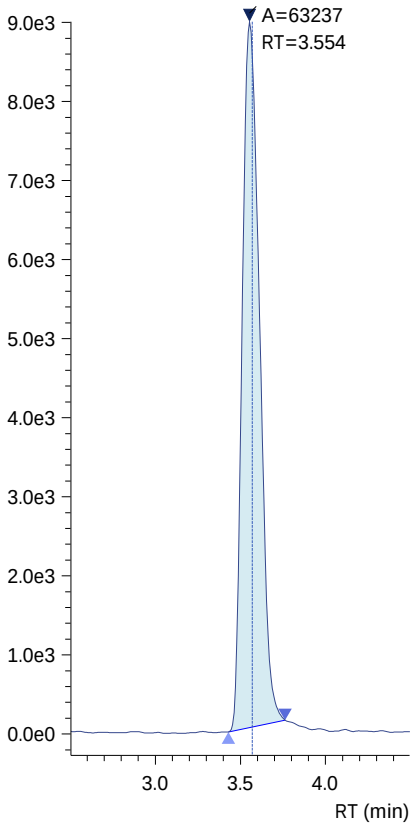
R1 101.00>85.00 (-) 2.09e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 9.01e3



Insight Report

Printed at 2/1/2023 2:06:14 PM

PERCHLORATEICV

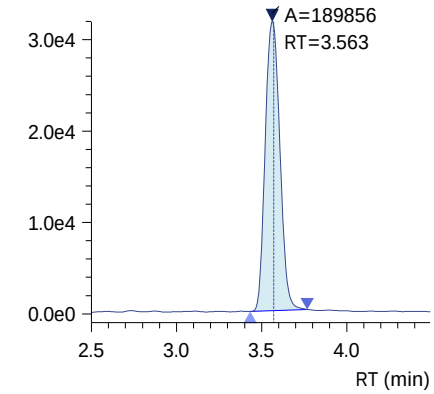
Sample ID: PERCHLORATEICV
Date Acquired: 2/1/2023 12:48:22 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-013.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.563	189856 1898	130049	10.5 379	ng/mL	101.00 >85.00	32.76	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.557	130049	130049	1.0000	ng/mL	----	----	

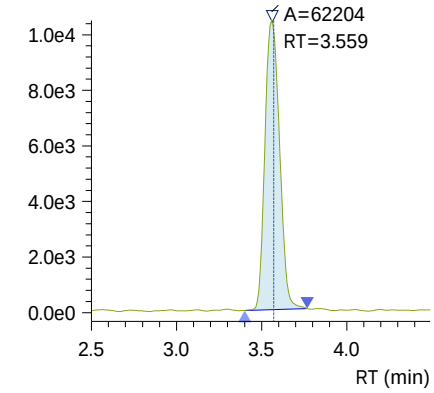
Perchlorate

Conc 10.5379
R#1 32.76 (31.99)

Q 99.00>83.00 (-) 3.20e4



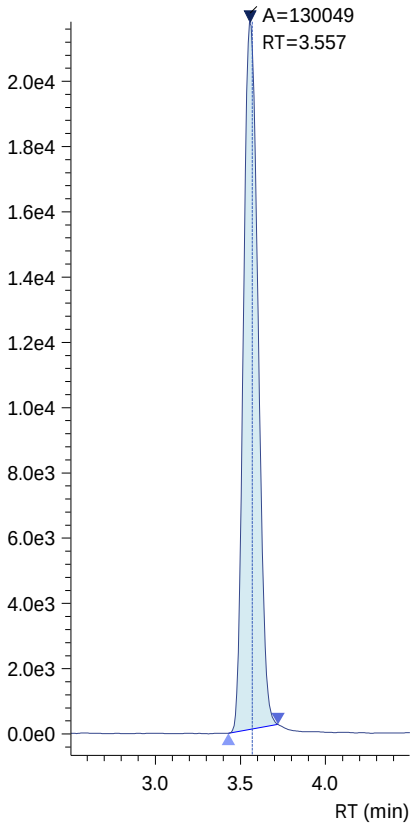
R1 101.00>85.00 (-) 1.05e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.18e4



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

20230215-794597

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: GENOVEVA

ICAL Date: 2/1/2023
Cal. Std. xp: 07/31/2023
ICAL ID: EC2300002

Mobile Phases : A:0.10% Formic Acid/Water 3210303-03 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	IB		20230215-001	Perchlorate6850c.lcm	1x	☒		2/15/2023 8:53
2	LODV		20230215-002	Perchlorate6850c.lcm	1x	☒	227501	2/15/2023 8:58
3	ICS		20230215-003	Perchlorate6850c.lcm	1x	☒	32103024	2/15/2023 9:04
4	PERCHLORATE7		20230215-004	Perchlorate6850c.lcm	1x	☒	227251	2/15/2023 9:11
5	EQ2300069-01		20230215-005	Perchlorate6850c.lcm	1x	☒		2/15/2023 9:17
6	EQ2300069-02		20230215-006	Perchlorate6850c.lcm	1x	☒		2/15/2023 9:23
7	EQ2300069-03		20230215-007	Perchlorate6850c.lcm	1x	☒		2/15/2023 9:28
8	IB		20230215-008	Perchlorate6850c.lcm	1x	☒		2/15/2023 9:35
9	EQ2300069-04		20230215-009	Perchlorate6850c.lcm	1x	☒		2/15/2023 9:40
10	EQ2300069-05		20230215-010	Perchlorate6850c.lcm	1x	☒	DNU-IR	2/15/2023 9:53
11	IB		20230215-011	Perchlorate6850c.lcm	1x	☒		2/15/2023 10:00
12	EQ2300069-06		20230215-012	Perchlorate6850c.lcm	1x	☒	DNU-BAD PEAK	2/15/2023 10:06
13	EQ2300069-07		20230215-013	Perchlorate6850c.lcm	1x	☒		2/15/2023 10:12
14	PERCHLORATE7		20230215-014	Perchlorate6850c.lcm	1x	☒	227251	2/15/2023 10:19
15	IB		20230215-015	Perchlorate6850c.lcm	1x	☒		2/15/2023 10:24
16	EQ2300069-08		20230215-016	Perchlorate6850c.lcm	1x	☒	DNU-IR	2/15/2023 10:30
17	EQ2300069-09		20230215-017	Perchlorate6850c.lcm	1x	☒		2/15/2023 10:46
18	R2300949-005		20230215-018	Perchlorate6850c.lcm	1x	☒		2/15/2023 10:52
19	R2300949-010		20230215-019	Perchlorate6850c.lcm	1x	☒		2/15/2023 10:58
20	R2300949-019		20230215-020	Perchlorate6850c.lcm	1x	☒		2/15/2023 11:03
21	R2300949-020		20230215-021	Perchlorate6850c.lcm	1x	☒	DNU-IR	2/15/2023 11:09
22	R2300949-025		20230215-022	Perchlorate6850c.lcm	1x	☒		2/15/2023 11:15
23	R2300949-034		20230215-023	Perchlorate6850c.lcm	1x	☒	DNU-IR	2/15/2023 11:20
24	R2300949-035		20230215-024	Perchlorate6850c.lcm	1x	☒		2/15/2023 11:26
25	PERCHLORATE7		20230215-025	Perchlorate6850c.lcm	1x	☒	227251	2/15/2023 11:32
26	R2300949-040		20230215-026	Perchlorate6850c.lcm	1x	☒		2/15/2023 11:37
27	R2300949-045		20230215-027	Perchlorate6850c.lcm	1x	☒	DNU-CONFIRM PEAK	2/15/2023 11:43
28	R2300949-055		20230215-028	Perchlorate6850c.lcm	1x	☒		2/15/2023 11:49
29	R2300949-060		20230215-029	Perchlorate6850c.lcm	1x	☒		2/15/2023 11:54
30	R2300949-065		20230215-030	Perchlorate6850c.lcm	1x	☒		2/15/2023 12:00
31	R2300949-070		20230215-031	Perchlorate6850c.lcm	1x	☒	DNU-CONFIRM PEAK	2/15/2023 12:06
32	R2300949-075		20230215-032	Perchlorate6850c.lcm	1x	☒	DNU-CONFIRM PEAK	2/15/2023 12:11
33	R2300949-080		20230215-033	Perchlorate6850c.lcm	1x	☒		2/15/2023 12:17
34	R2300949-085		20230215-034	Perchlorate6850c.lcm	1x	☒	DNU-CONFIRM PEAK	2/15/2023 12:23
35	R2300949-090		20230215-035	Perchlorate6850c.lcm	1x	☒		2/15/2023 12:28
36	PERCHLORATE7		20230215-036	Perchlorate6850c.lcm	1x	☒	227251	2/15/2023 12:34
37	R2300949-095		20230215-037	Perchlorate6850c.lcm	1x	☒		2/15/2023 12:40
38	R2300949-100		20230215-038	Perchlorate6850c.lcm	1x	☒		2/15/2023 12:45
39	R2300949-105		20230215-039	Perchlorate6850c.lcm	1x	☒		2/15/2023 12:51

20230215-794597

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: GENOVEVA

ICAL Date: 2/1/2023
Cal. Std. xp: 07/31/2023
ICAL ID: EC2300002

Mobile Phases : A:0.10% Formic Acid/Water 3210303-03 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
40	EQ2300068-01		20230215-040	Perchlorate6850c.lcm	1x	☒		2/15/2023 12:57
41	EQ2300068-02		20230215-041	Perchlorate6850c.lcm	1x	☒	DNU-BAD INJECTION	2/15/2023 13:02
42	EQ2300068-03		20230215-042	Perchlorate6850c.lcm	1x	☒		2/15/2023 13:08
43	EQ2300068-02		20230215-043	Perchlorate6850c.lcm	1x	☒		2/15/2023 13:15
44	IB		20230215-044	Perchlorate6850c.lcm	1x	☒		2/15/2023 13:22
45	EQ2300068-06		20230215-045	Perchlorate6850c.lcm	1x	☒		2/15/2023 13:27
46	EQ2300068-07		20230215-046	Perchlorate6850c.lcm	1x	☒		2/15/2023 13:33
47	PERCHLORATE7		20230215-047	Perchlorate6850c.lcm	1x	☒	227251	2/15/2023 13:48
48	E2300137-001		20230215-048	Perchlorate6850c.lcm	1x	☒		2/15/2023 13:54
49	E2300137-002		20230215-049	Perchlorate6850c.lcm	1x	☒		2/15/2023 13:59
50	E2300137-003		20230215-050	Perchlorate6850c.lcm	1x	☒	DNU-BAD PEAK	2/15/2023 14:05
51	E2300139-001		20230215-051	Perchlorate6850c.lcm	1x	☒	DNU-IR	2/15/2023 14:11
52	E2300140-001		20230215-052	Perchlorate6850c.lcm	1x	☒		2/15/2023 14:16
53	E2300140-002		20230215-053	Perchlorate6850c.lcm	1x	☒		2/15/2023 14:22
54	E2300140-003		20230215-054	Perchlorate6850c.lcm	1x	☒		2/15/2023 14:27
55	K2301520-001		20230215-055	Perchlorate6850c.lcm	1x	☒		2/15/2023 14:33
56	K2301520-002		20230215-056	Perchlorate6850c.lcm	1x	☒		2/15/2023 14:39
57	K2301520-003		20230215-057	Perchlorate6850c.lcm	1x	☒		2/15/2023 14:44
58	PERCHLORATE7		20230215-058	Perchlorate6850c.lcm	1x	☒	227251	2/15/2023 14:50
59	R2300855-012		20230215-059	Perchlorate6850c.lcm	1x	☒		2/15/2023 14:56
60	R2300938-004		20230215-060	Perchlorate6850c.lcm	1x	☒		2/15/2023 15:01
61	R2300941-012		20230215-061	Perchlorate6850c.lcm	1x	☒		2/15/2023 15:07
62	R2300943-012		20230215-062	Perchlorate6850c.lcm	1x	☒		2/15/2023 15:13
63	R2300945-012		20230215-063	Perchlorate6850c.lcm	1x	☒		2/15/2023 15:18
64	R2300947-012		20230215-064	Perchlorate6850c.lcm	1x	☒		2/15/2023 15:24
65	R2301091-012		20230215-065	Perchlorate6850c.lcm	1x	☒		2/15/2023 15:30
66	E2300139-001		20230215-066	Perchlorate6850c.lcm	1x	☒		2/15/2023 16:03
67	E2300137-003		20230215-067	Perchlorate6850c.lcm	1x	☒		2/15/2023 16:08
68	PERCHLORATE7		20230215-068	Perchlorate6850c.lcm	1x	☒	227251	2/15/2023 16:14
69	E2300137-004		20230215-069	Perchlorate6850c.lcm	1000x	☒		2/15/2023 16:20
70	E2300137-005		20230215-070	Perchlorate6850c.lcm	1000x	☒	DNU-OUT OF ICAL RANGE	2/15/2023 16:25
71	E2300137-006		20230215-071	Perchlorate6850c.lcm	1000x	☒	DNU-OUT OF ICAL RANGE	2/15/2023 16:31
72	IB		20230215-072	Perchlorate6850c.lcm	1x	☒		2/15/2023 16:37
73	EQ2300068-08		20230215-073	Perchlorate6850c.lcm	1x	☒		2/15/2023 16:42
74	EQ2300068-09		20230215-074	Perchlorate6850c.lcm	1x	☒		2/15/2023 16:48
75	PERCHLORATE7		20230215-075	Perchlorate6850c.lcm	1x	☒	227251	2/15/2023 16:54

20230216-794795

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: KNEIR

ICAL Date: 2/1/2023
Cal. Std. xp: 07/31/2023
ICAL ID: EC2300002

Mobile Phases : **A:**0.10% Formic Acid/Water 3210303-04 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	IB		20230216-001	Perchlorate6850c.lcm	1x	☒		2/16/2023 9:59
2	LODV		20230216-002	Perchlorate6850c.lcm	1x	☒	227501	2/16/2023 10:05
3	ICS		20230216-003	Perchlorate6850c.lcm	1x	☒	DNU-NEED RERUN	2/16/2023 10:11
4	PERCHLORATE7		20230216-004	Perchlorate6850c.lcm	1x	☒	227251	2/16/2023 10:17
5	ICS		20230216-005	Perchlorate6850c.lcm	1x	☒	32103024	2/16/2023 10:22
6	EQ2300069-05		20230216-006	Perchlorate6850c.lcm	1x	☒		2/16/2023 10:35
7	EQ2300069-06		20230216-007	Perchlorate6850c.lcm	1x	☒		2/16/2023 10:55
8	EQ2300069-08		20230216-008	Perchlorate6850c.lcm	1x	☒		2/16/2023 11:01
9	R2300949-020		20230216-009	Perchlorate6850c.lcm	1x	☒		2/16/2023 11:09
10	R2300949-034		20230216-010	Perchlorate6850c.lcm	1x	☒		2/16/2023 11:22
11	R2300949-045		20230216-011	Perchlorate6850c.lcm	1x	☒		2/16/2023 11:30
12	R2300949-070		20230216-012	Perchlorate6850c.lcm	1x	☒		2/16/2023 11:38
13	R2300949-075		20230216-013	Perchlorate6850c.lcm	1x	☒		2/16/2023 11:44
14	R2300949-085		20230216-014	Perchlorate6850c.lcm	1x	☒		2/16/2023 11:50
15	PERCHLORATE7		20230216-015	Perchlorate6850c.lcm	1x	☒	227251	2/16/2023 11:55
16	EQ2300072-01		20230216-016	Perchlorate6850c.lcm	1x	☒		2/16/2023 12:14
17	EQ2300072-02		20230216-017	Perchlorate6850c.lcm	1x	☒		2/16/2023 12:33
18	EQ2300072-03		20230216-018	Perchlorate6850c.lcm	1x	☒	DNU-IR	2/16/2023 12:38
19	EQ2300072-03		20230216-019	Perchlorate6850c.lcm	1x	☒		2/16/2023 12:45
20	IB		20230216-020	Perchlorate6850c.lcm	1x	☒		2/16/2023 13:10
21	EQ2300072-05		20230216-021	Perchlorate6850c.lcm	1x	☒		2/16/2023 13:22
22	EQ2300072-04		20230216-022	Perchlorate6850c.lcm	1x	☒		2/16/2023 13:27
23	R2300781-005		20230216-023	Perchlorate6850c.lcm	1x	☒	DNU-IR	2/16/2023 13:35
24	R2300781-010		20230216-024	Perchlorate6850c.lcm	1x	☒		2/16/2023 13:41
25	R2300781-015		20230216-025	Perchlorate6850c.lcm	1x	☒		2/16/2023 13:46
26	PERCHLORATE7		20230216-026	Perchlorate6850c.lcm	1x	☒	227251	2/16/2023 13:52
27	R2300781-020		20230216-027	Perchlorate6850c.lcm	1x	☒		2/16/2023 13:58
28	R2300781-029		20230216-028	Perchlorate6850c.lcm	1x	☒		2/16/2023 14:04
29	R2300781-030		20230216-029	Perchlorate6850c.lcm	1x	☒	DNU-IR	2/16/2023 14:09
30	R2300781-035		20230216-030	Perchlorate6850c.lcm	1x	☒		2/16/2023 14:15
31	R2301008-005		20230216-031	Perchlorate6850c.lcm	1x	☒		2/16/2023 14:21
32	R2301008-010		20230216-032	Perchlorate6850c.lcm	1x	☒		2/16/2023 14:27
33	R2301008-015		20230216-033	Perchlorate6850c.lcm	1x	☒		2/16/2023 14:32
34	R2301008-020		20230216-034	Perchlorate6850c.lcm	1x	☒	DNU-IR	2/16/2023 14:38
35	R2301008-025		20230216-035	Perchlorate6850c.lcm	1x	☒		2/16/2023 14:44
36	R2301008-030		20230216-036	Perchlorate6850c.lcm	1x	☒		2/16/2023 14:50

20230216-794795

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: KNEIR

ICAL Date: 2/1/2023
Cal. Std. xp: 07/31/2023
ICAL ID: EC2300002

Mobile Phases : **A:**0.10% Formic Acid/Water 3210303-04 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
37	PERCHLORATE7		20230216-037	Perchlorate6850c.lcm	1x	☒	227251	2/16/2023 14:55
38	R2301008-035		20230216-038	Perchlorate6850c.lcm	1x	☒		2/16/2023 15:01
39	R2301008-040		20230216-039	Perchlorate6850c.lcm	1x	☒	DNU-IR	2/16/2023 15:07
40	R2301008-045		20230216-040	Perchlorate6850c.lcm	1x	☒		2/16/2023 15:13
41	R2301008-050		20230216-041	Perchlorate6850c.lcm	1x	☒		2/16/2023 15:19
42	R2301008-059		20230216-042	Perchlorate6850c.lcm	1x	☒		2/16/2023 15:24
43	R2301008-060		20230216-043	Perchlorate6850c.lcm	1x	☒		2/16/2023 15:30
44	R2300781-005		20230216-044	Perchlorate6850c.lcm	1x	☒		2/16/2023 15:36
45	R2300781-030		20230216-045	Perchlorate6850c.lcm	1x	☒		2/16/2023 15:42
46	PERCHLORATE7		20230216-046	Perchlorate6850c.lcm	1x	☒		2/16/2023 16:03
47	R2301008-020		20230216-047	Perchlorate6850c.lcm	1x	☒		2/16/2023 16:09
48	R2301008-040		20230216-048	Perchlorate6850c.lcm	1x	☒		2/16/2023 16:16
49	E2300137-005		20230216-049	Perchlorate6850c.lcm	10000x	☒		2/16/2023 16:22
50	E2300137-006		20230216-050	Perchlorate6850c.lcm	10000x	☒		2/16/2023 16:28
51	PERCHLORATE7		20230216-051	Perchlorate6850c.lcm	1x	☒	227251	2/16/2023 16:33

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Analyzed:**	2/15/23 13:48

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230215\20230215-047	**Lab Code:**	EQ2300070-05
Instrument ID:	E-LCMS-01	**Analysis Lot:**	794597
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	167,281	3.56
	Upper Limit ==>	250,922	5.56
	Lower Limit ==>	83,641	1.56
Associated Analyses			
Continuing Calibration Verification	EQ2300070-05	161,147	3.40
130_021023	E2300137-001	211,407	3.41
17WW03_021023	E2300137-002	215,960	3.41

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Analyzed:**	2/15/23 14:50

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230215\20230215-058	**Lab Code:**	EQ2300070-06
Instrument ID:	E-LCMS-01	**Analysis Lot:**	794597
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	167,281	3.56
	Upper Limit ==>	250,922	5.56
	Lower Limit ==>	83,641	1.56
Associated Analyses			
Continuing Calibration Verification	EQ2300070-06	159,670	3.40
17WW01_021023	E2300137-003	222,345	3.40

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Analyzed:**	2/15/23 16:14

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230215\20230215-068	**Lab Code:**	EQ2300070-07
Instrument ID:	E-LCMS-01	**Analysis Lot:**	794597
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	167,281	3.56
	Upper Limit ==>	250,922	5.56
	Lower Limit ==>	83,641	1.56
Associated Analyses			
Continuing Calibration Verification	EQ2300070-07	168,790	3.40
17WW02_021023	E2300137-004	150,186	3.40
17WW03_021023MS	EQ2300068-08	201,486	3.41
17WW03_021023DMS	EQ2300068-09	205,418	3.41

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Analyzed:**	2/15/23 16:54

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230215\20230215-075	**Lab Code:**	EQ2300070-08
Instrument ID:	E-LCMS-01	**Analysis Lot:**	794597
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	167,281	3.56
	Upper Limit ==>	250,922	5.56
	Lower Limit ==>	83,641	1.56
Associated Analyses			
Continuing Calibration Verification	EQ2300070-08	169,196	3.40

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Analyzed:**	2/16/23 16:33

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230216\20230216-051	**Lab Code:**	EQ2300081-06
Instrument ID:	E-LCMS-01	**Analysis Lot:**	794795
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	167,281	3.56
	Upper Limit ==>	250,922	5.56
	Lower Limit ==>	83,641	1.56
Associated Analyses			
Continuing Calibration Verification	EQ2300081-06	189,402	3.41

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Analyzed:**	2/15/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	2/1/23
File ID:	I:\LCMS01\DATA\20230215\20230215-047	**Calibration ID:**	EC2300002
		Analysis Lot:	794597
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.5	0.1385	0.1455	5.1	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Analyzed:**	2/15/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	2/1/23
File ID:	I:\LCMS01\DATA\20230215\20230215-058	**Calibration ID:**	EC2300002
		Analysis Lot:	794597
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.7	0.1385	0.1477	6.6	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Analyzed:**	2/15/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	2/1/23
File ID:	I:\LCMS01\DATA\20230215\20230215-068	**Calibration ID:**	EC2300002
		Analysis Lot:	794597
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.3	0.1385	0.1427	3.0	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Analyzed:**	2/15/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	2/1/23
File ID:	I:\LCMS01\DATA\20230215\20230215-075	**Calibration ID:**	EC2300002
		Analysis Lot:	794597
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.4	0.1385	0.1442	4.1	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300137
Project:	LHAAP / Site 17	**Date Analyzed:**	2/16/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	2/1/23
File ID:	I:\LCMS01\DATA\20230216\20230216-051	**Calibration ID:**	EC2300002
		Analysis Lot:	794795
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.6	0.1385	0.1464	5.7	NA	± 15 %	Average RF

Insight Report

Printed at 2/16/2023 11:30:49 AM

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Project File: I:\LCMS01\DATA\20230215\20230215.damlp

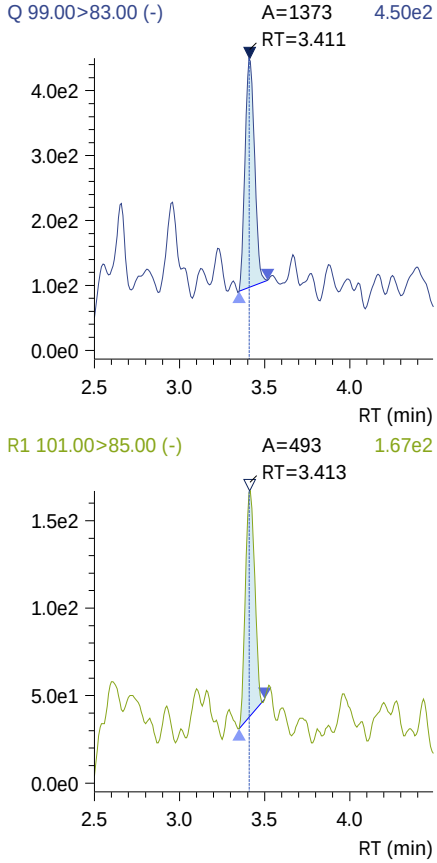
LODV

Sample ID: LODV
Date Acquired: 2/15/2023 8:58:39 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-002.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.411	1373	201868	0.0491	ng/mL	101.00 >85.00	35.88	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.411	201868	201868	1.0000	ng/mL	----	----	

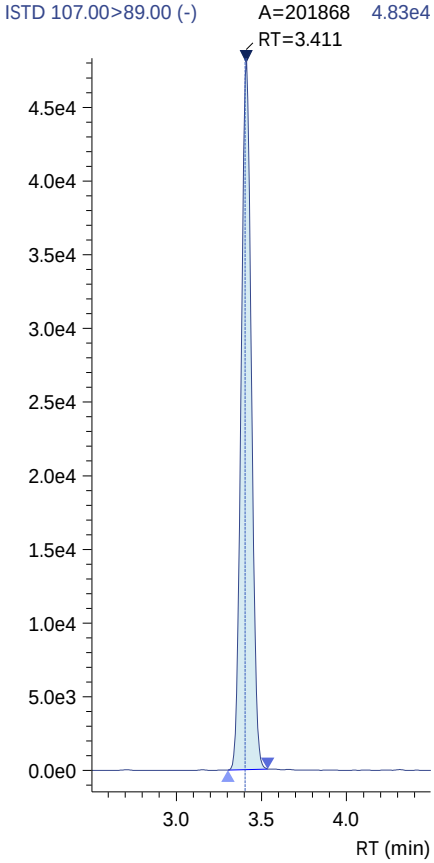
Perchlorate

Conc 0.0491
R#1 35.88 (31.80)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/16/2023 11:30:49 AM

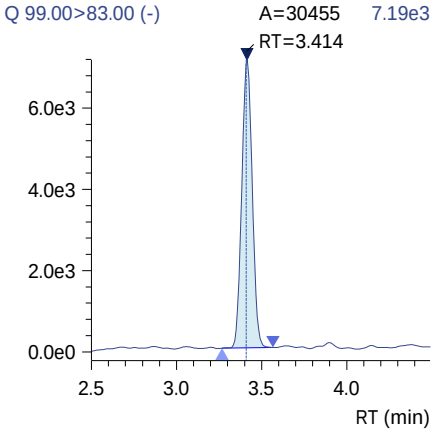
ICS

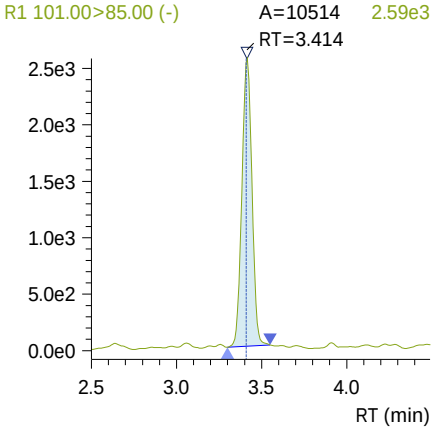
Sample ID: ICS
Date Acquired: 2/15/2023 9:04:18 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-003.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.414	30455	195056	1.1270	ng/mL	101.00 >85.00	34.52	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.411	195056	195056	1.0000	ng/mL	----	----	

Perchlorate

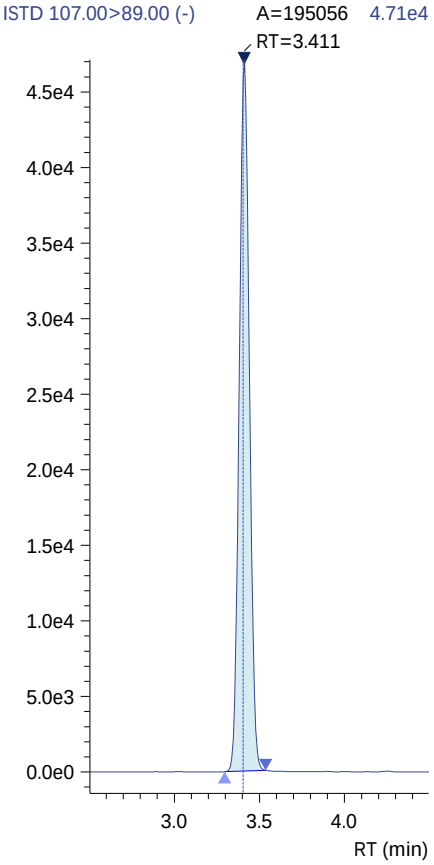
Conc 1.1270
R#1 34.52 (31.80)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/16/2023 11:30:49 AM

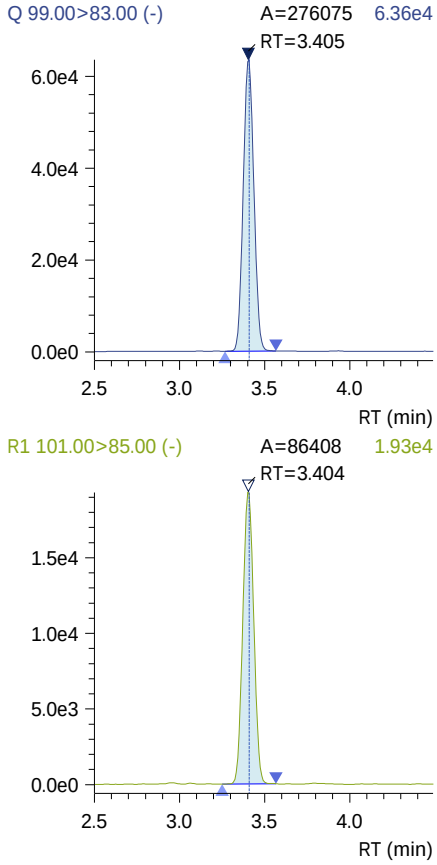
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 2/15/2023 9:11:31 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-004.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.405	2760 75	174765	11.4 027	ng/mL	101.00 >85.00	31.30	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.403	1747 65	174765	1.0000	ng/mL	----	----	

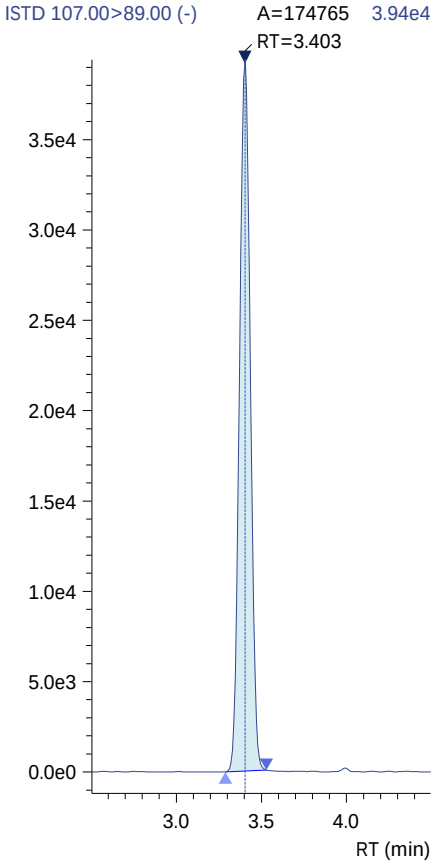
Perchlorate

Conc 11.4027
R#1 31.30 (31.80)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/16/2023 11:30:49 AM

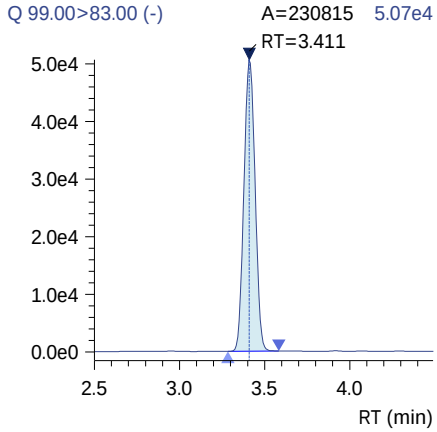
PERCHLORATE7

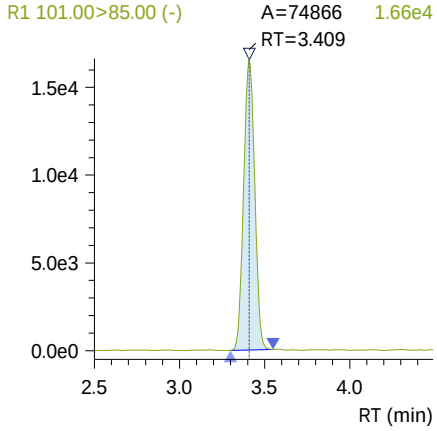
Sample ID: PERCHLORATE7
Date Acquired: 2/15/2023 12:34:36 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-036.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.411	2308 15	159617	10.4 381	ng/mL	101.00 >85.00	32.44	22.26 -41.33
Sodium Perchlorate-18O4 _IS	Auto	3.407	1596 17	159617	1.0000	ng/mL	----	----	

Perchlorate

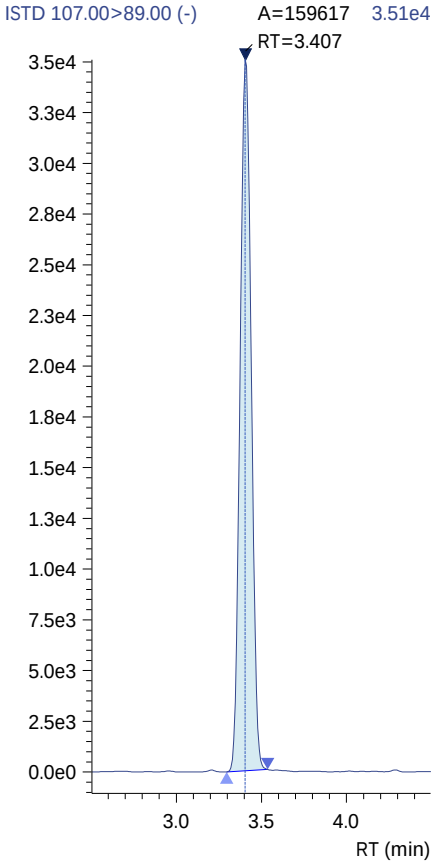
Conc 10.4381
R#1 32.44 (31.80)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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EQ2300068-01

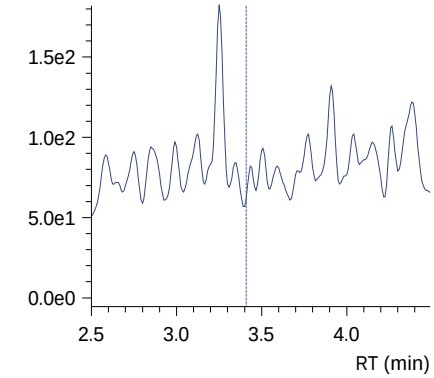
Sample ID: EQ2300068-01
Date Acquired: 2/15/2023 12:57:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-040.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	207202	----	ng/mL	101.00 >85.00	0.00	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.406	207202	207202	1.0000	ng/mL	----	----	

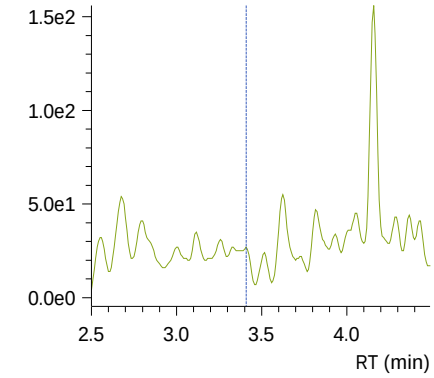
Perchlorate

Conc ----
R#1 0.00 (31.80)

Q 99.00>83.00 (-) 1.82e2



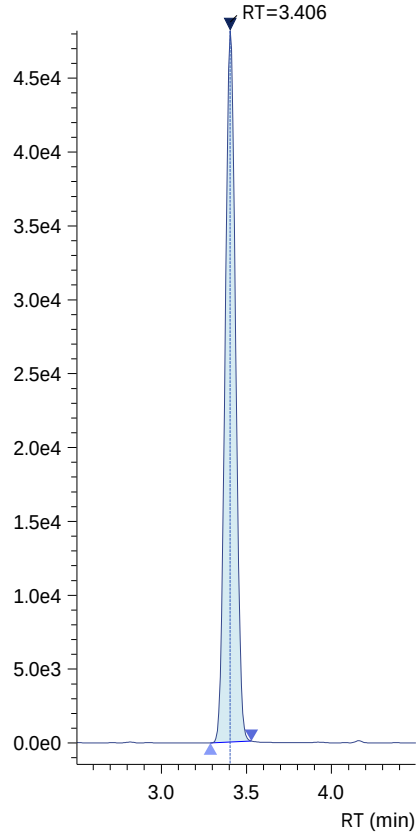
R1 101.00>85.00 (-) 1.56e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=207202 4.82e4



Insight Report

Printed at 2/16/2023 11:30:49 AM

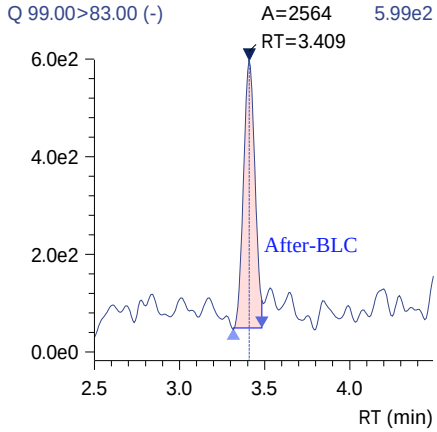
EQ2300068-03

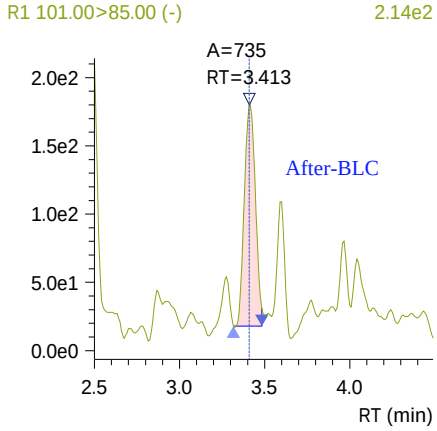
Sample ID: EQ2300068-03
Date Acquired: 2/15/2023 1:08:30 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-042.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.409	2564	199135	0.0929	ng/mL	101.00 >85.00	28.66	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.406	199135	199135	1.0000	ng/mL	----	----	

Perchlorate

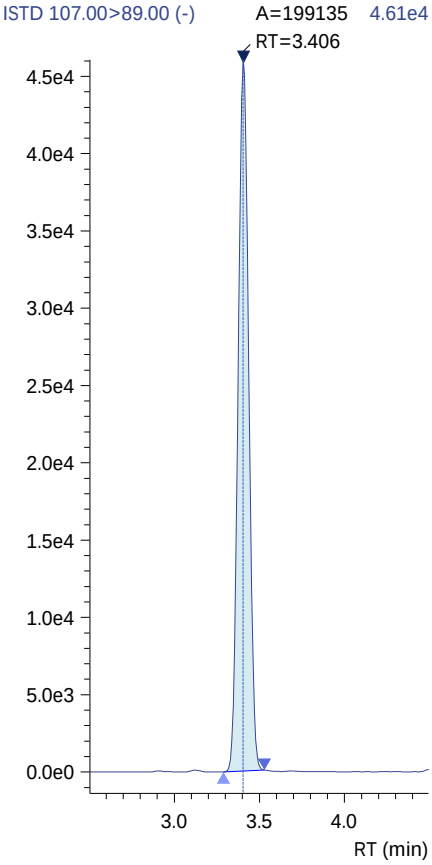
Conc 0.0929
R#1 28.66 (31.80)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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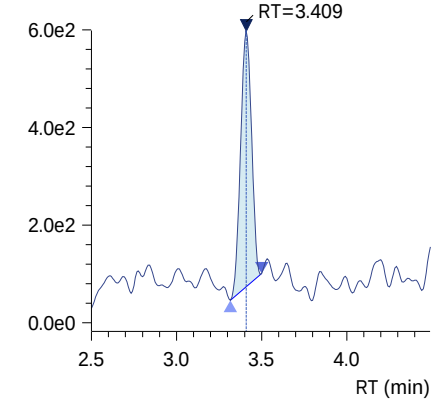
EQ2300068-03

Sample ID: EQ2300068-03
Date Acquired: 2/15/2023 1:08:30 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-042.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 4

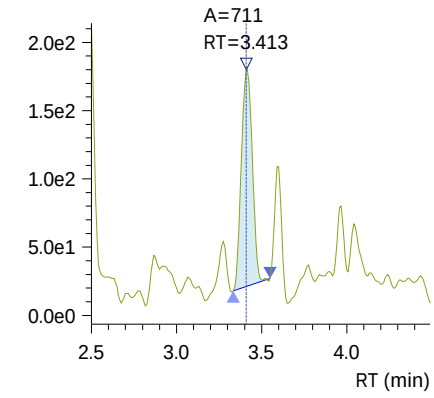
Perchlorate

Conc 0.0842
R#1 30.31 (31.80)

Q 99.00>83.00 (-) A=2346 5.99e2



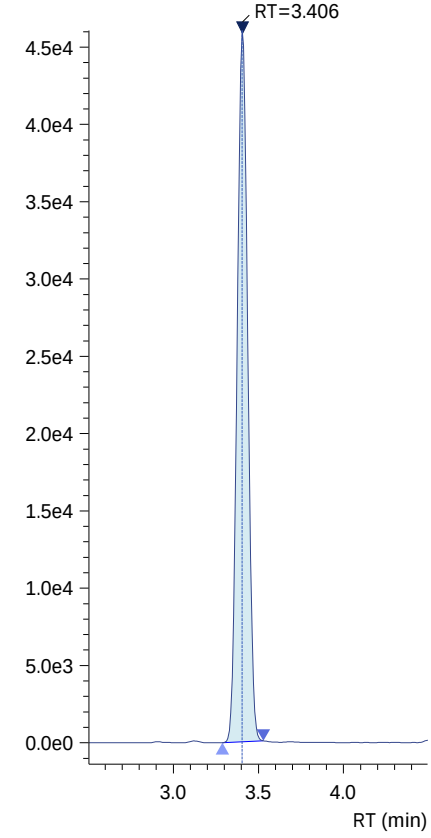
R1 101.00>85.00 (-) 2.14e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=199135 4.61e4



Insight Report

Printed at 2/16/2023 11:30:49 AM

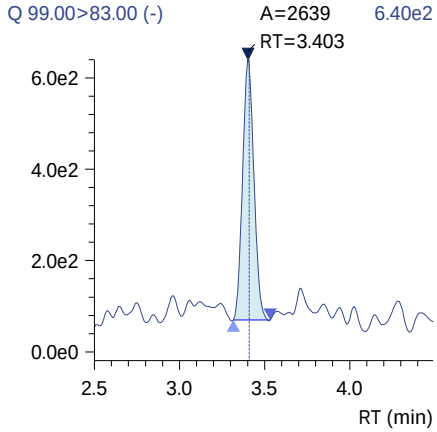
EQ2300068-02

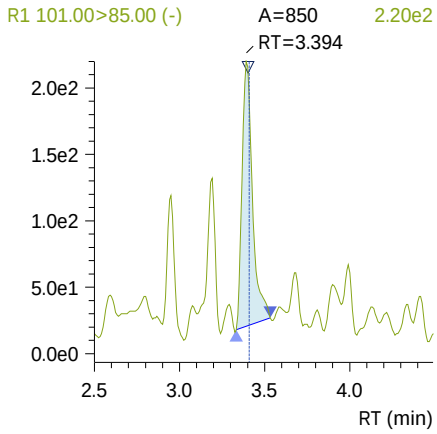
Sample ID: EQ2300068-02
Date Acquired: 2/15/2023 1:15:07 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-043.lcd
Vial: 12 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.403	2639	195646	0.0973	ng/mL	101.00 >85.00	32.23	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.401	195646	195646	1.0000	ng/mL	----	----	

Perchlorate

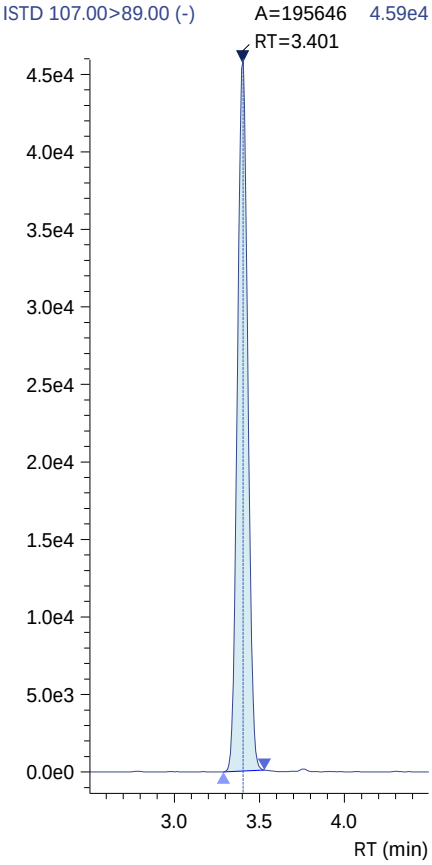
Conc 0.0973
R#1 32.23 (31.80)





Sodium Perchlorate-18O4_IS

Conc 1.0000



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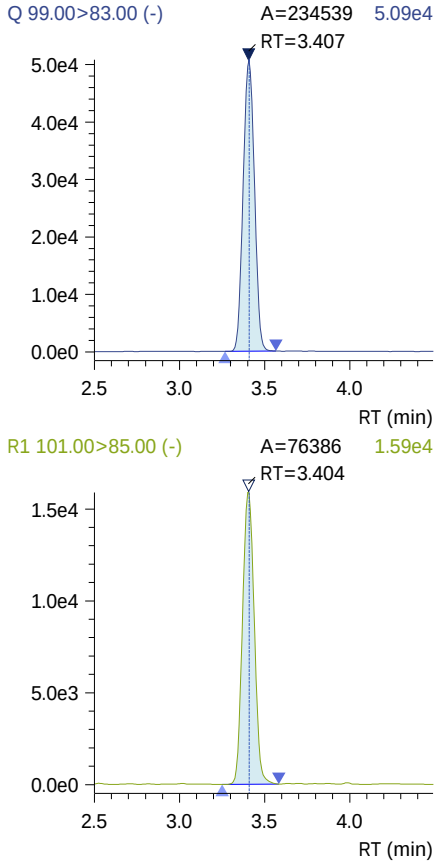
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 2/15/2023 1:48:24 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-047.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.407	234539	161147	10.5058	ng/mL	101.00 >85.00	32.57	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.402	161147	161147	1.0000	ng/mL	----	----	

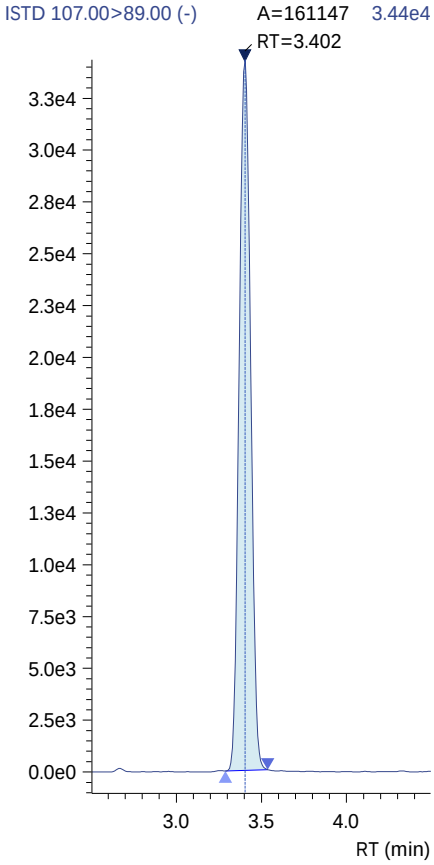
Perchlorate

Conc 10.5058
R#1 32.57 (31.80)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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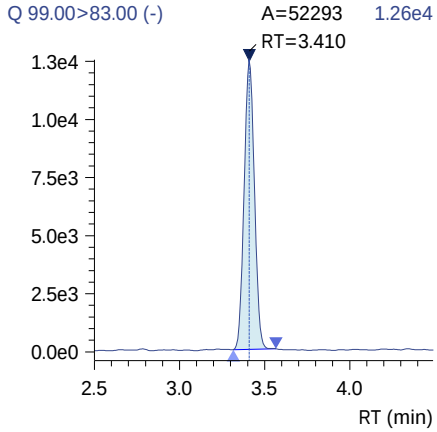
E2300137-001

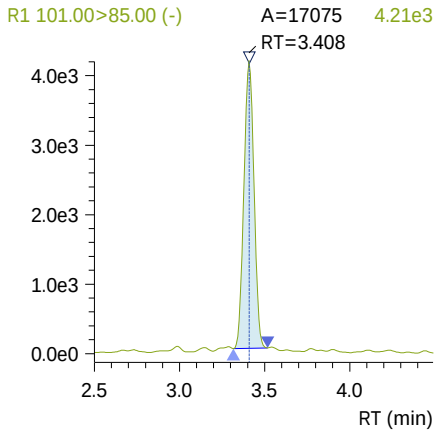
Sample ID: E2300137-001
Date Acquired: 2/15/2023 1:54:04 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-048.lcd
Vial: 18 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.410	52293	211407	1.7855	ng/mL	101.00 >85.00	32.65	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.407	211407	211407	1.0000	ng/mL	----	----	

Perchlorate

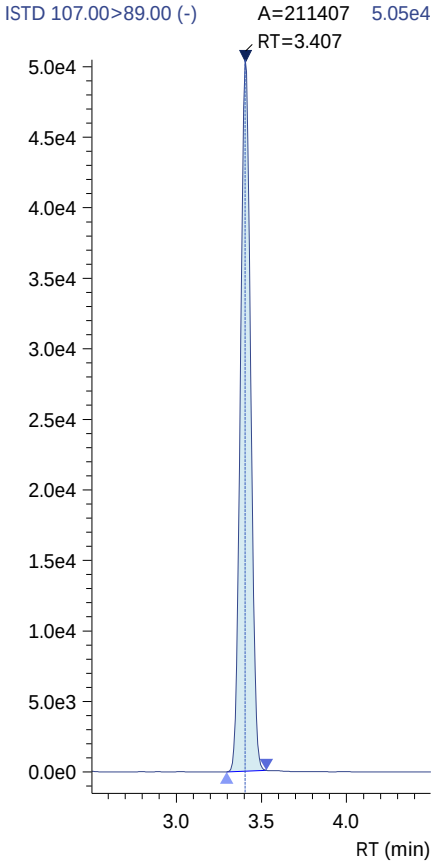
Conc 1.7855
R#1 32.65 (31.80)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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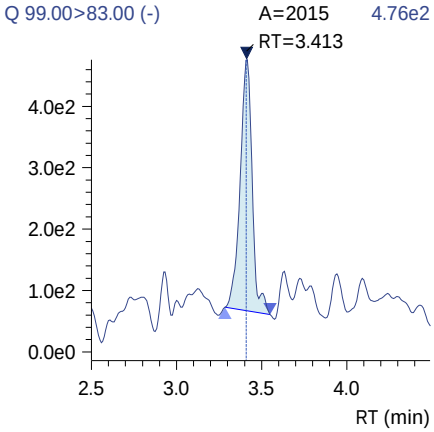
E2300137-002

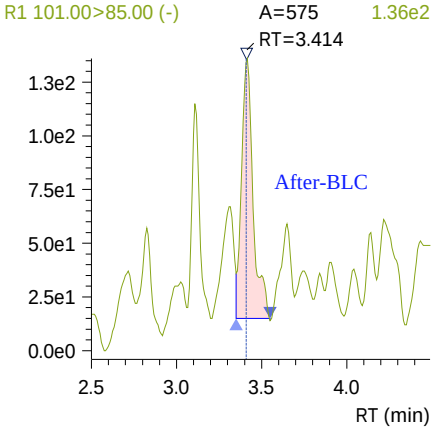
Sample ID: E2300137-002
Date Acquired: 2/15/2023 1:59:43 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-049.lcd
Vial: 19 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.413	2015	215960	0.0674	ng/mL	101.00 >85.00	28.54	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.407	2159 60	215960	1.0000	ng/mL	----	----	

Perchlorate

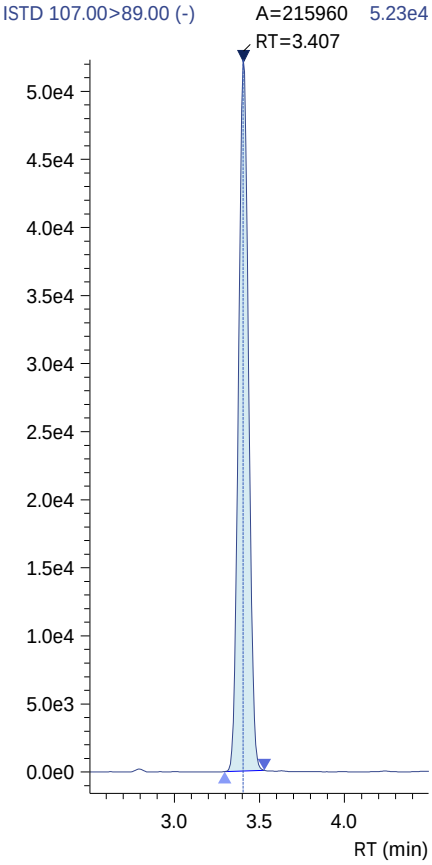
Conc 0.0674
R#1 28.54 (31.80)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/16/2023 11:36:26 AM

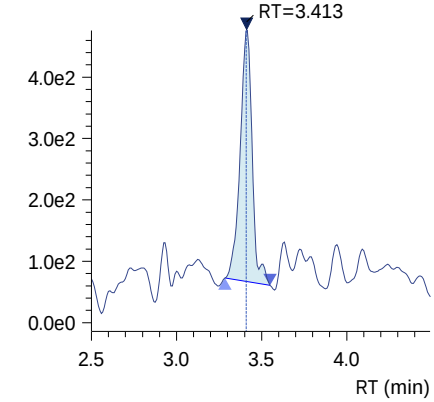
E2300137-002

Sample ID: E2300137-002
Date Acquired: 2/15/2023 1:59:43 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-049.lcd
Vial: 19 | Inj. Volume: 25.0000uL | Tray: 4

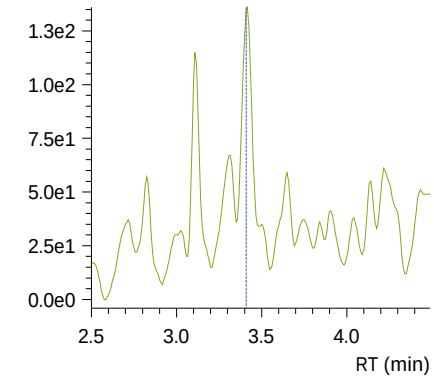
Perchlorate

Conc 0.0667
R#1 0.00 (31.80)

Q 99.00>83.00 (-) A=2015 4.76e2 RT=3.413



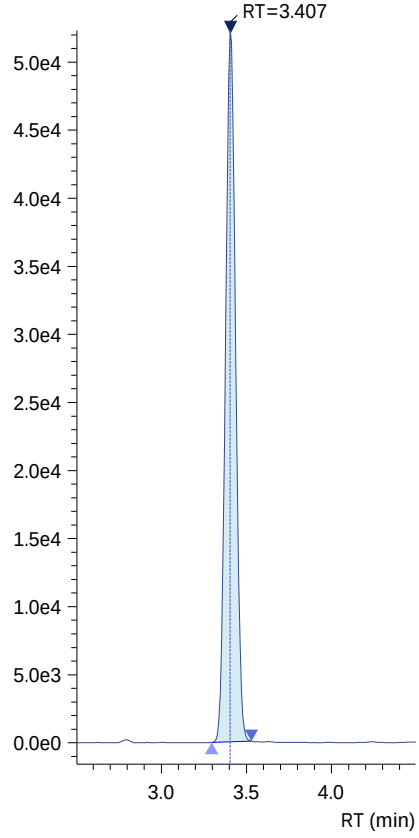
R1 101.00>85.00 (-) 1.36e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=215960 5.23e4 RT=3.407



Insight Report

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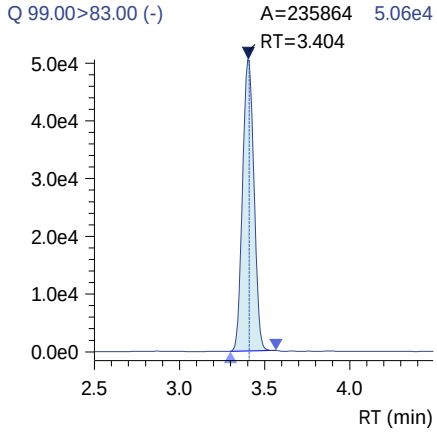
PERCHLORATE7

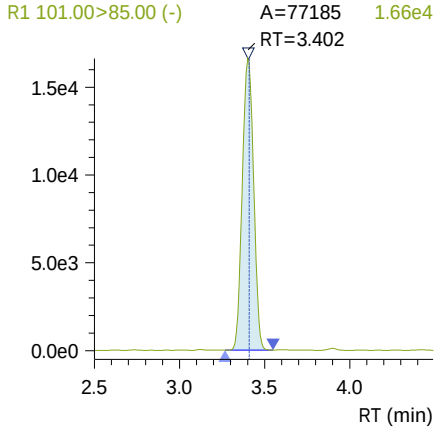
Sample ID: PERCHLORATE7
Date Acquired: 2/15/2023 2:50:38 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-058.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.404	2358 64	159670	10.6 628	ng/mL	101.00 >85.00	32.72	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.400	1596 70	159670	1.0000	ng/mL	----	----	

Perchlorate

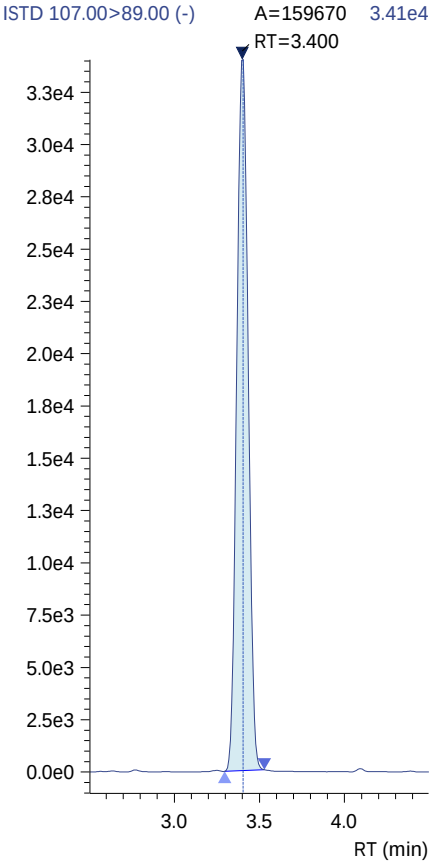
Conc 10.6628
R#1 32.72 (31.80)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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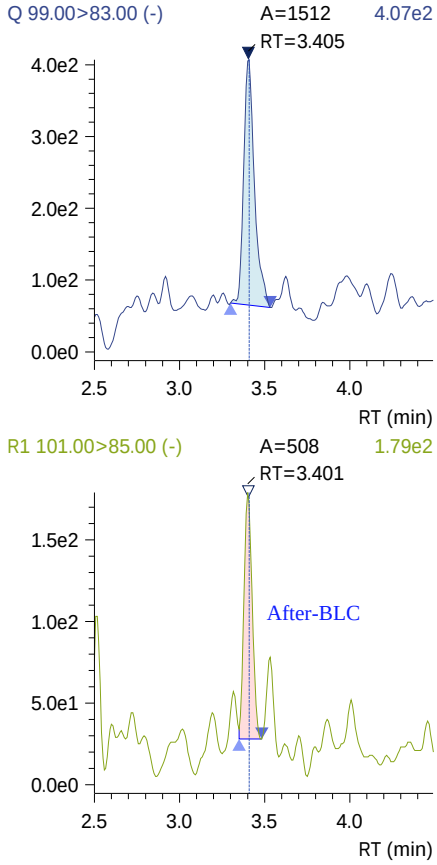
E2300137-003

Sample ID: E2300137-003
Date Acquired: 2/15/2023 4:08:59 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-067.lcd
Vial: 20 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.405	1512	222345	0.0491	ng/mL	101.00 >85.00	33.58	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.403	222345	222345	1.0000	ng/mL	----	----	

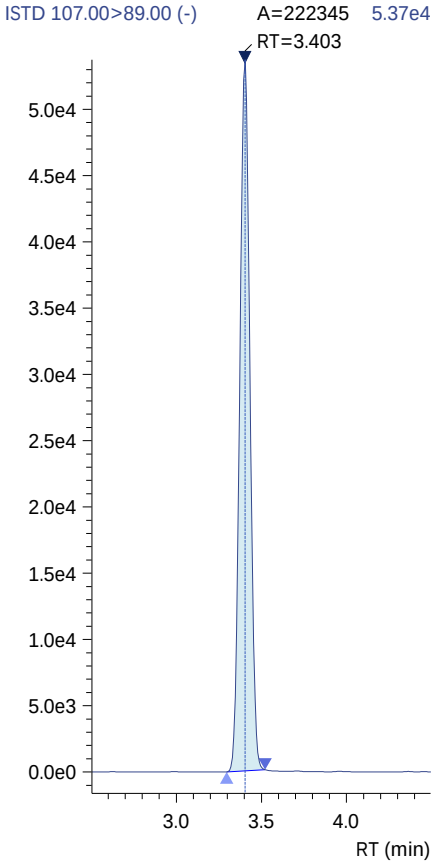
Perchlorate

Conc 0.0491
R#1 33.58 (31.80)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/16/2023 11:36:26 AM

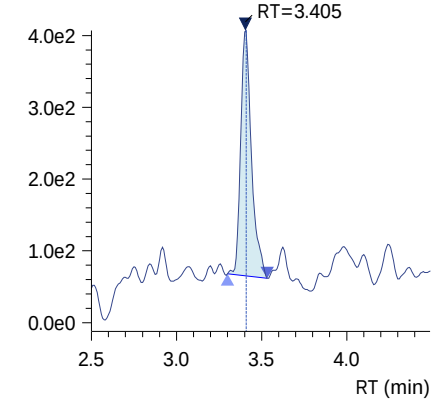
E2300137-003

Sample ID: E2300137-003
Date Acquired: 2/15/2023 4:08:59 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-067.lcd
Vial: 20 | Inj. Volume: 25.0000uL | Tray: 4

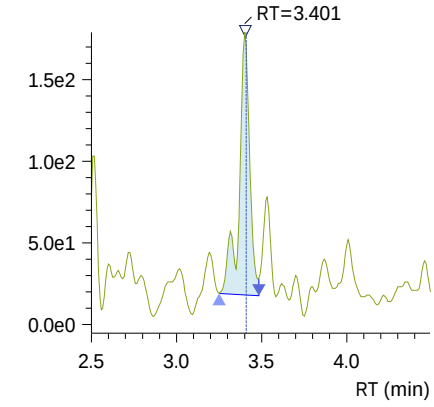
Perchlorate

Conc 0.0486
R#1 46.15 (31.80)

Q 99.00>83.00 (-) A=1512 4.07e2



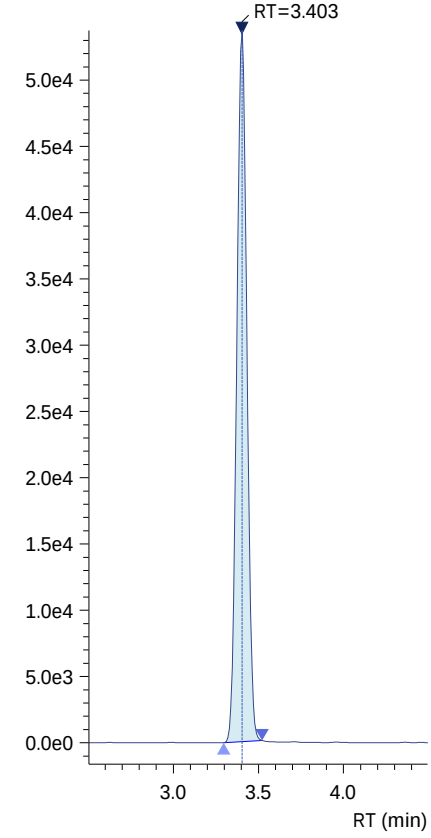
R1 101.00>85.00 (-) A=698 1.79e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=222345 5.37e4



Insight Report

Printed at 2/16/2023 11:30:49 AM

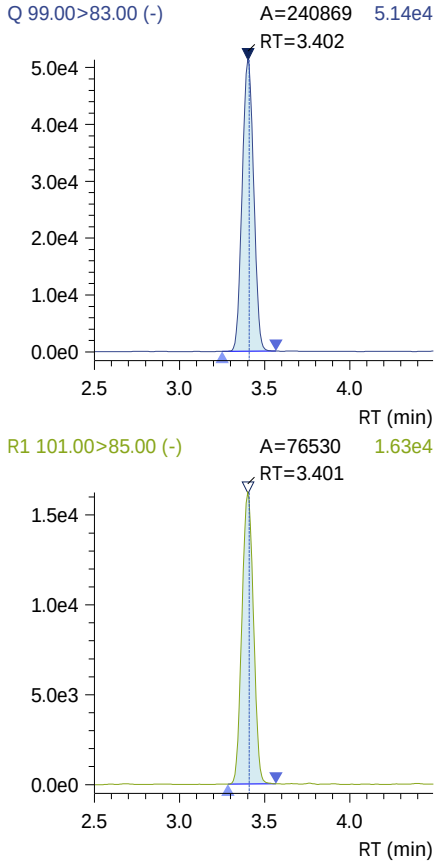
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 2/15/2023 4:14:38 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-068.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.402	240869 5.14e4	168790	10.3008	ng/mL	101.00 >85.00	31.77	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.397	168790 3.60e4	168790	1.0000	ng/mL	----	----	

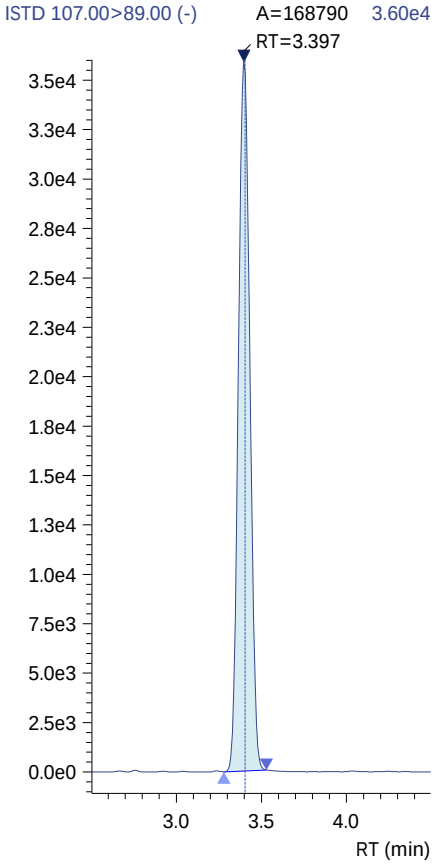
Perchlorate

Conc 10.3008
R#1 31.77 (31.80)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/16/2023 11:30:49 AM

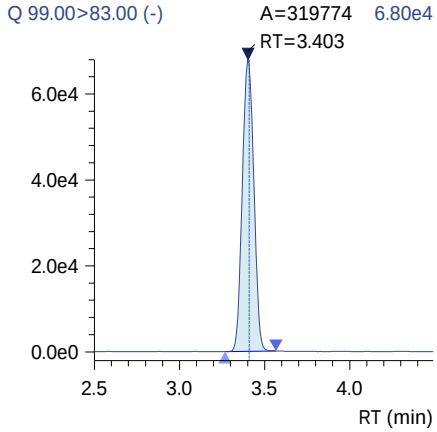
E2300137-004x1k

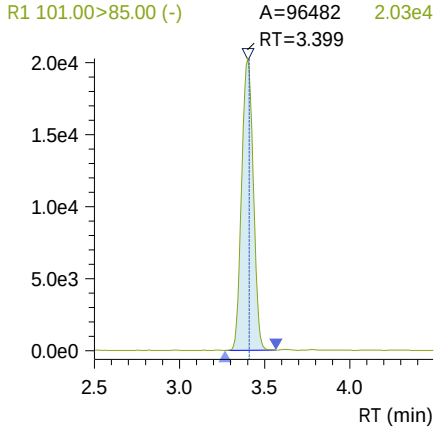
Sample ID: E2300137-004x1k
Date Acquired: 2/15/2023 4:20:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-069.lcd
Vial: 21 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.403	3197 74	150186	15.3 692	ng/mL	101.00 >85.00	30.17	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.400	1501 86	150186	1.0000	ng/mL	----	----	

Perchlorate

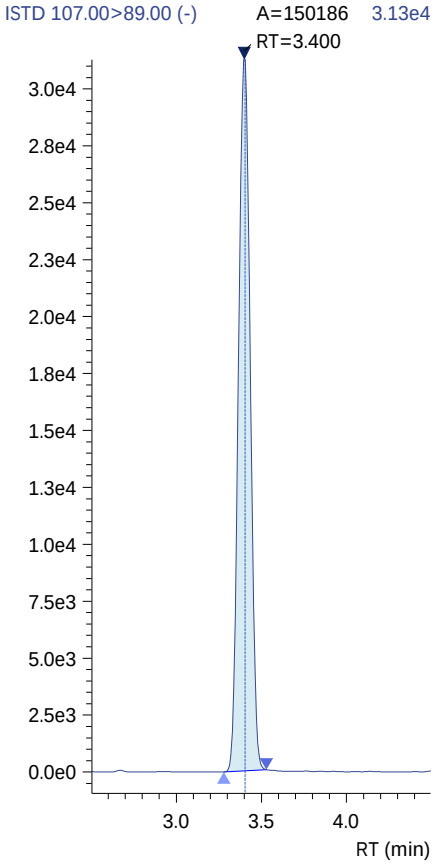
Conc 15.3692
R#1 30.17 (31.80)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/16/2023 11:30:49 AM

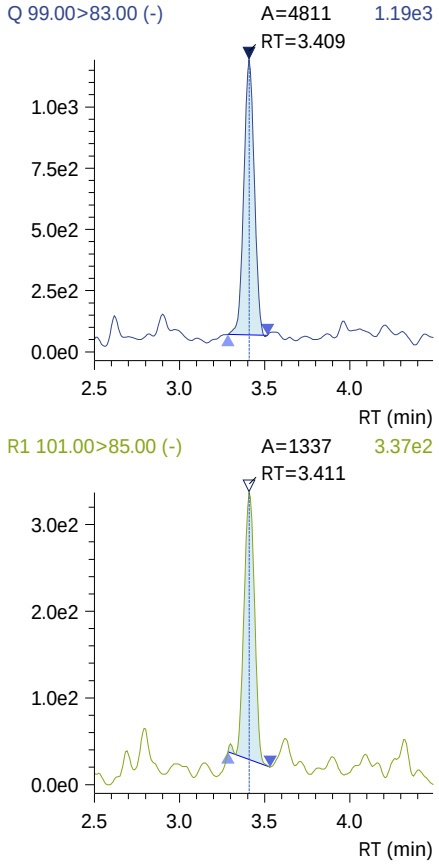
EQ2300068-08

Sample ID: EQ2300068-08
Date Acquired: 2/15/2023 4:42:53 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-073.lcd
Vial: 14 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.409	4811	201486	0.1723	ng/mL	101.00 >85.00	27.78	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.406	201486	201486	1.0000	ng/mL	----	----	

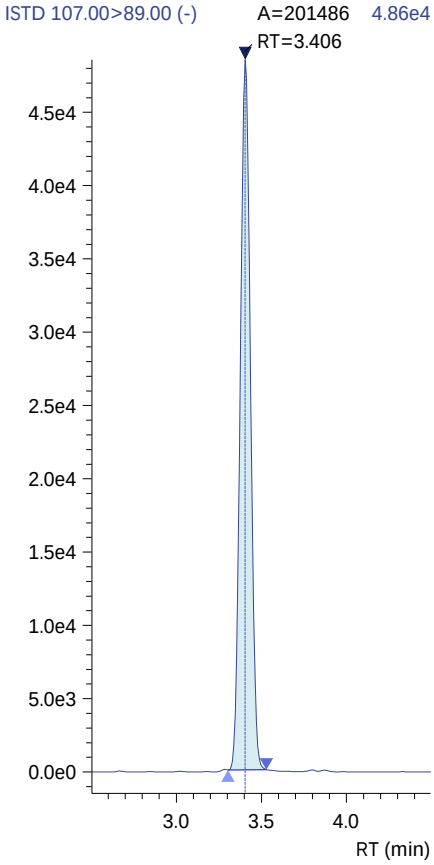
Perchlorate

Conc 0.1723
R#1 27.78 (31.80)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/16/2023 11:30:49 AM

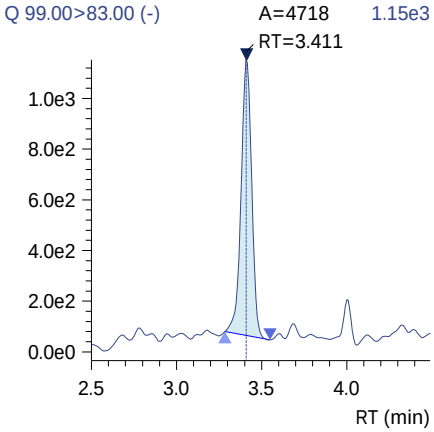
EQ2300068-09

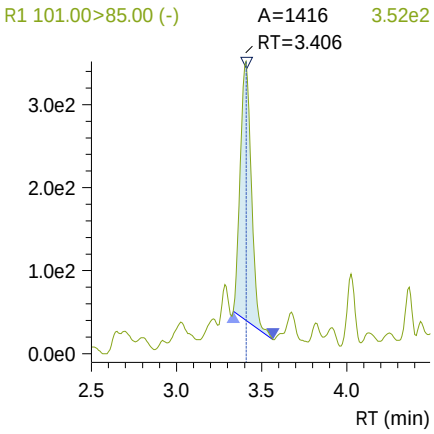
Sample ID: EQ2300068-09
Date Acquired: 2/15/2023 4:48:30 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-074.lcd
Vial: 15 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.411	4718	205418	0.1658	ng/mL	101.00 >85.00	30.00	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.406	2054 18	205418	1.0000	ng/mL	----	----	

Perchlorate

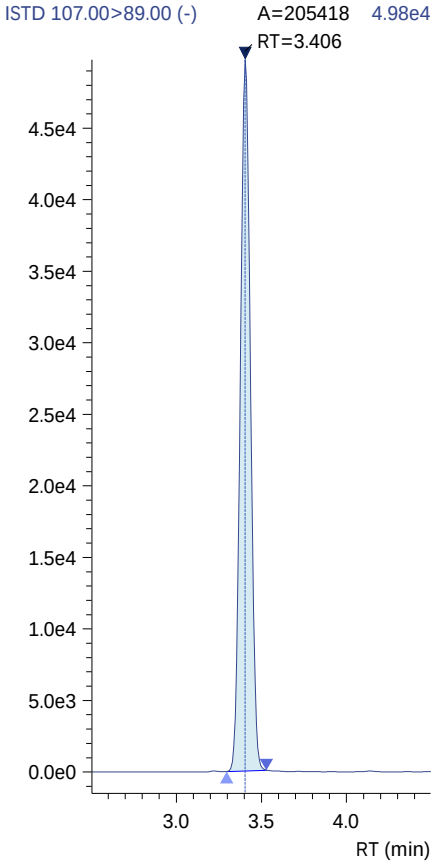
Conc 0.1658
R#1 30.00 (31.80)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/16/2023 11:30:49 AM

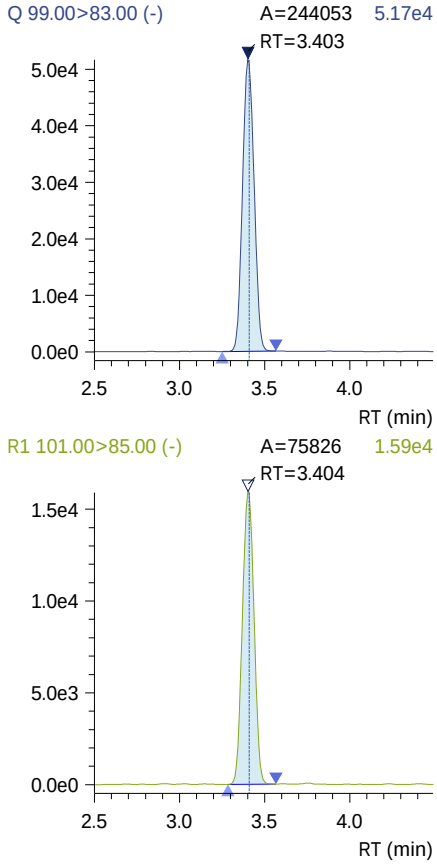
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 2/15/2023 4:54:06 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230215\20230215-075.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.403	2440 53	169196	10.4 119	ng/mL	101.00 >85.00	31.07	22.26 -41.33
Sodium Perchlorate-18O4_IS	Auto	3.401	1691 96	169196	1.0000	ng/mL	----	----	

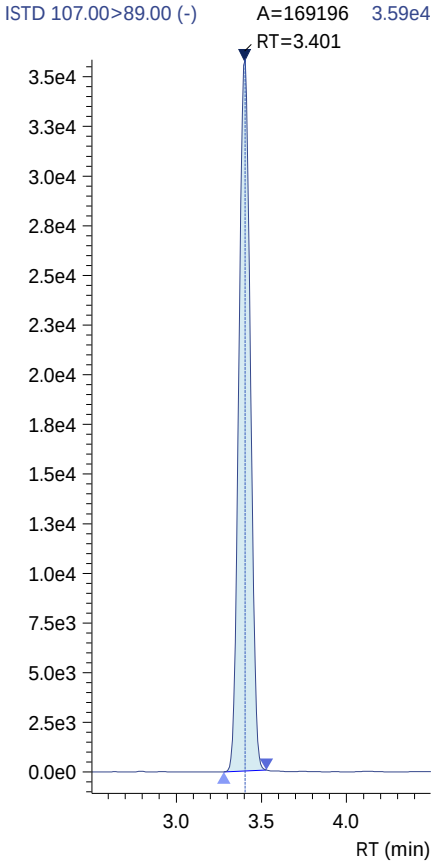
Perchlorate

Conc 10.4119
R#1 31.07 (31.80)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/17/2023 9:40:21 AM

Method File: I:\LCMS01\DATA\20230216\20230216.lcm
Project File: I:\LCMS01\DATA\20230216\20230216.damlp

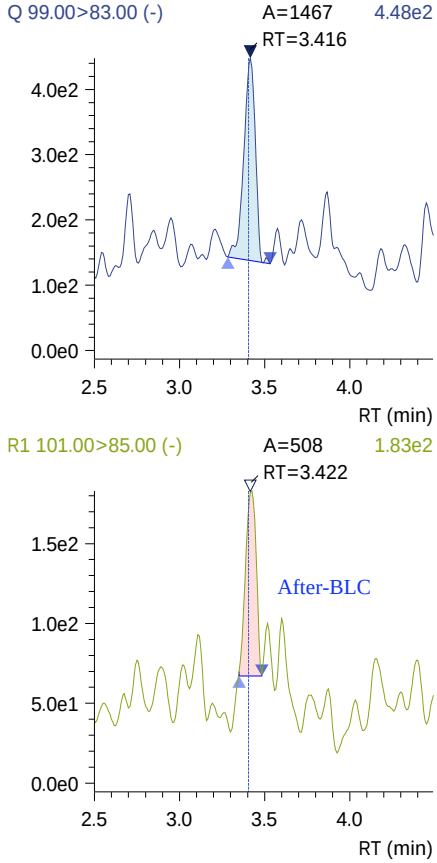
LODV

Sample ID: LODV
Date Acquired: 2/16/2023 10:05:27 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230216\20230216-002.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.416	1467	199647	0.0530	ng/mL	101.00 >85.00	34.62	22.38 -41.57
Sodium Perchlorate-18O4 _IS	Auto	3.407	199647	199647	1.0000	ng/mL	----	----	

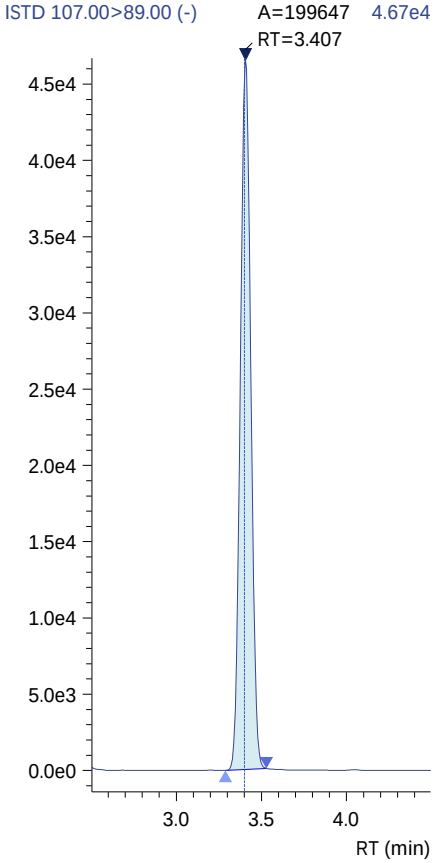
Perchlorate

Conc 0.0530
R#1 34.62 (31.98)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/17/2023 9:37:36 AM

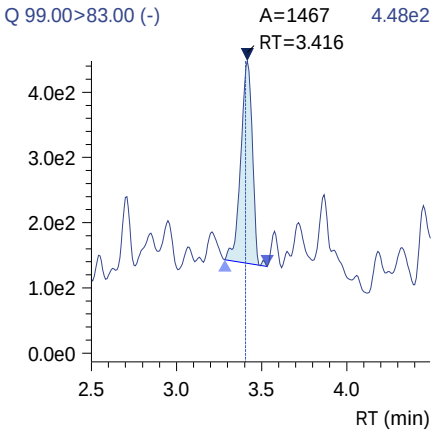
Method File: I:\LCMS01\DATA\20230216\20230216.lcm
Project File: I:\LCMS01\DATA\20230216\20230216.damlp

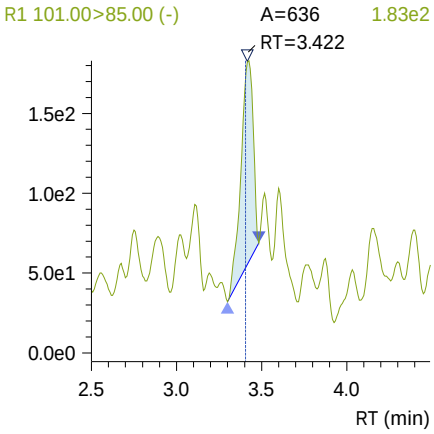
LODV

Sample ID: LODV
Date Acquired: 2/16/2023 10:05:27 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230216\20230216-002.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 0

Perchlorate

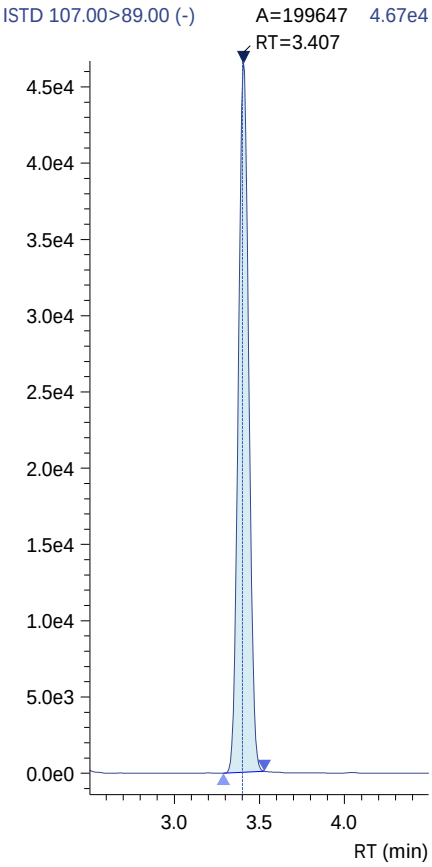
Conc 0.0525
R#1 43.35 (31.98)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/17/2023 9:40:21 AM

PERCHLORATE7

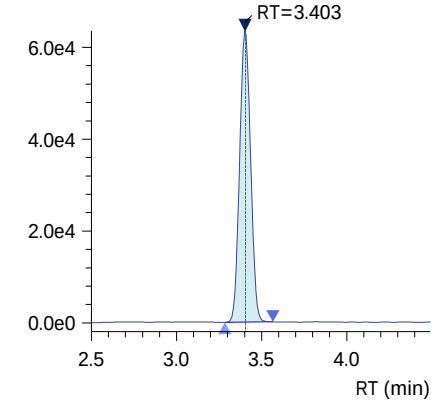
Sample ID: PERCHLORATE7
Date Acquired: 2/16/2023 10:17:15 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230216\20230216-004.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.403	2841 60	181109	11.3 255	ng/mL	101.00 >85.00	31.56	22.38 -41.57
Sodium Perchlorate-18O4_IS	Auto	3.399	1811 09	181109	1.0000	ng/mL	----	----	

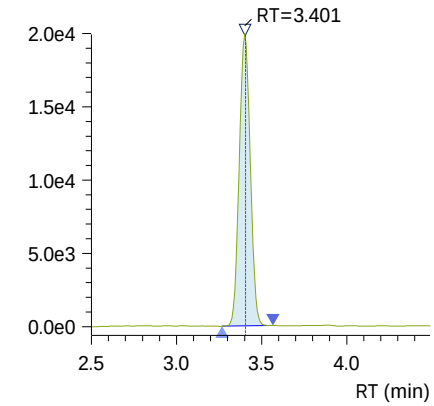
Perchlorate

Conc 11.3255
R#1 31.56 (31.98)

Q 99.00>83.00 (-) A=284160 6.36e4
RT=3.403



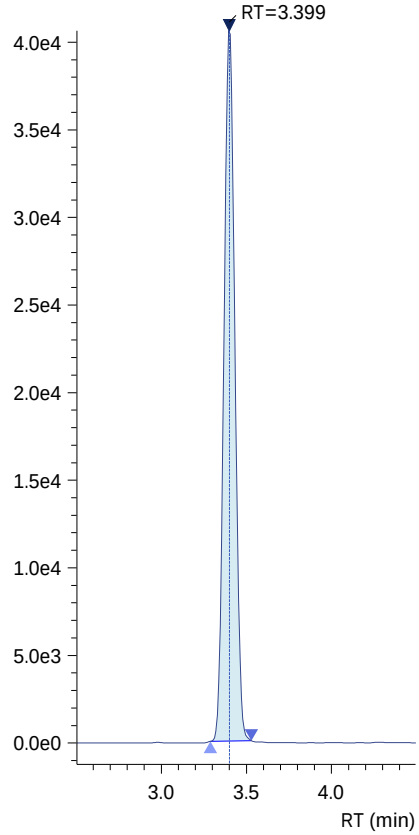
R1 101.00>85.00 (-) A=89668 1.99e4
RT=3.401



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=181109 4.07e4
RT=3.399



Insight Report

Printed at 2/17/2023 9:40:21 AM

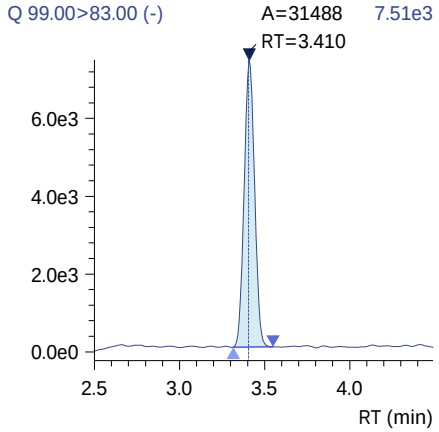
ICS

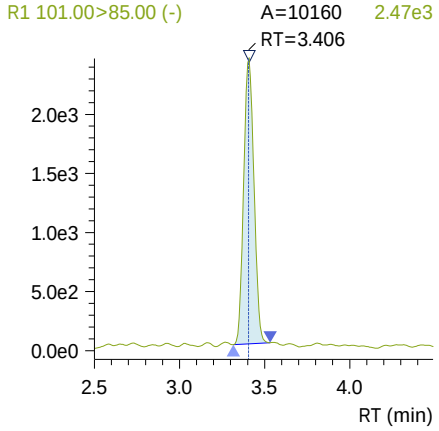
Sample ID: ICS
Date Acquired: 2/16/2023 10:22:53 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230216\20230216-005.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.410	31488	201322	1.1290	ng/mL	101.00 >85.00	32.27	22.38 -41.57
Sodium Perchlorate-18O4_IS	Auto	3.407	2013 22	201322	1.0000	ng/mL	----	----	

Perchlorate

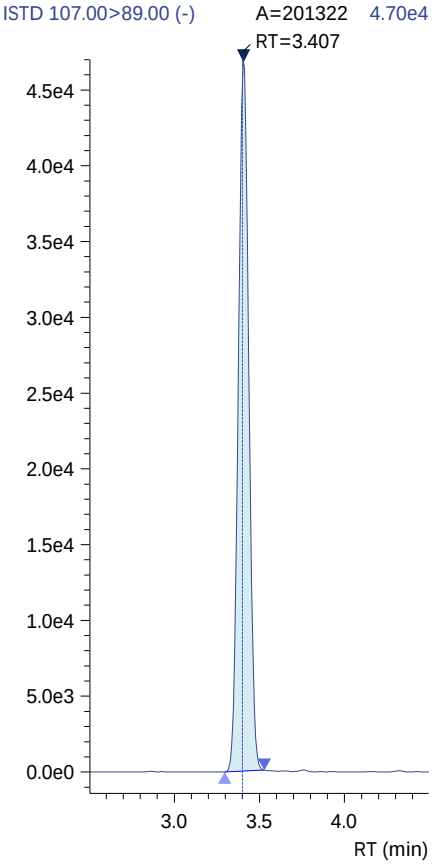
Conc 1.1290
R#1 32.27 (31.98)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/17/2023 9:40:21 AM

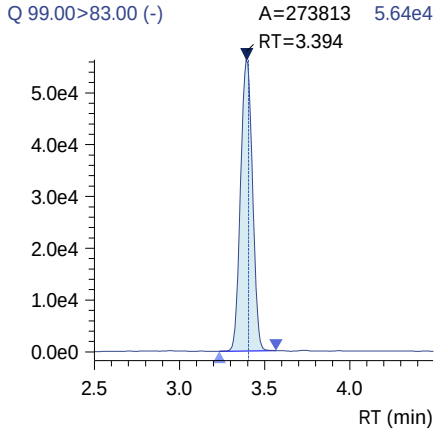
PERCHLORATE7

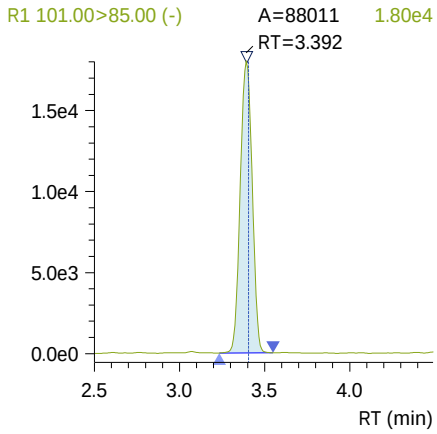
Sample ID: PERCHLORATE7
Date Acquired: 2/16/2023 4:03:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230216\20230216-046.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.394	2738 13	188202	10.5 019	ng/mL	101.00 >85.00	32.14	22.38 -41.57
Sodium Perchlorate-18O4_IS	Auto	3.389	1882 02	188202	1.0000	ng/mL	----	----	

Perchlorate

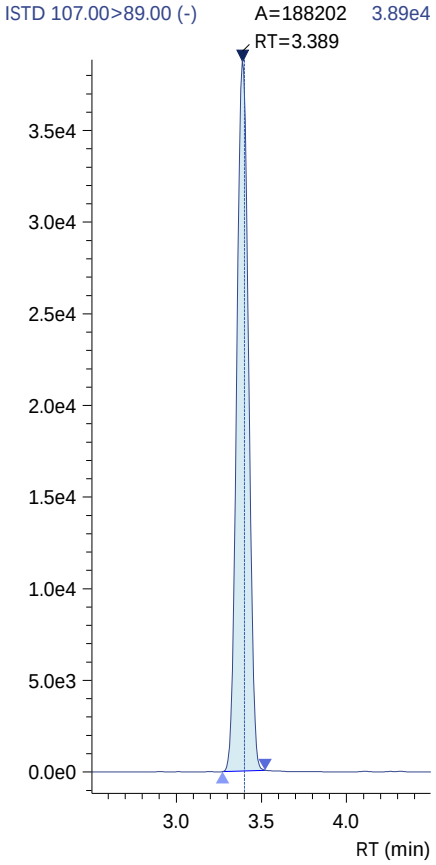
Conc 10.5019
R#1 32.14 (31.98)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/17/2023 9:40:21 AM

E2300137-005x10k

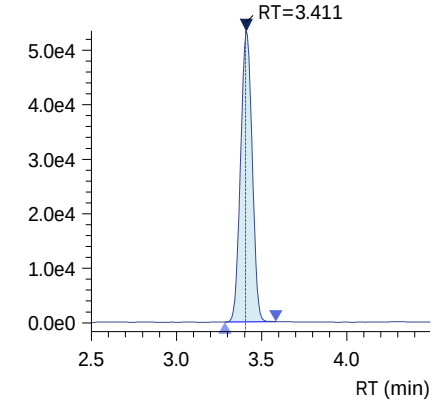
Sample ID: E2300137-005x10k
Date Acquired: 2/16/2023 4:22:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230216\20230216-049.lcd
Vial: 22 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.411	2525 48	169057	10.7 832	ng/mL	101.00 >85.00	31.25	22.38 -41.57
Sodium Perchlorate-18O4_IS	Auto	3.406	1690 57	169057	1.0000	ng/mL	----	----	

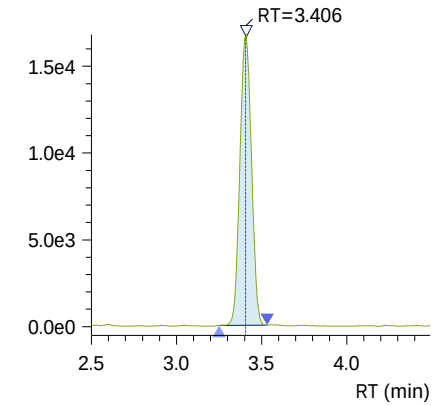
Perchlorate

Conc 10.7832
R#1 31.25 (31.98)

Q 99.00>83.00 (-) A=252548 5.36e4



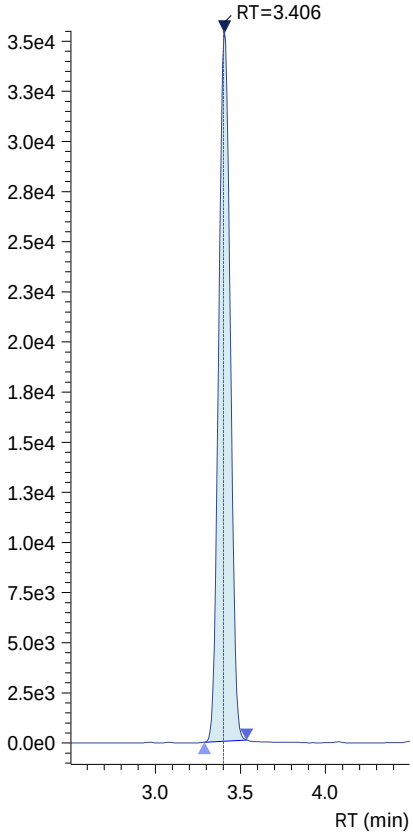
R1 101.00>85.00 (-) A=78923 1.68e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=169057 3.55e4



Insight Report

Printed at 2/17/2023 9:40:21 AM

E2300137-006x10k

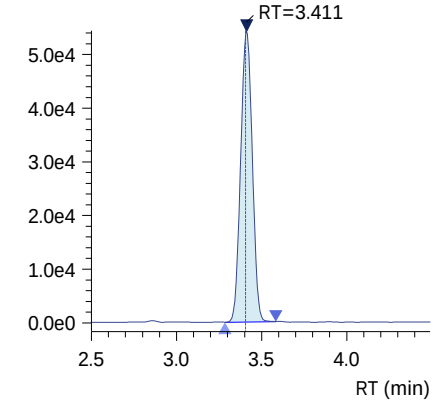
Sample ID: E2300137-006x10k
Date Acquired: 2/16/2023 4:28:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230216\20230216-050.lcd
Vial: 23 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.411	2572 14	172289	10.7 764	ng/mL	101.00 >85.00	30.74	22.38 -41.57
Sodium Perchlorate-18O4_IS	Auto	3.407	1722 89	172289	1.0000	ng/mL	----	----	

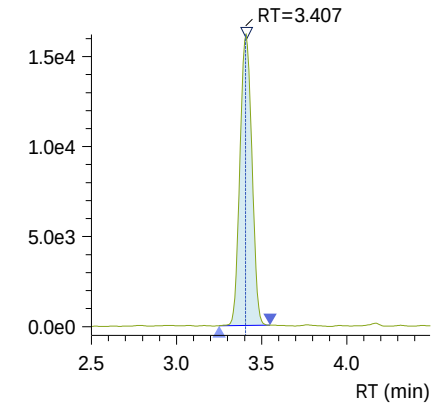
Perchlorate

Conc 10.7764
R#1 30.74 (31.98)

Q 99.00>83.00 (-) A=257214 5.44e4



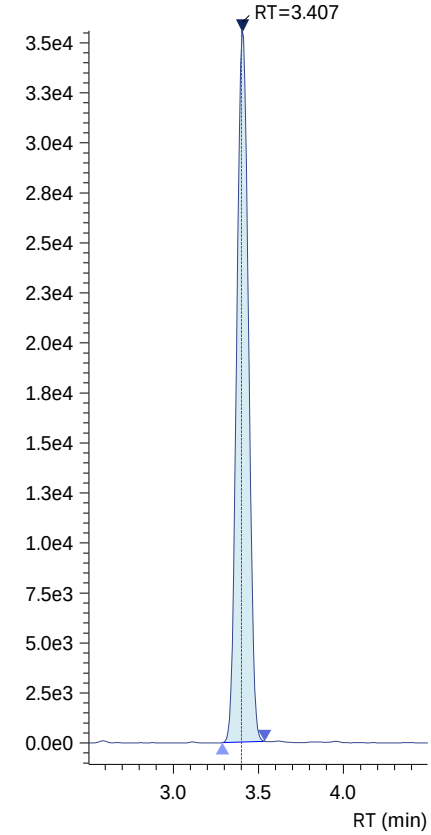
R1 101.00>85.00 (-) A=79069 1.62e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=172289 3.56e4



Insight Report

Printed at 2/17/2023 9:40:21 AM

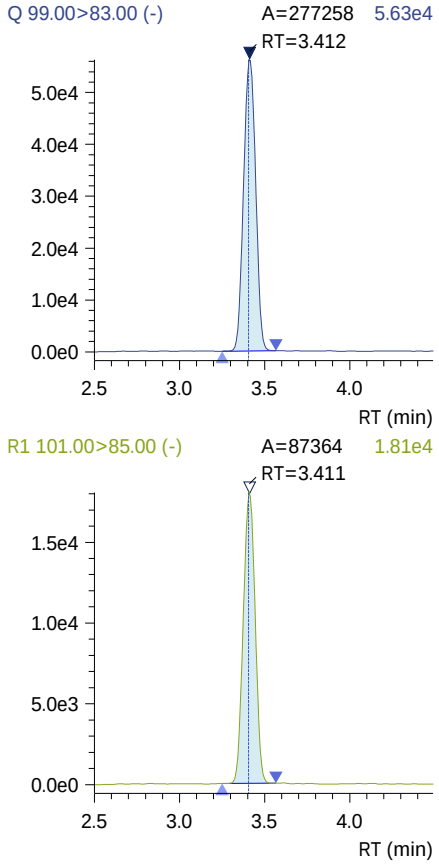
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 2/16/2023 4:33:48 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230216\20230216-051.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.412	277258 5.63e4	189402	10.5666	ng/mL	101.00 >85.00	31.51	22.38 -41.57
Sodium Perchlorate-18O4_IS	Auto	3.406	189402	189402	1.0000	ng/mL	----	----	

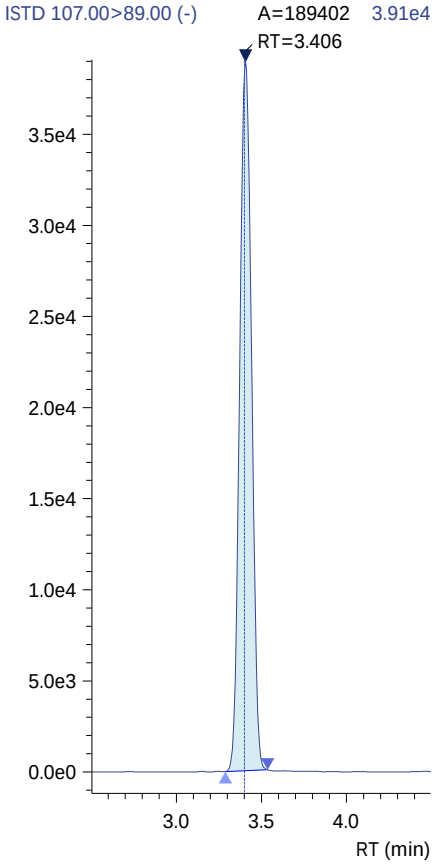
Perchlorate

Conc 10.5666
R#1 31.51 (31.98)



Sodium Perchlorate-18O4_IS

Conc 1.0000



March 17, 2023 Service Request No:E2300238

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Suite 129
Lakewood, CO 80228

Laboratory Results for: LHAAP / Site 17

Dear Marcia,

Enclosed are the results of the sample(s) submitted to our laboratory March 10, 2023
For your reference, these analyses have been assigned our service request number **E2300238.**

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.

Please contact me if you have any questions. My extension is 2188. You may also contact me via email at James.Guin@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

James Guin

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:	Bhate Environmental Associates	**Service Request No.:**	E2300238
Project:	LHAAP / Site 17	**Date Received:**	03/10/23
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

Six samples were received for analysis at ALS Environmental in Houston on 03/10/23.

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:

EQ2300131: 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 recoveries are marginally below the lower quality control limit; Associated LCS/DLCS/MSD recoveries are within quality control limits.

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: Bhate Environmental Associates, Inc. **Service Request:**E2300238
Project: LHAAP / Site 17

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2300238-001	130_030923	3/9/2023	0730
E2300238-002	130_030923_a	3/9/2023	0730
E2300238-003	17WW03_030923	3/9/2023	0820
E2300238-004	17WW01_030923	3/9/2023	0905
E2300238-005	17WW02_030923	3/9/2023	0915
E2300238-006	17WW06_030923	3/9/2023	0920

Service Request Summary

Folder #: **E2300238**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP / Site 17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 03/10/23
Internal Due Date: 3/24/2023
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2300238-001	130_030923	Water	03/09/23 0730	**IV**
E2300238-002	130_030923_a	Water	03/09/23 0730	**IV**
E2300238-003	17WW03_030923	Water	03/09/23 0820	**IV**
E2300238-004	17WW01_030923	Water	03/09/23 0905	**IV**
E2300238-005	17WW02_030923	Water	03/09/23 0915	**IV**
E2300238-006	17WW06_030923	Water	03/09/23 0920	**IV**

Service Request Summary

Folder #: **E2300238**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP / Site 17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 03/10/23
Internal Due Date: 3/24/2023
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

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	LA028-2023	12/31/2023
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	2368363	12/31/2023
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
Utah Department of Health Environmental Laboratory Certification	TX026932022-13	7/31/2023
Washington Department of Ecology	C819-22	11/14/2023

Chain of Custody

ALS Environmental - Houston HRMS
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bhate ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: of

Project/Phase No: MSC2020.0016.0002.0022

COC Number(1):

LIMS Number:

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 17

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Sample Analysis Requested (5): Number of containers	PERCHLORATE	Quality Assurance Samples (6): Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
130_030923	09 MAR 2023	0730	-	N		WG	1	X				
130_030923_a	09 MAR 2023	0730	-	FD		WG	1	X				
17WW03_030923	09 MAR 2023	0820	-	N		WG	1	X				
17WW01_030923	09 MAR 2023	0905		N		WG	1	X				
17WW01_030923_MS	09 MAR 2023	0905		MS		WG	1	X				
17WW01_030923_MSD	09 MAR 2023	0905	-	SD		WG	1	X				
17WW02_030923	09 MAR 2023	0915	-	N		WG	1	X				
17WW06_030923	09 MAR 2023	0920	-	N		WG	1	X				
			-									
49048 2.2°			-									
451 cline 5.0			-									

COMMENTS:

Standard TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	3/9/23	1300	1.	3/10/23	09:00
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Shipped No.:

Method of Shipment:

Fed Ex Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dane Wacasey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

Cooler Receipt Form

ALS Environmental

Project Chemist PG

Client/Project RHATE

Thermometer ID IR4

Date/Time Received: 3-10-23 Initials: PG

Date/Time Logged in: 3-10-23 Initials PG

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

If yes, how many and where? 1-F

Were they intact? ⊗ Yes ○ No ○ N/A

Were they signed and dated? ⊗ Yes ○ No ○ N/A

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?
5789 1995 3506		3-10-23	0900	PG	1.7	☑
						☐
						☐
						☐

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:

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

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

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 416556 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 3/16/23 10:20

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2300238-001	130_030923	.01	6850/ClO4 DOD			Water	10mL	
2	E2300238-002	130_030923_a	.01	6850/ClO4 DOD			Water	10mL	
3	E2300238-003	17WW03_030923	.01	6850/ClO4 DOD			Water	10mL	
4	E2300238-004	17WW01_030923	.02	6850/ClO4 DOD			Water	10mL	
5	E2300238-005	17WW02_030923	.01	6850/ClO4 DOD			Water	10mL	
6	E2300238-006	17WW06_030923	.01	6850/ClO4 DOD			Water	10mL	
7	E2300241-001	RSA-195-INT-07	.01	6850/ClO4 DOD			Water	10mL	
8	E2300241-002	RSA-195-INT-06	.01	6850/ClO4 DOD			Water	10mL	
9	E2300241-003	RSA-FB-06-080323	.01	6850/ClO4 DOD			Water	10mL	
10	E2300241-004	RSA-EB-06-080323	.01	6850/ClO4 DOD			Water	10mL	
11	E2300241-005	RSA-094-INT-01	.01	6850/ClO4 DOD			Water	10mL	
12	E2300251-001	LH18/24-SP650_031423_AIX	.01	6850/ClO4 DOD			Water	10mL	
13	E2300251-002	LH18/24-SP650_031423_BIX	.01	6850/ClO4 DOD			Water	10mL	
14	EQ2300131-01	LCS		6850/ClO4 DOD			Liquid	10mL	
15	EQ2300131-02	DLCS		6850/ClO4 DOD			Liquid	10mL	
16	EQ2300131-03	MB		6850/ClO4 DOD			Liquid	10mL	
17	EQ2300131-04	17WW01_030923 MS	.02	6850/ClO4 DOD			Liquid	10mL	
18	EQ2300131-05	17WW01_030923 DMS	.02	6850/ClO4 DOD			Liquid	10mL	
19	K2302951-001	LGAC-INT1-031323	.01	6850/ClO4			Water	10mL	

Spiking Solutions

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 226778 Logbook Ref: Perchlorate Internal Standard Expires On: 05/31/2023

E2300238-001	100.00µL	E2300238-002	100.00µL	E2300238-003	100.00µL	E2300238-004	100.00µL	E2300238-005	100.00µL	E2300238-006	100.00µL
E2300241-001	100.00µL	E2300241-002	100.00µL	E2300241-003	100.00µL	E2300241-004	100.00µL	E2300241-005	100.00µL	E2300251-001	100.00µL
E2300251-002	100.00µL	EQ2300131-01	100.00µL	EQ2300131-01	100.00µL	EQ2300131-02	100.00µL	EQ2300131-02	100.00µL	EQ2300131-03	100.00µL
EQ2300131-03	100.00µL	EQ2300131-04	100.00µL	EQ2300131-05	100.00µL	K2302951-001	100.00µL				

Name: Perchlorate Intermediate Stock1 Inventory ID 227236 Logbook Ref: Perchlorate (1st Source) Expires On: 07/31/2023

EQ2300131-01	1.00µL	EQ2300131-01	1.00µL	EQ2300131-02	1.00µL	EQ2300131-02	1.00µL	EQ2300131-04	1.00µL	EQ2300131-05	1.00µL

Preparation Materials

Water HPLC Grade	02/16/2023 Water (227655)	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)				

Preparation Information Benchsheet

Prep Run#: 416556
Team: Semivoa GCMS/XMI

Prep WorkFlow: GenExt28Day
Prep Method: Method

Status: Prepped
Prep Date/Time: 3/16/23 10:20

Preparation Steps

Step: Preparation
Started: 3/16/23 10:20
Finished: 3/16/23 10:40
By: XMI
Comments

Comments: _____

Reviewed By: XMI Date: 03/16/23

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

Analytical Results

ALS Environmental - Houston HRMS
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www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Collected:**	3/ 9/23 0730
Sample Matrix:	Water	**Date Received:**	3/10/23
Sample Name:	130_030923	**Units:**	µg/L
Lab Code:	E2300238-001	**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	**1.10**		0.100	0.0500	0.0250	1	3/16/23	3/16/23 10:47	416556	797870	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Collected:**	3/ 9/23 0730
Sample Matrix:	Water	**Date Received:**	3/10/23
Sample Name:	130_030923_a	**Units:**	µg/L
Lab Code:	E2300238-002	**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	**1.36**		0.100	0.0500	0.0250	1	3/16/23	3/16/23 10:53	416556	797870	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Collected:**	3/ 9/23 0820
Sample Matrix:	Water	**Date Received:**	3/10/23
Sample Name:	17WW03_030923	**Units:**	µg/L
Lab Code:	E2300238-003	**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	ND	U	0.100	0.0500	0.0250	1	3/16/23	3/16/23 10:58	416556	797870	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Collected:**	3/ 9/23 0905
Sample Matrix:	Water	**Date Received:**	3/10/23
Sample Name:	17WW01_030923	**Units:**	µg/L
Lab Code:	E2300238-004	**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	**0.0332**	J	0.100	0.0500	0.0250	1	3/16/23	3/16/23 11:11	416556	797870	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Collected:**	3/ 9/23 0915
Sample Matrix:	Water	**Date Received:**	3/10/23
Sample Name:	17WW02_030923	**Units:**	µg/L
Lab Code:	E2300238-005	**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	**11100**		100	50.0	25.0	1000	3/16/23	3/16/23 12:33	416556	797870	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Collected:**	3/ 9/23 0920
Sample Matrix:	Water	**Date Received:**	3/10/23
Sample Name:	17WW06_030923	**Units:**	µg/L
Lab Code:	E2300238-006	**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	**65900**		1000	500	250	10000	3/16/23	3/16/23 12:38	416556	797870	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2300131-03	**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	ND	U	0.100	0.0500	0.0250	1	3/16/23	3/16/23 10:01	416556	797870	

Accuracy & Precision

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

QA/QC Report

Client: Bhate Environmental Associates, Inc. **Service Request:** E2300238
Project: LHAAP / Site 17 **Date Analyzed:** 3/16/23
Sample Matrix: Water

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Units:** µg/L
Prep Method: Method **Basis:** NA

Extraction Lot: 416556

	Lab Control Sample EQ2300131-01			Duplicate Lab Control Sample EQ2300131-02					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.103	0.100	103	0.0972	0.100	97	84 - 119	5	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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2300131-01	**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	**0.103**		0.100	0.0500	0.0250	1	3/16/23	3/16/23 12:21	416556	797870	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2300131-02	**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	**0.0972**	J	0.100	0.0500	0.0250	1	3/16/23	3/16/23 09:55	416556	797870	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Collected:**	3/9/23
Sample Matrix:	Water	**Date Received:**	3/10/23
		Date Analyzed:	3/16/23

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	17WW01_030923	**Units:**	µg/L
Lab Code:	E2300238-004	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		17WW01_030923MS				17WW01_030923DMS					
		Matrix Spike				**Duplicate Matrix Spike**					
		EQ2300131-04				EQ2300131-05					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**		**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.0332	0.112	0.100	79	*	0.122	0.100	89	84 - 119	8	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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Collected:**	3/ 9/23 0905
Sample Matrix:	Water	**Date Received:**	3/10/23
Sample Name:	17WW01_030923	**Units:**	µg/L
Lab Code:	EQ2300131-04	**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	**0.112**		0.100	0.0500	0.0250	1	3/16/23	3/16/23 12:27	416556	797870	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Collected:**	3/ 9/23 0905
Sample Matrix:	Water	**Date Received:**	3/10/23
Sample Name:	17WW01_030923	**Units:**	µg/L
Lab Code:	EQ2300131-05	**Basis:**	NA
Run Type:	Duplicate 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	**0.122**		0.100	0.0500	0.0250	1	3/16/23	3/16/23 11:23	416556	797870	

Initial Calibration

ALS Environmental - Houston HRMS
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Phone (713)266-1599 Fax (713)266-0130
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20230201-793296

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: Kneir

ICAL Date: 2/1/2023
Cal. Std. xp: 07/31/2023
ICAL ID: EC2300002

Mobile Phases : A:0.10% Formic Acid/Water 3210303-02 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	PERCHLORATE1		20230201-003	Perchlorate6850c.lcm	1x	☒	227245	2/1/2023 11:50
2	PERCHLORATE2		20230201-004	Perchlorate6850c.lcm	1x	☒	227246	2/1/2023 11:55
3	PERCHLORATE3		20230201-005	Perchlorate6850c.lcm	1x	☒	227247	2/1/2023 12:01
4	PERCHLORATE4		20230201-006	Perchlorate6850c.lcm	1x	☒	227248	2/1/2023 12:07
5	PERCHLORATE5		20230201-007	Perchlorate6850c.lcm	1x	☒	227249	2/1/2023 12:13
6	PERCHLORATE6		20230201-008	Perchlorate6850c.lcm	1x	☒	227250	2/1/2023 12:19
7	PERCHLORATE7		20230201-009	Perchlorate6850c.lcm	1x	☒	227251	2/1/2023 12:25
8	PERCHLORATE8		20230201-010	Perchlorate6850c.lcm	1x	☒	227252	2/1/2023 12:30
9	PERCHLORATE9		20230201-011	Perchlorate6850c.lcm	1x	☒	227253	2/1/2023 12:36
10	PERCHLORATE10		20230201-012	Perchlorate6850c.lcm	1x	☒	227254	2/1/2023 12:42
11	PERCHLORATEICV		20230201-013	Perchlorate6850c.lcm	1x	☒	227256	2/1/2023 12:48
12	LODV		20230201-014	Perchlorate6850c.lcm	1x	☒	225199	2/1/2023 12:54
13	ICS		20230201-015	Perchlorate6850c.lcm	1x	☒	32103024	2/1/2023 13:00
14	PERCHLORATE7		20230201-016	Perchlorate6850c.lcm	1x	☒	227251	2/1/2023 15:24
15	EQ2300047-01		20230201-017	Perchlorate6850c.lcm	1x	☒		2/1/2023 15:30
16	EQ2300047-02		20230201-018	Perchlorate6850c.lcm	1x	☒		2/1/2023 15:36
17	EQ2300047-03		20230201-019	Perchlorate6850c.lcm	1x	☒		2/1/2023 15:41
18	R2300589-005		20230201-020	Perchlorate6850c.lcm	1x	☒		2/1/2023 15:48
19	R2300589-010		20230201-021	Perchlorate6850c.lcm	1x	☒	DNU-BAD PEAK SHAPE	2/1/2023 15:54
20	R2300648-018		20230201-022	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:00
21	R2300648-025		20230201-023	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:06
22	PERCHLORATE7		20230201-024	Perchlorate6850c.lcm	1x	☒	227251	2/1/2023 16:17
23	E2300092-001		20230201-025	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:23
24	E2300092-002		20230201-026	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:29
25	E2300092-003		20230201-027	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:35
26	E2300092-004		20230201-028	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:41
27	E2300094-001		20230201-029	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:47
28	E2300094-002		20230201-030	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:52
29	E2300094-003		20230201-031	Perchlorate6850c.lcm	1x	☒		2/1/2023 16:58
30	E2300094-004		20230201-032	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:04
31	E2300094-005		20230201-033	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:10
32	PERCHLORATE7		20230201-034	Perchlorate6850c.lcm	1x	☒	227251	2/1/2023 17:16
33	E2300096-001		20230201-035	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:21
34	E2300096-002		20230201-036	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:27
35	E2300096-003		20230201-037	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:33
36	E2300096-004		20230201-038	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:39
37	E2300096-005		20230201-039	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:45
38	E2300096-006		20230201-040	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:51
39	E2300096-007		20230201-041	Perchlorate6850c.lcm	1x	☒		2/1/2023 17:56
40	PERCHLORATE7		20230201-042	Perchlorate6850c.lcm	1x	☒	227251	2/1/2023 18:02

Initial Calibration - Detailed Report

Calibration ID: EC2300002 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2300002-01	PERCHLORATE1	20230201-003	02/01/2023 11:50
02	EC2300002-02	PERCHLORATE2	20230201-004	02/01/2023 11:55
03	EC2300002-03	PERCHLORATE3	20230201-005	02/01/2023 12:01
04	EC2300002-04	PERCHLORATE4	20230201-006	02/01/2023 12:07
05	EC2300002-05	PERCHLORATE5	20230201-007	02/01/2023 12:13
06	EC2300002-06	PERCHLORATE6	20230201-008	02/01/2023 12:19
07	EC2300002-07	PERCHLORATE7	20230201-009	02/01/2023 12:25
08	EC2300002-08	PERCHLORATE8	20230201-010	02/01/2023 12:30
09	EC2300002-09	PERCHLORATE9	20230201-011	02/01/2023 12:36
10	EC2300002-10	PERCHLORATE10	20230201-012	02/01/2023 12:42

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 4.86** **Average RF = 0.1385**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1253	02	0.5000	0.13	03	0.7000	0.1346	04	1.0000	0.1399
05	2.0000	0.1406	06	5.0000	0.1404	07	10.0000	0.1416	08	20.0000	0.1407
09	30.0000	0.1447	10	50.0000	0.1477						

Analyte

Perchlorate RSE = 4.86

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.0904	-9.6	02	0.5000	0.469	-6.1	03	0.7000	0.680	-2.8
04	1.0000	1.01	0.9	05	2.0000	2.03	1.5	06	5.0000	5.07	1.3
07	10.0000	10.2	2.2	08	20.0000	20.3	1.5	09	30.0000	31.3	4.5
10	50.0000	53.3	6.6								

Initial Calibration Verification Summary Report

Calibration ID:	EC2300002	**Instrument ID:**	E-LCMS-01
Datafile ID:	20230201-013	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2300002-11	T	Average RF	10	10.538	ng/mL	5.4	<= 15

Insight Report

Printed at 2/1/2023 2:06:14 PM

Method File: I:\LCMS01\DATA\02012023\20230201.lcm
Project File: I:\LCMS01\DATA\02012023\20230201.damlp

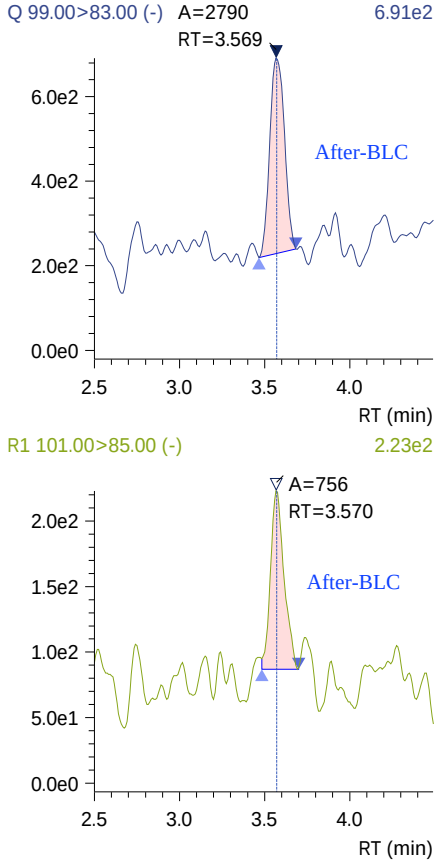
PERCHLORATE1

Sample ID: PERCHLORATE1
Date Acquired: 2/1/2023 11:50:11 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-003.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.569	2790	222693	0.0904	ng/mL	101.00 >85.00	27.11	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.568	222693	222693	1.0000	ng/mL	----	----	

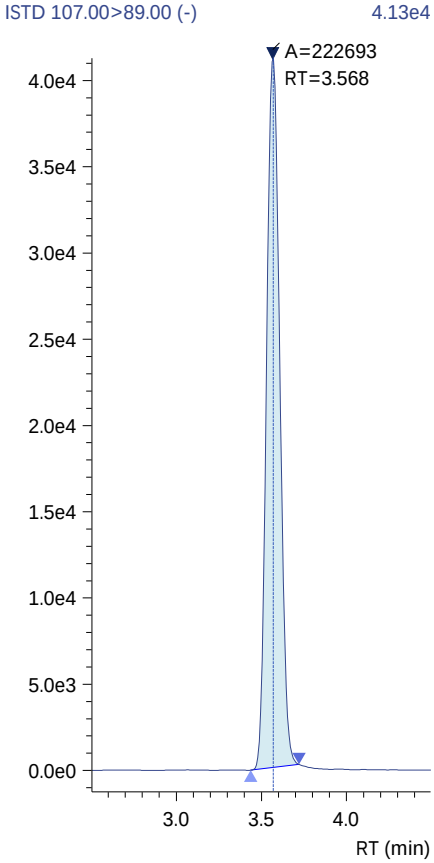
Perchlorate

Conc 0.0904
R#1 27.11 (31.99)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/1/2023 1:30:25 PM

Method File: I:\LCMS01\DATA\20230201\20230201ICAL.lcm
Project File: I:\LCMS01\DATA\20230201\20230201ICAL.damIp

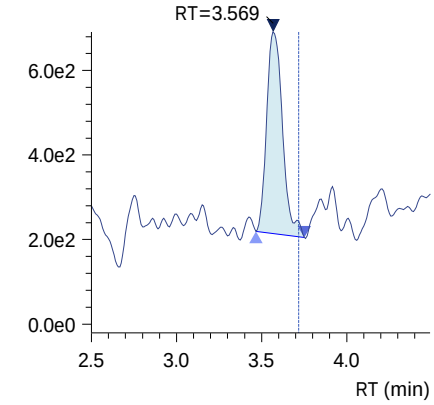
PERCHLORATE1

Sample ID: PERCHLORATE1
Date Acquired: 2/1/2023 11:50:11 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-003.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 1

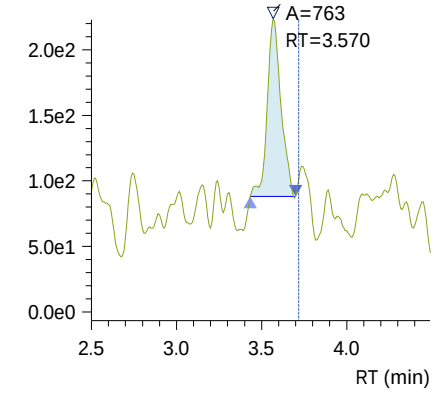
Perchlorate

Conc 0.0996
R#1 24.56 (34.45)

Q 99.00>83.00 (-) A=3105 6.91e2



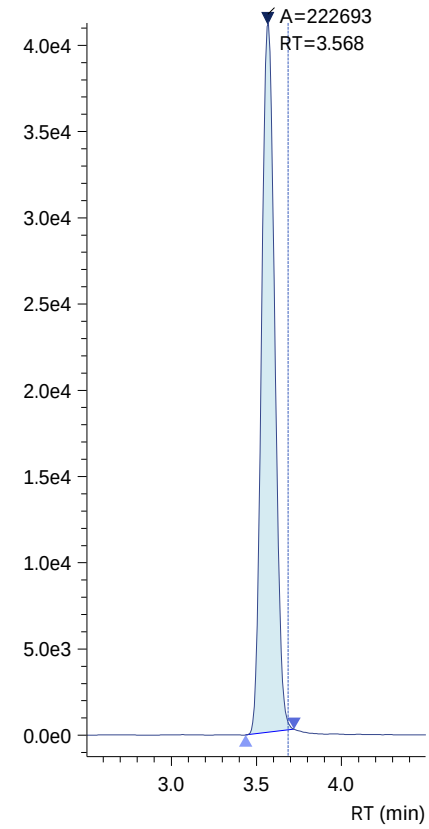
R1 101.00>85.00 (-) 2.23e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.13e4



Insight Report

Printed at 2/1/2023 2:06:14 PM

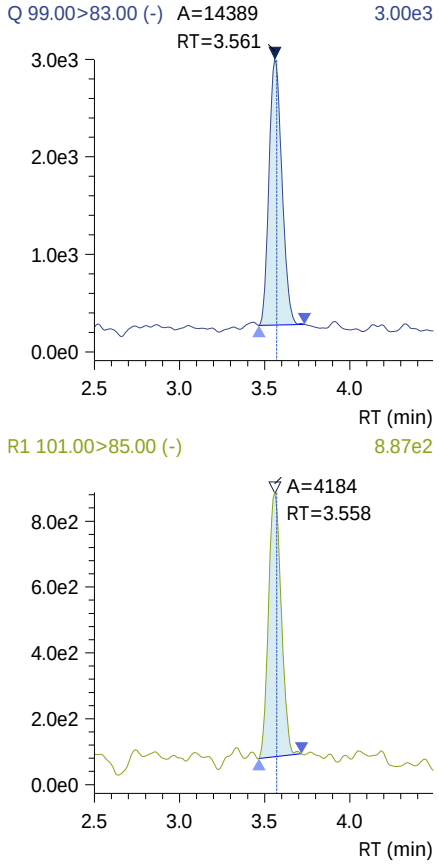
PERCHLORATE2

Sample ID: PERCHLORATE2
Date Acquired: 2/1/2023 11:55:59 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-004.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.561	14389	221291	0.4694	ng/mL	101.00 >85.00	29.08	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.558	221291	221291	1.0000	ng/mL	----	----	

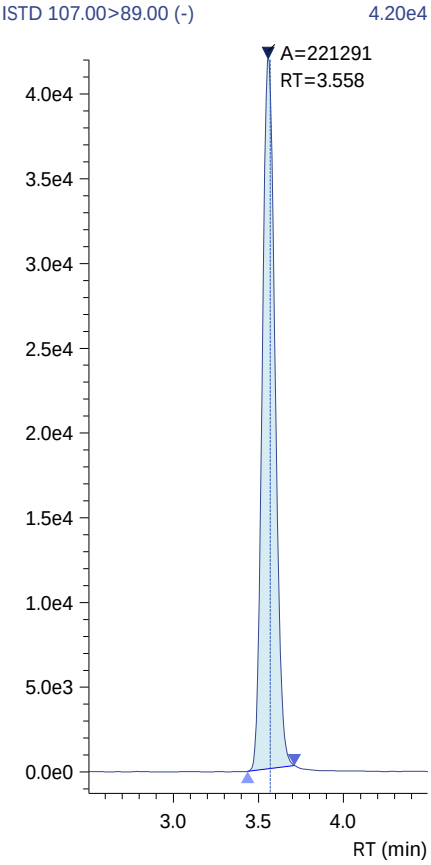
Perchlorate

Conc 0.4694
R#1 29.08 (31.99)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/1/2023 2:06:14 PM

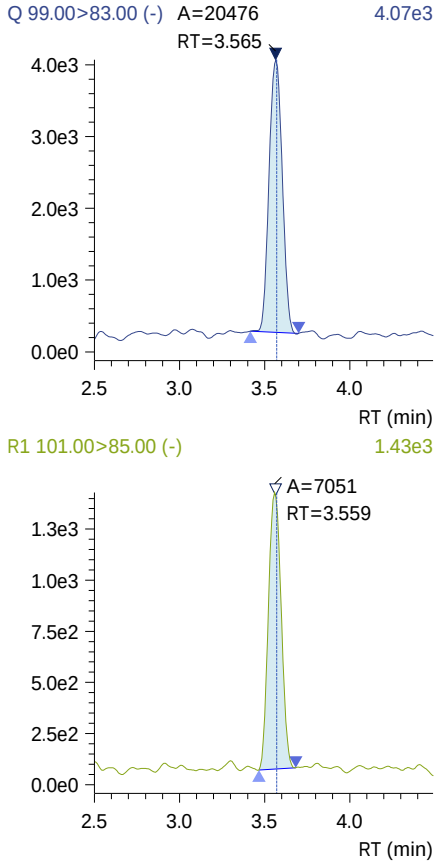
PERCHLORATE3

Sample ID: PERCHLORATE3
Date Acquired: 2/1/2023 12:01:49 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-005.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.565	20476	217325	0.6801	ng/mL	101.00 >85.00	34.44	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.559	2173 25	217325	1.0000	ng/mL	----	----	

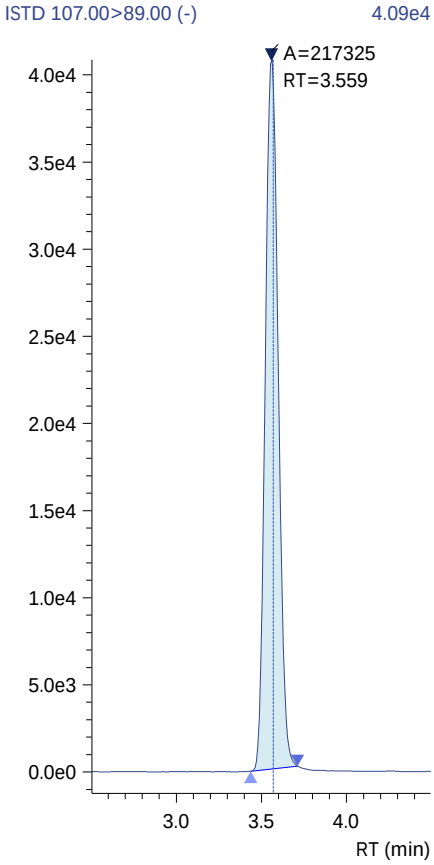
Perchlorate

Conc 0.6801
R#1 34.44 (31.99)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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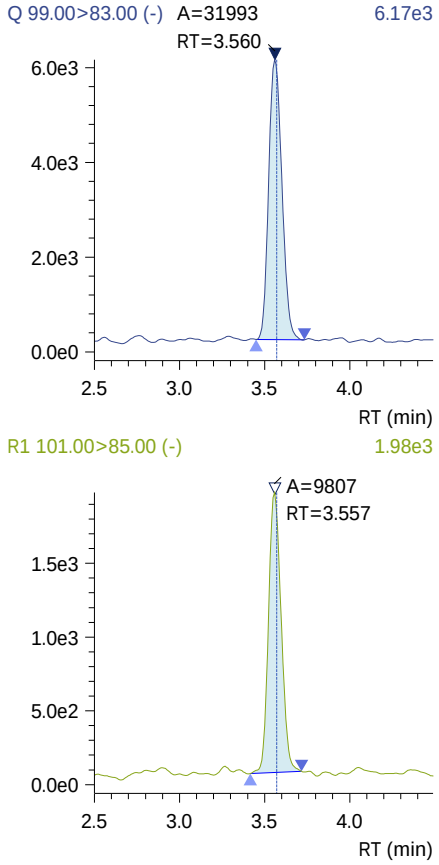
PERCHLORATE4

Sample ID: PERCHLORATE4
Date Acquired: 2/1/2023 12:07:38 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-006.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.560	31993	228763	1.0095	ng/mL	101.00 >85.00	30.65	24.11 -44.78
Sodium Perchlorate-18O4 _IS	Auto	3.557	2287 63	228763	1.0000	ng/mL	----	----	

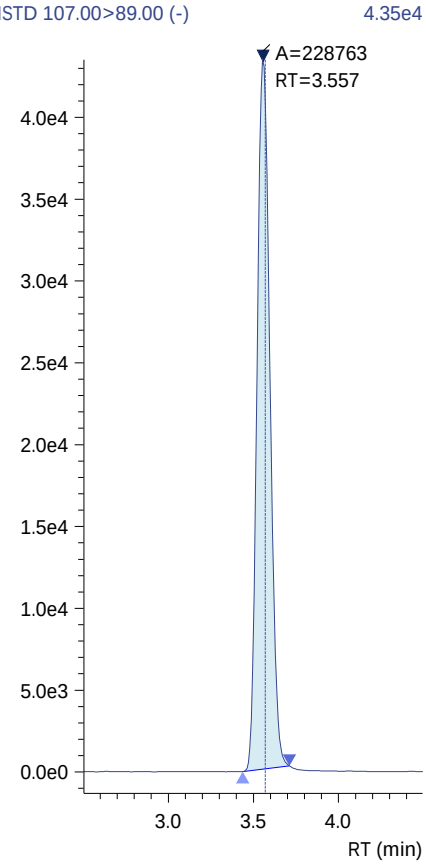
Perchlorate

Conc 1.0095
R#1 30.65 (31.99)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/1/2023 2:06:14 PM

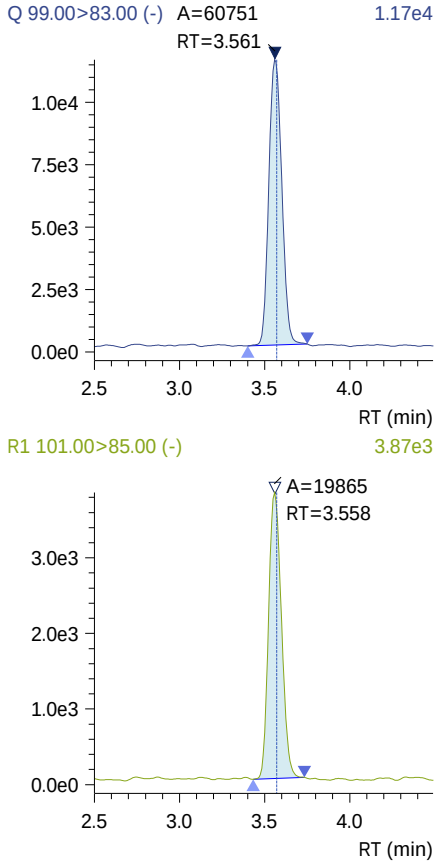
PERCHLORATE5

Sample ID: PERCHLORATE5
Date Acquired: 2/1/2023 12:13:29 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-007.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.561	60751	216066	2.0296	ng/mL	101.00 >85.00	32.70	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.557	216066	216066	1.0000	ng/mL	----	----	

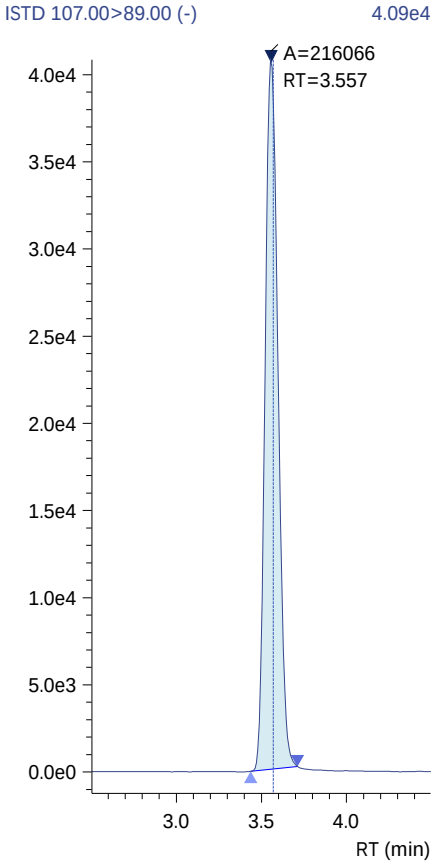
Perchlorate

Conc 2.0296
R#1 32.70 (31.99)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/1/2023 2:06:14 PM

PERCHLORATE6

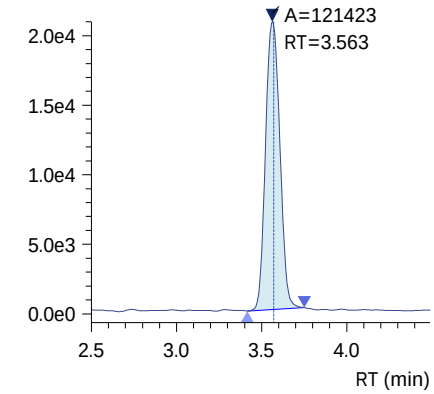
Sample ID: PERCHLORATE6
Date Acquired: 2/1/2023 12:19:20 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-008.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.563	1214 23	172986	5.0667	ng/mL	101.00 >85.00	32.55	24.11 -44.78
Sodium Perchlorate-18O4 _IS	Auto	3.558	1729 86	172986	1.0000	ng/mL	----	----	

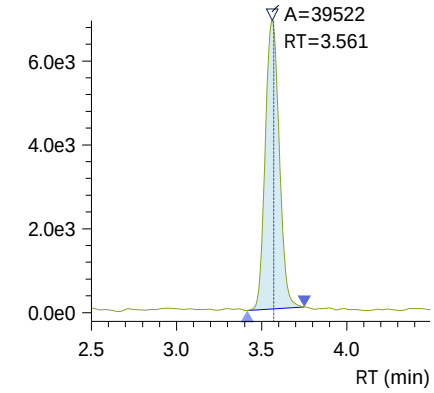
Perchlorate

Conc 5.0667
R#1 32.55 (31.99)

Q 99.00>83.00 (-) 2.10e4



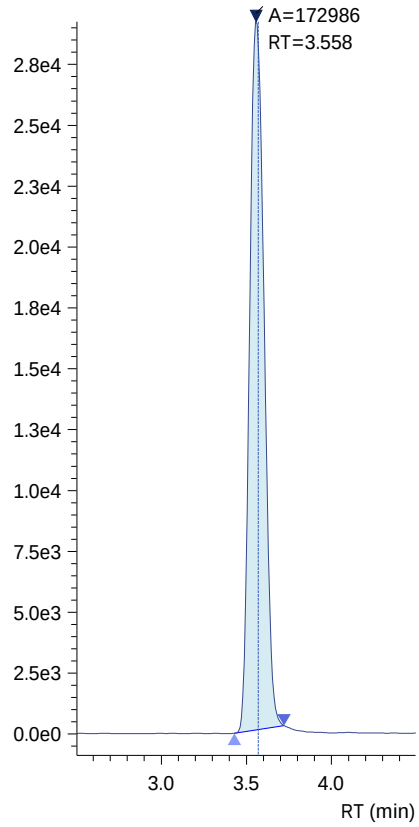
R1 101.00>85.00 (-) 6.97e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.93e4



Insight Report

Printed at 2/1/2023 2:06:14 PM

PERCHLORATE7

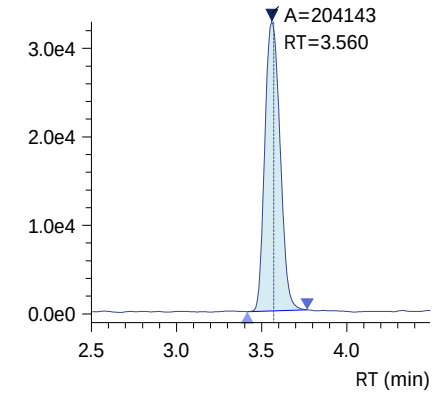
Sample ID: PERCHLORATE7
Date Acquired: 2/1/2023 12:25:10 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-009.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.560	2041 43	144196	10.2 192	ng/mL	101.00 >85.00	31.99	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.555	144196	144196	1.0000	ng/mL	----	----	

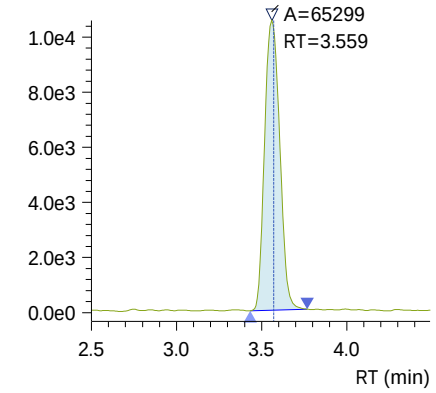
Perchlorate

Conc 10.2192
R#1 31.99 (31.99)

Q 99.00>83.00 (-) 3.30e4



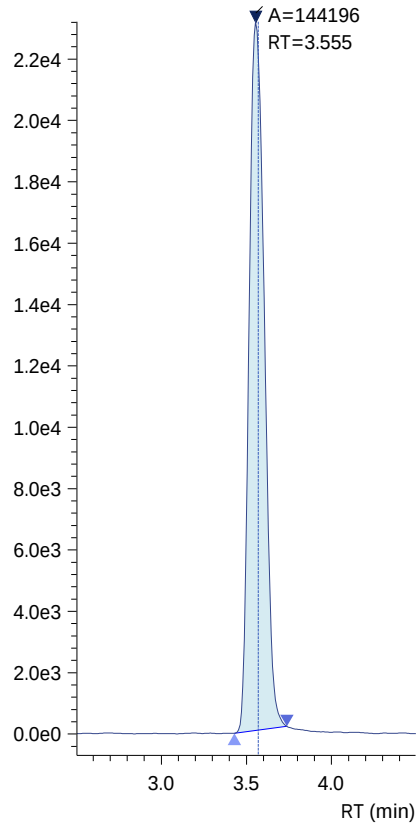
R1 101.00>85.00 (-) 1.06e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.32e4



Insight Report

Printed at 2/1/2023 2:06:14 PM

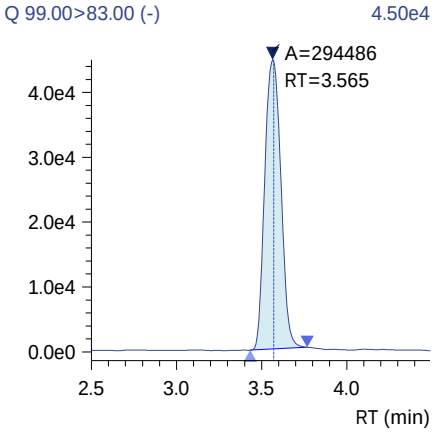
PERCHLORATE8

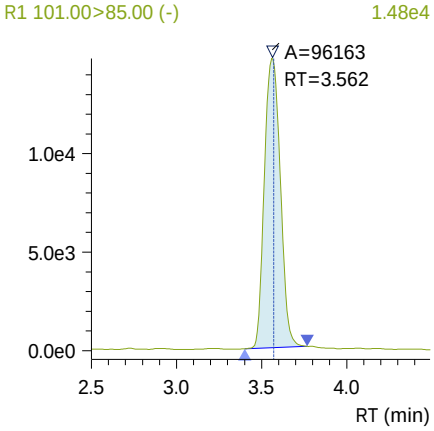
Sample ID: PERCHLORATE8
Date Acquired: 2/1/2023 12:30:57 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-010.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.565	294486	104680	20.3065	ng/mL	101.00 >85.00	32.66	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.557	104680	104680	1.0000	ng/mL	----	----	

Perchlorate

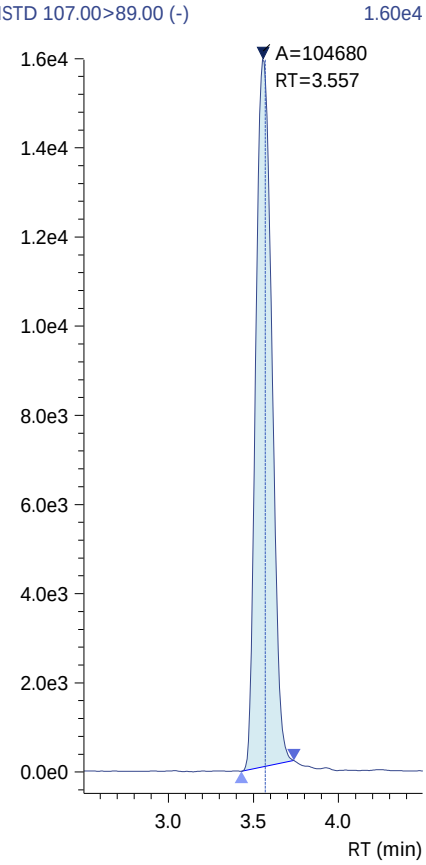
Conc 20.3065
R#1 32.66 (31.99)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/1/2023 2:06:14 PM

PERCHLORATE9

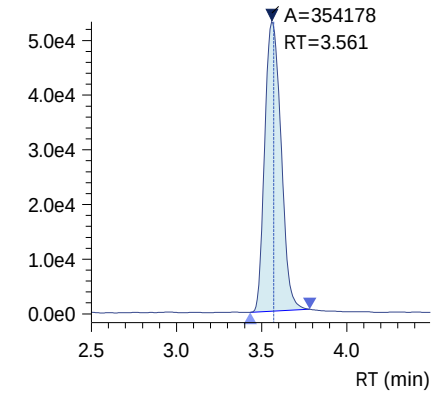
Sample ID: PERCHLORATE9
Date Acquired: 2/1/2023 12:36:45 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-011.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.561	3541	81577	31.3	ng/mL	101.00	31.89	24.11
			78		395		>85.00		-44.78
Sodium Perchlorate-18O4_IS	Auto	3.557	81577	81577	1.0000	ng/mL	----	----	

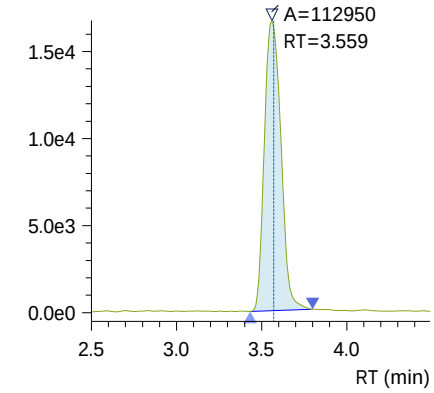
Perchlorate

Conc 31.3395
R#1 31.89 (31.99)

Q 99.00>83.00 (-) 5.34e4



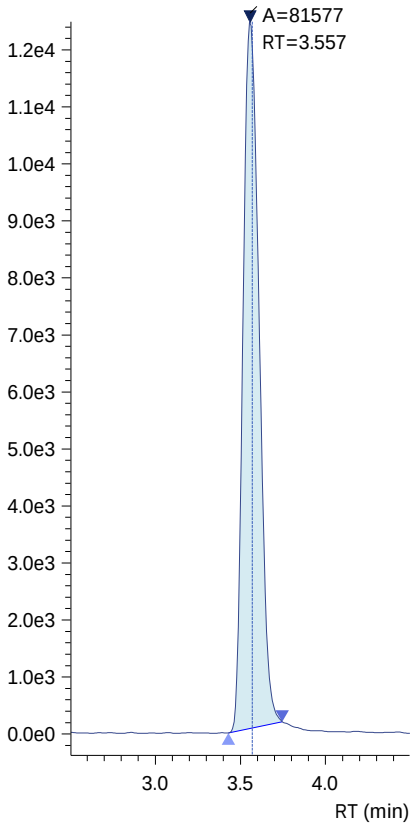
R1 101.00>85.00 (-) 1.68e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.25e4



Insight Report

Printed at 2/1/2023 2:06:14 PM

PERCHLORATE10

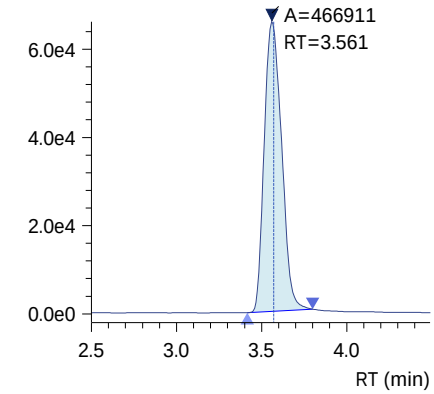
Sample ID: PERCHLORATE10
Date Acquired: 2/1/2023 12:42:34 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-012.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.561	4669	63237	53.2	ng/mL	101.00	32.40	24.11
			11		964		>85.00		-44.78
Sodium Perchlorate-18O4_IS	Auto	3.554	63237	63237	1.0000	ng/mL	----	----	

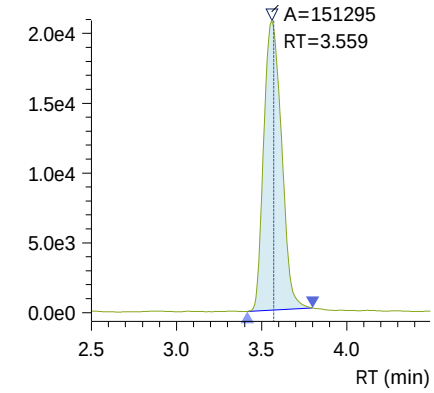
Perchlorate

Conc 53.2964
R#1 32.40 (31.99)

Q 99.00>83.00 (-) 6.62e4



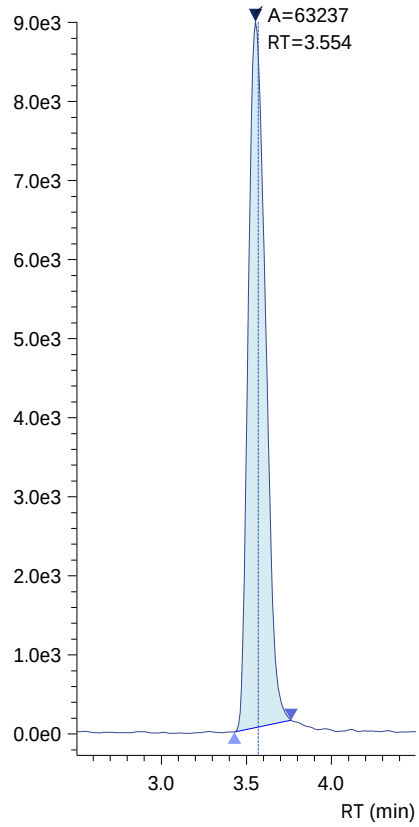
R1 101.00>85.00 (-) 2.09e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 9.01e3



Insight Report

Printed at 2/1/2023 2:06:14 PM

PERCHLORATEICV

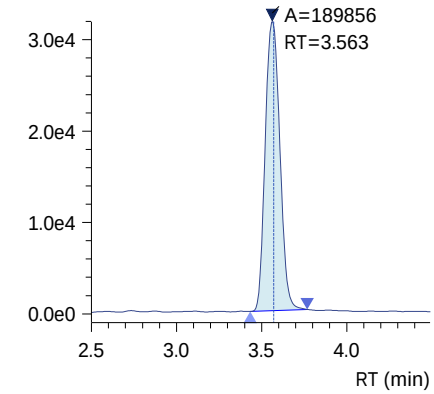
Sample ID: PERCHLORATEICV
Date Acquired: 2/1/2023 12:48:22 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\02012023\20230201-013.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.563	189856 1898	130049	10.5 379	ng/mL	101.00 >85.00	32.76	24.11 -44.78
Sodium Perchlorate-18O4_IS	Auto	3.557	130049	130049	1.0000	ng/mL	----	----	

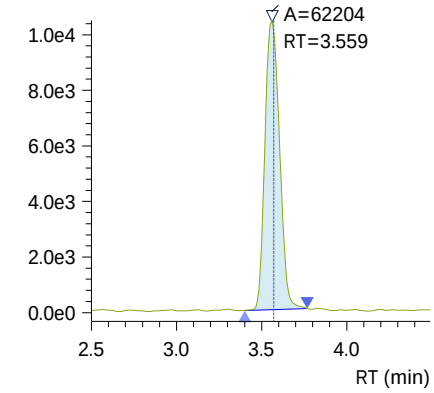
Perchlorate

Conc 10.5379
R#1 32.76 (31.99)

Q 99.00>83.00 (-) 3.20e4



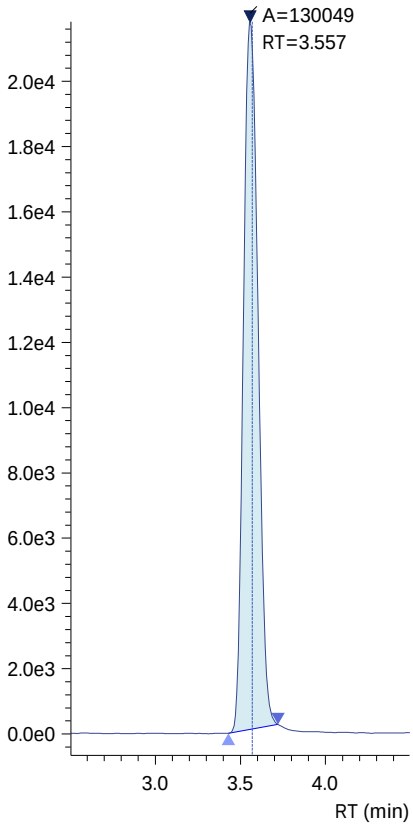
R1 101.00>85.00 (-) 1.05e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.18e4



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

20230316-797870

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: KNEIR

ICAL Date: 2/1/2023
Cal. Std. xp: 07/31/2023
ICAL ID: EC2300002

Mobile Phases : A:0.10% Formic Acid/Water 3210303-05 **B:**MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	IB		20230316-001	Perchlorate6850c.lcm	1x	☒		3/16/2023 8:53
2	LODV		20230316-002	Perchlorate6850c.lcm	1x	☒	227501	3/16/2023 8:59
3	ICS		20230316-003	Perchlorate6850c.lcm	1x	☒	32103024	3/16/2023 9:05
4	PERCHLORATE7		20230316-004	Perchlorate6850c.lcm	1x	☒	227251	3/16/2023 9:27
5	R2301893-035		20230315R-015	Perchlorate6850c.lcm	1x	☒		3/16/2023 9:44
6	EQ2300131-01		20230316-005	Perchlorate6850c.lcm	1x	☒	DNU-IR	3/16/2023 9:50
7	EQ2300131-02		20230316-006	Perchlorate6850c.lcm	1x	☒		3/16/2023 9:55
8	EQ2300131-03		20230316-007	Perchlorate6850c.lcm	1x	☒		3/16/2023 10:01
9	E2300251-001		20230316-008	Perchlorate6850c.lcm	1x	☒		3/16/2023 10:07
10	E2300251-002		20230316-009	Perchlorate6850c.lcm	1x	☒		3/16/2023 10:12
11	K2302951-001		20230316-010	Perchlorate6850c.lcm	1x	☒		3/16/2023 10:41
12	E2300238-001		20230316-011	Perchlorate6850c.lcm	1x	☒		3/16/2023 10:47
13	E2300238-002		20230316-012	Perchlorate6850c.lcm	1x	☒		3/16/2023 10:53
14	E2300238-003		20230316-013	Perchlorate6850c.lcm	1x	☒		3/16/2023 10:58
15	PERCHLORATE7		20230316-014	Perchlorate6850c.lcm	1x	☒	227251	3/16/2023 11:04
16	E2300238-004		20230316-015	Perchlorate6850c.lcm	1x	☒		3/16/2023 11:11
17	EQ2300131-04		20230316-016	Perchlorate6850c.lcm	1x	☒	DNU-RR	3/16/2023 11:17
18	EQ2300131-05		20230316-017	Perchlorate6850c.lcm	1x	☒		3/16/2023 11:23
19	E2300238-005		20230316-018	Perchlorate6850c.lcm	1x	☒	DNU-OUT OF ICAL RANGE	3/16/2023 11:28
20	E2300238-006		20230316-019	Perchlorate6850c.lcm	1x	☒	DNU-OUT OF ICAL RANGE	3/16/2023 11:34
21	IB		20230316-020	Perchlorate6850c.lcm	1x	☒		3/16/2023 11:40
22	E2300241-001		20230316-021	Perchlorate6850c.lcm	1x	☒		3/16/2023 11:47
23	E2300241-002		20230316-022	Perchlorate6850c.lcm	1x	☒		3/16/2023 11:53
24	E2300241-003		20230316-023	Perchlorate6850c.lcm	1x	☒		3/16/2023 11:58
25	E2300241-004		20230316-024	Perchlorate6850c.lcm	1x	☒		3/16/2023 12:04
26	PERCHLORATE7		20230316-025	Perchlorate6850c.lcm	1x	☒	227251	3/16/2023 12:10
27	E2300241-005		20230316-026	Perchlorate6850c.lcm	1x	☒		3/16/2023 12:15
28	EQ2300131-01		20230316-027	Perchlorate6850c.lcm	1x	☒		3/16/2023 12:21
29	EQ2300131-04		20230316-028	Perchlorate6850c.lcm	1x	☒		3/16/2023 12:27
30	E2300238-005		20230316-029	Perchlorate6850c.lcm	1000x	☒		3/16/2023 12:33
31	E2300238-006		20230316-030	Perchlorate6850c.lcm	10000x	☒		3/16/2023 12:38
32	PERCHLORATE7		20230316-036	Perchlorate6850c.lcm	1x	☒	227251	3/16/2023 13:14

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Analyzed:**	3/16/23 11:04

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230316\20230316-014	**Lab Code:**	EQ2300134-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	797870
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	167,281	3.56
	Upper Limit ==>	250,922	5.56
	Lower Limit ==>	83,641	1.56
Associated Analyses			
Continuing Calibration Verification	EQ2300134-02	170,210	3.36
17WW01_030923	E2300238-004	220,631	3.36
17WW01_030923DMS	EQ2300131-05	211,983	3.36

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Analyzed:**	3/16/23 12:10

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230316\20230316-025	**Lab Code:**	EQ2300134-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	797870
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	167,281	3.56
	Upper Limit ==>	250,922	5.56
	Lower Limit ==>	83,641	1.56
Associated Analyses			
Continuing Calibration Verification	EQ2300134-03	168,948	3.35
Lab Control Sample	EQ2300131-01	200,597	3.35
17WW01_030923MS	EQ2300131-04	216,967	3.36
17WW02_030923	E2300238-005	179,407	3.35
17WW06_030923	E2300238-006	183,905	3.35

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Analyzed:**	3/16/23 13:14

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230316\20230316-036	**Lab Code:**	EQ2300134-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	797870
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	167,281	3.56
	Upper Limit ==>	250,922	5.56
	Lower Limit ==>	83,641	1.56
Associated Analyses			
Continuing Calibration Verification	EQ2300134-04	170,281	3.35

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Analyzed:**	3/16/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	2/1/23
File ID:	I:\LCMS01\DATA\20230316\20230316-014	**Calibration ID:**	EC2300002
		Analysis Lot:	797870
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.9	0.1385	0.1507	8.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Analyzed:**	3/16/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	2/1/23
File ID:	I:\LCMS01\DATA\20230316\20230316-025	**Calibration ID:**	EC2300002
		Analysis Lot:	797870
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	11.3	0.1385	0.1572	13.5	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300238
Project:	LHAAP / Site 17	**Date Analyzed:**	3/16/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	2/1/23
File ID:	I:\LCMS01\DATA\20230316\20230316-036	**Calibration ID:**	EC2300002
		Analysis Lot:	797870
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.5	0.1385	0.1450	4.7	NA	± 15 %	Average RF

Insight Report

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Method File: I:\LCMS01\DATA\20230316\20230316.lcm
Project File: I:\LCMS01\DATA\20230316\20230316.damlp

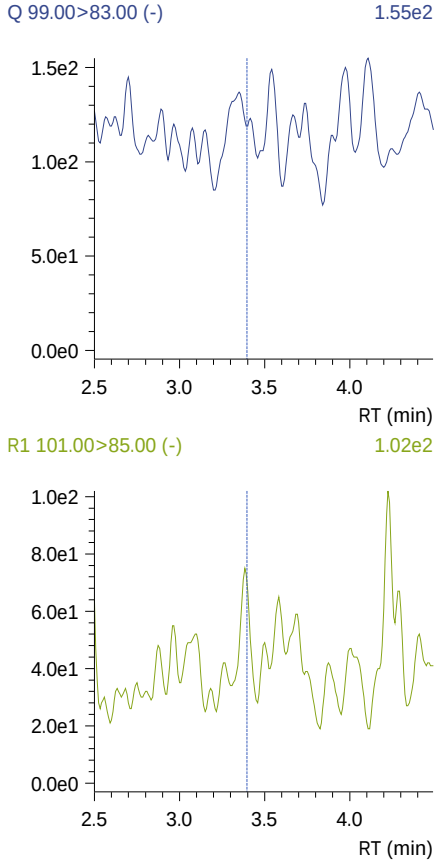
IB

Sample ID: IB
Date Acquired: 3/16/2023 8:53:56 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-001.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	224691	----	ng/mL	101.00 >85.00	0.00	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.362	224691	224691	1.0000	ng/mL	----	----	

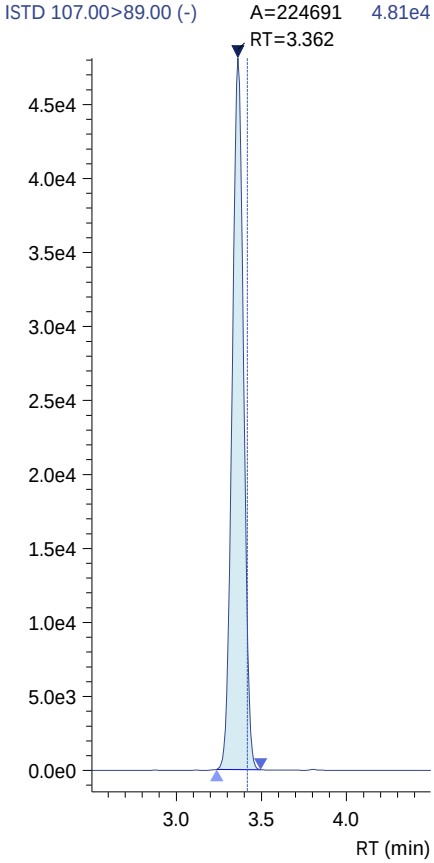
Perchlorate

Conc ----
R#1 0.00 (31.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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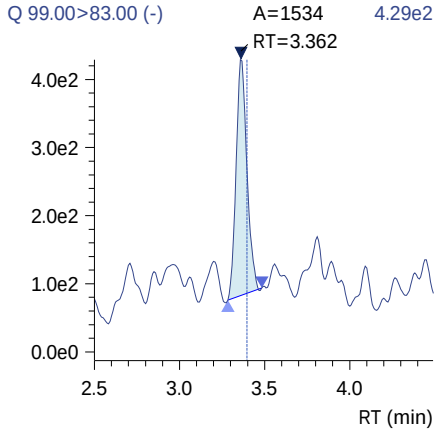
LODV

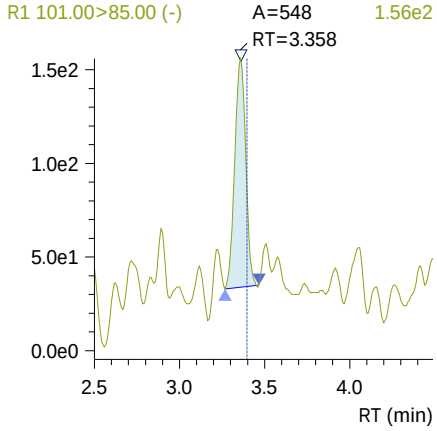
Sample ID: LODV
Date Acquired: 3/16/2023 8:59:39 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-002.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.362	1534	194482	0.0569	ng/mL	101.00 >85.00	35.69	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.359	194482	194482	1.0000	ng/mL	----	----	

Perchlorate

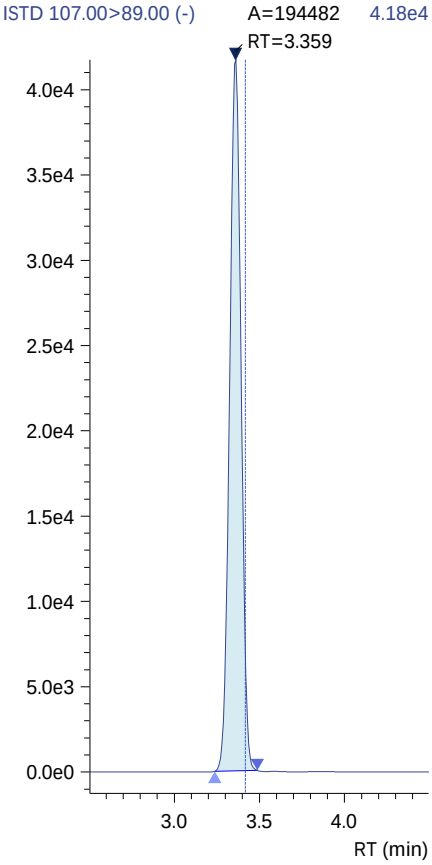
Conc 0.0569
R#1 35.69 (31.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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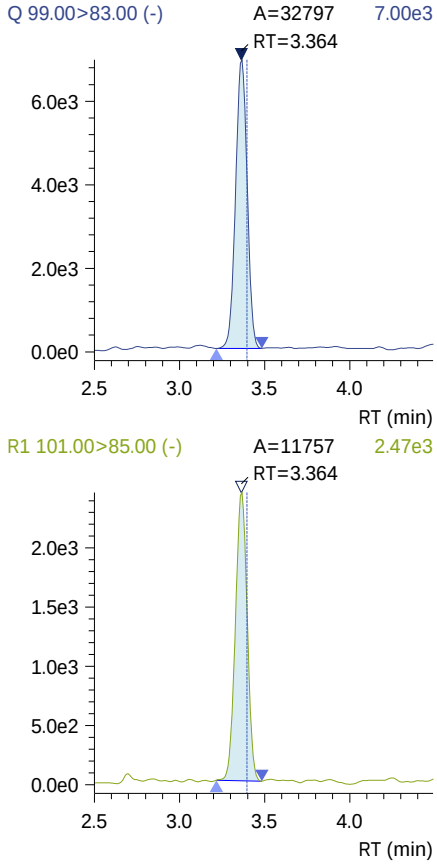
ICS

Sample ID: ICS
Date Acquired: 3/16/2023 9:05:19 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-003.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.364	32797	224283	1.0555	ng/mL	101.00 >85.00	35.85	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.360	224283	224283	1.0000	ng/mL	----	----	

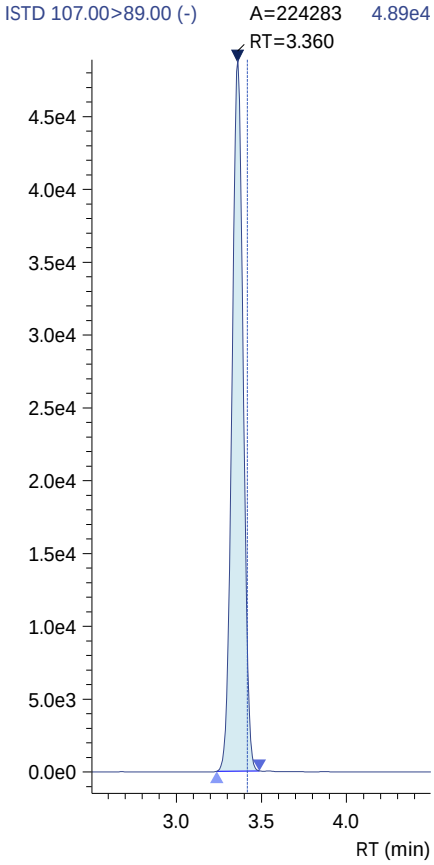
Perchlorate

Conc 1.0555
R#1 35.85 (31.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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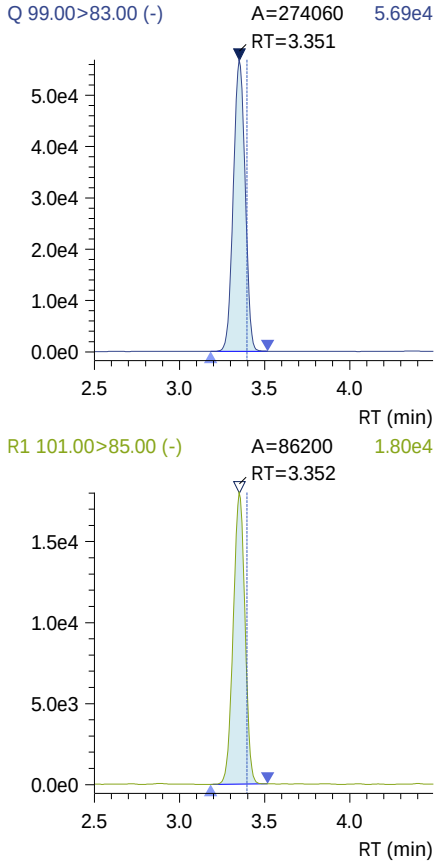
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 3/16/2023 9:27:04 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-004.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.351	2740 60	228780	8.6470	ng/mL	101.00 >85.00	31.45	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.348	2287 80	228780	1.0000	ng/mL	----	----	

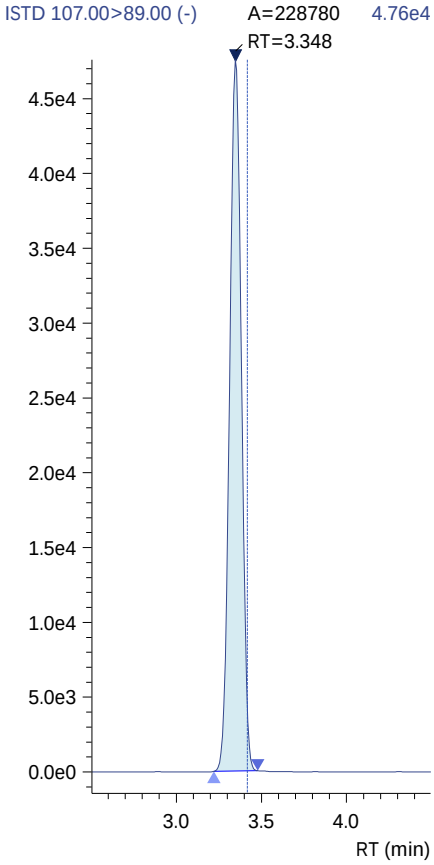
Perchlorate

Conc 8.6470
R#1 31.45 (31.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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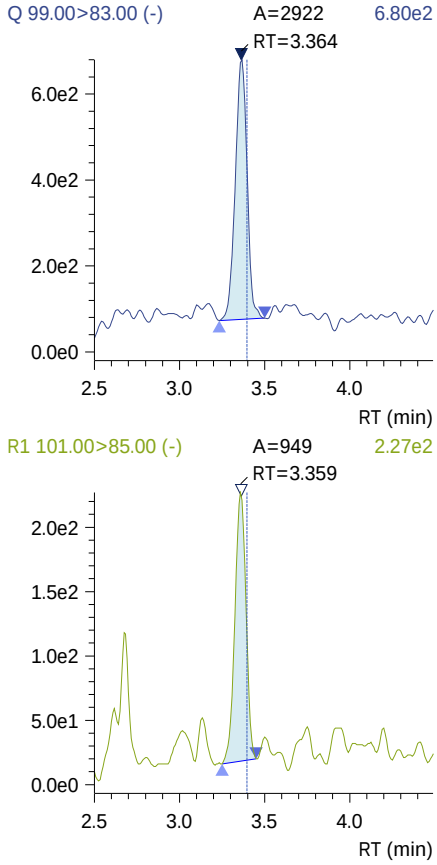
EQ2300131-02

Sample ID: EQ2300131-02
Date Acquired: 3/16/2023 9:55:45 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-006.lcd
Vial: 49 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.364	2922	216921	0.0972	ng/mL	101.00 >85.00	32.46	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.356	2169 21	216921	1.0000	ng/mL	----	----	

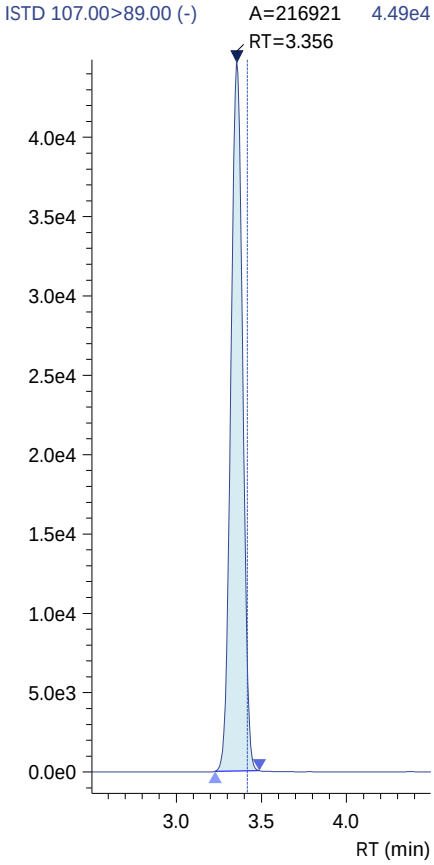
Perchlorate

Conc 0.0972
R#1 32.46 (31.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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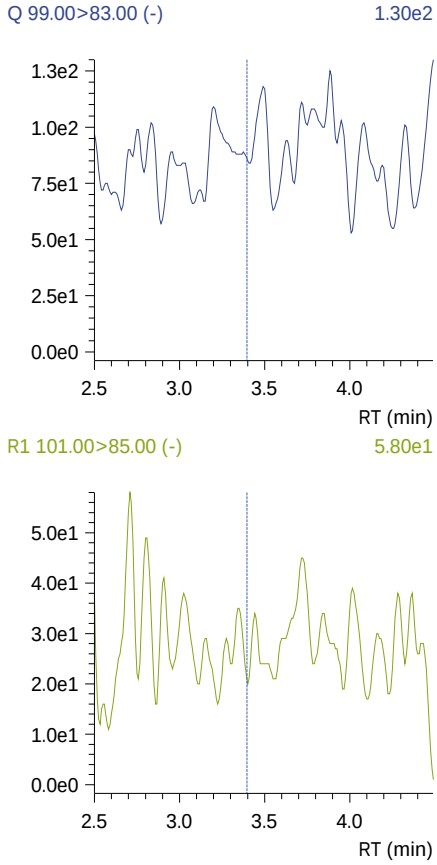
EQ2300131-03

Sample ID: EQ2300131-03
Date Acquired: 3/16/2023 10:01:29 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-007.lcd
Vial: 50 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	221916	----	ng/mL	101.00 >85.00	0.00	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.356	221916	221916	1.0000	ng/mL	----	----	

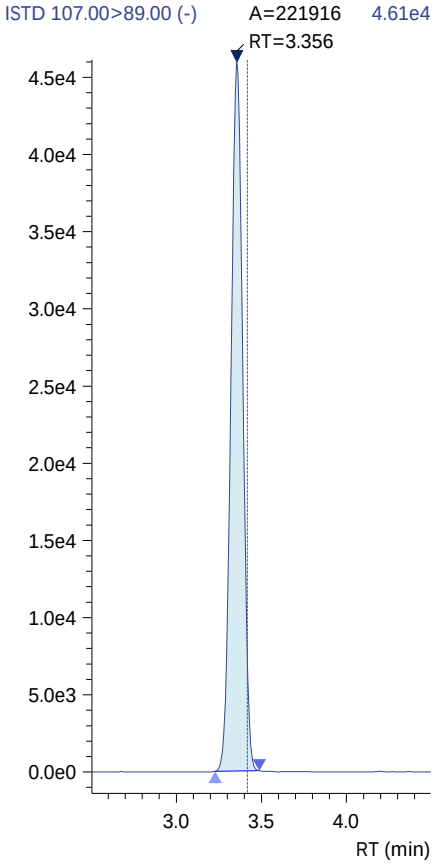
Perchlorate

Conc ----
R#1 0.00 (31.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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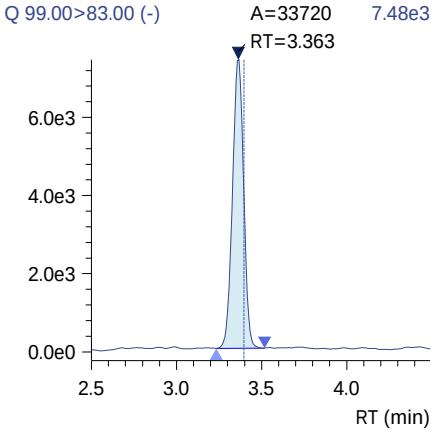
E2300238-001

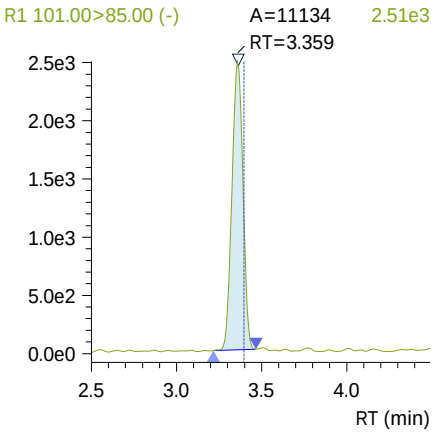
Sample ID: E2300238-001
Date Acquired: 3/16/2023 10:47:26 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-011.lcd
Vial: 53 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.363	33720	220908	1.1018	ng/mL	101.00 >85.00	33.02	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.359	220908	220908	1.0000	ng/mL	----	----	

Perchlorate

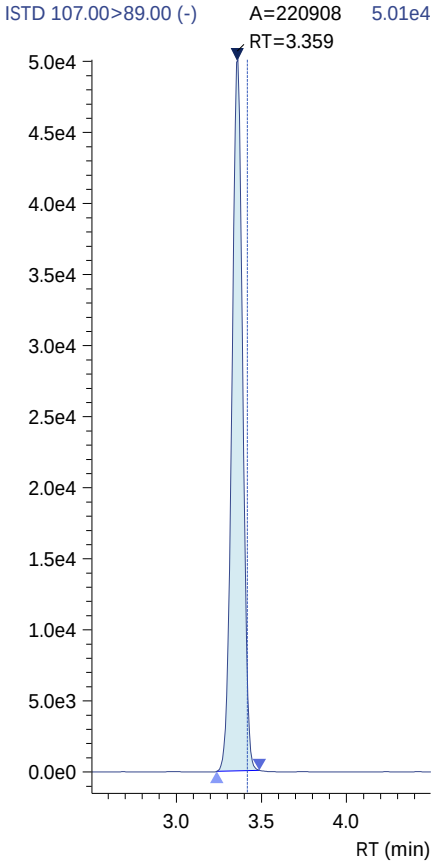
Conc 1.1018
R#1 33.02 (31.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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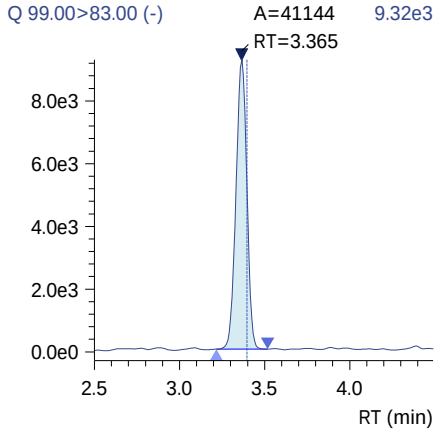
E2300238-002

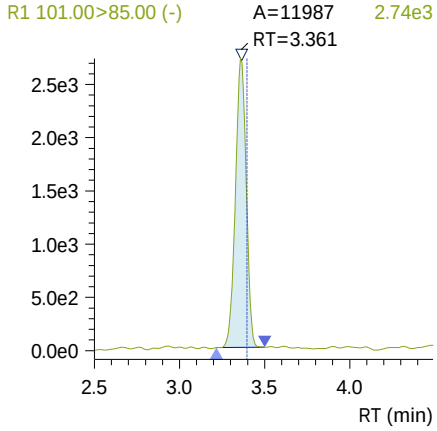
Sample ID: E2300238-002
Date Acquired: 3/16/2023 10:53:13 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-012.lcd
Vial: 54 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.365	41144	218627	1.3584	ng/mL	101.00 >85.00	29.13	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.362	218627	218627	1.0000	ng/mL	----	----	

Perchlorate

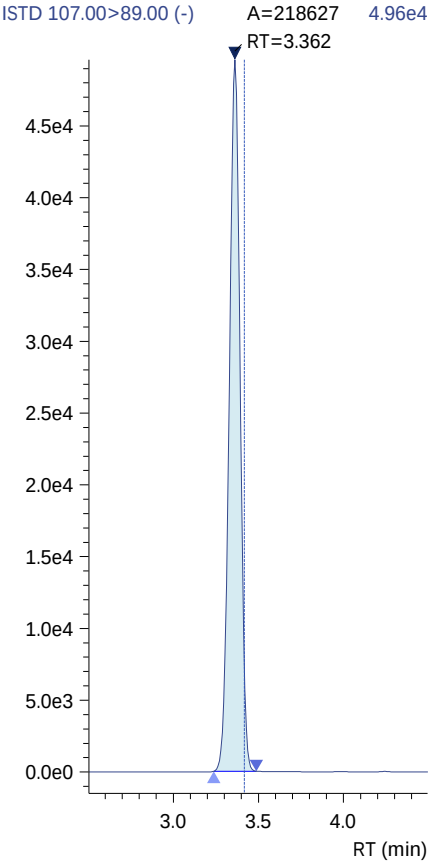
Conc 1.3584
R#1 29.13 (31.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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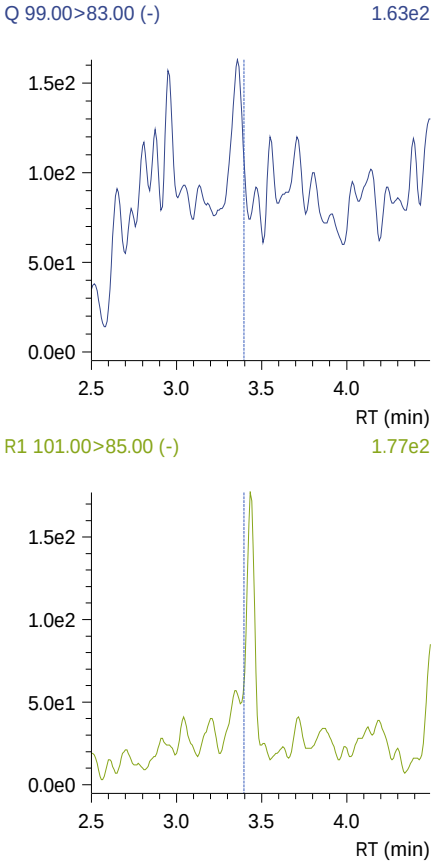
E2300238-003

Sample ID: E2300238-003
Date Acquired: 3/16/2023 10:58:54 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-013.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	225942	----	ng/mL	101.00 >85.00	0.00	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.363	225942	225942	1.0000	ng/mL	----	----	

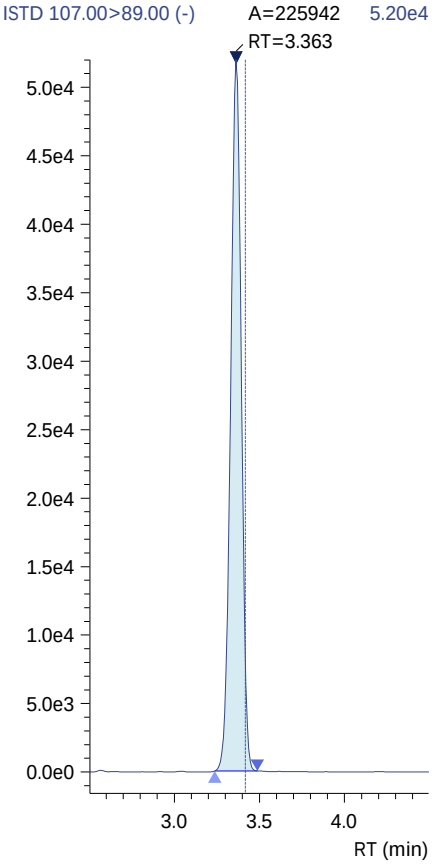
Perchlorate

Conc ----
R#1 0.00 (31.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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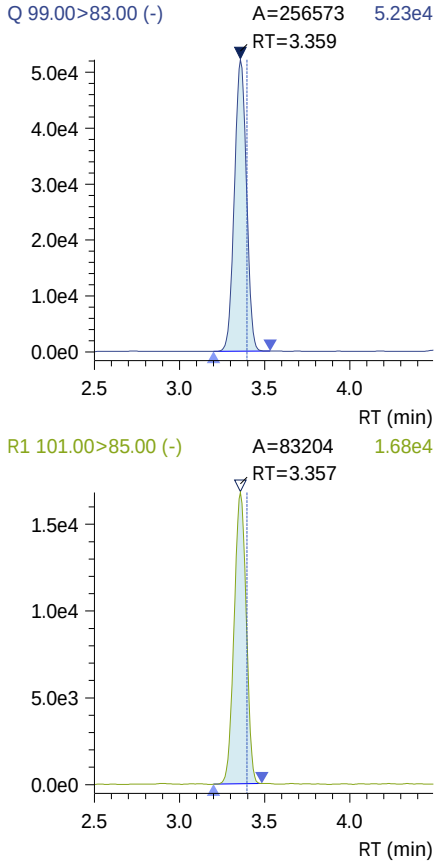
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 3/16/2023 11:04:36 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-014.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.359	2565 73	170210	10.8 808	ng/mL	101.00 >85.00	32.43	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.355	1702 10	170210	1.0000	ng/mL	----	----	

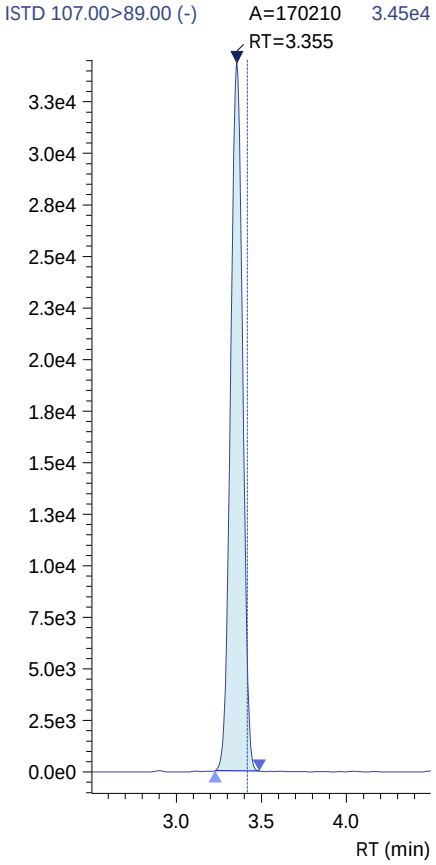
Perchlorate

Conc 10.8808
R#1 32.43 (31.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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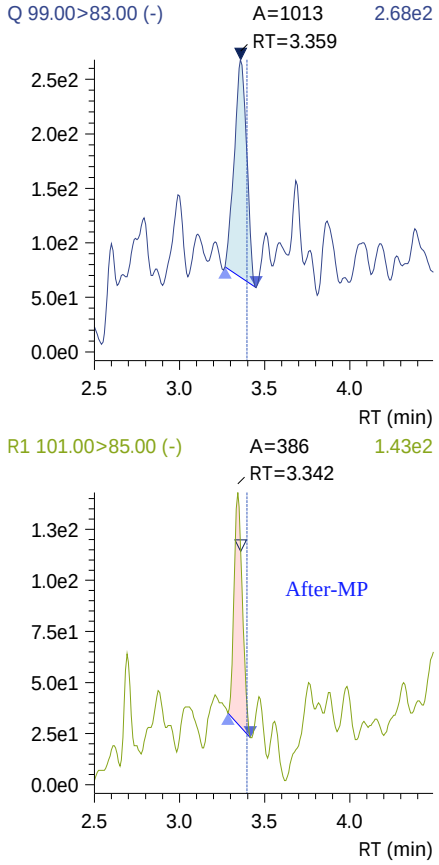
E2300238-004

Sample ID: E2300238-004
Date Acquired: 3/16/2023 11:11:36 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-015.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.359	1013	220631	0.0332	ng/mL	101.00 >85.00	38.05	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.359	220631	220631	1.0000	ng/mL	----	----	

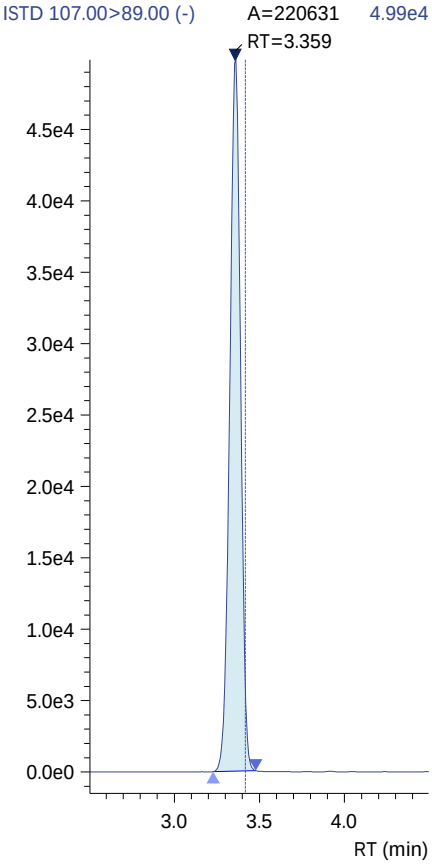
Perchlorate

Conc 0.0332
R#1 38.05 (31.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 3/16/2023 1:26:23 PM

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Project File: I:\LCMS01\DATA\20230316\20230316.damlp

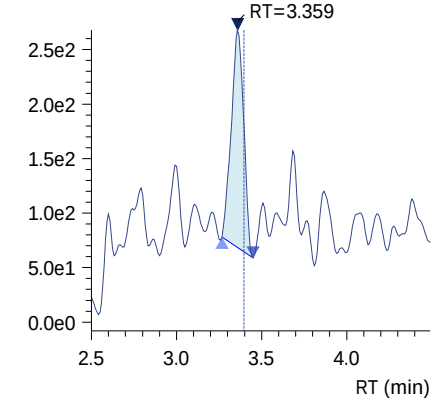
E2300238-004

Sample ID: E2300238-004
Date Acquired: 3/16/2023 11:11:36 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-015.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 5

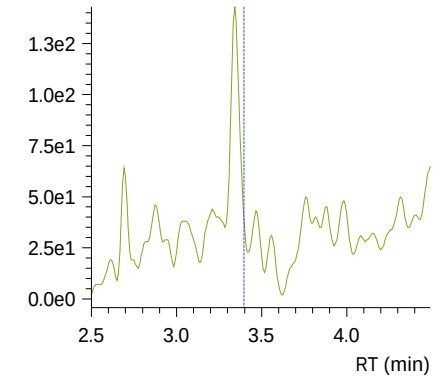
Perchlorate

Conc 0.0328
R#1 0.00 (31.10)

Q 99.00>83.00 (-) A=1013 2.68e2



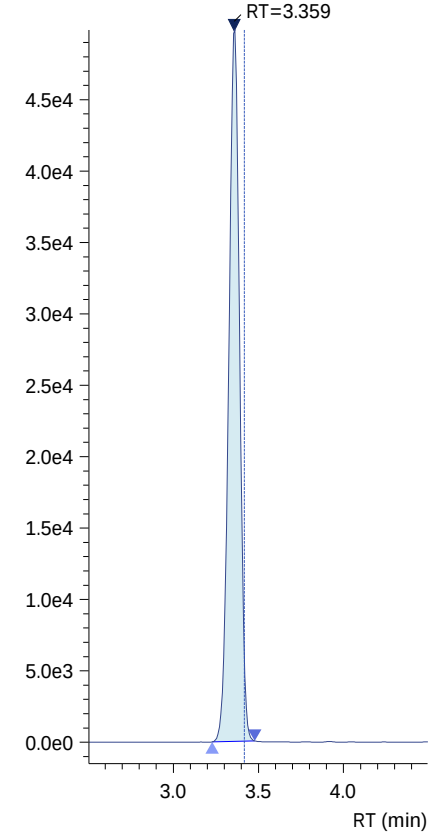
R1 101.00>85.00 (-) 1.43e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=220631 4.99e4



Insight Report

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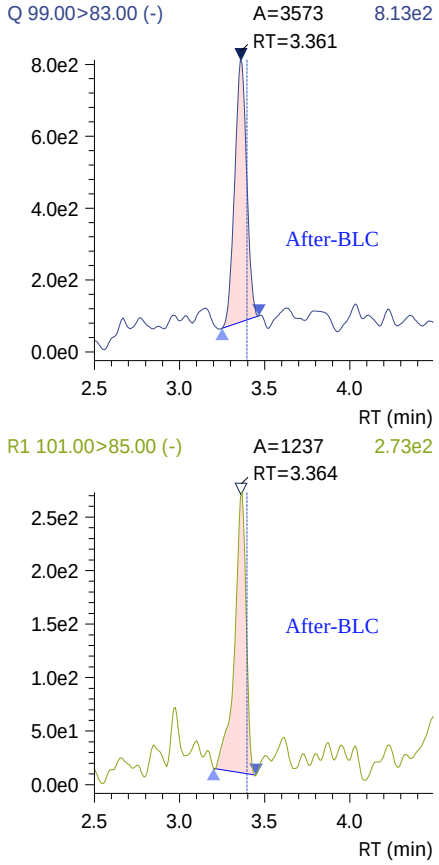
EQ2300131-05

Sample ID: EQ2300131-05
Date Acquired: 3/16/2023 11:23:03 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-017.lcd
Vial: 52 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.361	3573	211983	0.1217	ng/mL	101.00 >85.00	34.62	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.359	211983	211983	1.0000	ng/mL	----	----	

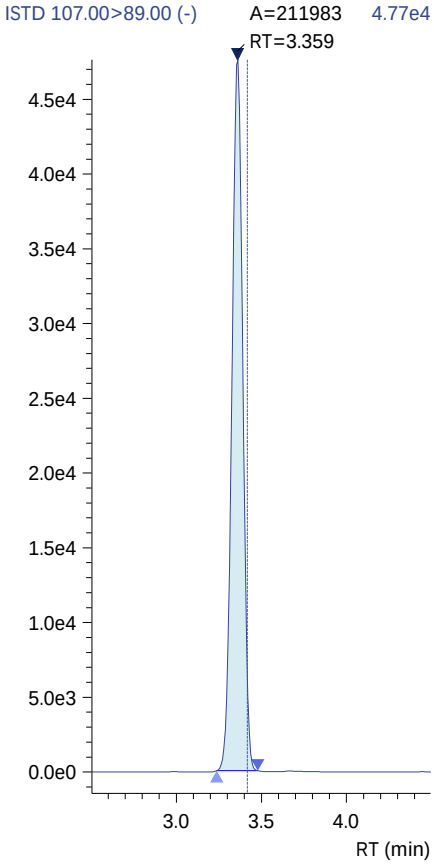
Perchlorate

Conc 0.1217
R#1 34.62 (31.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 3/16/2023 1:26:23 PM

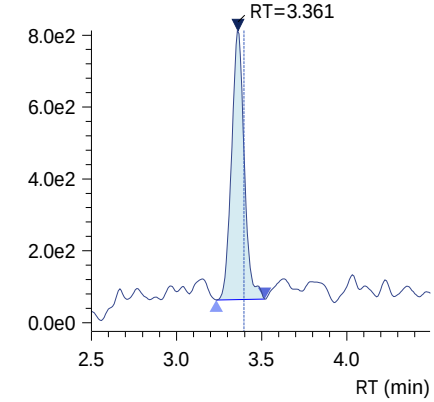
EQ2300131-05

Sample ID: EQ2300131-05
Date Acquired: 3/16/2023 11:23:03 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-017.lcd
Vial: 52 | Inj. Volume: 25.0000uL | Tray: 4

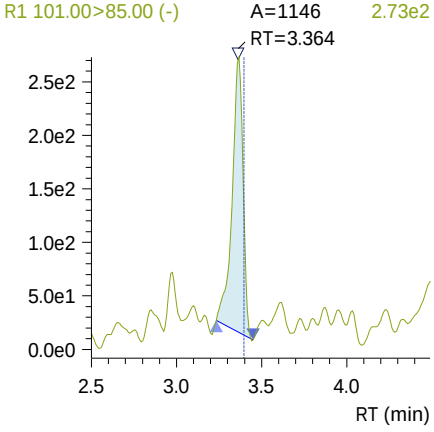
Perchlorate

Conc 0.1311
R#1 29.47 (31.10)

Q 99.00>83.00 (-) A=3888 8.13e2



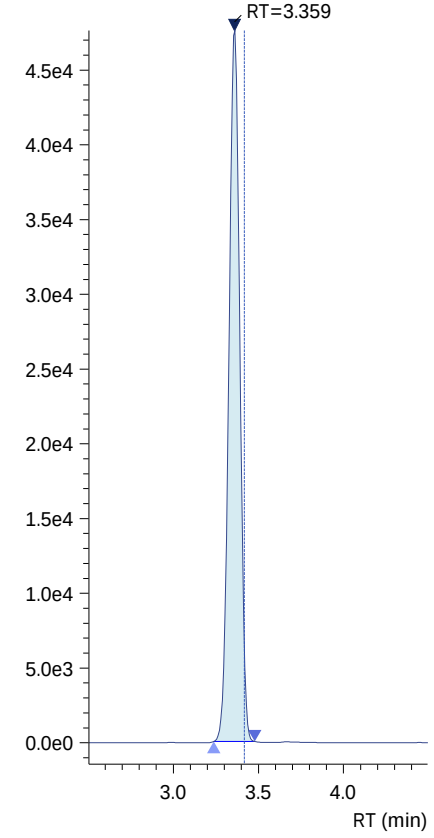
R1 101.00>85.00 (-) A=1146 2.73e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=211983 4.77e4



Insight Report

Printed at 3/16/2023 1:24:53 PM

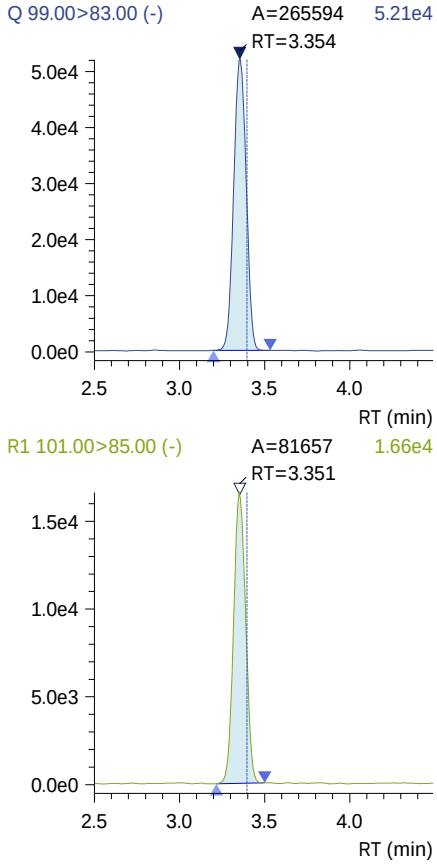
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 3/16/2023 12:10:14 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-025.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.354	2655 94	168948	11.3 476	ng/mL	101.00 >85.00	30.75	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.353	1689 48	168948	1.0000	ng/mL	----	----	

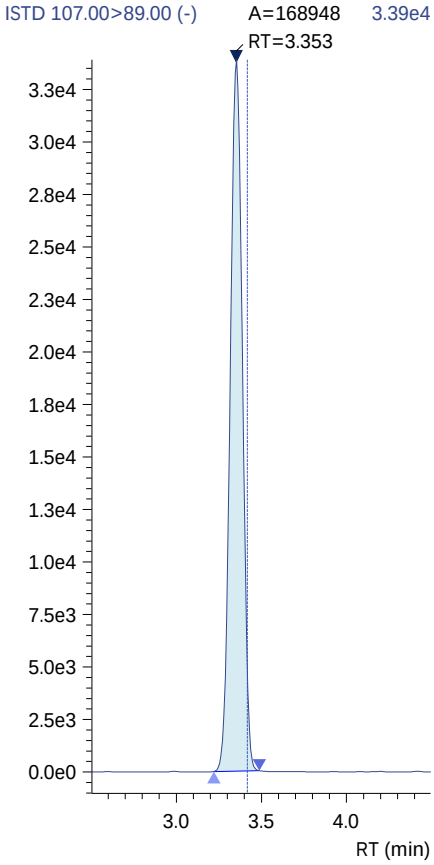
Perchlorate

Conc 11.3476
R#1 30.75 (31.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 3/16/2023 1:24:53 PM

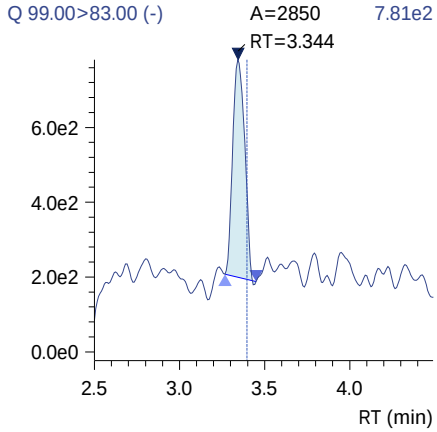
EQ2300131-01

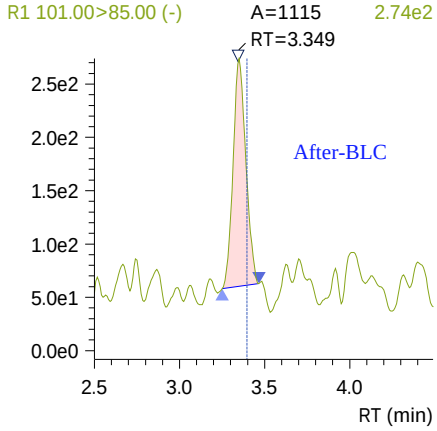
Sample ID: EQ2300131-01
Date Acquired: 3/16/2023 12:21:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-027.lcd
Vial: 48 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.344	2850	200597	0.1026	ng/mL	101.00 >85.00	39.11	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.352	200597	200597	1.0000	ng/mL	----	----	

Perchlorate

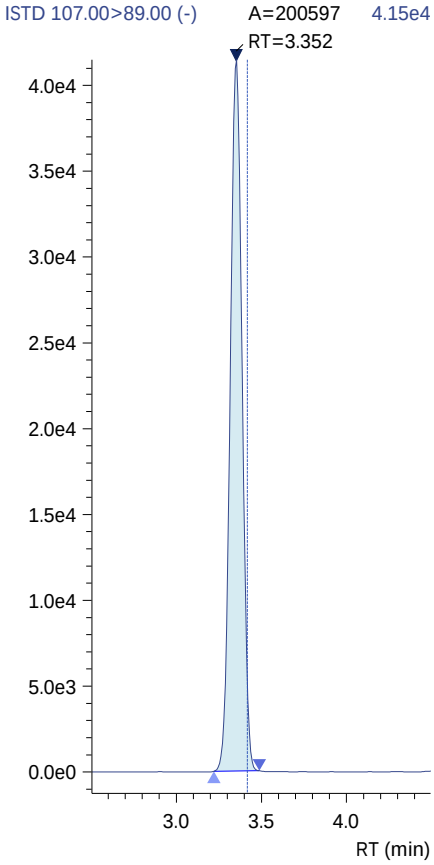
Conc 0.1026
R#1 39.11 (31.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 3/16/2023 1:26:23 PM

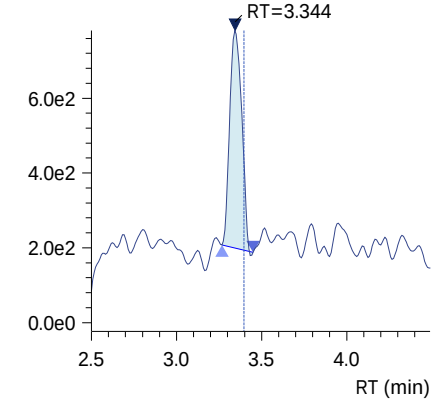
EQ2300131-01

Sample ID: EQ2300131-01
Date Acquired: 3/16/2023 12:21:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-027.lcd
Vial: 48 | Inj. Volume: 25.0000uL | Tray: 4

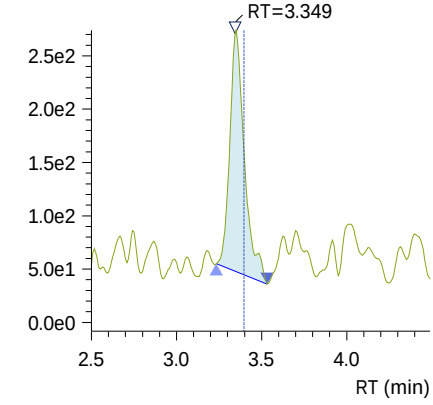
Perchlorate

Conc 0.1015
R#1 47.48 (31.10)

Q 99.00>83.00 (-) A=2850 7.81e2
RT=3.344



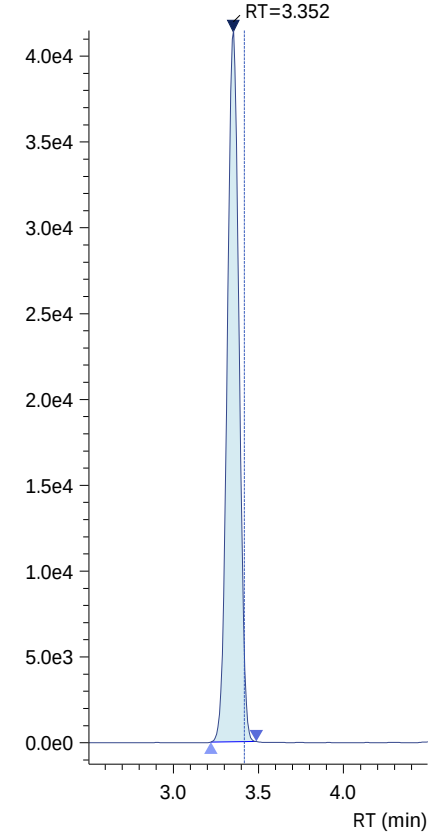
R1 101.00>85.00 (-) A=1353 2.74e2
RT=3.349



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=200597 4.15e4
RT=3.352



Insight Report

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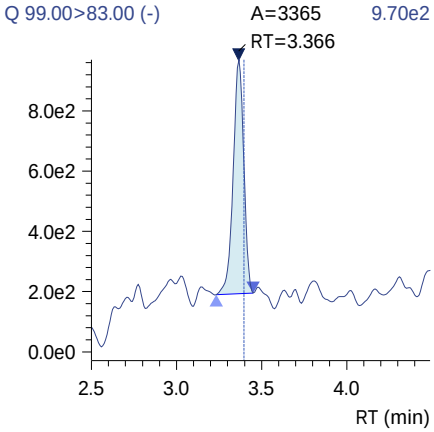
EQ2300131-04

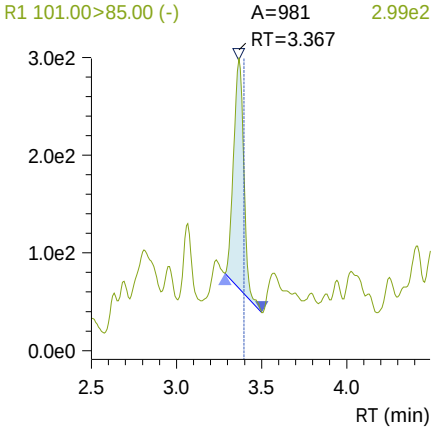
Sample ID: EQ2300131-04
Date Acquired: 3/16/2023 12:27:23 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-028.lcd
Vial: 51 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.366	3365	216967	0.1119	ng/mL	101.00 >85.00	29.14	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.361	216967	216967	1.0000	ng/mL	----	----	

Perchlorate

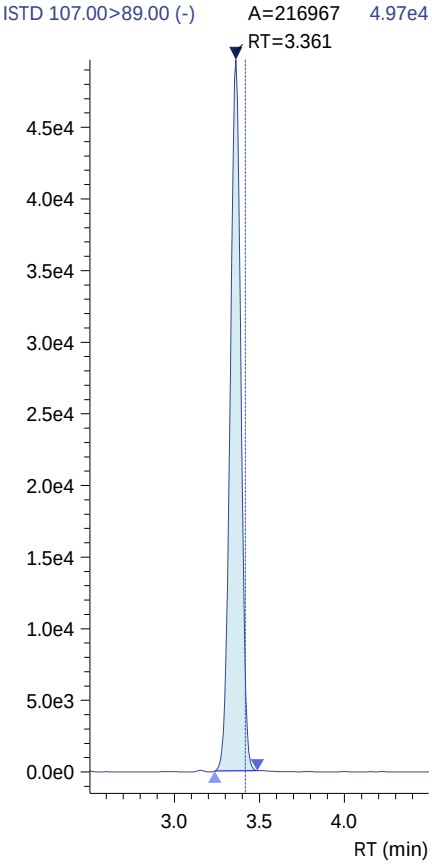
Conc 0.1119
R#1 29.14 (31.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 3/16/2023 1:24:53 PM

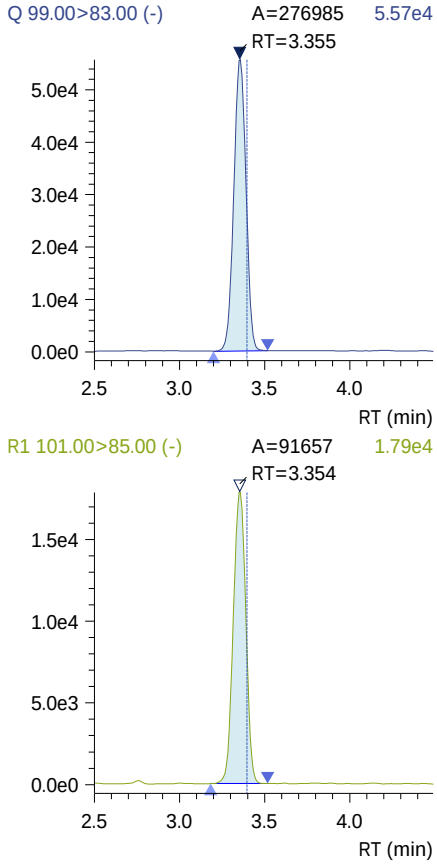
E2300238-005X1K

Sample ID: E2300238-005
Date Acquired: 3/16/2023 12:33:07 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-029.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.355	276985	179407	11.1443	ng/mL	101.00 >85.00	33.09	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.352	179407	179407	1.0000	ng/mL	----	----	

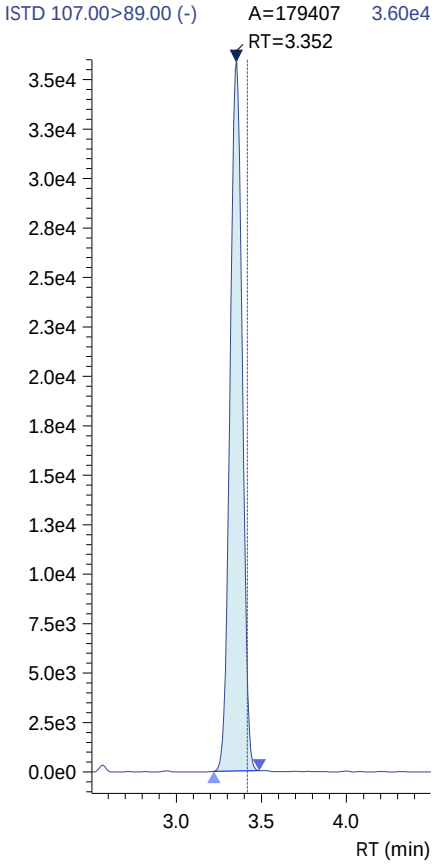
Perchlorate

Conc 11.1443
R#1 33.09 (31.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 3/16/2023 1:24:53 PM

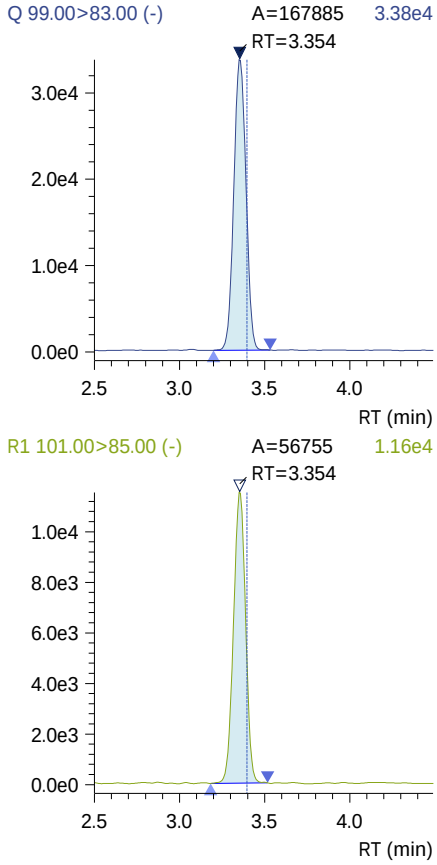
E2300238-006X10K

Sample ID: E2300238-006
Date Acquired: 3/16/2023 12:38:48 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-030.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.354	167885	183905	6.5895	ng/mL	101.00 >85.00	33.81	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.351	183905	183905	1.0000	ng/mL	----	----	

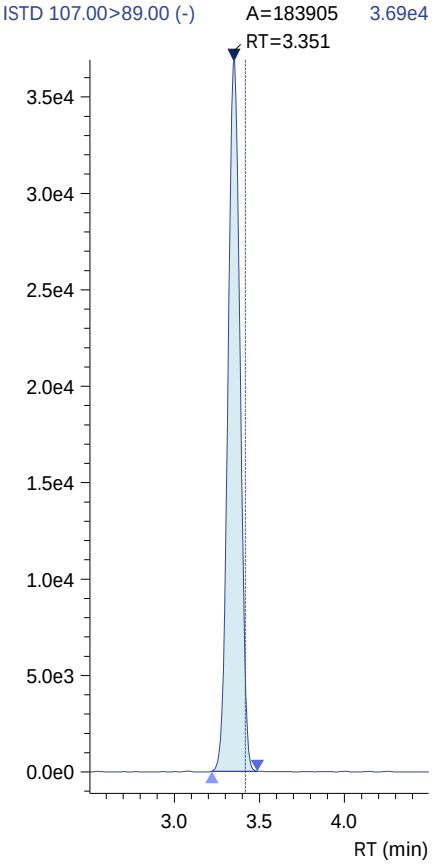
Perchlorate

Conc 6.5895
R#1 33.81 (31.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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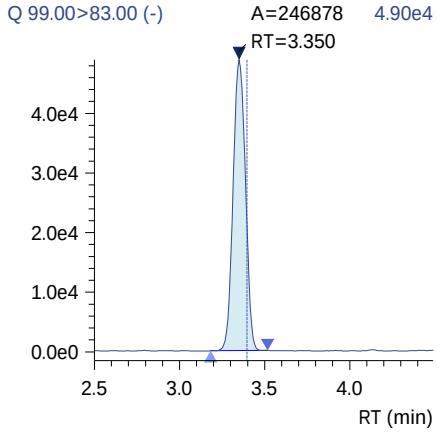
PERCHLORATE7

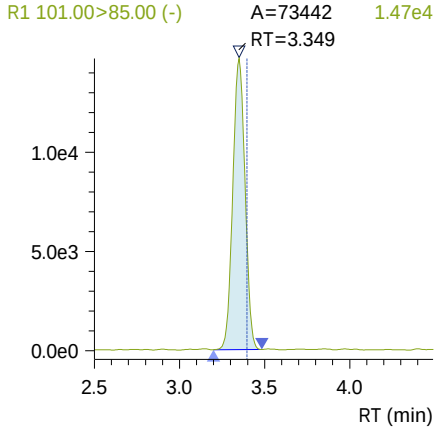
Sample ID: PERCHLORATE7
Date Acquired: 3/16/2023 1:14:07 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230316\20230316-036.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.350	2468 78	170281	10.4 653	ng/mL	101.00 >85.00	29.75	21.77 -40.42
Sodium Perchlorate-18O4_IS	Auto	3.350	1702 81	170281	1.0000	ng/mL	----	----	

Perchlorate

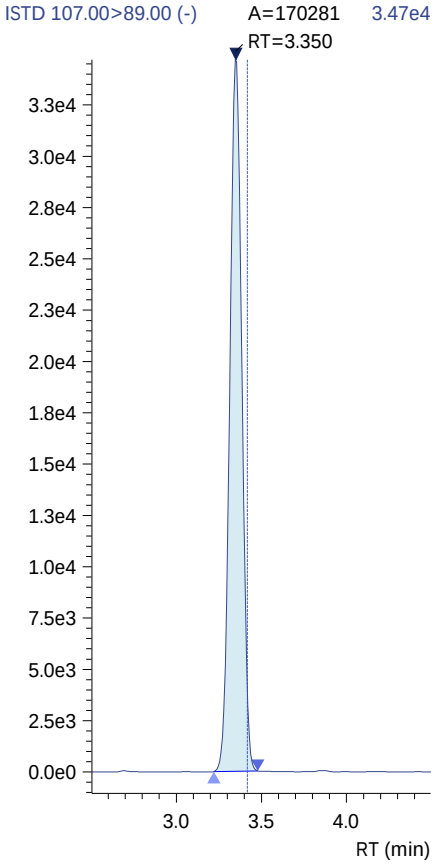
Conc 10.4653
R#1 29.75 (31.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



June 08, 2023 Service Request No:E2300528

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Suite 129
Lakewood, CO 80228

Laboratory Results for: LHAAP / Site 17

Dear Marcia,

Enclosed are the results of the sample(s) submitted to our laboratory June 02, 2023
For your reference, these analyses have been assigned our service request number **E2300528.**

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.

Please contact me if you have any questions. My extension is 2188. You may also contact me via email at James.Guin@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

James Guin

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 Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

ALS Environmental

Client:	Bhate Environmental Associates, Inc	**Service Request No.:**	E2300528
Project:	LHAAP/Site 17	**Date Received:**	06/02/23
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

Six samples were received for analysis at ALS Environmental in Houston on 06/02/23.

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:

EQ2300273: 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 batch precision (MS/DMS) measurements were determined on an unrelated sample 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: Bhate Environmental Associates, Inc. **Service Request:**E2300528
Project: LHAAP / Site 17

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2300528-001	130_060123	6/1/2023	0710
E2300528-002	17WW03_060123	6/1/2023	0750
E2300528-003	17WW01_060123	6/1/2023	0830
E2300528-004	17WW01_060123_a	6/1/2023	0830
E2300528-005	17WW02_060123	6/1/2023	0838
E2300528-006	17WW06_060123	6/1/2023	0843

Service Request Summary

Folder #: **E2300528**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP / Site 17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 06/02/23
Internal Due Date: 6/16/2023
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	Semivoa GCMS ClO4 DOD/6850
E2300528-001	130_060123	Water	06/01/23 0710	**IV**
E2300528-002	17WW03_060123	Water	06/01/23 0750	**IV**
E2300528-003	17WW01_060123	Water	06/01/23 0830	**IV**
E2300528-004	17WW01_060123_a	Water	06/01/23 0830	**IV**
E2300528-005	17WW02_060123	Water	06/01/23 0838	**IV**
E2300528-006	17WW06_060123	Water	06/01/23 0843	**IV**

Service Request Summary

Folder #: **E2300528**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP / Site 17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 06/02/23
Internal Due Date: 6/16/2023
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	2	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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State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
Arizona Department of Health Services	AZ0793_2024	5/27/2024
Arkansas Department of Environmental Quality	88-00356	3/27/2024
Department of Defense	L22-90	3/31/2024
Department of Defense	L23-358	5/31/2025
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
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	LA028-2023	12/31/2023
Maine Department of Health and Human Services	2022017	6/5/2024
Maryland Department of the Environment	343	6/30/2023
Minnesota Department of Health	2368363	12/31/2023
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2024
Nevada Department of Conservation and Natural Resources	TX026932023-1	7/31/2023
New Hampshire Environmental Laboratory Accreditation Program	209423	4/24/2024
New Jersey Department of Environmental Protection	TX008-2023	6/30/2023
New York Department of Health	11707	3/31/2024
Oklahoma Department of Environmental Quality	2022-141	8/31/2023
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	TN04016-2023	4/30/2024
Texas Commision on Environmental Quality	T104704231-23-30	4/30/2024
Utah Department of Health Environmental Laboratory Certification	TX026932022-13	7/31/2023
Washington Department of Ecology	C819-22	11/14/2023

Chain of Custody

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bhate ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: MSC2020.0016.0002.0022

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 17

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	PERCHLORATE									Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
							Sample Analysis Requested (5)										Quality Assurance Samples (6)			
130_060123	01 JUN 2023	0710	-	N		WG	1	X												
17WWW03_060123	01 JUN 2023	0750	-	N		WG	1	X												
17WWW03_060123_MS	01 JUN 2023	0750	-	MS		WG	1	X												
17WW03_060123_MSD	01 JUN 2023	0750		SD		WG	1	X												
17WW01_060123	01 JUN 2023	0830		N		WG	1	X												
17WW01_060123_A	01 JUN 2023	0830	-	FD		WG	1	X												
17WW02_060123	01 JUN 2023	0838	-	N		WG	1	X												
17WW06_060123	01 JUN 2023	0843	-	N		WG	1	X												
			-																	
			-																	
			-																	

COMMENTS: Standard TAT Cooler # 49572

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/1/23	1330	1. CH	6-2-23	0915
2.			2.		
3.			3.		

3.3° IR1
CF-0.1

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

_____ Method of Shipment: _____

_____ Fed Ex _____ Airbill Number:

_____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dane Wacasey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

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Client: bhate Date: JUN 0 2 2023 WO#:

Time Received: 09:15 Received by: CG BO#: 91462

Matrices: Solid/Sludge (Water) Oil Wipes Hydrocarbon Liquid Other

Kit ID/Cooler ID	Trip Blank ID	Cooler Temp (C) Observed/Corrected	IR #	Temp BLK Present?
49572	—	3.3 / 3.2	431	(Y) N
		/		Y N
		/		Y N
		/		Y N
		/		Y N

Delivery Method: (FedEx) UPS Greyhound ALS Client Other

Date/Time of Unpacking: JUN 0 3 2023 08:00 AM JUN 0 3 2023 Unpacked by: SM

Shipping container/cooler in good condition?	(Yes)	No	Not Present
Custody seals intact on shipping container/cooler?	(Yes)	No	Not Present
Custody seals intact on sample bottles?	Yes	No	(Not Present)
Chain of Custody present?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of Custody - Sampler's name present?	(Yes)	No	
Chain of Custody agrees with sample labels?	(Yes)	No	
Samples in proper container/bottle?	(Yes)	No	
VOA/TX1005/1006 Solids in hermetically Sealed Vials:	Yes	No	No VOA/TX1005/1006 Solid
Sample containers intact?	(Yes)	No	
Sufficient sample volume for indicated test?	(Yes)	No	
All samples received within holding time?	(Yes)	No	
Container/Temp Blank temperature in compliance?	(Yes)	No	
Water - VOA vials have zero headspace?	Yes	No	N/A (No VOA submitted)
Non-VOA waters preserved with HCl, H2SO4, HNO3 are pH <2?			Yes No (N/A)
Waters preserved with NaOH/Ascorbic acid are pH>12?	Yes	No	(N/A)
pH adjusted?	Yes*	No	(N/A) *See Preservation Logbook

pH adjusted by: _____ **pH Paper Lot:** _____

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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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Phone (281)530-5656 Fax (281)530-5887
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Preparation Information Benchsheet

Prep Run#: 420946 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 6/6/23 10:10

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2300516-001	HBW7_052623	.01	6850/ClO4 DOD			Water	10mL	
2	E2300516-002	HBW7_052623_a	.01	6850/ClO4 DOD			Water	10mL	
3	E2300516-003	HBW10_052623	.01	6850/ClO4 DOD			Water	10mL	
4	E2300516-004	HBW1_052623	.01	6850/ClO4 DOD			Water	10mL	
5	E2300516-005	GPW1_052623	.01	6850/ClO4 DOD			Water	10mL	
6	E2300516-006	GPW3_052623	.01	6850/ClO4 DOD			Water	10mL	
7	E2300525-001	OBOD-11-QA	.02	6850/ClO4 DOD			Water	10mL	
8	E2300528-001	130_060123	.01	6850/ClO4 DOD			Water	10mL	
9	E2300528-002	17WW03_060123	.02	6850/ClO4 DOD			Water	10mL	
10	E2300528-003	17WW01_060123	.01	6850/ClO4 DOD			Water	10mL	
11	E2300528-004	17WW01_060123_a	.01	6850/ClO4 DOD			Water	10mL	
12	E2300528-005	17WW02_060123	.01	6850/ClO4 DOD			Water	10mL	
13	E2300528-006	17WW06_060123	.01	6850/ClO4 DOD			Water	10mL	
14	E2300530-001	01MW4C1101305	.01	6850/ClO4 DOD			Ground Water	10mL	
15	E2300530-002	MW-4004C11-DP	.01	6850/ClO4 DOD			Ground Water	10mL	
16	E2300530-003	01MW3C12012305	.01	6850/ClO4 DOD			Ground Water	10mL	
17	E2300530-004	01SP19-3B012305	.01	6850/ClO4 DOD			Ground Water	10mL	
18	E2300530-005	01MW4C01012305	.01	6850/ClO4 DOD			Ground Water	10mL	
19	EQ2300273-01	MB		6850/ClO4 DOD			Liquid	10mL	
20	EQ2300273-02	LCS		6850/ClO4 DOD			Liquid	10mL	
21	EQ2300273-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
22	EQ2300273-04	OBOD-11-QA MS	.02	6850/ClO4 DOD			Liquid	10mL	
23	EQ2300273-05	OBOD-11-QA DMS	.02	6850/ClO4 DOD			Liquid	10mL	
24	EQ2300273-06	17WW03_060123 MS	.02	6850/ClO4 DOD			Liquid	10mL	
25	EQ2300273-07	17WW03_060123 DMS	.02	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Perchlorate Intermediate Stock1 Inventory ID 227236 Logbook Ref: Perchlorate (1st Source) Expires On: 07/31/2023

EQ2300273-02 1.00µL EQ2300273-03 1.00µL EQ2300273-04 1.00µL EQ2300273-05 1.00µL EQ2300273-06 1.00µL EQ2300273-07 1.00µL

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 227244 Logbook Ref: Perchlorate Internal Standard Expires On: 07/31/2023

E2300516-001 100.00µL E2300516-002 100.00µL E2300516-003 100.00µL E2300516-004 100.00µL E2300516-005 100.00µL E2300516-006 100.00µL
E2300525-001 100.00µL E2300528-001 100.00µL E2300528-002 100.00µL E2300528-003 100.00µL E2300528-004 100.00µL E2300528-005 100.00µL
E2300528-006 100.00µL E2300530-001 100.00µL E2300530-002 100.00µL E2300530-003 100.00µL E2300530-004 100.00µL E2300530-005 100.00µL

Preparation Information Benchsheet

Prep Run#: 420946 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 6/6/23 10:10

EQ2300273-01	100.00µL	EQ2300273-02	100.00µL	EQ2300273-03	100.00µL	EQ2300273-04	100.00µL	EQ2300273-05	100.00µL	EQ2300273-06	100.00µL
EQ2300273-07	100.00µL										

Preparation Materials

Water HPLC Grade	HPLC water 5/18/23CG (229314)	6850 Amber Glass screw vial	2mL Screw Top Vial (221894)	6850 0.45um syringe filters	6850 0.45um syringe (229005)
6850 Luer-Lok Syringes	luer-lock syringes (228116)				

Preparation Steps

Step: Preparation
Started: 6/6/23 10:10
Finished: 6/7/23 00:10
By: XMI
Comments

Comments: _____

Reviewed By: XM Date: 06/06/23

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

Analytical Results

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Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Collected:**	6/ 1/23 0710
Sample Matrix:	Water	**Date Received:**	6/ 2/23
Sample Name:	130_060123	**Units:**	µg/L
Lab Code:	E2300528-001	**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	**2.41**		0.100	0.0500	0.0250	1	6/ 6/23	6/7/23 11:20	420946	806739	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Collected:**	6/ 1/23 0750
Sample Matrix:	Water	**Date Received:**	6/ 2/23
Sample Name:	17WW03_060123	**Units:**	µg/L
Lab Code:	E2300528-002	**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	**0.0414**	J	0.100	0.0500	0.0250	1	6/ 6/23	6/7/23 11:31	420946	806739	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Collected:**	6/ 1/23 0830
Sample Matrix:	Water	**Date Received:**	6/ 2/23
Sample Name:	17WW01_060123	**Units:**	µg/L
Lab Code:	E2300528-003	**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	**0.0606**	J	0.100	0.0500	0.0250	1	6/ 6/23	6/7/23 11:54	420946	806739	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Collected:**	6/ 1/23 0830
Sample Matrix:	Water	**Date Received:**	6/ 2/23
Sample Name:	17WW01_060123_a	**Units:**	µg/L
Lab Code:	E2300528-004	**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	**0.114**		0.100	0.0500	0.0250	1	6/ 6/23	6/7/23 12:00	420946	806739	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Collected:**	6/ 1/23 0838
Sample Matrix:	Water	**Date Received:**	6/ 2/23
Sample Name:	17WW02_060123	**Units:**	µg/L
Lab Code:	E2300528-005	**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	**10500**		50.0	25.0	12.5	500	6/ 6/23	6/7/23 12:06	420946	806739	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Collected:**	6/ 1/23 0843
Sample Matrix:	Water	**Date Received:**	6/ 2/23
Sample Name:	17WW06_060123	**Units:**	µg/L
Lab Code:	E2300528-006	**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	**88700**		500	250	125	5000	6/ 6/23	6/7/23 12:11	420946	806739	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2300273-01	**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	6/ 6/23	6/6/23 12:39	420946	806642	

Accuracy & Precision

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QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/ 6/23
Sample Matrix:	Water		

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Units:**	µg/L
Prep Method:	Method	**Basis:**	NA
		Extraction Lot:	420946

	Lab Control Sample EQ2300273-02			Duplicate Lab Control Sample EQ2300273-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.100	0.100	100	0.0910	0.100	91	84 - 119	9	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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2300273-02	**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	**0.100**		0.100	0.0500	0.0250	1	6/ 6/23	6/6/23 12:45	420946	806642	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2300273-03	**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	**0.0910**	J	0.100	0.0500	0.0250	1	6/ 6/23	6/6/23 12:50	420946	806642	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Collected:**	6/1/23
Sample Matrix:	Water	**Date Received:**	6/2/23
		Date Analyzed:	6/ 7/23

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	17WW03_060123	**Units:**	µg/L
Lab Code:	E2300528-002	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		17WW03_060123MS				17WW03_060123DMS					
		Matrix Spike				**Duplicate Matrix Spike**					
		EQ2300273-06				EQ2300273-07					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.0414	0.136	0.100	95	0.131	0.100	90	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:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Collected:**	6/ 1/23 0750
Sample Matrix:	Water	**Date Received:**	6/ 2/23
Sample Name:	17WW03_060123	**Units:**	µg/L
Lab Code:	EQ2300273-06	**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	**0.136**		0.100	0.0500	0.0250	1	6/ 6/23	6/7/23 15:56	420946	806739	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Collected:**	6/ 1/23 0750
Sample Matrix:	Water	**Date Received:**	6/ 2/23
Sample Name:	17WW03_060123	**Units:**	µg/L
Lab Code:	EQ2300273-07	**Basis:**	NA
Run Type:	Duplicate 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	**0.131**		0.100	0.0500	0.0250	1	6/ 6/23	6/7/23 11:48	420946	806739	

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

20230606-806642

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XM
2nd Review: GC

ICAL Date: 6/6/2023
Cal. Std. xp: 07/31/2023
ICAL ID: EC2300009

Mobile Phases : A:20mM ammonium acetate in water 32103045 **B:**Acetonitrile 226552

	Sample Name		File Name	Acquisition Method	Dilution	Comments	Date/Time
1	PERCHLORATE1		20230606-001	Perchlorate6850c.lcm	1x	227245	6/6/2023 10:49
2	PERCHLORATE2		20230606-002	Perchlorate6850c.lcm	1x	227246	6/6/2023 10:55
3	PERCHLORATE3		20230606-003	Perchlorate6850c.lcm	1x	227247	6/6/2023 11:01
4	PERCHLORATE4		20230606-004	Perchlorate6850c.lcm	1x	227248	6/6/2023 11:06
5	PERCHLORATE5		20230606-005	Perchlorate6850c.lcm	1x	227249	6/6/2023 11:12
6	PERCHLORATE6		20230606-006	Perchlorate6850c.lcm	1x	227250	6/6/2023 11:18
7	PERCHLORATE7		20230606-007	Perchlorate6850c.lcm	1x	227251	6/6/2023 11:24
8	PERCHLORATE8		20230606-008	Perchlorate6850c.lcm	1x	227252	6/6/2023 11:29
9	PERCHLORATE9		20230606-009	Perchlorate6850c.lcm	1x	227253	6/6/2023 11:35
10	PERCHLORATE10		20230606-010	Perchlorate6850c.lcm	1x	227254	6/6/2023 11:41
11	PERCHLORATEICV		20230606-011	Perchlorate6850c.lcm	1x	227256	6/6/2023 11:47
12	IB		20230606-012	Perchlorate6850c.lcm	1x		6/6/2023 11:52
13	LODV		20230606-013	Perchlorate6850c.lcm	1x	227501	6/6/2023 11:58
14	ICS		20230606-014	Perchlorate6850c.lcm	1x	32103024	6/6/2023 12:04
15	CCV		20230606-015	Perchlorate6850c.lcm	1x	227251	6/6/2023 12:16
16	EQ2300272-01		20230606-016	Perchlorate6850c.lcm	1x		6/6/2023 12:22
17	EQ2300272-02		20230606-017	Perchlorate6850c.lcm	1x		6/6/2023 12:27
18	EQ2300272-03		20230606-018	Perchlorate6850c.lcm	1x		6/6/2023 12:33
19	EQ2300273-01		20230606-019	Perchlorate6850c.lcm	1x		6/6/2023 12:39
20	EQ2300273-02		20230606-020	Perchlorate6850c.lcm	1x		6/6/2023 12:45
21	EQ2300273-03		20230606-021	Perchlorate6850c.lcm	1x		6/6/2023 12:50
22	E2300516-001		20230606-022	Perchlorate6850c.lcm	1x		6/6/2023 12:56
23	E2300516-002		20230606-023	Perchlorate6850c.lcm	1x		6/6/2023 13:02
24	E2300516-003		20230606-024	Perchlorate6850c.lcm	1x		6/6/2023 13:08
25	E2300516-004		20230606-025	Perchlorate6850c.lcm	1x		6/6/2023 13:13
26	CCV		20230606-026	Perchlorate6850c.lcm	1x	227251	6/6/2023 13:19
27	E2300516-005		20230606-027	Perchlorate6850c.lcm	1x		6/6/2023 13:25
28	E2300516-006		20230606-028	Perchlorate6850c.lcm	1x	DNU-CONFIRM PEAK	6/6/2023 13:31
29	E2300519-001		20230606-029	Perchlorate6850c.lcm	1x		6/6/2023 13:36
30	E2300519-002		20230606-030	Perchlorate6850c.lcm	5000x		6/6/2023 13:42
31	E2300519-003		20230606-031	Perchlorate6850c.lcm	5000x		6/6/2023 13:48
32	E2300519-004		20230606-032	Perchlorate6850c.lcm	1x		6/6/2023 13:54
33	EQ2300272-04		20230606-033	Perchlorate6850c.lcm	1x		6/6/2023 13:59
34	EQ2300272-05		20230606-034	Perchlorate6850c.lcm	1x		6/6/2023 14:05
35	E2300519-005		20230606-035	Perchlorate6850c.lcm	1x		6/6/2023 14:11
36	E2300519-006		20230606-036	Perchlorate6850c.lcm	1x		6/6/2023 14:17
37	CCV		20230606-037	Perchlorate6850c.lcm	1x		6/6/2023 14:23

Initial Calibration - Detailed Report

Calibration ID: EC2300009 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2300009-01	PERCHLORATE1	20230606-001	06/06/2023 10:49
02	EC2300009-02	PERCHLORATE2	20230606-002	06/06/2023 10:55
03	EC2300009-03	PERCHLORATE3	20230606-003	06/06/2023 11:01
04	EC2300009-04	PERCHLORATE4	20230606-004	06/06/2023 11:06
05	EC2300009-05	PERCHLORATE5	20230606-005	06/06/2023 11:12
06	EC2300009-06	PERCHLORATE6	20230606-006	06/06/2023 11:18
07	EC2300009-07	PERCHLORATE7	20230606-007	06/06/2023 11:24
08	EC2300009-08	PERCHLORATE8	20230606-008	06/06/2023 11:29
09	EC2300009-09	PERCHLORATE9	20230606-009	06/06/2023 11:35
10	EC2300009-10	PERCHLORATE10	20230606-010	06/06/2023 11:41

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 3.738** **Average RF = 0.1827**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.201	02	0.5000	0.1818	03	0.7000	0.1758	04	1.0000	0.1836
05	2.0000	0.1782	06	5.0000	0.1799	07	10.0000	0.1808	08	20.0000	0.1834
09	30.0000	0.1812	10	50.0000	0.1815						

Analyte

Perchlorate RSE = 3.74

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.110	10.0	02	0.5000	0.498	-0.5	03	0.7000	0.673	-3.8
04	1.0000	1.00	0.5	05	2.0000	1.95	-2.5	06	5.0000	4.92	-1.5
07	10.0000	9.90	-1.0	08	20.0000	20.1	0.4	09	30.0000	29.7	-0.9
10	50.0000	49.7	-0.7								

Initial Calibration Verification Summary Report

Calibration ID:	EC2300009	**Instrument ID:**	E-LCMS-01
Datafile ID:	20230606-011	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2300009-11	T	Average RF	10	10.016	ng/mL	0.2	<= 15

Insight Report

Printed at 6/7/2023 10:10:58 AM

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Project File: I:\LCMS01\DATA\20230606\20230606.damlp

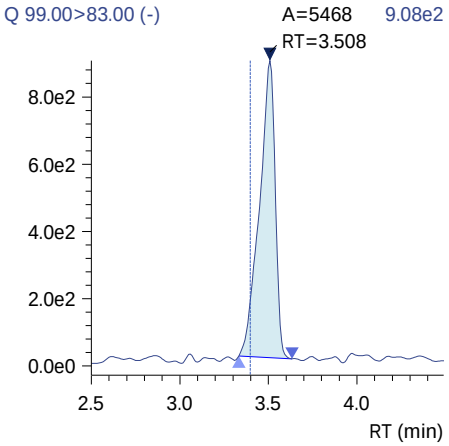
PERCHLORATE1

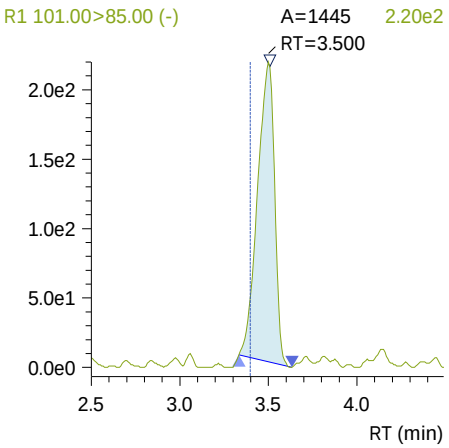
Sample ID: PERCHLORATE1
Date Acquired: 6/6/2023 10:49:38 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-001.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.508	5468	272033	0.1100	ng/mL	101.00 >85.00	26.42	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.499	272033	272033	1.0000	ng/mL	----	----	

Perchlorate

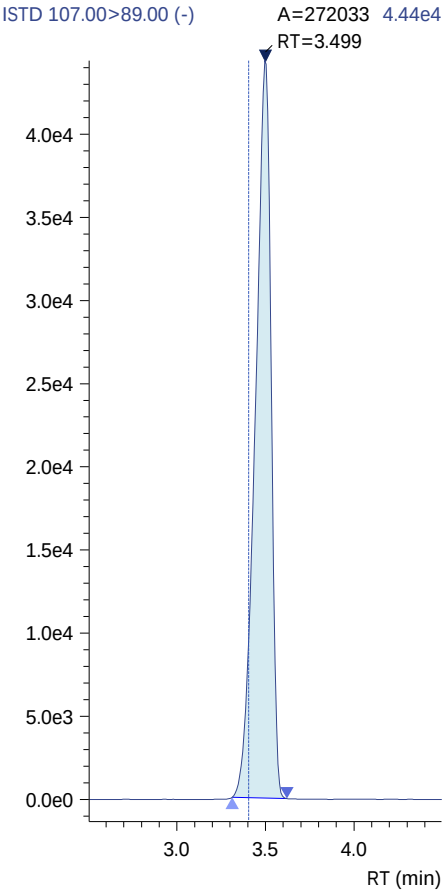
Conc 0.1100
R#1 26.42 (24.52)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/7/2023 10:10:58 AM

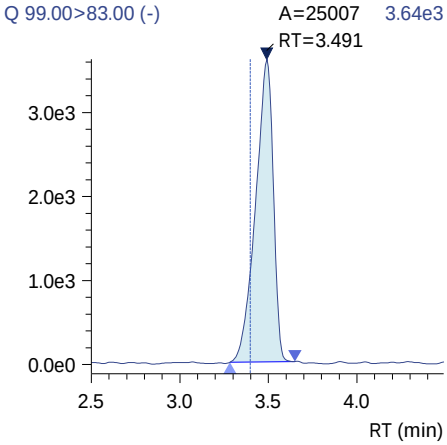
PERCHLORATE2

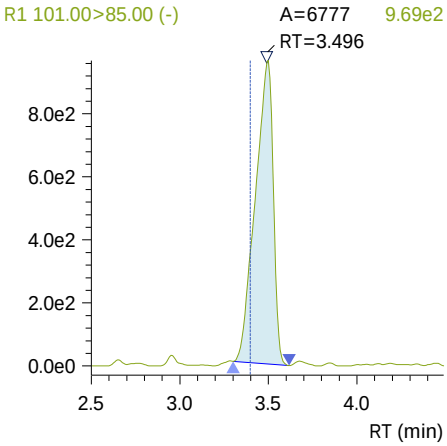
Sample ID: PERCHLORATE2
Date Acquired: 6/6/2023 10:55:23 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-002.lcd
Vial: 2 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.491	25007	275033	0.4976	ng/mL	101.00 >85.00	27.10	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.486	275033	275033	1.0000	ng/mL	----	----	

Perchlorate

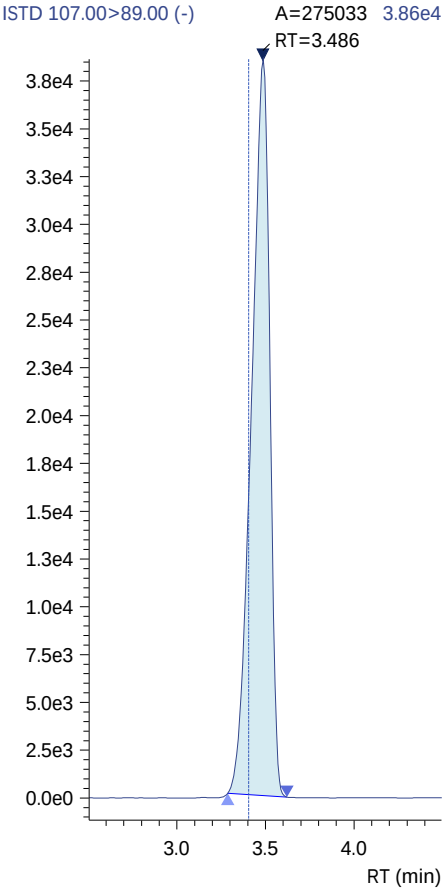
Conc 0.4976
R#1 27.10 (24.52)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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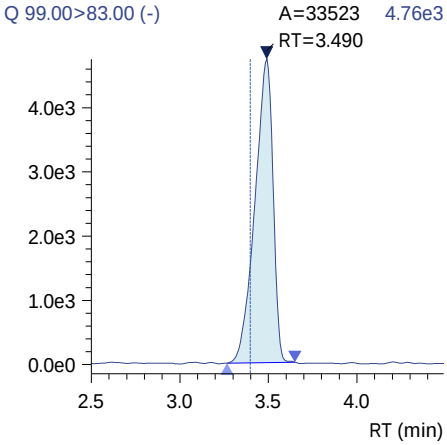
PERCHLORATE3

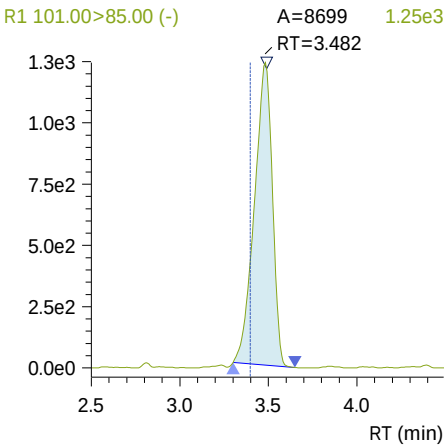
Sample ID: PERCHLORATE3
Date Acquired: 6/6/2023 11:01:08 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-003.lcd
Vial: 3 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.490	33523	272465	0.6733	ng/mL	101.00 >85.00	25.95	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.486	272465	272465	1.0000	ng/mL	----	----	

Perchlorate

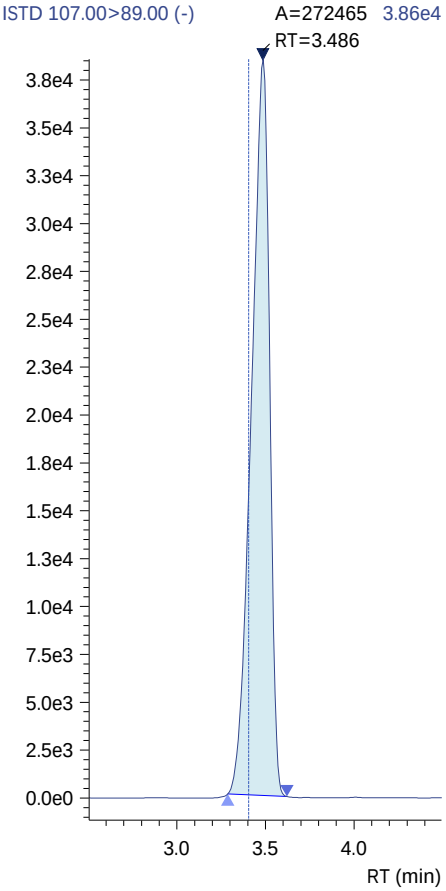
Conc 0.6733
R#1 25.95 (24.52)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/7/2023 10:10:58 AM

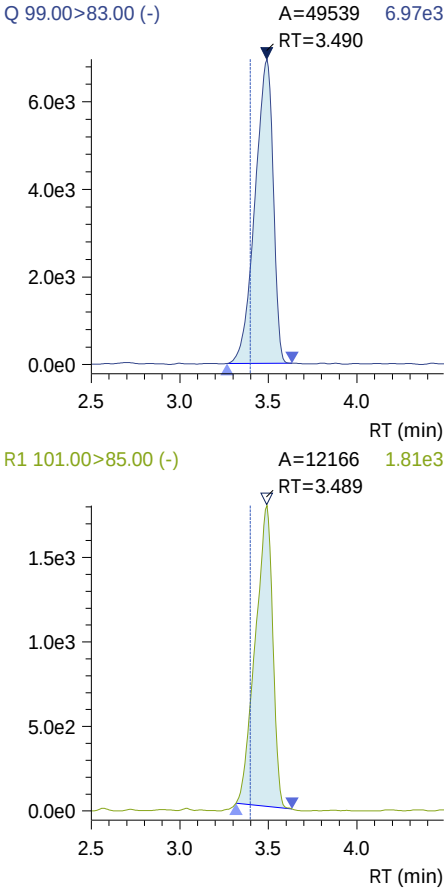
PERCHLORATE4

Sample ID: PERCHLORATE4
Date Acquired: 6/6/2023 11:06:52 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-004.lcd
Vial: 4 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.490	49539	269886	1.0045	ng/mL	101.00 >85.00	24.56	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.486	269886	269886	1.0000	ng/mL	----	----	

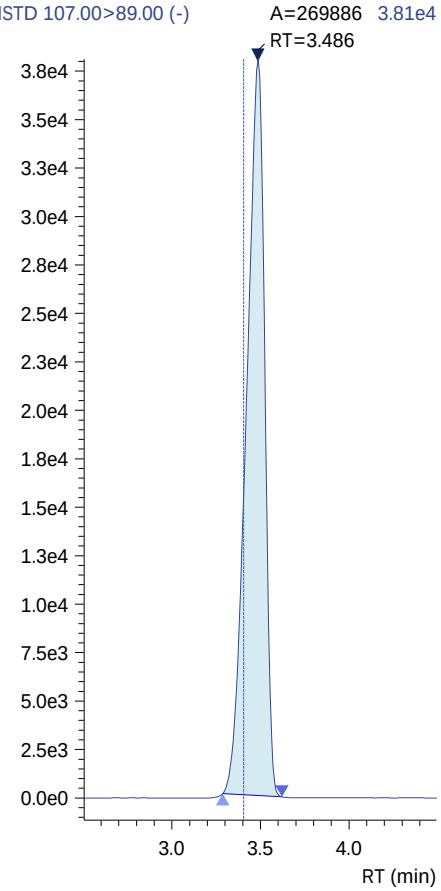
Perchlorate

Conc 1.0045
R#1 24.56 (24.52)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/7/2023 10:10:58 AM

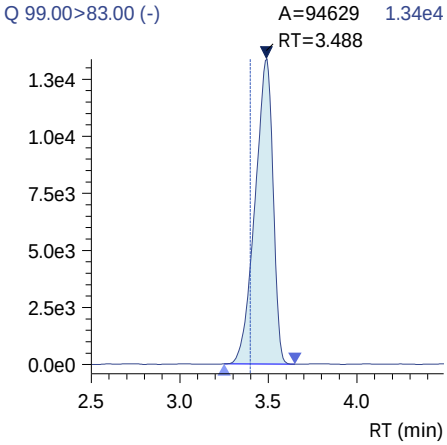
PERCHLORATE5

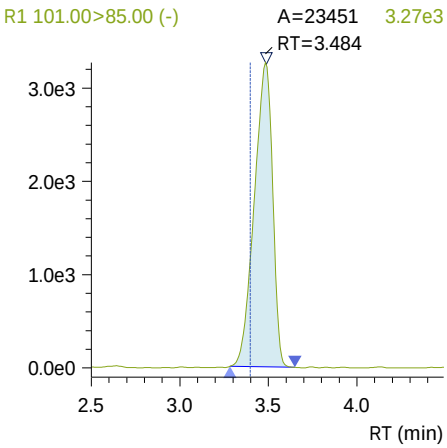
Sample ID: PERCHLORATE5
Date Acquired: 6/6/2023 11:12:36 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-005.lcd
Vial: 5 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.488	94629	265444	1.9510	ng/mL	101.00 >85.00	24.78	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.486	265444	265444	1.0000	ng/mL	----	----	

Perchlorate

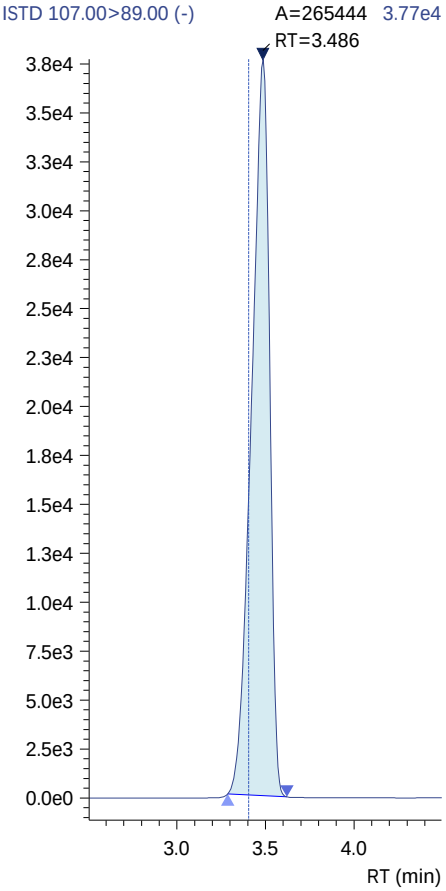
Conc 1.9510
R#1 24.78 (24.52)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/7/2023 10:10:58 AM

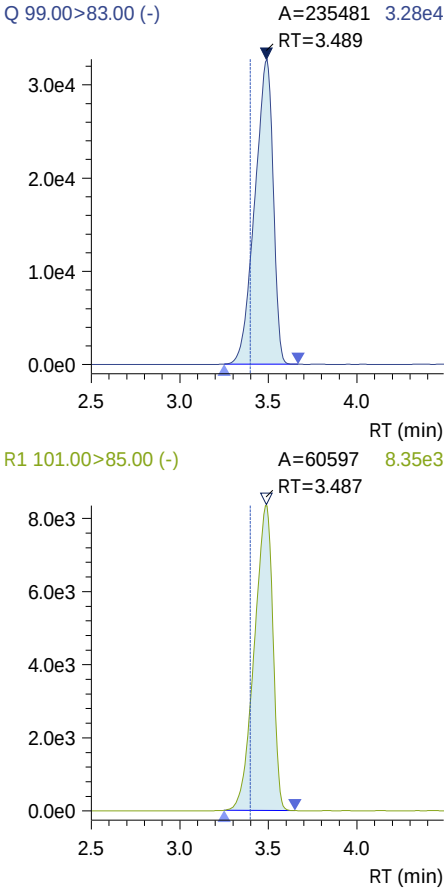
PERCHLORATE6

Sample ID: PERCHLORATE6
Date Acquired: 6/6/2023 11:18:22 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-006.lcd
Vial: 6 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.489	235481	261731	4.9238	ng/mL	101.00 >85.00	25.73	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.486	261731	261731	1.0000	ng/mL	----	----	

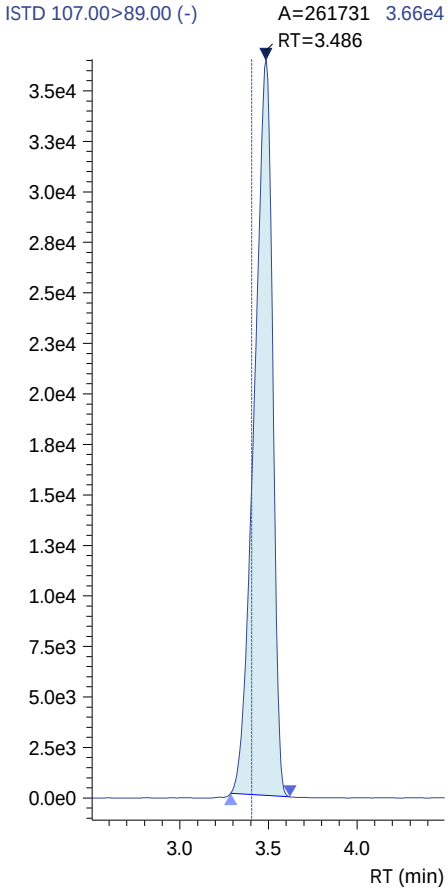
Perchlorate

Conc 4.9238
R#1 25.73 (24.52)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/7/2023 10:10:58 AM

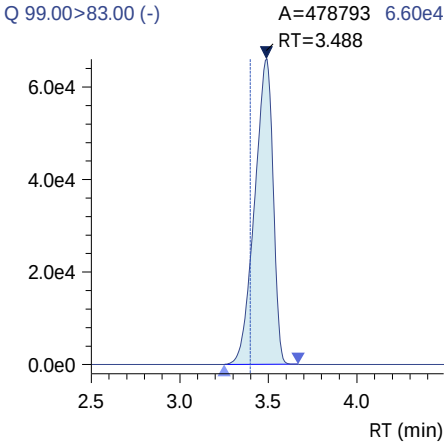
PERCHLORATE7

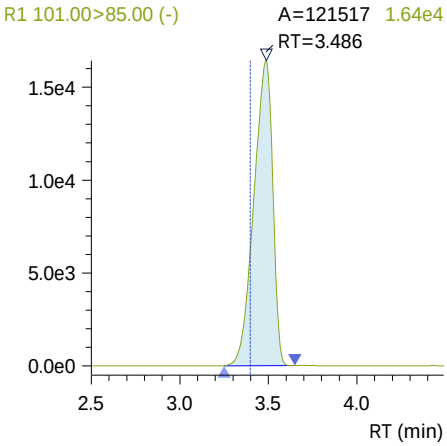
Sample ID: PERCHLORATE7
Date Acquired: 6/6/2023 11:24:09 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-007.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.488	478793	264810	9.8950	ng/mL	101.00 >85.00	25.38	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.485	264810	264810	1.0000	ng/mL	----	----	

Perchlorate

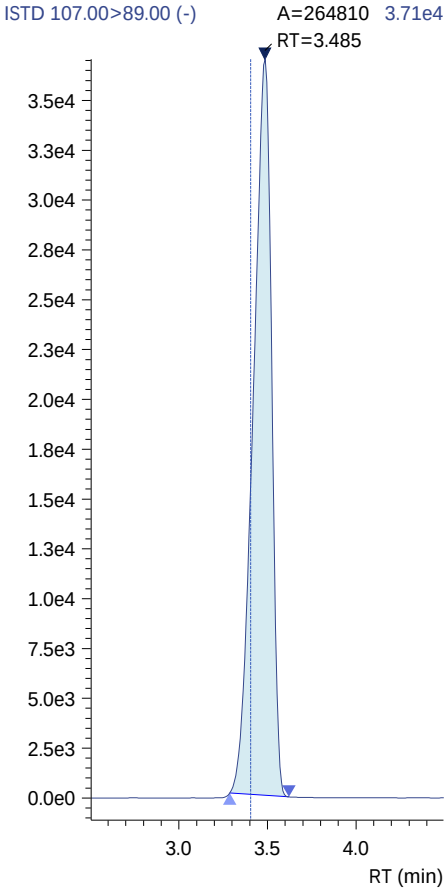
Conc 9.8950
R#1 25.38 (24.52)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/7/2023 10:10:58 AM

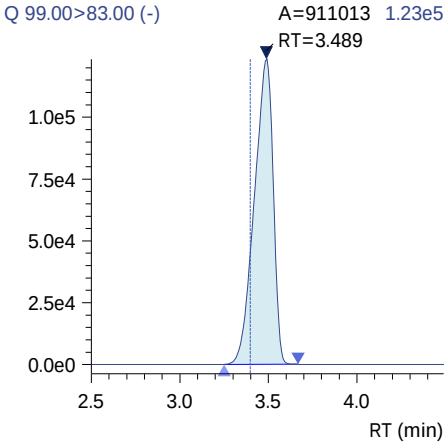
PERCHLORATE8

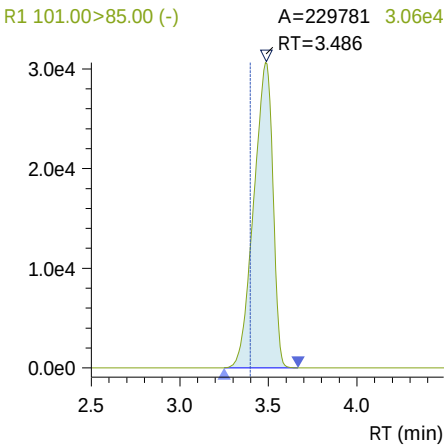
Sample ID: PERCHLORATE8
Date Acquired: 6/6/2023 11:29:53 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-008.lcd
Vial: 8 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.489	911013	248350	20.0754	ng/mL	101.00 >85.00	25.22	17.79-33.04
Sodium Perchlorate-18O4_IS	Auto	3.485	248350	248350	1.0000	ng/mL	----	----	

Perchlorate

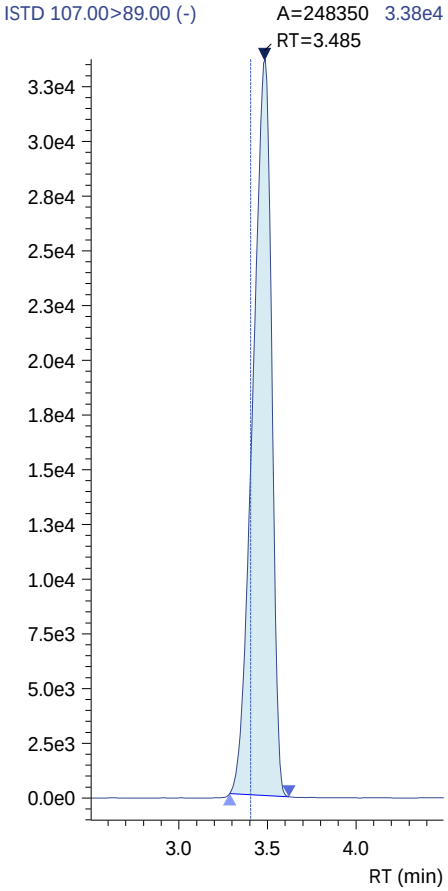
Conc 20.0754
R#1 25.22 (24.52)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/7/2023 10:10:58 AM

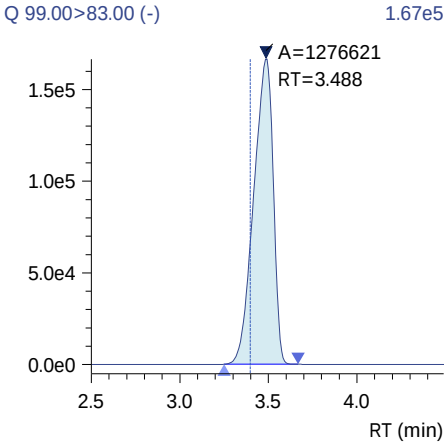
PERCHLORATE9

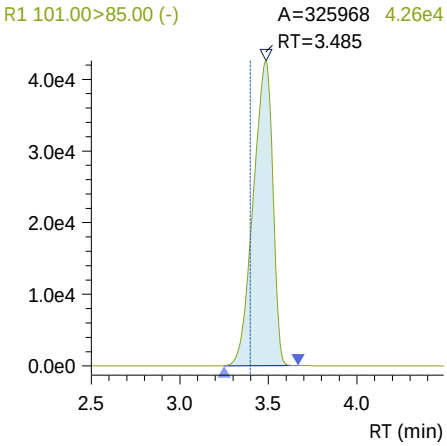
Sample ID: PERCHLORATE9
Date Acquired: 6/6/2023 11:35:36 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-009.lcd
Vial: 9 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.488	1276621	234897	29.74 32	ng/mL	101.00 >85.00	25.53	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.483	234897	234897	1.0000	ng/mL	----	----	

Perchlorate

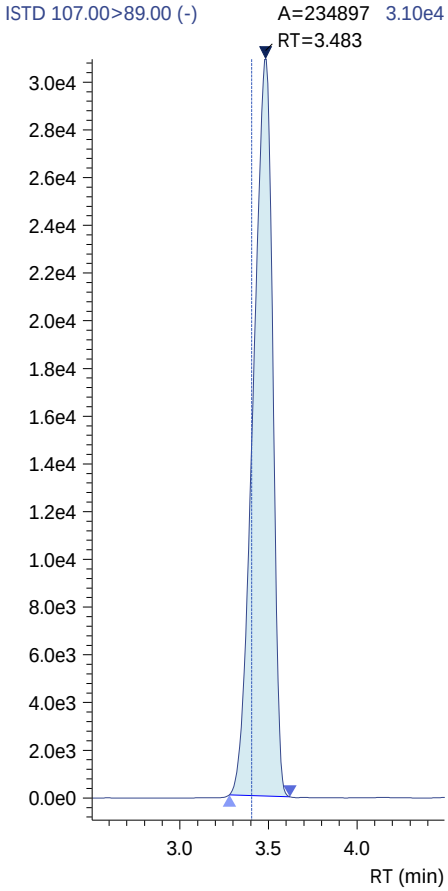
Conc 29.7432
R#1 25.53 (24.52)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/7/2023 10:10:58 AM

PERCHLORATE10

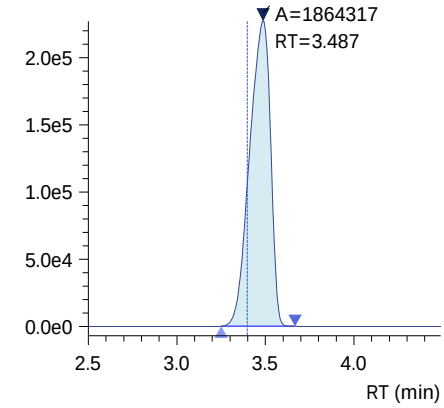
Sample ID: PERCHLORATE10
Date Acquired: 6/6/2023 11:41:20 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-010.lcd
Vial: 10 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.487	1864317	205439	49.6639	ng/mL	101.00 >85.00	25.31	17.79-33.04
Sodium Perchlorate-18O4_IS	Auto	3.483	205439	205439	1.0000	ng/mL	----	----	

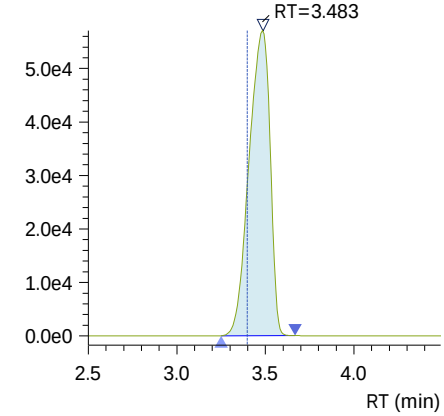
Perchlorate

Conc 49.6639
R#1 25.31 (24.52)

Q 99.00>83.00 (-) 2.27e5



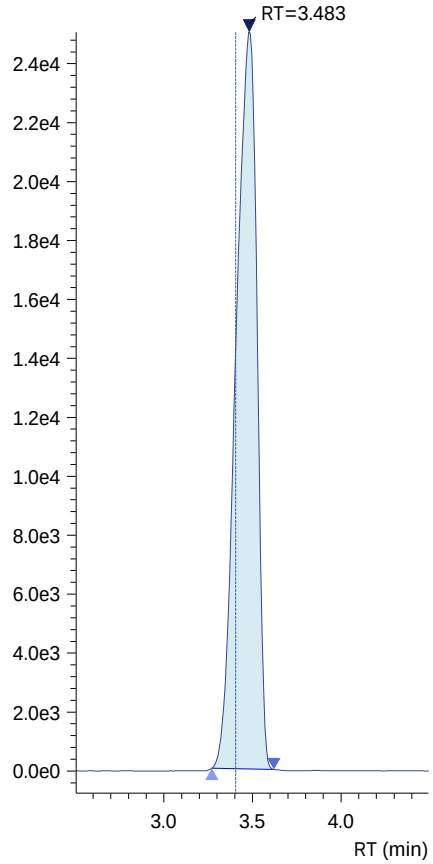
R1 101.00>85.00 (-) A=471863 5.71e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=205439 2.51e4



Insight Report

Printed at 6/7/2023 10:10:58 AM

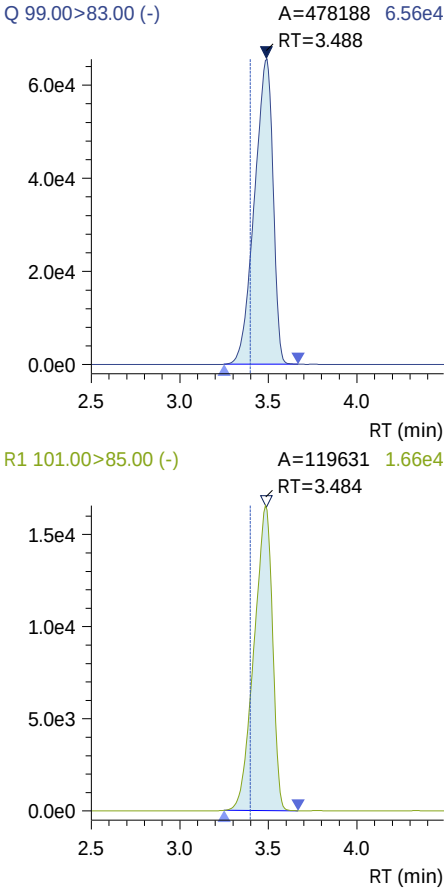
PERCHLORATEICV

Sample ID: PERCHLORATEICV
Date Acquired: 6/6/2023 11:47:07 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-011.lcd
Vial: 11 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.488	478188	261294	10.0155	ng/mL	101.00 >85.00	25.02	17.79-33.04
Sodium Perchlorate-18O4_IS	Auto	3.484	261294	261294	1.0000	ng/mL	----	----	

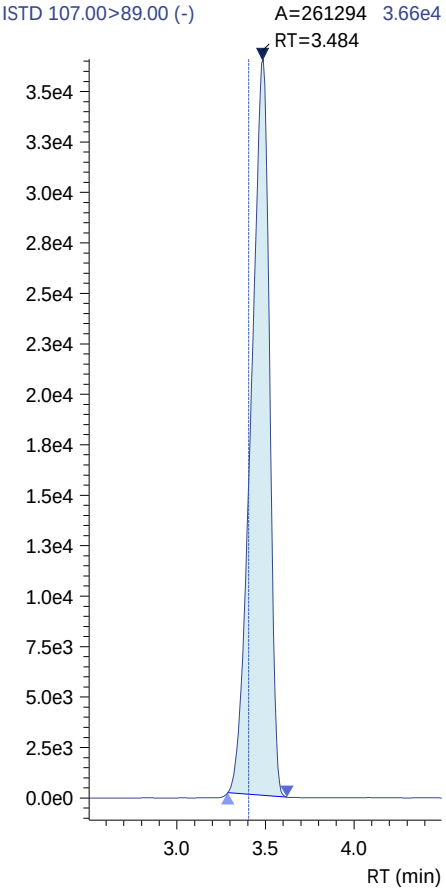
Perchlorate

Conc 10.0155
R#1 25.02 (24.52)



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

20230606-806642

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XM
2nd Review: GC

ICAL Date: 6/6/2023
Cal. Std. xp: 07/31/2023
ICAL ID: EC2300009

Mobile Phases : A:20mM ammonium acetate in water 32103045 **B:**Acetonitrile 226552

	Sample Name		File Name	Acquisition Method	Dilution	Comments	Date/Time
1	PERCHLORATE1		20230606-001	Perchlorate6850c.lcm	1x	227245	6/6/2023 10:49
2	PERCHLORATE2		20230606-002	Perchlorate6850c.lcm	1x	227246	6/6/2023 10:55
3	PERCHLORATE3		20230606-003	Perchlorate6850c.lcm	1x	227247	6/6/2023 11:01
4	PERCHLORATE4		20230606-004	Perchlorate6850c.lcm	1x	227248	6/6/2023 11:06
5	PERCHLORATE5		20230606-005	Perchlorate6850c.lcm	1x	227249	6/6/2023 11:12
6	PERCHLORATE6		20230606-006	Perchlorate6850c.lcm	1x	227250	6/6/2023 11:18
7	PERCHLORATE7		20230606-007	Perchlorate6850c.lcm	1x	227251	6/6/2023 11:24
8	PERCHLORATE8		20230606-008	Perchlorate6850c.lcm	1x	227252	6/6/2023 11:29
9	PERCHLORATE9		20230606-009	Perchlorate6850c.lcm	1x	227253	6/6/2023 11:35
10	PERCHLORATE10		20230606-010	Perchlorate6850c.lcm	1x	227254	6/6/2023 11:41
11	PERCHLORATEICV		20230606-011	Perchlorate6850c.lcm	1x	227256	6/6/2023 11:47
12	IB		20230606-012	Perchlorate6850c.lcm	1x		6/6/2023 11:52
13	LODV		20230606-013	Perchlorate6850c.lcm	1x	227501	6/6/2023 11:58
14	ICS		20230606-014	Perchlorate6850c.lcm	1x	32103024	6/6/2023 12:04
15	CCV		20230606-015	Perchlorate6850c.lcm	1x	227251	6/6/2023 12:16
16	EQ2300272-01		20230606-016	Perchlorate6850c.lcm	1x		6/6/2023 12:22
17	EQ2300272-02		20230606-017	Perchlorate6850c.lcm	1x		6/6/2023 12:27
18	EQ2300272-03		20230606-018	Perchlorate6850c.lcm	1x		6/6/2023 12:33
19	EQ2300273-01		20230606-019	Perchlorate6850c.lcm	1x		6/6/2023 12:39
20	EQ2300273-02		20230606-020	Perchlorate6850c.lcm	1x		6/6/2023 12:45
21	EQ2300273-03		20230606-021	Perchlorate6850c.lcm	1x		6/6/2023 12:50
22	E2300516-001		20230606-022	Perchlorate6850c.lcm	1x		6/6/2023 12:56
23	E2300516-002		20230606-023	Perchlorate6850c.lcm	1x		6/6/2023 13:02
24	E2300516-003		20230606-024	Perchlorate6850c.lcm	1x		6/6/2023 13:08
25	E2300516-004		20230606-025	Perchlorate6850c.lcm	1x		6/6/2023 13:13
26	CCV		20230606-026	Perchlorate6850c.lcm	1x	227251	6/6/2023 13:19
27	E2300516-005		20230606-027	Perchlorate6850c.lcm	1x		6/6/2023 13:25
28	E2300516-006		20230606-028	Perchlorate6850c.lcm	1x	DNU-CONFIRM PEAK	6/6/2023 13:31
29	E2300519-001		20230606-029	Perchlorate6850c.lcm	1x		6/6/2023 13:36
30	E2300519-002		20230606-030	Perchlorate6850c.lcm	5000x		6/6/2023 13:42
31	E2300519-003		20230606-031	Perchlorate6850c.lcm	5000x		6/6/2023 13:48
32	E2300519-004		20230606-032	Perchlorate6850c.lcm	1x		6/6/2023 13:54
33	EQ2300272-04		20230606-033	Perchlorate6850c.lcm	1x		6/6/2023 13:59
34	EQ2300272-05		20230606-034	Perchlorate6850c.lcm	1x		6/6/2023 14:05
35	E2300519-005		20230606-035	Perchlorate6850c.lcm	1x		6/6/2023 14:11
36	E2300519-006		20230606-036	Perchlorate6850c.lcm	1x		6/6/2023 14:17
37	CCV		20230606-037	Perchlorate6850c.lcm	1x		6/6/2023 14:23

20230607-806739

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XM
2nd Review: GC

ICAL Date: 6/6/2023
Cal. Std. xp: 07/31/2023
ICAL ID: EC2300009

Mobile Phases : A:20mM ammonium acetate in water 32103045 **B:**Acetonitrile 226552

	Sample Name		File Name	Acquisition Method	Dilution	Comments	Date/Time
1	IB		20230607-001	Perchlorate6850c.lcm	1x		6/7/2023 8:41
2	LODV		20230607-002	Perchlorate6850c.lcm	1x	227501	6/7/2023 8:51
3	ICS		20230607-003	Perchlorate6850c.lcm	1x	32103024	6/7/2023 8:57
4	CCV		20230607-004	Perchlorate6850c.lcm	1x	227251	6/7/2023 9:03
5	E2300519-007		20230607-005	Perchlorate6850c.lcm	1x	DNU-CONFIRM PEAK	6/7/2023 9:14
6	E2300519-008		20230607-006	Perchlorate6850c.lcm	1x		6/7/2023 9:19
7	E2300519-009		20230607-007	Perchlorate6850c.lcm	1x		6/7/2023 9:25
8	E2300520-001		20230607-008	Perchlorate6850c.lcm	1x		6/7/2023 9:31
9	E2300520-002		20230607-009	Perchlorate6850c.lcm	1x		6/7/2023 9:37
10	E2300520-003		20230607-010	Perchlorate6850c.lcm	1x		6/7/2023 9:42
11	E2300520-004		20230607-011	Perchlorate6850c.lcm	1x		6/7/2023 9:48
12	E2300520-005		20230607-012	Perchlorate6850c.lcm	1x		6/7/2023 9:54
13	E2300520-006		20230607-013	Perchlorate6850c.lcm	1x		6/7/2023 9:59
14	E2300520-007		20230607-014	Perchlorate6850c.lcm	1x		6/7/2023 10:05
15	CCV		20230607-015	Perchlorate6850c.lcm	1x	227251	6/7/2023 10:11
16	E2300520-008		20230607-016	Perchlorate6850c.lcm	1x		6/7/2023 10:17
17	E2300520-009		20230607-017	Perchlorate6850c.lcm	1x		6/7/2023 10:22
18	E2300520-010		20230607-018	Perchlorate6850c.lcm	1x		6/7/2023 10:28
19	E2300520-011		20230607-019	Perchlorate6850c.lcm	1x		6/7/2023 10:34
20	E2300525-001		20230607-020	Perchlorate6850c.lcm	1x		6/7/2023 10:40
21	EQ2300273-04		20230607-021	Perchlorate6850c.lcm	1x		6/7/2023 10:45
22	EQ2300273-05		20230607-022	Perchlorate6850c.lcm	1x		6/7/2023 10:51
23	E2300516-006		20230607-023	Perchlorate6850c.lcm	1x		6/7/2023 11:03
24	E2300528-001		20230607-024	Perchlorate6850c.lcm	1x		6/7/2023 11:20
25	E2300528-002		20230607-025	Perchlorate6850c.lcm	1x		6/7/2023 11:31
26	CCV		20230607-026	Perchlorate6850c.lcm	1x	227251	6/7/2023 11:37
27	EQ2300273-06		20230607-027	Perchlorate6850c.lcm	1x	DNU-RR	6/7/2023 11:43
28	EQ2300273-07		20230607-028	Perchlorate6850c.lcm	1x		6/7/2023 11:48
29	E2300528-003		20230607-029	Perchlorate6850c.lcm	1x		6/7/2023 11:54
30	E2300528-004		20230607-030	Perchlorate6850c.lcm	1x		6/7/2023 12:00
31	E2300528-005		20230607-031	Perchlorate6850c.lcm	500x		6/7/2023 12:06
32	E2300528-006		20230607-032	Perchlorate6850c.lcm	5000x		6/7/2023 12:11
33	EQ2300274-01		20230607-033	Perchlorate6850c.lcm	1x		6/7/2023 12:17
34	E2300529-001		20230607-034	Perchlorate6850c.lcm	1x		6/7/2023 12:25
35	EQ2300274-02		20230607-035	Perchlorate6850c.lcm	1x	DNU-IR	6/7/2023 12:31
36	EQ2300274-03		20230607-036	Perchlorate6850c.lcm	1x	DNU-IR	6/7/2023 12:36
37	CCV		20230607-037	Perchlorate6850c.lcm	1x	227251	6/7/2023 12:42

20230607-806739

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XM
2nd Review: GC

ICAL Date: 6/6/2023
Cal. Std. xp: 07/31/2023
ICAL ID: EC2300009

Mobile Phases : **A:**20mM ammonium acetate in water 32103045 **B:**Acetonitrile 226552

	Sample Name		File Name	Acquisition Method	Dilution	Comments	Date/Time
38	EQ2300274-02		20230607-038	Perchlorate6850c.lcm	1x		6/7/2023 13:29
39	EQ2300274-03		20230607-039	Perchlorate6850c.lcm	1x		6/7/2023 13:36
40	E2300519-007		20230607-040	Perchlorate6850c.lcm	1x		6/7/2023 13:41
41	E2300529-002		20230607-041	Perchlorate6850c.lcm	1x		6/7/2023 13:47
42	E2300529-003		20230607-042	Perchlorate6850c.lcm	1x		6/7/2023 13:53
43	E2300529-004		20230607-043	Perchlorate6850c.lcm	1x		6/7/2023 13:59
44	E2300529-005		20230607-044	Perchlorate6850c.lcm	1x		6/7/2023 14:05
45	E2300529-006		20230607-045	Perchlorate6850c.lcm	1x		6/7/2023 14:10
46	E2300529-007		20230607-046	Perchlorate6850c.lcm	1x		6/7/2023 14:16
47	E2300529--008		20230607-047	Perchlorate6850c.lcm	1000x		6/7/2023 14:22
48	CCV		20230607-048	Perchlorate6850c.lcm	1x	227251	6/7/2023 14:27
49	E2300530-001		20230607-049	Perchlorate6850c.lcm	1x		6/7/2023 15:02
50	E2300530-002		20230607-050	Perchlorate6850c.lcm	1x		6/7/2023 15:08
51	E2300530-003		20230607-051	Perchlorate6850c.lcm	1x		6/7/2023 15:13
52	E2300530-004		20230607-052	Perchlorate6850c.lcm	1x		6/7/2023 15:19
53	E2300530-005		20230607-053	Perchlorate6850c.lcm	1x		6/7/2023 15:25
54	E2300529-009		20230607-054	Perchlorate6850c.lcm	1x		6/7/2023 15:31
55	E2300529-010		20230607-055	Perchlorate6850c.lcm	1x		6/7/2023 15:36
56	E2300529-011		20230607-056	Perchlorate6850c.lcm	1x		6/7/2023 15:44
57	E2300529-012		20230607-057	Perchlorate6850c.lcm	1x		6/7/2023 15:50
58	EQ2300273-06		20230607-058	Perchlorate6850c.lcm	1x		6/7/2023 15:56
59	CCV		20230607-059	Perchlorate6850c.lcm	1x	227251	6/7/2023 16:01

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/6/23 12:16

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230606\20230606-015	**Lab Code:**	EQ2300280-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	806642
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	257,009	3.49
	Upper Limit ==>	385,514	5.49
	Lower Limit ==>	128,505	1.49
Associated Analyses			
Continuing Calibration Verification	EQ2300280-01	263,663	3.48
Method Blank	EQ2300273-01	261,461	3.48
Lab Control Sample	EQ2300273-02	255,243	3.48
Duplicate Lab Control Sample	EQ2300273-03	284,022	3.48

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/6/23 13:19

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230606\20230606-026	**Lab Code:**	EQ2300280-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	806642
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	257,009	3.49
	Upper Limit ==>	385,514	5.49
	Lower Limit ==>	128,505	1.49
Associated Analyses			
Continuing Calibration Verification	EQ2300280-03	259,328	3.48

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/6/23 14:23

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230606\20230606-037	**Lab Code:**	EQ2300280-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	806642
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	257,009	3.49
	Upper Limit ==>	385,514	5.49
	Lower Limit ==>	128,505	1.49
Associated Analyses			
Continuing Calibration Verification	EQ2300280-02	256,116	3.48

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/7/23 09:03

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230607\20230607-004	**Lab Code:**	EQ2300285-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	806739
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	257,009	3.49
	Upper Limit ==>	385,514	5.49
	Lower Limit ==>	128,505	1.49
Associated Analyses			
Continuing Calibration Verification	EQ2300285-01	291,896	3.49

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/7/23 10:11

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230607\20230607-015	**Lab Code:**	EQ2300285-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	806739
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	257,009	3.49
	Upper Limit ==>	385,514	5.49
	Lower Limit ==>	128,505	1.49
Associated Analyses			
Continuing Calibration Verification	EQ2300285-02	324,598	3.49
130_060123	E2300528-001	343,435	3.49
17WW03_060123	E2300528-002	341,625	3.49

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/7/23 11:37

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230607\20230607-026	**Lab Code:**	EQ2300285-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	806739
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	257,009	3.49
	Upper Limit ==>	385,514	5.49
	Lower Limit ==>	128,505	1.49
Associated Analyses			
Continuing Calibration Verification	EQ2300285-03	315,149	3.49
17WW03_060123DMS	EQ2300273-07	330,997	3.49
17WW01_060123	E2300528-003	334,710	3.49
17WW01_060123_a	E2300528-004	329,676	3.49
17WW02_060123	E2300528-005	270,081	3.49
17WW06_060123	E2300528-006	202,229	3.49

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/7/23 12:42

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230607\20230607-037	**Lab Code:**	EQ2300285-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	806739
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	257,009	3.49
	Upper Limit ==>	385,514	5.49
	Lower Limit ==>	128,505	1.49
Associated Analyses			
Continuing Calibration Verification	EQ2300285-04	227,499	3.49

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/7/23 14:27

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230607\20230607-048	**Lab Code:**	EQ2300285-05
Instrument ID:	E-LCMS-01	**Analysis Lot:**	806739
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	257,009	3.49
	Upper Limit ==>	385,514	5.49
	Lower Limit ==>	128,505	1.49
Associated Analyses			
Continuing Calibration Verification	EQ2300285-05	279,459	3.49
17WW03_060123MS	EQ2300273-06	285,032	3.49

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/7/23 16:01

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20230607\20230607-059	**Lab Code:**	EQ2300285-06
Instrument ID:	E-LCMS-01	**Analysis Lot:**	806739
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	257,009	3.49
	Upper Limit ==>	385,514	5.49
	Lower Limit ==>	128,505	1.49
Associated Analyses			
Continuing Calibration Verification	EQ2300285-06	268,982	3.49

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/ 6/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	6/6/23
File ID:	I:\LCMS01\DATA\20230606\20230606-015	**Calibration ID:**	EC2300009
		Analysis Lot:	806642
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.96	0.1827	0.1819	-0.4	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/ 6/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	6/6/23
File ID:	I:\LCMS01\DATA\20230606\20230606-037	**Calibration ID:**	EC2300009
		Analysis Lot:	806642
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.80	0.1827	0.1791	-2.0	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/ 6/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	6/6/23
File ID:	I:\LCMS01\DATA\20230606\20230606-026	**Calibration ID:**	EC2300009
		Analysis Lot:	806642
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.98	0.1827	0.1824	-0.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/ 7/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	6/6/23
File ID:	I:\LCMS01\DATA\20230607\20230607-004	**Calibration ID:**	EC2300009
		Analysis Lot:	806739
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.78	0.1827	0.1787	-2.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/ 7/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	6/6/23
File ID:	I:\LCMS01\DATA\20230607\20230607-015	**Calibration ID:**	EC2300009
		Analysis Lot:	806739
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.91	0.1827	0.1810	-0.9	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/ 7/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	6/6/23
File ID:	I:\LCMS01\DATA\20230607\20230607-026	**Calibration ID:**	EC2300009
		Analysis Lot:	806739
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.91	0.1827	0.1811	-0.9	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/ 7/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	6/6/23
File ID:	I:\LCMS01\DATA\20230607\20230607-037	**Calibration ID:**	EC2300009
		Analysis Lot:	806739
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.63	0.1827	0.1759	-3.7	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/ 7/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	6/6/23
File ID:	I:\LCMS01\DATA\20230607\20230607-048	**Calibration ID:**	EC2300009
		Analysis Lot:	806739
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.92	0.1827	0.1813	-0.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300528
Project:	LHAAP / Site 17	**Date Analyzed:**	6/ 7/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	6/6/23
File ID:	I:\LCMS01\DATA\20230607\20230607-059	**Calibration ID:**	EC2300009
		Analysis Lot:	806739
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.85	0.1827	0.1800	-1.5	NA	± 15 %	Average RF

Insight Report

Printed at 6/7/2023 10:10:58 AM

IB

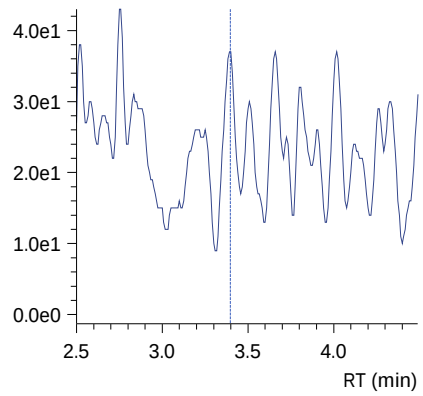
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Acquired by: System Administrator
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Vial: 4 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	259303	----	ng/mL	101.00 >85.00	0.00	17.79-33.04
Sodium Perchlorate-18O4_IS	Auto	3.484	259303	259303	1.0000	ng/mL	----	----	

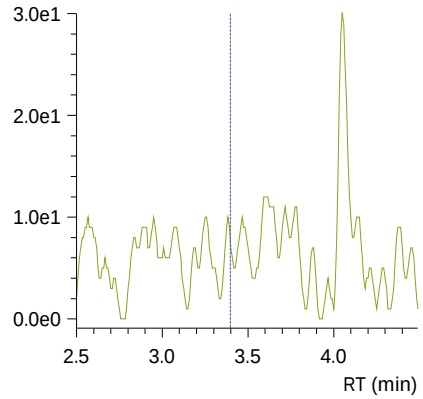
Perchlorate

Conc ----
R#1 0.00 (24.52)

Q 99.00>83.00 (-) 4.30e1



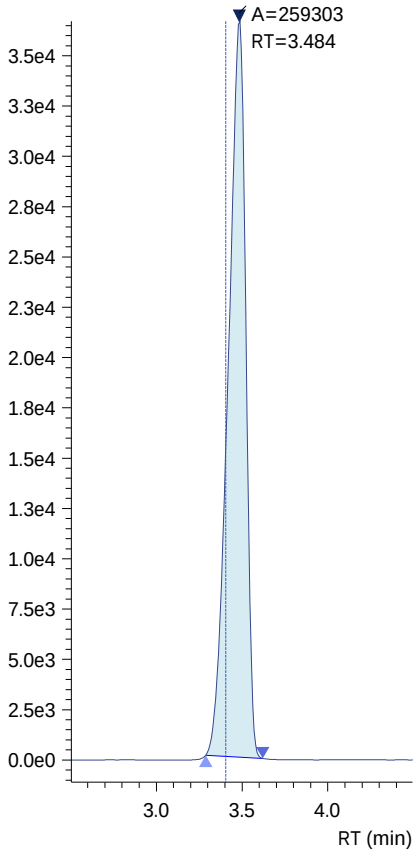
R1 101.00>85.00 (-) 3.00e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 3.67e4



Insight Report

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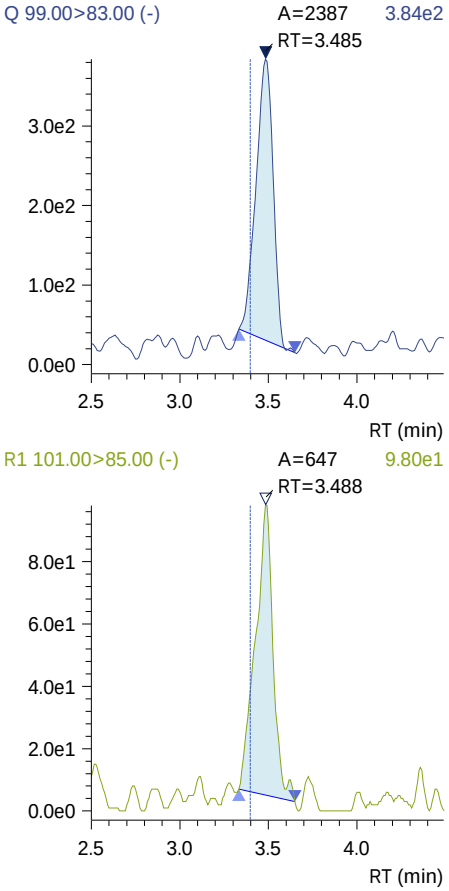
LODV

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Acquired by: System Administrator
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Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.485	2387	257935	0.0506	ng/mL	101.00 >85.00	27.11	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.484	257935	257935	1.0000	ng/mL	----	----	

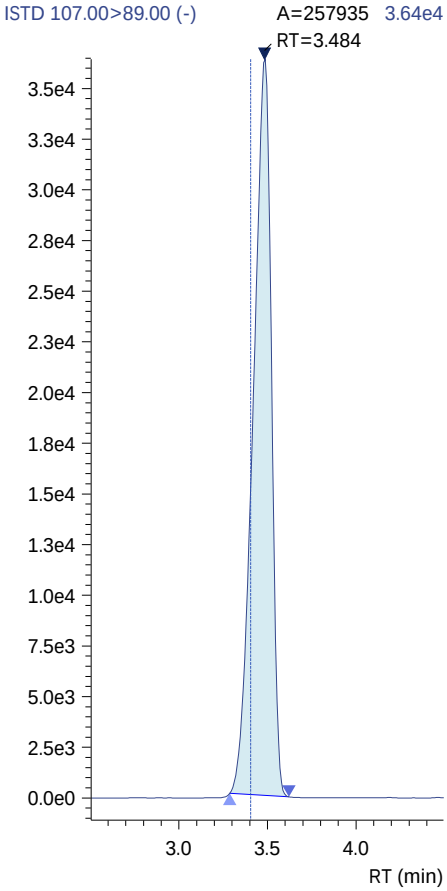
Perchlorate

Conc 0.0506
R#1 27.11 (24.52)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/7/2023 10:10:58 AM

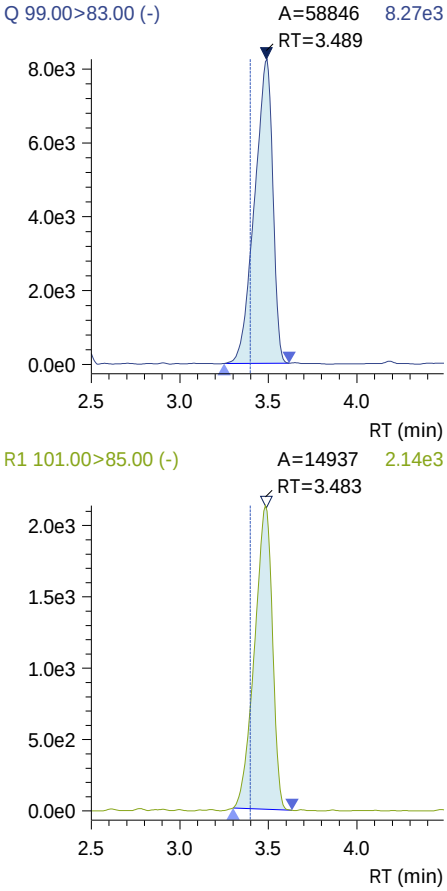
ICS

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Vial: 2 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.489	58846	301715	1.0674	ng/mL	101.00 >85.00	25.38	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.484	301715	301715	1.0000	ng/mL	----	----	

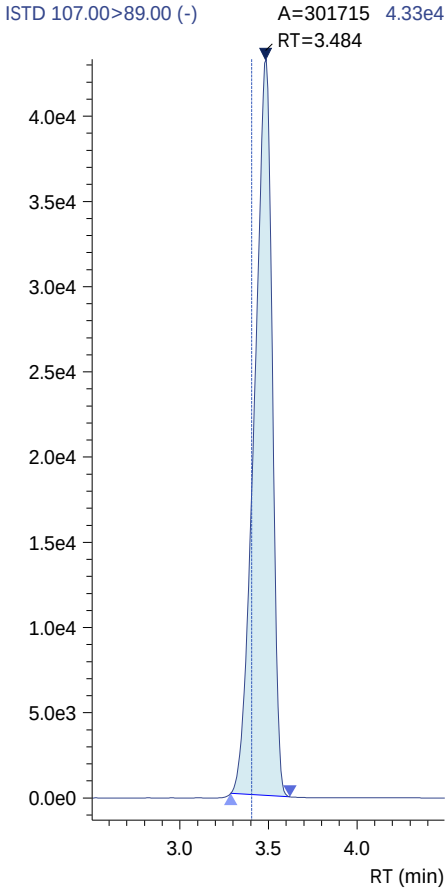
Perchlorate

Conc 1.0674
R#1 25.38 (24.52)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/7/2023 10:10:58 AM

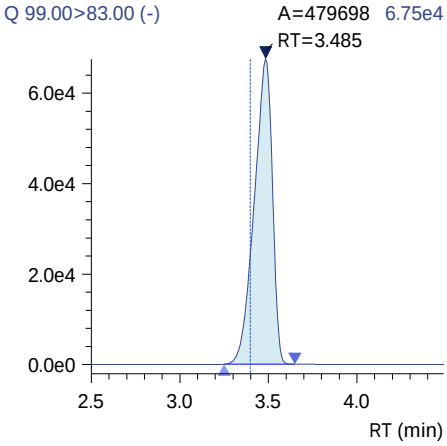
CCV

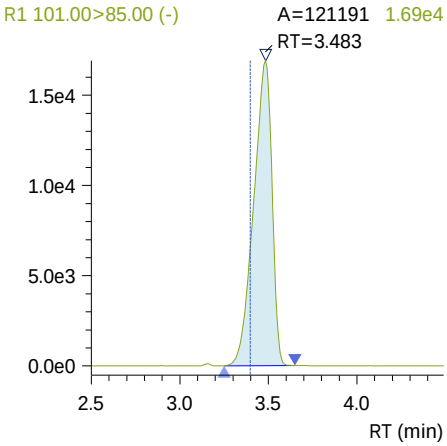
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Acquired by: System Administrator
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Vial: 7 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.485	479698	263663	9.9568	ng/mL	101.00 >85.00	25.26	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.481	263663	263663	1.0000	ng/mL	----	----	

Perchlorate

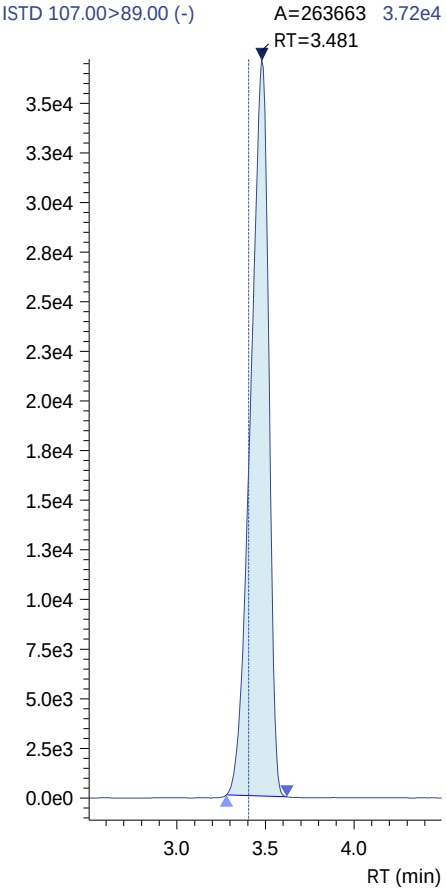
Conc 9.9568
R#1 25.26 (24.52)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/7/2023 10:10:58 AM

EQ2300273-01

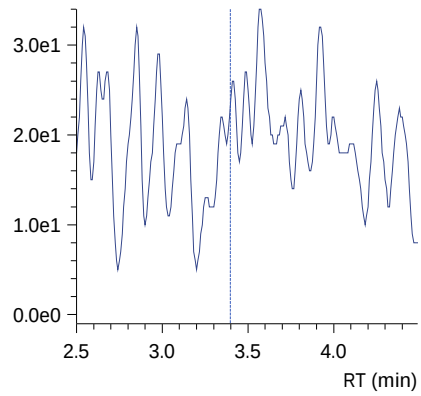
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Date Acquired: 6/6/2023 12:39:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-019.lcd
Vial: 40 | Inj. Volume: 10.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	261461	----	ng/mL	101.00 >85.00	0.00	17.79-33.04
Sodium Perchlorate-18O4_IS	Auto	3.483	261461	261461	1.0000	ng/mL	----	----	

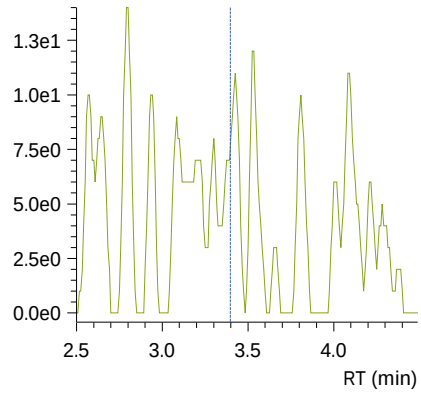
Perchlorate

Conc ----
R#1 0.00 (24.52)

Q 99.00>83.00 (-) 3.40e1



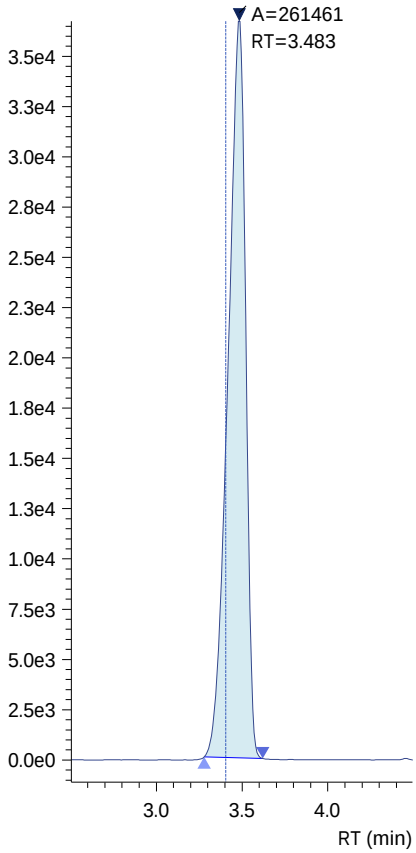
R1 101.00>85.00 (-) 1.40e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 3.67e4



Insight Report

Printed at 6/7/2023 10:10:58 AM

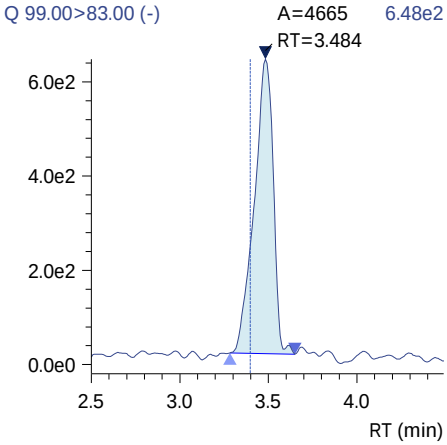
EQ2300273-02

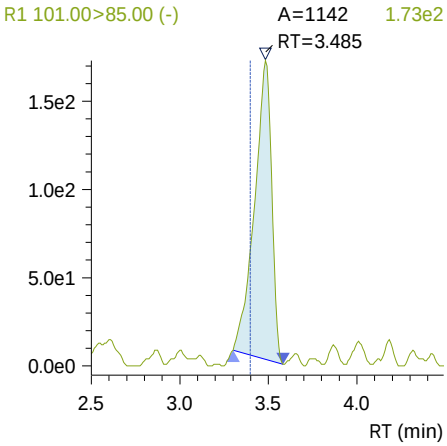
Sample ID: EQ2300273-02
Date Acquired: 6/6/2023 12:45:13 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-020.lcd
Vial: 41 | Inj. Volume: 10.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.484	4665	255243	0.1000	ng/mL	101.00 >85.00	24.47	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.482	255243	255243	1.0000	ng/mL	----	----	

Perchlorate

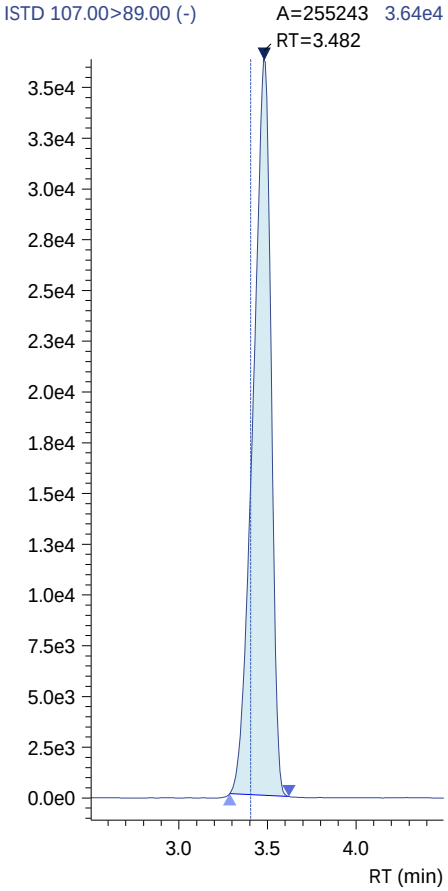
Conc 0.1000
R#1 24.47 (24.52)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/7/2023 10:10:58 AM

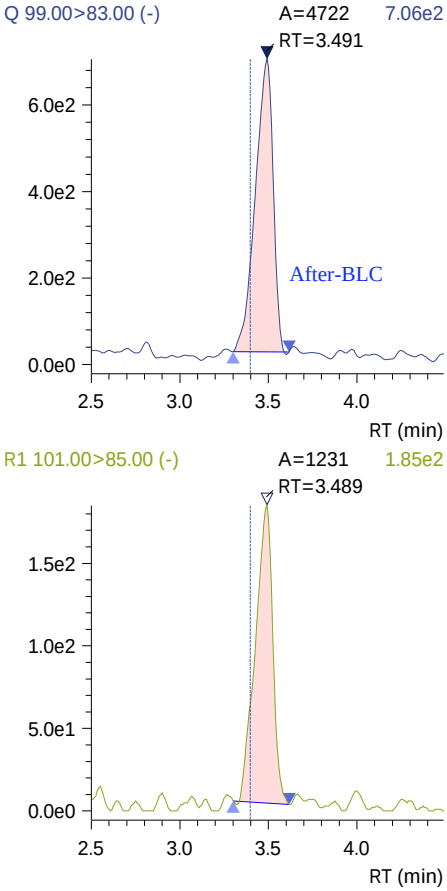
EQ2300273-03

Sample ID: EQ2300273-03
Date Acquired: 6/6/2023 12:50:56 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-021.lcd
Vial: 42 | Inj. Volume: 10.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.491	4722	284022	0.0910	ng/mL	101.00 >85.00	26.07	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.483	284022	284022	1.0000	ng/mL	----	----	

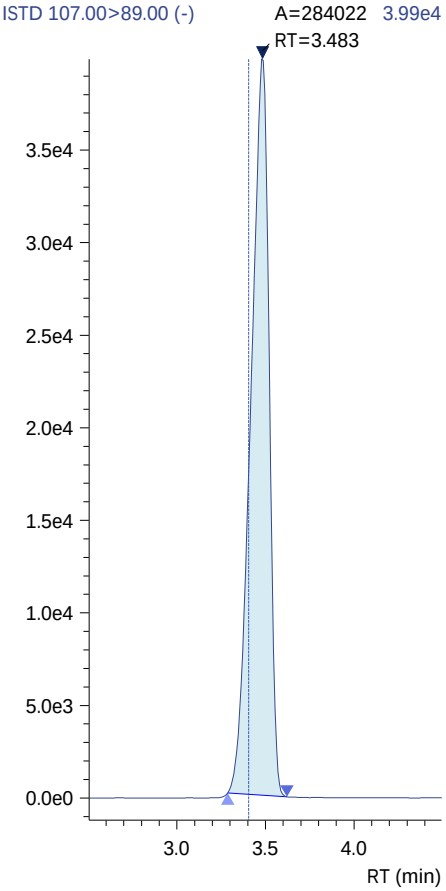
Perchlorate

Conc 0.0910
R#1 26.07 (24.52)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/7/2023 10:13:10 AM

Method File: I:\LCMS01\DATA\20230606\20230606.lcm
Project File: I:\LCMS01\DATA\20230606\20230606.damlp

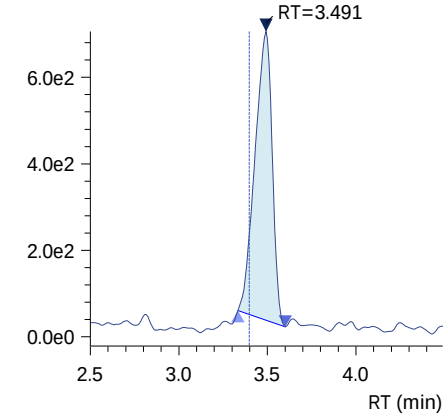
EQ2300273-03

Sample ID: EQ2300273-03
Date Acquired: 6/6/2023 12:50:56 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-021.lcd
Vial: 42 | Inj. Volume: 10.0000uL | Tray: 4

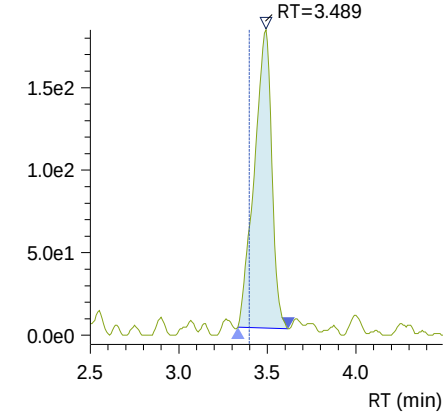
Perchlorate

Conc 0.0867
R#1 27.56 (24.52)

Q 99.00>83.00 (-) A=4500 7.06e2 RT=3.491



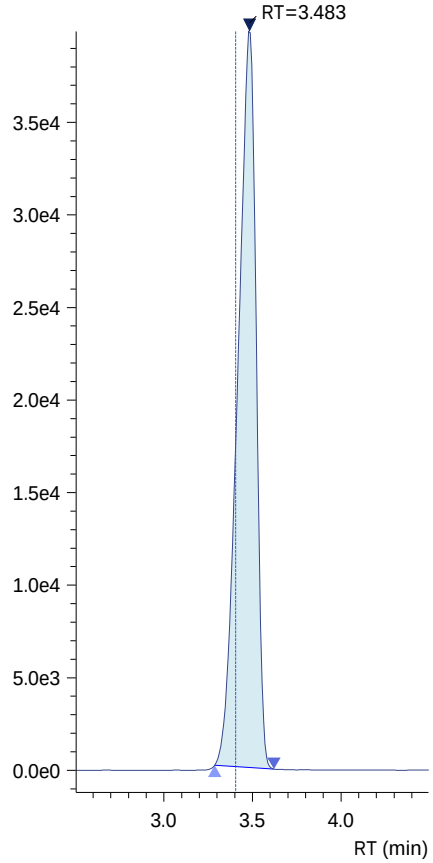
R1 101.00>85.00 (-) A=1240 1.85e2 RT=3.489



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=284022 3.99e4 RT=3.483



Insight Report

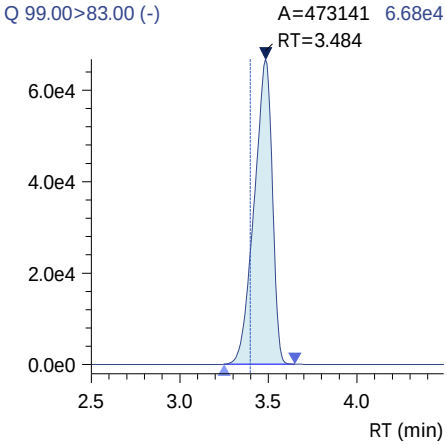
CCV

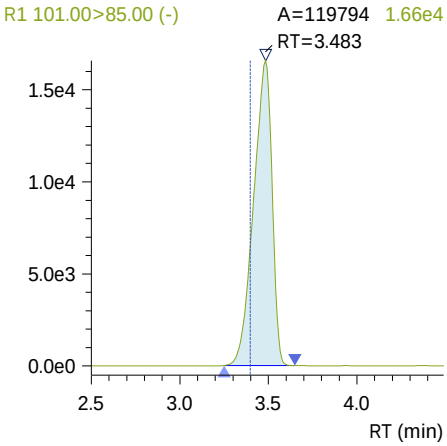
Sample ID: CCV
Date Acquired: 6/6/2023 1:19:42 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230606\20230606-026.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.484	473141	259328	9.9849	ng/mL	101.00 >85.00	25.32	17.79-33.04
Sodium Perchlorate-18O4 _IS	Auto	3.481	259328	259328	1.0000	ng/mL	----	----	

Perchlorate

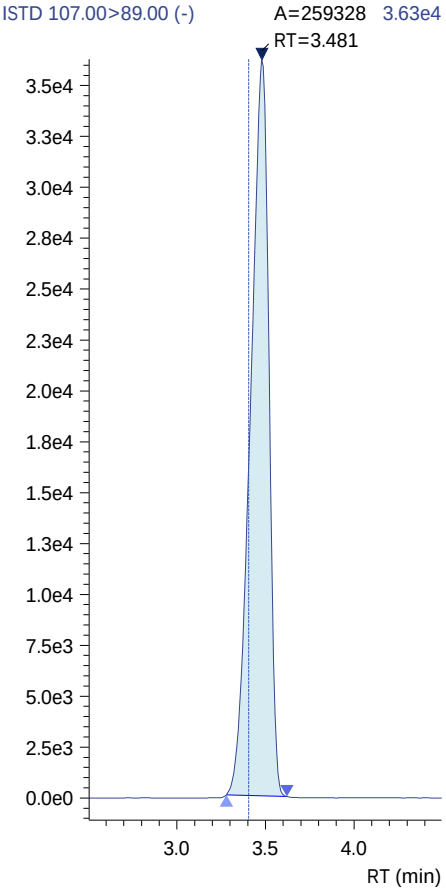
Conc 9.9849
R#1 25.32 (24.52)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/8/2023 10:17:10 AM

Method File: I:\LCMS01\DATA\20230607\20230607.lcm
Project File: I:\LCMS01\DATA\20230607\20230607.damlp

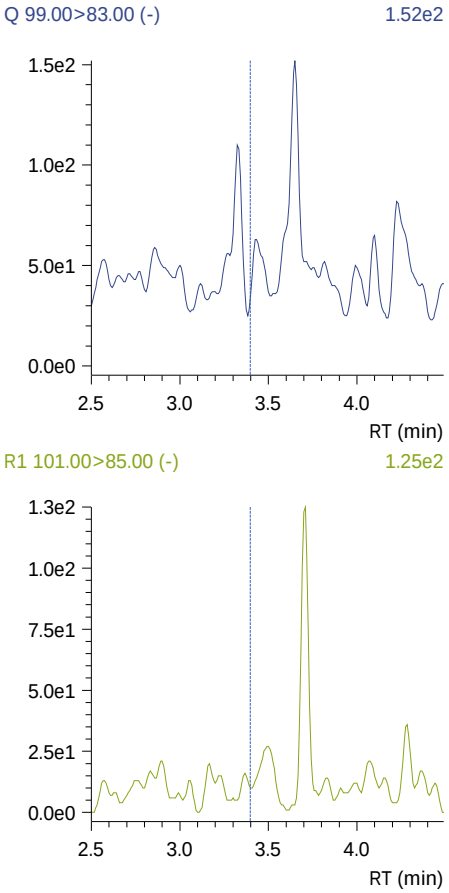
IB

Sample ID: IB
Date Acquired: 6/7/2023 8:41:34 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230607\20230607-001.lcd
Vial: 4 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	363589	----	ng/mL	101.00 >85.00	0.00	18.06-33.55
Sodium Perchlorate-18O4_IS	Auto	3.472	363589	363589	1.0000	ng/mL	----	----	

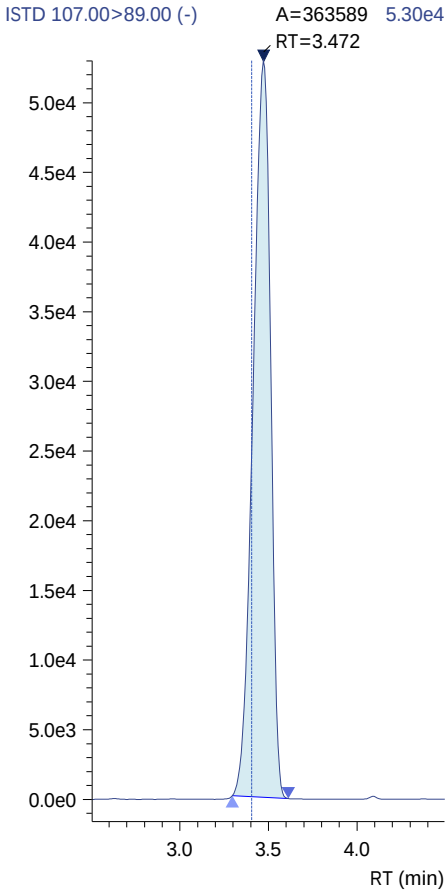
Perchlorate

Conc ----
R#1 0.00 (25.81)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/8/2023 10:19:47 AM

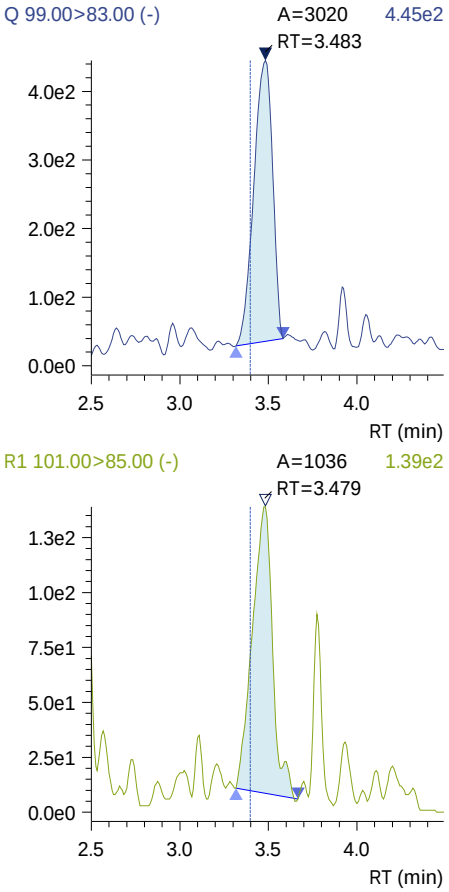
Method File: I:\LCMS01\DATA\20230607\20230607.lcm
Project File: I:\LCMS01\DATA\20230607\20230607.damlp

LODV

Sample ID: LODV
Date Acquired: 6/7/2023 8:51:37 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230607\20230607-002.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

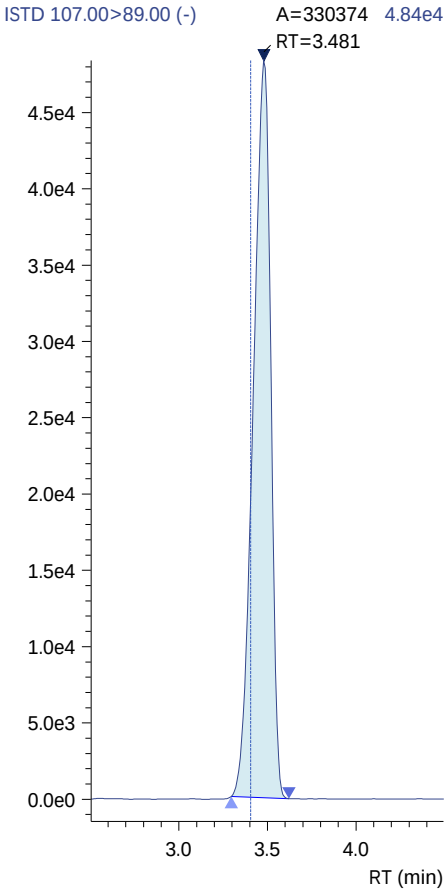
Perchlorate

Conc 0.0500
R#1 34.31 (25.81)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/8/2023 10:17:10 AM

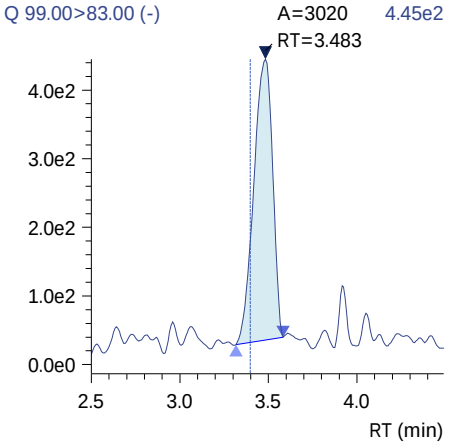
LODV

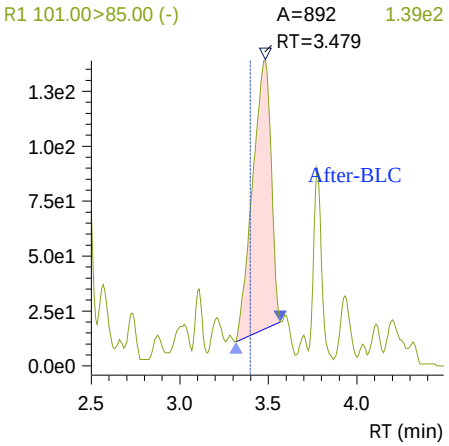
Sample ID: LODV
Date Acquired: 6/7/2023 8:51:37 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230607\20230607-002.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.483	3020	330374	0.0500	ng/mL	101.00 >85.00	29.54	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.481	330374	330374	1.0000	ng/mL	----	----	

Perchlorate

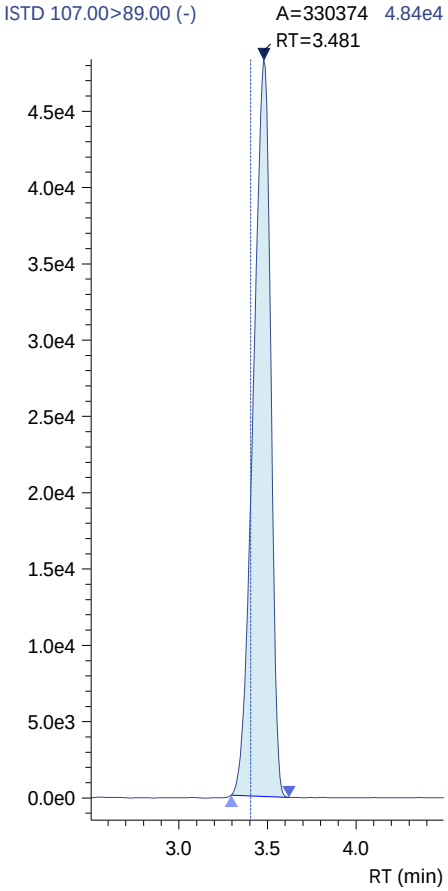
Conc 0.0500
R#1 29.54 (25.81)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/8/2023 10:17:10 AM

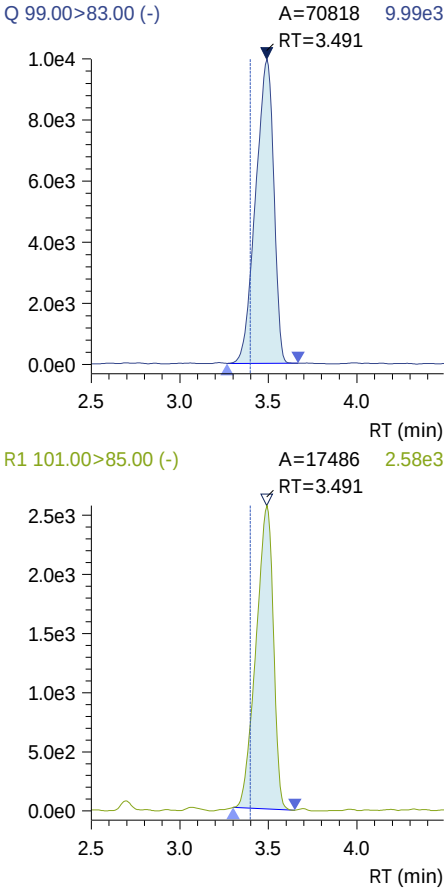
ICS

Sample ID: ICS
Date Acquired: 6/7/2023 8:57:21 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230607\20230607-003.lcd
Vial: 2 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.491	70818	360222	1.0759	ng/mL	101.00 >85.00	24.69	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.488	360222	360222	1.0000	ng/mL	----	----	

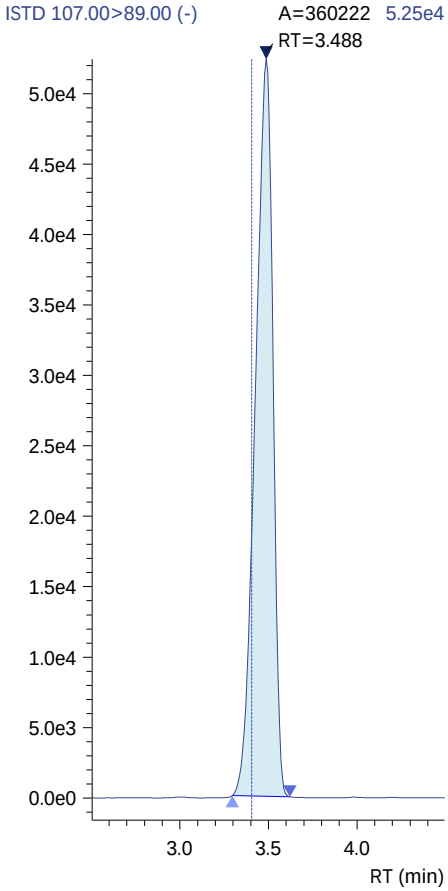
Perchlorate

Conc 1.0759
R#1 24.69 (25.81)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/8/2023 10:17:10 AM

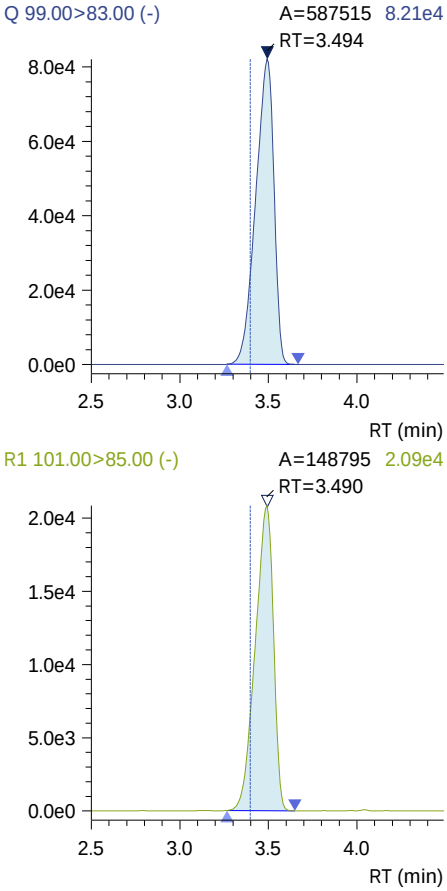
CCV

Sample ID: CCV
Date Acquired: 6/7/2023 10:11:28 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230607\20230607-015.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.494	587515	324598	9.9055	ng/mL	101.00 >85.00	25.33	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.490	324598	324598	1.0000	ng/mL	----	----	

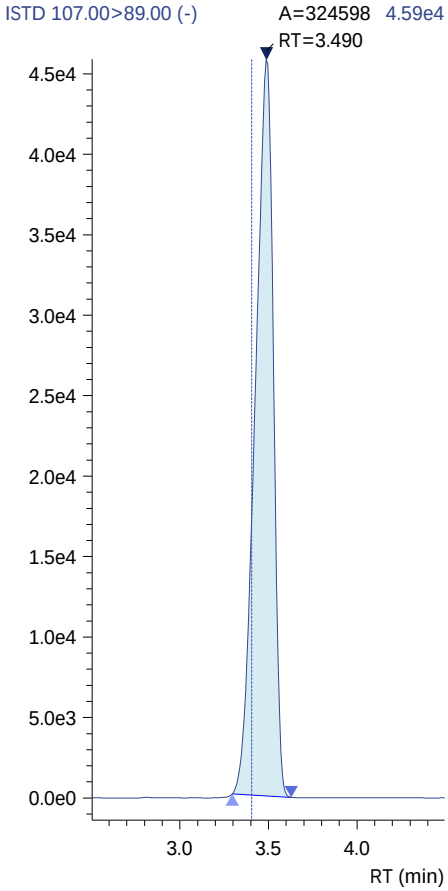
Perchlorate

Conc 9.9055
R#1 25.33 (25.81)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/8/2023 10:17:10 AM

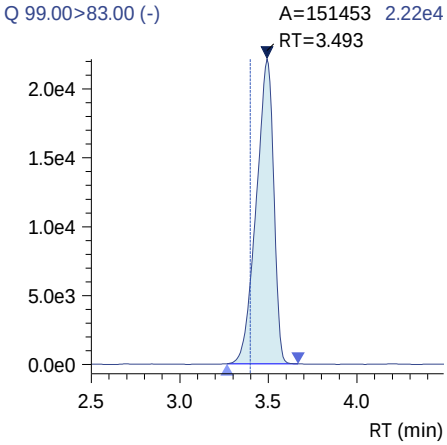
E2300528-001

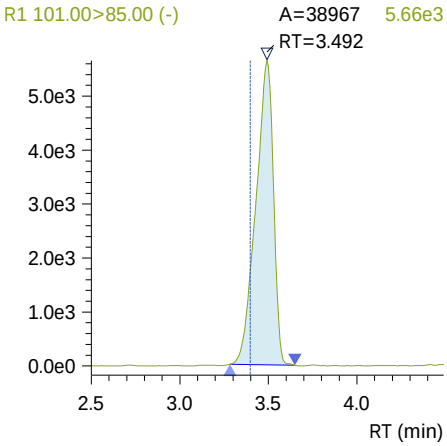
Sample ID: E2300528-001
Date Acquired: 6/7/2023 11:20:16 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230607\20230607-024.lcd
Vial: 28 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.493	151453	343435	2.4134	ng/mL	101.00 >85.00	25.73	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.491	343435	343435	1.0000	ng/mL	----	----	

Perchlorate

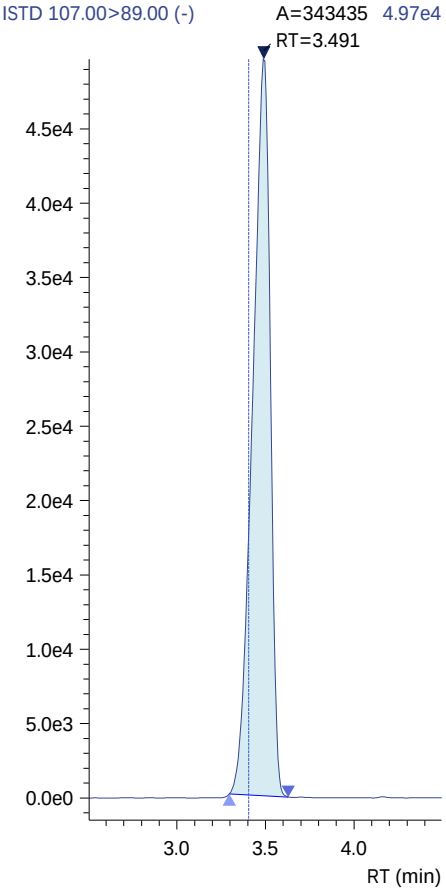
Conc 2.4134
R#1 25.73 (25.81)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/8/2023 10:17:10 AM

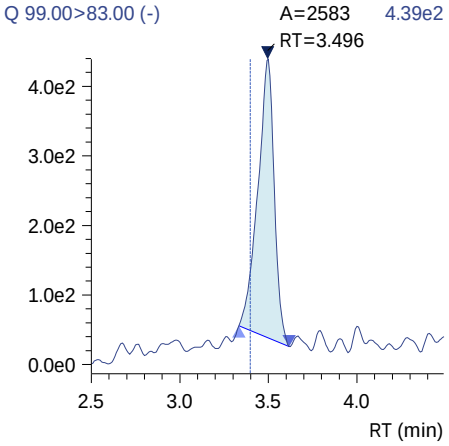
E2300528-002

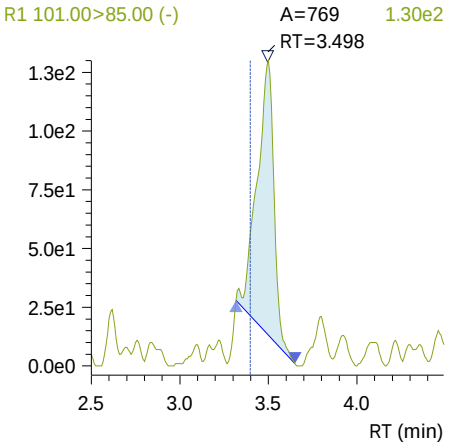
Sample ID: E2300528-002
Date Acquired: 6/7/2023 11:31:46 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230607\20230607-025.lcd
Vial: 29 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.496	2583	341625	0.0414	ng/mL	101.00 >85.00	29.76	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.490	341625	341625	1.0000	ng/mL	----	----	

Perchlorate

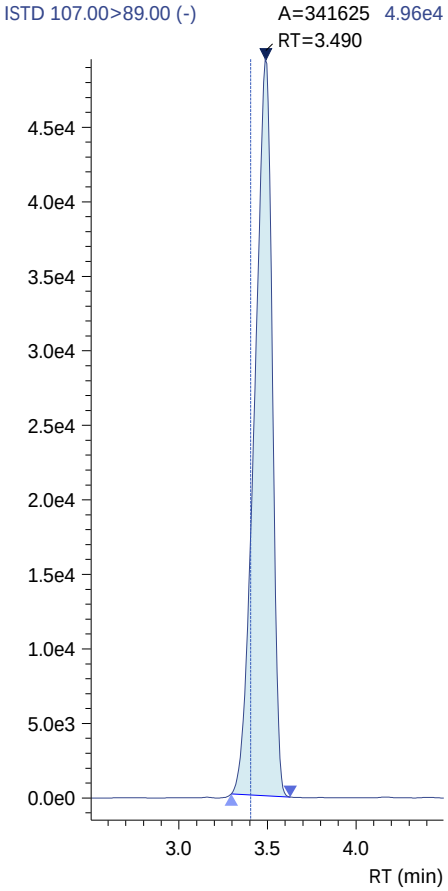
Conc 0.0414
R#1 29.76 (25.81)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/8/2023 10:17:10 AM

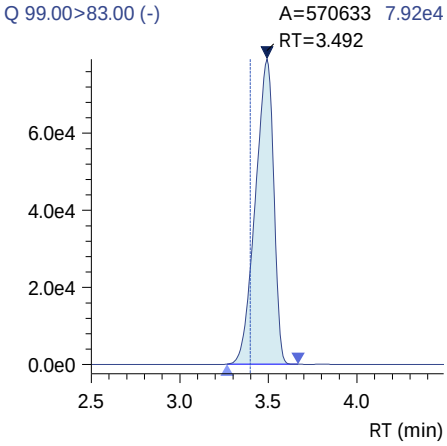
CCV

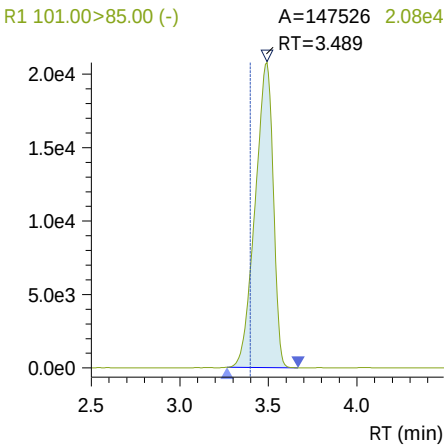
Sample ID: CCV
Date Acquired: 6/7/2023 11:37:30 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230607\20230607-026.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.492	570633	315149	9.9093	ng/mL	101.00 >85.00	25.85	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.489	315149	315149	1.0000	ng/mL	----	----	

Perchlorate

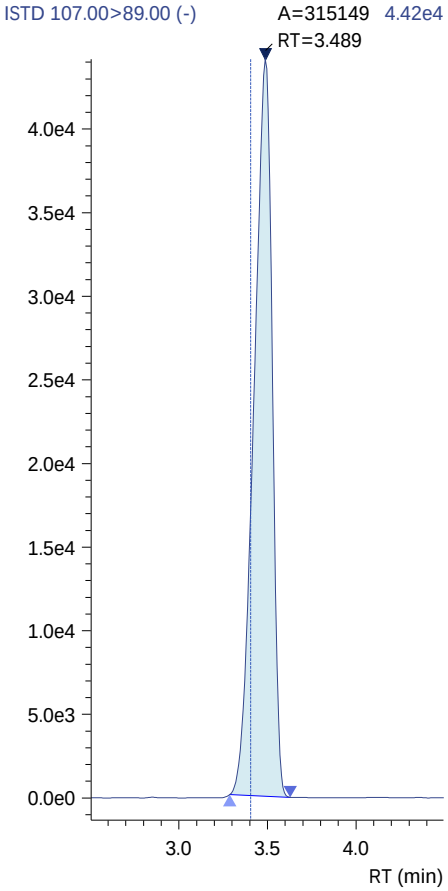
Conc 9.9093
R#1 25.85 (25.81)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/8/2023 10:17:10 AM

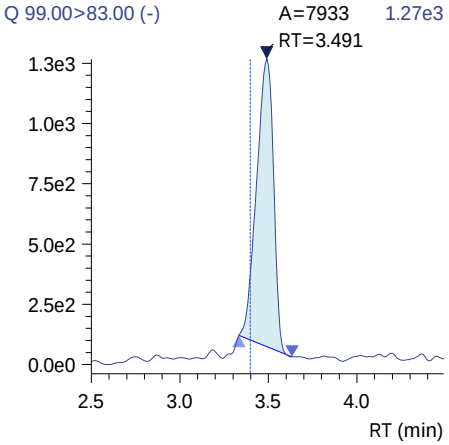
EQ2300273-07

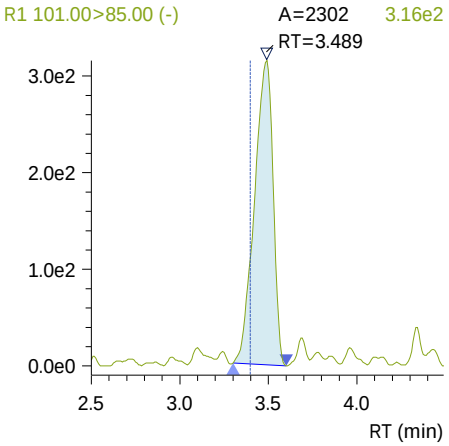
Sample ID: EQ2300273-07
Date Acquired: 6/7/2023 11:48:56 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230607\20230607-028.lcd
Vial: 3 | Inj. Volume: 10.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.491	7933	330997	0.1312	ng/mL	101.00 >85.00	29.02	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.491	330997	330997	1.0000	ng/mL	----	----	

Perchlorate

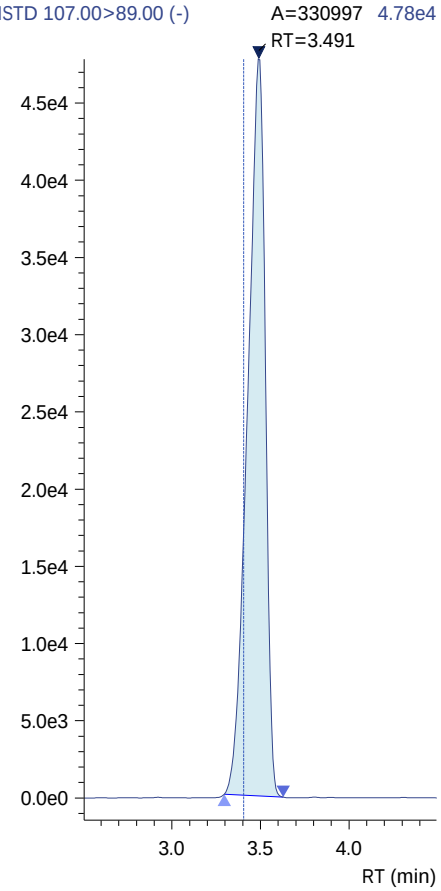
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R#1 29.02 (25.81)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

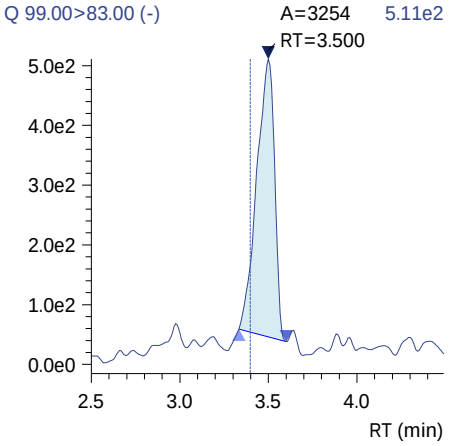
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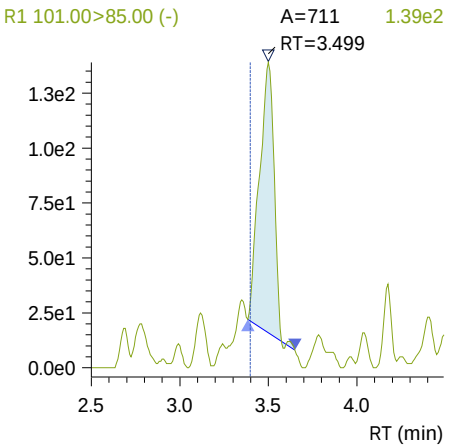
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Vial: 30 | Inj. Volume: 10.0000uL | Tray: 3

Perchlorate

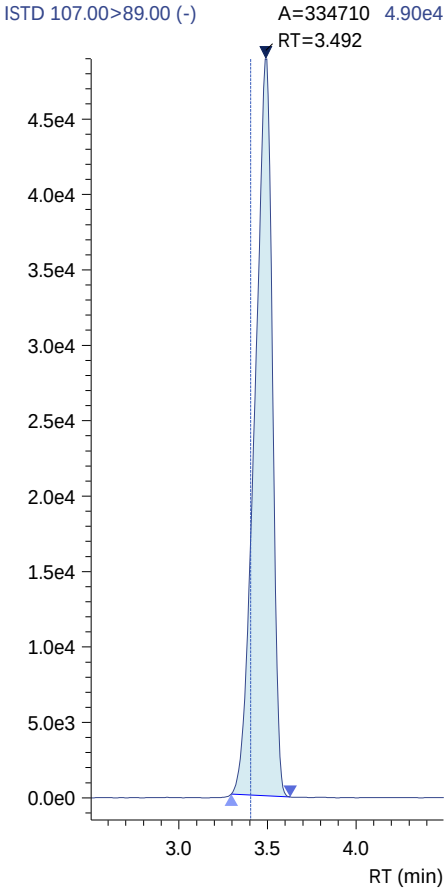
Conc 0.0532
R#1 21.85 (25.81)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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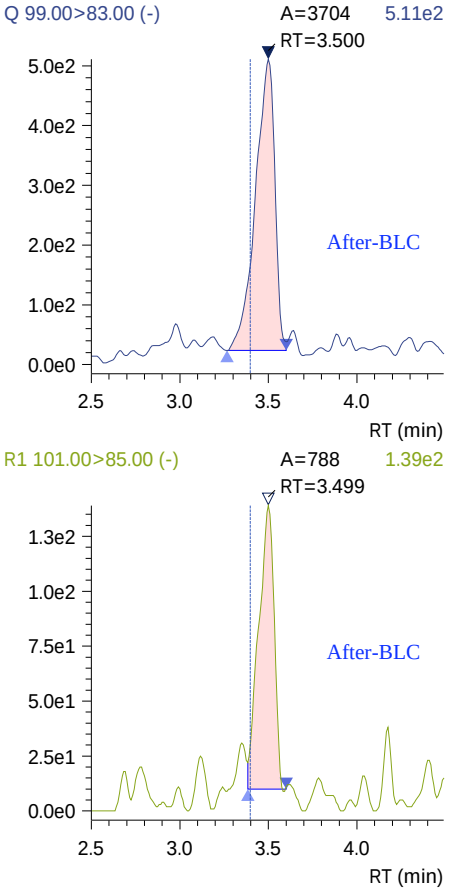
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Vial: 30 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.500	3704	334710	0.0606	ng/mL	101.00 >85.00	21.27	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.492	334710	334710	1.0000	ng/mL	----	----	

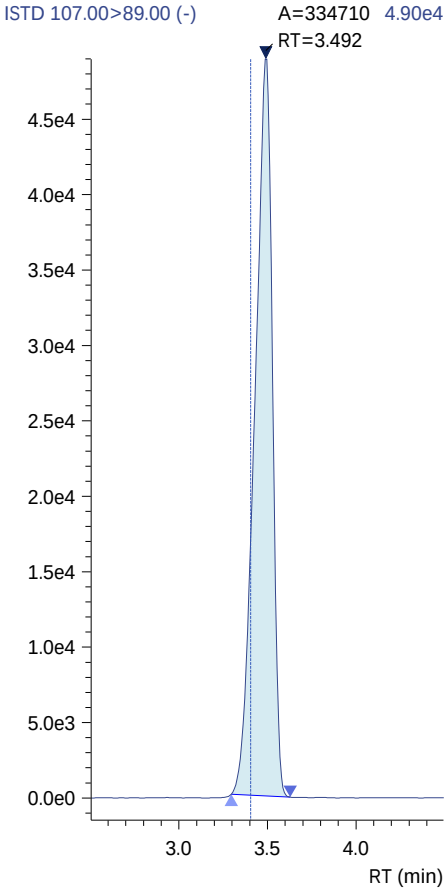
Perchlorate

Conc 0.0606
R#1 21.27 (25.81)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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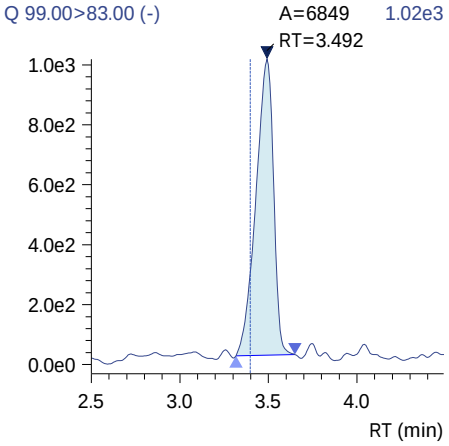
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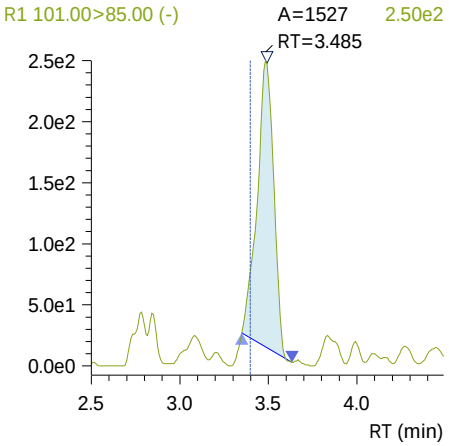
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Perchlorate	Auto	3.492	6849	329676	0.1137	ng/mL	101.00 >85.00	22.29	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.490	329676	329676	1.0000	ng/mL	----	----	

Perchlorate

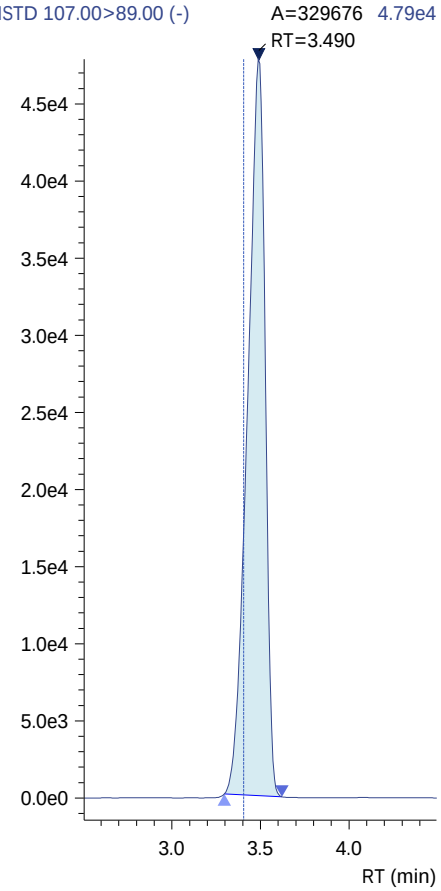
Conc 0.1137
R#1 22.29 (25.81)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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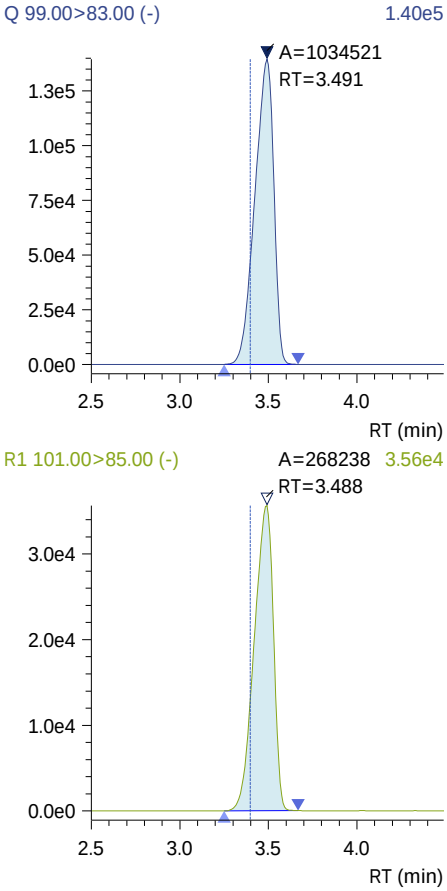
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Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.491	1034521	270081	20.96 28	ng/mL	101.00 >85.00	25.93	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.487	270081	270081	1.0000	ng/mL	----	----	

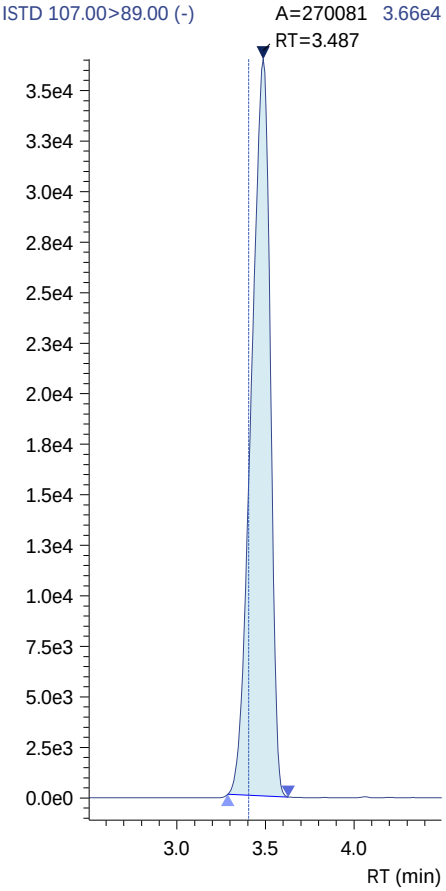
Perchlorate

Conc 20.9628
R#1 25.93 (25.81)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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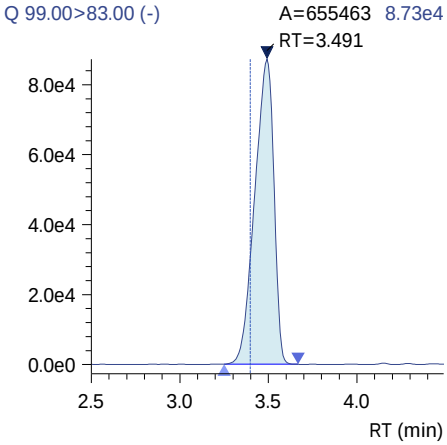
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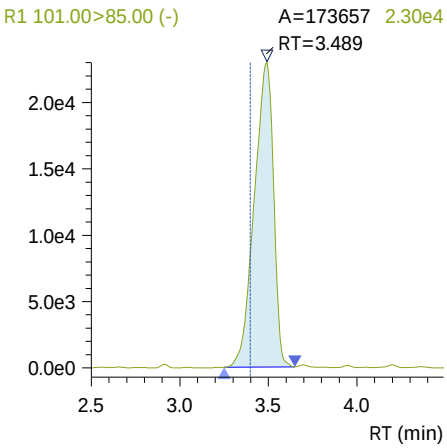
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Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
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Sodium Perchlorate-18O4_IS	Auto	3.486	202229	202229	1.0000	ng/mL	----	----	

Perchlorate

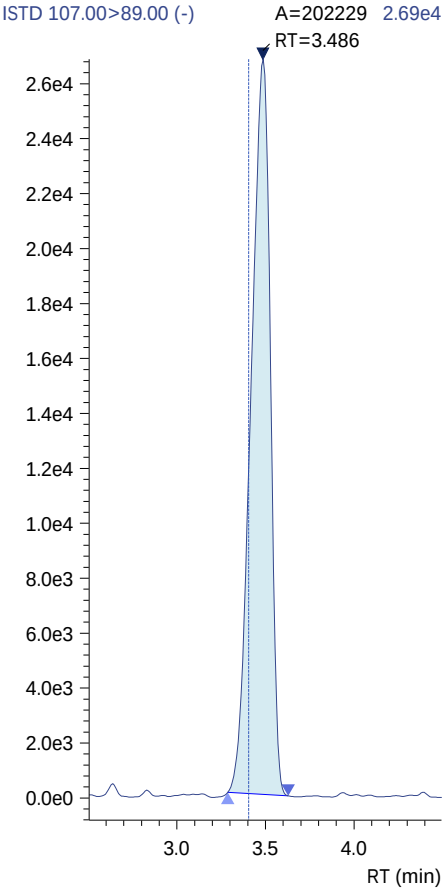
Conc 17.7381
R#1 26.49 (25.81)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

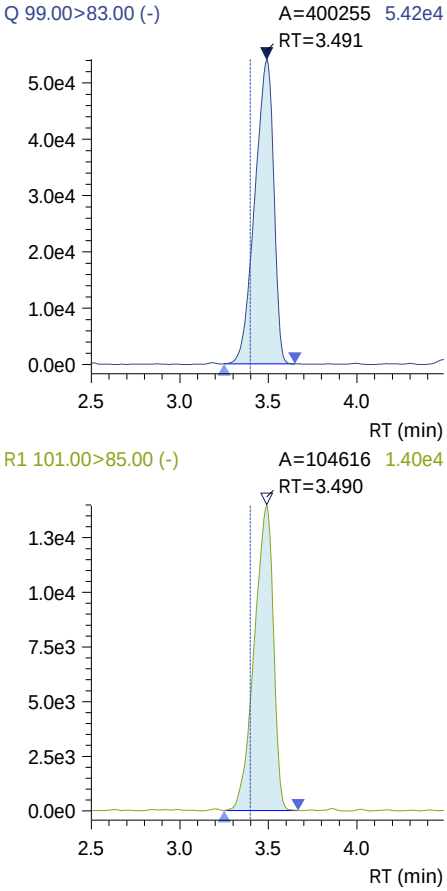
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Perchlorate	Auto	3.491	400255	227499	9.6285	ng/mL	101.00 >85.00	26.14	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.488	227499	227499	1.0000	ng/mL	----	----	

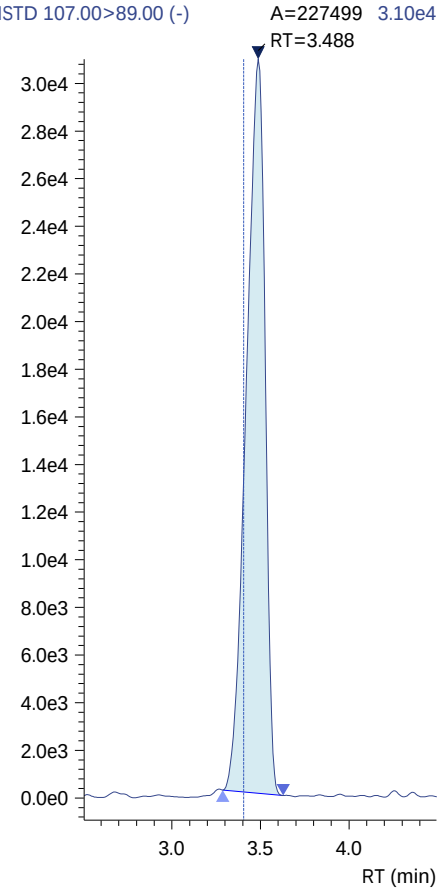
Perchlorate

Conc 9.6285
R#1 26.14 (25.81)



Sodium Perchlorate-18O4_IS

Conc 1.0000



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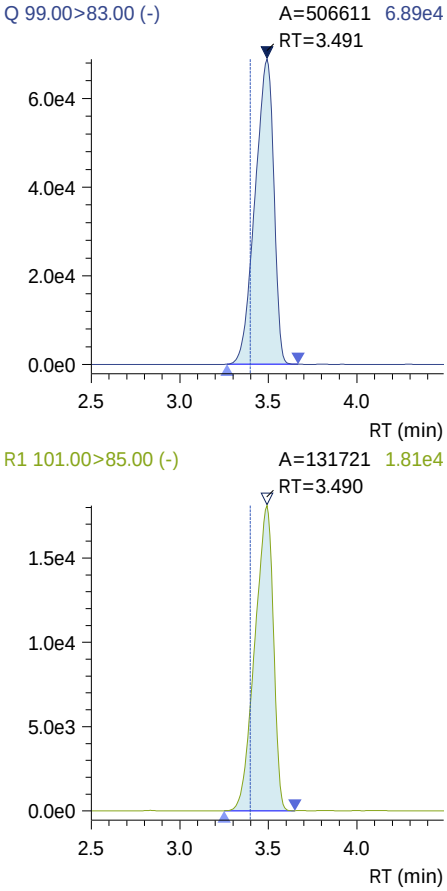
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Vial: 7 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.491	506611	279459	9.9211	ng/mL	101.00 >85.00	26.00	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.489	279459	279459	1.0000	ng/mL	----	----	

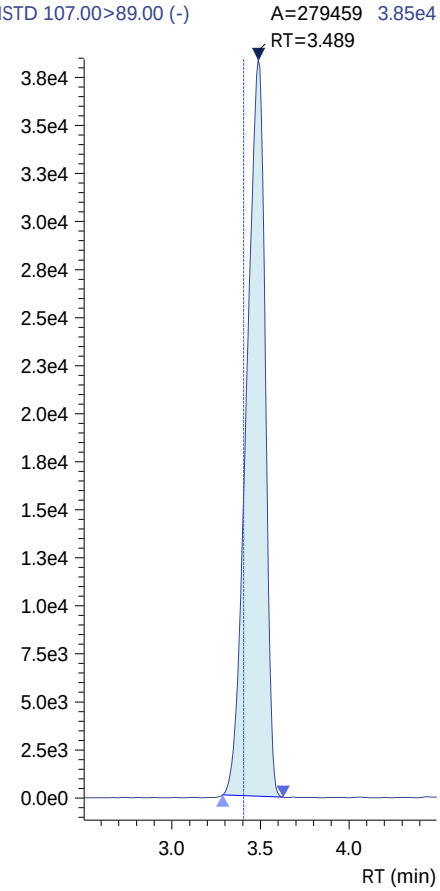
Perchlorate

Conc 9.9211
R#1 26.00 (25.81)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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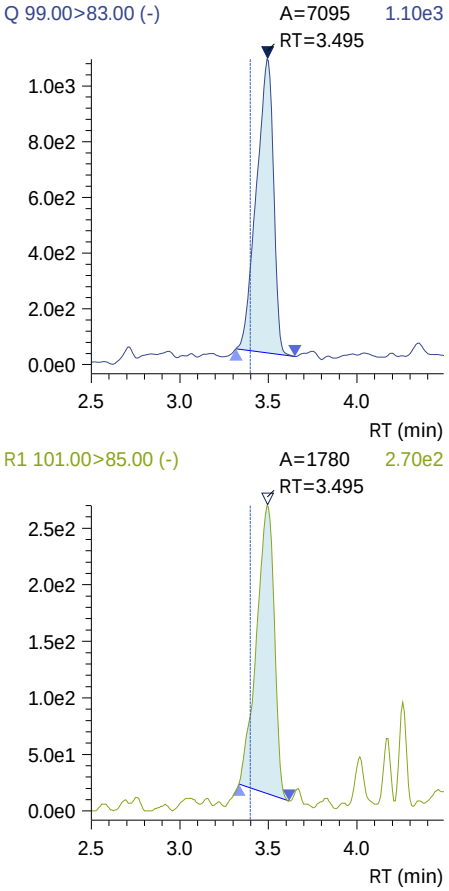
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Perchlorate	Auto	3.495	7095	285032	0.1362	ng/mL	101.00 >85.00	25.09	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.489	285032	285032	1.0000	ng/mL	----	----	

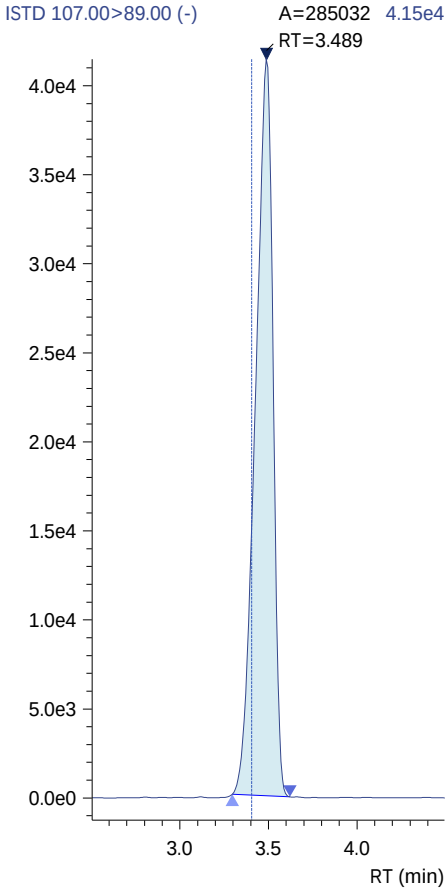
Perchlorate

Conc 0.1362
R#1 25.09 (25.81)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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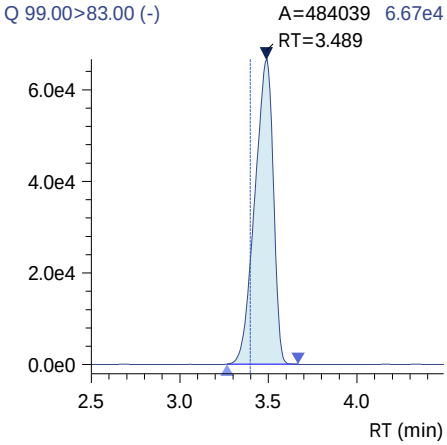
CCV

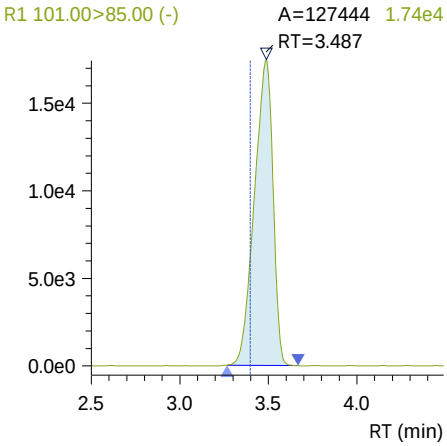
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Vial: 7 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.489	484039	268982	9.8483	ng/mL	101.00 >85.00	26.33	18.06-33.55
Sodium Perchlorate-18O4 _IS	Auto	3.486	268982	268982	1.0000	ng/mL	----	----	

Perchlorate

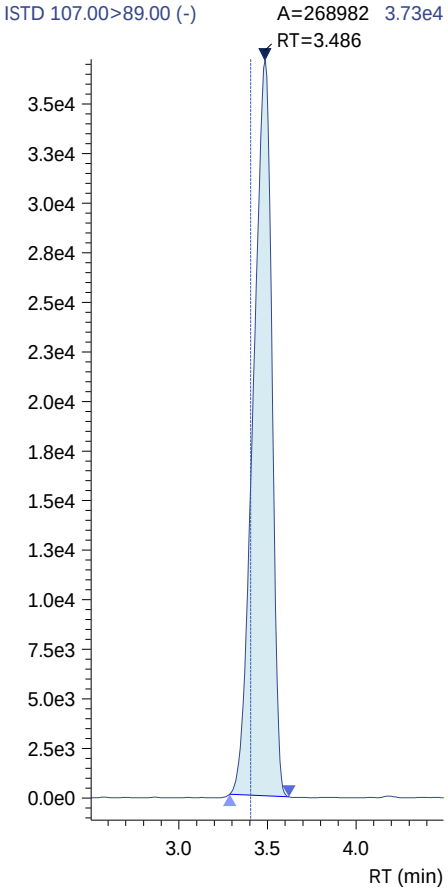
Conc 9.8483
R#1 26.33 (25.81)





Sodium Perchlorate-18O4_IS

Conc 1.0000



DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
US ARMY ENVIRONMENTAL COMMAND
2455 REYNOLDS ROAD
JOINT BASE SAN ANTONIO FORT SAM HOUSTON, TX 78234-7588

March 13, 2024

SUBJECT: Draft Final Ninth Annual Remedial Action Operation Report, LHAAP-50, Former Sump Water Tank, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, March 2024

Mr. Brian Follin
U.S. Environmental Protection Agency
1201 Elm Street, Suite 500
Dallas, TX 75270-2002

Dear Mr. Follin,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your review: (https://aptimcorp.sharepoint.com/sites/501032/regulators/SitePages/Home.aspx). 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 Environmental Protection Agency's (EPA) comments on the draft version received on December 17, 2023, and the Texas Commission on Environmental Quality's (TCEQ) comments received on December 7, 2023. Tables of responses to the EPA and TCEQ comments on the draft version are included with this draft final document. In accordance with the Federal Facility Agreement, this draft final will be considered final after 30 days without further comment.

The document was prepared by the Poarch Creek Indians, Government Services, LLC/Bhate Environmental Associates, Inc. 8(a) Joint Venture (PCI/Bhate JV) on behalf of the Army as part of PCI/Bhate JV's Performance Based Remediation contract for the facility. I ask that Zachary Beck, PCI/Bhate JV'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 (726) 999-0505, or by email at lena.j.sierocinski.civ@army.mil.

Sincerely,

Lena Sierocinski

Lena Sierocinski
LHAAP Environmental Support Manager
U.S. Army Environmental Command

Electronic copies furnished:
A. Palmie, TCEQ, Austin, TX
J. Reyes, USEPA Region 6, Dallas, TX
E. Duerkop, USFWS, Caddo Lake NWR, TX (1 hard copy and 1 CD)
C. Montoya USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
K. Russell, BRAC, Huntsville, AL
Z. Beck, Bhate, Lakewood, CO
P. Srivastav, APTIM, Houston, TX

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
US ARMY ENVIRONMENTAL COMMAND
2455 REYNOLDS ROAD
JOINT BASE SAN ANTONIO FORT SAM HOUSTON, TX 78234-7588

March 13, 2024

SUBJECT: Draft Final Ninth Annual Remedial Action Operation Report, LHAAP-50, Former Sump Water Tank, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, March 2024

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

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 review: (https://aptimcorp.sharepoint.com/sites/501032/regulators/SitePages/Home.aspx). 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 Environmental Protection Agency's (EPA) comments on the draft version received on December 17, 2023, and the Texas Commission on Environmental Quality's (TCEQ) comments received on December 7, 2023. Tables of responses to the EPA and TCEQ comments on the draft version are included with this draft final document. In accordance with the Federal Facility Agreement, this draft final will be considered final after 30 days without further comment.

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The point of contact for this action is the undersigned. I may be contacted at (726) 999-0505, or by email at lena.j.sierocinski.civ@army.mil.

Sincerely,

Lena Sierocinski

Lena Sierocinski
LHAAP Environmental Support Manager
U.S. Army Environmental Command

Electronic copies furnished:
B. Follin, USEPA Region 6, Dallas, TX
J. Reyes, USEPA Region 6, Dallas, TX
E. Duerkop, USFWS, Caddo Lake NWR, TX (1 hard copy and 1 CD)
C. Montoya USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
K. Russell, BRAC, Huntsville, AL
Z. Beck, Bhate, Lakewood, CO
P. Srivastav, APTIM, Houston, TX

Response to Comments on
Draft Ninth Annual Remedial Action Operation Report, LHAAP-50, Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas, October 2023
Document Date: 24 October 2023
Comment Date: 17 December 2023

Reviewers: Brian Follin - USEPA
Respondent: Lena Sierocinski - Army

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/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
1	Section 1.2, p. 1-2	1st paragraph, 2nd sentence	The word "performing" is misspelled as "preforming."	C	Concur. The bullet will be deleted, eliminating the word with the spelling error.	
2	Section 1.2, p. 1-3	2nd bullet, 1st sentence	The word "overtime" should be split into 2 words ("over time").	C	Concur. Due to comments from TCEQ, this sentence will be removed from the report to revise text back to the approved text from the Year 8 RA-O.	
3	Section 1.3, p. 1-4	1st paragraph, 2nd sentence	Fig. 2 should be cited at end of 2nd sentence.	C	Concur. Citation will be added for **Figure 2** at the end of the 2nd sentence in the 1st paragraph.	
4	Section 1.3, p. 1-4	1st paragraph, 6th sentence	"Prairie Goose Creek" should be "Goose Prairie Creek."	C	Concur. Due to comments from TCEQ, this sentence will be removed from the report in order to revise text back to the approved text from the Year 8 RA-O.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
5	Section 1.4, p. 1-5	4th paragraph, 2nd sentence	Sentence is somewhat misleading as currently constructed. Sentence should be revised slightly to indicate 60 ft was the depth at which the laterally extensive clay layer was 1st encountered, not that it was the 1st "unit" encountered at that depth.	C	Concur. Upon request of the TCEQ, the following sentence will be added from the Year 8 RA-O, "*While intermittent clay layers are present, no true aquiclude exists to prevent vertical communication between ground surface and approximately 60 feet bgs.*" – This will add clarity to the 2nd sentence in the 4th paragraph.	
6	Section 1.4, p. 1-5	4th paragraph, 2nd and 3rd sentences	The text "intermediate water-bearing zone well" should be "intermediate groundwater zone well" or "intermediate zone well."	C	Concur. Text will be revised accordingly (revised wording starts in 5th paragraph) and throughout the document where applicable.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
7	Section 1.4, p. 1-6	1st paragraph, 1st sentence	1) The word "conducted" should be "collected" — can't "conduct" groundwater data. 2) The text "the shallow water-bearing zone" should be revised to "shallow groundwater zone" or "shallow zone." 3) Recommend splitting sentence into 2 sentences—clarity/readability would be substantially improved by creating a new sentence using the part after "50WW20" describing groundwater flow. 4) Units of measure for hydraulic gradient should be in f**oo**t per foot, not f**ee**t per foot because gradient value is less than 1.	C	1) Concur. The word "conducted" will be corrected to "collected". 2) Concur. Text will be revised as requested. 3) Concur. The sentence will end after 50WW20, and the next sentence will begin with "*Groundwater flows*…" 4) Concur. Units will be corrected.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
8	Section 1.4, p. 1-6	1st paragraph, 2nd sentence	More appropriate to use "groundwater elevation" instead of "potentiometric surface elevation." A potentiometric surface is an imaginary surface constructed using groundwater elevations measured in various wells. Per the report, the hydraulic gradient was calculated using groundwater elevations measured in these 2 wells, not 2 locations without wells located on the potentiometric-surface map.	C	Concur. The text "potentiometric surface" will be replaced with "groundwater."	
9	Section 1.4, p. 1-6	2nd paragraph, 2nd sentence	The "in November 2019" text at the end of sentence is redundant because the sentence begins with "in November 2019."	C	Concur. The text "in November 2019" will be deleted from the sentence.	
10	Section 2.2.1, p. 2-2	1st paragraph, 1st sentence	1) Statement that the groundwater levels at the site varied "throughout the year" by the amounts described is misleading. The amount of variation for a given well throughout the year is unknown because water levels were not continuously measured/recorded. These values are simply the differences in groundwater elevations measured in the wells at 2 different times of year (October 2022 and May 2023). Given that, it could be stated that these measurements represent	C	1) Concur. The text will be revised to say, "*During the Year 9 RA-O sampling events, groundwater elevations were obtained from the 14 wells monitored during the October 2022 and May 2023 events and ranged from 176.06 to 179.72 feet below mean sea level (**Table 3**). The highest groundwater elevations were recorded in the May 2023 event*". 2) Concur. In the text "levels" will be deleted and replaced with "elevations". 3) Concur. See number 1 response.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
			the times of year when groundwater level elevations typically are the highest or lowest, if that happens to be the case. That info would provide the proper context for these reported elevation ranges. 2) Would be preferable (i.e., more specific) to use "groundwater elevations" instead of "groundwater levels." 3) Should indicate this range is for 14 wells with water-level measurements available for both measurement dates. 4) Would be helpful to indicate the May 2023 groundwater elevations were higher than all October 2022 elevations for the 14 wells in which a comparison could be made.		4) Concur. The following sentences will be added after the revised sentence in response 1, "*Groundwater elevations are typically higher in May than October due to more rainfall accumulating in May than October. The May 2023 groundwater elevations were higher than all October 2022 groundwater elevations for the 14 monitoring wells in which a comparison could be made*."	
11	Section 2.2.1, p. 2-2	1st paragraph, 2nd sentence	Would be more appropriate to describe groundwater flow as "generally northward" or "generally to the north" instead of "north" in this sentence because groundwater-flow direction within the LUC boundary is to the northeast, east-northeast, and northwest (east side).	C	Concur. The text "north" will be deleted and replaced with "generally to the north".	
12	Section 2.2.1, p. 2-2	1st paragraph, 4th sentence	The text "the saturated zone" at end of sentence should be changed to "the shallow zone."	C	Concur. The text "saturated" will be deleted and replaced with "shallow".	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
13	Section 2.2.2, p. 2-3	3rd paragraph, 3rd sentence	This sentence highlighting 1,1-DCE and 1,2-DCA MCL exceedances in various wells during the year 9 RAO is missing exceedances of MCLs for 2 COCs in well 50WW11: 1,1-DCE was detected at 22 micrograms per liter (µg/L) in the 10/11/22 sample, and 1,2-DCA was detected at a concentration of 25 µg /L in the same sample.	C	Concur. The text will be revised to: "*1,2-DCA and 1,1-DCE were detected above their respective MCLs at two wells (50WW11 and 50WW13) in October 2022 and at one well (50WW12) in May 2023*."	
14	Section 2.2.2, p. 2-3	4th and 5th paragraphs	Should discuss cis-1,2-DCE and vinyl chloride in these report sections as was done in the equivalent sections in all previous LHAAP-50 RAO reports. Importantly, there were MCL exceedances for cis-1,2-DCE.	C	Concur. The following sentence will be added to paragraph 3 to discuss VC concentrations, "*VC was not detected above its MCL (2 µg/L) in any of the monitoring wells sampled during either of the Year 3 post-ISB injections semiannual RA-O sampling events*." The following sentence will be added to paragraph 3, "*Cis-1,2-DCE was detected above its MCL at three wells (50WW05, 50WW08, and 50WW13) in October 2022 and at two wells (50WW05 and 50WW08) in May 2023*." The following sentence will be added to paragraph 4, "*Cis-1,2-DCE was detected above the MCL at 50WW05, 50WW08, and 50WW13. The maximum cis-1,2-DCE concentration*	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
					of 280 µg/L was detected at 50WW13." The following sentence will be added to paragraph 5, "*Cis-1,2-DCE was detected above the MCL at 50WW05 and 50WW08. The maximum cis-1,2-DCE concentration of 130 µg/L was detected at 50WW05*."	
15	Section 2.2.2, p. 2-3	4th paragraph, 2nd sentence	Missing 50WW11 exceedances. As was noted in comment #13, 1,1-DCE was detected at 22 µg/L in the 10/11/22 sample from well 50WW11, and 1,2-DCA was detected at a concentration of 25 µg /L in the same sample from the well.	C	Concur. The text in paragraph 4 will be revised to: "*The maximum 1,2-DCA concentration of 46 µg/L was detected at 50WW13 and the maximum 1,1-DCE concentration of 22 µg/L was detected at 50WW11*."	
16	Section 2.2.2, p. 2-4	1st paragraph, 1st complete sentence (begins with "The maximum perchlorate")	Should indicate this perchlorate concentration (84,500 µg/L) is for the duplicate sample (per table 4 and fig. 8).	C	Concur. The text "(duplicate sample)" will be added after "84,500 µg/L".	
17	Section 2.2.2, p. 2-4	1st paragraph, 2nd complete sentence (begins with "As previously stated")	1,2-DCA was detected at a slightly higher concentration in the duplicate sample (6.6 µg/L in the 5/25/23 sample). When describing the highest concentration for a given constituent/well, this document typically reports the duplicate sample concentration when it is higher than the regular sample (or both values in some cases).	C	Concur. The value will be corrected to the duplicate value and (duplicate sample) will be added after the value.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
18	Section 2.2.2, p. 2-4	2nd paragraph (begins with "Figures 9 and 10"), both sentences composing paragraph	Would be very helpful to the reader if these 2 sentences were relocated earlier in the section (after the 1st sentence in the 3rd paragraph on page 2-3).	C	Concur. Sentences will be moved to the 3rd paragraph.	
19	Section 2.3, p. 2-4	1st paragraph, 4th sentence	To improve clarity, the text "closest monitor well **in vicinity to** Goose Prairie Creek" should be changed/simplified to "closest monitoring well **near** Goose Prairie Creek."	C	Concur. The text will be revised as requested.	
20	Section 2.4, p. 2-4	1st paragraph, 3rd sentence	Perhaps worth noting in this sentence that retention of wells makes them available for groundwater-level measurements in addition to sampling. Additional groundwater elevation measurements help improve understanding of groundwater flow at the site and broader LHAAP-50 LUC area.	C	Concur. The text "groundwater-level measurements and…" will be added to the 3rd sentence.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
21	General comment on map figures		Text is very small on most map figures (well information and legend), and it is difficult to read on printed hardcopies. Map figures produced for previous LHAAP-50 RAO reports limited the map portions of the figs. mostly to the area within and immediately adjacent to the LUC area/boundary, thus eliminating much of the surrounding area that is shown in the figs. in this report. This approach allows for more spacing between well sites shown on the maps and thus, facilitates use of larger text for the ancillary information associated with the wells (and the text used in the legend).	C	Concur. The font size will be increased on all figures.	
22	Figure 4	Map portion of figure	Black well identifiers are nearly unreadable on printed hardcopy because blue background is too dark. Suggest lightening the blue as well as increasing size of text (see previous comment).	C	Concur. The font size will be increased on figures and the blue halo around the well IDs will be lightened.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
23	Figure 5	Map portion of figure	Strongly recommend adding one more groundwater-flow direction arrow to the LUC area (fig. 5; potentiometric- surface map for October 2022). In particular, strongly recommend locating the arrow close to and to left of well 50WW23, which would be located slightly to the right of the midway point between the 2 current flow arrows. Northward groundwater flow in this part of the LUC area differs from the northward groundwater flow in the eastern and western portions of the area covered by the potentiometric-surface map. **Importantly**, this flow arrow then would need to be added to all other maps that include groundwater-flow direction arrows.	C	Concur. An additional groundwater flow arrow will be added to the applicable figures.	
24	Sections 3 onward	General editorial comment	These report sections would benefit substantially from additional editorial attention. In particular, many sentences in these sections are awkwardly/poorly constructed. This creates a lot of additional work for the reader trying to understand the information and interpretations presented therein.	C	Concur. The primary author will read through Section 3 onward and make edits when appropriate. The document will then go back through a quality control review.	
25	Section 3, p. 3-1	1st paragraph, 5th sentence	As currently constructed, the sentence indicates the year 8 RAO report "ceased" DHC analysis. Of course, this is impossible, so the sentence needs to be revised.	C	Concur. The sentence will be revised to "*due to the decision in the Year 8 RA-O Report to discontinue DHC analysis…*"	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
26	Section 3, p. 3-1	1st paragraph, last sentence	Need to cite two February 2020 report sections at end of sentence—TOC is discussed in section 3.2 of the cited report. Thus, the last parenthetical of the sentence should be "(discussed in sections 2.2.3 and 3.2").	C	Concur. The text will be revised as suggested. Note that the citation is for February 2023; not February 2020.	
27	Section 3, p. 3-1	2nd paragraph, 1st sentence	"PCL/MCL" should be changed to "PCLs/MCLs" because the word "COCs" earlier in the sentence implies reference to more than one COC (and thus, more than one PCL or MCL).	C	Concur. The acronyms will be made plural.	
28	Section 3, p. 3-1	2nd paragraph, 2nd sentence	The word "the" is missing before "upper shallow zone"	C	Concur. The word "the" will be added before "upper shallow zone".	
29	Section 3.1.1, p. 3-1	2nd paragraph, 1st sentence	The text "above their PCL/MCL" should be changed to "above PCLs/MCLs."	C	Concur. The text will be revised as requested.	
30	Section 3.1.1, p. 3-2	1st paragraph, 1st complete sentence	The text "were calculated" at end of sentence should be relocated between "trends" and "using the" (i.e., ", trends were calculated using the…").	C	Concur. The text "were calculated" will be moved between "trends" and "using".	
31	Section 3.1.1, p. 3-2	2nd paragraph, 5th sentence	Recommend revising "COC that contained a concentration above…" to "COC with a concentration above...".	C	Concur. The text "that contained" will be deleted and replaced with "with".	
32	Section 3.1.1, p. 3-2	2nd paragraph, 6th sentence	Sentence is partially incorrect — table 8 and appendix E do not contain any "probably decreasing" COC trends for the year 9 RAO.	C	Concur. The text "probably decreasing" will be removed from the sentence.	
33	Section 3.1.1.1, p. 3-2	1st paragraph, 1st sentence	There is an extra period at end of sentence.	C	Concur. The additional period will be deleted.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
34	Section 3.1.1.1, p. 3-2	1st paragraph, 2nd sentence	Sentence should be revised to make it clear this is the lowest concentration observed since the May 2019 baseline (TCE = 110 µg/L in baseline sample).	C	Concur. The text "to date" will be replaced with "since the May 2019 baseline TCE concentration (110 µg/L)."	
35	Section 3.1.1.1, p. 3-2	2nd paragraph, last sentence	1) Believe "definite" was meant to be "direct" (i.e., "direct correlation")? 2) Disagree with conclusion that there does not seem to be any direct or inverse correlations between COC concentrations and groundwater elevations for all or parts of the post-ISB time period. Based on fig. 11a, TCE concentrations and groundwater elevations appear to be inversely correlated for 7 of 10 samples, and cis-1,2-DCE appears to be inversely correlated for 6 of 10 samples.	1) C 2) C	1) Concur. Per the second comment, the sentence containing this word will be deleted. 2) Concur. The last sentence will be deleted, and the following will be added, "*Based on **Figure 11a**, for all or part of the post-ISB period, TCE concentrations and groundwater elevations appear to be inversely correlated for 7 of 10 samples, and cis-1,2-DCE appears to be inversely correlated for 6 of 10 samples*."	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
36	Section 3.1.1.2, p. 3-3	1st paragraph, 1st sentence	Disagree with statement that TCE and PCE concentrations in 50WW06 fluctuated above and below the MCL/PCL in years 1 and 2 as currently written. Believe it mischaracterizes a substantial part of the post-ISB period during which these COC concentrations were consistently below the MCL/PCL (for 5 quarterly sampling events in a row: 2nd two quarters for year 1 sampling and 1st three quarters for year 2 sampling [1/28/21 to 1/6/22]) before increasing to concentrations above the MCL/PCL in the year 2 4th quarter samples (collected 4/6/22).	C	Concur. The statement will be removed. Text will be revised to "*TCE and perchlorate concentrations remained below their respective MCL/PCL during the last two quarters of Year 1 post ISB monitoring and the first three quarters of Year 2 post ISB monitoring before increasing to concentrations above their respective MCL/PCL during the fourth quarter of Year 2 post ISB monitoring (April 2022)*."	
37	Section 3.1.1.2, p. 3-3	2nd paragraph, 4th sentence	Fig. 11b indicates perchlorate concentrations/fluctuations "track/parallel" TCE concentrations/fluctuations, so sentence should be modified to indicate both TCE and perchlorate concentrations show an inverse correlation with groundwater elevations for parts of the period of record.	C	Concur. The text will be revised to, "*There is an inverse correlation between groundwater elevations and both TCE and perchlorate concentrations for parts of the period of record*."	
38	Section 3.1.1.2, p. 3-3	2nd paragraph, 4th sentence	Use of the word "significant" should be reserved for discussions of statistics or statistical results. "Substantial" would be an appropriate replacement.	C	Concur. The word "significant" will be deleted and the text will be revised as shown in the comment above.	
39	Section 3.1.1.3, p. 3-3	1st paragraph, 1st sentence	There is an extra space before "MCL".	C	Concur. The extra space will be deleted.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
40	Section 3.1.1.3, p. 3-3	1st paragraph, 4th sentence	Sentence needs to be revised — current sentence construction indicates the "Mann-Kendall trend analysis" is significantly increasing, not the TCE concentrations in well 50WW08.	C	Concur. The text will be revised to: "*However, the Mann-Kendall trend analysis shows that TCE concentration is significantly increasing*".	
41	Section 3.1.1.3, p. 3-3	1st paragraph, 5th sentence	Disagree with statement that TCE concentrations do not seem to be correlated to the change in groundwater elevations. Fig. 11c indicates post-ISB TCE concentrations were directly correlated with groundwater elevations for a substantial part of the post-ISB period. Notably, it indicates TCE concentrations were directly correlated with groundwater elevations for the last 3 quarterly samples for year 1 sampling and first 3 quarterly samples for year 2 sampling (6 quarterly sampling events in a row).	C	Concur. The sentence will be revised to: "*The increases and decreases in TCE concentrations are directly correlated to changes in groundwater elevations (**Figure 11c**).*"	
42	Section 3.1.1.3, p. 3-3	1st paragraph, last sentence	Comma between "50WW08" and "to the west is dry" is extraneous.	C	Concur. The comma will be removed. Note that the text refers to 50WW02; not 50WW08.	
43	Section 3.1.1.3, p. 3-3	2nd paragraph, 3rd sentence	A space is missing between the words "second" and "year 9."	C	Concur. A space will be added between the words.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
44	Section 3.1.1.3, p. 3-3	2nd paragraph, last sentence	The 2nd part of the sentence indicates post-ISB perchlorate concentrations are inversely correlated with groundwater elevations. This is only partially true, as 6 of 10 (60%) post-ISB sample concentrations appear to be inversely correlated with groundwater elevations. Given that, it is important to note that (1) 5 of 6 "inverse correlations" occurred in a row/sequentially (last 3 quarterly sampling events for year 1 sampling and first sample for year 2 sampling); and (2) these consecutive inverse correlations coincide with much of the period of time when TCE concentrations were consistently inversely correlated with groundwater elevations.	E	Clarification. Following further evaluation of **Figure 11c**, the following seems to be the most accurate way to describe the trend: "*From early 2014 to November 2019, the increase and decrease of perchlorate concentrations seem to generally be directly correlated with changes in groundwater elevations. Post ISB, the fluctuation in perchlorate concentrations based on groundwater elevations was diminished due to ongoing in situ treatment observed by groundwater sampling at 50WW08. Based on the Year 9 RA-O semiannual sampling events, the initial correlation with groundwater elevations is noted and may be due to diminished treatment of the aquifer near monitoring well 50WW08.*"	
45	Section 3.1.1.3, p. 3-3	3rd paragraph, 1st sentence	The comma after "sampling event" is extraneous.	C	Concur. The comma following "sampling event" will be deleted.	
46	Section 3.1.1.3, p. 3-4	1st paragraph, last sentence	Should clarify if the conclusion "limited biodegradation is occurring" is referring only to the area near 50WW08 or to the entire extent of the plume(s).	C	Concur. The sentence will be made clear to state that it is occurring in the area surrounding 50WW08.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
47	Section 3.1.1.4, p. 3-4	1st paragraph, 1st sentence	1) Need to indicate information in this topic sentence (and 1st sentence in this report) is for well 50WW09. 2) Sentence is awkwardly constructed, and there is substantial overlap/redundancy with the next sentence. Recommend combining these 2 sentences.	C	1) Concur. The sentence will be revised to indicate 50WW09 as the subject. 2) Concur. The sentences will be joined together to eliminate redundancy as follows: "*TCE was detected above the MCL in monitoring well 50WW09 during both Year 9 RA-O semiannual sampling events (October 2022 and May 2023) at 5.8 µg/L and 11 µg/L, respectively*."	
48	Section 3.1.1.4, p. 3-4	2nd part of 1st paragraph	Unclear why 2nd part of this paragraph transitions to discussion of cis-1,2-DCE before TCE discussion is concluded (as indicated in next paragraph). Recommend relocating this material after the next paragraph. Additionally, the 3 sentences in this paragraph discussing cis-1,2-DCE are awkwardly constructed and should be revised to improve clarity and readability.	C	Concur. The paragraph will be reorganized into three paragraphs to discuss TCE, cis-1,2-DCE, and trends for both COCs.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
49	Section 3.1.1.4, p. 3-4	2nd paragraph, 1st sentence	As constructed, the beginning of the sentence can be interpreted to indicate "concentrations" were detected, not the constituent (TCE) itself. This editorial issue occurs frequently throughout the report (e.g., 1st sentence of next report section [3.1.1.5]). Could revise sentence to something such as the following to fix this problem here and reduce redundancy: "TCE was detected in well 50WW09 at concentrations of 5.8 and 11 µg/L during the first and second year 9 RAO semiannual sampling events, respectively." (or something similar).	C	Concur. The text will be revised as follows: "*TCE was detected above the MCL in monitoring well 50WW09 during both Year 9 RA-O semiannual sampling events (October 2022 and May 2023) at 5.8 µg/L and 11 µg/L, respectively*."	
50	Section 3.1.1.4, p. 3-4	2nd paragraph, last 2 sentences	Regardless of what is stated in these 2 sentences, the relation between the COC (TCE **and** cis-1,2-DCE) concentrations and groundwater elevations for the 4 post-ISB samples from well 50WW09 is clear — fig. 11d indicates concentrations of both COCs were inversely correlated with groundwater elevations for the first 2 samples and directly correlated for the second 2 samples. Should revise these sentences accordingly.	C	Concur. While perhaps true, the text will be revised to reflect the trend more correctly in consideration of the ISB treatment as follows: "***Figure 11d*** *indicates that the fluctuations of COC concentrations (TCE and cis-1,2-DCE) and changes in groundwater elevations were inversely correlated prior to the injections. However, following the ISB injections, the fluctuations of COC concentrations generally correlated with groundwater elevations. If the same trend continues in the Year 10 RA-O, the ISB may have stalled or reduced in effectiveness."*	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
51	Section 3.1.1.5, p. 3-4	1st paragraph, 3rd sentence	The word "Concentrations" should be singular because the sentence is referencing a single concentration value. This "pluralization issue" occurs throughout the report.	C	Concur. Concentrations will be made singular in this instance and throughout the report where it is necessary.	
52	Section 3.1.1.6, p. 3-4	3rd paragraph, 1st sentence	Sentence construction is very awkward and should be revised to improve clarity and readability.	C	Concur. Sentence will be revised to ***"Figure 11f** shows that increases and decreases of COC concentrations at 50WW12 are directly correlated to changes in groundwater elevation during the Year 3 post-ISB injections RA-O."*	
53	Section 3.1.1.6, p. 3-4	3rd paragraph, 2nd sentence	Sentence states that the fact that high perchlorate concentrations in well 50WW12 are directly correlated with seasonally elevated groundwater elevations provides evidence of possible "residual source mass" near the well, but no discussion is provided to indicate how/why this might be the case (beyond what is briefly described in the next sentence). Additionally, it should be noted that the same pattern applies to the other COCs shown on fig. 11f—does that provide evidence of potential residual source mass for TCE as well?	C	Concur, The 3rd paragraph will be revised to: "*The relatively high perchlorate and chlorinated volatile organic compound concentrations, with seasonal peaks during times with elevated groundwater levels, may suggest that residual source mass is present near this well. This direct correlation has been consistent for perchlorate and TCE since August 2013 and for 1,1-DCE and 1,2-DCA since May 2016*."	
54	Section 3.1.1.7, p. 3-6	2nd paragraph, 1st sentence	A hyphen is missing between "1, 2" and "DCA" near beginning of sentence.	C	Concur. A hyphen will be added between "1, 2" and "DCA".	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
55	Section 3.1.1.7, p. 3-6	2nd paragraph, 3rd sentence	A hyphen is missing between "Cis" and "1,2-DCE" at beginning of sentence. Additionally, the "aa" in the later part of the sentence should be "an."	C	Concur. A hyphen will be added between "Cis" and "1,2-DCE"and "aa" will be changed to "an".	
56	Section 3.1.1.7, p. 3-6	3rd paragraph, both sentences composing paragraph	The word "indirect" in the 1st sentence should be "inverse." Additionally, both sentences are unclear and should be revised to improve clarity and readability. Perhaps the 1st sentence could be something such as the following: "Figure 11g indicates post-ISB COC concentrations measured in well 50WW13 were mostly inversely correlated with groundwater elevations" (or something similar). The next sentence should be revised because it is incorrect, as is supported by the conclusion made in the previous sentence. The conclusion that concentrations were inversely correlated with groundwater elevations indicates COC concentrations typically were highest when groundwater elevations were lowest, and lowest when groundwater elevations were highest. Additionally, once again it is stated that this provides evidence in support of "residual source mass" near a well without providing any discussion/explanation.	C	Concur. The text "indirect" will be changed to "inverse". The first sentence will be revised as suggested. Since the sentence was incorrect and the statement about a residual source mass being present was based on the incorrect statement, the sentences will be removed from the paragraph entirely.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
57	Section 3.1.1.8, p. 3-6	1st paragraph, 1st sentence	Additional text is needed after "and then" and before "20." Believe "decreased further to" or something similar would work. However, a better option would be to revise this sentence to provide this information in a clearer manner.	C	Concur. Please see comment number 58 below for this revision.	
58	Section 3.1.1.8, p. 3-6	1st paragraph, 2nd and 3rd sentences	The 2nd sentence states that TCE concentrations have decreased overall since 2013, and then the next sentence notes that the Mann-Kendall analysis indicated a stable TCE concentration trend for TCE in well 50WW14. This comparison should be qualified/put in context by noting the Mann-Kendall trend analysis was for a different (i.e., post-ISB) time period that is much shorter than for the entire period of record (i.e., all concentration data since 2013).	C	Concur. The paragraph will be revised to: "*TCE was the only COC detected in 50WW14 above its MCL during both Year 9 RA-O semiannual sampling events at 33 µg/L (October 2022) and 20 µg/L (May 2023). The Mann-Kendall analysis for TCE concentration at 50WW14 indicates a stable trend based on sampling data from November 2019 to May 2023. However, the TCE concentration at 50WW14 has decreased overall from the 2013 baseline sampling event (93.8 µg/L).*"	
59	Section 3.1.1.8, p. 3-6	2nd paragraph, 3rd sentence	This sentence incorrectly states there was no correlation between groundwater elevations and TCE concentrations in well 50WW14 during 2020 and 2021. Fig. 11h clearly shows that TCE concentrations were inversely correlated with groundwater elevations during 2020 and 2021 (all 6 quarterly samples collected during this timeframe).	C	Concur. The sentence will be revised to: "*During the post-ISB time period, TCE concentrations were inversely correlated with groundwater elevations for 7 out of the 10 sampling events*."	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
60	Section 3.1.1.8, p. 3-6	2nd paragraph, last sentence	This sentence is only partially correct by stating there was a direct correlation between groundwater elevations and TCE concentrations in well 50WW14 during the year 9 RAO monitoring period. Fig. 11h clearly indicates there was a direct correlation for the 1st sampling event (33 µg/L, sample collected 10/22) and an indirect correlation for the 2nd sampling event (20 µg/L, sample collected 5/23). Looking at the entire post-ISB time period, concentrations were inversely correlated with groundwater elevations much more frequently (7 of 10 samples) than directly correlated with groundwater elevations.	C	Concur. A sentence will be added to specify the post-ISB three sampling periods show a direct correlation.	
61	Section 3.1.1.9, p. 3-6	1st paragraph, 1st sentence	Because the report discusses redox conditions in relation to groundwater concentrations, strongly suggest replacing the word "reducing" with "decreasing." Note this comment applies to other locations in report where this word is used.	C	Concur. The word "reducing" will be replaced with the word "decreasing" throughout the report where applicable	
62	Section 3.1.1.9, p. 3-6	1st paragraph, 3rd sentence	Should note in sentence that concentration of 6.1 µg/L measured in May 2023 sample exceeded the MCL.	C	Concur. The parenthetical "(above the MCL)" will be added after the concentration value in this sentence.	

63	Section 3.1.2, p. 3-7	1st and 2nd paragraphs and 1st sentence of 1st paragraph	1) The word "reducing" should be changed to "reduced" (see comment #61). 2) Agree partially with conclusions in sentence. There are multiple lines of evidence indicating that concentrations have been reduced (and have possibly "plateaued") in the western treatment area (even if not to desired levels), but the evidence does not support this conclusion for the eastern treatment area near well 50WW12, especially when the entire post-ISB timeframe is considered. For example, the trend analysis results ("no trend" for all tested COCs; table 8) and plot of COC concentrations with time (fig. 11f) for the well clearly indicate concentrations are similar to or higher than pre-ISB concentrations (and rarely, lower), depending upon the post-ISB sample examined. Thus, believe it would be more appropriate to indicate evidence supporting the ISB remedy has reduced contaminant concentrations is mostly limited to (or evidence is stronger for) the western ISB injection/treatment area.	C	1) Concur. Based on comment number 61, the word "reducing" will be changed to "decreased". 2) Concur. The paragraph will be revised to: "*indicates that the ISB remedy has not effectively decreased contaminant concentrations within the ISB treatment area as expected (**Table 8**). Currently, stable conditions exist across most of the site indicating the ISB remedy is reaching a treatment plateau. However, evidence does not support this conclusion for the eastern treatment area near well 50WW12 as the trend analysis results for this well are "no trend" for all COCs tested (**Table 8**) and **Figure 11f** indicates that COC concentrations are similar to or higher than pre-ISB concentrations. Additionally, evaluation of treatment effectiveness in this area is limited because of the absence of monitoring wells immediately downgradient*." 3) Concur. Please see response 2 above for first sentence revision. It will be revised as such based on TCEQ comment.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
			Additionally, evaluation of treatment effectiveness in this area is hampered because of the absence of additional wells in the eastern treatment area, including downgradient areas located between the well and downgradient monitoring wells without detections. 3) Finally, beginning of sentence should be revised to improve clarity and readability. It is clear the authors meant to indicate/infer that "overall" (or collectively), the Mann-Kendall trend test results led to the conclusion that the ISB remedy has reduced COC concentrations in the treatment area. However, this conclusion is not conveyed clearly given the current sentence construction.			

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
64	Section 3.1.2, p. 3-7	2nd paragraph, last sentence	As was noted in an earlier comment and is applicable to this sentence, should clarify if the conclusion "limited biodegradation is occurring" is referring only to the area near 50WW08 or to the entire extent (or partial extent) of the LHAAP-50 plume(s).	C	Concur. The sentence will be revised to indicate that the biodegradation is occurring around 50WW08 as follows: "Additionally, increasing contaminant concentrations on the upgradient edge of the plume indicate that limited biodegradation isccurringg in the area surrounding 50WW08.".	
65	Section 3.1.3, p. 3-7	1st paragraph, 3rd sentence	The word "plume" near beginning of sentence should be plural.	C	Concur. The word "plume" will be made plural.	
66	Section 3.1.3, p. 3-7	1st paragraph, last sentence	The second part of sentence is incorrect because cis-1,2-DCE plume extent is not shown on fig. 3.	C	Concur. The text "cis-1,2-DCE" will be removed from the sentence.	
67	Section 3.1.3.2, p. 3-8	1st paragraph, 3rd sentence	Some extraneous words need removed in the italicized part of the sentence: "…encompasses *the same all the same* wells except for …".	C	Concur. The text "the same all" will be removed from the sentence.	
68	Section 3.1.3.2, p. 3-8	1st paragraph, 5th sentence	Need to add "October 2022" before "TCE plume (**Figure 9**)." (i.e., "October 2022 TCE plume…).	C	Concur. The text "October 2022" will be added to the sentence.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
69	Section 3.1.3.2, p. 3-8	1st paragraph, 5th sentence	Suggest revising last sentence to something such as the following: "Additionally, monitoring wells 50WW08 and 50WW09 are also located very close to the currently *inferred/interpreted/drawn* perchlorate plume boundary (**Figure 10**)." Or something similar. Any one of the italicized words could be used here (or something similar) to convey the subjective nature of these interpreted plume boundaries between wells with detections and downgradient wells without detections. The same COC concentration data and potentiometric-surface maps could be used to create scientifically defensible plume maps with boundaries/borders that differ from those created for this report.	C	Concur. Sentence will be revised as suggested.	
70	Section 3.1.3.3, p. 3-8	2nd paragraph, 1st sentence	Trend comparison explanation in this sentence is misleading. The difference between the year 8 and 9 RA-O trend results are differing trend analysis periods, not a change in the trend for the year in which the RA-O was conducted. Thus, need to revise sentence construction to indicate the trend periods analyzed for each of these RA-Os differed, and the trend analysis results differed for the periods analyzed.	C	Concur. Sentence will be revised to, "*…showed a probably increasing trend in TCE concentration when analyzed from 2019 (baseline event) through the Year 8 RA-O but showed no trend when analyzed through the Year 9 RA-O*."	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
71	Section 3.1.3.3, p. 3-8	2nd paragraph, 2nd sentence	Sentence mischaracterizes year 8 RA-O report statement regarding plume movement towards 50WW12. Importantly, the year 8 report indicated the TCE plume **core** might be migrating toward well 50WW12, not the plume itself because the plume was already at the well.	C	Concur. The word "core" will be added to the sentence for clarity.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
72	Section 3.1.3.3, p. 3-8	2nd paragraph, 2nd and 3rd sentences	The "no trend" result for TCE for the year 9 RA-O versus the "probably increasing" result for the year 8 RA-O is not conclusive proof TCE concentrations in well 50WW12 are stable or no longer increasing. Caution should be exercised with this interpretation because this change in trend results for the 2 different trend analysis periods (year 8 vs year 9) is due, in part, to the large variation (i.e., "swing") in TCE concentrations since the last year 8 RA-O sample (1,400 µg/L in April 2022 [last year 8 sample], 180 µg/L in October 2022, and 1,100 µg/L in May 2023 µg/L). This is easy to see in the COC time-series plot (fig. 11f), especially if one were to visualize a "trend line" through the baseline and post-ISB TCE concentration values. Additionally, the most recent post-ISB concentration (1,100 µg/L) is substantially higher (almost 3x) than the baseline concentration (280 µg/L) (possibly indicating migration of the plume core to the well?).	C	Concur. After reviewing COC concentration trends, paragraph will be revised to: "*50WW12, the farthest downgradient well within the TCE plume, showed a probably increasing trend in TCE concentration when analyzed from 2019 (baseline event) through the Year 8 RA-O. The Year 8 RA-O report stated that the TCE plume core might be migrating towards 50WW12 because of the probably increasing TCE concentration trend and seasonal fluctuations at 50WW12 (Bhate, February 2023). A clear overall increasing trend in TCE concentration at 50WW12 from 2013 (non-detect) (**Table 5**) to the most recent post-ISB TCE concentration from May 2023 (1,100 µg/L) (**Table 4**) is shown on **Figure 11f**. Additionally the May 2023 TCE concentration is more than 3 times the 2019 baseline concentration of 280 µg/L. However, Mann Kendall analysis completed for TCE concentrations detected at 50WW12 from 2019 through Year 9 RA-O indicated no statistical trend for TCE concentrations. As discussed in Section 3.1.1.6, there appears to be a direct correlation between groundwater elevations and detected TCE concentrations at 50WW12*."	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
73	Section 3.1.3.3, p. 3-8	2nd paragraph, 3rd sentence	The year 8 RA-O trend result for TCE in 50WW12 was "probably increasing," not "increasing."	C	Concur. This sentence will be revised to state, "probably increasing".	
74	Section 3.1.3.3, p. 3-8	2nd paragraph, last sentence	At beginning of sentence, "S**ection 3.1.1**" should be corrected to "S**ection 3.1.1.6**".	C	Concur. The referenced section will be corrected.	
75	Section 3.1.3.3, p. 3-8	3rd paragraph	Awkwardly constructed paragraph. Perhaps something such as the following: "Well 50WW08, an upper shallow zone monitoring well located within the LHAAP-50 boundary and near the western TCE plume border, was the only monitoring well for which a significant increasing trend was determined for TCE and cis-1,2-DCE (**Table 8**). The presence of cis-1,2-DCE provides evidence of TCE degradation in this portion of the TCE plume, and geochemical evidence indicates the degradation is likely *xxx*otic in nature (see **Section 3.2**). Well 50WW09, completed in the lower shallow zone, is located close to well 50WW08. TCE and cis-1,2-DCE concentrations measured in well 50WW9 during the Year 9 RA-O were substantially lower than concentrations measured in well 50WW08, and no significant statistical trend was determined for either COC in the well. The higher concentrations measured in well 50WW08 (TCE=720 and 650 µg/L; cis-1,2-DCE=73 and 85 µg/L) in	C	Concur. The paragraph will be revised as suggested.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
			comparison with well 50WW09 (TCE=5.8 and 11 µg/L; cis-1,2-DCE=0.54 and 1.1 µg/L; **Table 4**) indicates concentrations of these VOCs decrease with depth in the shallow zone at this location."			
76	Section 3.1.3.3, p. 3-9	1st paragraph, first 2 sentences in paragraph	1) Description of well 50WW13 location as "center of the plume" is not correct—figs. 9 and 10 show that the well is located more in the east-central part of the TCE plume. 2) Both sentences are awkwardly constructed. Consider revising to something such as the following: "Well 50WW13, located in the east-central portion of the TCE plume (**Figure 2**), has historically had the highest TCE concentrations measured at LHAAP-50. That pattern continued to be the case for one of the year 9 RA-O sampling events (October 2020), when TCE was measured in the well at a concentration of 8,600 µg/L (**Table 4** and **Figure 9**). No significant statistical trend was determined for any of the 5 COCs in the well for which trends were	C	1) Concur. The sentence will be revised to state "east-central" instead of "center". 2) Concur. The paragraph will be revised as suggested.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
			evaluated, including TCE; all COC trends were determined to be "stable" (**Table 8**)."			
77	Section 3.1.3.3, p. 3-9	1st paragraph, last sentence	Believe this type of statement should be modified on the basis of which portion of the plume is examined/being discussed. As noted in earlier comments, plume stability and trends in COC concentrations is less clear in the eastern portion of the plume (e.g., near 50WW12).	C	Concur. The sentence will be revised to include "aside from the eastern area surrounding 50WW12."	
78	Section 3.1.3.4, p. 3-9	3rd paragraph, 1st sentence	"Downgradient" should be one word.	C	Concur. The space will be removed between the words.	
79	Section 3.1.3.4, p. 3-9	3rd paragraph, 3rd sentence	As noted in earlier comment, the word "reduced" should be replaced with "decreased."	C	Concur. The word "reduced" will be changed to "decreased".	
80	Section 3.1.4, p. 3-10	3rd paragraph, 1st and last sentences	Statement that "Mann-Kendall trends are being "skewed by seasonal fluctuations in groundwater levels" is somewhat misleading/unclear and awkwardly phrased. Trends are not being "skewed" by groundwater-elevation fluctuations—a better description would be that it is the COC concentrations in the wells that are changing/fluctuating in response to the inter- and intra-annual groundwater-elevation changes (as shown in the COC time-series plots provided in fig. 13). The trends determined for individual wells collectively reflect these elevation changes over the period of time	C	Concur. The first and last sentences will be revised as suggested and the additional note will be added at the end of the paragraph. The possibility of an increase in COC concentrations after an injection event will also be discussed after the note.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
			selected for statistical (i.e., trend) analysis (trend analysis period). Consequently, this and the last sentence of the paragraph should be revised. Additionally, note that the groundwater elevation changes may reflect longer-term changes in addition to shorter-term seasonal changes (based on groundwater levels/elevations at this and other sites on LHAAP)—this is why the words "inter- and intra-annual" were used instead of "seasonally" or "seasonal" in the sentence before last.			
81	Sections 3.2.1 and 3.2.2		Should identify relevant report tables containing supporting DO and ORP data cited and discussed in these sections—tables containing these data are not currently cited in these 2 report sections, unlike the other geochemical parameter subsections in section 3.2.	C	Concur. A reference to **Table 4** will be added to the sections where applicable.	
82	Section 3.2.1, p. 3-11	1st paragraph, 4th sentence	For this sentence, recommend replacing the word "in" with "during," adding a comma after "3.76 mg/L", replacing the word "with" with "and", and adding the word "were" before "during the first semiannual."	C	Concur. The word "in" will be replaced with "during"; a comma will be added after "3.76 mg/L"; "with" will be replaced with "and", and added "were" to sentence 4 before "during the first semiannual".	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
83	Section 3.2.1, p. 3-11	1st paragraph, 5th and last sentences	Awkwardly constructed sentences. Recommend combining these two sentences into one, such as the following sentence (or something similar): "During the first year 9 RA-O semiannual sampling event, 60 percent of wells in the treatment area and 50 percent of wells outside the treatment area had measured DO concentrations favorable (DO<0.5 mg/L) to biotic reductive dechlorination (**Table X**)."	C	Concur. Sentence will be revised as suggested, but slightly altered since it was incorrect as written. "*During the first year 9 RA-O semiannual sampling event, all wells had measured DO concentrations (DO<0.5 mg/L) favorable to biotic reductive dechlorination. During the second year 9 RA-O semiannual sampling event, 60 % of wells in the treatment area and 50 % of wells outside the treatment area had measured DO concentrations favorable to biotic reductive dechlorination (**Table 4**)*."	
84	Section 3.2.1, p. 3-11	1st paragraph, last sentence	The word "are" should be changed to "were" (i.e., "… outside the treatment area **were** conducive to…").	C	Concur with this revision. However, the sentence referenced will be replaced with new text per the response to comment No. 83.	
85	Section 3.2.2, p. 3-11	1st paragraph, 2nd sentence	Suggest revising part of the sentence: "ORP values less than 50 millivolts (mV) are indicative of anaerobic conditions and are …".	C	Concur. Sentence will be revised as suggested.	
86	Section 3.2.2, p. 3-11	Entire paragraph/section	May 2023 ORP results (2nd year 9 RA-O sampling event) are discussed in this paragraph, but the corresponding October 2022 results (1st sampling event) are not discussed.	C	Concur. Discussion will be added regarding the October 2022 ORP levels: "*During the October 2022 sampling event of the Year 9 RA-O, ORP was above 50 mV at all wells in the treatment area except 50WW13 (38 mV) and 50WW14 (-39 mV). Outside the treatment area, ORP was above 50 mV for all wells except 50WW05 (20 mV), 50WW15 (23 mV), and 50WW29 (34 mV)*."	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
87	Section 3.2.3, p. 3-12	1st paragraph, 3rd sentence	Should modify the sentence to indicate these low (<0.1 mg/L) nitrate concentrations were found in all 5 treatment area wells (and during both sampling events).	C	Concur. The text will be revised to "*Specifically, all five wells within the treatment area indicated nitrate levels at <0.1 mg/L during both sampling events (**Table 4**). Therefore, nitrate levels indicate that nitrate-reducing processes will not inhibit anerobic biodegradation of perchlorate or chlorinated ethenes."*	
88	Section 3.2.4, p. 3-12	1st paragraph, 2nd to last sentence	Sulfate concentration range is incorrect—a higher concentration of 616 mg/L was measured in 50WW12 on 5/25/23.	C	Concur. Range will be corrected.	
89	Section 3.2.5, p. 3-12	1st paragraph, 3rd sentence	"µg/L" is missing after "0.821".	C	Concur. The text will be revised by adding "µg/L".	
90	Section 3.2.5, p. 3-12	1st paragraph, 4th sentence	Statement that second highest concentration of methane measured during year 9 RA-O was 49.1 µg/L (in well 50WW06) is incorrect—a concentration of 9,860 µg/L was measured in 50WW12 during the 1st sampling event (October 2022). Note that this indicates the highest and second-highest methane concentrations measured during year 9 RA-O were from the same well (50WW12).	C	Concur. The text in Section 3.2.5 will be corrected.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
91	Section 3.2.5, p. 3-12	1st paragraph, last sentence	Awkwardly constructed sentence. Additionally, note that the word "performing" is misspelled. Furthermore, note that description of methanogenesis as a result of microorganisms "performing methanogenesis" is a mischaracterization of this biotic degradation processes.	C, X	Concur. Sentence will be removed because it does not add value since a prior sentence states that methanogenesis is occurring in 50WW12.	
92	Section 3.2.6, p. 3-13	1st paragraph, 1st complete sentence	Should indicate TOC concentrations discussed in this paragraph are for wells located in the treatment zone.	C	Concur. The text in Section 3.2.6 will be revised to indicate the wells within the treatment area.	
93	Section 3.2.7, p. 3-13	1st paragraph, 3rd, 5th, and last 2 sentences	Major error in reported pH range—the 4.48 value is actually the specific conductance value for well 50WW12, not the pH value. The pH range in the report should be 6.37 (well 50WW06, May 2023) to 7.38 standard units (well 50WW13, October 2022). Thus, need to correct multiple sentences in this paragraph accordingly.	C	Concur. The text in Section 3.2.7 will be revised to the accurate data and supporting statements.	
94	Section 3.2.8, p. 3-13	1st paragraph, 4th sentence	Need to add "J" after 103 (value is "J qualified") and a comma after "50WW13" and "respectively" (i.e., "… and 50WW13**,** respectively**,** during the May 2023 monitoring event.").	C	Concur. The "J" and commas will be added to the sentence as suggested.	
95	Section 3.2.8, p. 3-13	Paragraph	Should state dissolved gas values discussed in this paragraph are for wells located in the treatment zone.	C	Concur. It will be stated that the paragraph is discussing wells within the treatment zone.	
96	Table 1	Column headings	Headings are missing for first two table columns — should be "Monitoring Location" for column 1 and "Well Location/Purpose" for column 2.	C	Concur. Heading column titles will be added.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
97	Table 2 and other tables	Table title	"LHAAP-50" is used twice in a row in table title. This occurs in multiple table titles.	C	Concur. The first use of LHAAP-50 will be deleted to avoid redundancy.	
98	Table 4	Cells with MCLs/PCL exceedances	On hardcopy, text is hard to read in blue-shaded cells with MCL or PCL exceedances. Recommended using same blue shading used in table 5.	C	Concur. Blue shading will be adjusted accordingly.	
99	Table 6	"Notes" section below table body.	"VOC" abbreviation is not defined in Notes section below table body.	C	Concur. The VOC definition will be added in the notes section.	
100	Table 6		The addition of two additional columns would make this table much more useful. Recommend adding (1) a column with the confidence factor (or alternatively, could add confidence factor as a parenthetical after the individual well trend results); and (2) a column with the "Well Location/Purpose" from tables 1 and 6.	C	Concur. We understand this comment was meant for **Table 8**. The confidence factor will be added in parentheses next to the well trend results and a Well Location/Purpose column will be added.	

Comment #	Section/Page	Paragraph/Line	Comment	C, D, E, or X[1]	Response	A or D[2]
101	Figures 11a–i	X-axis and Y- axis labels	1) Recommend adding a parenthetical with actual date/month of ISB injection immediately below "Date of injection" above figure body: i.e., "(March 2020)" 2) The labeling of the x-axis ("Sample Date") on figs. 11a–i makes it very difficult for the reader to determine which dates/times correspond to the plotted groundwater-elevation measurements. 3) Some of the Y-axis labeling ("Groundwater Elevation") is incorrectly listed	C	1) Concur. The date of the injection, "(March 2020)" will be added as suggested. 2) Concur. The x-axis title will be changed to "Time (Month-Year)". 3) Please note that the Groundwater Elevation labels are all on the right-hand side of the trend charts and appear to be listed the same. Further clarification is needed to determine what labeling is listed incorrectly on the y-axis.	
102	Sections 4.14.2 (Summary and Conclusions, and Conclusions		These sections reproduce/summarize information presented earlier in report. Consequently, all comments herein made to all earlier report sections should be applied to these 2 sections.	C	Concur. The text in Sections 4.1 and 4.2 will be revised appropriately.	

Response to Comments on
Draft Ninth Annual Remedial Action Operation Report, LHAAP-50, Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas, October 2023
Document Date: 24 October 2023
Comment Date: 7 December 2023

Reviewers: April Palmie - TCEQ
Respondent: Lena Sierocinski - Army

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/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
1	All Figures	Please increase the font size for the labels (MW and other features), notes, and legends. The text in the figures is not legible at a reasonable zoom size as presented in the draft. The figures were legible in the last RAO report.	C	Concur. The font size will be adjusted accordingly on all figures.	
2	General	There are requested changes back to the previously accepted standard language included in the RAO reports from prior years. This language generally comes from the foundational documents for these sites (RI, FS, ROD, Work Plan, RACR). Some of the edits to make the text (perhaps) read better, are not accurate or specific. Thank you for including a good set of bookmarks (including in Appendix D).	C	Concur. The text will be revised to the previously accepted standard where applicable throughout the document.	
3	General	Replace occurrences of “can be seen” to “are shown” or “are depicted”.	C	Concur. The text "can be seen" will be changed to "are shown" or "are depicted" throughout the document.	

Comment #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
4	Section 1.2/Page 1-2	LUCs bullet - Change “LUCs have been set in place” back to “implemented for the impacted area”.	C	Concur. Bullet will be revised to match the previous RA-O document.	
5	Section 1.2/Page 1-3	ISB bullet, “The injections are intended to provide an ideal environment for microorganisms to live” is not accurate. Please change several sentences back to “The ISB remedy involved injecting amendments including microbial cultures, electron donor sources, and nutrients into the subsurface to remove contaminant mass by enhancing microbial populations that will utilize the contaminants in groundwater during respiratory or metabolic activities.”	C	Concur. Bullet will be revised to match the previous RA-O document. The following was left (for clarity) at the start of the bullet, "In areas where the highest concentrations of COCs were observed, the ISB contingency remedy was implemented. These areas include the upper and lower shallow groundwater in the vicinity of wells 50WW11 and 50WW13 and the shallow groundwater in the vicinity of 50WW12.”	
6	Section 1.2/Page 1-3	RA-O Monitoring - Revise 2nd sentence back to: “Data from performance monitoring are used to evaluate whether the ISB and MNA remedies are effectively reducing COCs and confirm that the TCE and perchlorate plumes are stable and will not migrate to nearby surface water at levels that may present an unacceptable risk to human health and the environment.” [I added “confirm”]	C	Concur. Bullet will be revised to match the previous RA-O document.	
7	Section 1.2/Page 1-3	LUC performance objectives - For both LUC both bullets, revise back to prior year language “Prohibit access to the contaminated groundwater, except for environmental monitoring and testing.” And “Restrict land use to nonresidential.”	C	Concur. Bullets will be revised to match the previous RA-O document.	

Comment #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
8	Section 1.2/Page 1-4	ISB last bullet, "Prove" is not accurate. Revise back to "Demonstrate MNA processes are occurring using…"	C	Concur. Bullet will be revised to match the previous RA-O document.	
9	Section 1.3/Page 1-4	Was there a reason for the extensive site description rewrite? The site hasn't changed between years 8 and 9. Suggest replacing the new text with three paragraphs from prior year which were clear, accurate, and concise. Alternatively, here are specific corrections: First sentence, add back "(former sump water tank)" Correct "Prairie Goose Creek". Beginning with "Water treatment" through "was pumped into the creek" change these sentences back to the prior language (included below). The changes to accepted language add inferences which may or may not be accurate. "When operational, LHAAP-50 contained a 47,000-gallon capacity aboveground storage tank (AST) that received industrial wastewater from various industrial waste production sumps throughout LHAAP between 1955 and 1988. After the solids were filtered, the storage tank contents were discharged into Goose Prairie Creek upstream of the Goose Prairie Creek bridge on South Crockett Avenue, south of 51st Street (Figure 1-3). The flow in the creek was sufficient to dilute the water to safe	C	Clarification. The rewrite was done by a new hire who was trying not to copy directly from the previous report. The new hire now understands that it is acceptable to copy and paste site descriptions from old reports since they are the property of USACE. Site description will be copied and pasted from the previous RA-O document.	

Comment #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
		levels (Jacobs Engineering Group, Inc. 2002). If natural flow in the creek was considered insufficient, clean water was reportedly pumped into the creek to dilute the contents. The AST is no longer present."			
10	Section 1.4/Page 1-5	Remove the quotes "" in "The perchlorate" paragraph 2nd sentence. This sentence has been removed and it is important for CSM, please add it back - "While intermittent clay layers are present, no true aquiclude exists to prevent vertical communication between ground surface and approximately 60 feet bgs."	C	Concur. Quotes will be removed and the text "While intermittent clay layers are present, no true aquiclude exists to prevent vertical communication between ground surface and approximately 60 feet bgs" will be added.	
11	Section 1.4/Page 1-6	First paragraph, first sentence correct "shallow waterbearing zone" to the defined term "upper shallow zone". 2nd paragraph correct wells to "upper shallow zone wells".	C	Concur. The text in Section 1.4 will be revised as follows: "shallow waterbearing zone" will be deleted and replaced with "upper shallow zone wells" and the word "zone" will be added to "upper shallow well 50WW12" and "…50WW13".	
12	Section 2.1.1/Page 2-1/1st Paragraph	First sentence, "non-residential land use" is important. Revise first part of sentence back to "The objectives of the LUCs at LHAAP-50 are to prohibit non-residential land use, to prevent human exposure…" Last sentence, replace "The ESD for LHAAP-50" with "A restriction against use of groundwater"	C	Concur. The text will be revised as requested.	

Comment #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
13	Section 2.1.1/Page 2-1/2nd Paragraph	2nd sentence – This statement is not accurate "Notices of the groundwater restrictions are posted around the bounds". Revise the 2nd and 3rd sentences back to "A metes and bounds survey of the LUC boundary and notices of the groundwater use restrictions accompany all property transfer documents and were recorded at the Harrison County Courthouse in June 2015 in accordance with the Texas Administrative Code Title 30, Section 335.566."	C	Concur. The text will be revised as requested.	
14	Section 2.1.2/Page 2-1	Add "Conditions/integrity of" to beginning of the 1st sentence in the 1st paragraph. What you are specifically inspecting is a ROD requirement.	C	Concur. The text "Inspections of the conditions/ integrity of" will be added at the beginning of the sentence.	
15	Section 2.2.2/Page 2-3/1st Paragraph	Ferrous iron sentence, remove the description (rest of the sentence) after "field screening method".	C	Concur. The text in the sentence will be deleted following "field screening method".	
16	Section 2.3/Page 2-4	1st sentence, remove "of a" before "groundwater to surface water pathway". It is a potential pathway.	C	Concur. The text will be revised as requested.	
17	Section 3/Page 3-1/1st Paragraph	1st sentence, change to "using two lines of evidence". Next two sentences should read "first line of evidence" and "second line of evidence". 2nd paragraph, 2nd sentence, revise the end of the sentence to "outside of the treatment area are not likely be influenced by the ISB treatment."	C	Concur. The text in Section 3 will be revised as follows: "within" will be replaced with "using". In the next two sentences, "of evidence" will be added to the text. The sentence will be revised to "outside of the treatment area are not likely to be influenced by the ISB treatment."	
18	Section 3.1.1.3/Page 3-3	2nd Paragraph, replace "drastic" with "wide"	C	Concur. The text "drastic" will be replaced with "wide".	

Comment #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
19	Section 3.1.2/Page 3-7/1st Paragraph	1st paragraph, 1st sentence – revise to "indicates that the ISB remedy has not effectively reduced contaminant concentrations within the treatment area as expected (Table 8)."	C	Concur. Text will be revised as requested.	
20	Section 3.1.3.3/Page 3-8/3rd Paragraph	3rd paragraph, remove "drastically"	C	Concur. The text "drastically" will be removed from the sentence.	
21	Section 3.1.3.4/Page 3-9/1st Paragraph	1st paragraph, sentence including "sinches" revise that sentence to "50WW11 and 50WW13 are located in the ISB treatment area." Or similar.	C	Concur. Sentence will be revised as requested.	
22	Section 3.2.1/Page 3-11	Add this sentence back to the beginning of the paragraph – "DO is the most thermodynamically favored electron acceptor used by microbes for biodegradation of organic carbon, whether natural or anthropogenic (USEPA 1998)."	C	Concur. Sentence will be added to the beginning of the paragraph.	
23	Section 3.2.5/Page 3-12	1st sentence, replace the qualifier before "reducing conditions". From the source reference "The presence of methane in ground water is indicative of strongly reducing conditions." Add back "highly" or "strongly" to "reducing conditions". Last sentence – please fact check and revise. The sulfate concentrations are stable while methane has increased. Also correct "preforming" [Correct all 3 occurrences of this word misuse in the report narrative.]	C	Concur. The text "highly" will be added before "reducing conditions". Sentence was fact checked and will be revised. The spelling of "performing" will be corrected throughout the report.	

Comment #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
24	Section 3.2.7/Page 3-13	The pH in 50WW12 was not 4.84, that was the specific conductivity. The pH was 7.25 and 6.51. Such a low pH in groundwater would be something to recheck. Please revise several sentences in this paragraph including the last sentence.	C	Concur. Text will be revised with accurate data and supporting statements.	
25	Section 4.1/Page 4-2	In the discussion for 50WW12 perchlorate– "Monitoring well 50WW12 is the farthest down gradient plume in the perchlorate plume." This is not an accurate sentence. Revise. Also, the possibility of additional source (or insufficient treatment for the COC mass) is not ruled out by a single result below baseline (which was followed by a higher result). ISB was performed around this well and the concentrations of perchlorate have not reduced, which is demonstrated with the trend chart and Mann-Kendall. Remove or revise this sentence, to capture the seasonal impacts and general "no trend" nature of this well – "However, levels have reduced since then and were even below the baseline in October 2022 (17,600 µg/L)." 2nd to last paragraph on this page, sentence beginning "According to the Year 8 RA-O Report" – replace this clause with "As noted in the Year 8 RA-O Report"	C	Concur. The text in Section 4.1 will be revised to "furthest downgradient well in the…" Concur with the second statement as well. The paragraph will be revised to, "The Year 9 RA-O trend analysis revealed that there was no trend for perchlorate concentrations and that perchlorate concentrations were directly correlated with groundwater elevation. 50WW12 had the highest concentration levels of perchlorate during both of the Year 9 RA-O monitoring events at 17,900 µg/L in October 2022 and 79,100 µg/L in May 2023. The Year 8 RA-O report noted that the concentration of perchlorate detected in April 2022 (141,000 µg/L) at 50WW12 was the highest historical detection at site LHAAP-50 dating back to 2013 (Bhate, February 2023). This indicates that there may be a residual source responsible for the high concentrations near downgradient well 50WW12. Downgradient well 50WW29 showed perchlorate concentration levels below the PCL at..." The text will be revised to "as noted in".	
26	Section 4.2/Page 4-3	1st paragraph - The first sentence is confusing. Untreated source in the clay continues to source to the dissolved phase	C	Concur. Section 4.2 will be revised to include the following statements:	

Comment #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
		and that is part of the mass/flux explanation. Please revise this paragraph. Add this sentence or similar– "The ISB remedy is not meeting the performance criteria as outlined in the Contingency Remedy RD/RAWP." See 5.3.1 of the RA Work Plan which includes this under remedy evaluation to determine if the remedy is operating properly -"Reducing conditions conducive for the degradation of perchlorate/VOCs are present within the treatment area." Given the limited impact of ISB, it is time to consider the next steps. Was a similar conclusion included in the Five-Year Review with suggestions on how to proceed? Please add more discussion of the next steps in conclusion section. Consider additional characterization in the vicinity of 50WW12. Agree additional assessment may be necessary upgradient of 50WW08 for TCE.		1. "*Additional investigation near 50WW12 to determine the cause of the inter- and intra-annual groundwater elevation changes affecting COC concentration trends is recommended."* 2. "*Due to the geochemical data collected indicating marginal conditions for the degradation of perchlorate/VOCs within the treatment area, additional injections should be considered*." .	
27	Table 3	Please adjust so the table takes up more space on pages, which will result in font being larger. In year 9 this table is 3 pages, while in year 8 it was 6 pages and much easier to read.	C	Concur. Table 3 will be adjusted accordingly.	
28	Table 4	Please adjust so the table takes up more space on pages, which will result in font being larger. Reduce the number of columns on each page, which will improve font size and readability. Year 8 had 9 column pairs of well results, while year 9 has 11 (which is too many).	C	Concur. Table 4 will be adjusted accordingly.	

Comment #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
29	Table 5	This table is readable; please don't change the size.	C	Noted. Table 5 font size will not change.	

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DRAFT FINAL
NINTH ANNUAL REMEDIAL ACTION OPERATION REPORT
LHAAP-50 FORMER SUMP WATER TANK
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

March 2024

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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ACRONYMS AND ABBREVIATIONS

>	Greater than
%	Percent
µg/L	micrograms per liter
AECOM	AECOM Technical Services, Inc.
AST	Aboveground storage tank
bgs	below ground surface
Bhate	Bhate Environmental Associates, Inc.
COC	contaminant of concern
DCA	Dichloroethane
DCE	dichloroethane
DHC	*Dehalococcoides*
DO	dissolved oxygen
DPT	direct push technology
ESD	Explanation of Significant Differences
ISB	in situ bioremediation
J	Qualifier denoting an estimated result
Jacobs	Jacobs Engineering Group, Inc.
LHAAP	Longhorn Army Ammunition Plant
LLC	Limited Liability Company
LUC	land use control
MCL	maximum contaminant level
mg/L	milligrams per liter
MNA	monitored natural attenuation
mV	Millivolts
No.	Number
ORP	oxidation-reduction potential
PBJV	Poarch Creek Indians, Government Servies, LLC/Bhate Environmental Associates, Inc. Joint Venture
PCE	Tetrachloroethene
PCL	Protective concentration level
RA-O	Remedial Action Operation
RACR	Remedial Action Completion Report
RAWP	Remedial Action Work Plan

RD	Remedial Design
ROD	Record of Decision
TCE	Trichloroethene
TCEQ	Texas Commission on Environmental Quality
TOC	total organic carbon
U.S.	United States
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

The United States (U.S.) Army Corps of Engineers (USACE), Tulsa District, contracted Poarch Creek Indians, Government Services, Limited Liability Company (LLC)/Bhate Environmental Associates, Inc. Joint Venture (PBJV) under the USACE contract number W912BV23C0007, to conduct environmental restoration at multiple sites at the former Longhorn Army Ammunition Plant (LHAAP) in Karnack, Texas. PBJV is performing groundwater and surface water monitoring as part of Remedial Action Operation (RA-O) for the Monitored Natural Attenuation (MNA) groundwater remedy at LHAAP-50.

The purpose of this Year 9 RA-O Report is to discuss the progression of remedial activities at LHAAP-50 and recommend the next steps towards achieving site closure.

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 the former LHAAP installation to the north and east. The eastern fence is 3.5 miles from the Texas-Louisiana state border. LHAAP-50 is slated for transfer from the U.S. Army to the U.S. Fish and Wildlife Service (USFWS) for incorporation into the Caddo Lake National Wildlife Refuge in the future.

The Draft Final Third Annual RA-O Report concluded that MNA was ineffective and implementation of a contingency remedy would be appropriate (Bhate Environmental Associates, Inc. [Bhate], July 2018). A Final Explanation of Significant Differences (ESD) was submitted in July 2019 for changes to the Record of Decision (ROD) to implement the in-situ bioremediation (ISB) contingency remedy (USACE, July 2019). The U.S. Environmental Protection Agency (USEPA) signed the ESD, and the Texas Commission on Environmental Quality (TCEQ) concurred with the USEPA approval in September 2019. The Remedial Design (RD)/Remedial Action Work Plan (RAWP) for the contingency remedy was submitted in December 2019 and approved by USEPA in December 2019 and TCEQ in January 2020 (USACE, December 2019). The Year 6 RA-O sampling event in November 2019 was used as the baseline, prior to the ISB treatment. The ISB injections for the contingency remedy were completed in March 2020 and included injection of the emulsified vegetable oil carbon source (Electron Donor Solution – Extended Release™ from Tersus Environmental, LLC), microbial nutrient (diammonium phosphate), and dechlorinating culture (SDC-9™). The implementation of the ISB contingency remedy was reported in the Draft Final Remedial Action Completion Report (RACR) for Contingency Remedy in September 2020 (Bhate, November 2020).

This Ninth Annual RA-O Report represents the third year of RA-O implementation post-ISB and summarizes the results of the Land Use Controls (LUC) inspections and sampling activities conducted between July 2022 and June 2023. The Year 9 RA-O activities consisted of two semiannual sampling events conducted in October 2022 and May 2023. In accordance with the

Contingency Remedy RD/RAWP (USACE, December 2019), a remedy evaluation of the ISB injections is included in this report.

1.1 Remedial Action Objectives

The remedial action objectives for LHAAP-50, consistent with the reasonably anticipated future use as a national wildlife refuge, are as follows:

- Protection of human health and environment by preventing contaminated groundwater from migrating into nearby surface water.
- Protection of human health by preventing further potential degradation of groundwater and surface water from contaminated soil.
- Protection of human health by preventing human exposure to the contaminated groundwater.
- Return of groundwater to its potential beneficial uses as drinking water, wherever practicable.

1.2 Performance Objectives

The remedy selected for LHAAP-50 is described in Section 2.9.1 of the ROD (USACE, September 2010) and includes excavation of contaminated soil, MNA of contaminants of concern (COCs) in groundwater, and LUCs. Groundwater COCs include perchlorate, tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (DCE), 1,2-dichloroethane (DCA), cis-1,2-DCE, and vinyl chloride (VC).

Implementation of the excavation, MNA, and LUC remedy was documented in the Final 2016 RACR (AECOM Technical Services, Inc. [AECOM], June 2016).

Per the Remedial Action RAWP, RA-O monitoring of the ISB contingency remedy was completed quarterly for two years from July 2020 to March 2022, along with annual MNA monitoring. After the two years of ISB monitoring data were reviewed, it was determined that the ISB remedy was not performing as anticipated. In turn, it was decided that semiannual RA-O monitoring be continued for a third year to evaluate the impact of the ISB remedy and seasonal fluctuations on volatile organic compounds (VOCs) and perchlorate concentrations. The components of the remedy implemented for groundwater at LHAAP-50 are described in more detail below:

- **LUCs.** LUCs have been implemented for the impacted area as described in the Final 2016 RACR (AECOM, June 2016) to ensure the protection of human health by restricting the

use of groundwater. The groundwater use restriction will remain in place until the COCs in groundwater and soil allow unrestricted use and unlimited exposure.

- **ISB.** In areas where the highest concentrations of COCs were observed, the ISB contingency remedy was implemented. These areas include the upper and lower shallow groundwater near monitoring wells 50WW11 and 50WW13 and the shallow groundwater near of 50WW12. The ISB remedy involved injecting amendments including microbial cultures, electron donor sources, and nutrients into the subsurface to remove contaminant mass by enhancing microbial populations that will utilize the contaminants in groundwater during respiratory or metabolic activities. The Contingency Remedy RACR (Bhate, November 2020) documented the implementation of the contingency ISB.

- **MNA.** MNA constitutes a passive treatment where the contaminant concentrations decrease through natural attenuation processes such as biodegradation, dispersion, dilution, sorption, and volatilization (USEPA, September 1998). MNA was found to be ineffective as the primary remedy for COCs in groundwater and was enhanced with ISB. However, monitoring of MNA processes continues as part of the RA-O.

- **RA-O Monitoring.** Evaluation of the effectiveness of the MNA and ISB remedies is conducted through RA-O monitoring. Data from performance monitoring are used to evaluate whether the ISB and MNA remedies are effectively reducing COCs and confirm that the TCE and perchlorate plumes are stable and will not migrate to nearby surface water at levels that may present an unacceptable risk to human health and the environment. The first ISB injection event occurred in March 2020. RA-O monitoring was then conducted quarterly for the first two years post injection. Using the data from the two-year long quarterly sampling, cleanup times for the COCs were calculated. Based on this data, it was recommended in the Year 8 RA-O Report that RA-O monitoring needed to continue to be conducted semi-annually during the Year 9 RA-O monitoring period to evaluate the impact of the ISB remedy and seasonal groundwater fluctuations on VOC and perchlorate concentrations. Following that recommendation, the first year of semiannual RA-O monitoring (Year 3 of ISB performance monitoring) occurred during this Year 9 RA-O monitoring period. Data from this year will aid in determination of whether or not monitoring will continue on this basis or be reduced to annual MNA monitoring until the next Five-Year Review.

The Contingency Remedy RD/RAWP (USACE, December 2019) contains the performance monitoring program and the LUC inspection program. The performance objectives for the operation of the selected remedy are as follows:

- LUC performance objectives to be achieved via annual inspections and maintenance:
    - Prohibit access to the contaminated groundwater, except for environmental monitoring and testing.

  - Restrict land use to nonresidential.

- ISB treatment areas remedy performance objectives:
  - Achieve and maintain plume stability as measured by declining/decreasing concentrations of COCs in the performance wells relative to the baseline (November 2019 sampling event) and/or historical concentrations.
  - Achieve and maintain geochemical conditions conducive to natural attenuation of COCs in the shallow and intermediate groundwater zones.
  - Demonstrate MNA processes are occurring by calculating the attenuation rate, daughter COC product concentrations, and microbial culture counts.

Performance objective evaluations for the ISB treatment areas will be based on two lines of evidence presented in Section 5.3.1 of the Contingency Remedy RD/RAWP (USACE, December 2019). The performance MNA remedy will continue to be evaluated outside of the treatment areas using the criteria in the Final 2016 RACR (AECOM, June 2016).

1.3 Site Description

LHAAP-50 (former sump water tank) is in the north-central portion of LHAAP and covers an area of approximately 1 acre (**Figure 1**). The site is an open area of grass and brush that is bounded by South Crocket Avenue to the northeast, a drainage ditch to the west, a railroad spur to the south, and Goose Prairie Creek to the north (**Figure 2**). Runoff from the northeastern portion of the site is generally toward the northeast. Runoff is collected by a drainage ditch to the northeast that runs parallel to South Crockett Avenue and eventually joins Goose Prairie Creek. Runoff from the southwestern portion of the site is collected to the west by a drainage ditch that carries the runoff north into Goose Prairie Creek. Goose Prairie Creek eventually empties into Caddo Lake.

When operational, LHAAP-50 contained a 47,000-gallon capacity aboveground storage tank (AST) which received industrial wastewater from various industrial waste production sumps throughout LHAAP between 1955 and 1988. After the solids were filtered, the storage tank contents were discharged into Goose Prairie Creek upstream of the Goose Prairie Creek bridge on South Crockett Avenue, south of 51st Street (**Figure 2**). The flow in the creek was sufficient to dilute the water to safe levels (Jacobs Engineering Group, Inc. [Jacobs], January 2002). If natural flow in the creek was considered insufficient, clean water was reportedly pumped into the creek to dilute the contents. The AST is no longer present.

The LUC area associated with the groundwater use restriction at LHAAP-50 extends beyond the northern, southern, eastern, and western historical site boundaries and encompasses a total of approximately 77.19 acres (**Figure 2**). The nearest significant surface water body to LHAAP-50 is Goose Prairie Creek, located approximately 80 feet north of the site, which eventually flows into Caddo Lake. LHAAP-50 has no known areas of archaeological or historical importance.

1.4 Conceptual Site Model

Investigations into LHAAP-50 contamination occurred from 1992 to 2010. On-site contaminants were found to most likely be present due to AST releases from the sump water tank on-site. Aboveground spills are the likely source of perchlorate and VOCs found in soils and adjacent surface water.

COCs at LHAAP-50 include perchlorate, PCE, TCE, 1,1-DCE, 1,2-DCA, cis-1,2-DCE, and VC in groundwater. Perchlorate was also found in the soil until 183 cubic yards of contaminated soil was removed in September 2013 (AECOM, June 2016). The standards for soil clean up are the Texas Risk Reduction Rules Standard Number (No.) 2 industrial medium-specific concentrations. Groundwater cleanup standards are the USEPA maximum contaminant levels (MCLs) for the chlorinated volatile organic compounds. Perchlorate's cleanup level falls under the Texas Risk Reduction Program groundwater residential protective concentration level (PCL).

The perchlorate contamination levels in the soil at LHAAP-50 were not found to pose an unacceptable risk to human health; however, perchlorate was found above the PCL in groundwater. The area of this contamination is in the shallow groundwater (upper and lower zones) and poses an unacceptable carcinogenic risk and noncarcinogenic hazard to a future maintenance worker under an industrial exposure scenario (USACE, September 2010). The only other exposure pathway would be through the use of groundwater as a drinking source. However, shallow water is not used as drinking water at the refuge and the LUCs in place for the site prohibit groundwater use. Thus, the potential exposure is eliminated.

In previous documents, the site hydrogeology was represented as consisting of a shallow zone (approximately 0 to 30 feet below ground surface [bgs]) and an intermediate zone (approximately 35 to 60 feet bgs). Drilling activities, performed during implementation of the remedial action (AECOM, November 2016), revealed only a shallow unconfined aquifer extending from ground surface to approximately 60 feet bgs across the site. While intermittent clay layers are present, no true aquiclude exists to prevent vertical communication between ground surface and approximately 60 feet bgs. Since the first annual RA-O report (AECOM, November 2016), the former shallow zone is referred to as the "upper shallow" zone (0 to 30 feet bgs), the former intermediate zone is referred to as the "lower shallow" zone (30 to 60 feet bgs), and the former deep zone is referred to as the "intermediate" zone (greater than [>] 100 feet bgs).

The intermediate groundwater zone was found at 100 feet bgs underlying a dry unit of clay with some interbedded sands. Across the site, a layer of clay was the first unit encountered at approximately 60 feet bgs. An intermediate groundwater zone well (50WW10) was found to have a depth to water of 22.55 feet bgs. Based on the screened interval at 50WW10 (approximately 100 – 110 feet bgs), this indicates that there are confined conditions present in the intermediate groundwater zone well.

Due to the thickness of the shallow zone (60 feet), it was determined that more research needed to be done to test for variations in the nature and extent of contamination between the upper and lower portions of the shallow zone. From 2000 to 2002, 27 monitoring wells were installed to evaluate the nature and extent in the shallow zone. Eighteen wells were installed to monitor the lower portion of the shallow zone, and six wells were installed to monitor the upper portion of the shallow zone, and three wells (50WW17, 50WW19, and 50WW20) were installed with screens that covered the entire length of the saturated shallow zone. To delineate the downgradient edge of the plume beyond 50WW12, an additional upper shallow zone monitoring well (50WW29) was installed in August 2019 (Bhate, December 2019). See **Figure 2** for monitoring well locations.

Based on groundwater data collected in October 2022, groundwater in the upper shallow zone wells ranges from 18.25 feet bgs at 50WW28 to 25.00 feet bgs at 50WW20. Groundwater flows to the north within most of the LUC boundary but to the northeast and east-northeast across most of the plume area, with a hydraulic gradient of 0.002 foot per foot. The hydraulic gradient is calculated by dividing the difference of the groundwater elevation of 50WW28 and 50WW20 by the distance between the two monitoring wells (see **Figure 5**).

TCE and perchlorate are the most widespread COCs in shallow groundwater. In November 2019 prior to the ISB contingency remedy, the highest perchlorate concentration was detected in the upper shallow zone well 50WW12 at 47,000 micrograms per liter (µg/L), and the highest TCE concentration was detected in the center of the plume at the upper shallow zone well 50WW13 at 7,300 µg/L (**Figure 3**).

2 SITE ACTIVITIES AT LHAAP-50

2.1 Annual LUC Compliance Inspection, Monitoring, and Repair

2.1.1 Annual LUC Compliance Inspection

The objectives of the LUCs at LHAAP-50 are to prohibit non-residential land use, 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 anything other than environmental monitoring and testing until the cleanup levels are attained. (AECOM, June 2013). A restriction against use of groundwater will remain in effect until the COC concentrations in the soil and groundwater allow unrestricted use and unlimited exposure (USACE, July 2019).

The LUC boundary at LHAAP-50 is 77.19 acres and contains the areas with shallow zone groundwater VOCs and perchlorate contamination. A metes and bounds survey of the LUC boundary and notices of the groundwater use restrictions accompany all property transfer documents and were recorded at the Harrison County Courthouse in June 2015 in accordance with the Texas Administrative Code Title 30, Section 335.566. The survey plat, legal boundary, and description of the groundwater restriction, in conjunction with a locator map, were provided to the Texas Department of Licensing and Regulation in June 2015.

The Land Use Control Implementation Plan was finalized in the 2016 Final RACR (documenting the previous soil removal action and implementation of the MNA remedy) for LHAAP-50 (AECOM, June 2016). The Comprehensive LUC Management Plan (U.S. Department of the Army [U.S. Army], October 2019) provides a repository for LUC plans for sites throughout the former LHAAP. The LUC Plan for LHAAP-50 can be found within the Comprehensive LUC Management Plan, including blank copies of the Inspection and Maintenance Checklist and the LUC Compliance Inspection Form.

A LUC compliance inspection conducted on 11 October 2022 found that no compliance issues, changes in land use, or concerns were noted during the annual inspection. The Annual LUC Compliance Certification Documentation Form for the Year 9 Annual RA-O period is included in **Appendix A.**

2.1.2 Well Field Operation Maintenance

Inspections of the conditions/integrity of monitoring wells at LHAAP-50 are inspected during each sampling event and observations are recorded on well inspection forms. Photographs of each monitoring well are taken and stored in a photo log. The photo log and well inspection forms can be found in **Appendix B**. All monitoring wells were in good condition during the ninth annual reporting period. The only maintenance required was routine mowing events prior to sampling the site.

2.2 Groundwater Monitoring

The Year 9 reporting period includes the period from July 2022 to June 2023 and encompasses the first year of semiannual RA-O monitoring of the ISB remedy and seasonal groundwater fluctuations on VOC and perchlorate concentrations. Eight monitoring wells were sampled under the semiannual RA-O monitoring of the ISB remedy (**Table 1**), and fourteen monitoring wells were sampled as part of the annual RA-O network (**Table 2**). Monitoring well locations for both annual and post ISB monitoring are shown on **Figure 4**. The groundwater sampling events took place in October 2022 and May 2023, with the annual RA-O event occurring in October 2022. **Table 1** and **Table 2** list the analytes sampled for at each monitoring well.

The *Final Installation-Wide Work Plan* describes the sampling procedure and low-flow sampling technique used during the October 2022 and May 2023 sampling events (Bhate, May 2018). Depth to water and total depth of each monitoring well were recorded prior to pumping groundwater out of each well. As the water was pumped out of the ground, its quality was monitored until parameters stabilized within acceptable ranges determined in the Final Installation-Wide Work Plan. The water quality readings are recorded on Groundwater Sample Collection Forms that can be found in **Appendix C**. The samples were packaged and shipped on ice with a chain-of-custody to ALS Environmental in Houston, Texas. Copies of the chain-of-custody forms can be found in **Appendix D**.

2.2.1 Groundwater Elevations and Flow Direction

During the Year 9 RA-O sampling events, groundwater elevations were obtained from the 14 wells monitored during the October 2022 and May 2023 events and ranged from 176.06 to 179.72 feet below mean sea level (**Table 3**). The highest groundwater elevations were recorded in the May 2023 event. Groundwater elevations are typically higher in May than October due to more rainfall accumulating in May than October. The May 2023 groundwater elevations were higher than all October 2022 groundwater elevations for the 14 monitoring wells in which a comparison could be made. **Table 3** lists all groundwater elevations measured from July 2020 to May 2023.

The flow of groundwater at LHAAP-50 was determined to be generally to the north within most of the LUC boundary but to the northeast and east-northeast across most of the plume area. **Figure 5** provides a potentiometric contour map for the October 2022 sampling event, and **Figure 6** provides a potentiometric contour map for the May 2023 sampling event. Development of the potentiometric contours came from the measurements from monitoring wells screened in the upper shallow zone or that were fully penetrating the shallow zone. Monitoring wells screened only in the lower shallow zone (50WW06, 50WW09, 50WW14, 50WW25, 50WW26, and 50WW27) were not used in creating the contour maps. Monitoring wells 50WW02, 50WW03, and 50WW04 were dry during the October 2022 sampling. Water levels were only recorded for monitoring wells that required groundwater sampling during the May 2023 sampling event. Therefore, depth to water levels were not measured at 50WW01, 50WW02, 50WW03, 50WW04,

50WW07, 50WW17, 50WW19, 50WW20, 50WW21, 50WW24, or 50WW28 in May 2023. Moving forward, sitewide depth to water levels will be recorded during each sampling event.

2.2.2 Groundwater Analytical Results – Year 3 Post-ISB Injections

Year 3 RA-O monitoring of the ISB remedy consisted of the semiannual (October 2022 and May 2023) sampling of eight monitoring wells (**Table 1**). ISB direct push technology (DPT) points used during the March 2020 injections to remediate groundwater impacted with VOCs and perchlorate near 50WW13 and 50WW12 are shown on **Figures 2, 3, 9, and 10**. The samples were analyzed for perchlorate according to USEPA Method 6850 and select VOCs according to USEPA Method 8260C. Five of these eight monitoring wells (50WW06, 50WW11, 50WW12, 50WW13, and 50WW14) were sampled for geochemical parameters (ferrous iron, anions, dissolved gases, and total organic carbon [TOC]). Ferrous iron was analyzed using a field screening method. Anions were analyzed per USEPA Method SW9056A, dissolved gasses (ethene, ethane, methane, and carbon dioxide) were analyzed per USEPA Method RSK-175, and TOC was analyzed per USEPA Method SM5310B.

The Year 9 annual RA-O event occurred in October 2022 and included the same eight monitoring wells that were sampled for the ISB remedy monitoring, plus six additional monitoring wells. The additional monitoring wells were sampled for perchlorate and VOCs using the same analysis methods used for the ISB remedy monitoring.

Analytical results for both events are presented in **Table 4** and in the laboratory analytical data package found in **Appendix D**. **Figures 9 and 10** show the TCE and perchlorate plumes during October 2022 and May 2023, respectively. Historical COC concentrations can be found in **Table 5**. Analysis detected perchlorate above its PCL of 17 µg/L and TCE and cis-1,2-DCE above their respective MCLs (5 and 70 µg/L) during the Year 3 post-ISB injections semiannual RA-O sampling at multiple monitoring wells. 1,2-DCA and 1,1-DCE were detected above their respective MCLs (5 and 7 µg/L) at two monitoring wells (50WW11 and 50WW13) in October 2022 and at one monitoring well (50WW12) in May 2023. Cis-1,2-DCE was detected above its MCL at three monitoring wells (50WW05, 50WW08, and 50WW13) in October 2022 and at two monitoring wells (50WW05 and 50WW08) in May 2023. VC was not detected above its MCL (2 µg/L) in any of the monitoring wells sampled during either of the Year 3 post-ISB injections semiannual RA-O sampling events. Analytical results are discussed in more detail in the following two paragraphs. Section 3 discusses the remedial performance based on the analytical results.

Year 3 Post-ISB Injections, October 2022 Semiannual Sampling Event. During the October 2022 sampling event, TCE concentrations were detected above its MCL at eight monitoring wells (50WW05, 50WW06, 50WW08, 50WW09, 50WW11, 50WW12, 50WW13, and 50WW14). The maximum TCE concentration of 8,600 µg/L was detected at 50WW13. Perchlorate was detected above the PCL at five monitoring wells (50WW06, 50WW08, 50WW11, 50WW12, and 50WW13). The maximum perchlorate concentration of 17,900 µg/L (duplicate result) was detected at 50WW12. As previously stated, concentrations of 1,2-DCA and 1,1-DCE were detected above

their respective MCLs at 50WW11 and 50WW13. The maximum 1,2-DCA concentration of 46 µg/L was detected at 50WW13 and the maximum 1,1-DCE concentration of 22 µg/L was detected at 50WW11. Cis-1,2-DCE was detected above the MCL at 50WW05, 50WW08, and 50WW13. The maximum cis-1,2-DCE concentration of 280 µg/L was detected at 50WW13.

Year 3 Post-ISB Injections, May 2023 Semiannual Sampling Event. During the May 2023 sampling event, TCE concentrations were detected above its MCL at nine monitoring wells (50WW05, 50WW06, 50WW08, 50WW09, 50WW11, 50WW12, 50WW13, 50WW14, and 50WW15). The maximum TCE concentration of 1,100 µg/L was detected at 50WW12. Perchlorate concentrations were detected above the PCL at four monitoring wells (50WW08, 50WW11, 50WW12, and 50WW13). The maximum perchlorate concentration of 84,500 µg/L (duplicate sample) was detected at 50WW12. As previously stated, concentrations of 1,2-DCA and 1,1-DCE were detected above their respective MCLs at 50WW12. The compound, 1,2-DCA, was detected at a concentration of 6.6 µg/L (duplicate sample), and 1,1-DCE was detected at a concentration of 19 µg/L. Cis-1,2-DCE was detected above the MCL at 50WW05 and 50WW08. The maximum cis-1,2-DCE concentration of 130 µg/L was detected at 50WW05.

2.2.3 Groundwater Monitoring Optimization

Sampling will be conducted semi-annually for the performance monitoring well locations and annually for the RA-O locations, as shown in **Table 6**.

Historically, concentrations of dechlorinating bacteria known as *Dehalococcoides* (DHC) were measured in order to monitor the degradation rates of COCs. However, it was determined in the Year 8 RA-O that there were not sufficient microbial populations present to support significant degradation via bacteria (Bhate, February 2023). Therefore, DHC sampling was not included in the fourth quarter Year 8 RA-O sampling or in the Year 9 RA-O sampling.

2.3 Surface Water Sampling

Surface water sampling is conducted at LHAAP-50 to evaluate the potential groundwater to surface water pathway. Goose Prairie Creek flows northeast and runs parallel to the northern LUC boundary border from the western LUC boundary border to the eastern LUC boundary border. It is located north of LHAAP-50 and the ISB DPT injection points. The closest monitoring well near Goose Prairie Creek is 50WW16. Per the RAWP (AECOM, June 2013), if water is found flowing in the creek and the groundwater elevation at 50WW16 is above the bottom of the creek elevation, then a surface water sample from the creek is required. During the Year 9 sampling period, there was no water flow in Goose Prairie Creek. Therefore, no surface water sample was taken. If the conditions are appropriate, there will be a surface water sample taken from the creek during the Year 10 RA-O.

Historically, GPW-1 and GPW-1A were also included as locations for surface water sampling. However, the two locations were discontinued from sampling after a recommendation in the

Year 3 RA-O Report stating that the perchlorate levels were consistently detected below the PCL (Bhate, July 2018). The recommendation was approved by TCEQ and USEPA in July 2018.

2.4 Well Abandonment

The Year 2 and Year 3 RA-O Reports suggested the abandonment of 50WW03 and 50WW19 (AECOM, November 2016; Bhate, July 2018). The abandonment was approved by the USEPA and TCEQ; however, the monitoring wells have not been abandoned. The monitoring wells are being retained so that they are available for groundwater-level measurements and sampling, if needed. No monitoring wells are recommended for abandonment in this report.

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3 REMEDY EVALUATION

The evaluation of natural attenuation and ISB remedy are provided using two lines of evidence in this report. The first line of evidence describes the perchlorate and TCE plume stability at LHAAP-50 and will provide evaluation of natural attenuation at LHAAP-50. The second line of evidence describes the geochemical indicators that evaluate the ISB remedy. A third line of evidence may be used in order to establish adequate and conclusive evidence if the first two lines of evidence are deemed otherwise. A third line of evidence was not provided in this Year 9 RA-O Report due to the decision in the Year 8 RA-O Report to discontinue DHC analysis due to conditions becoming less favorable for reductive dechlorination and the remaining mass of TOC being less than 20 milligrams per liter [mg/L] (Bhate, February 2023) (discussed in Sections 2.2.3 and 3.2).

The monitoring wells that are evaluated have had detections of COCs above their respective PCLs/MCLs and are found within the shallow aquifer zone. While the RA-O monitoring network includes monitoring wells in the upper shallow zone, lower shallow zone, and upgradient/cross gradient monitoring wells, the upgradient/cross gradient monitoring wells that lie outside of the treatment area are not likely to be influenced by the ISB treatment. In turn, the following wells will be used to evaluate the effectiveness of the ISB remedy since they lie within the treatment area: 50WW06, 50WW11, 50WW12, 50WW13, and 50WW14. While 50WW05, 50WW08, 50WW09, and 50WW15 will be used to evaluate the MNA remedy since they lie outside of the treatment area.

3.1 First Line of Evidence: Plume Stability

The Contingency Remedy RD/RAWP (USACE, December 2019) describes the first line of evidence as plume stability (plume concentrations declining in the performance wells, and the plume not expanding in areal extent, as demonstrated by downgradient monitoring wells). The two parts of plume stability discussed below are: (1) change in COC concentrations with time and distance and (2) plume extent.

3.1.1 Change in COC Concentrations over Time and with Distance

Samples were collected from eight monitoring wells and analyzed for VOCs and perchlorate, as indicated in **Table 1**. The Contingency Remedy RD/RAWP (USACE, December 2019) identified these monitoring wells to monitor performance of the ISB contingency remedy at LHAAP-50. Additionally, 14 wells were sampled in October 2022 as part of the ongoing annual RA-O network (**Table 2**). Perchlorate, TCE, 1,2-DCA, 1,1-DCE, and cis-1,2-DCE were detected above their respective PCL and MCLs.

Mann-Kendall statistical trend analysis was completed for eight impacted monitoring wells with COC concentrations above PCLs/MCLs (50WW05, 50WW06, 50WW08, 50WW09, 50WW11,

50WW12, 50WW13, and 50WW14). For annual RA-O monitoring well 50WW09, the data set used for the analysis included the 2013 baseline samples and all subsequent RA-O monitoring events because the data was insufficient for statistical analysis using only annual post-ISB data. For the monitoring wells that are used to monitor the performance of the ISB remedy, trends were calculated using the 2019 baseline and post-injection data. The trend analysis results are presented in **Appendix E** in graphical format with statistical results presented below the Mann-Kendall analysis. The dates are presented on the x-axis of each graph, and the concentrations of COCs are presented on the y axis in µg/L (**Appendix E**).

The Mann-Kendall Test is a nonparametric statistical test to assess trends and is especially suited for evaluation of concentration-time series data to establish if trends are present (Gilbert, January 1987). This is a general test to determine whether concentrations tend to increase or decrease with time. The GSI Mann-Kendall Toolkit was used to conduct the analysis. Half of the detection limit was used for non-detect results, where applicable. Field duplicate data were not used, only the original sample. The Mann-Kendall Test was conducted for each monitoring well and for each COC with a concentration above the MCL/PCL in the most recent sampling event. The Mann-Kendall trends for all COCs detected during the Year 9 RA-O were "stable" or "no trend" except for TCE and cis-1,2-DCE at monitoring well 50WW08, which have "increasing" trends. A summary of the Mann-Kendall results is presented in **Table 8**. The COC concentrations over time for selected monitoring wells at LHAAP-50 are shown on **Figure 11-a** through **Figure 11-i**.

3.1.1.1 Monitoring Well 50WW05

TCE and cis-1,2-DCE were detected above their MCLs in 50WW05 during both semiannual sampling events during Year 9 RA-O. The TCE concentration decreased from 290 µg/L (October 2022) to 130 µg/L (May 2023) during Year 9 RA-O sampling to the lowest concentration observed since the May 2019 baseline TCE concentration (110 µg/L). The concentration of cis-1,2-DCE increased from 77 µg/L in October 2022 to 130 µg/L in May 2023. The presence of the TCE daughter product cis-1,2-DCE indicates that reductive dechlorination is taking place.

The Mann-Kendall trend analysis for monitoring well 50WW05 was conducted for TCE and cis-1,2-DCE (**Appendix E**). The Mann-Kendall analysis indicates a decreasing trend for TCE at a 99.3 percent (%) confidence factor. The results for cis-1,2-DCE indicate a decreasing trend at a 99.2% confidence factor. The COC concentration trends are shown on **Figure 11-a**. Based on **Figure 11-a**, for all or part of the post-ISB period, TCE concentrations and groundwater elevations appear to be inversely correlated for 7 of 10 samples, and cis-1,2-DCE appears to be inversely correlated for 6 of 10 samples.

3.1.1.2 Monitoring Well 50WW06

Perchlorate was detected above its PCL during the first semiannual Year 3 post-ISB injections RA-O monitoring event (October 2022) in monitoring well 50WW06. The concentration of

perchlorate during the Year 3 post-ISB injections RA-O period decreased from 257 µg/L in October 2022 to below the PCL at 5.79 µg/L during the second semiannual sampling in May 2023. In monitoring well 50WW06 the concentration of TCE decreased from 20 µg/L in October 2022 to 13 µg/L in May 2023. Historically, directly following ISB treatment, TCE and perchlorate concentrations decreased to concentrations below their MCL/PCL (respectively) in July 2020. TCE and perchlorate concentrations remained below their respective MCL/PCL during the last two quarters of Year 1 post ISB monitoring and the first three quarters of Year 2 post ISB monitoring before increasing to concentrations above their respective MCL/PCL during the fourth quarter of Year 2 post-ISB monitoring (April 2022).

The Mann-Kendall trend analysis for monitoring well 50WW06 was conducted for perchlorate and TCE (**Appendix E**). The trend analysis indicates no trend for both TCE and perchlorate with confidence factors of 61.9% and 50.0%, respectively. TCE and perchlorate concentration trends are shown on **Figure 11-b**. There is an inverse correlation between groundwater elevations and both TCE and perchlorate concentrations for parts of the period of record.

3.1.1.3 Monitoring Well 50WW08

Perchlorate, TCE, and cis-1,2-DCE were detected above their respective PCL/MCLs in 50WW08 during both semiannual sampling events during the Year 9 RA-O monitoring period. TCE concentrations increased post ISB compared to the baseline concentration in November 2019. TCE increased from 420 µg/L in November 2019 to 610 µg/L in Year 1 Quarter 4 (April 2021) and continued to increase to 720 µg/L in Year 2 Quarter 4 (April 2022). The TCE concentration remained at 720 µg/L for the first semiannual sampling event of Year 3 post-ISB injections (October 2022) and then decreased to 650 µg/L in the second semiannual sampling event (May 2023). However, the Mann-Kendall trend analysis shows that the TCE concentration is significantly increasing with a 98.7% confidence factor. The increases and decreases in TCE concentration are directly correlated to changes in groundwater elevations (**Figure 11-c**). While the upgradient monitoring well 50WW02 to the west is dry, upgradient monitoring well 50WW22, to the south was non-detect for TCE in both October 2022 and May 2023, bounding the TCE plume upgradient.

Perchlorate concentrations also increased post ISB compared to baseline concentration (83 µg/L) in November 2019. The highest perchlorate concentration was detected at 682 µg/L in Year 2 Quarter 2 (October 2021), which then decreased to 83.4 µg/L in Year 2 Quarter 4 (April 2022), then decreased to the lowest detected concentration, 31.1 µg/L (lower than the baseline) in the first semiannual sampling event of Year 9 (October 2022). The concentration then increased back up to 81.1 µg/L in the second Year 9 semiannual sampling event (May 2023). The wide fluctuations in perchlorate concentrations have led to a Mann-Kendall trend analysis with no significant trend and a 61.9% confidence factor. It should be noted that although there is not a significantly decreasing trend for perchlorate at 50WW08, the baseline sample in 2013 detected a concentration of 6,404 µg/L, which is quite higher than 81.1 µg/L (Bhate, February 2023). From

early 2014 to November 2019, the increase and decrease of perchlorate concentrations seem to generally be directly correlated with changes in groundwater elevations. Post ISB, the fluctuation in perchlorate concentrations based on groundwater elevations was diminished due to ongoing in situ treatment observed by groundwater sampling at 50WW08. Based on the Year 9 RA-O semiannual sampling events, the initial correlation with groundwater elevations is noted and may be due to diminished treatment of the aquifer near monitoring well 50WW08.

The cis-1,2-DCE concentration has increased from 39 µg/L during the November 2019 baseline sampling event to 85 µg/L in the Year 9 second semiannual sampling event. Mann-Kendall trend analysis results indicate a significantly increasing trend for cis-1,2-DCE at a 99.9% confidence factor. However, the increase in concentrations of cis-1,2-DCE indicates that reductive dechlorination is occurring. Increasing contaminant concentrations on the upgradient edge of the plume near 50WW08 indicate that limited biodegradation is occurring in this area.

3.1.1.4 Monitoring Well 50WW09

TCE was detected above the MCL in monitoring well 50WW09 during both Year 9 RA-O semiannual sampling events (October 2022 and May 2023) at 5.8 µg/L and 11 µg/L, respectively. The Mann-Kendall trend analysis results indicate that there is no significant trend in TCE concentration in 50WW09 with a confidence factor of 86.7%.

Cis-1,2-DCE was detected in monitoring well 50WW09 at concentrations of 0.54 J µg/L and 1.1 µg/L during the first and second Year 9 RA-O semiannual sampling events, respectively. As stated in Section 3.1.1, the data set used for the Mann-Kendall analysis for 50WW09 included the 2013 baseline samples and all subsequent RA-O monitoring events because there is insufficient data for statistical analysis using only post-ISB data. Mann-Kendall trend analysis results indicate that there is no significant trend associated with concentrations of cis-1,2-DCE in 50WW09 with a confidence factor of 52.7%. However, the presence of cis-1,2-DCE, indicates limited reductive dechlorination is occurring at 50WW09.

Figure 11-d indicates that the fluctuations of COC concentrations (TCE and cis-1,2-DCE) and changes in groundwater elevations were inversely correlated prior to the injections. However, following the ISB injections, the fluctuations of COC concentrations generally correlated with groundwater elevations. If the same trend continues in the Year 10 RA-O, the ISB may have stalled or reduced in effectiveness.

3.1.1.5 Monitoring Well 50WW11

Perchlorate and TCE concentrations were detected in monitoring well 50WW11 above their respective PCL and MCL at 50WW11 during both of the Year 3 post-ISB injections RA-O semiannual sampling events. Perchlorate was detected at 6,280 µg/L and 570 µg/L during the first and second Year 9 RA-O semiannual sampling events, respectively. Likewise, the TCE concentration during the first semiannual sampling event of the Year 3 post-ISB injections RA-O

was higher (3,100 µg/L) than the second semiannual sampling event (250 µg/L). The increases and decreases of the COC concentrations at 50WW11 have strong inverse correlations with the groundwater elevation data (see **Figure 11-e**). The Mann-Kendall trend analyses indicate stable trends for both perchlorate and TCE with a confidence factor of 89.1% for perchlorate and 75.3% for TCE.

During the fourth quarter of the Year 2 RA-O, concentrations of 1,2-DCA, cis-1,2-DCE, and 1,1-DCE were detected below their respective MCLs. Each COC concentration increased during the October 2022 sampling event with a detection of 25 µg/L for 1,2-DCA, 65 µg/L for cis-1,2-DCE, and 22 µg/L for 1,1-DCE. The concentrations then dropped back below their respective MCLs with a detection of 1.9 µg/L for 1,2-DCA, 8.5 µg/L for cis-1,2-DCE, and 2.1 µg/L for 1,1-DCE. Once again, the increases and decreases of the COC concentrations are found to have strong correlations with the groundwater elevation data (see **Figure 11-e**). The Mann-Kendall trend analyses indicate stable trends for each COC with a confidence factor of 85.9% for 1,2-DCA, 70.3 % for cis-1,2-DCE, and 87.5% for 1,1-DCE.

3.1.1.6 Monitoring Well 50WW12

Perchlorate and TCE were detected above their respective PCL and MCL during both of the Year 3 post-ISB injections RA-O sampling events at 50WW12. Perchlorate concentration during the first semiannual sampling event (October 2022) was detected at 17,600 µg/L. A duplicate sample was also taken from 50WW12 (17,900 µg/L). The concentration then increased to 79,100 µg/L (84,500 µg/L [duplicate result]) during the second Year 9 semiannual sampling event (May 2023). Likewise, the detected TCE concentration during the first semiannual sampling event of the Year 3 post-ISB injections RA-O (180 µg/L) was lower than the second semiannual sampling event (1,100 µg/L). The May 2023 concentrations of TCE and perchlorate were higher than the November 2019 baseline concentration of each COC (47,000 µg/L for perchlorate and 280 µg/L for TCE). The concentrations for TCE and perchlorate during the October 2022 sampling event were lower than their respective baseline concentrations.

1,1-DCE and 1,2 DCA were detected above their respective MCLs (7 µg/L and 4.5 µg/L) during the second semiannual sampling event (May 2023) at concentrations of 19 µg/L and 6.3 µg/L respectively. The May 2023 concentrations were higher than the November 2019 baseline concentrations (4.6 µg/L for 1,1-DCE and 2.7 µg/L for 1,2-DCA). Both COCs were detected at concentrations below their MCLs and their respective baseline concentrations during the first semiannual sampling event (October 2022) at 4.5 µg/L for 1,1-DCE and at 0.79 µg/L for 1,2-DCA.

Figure 11-f shows that increases and decreases of COC concentrations at 50WW12 are directly correlated to changes in groundwater elevation during the Year 3 post-ISB injections RA-O. The relatively high perchlorate and chlorinated volatile organic compound concentrations, with seasonal peaks during times with elevated groundwater levels, may suggest that residual source mass is present near this monitoring well. This direct correlation has been consistent for perchlorate and TCE since August 2013 and for 1,1-DCE and 1,2-DCA since May 2016.

The Mann-Kendall trend analyses indicate no trend for any of the COCs at 50WW12 with a confidence factor of 61.9% for perchlorate, 75.3% for TCE, 89.1% for 1,1-DCE, and 67.6% for 1,2-DCA.

3.1.1.7 Monitoring Well 50WW13

Perchlorate and TCE were detected above their respective PCL and MCL during both of the Year 3 post-ISB injections semiannual sampling events. Perchlorate concentration during the first semiannual sampling event (October 2022) was detected at 5,310 µg/L. Concentrations then decreased to 186 µg/L during the second semiannual sampling event (May 2023). Likewise, the detected TCE concentration during the first semiannual sampling event of the Year 3 post-ISB injections RA-O (8,600 µg/L) was higher than the second semiannual sampling event (490 µg/L). Each COC was detected at a higher concentration than the November 2019 baseline event (4,900 µg/L for perchlorate and 7,300 µg/L for TCE) during the October 2022 sampling event, and a lower concentration in the May 2023 sampling event.

Cis-1,2-DCE, 1,1-DCE, and 1,2-DCA were only detected above their MCLs during the first semiannual sampling event (October 2022) at concentrations of 280 µg/L, 14 µg/L, and 46 µg/L respectively. However, all three COCs were detected below their MCLs during the May 2023 sampling event. Cis-1,2-DCE has an MCL of 70 µg/L and was detected at 30 µg/L; 1,1-DCE has an MCL of 7 µg/L and was detected at 1.5 µg/L; 1,2-DCA has an MCL of 5 µg/L and was detected at 3.0 µg/L. The November 2019 baseline concentrations were detected at 230 µg/L for cis-1,2-DCE, 17 µg/L for 1,1-DCE and 39 µg/L for 1,2-DCA. Additionally, the October 2022 1,1-DCE concentrations did not exceed baseline concentration (17 µg/L, November 2019) during the Year 3 post-ISB injections RA-O.

Figure 11-g indicates post-ISB COC concentrations measured in monitoring well 50WW13 were mostly inversely correlated with groundwater elevations. The Mann-Kendall trend analyses indicate a stable trend for all of the COCs at 50WW13 with a confidence factor of 61.9% for perchlorate, 72.9% for TCE, 59.0% for cis-1,2-DCE, 79.9% for 1,1-DCE, and 61.9% for 1,2-DCA.

3.1.1.8 Monitoring Well 50WW14

TCE was the only COC detected in 50WW14 above its MCL during both Year 9 RA-O semiannual sampling events at 33 µg/L (October 2022) and 20 µg/L (May 2023). The Mann-Kendall analysis for TCE concentration at 50WW14 indicates a stable trend based on sampling data from November 2019 to May 2023. However, the TCE concentration at 50WW14 has decreased overall from the 2013 baseline sampling event (93.8 µg/L).

The fluctuations in TCE concentrations compared to groundwater elevation changes are shown on **Figure 11-h**. A direct correlation between groundwater elevation and TCE concentration was indicated from 2016 to 2019. During the post-ISB time period, TCE concentrations were inversely correlated with groundwater elevations for 7 out of the 10 sampling events. The three post-ISB

sampling events showing a direct correlation between TCE and groundwater elevation were January 2022, April 2022, and October 2022.

3.1.1.9 Monitoring Well 50WW15

TCE has been the only COC detected above the cleanup level in 50WW15 since May 2015. TCE levels have continued to fluctuate with an overall decline since early 2015 but increased slightly from 2.3 µg/L in May 2019 to 7.2 µg/L in November 2019, and further increased to 8.4 µg/L in October 2020 before decreasing to below the MCL for the first time in October 2021 (**Figure 11-i**). In October 2022 of the Year 9 RA-O, the TCE concentration was also below the MCL at 4.9 µg/L. However, the TCE concentration increased to 6.1 µg/L (above the MCL) in May 2023. Mann-Kendall analysis indicates a stable trend for the concentration levels with a confidence factor of 59.2%.

3.1.2 Overall LHAAP-50 Mann-Kendall Evaluation

The overall Mann-Kendall evaluation for monitoring wells with COCs exceeding the MCLs/PCLs at LHAAP-50 indicates that the ISB remedy has not effectively decreased contaminant concentrations within the ISB treatment area as expected (**Table 8**). Currently, stable conditions exist across most of the site indicating the ISB remedy is reaching a treatment plateau. However, evidence does not support this conclusion for the eastern treatment area near monitoring well 50WW12 as the trend analysis results for this well are "no trend" for all COCs tested (**Table 8**) and **Figure 11-f** indicates that COC concentrations are similar to or higher than pre-ISB concentrations. Additionally, evaluation of treatment effectiveness in this area is limited because of the absence of monitoring wells immediately downgradient. The presence of degradation products cis-1,2-DCE and VC suggests that limited biological degradation is occurring; however, the primary MNA processes reducing concentrations may be abiotic.

Contaminant concentrations outside the MNA treatment area may be decreasing. This is most likely due to abiotic processes based on the geochemical indicators discussed in Section 3.2. Additionally, increasing contaminant concentrations on the upgradient edge of the plume indicate that limited biodegradation is occurring in the area surrounding 50WW08. See excerpt from **Table 8** below.

Monitoring Well	Period of Record	Perchlorate	TCE	cis-1,2-DCE	1,1-DCE	1,2-DCA
50WW08	2019-2023	No trend	**Increasing**	**Increasing**	<MCL	<MCL

Notes: < = less than

3.1.3 Plume Extent

Two plume maps were created using the October 2022 and May 2023 Year 3 post-ISB monitoring data and the Year 9 RA-O MNA monitoring data. A map for each of the semiannual events was created showing the TCE and perchlorate plumes present at LHAAP-50. **Figure 9** presents the plumes in October 2022 and **Figure 10** presents the plumes in May 2023. Additionally, baseline TCE and perchlorate plume maps are presented on **Figure 3**.

3.1.3.1 Plume Configuration

The Year 9 RA-O TCE and perchlorate plumes are elongated along the northeasterly groundwater flow path. The groundwater contaminants follow the pattern of groundwater flow to the northeast and east-northeast. The Year 9 RA-O TCE and perchlorate plumes have a smaller footprint than the November 2019 plume extents.

3.1.3.2 Associated Wells

Monitoring wells that had TCE/perchlorate detections greater than the MCL/PCL are included within the respective plume boundary. The November 2019 baseline TCE plume encompasses the following wells: 50WW05, 50WW06, 50WW08, 50WW09, 50WW10, 50WW11, 50WW12, 50WW14, 50WW15, and 50WW27 (**Figure 3**). The November 2019 baseline perchlorate plume is located slightly farther south than the TCE plume and encompasses the same wells except for 50WW05, 50WW15, and 50WW27 (**Figure 3**). The October 2022 TCE and perchlorate plumes both encompass 50WW06, 50WW08, 50WW09, 50WW11, 50WW12, 50WW13, and 50WW14. Monitoring well 50WW05 is also included in the October 2022 TCE plume (**Figure 9**). The May 2023 TCE plume encompasses the same monitoring wells as the October 2022 TCE plume, with the addition of 50WW15 in the northwest corner of the plume, very close to the plume border. The May 2023 perchlorate plume encompasses the same monitoring wells as the October 2022 perchlorate plume with the exclusion of 50WW06. Additionally monitoring wells 50WW08 and 50WW09 are also located very close to the currently interpreted perchlorate plume boundary (**Figure 10**).

3.1.3.3 TCE Plume

Based on the COC concentration data and the plume maps, the TCE plume is relatively stable. TCE concentrations at 50WW05 showed a significantly decreasing trend. TCE concentrations at 50WW11, 50WW13, 50WW14, and 50WW15 all showed stable trends. No trend was indicated for TCE concentrations at 50WW06, 50WW09, or 50WW12. An increasing trend in TCE concentration was shown at 50WW08.

Monitoring well 50WW12, the farthest downgradient well within the TCE plume, showed a probably increasing trend in TCE concentration when analyzed from 2019 (baseline event) through the Year 8 RA-O, but showed no trend when analyzed through the Year 9 RA-O. The Year

8 RA-O report stated that the TCE plume core might be migrating towards 50WW12 because of the probably increasing TCE concentration trend and seasonal fluctuations at 50WW12 (Bhate, February 2023). A clear overall increasing trend in TCE concentration at 50WW12 from 2013 (non-detect) (**Table 5**) to the most recent post-ISB TCE concentration from May 2023 (1,100 µg/L) (**Table 4**) is shown on **Figure 11-f**. Additionally, the May 2023 TCE concentration is more than 3 times the 2019 baseline concentration of 280 µg/L. However, Mann-Kendall analysis completed for TCE concentrations detected at 50WW12 from 2019 through Year 9 RA-O indicated no statistical trend for TCE concentrations. As discussed in Section 3.1.1.6, there appears to be a direct correlation between groundwater elevations and detected TCE concentrations at 50WW12.

TCE concentrations at a further downgradient well (50WW29) remain non-detect, indicating that the plume does not extend far beyond 50WW12 (Bhate, February 2023). As discussed in Section 3.1.2, additional wells may be needed in the downgradient areas located between 50WW12 and monitoring wells without detections to determine the extent of the TCE plume.

Monitoring well 50WW08, an upper shallow zone well located within the LHAAP-50 boundary and near the western TCE plume border, was the only monitoring well for which a significant increasing trend was determined for TCE and cis-1,2-DCE (**Table 8**). The presence of cis-1,2-DCE provides evidence of TCE degradation in this portion of the TCE plume, and geochemical evidence indicates the degradation is likely abiotic in nature (Section 3.2). Monitoring well 50WW09, completed in the lower shallow zone, is located close to monitoring well 50WW08. TCE and cis-1,2-DCE concentrations measured in well 50WW9 during the Year 9 RA-O were substantially lower than concentrations measured in well 50WW08, and no significant statistical trend was determined for either COC in the well. The higher concentrations measured in well 50WW08 (TCE=720 µg/L and 650 µg/L; cis-1,2-DCE=73 µg/L and 85 µg/L) in comparison with well 50WW09 (TCE=5.8 µg/L and 11 µg/L; cis-1,2-DCE=0.54 J µg/L and 1.1 µg/L; **Table 4**) indicates concentrations of these VOCs decrease with depth in the shallow zone at this location.

Monitoring well 50WW13, located in the east-central portion of the TCE plume (**Figure 2**), has historically had the highest TCE concentrations measured at LHAAP-50. That pattern continued to be the case for one of the Year 9 RA-O sampling events (October 2022), when TCE was measured in the well at a concentration of 8,600 µg/L (**Table 4 and Figure 9**). No significant statistical trend was determined for any of the five COCs in the well for which trends were evaluated, including TCE; all COC trends were determined to be “stable” (**Table 8**). This, along with the fact that the monitoring wells surrounding the TCE plume are non-detect for TCE, indicates that the TCE plume is relatively stable, aside from the eastern area surrounding 50WW12.

3.1.3.4 Perchlorate Plume

Based on the COC concentration data and the plume maps, the perchlorate plume is relatively stable. Perchlorate concentrations at 50WW11 and 50WW13 both showed stable trends. No

trend was indicated for perchlorate concentrations at 50WW06, 50WW08, or 50WW12. No monitoring wells showed significant increases in perchlorate concentration trends during the Year 9 RA-O monitoring period. The Mann-Kendall analysis from the Year 8 RA-O for 50WW11 indicated a decreasing trend for perchlorate concentrations. Even though the Year 9 trend is now stable rather than decreasing, the concentration levels recorded during October 2022 (6,280 µg/L) and May 2023 (570 µg/L) are still both lower than the baseline sample concentration (8,000 µg/L). Monitoring well 50WW13 was also stable during the Year 8 RA-O. 50WW11 and 50WW13 are located within the ISB treatment area. 50WW15 and 50WW05 located just north of the plume, detected concentrations of perchlorate that were well below the PCL of 17 µg/L (less than or equal to 0.13 µg/L during both sampling events). This supports perchlorate plume stability.

While 50WW08 and 50WW06 did not show trends for perchlorate concentration levels, both October 2022 and May 2023 concentrations were below the baseline sample concentration for each well. Both monitoring wells are located on the edge of the perchlorate plume and are adjacent to monitoring wells outside of the plume (50WW05, 50WW16, and 50WW22) with October 2022 perchlorate concentrations at 0.109 µg/L, 0.05 µg/L, and 0.269 µg/L respectively, which are well below the PCL of 17 µg/L. Monitoring well 50WW06 was excluded from the plume in May 2023 when the perchlorate concentration dropped to 5.79 µg/L, which further supports the plume stability.

Monitoring well 50WW12 is the farthest downgradient well in the perchlorate plume. It had the highest concentration level of perchlorate at 79,100 µg/L in May 2023. The Year 8 RA-O report noted that the concentration of perchlorate detected in April 2022 (141,000 µg/L) at 50WW12 has been the highest detected since 2013, indicating that there may be a residual source responsible for the high concentrations near downgradient well 50WW12 (Bhate, February 2023). However, levels have decreased since then and were even below the baseline in October 2022 (17,600 µg/L). Perchlorate levels were below the PCL at downgradient well 50WW29 at concentrations of 0.138 µg/L in October 2022 and in 0.0701 J[1] µg/L May 2023 which means the plume has not moved far past 50WW12. Thus, supporting perchlorate plume stability.

As mentioned in the Year 8 RA-O, the absence of daughter products like cis-1,2-DCE and VC indicate that reductive dechlorination may be limited in the vicinity of 50WW12. It is possible that the high perchlorate concentrations are inhibiting the reductive dechlorination of TCE that would have been expected to occur (Bhate, February 2023). Reductive dechlorination may have also been inhibited for the same reason during the Year 9 RA-O monitoring period as only 1.6 µg/L of cis-1,2-DCE was detected at 50WW12 in May 2023. However, this low-level detection of cis-1,2-DCE indicates that there is some reductive dechlorination occurring. To evaluate if reductive dechlorination is occurring, monitoring will need to continue to be conducted.

[1] Qualifier denoting an estimated result.

3.1.4 Predictive Modeling

The RAWP (AECOM, June 2013) requires predictive modeling and the calculation of a natural attenuation rate to be conducted for COCs at monitoring wells that meet the following credentials: the concentration of the COC was greater than the MCL/PCL and the Mann-Kendall analysis trend for that COC was determined to be statistically decreasing over time based on the results of the RA-O monitoring period (**Appendix E**). Calculations of attenuation rates for qualifying wells can be found in **Appendix F**.

Table 8 summarizes the Year 9 Mann-Kendall trend analyses for each of the wells that had COCs with exceedances over the MCL/PCL. Monitoring well 50WW05 showed decreasing trends and MCL exceedances for both TCE and cis-1,2-DCE concentrations. Therefore, the time-dependent attenuation rate was calculated. The first order rate constant for TCE was determined to be 0.0007 day^{-1} and 0.0005 day^{-1} for cis-1,2-DCE. It was estimated that it would take 12.8 years for TCE to reach its MCL of 5 µg/L and 3.4 years for cis-1,2-DCE to reach its MCL of 70 µg/L. The natural attenuation rates for each COC decreased from the Year 8 RA-O estimations of 17.3 years and 10.4 years (respectively).

It should be noted that the current trends may not accurately predict future declines in COC concentrations due to the COC concentrations fluctuating in response to the inter- and intra-annual groundwater elevation changes (as shown in the COC time-series plots provided in **Figure 11-a** through **Figure 11-i**). The trends determined for individual wells collectively reflect these elevation changes over the period of time selected for statistical (i.e., trend) analysis. Additionally, an ISB injection event may have resulted in COCs desorption from the soil, resulting in increased COC concentrations that would also affect the Mann-Kendall trend. The Year 8 RA-O Report indicated that two monitoring wells, 50WW05 and 50WW11, met the credentials for predictive modeling (Bhate, February 2023). Unlike 50WW05, 50WW11 did not meet the credentials for this reporting period. Year 9 RA-O results for the Mann-Kendall trend analysis determined perchlorate concentrations at 50WW11 to be “stable” rather than “probably decreasing” (the Year 8 RA-O results). This was due to a substantial increase in concentration from 1,020 µg/L in April 2022 to 6,280 µg/L in October 2022. On the contrary, the concentration of perchlorate at 50WW11 decreased to 570 µg/L in May 2023 that, without the input of the October 2022 data, would have followed the decreasing trend. This is a prime example of inter- and intra-annual groundwater elevation changes effecting COC concentration trends. It should be noted that the groundwater elevation changes may reflect longer-term changes in addition to shorter-term seasonal changes (based on groundwater levels/elevations at this and other sites on LHAAP).

3.2 Performance Monitoring of ISB: Geochemical Indicators

Table 1 identifies the wells that were chosen to evaluate the performance of the ISB remedy. Geochemical parameters are collected in the field and are recorded during sampling events for

the monitoring wells. The field measured parameters for LHAAP-50 wells include dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, conductivity, turbidity, temperature, and ferrous iron. Groundwater samples were also analyzed for MNA parameters (nitrate, sulfate, chloride, dissolved gases, and TOC).

The wells in the treatment area used to evaluate the ISB remedy are 50WW06, 50WW11, 50WW12, 50WW13, and 50WW14. These wells are more likely to be affected by the ISB injections than the wells outside of the treatment area. In turn, the wells outside of the treatment area (50WW05, 50WW08, 50WW09, and 50WW15) are used to evaluate the MNA remedy.

3.2.1 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 greater than approximately 0.5 mg/L, and biotic reductive dechlorination is not expected to occur at DO levels above that threshold. DO levels in the monitoring wells (inside and outside the treatment area) sampled during the first semiannual Year 9 RA-O monitoring event were below 0.5 mg/L, ranging between 0.08 mg/L and 0.46 mg/L (**Table 4**). The DO levels in wells outside the treatment area during the second semiannual Year 9 RA-O monitoring event ranged between 0.03 mg/L and 0.72 mg/L with detections greater than 0.5 mg/L found in two wells (50WW08 and 50WW09) (**Table 4**). Inside the treatment area during the Year 9 second semiannual RA-O monitoring event, DO concentrations ranged from 0.05 mg/L to 3.76 mg/L (**Table 4**), and detections in two wells (50WW13 and 50WW06) were greater than 0.5 mg/L. During the first Year 9 RA-O semiannual sampling event, all wells had measured DO concentrations (DO <0.5 mg/L) favorable to biotic reductive dechlorination. During the second Year 9 RA-O semiannual sampling event, 60% of wells in the treatment area and 50% of wells outside the treatment area had measured DO concentrations favorable to biotic reductive dechlorination (**Table 4**).

3.2.2 Oxidation Reduction Potential

The ORP levels indicate how oxidative or reductive the groundwater is in the aquifer matrix and provide real-time data regarding whether conditions may be conducive for anaerobic biodegradation. ORP values less than 50 millivolts (mV) are indicative of anaerobic conditions and are conducive for the biological reduction of perchlorate, chlorinated ethenes, and ethanes. During the October 2022 sampling event of the Year 9 RA-O, ORP was above 50 mV at all wells in the treatment area except 50WW13 (38 mV) and 50WW14 (-39 mV). Outside the treatment area, ORP was above 50 mV for all wells except 50WW05 (20 mV), 50WW15 (23 mV), and 50WW29 (34 mV). During the May 2023 sampling event of the Year 9 RA-O, ORP was above 50 mV at all the wells in the treatment area except 50WW14 (-24 mV) (**Table 4**). Outside the treatment area, the ORP values were above 50 mV at all wells, except 50WW05 (38 mV) (**Table 4**). The ORP values in the impacted wells indicate that oxidative conditions (not favorable for reductive

dichlorination) were present in all wells except for 50WW05, 50WW13, 50WW14, 50WW15, and 50WW29 during the Year 9 RA-O monitoring period.

3.2.3 Nitrate

After DO has been depleted in the microbiological treatment zone, nitrate may be used as an electron acceptor for anaerobic biodegradation of perchlorate and chlorinated ethenes via denitrification. Nitrate levels above 1 mg/L may compete with the reductive pathway (USEPA, September 1998). Nitrate levels in LHAAP-50 groundwater were detected near or below the laboratory reporting limit of 0.1 mg/L during the Year 9 RA-O monitoring period. Specifically, all five wells within the treatment area indicated nitrate levels at <0.1 mg/L during both sampling events (**Table 4**). Therefore, nitrate levels indicate that nitrate-reducing processes will not inhibit anerobic biodegradation of perchlorate or chlorinated ethenes.

3.2.4 Sulfate

After DO and nitrate have been depleted in the groundwater, 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 greater than 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). **Table 4** indicates that the sulfate concentrations were above 20 mg/L in all the wells in the treatment area except 50WW06 in May 2023. Sulfate concentrations during the Year 9 RA-O ranged between 12.1 mg/L at 50WW06 and 616 mg/L at 50WW12, indicating that sulfate may compete as an electron acceptor with VOCs and perchlorate. Sulfate was not analyzed for in wells outside the treatment area.

3.2.5 Methane

Methanogenesis occurs in highly reducing conditions and generally occurs after oxygen, nitrate, and sulfate have been depleted. Methane levels above 500 µg/L are considered to indicate methanogenic conditions (USEPA, September 1998). Methane measured at the five wells in the treatment area ranged between 0.821 µg/L at 50WW06 (May 2023) and 14,800 µg/L at 50WW12 (May 2023) during the Year 9 RA-O monitoring period. The second highest concentration of methane (9,860 µg/L) was detected at 50WW12 in October 2022. The next highest concentration of methane was detected in 50WW06 (49.1 µg/L). Methane concentrations in 50WW12 indicate that methanogenesis is occurring. Note that the second highest TCE concentration (1,100 µg/L) and the highest perchlorate concentration (79,100 µg/L) were detected at 50WW12 corresponding to the high methane detections.

3.2.6 Total Organic Carbon

Regardless of the electron acceptor being used, organic carbon is a required source of reduced hydrogen and energy needed to sustain microbial degradation of contaminants. TOC

concentrations greater than 20 mg/L are considered adequate to support microbial activity (USEPA, September 1998). All TOC concentrations measured within the treatment area during this monitoring period were found to be below 20 mg/L. Therefore, TOC levels detected during the Year 9 RA-O monitoring period are not sufficient to support the reduction of perchlorate or VOCs.

3.2.7 pH

The pH of groundwater has an effect on the presence and activity of microbial populations in groundwater. Microbes capable of degrading chlorinated aliphatic hydrocarbons and petroleum hydrocarbon compounds generally prefer pH values varying from 6 to 8 standard units (USEPA, September 1998). The groundwater pH within the treatment area ranged between 6.51 and 7.38 standard units in the first semiannual monitoring event as part of the Year 9 RA-O; outside the treatment area, the pH ranged between 7.32 and 7.62 standard units in the first semiannual monitoring event of Year 9 RA-O. During the second semiannual monitoring event of the Year 9 RA-O, pH ranged between 6.31 and 7.4 standard units in monitoring wells outside the treatment area. The groundwater pH within the treatment area ranged between 6.37 and 6.88 standard units in the second semiannual monitoring event as part of the Year 9 RA-O. Optimal conditions for microbial populations were present throughout the entire Year 9 RA-O monitoring period in monitoring wells both inside and outside the treatment area.

3.2.8 Ethane and Ethene

Ethane and ethene are the two end products of the reductive dechlorination pathways for chlorinated ethanes and ethenes. In the Year 9 first semiannual monitoring event (October 2022), ethane was detected within the treatment zone at 1.43 J µg/L at 50WW14. During the second semiannual monitoring event (May 2023), ethane was detected within the treatment zone at 2.09 µg/L at 50WW06. Ethene was detected within the treatment zone at 103 J µg/L and 1.87 J µg/L at 50WW11 and 50WW13, respectively, during the first semiannual monitoring event (October 2022). Ethene was not detected within the treatment zone during the May 2023 monitoring event. Low levels of ethene and ethane detected at 50WW13 and 50WW14 are indicative of complete degradation of chlorinated ethenes, though slow and limited.

3.2.9 Geochemical-Indicator and MNA Parameter Summary

The qualitative assessment of geochemical indicators in the shallow groundwater zone at LHAAP-50 indicates that conditions both inside and outside the treatment area were more conducive to biological degradation during the first semiannual sampling event (October 2022) than in the second semiannual sampling event (May 2023). Additionally, conditions were slightly more conducive to biological degradation inside the treatment zone than outside the treatment zone. However, overall conditions were only marginally conducive to biological degradation, except at monitoring well 50WW12 where methanogenesis is occurring, at 50WW14 and 50WW06 where ethane was detected, and at 50WW11 and 50WW13 where ethene was detected.

4 SUMMARY AND CONCLUSIONS

4.1 Summary

A LUC compliance inspection conducted on 11 October 2022 found no compliance issues, changes in land use, or concerns. The use of the site is consistent with that mandated by the ROD. No damage to bollards, well pads, or protective casings was observed during the 2022/2023 well inspections, and minimal encroachment of weeds or brush on the wells pads was observed.

VOC, perchlorate, and geochemical data were collected during both of the Year 9 RA-O semiannual sampling events at LHAAP-50 to evaluate effectiveness of the ISB remedy. A tiered approach assessing the three lines of evidence was used to evaluate the occurrence of natural attenuation in site groundwater. TCE and perchlorate are the most widespread COCs in shallow groundwater at LHAAP-50. An assessment of the first line of evidence shows that both TCE and perchlorate plumes were relatively stable during the Year 9 RA-O monitoring. The plumes are bounded by downgradient well 50WW29, where the COCs were not detected.

Based on the COC concentration data and the plume maps, the TCE plume is relatively stable. TCE concentrations at 50WW05 showed a significantly decreasing trend. TCE concentrations at 50WW11, 50WW13, 50WW14, and 50WW15 all showed stable trends. Mann-Kendall analysis indicates no trend for TCE concentrations at 50WW06, 50WW09, or 50WW12. However, inter- and intra-annual groundwater elevation changes have affected COC concentration trends at these wells and discredited the Mann-Kendall analysis. The overall TCE concentration trends at 50WW06 and 50WW09 are decreasing. At 50WW12 the overall TCE concentration trend is increasing. An increasing trend in TCE concentration was shown at 50WW08, which is located on the far west side of the TCE plume. Cis-1,2-DCE concentrations also revealed an increasing trend at 50WW08, indicating that degradation of TCE is occurring at a direct rate with the rising TCE levels. The past Year 8 RA-O Mann-Kendall trend analysis indicated that TCE trends at 50WW12 (the furthest downgradient monitoring well in the TCE plume) were increasing. The highest concentration of TCE detected during the Year 9 RA-O was detected at 50WW13 (located in the east-central portion of the plume) at 8,600 µg/L during the October 2022 sampling event. This well has historically had the highest TCE concentrations and concentration levels remain stable. This, along with the fact that the monitoring wells surrounding the TCE plume are non-detect for TCE, indicates that the TCE plume is relatively stable.

Based on the COC concentration data and the plume maps, the perchlorate plume is relatively stable. Perchlorate concentrations at 50WW11 and 50WW13 both showed stable trends. No trend was indicated for perchlorate concentrations at 50WW06, 50WW08, or 50WW12. No monitoring wells showed significant increases in perchlorate concentration trends. 50WW15 and Monitoring well 50WW05 located just north of the plume, detected concentrations of perchlorate that were well below the PCL of 17 µg/L (less than or equal to 0.13 µg/L during both sampling events). This supports perchlorate plume stability. 50WW08 and 50WW06 did not show

trends for perchlorate concentration levels and both October 2022 and May 2023 concentrations were below the baseline sample concentration for each well. Both monitoring wells are located on the border of the perchlorate plume and are adjacent to monitoring wells outside of the plume with perchlorate concentrations far below the PCL. Monitoring well 50WW06 was even excluded from the plume in May 2023 when the perchlorate concentration dropped to 5.79 µg/L (below the PCL) which further supports the plume stability. Monitoring well 50WW12 is the farthest downgradient well in the perchlorate plume. The Year 9 RA-O trend analysis revealed that there was no trend for perchlorate concentrations and that perchlorate concentrations were directly correlated with groundwater elevation. Monitoring well 50WW12 had the highest concentration levels of perchlorate during both of the Year 9 RA-O monitoring events at 17,600 µg/L (17,900 µg/L [duplicate result]) in October 2022 and 79,100 µg/L (84,500 µg/L [duplicate result]) in May 2023. The Year 8 RA-O report noted that the concentration of perchlorate detected in April 2022 (141,000 µg/L) at 50WW12 was the highest historical detection at site LHAAP-50 dating back to 2013 (Bhate, February 2023). This indicates that there may be a residual source responsible for the high concentrations near downgradient well 50WW12. Downgradient well 50WW29 showed perchlorate concentration levels below the PCL at 0.138 µg/L in October 2022 and in 0.0701 J µg/L May 2023 which means the plume has not moved far past 50WW12. Thus, supporting perchlorate plume stability.

The qualitative assessment of geochemical indicators in the shallow groundwater zone at LHAAP-50 indicates that conditions both inside and outside the treatment area were more conducive to biological degradation during the first semiannual sampling event (October 2022) than in the second semiannual sampling event (May 2023). Additionally, conditions were slightly more conducive to biological degradation inside the treatment zone than outside the treatment zone. However, overall conditions were only marginally conducive to biological degradation.

Surface water samples to evaluate the performance of soil removal action (soil to surface water pathway) were not collected during the Year 9 RA-O monitoring period based on the recommendations in the Year 3 RA-O Report, which was approved in July 2018 (Bhate, July 2018). During the Year 9 RA-O monitoring period, there was no water flow in Goose Prairie Creek. Therefore, no surface water sample was collected.

As noted in the Year 8 RA-O Report, DHC analysis has since ceased due to conditions becoming less favorable for reductive dichlorination and there being no remaining mass of TOC > 20 mg/L present (Bhate, February 2023).

There are no additional proposed changes to the monitoring network for the Year 10 RA-O, and the sampling will be conducted semi-annually for the ISB performance monitoring wells and annually for the RA-O monitoring wells, as approved in the Contingency Remedy RD/RAWP (USACE, December 2019). The wells are in good condition and do not require additional maintenance during the Year 10 RA-O.

4.2 Conclusions

In some portions of the plume, contaminant concentrations outside the MNA treatment area may be decreasing. This is most likely due to abiotic processes. Additionally, increasing contaminant concentrations on the upgradient edge of the plume near 50WW08, indicate that contaminant concentrations are not decreasing due to MNA as expected. If concentrations continue to show a steady increase near 50WW08, additional investigations should be conducted to determine if residual sources are present upgradient.

The direct correlation with seasonal fluctuations in TCE concentrations needs to continue to be monitored during the Year 10 RA-O. Additional investigation near 50WW12 to determine the cause of the inter- and intra-annual groundwater elevation changes affecting COC concentration trends is recommended. As mentioned in the Year 8 RA-O, the absence of daughter products like cis-1,2-DCE and VC indicate that reductive dechlorination may be limited near 50WW12. It is possible that the high perchlorate concentrations are inhibiting the reductive dechlorination of TCE that would have been expected to occur. However, some reductive dichlorination is occurring. To evaluate if reductive dechlorination is occurring, monitoring should continue to be conducted during the Year 10 RA-O.

Based on the analytical results from this Year 9 RA-O reporting period, Year 10 RA-O groundwater sampling will follow the same sample plan as the Year 9 RA-O event. Due to geochemical data collected indicating marginal conditions for the degradation of perchlorate/VOCs within the treatment area, additional injections should be considered.

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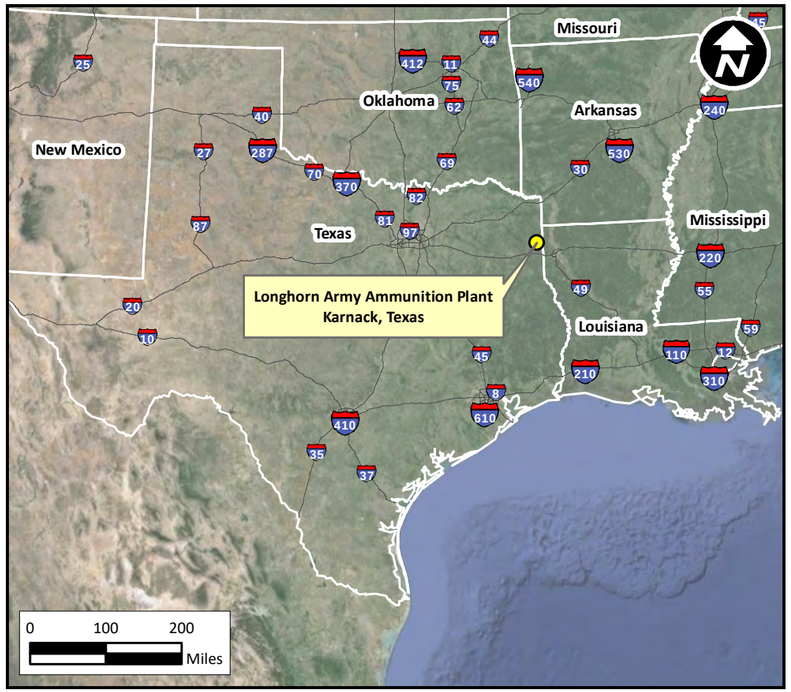
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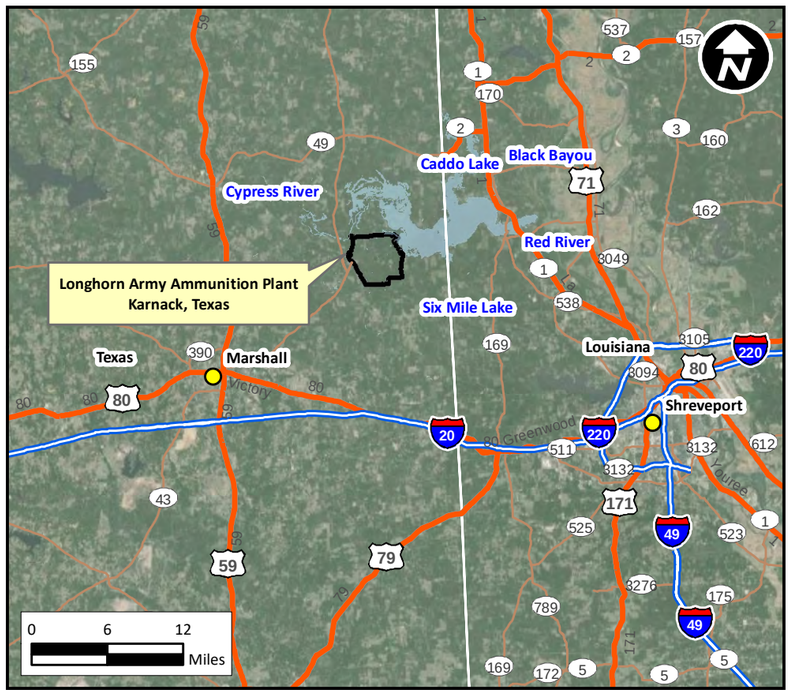
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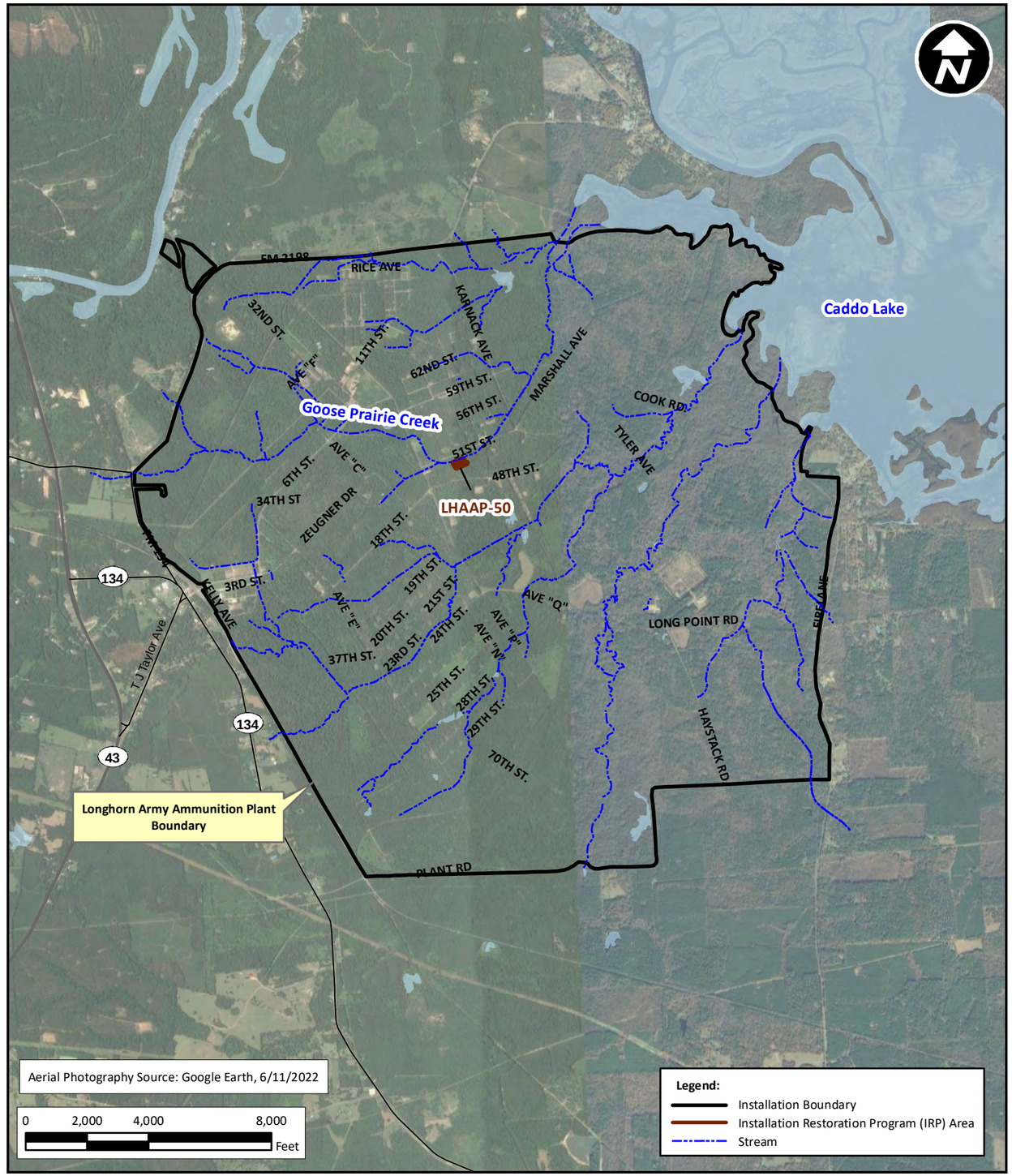
FIGURES

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Longhorn Army Ammunition Plant
Location and Site Vicinity Map

Figure 1

Ninth Annual Remedial Action Operation Report
LHAAP-50, Former Sump Water Tank
Longhorn Army Ammunition Plant
Karnack, Texas

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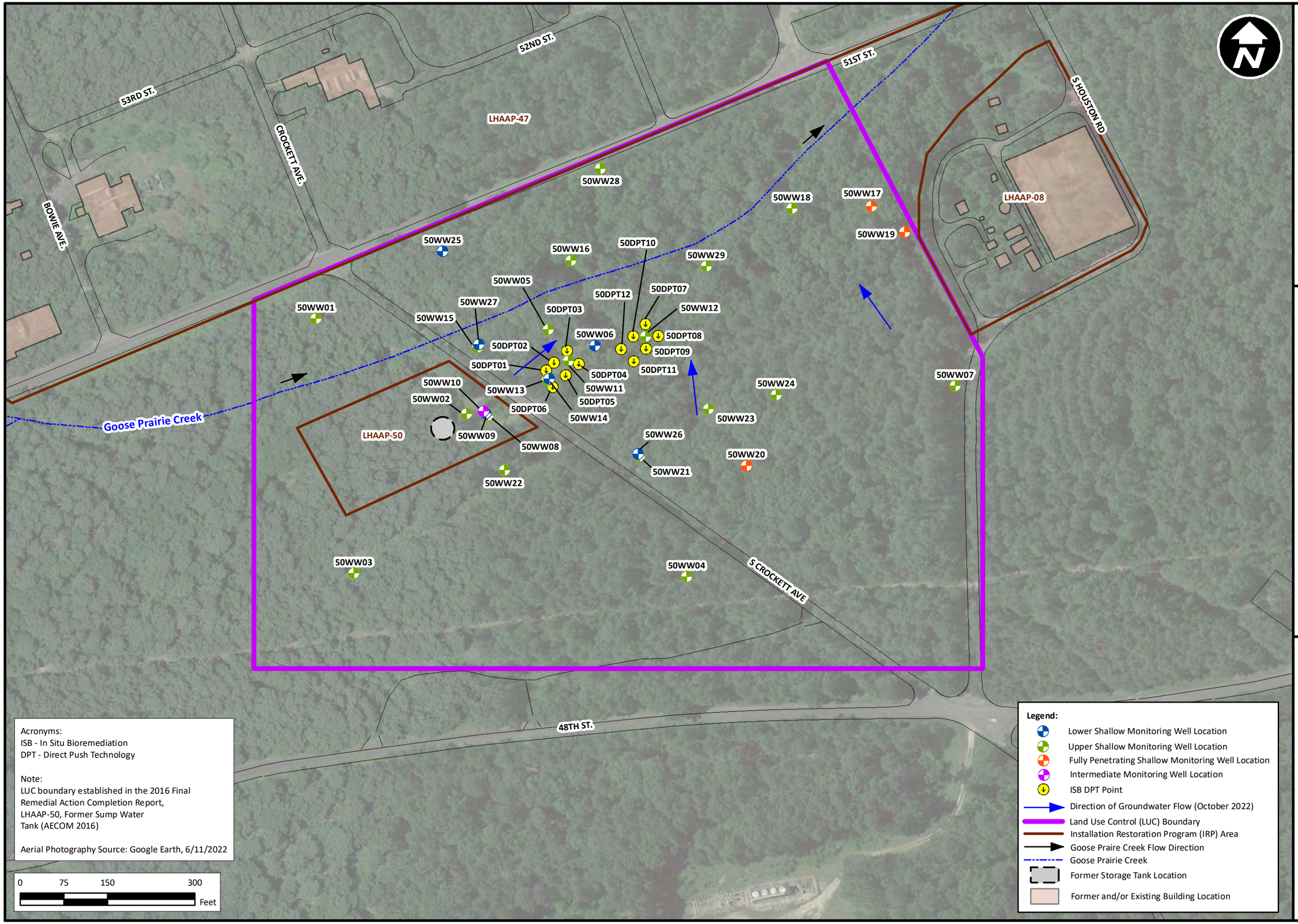
DATE: 3/12/2024

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0009.01

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Site Map

Figure 2

Ninth Annual Remedial Action Operation Report
LHAAP-50, Former Sump Water Tank
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

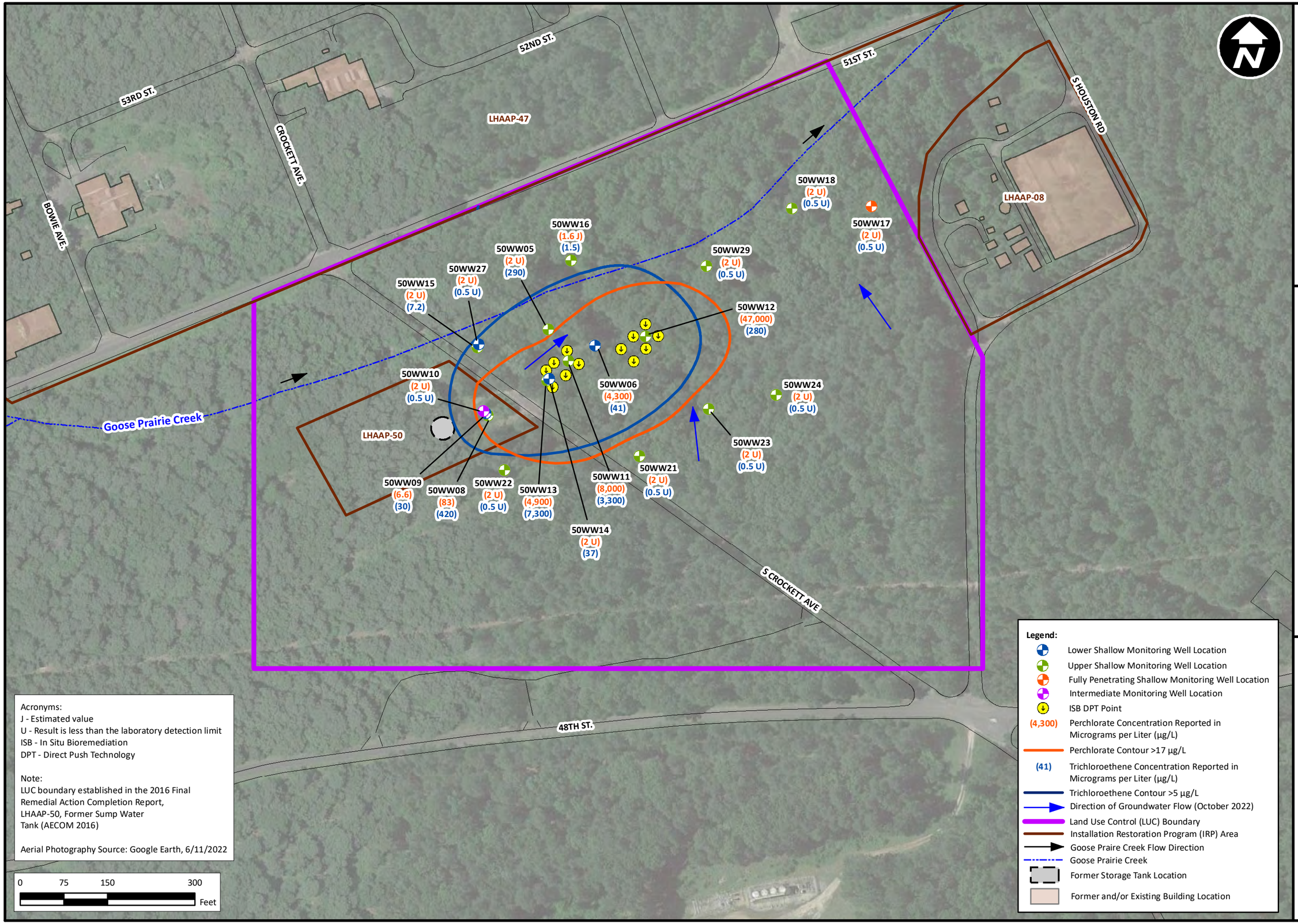
DATE: 12/19/2023

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0009.01

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Acronyms:
J - Estimated value
U - Result is less than the laboratory detection limit
ISB - In Situ Bioremediation
DPT - Direct Push Technology

Note:
LUC boundary established in the 2016 Final Remedial Action Completion Report, LHAAP-50, Former Sump Water Tank (AECOM 2016)

Aerial Photography Source: Google Earth, 6/11/2022

0 75 150 300 Feet

Legend:

- Lower Shallow Monitoring Well Location
- Upper Shallow Monitoring Well Location
- Fully Penetrating Shallow Monitoring Well Location
- Intermediate Monitoring Well Location
- ISB DPT Point
- (4,300) Perchlorate Concentration Reported in Micrograms per Liter (µg/L)
- Perchlorate Contour >17 µg/L
- (41) Trichloroethene Concentration Reported in Micrograms per Liter (µg/L)
- Trichloroethene Contour >5 µg/L
- Direction of Groundwater Flow (October 2022)
- Land Use Control (LUC) Boundary
- Installation Restoration Program (IRP) Area
- Goose Praire Creek Flow Direction
- Goose Prairie Creek
- Former Storage Tank Location
- Former and/or Existing Building Location

Trichloroethene and Perchlorate Plumes Baseline (November 2019)

Figure 3

Ninth Annual Remedial Action Operation Report
LHAAP-50, Former Sump Water Tank
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

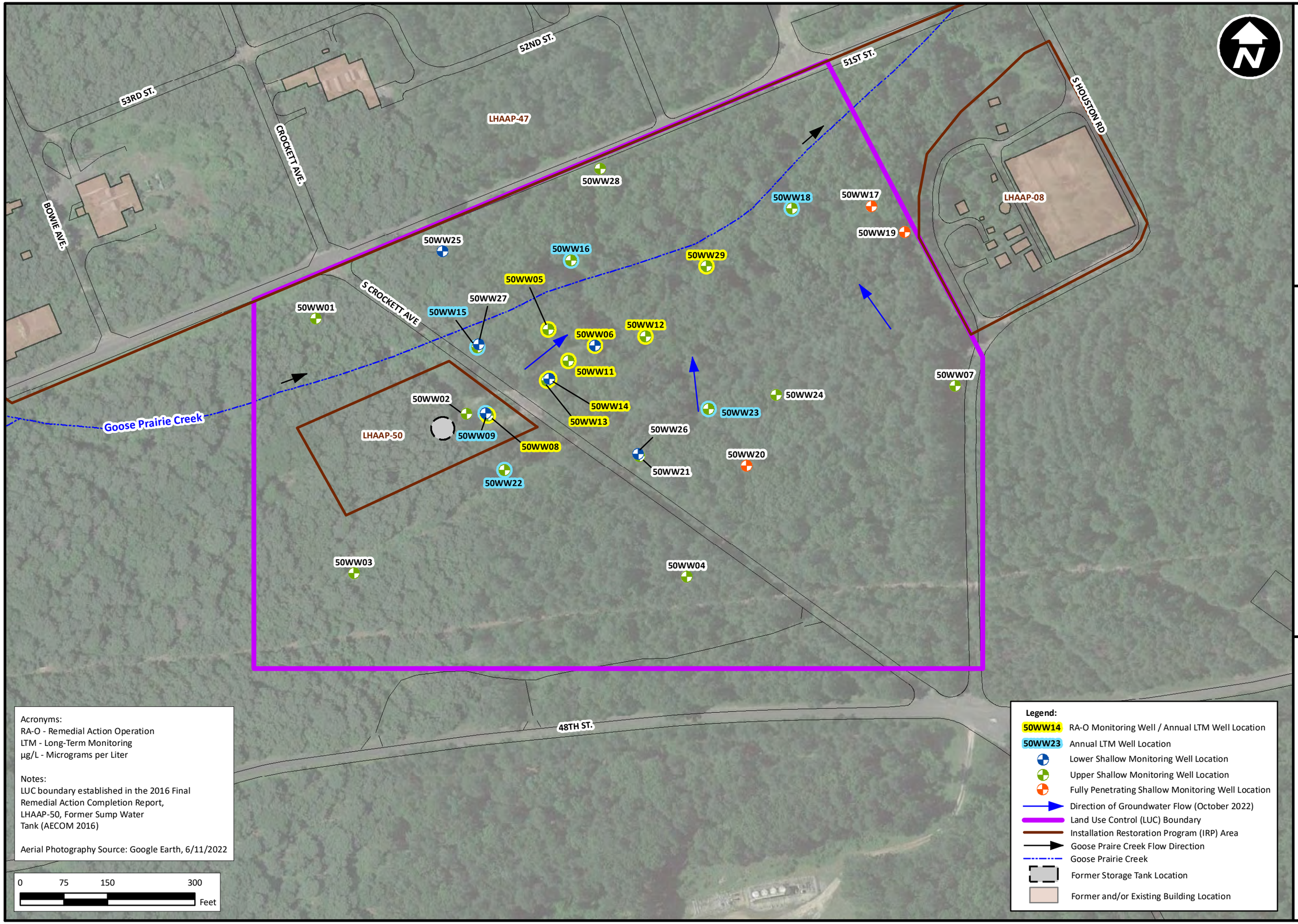
DATE: 12/19/2023

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0009.01

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RA-O Monitoring Network

Figure 4

Ninth Annual Remedial Action Operation Report
LHAAP-50, Former Sump Water Tank
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

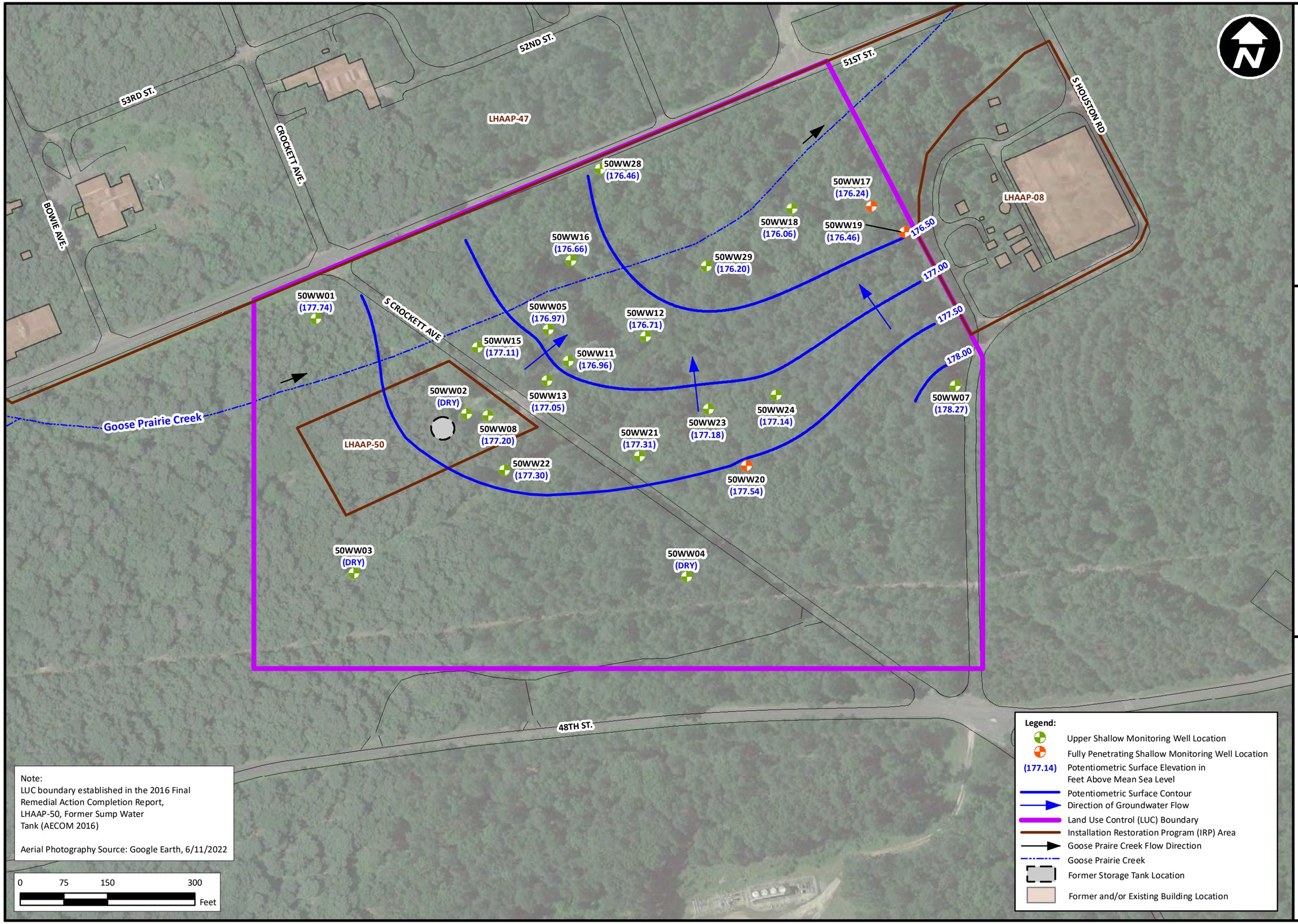
DATE: 12/19/2023

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0009.01

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Shallow Zone Potentiometric Map
1st Semiannual Sampling Event
(October 2022)

Figure 5

Ninth Annual Remedial Action Operation Report
LHAAP-50, Former Sump Water Tank
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

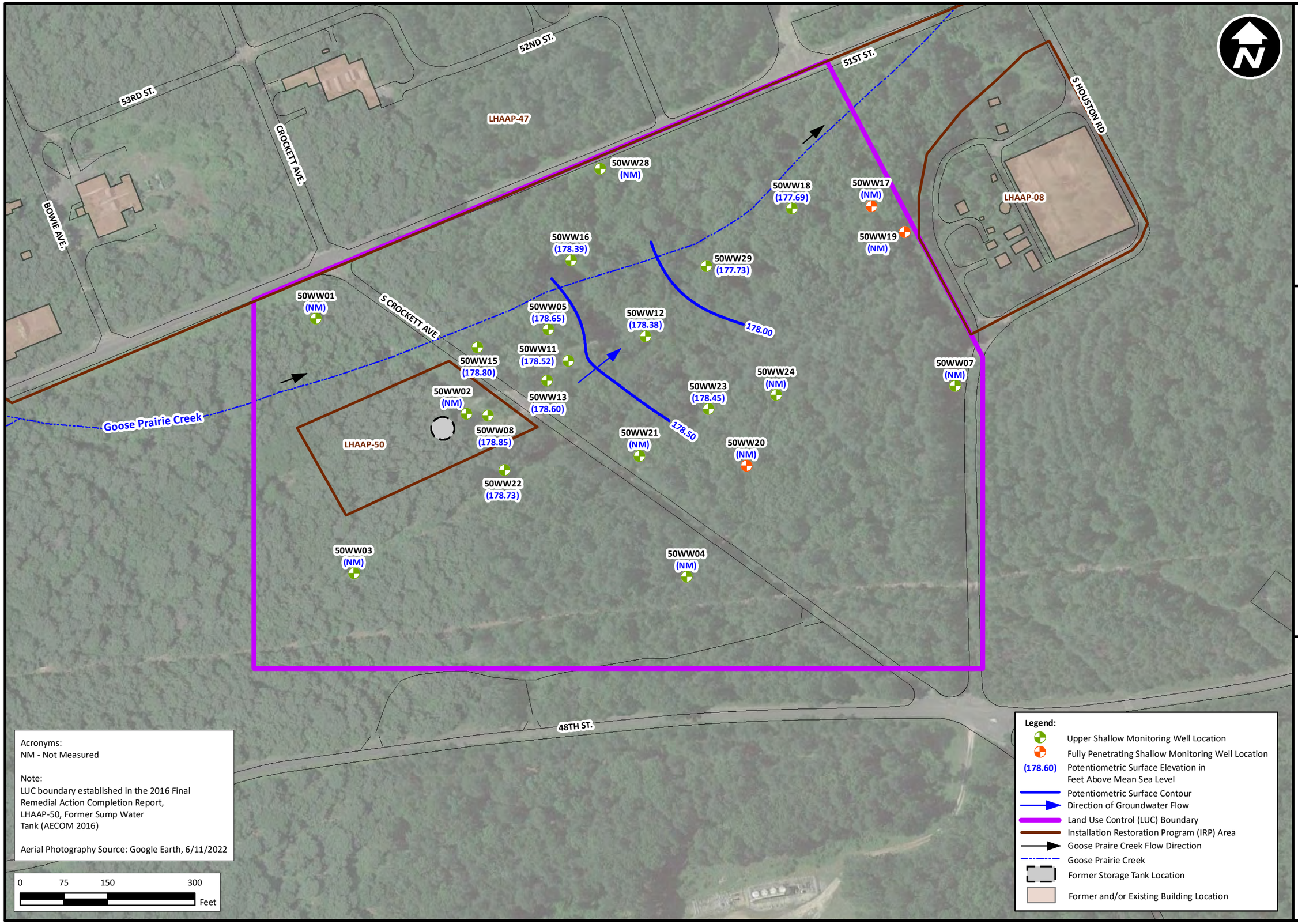
DATE: 12/19/2023

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0009.01

PCIbhate

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Shallow Zone Potentiometric Map
2nd Semiannual Sampling Event
(May 2023)

Figure 6

Ninth Annual Remedial Action Operation Report
LHAAP-50, Former Sump Water Tank
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 12/19/2023

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0009.01

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Legend
J = Estimated value
U = Result is less than the laboratory detection limit
COC = Contaminant of Concern
USEPA = United States Environmental Protection Agency
MCL = Maximum Contaminant Limit
DCE = Dichloroethene
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
Perchlorate	17
TCE	5
cis-1,2-DCE	70
VC	2

50WW05	10/10/2022
COC	Result
Perchlorate	0.109
TCE	**290**
cis-1,2-DCE	**77**
VC	1 U

50WW16	10/10/2022
COC	Result
Perchlorate	0.05 U / 0.05 U
TCE	1 U / 1 U
cis-1,2-DCE	1 U / 1 U
VC	1 U / 1 U

50WW29	10/11/2022
COC	Result
Perchlorate	0.138
TCE	1 U
cis-1,2-DCE	1 U
VC	1 U

50WW18	10/10/2022
COC	Result
Perchlorate	0.05 U
TCE	1 U
cis-1,2-DCE	1 U
VC	1 U

50WW14	10/11/2022
COC	Result
Perchlorate	0.101
TCE	**33**
cis-1,2-DCE	2.4
VC	1 U

50WW15	10/10/2022
COC	Result
Perchlorate	0.0301
TCE	4.9
cis-1,2-DCE	2.7
VC	0.56 J

50WW12	10/11/2022
COC	Result
Perchlorate	**17,600 / 17,900**
TCE	**180 / 180**
cis-1,2-DCE	1 U / 1 U
VC	1 U / 1 U

50WW23	10/10/2022
COC	Result
Perchlorate	0.142
TCE	1 U
cis-1,2-DCE	1 U
VC	1 U

50WW09	10/10/2022
COC	Result
Perchlorate	0.118
TCE	**5.8**
cis-1,2-DCE	0.54 J
VC	1 U

50WW08	10/10/2022
COC	Result
Perchlorate	**31.1**
TCE	**720**
cis-1,2-DCE	**73**
VC	1 U

50WW22	10/10/2022
COC	Result
Perchlorate	0.269
TCE	1 U
cis-1,2-DCE	1 U
VC	1 U

50WW13	10/11/2022
COC	Result
Perchlorate	**5,310**
TCE	**8,600**
cis-1,2-DCE	**280**
VC	25 U

50WW11	10/11/2022
COC	Result
Perchlorate	**6,280**
TCE	**3,100**
cis-1,2-DCE	65
VC	10 U

50WW06	10/11/2022
COC	Result
Perchlorate	**257**
TCE	**20**
cis-1,2-DCE	1.0
VC	1.0 U

Note:
LUC boundary established in the 2016 Final Remedial Action Completion Report, LHAAP-50, Former Sump Water Tank (AECOM 2016)

Aerial Photography Source: Google Earth, 6/11/2022

0 75 150 300 Feet

Legend:
- Lower Shallow Monitoring Well Location
- Upper Shallow Monitoring Well Location
- Direction of Groundwater Flow (October 2022)
- Land Use Control (LUC) Boundary
- Installation Restoration Program (IRP) Area
- Goose Praire Creek Flow Direction
- Goose Prairie Creek
- Former Storage Tank Location
- Former and/or Existing Building Location

LHAAP-47
LHAAP-08
LHAAP-50
51ST ST.
48TH ST.
BOWIE AVE.
S CROCKETT AVE
S HOUSTON RD
Goose Prairie Creek

COC Concentrations in Groundwater
Year 3 Post ISB Injections
1st Semiannual Sampling Event
(October 2022)

Figure 7

Ninth Annual Remedial Action Operation Report
LHAAP-50, Former Sump Water Tank
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM
DATE: 3/12/2024
SCALE: As Shown
PROJECT NO: JVPCIBH.0001.0009.01

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Legend
J = Estimated value
U = Result is less than the laboratory detection limit
COC = Contaminant of Concern
USEPA = United States Environmental Protection Agency
MCL = Maximum Contaminant Limit
DCE = Dichloroethene
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
Perchlorate	17
TCE	5
cis-1,2-DCE	70
VC	2

50WW05	5/25/2023
COC	Result
Perchlorate	0.13
TCE	**130**
cis-1,2-DCE	**130**
VC	0.5 U

50WW16	5/25/2023
COC	Result
Perchlorate	0.0369 J / 0.05 U
TCE	0.5 U / 0.5 U
cis-1,2-DCE	0.5 U / 0.5 U
VC	0.5 U / 0.5 U

50WW29	5/24/2023
COC	Result
Perchlorate	0.0701 J
TCE	0.5 U
cis-1,2-DCE	0.5 U
VC	0.5 U

50WW18	5/25/2023
COC	Result
Perchlorate	0.05 U
TCE	0.5 U
cis-1,2-DCE	0.5 U
VC	0.5 U

50WW14	5/25/2023
COC	Result
Perchlorate	0.168
TCE	**20**
cis-1,2-DCE	2.1
VC	0.5 U

50WW15	5/25/2023
COC	Result
Perchlorate	0.113
TCE	**6.1**
cis-1,2-DCE	3.2
VC	0.52 J

50WW12	5/25/2023
COC	Result
Perchlorate	**79,100 / 84,500**
TCE	**1,100 / 1,100**
cis-1,2-DCE	1.6 / 1.6
VC	0.5 U / 0.5 U

50WW23	5/25/2023
COC	Result
Perchlorate	0.0857 J
TCE	0.5 U
cis-1,2-DCE	0.5 U
VC	0.5 U

50WW09	5/24/2023
COC	Result
Perchlorate	0.712 J
TCE	**11**
cis-1,2-DCE	1.1
VC	0.5 U

50WW08	5/24/2023
COC	Result
Perchlorate	**81.1**
TCE	**650**
cis-1,2-DCE	**85**
VC	0.5 U

50WW22	5/24/2023
COC	Result
Perchlorate	0.981
TCE	0.5 U
cis-1,2-DCE	0.5 U
VC	0.5 U

50WW13	5/24/2023
COC	Result
Perchlorate	**186**
TCE	**490**
cis-1,2-DCE	30
VC	0.5 U

50WW11	5/24/2023
COC	Result
Perchlorate	**570**
TCE	**250**
cis-1,2-DCE	8.5
VC	0.5 U

50WW06	5/24/2023
COC	Result
Perchlorate	5.79
TCE	**13**
cis-1,2-DCE	0.5 U
VC	0.5 U

LHAAP-47
LHAAP-08
LHAAP-50
51ST ST.
BOWIE AVE.
Goose Prairie Creek
S HOUSTON RD
S CROCKETT AVE
48TH ST.

Note:
LUC boundary established in the 2016 Final Remedial Action Completion Report, LHAAP-50, Former Sump Water Tank (AECOM 2016)

Aerial Photography Source: Google Earth, 6/11/2022

0 75 150 300 Feet

Legend:
- Lower Shallow Monitoring Well Location
- Upper Shallow Monitoring Well Location
- Direction of Groundwater Flow (May 2023)
- Land Use Control (LUC) Boundary
- Installation Restoration Program (IRP) Area
- Goose Praire Creek Flow Direction
- Goose Prairie Creek
- Former Storage Tank Location
- Former and/or Existing Building Location

COC Concentrations in Groundwater
Year 3 Post ISB Injections
2nd Semiannual Sampling Event
(May 2023)

Figure 8

Ninth Annual Remedial Action Operation Report
LHAAP-50, Former Sump Water Tank
Longhorn Army Ammunition Plant
Karnack, Texas

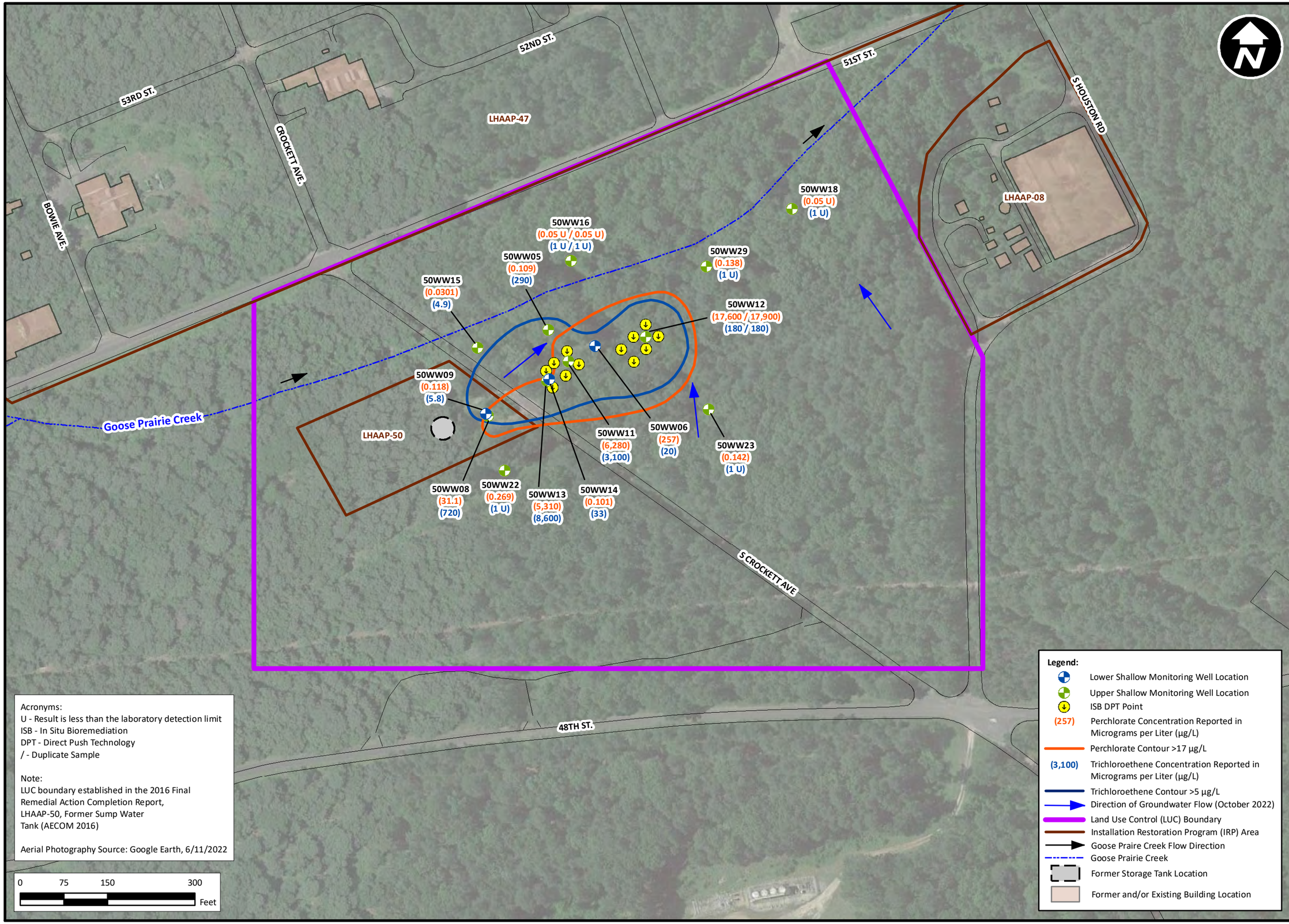
DRAWN BY: MRM
DATE: 3/12/2024
SCALE: As Shown
PROJECT NO: JVPCIBH.0001.0009.01

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TCE and Perchlorate Shallow Zone Plumes
Year 3 Post ISB Injections
1st Semiannual Sampling Event
(October 2022)

Figure 9



Acronyms:
U - Result is less than the laboratory detection limit
ISB - In Situ Bioremediation
DPT - Direct Push Technology
/ - Duplicate Sample

Note:
LUC boundary established in the 2016 Final Remedial Action Completion Report, LHAAP-50, Former Sump Water Tank (AECOM 2016)

Aerial Photography Source: Google Earth, 6/11/2022

0 75 150 300 Feet

Legend:

- Lower Shallow Monitoring Well Location
- Upper Shallow Monitoring Well Location
- ISB DPT Point
- (257) Perchlorate Concentration Reported in Micrograms per Liter (µg/L)
- Perchlorate Contour >17 µg/L
- (3,100) Trichloroethene Concentration Reported in Micrograms per Liter (µg/L)
- Trichloroethene Contour >5 µg/L
- Direction of Groundwater Flow (October 2022)
- Land Use Control (LUC) Boundary
- Installation Restoration Program (IRP) Area
- Goose Praire Creek Flow Direction
- Goose Prairie Creek
- Former Storage Tank Location
- Former and/or Existing Building Location

Ninth Annual Remedial Action Operation Report
LHAAP-50, Former Sump Water Tank
Longhorn Army Ammunition Plant
Karnack, Texas

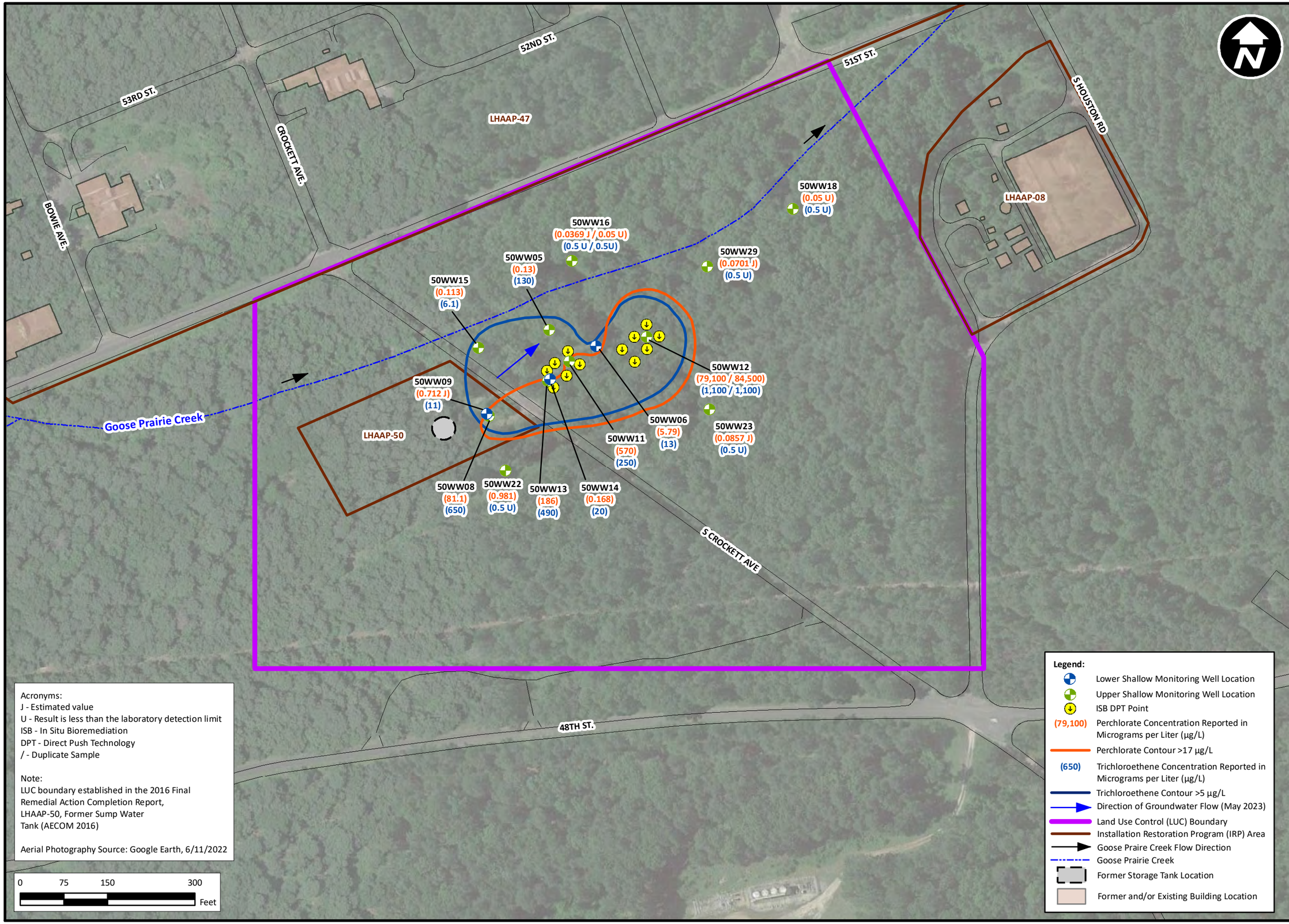
DRAWN BY: MRM
DATE: 3/12/2024
SCALE: As Shown
PROJECT NO: JVPCIBH.0001.0009.01

PCIbhate

01228885

TCE and Perchlorate Shallow Zone Plumes
Year 3 Post ISB Injections
2nd Semiannual Sampling Event
(May 2023)

Figure 10



Acronyms:
J - Estimated value
U - Result is less than the laboratory detection limit
ISB - In Situ Bioremediation
DPT - Direct Push Technology
/ - Duplicate Sample

Note:
LUC boundary established in the 2016 Final Remedial Action Completion Report, LHAAP-50, Former Sump Water Tank (AECOM 2016)

Aerial Photography Source: Google Earth, 6/11/2022

0 75 150 300 Feet

Legend:

- Lower Shallow Monitoring Well Location
- Upper Shallow Monitoring Well Location
- ISB DPT Point
- (79,100) Perchlorate Concentration Reported in Micrograms per Liter (µg/L)
- Perchlorate Contour >17 µg/L
- (650) Trichloroethene Concentration Reported in Micrograms per Liter (µg/L)
- Trichloroethene Contour >5 µg/L
- Direction of Groundwater Flow (May 2023)
- Land Use Control (LUC) Boundary
- Installation Restoration Program (IRP) Area
- Goose Praire Creek Flow Direction
- Goose Prairie Creek
- Former Storage Tank Location
- Former and/or Existing Building Location

Ninth Annual Remedial Action Operation Report
LHAAP-50, Former Sump Water Tank
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

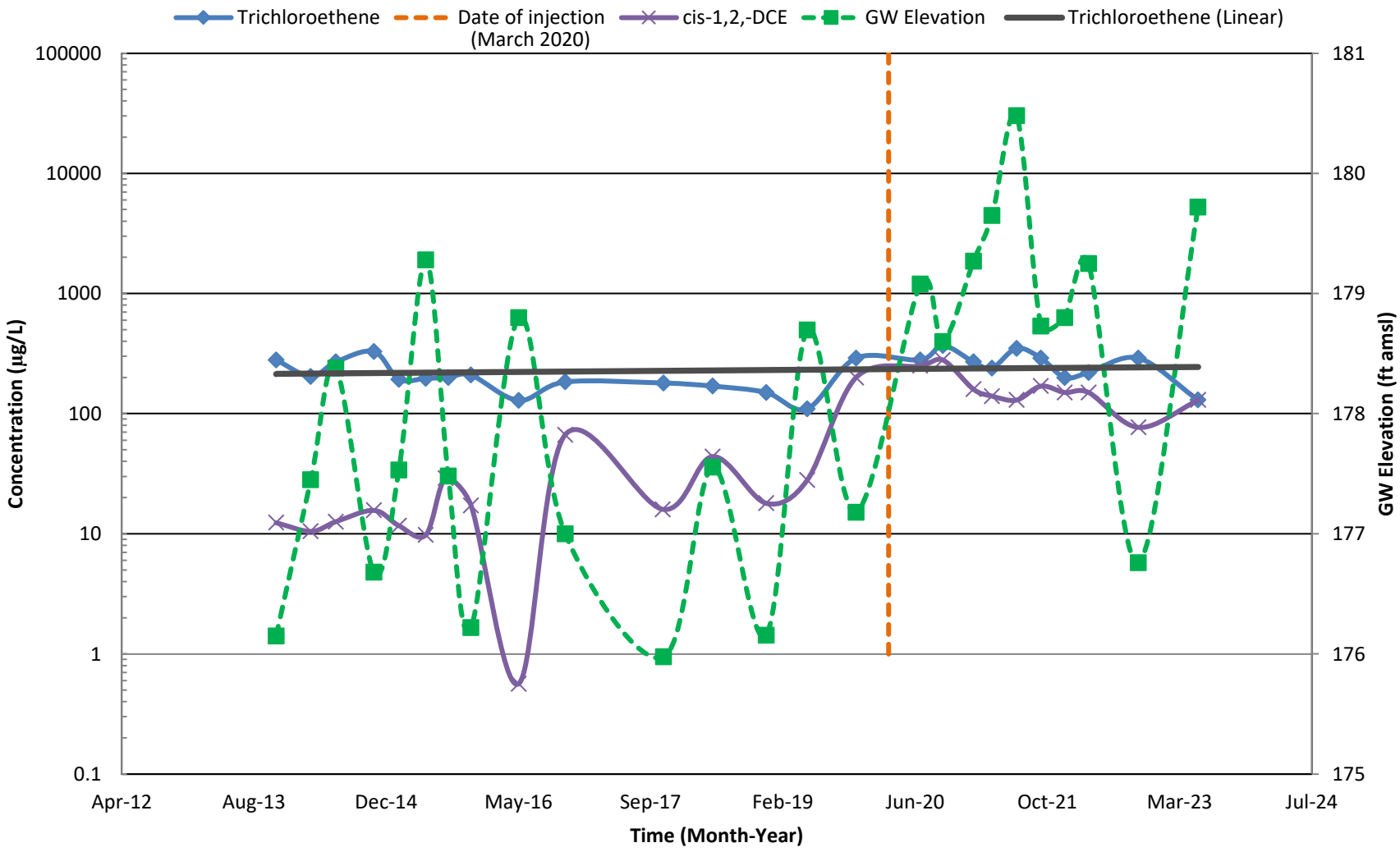
DATE: 3/12/2024

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0009.01

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Figure 11-a: COC Concentration Trends, 50WW05



Note:
amsl - above mean sea level

Figure 11-b: COC Concentration Trends, 50WW06 (lower shallow)

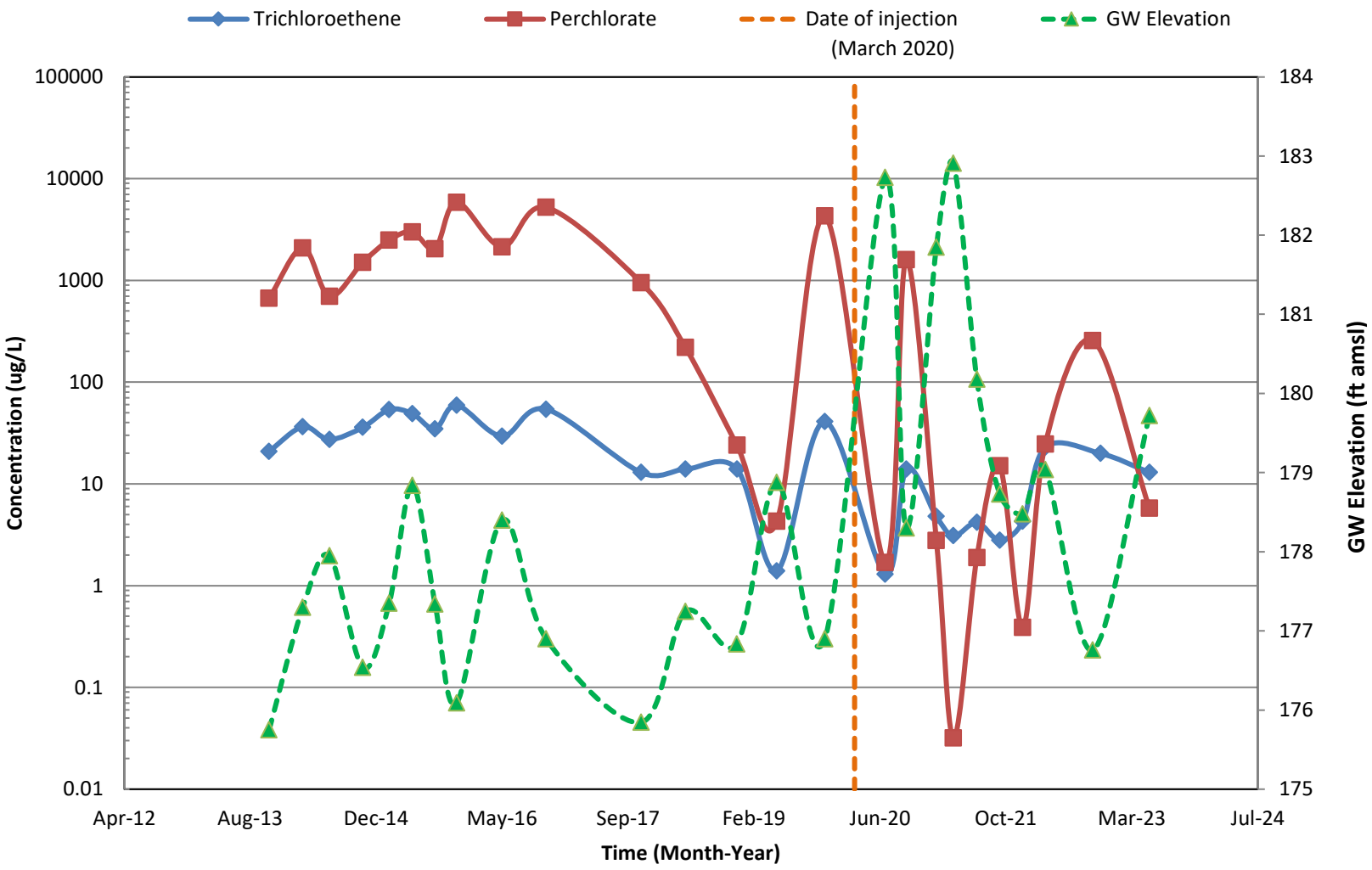


Figure 11-c: COC Concentration Trends, 50WW08

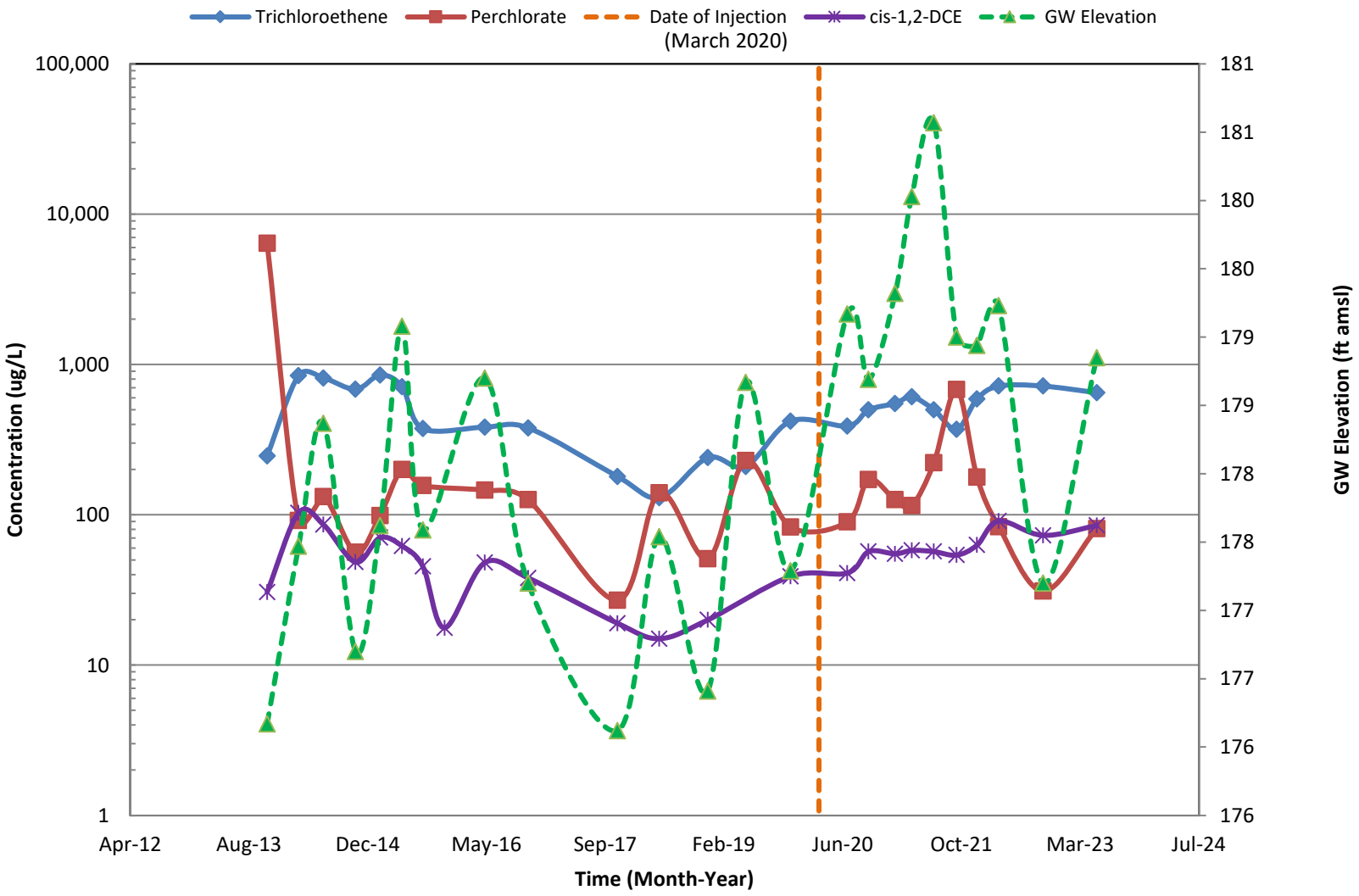


Figure 11-d: COC Concentration Trends, 50WW09

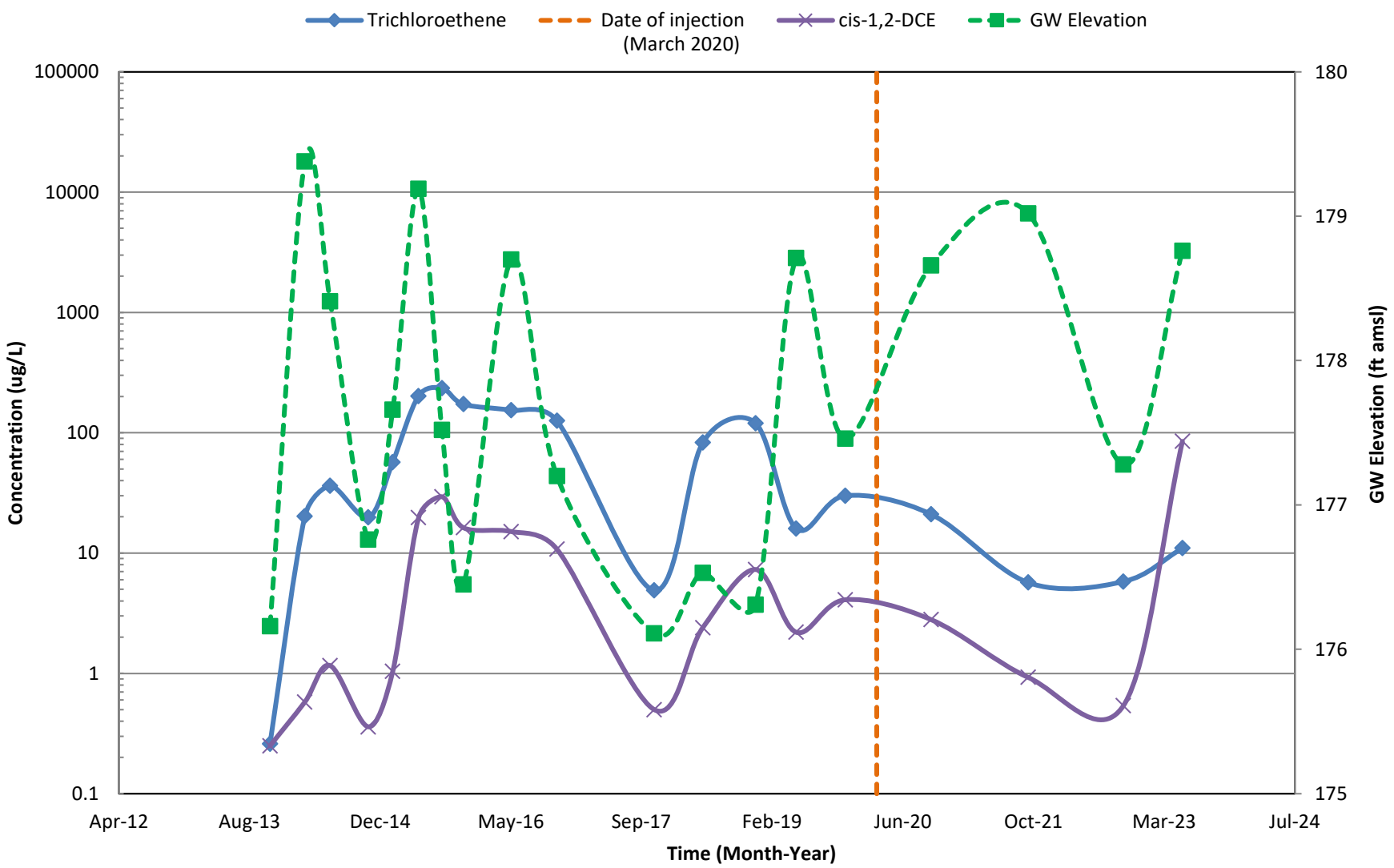


Figure 11-e: COC Concentration Trends, 50WW11

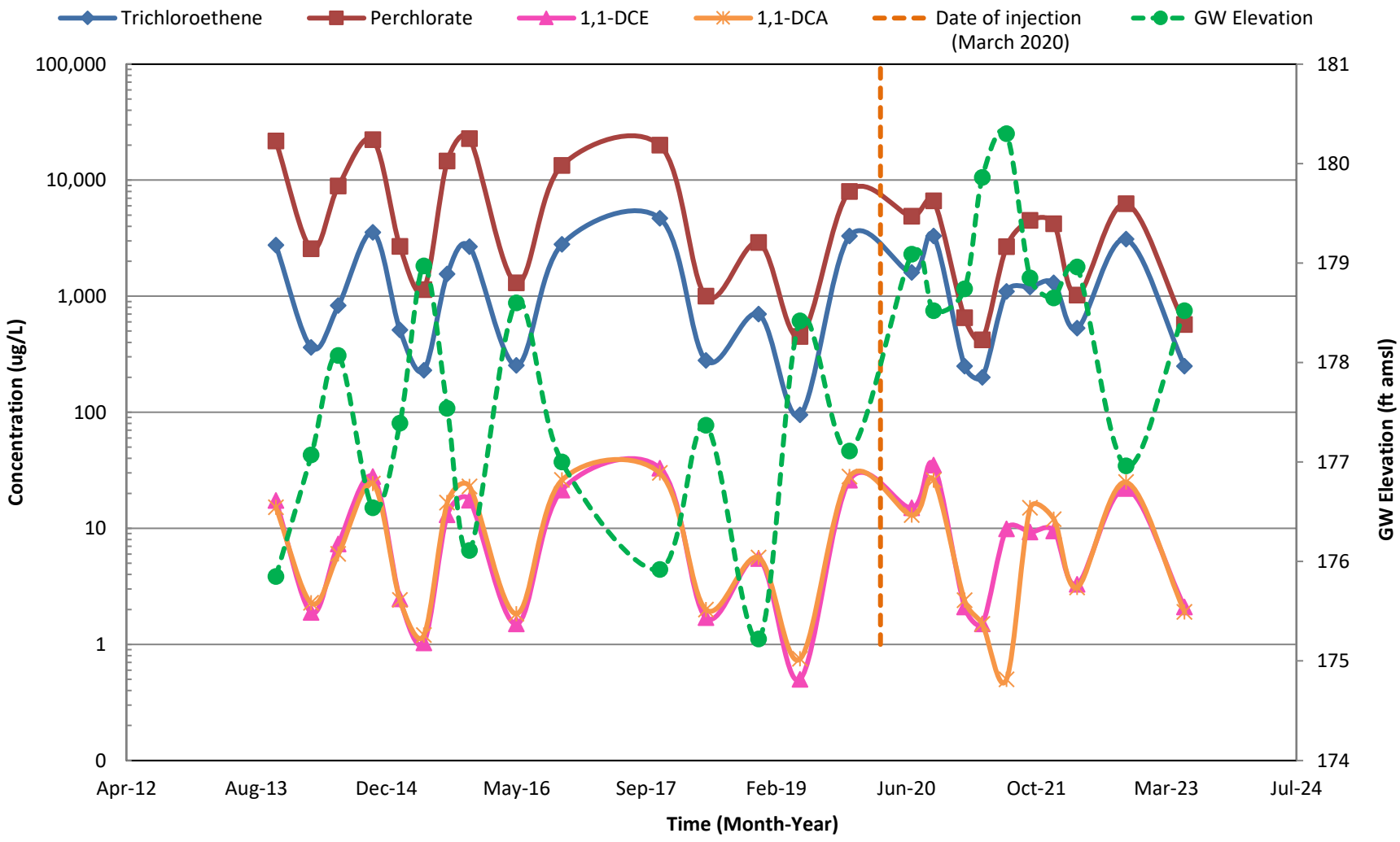


Figure 11-f: COC Concentration Trends, 50WW12

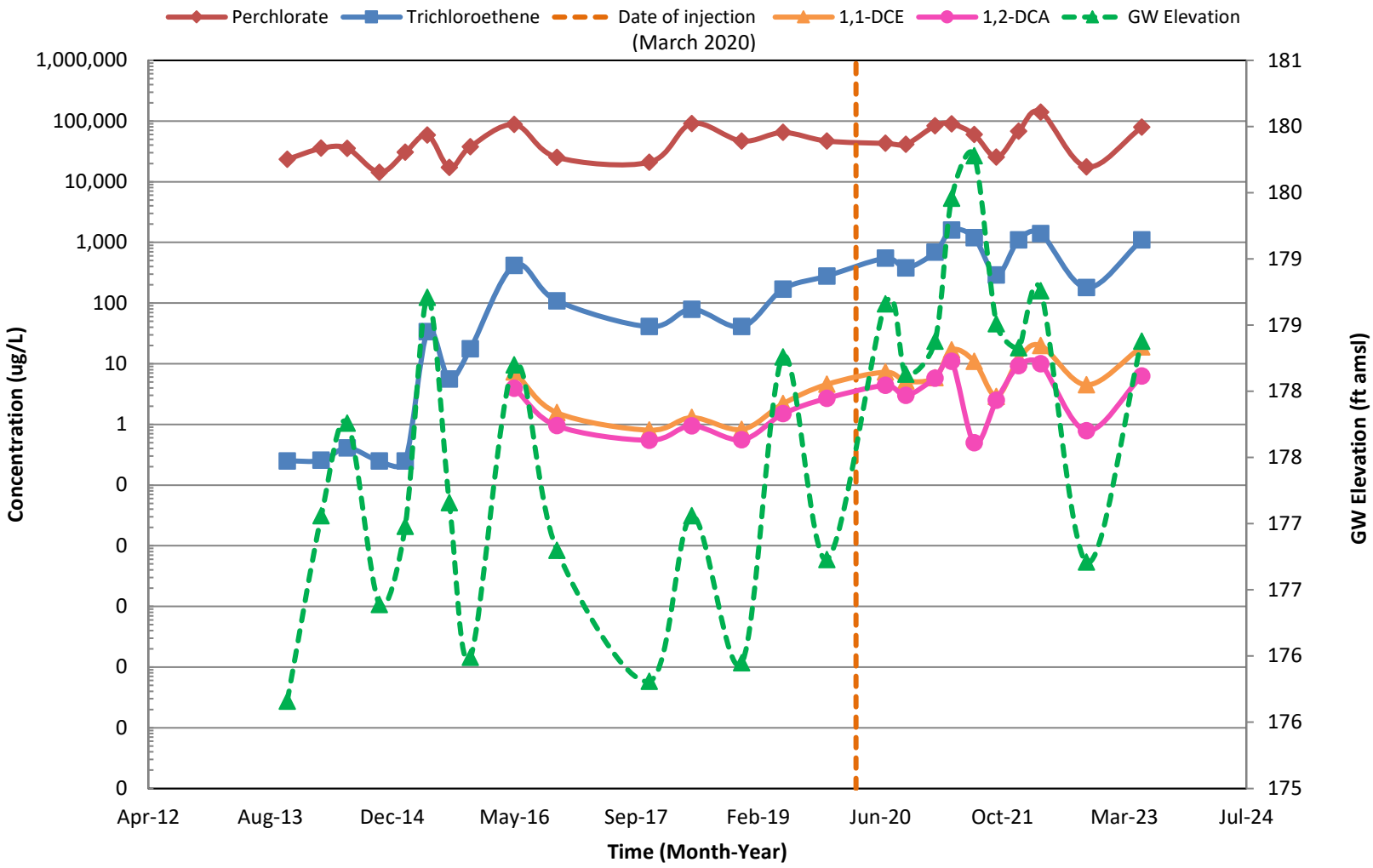


Figure 11-g: COC Concentration Trends, 50WW13

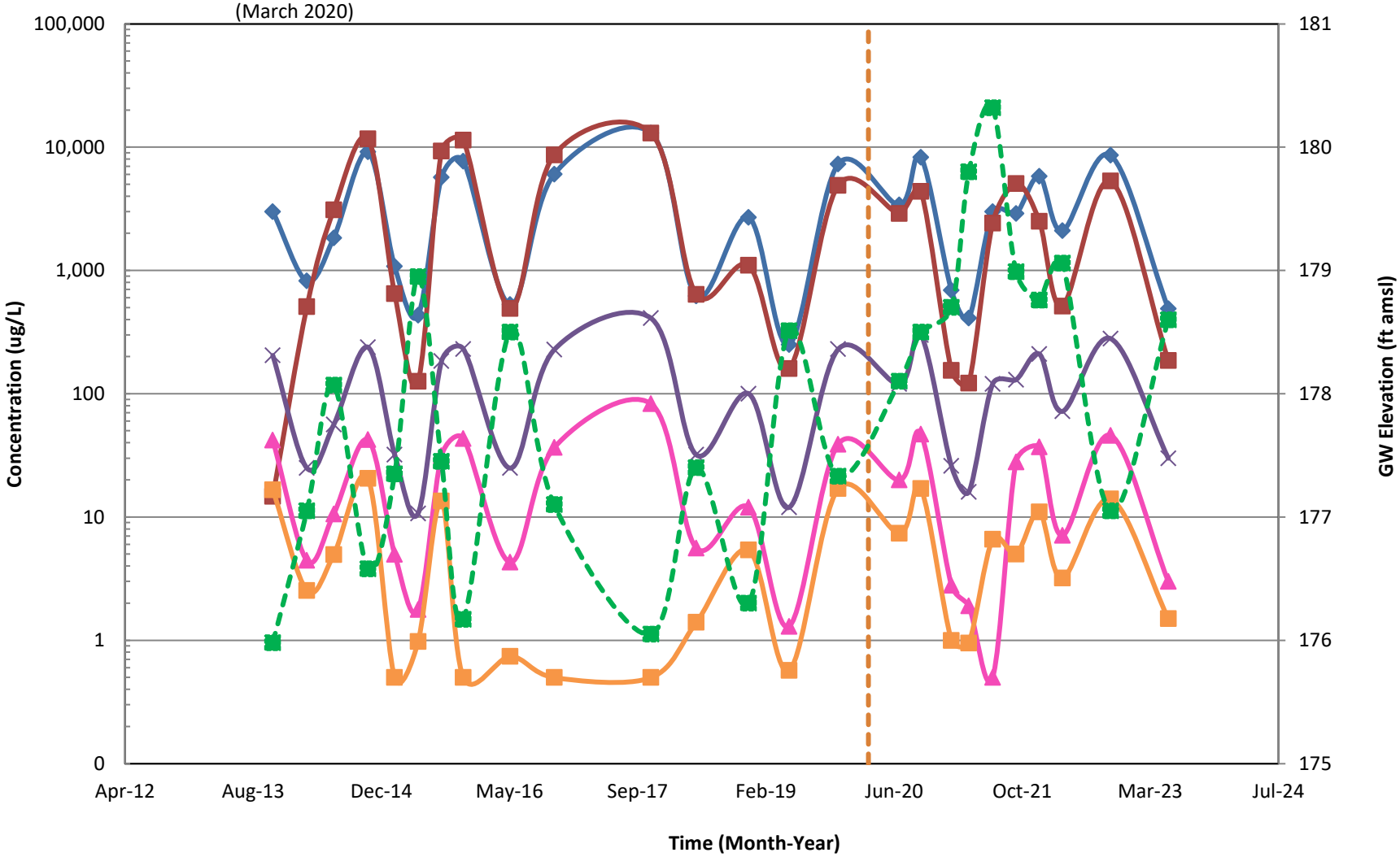


Figure 11-h: COC Concentration Trends, 50WW14

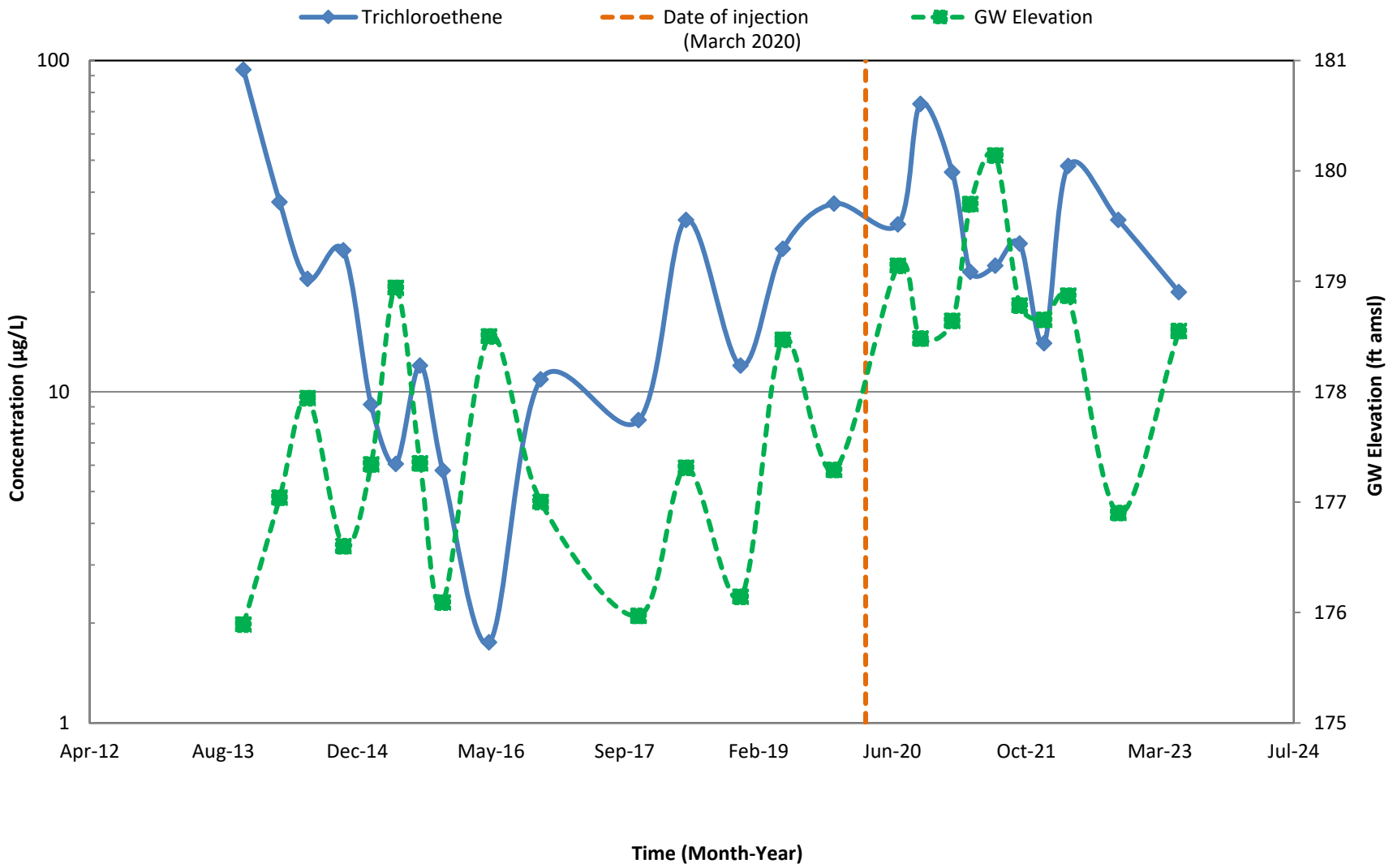
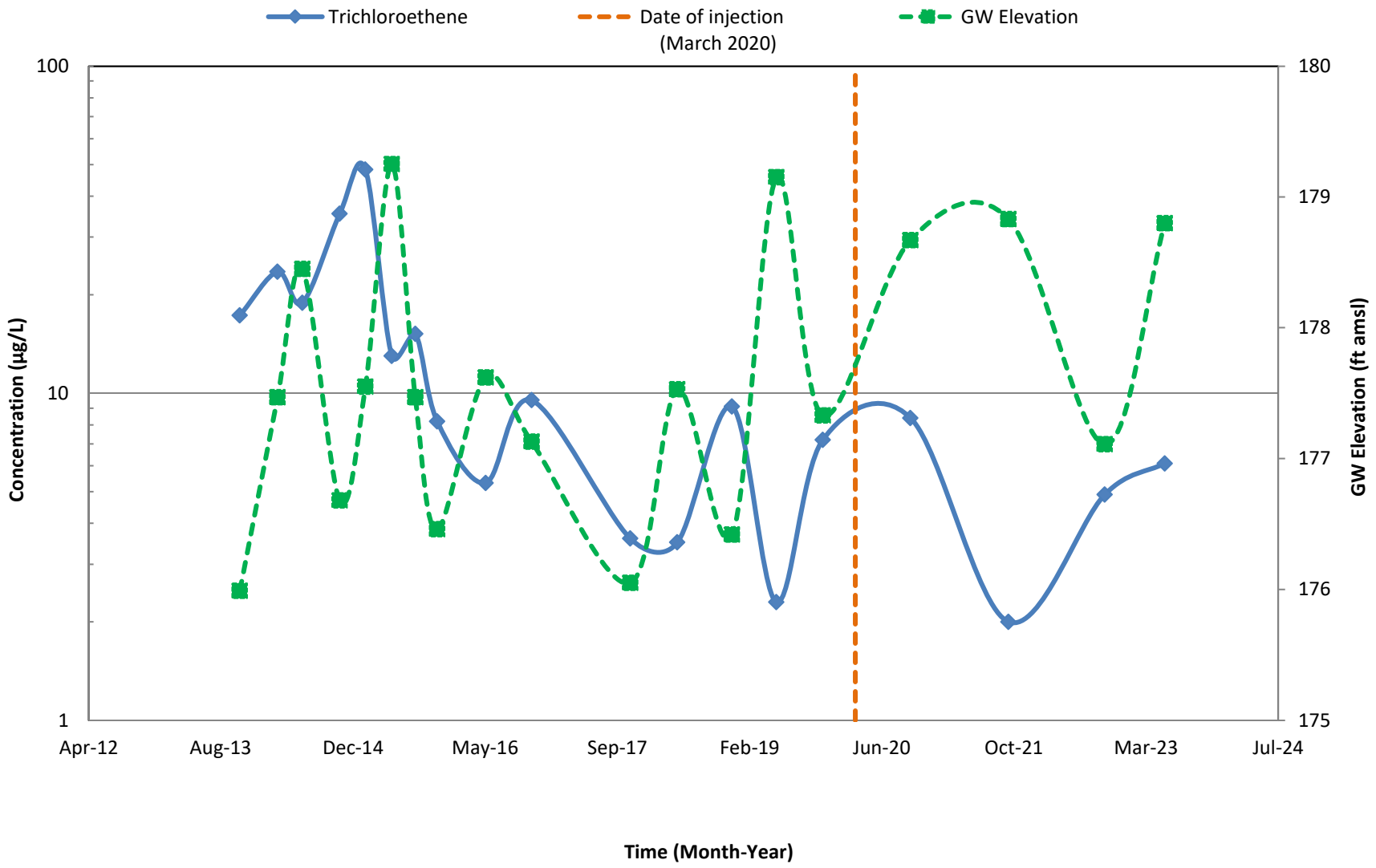


Figure 11-i: COC Concentration Trends, 50WW15



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TABLES

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Table 1
ISB Performance Monitoring Well Network Locations and Analyses
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

Monitoring Location	Well Location/Purpose	Performance – Years 1 and 2 (Quarterly) and Year 3 (Semiannually)								
		Perchlorate (6850)	VOCs (8260C)	DO (field reading)	ORP (field reading)	pH (field reading)	Ferrous Iron (field reading)	Anions (SW9056A)	Ethene, Ethane, Methane, & Carbon Dioxide (RSK-175)	TOC (SM5310B)
50WW08	Upgradient well	X	X	X	X	X				
50WW05	Cross-gradient well	X	X	X	X	X				
50WW06	Performance data within the plume	X	X	X	X	X	X	X	X	X
50WW11	Performance data within the treatment zone	X	X	X	X	X	X	X	X	X
50WW12	Performance data within the treatment zone	X	X	X	X	X	X	X	X	X
50WW13	Performance data within the treatment zone	X	X	X	X	X	X	X	X	X
50WW14	Performance data within the treatment zone	X	X	X	X	X	X	X	X	X
50WW29	Downgradient well	X	X	X	X	X				

Notes:
Anions include chloride, nitrate, and sulfate.
x - Indicates that sample was collected and analyzed for the listed analyte.
DO - dissolved oxygen
ISB - in situ bioremediation
ORP - oxygen-reduction potential
TOC - total organic carbon
VOC - volatile organic compound

Table 2
Year 9 RA-O / Long-Term Monitoring Well Network
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas

Parameters	VOCs (8260C)	Perchlorate (6850)	Field Parameters	TOC (SM5310B)	Anions (SW9056A)	Ethene, Ethane, Methane, and Carbon Dioxide (RSK-175)	Ferrous Iron (only field)
Well IDs							
50WW05	**X**	**X**	**X**				
50WW06	**X**	**X**	**X**	**X**	**X**	**X**	**X**
50WW08	**X**	**X**	**X**				
50WW09	**X**	**X**	**X**				
50WW11	**X**	**X**	**X**	**X**	**X**	**X**	**X**
50WW12	**X**	**X**	**X**	**X**	**X**	**X**	**X**
50WW13	**X**	**X**	**X**	**X**	**X**	**X**	**X**
50WW14	**X**	**X**	**X**	**X**	**X**	**X**	**X**
50WW15	**X**	**X**	**X**				
50WW16	**X**	**X**	**X**				
50WW18	**X**	**X**	**X**				
50WW22	**X**	**X**	**X**				
50WW23	**X**	**X**	**X**				
50WW29	**X**	**X**	**X**				

Notes:
The RA-O results from the November 2019 sampling event will be used for the baseline sampling event.
Field Parameters: DO, ORP, pH, specific conductivity, temperature.
Anions include chloride, nitrate, and sulfate
ID - identifier
DO - dissolved oxygen
ORP - oxidation-reduction potential
RA-O - remediation action operation
TOC - total organic carbon
VOC - volatile organic compound

Table 3
Groundwater Elevation Data
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

Monitoring Well	Zone	Date	Ground Surface Elevation (ft MSL)	Top of Casing Elevation (ft MSL)	Top of Screen (ft BTOC)	Bottom of Screen (ft BTOC)	Constructed Well Depth (ft BGS)	Measured Well Depth (ft BTOC)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)	Screened Interval Siltation (%)
50WW01	Upper Shallow	7/9/2020	195.29	198.50	13.21	23.21	23.21	23.25	18.65	179.85	None
		10/6/2020	195.29	198.50	13.21	23.21	23.21	23.25	19.15	179.35	None
		1/28/2021	195.29	198.50	13.21	23.21	23.21	23.25	18.90	179.60	None
		4/5/2021	195.29	198.50	13.21	23.21	23.21	23.23	17.85	180.65	None
		7/7/2021	195.29	198.50	13.21	23.21	23.21	23.23	17.77	180.73	None
		10/11/2021	195.29	198.50	13.21	23.21	23.21	23.23	19.23	179.27	None
		1/4/2022	195.29	198.50	13.21	23.21	23.21	23.23	19.05	179.45	None
		4/5/2022	195.29	198.50	13.21	23.21	23.21	23.23	19.83	178.67	None
		10/10/2022	195.29	198.50	13.21	23.21	23.21	23.27	20.76	177.74	None
		5/24/2023	195.29	198.50	13.21	23.21	23.21	NM	NM	NM	NM
50WW02	Upper Shallow	7/8/2020	197.40	200.74	12.34	22.34	22.34	22.37	DRY	DRY	None
		10/6/2020	197.40	200.74	12.34	22.34	22.34	22.37	DRY	DRY	None
		1/28/2021	197.40	200.74	12.34	22.34	22.34	22.20	DRY	DRY	1.4
		4/5/2021	197.40	200.74	12.34	22.34	22.34	22.20	20.50	180.24	1.4
		7/7/2021	197.40	200.74	12.34	22.34	22.34	22.22	20.09	180.65	1.2
		10/11/2021	197.40	200.74	12.34	22.34	22.34	22.22	21.49	179.25	1.2
		1/4/2022	197.40	200.74	12.34	22.34	22.34	22.25	21.70	179.04	0.9
		4/5/2022	197.40	200.74	12.34	22.34	22.34	22.21	21.32	179.42	1.3
		10/10/2022	197.40	200.74	12.34	22.34	22.34	22.21	DRY	DRY	1.3
		5/24/2023	197.40	200.74	12.34	22.34	22.34	NM	NM	NM	NM
50WW03	Upper Shallow	7/8/2020	199.88	202.94	13.06	23.06	23.06	23.20	DRY	DRY	None
		10/6/2020	199.88	202.94	13.06	23.06	23.06	23.20	DRY	DRY	None
		1/28/2021	199.88	202.94	13.06	23.06	23.06	22.98	DRY	DRY	0.8
		4/5/2021	199.88	202.94	13.06	23.06	23.06	23.00	21.45	181.49	0.6
		7/7/2021	199.88	202.94	13.06	23.06	23.06	23.04	20.85	182.09	0.2
		10/11/2021	199.88	202.94	13.06	23.06	23.06	23.00	21.84	181.10	0.6
		1/4/2022	199.88	202.94	13.06	23.06	23.06	23.00	22.00	180.94	0.6
		4/5/2022	199.88	202.94	13.06	23.06	23.06	23.01	21.84	181.10	0.5
		10/10/2022	199.88	202.94	13.06	23.06	23.06	23.00	DRY	DRY	0.6
		5/24/2023	199.88	202.94	13.06	23.06	23.06	NM	NM	NM	NM

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Monitoring Well	Zone	Date	Ground Surface Elevation (ft MSL)	Top of Casing Elevation (ft MSL)	Top of Screen (ft BTOC)	Bottom of Screen (ft BTOC)	Constructed Well Depth (ft BGS)	Measured Well Depth (ft BTOC)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)	Screened Interval Siltation (%)
50WW04	Upper Shallow	7/8/2020	201.64	204.51	12.87	22.87	22.87	23.20	DRY	DRY	None
		10/6/2020	201.64	204.51	12.87	22.87	22.87	23.20	DRY	DRY	None
		1/28/2021	201.64	204.51	12.87	22.87	22.87	23.20	DRY	DRY	None
		4/5/2021	201.64	204.51	12.87	22.87	22.87	23.22	DRY	DRY	None
		7/7/2021	201.64	204.51	12.87	22.87	22.87	23.18	22.95	181.56	None
		10/11/2021	201.64	204.51	12.87	22.87	22.87	23.16	DRY	DRY	None
		1/4/2022	201.64	204.51	12.87	22.87	22.87	23.17	DRY	DRY	None
		4/5/2022	201.64	204.51	12.87	22.87	22.87	23.18	23.01	181.5	None
		10/10/2022	201.64	204.51	12.87	22.87	22.87	23.15	DRY	DRY	None
		5/24/2023	201.64	204.51	12.87	22.87	22.87	NM	NM	NM	NM
50WW05	Upper Shallow	7/8/2020	195.20	197.60	14.34	24.34	25.34	25.35	18.60	179.00	None
		10/6/2020	195.20	197.60	14.34	24.34	25.34	25.30	19.00	178.60	None
		1/28/2021	195.20	197.60	14.34	24.34	25.34	25.31	18.33	179.27	None
		4/5/2021	195.20	197.60	14.34	24.34	25.34	25.31	17.95	179.65	None
		7/7/2021	195.20	197.60	14.34	24.34	25.34	25.32	17.12	180.48	None
		10/11/2021	195.20	197.60	14.34	24.34	25.34	25.30	18.87	178.73	None
		1/4/2022	195.20	197.60	14.34	24.34	25.34	25.30	18.80	178.80	None
		4/5/2022	195.20	197.60	14.34	24.34	25.34	25.31	18.35	179.25	None
		10/10/2022	195.20	197.60	14.34	24.34	25.34	25.30	20.63	176.97	None
		5/25/2023	195.20	197.60	14.34	24.34	25.34	25.30	18.95	178.65	None
50WW06	Lower Shallow	7/9/2020	192.99	195.35	47.35	57.35	60.35	58.00	12.62	182.73	None
		10/1/2020	192.99	195.35	47.35	57.35	60.35	58.05	17.05	178.30	None
		1/28/2021	192.99	195.35	47.35	57.35	60.35	58.10	13.50	181.85	None
		4/6/2021	192.99	195.35	47.35	57.35	60.35	58.11	12.44	182.91	None
		7/8/2021	192.99	195.35	47.35	57.35	60.35	58.02	15.17	180.18	None
		10/7/2021	192.99	195.35	47.35	57.35	60.35	58.02	16.66	178.69	None
		1/6/2022	192.99	195.35	47.35	57.35	60.35	58.10	16.87	178.48	None
		4/6/2022	192.99	195.35	47.35	57.35	60.35	58.06	16.31	179.04	None
		10/11/2022	192.99	195.35	47.35	57.35	60.35	58.12	18.59	176.76	None
		5/24/2023	192.99	195.35	47.35	57.35	60.35	57.98	15.63	179.72	None

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50WW07	Upper Shallow	7/9/2020	199.88	202.55	21.67	31.67	31.67	31.81	24.12	178.43	None
		10/6/2020	199.88	202.55	21.67	31.67	31.67	31.81	24.20	178.35	None
		1/28/2021	199.88	202.55	21.67	31.67	31.67	31.81	23.97	178.58	None
		4/5/2021	199.88	202.55	21.67	31.67	31.67	31.82	23.68	178.87	None
		7/7/2021	199.88	202.55	21.67	31.67	31.67	31.80	22.97	179.58	None
		10/11/2021	199.88	202.55	21.67	31.67	31.67	31.80	24.05	178.50	None
		1/4/2022	199.88	202.55	21.67	31.67	31.67	31.57	23.95	178.60	1.0
		4/5/2022	199.88	202.55	21.67	31.67	31.67	31.82	23.86	178.69	None
		10/10/2022	199.88	202.55	21.67	31.67	31.67	31.79	24.28	178.27	None
		5/24/2023	199.88	202.55	21.67	31.67	31.67	NM	NM	NM	NM
50WW08	Upper Shallow	7/8/2020	197.16	199.67	17.11	31.71	32.26	32.71	20.50	179.17	None
		10/5/2020	197.16	199.67	17.11	31.71	32.26	32.72	20.98	178.69	None
		1/25/2021	197.16	199.67	17.11	31.71	32.26	32.73	20.35	179.32	None
		4/5/2021	197.16	199.67	17.11	31.71	32.26	32.72	19.64	180.03	None
		7/7/2021	197.16	199.67	17.11	31.71	32.26	32.75	19.10	180.57	None
		10/11/2021	197.16	199.67	17.11	31.71	32.26	32.72	20.67	179.00	None
		1/5/2022	197.16	199.67	17.11	31.71	32.26	32.71	20.73	178.94	None
		4/6/2022	197.16	199.67	17.11	31.71	32.26	32.74	20.44	179.23	None
		10/10/2022	197.16	199.67	17.11	31.71	32.26	32.70	22.47	177.20	None
		5/24/2023	197.16	199.67	17.11	31.71	32.26	32.70	20.82	178.85	None
50WW09	Lower Shallow	7/8/2020	197.06	199.41	46.75	61.25	61.85	62.42	20.05	179.36	None
		10/6/2020	197.06	199.41	46.75	61.25	61.85	62.42	20.75	178.66	None
		1/28/2021	197.06	199.41	46.75	61.25	61.85	62.42	21.57	177.84	None
		4/5/2021	197.06	199.41	46.75	61.25	61.85	62.42	19.47	179.94	None
		7/7/2021	197.06	199.41	46.75	61.25	61.85	62.47	18.89	180.52	None
		10/11/2021	197.06	199.41	46.75	61.25	61.85	62.40	20.39	179.02	None
		1/4/2022	197.06	199.41	46.75	61.25	61.85	62.42	20.52	178.89	None
		4/5/2022	197.06	199.41	46.75	61.25	61.85	62.45	20.29	179.12	None
		10/10/2022	197.06	199.41	46.75	61.25	61.85	62.40	22.13	177.28	None
		5/24/2023	197.06	199.41	46.75	61.25	61.85	62.32	20.65	178.76	None

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50WW10	Intermediate	7/8/2020	196.72	199.25	101.43	110.93	111.53	111.25	20.37	178.88	None
		10/6/2020	196.72	199.25	101.43	110.93	111.53	111.23	23.38	175.87	None
		1/28/2021	196.72	199.25	101.43	110.93	111.53	111.25	22.95	176.30	None
		4/5/2021	196.72	199.25	101.43	110.93	111.53	111.37	22.55	176.70	None
		7/7/2021	196.72	199.25	101.43	110.93	111.53	111.26	22.61	176.64	None
		10/11/2021	196.72	199.25	101.43	110.93	111.53	111.25	20.77	178.48	None
		1/4/2022	196.72	199.25	101.43	110.93	111.53	111.25	23.03	176.22	None
		4/5/2022	196.72	199.25	101.43	110.93	111.53	111.06	22.68	176.57	None
		10/10/2022	196.72	199.25	101.43	110.93	111.53	111.10	23.47	175.78	None
		5/24/2023	196.72	199.25	101.43	110.93	111.53	NM	NM	NM	NM
50WW11	Upper Shallow	7/9/2020	194.72	197.07	22.55	37.05	37.65	37.78	17.98	179.09	None
		10/1/2020	194.72	197.07	22.55	37.05	37.65	37.80	18.55	178.52	None
		1/28/2021	194.72	197.07	22.55	37.05	37.65	37.80	18.33	178.74	None
		4/6/2021	194.72	197.07	22.55	37.05	37.65	37.80	17.21	179.86	None
		7/8/2021	194.72	197.07	22.55	37.05	37.65	37.79	16.77	180.30	None
		10/7/2021	194.72	197.07	22.55	37.05	37.65	37.80	18.22	178.85	None
		1/6/2022	194.72	197.07	22.55	37.05	37.65	37.77	18.42	178.65	None
		4/6/2022	194.72	197.07	22.55	37.05	37.65	37.78	18.11	178.96	None
		10/11/2022	194.72	197.07	22.55	37.05	37.65	37.75	20.11	176.96	None
		5/24/2023	194.72	197.07	22.55	37.05	37.65	37.80	18.55	178.52	None
50WW12	Upper Shallow	7/9/2020	193.26	195.66	22.50	37.00	37.60	37.92	17.00	178.66	None
		10/1/2020	193.26	195.66	22.50	37.00	37.60	37.92	17.53	178.13	None
		1/28/2021	193.26	195.66	22.50	37.00	37.60	37.92	17.28	178.38	None
		4/6/2021	193.26	195.66	22.50	37.00	37.60	37.84	16.20	179.46	None
		7/8/2021	193.26	195.66	22.50	37.00	37.60	37.91	15.88	179.78	None
		10/7/2021	193.26	195.66	22.50	37.00	37.60	37.91	17.15	178.51	None
		1/6/2022	193.26	195.66	22.50	37.00	37.60	37.90	17.33	178.33	None
		4/6/2022	193.26	195.66	22.50	37.00	37.60	37.92	16.90	178.76	None
		10/11/2022	193.26	195.66	22.50	37.00	37.60	37.84	18.95	176.71	None
		5/25/2023	193.26	195.66	22.50	37.00	37.60	37.87	17.28	178.38	None

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50WW13	Upper Shallow	7/9/2020	195.01	197.45	22.44	36.94	37.54	37.63	19.35	178.10	None
		10/1/2020	195.01	197.45	22.44	36.94	37.54	37.63	18.95	178.50	None
		1/28/2021	195.01	197.45	22.44	36.94	37.54	37.65	18.75	178.70	None
		4/6/2021	195.01	197.45	22.44	36.94	37.54	37.65	17.65	179.80	None
		7/8/2021	195.01	197.45	22.44	36.94	37.54	37.63	17.13	180.32	None
		10/7/2021	195.01	197.45	22.44	36.94	37.54	37.60	18.46	178.99	None
		1/6/2022	195.01	197.45	22.44	36.94	37.54	37.60	18.69	178.76	None
		4/6/2022	195.01	197.45	22.44	36.94	37.54	37.62	18.39	179.06	None
		10/11/2022	195.01	197.45	22.44	36.94	37.54	37.60	20.40	177.05	None
		5/24/2023	195.01	197.45	22.44	36.94	37.54	37.63	18.85	178.60	None
50WW14	Lower Shallow	7/9/2020	195.14	197.52	45.78	60.28	60.88	60.70	18.38	179.14	None
		10/1/2020	195.14	197.52	45.78	60.28	60.88	60.70	19.04	178.48	None
		1/28/2021	195.14	197.52	45.78	60.28	60.88	60.67	18.88	178.64	None
		4/6/2021	195.14	197.52	45.78	60.28	60.88	59.95	17.82	179.70	None
		7/8/2021	195.14	197.52	45.78	60.28	60.88	59.70	17.38	180.14	None
		10/7/2021	195.14	197.52	45.78	60.28	60.88	60.70	18.74	178.78	None
		1/6/2022	195.14	197.52	45.78	60.28	60.88	59.70	18.87	178.65	None
		4/6/2022	195.14	197.52	45.78	60.28	60.88	60.66	18.65	178.87	None
		10/11/2022	195.14	197.52	45.78	60.28	60.88	60.63	20.62	176.90	None
		5/25/2023	195.14	197.52	45.78	60.28	60.88	60.75	18.97	178.55	None
50WW15	Upper Shallow	7/9/2020	193.95	196.30	22.25	36.75	37.75	37.90	17.00	179.30	None
		10/1/2020	193.95	196.30	22.25	36.75	37.75	37.88	17.63	178.67	None
		1/28/2021	193.95	196.30	22.25	36.75	37.75	37.90	17.33	178.97	None
		4/6/2021	193.95	196.30	22.25	36.75	37.75	37.90	16.34	179.96	None
		7/8/2021	193.95	196.30	22.25	36.75	37.75	37.88	15.80	180.50	None
		10/7/2021	193.95	196.30	22.25	36.75	37.75	37.85	17.47	178.83	None
		1/6/2022	193.95	196.30	22.25	36.75	37.75	37.65	17.42	178.88	None
		4/6/2022	193.95	196.30	22.25	36.75	37.75	37.88	17.21	179.09	None
		10/10/2022	193.95	196.30	22.25	36.75	37.75	37.62	19.19	177.11	None
		5/25/2023	193.95	196.30	22.25	36.75	37.75	37.69	17.50	178.80	None

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50WW16	Upper Shallow	7/9/2020	194.10	196.66	22.66	37.16	37.76	37.90	17.63	179.03	None
		10/5/2020	194.10	196.66	22.66	37.16	37.76	38.04	18.50	178.16	None
		1/28/2021	194.10	196.66	22.66	37.16	37.76	38.04	18.29	178.37	None
		4/5/2021	194.10	196.66	22.66	37.16	37.76	38.02	16.95	179.71	None
		7/7/2021	194.10	196.66	22.66	37.16	37.76	37.45	16.69	179.97	None
		10/11/2021	194.10	196.66	22.66	37.16	37.76	37.90	18.19	178.47	None
		1/4/2022	194.10	196.66	22.66	37.16	37.76	38.05	18.27	178.39	None
		4/5/2022	194.10	196.66	22.66	37.16	37.76	38.02	17.98	178.68	None
		10/10/2022	194.10	196.66	22.66	37.16	37.76	38.02	20.00	176.66	None
		5/25/2023	194.10	196.66	22.66	37.16	37.76	37.90	18.27	178.39	None
50WW17	Shallow	7/9/2020	192.73	195.13	22.30	66.80	67.40	64.63	17.07	178.06	4.9
		10/6/2020	192.73	195.13	22.30	66.80	67.40	64.63	17.48	177.65	4.9
		1/28/2021	192.73	195.13	22.30	66.80	67.40	64.63	17.17	177.96	4.9
		4/5/2021	192.73	195.13	22.30	66.80	67.40	64.55	16.50	178.63	5.1
		7/7/2021	192.73	195.13	22.30	66.80	67.40	66.27	16.88	178.25	1.2
		10/11/2021	192.73	195.13	22.30	66.80	67.40	64.68	17.25	177.88	4.8
		1/4/2022	192.73	195.13	22.30	66.80	67.40	64.38	17.38	177.75	5.4
		4/5/2022	192.73	195.13	22.30	66.80	67.40	64.41	17.19	177.94	5.4
		10/10/2022	192.73	195.13	22.30	66.80	67.40	64.70	18.89	176.24	4.7
		5/24/2023	192.73	195.13	22.30	66.80	67.40	NM	NM	NM	NM
50WW18	Upper Shallow	7/9/2020	192.57	194.84	22.37	36.87	37.47	37.65	16.88	177.96	None
		10/5/2020	192.57	194.84	22.37	36.87	37.47	37.65	17.21	177.63	None
		1/28/2021	192.57	194.84	22.37	36.87	37.47	37.65	16.95	177.89	None
		4/5/2021	192.57	194.84	22.37	36.87	37.47	37.44	17.21	177.63	None
		7/7/2021	192.57	194.84	22.37	36.87	37.47	37.03	17.29	177.55	None
		10/11/2021	192.57	194.84	22.37	36.87	37.47	37.63	17.02	177.82	None
		1/4/2022	192.57	194.84	22.37	36.87	37.47	37.63	17.15	177.69	None
		4/5/2022	192.57	194.84	22.37	36.87	37.47	37.52	16.94	177.90	None
		10/10/2022	192.57	194.84	22.37	36.87	37.47	37.50	18.78	176.06	None
		5/25/2023	192.57	194.84	22.37	36.87	37.47	37.51	17.15	177.69	None

Table 3
Groundwater Elevation Data
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

Monitoring Well	Zone	Date	Ground Surface Elevation (ft MSL)	Top of Casing Elevation (ft MSL)	Top of Screen (ft BTOC)	Bottom of Screen (ft BTOC)	Constructed Well Depth (ft BGS)	Measured Well Depth (ft BTOC)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)	Screened Interval Siltation (%)
50WW19	Shallow	7/9/2020	193.71	195.96	21.35	65.85	66.45	64.90	17.75	178.21	2.1
		10/6/2020	193.71	195.96	21.35	65.85	66.45	64.88	18.11	177.85	2.2
		1/28/2021	193.71	195.96	21.35	65.85	66.45	64.88	17.87	178.09	2.2
		4/5/2021	193.71	195.96	21.35	65.85	66.45	65.00	17.10	178.86	1.9
		7/7/2021	193.71	195.96	21.35	65.85	66.45	65.00	16.71	179.25	1.9
		10/11/2021	193.71	195.96	21.35	65.85	66.45	64.90	17.77	178.19	2.1
		1/4/2022	193.71	195.96	21.35	65.85	66.45	65.00	17.97	177.99	1.9
		4/5/2022	193.71	195.96	21.35	65.85	66.45	64.81	17.80	178.16	2.3
		10/10/2022	193.71	195.96	21.35	65.85	66.45	65.22	19.50	176.46	1.4
		5/24/2023	193.71	195.96	21.35	65.85	66.45	NM	NM	NM	NM
50WW20	Shallow	7/8/2020	200.30	202.54	20.54	55.04	55.54	57.80	23.42	179.12	None
		10/6/2020	200.30	202.54	20.54	55.04	55.54	57.80	23.83	178.71	None
		1/28/2021	200.30	202.54	20.54	55.04	55.54	55.83	23.80	178.74	None
		4/5/2021	200.30	202.54	20.54	55.04	55.54	55.84	23.00	179.54	None
		7/7/2021	200.30	202.54	20.54	55.04	55.54	55.85	21.41	181.13	None
		10/11/2021	200.30	202.54	20.54	55.04	55.54	55.78	23.45	179.09	None
		1/4/2022	200.30	202.54	20.54	55.04	55.54	55.80	23.48	179.06	None
		4/5/2022	200.30	202.54	20.54	55.04	55.54	55.84	23.34	179.20	None
		10/10/2022	200.30	202.54	20.54	55.04	55.54	55.80	25.00	177.54	None
		5/24/2023	200.30	202.54	20.54	55.04	55.54	NM	NM	NM	NM
50WW21	Upper Shallow	7/8/2020	197.68	200.14	22.36	36.86	37.46	37.67	21.17	178.97	None
		10/6/2020	197.68	200.14	22.36	36.86	37.46	37.67	21.60	178.54	None
		1/28/2021	197.68	200.14	22.36	36.86	37.46	37.63	27.70	172.44	None
		4/5/2021	197.68	200.14	22.36	36.86	37.46	37.65	20.51	179.63	None
		7/7/2021	197.68	200.14	22.36	36.86	37.46	37.64	20.03	180.11	None
		10/11/2021	197.68	200.14	22.36	36.86	37.46	37.62	21.20	178.94	None
		1/4/2022	197.68	200.14	22.36	36.86	37.46	37.62	21.35	178.79	None
		4/5/2022	197.68	200.14	22.36	36.86	37.46	37.61	21.28	178.86	None
		10/10/2022	197.68	200.14	22.36	36.86	37.46	37.61	22.83	177.31	None
		5/24/2023	197.68	200.14	22.36	36.86	37.46	NM	NM	NM	NM

Table 3
Groundwater Elevation Data
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

Monitoring Well	Zone	Date	Ground Surface Elevation (ft MSL)	Top of Casing Elevation (ft MSL)	Top of Screen (ft BTOC)	Bottom of Screen (ft BTOC)	Constructed Well Depth (ft BGS)	Measured Well Depth (ft BTOC)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)	Screened Interval Siltation (%)
50WW22	Upper Shallow	7/8/2020	199.93	202.10	21.97	36.57	37.17	37.82	23.03	179.07	None
		10/5/2020	199.93	202.10	21.97	36.57	37.17	37.82	23.42	178.68	None
		1/28/2021	199.93	202.10	21.97	36.57	37.17	37.80	23.22	178.88	None
		4/5/2021	199.93	202.10	21.97	36.57	37.17	37.80	22.25	179.85	None
		7/7/2021	199.93	202.10	21.97	36.57	37.17	37.82	21.72	180.38	None
		10/11/2021	199.93	202.10	21.97	36.57	37.17	37.79	22.90	179.20	None
		1/4/2022	199.93	202.10	21.97	36.57	37.17	37.79	23.10	179.00	None
		4/5/2022	199.93	202.10	21.97	36.57	37.17	37.78	22.98	179.12	None
		10/10/2022	199.93	202.10	21.97	36.57	37.17	37.77	24.80	177.30	None
		5/24/2023	199.93	202.10	21.97	36.57	37.17	37.80	23.37	178.73	None
50WW23	Upper Shallow	7/8/2020	198.33	200.75	22.42	36.92	37.52	37.82	22.00	178.75	None
		10/5/2020	198.33	200.75	22.42	36.92	37.52	37.82	22.30	178.45	None
		1/28/2021	198.33	200.75	22.42	36.92	37.52	37.82	22.24	178.51	None
		4/5/2021	198.33	200.75	22.42	36.92	37.52	37.84	21.45	179.30	None
		7/7/2021	198.33	200.75	22.42	36.92	37.52	37.82	20.87	179.88	None
		10/11/2021	198.33	200.75	22.42	36.92	37.52	37.79	21.88	178.87	None
		1/4/2022	198.33	200.75	22.42	36.92	37.52	37.81	22.05	178.70	None
		4/5/2022	198.33	200.75	22.42	36.92	37.52	37.82	21.93	178.82	None
		10/10/2022	198.33	200.75	22.42	36.92	37.52	37.79	23.57	177.18	None
		5/25/2023	198.33	200.75	22.42	36.92	37.52	37.80	22.30	178.45	None
50WW24	Upper Shallow	7/8/2020	199.37	201.63	22.66	37.16	37.76	38.02	22.92	178.71	None
		10/6/2020	199.37	201.63	22.66	37.16	37.76	38.00	23.05	178.58	None
		1/28/2021	199.37	201.63	22.66	37.16	37.76	37.96	23.07	178.56	None
		4/5/2021	199.37	201.63	22.66	37.16	37.76	38.02	22.48	179.15	None
		7/7/2021	199.37	201.63	22.66	37.16	37.76	38.02	22.83	178.80	None
		10/11/2021	199.37	201.63	22.66	37.16	37.76	37.97	22.80	178.83	None
		1/4/2022	199.37	201.63	22.66	37.16	37.76	37.97	22.95	178.68	None
		4/5/2022	199.37	201.63	22.66	37.16	37.76	38.01	22.82	178.81	None
		10/10/2022	199.37	201.63	22.66	37.16	37.76	37.97	24.49	177.14	None
		5/24/2023	199.37	201.63	22.66	37.16	37.76	NM	NM	NM	NM

Table 3
Groundwater Elevation Data
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

Monitoring Well	Zone	Date	Ground Surface Elevation (ft MSL)	Top of Casing Elevation (ft MSL)	Top of Screen (ft BTOC)	Bottom of Screen (ft BTOC)	Constructed Well Depth (ft BGS)	Measured Well Depth (ft BTOC)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)	Screened Interval Siltation (%)
50WW25	Lower Shallow	7/9/2020	193.48	195.98	47.50	56.90	57.50	57.81	16.91	179.07	None
		10/6/2020	193.48	195.98	47.50	56.90	57.50	57.80	17.67	178.31	None
		1/28/2021	193.48	195.98	47.50	56.90	57.50	57.80	17.39	178.59	None
		4/5/2021	193.48	195.98	47.50	56.90	57.50	57.82	16.13	179.85	None
		7/7/2021	193.48	195.98	47.50	56.90	57.50	56.67	17.73	178.25	2.4
		10/11/2021	193.48	195.98	47.50	56.90	57.50	57.82	17.70	178.28	None
		1/4/2022	193.48	195.98	47.50	56.90	57.50	57.80	17.62	178.36	None
		4/5/2022	193.48	195.98	47.50	56.90	57.50	57.81	17.28	178.70	None
		10/10/2022	193.48	195.98	47.50	56.90	57.50	56.77	19.04	176.94	None
		5/24/2023	193.48	195.98	47.50	56.90	57.50	NM	NM	NM	NM
50WW26	Lower Shallow	7/8/2020	197.68	200.07	47.49	61.99	62.59	62.80	21.25	178.82	None
		10/6/2020	197.68	200.07	47.49	61.99	62.59	62.80	21.31	178.76	None
		1/28/2021	197.68	200.07	47.49	61.99	62.59	62.77	22.57	177.50	None
		4/5/2021	197.68	200.07	47.49	61.99	62.59	62.85	20.55	179.52	None
		7/7/2021	197.68	200.07	47.49	61.99	62.59	62.80	20.00	180.07	None
		10/11/2021	197.68	200.07	47.49	61.99	62.59	62.80	21.15	178.92	None
		1/4/2022	197.68	200.07	47.49	61.99	62.59	62.83	21.31	178.76	None
		4/5/2022	197.68	200.07	47.49	61.99	62.59	62.71	21.21	178.86	None
		10/10/2022	197.68	200.07	47.49	61.99	62.59	62.78	22.85	177.22	None
		5/24/2023	197.68	200.07	47.49	61.99	62.59	NM	NM	NM	NM
50WW27	Lower Shallow	7/8/2020	193.84	196.22	45.28	59.78	60.38	59.95	16.91	179.31	None
		10/6/2020	193.84	196.22	45.28	59.78	60.38	59.93	17.57	178.65	None
		1/28/2021	193.84	196.22	45.28	59.78	60.38	59.94	17.05	179.17	None
		4/5/2021	193.84	196.22	45.28	59.78	60.38	59.93	16.35	179.87	None
		7/7/2021	193.84	196.22	45.28	59.78	60.38	59.95	15.73	180.49	None
		10/11/2021	193.84	196.22	45.28	59.78	60.38	59.92	17.70	178.52	None
		1/4/2022	193.84	196.22	45.28	59.78	60.38	59.93	17.40	178.82	None
		4/5/2022	193.84	196.22	45.28	59.78	60.38	60.01	17.18	179.04	None
		10/10/2022	193.84	196.22	45.28	59.78	60.38	59.92	19.14	177.08	None
		5/24/2023	193.84	196.22	45.28	59.78	60.38	NM	NM	NM	NM

Table 3
Groundwater Elevation Data
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

Monitoring Well	Zone	Date	Ground Surface Elevation (ft MSL)	Top of Casing Elevation (ft MSL)	Top of Screen (ft BTOC)	Bottom of Screen (ft BTOC)	Constructed Well Depth (ft BGS)	Measured Well Depth (ft BTOC)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)	Screened Interval Siltation (%)
50WW28	Upper Shallow	7/8/2020	192.04	194.71	16.57	26.57	26.97	27.10	16.03	178.68	None
		10/6/2020	192.04	194.71	16.57	26.57	26.97	27.10	16.72	177.99	None
		1/28/2021	192.04	194.71	16.57	26.57	26.97	27.10	16.49	178.22	None
		4/5/2021	192.04	194.71	16.57	26.57	26.97	27.10	15.31	179.40	None
		7/7/2021	192.04	194.71	16.57	26.57	26.97	27.05	13.31	181.40	None
		10/11/2021	192.04	194.71	16.57	26.57	26.97	27.08	16.52	178.19	None
		1/4/2022	192.04	194.71	16.57	26.57	26.97	27.09	16.65	178.06	None
		4/5/2022	192.04	194.71	16.57	26.57	26.97	27.29	16.45	178.26	None
		10/10/2022	192.04	194.71	16.57	26.57	26.97	27.30	18.25	176.46	None
		5/24/2023	192.04	194.71	16.57	26.57	26.97	NM	NM	NM	NM
50WW29	Upper Shallow	7/8/2020	192.18	195.63	23.45	38.45	38.45	37.90	17.69	177.94	3.7
		10/1/2020	192.18	195.63	23.45	38.45	38.45	38.10	18.03	177.60	2.3
		1/25/2021	192.18	195.63	23.45	38.45	38.45	38.10	17.18	178.45	2.3
		4/5/2021	192.18	195.63	23.45	38.45	38.45	37.90	16.93	178.70	3.7
		7/7/2021	192.18	195.63	23.45	38.45	38.45	38.10	16.27	179.36	2.3
		10/7/2021	192.18	195.63	23.45	38.45	38.45	38.09	17.75	177.88	2.4
		1/4/2022	192.18	195.63	23.45	38.45	38.45	37.90	17.75	177.88	3.7
		4/5/2022	192.18	195.63	23.45	38.45	38.45	37.91	17.16	178.47	3.6
		10/11/2022	192.18	195.63	23.45	38.45	38.45	38.08	19.43	176.20	2.5
		5/24/2023	192.18	195.63	23.45	38.45	38.45	38.10	17.90	177.73	2.3

Notes:
% - percentage
ft BGS - feet below ground surface
ft BTOC - feet below top of casing
ft MSL - feet below mean sea level
NM - no measurement
RA-O - Remedial Action Operation

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW05 (Upper Shallow)															
		Sample ID	50WW05-191108		50WW05-200708		50WW05-201001		50WW05-210125		50WW05-210405		50WW05-210707		50WW05-211007		50WW05-220105	
		Sample Date	11/8/2019		7/8/2020		10/1/2020		1/25/2021		4/5/2021		7/7/2021		10/7/2021		1/5/2022	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC																		
Dehalococcoides	cells/mL	NV	NA		NA		NA		NA		NA		NA		NA		NA	
FIELD TESTS																		
Dissolved oxygen	mg/L	NV	0.02		0.12		0.37		0.05		0.32		0.76		0.34		0.95	
Ferrous Iron	NA	NV	NM		NM		NM		NM		NM		NM		NM		NM	
Oxidation Reduction Potential	mV	NV	58		99		105		94		159		102		120		195	
pH	pH_units	NV	6.75		7.07		6.71		7.02		6.78		6.30		6.06		5.79	
Specific conductivity	µmhos/cm	NV	1.15		1.45		1.44		1.75		1.60		1.79		0.779		1.54	
Temperature	deg. C	NV	16.78		21.76		20.30		19.52		17.50		19.03		23.18		17.74	
Turbidity	NTU	NV	0.7		0		0		0		0.2		3.3		0		0	
DISSOLVED GASES																		
Carbon dioxide	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Ethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Ethylene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Methane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
GENERAL CHEMISTRY																		
Chloride	mg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Nitrate	mg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Sulfate	mg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Total organic carbon	mg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
PERCHLORATE																		
Perchlorate	µg/L	17	< 2	U	3.08		0.621		< 0.05	U	< 0.05	U	0.059	J	0.252	J	< 0.2	U
VOLATILES																		
1,1,1,2-Tetrachloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1,1-Trichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1,2,2-Tetrachloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1-Dichloroethane	µg/L	NV	0.41	J	NA		NA		NA		NA		NA		NA		NA	
1,1-Dichloroethene	µg/L	7	4.8		4.9		7		4.4		4.7		3.6		4.8		2.3	
1,1-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2,3-Trichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2,3-Trichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2,4-Trichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2,4-Trimethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromoethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2-Dichloroethane	µg/L	5	2.7		2.4		3.1		2		1.6		< 0.5	U	2.6		2.1	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW05 (Upper Shallow)															
		Sample ID	50WW05-191108		50WW05-200708		50WW05-201001		50WW05-210125		50WW05-210405		50WW05-210707		50WW05-211007		50WW05-220105	
		Sample Date	11/8/2019		7/8/2020		10/1/2020		1/25/2021		4/5/2021		7/7/2021		10/7/2021		1/5/2022	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,3,5-Trimethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,3-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,3-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
2,2-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
2-Butanone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
2-Chlorotoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
2-Hexanone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
4-Chlorotoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Acetone	µg/L	NV	< 2	U	NA		NA		NA		NA		NA		NA		NA	
Benzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromochloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromodichloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromoform	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromomethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Carbon disulfide	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Carbon tetrachloride	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Chlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Chloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Chloroform	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Chloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
cis-1,2-Dichloroethene	µg/L	70	**200**		**250**		**280**		**160**		**140**		**130**		**170**		**150**	
cis-1,3-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Dibromochloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Dibromomethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Dichlorodifluoromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Ethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Hexachlorobutadiene	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Isopropylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
m,p-Xylenes	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Methyl isobutyl ketone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Methylene chloride	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Naphthalene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
n-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
n-Propylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
o-Xylene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW05 (Upper Shallow)															
		Sample ID	50WW05-191108		50WW05-200708		50WW05-201001		50WW05-210125		50WW05-210405		50WW05-210707		50WW05-211007		50WW05-220105	
		Sample Date	11/8/2019		7/8/2020		10/1/2020		1/25/2021		4/5/2021		7/7/2021		10/7/2021		1/5/2022	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
p-Isopropyltoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
sec-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Styrene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
tert-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Tetrachloroethene	µg/L	5	1.2		< 1	U	0.75	J	0.86	J	< 1	U	0.61	J	0.89	J	< 1	
Toluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
trans-1,2-Dichloroethene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
trans-1,3-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Trichloroethene	µg/L	5	**290**		**280**		**370**		**270**		**240**		**350**		**290**		**200**	
Trichlorofluoromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
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	

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

			Location Code	50WW05 (Upper Shallow)						50WW06 (Lower Shallow)									
			Sample ID	50WW05-220405		50WW05-221010		50WW05_052523		50WW06-191112		50WW06-200709		50WW06-201001		50WW06-210128		50WW06-210406	
			Sample Date	4/5/2022		10/10/2022		5/25/2023		11/12/2019		7/9/2020		10/1/2020		1/28/2021		4/6/2021	
			Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**		**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC																			
Dehalococcoides	cells/mL	NV		NA		NA		NA		NA		< 1.2	U	0.2	J	0.6		0.4	J
FIELD TESTS																			
Dissolved oxygen	mg/L	NV		0.3		0.34		0.06		0.04		2.42		0.06		0.09		1.39	
Ferrous Iron	NA	NV		NM		NM		NM		0.36		0.25		NM		1.11		0.45	
Oxidation Reduction Potential	mV	NV		183		20		38		158		257		95		107		263	
pH	pH_units	NV		6.27		7.36		7.21		6.45		5.60		6.31		5.67		5.04	
Specific conductivity	µmhos/cm	NV		1.4		1.43		1.88		0.505		0.086		0.385		0.130		0.076	
Temperature	deg. C	NV		21.41		19.25		19.73		15.70		23.42		19.27		12.00		16.62	
Turbidity	NTU	NV		10		0		0		53.7		3.8		0		2.9		5.9	
DISSOLVED GASES																			
Carbon dioxide	µg/L	NV		NA		NA		NA		120,000		98,000		93,000		45,000	J	88,000	J
Ethane	µg/L	NV		NA		NA		NA		< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U
Ethylene	µg/L	NV		NA		NA		NA		< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U
Methane	µg/L	NV		NA		NA		NA		1.1	J	2.1		3.8		< 1	U	2.6	
GENERAL CHEMISTRY																			
Chloride	mg/L	NV		NA		NA		NA		84.1		3.25		41.8		3.06		3.42	
Nitrate	mg/L	NV		NA		NA		NA		< 0.1	U	< 0.1	U	< 0.1	U	0.212		< 0.1	U
Sulfate	mg/L	NV		NA		NA		NA		20.8		8.12		17.9		8.29		10.9	
Total organic carbon	mg/L	NV		NA		NA		NA		1.63		9.31	J	6.09		1.55		1.57	
PERCHLORATE																			
Perchlorate	µg/L	17		< 0.05	U	0.109		0.13		**4,300**		1.69		**1,660**		2.78		0.032	J
VOLATILES																			
1,1,1,2-Tetrachloroethane	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1,1-Trichloroethane	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1,2,2-Tetrachloroethane	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1,2-Trichloroethane	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1-Dichloroethane	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1-Dichloroethene	µg/L	7		3.6		3.3		3.1		< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
1,1-Dichloropropene	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2,3-Trichlorobenzene	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2,3-Trichloropropane	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2,4-Trichlorobenzene	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2,4-Trimethylbenzene	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2-Dibromoethane	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2-Dichlorobenzene	µg/L	NV		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2-Dichloroethane	µg/L	5		1.9		1.7		1.2		< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW05 (Upper Shallow)						50WW06 (Lower Shallow)									
		Sample ID	50WW05-220405		50WW05-221010		50WW05_052523		50WW06-191112		50WW06-200709		50WW06-201001		50WW06-210128		50WW06-210406	
		Sample Date	4/5/2022		10/10/2022		5/25/2023		11/12/2019		7/9/2020		10/1/2020		1/28/2021		4/6/2021	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
1,2-Dichloropropane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,3,5-Trimethylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,3-Dichlorobenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,3-Dichloropropane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,4-Dichlorobenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
2,2-Dichloropropane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
2-Butanone	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
2-Chlorotoluene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
2-Hexanone	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
4-Chlorotoluene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Acetone	µg/L	NV	NA		NA		NA		< 2	U	NA		NA		NA		NA	
Benzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Bromobenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Bromochloromethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Bromodichloromethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Bromoform	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Bromomethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Carbon disulfide	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
Carbon tetrachloride	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Chlorobenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Chloroethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Chloroform	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Chloromethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
cis-1,2-Dichloroethene	µg/L	70	**150**		**77**		**130**		1.2		< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
cis-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Dibromochloromethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Dibromomethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Dichlorodifluoromethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Ethylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Hexachlorobutadiene	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
Isopropylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
m,p-Xylenes	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
Methyl isobutyl ketone	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
Methylene chloride	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
Naphthalene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
n-Butylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
n-Propylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
o-Xylene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW05 (Upper Shallow)						50WW06 (Lower Shallow)									
		Sample ID	50WW05-220405		50WW05-221010		50WW05_052523		50WW06-191112		50WW06-200709		50WW06-201001		50WW06-210128		50WW06-210406	
		Sample Date	4/5/2022		10/10/2022		5/25/2023		11/12/2019		7/9/2020		10/1/2020		1/28/2021		4/6/2021	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
p-Isopropyltoluene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
sec-Butylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Styrene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
tert-Butylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Tetrachloroethene	µg/L	5	0.67	J	1.2		0.65	J	< 0.5	U	< 1	U	< 0.5	U	< 1	U	< 1	U
Toluene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
trans-1,2-Dichloroethene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
trans-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Trichloroethene	µg/L	5	**220**		**290**		**130**		**41**		1.3		**14**		4.8		3.1	
Trichlorofluoromethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Vinyl chloride	µg/L	2	< 0.5	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

			Location Code		50WW06 (Lower Shallow)										50WW08 (Upper Shallow)			
			Sample ID		50WW06-210708		50WW06-211007		50WW06-220106		50WW06-220406		50WW06-221011		50WW06_052423		50WW08-191112		50WW08-200708	
			Sample Date		7/8/2021		10/7/2021		1/6/2022		4/6/2022		10/11/2022		5/24/2023		11/12/2019		7/8/2020	
			Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
DHC																				
Dehalococcoides	cells/mL	NV	1		2		0.7		NA		NA		NA		NA		NA		NA	
FIELD TESTS																				
Dissolved oxygen	mg/L	NV	0.91		0.19		0.44		5.4		0.08		3.76		0.14		0.09			
Ferrous Iron	NA	NV	0.39		2.35		3.77		0.08		NM		0.06		0.09		NM			
Oxidation Reduction Potential	mV	NV	148		29		228		187		166		191		153		212			
pH	pH_units	NV	6.59		4.84		3.72		6.2		6.51		6.37		6.99		7.23			
Specific conductivity	µmhos/cm	NV	0.235		0.184		0.518		0.121		0.355		0.37		2.23		2.26			
Temperature	deg. C	NV	19.93		19.00		16.77		19.62		19.33		20.69		16.17		21.38			
Turbidity	NTU	NV	10.9		4.3		20.2		9		0		0		72.7		0			
DISSOLVED GASES																				
Carbon dioxide	µg/L	NV	170,000	J	541,000	J	44,500		36,400	J	72,000		30,000		69,000		NA			
Ethane	µg/L	NV	< 0.47	U	< 2	UJ	< 0.5	U	2.09		< 0.5	UJ	< 0.5	U	< 0.47	U	NA			
Ethylene	µg/L	NV	< 0.55	U	< 1	UJ	0.992	J	< 0.5	U	3.13	J	< 0.5	U	< 0.55	U	NA			
Methane	µg/L	NV	0.68	J	7.3	J	27.6	J	3.1		49.1		0.821		3		NA			
GENERAL CHEMISTRY																				
Chloride	mg/L	NV	3.31		42.6		69.2		10.4		72.7		3.89		361		NA			
Nitrate	mg/L	NV	0.11	UB	< 0.1	U	0.0881	J	0.46		0.133		0.144		0.118		NA			
Sulfate	mg/L	NV	13.4		22.9		30.4		11.8		31.5		12.1		304		NA			
Total organic carbon	mg/L	NV	2.23		5.32		7.96		1.61		2.42		1.83		0.83		NA			
PERCHLORATE																				
Perchlorate	µg/L	17	1.89	J	15.1	J	0.39		**24.7**		**257**		5.79		**83**		**89.8**			
VOLATILES																				
1,1,1,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA			
1,1,1-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA			
1,1,2,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA			
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		1.6		NA			
1,1,2-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA			
1,1-Dichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		1		NA			
1,1-Dichloroethene	µg/L	7	< 0.5	U	< 0.5	U	< 0.5		< 0.5	U	< 1	U	< 0.5	U	1.2		0.95	J		
1,1-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA			
1,2,3-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA			
1,2,3-Trichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA			
1,2,4-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA			
1,2,4-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA			
1,2-Dibromo-3-chloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA			
1,2-Dibromoethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA			
1,2-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA			
1,2-Dichloroethane	µg/L	5	< 0.5	U	< 0.5	U	< 0.5		< 0.5	U	< 1	U	< 0.5	U	2.2		1.5			

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW06 (Lower Shallow)												50WW08 (Upper Shallow)			
		Sample ID	50WW06-210708		50WW06-211007		50WW06-220106		50WW06-220406		50WW06-221011		50WW06_052423		50WW08-191112		50WW08-200708	
		Sample Date	7/8/2021		10/7/2021		1/6/2022		4/6/2022		10/11/2022		5/24/2023		11/12/2019		7/8/2020	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
1,3,5-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
1,3-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
1,3-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
1,4-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
2,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
2-Butanone	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	NA	
2-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
2-Hexanone	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	NA	
4-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Acetone	µg/L	NV	NA		NA		NA		NA		NA		NA		< 2	U	NA	
Benzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Bromobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Bromochloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Bromodichloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Bromoform	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Bromomethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Carbon disulfide	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	NA	
Carbon tetrachloride	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Chlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Chloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Chloroform	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Chloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	0.74		< 0.5	U	1.0		< 0.5	U	39		41	
cis-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Dibromochloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Dibromomethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Dichlorodifluoromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Ethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Hexachlorobutadiene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	NA	
Isopropylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
m,p-Xylenes	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	NA	
Methyl isobutyl ketone	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	NA	
Methylene chloride	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	NA	
Naphthalene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
n-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
n-Propylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
o-Xylene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

	Location Code	50WW06 (Lower Shallow)												50WW08 (Upper Shallow)			
	Sample ID	50WW06-210708		50WW06-211007		50WW06-220106		50WW06-220406		50WW06-221011		50WW06_052423		50WW08-191112		50WW08-200708	
	Sample Date	7/8/2021		10/7/2021		1/6/2022		4/6/2022		10/11/2022		5/24/2023		11/12/2019		7/8/2020	
	Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
p-Isopropyltoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
sec-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Styrene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
tert-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Tetrachloroethene	µg/L	5	< 1	U	< 1	U	< 1		< 1	U	< 1	U	< 0.5	U	1.3		1.4	
Toluene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
trans-1,2-Dichloroethene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
trans-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Trichloroethene	µg/L	5	4.2		2.8		4.3		**23**		**20**		**13**		**420**		**390**	
Trichlorofluoromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	NA	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5		< 0.5	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

			Location Code		50WW08 (Upper Shallow)															
			Sample ID		50WW08-201005		50WW08-210125		50WW08-210405		50WW08-210707		50WW08-211011		50WW08-220105		50WW08-220406		50WW08-221010		50WW08_052423	
			Sample Date		10/5/2020		1/25/2021		4/5/2021		7/7/2021		10/11/2021		1/5/2022		4/6/2022		10/10/2022		5/24/2023	
			Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC																				
Dehalococcoides	cells/mL	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
FIELD TESTS																				
Dissolved oxygen	mg/L	NV	3.17		0.08		0.66		1.37		0.26		0.59		0.2		0.2		0.72	
Ferrous Iron	NA	NV	NM		NM		NM		NM		NM		NM		NM		NM		NM	
Oxidation Reduction Potential	mV	NV	220		186		151		143		200		184		176		109		151	
pH	pH_units	NV	6.02		6.12		6.57		6.08		5.79		6.09		6.58		7.56		7.01	
Specific conductivity	µmhos/cm	NV	2.36		2.61		2.51		2.28		1.34		2.41		2.37		2.35		2.83	
Temperature	deg. C	NV	18.27		19.13		16.96		20.09		19.49		17.69		19.49		17.4		19.71	
Turbidity	NTU	NV	0		17		18.3		32.3		12.9		11		21		0		398	
DISSOLVED GASES																				
Carbon dioxide	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Ethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Ethylene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
GENERAL CHEMISTRY																				
Chloride	mg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Nitrate	mg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Sulfate	mg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Total organic carbon	mg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
PERCHLORATE																				
Perchlorate	µg/L	17	**172**		**126**		**115**		**222**		**682**		**178**		**83.4**		**31.1**		**81.1**	
VOLATILES																				
1,1,1,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,1-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1-Dichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1-Dichloroethene	µg/L	7	1		0.82	J	1.3		0.72	J	0.56	J	0.98		1.1		1		1.1	
1,1-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,3-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,3-Trichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromoethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichloroethane	µg/L	5	2.2		2.3		1.8		1.9		3.2		1.5		1.7		1.1		1.5	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

			Location Code	50WW08 (Upper Shallow)																
			Sample ID	50WW08-201005		50WW08-210125		50WW08-210405		50WW08-210707		50WW08-211011		50WW08-220105		50WW08-220406		50WW08-221010		50WW08_052423	
			Sample Date	10/5/2020		1/25/2021		4/5/2021		7/7/2021		10/11/2021		1/5/2022		4/6/2022		10/10/2022		5/24/2023	
			Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL		Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,3,5-Trimethylbenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,3-Dichlorobenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,3-Dichloropropane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,2-Dichloropropane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Butanone	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Chlorotoluene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Hexanone	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Chlorotoluene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Acetone	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Benzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromobenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromochloromethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromodichloromethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromoform	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromomethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Carbon disulfide	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Carbon tetrachloride	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chlorobenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chloroethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chloroform	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chloromethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
cis-1,2-Dichloroethene	µg/L	70		57		55		58		57		54		63		**91**		**73**		**85**	
cis-1,3-Dichloropropene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dibromochloromethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dibromomethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dichlorodifluoromethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Ethylbenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Hexachlorobutadiene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Isopropylbenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
m,p-Xylenes	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl isobutyl ketone	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methylene chloride	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Naphthalene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
n-Butylbenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
n-Propylbenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
o-Xylene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW08 (Upper Shallow)																	
		Sample ID	50WW08-201005		50WW08-210125		50WW08-210405		50WW08-210707		50WW08-211011		50WW08-220105		50WW08-220406		50WW08-221010		50WW08_052423	
		Sample Date	10/5/2020		1/25/2021		4/5/2021		7/7/2021		10/11/2021		1/5/2022		4/6/2022		10/10/2022		5/24/2023	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
p-Isopropyltoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
sec-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Styrene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
tert-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Tetrachloroethene	µg/L	5	1.4		1.4		1.6		1.3		0.9	J	1.2		1.7		1.8		1.8	
Toluene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
trans-1,2-Dichloroethene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
trans-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Trichloroethene	µg/L	5	**500**		**550**		**610**		**500**		**370**		**590**		**720**		**720**		**650**	
Trichlorofluoromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5		< 0.5	U	< 1	U	< 0.5	U

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW09 (Lower Shallow)												50WW11 (Upper Shallow)			
		Sample ID	50WW09-191111		50WW09-191111-		50WW09-201005		50WW09-211011		50WW09-221010		50WW09_052423		50WW11-191112		50WW11-200709	
		Sample Date	11/11/2019		11/11/2019		10/5/2020		10/11/2021		10/10/2022		5/24/2023		11/12/2019		7/9/2020	
		Sample Purpose	REG		FD		REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC																		
Dehalococcoides	cells/mL	NV	NA		NA		NA		NA		NA		NA		NA		0.5	
FIELD TESTS																		
Dissolved oxygen	mg/L	NV	0.25		0.25		0.43		0.18		0.27		0.71		0.71		1.88	
Ferrous Iron	NA	NV	NM		NM		NM		NM		NM		NM		0.64		0.51	
Oxidation Reduction Potential	mV	NV	116		116		219		202		1		173		145		131	
pH	pH_units	NV	6.62		6.62		6.20		5.36		7.32		6.31		6.39		6.69	
Specific conductivity	µmhos/cm	NV	1.68		1.68		2.08		0.894		2.28		1.02		1.96		1.93	
Temperature	deg. C	NV	18.80		18.80		18.43		21.69		18.64		19.65		14.64		21.79	
Turbidity	NTU	NV	290		290		113		11.2		4.1		217		116		43.6	
DISSOLVED GASES																		
Carbon dioxide	µg/L	NV	NA		NA		NA		NA		NA		NA		270,000		85,000	
Ethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.47	U	< 0.47	U
Ethylene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.55	U	< 0.55	U
Methane	µg/L	NV	NA		NA		NA		NA		NA		NA		6.8		< 1	U
GENERAL CHEMISTRY																		
Chloride	mg/L	NV	NA		NA		NA		NA		NA		NA		294		306	
Nitrate	mg/L	NV	NA		NA		NA		NA		NA		NA		< 0.1	U	< 0.1	U
Sulfate	mg/L	NV	NA		NA		NA		NA		NA		NA		351		391	
Total organic carbon	mg/L	NV	NA		NA		NA		NA		NA		NA		1.49		1.18	J
PERCHLORATE																		
Perchlorate	µg/L	17	6.6		7.4		< 0.5	U	0.167	J	0.118		0.712	J	**8,000**		**4,880**	
VOLATILES																		
1,1,1,2-Tetrachloroethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,1,1-Trichloroethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,1,2,2-Tetrachloroethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,1,2-Trichloroethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,1-Dichloroethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,1-Dichloroethene	µg/L	7	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U	**26**		**15**	
1,1-Dichloropropene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,2,3-Trichlorobenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,2,3-Trichloropropane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,2,4-Trichlorobenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,2,4-Trimethylbenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,2-Dibromo-3-chloropropane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,2-Dibromoethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,2-Dichlorobenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,2-Dichloroethane	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U	**28**		**13**	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW09 (Lower Shallow)												50WW11 (Upper Shallow)			
		Sample ID	50WW09-191111		50WW09-191111-		50WW09-201005		50WW09-211011		50WW09-221010		50WW09_052423		50WW11-191112		50WW11-200709	
		Sample Date	11/11/2019		11/11/2019		10/5/2020		10/11/2021		10/10/2022		5/24/2023		11/12/2019		7/9/2020	
		Sample Purpose	REG		FD		REG		REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,3,5-Trimethylbenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,3-Dichlorobenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,3-Dichloropropane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
1,4-Dichlorobenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
2,2-Dichloropropane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
2-Butanone	µg/L	NV	< 1	U	< 1	U	NA		NA		NA		NA		< 10	U	NA	
2-Chlorotoluene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
2-Hexanone	µg/L	NV	< 1	U	< 1	U	NA		NA		NA		NA		< 10	U	NA	
4-Chlorotoluene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Acetone	µg/L	NV	< 2	U	< 2	U	NA		NA		NA		NA		< 20	U	NA	
Benzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Bromobenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Bromochloromethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Bromodichloromethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Bromoform	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Bromomethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Carbon disulfide	µg/L	NV	< 1	U	< 1	U	NA		NA		NA		NA		< 10	U	NA	
Carbon tetrachloride	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Chlorobenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Chloroethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Chloroform	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Chloromethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
cis-1,2-Dichloroethene	µg/L	70	4.1		4		2.8		0.93	J	0.54	J	1.1		58		29	
cis-1,3-Dichloropropene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Dibromochloromethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Dibromomethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Dichlorodifluoromethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Ethylbenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Hexachlorobutadiene	µg/L	NV	< 1	U	< 1	U	NA		NA		NA		NA		< 10	U	NA	
Isopropylbenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
m,p-Xylenes	µg/L	NV	< 1	U	< 1	U	NA		NA		NA		NA		< 10	U	NA	
Methyl isobutyl ketone	µg/L	NV	< 1	U	< 1	U	NA		NA		NA		NA		< 10	U	NA	
Methylene chloride	µg/L	NV	< 1	U	< 1	U	NA		NA		NA		NA		< 10	U	NA	
Naphthalene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
n-Butylbenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
n-Propylbenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
o-Xylene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

	Location Code	50WW09 (Lower Shallow)												50WW11 (Upper Shallow)			
	Sample ID	50WW09-191111		50WW09-191111-		50WW09-201005		50WW09-211011		50WW09-221010		50WW09_052423		50WW11-191112		50WW11-200709	
	Sample Date	11/11/2019		11/11/2019		10/5/2020		10/11/2021		10/10/2022		5/24/2023		11/12/2019		7/9/2020	
	Sample Purpose	REG		FD		REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
p-Isopropyltoluene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
sec-Butylbenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Styrene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
tert-Butylbenzene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Tetrachloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 1	U	< 0.5	U	< 5	U	2.4	
Toluene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
trans-1,2-Dichloroethene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
trans-1,3-Dichloropropene	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Trichloroethene	µg/L	5	**30**		**30**		**21**		**5.7**		**5.8**		**11**		**3,300**		**1,600**	
Trichlorofluoromethane	µg/L	NV	< 0.5	U	< 0.5	U	NA		NA		NA		NA		< 5	U	NA	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U	< 5	U	1.1	

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

			Location Code		50WW11 (Upper Shallow)													
			Sample ID		50WW11-200709-		50WW11-201001		50WW11-201001-		50WW11-210128		50WW11-210406		50WW11-210406-		50WW11-210708		50WW11-210708-	
			Sample Date		7/9/2020		10/1/2020		10/1/2020		1/28/2021		4/6/2021		4/6/2021		7/8/2021		7/8/2021	
			Sample Purpose		FD		REG		FD		REG		REG		FD		REG		FD	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC																				
Dehalococcoides	cells/mL	NV	NA		4		NA		1.4		0.9		NA		3		NA	
FIELD TESTS																				
Dissolved oxygen	mg/L	NV	1.88		1.12		1.12		0.03		1.16		1.16		1.79		1.79	
Ferrous Iron	NA	NV	0.51		NM		NM		1.91		0.74		0.74		0.67		0.67	
Oxidation Reduction Potential	mV	NV	131		94		94		72		200		200		137		137	
pH	pH_units	NV	6.69		6.70		6.70		5.60		5.70		5.70		5.98		5.98	
Specific conductivity	µmhos/cm	NV	1.93		2.10		2.10		2.32		1.96		1.96		1.85		1.85	
Temperature	deg. C	NV	21.79		19.05		19.05		15.42		18.11		18.11		19.63		19.63	
Turbidity	NTU	NV	43.6		20		20		73.3		60.3		60.3		53.2		53.2	
DISSOLVED GASES																				
Carbon dioxide	µg/L	NV	80,000		74,000		79,000		380,000	J	310,000	J	300,000	J	730,000	J	570,000	J
Ethane	µg/L	NV	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U
Ethylene	µg/L	NV	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U
Methane	µg/L	NV	0.93	J	4.6		5.1		4.4		1.1	J	1.7	J	2.2	J	3.2	J
GENERAL CHEMISTRY																				
Chloride	mg/L	NV	300		305		301		295		295		283		285		281	
Nitrate	mg/L	NV	< 0.1	U	< 0.1	U	< 0.1	U	< 0.1	U	< 0.1	U	< 0.1	U	< 0.1	U	< 0.1	U
Sulfate	mg/L	NV	388		475		403		261		304		294		358		354	
Total organic carbon	mg/L	NV	1.16	J	1.82		1.86		1.98		1.65		1.62		1.9		1.81	
PERCHLORATE																				
Perchlorate	µg/L	17	**4,960**		**6,630**		**7,940**		**651**		**421**		**482**		**2,670**		**2610**	
VOLATILES																				
1,1,1,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,1,1-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,1-Dichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,1-Dichloroethene	µg/L	7	**15**		**35**		**34**		2.1	J	1.5		2		**9.9**		**9.7**	
1,1-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,2,3-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,2,3-Trichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromoethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichloroethane	µg/L	5	**13**		**26**		**25**		2.4	J	1.5		1.8		< 0.5	U	< 0.5	U

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW11 (Upper Shallow)															
		Sample ID	50WW11-200709-		50WW11-201001		50WW11-201001-		50WW11-210128		50WW11-210406		50WW11-210406-		50WW11-210708		50WW11-210708-	
		Sample Date	7/9/2020		10/1/2020		10/1/2020		1/28/2021		4/6/2021		4/6/2021		7/8/2021		7/8/2021	
		Sample Purpose	FD		REG		FD		REG		REG		FD		REG		FD	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,3,5-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,3-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,3-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
2,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
2-Butanone	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
2-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
2-Hexanone	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
4-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Acetone	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Benzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Bromobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Bromochloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Bromodichloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Bromoform	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Bromomethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Carbon disulfide	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Carbon tetrachloride	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Chlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Chloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Chloroform	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Chloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
cis-1,2-Dichloroethene	µg/L	70	29		**74**		**74**		6.7	J	5.3		5.7		20		19	
cis-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Dibromochloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Dibromomethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Dichlorodifluoromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Ethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Hexachlorobutadiene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Isopropylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
m,p-Xylenes	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Methyl isobutyl ketone	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Methylene chloride	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Naphthalene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
n-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
n-Propylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
o-Xylene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

	Location Code	50WW11 (Upper Shallow)															
	Sample ID	50WW11-200709-		50WW11-201001		50WW11-201001-		50WW11-210128		50WW11-210406		50WW11-210406-		50WW11-210708		50WW11-210708-	
	Sample Date	7/9/2020		10/1/2020		10/1/2020		1/28/2021		4/6/2021		4/6/2021		7/8/2021		7/8/2021	
	Sample Purpose	FD		REG		FD		REG		REG		FD		REG		FD	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
p-Isopropyltoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
sec-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Styrene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
tert-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Tetrachloroethene	µg/L	5	2.7		**6.8**		**7.1**		0.87	J	< 1	U	< 1	U	1.7		1.9	
Toluene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
trans-1,2-Dichloroethene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
trans-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Trichloroethene	µg/L	5	**1,500**		**3,300**		**3,500**		**250**		**200**		**230**		**1,100**		**1,100**	
Trichlorofluoromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Vinyl chloride	µg/L	2	1.1		**3.4**		**3.5**		< 0.5	U	< 0.5	U	< 0.5	U	0.6	J	0.62	J

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

	Location Code	50WW11 (Upper Shallow)												50WW12 (Upper Shallow)			
	Sample ID	50WW11-211007		50WW11-211007-		50WW11-220106		50WW11-220406		50WW11-221011		50WW11_052423		50WW12-191112		50WW12-191112-	
	Sample Date	10/7/2021		10/7/2021		1/6/2022		4/6/2022		10/11/2022		5/24/2023		11/12/2019		11/12/2019	
	Sample Purpose	REG		FD		REG		REG		REG		REG		REG		FD	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC																		
Dehalococcoides	cells/mL	NV	1.5		NA		2		NA		NA		NA		NA		NA	
FIELD TESTS																		
Dissolved oxygen	mg/L	NV	0.27		0.27		0.43		6.9		0.37		0.14		0.14		0.14	
Ferrous Iron	NA	NV	0.57		0.57		1		0.18		NM		0.36		0.61		0.61	
Oxidation Reduction Potential	mV	NV	135		135		169		12		64		111		156		156	
pH	pH_units	NV	5.54		5.54		5.57		6.76		7.31		6.75		6.22		6.22	
Specific conductivity	µmhos/cm	NV	1.06		1.06		2.04		1.89		2.05		2.28		4.43		4.43	
Temperature	deg. C	NV	18.01		18.01		16.83		20.25		18.93		20.68		15.07		15.07	
Turbidity	NTU	NV	49.1		49.1		192		22		104		23		142		142	
DISSOLVED GASES																		
Carbon dioxide	µg/L	NV	450,000		417,000		150,000		61,400	J	74,000		42,000		250,000		300,000	
Ethane	µg/L	NV	< 2	UJ	< 2	UJ	< 0.5	U	< 0.5	U	< 0.5	UJ	< 0.5	U	< 0.47	U	< 0.47	U
Ethylene	µg/L	NV	< 1	UJ	< 1	UJ	1.21	J	3.4		103	J	< 0.5	U	< 0.55	U	< 0.55	U
Methane	µg/L	NV	3	J	4.3	J	4.67	J	5.29		484		4.07		1.5		1.6	
GENERAL CHEMISTRY																		
Chloride	mg/L	NV	275		279		274		294		308		335		1,070		1,060	
Nitrate	mg/L	NV	< 0.1	U	< 0.1	U	0.0439	J	0.0429	J	0.0498	J	< 0.05	U	< 0.1	U	< 0.1	U
Sulfate	mg/L	NV	356		365		354		302		389		324		531		533	
Total organic carbon	mg/L	NV	2.93		2.64		2.82		0.896	J	1.78		1.5		1.11		1.19	
PERCHLORATE																		
Perchlorate	µg/L	17	**4500**		**4,700**		**4,200**		**1,020**		**6,280**		**570**		**47,000**		**43,000**	
VOLATILES																		
1,1,1,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,1,1-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,1,2,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,1,2-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,1-Dichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	1.5	
1,1-Dichloroethene	µg/L	7	**9.3**		**11**		**9.5**		3.3		22		2.1		4.6		4.1	
1,1-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,2,3-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,2,3-Trichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,2,4-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,2,4-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,2-Dibromo-3-chloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,2-Dibromoethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,2-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,2-Dichloroethane	µg/L	5	**15**		**16**		**12**		3.1		25		1.9		2.7		2.7	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW11 (Upper Shallow)												50WW12 (Upper Shallow)			
		Sample ID	50WW11-211007		50WW11-211007-		50WW11-220106		50WW11-220406		50WW11-221011		50WW11_052423		50WW12-191112		50WW12-191112-	
		Sample Date	10/7/2021		10/7/2021		1/6/2022		4/6/2022		10/11/2022		5/24/2023		11/12/2019		11/12/2019	
		Sample Purpose	REG		FD		REG		REG		REG		REG		REG		FD	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,3,5-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,3-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,3-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
1,4-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
2,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
2-Butanone	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	< 1	U
2-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
2-Hexanone	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	< 1	U
4-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Acetone	µg/L	NV	NA		NA		NA		NA		NA		NA		< 2	U	< 2	U
Benzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Bromobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Bromochloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Bromodichloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Bromoform	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Bromomethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Carbon disulfide	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	< 1	U
Carbon tetrachloride	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Chlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Chloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Chloroform	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Chloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
cis-1,2-Dichloroethene	µg/L	70	33		36		29		19		65		8.5		< 0.5	U	0.76	J
cis-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Dibromochloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Dibromomethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Dichlorodifluoromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Ethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Hexachlorobutadiene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	< 1	U
Isopropylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
m,p-Xylenes	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	< 1	U
Methyl isobutyl ketone	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	< 1	U
Methylene chloride	µg/L	NV	NA		NA		NA		NA		NA		NA		< 1	U	< 1	U
Naphthalene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
n-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
n-Propylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
o-Xylene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

	Location Code	50WW11 (Upper Shallow)												50WW12 (Upper Shallow)			
	Sample ID	50WW11-211007		50WW11-211007-		50WW11-220106		50WW11-220406		50WW11-221011		50WW11_052423		50WW12-191112		50WW12-191112-	
	Sample Date	10/7/2021		10/7/2021		1/6/2022		4/6/2022		10/11/2022		5/24/2023		11/12/2019		11/12/2019	
	Sample Purpose	REG		FD		REG		REG		REG		REG		REG		FD	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
p-Isopropyltoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
sec-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Styrene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
tert-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Tetrachloroethene	µg/L	5	2.8		3.3		2.4		1.8		6.5	J	0.82	J	< 0.5	U	< 0.5	U
Toluene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
trans-1,2-Dichloroethene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
trans-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	**1,200**		**1,300**		**1,300**		**530**		**3,100**		**250**		**280**		**260**	
Trichlorofluoromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.5	U	< 0.5	U
Vinyl chloride	µg/L	2	0.84	J	1		0.98		< 0.5	U	< 10	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

			Location Code		50WW12 (Upper Shallow)													
			Sample ID		50WW12-200709		50WW12-201001		50WW12-210128		50WW12-210406		50WW12-210708		50WW12-211007		50WW12-220106		50WW12-220406	
			Sample Date		7/9/2020		10/1/2020		1/28/2021		4/6/2021		7/8/2021		10/7/2021		1/6/2022		4/6/2022	
			Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC																				
Dehalococcoides	cells/mL	NV	0.4	J	1.4		0.5	J	0.4	J	1.8		6.1		0.4	J	NA			
FIELD TESTS																				
Dissolved oxygen	mg/L	NV	0.05		0.27		0.08		0.65		0.84		0.24		0.58		0			
Ferrous Iron	NA	NV	0.31		NM		0.97		0.58		0.53		0.00		1.08		0.17			
Oxidation Reduction Potential	mV	NV	201		96		100		170		188		108		106		67			
pH	pH_units	NV	6.20		6.46		5.71		6.11		5.80		5.80		5.91		6.49			
Specific conductivity	µmhos/cm	NV	4.40		4.85		4.77		4.31		4.28		2.80		4.25		4.25			
Temperature	deg. C	NV	21.31		19.65		15.56		18.66		20.66		19.47		15.93		19.67			
Turbidity	NTU	NV	17.2		32		43.3		73.1		46.3		22.3		216		22			
DISSOLVED GASES																				
Carbon dioxide	µg/L	NV	140,000		140,000		420,000		130,000	J	570,000	J	366,000		326,000		83,700	J		
Ethane	µg/L	NV	< 0.47	U	< 0.47	U	< 0.47	UJ	< 0.47	U	3.1		< 2	UJ	< 0.5	U	< 0.5	U		
Ethylene	µg/L	NV	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	2.9		< 1	UJ	1.19	J	< 0.5	U		
Methane	µg/L	NV	0.68	J	0.83	J	0.61	J	1.5		2.3		810	J	23.4	J	3,380			
GENERAL CHEMISTRY																				
Chloride	mg/L	NV	1,080		1,080		1,020		994		997		1,120		1,020		1,010			
Nitrate	mg/L	NV	< 0.1	U	< 0.2	U	0.11	J	0.226		< 0.2	U	< 0.1	U	0.108	J	< 0.2	U		
Sulfate	mg/L	NV	561		595		499		572		534		567		634		574			
Total organic carbon	mg/L	NV	0.73	J	1.14		1.85		1.73		1.93		2.49		5.59		1.84			
PERCHLORATE																				
Perchlorate	µg/L	17	**43,000**		**41,600**		**83,800**		**90,000**		**60,300**		**25,500**		**68,100**		**141,000**	J		
VOLATILES																				
1,1,1,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,1,1-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,1,2,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,1,2-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,1-Dichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,1-Dichloroethene	µg/L	7	**7.3**		5.2		5.9	J	**17**		**11**		2.9		**12**		**20**			
1,1-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,2,3-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,2,3-Trichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,2,4-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,2,4-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,2-Dibromo-3-chloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,2-Dibromoethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,2-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA			
1,2-Dichloroethane	µg/L	5	4.4		3		**5.8**		**11**		< 0.5	U	2.5		**9.3**		**10**			

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW12 (Upper Shallow)															
		Sample ID	50WW12-200709		50WW12-201001		50WW12-210128		50WW12-210406		50WW12-210708		50WW12-211007		50WW12-220106		50WW12-220406	
		Sample Date	7/9/2020		10/1/2020		1/28/2021		4/6/2021		7/8/2021		10/7/2021		1/6/2022		4/6/2022	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,3,5-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,3-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,3-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
2,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
2-Butanone	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
2-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
2-Hexanone	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
4-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Acetone	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Benzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Bromobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Bromochloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Bromodichloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Bromoform	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Bromomethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Carbon disulfide	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Carbon tetrachloride	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Chlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Chloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Chloroform	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Chloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
cis-1,2-Dichloroethene	µg/L	70	1.1		0.87	J	1.3		4	J	2.4		1.1		2		3.5	
cis-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Dibromochloromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Dibromomethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Dichlorodifluoromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Ethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Hexachlorobutadiene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Isopropylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
m,p-Xylenes	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Methyl isobutyl ketone	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Methylene chloride	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Naphthalene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
n-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
n-Propylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
o-Xylene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW12 (Upper Shallow)															
		Sample ID	50WW12-200709		50WW12-201001		50WW12-210128		50WW12-210406		50WW12-210708		50WW12-211007		50WW12-220106		50WW12-220406	
		Sample Date	7/9/2020		10/1/2020		1/28/2021		4/6/2021		7/8/2021		10/7/2021		1/6/2022		4/6/2022	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
p-Isopropyltoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
sec-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Styrene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
tert-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Tetrachloroethene	µg/L	5	< 1	U	< 1	U	< 1	U	< 5	U	< 1	U	< 1	U	< 1		< 1	U
Toluene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
trans-1,2-Dichloroethene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
trans-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Trichloroethene	µg/L	5	**550**		**380**		**690**		**1,600**		**1,200**		**290**		**1,100**		**1,400**	
Trichlorofluoromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	UJ	< 2.5	U	< 0.5	U	< 0.5	U	< 0.5		< 0.5	U

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

			Location Code		50WW12 (Upper Shallow)								50WW13 (Upper Shallow)					
			Sample ID		50WW12-220406-		50WW12-221011		50WW12-221011-		50WW12_052523		50WW12_052523		50WW13-191113		50WW13-200709		50WW13-201001	
			Sample Date		4/6/2022		10/11/2022		10/11/2022		5/25/2023		5/25/2023		11/13/2019		7/9/2020		10/1/2020	
			Sample Purpose		FD		REG		FD		REG		FD		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**			**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC																				
Dehalococcoides	cells/mL	NV		NA		NA		NA		NA		NA		NA		2		3.8	
FIELD TESTS																				
Dissolved oxygen	mg/L	NV		0		0.35		0.35		0.03		0.03		0.02		0.78		0.14	
Ferrous Iron	NA	NV		0.17		NM		NM		0.47		0.47		0.70		NM		NM	
Oxidation Reduction Potential	mV	NV		67		61		61		146		146		40		97		86	
pH	pH_units	NV		6.49		7.25		7.25		6.51		6.51		6.77		6.88		6.06	
Specific conductivity	µmhos/cm	NV		4.25		4.84		4.84		5.03		5.03		2.11		2.15		2.15	
Temperature	deg. C	NV		19.67		20.06		20.06		18.93		18.93		12.95		20.80		18.84	
Turbidity	NTU	NV		22		18.3		18.3		40.2		40.2		118		23.1		11.8	
DISSOLVED GASES																				
Carbon dioxide	µg/L	NV		96,000	J	80,000		78,000		64,000		64,000		86,000		72,000		310,000	
Ethane	µg/L	NV		< 0.5	U	< 0.5	U	< 0.5	UJ	< 0.5	U	< 0.5	U	< 0.47	U	< 0.47	U	< 0.47	U
Ethylene	µg/L	NV		< 0.5	U	< 0.5	UJ	< 0.5	UJ	< 0.5	U	< 0.5	U	< 0.55	U	< 0.55	U	< 0.55	U
Methane	µg/L	NV		3,220		9,860		8,290		14,800		12,100		4.7		0.65	J	4.2	
GENERAL CHEMISTRY																				
Chloride	mg/L	NV		1,020		1,160		1,150		1,150		1,150		308		353		316	
Nitrate	mg/L	NV		< 0.2	U	< 0.5	U	< 0.5	U	0.164		0.157		< 0.1	U	< 0.1	U	< 0.1	U
Sulfate	mg/L	NV		576		563		568		616		613		316		363		356	
Total organic carbon	mg/L	NV		1.41		1.69		1.66		2.05		1.96		1.78		1.39	J	3.54	
PERCHLORATE																				
Perchlorate	µg/L	17		**101,000**	J	**17,600**		**17,900**		**79,100**		**84,500**		**4,900**		**2,900**		**4,390**	
VOLATILES																				
1,1,1,2-Tetrachloroethane	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,1,1-Trichloroethane	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,1,2,2-Tetrachloroethane	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,1,2-Trichloroethane	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,1-Dichloroethane	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,1-Dichloroethene	µg/L	7		**19**		4.5		4.5		**19**		**19**		**17**	J	**7.4**		**17**	
1,1-Dichloropropene	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,2,3-Trichlorobenzene	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,2,3-Trichloropropane	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,2,4-Trichlorobenzene	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,2,4-Trimethylbenzene	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,2-Dibromo-3-chloropropane	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,2-Dibromoethane	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,2-Dichlorobenzene	µg/L	NV		NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,2-Dichloroethane	µg/L	5		**10**		0.79	J	0.82	J	**6.3**		**6.6**		**39**		**20**		**47**	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW12 (Upper Shallow)										50WW13 (Upper Shallow)					
		Sample ID	50WW12-220406-		50WW12-221011		50WW12-221011-		50WW12_052523		50WW12_052523		50WW13-191113		50WW13-200709		50WW13-201001	
		Sample Date	4/6/2022		10/11/2022		10/11/2022		5/25/2023		5/25/2023		11/13/2019		7/9/2020		10/1/2020	
		Sample Purpose	FD		REG		FD		REG		FD		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
1,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,3,5-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,3-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,3-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
1,4-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
2,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
2-Butanone	µg/L	NV	NA		NA		NA		NA		NA		< 25	U	NA		NA	
2-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
2-Hexanone	µg/L	NV	NA		NA		NA		NA		NA		< 25	U	NA		NA	
4-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Acetone	µg/L	NV	NA		NA		NA		NA		NA		< 25	U	NA		NA	
Benzene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Bromobenzene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Bromochloromethane	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Bromodichloromethane	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Bromoform	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Bromomethane	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Carbon disulfide	µg/L	NV	NA		NA		NA		NA		NA		< 25	U	NA		NA	
Carbon tetrachloride	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Chlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Chloroethane	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Chloroform	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Chloromethane	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
cis-1,2-Dichloroethene	µg/L	70	4.1		< 1	U	< 1	U	1.6		1.6		**230**		**120**		**300**	
cis-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Dibromochloromethane	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Dibromomethane	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Dichlorodifluoromethane	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Ethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Hexachlorobutadiene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Isopropylbenzene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
m,p-Xylenes	µg/L	NV	NA		NA		NA		NA		NA		< 25	U	NA		NA	
Methyl isobutyl ketone	µg/L	NV	NA		NA		NA		NA		NA		< 25	U	NA		NA	
Methylene chloride	µg/L	NV	NA		NA		NA		NA		NA		< 25	U	NA		NA	
Naphthalene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
n-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
n-Propylbenzene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
o-Xylene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW12 (Upper Shallow)										50WW13 (Upper Shallow)					
		Sample ID	50WW12-220406-		50WW12-221011		50WW12-221011-		50WW12_052523		50WW12_052523		50WW13-191113		50WW13-200709		50WW13-201001	
		Sample Date	4/6/2022		10/11/2022		10/11/2022		5/25/2023		5/25/2023		11/13/2019		7/9/2020		10/1/2020	
		Sample Purpose	FD		REG		FD		REG		FD		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
p-Isopropyltoluene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
sec-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Styrene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
tert-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Tetrachloroethene	µg/L	5	< 1	U	< 1	U	< 1	U	< 0.5	U	< 0.5	U	< 12	U	3.4	J	**8.6**	
Toluene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
trans-1,2-Dichloroethene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
trans-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Trichloroethene	µg/L	5	**1,400**		**180**		**180**		**1,100**		**1,100**		**7,300**		**3,400**		**8,300**	
Trichlorofluoromethane	µg/L	NV	NA		NA		NA		NA		NA		< 12	U	NA		NA	
Vinyl chloride	µg/L	2	< 0.5	U	< 1	U	< 1	U	< 0.5	U	< 0.5	U	< 12	U	< 2.5	U	NS	J

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

			Location Code		50WW13 (Upper Shallow)															
			Sample ID		50WW13-210128		50WW13-210406		50WW13-210708		50WW13-211007		50WW13-220106		50WW13-220106-		50WW13-220406		50WW13-221011		50WW13_052423	
			Sample Date		1/28/2021		4/6/2021		7/8/2021		10/7/2021		1/6/2022		1/6/2022		4/6/2022		10/11/2022		5/24/2023	
			Sample Purpose		REG		REG		REG		REG		REG		FD		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC																				
Dehalococcoides	cells/mL	NV	5		1.7		2.9		0.8	J	2.6		NA		NA		NA		NA	
FIELD TESTS																				
Dissolved oxygen	mg/L	NV	0.06		0.85		0.97		0.25		0.45		0.45		1		0.3		1.4	
Ferrous Iron	NA	NV	1.43		0.65		0.60		2.05		0.81		0.81		0.00		NM		0.46	
Oxidation Reduction Potential	mV	NV	-6		153		125		126		136		136		71		38		126	
pH	pH_units	NV	6.11		5.87		6.20		5.53		5.66		5.66		6.78		7.38		6.88	
Specific conductivity	µmhos/cm	NV	2.68		2.38		2.14		1.20		2.15		2.15		2.1		2.02		2.73	
Temperature	deg. C	NV	15.73		18.10		19.16		17.97		16.9		16.9		20.99		18.71		20.63	
Turbidity	NTU	NV	26.2		54.4		102		174		104		104		79		45.2		0	
DISSOLVED GASES																				
Carbon dioxide	µg/L	NV	260,000	J	300,000	J	330,000	J	477,000		288,000		220,000		50,100	J	67,000		38,000	
Ethane	µg/L	NV	< 0.47	U	< 0.47	U	< 0.47	U	< 2	UJ	< 0.5	U	< 0.5	U	1.56		< 0.5	UJ	< 0.5	U
Ethylene	µg/L	NV	< 0.55	U	< 0.55	U	< 0.55	U	< 1	UJ	0.901	J	2.25	J	< 0.5	U	1.87	J	< 0.5	U
Methane	µg/L	NV	4.3		1.4		1.6		3.3	J	7.59	J	8.38	J	2.81		21.9		1.55	
GENERAL CHEMISTRY																				
Chloride	mg/L	NV	387		386		329		294		312		300		372		291		401	
Nitrate	mg/L	NV	< 0.1	U	< 0.1	U	< 0.1	U	< 0.1	U	0.038	J	0.0382	J	0.0314	J	< 0.1	U	0.119	
Sulfate	mg/L	NV	302		345		347		338		324		309		349		332		374	
Total organic carbon	mg/L	NV	1.64		1.76		1.76		3.11		3.39	J	2.12	J	1.89		2.07		1.59	
PERCHLORATE																				
Perchlorate	µg/L	17	**155**		**122**		**2,420**		**5,080**		**2,500**		**3,220**		**514**		**5310**		**186**	
VOLATILES																				
1,1,1,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,1-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1-Dichloroethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1-Dichloroethene	µg/L	7	1		0.95	J	6.6		5	J	**11**		**9.6**		3.2		**14**	J	1.5	
1,1-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,3-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,3-Trichloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromoethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichloroethane	µg/L	5	2.8		1.9		< 0.5	U	**28**		**37**		**33**		**7.1**		**46**		3	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

			Location Code	50WW13 (Upper Shallow)																	
			Sample ID	50WW13-210128		50WW13-210406		50WW13-210708		50WW13-211007		50WW13-220106		50WW13-220106-		50WW13-220406		50WW13-221011		50WW13_052423	
			Sample Date	1/28/2021		4/6/2021		7/8/2021		10/7/2021		1/6/2022		1/6/2022		4/6/2022		10/11/2022		5/24/2023	
			Sample Purpose	REG		REG		REG		REG		REG		FD		REG		REG		REG	
Analyte	Units	MCL/PCL		Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,3,5-Trimethylbenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,3-Dichlorobenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,3-Dichloropropane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,2-Dichloropropane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Butanone	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Chlorotoluene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Hexanone	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Chlorotoluene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Acetone	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Benzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromobenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromochloromethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromodichloromethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromoform	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromomethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Carbon disulfide	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Carbon tetrachloride	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chlorobenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chloroethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chloroform	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chloromethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
cis-1,2-Dichloroethene	µg/L	70		26		16		**120**		**130**		**210**		**200**		**72**		**280**		30	
cis-1,3-Dichloropropene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dibromochloromethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dibromomethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dichlorodifluoromethane	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Ethylbenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Hexachlorobutadiene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Isopropylbenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
m,p-Xylenes	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl isobutyl ketone	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methylene chloride	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Naphthalene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
n-Butylbenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
n-Propylbenzene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	
o-Xylene	µg/L	NV		NA		NA		NA		NA		NA		NA		NA		NA		NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

			Location Code		50WW13 (Upper Shallow)															
			Sample ID		50WW13-210128		50WW13-210406		50WW13-210708		50WW13-211007		50WW13-220106		50WW13-220106-		50WW13-220406		50WW13-221011		50WW13_052423	
			Sample Date		1/28/2021		4/6/2021		7/8/2021		10/7/2021		1/6/2022		1/6/2022		4/6/2022		10/11/2022		5/24/2023	
			Sample Purpose		REG		REG		REG		REG		REG		FD		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
p-Isopropyltoluene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
sec-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Styrene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
tert-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Tetrachloroethene	µg/L	5	2.4		1.7		3.8		4.7	J	**5.8**		**6.9**		**7.2**		< 25	U	2.2	
Toluene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
trans-1,2-Dichloroethene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
trans-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Trichloroethene	µg/L	5	**690**		**410**		**3,000**		**2,900**		**5,800**		**5,700**		**2,100**		**8,600**		**490**		
Trichlorofluoromethane	µg/L	NV	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	0.92	J	< 2.5	U	< 2.5		< 2.5		0.54	J	< 25	U	< 0.5	U		

Notes:

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J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW14 (Lower Shallow)															
		Sample ID	50WW14-191113		50WW14-200709		50WW14-201001		50WW14-210128		50WW14-210128-		50WW14-210406		50WW14-210708		50WW14-211007	
		Sample Date	11/13/2019		7/9/2020		10/1/2020		1/28/2021		1/28/2021		4/6/2021		7/8/2021		10/7/2021	
		Sample Purpose	REG		REG		REG		REG		FD		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
DHC																		
Dehalococcoides	cells/mL	NV	NA		0.8		2.1		3.3		NA		13.4		3.8		0.7	J
FIELD TESTS																		
Dissolved oxygen	mg/L	NV	0.03		0.46		0.15		0.04		0.04		0.17		1.23		0.28	
Ferrous Iron	NA	NV	1.67		1.83				3.77		3.77		1.6		1.49		3.87	
Oxidation Reduction Potential	mV	NV	-20		-21		7		-125		-125		-34		46		-12	
pH	pH_units	NV	6.53		6.75		6.26		5.91		5.91		6.34		5.87		5.39	
Specific conductivity	µmhos/cm	NV	2.20		2.21		2.22		2.68		2.68		2.40		2.24		1.34	
Temperature	deg. C	NV	16.55		20.87		18.53		16.60		16.60		18.30		19.47		18.66	
Turbidity	NTU	NV	300		125		159		207		207		76.2		196		104	
DISSOLVED GASES																		
Carbon dioxide	µg/L	NV	97,000		85,000		170,000		380,000	J	340,000	J	98,000	J	490,000	J	472,000	
Ethane	µg/L	NV	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 0.47	U	< 2	UJ
Ethylene	µg/L	NV	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 0.55	U	< 1	UJ
Methane	µg/L	NV	1.8		1.9		2.2		1.8		1.5		3		1.6		2.5	J
GENERAL CHEMISTRY																		
Chloride	mg/L	NV	395		397		393		385		387		402		404		422	
Nitrate	mg/L	NV	< 0.1	U	< 0.1	U	< 0.1	U	< 0.1	U	< 0.1	U	< 0.1	U	0.0723	UB	< 0.1	U
Sulfate	mg/L	NV	357		382		375		316		322		383		370		377	
Total organic carbon	mg/L	NV	0.88		0.84	J	1.58		1.86		1.88		1.57		1.34		1.39	
PERCHLORATE																		
Perchlorate	µg/L	17	< 2	U	3.69		1.37		< 0.25	U	< 0.25	U	< 0.05	U	0.636		< 0.2	U
VOLATILES																		
1,1,1,2-Tetrachloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1,1-Trichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1,2,2-Tetrachloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1-Dichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1-Dichloroethene	µg/L	7	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
1,1-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2,3-Trichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2,3-Trichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2,4-Trichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2,4-Trimethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromoethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2-Dichloroethane	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	0.54	J	< 0.5	U	< 0.5	U	< 0.5	U

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW14 (Lower Shallow)															
		Sample ID	50WW14-191113		50WW14-200709		50WW14-201001		50WW14-210128		50WW14-210128-		50WW14-210406		50WW14-210708		50WW14-211007	
		Sample Date	11/13/2019		7/9/2020		10/1/2020		1/28/2021		1/28/2021		4/6/2021		7/8/2021		10/7/2021	
		Sample Purpose	REG		REG		REG		REG		FD		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,3,5-Trimethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,3-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,3-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
2,2-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
2-Butanone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
2-Chlorotoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
2-Hexanone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
4-Chlorotoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Acetone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Benzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromochloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromodichloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromoform	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromomethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Carbon disulfide	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Carbon tetrachloride	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Chlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Chloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Chloroform	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Chloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
cis-1,2-Dichloroethene	µg/L	70	1.7		1.3		2.9		4.1		4.5		5.9		2.4		4.6	
cis-1,3-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Dibromochloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Dibromomethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Dichlorodifluoromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Ethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Hexachlorobutadiene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Isopropylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
m,p-Xylenes	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Methyl isobutyl ketone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Methylene chloride	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Naphthalene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
n-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
n-Propylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
o-Xylene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW14 (Lower Shallow)															
		Sample ID	50WW14-191113		50WW14-200709		50WW14-201001		50WW14-210128		50WW14-210128-		50WW14-210406		50WW14-210708		50WW14-211007	
		Sample Date	11/13/2019		7/9/2020		10/1/2020		1/28/2021		1/28/2021		4/6/2021		7/8/2021		10/7/2021	
		Sample Purpose	REG		REG		REG		REG		FD		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
p-Isopropyltoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
sec-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Styrene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
tert-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Tetrachloroethene	µg/L	5	< 0.5	U	< 1	U	< 0.5	U	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
Toluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
trans-1,2-Dichloroethene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
trans-1,3-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Trichloroethene	µg/L	5	**37**		**32**		**74**	J+	**46**		**46**		**23**		**24**		**28**	
Trichlorofluoromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
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

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW15 (Upper Shallow)																	
		Sample ID	50WW14-220106		50WW14-220406		50WW14-221011		50WW14_052523		50WW15-191108		50WW15-201005		50WW15-211011		50WW15-221010		50WW15_052523	
		Sample Date	1/6/2022		4/6/2022		10/11/2022		5/25/2023		11/8/2019		10/5/2020		10/11/2021		10/10/2022		5/25/2023	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC																				
Dehalococcoides	cells/mL	NV	20.4		NA		NA		NA		NA		NA		NA		NA		NA	
FIELD TESTS																				
Dissolved oxygen	mg/L	NV	0.56		0.2		0.17		0.05		0.04		0.83		0.22		0.46		0.03	
Ferrous Iron	NA	NV	3.53		3.30		NM		3.30		NM		NM		NM		NM		NM	
Oxidation Reduction Potential	mV	NV	165		-56		-39		-24		29		172		121		23		61	
pH	pH_units	NV	5.21		6.68		7.19		6.72		6.93		6.42		5.52		7.62		7.4	
Specific conductivity	µmhos/cm	NV	2.38		2.27		2.21		2.66		1.77		1.90		1.02		1.82		2.17	
Temperature	deg. C	NV	17.43		22.6		19.64		19.81		16.79		18.64		19.47		19.96		20.75	
Turbidity	NTU	NV	123		26		88.2		144		84.8		20		70.1		37.2		32.1	
DISSOLVED GASES																				
Carbon dioxide	µg/L	NV	634,000		65,700	J	75,000		49,000	J	NA		NA		NA		NA		NA	
Ethane	µg/L	NV	< 0.5	U	< 0.5	U	1.43	J	< 0.5	U	NA		NA		NA		NA		NA	
Ethylene	µg/L	NV	2.32	J	2.28		< 0.5	UJ	< 0.5	U	NA		NA		NA		NA		NA	
Methane	µg/L	NV	4.48	J	3.21	J	5.67		6.76		NA		NA		NA		NA		NA	
GENERAL CHEMISTRY																				
Chloride	mg/L	NV	444		405		418		409		NA		NA		NA		NA		NA	
Nitrate	mg/L	NV	< 0.1	U	< 0.1	U	< 0.1	U	< 0.05	U	NA		NA		NA		NA		NA	
Sulfate	mg/L	NV	398		380		394		408		NA		NA		NA		NA		NA	
Total organic carbon	mg/L	NV	1.47		3.11		1.23		1.41		NA		NA		NA		NA		NA	
PERCHLORATE																				
Perchlorate	µg/L	17	< 0.2	U	1.48		0.101		0.168		< 2	U	< 0.5	U	< 0.2	U	0.0301		0.113	
VOLATILES																				
1,1,1,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1,1-Trichloroethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1,2,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1,2-Trichloroethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1-Dichloroethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1-Dichloroethene	µg/L	7	< 0.5		< 0.5	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U
1,1-Dichloropropene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2,3-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2,3-Trichloropropane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2,4-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2,4-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2-Dibromoethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2-Dichloroethane	µg/L	5	< 0.5		0.51	J	< 1	U	0.51	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

			Location Code		50WW15 (Upper Shallow)													
			Sample ID		50WW14-220106		50WW14-220406		50WW14-221011		50WW14_052523		50WW15-191108		50WW15-201005		50WW15-211011		50WW15-221010		50WW15_052523	
			Sample Date		1/6/2022		4/6/2022		10/11/2022		5/25/2023		11/8/2019		10/5/2020		10/11/2021		10/10/2022		5/25/2023	
			Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
1,3,5-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
1,3-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
1,3-Dichloropropane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
1,4-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
2,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
2-Butanone	µg/L	NV	NA		NA		NA		NA		< 1	U	NA		NA		NA		NA		NA	
2-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
2-Hexanone	µg/L	NV	NA		NA		NA		NA		< 1	U	NA		NA		NA		NA		NA	
4-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Acetone	µg/L	NV	NA		NA		NA		NA		< 2	U	NA		NA		NA		NA		NA	
Benzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Bromobenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Bromochloromethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Bromodichloromethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Bromoform	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Bromomethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Carbon disulfide	µg/L	NV	NA		NA		NA		NA		< 1	U	NA		NA		NA		NA		NA	
Carbon tetrachloride	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Chlorobenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Chloroethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Chloroform	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Chloromethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
cis-1,2-Dichloroethene	µg/L	70	9.6		14		2.4		2.1		5.5		5.4		1.4		2.7		3.2			
cis-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Dibromochloromethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Dibromomethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Dichlorodifluoromethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Ethylbenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
Hexachlorobutadiene	µg/L	NV	NA		NA		NA		NA		< 1	U	NA		NA		NA		NA		NA	
Isopropylbenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
m,p-Xylenes	µg/L	NV	NA		NA		NA		NA		< 1	U	NA		NA		NA		NA		NA	
Methyl isobutyl ketone	µg/L	NV	NA		NA		NA		NA		< 1	U	NA		NA		NA		NA		NA	
Methylene chloride	µg/L	NV	NA		NA		NA		NA		< 1	U	NA		NA		NA		NA		NA	
Naphthalene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
n-Butylbenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
n-Propylbenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	
o-Xylene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA		NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW15 (Upper Shallow)																	
		Sample ID	50WW14-220106		50WW14-220406		50WW14-221011		50WW14_052523		50WW15-191108		50WW15-201005		50WW15-211011		50WW15-221010		50WW15_052523	
		Sample Date	1/6/2022		4/6/2022		10/11/2022		5/25/2023		11/8/2019		10/5/2020		10/11/2021		10/10/2022		5/25/2023	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
p-Isopropyltoluene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
sec-Butylbenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Styrene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
tert-Butylbenzene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Tetrachloroethene	µg/L	5	< 1		< 1	U	< 1	U	< 0.5	U	2.1		1.8		< 1	U	1		1.4	
Toluene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
trans-1,2-Dichloroethene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
trans-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Trichloroethene	µg/L	5	**14**		**48**		**33**		**20**		**7.2**		**8.4**		2		4.9		**6.1**	
Trichlorofluoromethane	µg/L	NV	NA		NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Vinyl chloride	µg/L	2	< 0.5		< 0.5	U	< 1	U	< 0.5	U	1.7		1.1		< 0.5	U	0.56	J	0.52	J

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW16 (Upper Shallow)															
		Sample ID	50WW16-191113		50WW16-201005		50WW16-211011		50WW16-211011-		50WW16-221010		50WW16-221010-		50WW16_052523		50WW16_052523	
		Sample Date	11/13/2019		10/5/2020		10/11/2021		10/11/2021		10/10/2022		10/10/2022		5/25/2023		5/25/2023	
		Sample Purpose	REG		REG		REG		FD		REG		FD		REG		FD	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC																		
Dehalococcoides	cells/mL	NV	NA		NA		NA		NA		NA		NA		NA		NA	
FIELD TESTS																		
Dissolved oxygen	mg/L	NV	0.07		0.26		0.12		NM		0.39		0.39		0.02		0.02	
Ferrous Iron	NA	NV	0.15		NM		NM		NM		NM		NM		NM		NM	
Oxidation Reduction Potential	mV	NV	104		201		192		NM		52		52		96		96	
pH	pH_units	NV	6.97		5.60		4.90		NM		7.36		7.36		6.73		6.73	
Specific conductivity	µmhos/cm	NV	0.251		0.224		0.129		NM		0.217		0.217		0.307		0.307	
Temperature	deg. C	NV	14.49		19.02		19.79		NM		22.08		22.08		20.93		20.93	
Turbidity	NTU	NV	84.7		27.7		134		NM		65		65		101		101	
DISSOLVED GASES																		
Carbon dioxide	µg/L	NV	26,000		NA		NA		NA		NA		NA		NA		NA	
Ethane	µg/L	NV	< 0.47	U	NA		NA		NA		NA		NA		NA		NA	
Ethylene	µg/L	NV	< 0.55	U	NA		NA		NA		NA		NA		NA		NA	
Methane	µg/L	NV	3		NA		NA		NA		NA		NA		NA		NA	
GENERAL CHEMISTRY																		
Chloride	mg/L	NV	6.07		NA		NA		NA		NA		NA		NA		NA	
Nitrate	mg/L	NV	< 0.1	U	NA		NA		NA		NA		NA		NA		NA	
Sulfate	mg/L	NV	28.7		NA		NA		NA		NA		NA		NA		NA	
Total organic carbon	mg/L	NV	1.05		NA		NA		NA		NA		NA		NA		NA	
PERCHLORATE																		
Perchlorate	µg/L	17	1.6	J	0.0701	J	< 0.2	U	< 0.2	U	< 0.05		< 0.05		0.0369	J	< 0.05	U
VOLATILES																		
1,1,1,2-Tetrachloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1,1-Trichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1,2,2-Tetrachloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1-Dichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,1-Dichloroethene	µg/L	7	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 1	U	< 0.5	U	< 0.5	U
1,1-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2,3-Trichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2,3-Trichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2,4-Trichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2,4-Trimethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromoethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,2-Dichloroethane	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 1	U	< 0.5	U	< 0.5	U

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW16 (Upper Shallow)															
		Sample ID	50WW16-191113		50WW16-201005		50WW16-211011		50WW16-211011-		50WW16-221010		50WW16-221010-		50WW16_052523		50WW16_052523	
		Sample Date	11/13/2019		10/5/2020		10/11/2021		10/11/2021		10/10/2022		10/10/2022		5/25/2023		5/25/2023	
		Sample Purpose	REG		REG		REG		FD		REG		FD		REG		FD	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,3,5-Trimethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,3-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,3-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
2,2-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
2-Butanone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
2-Chlorotoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
2-Hexanone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
4-Chlorotoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Acetone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Benzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromochloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromodichloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromoform	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Bromomethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Carbon disulfide	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Carbon tetrachloride	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Chlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Chloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Chloroform	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Chloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 1	U	< 0.5	U	< 0.5	U
cis-1,3-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Dibromochloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Dibromomethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Dichlorodifluoromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Ethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Hexachlorobutadiene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Isopropylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
m,p-Xylenes	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Methyl isobutyl ketone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Methylene chloride	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		NA		NA	
Naphthalene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
n-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
n-Propylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
o-Xylene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW16 (Upper Shallow)															
		Sample ID	50WW16-191113		50WW16-201005		50WW16-211011		50WW16-211011-		50WW16-221010		50WW16-221010-		50WW16_052523		50WW16_052523	
		Sample Date	11/13/2019		10/5/2020		10/11/2021		10/11/2021		10/10/2022		10/10/2022		5/25/2023		5/25/2023	
		Sample Purpose	REG		REG		REG		FD		REG		FD		REG		FD	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
p-Isopropyltoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
sec-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Styrene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
tert-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Tetrachloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 1	U	< 1	U	< 1	U	< 1	U	< 0.5	U	< 0.5	U
Toluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
trans-1,2-Dichloroethene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
trans-1,3-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Trichloroethene	µg/L	5	1.5		0.62	J	< 0.5	U	< 0.5	U	< 1	U	< 1	U	< 0.5	U	< 0.5	U
Trichlorofluoromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		NA		NA	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 1	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

			50WW18 (Upper Shallow)												50WW22 (Upper Shallow)			
Location Code			50WW18 (Upper Shallow)												50WW22 (Upper Shallow)			
Sample ID			50WW18-191108		50WW18-201005		50WW18-201005-		50WW18-211011		50WW18-221010		50WW18_052523		50WW22-191112		50WW22-201005	
Sample Date			11/8/2019		10/5/2020		10/5/2020		10/11/2021		10/10/2022		5/25/2023		11/12/2019		10/5/2020	
Sample Purpose			REG		REG		FD		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC																		
Dehalococcoides	cells/mL	NV	NA		NA		NA		NA		NA		NA		NA		NA	
FIELD TESTS																		
Dissolved oxygen	mg/L	NV	0.05		0.15		0.15		0.16		0.09		0.07		1.83		0.95	
Ferrous Iron	NA	NV	NM		NM		NM		NM		NM		NM		0.17		NM	
Oxidation Reduction Potential	mV	NV	102		172		172		179		73		129		193		223	
pH	pH_units	NV	6.59		6.67		6.67		5.68		7.18		6.92		6.76		5.99	
Specific conductivity	µmhos/cm	NV	3.19		3.24		3.24		1.810		2.8		3.4		3.96		4.12	
Temperature	deg. C	NV	16.01		19.07		19.07		19.38		21.64		20.79		14.14		18.17	
Turbidity	NTU	NV	77		43.1		43.1		50.1		20.2		190		57.4		4.5	
DISSOLVED GASES																		
Carbon dioxide	µg/L	NV	NA		NA		NA		NA		NA		NA		79,000		NA	
Ethane	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.47	U	NA	
Ethylene	µg/L	NV	NA		NA		NA		NA		NA		NA		< 0.55	U	NA	
Methane	µg/L	NV	NA		NA		NA		NA		NA		NA		0.55	J	NA	
GENERAL CHEMISTRY																		
Chloride	mg/L	NV	NA		NA		NA		NA		NA		NA		773		NA	
Nitrate	mg/L	NV	NA		NA		NA		NA		NA		NA		< 0.1	U	NA	
Sulfate	mg/L	NV	NA		NA		NA		NA		NA		NA		587		NA	
Total organic carbon	mg/L	NV	NA		NA		NA		NA		NA		NA		1.01		NA	
PERCHLORATE																		
Perchlorate	µg/L	17	< 2	U	< 0.5	U	< 0.5	U	< 0.2	U	< 0.05	U	< 0.05	U	< 2	U	< 0.5	U
VOLATILES																		
1,1,1,2-Tetrachloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,1,1-Trichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,1,2,2-Tetrachloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		1		NA	
1,1,2-Trichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,1-Dichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,1-Dichloroethene	µg/L	7	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U
1,1-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,2,3-Trichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,2,3-Trichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,2,4-Trichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,2,4-Trimethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,2-Dibromo-3-chloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,2-Dibromoethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,2-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,2-Dichloroethane	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW18 (Upper Shallow)												50WW22 (Upper Shallow)			
		Sample ID	50WW18-191108		50WW18-201005		50WW18-201005-		50WW18-211011		50WW18-221010		50WW18_052523		50WW22-191112		50WW22-201005	
		Sample Date	11/8/2019		10/5/2020		10/5/2020		10/11/2021		10/10/2022		5/25/2023		11/12/2019		10/5/2020	
		Sample Purpose	REG		REG		FD		REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,3,5-Trimethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,3-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,3-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
1,4-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
2,2-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
2-Butanone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		< 1	U	NA	
2-Chlorotoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
2-Hexanone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		< 1	U	NA	
4-Chlorotoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Acetone	µg/L	NV	< 2	U	NA		NA		NA		NA		NA		< 2	U	NA	
Benzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Bromobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Bromochloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Bromodichloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Bromoform	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Bromomethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Carbon disulfide	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		< 1	U	NA	
Carbon tetrachloride	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Chlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Chloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Chloroform	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Chloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U
cis-1,3-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Dibromochloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Dibromomethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Dichlorodifluoromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Ethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Hexachlorobutadiene	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		< 1	U	NA	
Isopropylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
m,p-Xylenes	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		< 1	U	NA	
Methyl isobutyl ketone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		< 1	U	NA	
Methylene chloride	µg/L	NV	< 1	U	NA		NA		NA		NA		NA		< 1	U	NA	
Naphthalene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
n-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
n-Propylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
o-Xylene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

	Location Code	50WW18 (Upper Shallow)												50WW22 (Upper Shallow)			
	Sample ID	50WW18-191108		50WW18-201005		50WW18-201005-		50WW18-211011		50WW18-221010		50WW18_052523		50WW22-191112		50WW22-201005	
	Sample Date	11/8/2019		10/5/2020		10/5/2020		10/11/2021		10/10/2022		5/25/2023		11/12/2019		10/5/2020	
	Sample Purpose	REG		REG		FD		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
p-Isopropyltoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
sec-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Styrene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
tert-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Tetrachloroethene	µg/L	5	< 0.5	U	< 1	U	< 0.5	U	< 1	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U
Toluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
trans-1,2-Dichloroethene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
trans-1,3-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichlorofluoromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA		< 0.5	U	NA	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW22 (Upper Shallow)						50WW23 (Upper Shallow)									
		Sample ID	50WW22-211011		50WW22-221010		50WW22_052423		50WW23-191113		50WW23-201005		50WW23-211011		50WW23-221010		50WW23_052523	
		Sample Date	10/11/2021		10/10/2022		5/24/2023		11/13/2019		10/5/2020		10/11/2021		10/10/2022		5/25/2023	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC																		
Dehalococcoides	cells/mL	NV	NA		NA		NA		NA		NA		NA		NA		NA	
FIELD TESTS																		
Dissolved oxygen	mg/L	NV	0.31		0.29		0.37		0.71		1.1		0.39		0.37		0.3	
Ferrous Iron	NA	NV	NM		NM		NM		0.38		NM		NM		NM		NM	
Oxidation Reduction Potential	mV	NV	218		129		171		172		216		200		173		197	
pH	pH_units	NV	5.63		7.43		6.18		6.18		6.30		5.42		6.82		6.43	
Specific conductivity	µmhos/cm	NV	2.290		3.85		4.48		4.80		5.59		2.90		7.55		5.59	
Temperature	deg. C	NV	18.61		18.24		19.78		14.48		18.36		18.50		18.57		19.2	
Turbidity	NTU	NV	12.4		0		0		65.9		0		18.6		0		0	
DISSOLVED GASES																		
Carbon dioxide	µg/L	NV	NA		NA		NA		190,000		NA		NA		NA		NA	
Ethane	µg/L	NV	NA		NA		NA		< 0.47	U	NA		NA		NA		NA	
Ethylene	µg/L	NV	NA		NA		NA		< 0.55	U	NA		NA		NA		NA	
Methane	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
GENERAL CHEMISTRY																		
Chloride	mg/L	NV	NA		NA		NA		1,290		NA		NA		NA		NA	
Nitrate	mg/L	NV	NA		NA		NA		0.104		NA		NA		NA		NA	
Sulfate	mg/L	NV	NA		NA		NA		181		NA		NA		NA		NA	
Total organic carbon	mg/L	NV	NA		NA		NA		0.2	J	NA		NA		NA		NA	
PERCHLORATE																		
Perchlorate	µg/L	17	0.464		0.269		0.981		< 2	U	< 0.5	U	0.139	J	0.142		0.0857	J
VOLATILES																		
1,1,1,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1,1-Trichloroethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1,2,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1,2-Trichloroethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1-Dichloroethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,1-Dichloroethene	µg/L	7	< 0.5	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U
1,1-Dichloropropene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2,3-Trichlorobenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2,3-Trichloropropane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2,4-Trichlorobenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2,4-Trimethylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2-Dibromoethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2-Dichlorobenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,2-Dichloroethane	µg/L	5	< 0.5	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW22 (Upper Shallow)						50WW23 (Upper Shallow)									
		Sample ID	50WW22-211011		50WW22-221010		50WW22_052423		50WW23-191113		50WW23-201005		50WW23-211011		50WW23-221010		50WW23_052523	
		Sample Date	10/11/2021		10/10/2022		5/24/2023		11/13/2019		10/5/2020		10/11/2021		10/10/2022		5/25/2023	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,3,5-Trimethylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,3-Dichlorobenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,3-Dichloropropane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
1,4-Dichlorobenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
2,2-Dichloropropane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
2-Butanone	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
2-Chlorotoluene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
2-Hexanone	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
4-Chlorotoluene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Acetone	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
Benzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Bromobenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Bromochloromethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Bromodichloromethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Bromoform	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Bromomethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Carbon disulfide	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
Carbon tetrachloride	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Chlorobenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Chloroethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Chloroform	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Chloromethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U
cis-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Dibromochloromethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Dibromomethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Dichlorodifluoromethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Ethylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Hexachlorobutadiene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Isopropylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
m,p-Xylenes	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
Methyl isobutyl ketone	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
Methylene chloride	µg/L	NV	NA		NA		NA		< 1	U	NA		NA		NA		NA	
Naphthalene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
n-Butylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
n-Propylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
o-Xylene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW22 (Upper Shallow)						50WW23 (Upper Shallow)									
		Sample ID	50WW22-211011		50WW22-221010		50WW22_052423		50WW23-191113		50WW23-201005		50WW23-211011		50WW23-221010		50WW23_052523	
		Sample Date	10/11/2021		10/10/2022		5/24/2023		11/13/2019		10/5/2020		10/11/2021		10/10/2022		5/25/2023	
		Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
p-Isopropyltoluene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
sec-Butylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Styrene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
tert-Butylbenzene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Tetrachloroethene	µg/L	5	< 1	U	< 1	U	< 0.5	U	< 0.5	U	< 1	U	< 1	U	< 1	U	< 0.5	U
Toluene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
trans-1,2-Dichloroethene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
trans-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Trichloroethene	µg/L	5	< 0.5	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U
Trichlorofluoromethane	µg/L	NV	NA		NA		NA		< 0.5	U	NA		NA		NA		NA	
Vinyl chloride	µg/L	2	< 0.5	U	< 1	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 1	U	< 0.5	U

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW29 (Upper Shallow)											
		Sample ID	50WW29-191111		50WW29-200708		50WW29-201001		50WW29-210125		50WW29-210405		50WW29-210707	
		Sample Date	11/11/2019		7/8/2020		10/1/2020		1/25/2021		4/5/2021		7/7/2021	
		Sample Purpose	REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC														
Dehalococcoides	cells/mL	NV	NA		NA		NA		NA		NA		NA	
FIELD TESTS														
Dissolved oxygen	mg/L	NV	0.05		0.03		0.06		0.02		0.56		0.72	
Ferrous Iron	NA	NV	NM		NM		NM		NM		NM		NM	
Oxidation Reduction Potential	mV	NV	70		68		142		7		245		103	
pH	pH_units	NV	6.45		6.51		5.62		5.66		5.56		5.88	
Specific conductivity	µmhos/cm	NV	3.44		3.65		3.83		4.13		4.16		3.97	
Temperature	deg. C	NV	17.76		19.83		19.22		17.98		17.73		18.35	
Turbidity	NTU	NV	29.2		0		4.2		34.5		11.6		22.2	
DISSOLVED GASES														
Carbon dioxide	µg/L	NV	NA		NA		NA		NA		NA		NA	
Ethane	µg/L	NV	NA		NA		NA		NA		NA		NA	
Ethylene	µg/L	NV	NA		NA		NA		NA		NA		NA	
Methane	µg/L	NV	NA		NA		NA		NA		NA		NA	
GENERAL CHEMISTRY														
Chloride	mg/L	NV	NA		NA		NA		NA		NA		NA	
Nitrate	mg/L	NV	NA		NA		NA		NA		NA		NA	
Sulfate	mg/L	NV	NA		NA		NA		NA		NA		NA	
Total organic carbon	mg/L	NV	NA		NA		NA		NA		NA		NA	
PERCHLORATE														
Perchlorate	µg/L	17	< 2	U	2.47		5.96		< 0.5	U	< 0.05	U	0.174	
VOLATILES														
1,1,1,2-Tetrachloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,1,1-Trichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,1,2,2-Tetrachloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,1-Dichloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,1-Dichloroethene	µg/L	7	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
1,1-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,2,3-Trichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,2,3-Trichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,2,4-Trichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,2,4-Trimethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,2-Dibromoethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,2-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,2-Dichloroethane	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW29 (Upper Shallow)											
		Sample ID	50WW29-191111		50WW29-200708		50WW29-201001		50WW29-210125		50WW29-210405		50WW29-210707	
		Sample Date	11/11/2019		7/8/2020		10/1/2020		1/25/2021		4/5/2021		7/7/2021	
		Sample Purpose	REG		REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,3,5-Trimethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,3-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,3-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
1,4-Dichlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
2,2-Dichloropropane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
2-Butanone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA	
2-Chlorotoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
2-Hexanone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA	
4-Chlorotoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Acetone	µg/L	NV	< 2	U	NA		NA		NA		NA		NA	
Benzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Bromobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Bromochloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Bromodichloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Bromoform	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Bromomethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Carbon disulfide	µg/L	NV	< 1	U	NA		NA		NA		NA		NA	
Carbon tetrachloride	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Chlorobenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Chloroethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Chloroform	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Chloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
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
cis-1,3-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Dibromochloromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Dibromomethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Dichlorodifluoromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Ethylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Hexachlorobutadiene	µg/L	NV	< 1	U	NA		NA		NA		NA		NA	
Isopropylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
m,p-Xylenes	µg/L	NV	< 1	U	NA		NA		NA		NA		NA	
Methyl isobutyl ketone	µg/L	NV	< 1	U	NA		NA		NA		NA		NA	
Methylene chloride	µg/L	NV	< 1	U	NA		NA		NA		NA		NA	
Naphthalene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
n-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
n-Propylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
o-Xylene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW29 (Upper Shallow)											
		Sample ID	50WW29-191111		50WW29-200708		50WW29-201001		50WW29-210125		50WW29-210405		50WW29-210707	
		Sample Date	11/11/2019		7/8/2020		10/1/2020		1/25/2021		4/5/2021		7/7/2021	
		Sample Purpose	REG		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
p-Isopropyltoluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
sec-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Styrene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
tert-Butylbenzene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Tetrachloroethene	µg/L	5	< 0.5	U	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
Toluene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
trans-1,2-Dichloroethene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
trans-1,3-Dichloropropene	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Trichloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U
Trichlorofluoromethane	µg/L	NV	< 0.5	U	NA		NA		NA		NA		NA	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

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MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

			Location Code		50WW29 (Upper Shallow)							
			Sample ID		50WW29-211007		50WW29-220105		50WW29-220405		50WW29-221011		50WW29_052423	
			Sample Date		10/7/2021		1/5/2022		4/5/2022		10/11/2022		5/24/2023	
			Sample Purpose		REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
DHC												
Dehalococcoides	cells/mL	NV	NA		NA		NA		NA		NA	
FIELD TESTS												
Dissolved oxygen	mg/L	NV	1.73		0.54		5.5		0.18		0.05	
Ferrous Iron	NA	NV	NM		NM		NM		NM		NM	
Oxidation Reduction Potential	mV	NV	126		206		333		34		132	
pH	pH_units	NV	5.47		5.6		6.67		7.21		6.82	
Specific conductivity	µmhos/cm	NV	2.390		3.81		4.15		3.95		4.59	
Temperature	deg. C	NV	20.83		17.38		21.35		20.93		20.34	
Turbidity	NTU	NV	10.7		17.1		16		51.1		0	
DISSOLVED GASES												
Carbon dioxide	µg/L	NV	NA		NA		NA		NA		NA	
Ethane	µg/L	NV	NA		NA		NA		NA		NA	
Ethylene	µg/L	NV	NA		NA		NA		NA		NA	
Methane	µg/L	NV	NA		NA		NA		NA		NA	
GENERAL CHEMISTRY												
Chloride	mg/L	NV	NA		NA		NA		NA		NA	
Nitrate	mg/L	NV	NA		NA		NA		NA		NA	
Sulfate	mg/L	NV	NA		NA		NA		NA		NA	
Total organic carbon	mg/L	NV	NA		NA		NA		NA		NA	
PERCHLORATE												
Perchlorate	µg/L	17	3.58		0.075	J	0.0655	J	0.138		0.0701	J
VOLATILES												
1,1,1,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA	
1,1,1-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA	
1,1,2,2-Tetrachloroethane	µg/L	NV	NA		NA		NA		NA		NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	µg/L	NV	NA		NA		NA		NA		NA	
1,1-Dichloroethane	µg/L	NV	NA		NA		NA		NA		NA	
1,1-Dichloroethene	µg/L	7	< 0.5	U	< 0.5		< 0.5	U	< 1	U	< 0.5	U
1,1-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA	
1,2,3-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA	
1,2,3-Trichloropropane	µg/L	NV	NA		NA		NA		NA		NA	
1,2,4-Trichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA	
1,2,4-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane	µg/L	NV	NA		NA		NA		NA		NA	
1,2-Dibromoethane	µg/L	NV	NA		NA		NA		NA		NA	
1,2-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA	
1,2-Dichloroethane	µg/L	5	< 0.5	U	< 0.5		< 0.5	U	< 1	U	< 0.5	U

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW29 (Upper Shallow)									
		Sample ID	50WW29-211007		50WW29-220105		50WW29-220405		50WW29-221011		50WW29_052423	
		Sample Date	10/7/2021		1/5/2022		4/5/2022		10/11/2022		5/24/2023	
		Sample Purpose	REG		REG		REG		REG		REG	
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
1,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA	
1,3,5-Trimethylbenzene	µg/L	NV	NA		NA		NA		NA		NA	
1,3-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA	
1,3-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA	
1,4-Dichlorobenzene	µg/L	NV	NA		NA		NA		NA		NA	
2,2-Dichloropropane	µg/L	NV	NA		NA		NA		NA		NA	
2-Butanone	µg/L	NV	NA		NA		NA		NA		NA	
2-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		NA	
2-Hexanone	µg/L	NV	NA		NA		NA		NA		NA	
4-Chlorotoluene	µg/L	NV	NA		NA		NA		NA		NA	
Acetone	µg/L	NV	NA		NA		NA		NA		NA	
Benzene	µg/L	NV	NA		NA		NA		NA		NA	
Bromobenzene	µg/L	NV	NA		NA		NA		NA		NA	
Bromochloromethane	µg/L	NV	NA		NA		NA		NA		NA	
Bromodichloromethane	µg/L	NV	NA		NA		NA		NA		NA	
Bromoform	µg/L	NV	NA		NA		NA		NA		NA	
Bromomethane	µg/L	NV	NA		NA		NA		NA		NA	
Carbon disulfide	µg/L	NV	NA		NA		NA		NA		NA	
Carbon tetrachloride	µg/L	NV	NA		NA		NA		NA		NA	
Chlorobenzene	µg/L	NV	NA		NA		NA		NA		NA	
Chloroethane	µg/L	NV	NA		NA		NA		NA		NA	
Chloroform	µg/L	NV	NA		NA		NA		NA		NA	
Chloromethane	µg/L	NV	NA		NA		NA		NA		NA	
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5		< 0.5	U	< 1	U	< 0.5	U
cis-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA	
Dibromochloromethane	µg/L	NV	NA		NA		NA		NA		NA	
Dibromomethane	µg/L	NV	NA		NA		NA		NA		NA	
Dichlorodifluoromethane	µg/L	NV	NA		NA		NA		NA		NA	
Ethylbenzene	µg/L	NV	NA		NA		NA		NA		NA	
Hexachlorobutadiene	µg/L	NV	NA		NA		NA		NA		NA	
Isopropylbenzene	µg/L	NV	NA		NA		NA		NA		NA	
m,p-Xylenes	µg/L	NV	NA		NA		NA		NA		NA	
Methyl isobutyl ketone	µg/L	NV	NA		NA		NA		NA		NA	
Methylene chloride	µg/L	NV	NA		NA		NA		NA		NA	
Naphthalene	µg/L	NV	NA		NA		NA		NA		NA	
n-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA	
n-Propylbenzene	µg/L	NV	NA		NA		NA		NA		NA	
o-Xylene	µg/L	NV	NA		NA		NA		NA		NA	

Table 4
Year 1, 2, and 3 RA-O Analytical Results
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

		Location Code	50WW29 (Upper Shallow)									
		Sample ID	50WW29-211007		50WW29-220105		50WW29-220405		50WW29-221011		50WW29_052423	
		Sample Date	10/7/2021		1/5/2022		4/5/2022		10/11/2022		5/24/2023	
		Sample Purpose	REG		REG		REG		REG		REG	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
p-Isopropyltoluene	µg/L	NV	NA		NA		NA		NA		NA	
sec-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA	
Styrene	µg/L	NV	NA		NA		NA		NA		NA	
tert-Butylbenzene	µg/L	NV	NA		NA		NA		NA		NA	
Tetrachloroethene	µg/L	5	< 1	U	< 1		< 1	U	< 1	U	< 0.5	U
Toluene	µg/L	NV	NA		NA		NA		NA		NA	
trans-1,2-Dichloroethene	µg/L	NV	NA		NA		NA		NA		NA	
trans-1,3-Dichloropropene	µg/L	NV	NA		NA		NA		NA		NA	
Trichloroethene	µg/L	5	< 0.5	U	< 0.5		< 0.5	U	< 1	U	< 0.5	U
Trichlorofluoromethane	µg/L	NV	NA		NA		NA		NA		NA	
Vinyl chloride	µg/L	2	< 0.5	U	< 0.5		< 0.5	U	< 1	U	< 0.5	U

Notes:

Blue Highlighting Indicates the concentration or detection limit exceeds the MCL/PCL

Bold concentrations are positive detections exceeding the MCL/PCL

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

J+ - The analyte was positively identified; the associated numerical value is its approximate concentration in the sample, with a high bias.

U - Undetected: The analyte was analyzed for, but not detected.

UB - The concentration detected is less than 5x the contamination detected in the related blank sample; therefore, the concentration is qualified as not detected due to blank contamination.

UJ – Undetected estimated. The analyte was analyzed for, but was not detected. Even though the analyte was not detected, certain discrepancies in meeting analyte specific quality control were not met.

MCL - Maximum Contaminant Limit

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (used for perchlorate,where no MCL has been established)

mg/L - milligrams per liter

µg/L - micrograms per liter

ID - Identification

REG - Regular sample

FD - Field duplicate sample

< - The analyte was not detected above the concentration shown

NV - No MCL/PCL is shown for analytes that are not COCs

NA - not analyzed

NM - not measured

Std Units - Standard pH Units

mV - millivolts

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

Sample ID			50SW06-021715		50SW06-052215		50SW06-111315		50WW01-031314		50WW01-052715		50WW01-082015		50WW01-051216		50WW02-980930		50WW02-981022		50WW02-000524	
Sample Date			2/17/2015		5/22/2015		11/13/2015		3/13/2014		5/27/2015		8/20/2015		5/12/2016		9/30/1998		10/22/1998		5/24/2000	
Well Completion Zone			Surface Water		Surface Water		Surface Water		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	0.684		0.218	J	1.44	J	<0.2	U	<0.2	U	<0.2	U	0.2	U	NA		18,000		4,190	
1,1-Dichloroethene	µg/L	7	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	1	U	50		NA		<350	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	98		NA		<350	U
cis-1,2-Dichloroethene	µg/L	70	<0.5	U	<0.5	U	<0.5	U	<0.5	U	0.372	J	0.41	J	0.67	J	2,100		NA		3,100	
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	35		NA		<350	U
Trichloroethene	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	0.685	J	0.543	J	0.81	J	2,900		NA		18,000	
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	100		NA		<350	U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection.

COC - contaminants of concern

ID - identifier

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

			Sample ID	50WW02-001003		50WW02-010209		50WW02-020311		50WW02-020921		50WW02-040830		50WW02-050511		50WW02-FEB2007		50WW02-040309		50WW03-980930		50WW03-000522	
			Sample Date	10/3/2000		2/9/2001		3/11/2002		9/21/2002		8/30/2004		5/11/2005		2/23/2007		4/3/2009		9/30/1998		5/22/2000	
			Well Completion Zone	Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]		Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17		9,950		10,000		6,840		7,600		2,500		1,630		532		110		NA		810	
1,1-Dichloroethene	µg/L	7		<200	U	NA		NA		NA		20		4.81		6.5		<50	U	<1	U	NA	
1,2-Dichloroethane	µg/L	5		79		NA		NA		NA		58		20.2		18.8		18	J	<1	U	NA	
cis-1,2-Dichloroethene	µg/L	70		4,060		NA		NA		NA		1,800	J	954		855		978		<1	U	NA	
Tetrachloroethene	µg/L	5		<200	U	NA		NA		NA		28		6.87		9.3		<50	U	<1	U	NA	
Trichloroethene	µg/L	5		16,100		NA		NA		NA		9,200	J	4,840		5,420		8,050		0.57		NA	
Vinyl Chloride	µg/L	2		<200	U	NA		NA		NA		36		8.56		15.2		<50	U	<1	U	NA	

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection.

COC - contaminants of concern

ID - identifier

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW03-001002		50WW03-010209		50WW03-020312		50WW03-020921		50WW03-040830		50WW03-050511		50WW03-FEB2007		50WW04-980930		50WW04-981022		50WW04-000522	
Sample Date			10/2/2000		2/9/2001		3/12/2002		9/21/2002		8/30/2004		5/11/2005		2/24/2007		9/30/1998		10/22/1998		5/22/2000	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	<8	U	<1.4	U	<4	U	<4	U	<1	U	<4	U	<10	U	NA		<1	U	<1	U
1,1-Dichloroethene	µg/L	7	NA		NA		NA		NA		<5	U	<1	U	<2	U	<1	U	NA		NA	
1,2-Dichloroethane	µg/L	5	NA		NA		NA		NA		<5	U	<1	U	<2	U	<1	U	NA		NA	
cis-1,2-Dichloroethene	µg/L	70	NA		NA		NA		NA		<5	U	<1	U	<2	U	0.64		NA		NA	
Tetrachloroethene	µg/L	5	NA		NA		NA		NA		<5	U	<1	U	<2	U	<1	U	NA		NA	
Trichloroethene	µg/L	5	NA		NA		NA		NA		8		<1	U	<2	U	9.4		NA		NA	
Vinyl Chloride	µg/L	2	NA		NA		NA		NA		<5	U	<1	U	<2	U	<1	U	NA		NA	

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection.

COC - contaminants of concern

ID - identifier

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW04-001002		50WW04-020312		50WW04-020921		50WW04-040831		50WW04-050510		50WW05-020921		50WW05-050511		50WW05-FEB2007		50WW05-040409		50WW05-100805	
Sample Date			10/2/2000		3/12/2002		9/21/2002		8/31/2004		5/10/2005		9/21/2002		5/11/2005		2/23/2007		4/4/2009		8/5/2010	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	<16	U	<4	U	<4	U	<1	U	<5	U	5850		719		27.8		<4	U	0.189	J
1,1-Dichloroethene	µg/L	7	NA		NA		NA		<5	U	<1	U	NA		21.6		12.9		4.61	J	5.73	
1,2-Dichloroethane	µg/L	5	NA		NA		NA		<5	U	<1	U	NA		24.1		13.5		7.39		7.91	
cis-1,2-Dichloroethene	µg/L	70	NA		NA		NA		<5	U	<1	U	NA		66.3		48.2		29		30.1	
Tetrachloroethene	µg/L	5	NA		NA		NA		<5	U	<1	U	NA		6.76		5.1		1.61	J	2.64	J
Trichloroethene	µg/L	5	NA		NA		NA		2	J	<1	U	NA		3,130		1,460		601		788	
Vinyl Chloride	µg/L	2	NA		NA		NA		<5	U	<1	U	NA		3.69		2.5		<5	U	1.48	J

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection.

COC - contaminants of concern

ID - identifier

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW05-110613		50WW05-031714		50WW05-062014		50WW05-111114		50WW05-021315		50WW05FD-021315		50WW05-052615		50WW05-081915		50WW05FD-081915		50WW05-111315	
Sample Date			11/6/2013		3/17/2014		6/20/2014		11/11/2014		2/13/2015		2/13/2015		5/26/2015		8/19/2015		8/19/2015		11/13/2015	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	0.397	J	<0.2	U	20.5		<0.2	U	<0.2	U	<0.2	U	<0.2	U	1.69		1.64		0.7	J
1,1-Dichloroethene	µg/L	7	2.57		2.12		2.67		2.68		1.76	J	1.91	J	1.77	J	2.02		2.08		1.42	J
1,2-Dichloroethane	µg/L	5	2.81		2.54		2.82		2.97		1.58		1.62		1.9		1.6		1.66		1.93	
cis-1,2-Dichloroethene	µg/L	70	12.4		10.5		12.6		15.7		11.7		12.6		9.81		29.1		28.1		17.2	
Tetrachloroethene	µg/L	5	1.54		1.01		1.48		1.6		0.963	J	0.888	J	0.86	J	0.787	J	0.651	J	0.848	J
Trichloroethene	µg/L	5	280		204		270		329		193		196		197		200		200		210	
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

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection.

COC - contaminants of concern

ID - identifier

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

			Sample ID	50WW05-051116		50WW05-110316		50WW05-111017		50WW05-111017-FD		50WW05-180515		50WW05-181203		50WW05-190507		50WW05-191108		50WW06-040830		50WW06-050511	
			Sample Date	5/11/2016		11/03/2016		11/10/2017		11/10/2017		5/15/2018		12/3/2018		5/7/2019		11/8/2019		8/30/2004		5/11/2005	
			Well Completion Zone	Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Lower Shallow		Lower Shallow	
Analyte	Units	MCL/PCL [a]		Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17		1.67	J	0.2	U	4	U	4	U	2	U	< 4	U	< 4	U	< 2	U	6.7		24.8	
1,1-Dichloroethene	µg/L	7		1.33		1.78	J	1.5		1.4		1.9		1.2		1.2		4.8		<5	U	<1	U
1,2-Dichloroethane	µg/L	5		27.2		1.56		1.3		1.3		1.5		1.2		0.94	J	2.7		<5	U	<1	U
cis-1,2-Dichloroethene	µg/L	70		0.565	J	66.7		16	J	13	J	44		18		28		200		<5	U	0.332	J
Tetrachloroethene	µg/L	5		0.5	U	0.637	J	0.91	J	0.83	J	0.5	U	0.86	J	< 0.5	U	1.2		<5	U	<1	U
Trichloroethene	µg/L	5		**129**		**184**		180		160		170		150		110		290		15		4.7	
Vinyl Chloride	µg/L	2		0.5	U	0.5	U	1	U	1	U	0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	<5	U	<1	U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

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COC - contaminants of concern

ID - identifier

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

			Sample ID	50WW06-FEB2007		50WW06-100807		50WW06-100807-FD		50WW06-102813		50WW06-031114		50WW06-062514		50WW06-110414		50WW06-021715		50WW06-052015		50WW06-081815	
			Sample Date	2/22/2007		8/7/2010		8/7/2010		10/28/2013		3/11/2014		6/25/2014		11/4/2014		2/17/2015		5/20/2015		8/18/2015	
			Well Completion Zone	Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	<10	U	113		131		670		2,090		700		1,510		2,490		3,000		2,050	
1,1-Dichloroethene	µg/L	7	<2	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U
1,2-Dichloroethane	µg/L	5	<2	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
cis-1,2-Dichloroethene	µg/L	70	<2	U	<1	U	<1	U	0.994	J	0.39	J	0.299	J	1.61		0.572	J	0.637	J	0.874	J
Tetrachloroethene	µg/L	5	<2	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
Trichloroethene	µg/L	5	2		3.33		3.28		20.9		36.5		27.4		36.1		53.9		49.1		34.7	
Vinyl Chloride	µg/L	2	<2	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

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

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ID - identifier

MCL - maximum contaminant level

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PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW06-111215		50WW06-051016		50WW06-110116		50WW06-111317		50WW06-180508		50WW06-181129		50WW06-190506		50WW06-191112		50WW07-021908		50WW07-040409	
Sample Date			11/12/2015		5/10/2016		11/1/2016		11/13/2017		5/8/2018		11/29/2018		5/6/2019		11/12/2019		2/19/2008		4/4/2009	
Well Completion Zone			Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	5,860		2,140		5,240		950		220		24		4.3		4,300		NA		<4	U
1,1-Dichloroethene	µg/L	7	<1	U	1	U	1	U	1	U	0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	<1	U	<1	U
1,2-Dichloroethane	µg/L	5	0.25	J	0.5	U	0.5	U	1	U	0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	<1	U	<1	U
cis-1,2-Dichloroethene	µg/L	70	1.04		0.388	J	2.37		1.9		0.5	U	< 0.5	U	< 0.5	U	1.2		<1	U	<1	U
Tetrachloroethene	µg/L	5	<0.5	U	0.5	U	0.5	U	1	U	0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	<1	U	<1	U
Trichloroethene	µg/L	5	59.4		29.5		54.2		13		14		14		1.4		41		<1	U	<1	U
Vinyl Chloride	µg/L	2	<0.5	U	0.5	U	0.5	U	1	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/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection.

COC - contaminants of concern

ID - identifier

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW07-100807		50WW07-110513		50WW07-032514		50WW07-062014		50WW07-110714		50WW07-021315		50WW07-052615		50WW07-082115		50WW07-110915		50WW07-051116	
Sample Date			8/7/2010		11/5/2013		3/25/2014		6/20/2014		11/7/2014		2/13/2015		5/26/2015		8/21/2015		11/9/2015		5/11/16	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	0.262		<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<1	U	1.08	
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
1,2-Dichloroethane	µg/L	5	<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
cis-1,2-Dichloroethene	µg/L	70	<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	<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	<1	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	0.42	J	<0.5	U	<0.5	U	0.5	U
Vinyl Chloride	µg/L	2	<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/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW08-103013 [b]		50WW08-031114		50WW08-062414		50WW08-110614		50WW08-021715		50WW08-052115		50WW08-081715		50WW08-111615		50WW08-050316		50WW08-110216	
Sample Date			10/30/2013		3/11/2014		6/24/2014		11/6/2014		2/17/2015		5/21/2015		8/17/2015		11/16/2015		5/3/2016		11/2/2016	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	6,404		91.5		132		56.3		99		200		157		32.4	J	146		126	
1,1-Dichloroethene	µg/L	7	<5	U	1.71	J	<5	U	<2.5	U	<2.5	U	<2.5	U	<2.5	U	<1	U	0.812	J	2.5	U
1,2-Dichloroethane	µg/L	5	<5	U	5.73		4.36	J	2.12	J	3.59		3.6		2.63		1.26		3.23		2.41	J
cis-1,2-Dichloroethene	µg/L	70	30.6		103		86		48.5		70.5		62.1		45.4		17.7		48.1		38	
Tetrachloroethene	µg/L	5	<5	U	2.15		2.03	J	1.9	J	2.55		2	J	1.2	J	1.21		1.66		1.11	J
Trichloroethene	µg/L	5	247		845		814		685		852		712		375		288		383		379	
Vinyl Chloride	µg/L	2	<2	U	0.517	J	<2.5	U	<1.25	U	<1.25	U	<1.25	U	<1.25	U	<0.5	U	0.374	J	1.25	U

Notes:

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW08-111317		50WW08-111317-FD		50WW08-180508		50WW08-181128		50WW08-190507		50WW08-191112		50WW09-110113		50WW09-031414		50WW09-061914		50WW09-111214	
Sample Date			11/13/2017		11/13/2017		5/8/2018		11/28/2018		5/7/2019		11/12/2019		11/1/2013		3/14/2014		6/19/2014		11/12/2014	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	27		25		140		51		230		83		<0.2	U	<0.2	U	<0.2	U	0.593	
1,1-Dichloroethene	µg/L	7	1	U	1	U	0.5	U	0.62	J	< 0.5	U	1.2		<1	U	<1	U	<1	U	<1	U
1,2-Dichloroethane	µg/L	5	0.98	J	1.2	J	1.6		1.5		2.1		2.2		<0.5	U	<0.5	U	<0.5	U	<0.5	U
cis-1,2-Dichloroethene	µg/L	70	19		23		15		20		20		39		<0.5	U	0.579	J	1.16		0.36	J
Tetrachloroethene	µg/L	5	1		1.1		0.5	U	1.1		0.75	J	1.3		<0.5	U	<0.5	U	<0.5	U	<0.5	U
Trichloroethene	µg/L	5	180	J	240	J	130		240	J	210		420		0.26	J	20.2		36.3		19.8	
Vinyl Chloride	µg/L	2	1	U	1	U	0.5	U	0.66	J	< 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/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW09-021315		50WW09-052315		50WW09-082115		50WW09FD-082115		50WW09-111115		50WW09FD-111115		50WW09-051216		50WW09-110316		50WW09-111017		50WW09-180515	
Sample Date			2/13/2015		5/23/2015		8/21/2015		8/21/2015		11/11/2015		11/11/2015		5/12/2016		11/3/2016		11/10/2017		5/15/2018	
Well Completion Zone			Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	<0.2	U	0.196	J	<0.2	U	<0.2	U	<1	U	<1	U	0.2	U	0.2	U	4	U	2.7	J
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
1,2-Dichloroethane	µg/L	5	<0.5	U	1.11		1.66		1.83		1.09		1.05		0.688	J	0.519	J	1	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	1.04		19.7		29.4		29.5		16.3		16		15.1		10.8		1	U	2.4	
Tetrachloroethene	µg/L	5	0.353	J	0.423	J	0.536	J	0.34	J	0.404	J	0.393	J	0.452	J	0.344	J	1	U	0.5	U
Trichloroethene	µg/L	5	57	J	202		235		228		173		170		**154**		126		4.9		83	
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	1	U	0.5	U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW09-180515FD		50WW09-181203		50WW09-190507		50WW09-190507-FD		50WW09-191111		50WW10-110513		50WW10FD-110513		50WW10-031414		50WW10-061914		50WW10FD-061914	
Sample Date			5/15/2018		12/3/2018		5/7/2019		5/7/2019		11/11/2019		11/5/2013		11/5/2013		3/14/2014		6/19/2014		6/19/2014	
Well Completion Zone			Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Intermediate		Intermediate		Intermediate		Intermediate		Intermediate	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	2.8	J	< 4	U	7.2		7.8		6.6		0.906		0.924		0.272	J	0.499		1.46	
1,1-Dichloroethene	µg/L	7	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
1,2-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
cis-1,2-Dichloroethene	µg/L	70	2.2		7.3		2.2		2.1		4.1		<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
Trichloroethene	µg/L	5	74		120		16		16		30		<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

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

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RA-O - Remedial Action Operation

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW10-111214		50WW10-021315		50WW10-052315		50WW10-082115		50WW10-111115		50WW10-051216		50WW10-110316		50WW10-111017		50WW10-180515		50WW10-181203	
Sample Date			11/12/2014		2/13/2015		5/23/2015		8/21/2015		11/11/2015		5/12/2016		11/03/2016		11/10/2017		5/15/2018		12/3/2018	
Well Completion Zone			Intermediate		Intermediate		Intermediate		Intermediate		Intermediate		Intermediate		Intermediate		Intermediate		Intermediate		Intermediate	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	0.2	U	0.2	U	4	U	2	U	< 4	U
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	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	1	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	1	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	U	0.5	U	< 0.5	U
Trichloroethene	µg/L	5	<0.5	U	<0.5	U	0.549	J	0.494	J	0.766	J	0.5	U	0.5	U	1	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	1	U	0.5	U	< 0.5	U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW10-190507		50WW11-102813		50WW11-031314		50WW11-062514		50WW11-110514		50WW11-021715		50WW11-052015		50WW11-081815		50WW11-111215		50WW11-051016	
Sample Date			5/7/2019		10/28/2013		3/13/2014		6/25/2014		11/5/2014		2/17/2015		5/20/2015		8/18/2015		11/12/2015		5/10/2016	
Well Completion Zone			Intermediate		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	< 4	U	21,700		2,570		8,910		22,300		2,690		1,140		17,600		22,800		1,300	
1,1-Dichloroethene	µg/L	7	< 0.5	U	17.4		1.88	J	7.35		27.9		2.47	J	1.03	J	13.1		17.5	J	1.5	J
1,2-Dichloroethane	µg/L	5	< 0.5	U	15.2		2.28	J	6.01		24.3		2.42		1.2		16.7		22.9		1.84	
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	43.9		4.46		12.6		70.8		6.86		2.4		36.3		54.1		5.35	
Tetrachloroethene	µg/L	5	< 0.5	U	2.76		<1.25	U	0.678	J	5.03		0.951	J	0.275	J	2.48		<10	U	0.417	J
Trichloroethene	µg/L	5	< 0.5	U	2,750		362		831		3,550		512		230		1,550		2,670		254	
Vinyl Chloride	µg/L	2	< 0.5	U	1.95		<1.25	U	0.516	J	3.53	J	<1	U	<0.5	U	1.29		<10	U	0.5	U

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW11-110116		50WW11-111317		50WW11-180509		50WW11-181128		50WW11-181128-FD		50WW11-190506		50WW11-191112		50WW12-102313		50WW12-031114		50WW12-062614	
Sample Date			11/01/2016		11/13/2017		5/9/2018		11/28/2018		11/28/2018		5/6/2019		11/12/2019		10/23/2013		3/11/2014		6/26/2014	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	13,400		20,000		1,000		2,900		3,200		450		8,000		23,600		35,700		35,500	
1,1-Dichloroethene	µg/L	7	21.4		33		1.7		5.5		5.5		< 0.5	U	26		<1	U	<1	U	<1	U
1,2-Dichloroethane	µg/L	5	26.1		30		2		5.6		5.4		0.75	J	28		<0.5	U	<0.5	U	<0.5	U
cis-1,2-Dichloroethene	µg/L	70	67.4		78		11		18		17		3.1		58		<0.5	U	<0.5	U	<0.5	U
Tetrachloroethene	µg/L	5	4.91		10	U	0.5	U	1.7		1.7		< 0.5	U	< 5	U	<0.5	U	<0.5	U	<0.5	U
Trichloroethene	µg/L	5	2,880		4,700		280		700	J	710	J	95		3,300		<0.5	U	0.257	J	0.411	J
Vinyl Chloride	µg/L	2	1.9		10	U	0.5	U	0.99	J	1		< 0.5	U	< 5	U	<0.5	U	<0.5	U	<0.5	U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

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COC - contaminants of concern

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PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW12-110414		50WW12-021815		50WW12-052015		50WW12-081815		50WW12-111215		50WW12-051016		50WW12-110116		50WW12-111417		50WW12-180508		50WW12-180508FD	
Sample Date			11/4/2014		2/18/2015		5/20/2015		8/18/2015		11/12/2015		5/10/2016		11/1/2016		11/14/2017		5/8/2018		5/8/2018	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	14,300		30,600		59,200		17,300		37,900		87,800		25,300		21,000		91,000		89,000	
1,1-Dichloroethene	µg/L	7	<1	U	<1	U	0.878	J	<1	U	<1	U	7.35		1.57	J	0.81	J	1.3		1.1	
1,2-Dichloroethane	µg/L	5	<0.5	U	<0.5	U	0.389	J	<0.5	U	<0.5	U	3.93		0.952	J	0.55	J	0.95	J	1	
cis-1,2-Dichloroethene	µg/L	70	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	0.78	J	0.5	U	1	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	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	<0.5	U	<0.5	U	33.9		5.59		17.6		417		109		41		79		74	
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	1	U	0.5	U	0.5	U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW12-181128		50WW12-190516		50WW12-190516-FD		50WW12-191112		50WW13-103013 (1)		50WW13-031214		50WW13-062514		50WW13-110514		50WW13-021715	
Sample Date			11/28/2018		5/16/2019		5/16/2019		11/12/2019		10/30/2013		3/12/2014		6/25/2014		11/5/2014		2/17/2015	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	47,000		65,000		76,000		47,000		14.7		510		3,110		11,700		648	
1,1-Dichloroethene	µg/L	7	0.83	J	2.2		2.2		4.6		16.6		2.54		4.95	J	20.6		<5	U
1,2-Dichloroethane	µg/L	5	0.56	J	1.5		1.5		2.7		42		4.45		10.6		42.4		4.99	J
cis-1,2-Dichloroethene	µg/L	70	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	205		25		56.3		239		32.1	
Tetrachloroethene	µg/L	5	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	7.2		1.06		1.39	J	7.05	J	1.89	J
Trichloroethene	µg/L	5	41	J	170		170		280		3000		823		1,840		9,150		1,080	
Vinyl Chloride	µg/L	2	< 0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	<2	U	<0.5	U	<2.5	U	3.36	J	<2.5	U

Notes:

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW13-052015		50WW13-081915		50WW13-111215		50WW13B-051316		50WW13T-051316		50WW13-110116		50WW13-111317		50WW13-180509		50WW13-181129		50WW13-190506	
Sample Date			5/20/2015		8/19/2015		11/12/2015		5/13/2016		5/13/2016		11/1/2016		11/13/2017		5/9/2018		11/29/2018		5/6/2019	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	126		9,300		11,400		256		493		8,650		13,000		640		1,100		160	
1,1-Dichloroethene	µg/L	7	0.978	J	13.5		<50	U	0.74	J	1.23	J	50	U	50	U	1.4		5.4		0.57	J
1,2-Dichloroethane	µg/L	5	1.78		31.5		43.4	J	2.24		4.31		36.7	J	83		5.6		12		1.3	
cis-1,2-Dichloroethene	µg/L	70	10.7		184		231		15.8		25		228		410		32		100		12	
Tetrachloroethene	µg/L	5	0.554	J	6.19		<25	U	0.555	J	0.846	J	25	U	50	U	1.6		4.6		< 0.5	U
Trichloroethene	µg/L	5	433		5,700		7,710	J	322		529		6,050		13,000		620		2,700		250	
Vinyl Chloride	µg/L	2	<0.5	U	2.31	J	<25	U	0.5	U	0.259	J	25	U	50	U	0.5	U	1.4		< 0.5	U

Notes:

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW13-191113		50WW14-102813		50WW14-031214		50WW14-062514		50WW14-110514		50WW14-021715		50WW14-052015		50WW14-081915		50WW14-111215		50WW14-050316	
Sample Date			11/13/2019		10/28/2013		3/12/2014		6/25/2014		11/5/2014		2/17/2015		5/20/2015		8/19/2015		11/12/2015		5/3/2016	
Well Completion Zone			Upper Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	4,900		5.45		0.256	J	0.121	J	5.37		0.381	J	2.06		2.19		7.5		0.47	
1,1-Dichloroethene	µg/L	7	17	J	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	1	U
1,2-Dichloroethane	µg/L	5	39		1.16		<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	230		6.52		1.33		0.826	J	2.39		13.5		5.66		7.56		14.2		1.41	
Tetrachloroethene	µg/L	5	< 12	U	<0.5	U	<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	7,300		93.8		37.4		21.9		26.7		9.14		6.05		12		5.78		1.75	
Vinyl Chloride	µg/L	2	< 12	U	<0.5	U	<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/PCL.

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW14-110116		50WW14-111317		50WW14-180509		50WW14-181129		50WW14-190506		50WW15-102513		50WW15-031714		50WW15-061914		50WW15-110714		50WW15-021215	
Sample Date			11/01/2016		11/13/2017		5/9/2018		11/29/2018		5/6/2019		10/25/2013		3/17/2014		6/19/2014		11/7/2014		2/12/2015	
Well Completion Zone			Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	0.2	U	4	U	2	U	1.9	J	< 4	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	0.942	J
1,1-Dichloroethene	µg/L	7	1	U	1	U	0.5	U	< 0.5	U	< 0.5	U	<1	U	<1	U	<1	U	<1	U	<1	U
1,2-Dichloroethane	µg/L	5	0.5	U	1	U	1.2		< 0.5	U	< 0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	0.258	J
cis-1,2-Dichloroethene	µg/L	70	2.76		2.7		3.9		3.2		1.9		11.9		13.8		12.9		14.3		14.3	
Tetrachloroethene	µg/L	5	0.5	U	1	U	0.5	U	< 0.5	U	< 0.5	U	3.25		3.33		3.05		3.34		3.31	
Trichloroethene	µg/L	5	10.9		8.2		33		12		27		17.3		23.5		18.9		35.4		48.3	
Vinyl Chloride	µg/L	2	0.5	U	1	U	0.5	U	< 0.5	U	< 0.5	U	3.24		3.09		2.76		2.69		2.2	

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW15FD-021215		50WW15-052315		50WW15-082015		50WW15FD-082015		50WW15-111115		50WW15FD-111115		50WW15-051116		50WW15-110216		50WW15-111017	
Sample Date			2/12/2015		5/23/2015		8/20/2015		8/20/2015		11/11/2015		11/11/2015		5/12/2016		11/02/2016		11/10/2017	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	1.34	J	<0.2	U	0.237	J	0.155	J	<1	U	<1	U	0.2	U	0.2	U	4	U
1,1-Dichloroethene	µg/L	7	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	1	U	1	U	1	U
1,2-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	1	U
cis-1,2-Dichloroethene	µg/L	70	14.2		10.8		10.1		10.4		7.16		6.89		6.31		6.63		4.2	
Tetrachloroethene	µg/L	5	3.24		2.96		1.92		2.01		1.83		1.76		1.86		1.89		1.3	
Trichloroethene	µg/L	5	46.9		13		15.2		15.1		8.2		8.05		**5.32**		**9.52**		3.6	
Vinyl Chloride	µg/L	2	2.27		1.91		1.25		1.38		0.966	J	0.923	J	0.5	U	1.18		0.85	J

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW15-180507		50WW15-181130		50WW15-190523		50WW15-191108		50WW16-102513		50WW16-032514		50WW16-062614		50WW16FD-062614		50WW16-111214		50WW16-021315	
Sample Date			5/7/2018		11/30/2018		5/23/2019		11/8/2019		10/25/2013		3/25/2014		6/26/2014		6/26/2014		11/12/2014		2/13/2015	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	2	U	< 4	U	< 4	U	< 2	U	0.284	J	<0.2	U	0.725		0.682		<0.2	U	<0.2	U
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
1,2-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
cis-1,2-Dichloroethene	µg/L	70	3.1		5.9		2.9		5.5		0.656	J	0.548	J	0.471	J	0.456	J	<0.5	U	<0.5	U
Tetrachloroethene	µg/L	5	1.5		2		0.87	J	2.1		<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
Trichloroethene	µg/L	5	3.5		9.1		2.3		**7.2**		18.1		11.4		12		11.6		1.05		0.391	J
Vinyl Chloride	µg/L	2	0.5	U	1.5		< 0.5	U	1.7		<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW16-052215		50WW16-082015		50WW16-111315		50WW16-051116		50WW16-110216		50WW16-111417		50WW16-180509		50WW16-181128		50WW16-190506		50WW17-102513	
Sample Date			5/22/2015		8/20/2015		11/13/2015		5/11/2016		11/2/2016		11/14/2017		5/9/2018		11/28/2018		5/6/2019		10/25/2013	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Fully Penetrating Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	<0.2	U	<0.2	U	<0.2	U	0.101	J	0.846		4	U	2	U	< 4	U	< 4	U	0.51	
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	<1	U
1,2-Dichloroethane	µg/L	5	<0.5	U	<0.5	U	<0.5	U	0.5	U	0.5	U	1	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	1	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	U	0.5	U	< 0.5	U	< 0.5	U	<0.5	U
Trichloroethene	µg/L	5	<0.5	U	1.5		0.986	J	0.287	J	2.72		1.7	U	0.5	U	1.9	J	0.61	J	<0.5	U
Vinyl Chloride	µg/L	2	<0.5	U	<0.5	U	<0.5	U	0.5	U	0.5	U	1	U	0.5	U	< 0.5	U	< 0.5	U	<0.5	U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection.

COC - contaminants of concern

ID - identifier

MCL - maximum contaminant level

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PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW17-032514		50WW17-062014		50WW17-111114		50WW17-021315		50WW17-052215		50WW17-081915		50WW17-110915		50WW17B-051316		50WW17M-051316		50WW17T-051316	
Sample Date			3/25/2014		6/20/2014		11/11/2014		2/13/2015		5/22/2015		8/19/2015		11/9/2015		5/13/16		5/13/16		5/13/16	
Well Completion Zone			Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	<0.2	U	1.76		<0.2	U	<0.2	U	<0.2	U	0.193	J	<0.4	U	0.2	U	0.119	J	0.149	J
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
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
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
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
Trichloroethene	µg/L	5	<0.5	U	0.516	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
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

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW17-110416		50WW17-111017		50WW17-180515		50WW17-181130		50WW17-190516		50WW17-191108		50WW18-102313		50WW18-032614		50WW18-062414		50WW18-110414	
Sample Date			11/4/2016		11/10/2017		5/15/2018		11/30/2018		5/16/2019		11/8/2019		10/23/2013		3/26/2014		6/24/2014		11/4/2014	
Well Completion Zone			Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	0.2	U	4	U	2	U	< 4	U	< 4	U	2	U	<0.2	U	<0.2	U	0.172	J	<0.2	U
1,1-Dichloroethene	µg/L	7	1	U	1	U	0.5	U	< 0.5	U	< 0.5	U	0.5	U	<1	U	<1	U	<1	U	<1	U
1,2-Dichloroethane	µg/L	5	0.5	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
cis-1,2-Dichloroethene	µg/L	70	0.5	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
Tetrachloroethene	µg/L	5	0.5	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
Trichloroethene	µg/L	5	0.5	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
Vinyl Chloride	µg/L	2	0.5	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

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

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J - estimated value; analyte concentration was less than the limit of quantification.

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Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW18-021815		50WW18-052815		50WW18-081715		50WW18-111615		50WW18-050316		50WW18-110316		50WW18-111017		50WW18-180507		50WW18-181130		50WW18-190516	
Sample Date			2/18/2015		5/28/2015		8/17/2015		11/16/2015		5/3/2016		11/03/2016		11/10/2017		5/7/2018		11/30/2018		5/16/2019	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	0.258	J	<0.2	U	0.144	J	<1	U	0.2	U	0.2	U	4	U	2	U	< 4	U	< 4	U
1,1-Dichloroethene	µg/L	7	<1	U	<1	U	<1	U	<1	U	1	U	1	U	1	U	0.5	U	< 0.5	U	< 0.5	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	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	1	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	UJ	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	1	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	1	U	0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

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RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

			Sample ID	50WW18-191108		50WW19-011414		50WW19-032514		50WW19-062014		50WW19-111114		50WW19-021315		50WW19-052215		50WW19FD-052215		50WW19-082115		50WW19-110915	
			Sample Date	11/8/2019		1/14/2014		3/25/2014		6/20/2014		11/11/2014		2/13/2015		5/22/2015		5/22/2015		8/21/2015		11/9/2015	
			Well Completion Zone	Upper Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	< 2	U	<0.2	U	<0.2	U	0.48		<0.2	U	<0.2	U	0.305	J	0.198	J	<0.2	U	<0.2	U
1,1-Dichloroethene	µg/L	7	< 0.5	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	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
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
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
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
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

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

			Sample ID	50WW19B-051316		50WW19M-051316		50WW19T-051316		50WW19-110416		50WW20-110713		50WW20-031314		50WW20FD-031314		50WW20-061914		50WW20-111114	
			Sample Date	5/3/2016		5/13/2016		5/13/2016		11/04/2016		11/7/2013		3/13/2014		3/13/2014		6/19/2014		11/11/2014	
			Well Completion Zone	Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow	
Analyte	Units	MCL/PCL [a]		Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17		0.2	U	0.2	U	0.338	J	0.2	U	<0.2	U	0.697		0.673		<0.2	U	<0.2	U
1,1-Dichloroethene	µg/L	7		1	U	1	U	1	U	1	U	<1	U	<1	U	<1	U	<1	U	<1	U
1,2-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
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
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
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
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

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW20FD-111114		50WW20-021215		50WW20-052615		50WW20-082115		50WW20-111015		50WW20-51116		50WW21-102513		50WW21FD-102513		50WW21-032514	
Sample Date			11/11/2014		2/12/2015		5/26/2015		8/21/2015		11/10/2015		5/11/2016		10/25/2013		10/25/2013		3/25/2014	
Well Completion Zone			Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Fully Penetrating Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	<0.2	U	0.168	J	<0.2	U	<0.2	U	<0.2	U	0.2	U	0.731		0.818		0.606	
1,1-Dichloroethene	µg/L	7	<1	U	<1	U	<1	U	<1	U	<1	U	1	U	<1	U	<1	U	<1	U
1,2-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
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
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
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
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

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Blue Highlighting indicates analyte detected above MCL/PCL.

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW21-062014		50WW21FD-062014		50WW21-111314		50WW21FD-111314		50WW21-021215		50WW21-052315		50WW21FD-052315		50WW21-082015		50WW21-111015	
Sample Date			6/20/2014		6/20/2014		11/13/2014		11/13/2014		2/12/2015		5/23/2015		5/23/2015		8/20/2015		11/10/2015	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	0.964		0.934		0.779		0.779		0.878		0.502		0.516		0.67		1.21	J
1,1-Dichloroethene	µg/L	7	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U
1,2-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
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
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
Trichloroethene	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	0.447	J	<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

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW21-051216		50WW21-110316		50WW21-111017		50WW21-180507		50WW21-181130		50WW21-190516		50WW22-102313		50WW22-031214		50WW22-062414		50WW22-110614	
Sample Date			5/12/2016		11/03/2016		11/10/2017		5/7/2018		11/30/2018		5/16/2019		10/23/2013		3/12/2014		6/24/2014		11/6/2014	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	0.398	J	0.418		4	U	2	U	< 4	U	< 4	U	6.97		1.54		2.29		1.06	
1,1-Dichloroethene	µg/L	7	1	U	1	U	1	U	0.5	U	< 0.5	U	< 0.5	U	<1	U	<1	U	<1	U	<1	U
1,2-Dichloroethane	µg/L	5	0.5	U	0.5	U	1	U	0.5	U	< 0.5	U	< 0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	1	U	0.5	U	< 0.5	U	< 0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	1	U	0.5	U	< 0.5	U	< 0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	U	1	U	0.5	U	< 0.5	U	< 0.5	U	<0.5	U	<0.5	U	<0.5	U	0.339	J
Vinyl Chloride	µg/L	2	0.5	U	0.5	U	1	U	0.5	U	< 0.5	U	< 0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection.

COC - contaminants of concern

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PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW22-021715		50WW22-052115		50WW22-081815		50WW22-111615		50WW22-051016		50WW22-110216		50WW22-111317		50WW22-180509		50WW22-181203		50WW22-190506	
Sample Date			2/17/2015		5/21/2015		8/18/2015		11/16/2015		5/10/2016		11/2/2016		11/13/2017		5/9/2018		12/3/2018		5/6/2019	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	1.51		2.92		3.62		0.642	J	1.46		1.02		4	U	1.1	J	< 4	U	< 4	U
1,1-Dichloroethene	µg/L	7	<1	U	<1	U	<1	U	<1	U	1	U	1	U	1	U	0.5	U	< 0.5	U	< 0.5	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	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	1	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	U	0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	<0.5	U	<0.5	U	<0.5	U	0.454	J	0.5	U	0.5	U	1	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	1	U	0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

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ID - identifier

MCL - maximum contaminant level

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PCL - Texas residential groundwater protective concentration level

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Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW22-191112		50WW23-102913		50WW23-031314		50WW23-062614		50WW23-110414		50WW23-021815		50WW23-052015		50WW23-081715		50WW23-111615		50WW23-051016	
Sample Date			11/12/2019		10/29/2013		3/13/2014		6/26/2014		11/4/2014		2/18/2015		5/20/2015		8/17/2015		11/16/2015		5/10/2016	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	< 2	U	0.336	J	0.227	J	0.182	J	<0.2	U	<0.2	U	23.3		0.527		<1	U	2.15	
1,1-Dichloroethene	µg/L	7	< 0.5	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	1	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
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
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
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
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

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW23-110116		50WW23-111417		50WW23-180515		50WW23-181203		50WW23-190507		50WW23-190507		50WW24-102913		50WW24-032614		50WW24-062614		50WW24-110414	
Sample Date			11/01/2016		11/14/2017		5/15/2018		12/3/2018		5/7/2019		11/13/2019		10/29/2013		3/26/2014		6/26/2014		11/4/2014	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	4.76		4	U	2	U	< 4	U	< 4	U	< 2	U	0.479		<0.2	U	110		<0.2	U
1,1-Dichloroethene	µg/L	7	1	U	1	U	0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	<1	U	<1	U	<1	U	<1	U
1,2-Dichloroethane	µg/L	5	0.5	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
cis-1,2-Dichloroethene	µg/L	70	0.5	U	1	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
Tetrachloroethene	µg/L	5	0.5	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
Trichloroethene	µg/L	5	0.5	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
Vinyl Chloride	µg/L	2	0.5	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

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

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Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW24-021815		50WW24-052815		50WW24-081715		50WW24-111615		50WW24-051016		50WW24-110316		50WW24-111017		50WW24-180507		50WW24-181130		50WW24-190507	
Sample Date			2/18/2015		5/28/2015		8/17/2015		11/16/2015		5/10/2016		11/3/2016		11/10/2017		5/7/2018		11/30/2018		5/7/2019	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	<0.2	U	<0.2	U	<0.2	U	<1	U	36.8		0.2	U	4	U	2	U	< 4	U	< 4	U
1,1-Dichloroethene	µg/L	7	<1	U	<1	U	<1	U	<1	U	1	U	1	U	1	U	0.5	U	< 0.5	U	< 0.5	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	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	1	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	U	0.5	U	< 0.5	U	< 0.5	U
Trichloroethene	µg/L	5	<0.5	U	0.268	J	<0.5	U	<0.5	U	0.5	U	0.5	U	1	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	1	U	0.5	U	< 0.5	U	< 0.5	U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW24-191108		50WW25-102313		50WW25-032614		50WW25-062414		50WW25-110614		50WW25-021815		50WW25-052815		50WW26-110613		50WW26FD-110613		50WW26-032614	
Sample Date			11/8/2019		10/23/2013		3/26/2014		6/24/2014		11/6/2014		2/18/2015		5/28/2015		11/6/2013		11/6/2013		3/26/2014	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Lower Shallow		Lower Shallow		Lower Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	2	U	<0.2	U	9.13		31.8		17.8		42.2		15		<0.2	U	<0.2	U	<0.2	U
1,1-Dichloroethene	µg/L	7	0.5	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	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
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
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
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
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

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW26FD-032614		50WW26-062014		50WW26-111314		50WW26-021315		50WW26-052315		50WW26-082015		50WW26-111015		50WW26FD-111015		50WW26-050316		50WW26-110216	
Sample Date			3/26/2014		6/20/2014		11/13/2014		2/13/2015		5/23/2015		8/20/2015		11/10/2015		11/10/2015		5/3/2016		11/2/2016	
Well Completion Zone			Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<1	U	<1	U	0.2	U	0.2	U
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
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
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	0.515	J
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
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
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

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW27-110613		50WW27-031714		50WW27FD-031714		50WW27-061914		50WW27-110714		50WW27FD-110714		50WW27-021215		50WW27-052315		50WW27-082015		50WW27-111115	
Sample Date			11/6/2013		3/17/2014		3/17/2014		6/19/2014		11/7/2014		11/7/2014		2/12/2015		5/23/2015		8/20/2015		11/11/2015	
Well Completion Zone			Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<0.2	U	<1	U
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
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
cis-1,2-Dichloroethene	µg/L	70	<0.5	U	0.611	J	0.518	J	0.871	J	0.529	J	0.493	J	0.691	J	0.709	J	0.33	J	0.581	J
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
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
Vinyl Chloride	µg/L	2	<0.5	U	<0.5	U	<0.5	U	0.251	J	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:

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Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW27-051216		50WW27-110216		50WW27-111017		50WW27-180507		50WW27-181203		50WW27-181203-FD 12/3/2018		50WW27-190523		50WW27-191108		50WW28-070914		50WW28-111214	
Sample Date			5/12/2016		11/2/2016		11/10/2017		5/7/2018		12/3/2018				5/23/2019		11/8/2019		7/9/2014		11/12/2014	
Well Completion Zone			Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Lower Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	0.2	U	0.124	J	4	U	2	U	< 4	U	< 4	U	< 4	U	2	U	2.57		2.01	J
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	<1	U	<1	U
1,2-Dichloroethane	µg/L	5	0.5	U	0.5	U	1	U	0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	0.5	U	<0.5	U	<0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.515	J	0.498	J	1	U	0.5	U	< 0.5	U	< 0.5	U	0.74	J	0.92	J	<0.5	U	<0.5	U
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	1	U	0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	0.5	U	<0.5	U	<0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	U	1	U	0.5	U	< 0.5	U	< 0.5	U	< 0.5	U	0.5	U	<0.5	U	<0.5	U
Vinyl Chloride	µg/L	2	0.5	U	0.5	U	1	U	0.5	U	0.66	J	0.66	J	< 0.5	U	0.5	U	<0.5	U	<0.5	U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection.

COC - contaminants of concern

ID - identifier

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			50WW28-021715		50WW28FD-021715		50WW28-052615		50WW28FD-052615		50WW28-082015		50WW28-051116		50WW28-111315		50WW29-191111		GPW1-021715	
Sample Date			2/17/2015		2/17/2015		5/26/2015		5/26/2015		8/20/2015		5/11/2016		11/13/2015		11/11/2019		2/17/2015	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Surface Water	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	1.44		1.44		1.04		1.05		0.688		1.12		1.64		2	U	0.737	
1,1-Dichloroethene	µg/L	7	<1	U	<1	U	<1	U	<1	U	<1	U	1	U	<1	U	0.5	U	<1	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
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
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
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
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

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection.

COC - contaminants of concern

ID - identifier

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			GPW1-050815		GPW1-052215		GPW1-111315		GPW1-2/11/2016		GPW1-5/13/2016		GPW1-081016		GPW1-111316		GPW1A-021715		GPW1A-050815		GPW1A-021116	
Sample Date			5/8/2015		5/22/2015		11/13/2015		2/11/2016		5/13/2016		8/1/2016		11/13/2016		2/17/2015		5/8/2015		2/11/2016	
Well Completion Zone			Surface Water		Surface Water		Surface Water		Surface Water		Surface Water		Surface Water		Surface Water		Surface Water		Surface Water		Surface Water	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	0.156	J	0.213	J	0.139	J	0.447		6.59		0.162	J	0.301	J	38.2		16		NA	
1,1-Dichloroethene	µg/L	7	<1	U	<1	U	<1	U	NA		NA		NA		NA		<1	U	<1	U	NA	
1,2-Dichloroethane	µg/L	5	<0.5	U	<0.5	U	<0.5	U	NA		NA		NA		NA		<0.5	U	<0.5	U	NA	
cis-1,2-Dichloroethene	µg/L	70	<0.5	U	<0.5	U	<0.5	U	NA		NA		NA		NA		<0.5	U	<0.5	U	NA	
Tetrachloroethene	µg/L	5	<0.5	U	<0.5	U	<0.5	U	NA		NA		NA		NA		<0.5	U	<0.5	U	NA	
Trichloroethene	µg/L	5	<0.5	U	<0.5	U	<0.5	U	NA		NA		NA		NA		<0.5	U	<0.5	U	NA	
Vinyl Chloride	µg/L	2	<0.5	U	<0.5	U	<0.5	U	NA		NA		NA		NA		<0.5	U	<0.5	U	NA	

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection.

COC - contaminants of concern

ID - identifier

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

Sample ID			GPW1A-050116		GPW1A-081016		GPW1A-110116		LHSMW54-941209		LHSMW54-960212		LHSMW54-960821		LHSMW54-980520		LHSMW54-000521		LHSMW54-020309		LHSMW54-020921	
Sample Date			5/1/2016		8/1/16		11/1/2016		12/9/1994		2/12/1996		8/21/1996		5/20/1998		5/21/2000		3/9/2002		9/21/2002	
Well Completion Zone			Surface Water		Surface Water		Surface Water		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	NA		0.137	J	NA		NA		NA		NA		NA		<1	U	<4	U	<4	U
1,1-Dichloroethene	µg/L	7	NA		NA		NA		<5	U	NA		<0.2	U	<1	U	NA		NA		NA	
1,2-Dichloroethane	µg/L	5	NA		NA		NA		<5	U	NA		<0.31	U	<1	U	NA		NA		NA	
cis-1,2-Dichloroethene	µg/L	70	NA		NA		NA		NA		NA		<0.2	U	0.7		NA		NA		NA	
Tetrachloroethene	µg/L	5	NA		NA		NA		<5	U	NA		<0.25	U	<1	U	NA		NA		NA	
Trichloroethene	µg/L	5	NA		NA		NA		12		11		15.7		210		NA		NA		NA	
Vinyl Chloride	µg/L	2	NA		NA		NA		NA		NA		<0.24	U	<1	U	NA		NA		NA	

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection.

COC - contaminants of concern

ID - identifier

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 5
Historical COC Concentrations
LHAAP-50, Longhorn Army Ammunition Plant, Karnack
Year 9 RA-O Report

			LHSMW54-100806		LHSMW54-101707		LHSMW54-110713		LHSMW54-021815		LHSMW54-052715		LHSMW54-111315	
Sample ID														
Sample Date			8/6/2010		10/17/2007		11/7/2013		2/18/2015		5/27/2015		11/13/2015	
Well Completion Zone			Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow		Upper Shallow	
Analyte	Units	MCL/PCL [a]	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate	µg/L	17	<0.2	U	<1	U	<0.2	U	0.271	J	<0.2	U	<1	UJ
1,1-Dichloroethene	µg/L	7	<2.5	U	<1	U	<1	U	<1	U	<1	U	<1	U
1,2-Dichloroethane	µg/L	5	<2.5	U	<1	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.657	J	1.59		0.392	J	0.316	J	0.261	J	0.323	J
Tetrachloroethene	µg/L	5	<2.5	U	<1	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
Trichloroethene	µg/L	5	369		601		112		93.8		95.9		88.3	
Vinyl Chloride	µg/L	2	<2.5	U	<1	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:

Blue Highlighting indicates analyte detected above MCL/PCL.

[a] Cleanup goal is MCL except for perchlorate. For perchlorate, Texas Risk Reduction Program groundwater residential PCL is used.

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the limit of detection.

COC - contaminants of concern

ID - identifier

MCL - maximum contaminant level

NA - not analyzed

PCL - Texas residential groundwater protective concentration level

RA-O - Remedial Action Operation

Val Qual - validation qualifier

Table 6

Future Year 10 ISB and RA-O Monitoring Network Locations and Analyses

LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas

Year 9 RA-O Report

Monitoring Location	Well Location/Purpose	Perchlorate (6850)	VOCs (8260C)	DO (field reading)	ORP (field reading)	pH (field reading)	Ferrous Iron (field reading)	Anions (SW9056A)	Ethene, Ethane, Methane & Carbon Dioxide (RSK-175)	TOC (SM5310B)
ISB Performance Monitoring Locations - Semiannual for Years 9 (current), 10 and 11 (future)										
50WW05	Cross-gradient to treatment area	X	X	X	X	X				
50WW06	Performance monitoring within the plume	X	X	X	X	X	X	X	X	X
50WW08	Upgradient of treatment area	X	X	X	X	X				
50WW11	Performance monitoring within the plume	X	X	X	X	X	X	X	X	X
50WW12	Performance monitoring within the plume	X	X	X	X	X	X	X	X	X
50WW13	Performance monitoring within the plume	X	X	X	X	X	X	X	X	X
50WW14	Performance monitoring within the plume	X	X	X	X	X	X	X	X	X
50WW29	Downgradient of plume/treatment area	X	X	X	X	X				
RA-O Long Term Monitoring Locations (Annual)										
50WW09	Within the plume	X	X	X	X	X				
50WW15	Plume delineation, cross/upgradient	X	X	X	X	X				
50WW16	Plume delineation, cross-gradient	X	X	X	X	X				
50WW18	Plume delineation, downgradient	X	X	X	X	X				
50WW22	Plume delineation, upgradient	X	X	X	X	X				
50WW23	Plume delineation, cross-gradient	X	X	X	X	X				

Notes:

Anions include chloride, nitrate, and sulfate.

X Indicates that sample will be collected and analyzed for the listed analyte.

DO - dissolved oxygen

ISB - in situ bioremediation

ORP - oxygen-reduction potential

RA-O - Remedial Action Operation

TOC - total organic carbon

VOC - volatile organic compound

Table 7
Groundwater Elevation vs. Bottom of Drainage Channel Elevation
LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas
Year 9 RA-O Report

Surface Water Sample Location	Bottom of Drainage Channel (ft amsl)	Nearest Well	Groundwater Elevation during Surface Water Sampling (ft amsl)	Groundwater Elevation Measurement Date
50SW06	182.902	50WW16	179.97	7/7/2021
			178.47	10/11/2021
			178.39	1/4/2022
			178.68	4/5/2022
			176.66	10/10/2023
			178.39	5/25/2023

Notes:
ft amsl - feet above mean sea level
vs. - versus

Table 8

Mann-Kendall Trend Summary

LHAAP-50, Longhorn Army Ammunition Plant, Karnack, Texas

Year 9 RA-O Report

Monitoring Well	Well Location/Purpose	Period of Record	Perchlorate	TCE	cis-1,2-DCE	1,1-DCE	1,2-DCA
50WW05	Cross-gradient to treatment area	2019-2023	–	Decreasing (99.3%)	Decreasing (99.2%)	–	–
50WW06	Performance monitoring within the plume	2019-2023	No trend (50.0%)	No trend (61.9%)	–	–	–
50WW08	Upgradient of treatment area	2019-2023	No trend (61.9%)	**Increasing (98.7%)**	**Increasing (85%)**	–	–
50WW09	Within the plume	2013-2023	–	No trend (86.7%)	No trend (52.7%)	–	–
50WW11	Performance monitoring within the plume	2019-2023	Stable (89.1%)	Stable (75.3%)	Stable (70.3%)	Stable (87.5%)	Stable (85.9%)
50WW12	Performance monitoring within the plume	2019-2023	No trend (61.9%)	No trend (75.3%)	–	No Trend (89.1%)	No trend (67.6%)
50WW13	Performance monitoring within the plume	2019-2023	Stable (61.9%)	Stable (72.9%)	Stable (59.0%)	Stable (79.9%)	Stable (61.9%)
50WW14	Performance monitoring within the plume	2019-2023	–	Stable (85.9%)	–	–	–
50WW15	Plume delineation, cross/upgradient	2019-2023	–	Stable (59.2%)	–	–	–

Notes:

Bolded cells indicate a statistically significant trend with >95% confidence. "Significant" refers to the statistical confidence in the trend.

Parenthetical after trend result indicates the confidence factor of the trend.

– - Mann-Kendall trend analysis was not conducted for the COC at the well due to the concentration being below the MCL/PCL.

DCA - dichloroethane

DCE - dichloroethene

TCE - trichloroethene

APPENDIX A
ANNUAL LAND USE CONTROL COMPLIANCE CERTIFICATION DOCUMENTATION

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Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated _____ for LHAAP-50 a certification of site was conducted by Aptim [indicate transferee] on 10/11/22.

A summary of land use control mechanisms is as follows:

- Groundwater restriction - restriction of the use of groundwater to environmental monitoring and testing until cleanup levels are met. The restriction against residential use of groundwater will remain in effect until the levels of the COCs in groundwater 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: OCTOBER 11, 2022

Name/Title: Scott Beesinger/Senior Field Tech

Signature: Scott Beesinger

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

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APPENDIX B
PHOTOGRAPHIC LOG AND WELL INSPECTION FORMS

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Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 1: 50WW01 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 2: 50WW02 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 3: 50WW03 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 4: 50WW04 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 5: 50WW05 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 6: 50WW06 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 7: 50WW07 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 8: 50WW08 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 9: 50WW09 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 10: 50WW10 has a legible well ID label, an operable pad lock, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition. One of the bollards has been knocked over onto the ground. The other three bollards are stable.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 11: 50WW11 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 12: 50WW12 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 13: 50WW13 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 14: 50WW14 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 15: 50WW15 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 16: 50WW16 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 17: 50WW17 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 18: 50WW18 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 19: 50WW19 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 20: 50WW20 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 21: 50WW21 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 22: 50WW22 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 23: 50WW23 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 24: 50WW24 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 25: 50WW25 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 26: 50WW26 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 27: 50WW27 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 28: 50WW28 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the well casing is in good condition. Three of the four bollards have paint in good condition. One bollard needs to be repainted.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log October 2022



Photo 29: 50WW29 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log May 2023



Photo 1: 50WW05 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 2: 50WW06 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log May 2023



Photo 3: 50WW08 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 4: 50WW09 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log May 2023



Photo 5: 50WW11 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 6: 50WW12 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log May 2023



Photo 7: 50WW13 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 8: 50WW14 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log May 2023



Photo 9: 50WW15 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 10: 50WW16 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-50 Photograph Log May 2023



Photo 11: 50WW18 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 12: 50WW22 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2022



Photo 13: 50WW23 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.



Photo 14: 50WW29 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing are also in good condition.

01229036

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50

Well ID: 50WW09
Inspection Date: 10/10/22
Well Completion Depth/ Measured Depth: 62.40
Inspector: Scott Beasinger

☒ 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:

01229037

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 5DMW08
Inspection Date: 10/10/22
Well Completion Depth/ Measured Depth: 32.70
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:

01229038

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50

Well ID: 50MW22
Inspection Date: 10/10/22
Well Completion Depth/ Measured Depth: 37.77
Inspector: Scott Baggenstoss

☒ 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:

01229039

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 50032
Client: Army
Site Name: 50
Well ID: 50WW23
Inspection Date: 10/10/22
Well Completion Depth/ Measured Depth: 37.79
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:

01229040

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: SD

Well ID: SDMW05
Inspection Date: 10/10/22
Well Completion Depth/ Measured Depth: 25-30
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 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:

01229041

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW15
Inspection Date: 10/10/22
Well Completion Depth/ Measured Depth: 37.62
Inspector: Scott Beasinger

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:

01229042

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW16
Inspection Date: 10/10/22
Well Completion Depth/ Measured Depth: 38.02
Inspector: Scott Beesingar

☒ 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:

01229043

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50
Well ID: 50MW18
Inspection Date: 10/10/22
Well Completion Depth/ Measured Depth: 37.50
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:

01229044

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW14
Inspection Date: 10/11/22
Well Completion Depth/ Measured Depth: 60.63
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:

01229045

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW13
Inspection Date: 10/11/22
Well Completion Depth/ Measured Depth: 37.60
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:

01229046

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW11
Inspection Date: 10/11/22
Well Completion Depth/ Measured Depth: 37.75
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:

01229047

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50
Well ID: 50MW06
Inspection Date: 10/11/22
Well Completion Depth/ Measured Depth: 58.12
Inspector: Scott Beasinger

☒ 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:

01229048

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW12
Inspection Date: 10/11/22
Well Completion Depth/ Measured Depth: 37.84
Inspector: Scott Beasinger

☒ 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:

01229049

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: SD1032
Client: Army
Site Name: SD

Well ID: SDMW29
Inspection Date: 10/11/22
Well Completion Depth/ Measured Depth: 38.08
Inspector: Scott Beasinger

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:

01229050

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50
Well ID: 50MW26
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 62.78
Inspector: Scott Beggs, NGWA

☒ 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:

01229051

WELL INSPECTION FORM

Job Name: LTAAAP
Job No.: 501032
Client: ARMY
Site Name: 50

Well ID: 50WW21
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 37.61
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 N A

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:

01229052

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50MW04
Inspection Date: 10/4/22
Well Completion Depth/Measured Depth: 23.15
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) ☒ 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:

01229053

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50

Well ID: 50WW20
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 55.80
Inspector: Scott Beasinger

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:

01229054

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50

Well ID: 50WW24
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 37.97
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:

01229055

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: SD
Well ID: SDWW10
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 111.10
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:

01229056

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW02
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 22.21
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:

01229057

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW03
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 23.00
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

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:

01229058

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50

Well ID: 50WW27
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 59.92
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:

01229059

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 50
Well ID: 50WW01
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 23.27
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:

01229060

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50
Well ID: 50WW25
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 56.77
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:

01229061

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 50102
Client: ARMY
Site Name: 50
Well ID: 50WW28
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 29.30
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 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:

01229062

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARmy
Site Name: 50
Well ID: 50WW19
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 65.22
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:

01229063

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 50

Well ID: SDWW17
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 64.70
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:

01229064

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 50132
Client: Army
Site Name: SO

Well ID: SOWW07
Inspection Date: 10/4/22
Well Completion Depth/ Measured Depth: 31.79
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) ☒ 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:

01229065

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCIBH.0001
Client: ARMY
Site Name: SD
Well ID: SDMW29
Inspection Date: 5/24/23
Well Completion Depth/ Measured Depth: 38.10
Inspector: Scott Beasinger

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:

01229066

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPLIBH.0001
Client: ARMY
Site Name: SD
Well ID: SDWW06
Inspection Date: 5/24/23
Well Completion Depth/ Measured Depth: 57.98
Inspector: Scott Beasinger

☒ 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:

01229067

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCIBH.0001
Client: ARMY
Site Name: 50
Well ID: 50MW11
Inspection Date: 5/24/23
Well Completion Depth/ Measured Depth: 37.80
Inspector: SCOTT BASINGER

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:

01229068

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCIBH.0001
Client: ARMY
Site Name: 50
Well ID: 50MW13
Inspection Date: 5/24/23
Well Completion Depth/ Measured Depth: 37.63
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:

01229069

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: SVPCIBH.0001
Client: ARMY
Site Name: 50

Well ID: 50MW22
Inspection Date: 5/24/23
Well Completion Depth/ Measured Depth: 37.80
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:

01229070

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCTBH.0001
Client: ARMY
Site Name: 50
Well ID: 50WW08
Inspection Date: 5/24/23
Well Completion Depth/ Measured Depth: 32.70
Inspector: Scott Beggsinger

☒ 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:

01229071

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCIBH.0001
Client: Army
Site Name: 50
Well ID: 50WW09
Inspection Date: 5/24/23
Well Completion Depth/ Measured Depth: 62.32
Inspector: Scott Beasinger

☒ 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)
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:

01229072

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCIBH.0001
Client: ARMY
Site Name: 50
Well ID: 50WW18
Inspection Date: 5/25/23
Well Completion Depth/ Measured Depth: 37.51
Inspector: Scott Beasinger

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:

01229073

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCIBH.0001
Client: Army
Site Name: 50
Well ID: 50WW16
Inspection Date: 5/25/23
Well Completion Depth/ Measured Depth: 37.90
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:

01229074

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: SUPCIBH.0001
Client: ARMY
Site Name: 50
Well ID: 50MW15
Inspection Date: 5/25/23
Well Completion Depth/ Measured Depth: 37.69
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:

01229075

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCIBH.0001
Client: Army
Site Name: 50
Well ID: 50WW05
Inspection Date: 5/25/23
Well Completion Depth/ Measured Depth: 25.30
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): 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:

01229076

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCIBH.0001
Client: Army
Site Name: 50
Well ID: 50NW14
Inspection Date: 5/25/23
Well Completion Depth/ Measured Depth: 60.75
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): 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:

01229077

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: SUPCIBH.0001
Client: ARmy
Site Name: 50

Well ID: 50MW12
Inspection Date: 5/25/23
Well Completion Depth/ Measured Depth: 37.87
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:

01229078

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCIBH-0001
Client: ARMY
Site Name: 50
Well ID: 50WW23
Inspection Date: 5/25/23
Well Completion Depth/ Measured Depth: 37.80
Inspector: Scott Beegs.NGAR

☒ 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:

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APPENDIX C
GROUNDWATER SAMPLING FORMS

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APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50SW06**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 50SW06-221010 **DATE/TIME:** 10/10/22 1140 **Pump Inlet Depth:** NA

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): NA

Purge Start Date/Time: NA

Depth to Water - Initial (DTWi) (ft) NA

Purge End Date/Time: NA

Depth to Well Bottom (ft) NA

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): NA

Pump Start Time: NA

Ferrous Iron (Required Y or N) NA mg/L

APTIM

Sample Collection Log

Location ID: 50SW06 Sample No: 50SW06-~~1005~~ 221010

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
		Sample Location is Dry								
		NO Samples Collected								

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW05**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 50WW05-221010 **DATE/TIME:** 10/10/22 0957 **Pump Inlet Depth:** 21.25

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 10/10/22 1005

Depth to Water - Initial (DTWi) (ft) 20.63

Purge End Date/Time: 10/10/22 1035

Depth to Well Bottom (ft) 25.30

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 14.34-24.34

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 21.25 Pump Start Time: 1005

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW - 20.63

APTIM

Sample Collection Log

Location ID: 50WW05		Sample No: 50WW05-221010								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/19/22	1010	100	.5	20.70	1.45	17.76	7.66	3.3	[redacted] 37	0.80
	1015	100	1.0	20.75	1.47	18.77	7.45	1.2	22	0.50
	1020	100	1.5	20.78	1.45	19.02	7.37	0.5	22	0.36
	1025	100	2.0	20.80	1.44	19.11	7.37	0.0	21	0.35
	1030	100	2.5	20.82	1.43	19.17	7.36	0.0	21	0.34
↓	1035	100	3.0	20.81	1.43	19.25	7.36	0.0	20	0.34

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW06**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 50WW06-221011 **DATE/TIME:** 10/11/22 0951 **Pump Inlet Depth:** 52.80

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample | **Assoc. QC Samples** | **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 10/11/22 1000

Depth to Water - Initial (DTWi) (ft) 18.59

Purge End Date/Time: 10/11/22 1030

Depth to Well Bottom (ft) ~~58~~ 58.12

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 47.35 - 57.35

Discharge Tube Diameter: 1/4" Immersible Layer: Y (N)

Approximate depth of pump inlet*(ft): ~~52~~ 52.80

Pump Start Time: 1000

Ferrous Iron (Required (Y) or N) 0.40 mg/L

2ND DTW - 18.59

APTIM

Sample Collection Log

Location ID: 50WW06					Sample No: 50WW06-221011					
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/11/22	1005	100	.5	18.65	0.442	18.26	8.10	5.3	89	0.70
	1010	100	1.0	18.70	0.365	19.02	6.62	2.5	159	0.29
	1015	100	1.5	18.73	0.356	19.17	6.52	1.1	164	0.09
	1020	100	2.0	18.75	0.355	19.24	6.52	0.5	165	0.09
	1025	100	2.5	18.76	0.355	19.28	6.51	0.0	165	0.09
	1030	100	3.0	18.77	0.355	19.33	6.51	0.0	166	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW08**

Sampler(s): Scott Beasinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 50WW08-221010 **DATE/TIME:** 10/10/22 0757 **Pump Inlet Depth:** 24.41

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 22.47

Depth to Well Bottom (ft) ~~28.75~~ 32.70

Screen Interval (ft): 17.11 - 31.71

Approximate depth of pump inlet*(ft): ~~22.2~~ 24.41

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: Low Flow/Bladder Pump

Purge Start Date/Time: 10/10/22 0800

Purge End Date/Time: 10/10/22 0830

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 0800

2ND DTW - 22.47

APTIM

Sample Collection Log

Location ID: 50WW08				Sample No: 50WW08-2210 10						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/10/22	0805	100	.5	22.55	2.17	17.58	7.62	6.6	141	0.77
	0810	100	1.0	22.61	2.28	17.52	7.58	3.0	130	0.39
	0815	100	1.5	22.65	2.33	17.49	7.57	1.7	112	0.21
	0820	100	2.0	22.68	2.34	17.46	7.57	0.5	111	0.21
	0825	100	2.5	22.71	2.35	17.43	7.56	0.0	110	0.20
	0830	100	3.0	22.73	2.35	17.40	7.56	0.0	109	0.20

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW09**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 50WW09-2210_ID **DATE/TIME:** 10/10/22 0712 **Pump Inlet Depth:** 54.00

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 10/10/22 0720

Depth to Water - Initial (DTWi) (ft) 22.13

Purge End Date/Time: 10/10/22 0750

Depth to Well Bottom (ft) ~~56~~ 62.40

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 46.75 - 61.25

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~54.85~~ 54.00

Pump Start Time: 0720

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW - 22.13

APTIM

Sample Collection Log

Location ID: 50WW09		Sample No: 50WW09-2210.10								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/10/22	0725	100	.5	22.20	1.70	20.39	7.70	19.1	-21	0.87
	0730	100	1.0	22.26	2.04	19.54	7.55	12.6	-5	0.45
	0735	100	1.5	22.30	2.25	18.82	7.34	7.9	0	0.29
	0740	100	2.0	22.33	2.26	18.76	7.33	6.2	1	0.28
	0745	100	2.5	22.35	2.27	18.70	7.33	5.3	1	0.28
	0750	100	3.0	22.37	2.28	18.64	7.32	4.1	1	0.27

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW11**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 50WW11-2210-11 **DATE/TIME:** 10/11/22 0904 **Pump Inlet Depth:** 29.80

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 10/11/22 0910

Depth to Water - Initial (DTWi) (ft) 20.11

Purge End Date/Time: 10/11/22 0940

Depth to Well Bottom (ft) ~~353~~ 37.75

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 22.55-37.05

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~27.45~~ 29.80 Pump Start Time: 0910

Ferrous Iron (Required (Y) or N) 0.83 mg/L

2ND DTW- 20.11

APTIM

Sample Collection Log

Location ID: 50WW11				Sample No: 50WW11-2210 LL						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/11/22	0915	100	.5	20.18	1.80	17.85	7.81	137	88	0.85
	0920	100	1.0	20.24	2.00	18.65	7.53	118	67	0.51
	0925	100	1.5	20.27	2.04	18.78	7.33	108	66	0.40
	0930	100	2.0	20.30	2.05	18.84	7.33	106	65	0.39
	0935	100	2.5	20.32	2.05	18.88	7.32	105	64	0.38
	0940	100	3.0	20.34	2.05	18.93	7.31	104	64	0.37

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW12**

Sampler(s): Scott Beasinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 50WW12-2210 11 **DATE/TIME:** 10/11/22 1041 **Pump Inlet Depth:** 29.75

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 10/11/22 1050

Depth to Water - Initial (DTWi) (ft) 18.95

Purge End Date/Time: 10/11/22 1120

Depth to Well Bottom (ft) ~~37.2~~ 37.84

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 22.50 - 37.00

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~27.25~~ 29.75 Pump Start Time: 1050

Ferrous Iron (Required (Y) or N) 0.40 mg/L

2ND DTW - 18.95

APTIM

Sample Collection Log

Location ID: 50WW12		Sample No: 50WW12-221011								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/11/22	1055	100	.5	19.02	4.91	19.41	6.34	29.7	132	0.91
	1100	100	1.0	19.08	4.90	19.59	7.01	23.6	85	0.55
	1105	100	1.5	19.12	4.86	19.89	7.22	19.8	63	0.37
	1110	100	2.0	19.15	4.85	19.95	7.23	19.4	62	0.37
	1115	100	2.5	19.18	4.84	20.01	7.24	18.7	61	0.36
	1120	100	3.0	19.20	4.84	20.06	7.25	18.3	61	0.35

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW12**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 50WW12-2210 11-FD **DATE/TIME:** 10/11/22 1041 **Pump Inlet Depth:** 29.75

Sampling Method: LF **Sample Purpose:** FD **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 10/11/22 1050

Depth to Water - Initial (DTWi) (ft) 18.95

Purge End Date/Time. 10/11/22 1120

Depth to Well Bottom (ft) ~~25.2~~ 37.84

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.50 - 37.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y (N)

Approximate depth of pump inlet*(ft): ~~27.35~~ 29.75

Pump Start Time: 1050

Ferrous Iron (Required (F) or N) 0.40 mg/L

2ND DTW - 18.95

APTIM

Sample Collection Log

Location ID: 50WW12		Sample No: 50WW12-221011-FD								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/4/22	1055	100	1.5	19.02	4.91	19.41	6.34	29.7	132	0.91
	1100	100	1.0	19.08	4.90	19.59	7.01	23.6	85	0.55
	1105	100	1.5	19.12	4.86	19.89	7.22	19.8	63	0.37
	1110	100	2.0	19.15	4.85	19.95	7.23	19.4	62	0.37
	1115	100	2.5	19.18	4.84	20.01	7.24	18.7	61	0.36
	1120	100	3.0	19.20	4.84	20.06	7.25	18.3	61	0.35

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW13**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 50WW13-221011 **DATE/TIME:** 10/11/22 0818 **Pump Inlet Depth:** 29.69

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample | **Assoc. QC Samples** | **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 10/11/22 0825

Depth to Water - Initial (DTWi) (ft) 20.40

Purge End Date/Time: 10/11/22 0855

Depth to Well Bottom (ft) ~~37~~ 37.60

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.44 - 36.94

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~27~~ 29.69

Pump Start Time: 0825

Ferrous Iron (Required (Y) or N) 0.54 mg/L

2ND DTW - 20.40

APTIM

Sample Collection Log

Location ID: 50WW13		Sample No: 50WW13-2210 11								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/11/22	0830	100	.5	20.47	2.04	18.34	7.49	58.7	74	0.83
	0835	100	1.0	20.53	2.02	18.60	7.44	50.5	52	0.49
	0840	100	1.5	20.57	2.02	18.63	7.39	47.1	40	0.32
	0845	100	2.0	20.60	2.02	18.66	7.38	46.5	39	0.31
	0850	100	2.5	20.62	2.02	18.69	7.38	45.8	39	0.31
	0855	100	3.0	20.64	2.02	18.71	7.38	45.2	38	0.30

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW14**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

CLEAR

SAMPLING INFORMATION

Sample No: 50WW14-221011 **DATE/TIME:** 10/11/22 0716 **Pump Inlet Depth:** 53.03

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 10/11/22 0725

Depth to Water - Initial (DTWi) (ft) 20.62

Purge End Date/Time: 10/11/22 0755

Depth to Well Bottom (ft) ~~59.85~~ 60.63

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 45.78 - 60.28

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~59.85~~ 53.03

Pump Start Time: 0725

Ferrous Iron (Required) Y or N) 3.89 mg/L

2ND DTW - 20.62

APTIM

Sample Collection Log

Location ID: 50WW14					Sample No: 50WW14-2210.11					
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/11/22	0730	100	.5	20.70	2.16	21.42	7.72	97.7	-17	0.77
	0735	100	1.0	20.76	2.20	20.15	7.37	93.4	-35	0.35
	0740	100	1.5	20.80	2.20	19.79	7.21	90.2	-37	0.18
	0745	100	2.0	20.82	2.21	19.73	7.21	89.5	-38	0.18
	0750	100	2.5	20.84	2.21	19.68	7.20	88.9	-39	0.18
	0755	100	3.0	20.86	2.21	19.64	7.19	88.2	-39	0.17

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW14**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 50WW14-221011-MS **DATE/TIME:** 10/11/22 0716 **Pump Inlet Depth:** 53.03

Sampling Method: LF **Sample Purpose:** MS **Sample Matrix:** GW

Appearance of Sample | **Assoc. QC Samples** | **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 10/11/22 0725

Depth to Water - Initial (DTWi) (ft) 20.62

Purge End Date/Time: 10/11/22 0755

Depth to Well Bottom (ft) ~~60.63~~ 60.63

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 45.78 - 60.28

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~50.63~~ 53.03

Pump Start Time: 0725

Ferrous Iron (Required (Y) or N) 3.89 mg/L

2ND DTW- 20.62

APTIM

Sample Collection Log

Location ID: 50WW14		Sample No: 50WW14-221011-MS								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/11/22	0730	100	.5	20.70	2.16	21.42	7.72	97.7	-17	0.77
	0735	100	1.0	20.76	2.20	20.15	7.37	93.4	-35	0.35
	0740	100	1.5	20.80	2.20	19.79	7.21	90.2	-37	0.18
	0745	100	2.0	20.82	2.21	19.73	7.21	89.5	-38	0.18
	0750	100	2.5	20.84	2.21	19.68	7.20	88.9	-39	0.18
	0755	100	3.0	20.86	2.21	19.64	7.19	88.2	-39	0.17

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW14**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 50WW14-221011-MSD **DATE/TIME:** 10/11/22 0716 **Pump Inlet Depth:** 53.03

Sampling Method: LF **Sample Purpose:** MSD **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions (chloride/nitrate/sulfate) in Water by SW9056	1 x 125 mL HPDE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 10/11/22 0725

Depth to Water - Initial (DTWi) (ft) 20.62

Purge End Date/Time: 10/11/22 0755

Depth to Well Bottom (ft) ~~[illegible]~~ 60.63

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 45.78 - 60.28

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~[illegible]~~ 53.03

Pump Start Time: 0725

Ferrous Iron (Required (Y) or N) _____ mg/L

2ND DTW - 20.62

APTIM

Sample Collection Log

Location ID: 50WW14		Sample No: 50WW14-221011-MSD								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/11/22	0730	100	.5	20.70	2.16	21.42	7.72	97.7	-17	0.77
	0735	100	1.0	20.76	2.20	20.15	7.37	93.4	-35	0.35
	0740	100	1.5	20.80	2.20	19.79	7.21	90.2	-37	0.18
	0745	100	2.0	20.82	2.21	19.73	7.21	89.5	-38	0.18
	0750	100	2.5	20.84	2.21	19.68	7.20	88.9	-39	0.18
↓	0755	100	3.0	20.86	2.21	19.64	7.19	88.2	-39	0.17

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW15**

Sampler(s): Scott Baggenger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 50WW15-221010 **DATE/TIME:** 10/10/22 1041 **Pump Inlet Depth:** 29.50

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample | **Assoc. QC Samples** | **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 10/10/22 1045

Depth to Water - Initial (DTWi) (ft) 19.19

Purge End Date/Time: 10/10/22 1115

Depth to Well Bottom (ft) ~~35~~ 37.62

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 22.25-36.75

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25~~ 29.50

Pump Start Time: 1045

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW - 19.19

APTIM

Sample Collection Log

Location ID: 50WW15 Sample No: 50WW15-221010

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/10/22	1050	100	.5	19.27	1.75	19.73	7.76	46.8	85	1.08
	1055	100	1.0	19.33	1.78	19.80	7.61	40.5	33	0.67
	1100	100	1.5	19.37	1.80	19.85	7.61	38.8	25	0.49
	1105	100	2.0	19.39	1.81	19.89	7.62	38.3	24	0.48
	1110	100	2.5	19.40	1.81	19.93	7.62	37.6	23	0.47
	1115	100	3.0	19.41	1.82	19.96	7.62	37.2	23	0.46

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW16**

Sampler(s): Scott Beegs, NGER

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 50WW16-2210 .10 **DATE/TIME:** 10/10/22 1123 **Pump Inlet Depth:** 29.91

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 20.00

Depth to Well Bottom (ft) [redacted] 38.02

Screen Interval (ft): 22.66 - 37.16

Approximate depth of pump inlet*(ft): [redacted] 29.91

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: Low Flow/Bladder Pump

Purge Start Date/Time: 10/10/22 1130

Purge End Date/Time: 10/10/22 1200

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 1130

2ND DTW - 20.00

APTIM

Sample Collection Log

Location ID: 50WW16 Sample No: 50WW16-2210

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/10/22	1135	100	1.5	20.07	0.224	20.95	7.69	74.8	70	0.90
	1140	100	1.0	20.13	0.208	21.29	7.45	69.2	67	0.57
	1145	100	1.5	20.17	0.216	21.89	7.37	66.7	54	0.42
	1150	100	2.0	20.20	0.216	21.96	7.36	66.3	54	0.41
	1155	100	2.5	20.22	0.217	22.02	7.36	65.5	53	0.41
	1200	100	3.0	20.24	0.217	22.08	7.36	65.0	52	0.39

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW16**

Sampler(s): Scott Baysinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 50WW16-2210~~10~~-FD **DATE/TIME:** ~~10~~/10/22 1123 **Pump Inlet Depth:** 29.91

Sampling Method: LF **Sample Purpose:** FD **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 10/10/22 1130

Depth to Water - Initial (DTWi) (ft) 20.00

Purge End Date/Time: 10/10/22 1200

Depth to Well Bottom (ft) ~~38.0~~ 38.02

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 22.66-37.16

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~28.0~~ 29.91 Pump Start Time: 1130

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW - 20.00

APTIM

Sample Collection Log

Location ID: 50WW16		Sample No: 50WW16-221012FD								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/19/22	1135	100	.5	20.07	0.224	20.95	7.69	74.8	70	0.90
	1140	100	1.0	20.13	0.208	21.29	7.45	69.2	67	0.57
	1145	100	1.5	20.17	0.216	21.89	7.37	66.7	54	0.42
	1150	100	2.0	20.20	0.216	21.96	7.36	66.3	54	0.41
	1155	100	2.5	20.22	0.217	22.02	7.36	65.5	53	0.41
	1200	100	3.0	20.24	0.217	22.08	7.36	65.0	52	0.39

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW18**

Sampler(s): Scott Beasinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 50WW18-221010 **DATE/TIME:** 10/10/22 1209 **Pump Inlet Depth:** 29.62

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 10/10/22 1215

Depth to Water - Initial (DTWi) (ft) 18.78

Purge End Date/Time: 10/10/22 1245

Depth to Well Bottom (ft) ~~37~~ 37.50

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.37 - 36.87

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~29~~ 29.62

Pump Start Time: 1215

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW - 18.78

APTIM

Sample Collection Log

Location ID: 50WW18 Sample No: 50WW18-221010

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/10/22	1220	100	1.5	18.85	2.75	22.70	7.08	31.3	119	0.71
	1225	100	1.0	18.90	2.78	21.95	7.19	25.0	75	0.27
	1230	100	1.5	18.93	2.79	21.77	7.19	21.7	74	0.10
	1235	100	2.0	18.95	2.80	21.73	7.18	21.3	74	0.10
	1240	100	2.5	18.97	2.80	21.68	7.18	20.6	73	0.09
	1245	100	3.0	18.98	2.80	21.64	7.18	20.2	73	0.09

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW22**

Sampler(s): Scott Beggs, NGAR

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 50WW22-2210_10 **DATE/TIME:** 10/10/22 0836 **Pump Inlet Depth:** 29.27

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 24.80

Depth to Well Bottom (ft) 37.77

Screen Interval (ft): 21.97-36.57

Approximate depth of pump inlet*(ft): 29.27

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: Low Flow/Bladder Pump

Purge Start Date/Time: 10/10/22 0840

Purge End Date/Time: 10/10/22 0910

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 0840

2ND DTW - 24.80

APTIM

Sample Collection Log

Location ID: 50WW22		Sample No: 50WW22-221010								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/10/22	0845	100	.5	24.88	3.86	17.32	7.73	11.3	136	0.81
	0850	100	1.0	24.94	3.87	18.00	7.48	6.7	134	0.42
	0855	100	1.5	24.99	3.86	18.10	7.44	2.9	130	0.31
	0900	100	2.0	25.02	3.85	18.16	7.43	1.1	130	0.30
	0905	100	2.5	25.04	3.85	18.20	7.43	0.3	129	0.29
↓	0910	100	3.0	25.06	3.85	18.24	7.43	0.0	129	0.29

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW23**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 50WW23-221010 **DATE/TIME:** 10/10/22 0916 **Pump Inlet Depth:** 29.67

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample **Assoc. QC Samples** **Decontamination Procedures**

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.57

Depth to Well Bottom (ft) ~~37.5~~ 37.79

Screen Interval (ft): 22.42 - 36.92

Approximate depth of pump inlet*(ft): ~~29.5~~ 29.67

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: Low flow/Bladder Pump

Purge Start Date/Time: 10/10/22 0920

Purge End Date/Time: 10/10/22 0950

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 0920

2ND DTW - 23.57

APTIM

Sample Collection Log

Location ID: 50WW23 Sample No: 50WW23-221010

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/10/22	0925	100	.5	23.65	7.31	17.84	7.60	15.7	156	0.88
	0930	100	1.0	23.71	7.47	18.21	6.98	8.0	165	0.51
	0935	100	1.5	23.75	7.54	18.38	6.83	4.1	171	0.39
	0940	100	2.0	23.78	7.54	18.45	6.82	1.7	172	0.38
	0945	100	2.5	23.81	7.55	18.51	6.82	0.6	173	0.38
	0950	100	3.0	23.83	7.55	18.57	6.82	0.0	173	0.37

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **50WW29**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 50WW29-2210 JL **DATE/TIME:** 10/11/22 1137 **Pump Inlet Depth:** 30.95

Sampling Method: LF **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.):

Purge Start Date/Time: 10/11/22 1145

Depth to Water - Initial (DTWi) (ft) 19.43

Purge End Date/Time: 10/11/22 1215

Depth to Well Bottom (ft) ~~35~~ 38.08

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 23.45 - 38.45

Discharge Tube Diameter: 1/4"

Immersible Layer: Y (N)

Approximate depth of pump inlet*(ft): ~~25~~ 30.95

Pump Start Time: 1145

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW- 19.43

APTIM

Sample Collection Log

Location ID: 50WW29		Sample No: 50WW29-221011								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
10/11/22	1150	100	1.5	19.50	4.11	21.42	7.93	65.3	94	0.73
	1155	100	1.0	19.55	4.07	21.31	7.46	57.7	59	0.35
	1200	100	1.5	19.59	3.98	21.10	7.24	53.2	36	0.19
	1205	100	2.0	19.61	3.97	21.04	7.23	52.4	35	0.19
	1210	100	2.5	19.63	3.96	20.98	7.22	51.6	35	0.18
	1215	100	3.0	19.64	3.95	20.93	7.21	51.1	34	0.18

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

LOCATION	Site: LHAAP - 50	Location ID: SDWW29	Date: 5/24/23
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: LevelD
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 17.90
	Total Well Depth (ft) (C): 38.10	Water Column Thickness (ft) (C-B): 20.20	2nd Depth to Water (pre-purge): 17.90
	Screened Interval: 23.45 - 38.45	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 3.23
	Pump placement: 30.95	Well Condition: GOOD	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/24/23	1115	17.97	0.13	100	21.84	6.96	4.28	0.67	5.5	177	
	1120	18.03	0.26	100	20.70	6.92	4.47	0.25	2.9	159	
	1125	18.07	0.39	100	20.50	6.83	4.57	0.06	1.1	135	
	1130	18.10	0.52	100	20.44	6.82	4.58	0.06	0.5	134	
	1135	18.12	0.65	100	20.39	6.82	4.59	0.06	0.0	133	
	1140	18.14	0.78	100	20.34	6.82	4.59	0.05	0.0	132	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type		Preserv.	Filter (Y/N)	Method	Parameter(s)
3	40ml GLASS	HCL	N		VOC
1	125ml PLASTIC	NA	Y		PERCHLORATE

Sample ID: SDWW29-052423 Sample Time: 1140

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

LOCATION	Site: LHAAP - 50	Location ID: SDWW23	Date: 5/25/23
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 22.30
	Total Well Depth (ft) (C): 37.80	Water Column Thickness (ft) (C-B): 15.50	2nd Depth to Water (pre-purge): 22.30
	Screened Interval: 22.42-36.92	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 2.48
	Pump placement: 29.67	Well Condition: GOOD	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/25/23	0645	22.38	0.13	100	22.47	7.18	5.24	0.98	3.7	231	
	0650	22.44	0.26	100	19.81	6.62	5.47	0.60	1.1	220	
	0655	22.48	0.39	100	19.38	6.45	5.57	0.33	0.5	200	
	0700	22.51	0.52	100	19.33	6.44	5.58	0.32	0.0	199	
	0705	22.54	0.65	100	19.26	6.44	5.59	0.31	0.0	198	
↓	0710	22.56	0.78	100	19.20	6.43	5.59	0.30	0.0	197	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
3	40ml GLASS		HCL	N		VOC
1	125ml PLASTIC		NA	Y		PERCHLORATE

Sample ID: SDWW23-052523

Sample Time: 0710

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GROUNDWATER SAMPLE COLLECTION FORM

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LOCATION	Site: LHAAP - 50	Location ID: SDWW22	Date: 5/24/23
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 23.37
	Total Well Depth (ft) (C): 37.80	Water Column Thickness (ft) (C-B): 14.43	2nd Depth to Water (pre-purge): 23.37
	Screened Interval: 21.97-36.57	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 2.31
	Pump placement: 29.27	Well Condition: GOOD	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/24/23	0755	23.40	0.13	100	19.97	7.67	3.62	0.94	6.3	162	
	0800	23.47	0.26	100	19.83	6.42	4.29	0.39	3.7	164	
	0805	23.52	0.39	100	19.81	6.21	4.46	0.38	1.8	169	
	0810	23.55	0.52	100	19.80	6.20	4.47	0.38	0.9	170	
	0815	23.57	0.65	100	19.79	6.19	4.48	0.37	0.0	170	
	0820	23.59	0.78	100	19.78	6.18	4.48	0.37	0.0	171	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers	Volume/Type	Preserv.	Filter (Y/N)	Method	Parameter(s)
3	40 ml Glass	HCl	N		VOC
1	125ml Plastic	NA	Y		PERCHLORATE

Sample ID: SDWW22-052423 Sample Time: 0820

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

LOCATION	Site: LHAAP - 50	Location ID: 50WW18	Date: 5/25/23
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 17.15
	Total Well Depth (ft) (C): 37.51	Water Column Thickness (ft) (C-B): 20.36	2nd Depth to Water(pre-purge): 17.15
	Screened Interval: 22.37 - 36.87	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 3.26
	Pump placement: 29.62	Well Condition: GOOD	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/25/23	1140	17.22	0.13	100	23.38	7.19	3.11	0.73	221	135	
	1145	17.28	0.26	100	21.20	7.01	3.33	0.26	206	133	
	1150	17.32	0.39	100	20.92	6.92	3.39	0.08	195	131	
	1155	17.35	0.52	100	20.86	6.92	3.40	0.08	194	130	
	1200	17.37	0.65	100	20.82	6.92	3.40	0.07	192	129	
	1205	17.38	0.78	100	20.79	6.92	3.40	0.07	190	129	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
3	40ml GLASS		HCl	N		VOC
1	125ml PLASTIC		NA	Y		PERCHLORATE

Sample ID: 50WW18-052523 Sample Time: 1205

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

LOCATION	Site: LHAAP - 50	Location ID: SDWW16	Date: 5/25/23
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 18.27
	Total Well Depth (ft) (C): 37.90	Water Column Thickness (ft) (C-B): 19.63	2nd Depth to Water (pre-purge): 18.27
	Screened Interval: 22.66 - 37.16	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 3.14
	Pump placement: 29.91	Well Condition: GOOD	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/25/23	1055	18.35	0.13	100	22.29	7.90	0.367	0.60	133	97	
	1100	18.41	0.26	100	21.12	6.98	0.320	0.20	110	99	
	1105	18.45	0.39	100	21.05	6.76	0.308	0.03	105	97	
	1110	18.47	0.52	100	21.01	6.75	0.308	0.03	103	96	
	1115	18.49	0.65	100	20.97	6.74	0.307	0.02	102	96	
↓	1120	18.50	0.78	100	20.93	6.73	0.307	0.02	101	96	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type		Preserv.	Filter (Y/N)	Method	Parameter(s)
6	40ml GLASS	HCL	N		VOC
2	125ml PLASTIC	NA	Y		PERCHLORATE

Sample ID: SDWW16_052523 Sample Time: 1120

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GROUNDWATER SAMPLE COLLECTION FORM

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LOCATION	Site: LHAAP - 50	Location ID: 50WW15	Date: 5/25/23
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 17.50
	Total Well Depth (ft) (C): 37.69	Water Column Thickness (ft) (C-B): 20.19	2nd Depth to Water(pre-purge): 17.50
	Screened Interval: 22.25 - 36.75	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 3.23
	Pump placement: 29.50	Well Condition: GOOD	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/25/23	1010	17.57	0.13	100	21.09	7.87	1.54	0.60	44.7	78	
	1015	17.62	0.26	100	20.89	7.51	2.06	0.20	36.6	75	
	1020	17.65	0.39	100	20.85	7.42	2.15	0.04	33.8	63	
	1025	17.68	0.52	100	20.81	7.42	2.16	0.03	33.2	62	
	1030	17.70	0.65	100	20.77	7.41	2.17	0.03	32.6	62	
	1035	17.72	0.78	100	20.75	7.40	2.17	0.03	32.1	61	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type		Preserv.	Filter (Y/N)	Method	Parameter(s)
3	40ml GLASS	HCL	N		VOC
1	125ml PLASTIC	NA	Y		PERCHLORATE

Sample ID: 50WW15_052523 Sample Time: 1035

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

LOCATION	Site: LHAAP - 50	Location ID: 50WW14	Date: 5/25/23
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 18.97
	Total Well Depth (ft) (C): 60.75	Water Column Thickness (ft) (C-B): 41.78	2nd Depth to Water (pre-purge): 18.97
	Screened Interval: 45.78 - 60.28	Weather: Clear	Well Volume (gal) (A*(C-B)): 6.68
	Pump placement: 53.03	Well Condition: Good	Ferrous Iron: 3.30 mg/L

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/25/23	0830	19.04	0.13	100	19.20	7.34	2.72	0.61	188	[redacted]-7	
	0835	19.09	0.26	100	19.59	6.90	2.69	0.22	160	-18	
	0840	19.12	0.39	100	19.65	6.75	2.66	0.06	149	-23	
	0845	19.15	0.52	100	19.70	6.73	2.66	0.06	147	-23	
	0850	19.17	0.65	100	19.76	6.72	2.66	0.05	145	-24	
	0855	19.19	0.78	100	19.81	6.72	2.66	0.05	144	-24	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers	Volume/Type	Preserv.	Filter (Y/N)	Method	Parameter(s)
9	40ml Glass	HCL	N		VOC
9	40ml Glass	HCL	N		MEE
6	40ml Amber	H2SO4	N		TOC
9	40ml Glass	NA	N		CO2
3	125ml Plastic	NA	N		Anions
3	125ml Plastic	NA	Y		Perchlorate

Sample ID: 50WW14_052523 Sample Time: 0855

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

LOCATION	Site: LHAAP - 50	Location ID: 50WW13	Date: 5/24/23
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: LevelD
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 18.85
	Total Well Depth (ft) (C): 37.63	Water Column Thickness (ft) (C-B): 18.78	2nd Depth to Water (pre-purge): 18.85
	Screened Interval: 22.44 - 36.94	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 3.00
	Pump placement: 29.69	Well Condition: GOOD	Ferrous Iron: 0.46 mg/L

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/24/23	0840	18.92	0.13	100	20.28	7.36	1.47	1.88	14.7	171	
	0845	18.98	0.26	100	20.51	7.05	2.44	1.60	7.2	155	
	0850	19.02	0.39	100	20.55	6.90	2.70	1.46	3.3	130	
	0855	19.05	0.52	100	20.58	6.89	2.71	1.47	1.2	128	
	0900	19.08	0.65	100	20.60	6.89	2.72	1.42	0.5	127	
↓	0905	19.10	0.78	100	20.63	6.88	2.73	1.40	0.0	126	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers	Volume/Type	Preserv.	Filter (Y/N)	Method	Parameter(s)
3	40 ml GLASS	HCL	N		VOC
3	40 ml GLASS	HCL	N		MEE
2	40 ml AMBER	H_2SO_4	N		TOC
3	40 ml GLASS	NA	N		CO2
1	125 ml PLASTIC	NA	N		ANIONS
1	125 ml PLASTIC	NA	Y		PERCHLORATE

Sample ID: 50WW13_052423

Sample Time: 0905

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

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LOCATION	Site: LHAAP - 50	Location ID: SDWW12	Date: 5/25/23
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 17.28
	Total Well Depth (ft) (C): 37.87	Water Column Thickness (ft) (C-B): 20.59	2nd Depth to Water(pre-purge): 17.28
	Screened Interval: 22.50 - 37.00	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 3.29
	Pump placement: 29.75	Well Condition: GOOD	Ferrous Iron: 0.47 mg/L

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/25/23	0730	17.35	0.13	100	19.72	7.27	4.68	0.63	60.1	189	
	0735	17.41	0.26	100	19.18	6.64	4.95	0.21	48.7	167	
	0740	17.45	0.39	100	19.08	6.53	5.02	0.04	42.2	149	
	0745	17.47	0.52	100	19.02	6.52	5.03	0.04	41.5	148	
	0750	17.49	0.65	100	18.97	6.51	5.03	0.03	40.8	147	
	0755	17.50	0.78	100	18.93	6.51	5.03	0.03	40.2	146	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type		Preserv.	Filter (Y/N)	Method	Parameter(s)
6	40ml GLASS	HCL	N		VOC
6	40ml GLASS	HCL	N		MEE
4	40ml AMBER	H2SO4	N		TOC
6	40ml GLASS	NA	N		CO2
2	125ml PLASTIC	NA	N		ANIONS
2	125ml PLASTIC	NA	Y		PERCHLORATE

Sample ID: SDWW12-052423

Sample Time: 0755

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

LOCATION	Site: LHAAP - 50	Location ID: SDWW11	Date: 5/24/23
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 18.55
	Total Well Depth (ft) (C): 37.80	Water Column Thickness (ft) (C-B): 19.25	2nd Depth to Water (pre-purge): 18.55
	Screened Interval: 22.55 - 37.05	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 3.08
	Pump placement: 29.80	Well Condition: GOOD	Ferrous Iron: 0.36 mg/L

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/24/23	0930	18.62	0.13	100	21.28	7.41	2.36	0.79	29.7	156	
	0935	18.68	0.26	100	20.95	6.93	2.32	0.36	25.4	131	
	0940	18.72	0.39	100	20.84	6.77	2.30	0.15	24.7	115	
	0945	18.74	0.52	100	20.77	6.77	2.29	0.15	24.2	113	
	0950	18.76	0.65	100	20.72	6.76	2.28	0.14	23.5	112	
	0955	18.78	0.78	100	20.68	6.75	2.28	0.14	23.0	111	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	3	40ml GLASS	HCL	N		VOC
	3	40ml GLASS	HCL	N		MEE
	2	40ml AMBER	H2SO4	N		TOC
	3	40ml GLASS	NA	N		CO2
	1	125ml PLASTIC	NA	N		ANIONS
	1	125ml PLASTIC	NA	Y		PERCHLORATE

Sample ID: SDWW11-052423 Sample Time: 0955

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

Page 1 of 1

LOCATION	Site: LHAAP - 50	Location ID: SDWW09	Date: 5/24/23
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 20.65
	Total Well Depth (ft) (C): 62.32	Water Column Thickness (ft) (C-B): 41.67	2nd Depth to Water(pre-purge): 20.65
	Screened Interval: 46.75 - 61.25	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 6.67
	Pump placement: 54.00	Well Condition: GOOD	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/24/23	0630	20.72	0.13	100	22.60	6.30	0.991	1.79	251	204	
	0635	20.78	0.26	100	20.09	6.36	0.999	1.07	229	174	
	0640	20.82	0.39	100	19.84	6.32	1.01	0.75	220	174	
	0645	20.84	0.52	100	19.76	6.31	1.01	0.73	219	173	
	0650	20.86	0.65	100	19.70	6.31	1.02	0.72	218	173	
↓	0655	20.87	0.78	100	19.65	6.31	1.02	0.71	217	173	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers	Volume/Type	Preserv.	Filter (Y/N)	Method	Parameter(s)
3	40 ml GLASS	HCL	N		VOC
1	125ml PLASTIC	NA	Y		PERCHLORATE

Sample ID: SDWW09_052423 Sample Time: 0655

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

LOCATION	Site: LHAAP - 50	Location ID: 50WW08	Date: 5/24/23
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 20.82
	Total Well Depth (ft) (C): 32.70	Water Column Thickness (ft) (C-B): 11.88	2nd Depth to Water(pre-purge): 20.82
	Screened Interval: 17.11 - 31.71	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 1.90
	Pump placement: 24.41	Well Condition: GOOD	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/24/23	0710	20.90	0.13	100	20.45	6.87	2.51	1.88	407	143	
	0715	20.96	0.26	100	19.88	6.99	2.80	1.18	403	155	
	0720	21.00	0.39	100	19.82	6.99	2.82	0.76	400	153	
	0725	21.03	0.52	100	19.78	7.00	2.83	0.75	399	152	
	0730	21.05	0.65	100	19.74	7.00	2.83	0.73	399	151	
	0735	21.07	0.78	100	19.71	7.01	2.83	0.72	398	151	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		3	40ml GLASS	HCl	N		VOC
						1	125ml PLASTIC	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 50WW08_052423 Sample Time: 0735

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

LOCATION	Site: LHAAP - 50	Location ID: 50WW06	Date: 5/24/23
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): 15.63
	Total Well Depth (ft) (C): 57.98	Water Column Thickness (ft) (C-B): 42.35	2nd Depth to Water (pre-purge): 15.63
	Screened Interval: 47.35 - 57.35	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 27.61
	Pump placement: 52.35	Well Condition: GOOD	Ferrous Iron: 0.06 mg/L

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/24/23	1025	15.70	0.13	100	22.30	7.21	0.457	4.33	3.3	150	
	1030	15.75	0.26	100	21.12	6.71	0.395	3.97	2.0	167	
	1035	15.78	0.39	100	20.81	6.39	0.371	3.83	1.1	188	
	1040	15.80	0.52	100	20.76	6.38	0.371	3.80	0.4	190	
	1045	15.81	0.65	100	20.73	6.38	0.371	3.78	0.0	191	
	1050	15.82	0.78	100	20.69	6.37	0.370	3.76	0.0	191	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type		Preserv.	Filter (Y/N)	Method	Parameter(s)
3	40ml GLASS	HCL	N		VOC
3	40ml GLASS	HCL	N		MEE
2	40ml AMBER	H2SO4	N		TOC
3	40ml GLASS	NA	N		CO2
1	125ml PLASTIC	NA	N		ANIONS
1	125ml PLASTIC	NA	Y		PERCHLORATE

Sample ID: 50WW06_052423 Sample Time: 1050

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APPENDIX D
LABORATORY ANALYTICAL DATA PACKAGE

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alsglobal.com

WorkOrder: HS22100575

LHAAP 50 October 2022

Aptim Environmental & Infrastucture, Inc.

Vicki Graves
10333 Richmond Ave Ste 1030
Houston TX 77042

25-Oct-2022

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HS22100575 LHAAP 50 October 2022 Final

ALS WO# HS22100575

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October 21, 2022

Vicki Graves
Aptim Environmental & Infrastucture, Inc.
10333 Richmond Ave
Ste 1030
Houston, TX 77042

Work Order: **HS22100575**

Laboratory Results for: **LHAAP 50 October 2022**

Dear Vicki Graves ,

ALS Environmental received 10 sample(s) on Oct 12, 2022 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
Work Order: HS22100575

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22100575-01	50WW09-221010	Groundwater		10-Oct-2022 07:50	12-Oct-2022 09:00	☐
HS22100575-02	50WW08-221010	Groundwater		10-Oct-2022 08:30	12-Oct-2022 09:00	☐
HS22100575-03	50WW22-221010	Groundwater		10-Oct-2022 09:10	12-Oct-2022 09:00	☐
HS22100575-04	50WW23-221010	Groundwater		10-Oct-2022 09:50	12-Oct-2022 09:00	☐
HS22100575-05	50WW05-221010	Groundwater		10-Oct-2022 10:35	12-Oct-2022 09:00	☐
HS22100575-06	50WW15-221010	Groundwater		10-Oct-2022 11:15	12-Oct-2022 09:00	☐
HS22100575-07	50WW16-221010	Groundwater		10-Oct-2022 12:00	12-Oct-2022 09:00	☐
HS22100575-08	50WW16-221010-FD	Groundwater		10-Oct-2022 12:00	12-Oct-2022 09:00	☐
HS22100575-09	50WW18-221010	Groundwater		10-Oct-2022 12:45	12-Oct-2022 09:00	☐
HS22100575-10	Trip Blank-221010	Water	CG-0906922-201	10-Oct-2022 00:00	12-Oct-2022 09:00	☐

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP 50 October 2022
Work Order: HS22100575

Work Order Comments

- This level IV data package was revised to include the correct run log for VOA6 Initial Calibration.
- The analysis for Perchlorate was subcontracted to ALS Houston Specialty Lab. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R419606

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

Batch ID: R419507

Sample ID: HS22100577-01MS

- MS and MSD are for an unrelated sample

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
Sample ID: 50WW09-221010
Collection Date: 10-Oct-2022 07:50

ANALYTICAL REPORT
WorkOrder:HS22100575
Lab ID:HS22100575-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 15:17
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 15:17
cis-1,2-Dichloroethene	**0.54**	J	**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 15:17
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	15-Oct-2022 15:17
Trichloroethene	**5.8**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 15:17
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 15:17
Surr: 1,2-Dichloroethane-d4	*86.4*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 15:17*
Surr: 4-Bromofluorobenzene	*96.2*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 15:17*
Surr: Dibromofluoromethane	*87.8*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 15:17*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 15:17*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53

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

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
Sample ID: 50WW08-221010
Collection Date: 10-Oct-2022 08:30

ANALYTICAL REPORT
WorkOrder:HS22100575
Lab ID:HS22100575-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	**1.0**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 18:47
1,2-Dichloroethane	**1.1**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 18:47
cis-1,2-Dichloroethene	**73**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 18:47
Tetrachloroethene	**1.8**		**0.30**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 18:47
Trichloroethene	**720**		**2.0**	**10**	**10**	**ug/L**	10	17-Oct-2022 17:51
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 18:47
Surr: 1,2-Dichloroethane-d4	*85.6*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 18:47*
Surr: 1,2-Dichloroethane-d4	*83.3*			**0**	*81-118*	*%REC*	*10*	*17-Oct-2022 17:51*
Surr: 4-Bromofluorobenzene	*97.4*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 18:47*
Surr: 4-Bromofluorobenzene	*96.1*			**0**	*85-114*	*%REC*	*10*	*17-Oct-2022 17:51*
Surr: Dibromofluoromethane	*88.2*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 18:47*
Surr: Dibromofluoromethane	*90.5*			**0**	*80-119*	*%REC*	*10*	*17-Oct-2022 17:51*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 18:47*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*10*	*17-Oct-2022 17:51*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53

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

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
Sample ID: 50WW22-221010
Collection Date: 10-Oct-2022 09:10

ANALYTICAL REPORT
WorkOrder:HS22100575
Lab ID:HS22100575-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 15:38
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 15:38
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 15:38
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	15-Oct-2022 15:38
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 15:38
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 15:38
Surr: 1,2-Dichloroethane-d4	*87.1*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 15:38*
Surr: 4-Bromofluorobenzene	*95.7*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 15:38*
Surr: Dibromofluoromethane	*88.9*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 15:38*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 15:38*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53

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

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
Sample ID: 50WW23-221010
Collection Date: 10-Oct-2022 09:50

ANALYTICAL REPORT
WorkOrder:HS22100575
Lab ID:HS22100575-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 15:59
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 15:59
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 15:59
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	15-Oct-2022 15:59
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 15:59
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 15:59
Surr: 1,2-Dichloroethane-d4	*88.4*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 15:59*
Surr: 4-Bromofluorobenzene	*96.2*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 15:59*
Surr: Dibromofluoromethane	*89.8*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 15:59*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 15:59*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53

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

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP 50 October 2022
Sample ID: 50WW05-221010
Collection Date: 10-Oct-2022 10:35

ANALYTICAL REPORT
WorkOrder:HS22100575
Lab ID:HS22100575-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	**3.3**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 18:26
1,2-Dichloroethane	**1.7**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 18:26
cis-1,2-Dichloroethene	**77**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 18:26
Tetrachloroethene	**1.2**		**0.30**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 18:26
Trichloroethene	**290**		**1.0**	**5.0**	**5.0**	**ug/L**	5	17-Oct-2022 17:30
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 18:26
Surr: 1,2-Dichloroethane-d4	*86.7*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 18:26*
Surr: 1,2-Dichloroethane-d4	*92.4*			**0**	*81-118*	*%REC*	*5*	*17-Oct-2022 17:30*
Surr: 4-Bromofluorobenzene	*98.1*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 18:26*
Surr: 4-Bromofluorobenzene	*97.3*			**0**	*85-114*	*%REC*	*5*	*17-Oct-2022 17:30*
Surr: Dibromofluoromethane	*89.4*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 18:26*
Surr: Dibromofluoromethane	*92.3*			**0**	*80-119*	*%REC*	*5*	*17-Oct-2022 17:30*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 18:26*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*5*	*17-Oct-2022 17:30*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53

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

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
Sample ID: 50WW15-221010
Collection Date: 10-Oct-2022 11:15

ANALYTICAL REPORT
WorkOrder:HS22100575
Lab ID:HS22100575-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 16:20
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 16:20
cis-1,2-Dichloroethene	**2.7**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 16:20
Tetrachloroethene	**1.0**		**0.30**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 16:20
Trichloroethene	**4.9**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 16:20
Vinyl chloride	**0.56**	J	**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 16:20
Surr: 1,2-Dichloroethane-d4	*85.9*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 16:20*
Surr: 4-Bromofluorobenzene	*96.8*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 16:20*
Surr: Dibromofluoromethane	*87.1*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 16:20*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 16:20*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53

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

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
Sample ID: 50WW16-221010
Collection Date: 10-Oct-2022 12:00

ANALYTICAL REPORT
WorkOrder:HS22100575
Lab ID:HS22100575-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 16:41
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 16:41
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 16:41
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	15-Oct-2022 16:41
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 16:41
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 16:41
Surr: 1,2-Dichloroethane-d4	*87.7*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 16:41*
Surr: 4-Bromofluorobenzene	*96.9*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 16:41*
Surr: Dibromofluoromethane	*89.7*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 16:41*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 16:41*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53

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

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
Sample ID: 50WW16-221010-FD
Collection Date: 10-Oct-2022 12:00

ANALYTICAL REPORT
WorkOrder:HS22100575
Lab ID:HS22100575-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 17:02
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 17:02
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 17:02
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	15-Oct-2022 17:02
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 17:02
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 17:02
Surr: 1,2-Dichloroethane-d4	*85.6*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 17:02*
Surr: 4-Bromofluorobenzene	*94.7*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 17:02*
Surr: Dibromofluoromethane	*88.1*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 17:02*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 17:02*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53

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

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
Sample ID: 50WW18-221010
Collection Date: 10-Oct-2022 12:45

ANALYTICAL REPORT
WorkOrder:HS22100575
Lab ID:HS22100575-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 17:23
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 17:23
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 17:23
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	15-Oct-2022 17:23
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 17:23
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 17:23
Surr: 1,2-Dichloroethane-d4	*85.4*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 17:23*
Surr: 4-Bromofluorobenzene	*97.6*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 17:23*
Surr: Dibromofluoromethane	*88.5*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 17:23*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 17:23*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53

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

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
Sample ID: Trip Blank-221010
Collection Date: 10-Oct-2022 00:00

ANALYTICAL REPORT
WorkOrder:HS22100575
Lab ID:HS22100575-10
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 13:52
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 13:52
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 13:52
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	15-Oct-2022 13:52
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 13:52
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 13:52
Surr: 1,2-Dichloroethane-d4	*86.0*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 13:52*
Surr: 4-Bromofluorobenzene	*97.2*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 13:52*
Surr: Dibromofluoromethane	*86.8*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 13:52*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 13:52*

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

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
WorkOrder: HS22100575

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R419507 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS22100575-10	Trip Blank-221010	10 Oct 2022 00:00			15 Oct 2022 13:52	1
Batch ID: R419507 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS22100575-01	50WW09-221010	10 Oct 2022 07:50			15 Oct 2022 15:17	1
HS22100575-02	50WW08-221010	10 Oct 2022 08:30			15 Oct 2022 18:47	1
HS22100575-03	50WW22-221010	10 Oct 2022 09:10			15 Oct 2022 15:38	1
HS22100575-04	50WW23-221010	10 Oct 2022 09:50			15 Oct 2022 15:59	1
HS22100575-05	50WW05-221010	10 Oct 2022 10:35			15 Oct 2022 18:26	1
HS22100575-06	50WW15-221010	10 Oct 2022 11:15			15 Oct 2022 16:20	1
HS22100575-07	50WW16-221010	10 Oct 2022 12:00			15 Oct 2022 16:41	1
HS22100575-08	50WW16-221010-FD	10 Oct 2022 12:00			15 Oct 2022 17:02	1
HS22100575-09	50WW18-221010	10 Oct 2022 12:45			15 Oct 2022 17:23	1
Batch ID: R419606 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS22100575-02	50WW08-221010	10 Oct 2022 08:30			17 Oct 2022 17:51	10
HS22100575-05	50WW05-221010	10 Oct 2022 10:35			17 Oct 2022 17:30	5
Batch ID: R419878 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS22100575-01	50WW09-221010	10 Oct 2022 07:50			20 Oct 2022 15:53	1
HS22100575-02	50WW08-221010	10 Oct 2022 08:30			20 Oct 2022 15:53	1
HS22100575-03	50WW22-221010	10 Oct 2022 09:10			20 Oct 2022 15:53	1
HS22100575-04	50WW23-221010	10 Oct 2022 09:50			20 Oct 2022 15:53	1
HS22100575-05	50WW05-221010	10 Oct 2022 10:35			20 Oct 2022 15:53	1
HS22100575-06	50WW15-221010	10 Oct 2022 11:15			20 Oct 2022 15:53	1
HS22100575-07	50WW16-221010	10 Oct 2022 12:00			20 Oct 2022 15:53	1
HS22100575-08	50WW16-221010-FD	10 Oct 2022 12:00			20 Oct 2022 15:53	1
HS22100575-09	50WW18-221010	10 Oct 2022 12:45			20 Oct 2022 15:53	1

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
WorkOrder: HS22100575

QC BATCH REPORT

Batch ID: R419507 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-221015** Units: **ug/L** Analysis Date: **15-Oct-2022 13:10**
Client ID: Run ID: **VOA6_419507** SeqNo: **6923902** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	1.0	1.0								U
1,2-Dichloroethane	1.0	1.0								U
cis-1,2-Dichloroethene	1.0	1.0								U
Tetrachloroethene	1.0	1.0								U
Trichloroethene	1.0	1.0								U
Vinyl chloride	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*42.18*	*1.0*	*50*	*0*	*84.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.66*	*1.0*	*50*	*0*	*97.3*	*85 - 114*				
Surr: Dibromofluoromethane	*44.25*	*1.0*	*50*	*0*	*88.5*	*80 - 119*				
Surr: Toluene-d8	*52.9*	*1.0*	*50*	*0*	*106*	*89 - 112*				

LCS Sample ID: **VLCSW-221015** Units: **ug/L** Analysis Date: **15-Oct-2022 12:28**
Client ID: Run ID: **VOA6_419507** SeqNo: **6923901** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	19.91	1.0	20	0	99.6	71 - 131				
1,2-Dichloroethane	20.68	1.0	20	0	103	73 - 128				
cis-1,2-Dichloroethene	20.27	1.0	20	0	101	78 - 123				
Tetrachloroethene	19.61	1.0	20	0	98.0	74 - 129				
Trichloroethene	19.57	1.0	20	0	97.9	79 - 123				
Vinyl chloride	19.9	1.0	20	0	99.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.36*	*1.0*	*50*	*0*	*105*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.65*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*51.09*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*49.87*	*1.0*	*50*	*0*	*99.7*	*89 - 112*				

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
WorkOrder: HS22100575

QC BATCH REPORT

Batch ID: R419507 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS22100577-01MS** Units: **ug/L** Analysis Date: **15-Oct-2022 20:33**
Client ID: Run ID: **VOA6_419507** SeqNo: **6923923** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	16.14	1.0	20	0	80.7	71 - 131				
1,2-Dichloroethane	18.87	1.0	20	0	94.3	73 - 128				
cis-1,2-Dichloroethene	18.63	1.0	20	2.417	81.1	78 - 123				
Tetrachloroethene	18.15	1.0	20	0	90.8	74 - 129				
Trichloroethene	49.74	1.0	20	33.33	82.0	79 - 123				
Vinyl chloride	15.88	1.0	20	0	79.4	58 - 137				
Surr: 1,2-Dichloroethane-d4	*42.8*	*1.0*	*50*	*0*	*85.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.1*	*1.0*	*50*	*0*	*98.2*	*85 - 114*				
Surr: Dibromofluoromethane	*43.82*	*1.0*	*50*	*0*	*87.6*	*80 - 119*				
Surr: Toluene-d8	*52.39*	*1.0*	*50*	*0*	*105*	*89 - 112*				

MSD Sample ID: **HS22100577-01MSD** Units: **ug/L** Analysis Date: **15-Oct-2022 20:54**
Client ID: Run ID: **VOA6_419507** SeqNo: **6923924** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	16.4	1.0	20	0	82.0	71 - 131	16.14	1.59	20	
1,2-Dichloroethane	19.46	1.0	20	0	97.3	73 - 128	18.87	3.1	20	
cis-1,2-Dichloroethene	19.02	1.0	20	2.417	83.0	78 - 123	18.63	2.08	20	
Tetrachloroethene	18.65	1.0	20	0	93.2	74 - 129	18.15	2.68	20	
Trichloroethene	49.03	1.0	20	33.33	78.5	79 - 123	49.74	1.43	20	S
Vinyl chloride	16.3	1.0	20	0	81.5	58 - 137	15.88	2.64	20	
Surr: 1,2-Dichloroethane-d4	*44.61*	*1.0*	*50*	*0*	*89.2*	*81 - 118*	*42.8*	*4.14*	*20*	
Surr: 4-Bromofluorobenzene	*48.99*	*1.0*	*50*	*0*	*98.0*	*85 - 114*	*49.1*	*0.226*	*20*	
Surr: Dibromofluoromethane	*44.36*	*1.0*	*50*	*0*	*88.7*	*80 - 119*	*43.82*	*1.21*	*20*	
Surr: Toluene-d8	*52.26*	*1.0*	*50*	*0*	*105*	*89 - 112*	*52.39*	*0.237*	*20*	

The following samples were analyzed in this batch:

HS22100575-01	HS22100575-02	HS22100575-03	HS22100575-04
HS22100575-05	HS22100575-06	HS22100575-07	HS22100575-08
HS22100575-09	HS22100575-10		

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
WorkOrder: HS22100575

QC BATCH REPORT

Batch ID: R419606 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-221017** Units: **ug/L** Analysis Date: **17-Oct-2022 12:35**
Client ID: Run ID: **VOA6_419606** SeqNo: **6924970** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.69*	*1.0*	*50*	*0*	*91.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.08*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*46*	*1.0*	*50*	*0*	*92.0*	*80 - 119*				
Surr: Toluene-d8	*55.07*	*1.0*	*50*	*0*	*110*	*89 - 112*				

LCS Sample ID: **VLCSW-221017** Units: **ug/L** Analysis Date: **17-Oct-2022 11:53**
Client ID: Run ID: **VOA6_419606** SeqNo: **6924969** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	18.7	1.0	20	0	93.5	79 - 123				
Surr: 1,2-Dichloroethane-d4	*53.06*	*1.0*	*50*	*0*	*106*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.77*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*51.93*	*1.0*	*50*	*0*	*104*	*80 - 119*				
Surr: Toluene-d8	*53.63*	*1.0*	*50*	*0*	*107*	*89 - 112*				

MS Sample ID: **HS22100604-02MS** Units: **ug/L** Analysis Date: **17-Oct-2022 16:48**
Client ID: Run ID: **VOA6_419606** SeqNo: **6924980** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	20.28	1.0	20	1.27	95.1	79 - 123				
Surr: 1,2-Dichloroethane-d4	*47.51*	*1.0*	*50*	*0*	*95.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*45.43*	*1.0*	*50*	*0*	*90.9*	*80 - 119*				
Surr: Toluene-d8	*53.11*	*1.0*	*50*	*0*	*106*	*89 - 112*				

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
WorkOrder: HS22100575

QC BATCH REPORT

Batch ID: R419606 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS22100604-02MSD** Units: **ug/L** Analysis Date: **17-Oct-2022 17:09**
Client ID: Run ID: **VOA6_419606** SeqNo: **6924981** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	18.74	1.0	20	1.27	87.3	79 - 123	20.28	7.93	20	
Surr: 1,2-Dichloroethane-d4	*44.94*	*1.0*	*50*	*0*	*89.9*	*81 - 118*	*47.51*	*5.57*	*20*	
Surr: 4-Bromofluorobenzene	*50.15*	*1.0*	*50*	*0*	*100*	*85 - 114*	*51*	*1.69*	*20*	
Surr: Dibromofluoromethane	*44.62*	*1.0*	*50*	*0*	*89.2*	*80 - 119*	*45.43*	*1.8*	*20*	
Surr: Toluene-d8	*52.37*	*1.0*	*50*	*0*	*105*	*89 - 112*	*53.11*	*1.41*	*20*	

The following samples were analyzed in this batch: HS22100575-02 HS22100575-05

ALS Houston, US Date: 21-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 50 October 2022
WorkOrder: **HS22100575**

QUALIFIERS, ACRONYMS, UNITS

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

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

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	22-041-0	27-Mar-2023
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-36	30-Jun-2023
Illinois	2000322022-9	09-May-2023
Kansas	E-10352; 2022-2023	31-Jul-2023
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2022-2023	30-Jun-2023
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
North Dakota	R-193 2022-2023	30-Apr-2023
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932022-13	31-Jul-2023

ALS Houston, US Date: 21-Oct-22

Sample Receipt Checklist

Work Order ID: HS22100575 **Date/Time Received:** 12-Oct-2022 09:00

Client Name: CBI-Houston **Received by:** Corey Grandits

Completed By:	/S/ Paresh M. Giga	12-Oct-2022 12:44	**Reviewed by:**	/S/ Dane J. Wacasey	20-Oct-2022 20:58
	eSignature	Date/Time		eSignature	Date/Time

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

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:none
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	2.6C/2.4C U/C	IR31
Cooler(s)/Kit(s):	49598	
Date/Time sample(s) sent to storage:	10/12/22 13:00	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (280) 575-2190 ATTN: Dane Wacasey

Project: APTIM — LONGHORN
ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP50 October 2022**

Prepared By: Scott Beesinger

P.O. Number

HS22100575

Aptim Environmental & Infrastucture, Inc.
LHAAP 50 October 2022

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (chloride sulfate, nitrate) by SW9056	CO2 by RSK 175	Perchlorate by SW 6850	Remarks (Preservatives, etc.)	Lab I.D.#
50WW09-221010	WG	10/10/22 0750		4	X					X		
50WW08-221010	WG	10/10/22 0830		4	X					X		
50WW22-221010	WG	10/10/22 0910		4	X					X		
50WW23-221010	WG	10/10/22 0950		4	X					X		
50WW05-221010	WG	10/10/22 1035		4	X					X		
50WW15-221010	WG	10/10/22 1115		4	X					X		
50WW16-221010	WG	10/10/22 1200		4	X					X		
50WW16-221010-FD	WG	10/10/22 1200		4	X					X		

Additional Remarks: **Standard TAT on all parameters. Please email results to Vicki.Graves@aptim.com and invoices to fedinvoices@aptim.com**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	10/11/22	1430	FEDEX GR	10/12/22	0900						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

99598
IR# 2.6°
CF=0.7

(Word) S:\1-ccs\Forms\Chain of Custody - BiWeekly

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (280) 575-2190 ATTN: Dane Wacasey

Project: APTIM LONGHORN
ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP50 October 2022**

Prepared By: Scott Beesinger

P.O. Number

HS22100575
Aptim Environmental & Infrastucture, Inc.
LHAAP 50 October 2022

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (chloride sulfate, nitrate) by SW9056	CO2 by RSK 175	Perchlorate by SW 6850	Remarks (Preservatives, etc.)	Lab I.D.#
SOWW18-221010	WG	10/10/22 1245		4	X					X		
TRIP BLANK-221010	W	10/10/22		2	X							

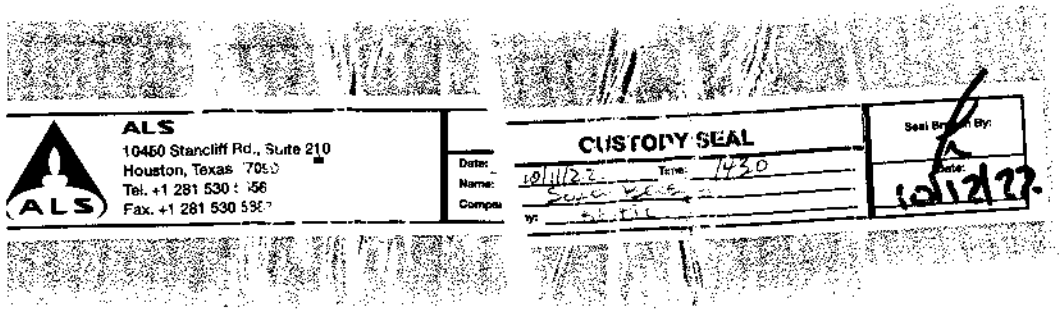
Additional Remarks: **Standard TAT on all parameters. Please email results to Vicki.Graves@aptim.com and invoices to fedinvoices@aptim.com**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Dane Beesinger	10/11/22	1430									

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas
Tel. +1 281 530
Fax. +1 281 530
CUSTODY SEAL
Date:
Name:
Compa
Time: 1430
Seal Br
Date:
10/12/22


FedEx
TRK#
0221 5789 1998 4300
WED - 12 OCT AA
PRIORITY OVERNIGHT
AB SGRA 49598
77099
TX-US
IAH

October 19, 2022 Service Request No:E2200994

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

Laboratory Results for: HS22100575

Dear Dane,

Enclosed are the results of the sample(s) submitted to our laboratory October 13, 2022
For your reference, these analyses have been assigned our service request number **E2200994.**

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.

Please contact me if you have any questions. My extension is 2188. You may also contact me via email at James.Guin@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

James Guin

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.:**	E2200994
Project:	HS22100575	**Date Received:**	10/13/22
Sample Matrix:	GW		

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 II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Nine samples were received for analysis at ALS Environmental in Houston on 10/13/22.

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:

EQ2200469-02/03: 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 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:**E2200994
Project: HS22100575

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2200994-001	50WW09-221010	10/10/2022	0750
E2200994-002	50WW08-221010	10/10/2022	0830
E2200994-003	50WW22-221010	10/10/2022	0910
E2200994-004	50WW23-221010	10/10/2022	0950
E2200994-005	50WW05-221010	10/10/2022	1035
E2200994-006	50WW15-221010	10/10/2022	1115
E2200994-007	50WW16-221010	10/10/2022	1200
E2200994-008	50WW16-221010-FD	10/10/2022	1200
E2200994-009	50WW18-221010	10/10/2022	1245

Service Request Summary

Folder #: **E2200994**
Client Name: ALS Environmental - US
Project Name: HS22100575
Project Number:

Report To: Dane Wacasey
ALS Group USA, Corp.
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-575-2190
Cell Number:
Fax Number: 281-530-5887
E-mail: dane.wacasey@alsglobal.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 10/13/22
Internal Due Date: 10/26/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS22100575
EDD: EQUIS
EFWEDD_LHAAP

9 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2200994-001	50WW09-221010	Ground Water	10/10/22 0750	**IV**
E2200994-002	50WW08-221010	Ground Water	10/10/22 0830	**IV**
E2200994-003	50WW22-221010	Ground Water	10/10/22 0910	**IV**
E2200994-004	50WW23-221010	Ground Water	10/10/22 0950	**IV**
E2200994-005	50WW05-221010	Ground Water	10/10/22 1035	**IV**
E2200994-006	50WW15-221010	Ground Water	10/10/22 1115	**IV**
E2200994-007	50WW16-221010	Ground Water	10/10/22 1200	**IV**
E2200994-008	50WW16-221010-FD	Ground Water	10/10/22 1200	**IV**
E2200994-009	50WW18-221010	Ground Water	10/10/22 1245	**IV**

Service Request Summary

Folder #: **E2200994**
Client Name: ALS Environmental - US
Project Name: HS22100575
Project Number:

Report To: Dane Wacasey
ALS Group USA, Corp.
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-575-2190
Cell Number:
Fax Number: 281-530-5887
E-mail: dane.wacasey@alsglobal.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 10/13/22
Internal Due Date: 10/26/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS22100575
EDD: EQUIS
EFWEDD_LHAAP

9 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	9	Level IV Due 11/2

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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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
Utah Department of Health Environmental Laboratory Certification	TX026932022-13	7/31/2023
Washington Department of Health	C819-2022	11/14/2022

Chain of Custody

ALS Environmental - Houston HRMS
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www.alsglobal.com

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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: Dept of Defense **COC ID:** 20092

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:	HS22100575
TSR:	Ron Martino

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS22100575-01**	**50WW09-221010**	**Groundwater**	**10 Oct 2022 07:50**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
2.	**HS22100575-02**	**50WW08-221010**	**Groundwater**	**10 Oct 2022 08:30**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
3.	**HS22100575-03**	**50WW22-221010**	**Groundwater**	**10 Oct 2022 09:10**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
4.	**HS22100575-04**	**50WW23-221010**	**Groundwater**	**10 Oct 2022 09:50**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
5.	**HS22100575-05**	**50WW05-221010**	**Groundwater**	**10 Oct 2022 10:35**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
6.	**HS22100575-06**	**50WW15-221010**	**Groundwater**	**10 Oct 2022 11:15**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
7.	**HS22100575-07**	**50WW16-221010**	**Groundwater**	**10 Oct 2022 12:00**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
8.	**HS22100575-08**	**50WW16-221010-FD**	**Groundwater**	**10 Oct 2022 12:00**

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID: 20092**

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
9.	**HS22100575-09**	**50WW18-221010**	**Groundwater**	**10 Oct 2022 12:45**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022

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

QC Level: DOD IV (DoD Data Package)

Relinquished By: NR Date/Time:

Received By: COREY G Date/Time: 10/11/22 0911

Cooler ID(s): Temperature(s):

12 Oct 2022 Page 1 of 2

ALS Environmental

Cooler Receipt Form

Project Chemist JG

Client/Project ALS

Thermometer ID IR#1

Date/Time Received: 10/13/22 Initials: CA

Date/Time Logged in: 10/13/22 Initials CA

1. Method of delivery: ○ US Mail ○ Fed Ex ○ UPS ○ DHL ☒ Courier (ALS) ○ 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?
NA		10/13/22	0800	CA	4.8	☒
						☐
						☐
						☐

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:

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

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

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 408149 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 10/14/22 10:12

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2200993-001	50WW14-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
2	E2200993-002	50WW13-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
3	E2200993-003	50WW11-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
4	E2200993-004	50WW06-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
5	E2200993-005	50WW12-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
6	E2200993-006	50WW12-221011-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
7	E2200993-007	50WW29-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
8	E2200994-001	50WW09-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
9	E2200994-002	50WW08-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
10	E2200994-003	50WW22-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
11	E2200994-004	50WW23-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
12	E2200994-005	50WW05-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
13	E2200994-006	50WW15-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
14	E2200994-007	50WW16-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
15	E2200994-008	50WW16-221010-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
16	E2200994-009	50WW18-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
17	EQ2200469-01	MB		6850/ClO4 DOD			Liquid	10mL	
18	EQ2200469-02	LCS		6850/ClO4 DOD			Liquid	10mL	
19	EQ2200469-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
20	EQ2200469-04	50WW14-221011 MS	.01	6850/ClO4 DOD			Liquid	10mL	
21	EQ2200469-05	50WW14-221011 DMS	.01	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Perchlorate Intermediate Stock1 Inventory ID 222798 Logbook Ref: Perchlorate (1st Source) Expires On: 10/29/2022

EQ2200469-02	1.00µL	EQ2200469-03	1.00µL	EQ2200469-04	1.00µL	EQ2200469-05	1.00µL

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 225266 Logbook Ref: Perchlorate Internal Standard Expires On: 01/31/2023

E2200993-001	100.00µL	E2200993-002	100.00µL	E2200993-003	100.00µL	E2200993-004	100.00µL	E2200993-005	100.00µL	E2200993-006	100.00µL
E2200993-007	100.00µL	E2200994-001	100.00µL	E2200994-002	100.00µL	E2200994-003	100.00µL	E2200994-004	100.00µL	E2200994-005	100.00µL
E2200994-006	100.00µL	E2200994-007	100.00µL	E2200994-008	100.00µL	E2200994-009	100.00µL	EQ2200469-01	100.00µL	EQ2200469-02	100.00µL
EQ2200469-03	100.00µL	EQ2200469-04	100.00µL	EQ2200469-05	100.00µL						

Preparation Information Benchsheet

Prep Run#: 408149 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 10/14/22 10:12

Preparation Materials

Water HPLC Grade	09/22/22 Water (225106)	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: 10/14/22 10:12
Finished: 10/14/22 10:31
By: XMI
Comments

Comments: _____

Reviewed By: GR Date: 10/14/22

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:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 0750
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW09-221010	**Units:**	µg/L
Lab Code:	E2200994-001	**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	**0.118**		0.100	0.0500	0.0250	1	10/14/22	10/18/22 10:46	408149	781799	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 0830
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW08-221010	**Units:**	µg/L
Lab Code:	E2200994-002	**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	**31.1**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 19:29	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 0910
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW22-221010	**Units:**	µg/L
Lab Code:	E2200994-003	**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	**0.269**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 19:37	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 0950
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW23-221010	**Units:**	µg/L
Lab Code:	E2200994-004	**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	**0.142**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 19:46	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 1035
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW05-221010	**Units:**	µg/L
Lab Code:	E2200994-005	**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	**0.109**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 19:54	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 1115
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW15-221010	**Units:**	µg/L
Lab Code:	E2200994-006	**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	**0.0301**	J	0.100	0.0500	0.0250	1	10/14/22	10/17/22 20:02	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 1200
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW16-221010	**Units:**	µg/L
Lab Code:	E2200994-007	**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	ND	U	0.100	0.0500	0.0250	1	10/14/22	10/17/22 20:11	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 1200
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW16-221010-FD	**Units:**	µg/L
Lab Code:	E2200994-008	**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	ND	U	0.100	0.0500	0.0250	1	10/14/22	10/17/22 20:28	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 1245
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW18-221010	**Units:**	µg/L
Lab Code:	E2200994-009	**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	ND	U	0.100	0.0500	0.0250	1	10/14/22	10/17/22 20:36	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2200469-01	**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	10/14/22	10/17/22 17:23	408149	781288	

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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

QA/QC Report

Client: ALS Environmental - US
Project: HS22100575
Sample Matrix: Ground Water

Service Request: E2200994
Date Analyzed: 10/17/22

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: 408149

	Lab Control Sample EQ2200469-02			Duplicate Lab Control Sample EQ2200469-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.114	0.100	114	0.103	0.100	103	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:**	E2200994
Project:	HS22100575	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200469-02	**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	**0.114**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 17:31	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200469-03	**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	**0.103**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 17:40	408149	781288	

HS22100575-MSVOA-SW8260

ALS WO# HS22100575

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Form 1

Organic Analysis Data Sheet

Volatiles by by EPA 8260

Workorder

HS22100575

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 50 October 2022

10/28/2022

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Project LHAAP 50 October 2022

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HS22100575

Volatiles by by EPA 8260

HS22100575-01	Collected	Received	Matrix	Basis
50WW09-221010	10/10/22 07:50	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 15:17	VOA6_419507	X101513
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 15:17	VOA6_419507	X101513
cis-1,2-Dichloroethene	ug/L	0.54	J	0.20	1.0	1.0	1	10/15/22 15:17	VOA6_419507	X101513
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 15:17	VOA6_419507	X101513
Trichloroethene	ug/L	5.8		0.20	1.0	1.0	1	10/15/22 15:17	VOA6_419507	X101513
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 15:17	VOA6_419507	X101513

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Project LHAAP 50 October 2022

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HS22100575

Volatiles by by EPA 8260

HS22100575-02	Collected	Received	Matrix	Basis
50WW08-221010	10/10/22 08:30	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0		0.20	1.0	1.0	1	10/15/22 18:47	VOA6_419507	X101523
1,2-Dichloroethane	ug/L	1.1		0.20	1.0	1.0	1	10/15/22 18:47	VOA6_419507	X101523
cis-1,2-Dichloroethene	ug/L	73		0.20	1.0	1.0	1	10/15/22 18:47	VOA6_419507	X101523
Tetrachloroethene	ug/L	1.8		0.30	1.0	1.0	1	10/15/22 18:47	VOA6_419507	X101523
Trichloroethene	ug/L	720		2.0	10	10	10	10/17/22 17:51	VOA6_419606	X101722
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 18:47	VOA6_419507	X101523

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Volatiles by by EPA 8260

HS22100575-03	Collected	Received	Matrix	Basis
50WW22-221010	10/10/22 09:10	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 15:38	VOA6_419507	X101514
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 15:38	VOA6_419507	X101514
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 15:38	VOA6_419507	X101514
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 15:38	VOA6_419507	X101514
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 15:38	VOA6_419507	X101514
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 15:38	VOA6_419507	X101514

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Volatiles by by EPA 8260

HS22100575-04				Collected	Received	Matrix	Basis
50WW23-221010				10/10/22 09:50	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 15:59	VOA6_419507	X101515
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 15:59	VOA6_419507	X101515
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 15:59	VOA6_419507	X101515
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 15:59	VOA6_419507	X101515
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 15:59	VOA6_419507	X101515
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 15:59	VOA6_419507	X101515

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HS22100575-05	Collected	Received	Matrix	Basis
50WW05-221010	10/10/22 10:35	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	3.3		0.20	1.0	1.0	1	10/15/22 18:26	VOA6_419507	X101522
1,2-Dichloroethane	ug/L	1.7		0.20	1.0	1.0	1	10/15/22 18:26	VOA6_419507	X101522
cis-1,2-Dichloroethene	ug/L	77		0.20	1.0	1.0	1	10/15/22 18:26	VOA6_419507	X101522
Tetrachloroethene	ug/L	1.2		0.30	1.0	1.0	1	10/15/22 18:26	VOA6_419507	X101522
Trichloroethene	ug/L	290		1.0	5.0	5.0	5	10/17/22 17:30	VOA6_419606	X101721
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 18:26	VOA6_419507	X101522

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Volatiles by by EPA 8260

HS22100575-06				Collected	Received	Matrix	Basis
50WW15-221010				10/10/22 11:15	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 16:20	VOA6_419507	X101516
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 16:20	VOA6_419507	X101516
cis-1,2-Dichloroethene	ug/L	2.7		0.20	1.0	1.0	1	10/15/22 16:20	VOA6_419507	X101516
Tetrachloroethene	ug/L	1.0		0.30	1.0	1.0	1	10/15/22 16:20	VOA6_419507	X101516
Trichloroethene	ug/L	4.9		0.20	1.0	1.0	1	10/15/22 16:20	VOA6_419507	X101516
Vinyl chloride	ug/L	0.56	J	0.20	1.0	1.0	1	10/15/22 16:20	VOA6_419507	X101516

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Project LHAAP 50 October 2022

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HS22100575-07	Collected	Received	Matrix	Basis
50WW16-221010	10/10/22 12:00	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 16:41	VOA6_419507	X101517
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 16:41	VOA6_419507	X101517
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 16:41	VOA6_419507	X101517
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 16:41	VOA6_419507	X101517
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 16:41	VOA6_419507	X101517
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 16:41	VOA6_419507	X101517

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Project LHAAP 50 October 2022

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Volatiles by by EPA 8260

HS22100575-08

50WW16-221010-FD

Collected	Received	Matrix	Basis
10/10/22 12:00	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 17:02	VOA6_419507	X101518
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 17:02	VOA6_419507	X101518
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 17:02	VOA6_419507	X101518
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 17:02	VOA6_419507	X101518
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 17:02	VOA6_419507	X101518
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 17:02	VOA6_419507	X101518

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Project LHAAP 50 October 2022

Workorder
HS22100575

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HS22100575-09		Collected	Received	Matrix	Basis
50WW18-221010		10/10/22 12:45	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 17:23	VOA6_419507	X101519
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 17:23	VOA6_419507	X101519
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 17:23	VOA6_419507	X101519
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 17:23	VOA6_419507	X101519
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 17:23	VOA6_419507	X101519
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 17:23	VOA6_419507	X101519

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Project LHAAP 50 October 2022

Workorder
HS22100575

Volatiles by by EPA 8260

HS22100575-10	Collected	Received	Matrix	Basis
Trip Blank-221010	10/10/22 00:00	10/12/22 09:00	Water	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:52	VOA6_419507	X101509
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:52	VOA6_419507	X101509
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:52	VOA6_419507	X101509
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 13:52	VOA6_419507	X101509
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:52	VOA6_419507	X101509
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:52	VOA6_419507	X101509

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VBLKW-221015	Collected	Received	Matrix	Basis
VBLKW-221015	NA	NA	Aqueous	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:10	VOA6_419507	X101507
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:10	VOA6_419507	X101507
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:10	VOA6_419507	X101507
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 13:10	VOA6_419507	X101507
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:10	VOA6_419507	X101507
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:10	VOA6_419507	X101507

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Project LHAAP 50 October 2022

Workorder
HS22100575

Volatiles by by EPA 8260

VBLKW-221017	Collected	Received	Matrix	Basis
VBLKW-221017	NA	NA	Aqueous	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/17/22 12:35	VOA6_419606	X101707

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Form 2

System Monitoring Compound Recovery

Volatiles by by EPA 8260

Workorder

HS22100575

Client

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Project

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Form 2 - System Monitoring Compound Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

RunID
VOA6_419507

Volatiles by by EPA 8260

CCV	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	49.26	50	98.5	80-120	
4-Bromofluorobenzene	49.56	50	99.1	80-120	
Dibromofluoromethane	49.79	50	99.6	80-120	
Toluene-d8	48.21	50	96.4	80-120	

CCB	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	42.19	50	84.4	80-120	
4-Bromofluorobenzene	47.54	50	95.1	80-120	
Dibromofluoromethane	43.9	50	87.8	80-120	
Toluene-d8	52.51	50	105	80-120	

VLCSW-221015	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	52.36	50	105	81-118	
4-Bromofluorobenzene	50.65	50	101	85-114	
Dibromofluoromethane	51.09	50	102	80-119	
Toluene-d8	49.87	50	99.7	89-112	

VBLKW-221015	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	42.18	50	84.4	81-118	
4-Bromofluorobenzene	48.66	50	97.3	85-114	
Dibromofluoromethane	44.25	50	88.5	80-119	
Toluene-d8	52.9	50	106	89-112	

Q - Surrogate %Recovery Flag * - %Recovery / RPD Outside Limits

Form 2 - System Monitoring Compound Recovery

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Project LHAAP 50 October 2022

Workorder
HS22100575

RunID
VOA6_419507

Volatiles by by EPA 8260

HS22100575-10	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	43	50	86.0	81-118	
4-Bromofluorobenzene	49	50	97.2	85-114	
Dibromofluoromethane	43	50	86.8	80-119	
Toluene-d8	52	50	104	89-112	

HS22100575-01	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	43	50	86.4	81-118	
4-Bromofluorobenzene	48	50	96.2	85-114	
Dibromofluoromethane	44	50	87.8	80-119	
Toluene-d8	53	50	106	89-112	

HS22100575-03	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	44	50	87.1	81-118	
4-Bromofluorobenzene	48	50	95.7	85-114	
Dibromofluoromethane	44	50	88.9	80-119	
Toluene-d8	53	50	106	89-112	

HS22100575-04	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	44	50	88.4	81-118	
4-Bromofluorobenzene	48	50	96.2	85-114	
Dibromofluoromethane	45	50	89.8	80-119	
Toluene-d8	54	50	107	89-112	

Q - Surrogate %Recovery Flag * - %Recovery / RPD Outside Limits

Form 2 - System Monitoring Compound Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

RunID
VOA6_419507

Volatiles by by EPA 8260

HS22100575-06	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	43	50	85.9	81-118	
4-Bromofluorobenzene	48	50	96.8	85-114	
Dibromofluoromethane	44	50	87.1	80-119	
Toluene-d8	53	50	105	89-112	

HS22100575-07	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	44	50	87.7	81-118	
4-Bromofluorobenzene	48	50	96.9	85-114	
Dibromofluoromethane	45	50	89.7	80-119	
Toluene-d8	53	50	107	89-112	

HS22100575-08	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	43	50	85.6	81-118	
4-Bromofluorobenzene	47	50	94.7	85-114	
Dibromofluoromethane	44	50	88.1	80-119	
Toluene-d8	53	50	106	89-112	

HS22100575-09	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	43	50	85.4	81-118	
4-Bromofluorobenzene	49	50	97.6	85-114	
Dibromofluoromethane	44	50	88.5	80-119	
Toluene-d8	52	50	104	89-112	

Q - Surrogate %Recovery Flag * - %Recovery / RPD Outside Limits

Form 2 - System Monitoring Compound Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

RunID
VOA6_419507

Volatiles by by EPA 8260

HS22100575-05	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	43	50	86.7	81-118	
4-Bromofluorobenzene	49	50	98.1	85-114	
Dibromofluoromethane	45	50	89.4	80-119	
Toluene-d8	53	50	106	89-112	

HS22100575-02	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	43	50	85.6	81-118	
4-Bromofluorobenzene	49	50	97.4	85-114	
Dibromofluoromethane	44	50	88.2	80-119	
Toluene-d8	53	50	106	89-112	

HS22100577-01MS	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	42.8	50	85.6	81-118	
4-Bromofluorobenzene	49.1	50	98.2	85-114	
Dibromofluoromethane	43.82	50	87.6	80-119	
Toluene-d8	52.39	50	105	89-112	

HS22100577-01MSD	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	44.61	50	89.2	81-118	
4-Bromofluorobenzene	48.99	50	98.0	85-114	
Dibromofluoromethane	44.36	50	88.7	80-119	
Toluene-d8	52.26	50	105	89-112	

Q - Surrogate %Recovery Flag * - %Recovery / RPD Outside Limits

Form 2 - System Monitoring Compound Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

RunID
VOA6_419606

Volatiles by by EPA 8260

CCV	Analyzed 10/17/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	49.07	50	98.1	80-120	
4-Bromofluorobenzene	53.95	50	108	80-120	
Dibromofluoromethane	50.43	50	101	80-120	
Toluene-d8	52.37	50	105	80-120	

CCB	Analyzed 10/17/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	44.66	50	89.3	80-120	
4-Bromofluorobenzene	50.3	50	101	80-120	
Dibromofluoromethane	45.55	50	91.1	80-120	
Toluene-d8	55.25	50	111	80-120	

VLCSW-221017	Analyzed 10/17/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	53.06	50	106	81-118	
4-Bromofluorobenzene	52.77	50	106	85-114	
Dibromofluoromethane	51.93	50	104	80-119	
Toluene-d8	53.63	50	107	89-112	

VBLKW-221017	Analyzed 10/17/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	45.69	50	91.4	81-118	
4-Bromofluorobenzene	51.08	50	102	85-114	
Dibromofluoromethane	46	50	92.0	80-119	
Toluene-d8	55.07	50	110	89-112	

Q - Surrogate %Recovery Flag * - %Recovery / RPD Outside Limits

Form 2 - System Monitoring Compound Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

RunID
VOA6_419606

Volatiles by by EPA 8260

HS22100604-02MS	Analyzed 10/17/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	47.51	50	95.0	81-118	
4-Bromofluorobenzene	51	50	102	85-114	
Dibromofluoromethane	45.43	50	90.9	80-119	
Toluene-d8	53.11	50	106	89-112	

HS22100604-02MSD	Analyzed 10/17/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	44.94	50	89.9	81-118	
4-Bromofluorobenzene	50.15	50	100	85-114	
Dibromofluoromethane	44.62	50	89.2	80-119	
Toluene-d8	52.37	50	105	89-112	

HS22100575-05	Analyzed 10/17/22		Conc Units µg/L		DF 5
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	230	250	92.4	81-118	
4-Bromofluorobenzene	240	250	97.3	85-114	
Dibromofluoromethane	230	250	92.3	80-119	
Toluene-d8	260	250	104	89-112	

HS22100575-02	Analyzed 10/17/22		Conc Units µg/L		DF 10
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	420	500	83.3	81-118	
4-Bromofluorobenzene	480	500	96.1	85-114	
Dibromofluoromethane	450	500	90.5	80-119	
Toluene-d8	530	500	106	89-112	

Q - Surrogate %Recovery Flag * - %Recovery / RPD Outside Limits

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Form 3A

Matrix Spike/Spike Duplicate Recovery

Workorder

HS22100575

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Form 3A - Matrix Spike/Spike Duplicate Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

		HS22100577-01		HS22100577-01MS				HS22100577-01MSD						
Sample Matrix	Aqueous	**Run Date**	10/15/22	10/15/22				10/15/22						
Units	µg/L	**Run Time**	14:13	20:33				20:54						
		Data File	X101510.D	X101528.D				X101529.D						
Analyte	%R Limits	DF	Result	MS Result	Spike Added	%R	Q	MSD Result	Spike Added	%R	Q	RPD Limit	RPD	Q
1,1-Dichloroethene	71-131	1	0	16.14	20.00	81		16.4	20.00	82		20	1.60	
1,2-Dichloroethane	73-128	1	0	18.87	20.00	94		19.46	20.00	97		20	3.10	
cis-1,2-Dichloroethene	78-123	1	2.417	18.63	20.00	81		19.02	20.00	83		20	2.10	
Tetrachloroethene	74-129	1	0	18.15	20.00	91		18.65	20.00	93		20	2.70	
Trichloroethene	79-123	1	33.33	49.74	20.00	82		49.03	20.00	79	*	20	1.40	
Vinyl chloride	58-137	1	0	15.88	20.00	79		16.3	20.00	82		20	2.60	

- %Recovery / RPD Flag * - %Recovery / RPD Outside Limits OL - Outside Limits

Form 3A - Matrix Spike/Spike Duplicate Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

		HS22100604-02		HS22100604-02MS				HS22100604-02MSD						
Sample Matrix Aqueous		**Run Date**	10/17/22	10/17/22				10/17/22						
Units µg/L		**Run Time**	13:38	16:48				17:09						
		Data File	X101710.D	X101719.D				X101720.D						
Analyte	%R Limits	DF	Result	MS Result	Spike Added	%R	Q	MSD Result	Spike Added	%R	Q	RPD Limit	RPD	Q
Trichloroethene	79-123	1	1.270	20.28	20.00	95		18.74	20.00	87		20	7.90	

- %Recovery / RPD Flag * - %Recovery / RPD Outside Limits OL - Outside Limits

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Form 3B

Laboratory Control Sample Recovery

Volatiles by by EPA 8260

Workorder

HS22100575

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 50 October 2022

10/28/2022

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Form 3B - Laboratory Control Sample Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

Volatiles by by EPA 8260

VOA6_419507		QC ID	VLCSW-221015			
QC Matrix Aqueous	Units	Run Date	10/15/22			
	ug/L	Run Time	12:28			
Analyte	%R Limits	Spike Added	LCS Result	%R	Q	
1,1-Dichloroethene	71-131	20	19.91	100		
1,2-Dichloroethane	73-128	20	20.68	103		
1,2-Dichloroethane-d4	81-118	50	52.36	105		
4-Bromofluorobenzene	85-114	50	50.65	101		
cis-1,2-Dichloroethene	78-123	20	20.27	101		
Dibromofluoromethane	80-119	50	51.09	102		
Tetrachloroethene	74-129	20	19.61	98		
Toluene-d8	89-112	50	49.87	100		
Trichloroethene	79-123	20	19.57	98		
Vinyl chloride	58-137	20	19.9	100		

- %Recovery / RPD Flag * - %Recovery / RPD Outside Limits

Form 3B - Laboratory Control Sample Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

Volatiles by by EPA 8260

VOA6_419606		QC ID	VLCSW-221017			
QC Matrix Aqueous	Units %REC	Run Date Run Time	10/17/22 11:53			
Analyte	%R Limits	Spike Added	LCS Result	%R	Q	
1,2-Dichloroethane-d4	81-118	50	53.06	106		
4-Bromofluorobenzene	85-114	50	52.77	106		
Dibromofluoromethane	80-119	50	51.93	104		
Toluene-d8	89-112	50	53.63	107		
Trichloroethene	79-123	20	18.7	94		

- %Recovery / RPD Flag * - %Recovery / RPD Outside Limits

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Form 4

Method Blank Summary

Volatiles by by EPA 8260

Workorder

HS22100575

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
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Phone (281) 530-5656 Fax (281) 530-5887
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Form 4 - Method Blank Summary

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

Volatiles by by EPA 8260

Client Sample ID	Type	Lab Sample ID	File ID	Date Analyzed	Run ID
METHOD BLANK	MBLK	VBLKW-221015	X101507.D	10/15/22 13:10	VOA6_419507
VLCSW-221015	LCS	VLCSW-221015	X101505.D	10/15/22 12:28	VOA6_419507
Trip Blank-221010	SAMP	HS22100575-10	X101509.D	10/15/22 13:52	VOA6_419507
50WW09-221010	SAMP	HS22100575-01	X101513.D	10/15/22 15:17	VOA6_419507
50WW22-221010	SAMP	HS22100575-03	X101514.D	10/15/22 15:38	VOA6_419507
50WW23-221010	SAMP	HS22100575-04	X101515.D	10/15/22 15:59	VOA6_419507
50WW15-221010	SAMP	HS22100575-06	X101516.D	10/15/22 16:20	VOA6_419507
50WW16-221010	SAMP	HS22100575-07	X101517.D	10/15/22 16:41	VOA6_419507
50WW16-221010-FD	SAMP	HS22100575-08	X101518.D	10/15/22 17:02	VOA6_419507
50WW18-221010	SAMP	HS22100575-09	X101519.D	10/15/22 17:23	VOA6_419507
50WW05-221010	SAMP	HS22100575-05	X101522.D	10/15/22 18:26	VOA6_419507
50WW08-221010	SAMP	HS22100575-02	X101523.D	10/15/22 18:47	VOA6_419507
BatchQC	MS	HS22100577-01MS	X101528.D	10/15/22 20:33	VOA6_419507
BatchQC	MSD	HS22100577-01MSD	X101529.D	10/15/22 20:54	VOA6_419507

Form 4 - Method Blank Summary

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

Volatiles by by EPA 8260

Client Sample ID	Type	Lab Sample ID	File ID	Date Analyzed	Run ID
METHOD BLANK	MBLK	VBLKW-221017	X101707.D	10/17/22 12:35	VOA6_419606
VLCSW-221017	LCS	VLCSW-221017	X101705.D	10/17/22 11:53	VOA6_419606
BatchQC	MS	HS22100604-02MS	X101719.D	10/17/22 16:48	VOA6_419606
BatchQC	MSD	HS22100604-02MSD	X101720.D	10/17/22 17:09	VOA6_419606
50WW05-221010	SAMP	HS22100575-05	X101721.D	10/17/22 17:30	VOA6_419606
50WW08-221010	SAMP	HS22100575-02	X101722.D	10/17/22 17:51	VOA6_419606

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Form 5

Instrument Performance Check

Workorder

HS22100575

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
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Form 5 - Instrument Performance Check

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

RunID
VOA6_419504

Tune File X101401.D 10/14/22 11:05

m / e	Ion Abundance Criterion	%RA
50	15.0 - 40.0% of mass 95	15.8 (15.8)
75	30.0 - 60.0% of mass 95	43.2 (43.2)
95	Base peak, 100% RA	100 (100)
96	5.0 - 9.0% of mass 95	6.7 (6.73)
173	Less than 2.0% of mass 174	0.4 (0.41) 1
174	50.0 - 120.0% of mass 95	99.6 (99.6)
175	4.0 - 9.0% of mass 174	6.5 (6.5) 1
176	93.0 - 101.0% of mass 174	97.7 (98.1) 1
177	5.0 - 9.0% of mass 176	6.1 (6.21) 2

Value is % of mass 1) 174 2) 176 RA - Relative Abundance

This check applies to the following analyses

	Type	Date Analyzed	Lab File ID	Sample ID
1	ICAL1	10/14/22 11:26	X101402	VSTD000.25
2	ICAL2	10/14/22 12:08	X101403	VSTD000.5
3	ICAL3	10/14/22 12:29	X101404	VSTD001
4	ICAL4	10/14/22 12:50	X101405	VSTD002
5	ICAL6	10/14/22 13:32	X101407	VSTD020
6	ICAL7	10/14/22 13:53	X101408	VSTD050
7	ICAL8	10/14/22 14:14	X101409	VSTD100
8	ICAL9	10/14/22 14:35	X101410	VSTD150
9	ICAL	10/14/22 14:56	X101411	VSTD200
10	ICAL5	10/14/22 15:59	X101414	VSTD005
11	ICV	10/14/22 16:41	X101416	CCV

Form 5 - Instrument Performance Check

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

RunID
VOA6_419507

Tune File X101501.D 10/15/22 11:04

m / e	Ion Abundance Criterion	%RA
50	15.0 - 40.0% of mass 95	15.4 (15.4)
75	30.0 - 60.0% of mass 95	43.8 (43.8)
95	Base peak, 100% RA	100 (97.4)
96	5.0 - 9.0% of mass 95	7.2 (7.21)
173	Less than 2.0% of mass 174	0.6 (0.614) 1
174	50.0 - 120.0% of mass 95	102.7 (103)
175	4.0 - 9.0% of mass 174	7.4 (7.22) 1
176	93.0 - 101.0% of mass 174	99.9 (97.3) 1
177	5.0 - 9.0% of mass 176	6.5 (6.54) 2

Value is % of mass 1) 174 2) 176 RA - Relative Abundance

This check applies to the following analyses

	Type	Date Analyzed	Lab File ID	Sample ID
1	CCV	10/15/22 11:46	X101503	CCV
2	CCB	10/15/22 12:07	X101504	CCB
3	LCS	10/15/22 12:28	X101505	VLCSW-221015
4	MBLK	10/15/22 13:10	X101507	VBLKW-221015
5	SAMP	10/15/22 13:52	X101509	Trip Blank-221010
6	SAMP	10/15/22 15:17	X101513	50WW09-221010
7	SAMP	10/15/22 15:38	X101514	50WW22-221010
8	SAMP	10/15/22 15:59	X101515	50WW23-221010
9	SAMP	10/15/22 16:20	X101516	50WW15-221010
10	SAMP	10/15/22 16:41	X101517	50WW16-221010
11	SAMP	10/15/22 17:02	X101518	50WW16-221010-FD
12	SAMP	10/15/22 17:23	X101519	50WW18-221010
13	SAMP	10/15/22 18:26	X101522	50WW05-221010
14	SAMP	10/15/22 18:47	X101523	50WW08-221010
15	MS	10/15/22 20:33	X101528	ZZZZZZMS
16	MSD	10/15/22 20:54	X101529	ZZZZZZMSD
17	CCV_EN	10/15/22 21:15	X101530	CCV-END

Form 5 - Instrument Performance Check

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

RunID
VOA6_419606

Tune File X101701.D 10/17/22 10:29

m / e	Ion Abundance Criterion	%RA
50	15.0 - 40.0% of mass 95	15.1 (15.1)
75	30.0 - 60.0% of mass 95	43.7 (43.7)
95	Base peak, 100% RA	100 (100)
96	5.0 - 9.0% of mass 95	6.6 (6.63)
173	Less than 2.0% of mass 174	0.6 (0.581) 1
174	50.0 - 120.0% of mass 95	98.1 (98.1)
175	4.0 - 9.0% of mass 174	7.1 (7.21) 1
176	93.0 - 101.0% of mass 174	96.1 (98) 1
177	5.0 - 9.0% of mass 176	6.3 (6.6) 2

Value is % of mass 1) 174 2) 176 RA - Relative Abundance

This check applies to the following analyses

	Type	Date Analyzed	Lab File ID	Sample ID
1	CCV	10/17/22 11:11	X101703	CCV
2	CCB	10/17/22 11:32	X101704	CCB
3	LCS	10/17/22 11:53	X101705	VLCSW-221017
4	MBLK	10/17/22 12:35	X101707	VBLKW-221017
5	MS	10/17/22 16:48	X101719	ZZZZZZMS
6	MSD	10/17/22 17:09	X101720	ZZZZZZMSD
7	SAMP	10/17/22 17:30	X101721	50WW05-221010
8	SAMP	10/17/22 17:51	X101722	50WW08-221010
9	CCV_EN	10/17/22 18:12	X101723	CCV-END

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Form 6

Initial Calibration Data

Workorder

HS22100575

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
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Initial Calibration Data

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 50 October 2022

Workorder HS22100575

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126
ICAL End Date 14-OCT-2022 1559

Calibration Files

Level 1 ..voa6.i\X221014.b\X101402.D
Level 2 ..voa6.i\X221014.b\X101403.D
Level 3 ..voa6.i\X221014.b\X101404.D
Level 4 ..voa6.i\X221014.b\X101405.D
Level 5 ..voa6.i\X221014.b\X101414.D
Level 6 ..voa6.i\X221014.b\X101407.D
Level 7 ..voa6.i\X221014.b\X101408.D
Level 8 ..voa6.i\X221014.b\X101409.D
Level 9 ..voa6.i\X221014.b\X101410.D
Level 10 ..voa6.i\X221014.b\X101411.D

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Dichlorodifluoromethane	NE 162160	1958 313626	3165 468527	5960 585094	15457	64041	LINR	-0.02304	0.36090		0.99789	
Chloromethane	NE 179926	2218 345134	4414 522756	8169 708783	20317	75278	LINR	-0.00680	0.42162		0.99969	
Propionitrile	NE 0.04482	0.03636 0.04476	0.04205 0.04573	0.04892 0.04495	0.04083	0.04664	AVRG		0.04389		8.39144	
Vinyl Chloride	NE 0.38257	0.41328 0.37204	0.41188 0.38359	0.35003 0.36616	0.36840	0.37983	AVRG		0.38086		5.43214	
Bromomethane	NE 107545	1461 211517	3052 329295	5824 434479	15054	48128	LINR	-0.01183	0.26002		0.99941	
Chloroethane	NE 0.23694	0.23364 0.22833	0.23059 0.23142	0.21765 0.21779	0.23370	0.24283	AVRG		0.23032		3.58520	
Trichlorofluoromethane	NE 0.53219	0.52344 0.51639	0.51894 0.52883	0.41810 0.49659	0.48147	0.53399	AVRG		0.50555		7.32991	
Acrolein	NE 0.02819	0.02463 0.02515	0.03359 0.02633	0.02555 0.02738	0.03232	0.02794	AVRG		0.02790		11.23309	
Acetone	NE 78599	1015 175831	1718 248410	3884 NE	10022	34498	LINR	-0.00334	0.10100		0.99878	*
1,1-Dichloroethene	NE 0.32082	0.39091 0.31684	0.30635 0.31924	0.31602 0.30423	0.30557	0.33055	AVRG		0.32339		8.25882	

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Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Isobutyl Alcohol	NE 425892	6709 870462	10330 1270958	17194 1690451	47767	177006	LINR	-0.20064	0.05086		0.99991	
Acetonitrile	NE 0.04150	0.03050 0.04010	0.03723 0.04067	0.03490 0.04214	0.04097	0.04265	AVRG		0.03896		10.32411	
Allyl Chloride	NE 0.85726	0.84844 0.83903	0.87376 0.86213	0.89732 0.85942	0.84202	0.88285	AVRG		0.86247		2.22942	
Iodomethane	NE 473427	1369 1041949	3290 1553365	6956 NE	27348	155126	QUAD	0.06840	1.70374	-0.03500	0.99935	
Acrylonitrile	NE 107044	699 215625	1067 322717	2845 422900	10352	36550	LINR	0.02515	0.12855		0.99968	
Methylene Chloride	NE 202027	3314 399989	5391 591753	9699 773591	26716	87632	LINR	-0.02674	0.46634		0.99967	
Methyl tert-butyl ether	NE 1.15594	1.07828 1.13673	1.28481 1.15529	1.36952 1.14392	1.20593	1.21935	AVRG		1.19442		7.36817	
Carbon Disulfide	NE 1.13753	1.17916 1.13541	1.10593 1.16274	1.04230 1.11136	1.17504	1.14270	AVRG		1.13246		3.73697	
trans-1,2-Dichloroethene	NE 0.44889	0.48656 0.44060	0.39906 0.44521	0.41386 0.42900	0.44610	0.45705	AVRG		0.44070		5.71716	
Vinyl Acetate	NE 1.03002	1.00666 0.99215	0.90040 0.97988	1.00473 0.95845	1.00586	1.06528	AVRG		0.99371		4.64172	
1,1-Dichloroethane	NE 0.75852	0.80752 0.74923	0.74776 0.75167	0.71013 0.72366	0.75223	0.77337	AVRG		0.75268		3.68665	
Chloroprene	NE 0.12642	0.14775 0.12397	0.12223 0.12881	0.14504 0.11692	0.12105	0.11908	AVRG		0.12792		8.66885	

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Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559 ICAL Summary Page 3 / 11

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
2-Butanone	NE 0.12225	0.14478 0.12860	0.10865 0.13324	0.11266 0.12913	0.09289	0.11275	AVRG		0.12055		12.84834	*
Methacrylonitrile	NE 0.29906	0.31668 0.28887	0.34141 0.30043	0.37295 0.29595	0.29598	0.30607	AVRG		0.31305		8.73199	
2,2-Dichloropropane	NE 0.61894	0.62717 0.61950	0.56152 0.62793	0.51605 0.59158	0.65449	0.63925	AVRG		0.60627		7.14501	
cis-1,2-Dichloroethene	NE 0.52487	0.56579 0.51735	0.51647 0.51701	0.48116 0.50398	0.53854	0.53512	AVRG		0.52225		4.51102	
Chloroform	NE 0.79487	0.99405 0.79463	0.82082 0.78800	0.77249 0.77107	0.78938	0.82524	AVRG		0.81673		8.45133	
Bromochloromethane	NE 0.27507	0.36617 0.28026	0.29176 0.27334	0.26575 0.26110	0.28958	0.28498	AVRG		0.28756		10.85543	
1,1,1-Trichloroethane	NE 0.65505	0.68570 0.65313	0.61399 0.66897	0.59255 0.63885	0.64504	0.65500	AVRG		0.64537		4.33008	
1,1-Dichloropropene	NE 0.40313	0.47373 0.39591	0.39340 0.40450	0.35959 0.38632	0.37305	0.39868	AVRG		0.39870		7.96090	
1,2-Dichloroethane	NE 0.38496	0.36941 0.37605	0.33214 0.37203	0.34762 0.38304	0.36872	0.38648	AVRG		0.36894		4.91630	
Carbon Tetrachloride	NE 0.38191	0.47437 0.38423	0.43549 0.39531	0.37061 0.37926	0.37365	0.37674	AVRG		0.39684		8.83184	
Benzene	NE 1.23451	1.44361 1.23911	1.31728 1.23124	1.19369 1.20954	1.24455	1.25769	AVRG		1.26347		6.00071	
Trichloroethene	NE 0.36343	0.44765 0.37256	0.37168 0.37789	0.34063 0.36679	0.37374	0.37041	AVRG		0.37609		7.69366	

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ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Bromodichloromethane	NE 0.40090	0.45671 0.41687	0.41504 0.41469	0.38361 0.41615	0.40699	0.40199	AVRG		0.41255		4.77805	
Methyl Methacrylate	NE 0.29990	0.34047 0.30857	0.29847 0.31359	0.28773 0.31201	0.31441	0.31242	AVRG		0.30973		4.71081	
2-Chloroethylvinyl ether	NE 117091	2105 250016	2521 389632	3536 508948	10768	46277	LINR	0.06210	0.10666		0.99925	
1,2-Dichloropropane	NE 0.30777	0.42539 0.31215	0.33421 0.30581	0.29165 0.30444	0.33232	0.31920	AVRG		0.32588		12.18189	
2-Nitropropane	NE 0.62580	3.05901 0.64762	1.02681 0.65282	0.61330 0.63744	0.64754	0.65101	AVRG		0.95126		84.18592	*
Dibromomethane	NE 0.19631	0.14678 0.20037	0.22284 0.19563	0.19862 0.19595	0.20318	0.19574	AVRG		0.19505		10.27405	
4-Methyl-2-Pentanone	NE 260737	4892 544315	8728 810393	12989 1062135	28218	107201	LINR	0.00433	0.24088		0.99987	
cis-1,3-Dichloropropene	NE 0.52277	0.58377 0.54397	0.45609 0.54363	0.49027 0.54242	0.54036	0.52435	AVRG		0.52751		6.90165	
Ethyl Methacrylate	NE 0.38866	0.37354 0.40735	0.42984 0.41978	0.36524 0.42215	0.38377	0.39477	AVRG		0.39835		5.70324	
Toluene	NE 1.44995	1.73884 1.45816	1.46696 1.44974	1.36848 1.41792	1.54082	1.46616	AVRG		1.48411		7.12667	
trans-1,3-Dichloropropene	NE 0.42650	0.40471 0.44278	0.37948 0.44379	0.37891 0.44583	0.42120	0.41942	AVRG		0.41807		6.17204	
2-Hexanone	NE 0.14465	0.21443 0.15901	0.17595 0.16187	0.16560 0.16244	0.15654	0.14228	AVRG		0.16475		12.90658	

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1,1,2-Trichloroethane	NE 0.25443	0.35275 0.25720	0.30759 0.25308	0.26318 0.25170	0.27497	0.26125	AVRG		0.27513		12.32553	
1,3-Dichloropropane	NE 0.51185	0.73471 0.52414	0.60302 0.51720	0.52812 0.51551	0.55276	0.52936	AVRG		0.55741		12.95834	
Dibromochloromethane	NE 211264	3780 440505	5151 650961	8098 870695	21891	85257	LINR	0.01138	0.39297		0.99974	
Tetrachloroethene	NE 0.33686	0.40481 0.33614	0.34788 0.34319	0.31889 0.32701	0.34871	0.34885	AVRG		0.34582		7.05507	
1,2-Dibromoethane	NE 0.32431	0.45069 0.33395	0.33923 0.32832	0.31739 0.33022	0.33795	0.33111	AVRG		0.34368		11.83699	
1-Chlorohexane	NE 0.24108	0.67807 0.24421	0.31488 0.24975	0.16192 0.23524	0.24331	0.23746	AVRG		0.28955		52.04473	*
Chlorobenzene	NE 0.98572	1.27526 0.99241	1.10570 0.98778	0.96748 0.97810	1.08428	1.00894	AVRG		1.04285		9.56193	
1,1,1,2-Tetrachloroethane	NE 0.35956	0.42320 0.37285	0.43031 0.37022	0.34456 0.37296	0.37954	0.36756	AVRG		0.38008		7.45446	
Ethylbenzene	NE 0.50709	0.73231 0.50982	0.54175 0.51383	0.47263 0.50002	0.53295	0.51335	AVRG		0.53597		14.21170	
m,p-Xylenes	NE 0.63679	0.74889 0.63311	0.67465 0.64039	0.56424 0.61808	0.66172	0.65067	AVRG		0.64761		7.60383	
o-Xylene	NE 0.60752	0.71633 0.61063	0.67951 0.61198	0.57808 0.59859	0.65582	0.62485	AVRG		0.63148		6.96223	
Styrene	NE 1.03216	0.97853 1.05488	1.03910 1.04619	0.78122 1.02720	1.08294	1.04201	AVRG		1.00936		8.90498	

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Bromoform	NE 131593	1906 275605	3244 416750	4836 556325	12900	51773	LINR	0.02247	0.25128		0.99956	
Isopropylbenzene	NE 1.50440	1.79417 1.50639	1.54501 1.53844	1.34135 1.48418	1.62286	1.51632	AVRG		1.53923		7.85755	
1,1,2,2-Tetrachloroethane	NE 191262	3092 392179	4913 578090	8718 755347	22472	79481	LINR	-0.00596	0.67757		0.99988	
1,2,3-Trichloropropane	NE 0.48583	0.52083 0.52346	0.59398 0.50363	0.52934 0.51236	0.56927	0.49409	AVRG		0.52587		6.67464	
trans-1,4-Dichloro-2-butene	NE 43736	654 91591	967 141358	1568 187111	4568	16478	LINR	0.02851	0.08473		0.99935	
n-Propylbenzene	NE 965817	15732 1931706	19374 2927124	32397 3699223	105117	386450	LINR	-0.00509	3.35826		0.99987	
Bromobenzene	NE 0.88929	0.99826 0.90778	1.05022 0.90296	0.84011 0.91386	0.95898	0.92245	AVRG		0.93155		6.70486	
1,3,5-Trimethylbenzene	NE 2.48627	2.71812 2.47868	2.61124 2.47329	2.26246 2.43164	2.78486	2.55584	AVRG		2.53360		6.18598	
2-Chlorotoluene	NE 2.07510	2.88221 2.07779	2.49732 2.05983	2.12912 2.03906	2.35587	2.16821	AVRG		2.25384		12.49173	
4-Chlorotoluene	NE 2.34424	3.17826 2.35039	2.72766 2.32653	2.16095 2.31437	2.56911	2.43716	AVRG		2.48985		12.26296	
tert-Butylbenzene	NE 2.09806	2.60380 2.09938	2.28581 2.11253	1.94081 2.08975	2.40500	2.14804	AVRG		2.19813		9.13567	
1,2,4-Trimethylbenzene	NE 2.46672	3.43726 2.47083	2.65408 2.48656	2.24193 2.45374	2.76114	2.56924	AVRG		2.61572		13.00356	

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sec-Butylbenzene	NE 2.84707	3.69697 2.86300	3.02038 2.88942	2.50051 2.83873	3.29253	2.86720	AVRG		2.97954		11.35369	
p-Isopropyltoluene	NE 2.54887	3.19661 2.56556	2.57054 2.59252	2.16609 2.54671	2.98280	2.59150	AVRG		2.64013		11.07456	
1,3-Dichlorobenzene	NE 1.47575	1.78656 1.50621	1.68828 1.51164	1.37746 1.50683	1.74464	1.49649	AVRG		1.56598		8.86177	
1,4-Dichlorobenzene	NE 1.50160	1.89665 1.51308	2.00695 1.52421	1.39703 1.50583	1.79285	1.57052	AVRG		1.63430		12.87370	
Benzyl Chloride	NE 0.43519	1.83111 0.47895	0.62164 0.50289	0.40400 0.51328	0.48411	0.42106	AVRG		0.63247		71.78882	*
n-Butylbenzene	NE 2.07660	2.19765 2.07910	1.96128 2.09230	1.58438 2.05970	2.51461	2.05183	AVRG		2.06860		11.62544	
1,2-Dichlorobenzene	NE 376934	5627 770867	10311 1158123	15019 1492210	48078	154590	LINR	-0.00440	1.34373		0.99994	
1,2-Dibromo-3-Chloropropane	NE 19399	303 41420	475 65930	903 87502	2467	7513	LINR	0.03680	0.07806		0.99802	
1,2,4-Trichlorobenzene	NE 166885	2124 357352	NE 563938	3514 749105	33011	63618	LINR	0.03696	0.66899		0.99767	*
Hexachlorobutadiene	NE 128928	1814 270788	2554 408156	4115 534882	22062	51139	QUAD	-0.00930	2.20996	-0.06935	0.99973	
Naphthalene	NE 0.74159	1.04025 0.80661	0.98801 0.88567	0.74844 0.91338	0.84251	0.69369	AVRG		0.85113		13.71169	
1,2,3-Trichlorobenzene	NE 0.36788	0.51589 0.40196	0.45802 0.43082	0.35400 0.44737	0.40894	0.36177	AVRG		0.41629		12.68082	

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Ethyl Acetate	NE 147790	2349 309571	3696 446269	5696 579438	17751	66369	LINR	-0.02221	0.35196		0.99919	
Methyl Acrylate	NE 145777	NE 329295	NE 493482	889 650975	10862	66109	LINR	0.03920	0.39709		0.99924	*
n-Butanol	NE 0.00668	NE 0.00731	0.00404 0.00801	0.00339 0.00797	0.00366	0.00628	AVRG		0.00592		32.71740	*
Ethyl Acrylate	NE 0.98161	NE 0.95334	NE 0.97749	0.38521 0.98551	0.46749	1.01088	AVRG		0.82308		33.11604	*
Cyclohexanone	NE 0.01526	0.01653 0.01516	0.02327 0.01645	0.01919 0.01659	0.01903	0.01646	AVRG		0.01755		14.65734	
1,4-Dioxane	0.00170 0.00396	0.00496 0.00391	0.00378 0.00412	0.00386 0.00388	0.00389	0.00398	AVRG		0.00380		21.36261	*
n-Hexane	NE 0.46767	0.48204 0.44812	0.41658 0.45305	0.39724 0.41720	0.44872	0.45897	AVRG		0.44329		6.18028	
Freon TF	NE 0.33340	0.30002 0.31908	0.27847 0.32436	0.28985 0.29808	0.29802	0.32775	AVRG		0.30767		6.17471	
Methyl Acetate	NE 0.22163	0.24816 0.22693	0.19047 0.22138	0.19538 0.22132	0.20710	0.22168	AVRG		0.21712		8.01052	
Methylcyclohexane	NE 0.66509	0.71004 0.65559	0.62205 0.66647	0.63485 0.68501	0.67571	0.67751	AVRG		0.66581		3.95203	
Isopropyl alcohol	NE 126400	3311 261455	4080 402867	5094 530448	13792	50397	LINR	0.15528	0.01598		0.99956	
Amyl alcohol	NE 0.00503	0.01795 0.00554	0.00599 0.00607	0.00401 0.00604	0.00607	0.00495	AVRG		0.00685		61.60967	*

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Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 50 October 2022

Workorder HS22100575

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Allyl alcohol	NE 0.02338	0.02410 0.02241	0.02083 0.02265	0.01986 0.02086	0.02244	0.02295	AVRG		0.02216		6.18028	
4-Methyl-2-pentanol	NE 0.03866	0.04259 0.04039	0.04907 0.04383	0.05542 0.04368	0.05202	0.04364	AVRG		0.04548		12.15642	
Tert-butyl alcohol	NE 241419	5696 498491	7925 769833	12326 1015592	30141	100144	LINR	0.04267	0.03051		0.99952	
Diethyl ether	NE 0.23232	0.25720 0.22321	0.23976 0.22641	0.26545 0.22525	0.24552	0.24794	AVRG		0.24034		6.20536	
1,3-Butadiene	NE 0.27187	0.32310 0.26095	0.26635 0.26902	0.25626 0.25456	0.26209	0.28120	AVRG		0.27171		7.70764	
Cyclohexane	NE 0.62396	0.59696 0.57533	0.52635 0.59337	0.51411 0.54677	0.54877	0.64041	AVRG		0.57400		7.55531	
Tetrahydrofuran	NE 0.05029	NE 0.05069	NE 0.05144	0.05679 0.05039	0.04609	0.05350	AVRG		0.05131		6.37980	*
alpha-Methylstyrene	NE 340672	5074 703458	7155 1066358	11366 1360092	38182	134711	LINR	0.00504	1.23208		0.99990	
Diisopropyl ether	NE 1.21951	NE 1.16415	1.27281 1.18527	1.37005 1.16505	1.25767	1.28319	AVRG		1.23971		5.69993	*
Dichlorofluoromethane	NE 0.58679	NE 0.54886	NE 0.57677	NE 0.58573	NE	0.62114	AVRG		0.58386		4.43085	*
Propylene oxide	NE 0.02960	NE 0.03021	0.04218 0.03099	0.04453 0.02918	0.02781	0.03501	AVRG		0.03369		18.84591	*
3-Methyl-1-butanol	NE 0.00484	0.02260 0.00571	0.00639 0.00606	0.00617 0.00610	0.00476	0.00506	AVRG		0.00752		75.62682	*

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Initial Calibration Data

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 50 October 2022

Workorder HS22100575

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559 ICAL Summary Page 10 / 11

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Butyl acrylate	NE 0.49102	0.33402 0.54383	0.43485 0.57829	0.48992 0.59316	0.54760	0.50674	AVRG		0.50216		15.89583	*
1,2,3-Trimethylbenzene	NE 2.25708	2.00675 2.20926	2.30768 2.23730	2.39910 2.30636	2.70311	2.38885	AVRG		2.31283		8.07209	
Ethanol	NE 0.00179	NE 0.00187	NE 0.00180	NE 0.00165	0.00226	0.00184	AVRG		0.00187		11.01001	*
1-Propanol	NE 0.00885	NE 0.00693	NE 0.00706	0.00888 0.00723	0.00789	0.00833	AVRG		0.00788		10.55118	*
tert-Butyl formate	NE 0.23371	NE 0.24156	NE 0.25471	NE 0.24882	0.31093	0.24534	AVRG		0.25584		10.90160	*
3,3-Dimethyl-1-butanol	NE 0.01942	NE 0.02066	NE 0.02243	NE 0.02234	0.02714	0.02193	AVRG		0.02232		11.78123	*
tert-Amyl methyl ether	NE 1.29907	3.35428 0.26866	2.05457 0.30973	1.60144 0.29935	0.21585	1.45981	AVRG		1.20697		88.11652	*
tert-Butyl ethyl ether	NE 1.26866	1.17274 1.22140	1.40740 1.24940	1.48374 1.23070	1.33521	1.35326	AVRG		1.30250		7.67914	
tert-Amyl alcohol	NE 0.02337	0.18756 0.02416	0.06652 0.02547	0.03814 0.02488	0.03109	0.02453	AVRG		0.04953		108	*
Epichlorohydrin	NE 0.01876	0.02576 0.01857	0.02574 0.02000	0.02373 0.01949	0.02269	0.01841	AVRG		0.02146		14.21554	
Isoprene	NE 0.09163	NE 0.09240	0.12670 0.09339	0.12047 0.08727	0.10182	0.10000	AVRG		0.10171		14.12900	*
n-Amyl acetate	NE 0.41712	NE 0.45908	NE 0.47676	NE 0.48671	NE	0.44368	AVRG		0.45667		6.04115	*

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Initial Calibration Data

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 50 October 2022

Workorder HS22100575

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559 ICAL Summary Page 11 / 11

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Isopropyl acetate	NE 0.69207	1.12588 0.71261	0.82181 0.69869	0.84413 0.70609	0.72417	0.71336	AVRG		0.78209		17.93276	*
n-Butyl acetate	NE 0.15787	NE 0.15460	0.32201 0.16833	0.31322 0.16344	0.20273	0.17995	AVRG		0.20777		33.44908	*
Acetaldehyde	NE 36228	NE 69355	NE 95544	4205 NE	5574	17646	LINR	-0.48198	0.01888		0.99790	*
Methyl Amyl Ketone	NE 0.44930	NE 0.50438	0.39176 0.54945	0.46615 0.56126	0.51748	0.47218	AVRG		0.48899		11.40192	*
Dimethyl Disulfide	NE 0.74551	0.56633 0.75254	0.67041 0.77006	0.61276 0.79095	0.68510	0.72540	AVRG		0.70212		10.70490	
1,2-Dichloroethylene (total)	NE 0.48688	0.52617 0.47897	0.45776 0.48111	0.44751 0.46649	0.49232	0.49608	AVRG		0.48148		4.81803	
Xylenes (total)	NE 0.57826	0.68306 0.57698	0.61552 0.58264	0.52357 0.56212	0.60558	0.58690	AVRG		0.59051		7.36042	
Dibromofluoromethane	NE 182656	1913 391368	3430 563177	8012 729143	21880	77480	LINR	-0.01306	0.44454		0.99909	
1,2-Dichloroethane-d4	NE 180049	2199 390623	4127 556716	7583 714756	20670	76679	LINR	-0.01567	0.43781		0.99855	
Toluene-d8	NE 1.19378	1.32647 1.27809	1.06821 1.23994	1.31483 1.21806	1.38448	1.25360	AVRG		1.25305		7.25871	
4-Bromofluorobenzene	NE 241297	3195 515729	5261 754914	10456 966365	33148	101212	LINR	-0.00710	0.44289		0.99946	

NE - Not Evaluated, AVRG - Averaged, LINR - Linear Regression, WLIN - Weighted Linear, QUAD - Quadratic, * - Curve Fit Outside Limits

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Form 6I

Initial Calibration Verification (ICV)

Workorder

HS22100575

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Initial Calibration Verification (ICV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 50 October 2022

Workorder HS22100575

RunID VOA6_419504

Volatiles Organics by Method 8260C

Instrument ID voa6.i ICAL Date 14-OCT-2022
Lab File ID X101416.D ICAL Time 1353
?VAL? ?VAL? Conc Units ug/L
Analysis Type VOA Level LOW

Compound	Amount Added	Amount Recovered	% Recovered	Limits	Q
1,1,1,2-Tetrachlor	50.00	47.11	94.23	80-120	
1,1,1-Trichloroeth	50.00	47.76	95.52	80-120	
1,1,2,2-Tetrachlor	50.00	48.31	96.62	80-120	
Freon TF	50.00	49.64	99.29	80-120	
Methyl Acetate	50.00	45.90	91.80	80-120	
Cyclohexane	50.00	49.81	99.63	80-120	
Methylcyclohexane	50.00	50.57	101.15	80-120	
Carbon Disulfide	100.00	93.39	93.39	80-120	
2-Hexanone	100.00	87.79	87.80	80-120	
1,1,2-Trichloroeth	50.00	44.88	89.76	80-120	
1,1-Dichloroethane	50.00	46.86	93.74	80-120	
1,1-Dichloroethene	50.00	45.81	91.63	80-120	
1,1-Dichloropropen	50.00	48.11	96.23	80-120	
1,2,3-Trichloroben	50.00	49.99	100.00	80-120	
1,2,3-Trichloropro	50.00	46.48	92.96	80-120	
1,2,4-Trichloroben	50.00	48.04	96.09	80-120	
1,2,4-Trimethylben	50.00	46.78	93.57	80-120	
1,2-Dibromo-3-Chlo	50.00	46.19	92.40	80-120	
1,2-Dibromoethane	50.00	46.35	92.72	80-120	
Acrolein	100.00	95.70	95.70	80-120	
Acrylonitrile	100.00	96.00	96.01	80-120	
1,2-Dichlorobenzen	50.00	48.63	97.27	80-120	
1,2-Dichloroethane	50.00	50.48	100.98	80-120	
1,2-Dichloropropan	50.00	46.84	93.69	80-120	
1,3,5-Trimethylben	50.00	48.63	97.28	80-120	
1,3-Dichlorobenzen	50.00	47.11	94.22	80-120	
1,3-Dichloropropan	50.00	45.21	90.42	80-120	
1,4-Dichlorobenzen	50.00	45.80	91.60	80-120	
1-Chlorohexane	50.00	41.85	83.70	80-120	
2,2-Dichloropropan	50.00	49.89	99.78	80-120	
2-Butanone	100.00	98.21	98.21	80-120	
2-Chlorotoluene	50.00	45.11	90.22	80-120	
4-Chlorotoluene	50.00	46.47	92.96	80-120	
p-Isopropyltoluene	50.00	48.33	96.66	80-120	

Initial Calibration Verification (ICV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 50 October 2022

Workorder HS22100575

RunID VOA6_419504

Volatiles Organics by Method 8260C

Instrument ID voa6.i ICAL Date 14-OCT-2022
Lab File ID X101416.D ICAL Time 1353
?VAL? ?VAL? Conc Units ug/L
Analysis Type VOA Level LOW

Compound	Amount Added	Amount Recovered	% Recovered	Limits	Q
4-Methyl-2-Pentano	100.00	94.04	94.05	80-120	
Acetone	100.00	102.11	102.12	80-120	
Benzene	50.00	47.45	94.91	80-120	
Bromobenzene	50.00	47.68	95.37	80-120	
Bromochloromethane	50.00	46.35	92.71	80-120	
Bromodichlorometha	50.00	48.01	96.03	80-120	
Bromoform	50.00	46.73	93.47	80-120	
Bromomethane	50.00	48.41	96.83	80-120	
Carbon Tetrachlori	50.00	46.63	93.27	80-120	
Chlorobenzene	50.00	46.74	93.48	80-120	
Chloroethane	50.00	46.85	93.71	80-120	
Chloroform	50.00	46.14	92.29	80-120	
Chloromethane	50.00	46.78	93.56	80-120	
cis-1,2-Dichloroet	50.00	47.22	94.45	80-120	
cis-1,3-Dichloropr	50.00	49.91	99.83	80-120	
Dibromochlorometha	50.00	47.28	94.58	80-120	
Dibromomethane	50.00	48.45	96.91	80-120	
Dichlorodifluorome	50.00	48.37	96.75	80-120	
Ethylbenzene	50.00	47.20	94.41	80-120	
Hexachlorobutadien	50.00	51.01	102.02	80-120	
Isopropylbenzene	50.00	48.46	96.94	80-120	
m,p-Xylenes	100.00	97.72	97.72	80-120	
Methyl tert-butyl	50.00	46.76	93.54	80-120	
Methylene Chloride	50.00	48.60	97.22	80-120	
n-Butylbenzene	50.00	49.91	99.83	80-120	
n-Propylbenzene	50.00	49.20	98.40	80-120	
Naphthalene	50.00	48.29	96.60	80-120	
o-Xylene	50.00	47.74	95.49	80-120	
sec-Butylbenzene	50.00	47.19	94.39	80-120	
Styrene	50.00	50.89	101.79	80-120	
tert-Butylbenzene	50.00	46.90	93.81	80-120	
Tetrachloroethene	50.00	48.49	97.00	80-120	
Toluene	50.00	48.03	96.07	80-120	
trans-1,2-Dichloro	50.00	47.97	95.96	80-120	

Initial Calibration Verification (ICV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 50 October 2022

Workorder HS22100575

RunID VOA6_419504

Volatiles Organics by Method 8260C

Instrument ID voa6.i ICAL Date 14-OCT-2022
Lab File ID X101416.D ICAL Time 1353
?VAL? ?VAL? Conc Units ug/L
Analysis Type VOA Level LOW

Compound	Amount Added	Amount Recovered	% Recovered	Limits	Q
trans-1,3-Dichloro	50.00	50.60	101.21	80-120	
Trichloroethene	50.00	47.29	94.59	80-120	
Trichlorofluoromet	50.00	48.44	96.90	80-120	
Vinyl Chloride	50.00	45.59	91.18	80-120	
1,2-Dichloroethyle	100.00	95.20	95.20	80-120	
Xylenes (total)	150.00	145.46	96.98	80-120	
1,4-Dioxane	1000.00	943.52	94.35	80-120	
Dibromofluorometha	50.00	49.58	99.18	71-125	
1,2-Dichloroethane	50.00	48.62	97.24	70-125	
Toluene-d8	50.00	49.53	99.08	75-125	
4-Bromofluorobenze	50.00	50.58	101.18	72-125	

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Form 7

Continuing Calibration Verification (CCV)

Workorder

HS22100575

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Continuing Calibration Verification (CCV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 50 October 2022

Workorder HS22100575

RunID VOA6_419507

Volatiles Organics by Method 8260C

Instrument ID voa6.i Injection Date 15-OCT-2022 1146
Lab File ID X101503.D ICAL Date(s) 14-OCT-2022 14-OCT-2022
Analysis Type WATER ICAL Times 1126 1559
Lab Sample ID CCV Quant Type ISTD

Compound	$\overline{RRF}$ / Amount	RF50	CCV RRF50	Min RRF	%D / %Drift	Max %D / %Drift	Curve Type	Q
Dibromofluoromethane	50.0	49.78974	0.44847	0.100	0.42053	20.0	Linear	
1,2-Dichloroethane-d4	50.0	49.26091	0.43820	0.100	1.47818	20.0	Linear	
Toluene-d8	1.25305	1.20812	1.20812	0.100	3.58554	20.0	Averaged	
4-Bromofluorobenzene	50.0	49.55912	0.44213	0.100	0.88176	20.0	Linear	
Vinyl Chloride	0.38086	0.36220	0.36220	0.100	4.90186	20.0	Averaged	
1,1-Dichloroethene	0.32339	0.30419	0.30419	0.100	5.93920	20.0	Averaged	
cis-1,2-Dichloroethene	0.52225	0.49913	0.49913	0.100	4.42761	20.0	Averaged	
1,2-Dichloroethane	0.36894	0.36559	0.36559	0.100	0.90695	20.0	Averaged	
Trichloroethene	0.37609	0.35817	0.35817	0.200	4.76311	20.0	Averaged	
Tetrachloroethene	0.34582	0.33208	0.33208	0.200	3.97102	20.0	Averaged	

Continuing Calibration Verification (CCV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 50 October 2022

Workorder HS22100575

RunID VOA6_419507

Volatiles Organics by Method 8260C

Instrument ID voa6.i Injection Date 15-OCT-2022 2115
Lab File ID X101530.D ICAL Date(s) 14-OCT-2022 14-OCT-2022
Analysis Type WATER ICAL Times 1126 1559
Lab Sample ID CCV-END Quant Type ISTD

Compound	$\overline{RRF}$ / Amount	RF50	CCV RRF50	Min RRF	%D / %Drift	Max %D / %Drift	Curve Type	Q
Dibromofluoromethane	50.0	52.88157	0.47596	0.100	-5.76313	50.0	Linear	
1,2-Dichloroethane-d4	50.0	51.78547	0.46031	0.100	-3.57095	50.0	Linear	
Toluene-d8	1.25305	1.23291	1.23291	0.100	1.60751	50.0	Averaged	
4-Bromofluorobenzene	50.0	50.54944	0.45090	0.100	-1.09888	50.0	Linear	
Vinyl Chloride	0.38086	0.37040	0.37040	0.100	2.74746	50.0	Averaged	
1,1-Dichloroethene	0.32339	0.32398	0.32398	0.100	-0.18159	50.0	Averaged	
cis-1,2-Dichloroethene	0.52225	0.52826	0.52826	0.100	-1.15039	50.0	Averaged	
1,2-Dichloroethane	0.36894	0.36957	0.36957	0.100	-0.17022	50.0	Averaged	
Trichloroethene	0.37609	0.36863	0.36863	0.200	1.98265	50.0	Averaged	
Tetrachloroethene	0.34582	0.33287	0.33287	0.200	3.74432	50.0	Averaged	

Continuing Calibration Verification (CCV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 50 October 2022

Workorder HS22100575

RunID VOA6_419606

Volatiles Organics by Method 8260C

Instrument ID voa6.i Injection Date 17-OCT-2022 1111
Lab File ID X101703.D ICAL Date(s) 14-OCT-2022 14-OCT-2022
Analysis Type WATER ICAL Times 1126 1559
Lab Sample ID CCV Quant Type ISTD

Compound	$\overline{RRF}$ / Amount	RF50	CCV RRF50	Min RRF	%D / %Drift	Max %D / %Drift	Curve Type	Q
Dibromofluoromethane	50.0	50.43386	0.45420	0.100	-0.86771	20.0	Linear	
1,2-Dichloroethane-d4	50.0	49.07224	0.43655	0.100	1.85553	20.0	Linear	
Toluene-d8	1.25305	1.31237	1.31237	0.100	-4.73373	20.0	Averaged	
4-Bromofluorobenzene	50.0	53.95494	0.48107	0.100	-7.90988	20.0	Linear	
Vinyl Chloride	0.38086	0.40556	0.40556	0.100	-6.48437	20.0	Averaged	
1,1-Dichloroethene	0.32339	0.34359	0.34359	0.100	-6.24588	20.0	Averaged	
cis-1,2-Dichloroethene	0.52225	0.54727	0.54727	0.100	-4.78953	20.0	Averaged	
1,2-Dichloroethane	0.36894	0.36990	0.36990	0.100	-0.25883	20.0	Averaged	
Trichloroethene	0.37609	0.37240	0.37240	0.200	0.97917	20.0	Averaged	
Tetrachloroethene	0.34582	0.35653	0.35653	0.200	-3.09776	20.0	Averaged	

Continuing Calibration Verification (CCV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 50 October 2022

Workorder HS22100575

RunID VOA6_419606

Volatiles Organics by Method 8260C

Instrument ID voa6.i Injection Date 17-OCT-2022 1812
Lab File ID X101723.D ICAL Date(s) 14-OCT-2022 14-OCT-2022
Analysis Type WATER ICAL Times 1126 1559
Lab Sample ID CCV-END Quant Type ISTD

Compound	$\overline{RRF}$ / Amount	RF50	CCV RRF50	Min RRF	%D / %Drift	Max %D / %Drift	Curve Type	Q
Dibromofluoromethane	50.0	51.26287	0.46157	0.100	-2.52573	50.0	Linear	
1,2-Dichloroethane-d4	50.0	51.34521	0.45645	0.100	-2.69043	50.0	Linear	
Toluene-d8	1.25305	1.26490	1.26490	0.100	-0.94600	50.0	Averaged	
4-Bromofluorobenzene	50.0	52.98755	0.47250	0.100	-5.97511	50.0	Linear	
Vinyl Chloride	0.38086	0.40157	0.40157	0.100	-5.43568	50.0	Averaged	
1,1-Dichloroethene	0.32339	0.33626	0.33626	0.100	-3.97981	50.0	Averaged	
cis-1,2-Dichloroethene	0.52225	0.52198	0.52198	0.100	0.05312	50.0	Averaged	
1,2-Dichloroethane	0.36894	0.37897	0.37897	0.100	-2.71912	50.0	Averaged	
Trichloroethene	0.37609	0.36666	0.36666	0.200	2.50558	50.0	Averaged	
Tetrachloroethene	0.34582	0.33280	0.33280	0.200	3.76319	50.0	Averaged	

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Form 8

Internal Standard Area and RT Summary

Workorder

HS22100575

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Form 8 - Internal Standard Area and RT Summary

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

RunID
VOA6_419507

		IS1				IS2				IS3				IS4			
Sample ID	File ID	Area		RT		Area		RT		Area		RT		Area		RT	
12-HOUR STD (CCV)	X101503	401535	#	4.18	#	586680	#	4.97	#	550362	#	7.67	#	277678	#	9.66	#
CCB	X101504	484661		4.19		652593		4.97		563355		7.67		258430		9.67	
VLCSW-221015	X101505	397881		4.19		583073		4.97		546961		7.67		270277		9.67	
VBLKW-221015	X101507	497692		4.19		664702		4.97		581083		7.67		272159		9.67	
HS22100575-10	X101509	507668		4.19		672731		4.97		597550		7.67		274493		9.67	
HS22100575-01	X101513	498382		4.18		658594		4.97		572994		7.67		265792		9.67	
HS22100575-03	X101514	493781		4.18		664404		4.97		581081		7.67		270517		9.67	
HS22100575-04	X101515	494096		4.19		666839		4.97		578404		7.67		274591		9.67	
HS22100575-06	X101516	506635		4.18		674005		4.97		594958		7.67		281006		9.67	
HS22100575-07	X101517	496553		4.18		664950		4.97		578002		7.67		269947		9.67	
HS22100575-08	X101518	511044		4.18		678186		4.97		593574		7.67		277889		9.67	
HS22100575-09	X101519	503846		4.18		670212		4.97		598793		7.67		286854		9.67	
HS22100575-05	X101522	497519		4.19		665776		4.97		576663		7.67		268178		9.67	
HS22100575-02	X101523	498852		4.18		664721		4.97		573480		7.67		272750		9.67	
ZZZZZZMS	X101528	505702		4.19		678373		4.97		600147		7.67		300865		9.66	
ZZZZZZMSD	X101529	498848		4.18		668634		4.97		586328		7.67		281159		9.67	
CCV-END	X101530	382154		4.18		581716		4.97		541345		7.67		276403		9.66	

IS1 - Pentafluorobenzene IS2 - 1,4-Difluorobenzene IS3 - Chlorobenzene-d5 IS4 - 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of 12H STD IS Area
AREA LOWER LIMIT = - 50% of 12H STD IS Area
RT - Retention Time IS - Internal Standard

RT UPPER LIMIT = + 0.50 of 12H STD IS RT
RT LOWER LIMIT = - 0.50 of 12H STD IS RT
CCV - Continuing Calibration Verification

- Area or RT Limit Flag
* - Value Outside Area or RT limits
H - Hour STD - Standard

Form 8 - Internal Standard Area and RT Summary

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

RunID
VOA6_419606

		IS1				IS2				IS3				IS4			
Sample ID	File ID	Area		RT		Area		RT		Area		RT		Area		RT	
12-HOUR STD (CCV)	X101703	399449	#	4.19	#	592013	#	4.97	#	560455	#	7.67	#	290556	#	9.66	#
CCB	X101704	522380		4.19		698486		4.97		586779		7.67		269128		9.67	
VLCSW-221017	X101705	422560		4.19		631991		4.97		572313		7.67		293024		9.66	
VBLKW-221017	X101707	534344		4.18		742665		4.97		627087		7.67		298047		9.66	
ZZZZZZMS	X101719	534860		4.18		751460		4.97		652951		7.67		326328		9.66	
ZZZZZZMSD	X101720	549671		4.18		745890		4.97		659194		7.67		328050		9.66	
HS22100575-05	X101721	543909		4.19		755748		4.97		663309		7.67		312648		9.67	
HS22100575-02	X101722	544229		4.19		748397		4.97		649655		7.67		295770		9.67	
CCV-END	X101723	442220		4.19		655525		4.97		607836		7.67		306642		9.66	

IS1 - Pentafluorobenzene IS2 - 1,4-Difluorobenzene IS3 - Chlorobenzene-d5 IS4 - 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of 12H STD IS Area
AREA LOWER LIMIT = - 50% of 12H STD IS Area
RT - Retention Time IS - Internal Standard

RT UPPER LIMIT = + 0.50 of 12H STD IS RT
RT LOWER LIMIT = - 0.50 of 12H STD IS RT
CCV - Continuing Calibration Verification

- Area or RT Limit Flag
* - Value Outside Area or RT limits
H - Hour STD - Standard

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Analysis Run Log

Volatiles by by EPA 8260

Workorder

HS22100575

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

MSVOA06 -Logbook

Batch: 51631 **Analyst:** Presenta Cabascango

Date: 10-14-2022 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	10-14-2022 11:05 am	1.00	0.00 mL	0.00 mL	X101401.D	Liquid	Y	NA
2	VSTD000.25	ICAL1	10-14-2022 11:26 am	1.00	5.00 mL	0.00 mL	X101402.D	Liquid	Y	NA
3	VSTD000.5	ICAL2	10-14-2022 12:08 pm	1.00	5.00 mL	0.00 mL	X101403.D	Liquid	Y	NA
4	VSTD001	ICAL3	10-14-2022 12:29 pm	1.00	5.00 mL	0.00 mL	X101404.D	Liquid	Y	NA
5	VSTD002	ICAL4	10-14-2022 12:50 pm	1.00	5.00 mL	0.00 mL	X101405.D	Liquid	Y	NA
6	VSTD005	ICAL5	10-14-2022 01:11 pm	1.00	5.00 mL	0.00 mL	X101406a.D	Liquid	Y	NA
7	VSTD020	ICAL6	10-14-2022 01:32 pm	1.00	5.00 mL	0.00 mL	X101407.D	Liquid	Y	NA
8	VSTD050	ICAL7	10-14-2022 01:53 pm	1.00	5.00 mL	0.00 mL	X101408.D	Liquid	Y	NA
9	VSTD100	ICAL8	10-14-2022 02:14 pm	1.00	5.00 mL	0.00 mL	X101409.D	Liquid	Y	NA
10	VSTD150	ICAL9	10-14-2022 02:35 pm	1.00	5.00 mL	0.00 mL	X101410.D	Liquid	Y	NA
11	VSTD200	ICAL	10-14-2022 02:56 pm	1.00	5.00 mL	0.00 mL	X101411.D	Liquid	Y	NA
12	BLANK	SAMP	10-14-2022 03:17 pm	1.00	5.00 mL	0.00 mL	X101412.D	Liquid	Y	NA
13	BLANK	SAMP	10-14-2022 03:38 pm	1.00	5.00 mL	0.00 mL	X101413.D	Liquid	Y	NA
14	VSTD005	ICAL5	10-14-2022 03:59 pm	1.00	5.00 mL	0.00 mL	X101414.D	Liquid	Y	NA
15	BLANK	SAMP	10-14-2022 04:20 pm	1.00	5.00 mL	0.00 mL	X101415.D	Liquid	Y	NA
16	CCV	CCV	10-14-2022 04:41 pm	1.00	5.00 mL	0.00 mL	X101416.D	Liquid	Y	NA
17	BLANK	SAMP	10-14-2022 05:02 pm	1.00	5.00 mL	0.00 mL	X101417.D	Liquid	Y	NA
18	VLCSW-221014	LCS	10-14-2022 05:23 pm	1.00	5.00 mL	0.00 mL	X101418.D	Liquid	Y	NA
19	BLANK	SAMP	10-14-2022 05:44 pm	1.00	5.00 mL	0.00 mL	X101419.D	Liquid	Y	NA
20	VBLKM-221014	MBLK	10-14-2022 06:05 pm	50.00	5.00 mL	0.00 mL	X101420.D	Liquid	Y	NA
21	VBLKW-221014	MBLK	10-14-2022 06:26 pm	1.00	5.00 mL	0.00 mL	X101421.D	Liquid	Y	NA
22	HS22100259-01	SAMP	10-14-2022 06:47 pm	1.00	5.00 mL	0.00 mL	X101422.D	Liquid	Y	NA
23	HS22100259-02	SAMP	10-14-2022 07:08 pm	1.00	5.00 mL	0.00 mL	X101423.D	Liquid	Y	NA
24	HS22100259-03	SAMP	10-14-2022 07:29 pm	1.00	5.00 mL	0.00 mL	X101424.D	Liquid	Y	NA
25	HS22100259-04	SAMP	10-14-2022 07:50 pm	1.00	5.00 mL	0.00 mL	X101425.D	Liquid	Y	NA
26	HS22100259-05	SAMP	10-14-2022 08:11 pm	1.00	5.00 mL	0.00 mL	X101426.D	Liquid	Y	NA
27	HS22100259-06	SAMP	10-14-2022 08:32 pm	1.00	5.00 mL	0.00 mL	X101427.D	Liquid	Y	NA
28	HS22100229-01	SAMP	10-14-2022 08:53 pm	1000.0	5.00 mL	0.00 mL	X101428.D	Liquid	Y	NA
29	HS22100259-02MS	MS	10-14-2022 09:14 pm	1.00	5.00 mL	0.00 mL	X101429.D	Liquid	Y	NA
30	HS22100259-02MSD	MSD	10-14-2022 09:35 pm	1.00	5.00 mL	0.00 mL	X101430.D	Liquid	Y	NA
31	CCV-END	CCV	10-14-2022 09:56 pm	1.00	5.00 mL	0.00 mL	X101431.D	Liquid	Y	NA
32	BLANK	SAMP	10-14-2022 10:17 pm	1.00	5.00 mL	0.00 mL	X101432.D	Liquid	Y	NA
33	BLANK	SAMP	10-15-2022 10:14 am	1.00	5.00 mL	0.00 mL	X101433.D	Liquid	Y	NA

Form 13 - Analysis Run Log

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

Volatiles by by EPA 8260

RUNID
VOA6_419507

Run ID VOA6_419507 **Start Date** 10/15/22 **EndDate** 10/15/22 **Matrix** Aqueous

Client Sample ID	Type	Lab Sample ID	File ID	Analysis Date	DF
CCV	CCV	CCV	X101503.D	10/15/22 11:46	1
CCB	CCB	CCB	X101504.D	10/15/22 12:07	1
VLCSW-221015	LCS	VLCSW-221015	X101505.D	10/15/22 12:28	1
VBLKW-221015	MBLK	VBLKW-221015	X101507.D	10/15/22 13:10	1
Trip Blank-221010	SAMP	HS22100575-10	X101509.D	10/15/22 13:52	1
50WW09-221010	SAMP	HS22100575-01	X101513.D	10/15/22 15:17	1
50WW22-221010	SAMP	HS22100575-03	X101514.D	10/15/22 15:38	1
50WW23-221010	SAMP	HS22100575-04	X101515.D	10/15/22 15:59	1
50WW15-221010	SAMP	HS22100575-06	X101516.D	10/15/22 16:20	1
50WW16-221010	SAMP	HS22100575-07	X101517.D	10/15/22 16:41	1
50WW16-221010-FD	SAMP	HS22100575-08	X101518.D	10/15/22 17:02	1
50WW18-221010	SAMP	HS22100575-09	X101519.D	10/15/22 17:23	1
50WW05-221010	SAMP	HS22100575-05	X101522.D	10/15/22 18:26	1
50WW08-221010	SAMP	HS22100575-02	X101523.D	10/15/22 18:47	1
BatchQC	MS	HS22100577-01MS	X101528.D	10/15/22 20:33	1
BatchQC	MSD	HS22100577-01MSD	X101529.D	10/15/22 20:54	1

Form 13 - Analysis Run Log

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 50 October 2022

Workorder
HS22100575

Volatiles by by EPA 8260

RUNID
VOA6_419606

Run ID VOA6_419606 **Start Date** 10/17/22 **EndDate** 10/17/22 **Matrix** Aqueous

Client Sample ID	Type	Lab Sample ID	File ID	Analysis Date	DF
CCV	CCV	CCV	X101703.D	10/17/22 11:11	1
CCB	CCB	CCB	X101704.D	10/17/22 11:32	1
VLCSW-221017	LCS	VLCSW-221017	X101705.D	10/17/22 11:53	1
VBLKW-221017	MBLK	VBLKW-221017	X101707.D	10/17/22 12:35	1
BatchQC	MS	HS22100604-02MS	X101719.D	10/17/22 16:48	1
BatchQC	MSD	HS22100604-02MSD	X101720.D	10/17/22 17:09	1
50WW05-221010	SAMP	HS22100575-05	X101721.D	10/17/22 17:30	5
50WW08-221010	SAMP	HS22100575-02	X101722.D	10/17/22 17:51	10

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Raw Data VOA6 419504

Volatiles by by EPA 8260

Workorder

HS22100575

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
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Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101401.D Page 1
Report Date: 16-Oct-2022 22:26

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101401.D
Lab Smp Id: BFB Client Smp ID: BFB
Inj Date : 14-OCT-2022 11:05
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\X221014.b\bfb.m
Meth Date : 27-Sep-2022 15:10 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	1961			0.00- 100.00	100.00
8.695	8.889	(0.000)	50	310			15.00- 40.00	15.81
8.695	8.889	(0.000)	75	847			30.00- 60.00	43.19
8.695	8.889	(0.000)	96	132			5.00- 9.00	6.73
8.695	8.889	(0.000)	173	8			0.00- 2.00	0.41
8.695	8.889	(0.000)	174	1953			50.00- 0.00	99.59
8.695	8.889	(0.000)	175	127			5.00- 9.00	6.50
8.695	8.889	(0.000)	176	1915			95.00- 101.00	98.05
8.695	8.889	(0.000)	177	119			5.00- 9.00	6.21

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	15.81
75	30.00 - 60.00% of mass 95	43.19
96	5.00 - 9.00% of mass 95	6.73
173	Less than 2.00% of mass 174	0.41 (0.41)
174	Greater than 50.00% of mass 95	99.59
175	5.00 - 9.00% of mass 174	6.48 (6.50)
176	95.00 - 101.00% of mass 174	97.65 (98.05)
177	5.00 - 9.00% of mass 176	6.07 (6.21)

Data File: X101401.D
Spectrum: Average Spectrum: 8.721 to 8.935 min.
Location of Maximum: 95.00
Number of points: 86

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	4	62.00	66	91.00	2	143.00	4
37.00	55	63.00	69	92.00	46	157.00	2
38.00	57	64.00	14	93.00	70	165.00	1
39.00	60	65.00	17	94.00	291	168.00	1
40.00	307	66.00	8	95.00	1961	169.00	0.000
41.00	6	68.00	161	96.00	132	170.00	11
42.00	1	69.00	171	97.00	0.000	173.00	8
43.00	29	70.00	6	98.00	0.000	174.00	1953
44.00	480	72.00	7	100.00	1	175.00	127
45.00	10	73.00	58	105.00	3	176.00	1915
47.00	7	74.00	272	109.00	0.000	177.00	119
48.00	1	75.00	847	110.00	2	184.00	2
49.00	48	76.00	84	115.00	29	186.00	146
50.00	310	77.00	116	117.00	2	187.00	2
51.00	154	78.00	32	127.00	0.000	207.00	15
52.00	3	79.00	20	128.00	7	262.00	14
54.00	2	80.00	7	129.00	9	263.00	0.000
56.00	11	81.00	32	130.00	4	278.00	16
57.00	25	82.00	1	133.00	1	281.00	39
58.00	2	86.00	1	139.00	11	282.00	3
60.00	3	87.00	83	141.00	53		
61.00	56	88.00	68	142.00	1		

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101401.D

Date : 14-OCT-2022 11:05

Client ID: BFB

Instrument: voa6.i

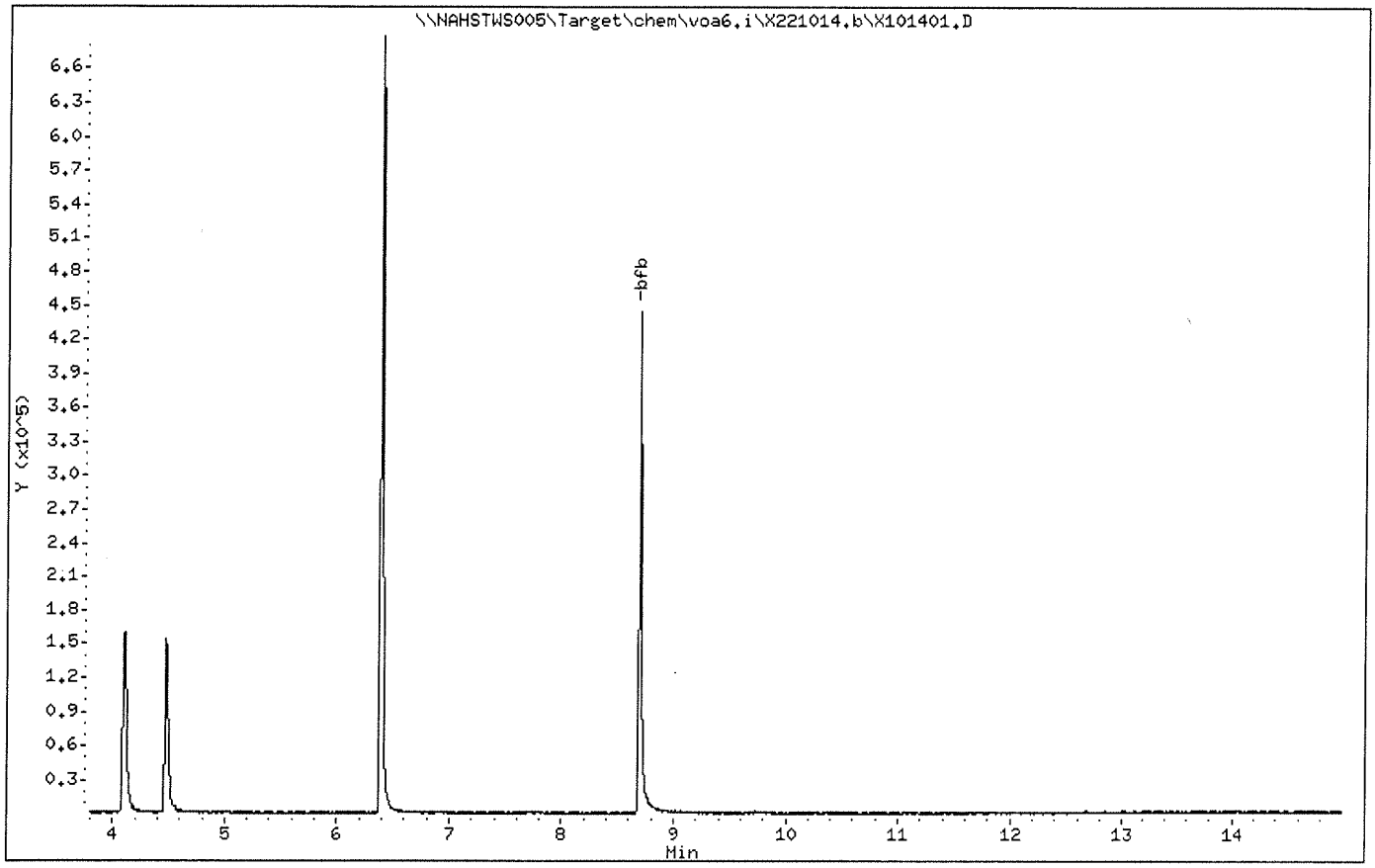
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101401.D Page 2

Date : 14-OCT-2022 11:05

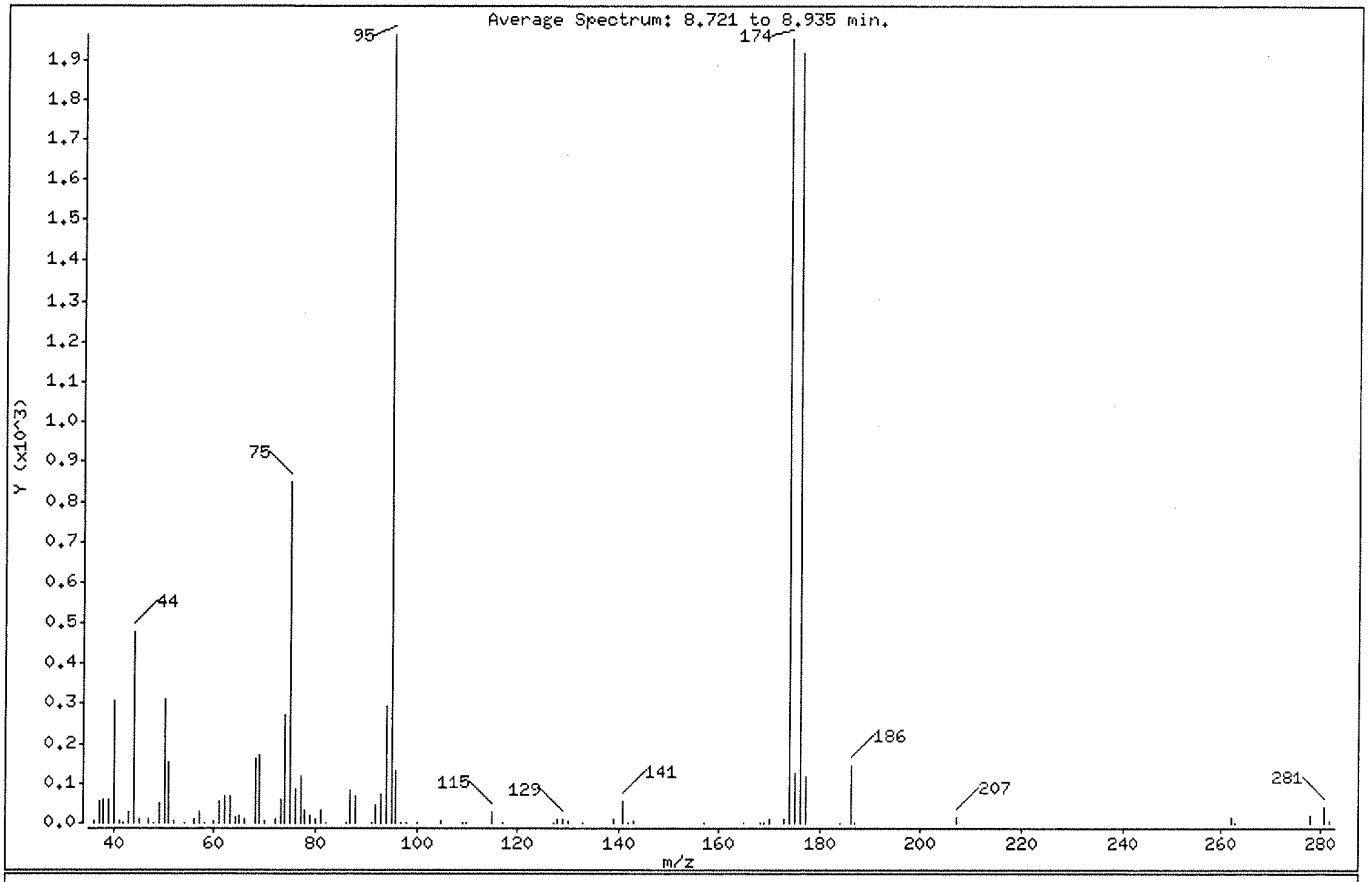
Client ID: BFB Instrument: voa6.i

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	15.81
75	30.00 - 60.00% of mass 95	43.19
96	5.00 - 9.00% of mass 95	6.73
173	Less than 2.00% of mass 174	0.41 (0.41)
174	Greater than 50.00% of mass 95	99.59
175	5.00 - 9.00% of mass 174	6.48 (6.50)
176	95.00 - 101.00% of mass 174	97.65 (98.05)
177	5.00 - 9.00% of mass 176	6.07 (6.21)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101401.D

Date : 14-OCT-2022 11:05

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: X101401.D
Spectrum: Average Spectrum: 8.721 to 8.935 min.
Location of Maximum: 95.00
Number of points: 86

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	4	62.00	66	91.00	2	143.00	4
37.00	55	63.00	69	92.00	46	157.00	2
38.00	57	64.00	14	93.00	70	165.00	1
39.00	60	65.00	17	94.00	291	168.00	1
40.00	307	66.00	8	95.00	1961	169.00	0.000
41.00	6	68.00	161	96.00	132	170.00	11
42.00	1	69.00	171	97.00	0.000	173.00	8
43.00	29	70.00	6	98.00	0.000	174.00	1953
44.00	480	72.00	7	100.00	1	175.00	127
45.00	10	73.00	58	105.00	3	176.00	1915
47.00	7	74.00	272	109.00	0.000	177.00	119
48.00	1	75.00	847	110.00	2	184.00	2
49.00	48	76.00	84	115.00	29	186.00	146
50.00	310	77.00	116	117.00	2	187.00	2
51.00	154	78.00	32	127.00	0.000	207.00	15
52.00	3	79.00	20	128.00	7	262.00	14
54.00	2	80.00	7	129.00	9	263.00	0.000
56.00	11	81.00	32	130.00	4	278.00	16
57.00	25	82.00	1	133.00	1	281.00	39
58.00	2	86.00	1	139.00	11	282.00	3
60.00	3	87.00	83	141.00	53		
61.00	56	88.00	68	142.00	1		

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101401.D
Inj Date : 14-OCT-2022 11:05
InstruID : voa6.i
LabSampID : BFB

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D Page 1
Report Date: 27-Oct-2022 15:16

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D
Lab Smp Id: VSTD000.25 Client Smp ID: VSTD000.251
Inj Date : 14-OCT-2022 11:26
Operator : PC Inst ID: voa6.i
Smp Info : VSTD000.25;VSTD000.25;1;1;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\8260W.m
Meth Date : 27-Oct-2022 15:16 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 15:59 Cal File: X101414.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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)	435041	50.0000	
135	1,4-Dioxane	88	5.636	5.636	(1.347)	74	5.00000	2.23(M)
140	1,3-Butadiene	54	1.171	1.171	(0.280)	518	0.25000	0.21(M)
25	Methacrylonitrile	41	3.885	3.885	(0.928)	416	0.25000	0.15(M)
12	Isobutyl Alcohol	43	4.699	4.699	(1.123)	1453	5.00000	(TM)
13	Acetonitrile	39	2.206	2.206	(0.527)	836	2.50000	2.46(M)
14	Allyl Chloride	41	2.209	2.209	(0.528)	1002	0.25000	0.13
4	Propionitrile	54	3.709	3.709	(0.886)	743	2.50000	1.94(M)
136	n-Hexane	57	2.779	2.779	(0.664)	819	0.25000	0.21(T)
145	alpha-Methylstyrene	118	9.283	9.283	(0.960)	1303	0.25000	0.43
200	Dimethyl Disulfide	94	6.205	6.205	(0.809)	2040	0.25000	0.24
139	Diethyl ether	59	1.760	1.760	(0.421)	517	0.25000	0.24(M)
49	Ethyl Methacrylate	69	6.813	6.813	(1.371)	746	0.25000	0.14
150	Allyl alcohol	57	2.779	2.779	(0.664)	819	5.00000	4.24
166	1,2,3-Trimethylbenzene	105	9.737	9.737	(1.007)	3054	0.25000	0.23
2	Dichlorodifluoromethane	85	0.976	0.976	(0.233)	706	0.25000	(M)
3	Chloromethane	50	1.077	1.077	(0.258)	1186	0.25000	(M)
5	Vinyl Chloride	62	1.149	1.149	(0.275)	904	0.25000	0.27
6	Bromomethane	94	1.343	1.343	(0.321)	768	0.25000	(M)
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	1058	0.25000	0.24

9	Acrolein	56	1.471	1.471 (0.352)	62	0.50000	0.25(M)
10	Acetone	43	1.977	1.977 (0.472)	356	0.50000	0.23(M)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D Page 2
Report Date: 27-Oct-2022 15:16

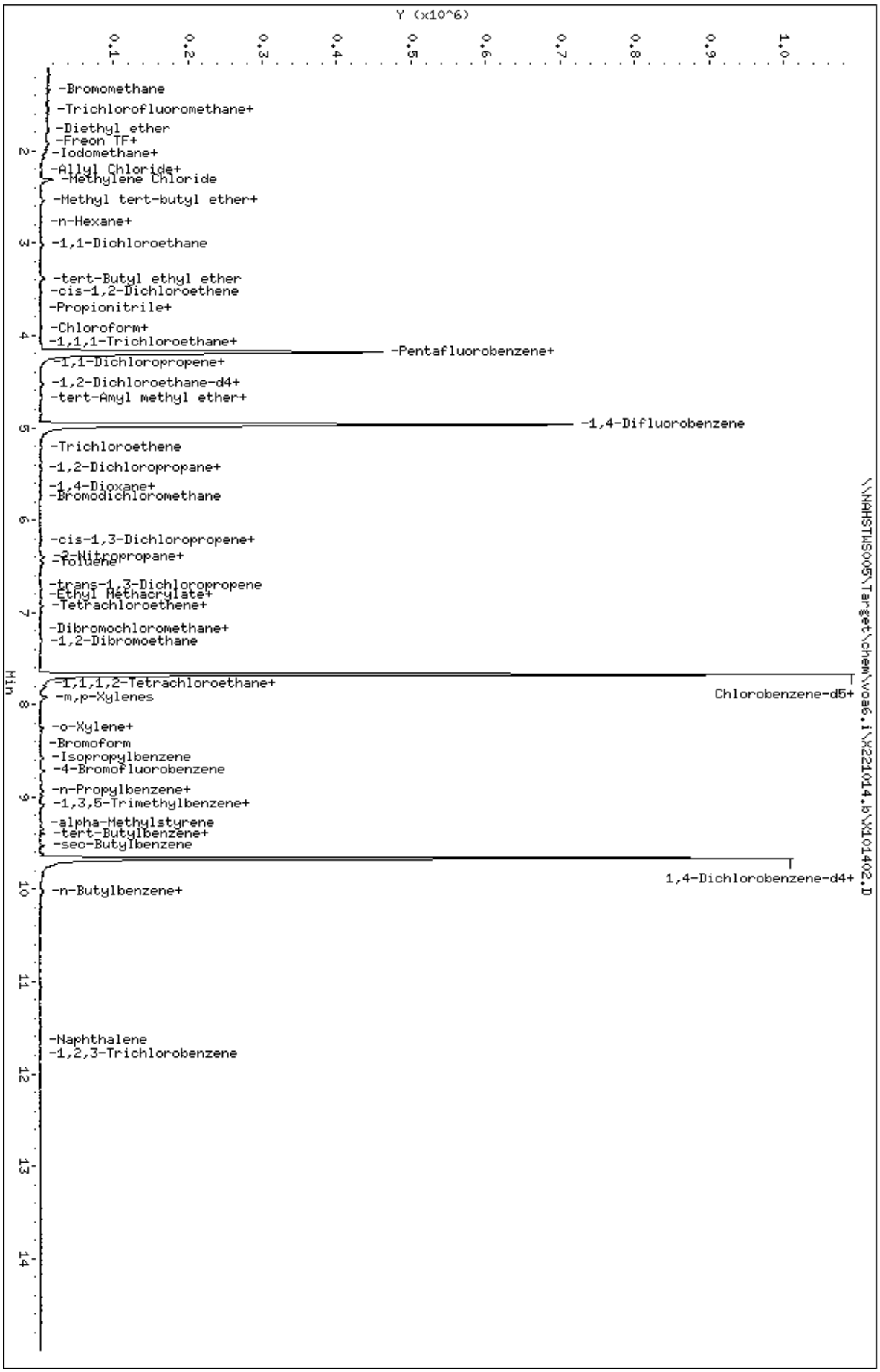
		QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	11 1,1-Dichloroethene	96	1.921	1.921	(0.459)	882	0.25000	0.31(M)
	15 Iodomethane	142	2.033	2.033	(0.486)	716	0.50000	3.56(T)
	17 Methylene Chloride	84	2.303	2.303	(0.550)	2239	0.25000	(M)
	18 Methyl tert-butyl ether	73	2.543	2.543	(0.608)	2796	0.25000	0.26
	19 Carbon Disulfide	76	2.071	2.071	(0.495)	4806	0.50000	0.48
	20 trans-1,2-Dichloroethene	96	2.536	2.536	(0.606)	893	0.25000	0.23(T)
	22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	1777	0.25000	0.27(M)
	27 cis-1,2-Dichloroethene	96	3.548	3.548	(0.848)	885	0.25000	0.19
	28 Chloroform	83	3.919	3.919	(0.936)	1428	0.25000	0.20
	29 Bromochloromethane	128	3.806	3.806	(0.910)	540	0.25000	0.21(M)
$	30 Dibromofluoromethane	113	4.125	4.125	(0.986)	1067	0.25000	
	31 1,1,1-Trichloroethane	97	4.080	4.080	(0.975)	1091	0.25000	0.19
	32 1,1-Dichloropropene	75	4.290	4.290	(0.863)	989	0.25000	0.19
	33 1,2-Dichloroethane	62	4.575	4.575	(0.921)	1411	0.25000	0.29(M)
	34 Carbon Tetrachloride	117	4.256	4.256	(0.857)	2056	0.25000	0.40
$	35 1,2-Dichloroethane-d4	65	4.500	4.500	(1.075)	1303	0.25000	(T)
*	36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	647192	50.0000	
	37 Benzene	78	4.526	4.526	(0.911)	4079	0.25000	0.24
	38 Trichloroethene	130	5.216	5.216	(1.050)	1246	0.25000	0.25(M)
	39 Bromodichloromethane	83	5.741	5.741	(1.155)	1228	0.25000	0.22(M)
	42 1,2-Dichloropropane	63	5.437	5.437	(1.094)	1289	0.25000	0.30
	44 Dibromomethane	93	5.564	5.564	(1.120)	599	0.25000	0.23(M)
	46 cis-1,3-Dichloropropene	75	6.175	6.175	(1.243)	1525	0.25000	0.22
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	599885	50.0000	
$	48 Toluene-d8	98	6.397	6.397	(0.834)	4917	0.25000	0.32(T)
	50 Toluene	91	6.460	6.460	(0.842)	4388	0.25000	0.24
	51 trans-1,3-Dichloropropene	75	6.712	6.712	(1.351)	1118	0.25000	0.20(M)
	52 2-Hexanone	43	7.146	7.146	(0.932)	863	0.50000	0.43(TM)
	53 1,1,2-Trichloroethane	83	6.854	6.854	(0.893)	780	0.25000	0.23
	54 1,3-Dichloropropane	76	6.993	6.993	(0.912)	1570	0.25000	0.23(M)
	55 Dibromochloromethane	129	7.188	7.188	(0.937)	1077	0.25000	0.79
	56 Tetrachloroethene	164	6.933	6.933	(0.904)	948	0.25000	0.22
	57 1,2-Dibromoethane	107	7.274	7.274	(0.948)	915	0.25000	0.22
	58 1-Chlorohexane	55	7.671	7.671	(1.544)	5057	0.25000	1.34
	59 Chlorobenzene	112	7.694	7.694	(1.003)	2980	0.25000	0.23
	60 1,1,1,2-Tetrachloroethane	131	7.780	7.780	(1.014)	1000	0.25000	0.21
	61 Ethylbenzene	106	7.814	7.814	(1.019)	1439	0.25000	0.22
	62 m,p-Xylenes	106	7.919	7.919	(1.032)	3311	0.50000	0.42
	63 o-Xylene	106	8.260	8.260	(1.077)	1620	0.25000	0.21
	64 Styrene	104	8.308	8.308	(1.083)	2311	0.25000	0.19(M)
	66 Bromoform	173	8.428	8.428	(1.099)	495	0.25000	1.28(M)
	67 Isopropylbenzene	105	8.571	8.571	(1.117)	3786	0.25000	0.20
	68 1,1,2,2-Tetrachloroethane	83	8.856	8.856	(0.916)	1251	0.25000	0.02(M)
$	69 4-Bromofluorobenzene	95	8.717	8.717	(1.136)	2408	0.25000	0.09
*	70 1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	285946	50.0000	
	71 1,2,3-Trichloropropane	75	8.878	8.878	(0.919)	355	0.25000	0.11(MH)
	73 n-Propylbenzene	91	8.931	8.931	(0.924)	3551	0.25000	
	74 Bromobenzene	156	8.841	8.841	(0.915)	914	0.25000	0.17
	75 1,3,5-Trimethylbenzene	105	9.084	9.084	(0.940)	3330	0.25000	0.22
	76 2-Chlorotoluene	91	8.998	8.998	(0.931)	3169	0.25000	0.24
	77 4-Chlorotoluene	91	9.107	9.107	(0.942)	2460	0.25000	0.17
	78 tert-Butylbenzene	119	9.339	9.339	(0.966)	2899	0.25000	0.23

79 1,2,4-Trimethylbenzene	105	9.392	9.392 (0.972)	3080	0.25000	0.20
81 sec-Butylbenzene	105	9.527	9.527 (0.986)	3600	0.25000	0.21

		QUANT SIG					AMOUNTS CAL-AMT	AMOUNTS ON-COL
	Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
	82 p-Isopropyltoluene	119	9.654	9.654	(0.999)	2935	0.25000	0.19
	83 1,3-Dichlorobenzene	146	9.613	9.613	(0.995)	1708	0.25000	0.19
	84 1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	2383	0.25000	0.25
	87 n-Butylbenzene	91	10.025	10.025	(1.037)	1096	0.25000	0.09
	88 1,2-Dichlorobenzene	146	10.022	10.022	(1.037)	1638	0.25000	
	92 Naphthalene	128	11.637	11.637	(1.204)	477	0.25000	0.09(M)
	93 1,2,3-Trichlorobenzene	180	11.787	11.787	(1.220)	326	0.25000	0.13(M)
M	94 1,2-Dichloroethylene (total)	96				1778	0.50000	
M	95 Xylenes (total)	106				4931	0.75000	
	141 Cyclohexane	56	4.121	4.121	(0.985)	1143	0.25000	0.22(M)
	138 Freon TF	101	1.906	1.906	(0.455)	684	0.25000	0.25
	147 Methylcyclohexane	55	5.362	5.362	(1.079)	1012	0.25000	0.11

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS005\Target\chem\voa6,i\X221014,b\X101402.D
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Column phase: DB624

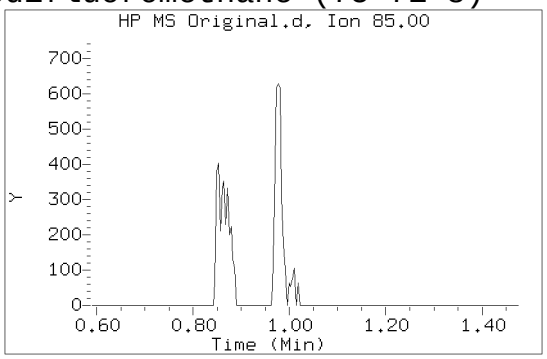
Instrument: voa6,i
Operator: PC
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Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D
Inj Date : 14-OCT-2022 11:26
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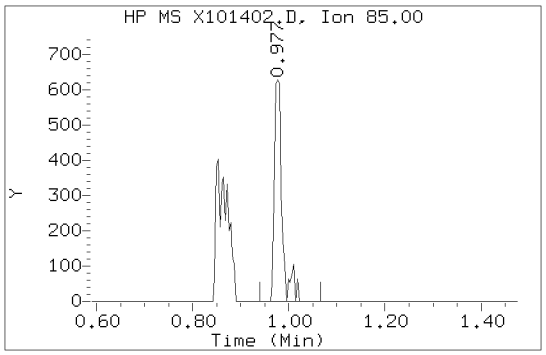
Dichlorodifluoromethane (75-71-8)

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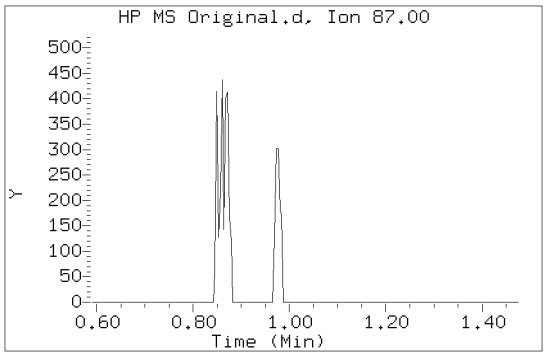
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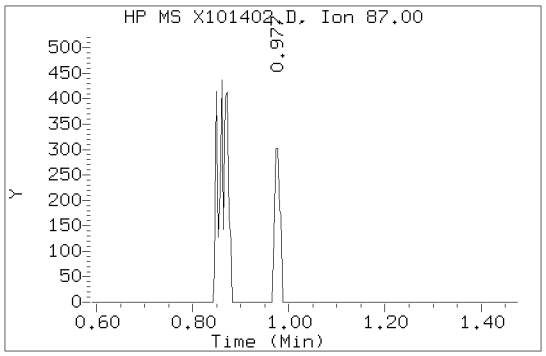
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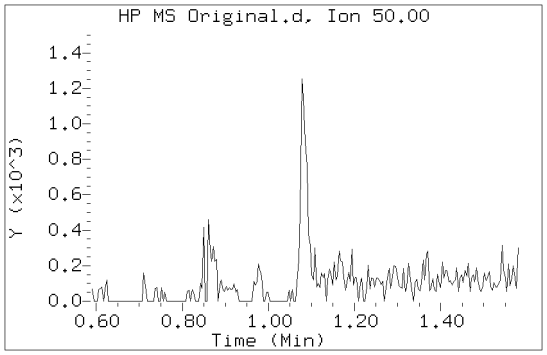
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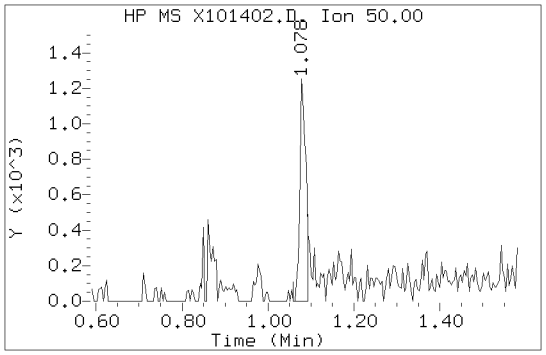
Chloromethane (74-87-3)

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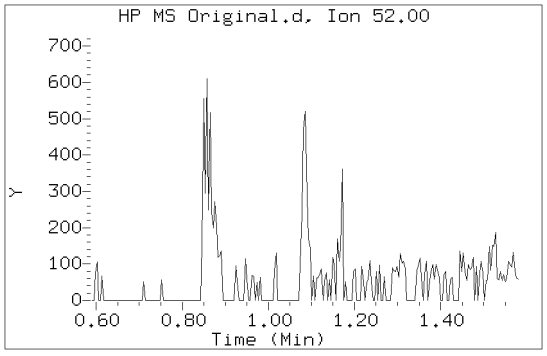
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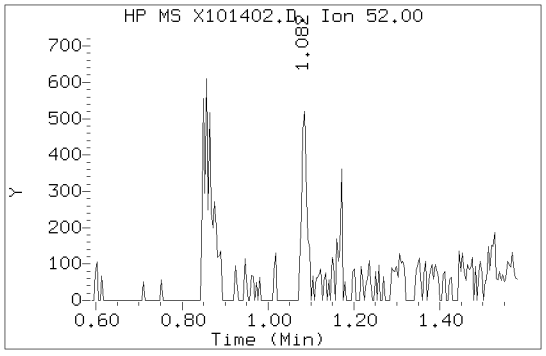
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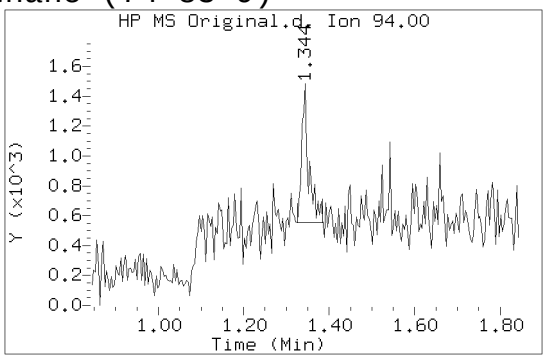


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LabSampID : VSTD000.25

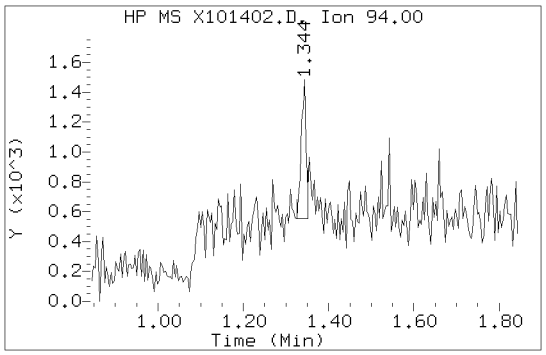
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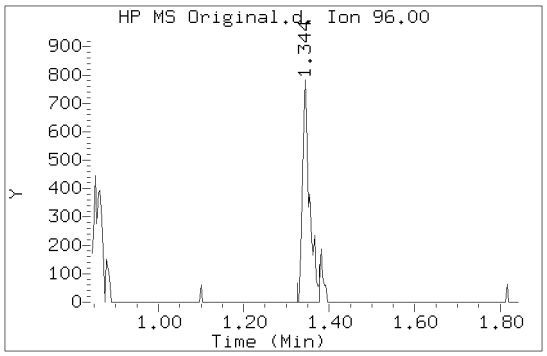
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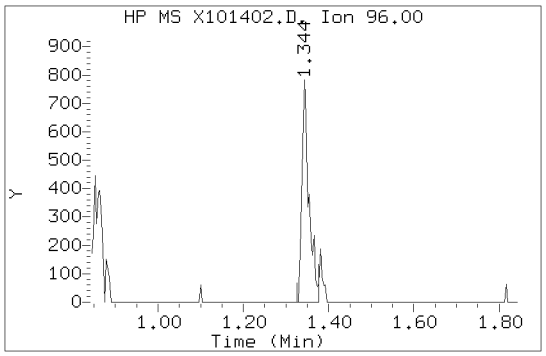
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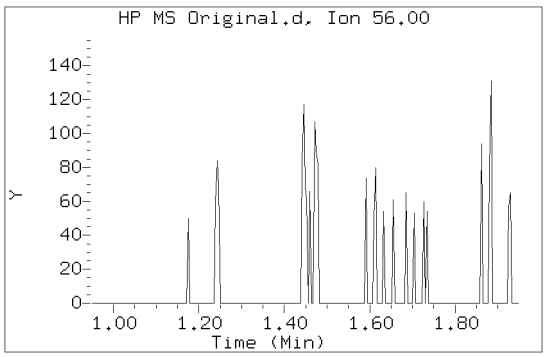
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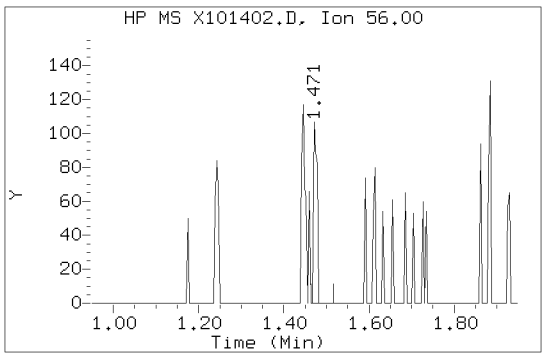
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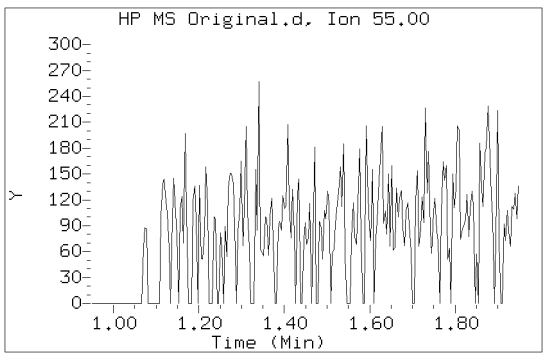
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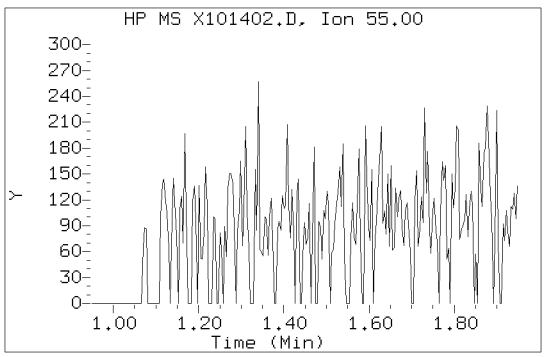
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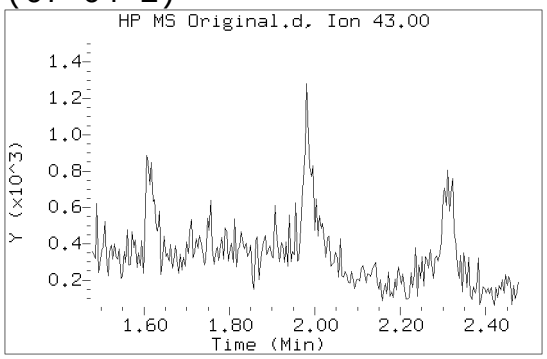


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

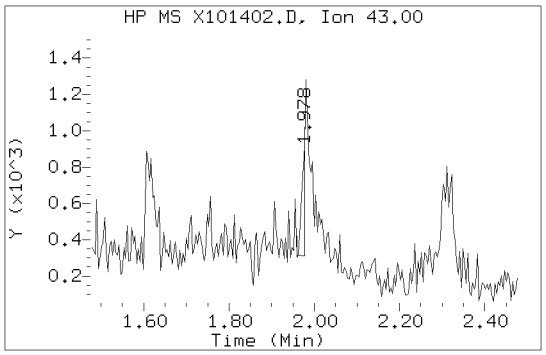
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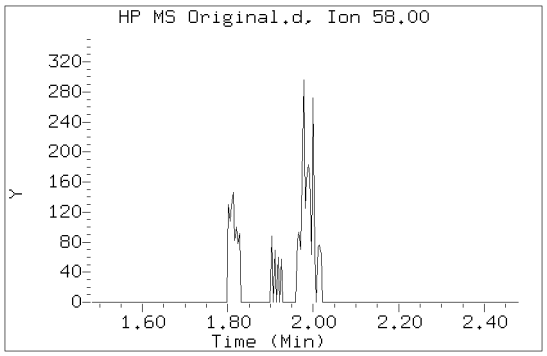
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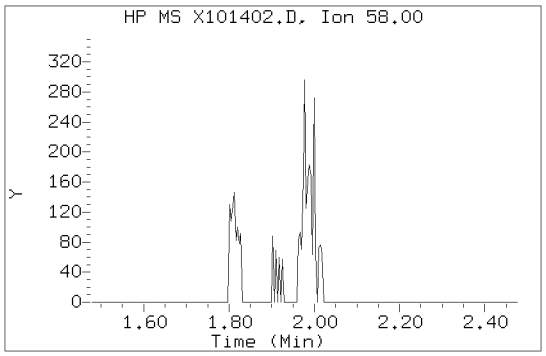
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BEFORE
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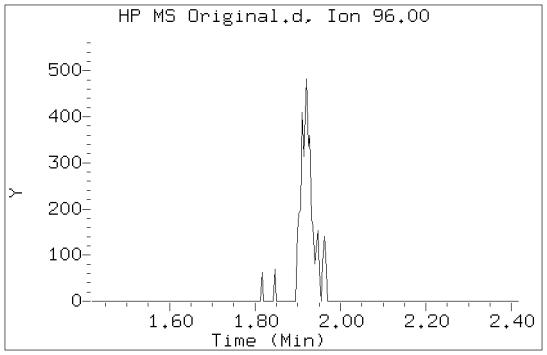
AFTER
MASS
58
AREA
0
HEIGHT
0
27-Oct-2022
15:16



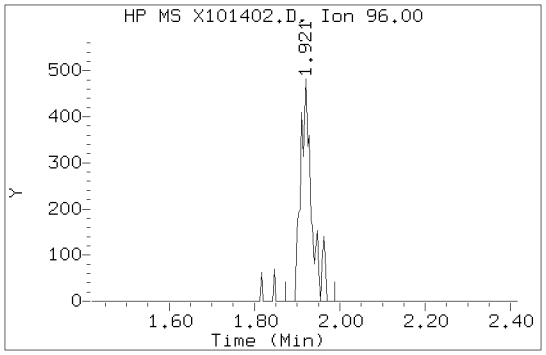
1,1-Dichloroethene (75-35-4)

Reason Code:

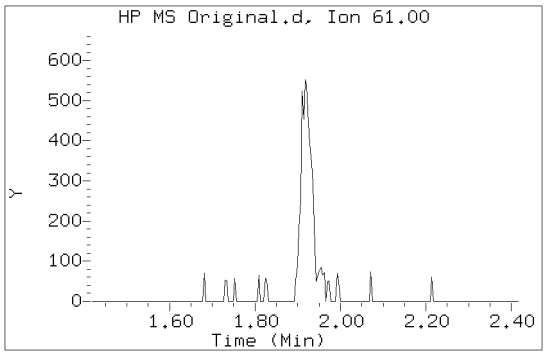
BEFORE
MASS
96
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



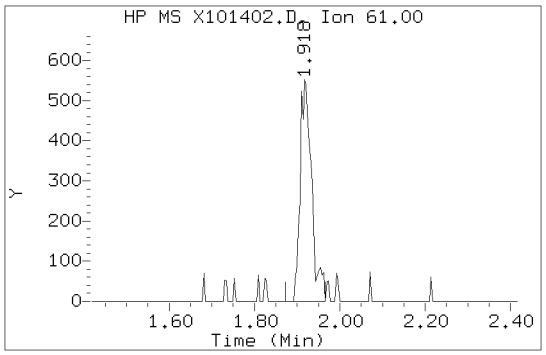
AFTER
MASS
96
AREA
882
HEIGHT
482
27-Oct-2022
15:16



BEFORE
MASS
61
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
61
AREA
1048
HEIGHT
552
27-Oct-2022
15:16

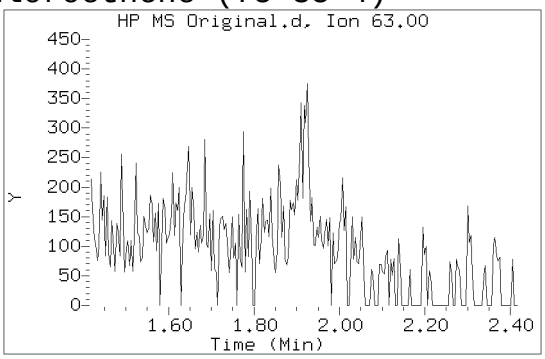


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

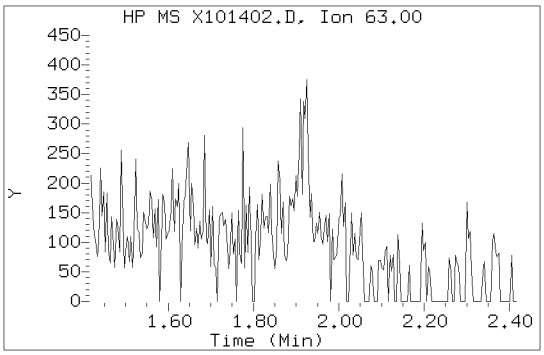
1,1-Dichloroethene (75-35-4)

Reason Code:

BEFORE
MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



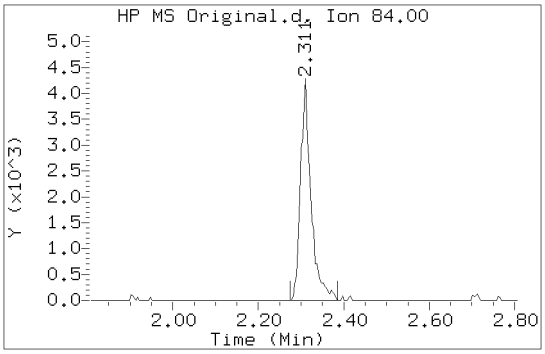
AFTER
MASS
63
AREA
0
HEIGHT
0
27-Oct-2022
15:16



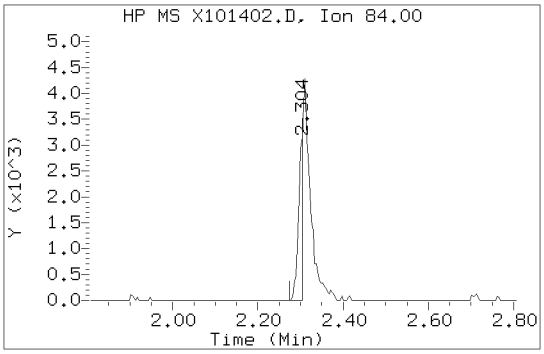
Methylene Chloride (75-09-2)

Reason Code:

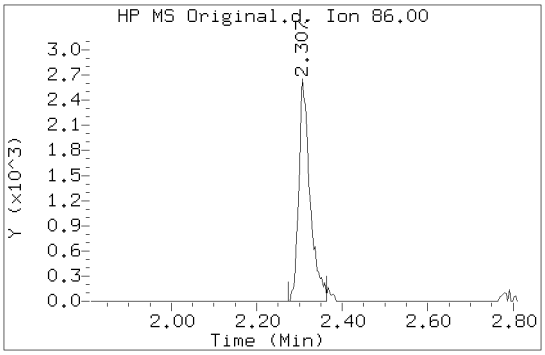
BEFORE
MASS
84
AREA
7458
HEIGHT
4284
19-Oct-2022
16:03
linh
pham



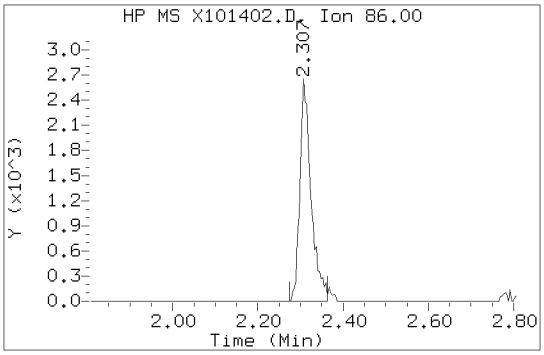
AFTER
MASS
84
AREA
2239
HEIGHT
3151
27-Oct-2022
15:16



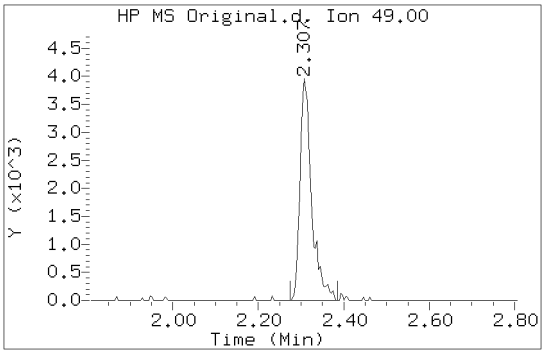
BEFORE
MASS
86
AREA
4929
HEIGHT
2654
19-Oct-2022
16:03
linh
pham



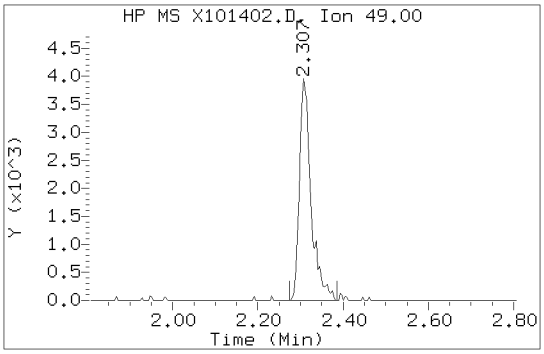
AFTER
MASS
86
AREA
4929
HEIGHT
2654
27-Oct-2022
15:16



BEFORE
MASS
49
AREA
7690
HEIGHT
3958
19-Oct-2022
16:03
linh
pham



AFTER
MASS
49
AREA
7690
HEIGHT
3958
27-Oct-2022
15:16

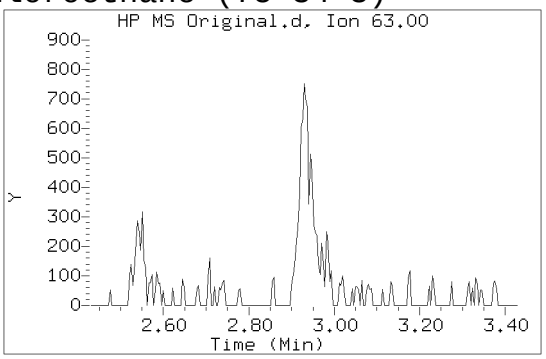


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

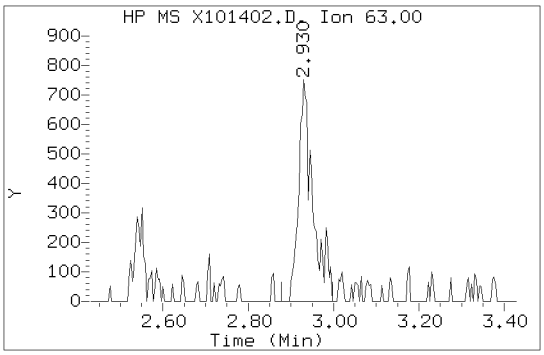
1,1-Dichloroethane (75-34-3)

Reason Code:

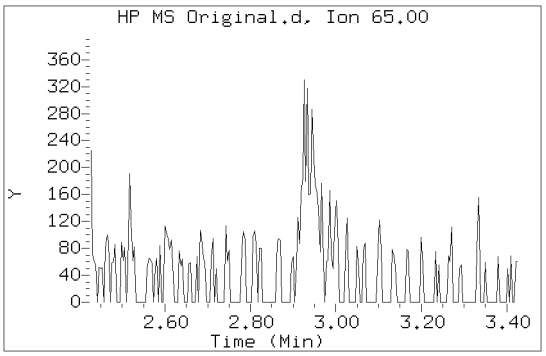
BEFORE
MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



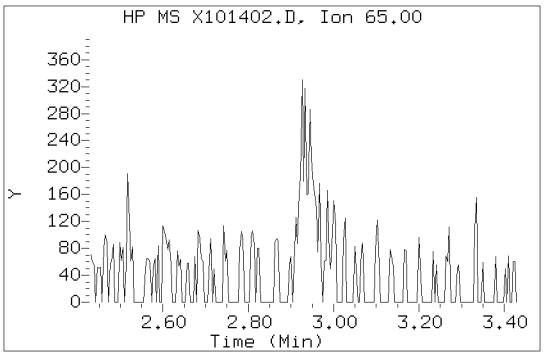
AFTER
MASS
63
AREA
1777
HEIGHT
751
27-Oct-2022
15:16



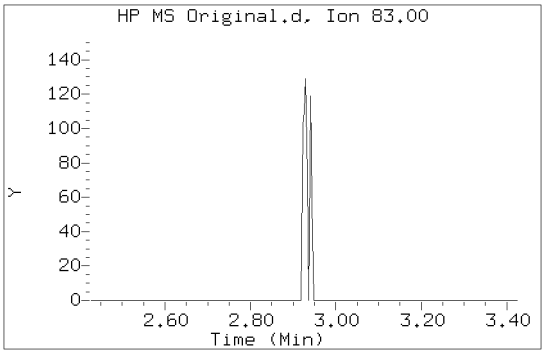
BEFORE
MASS
65
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



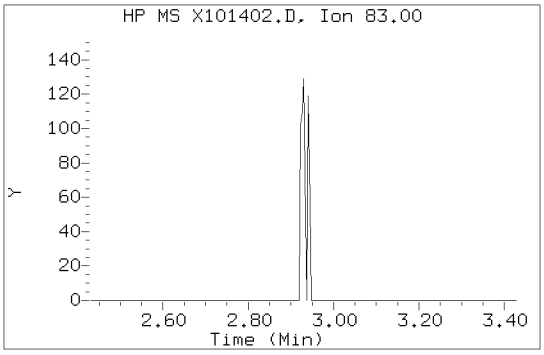
AFTER
MASS
65
AREA
0
HEIGHT
0
27-Oct-2022
15:16



BEFORE
MASS
83
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



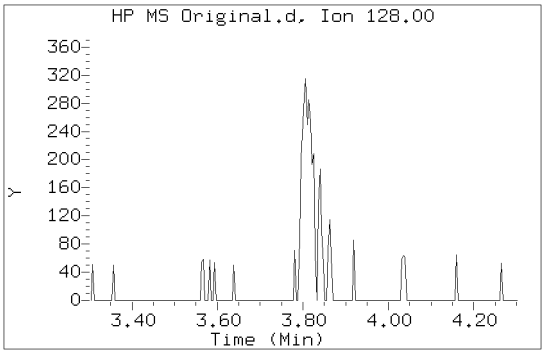
AFTER
MASS
83
AREA
0
HEIGHT
0
27-Oct-2022
15:16



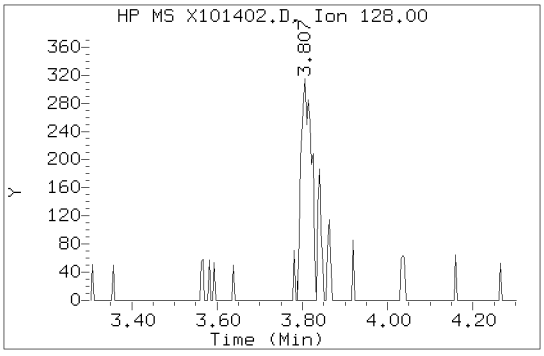
Bromochloromethane (74-97-5)

Reason Code:

BEFORE
MASS
128
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
128
AREA
540
HEIGHT
315
27-Oct-2022
15:16



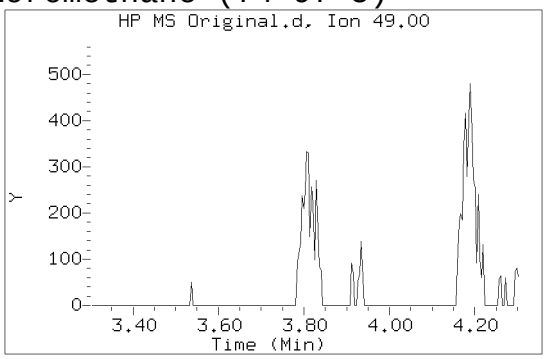
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D
Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

Bromochloromethane (74-97-5)

Reason Code:

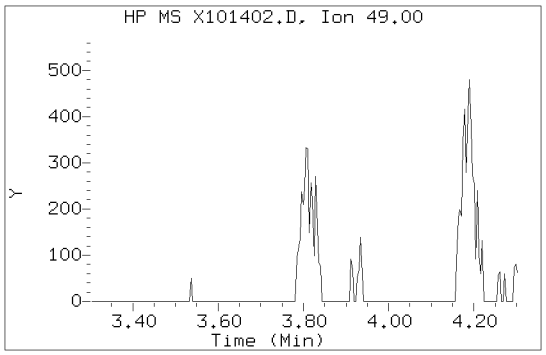
BEFORE

MASS
49
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



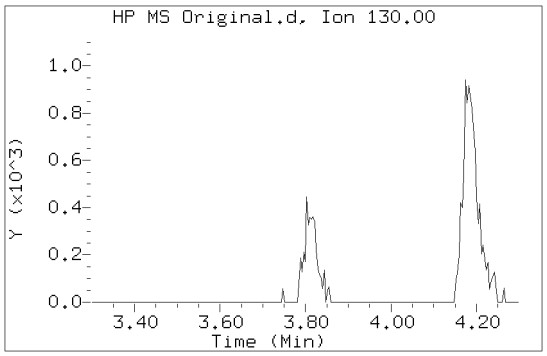
AFTER

MASS
49
AREA
0
HEIGHT
0
27-Oct-2022
15:16



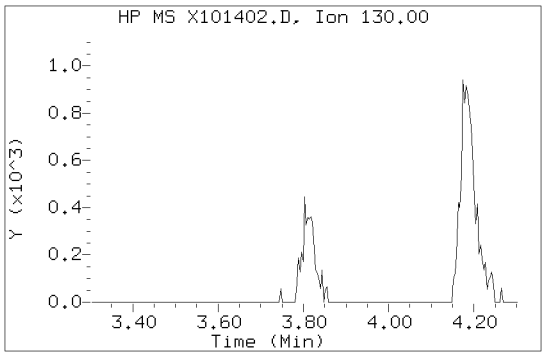
BEFORE

MASS
130
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
130
AREA
0
HEIGHT
0
27-Oct-2022
15:16

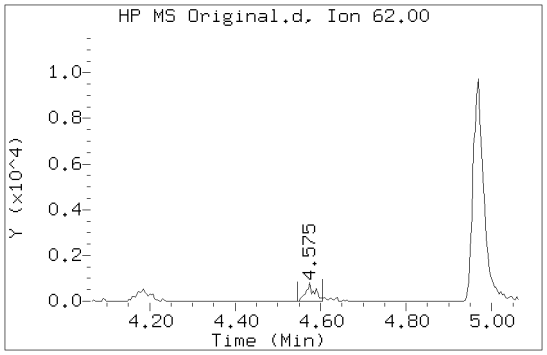


1,2-Dichloroethane (107-06-2)

Reason Code:

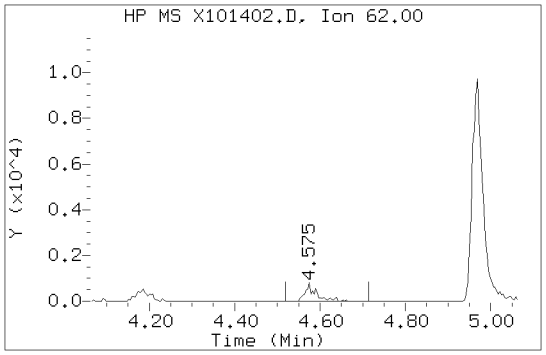
BEFORE

MASS
62
AREA
1160
HEIGHT
824
19-Oct-2022
16:03
linh
pham



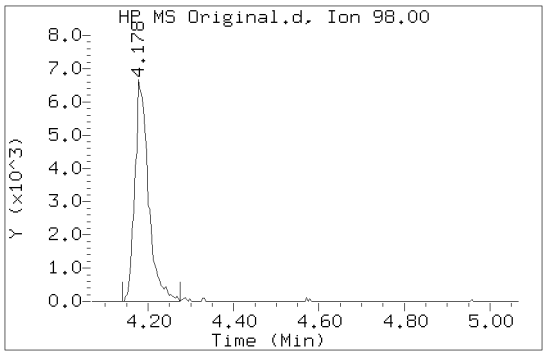
AFTER

MASS
62
AREA
1411
HEIGHT
824
27-Oct-2022
15:16



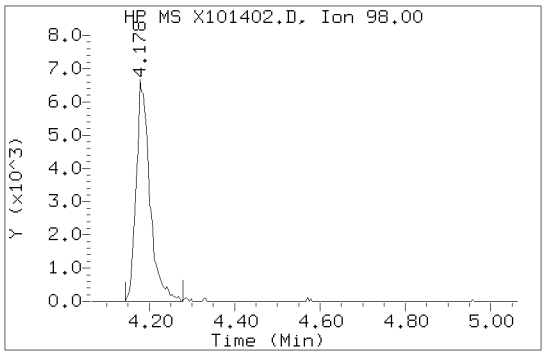
BEFORE

MASS
98
AREA
14787
HEIGHT
6667
19-Oct-2022
16:03
linh
pham



AFTER

MASS
98
AREA
14800
HEIGHT
6667
27-Oct-2022
15:16

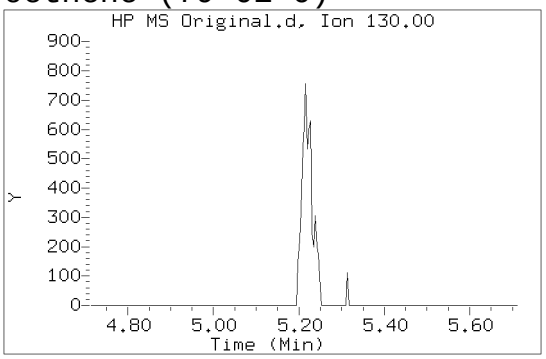


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InstruID : voa6.i
LabSampID : VSTD000.25

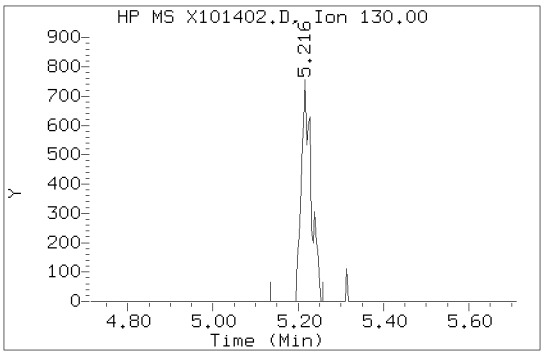
Trichloroethene (79-01-6)

Reason Code:

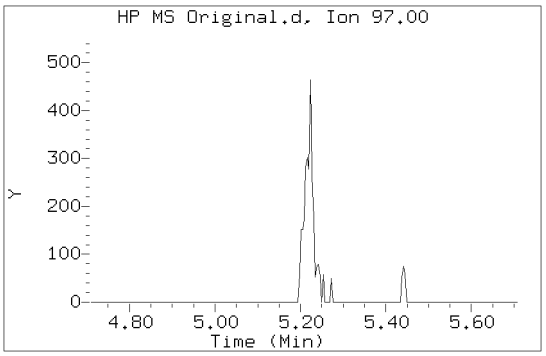
BEFORE
MASS
130
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



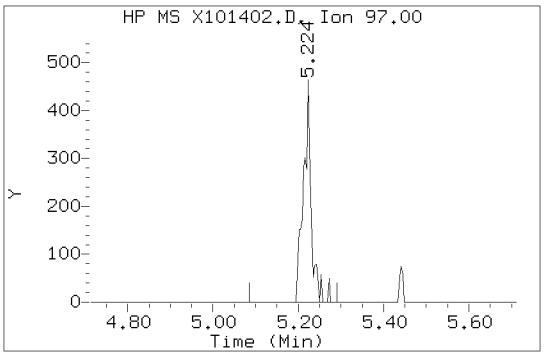
AFTER
MASS
130
AREA
1246
HEIGHT
756
27-Oct-2022
15:16



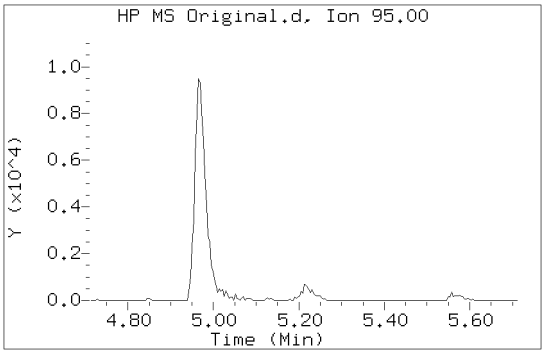
BEFORE
MASS
97
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



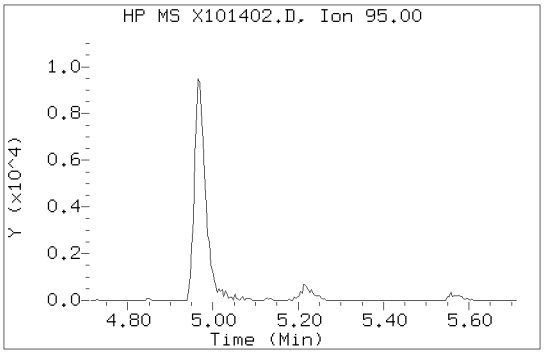
AFTER
MASS
97
AREA
600
HEIGHT
464
27-Oct-2022
15:16



BEFORE
MASS
95
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



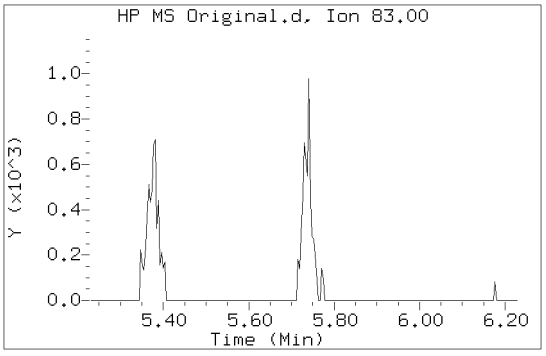
AFTER
MASS
95
AREA
0
HEIGHT
0
27-Oct-2022
15:16



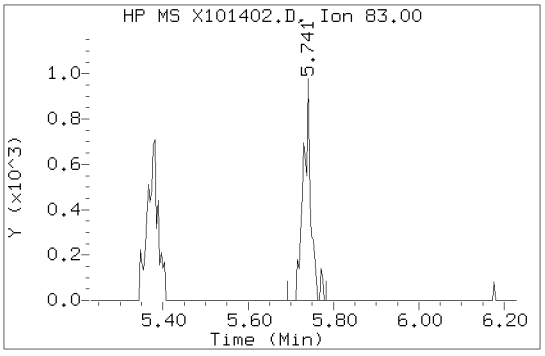
Bromodichloromethane (75-27-4)

Reason Code:

BEFORE
MASS
83
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
83
AREA
1228
HEIGHT
978
27-Oct-2022
15:16

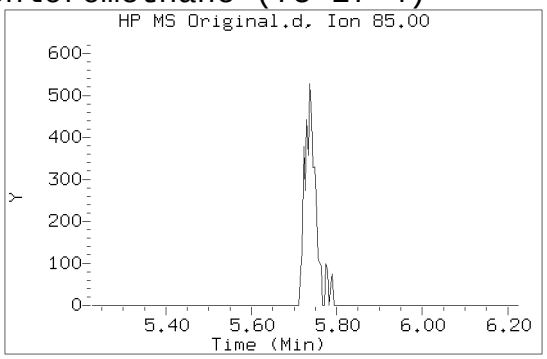


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

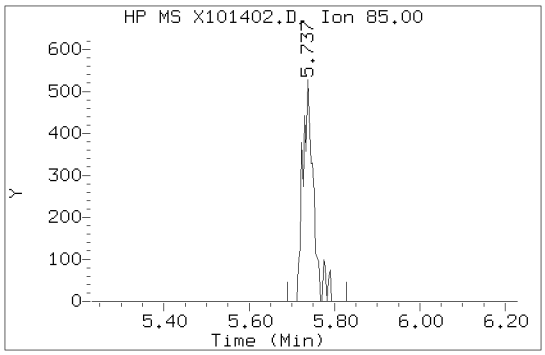
Bromodichloromethane (75-27-4)

Reason Code:

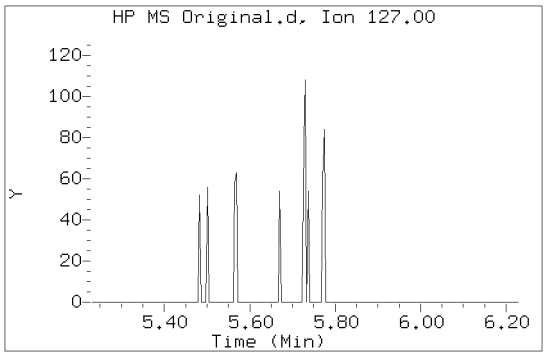
BEFORE
MASS
85
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



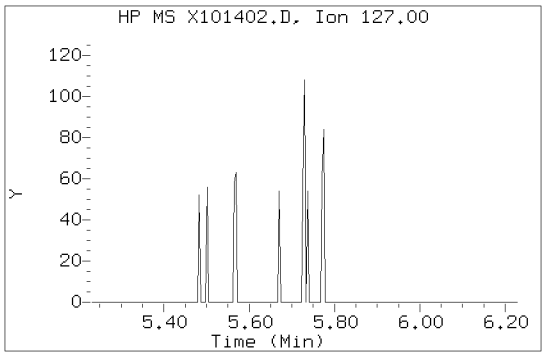
AFTER
MASS
85
AREA
938
HEIGHT
528
27-Oct-2022
15:16



BEFORE
MASS
127
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



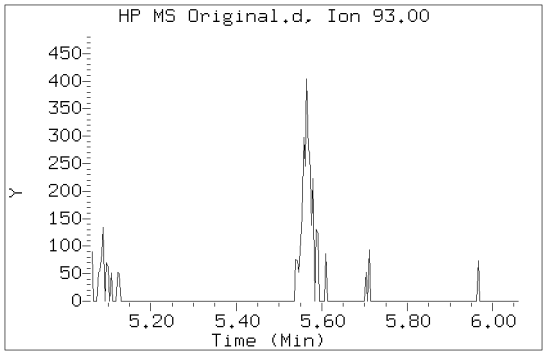
AFTER
MASS
127
AREA
0
HEIGHT
0
27-Oct-2022
15:16



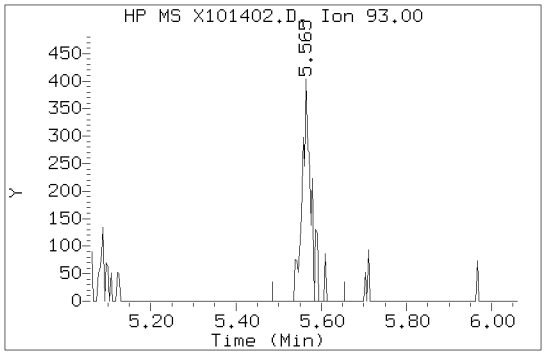
Dibromomethane (74-95-3)

Reason Code:

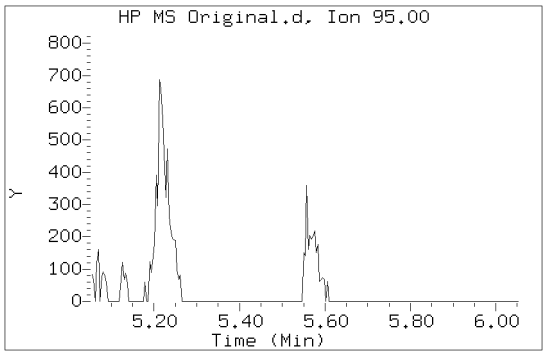
BEFORE
MASS
93
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



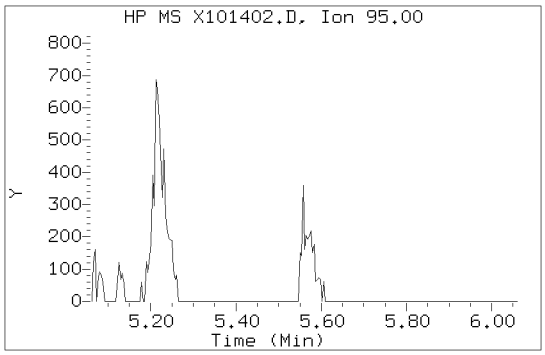
AFTER
MASS
93
AREA
599
HEIGHT
404
27-Oct-2022
15:16



BEFORE
MASS
95
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
95
AREA
0
HEIGHT
0
27-Oct-2022
15:16

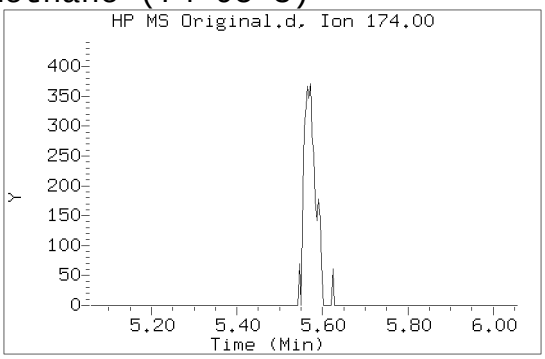


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D
Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

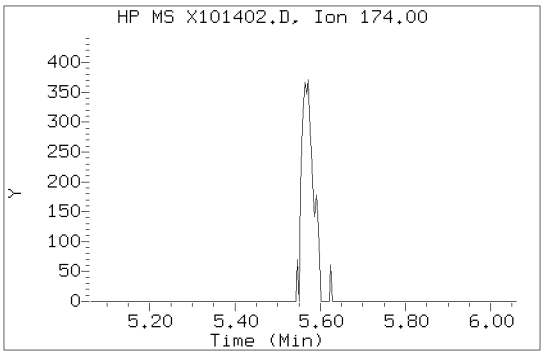
Dibromomethane (74-95-3)

Reason Code:

BEFORE
MASS
174
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



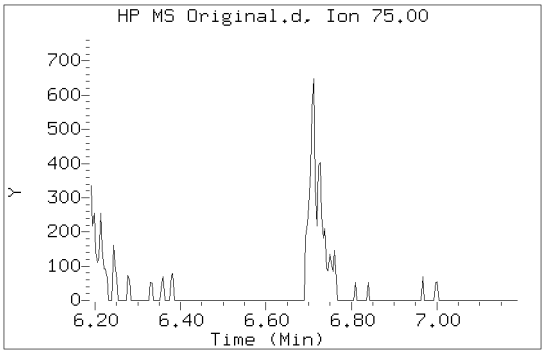
AFTER
MASS
174
AREA
0
HEIGHT
0
27-Oct-2022
15:16



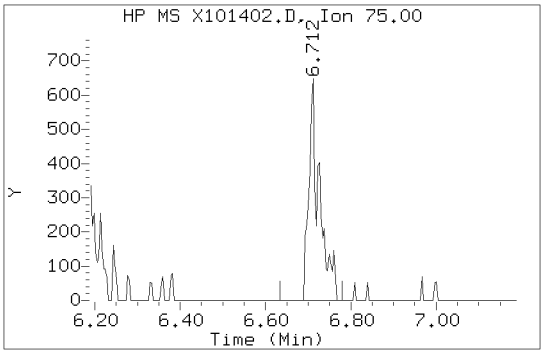
trans-1,3-Dichloropropene (10061-02-6)

Reason Code:

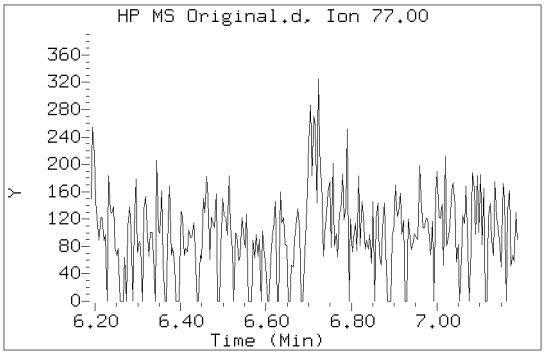
BEFORE
MASS
75
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



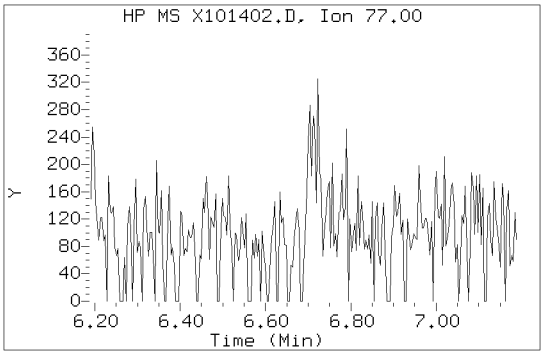
AFTER
MASS
75
AREA
1118
HEIGHT
648
27-Oct-2022
15:16



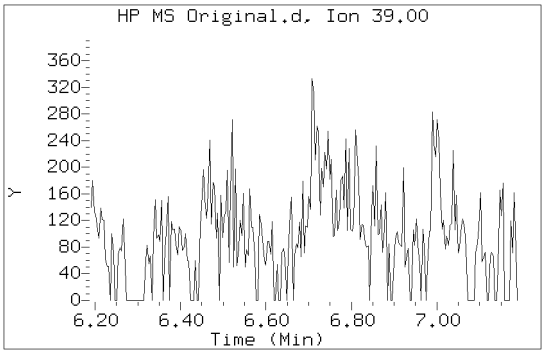
BEFORE
MASS
77
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



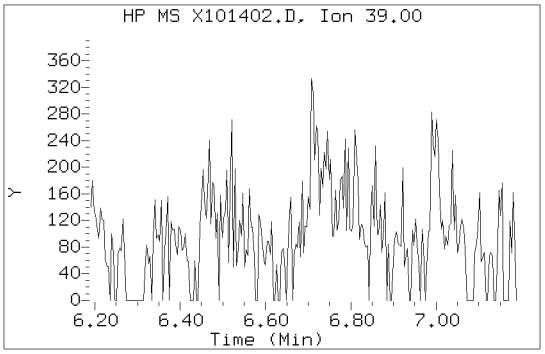
AFTER
MASS
77
AREA
0
HEIGHT
0
27-Oct-2022
15:16



BEFORE
MASS
39
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
39
AREA
0
HEIGHT
0
27-Oct-2022
15:16



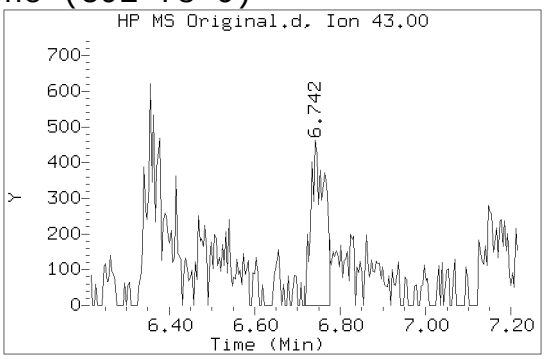
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D
Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

2-Hexanone (591-78-6)

Reason Code:

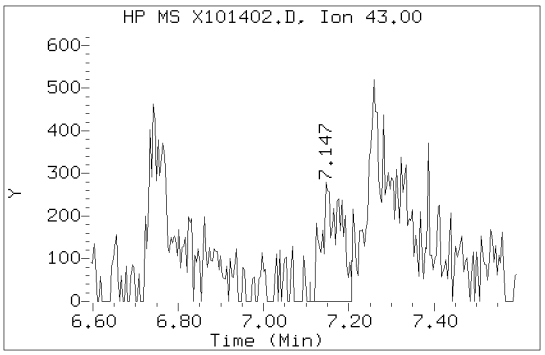
BEFORE

MASS
43
AREA
1019
HEIGHT
463
19-Oct-2022
16:03
linh
pham



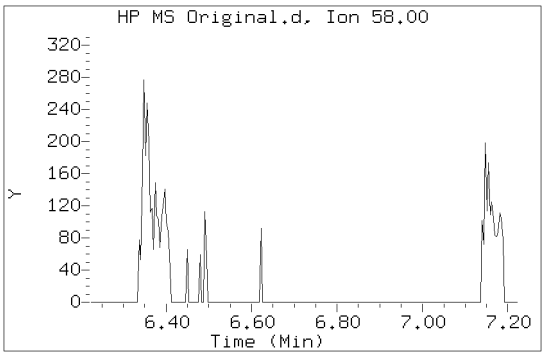
AFTER

MASS
43
AREA
863
HEIGHT
280
27-Oct-2022
15:16



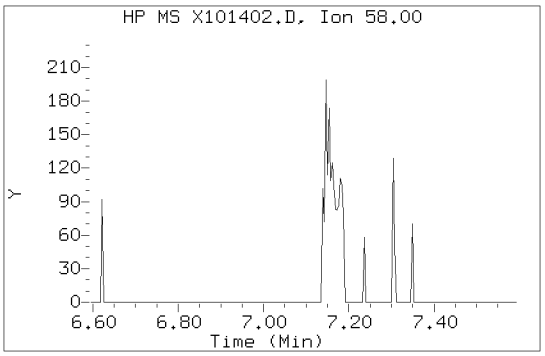
BEFORE

MASS
58
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



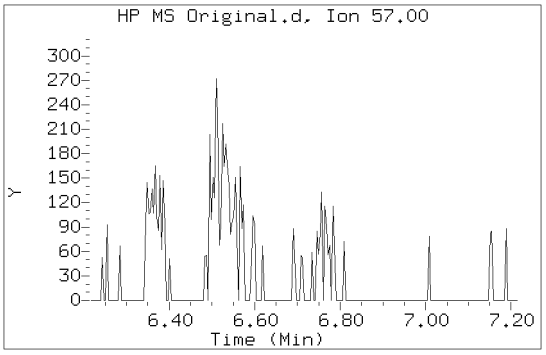
AFTER

MASS
58
AREA
0
HEIGHT
0
27-Oct-2022
15:16



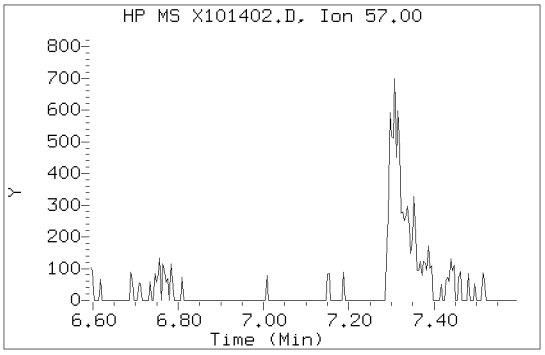
BEFORE

MASS
57
AREA
1144
HEIGHT
699
19-Oct-2022
16:03
linh
pham



AFTER

MASS
57
AREA
0
HEIGHT
0
27-Oct-2022
15:16

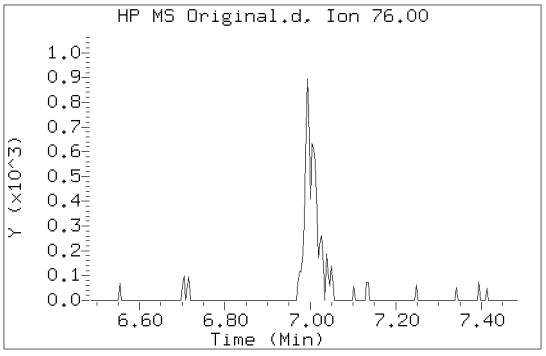


1,3-Dichloropropane (142-28-9)

Reason Code:

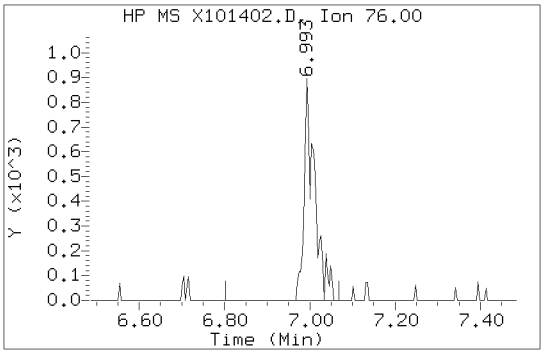
BEFORE

MASS
76
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
76
AREA
1570
HEIGHT
895
27-Oct-2022
15:16

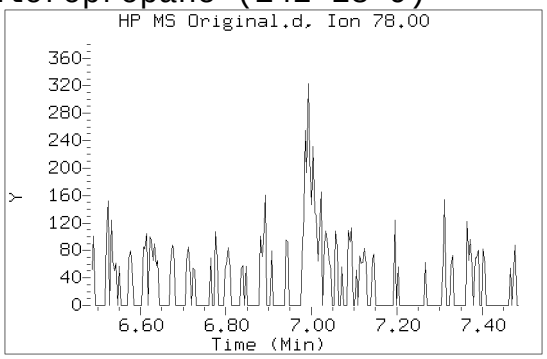


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

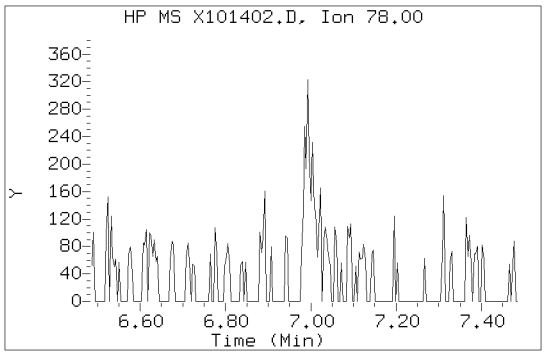
1,3-Dichloropropane (142-28-9)

Reason Code:

BEFORE
MASS
78
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



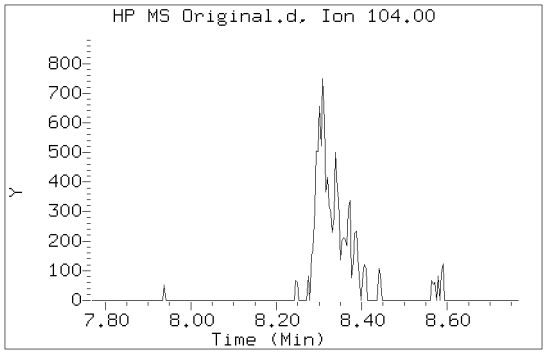
AFTER
MASS
78
AREA
0
HEIGHT
0
27-Oct-2022
15:16



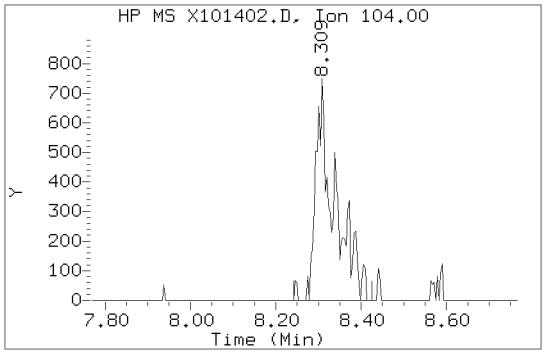
Styrene (100-42-5)

Reason Code:

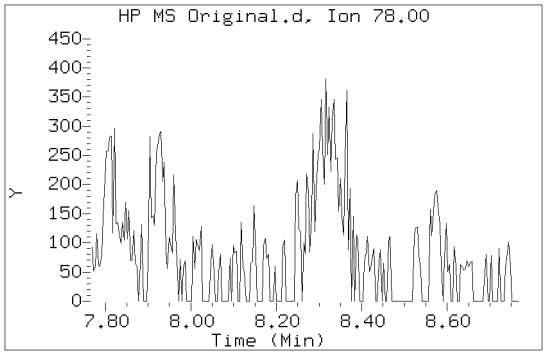
BEFORE
MASS
104
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



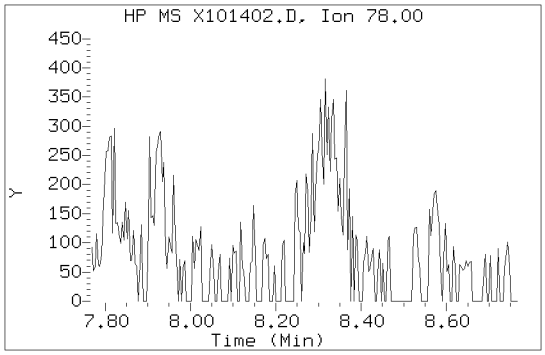
AFTER
MASS
104
AREA
2311
HEIGHT
749
27-Oct-2022
15:16



BEFORE
MASS
78
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



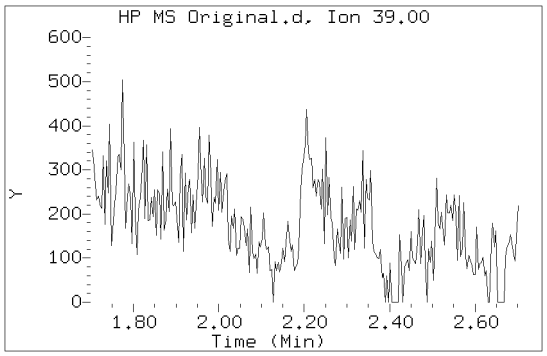
AFTER
MASS
78
AREA
0
HEIGHT
0
27-Oct-2022
15:16



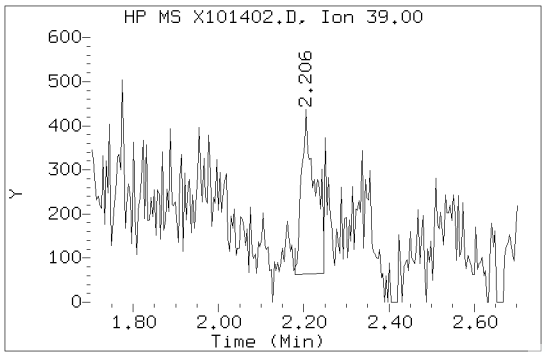
Acetonitrile (75-05-8)

Reason Code:

BEFORE
MASS
39
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
39
AREA
836
HEIGHT
373
27-Oct-2022
15:16

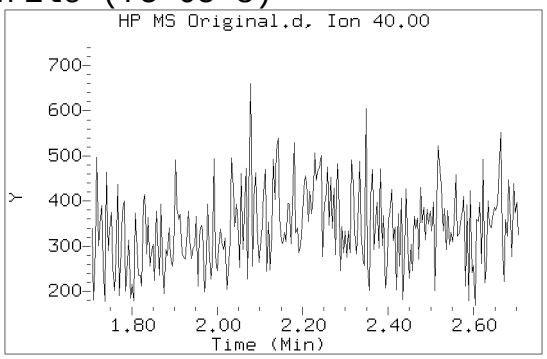


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

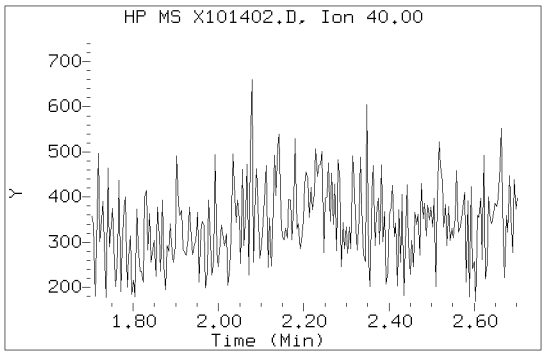
Acetonitrile (75-05-8)

Reason Code:

BEFORE
MASS
40
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



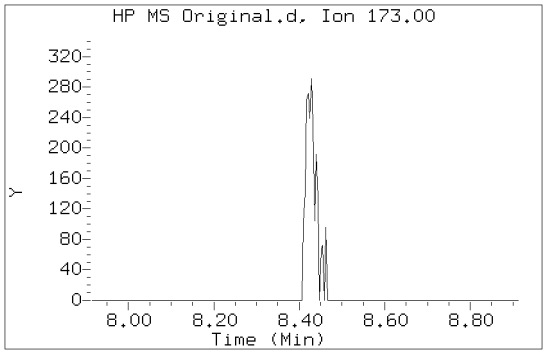
AFTER
MASS
40
AREA
0
HEIGHT
0
27-Oct-2022
15:16



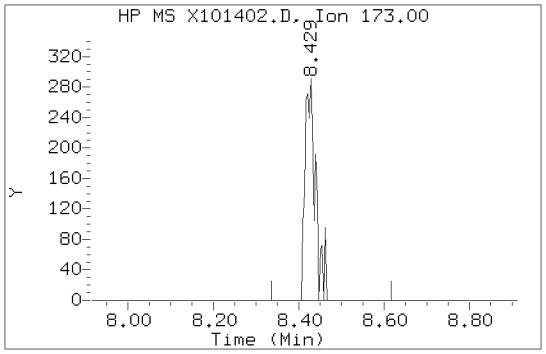
Bromoform (75-25-2)

Reason Code:

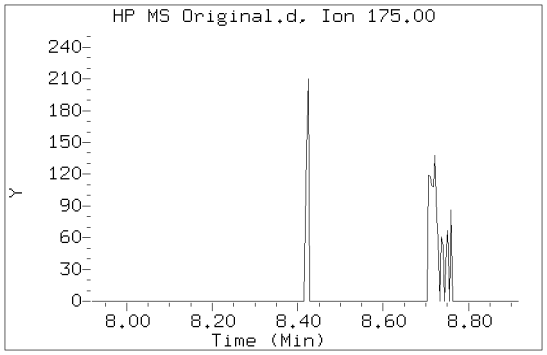
BEFORE
MASS
173
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



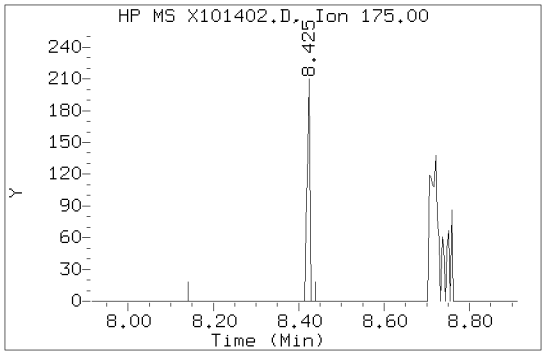
AFTER
MASS
173
AREA
495
HEIGHT
291
27-Oct-2022
15:16



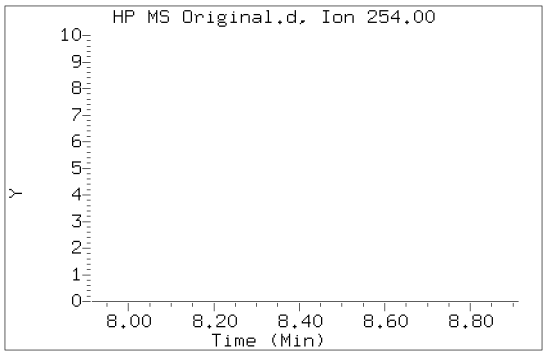
BEFORE
MASS
175
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



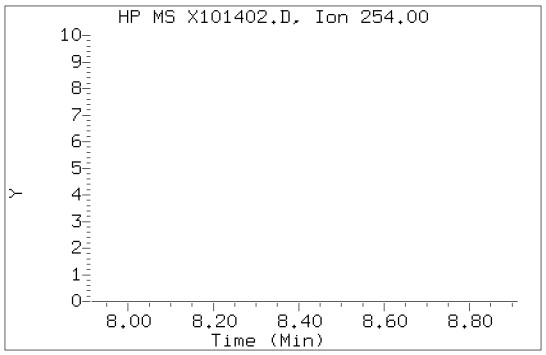
AFTER
MASS
175
AREA
95
HEIGHT
210
27-Oct-2022
15:16



BEFORE
MASS
254
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
254
AREA
0
HEIGHT
0
27-Oct-2022
15:16



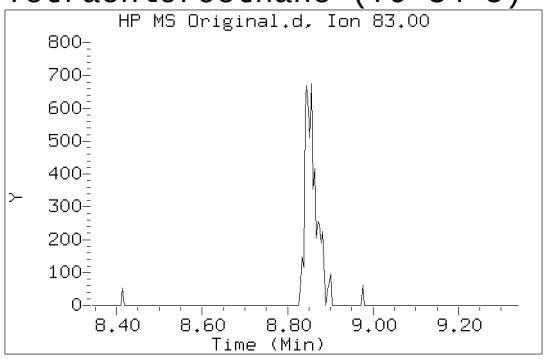
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D
Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

1,1,2,2-Tetrachloroethane (79-34-5)

Reason Code:

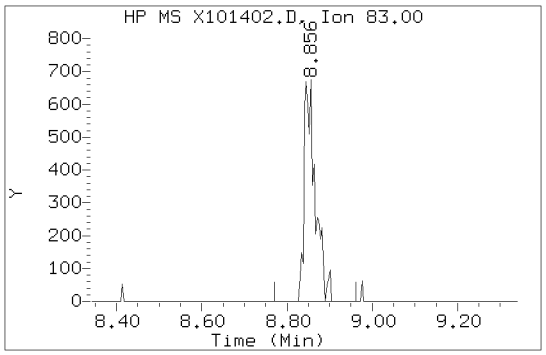
BEFORE

MASS
83
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



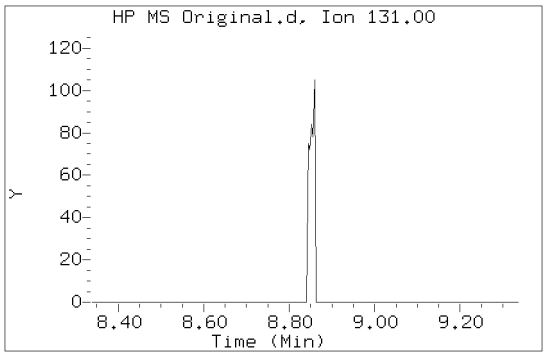
AFTER

MASS
83
AREA
1251
HEIGHT
675
27-Oct-2022
15:16



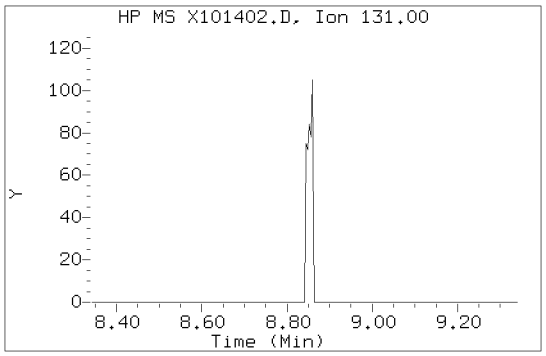
BEFORE

MASS
131
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



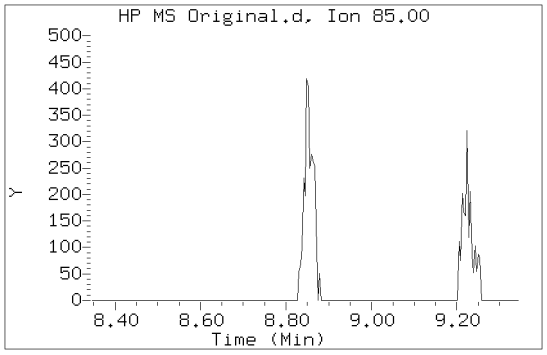
AFTER

MASS
131
AREA
0
HEIGHT
0
27-Oct-2022
15:16



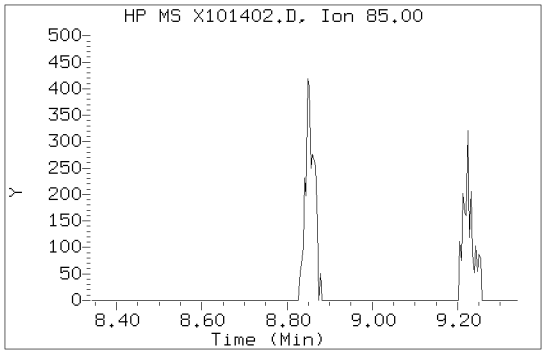
BEFORE

MASS
85
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
85
AREA
0
HEIGHT
0
27-Oct-2022
15:16

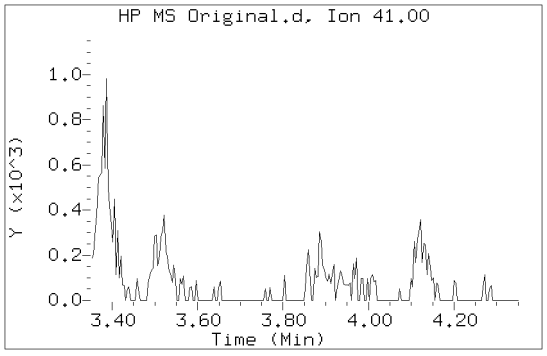


Methacrylonitrile (126-98-7)

Reason Code:

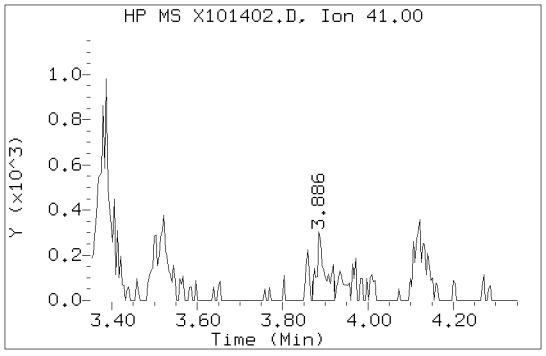
BEFORE

MASS
41
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
41
AREA
416
HEIGHT
304
27-Oct-2022
15:16



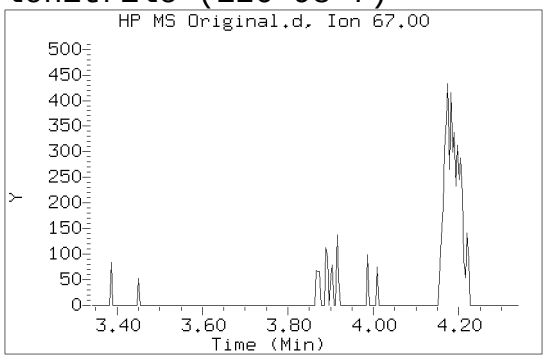
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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

Methacrylonitrile (126-98-7)

Reason Code:

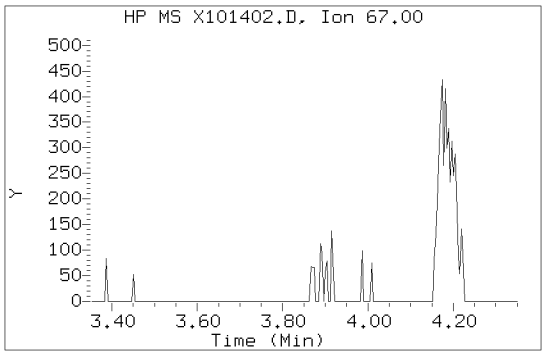
BEFORE

MASS
67
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



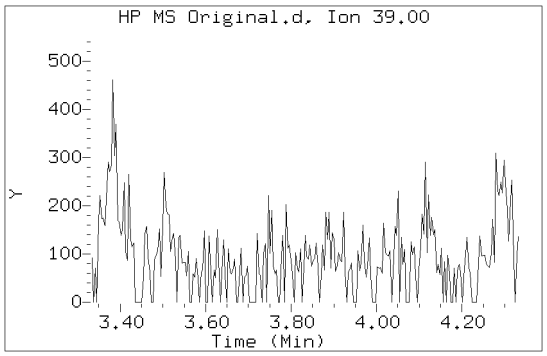
AFTER

MASS
67
AREA
0
HEIGHT
0
27-Oct-2022
15:16



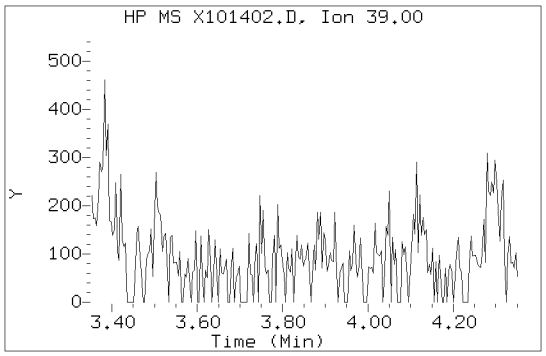
BEFORE

MASS
39
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
39
AREA
0
HEIGHT
0
27-Oct-2022
15:16

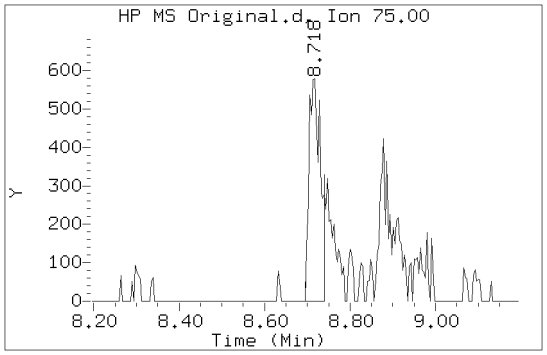


1,2,3-Trichloropropane (96-18-4)

Reason Code:

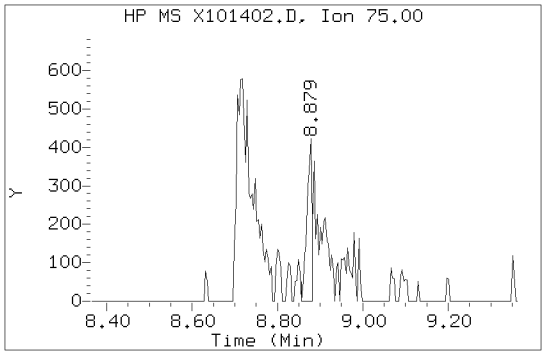
BEFORE

MASS
75
AREA
1071
HEIGHT
578
19-Oct-2022
16:03
linh
pham



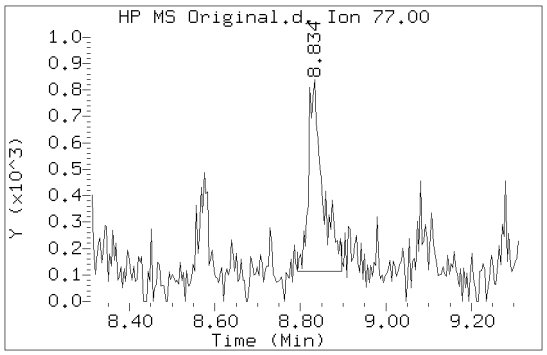
AFTER

MASS
75
AREA
355
HEIGHT
423
27-Oct-2022
15:16



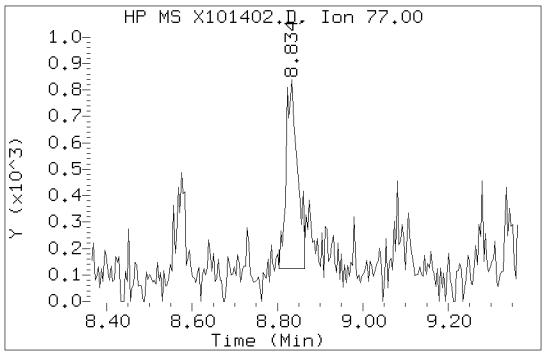
BEFORE

MASS
77
AREA
1675
HEIGHT
726
19-Oct-2022
16:03
linh
pham



AFTER

MASS
77
AREA
1321
HEIGHT
715
27-Oct-2022
15:16



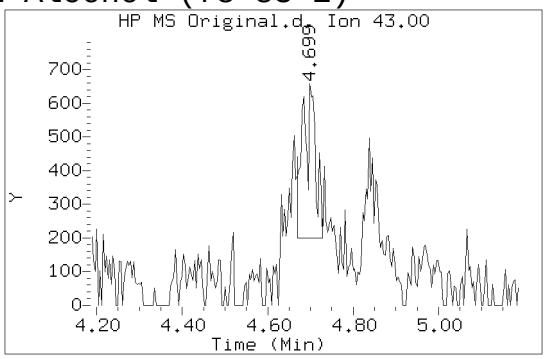
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D
Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

Isobutyl Alcohol (78-83-1)

Reason Code:

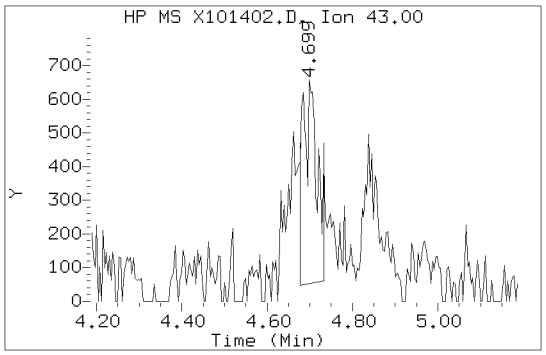
BEFORE

MASS
43
AREA
965
HEIGHT
458
19-Oct-2022
16:03
linh
pham



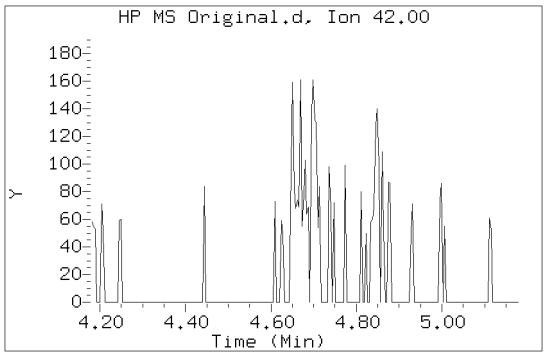
AFTER

MASS
43
AREA
1453
HEIGHT
605
27-Oct-2022
15:16



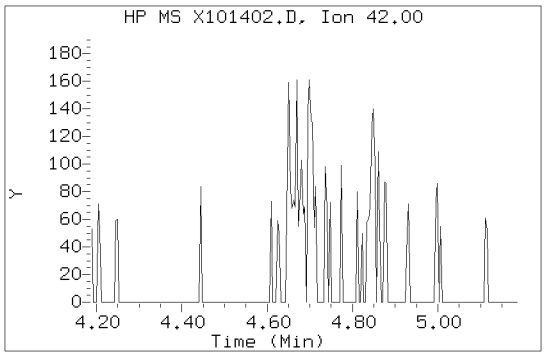
BEFORE

MASS
42
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



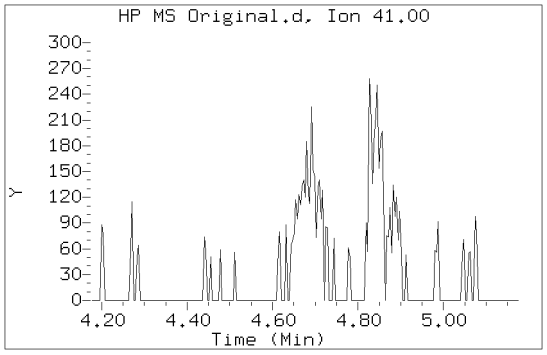
AFTER

MASS
42
AREA
0
HEIGHT
0
27-Oct-2022
15:16



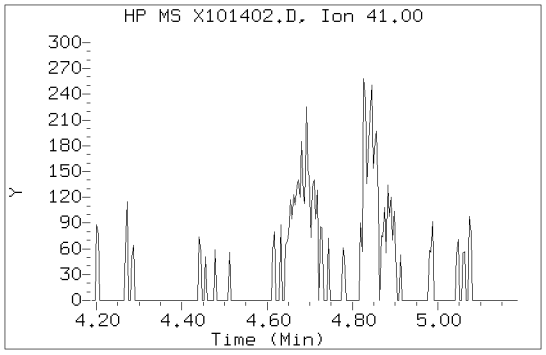
BEFORE

MASS
41
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
41
AREA
0
HEIGHT
0
27-Oct-2022
15:16

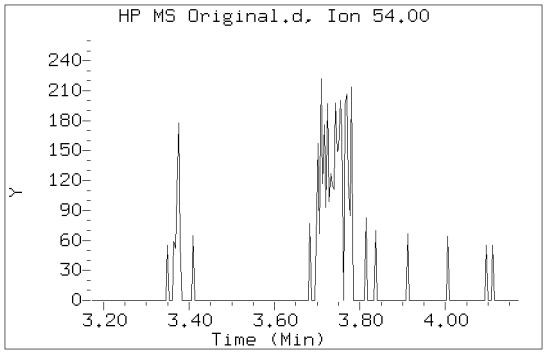


Propionitrile (107-12-0)

Reason Code:

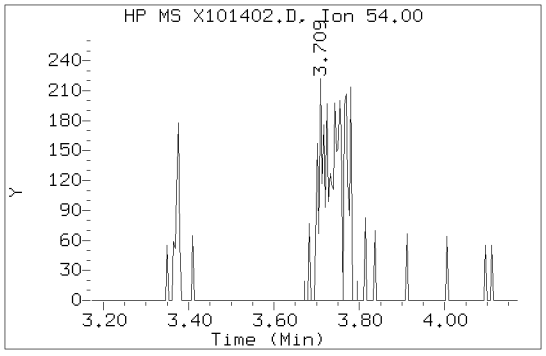
BEFORE

MASS
54
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
54
AREA
743
HEIGHT
222
27-Oct-2022
15:16



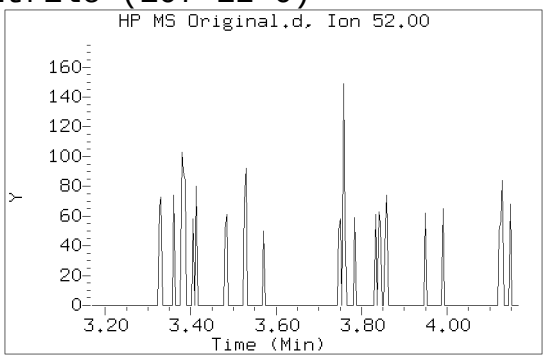
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D
Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

Propionitrile (107-12-0)

Reason Code:

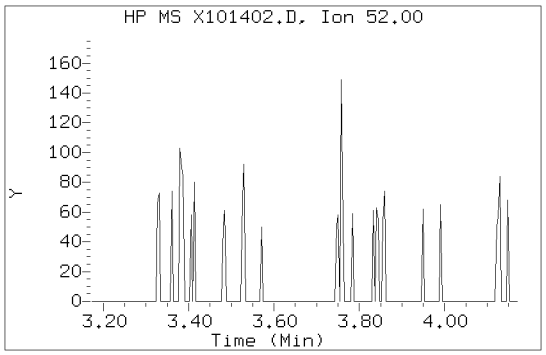
BEFORE

MASS
52
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



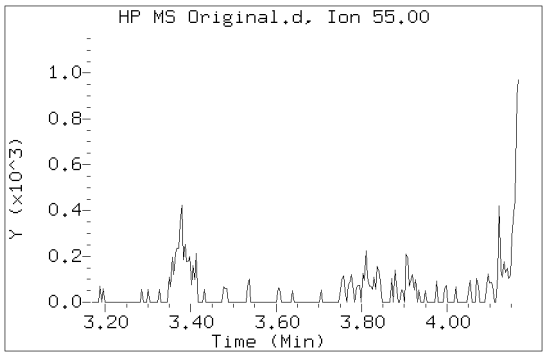
AFTER

MASS
52
AREA
0
HEIGHT
0
27-Oct-2022
15:16



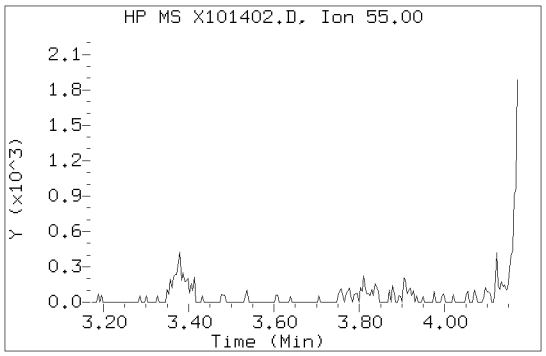
BEFORE

MASS
55
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
55
AREA
0
HEIGHT
0
27-Oct-2022
15:16

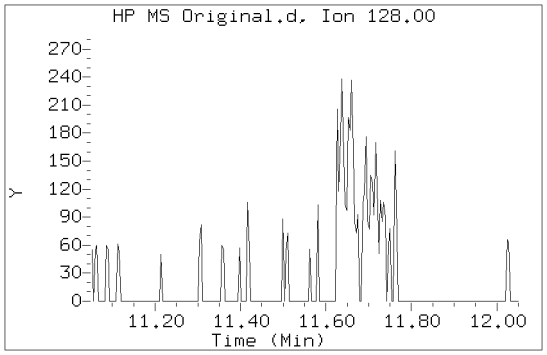


Naphthalene (91-20-3)

Reason Code:

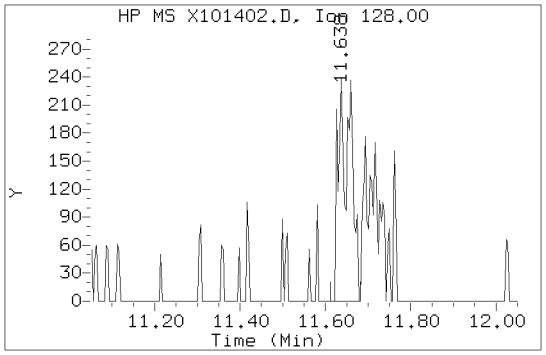
BEFORE

MASS
128
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
128
AREA
477
HEIGHT
238
27-Oct-2022
15:16

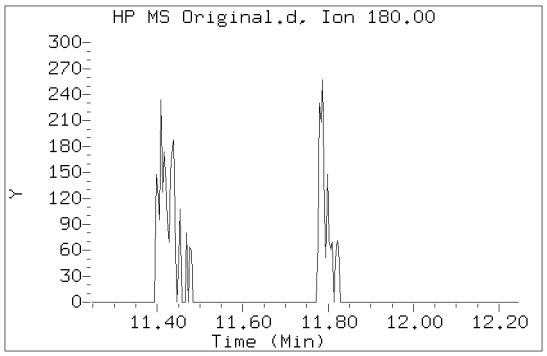


1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

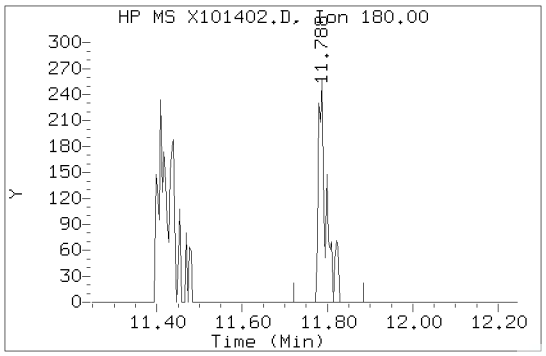
BEFORE

MASS
180
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
180
AREA
326
HEIGHT
257
27-Oct-2022
15:16

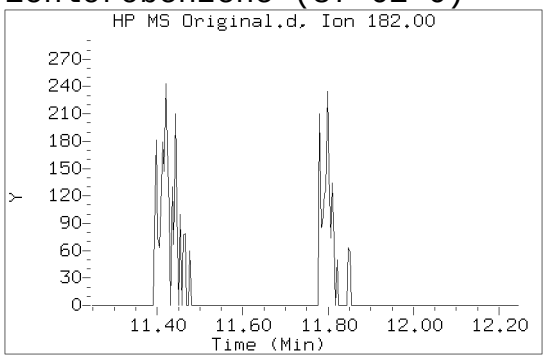


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

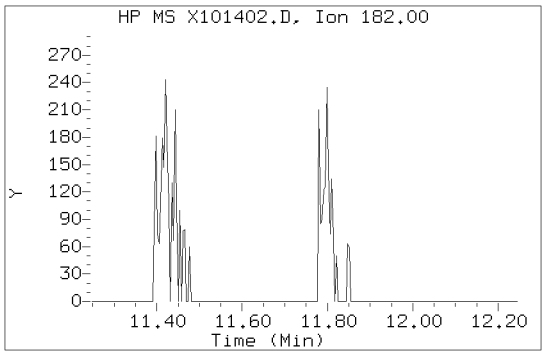
1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

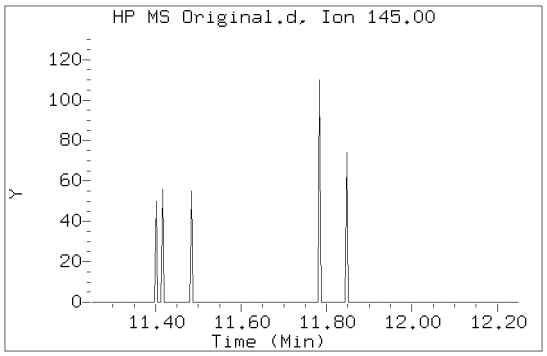
BEFORE
MASS
182
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



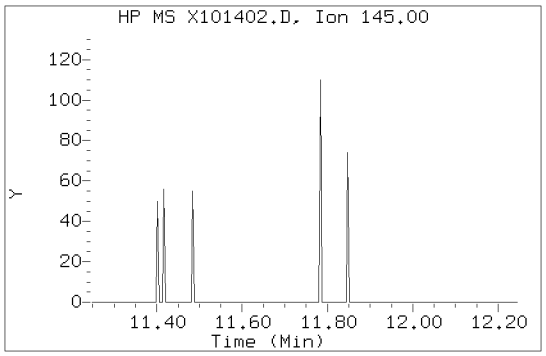
AFTER
MASS
182
AREA
0
HEIGHT
0
27-Oct-2022
15:16



BEFORE
MASS
145
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



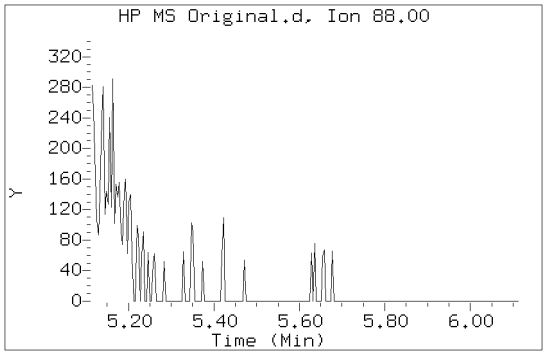
AFTER
MASS
145
AREA
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HEIGHT
0
27-Oct-2022
15:16



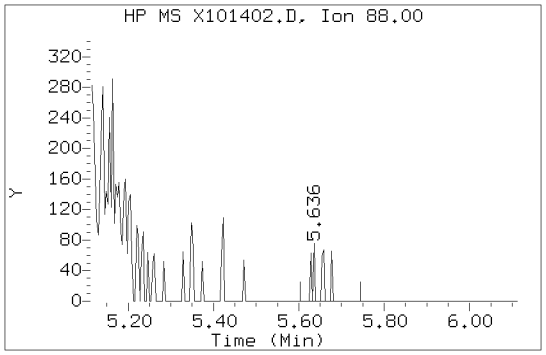
1,4-Dioxane ()

Reason Code:

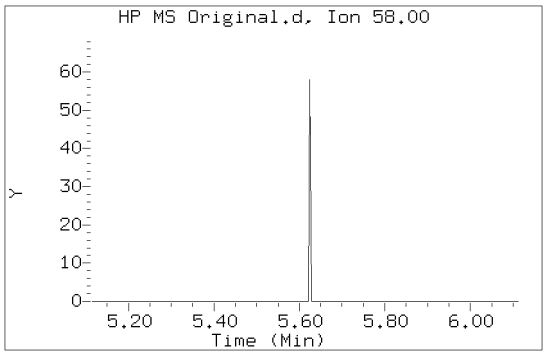
BEFORE
MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



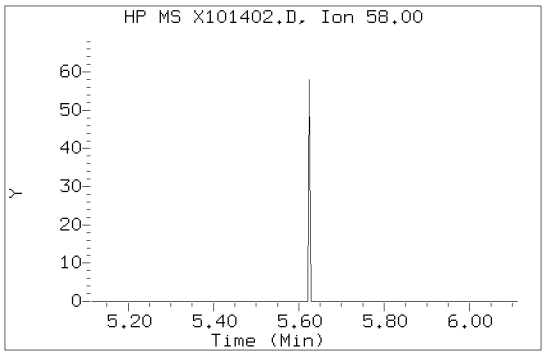
AFTER
MASS
88
AREA
74
HEIGHT
76
27-Oct-2022
15:16



BEFORE
MASS
58
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
58
AREA
0
HEIGHT
0
27-Oct-2022
15:16

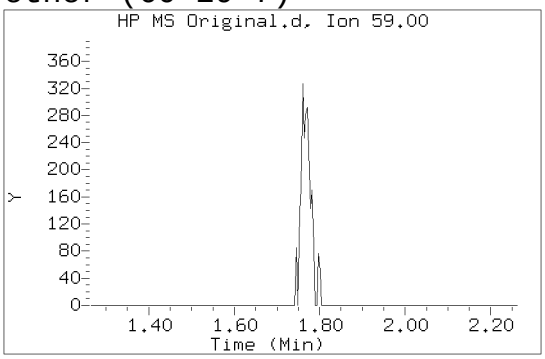


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

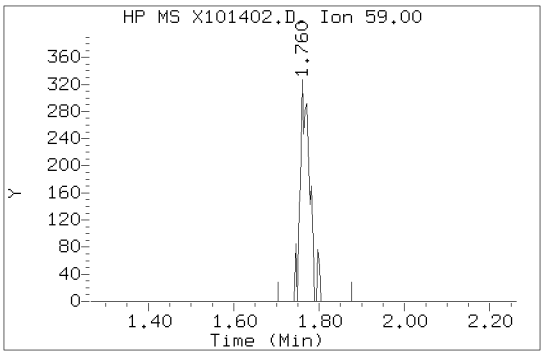
Diethyl ether (60-29-7)

Reason Code:

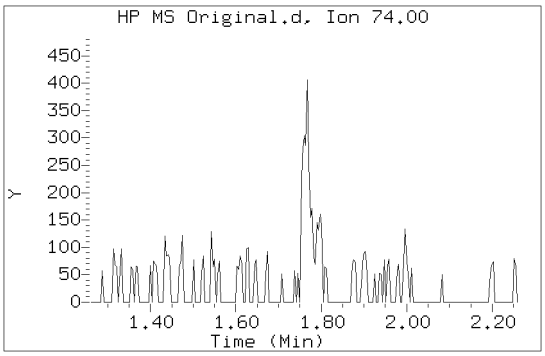
BEFORE
MASS
59
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



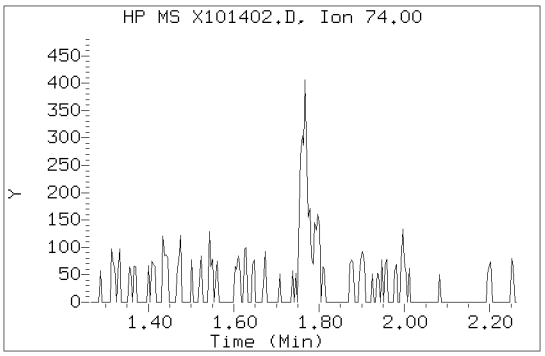
AFTER
MASS
59
AREA
517
HEIGHT
327
27-Oct-2022
15:16



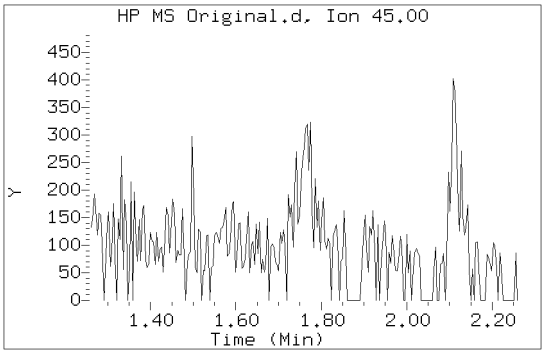
BEFORE
MASS
74
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



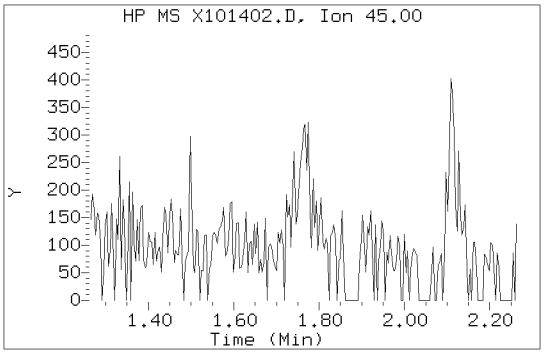
AFTER
MASS
74
AREA
0
HEIGHT
0
27-Oct-2022
15:16



BEFORE
MASS
45
AREA
0
HEIGHT
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19-Oct-2022
16:03
linh
pham



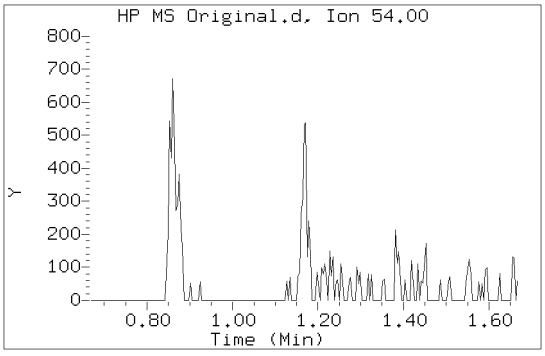
AFTER
MASS
45
AREA
0
HEIGHT
0
27-Oct-2022
15:16



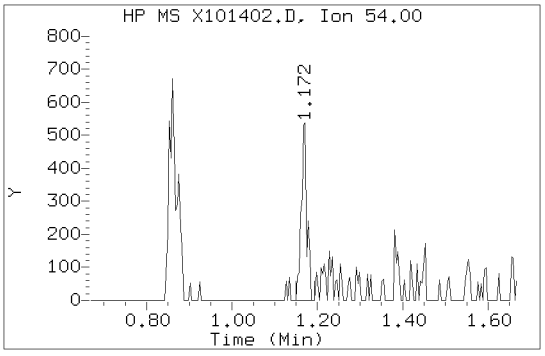
1,3-Butadiene (106-99-0)

Reason Code:

BEFORE
MASS
54
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
54
AREA
518
HEIGHT
538
27-Oct-2022
15:16



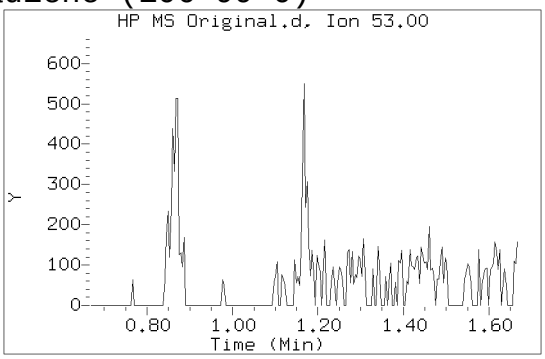
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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

1,3-Butadiene (106-99-0)

Reason Code:

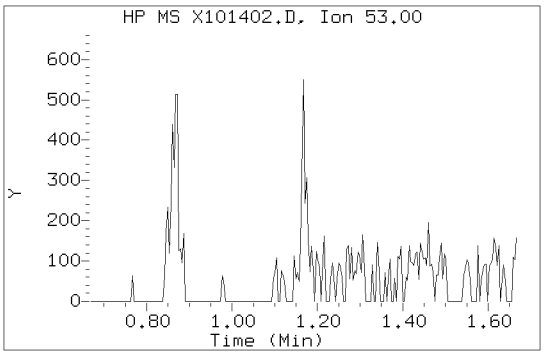
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AFTER

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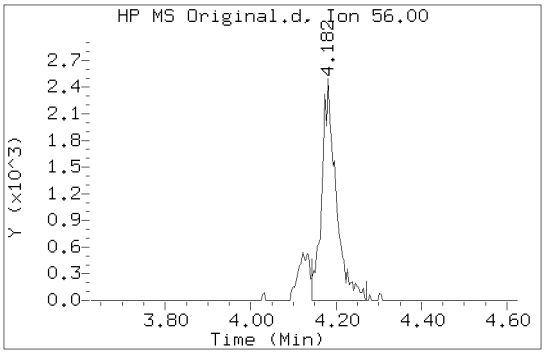


Cyclohexane (110-82-7)

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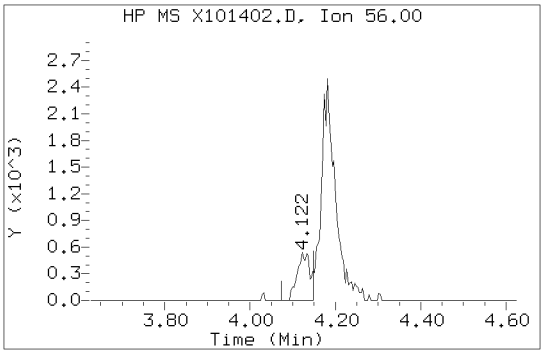
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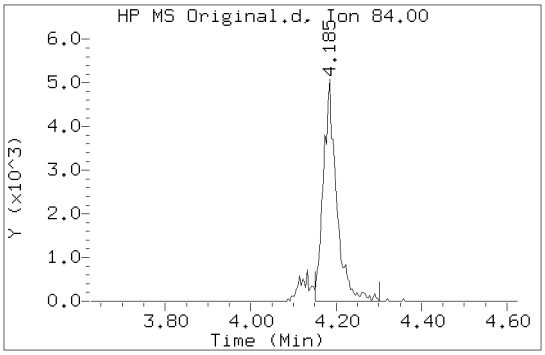
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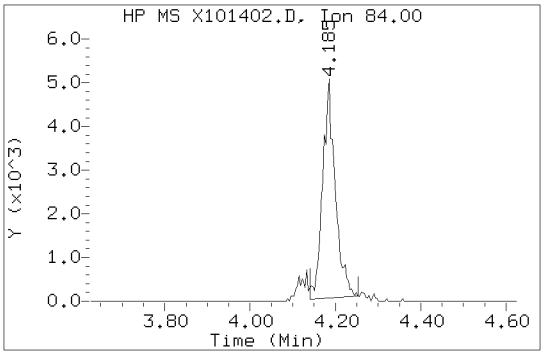
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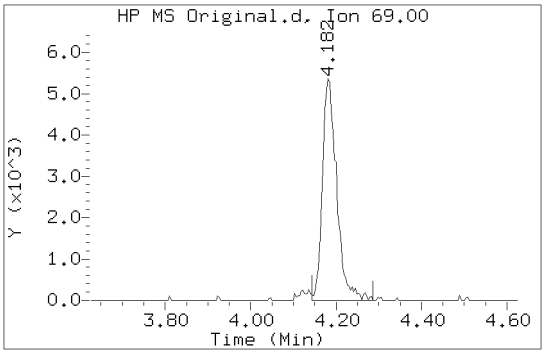
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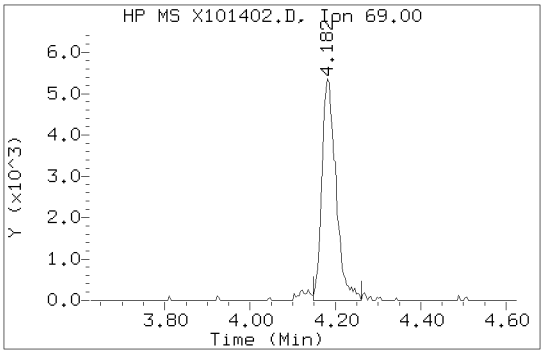
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AFTER

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15:16



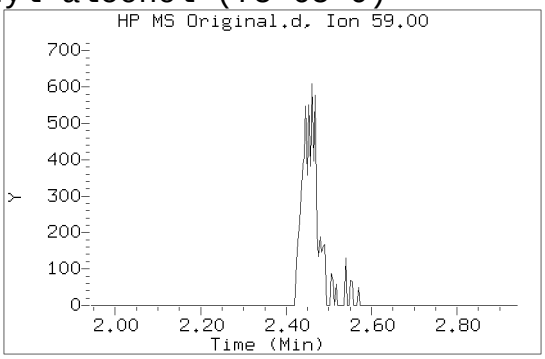
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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

Tert-Butyl alcohol (75-65-0)

Reason Code:

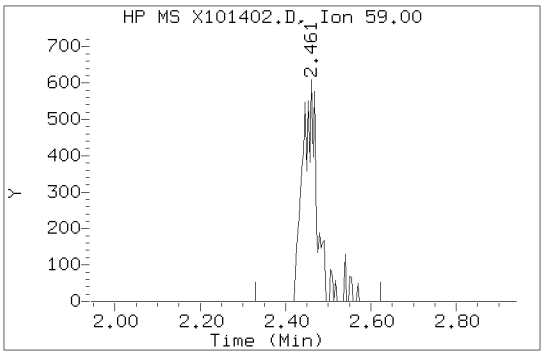
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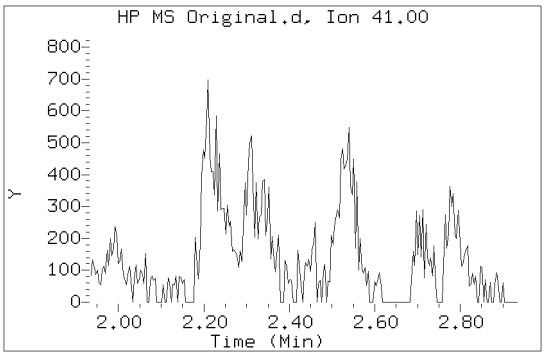
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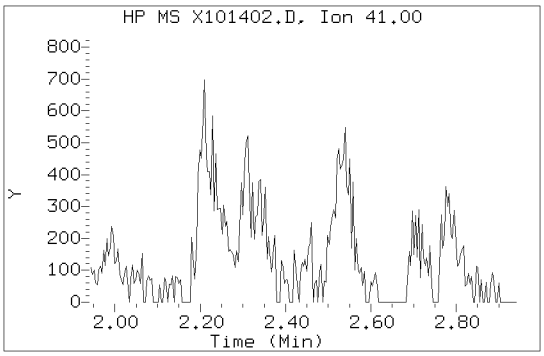
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pham



AFTER

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27-Oct-2022
15:16



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D Page 1
Report Date: 27-Oct-2022 15:16

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
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Inj Date : 14-OCT-2022 12:08
Operator : PC Inst ID: voa6.i
Smp Info : VSTD000.5;VSTD000.5;1;2;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
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Meth Date : 27-Oct-2022 15:16 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 11:26 Cal File: X101402.D
Als bottle: 4 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.181	4.181	(1.000)	420299	50.0000	
135	1,4-Dioxane	88	5.606	5.606	(1.341)	417	10.0000	13.03(M)
140	1,3-Butadiene	54	1.167	1.167	(0.279)	1358	0.50000	0.59
25	Methacrylonitrile	41	3.885	3.885	(0.929)	1331	0.50000	0.50(M)
12	Isobutyl Alcohol	43	4.691	4.691	(1.122)	6709	10.0000	5.66(M)
13	Acetonitrile	39	2.206	2.206	(0.528)	1282	5.00000	3.91(M)
14	Allyl Chloride	41	2.206	2.206	(0.528)	3566	0.50000	0.49(M)
4	Propionitrile	54	3.716	3.716	(0.889)	1528	5.00000	4.14(M)
136	n-Hexane	57	2.787	2.787	(0.667)	2026	0.50000	0.54
72	trans-1,4-Dichloro-2-butene	53	8.905	8.905	(1.161)	654	0.50000	2.08(M)
23	Chloroprene	53	1.778	1.778	(0.425)	621	0.50000	0.57(M)
145	alpha-Methylstyrene	118	9.268	9.268	(0.959)	5074	0.50000	0.97(M)
200	Dimethyl Disulfide	94	6.206	6.206	(0.809)	3296	0.50000	0.40
139	Diethyl ether	59	1.760	1.760	(0.421)	1081	0.50000	0.53(M)
130	Ethyl Acetate	43	3.698	3.698	(0.884)	2349	0.50000	(M)
40	Methyl Methacrylate	41	5.639	5.639	(1.349)	1431	0.50000	0.54(M)
49	Ethyl Methacrylate	69	6.805	6.805	(1.370)	2349	0.50000	0.46(M)
150	Allyl alcohol	57	2.787	2.787	(0.667)	2026	10.0000	10.87
166	1,2,3-Trimethylbenzene	105	9.740	9.740	(1.008)	5687	0.50000	0.43
162	Butyl acrylate	55	8.294	8.294	(1.081)	1944	0.50000	0.33

2 Dichlorodifluoromethane	85	0.976	0.976 (0.234)	1958	0.50000	(M)	
3 Chloromethane	50	1.081	1.081 (0.259)	2218	0.50000	0.28	

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D Page 2
Report Date: 27-Oct-2022 15:16

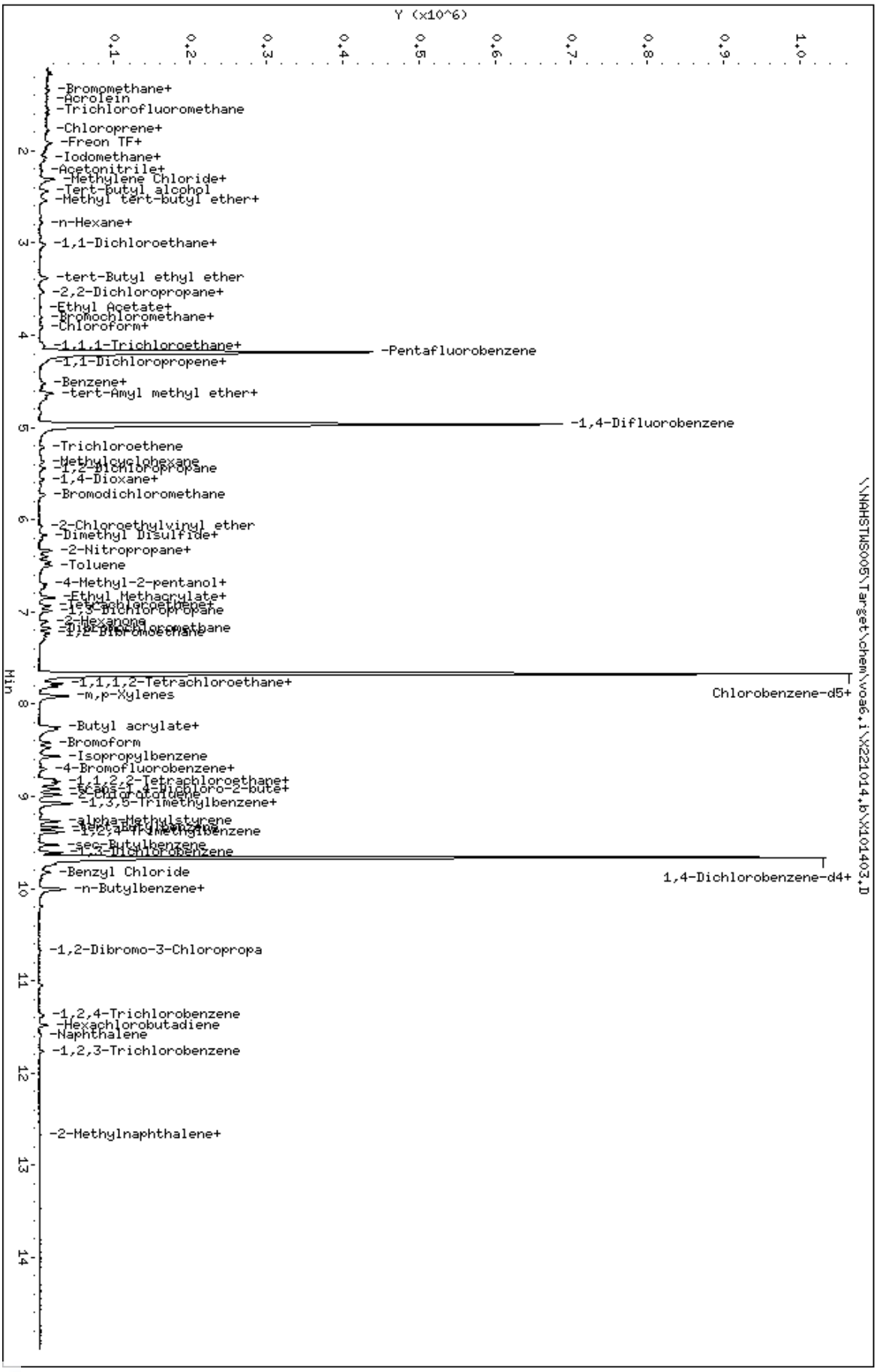
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	5 Vinyl Chloride	62	1.145	1.145	(0.274)	1737	0.50000	0.54
	6 Bromomethane	94	1.344	1.344	(0.321)	1461	0.50000	0.07(M)
	7 Chloroethane	64	1.407	1.407	(0.337)	982	0.50000	0.50(M)
	8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	2200	0.50000	0.51
	9 Acrolein	56	1.445	1.445	(0.346)	207	1.00000	0.88(M)
	10 Acetone	43	1.981	1.981	(0.474)	1015	1.00000	1.02(M)
	11 1,1-Dichloroethene	96	1.925	1.925	(0.460)	1643	0.50000	0.60(M)
	15 Iodomethane	142	2.030	2.030	(0.485)	1369	1.00000	3.69(T)
	16 Acrylonitrile	53	2.592	2.592	(0.620)	699	1.00000	1.90(M)
	17 Methylene Chloride	84	2.307	2.307	(0.552)	3314	0.50000	(M)
	18 Methyl tert-butyl ether	73	2.543	2.543	(0.608)	4532	0.50000	0.45
	19 Carbon Disulfide	76	2.071	2.071	(0.495)	9912	1.00000	1.04
	20 trans-1,2-Dichloroethene	96	2.551	2.551	(0.610)	2045	0.50000	0.55(M)
	21 Vinyl Acetate	43	3.030	3.030	(0.725)	8462	1.00000	1.01(M)
	22 1,1-Dichloroethane	63	2.925	2.925	(0.700)	3394	0.50000	0.53(T)
	24 2-Butanone	43	3.623	3.623	(0.866)	1217	1.00000	1.20(M)
	26 2,2-Dichloropropane	77	3.507	3.507	(0.839)	2636	0.50000	0.51
	27 cis-1,2-Dichloroethene	96	3.540	3.540	(0.847)	2378	0.50000	0.54
	28 Chloroform	83	3.915	3.915	(0.936)	4178	0.50000	0.60
	29 Bromochloromethane	128	3.810	3.810	(0.911)	1539	0.50000	0.63
$	30 Dibromofluoromethane	113	4.118	4.118	(0.985)	1913	0.50000	(M)
	31 1,1,1-Trichloroethane	97	4.080	4.080	(0.976)	2882	0.50000	0.53
	32 1,1-Dichloropropene	75	4.290	4.290	(0.863)	2979	0.50000	0.59
	33 1,2-Dichloroethane	62	4.571	4.571	(0.920)	2323	0.50000	0.50(M)
	34 Carbon Tetrachloride	117	4.260	4.260	(0.857)	2983	0.50000	0.59
$	35 1,2-Dichloroethane-d4	65	4.481	4.481	(1.072)	2199	0.50000	(TM)
*	36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	628840	50.0000	
	37 Benzene	78	4.522	4.522	(0.910)	9078	0.50000	0.57
	38 Trichloroethene	130	5.212	5.212	(1.049)	2815	0.50000	0.59
	39 Bromodichloromethane	83	5.729	5.729	(1.153)	2872	0.50000	0.55(M)
	41 2-Chloroethylvinyl ether	63	6.078	6.078	(1.223)	2105	1.00000	4.67
	42 1,2-Dichloropropane	63	5.441	5.441	(1.095)	2675	0.50000	0.65(M)
	44 Dibromomethane	93	5.557	5.557	(1.118)	923	0.50000	0.37(M)
	45 4-Methyl-2-Pentanone	43	6.333	6.333	(0.826)	4892	1.00000	1.96(M)
	46 cis-1,3-Dichloropropene	75	6.164	6.164	(1.241)	3671	0.50000	0.55(M)
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	581997	50.0000	
$	48 Toluene-d8	98	6.400	6.400	(0.834)	7720	0.50000	0.52
	50 Toluene	91	6.457	6.457	(0.842)	10120	0.50000	0.58(M)
	51 trans-1,3-Dichloropropene	75	6.693	6.693	(1.347)	2545	0.50000	0.48(M)
	52 2-Hexanone	43	7.101	7.101	(0.926)	2496	1.00000	1.30(MH)
	53 1,1,2-Trichloroethane	83	6.843	6.843	(0.892)	2053	0.50000	0.64(M)
	54 1,3-Dichloropropane	76	6.985	6.985	(0.911)	4276	0.50000	0.65(M)
	55 Dibromochloromethane	129	7.180	7.180	(0.936)	3780	0.50000	1.39(M)
	56 Tetrachloroethene	164	6.933	6.933	(0.904)	2356	0.50000	0.58
	57 1,2-Dibromoethane	107	7.266	7.266	(0.947)	2623	0.50000	0.65(M)
	58 1-Chlorohexane	55	7.671	7.671	(1.544)	4264	0.50000	1.17
	59 Chlorobenzene	112	7.694	7.694	(1.003)	7422	0.50000	0.61(M)
	60 1,1,1,2-Tetrachloroethane	131	7.772	7.772	(1.013)	2463	0.50000	0.55(M)
	61 Ethylbenzene	106	7.810	7.810	(1.018)	4262	0.50000	0.68(M)
	62 m,p-Xylenes	106	7.915	7.915	(1.032)	8717	1.00000	1.15(M)
	63 o-Xylene	106	8.252	8.252	(1.076)	4169	0.50000	0.56(M)
	64 Styrene	104	8.275	8.275	(1.079)	5695	0.50000	0.48(M)

66 Bromoform	173	8.413	8.413 (1.097)	1906	0.50000	1.77(TM)
67 Isopropylbenzene	105	8.567	8.567 (1.117)	10442	0.50000	0.58(M)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	68 1,1,2,2-Tetrachloroethane	83	8.837	8.837	(0.915)	3092	0.50000	0.50(M)
$	69 4-Bromofluorobenzene	95	8.706	8.706	(1.135)	3195	0.50000	0.26
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	283394	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	1476	0.50000	0.49(MH)
	73 n-Propylbenzene	91	8.920	8.920	(0.923)	15732	0.50000	0.57(M)
	74 Bromobenzene	156	8.815	8.815	(0.912)	2829	0.50000	0.53(M)
	75 1,3,5-Trimethylbenzene	105	9.073	9.073	(0.939)	7703	0.50000	0.53(M)
	76 2-Chlorotoluene	91	8.980	8.980	(0.929)	8168	0.50000	0.63(M)
	77 4-Chlorotoluene	91	9.084	9.084	(0.940)	9007	0.50000	0.63(M)
	78 tert-Butylbenzene	119	9.339	9.339	(0.967)	7379	0.50000	0.59(M)
	79 1,2,4-Trimethylbenzene	105	9.388	9.388	(0.972)	9741	0.50000	0.65(M)
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	10477	0.50000	0.62(M)
	82 p-Isopropyltoluene	119	9.654	9.654	(0.999)	9059	0.50000	0.60(M)
	83 1,3-Dichlorobenzene	146	9.609	9.609	(0.995)	5063	0.50000	0.57(M)
	84 1,4-Dichlorobenzene	146	9.681	9.681	(1.002)	5375	0.50000	0.58(M)
	86 Benzyl Chloride	91	9.823	9.823	(1.280)	10657	0.50000	1.44
	87 n-Butylbenzene	91	10.007	10.007	(1.036)	6228	0.50000	0.53(M)
	88 1,2-Dichlorobenzene	146	9.999	9.999	(1.035)	5627	0.50000	0.51(M)
	89 1,2-Dibromo-3-Chloropropane	155	10.674	10.674	(1.105)	303	0.50000	2.52(M)
	90 1,2,4-Trichlorobenzene	180	11.371	11.371	(1.177)	2124	0.50000	2.40(M)
	91 Hexachlorobutadiene	225	11.484	11.484	(1.189)	1814	0.50000	0.24(M)
	92 Naphthalene	128	11.596	11.596	(1.200)	2948	0.50000	0.61(M)
	93 1,2,3-Trichlorobenzene	180	11.769	11.769	(1.218)	1462	0.50000	0.61(M)
M	94 1,2-Dichloroethylene (total)	96				4423	1.00000	
M	95 Xylenes (total)	106				12886	1.50000	
	141 Cyclohexane	56	4.121	4.121	(0.986)	2509	0.50000	0.51(H)
	138 Freon TF	101	1.913	1.913	(0.458)	1261	0.50000	0.48
	147 Methylcyclohexane	55	5.373	5.373	(1.081)	4465	0.50000	0.53(M)
	146 Methyl Acetate	43	2.266	2.266	(0.542)	1043	0.50000	0.57(M)
	148 Tert-Butyl alcohol	59	2.434	2.434	(0.582)	5696	10.0000	24.34(aM)
	149 Isopropyl Alcohol	45	2.105	2.105	(0.503)	3311	10.0000	32.41(M)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS005\Target\chem\voa6,i\X221014,b\X101403,D
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Column phase: DB624

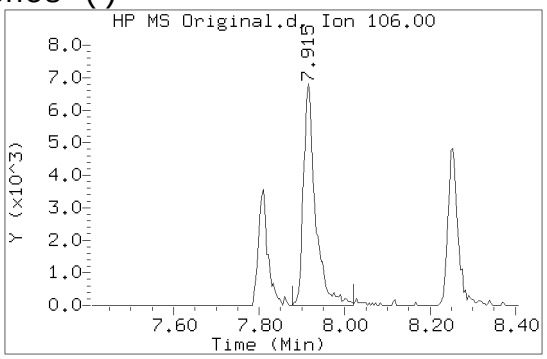
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Operator: PC
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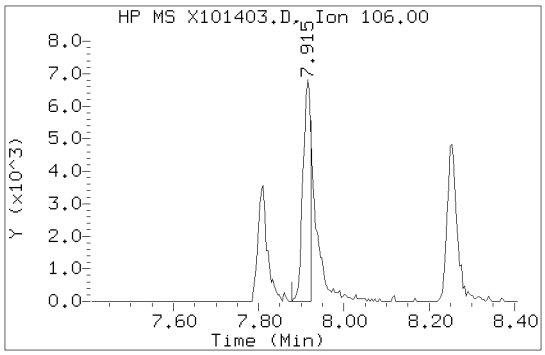
m,p-Xylenes ()

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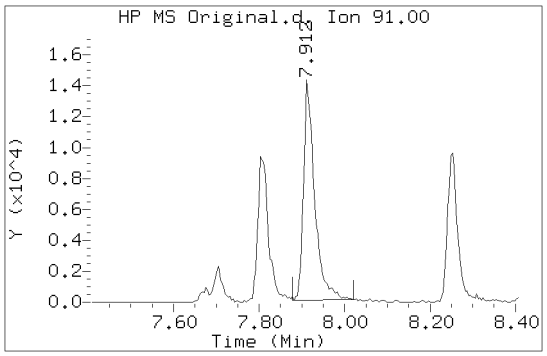
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19-Oct-2022
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linh
pham



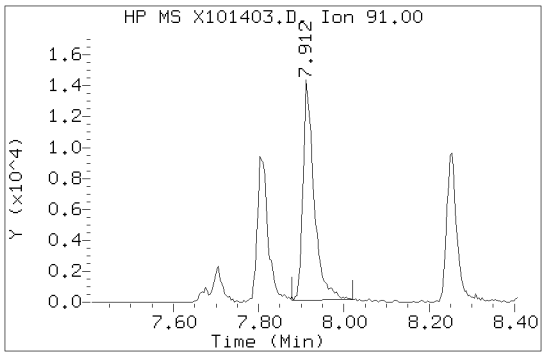
AFTER
MASS
106
AREA
8717
HEIGHT
6816
27-Oct-2022
15:16



BEFORE
MASS
91
AREA
26387
HEIGHT
14264
19-Oct-2022
16:03
linh
pham



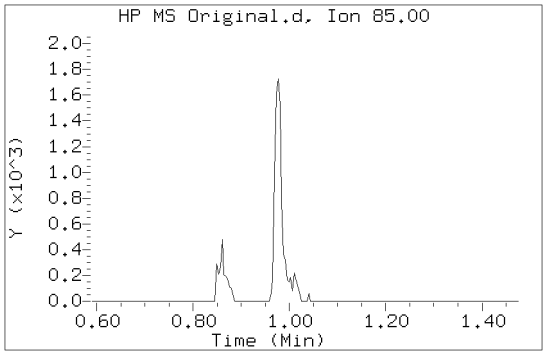
AFTER
MASS
91
AREA
26387
HEIGHT
14264
27-Oct-2022
15:16



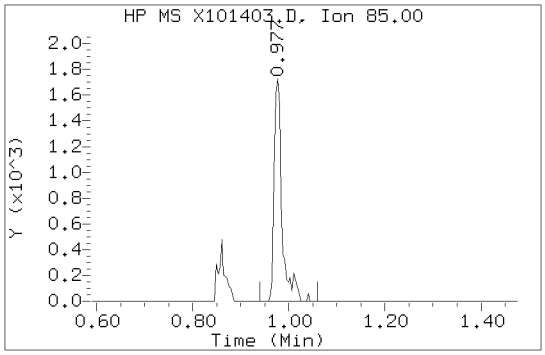
Dichlorodifluoromethane (75-71-8)

Reason Code:

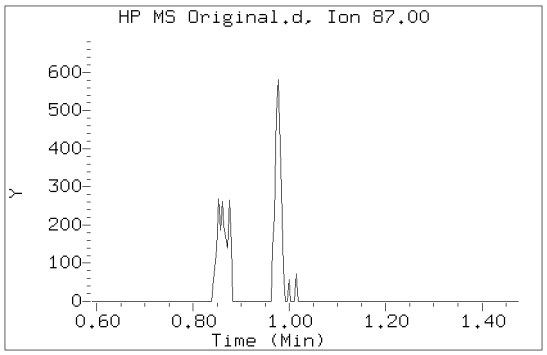
BEFORE
MASS
85
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



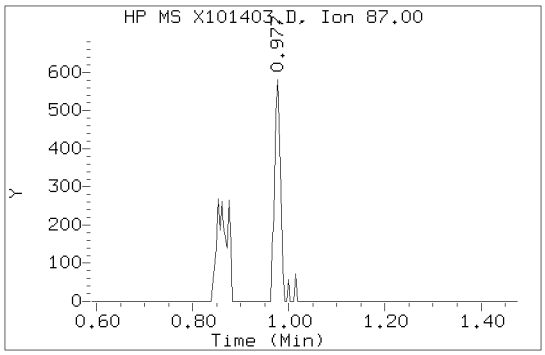
AFTER
MASS
85
AREA
1958
HEIGHT
1726
27-Oct-2022
15:16



BEFORE
MASS
87
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
87
AREA
0
HEIGHT
0
27-Oct-2022
15:16

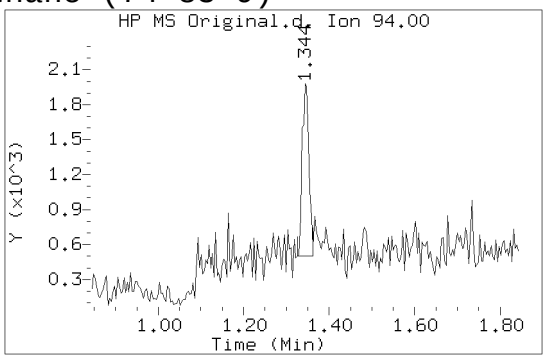


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

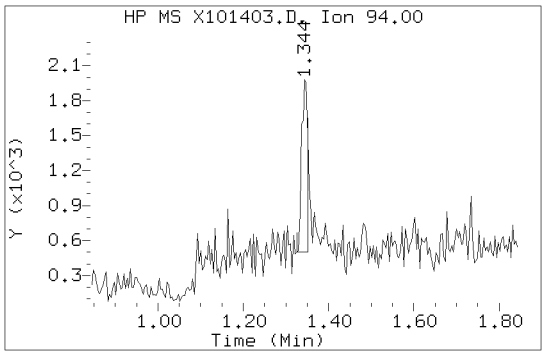
Bromomethane (74-83-9)

Reason Code:

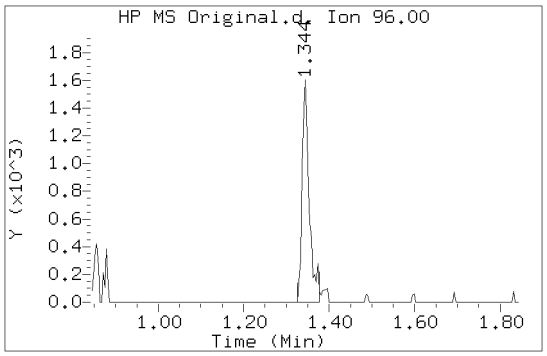
BEFORE
MASS
94
AREA
1682
HEIGHT
1480
19-Oct-2022
16:03
linh
pham



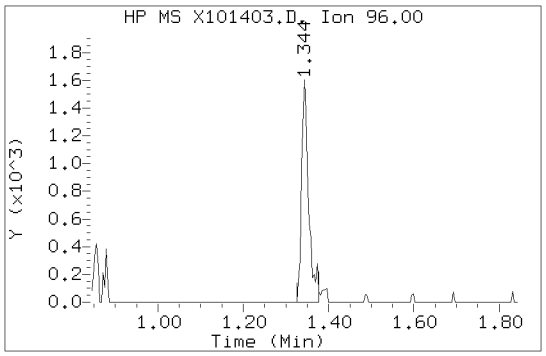
AFTER
MASS
94
AREA
1461
HEIGHT
1480
27-Oct-2022
15:16



BEFORE
MASS
96
AREA
1913
HEIGHT
1603
19-Oct-2022
16:03
linh
pham



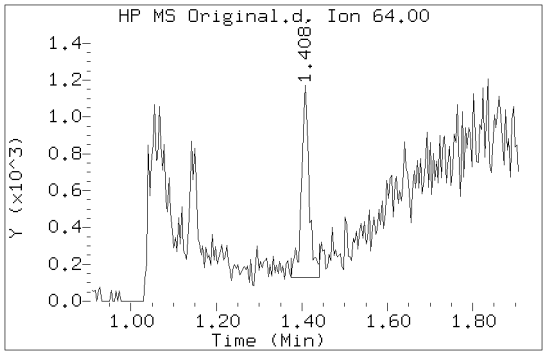
AFTER
MASS
96
AREA
1913
HEIGHT
1603
27-Oct-2022
15:16



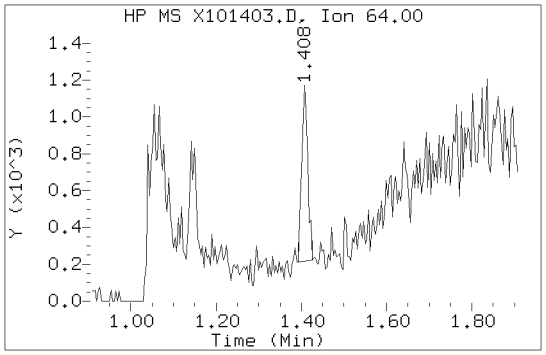
Chloroethane (75-00-3)

Reason Code:

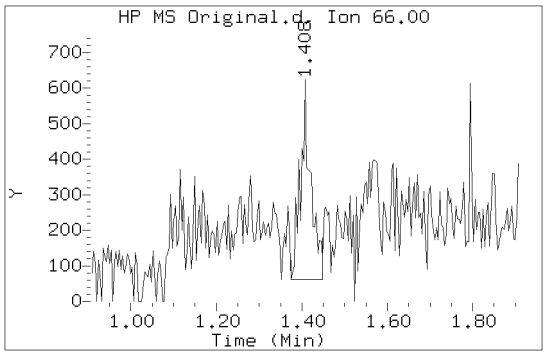
BEFORE
MASS
64
AREA
1354
HEIGHT
1042
19-Oct-2022
16:03
linh
pham



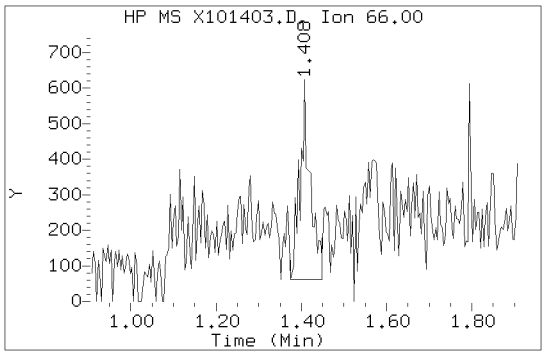
AFTER
MASS
64
AREA
982
HEIGHT
954
27-Oct-2022
15:16



BEFORE
MASS
66
AREA
954
HEIGHT
562
19-Oct-2022
16:03
linh
pham



AFTER
MASS
66
AREA
954
HEIGHT
562
27-Oct-2022
15:16

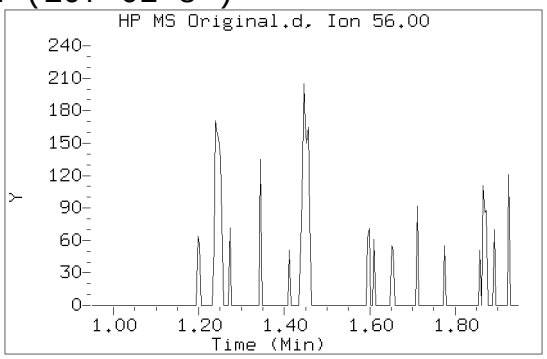


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

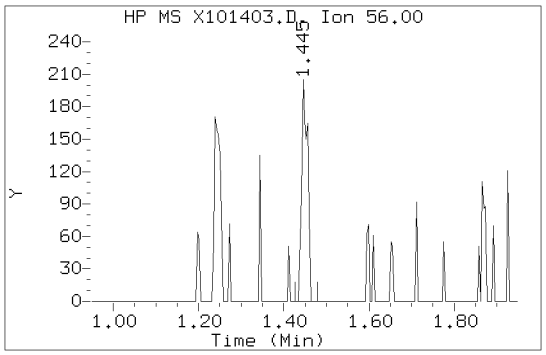
Acrolein (107-02-8)

Reason Code:

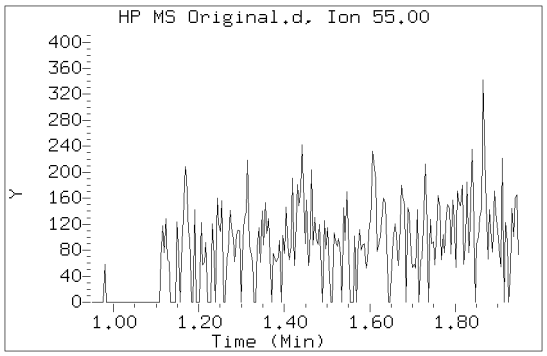
BEFORE
MASS
56
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



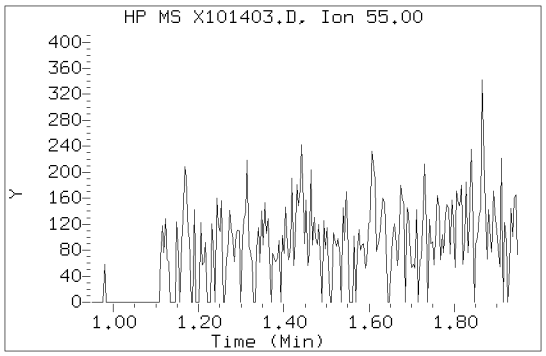
AFTER
MASS
56
AREA
207
HEIGHT
205
27-Oct-2022
15:16



BEFORE
MASS
55
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



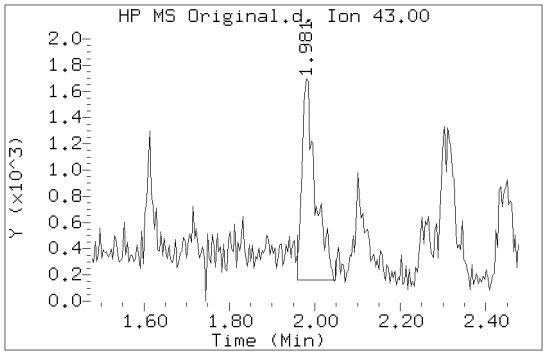
AFTER
MASS
55
AREA
0
HEIGHT
0
27-Oct-2022
15:16



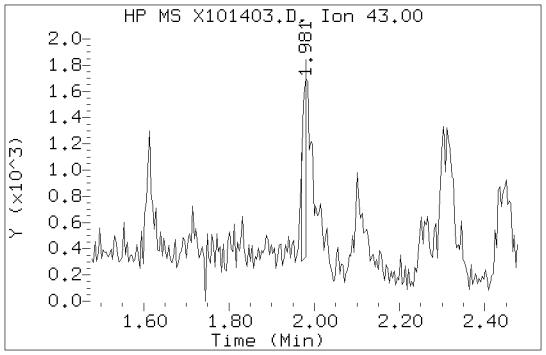
Acetone (67-64-1)

Reason Code:

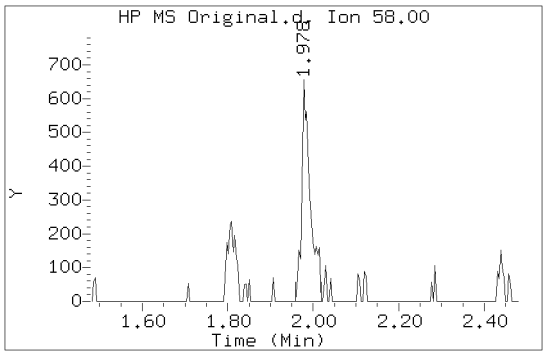
BEFORE
MASS
43
AREA
3421
HEIGHT
1533
19-Oct-2022
16:03
linh
pham



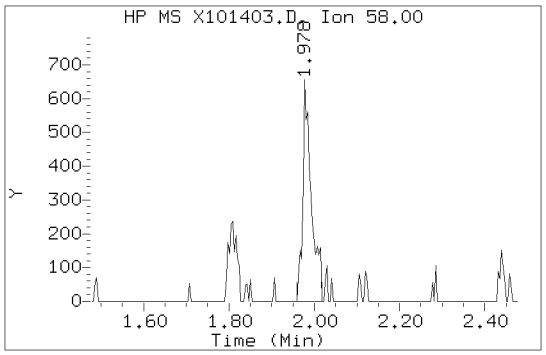
AFTER
MASS
43
AREA
1015
HEIGHT
1355
27-Oct-2022
15:16



BEFORE
MASS
58
AREA
936
HEIGHT
656
19-Oct-2022
16:03
linh
pham



AFTER
MASS
58
AREA
936
HEIGHT
656
27-Oct-2022
15:16



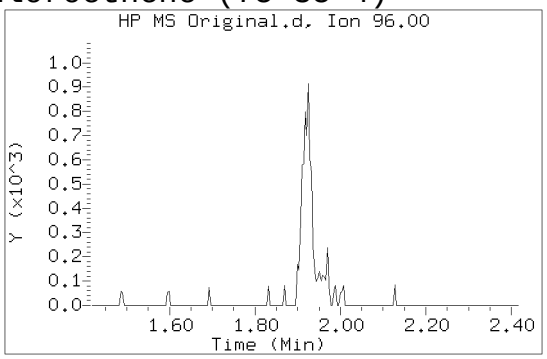
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,1-Dichloroethene (75-35-4)

Reason Code:

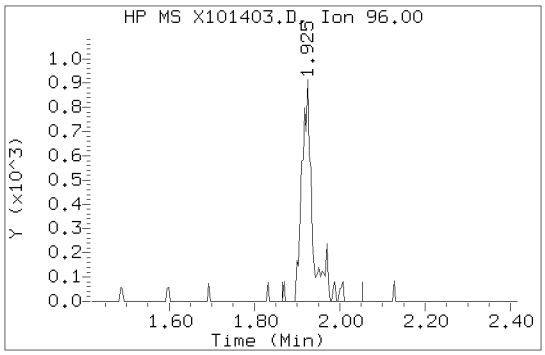
BEFORE

MASS
96
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



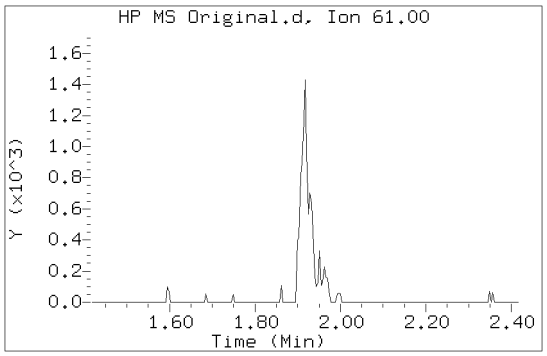
AFTER

MASS
96
AREA
1643
HEIGHT
914
27-Oct-2022
15:16



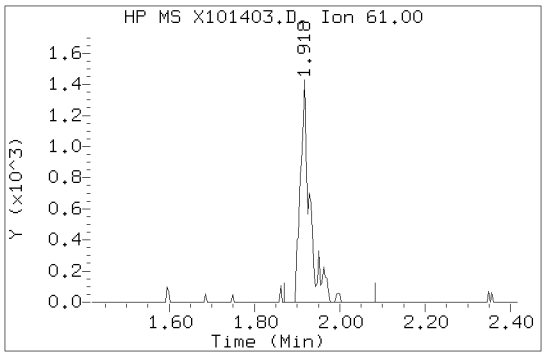
BEFORE

MASS
61
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



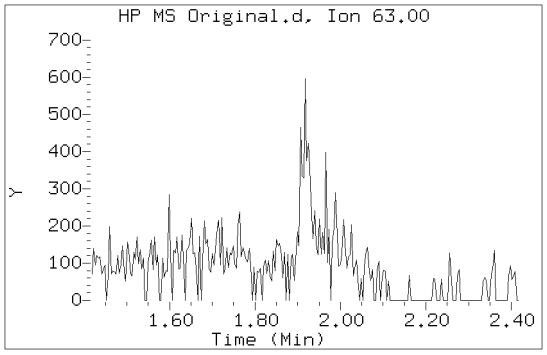
AFTER

MASS
61
AREA
2292
HEIGHT
1429
27-Oct-2022
15:16



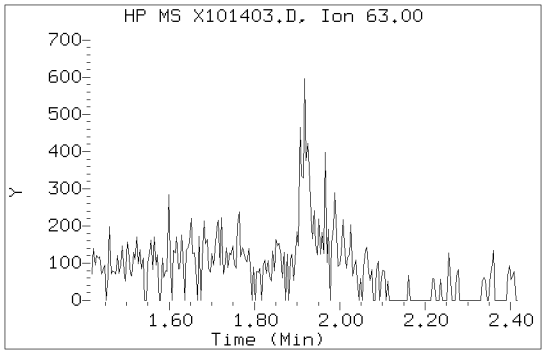
BEFORE

MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
63
AREA
0
HEIGHT
0
27-Oct-2022
15:16

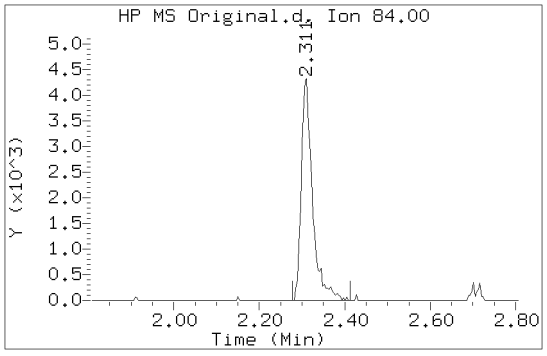


Methylene Chloride (75-09-2)

Reason Code:

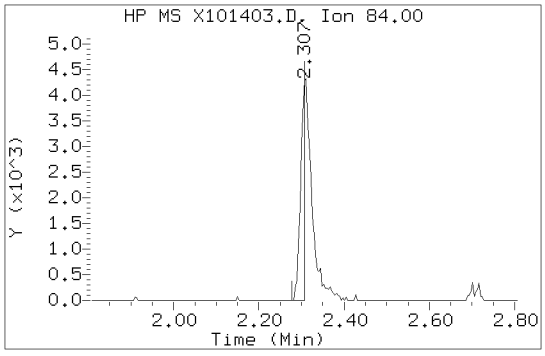
BEFORE

MASS
84
AREA
8076
HEIGHT
4325
19-Oct-2022
16:03
linh
pham



AFTER

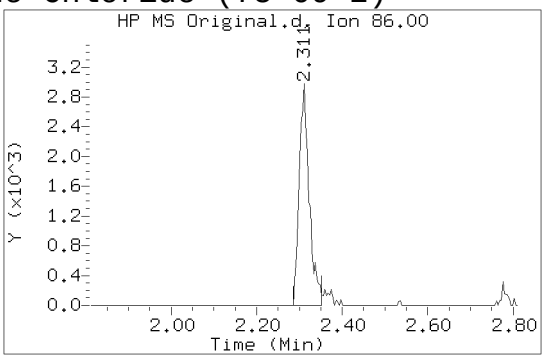
MASS
84
AREA
3314
HEIGHT
4285
27-Oct-2022
15:16



Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

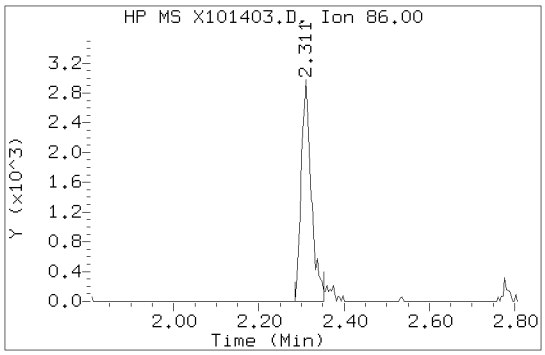
Methylene Chloride (75-09-2)

BEFORE
MASS
86
AREA
4986
HEIGHT
2979
19-Oct-2022
16:03
linh
pham

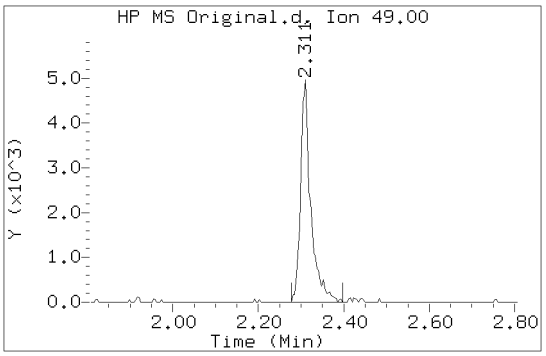


AFTER
MASS
86
AREA
4986
HEIGHT
2979
27-Oct-2022
15:16

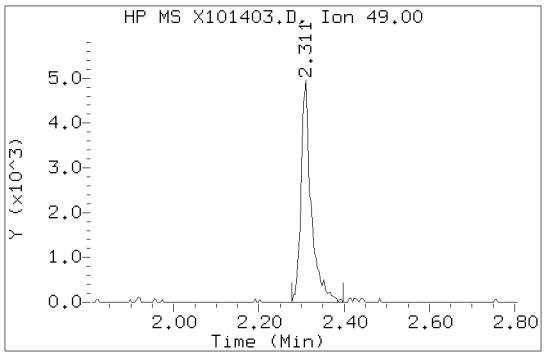
Reason Code:



BEFORE
MASS
49
AREA
8404
HEIGHT
4964
19-Oct-2022
16:03
linh
pham

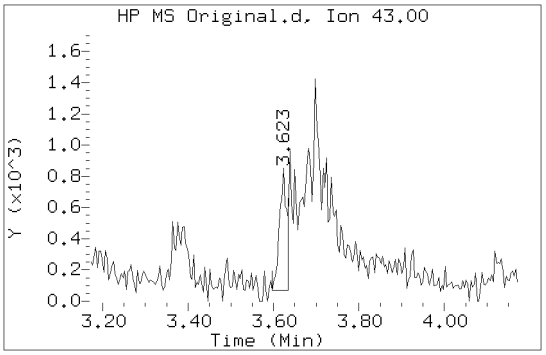


AFTER
MASS
49
AREA
8404
HEIGHT
4964
27-Oct-2022
15:16



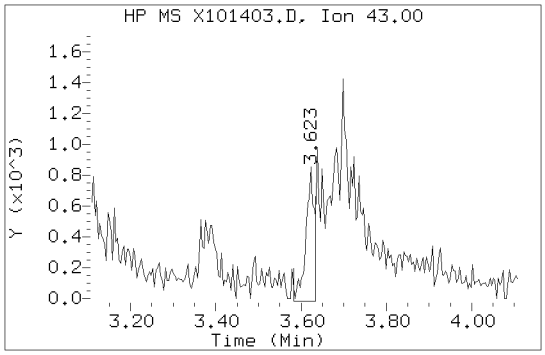
2-Butanone (78-93-3)

BEFORE
MASS
43
AREA
925
HEIGHT
782
19-Oct-2022
16:03
linh
pham

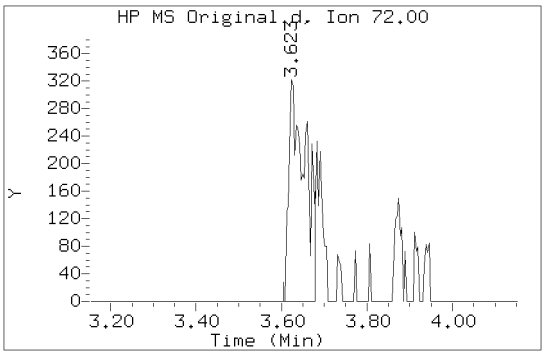


AFTER
MASS
43
AREA
1217
HEIGHT
869
27-Oct-2022
15:16

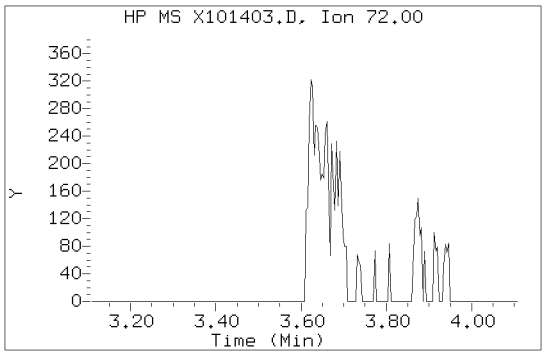
Reason Code:



BEFORE
MASS
72
AREA
884
HEIGHT
322
19-Oct-2022
16:03
linh
pham



AFTER
MASS
72
AREA
0
HEIGHT
0
27-Oct-2022
15:16



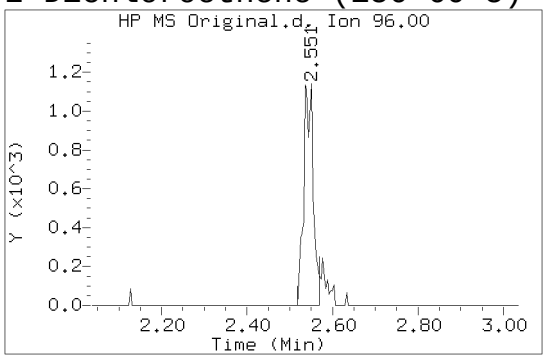
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

trans-1,2-Dichloroethene (156-60-5)

Reason Code:

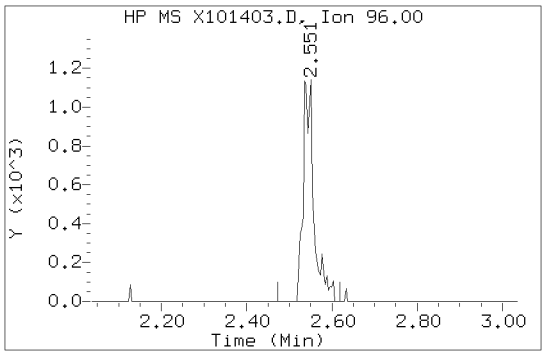
BEFORE

MASS
96
AREA
1810
HEIGHT
1141
19-Oct-2022
16:03
linh
pham



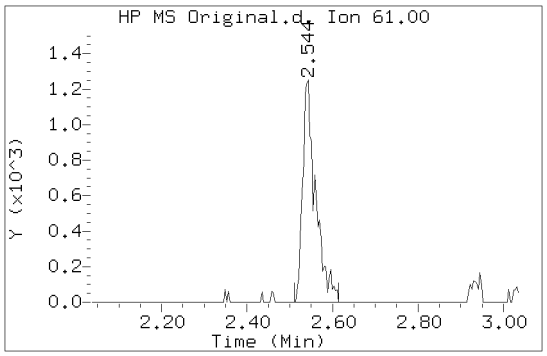
AFTER

MASS
96
AREA
2045
HEIGHT
1141
27-Oct-2022
15:16



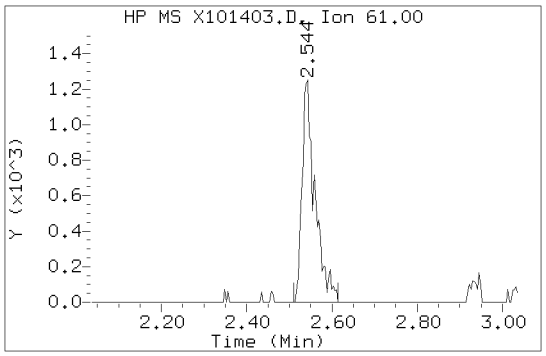
BEFORE

MASS
61
AREA
2676
HEIGHT
1252
19-Oct-2022
16:03
linh
pham



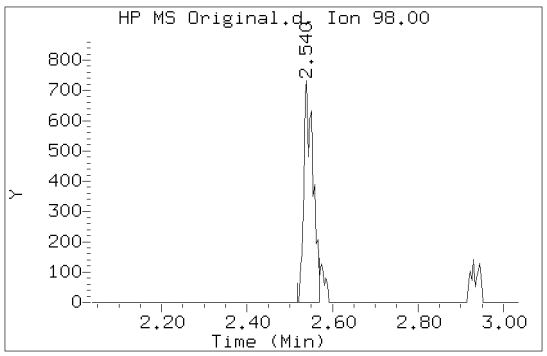
AFTER

MASS
61
AREA
2676
HEIGHT
1252
27-Oct-2022
15:16



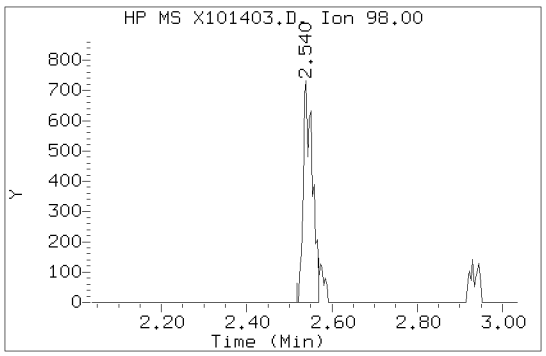
BEFORE

MASS
98
AREA
1127
HEIGHT
732
19-Oct-2022
16:03
linh
pham



AFTER

MASS
98
AREA
1127
HEIGHT
732
27-Oct-2022
15:16

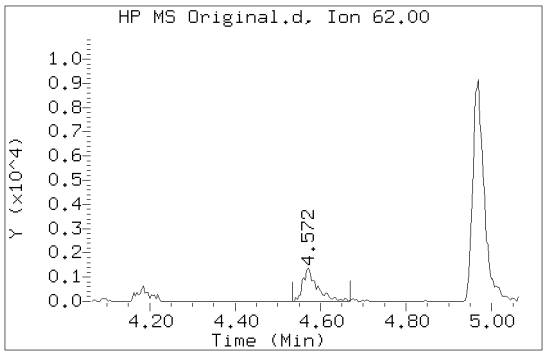


1,2-Dichloroethane (107-06-2)

Reason Code:

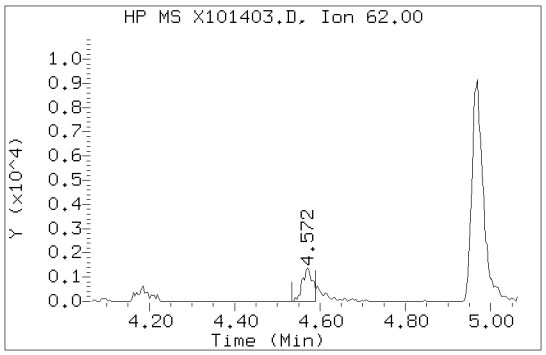
BEFORE

MASS
62
AREA
3213
HEIGHT
1364
19-Oct-2022
16:03
linh
pham



AFTER

MASS
62
AREA
2323
HEIGHT
1364
27-Oct-2022
15:16



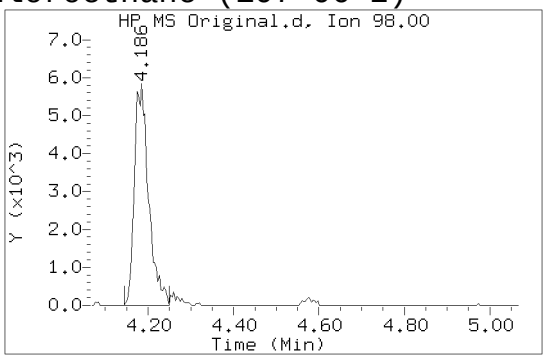
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,2-Dichloroethane (107-06-2)

Reason Code:

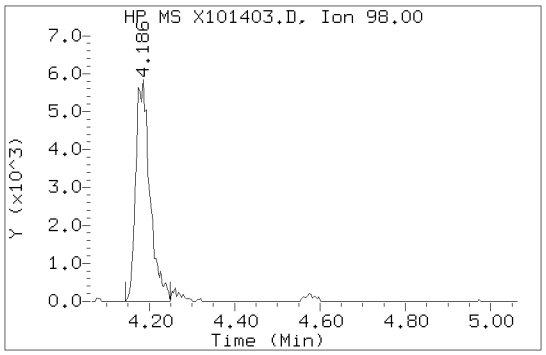
BEFORE

MASS
98
AREA
13451
HEIGHT
5842
19-Oct-2022
16:03
linh
pham



AFTER

MASS
98
AREA
13451
HEIGHT
5842
27-Oct-2022
15:16

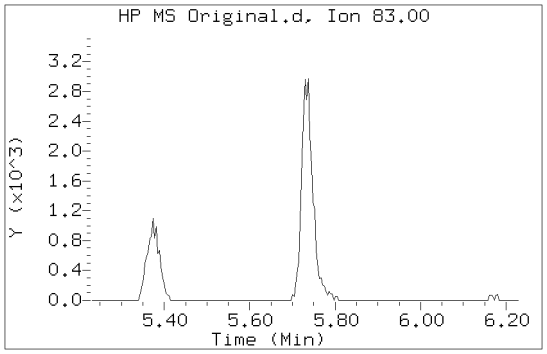


Bromodichloromethane (75-27-4)

Reason Code:

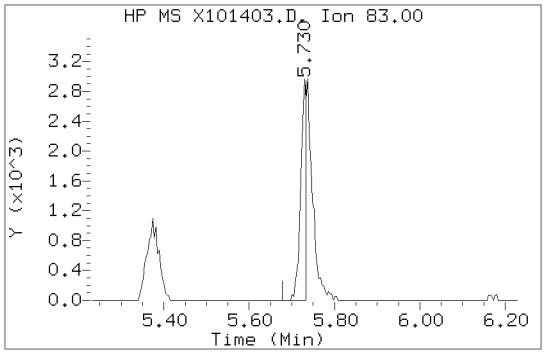
BEFORE

MASS
83
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



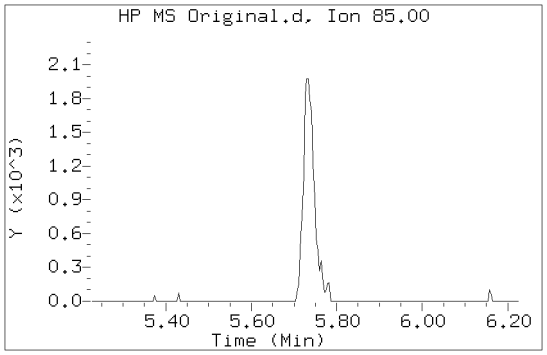
AFTER

MASS
83
AREA
2872
HEIGHT
2967
27-Oct-2022
15:16



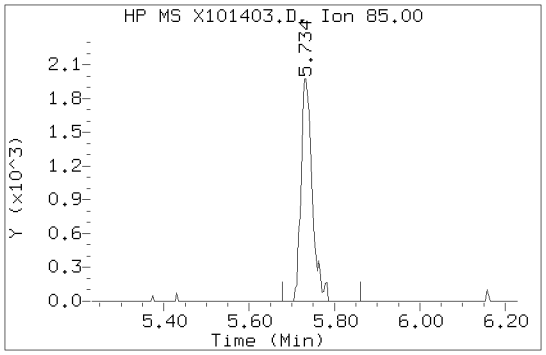
BEFORE

MASS
85
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



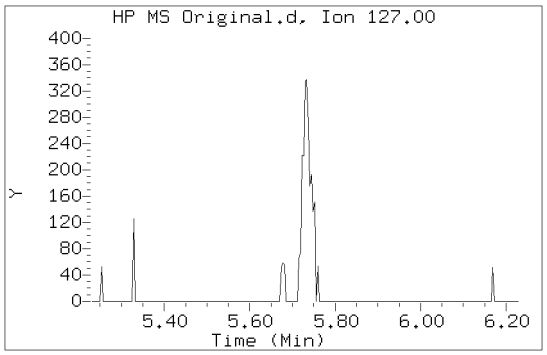
AFTER

MASS
85
AREA
3702
HEIGHT
1975
27-Oct-2022
15:16



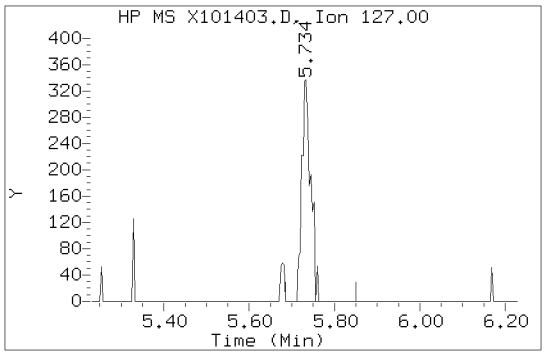
BEFORE

MASS
127
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
127
AREA
502
HEIGHT
337
27-Oct-2022
15:16



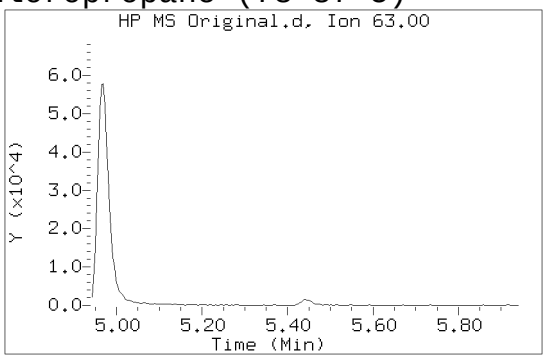
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,2-Dichloropropane (78-87-5)

Reason Code:

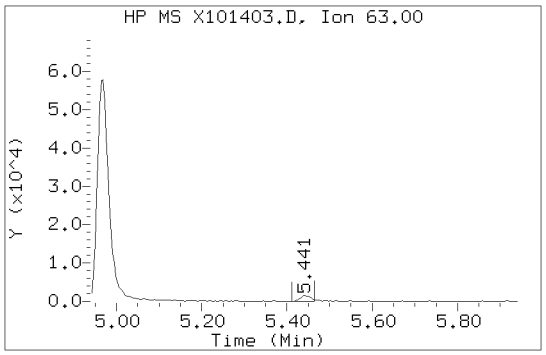
BEFORE

MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



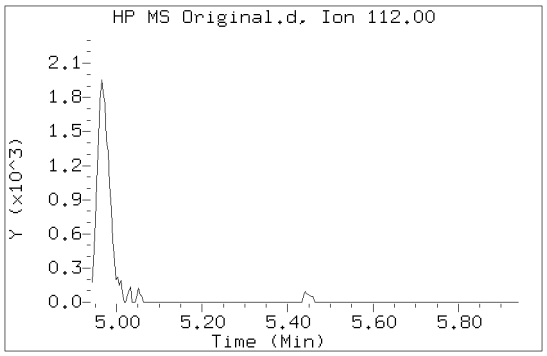
AFTER

MASS
63
AREA
2675
HEIGHT
1532
27-Oct-2022
15:16



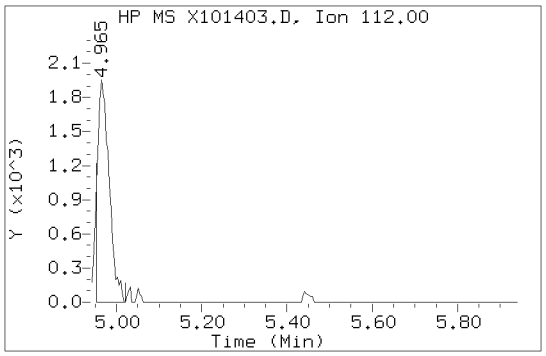
BEFORE

MASS
112
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
112
AREA
3629
HEIGHT
1953
27-Oct-2022
15:16

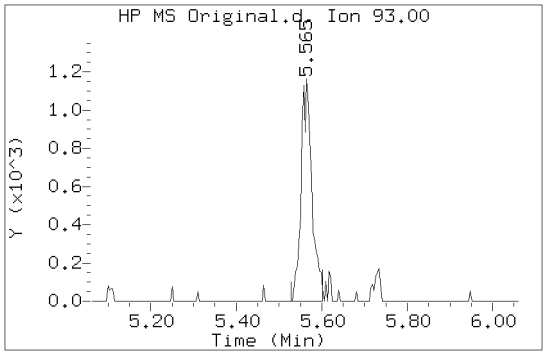


Dibromomethane (74-95-3)

Reason Code:

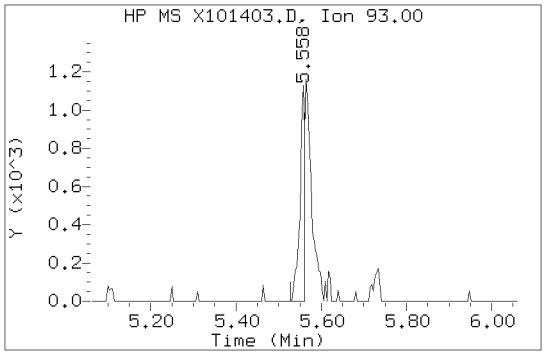
BEFORE

MASS
93
AREA
2094
HEIGHT
1163
19-Oct-2022
16:03
linh
pham



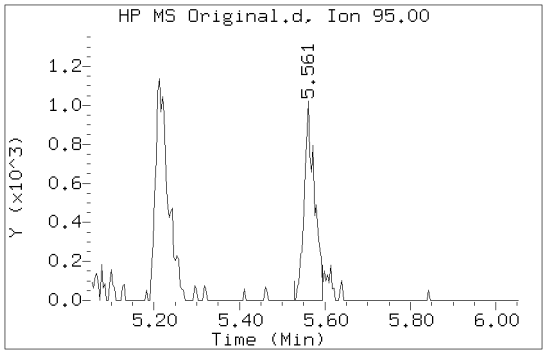
AFTER

MASS
93
AREA
923
HEIGHT
1129
27-Oct-2022
15:16



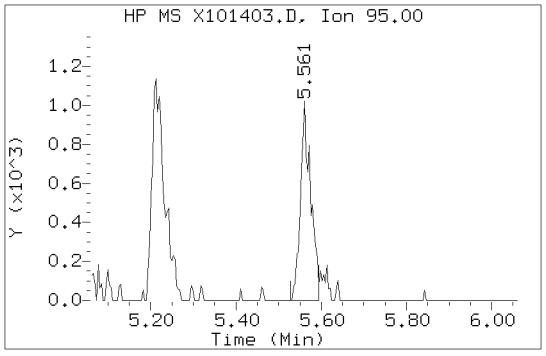
BEFORE

MASS
95
AREA
1740
HEIGHT
1023
19-Oct-2022
16:03
linh
pham



AFTER

MASS
95
AREA
1740
HEIGHT
1023
27-Oct-2022
15:16

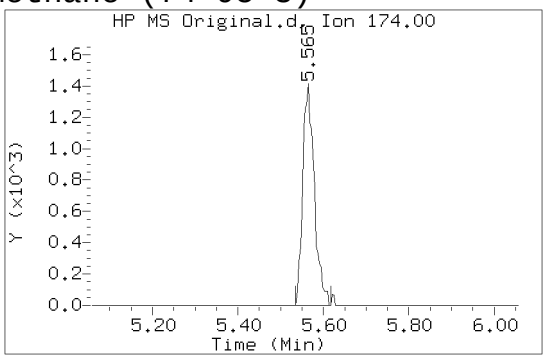


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Inj Date : 14-OCT-2022 12:08
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LabSampID : VSTD000.5

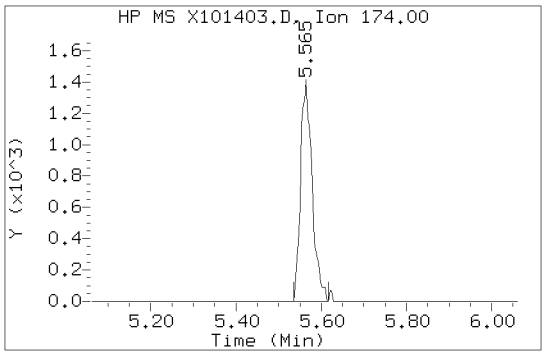
Dibromomethane (74-95-3)

Reason Code:

BEFORE
MASS
174
AREA
2711
HEIGHT
1415
19-Oct-2022
16:03
linh
pham



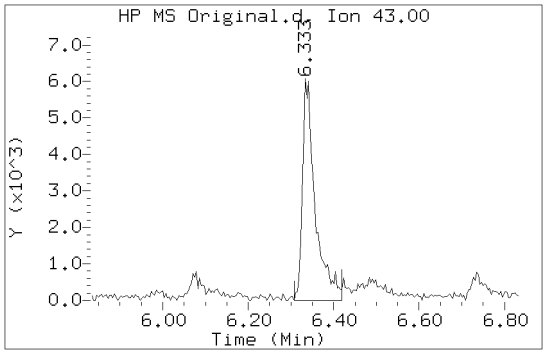
AFTER
MASS
174
AREA
2711
HEIGHT
1415
27-Oct-2022
15:16



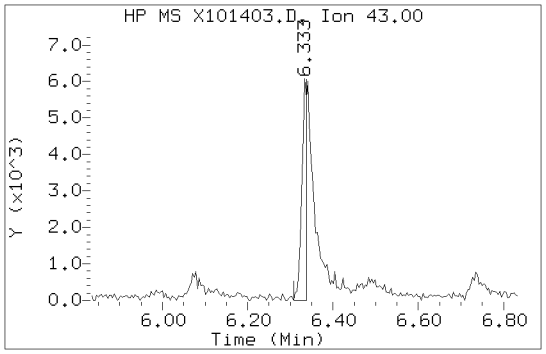
4-Methyl-2-Pentanone (108-10-1)

Reason Code:

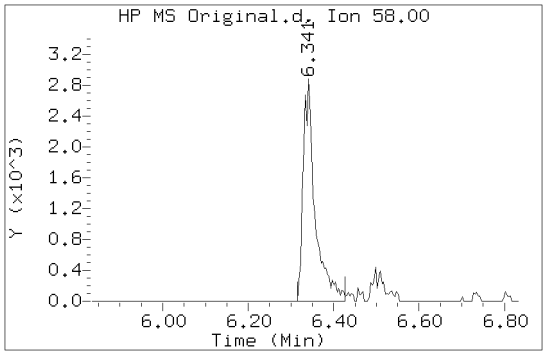
BEFORE
MASS
43
AREA
12857
HEIGHT
6076
19-Oct-2022
16:03
linh
pham



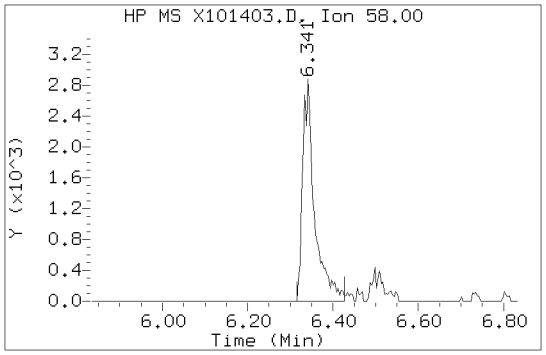
AFTER
MASS
43
AREA
4892
HEIGHT
6076
27-Oct-2022
15:16



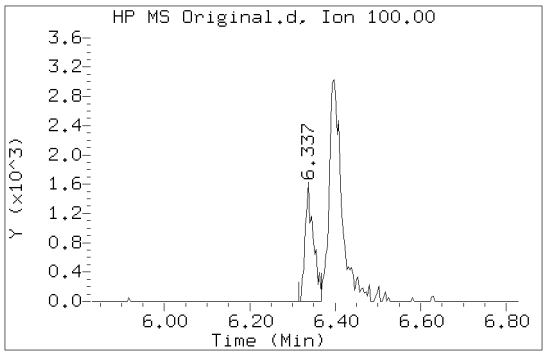
BEFORE
MASS
58
AREA
5721
HEIGHT
2884
19-Oct-2022
16:03
linh
pham



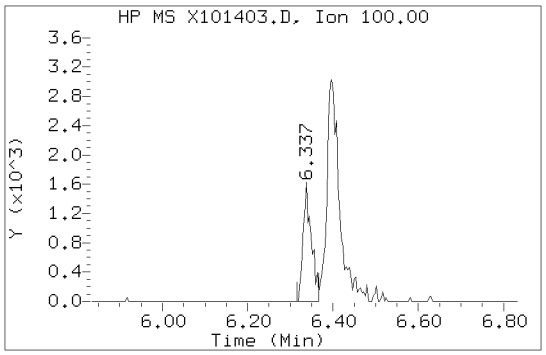
AFTER
MASS
58
AREA
5721
HEIGHT
2884
27-Oct-2022
15:16



BEFORE
MASS
100
AREA
2203
HEIGHT
1627
19-Oct-2022
16:03
linh
pham



AFTER
MASS
100
AREA
2203
HEIGHT
1627
27-Oct-2022
15:16

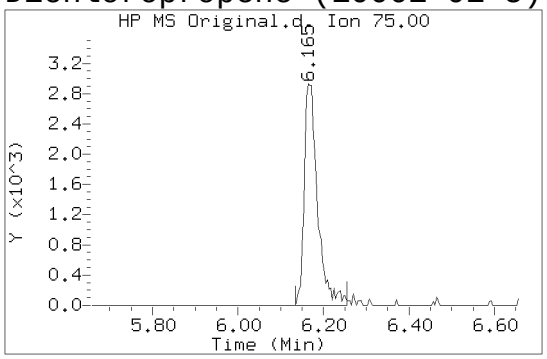


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InstruID : voa6.i
LabSampID : VSTD000.5

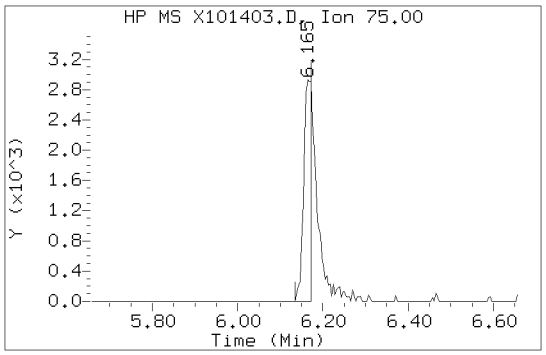
cis-1,3-Dichloropropene (10061-01-5)

Reason Code:

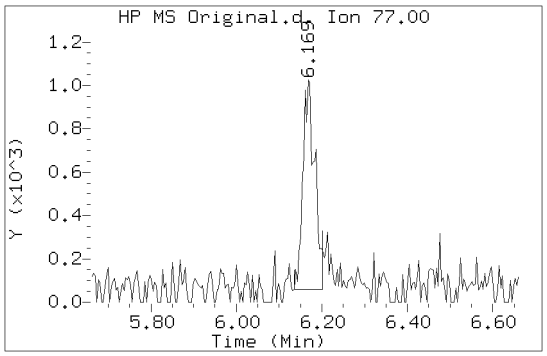
BEFORE
MASS
75
AREA
6452
HEIGHT
2932
19-Oct-2022
16:03
linh
pham



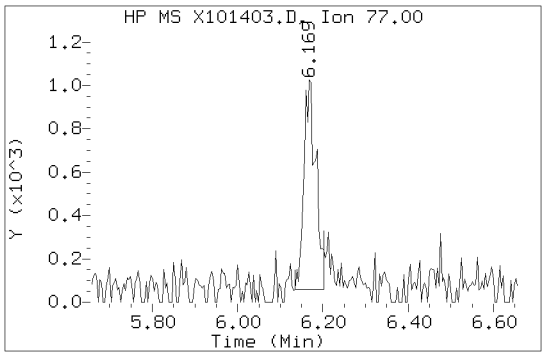
AFTER
MASS
75
AREA
3671
HEIGHT
2932
27-Oct-2022
15:16



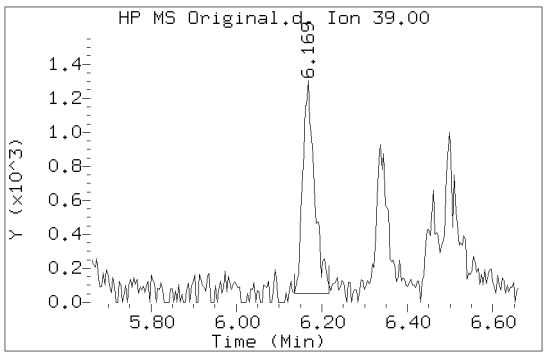
BEFORE
MASS
77
AREA
1904
HEIGHT
966
19-Oct-2022
16:03
linh
pham



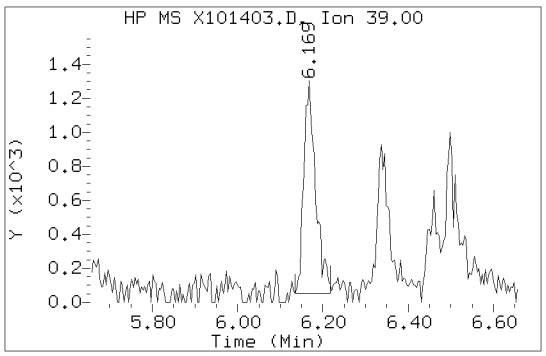
AFTER
MASS
77
AREA
1904
HEIGHT
966
27-Oct-2022
15:16



BEFORE
MASS
39
AREA
2455
HEIGHT
1252
19-Oct-2022
16:03
linh
pham



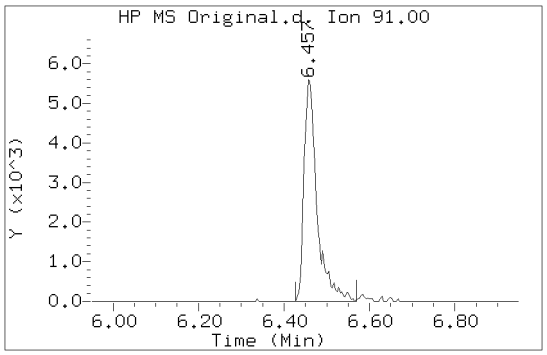
AFTER
MASS
39
AREA
2455
HEIGHT
1252
27-Oct-2022
15:16



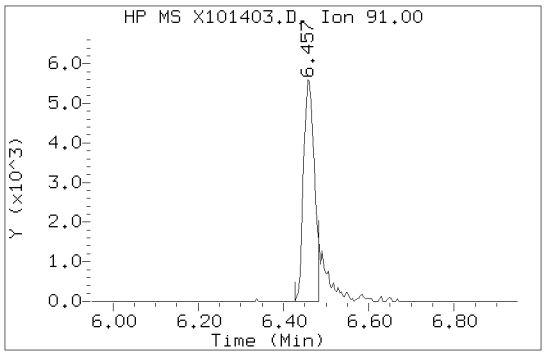
Toluene (108-88-3)

Reason Code:

BEFORE
MASS
91
AREA
12093
HEIGHT
5597
19-Oct-2022
16:03
linh
pham



AFTER
MASS
91
AREA
10120
HEIGHT
5597
27-Oct-2022
15:16

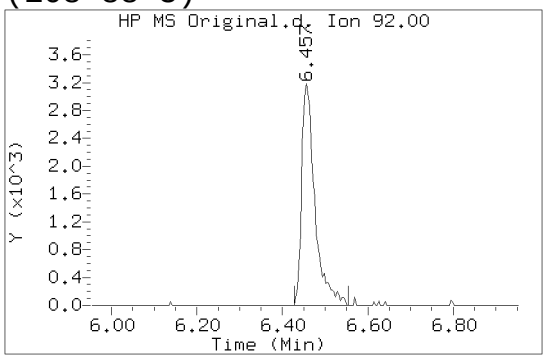


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

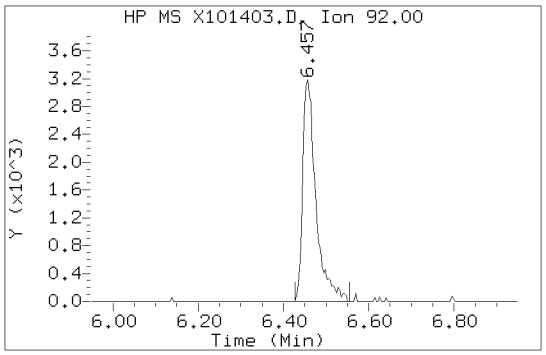
Toluene (108-88-3)

Reason Code:

BEFORE
MASS
92
AREA
7009
HEIGHT
3185
19-Oct-2022
16:03
linh
pham



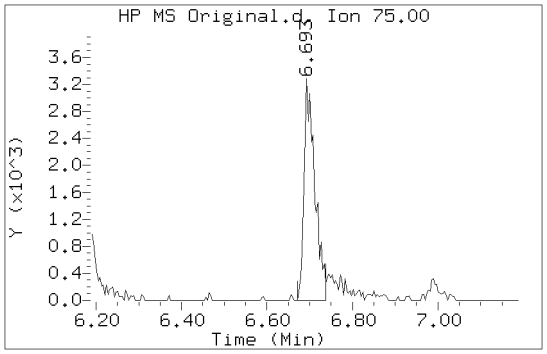
AFTER
MASS
92
AREA
7009
HEIGHT
3185
27-Oct-2022
15:16



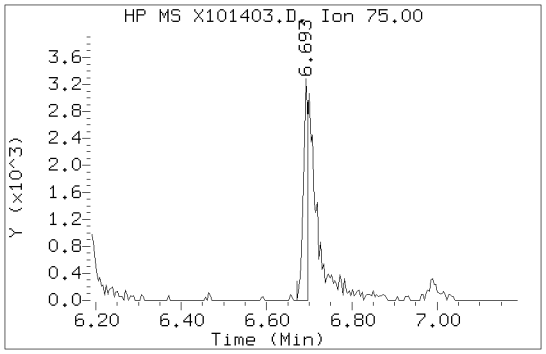
trans-1,3-Dichloropropene (10061-02-6)

Reason Code:

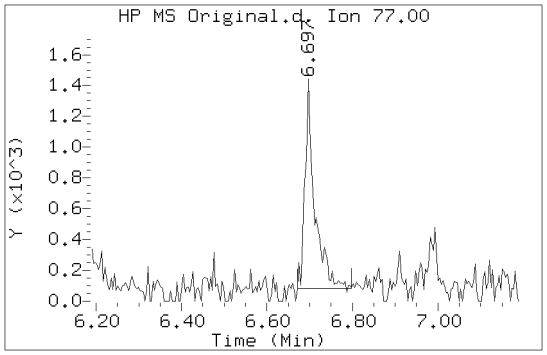
BEFORE
MASS
75
AREA
5872
HEIGHT
3285
19-Oct-2022
16:03
linh
pham



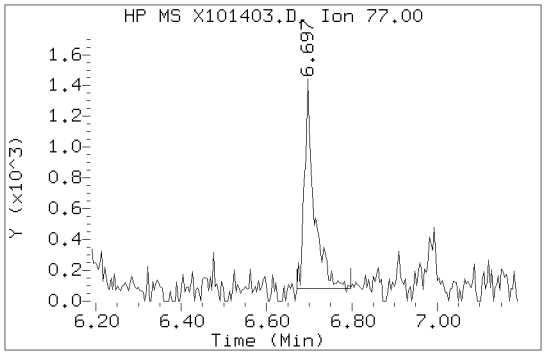
AFTER
MASS
75
AREA
2545
HEIGHT
3285
27-Oct-2022
15:16



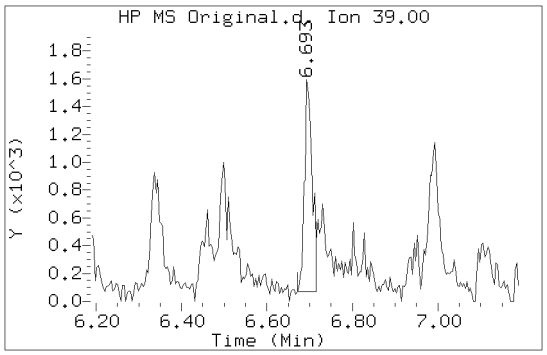
BEFORE
MASS
77
AREA
2163
HEIGHT
1361
19-Oct-2022
16:03
linh
pham



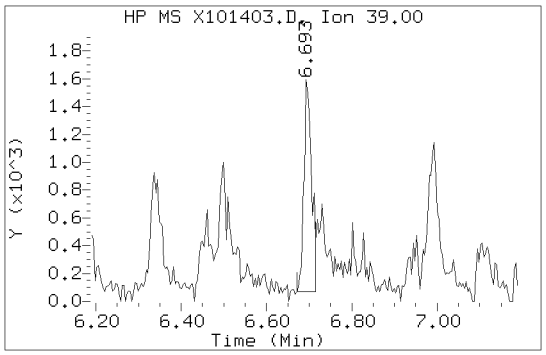
AFTER
MASS
77
AREA
2163
HEIGHT
1361
27-Oct-2022
15:16



BEFORE
MASS
39
AREA
1966
HEIGHT
1526
19-Oct-2022
16:03
linh
pham



AFTER
MASS
39
AREA
1966
HEIGHT
1526
27-Oct-2022
15:16



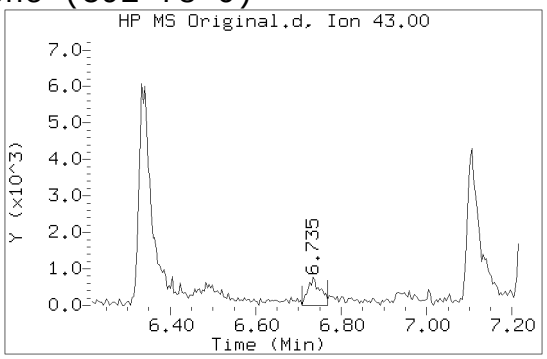
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

2-Hexanone (591-78-6)

Reason Code:

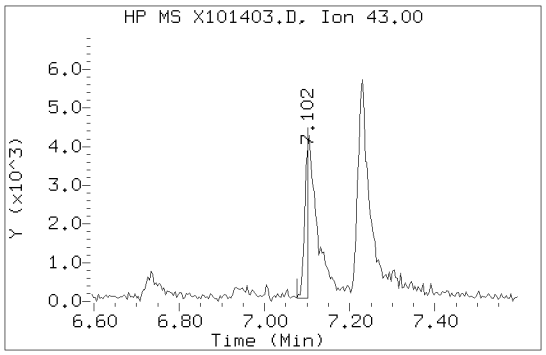
BEFORE

MASS
43
AREA
1554
HEIGHT
778
19-Oct-2022
16:03
linh
pham



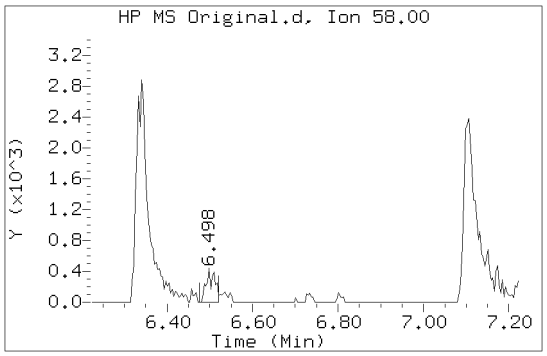
AFTER

MASS
43
AREA
2496
HEIGHT
3900
27-Oct-2022
15:16



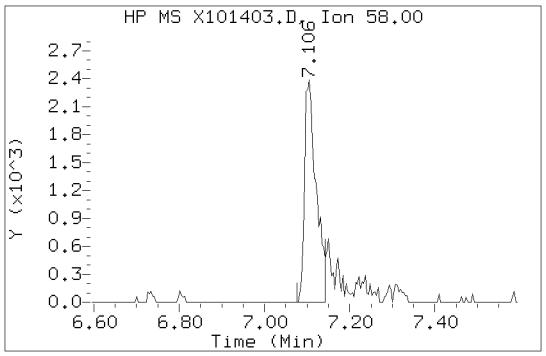
BEFORE

MASS
58
AREA
601
HEIGHT
443
19-Oct-2022
16:03
linh
pham



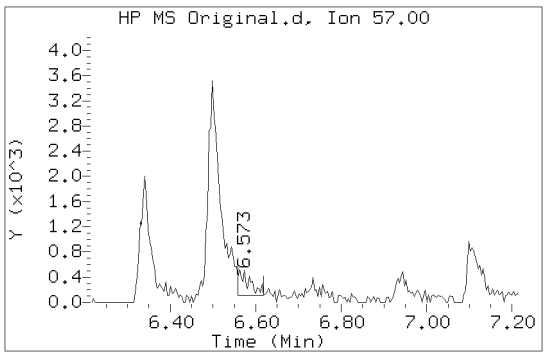
AFTER

MASS
58
AREA
4590
HEIGHT
2388
27-Oct-2022
15:16



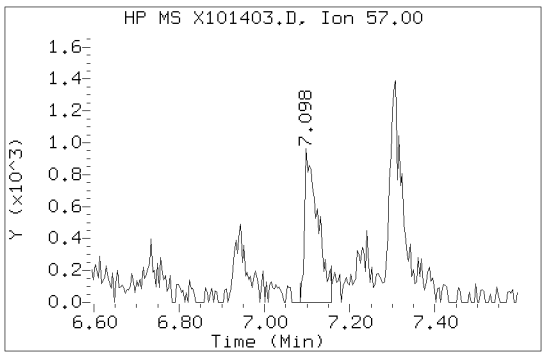
BEFORE

MASS
57
AREA
696
HEIGHT
392
19-Oct-2022
16:03
linh
pham



AFTER

MASS
57
AREA
2067
HEIGHT
962
27-Oct-2022
15:16

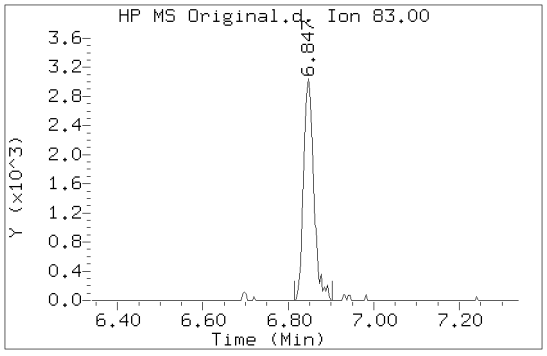


1,1,2-Trichloroethane (79-00-5)

Reason Code:

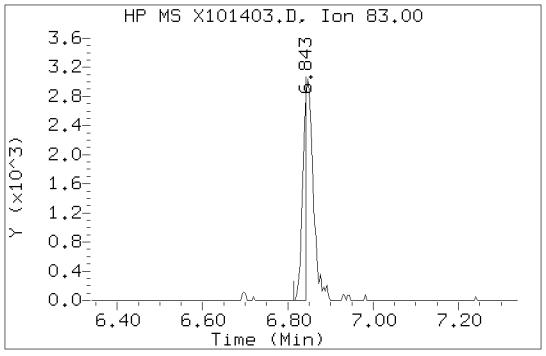
BEFORE

MASS
83
AREA
5189
HEIGHT
3043
19-Oct-2022
16:03
linh
pham



AFTER

MASS
83
AREA
2053
HEIGHT
2809
27-Oct-2022
15:16



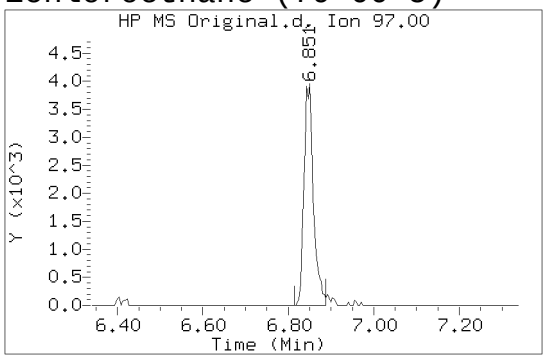
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,1,2-Trichloroethane (79-00-5)

Reason Code:

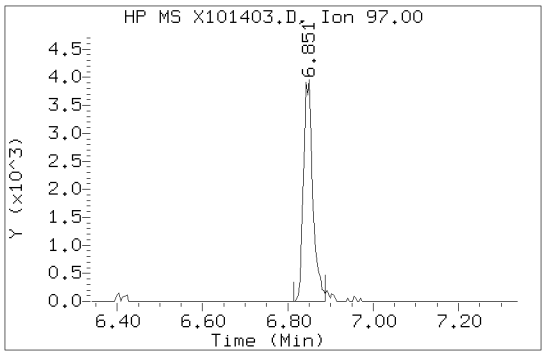
BEFORE

MASS
97
AREA
6196
HEIGHT
3957
19-Oct-2022
16:03
linh
pham



AFTER

MASS
97
AREA
6196
HEIGHT
3957
27-Oct-2022
15:16

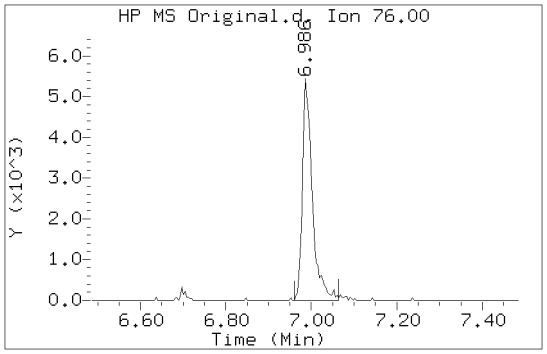


1,3-Dichloropropane (142-28-9)

Reason Code:

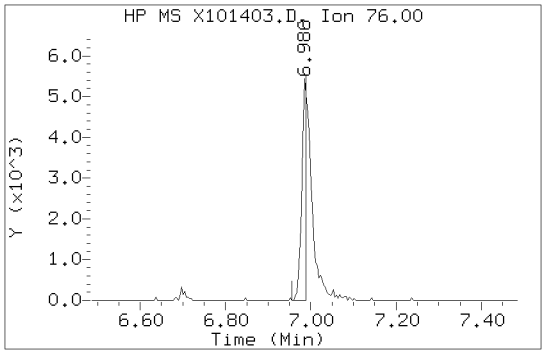
BEFORE

MASS
76
AREA
8879
HEIGHT
5441
19-Oct-2022
16:03
linh
pham



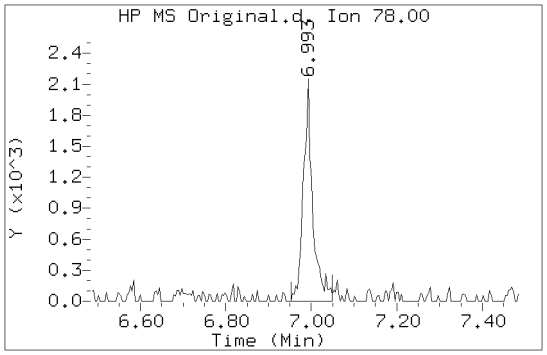
AFTER

MASS
76
AREA
4276
HEIGHT
5441
27-Oct-2022
15:16



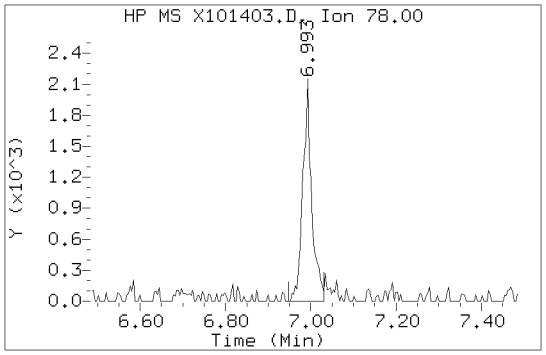
BEFORE

MASS
78
AREA
3299
HEIGHT
2152
19-Oct-2022
16:03
linh
pham



AFTER

MASS
78
AREA
3143
HEIGHT
2152
27-Oct-2022
15:16

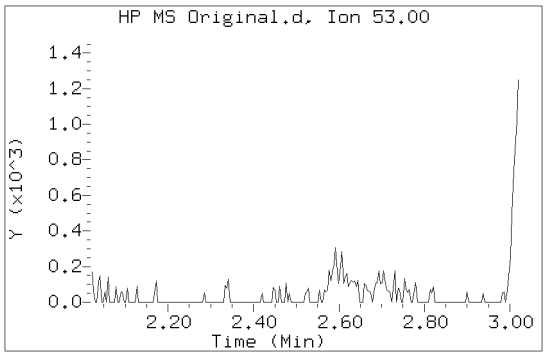


Acrylonitrile (107-13-1)

Reason Code:

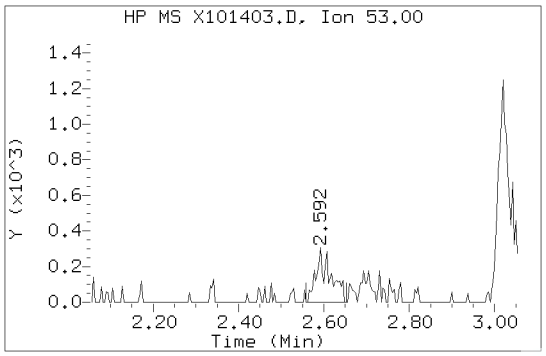
BEFORE

MASS
53
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
53
AREA
699
HEIGHT
308
27-Oct-2022
15:16

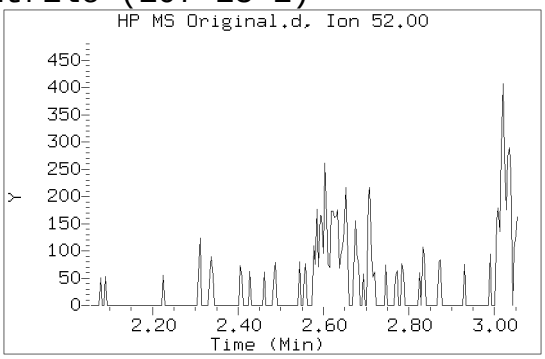


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

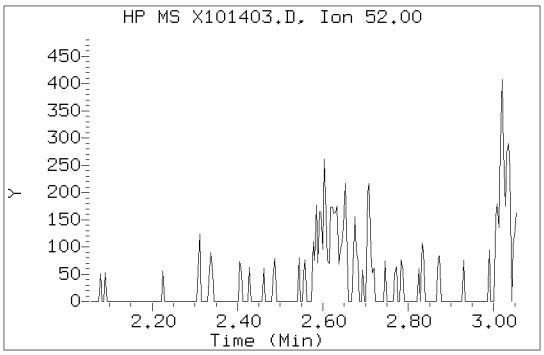
Acrylonitrile (107-13-1)

Reason Code:

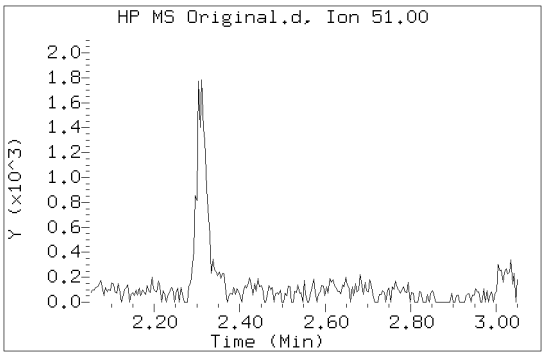
BEFORE
MASS
52
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



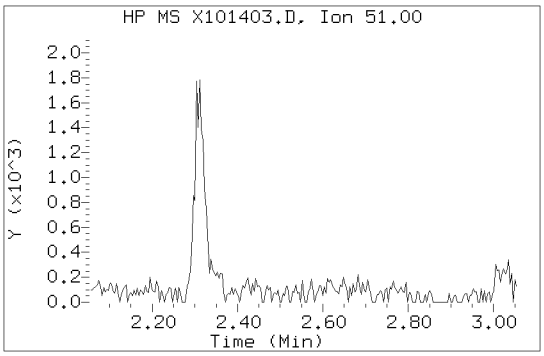
AFTER
MASS
52
AREA
0
HEIGHT
0
27-Oct-2022
15:16



BEFORE
MASS
51
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



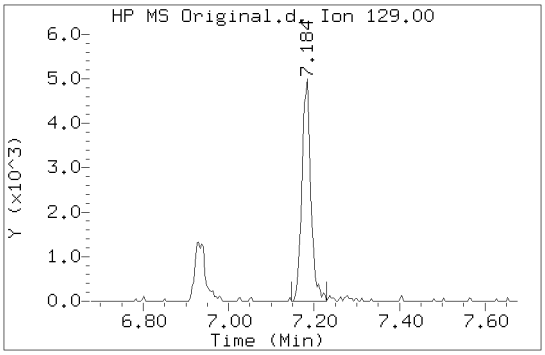
AFTER
MASS
51
AREA
0
HEIGHT
0
27-Oct-2022
15:16



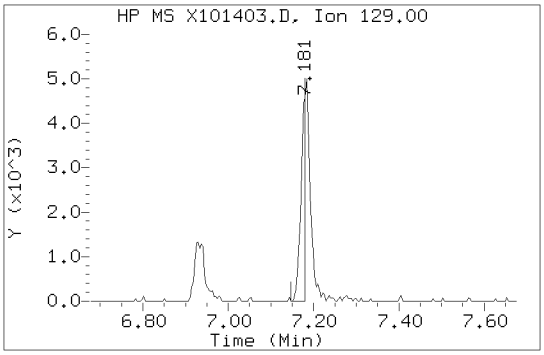
Dibromochloromethane (124-48-1)

Reason Code:

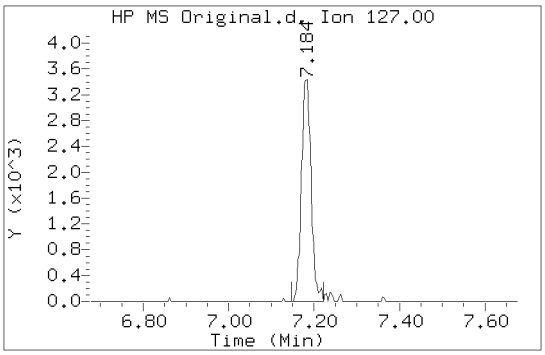
BEFORE
MASS
129
AREA
7442
HEIGHT
4999
19-Oct-2022
16:03
linh
pham



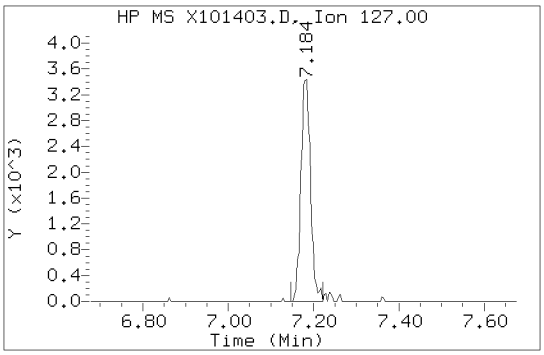
AFTER
MASS
129
AREA
3780
HEIGHT
4585
27-Oct-2022
15:16



BEFORE
MASS
127
AREA
5537
HEIGHT
3434
19-Oct-2022
16:03
linh
pham



AFTER
MASS
127
AREA
5537
HEIGHT
3434
27-Oct-2022
15:16



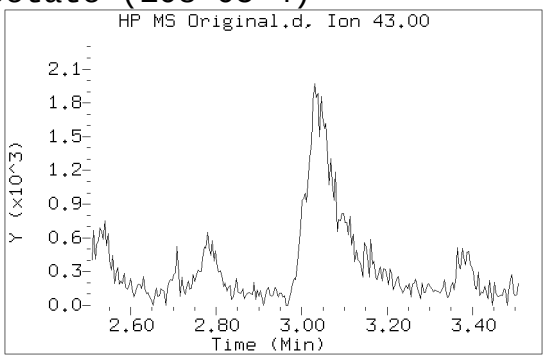
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Vinyl Acetate (108-05-4)

Reason Code:

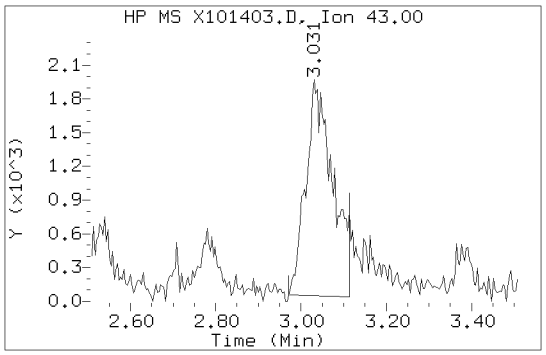
BEFORE

MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



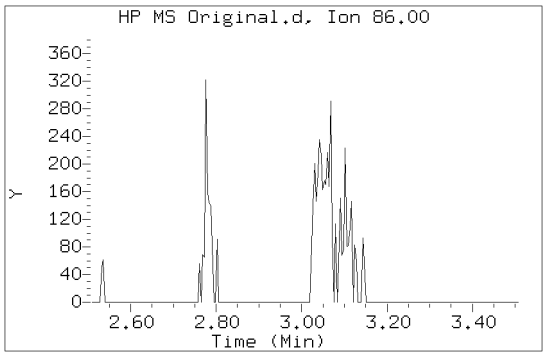
AFTER

MASS
43
AREA
8462
HEIGHT
1921
27-Oct-2022
15:16



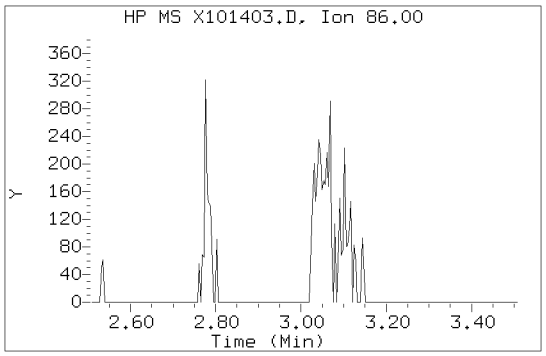
BEFORE

MASS
86
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
86
AREA
0
HEIGHT
0
27-Oct-2022
15:16

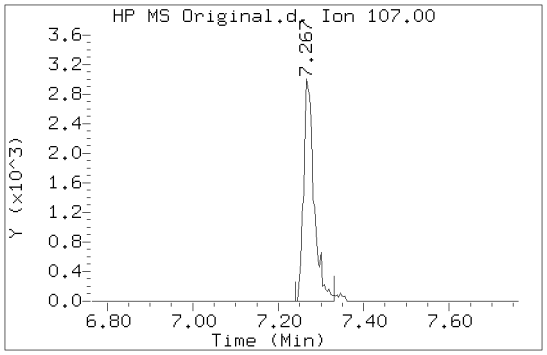


1,2-Dibromoethane (106-93-4)

Reason Code:

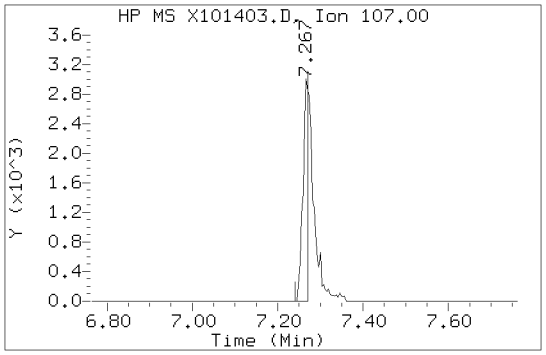
BEFORE

MASS
107
AREA
5191
HEIGHT
3004
19-Oct-2022
16:03
linh
pham



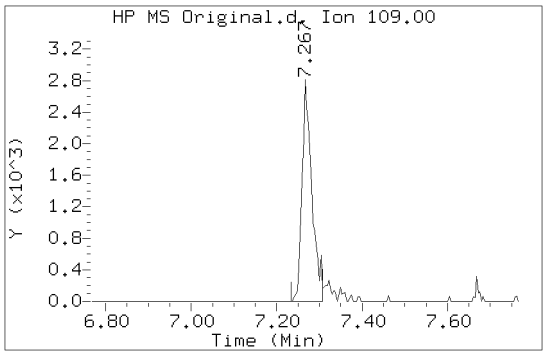
AFTER

MASS
107
AREA
2623
HEIGHT
3004
27-Oct-2022
15:16



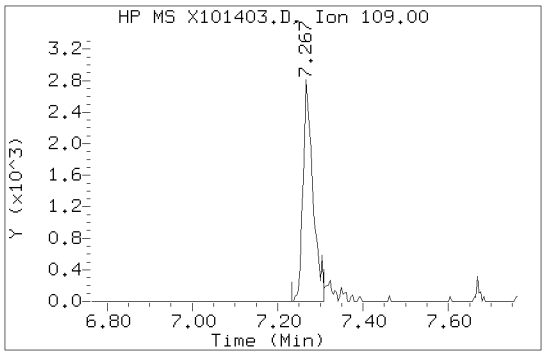
BEFORE

MASS
109
AREA
4605
HEIGHT
2812
19-Oct-2022
16:03
linh
pham



AFTER

MASS
109
AREA
4605
HEIGHT
2812
27-Oct-2022
15:16



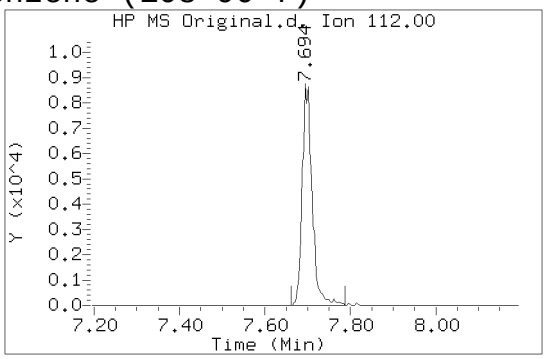
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Chlorobenzene (108-90-7)

Reason Code:

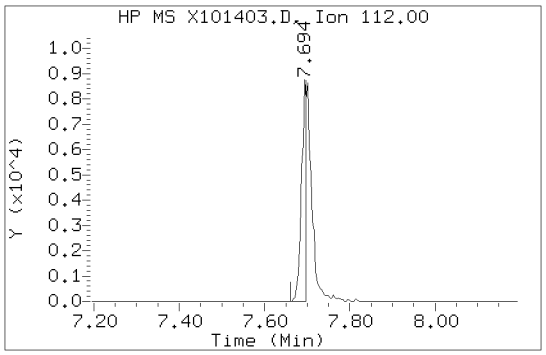
BEFORE

MASS
112
AREA
14470
HEIGHT
8762
19-Oct-2022
16:03
linh
pham



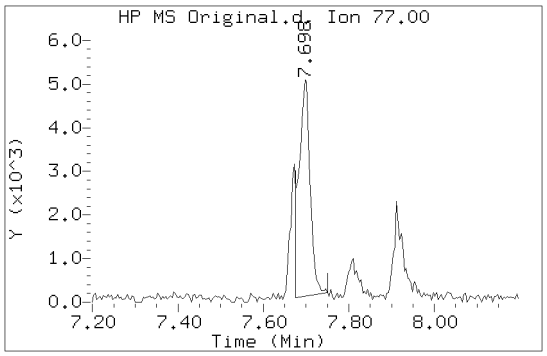
AFTER

MASS
112
AREA
7422
HEIGHT
8762
27-Oct-2022
15:16



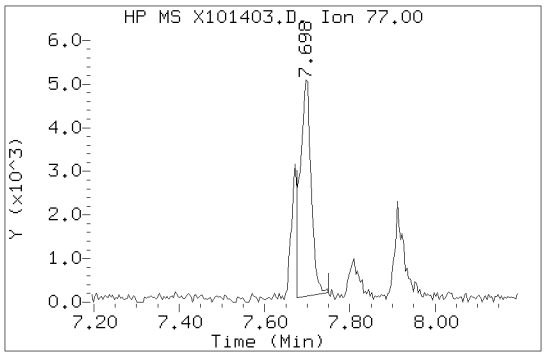
BEFORE

MASS
77
AREA
9210
HEIGHT
4953
19-Oct-2022
16:03
linh
pham



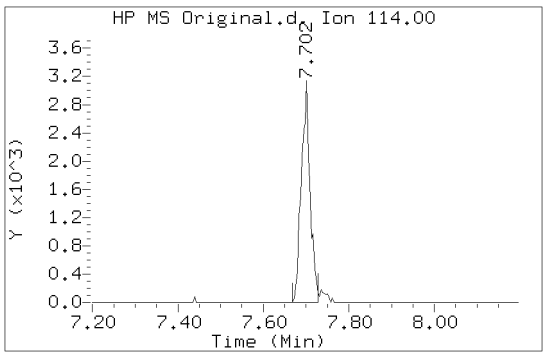
AFTER

MASS
77
AREA
9210
HEIGHT
4953
27-Oct-2022
15:16



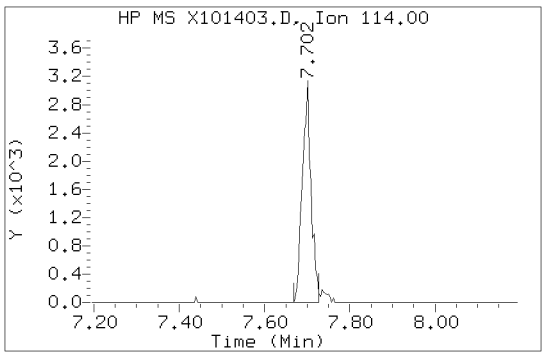
BEFORE

MASS
114
AREA
4544
HEIGHT
3139
19-Oct-2022
16:03
linh
pham



AFTER

MASS
114
AREA
4544
HEIGHT
3139
27-Oct-2022
15:16

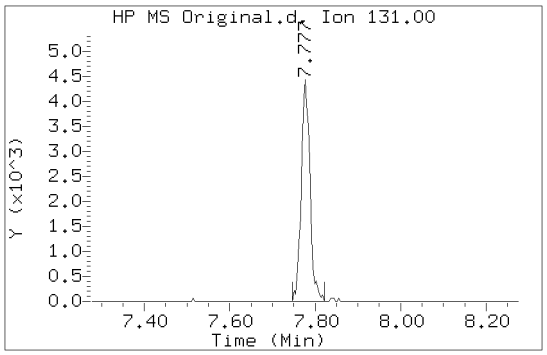


1,1,1,2-Tetrachloroethane (630-20-6)

Reason Code:

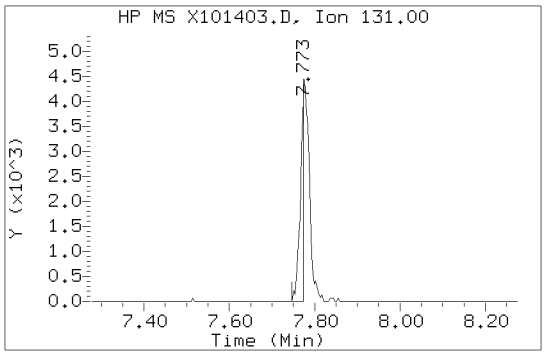
BEFORE

MASS
131
AREA
6513
HEIGHT
4433
19-Oct-2022
16:03
linh
pham



AFTER

MASS
131
AREA
2463
HEIGHT
4059
27-Oct-2022
15:16

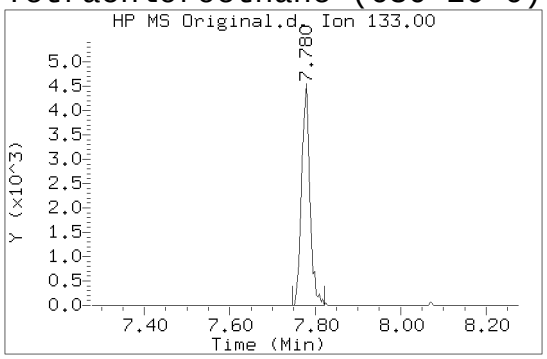


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

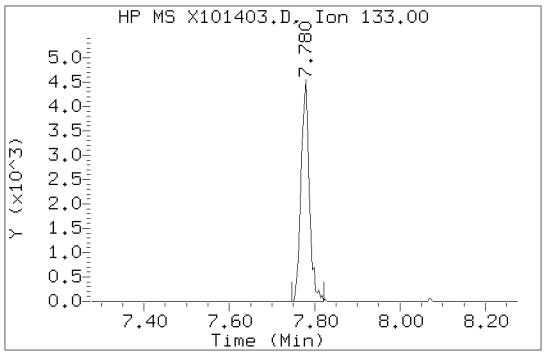
1,1,1,2-Tetrachloroethane (630-20-6)

Reason Code:

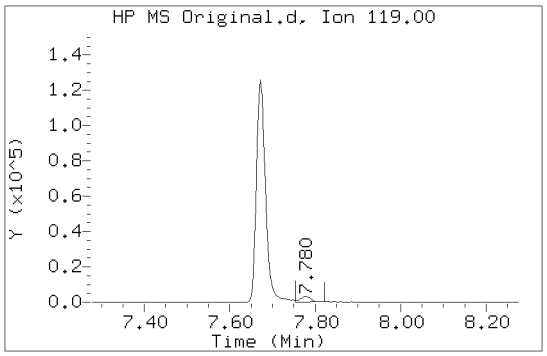
BEFORE
MASS
133
AREA
6302
HEIGHT
4550
19-Oct-2022
16:03
linh
pham



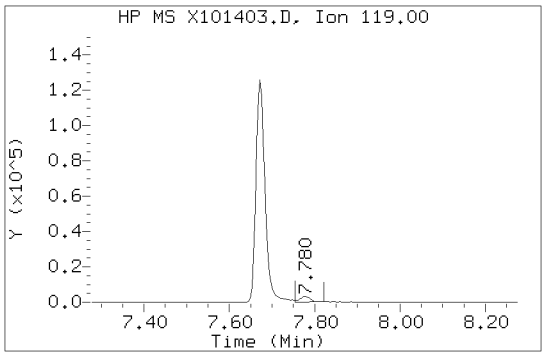
AFTER
MASS
133
AREA
6302
HEIGHT
4550
27-Oct-2022
15:16



BEFORE
MASS
119
AREA
5496
HEIGHT
3276
19-Oct-2022
16:03
linh
pham



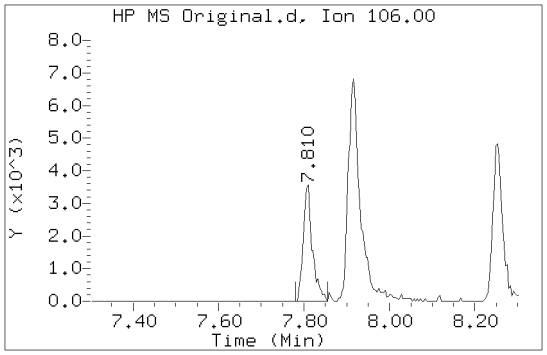
AFTER
MASS
119
AREA
5496
HEIGHT
3276
27-Oct-2022
15:16



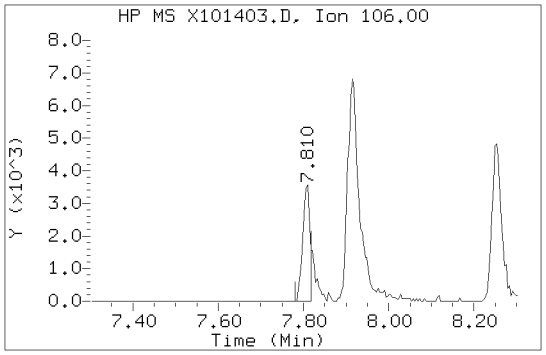
Ethylbenzene (100-41-4)

Reason Code:

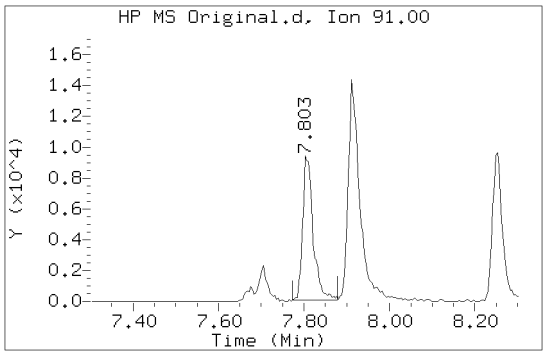
BEFORE
MASS
106
AREA
5434
HEIGHT
3566
19-Oct-2022
16:03
linh
pham



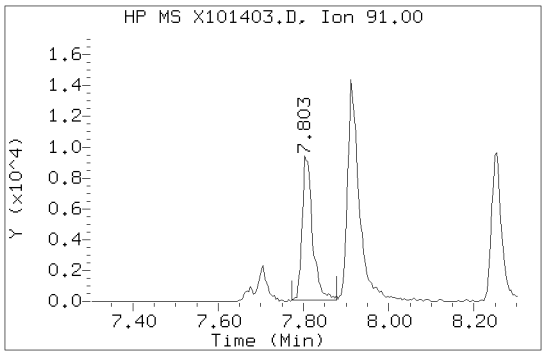
AFTER
MASS
106
AREA
4262
HEIGHT
3566
27-Oct-2022
15:16



BEFORE
MASS
91
AREA
16395
HEIGHT
9376
19-Oct-2022
16:03
linh
pham



AFTER
MASS
91
AREA
16395
HEIGHT
9376
27-Oct-2022
15:16



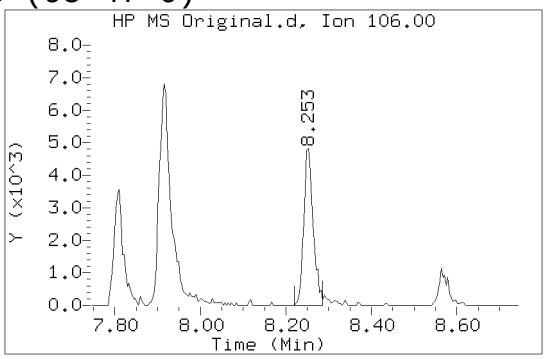
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

o-Xylene (95-47-6)

Reason Code:

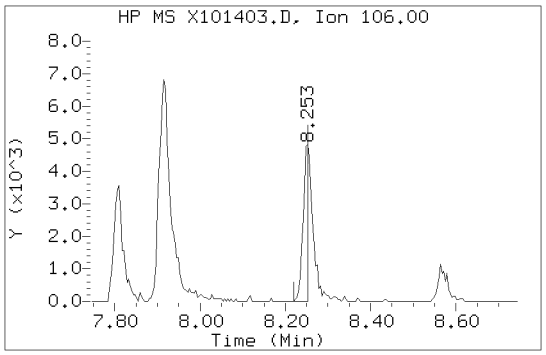
BEFORE

MASS
106
AREA
7578
HEIGHT
4831
19-Oct-2022
16:03
linh
pham



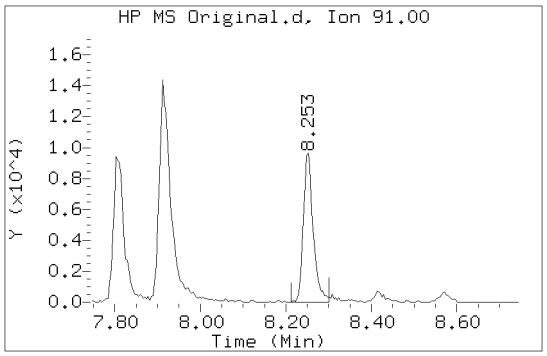
AFTER

MASS
106
AREA
4169
HEIGHT
4831
27-Oct-2022
15:16



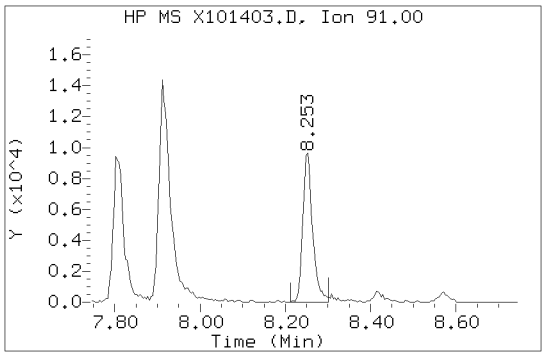
BEFORE

MASS
91
AREA
15841
HEIGHT
9647
19-Oct-2022
16:03
linh
pham



AFTER

MASS
91
AREA
15841
HEIGHT
9647
27-Oct-2022
15:16

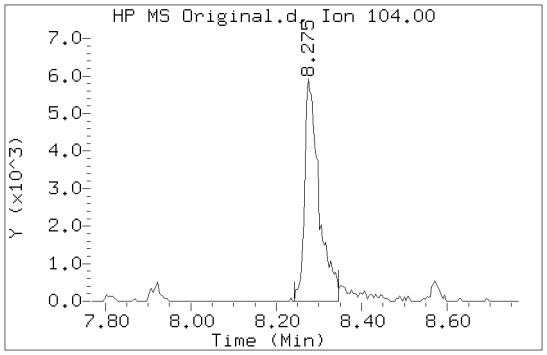


Styrene (100-42-5)

Reason Code:

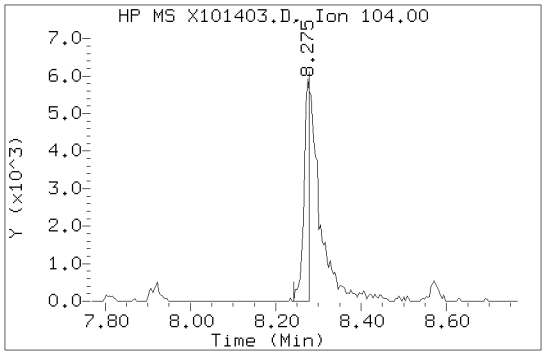
BEFORE

MASS
104
AREA
14011
HEIGHT
5923
19-Oct-2022
16:03
linh
pham



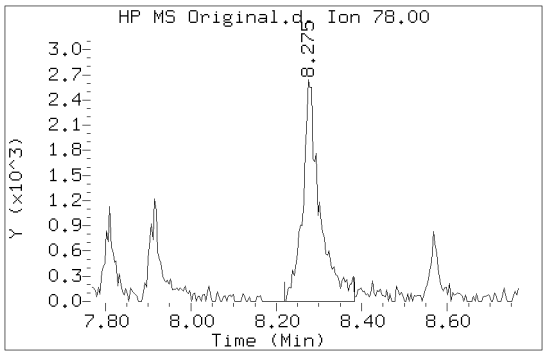
AFTER

MASS
104
AREA
5695
HEIGHT
5923
27-Oct-2022
15:16



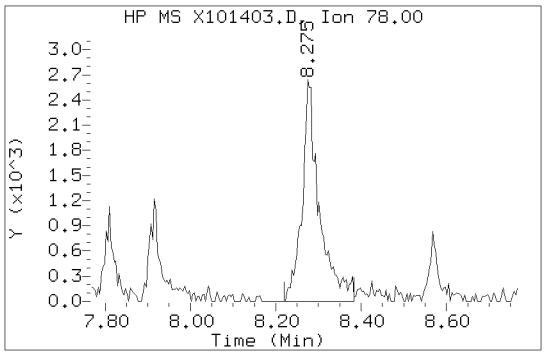
BEFORE

MASS
78
AREA
7490
HEIGHT
2642
19-Oct-2022
16:03
linh
pham



AFTER

MASS
78
AREA
7490
HEIGHT
2642
27-Oct-2022
15:16



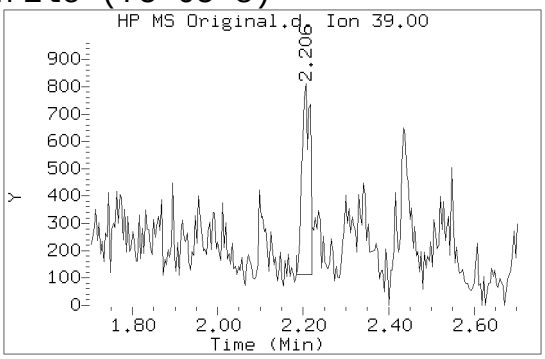
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Acetonitrile (75-05-8)

Reason Code:

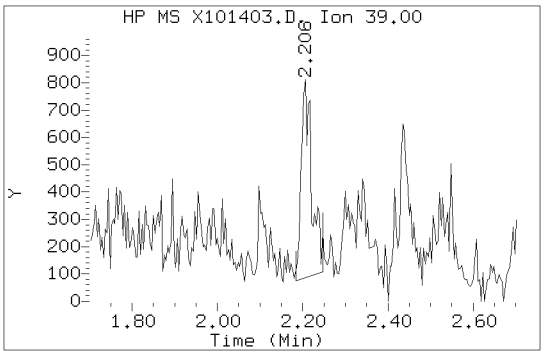
BEFORE

MASS
39
AREA
940
HEIGHT
698
19-Oct-2022
16:03
linh
pham



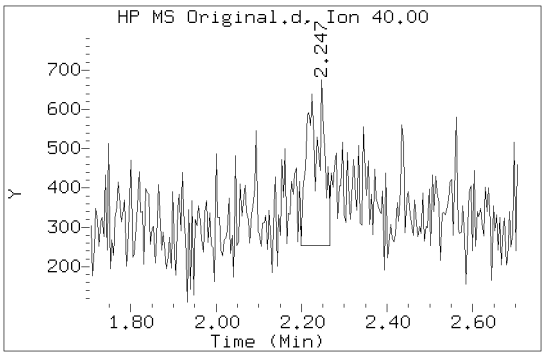
AFTER

MASS
39
AREA
1282
HEIGHT
724
27-Oct-2022
15:16



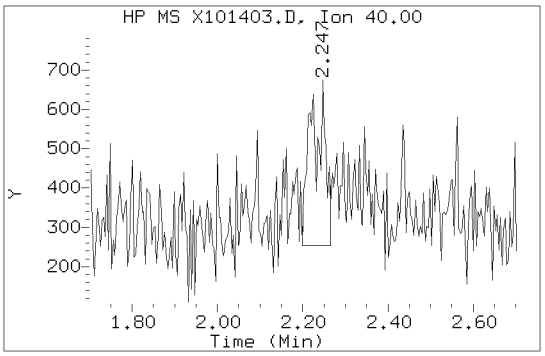
BEFORE

MASS
40
AREA
991
HEIGHT
422
19-Oct-2022
16:03
linh
pham



AFTER

MASS
40
AREA
991
HEIGHT
422
27-Oct-2022
15:16

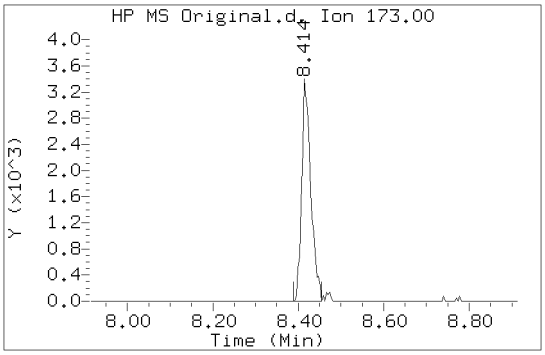


Bromoform (75-25-2)

Reason Code:

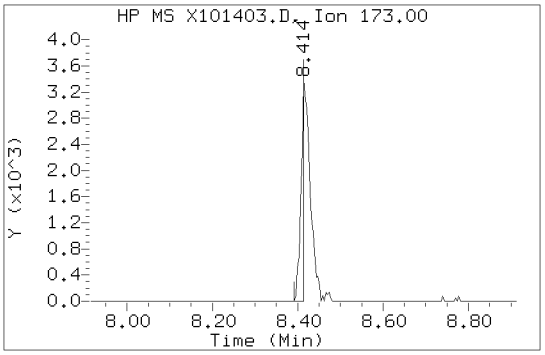
BEFORE

MASS
173
AREA
5149
HEIGHT
3401
19-Oct-2022
16:03
linh
pham



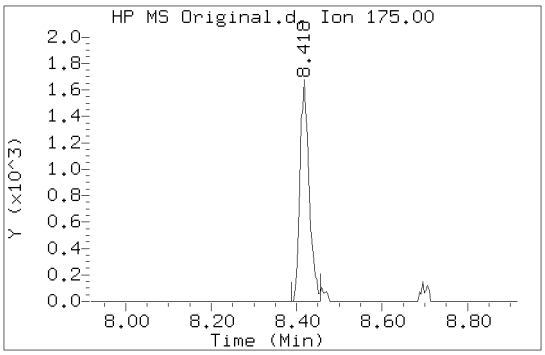
AFTER

MASS
173
AREA
1906
HEIGHT
3401
27-Oct-2022
15:16



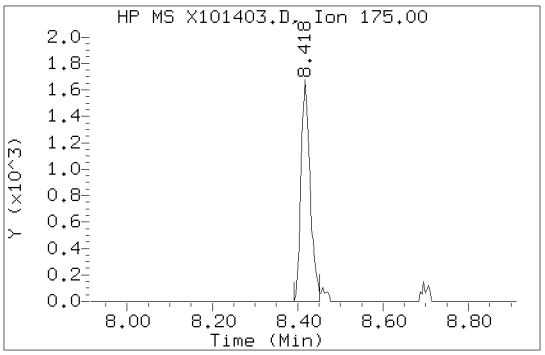
BEFORE

MASS
175
AREA
2581
HEIGHT
1677
19-Oct-2022
16:03
linh
pham



AFTER

MASS
175
AREA
2567
HEIGHT
1677
27-Oct-2022
15:16



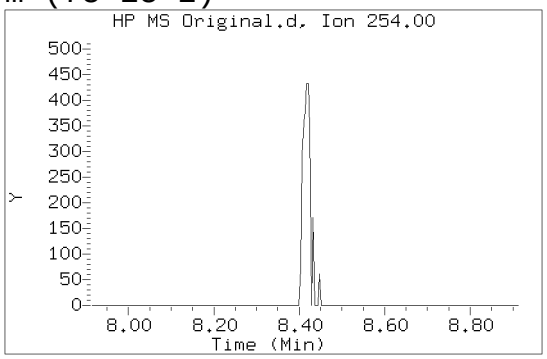
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Bromoform (75-25-2)

Reason Code:

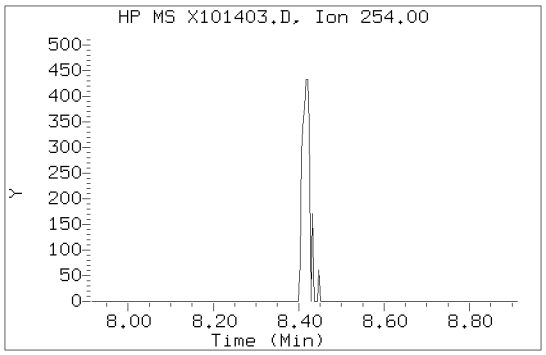
BEFORE

MASS
254
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
254
AREA
0
HEIGHT
0
27-Oct-2022
15:16

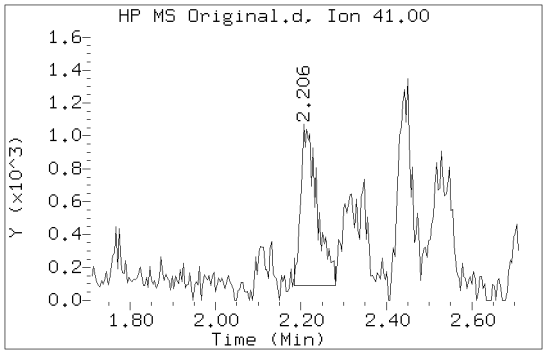


Allyl Chloride (107-05-1)

Reason Code:

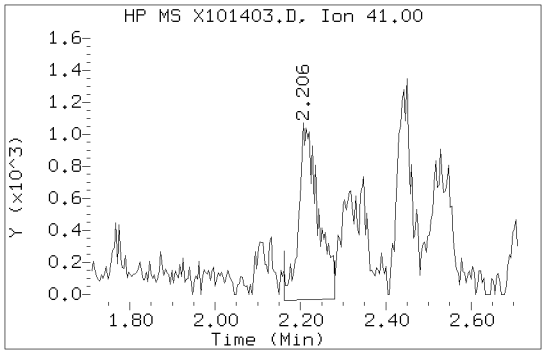
BEFORE

MASS
41
AREA
2641
HEIGHT
983
19-Oct-2022
16:03
linh
pham



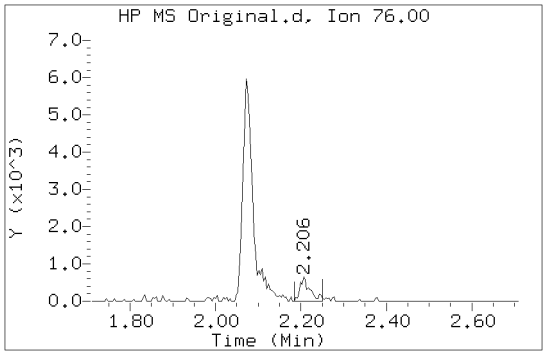
AFTER

MASS
41
AREA
3566
HEIGHT
1106
27-Oct-2022
15:16



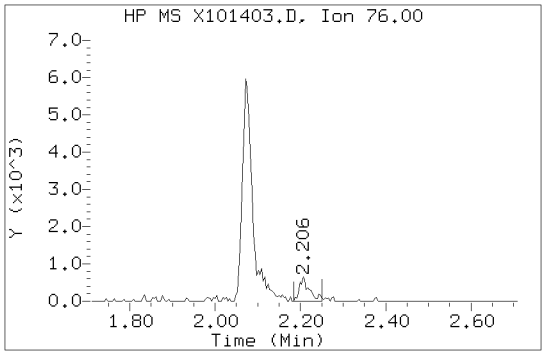
BEFORE

MASS
76
AREA
1072
HEIGHT
653
19-Oct-2022
16:03
linh
pham



AFTER

MASS
76
AREA
1072
HEIGHT
653
27-Oct-2022
15:16

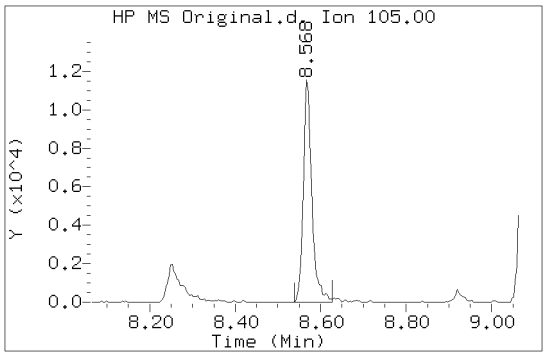


Isopropylbenzene (98-82-8)

Reason Code:

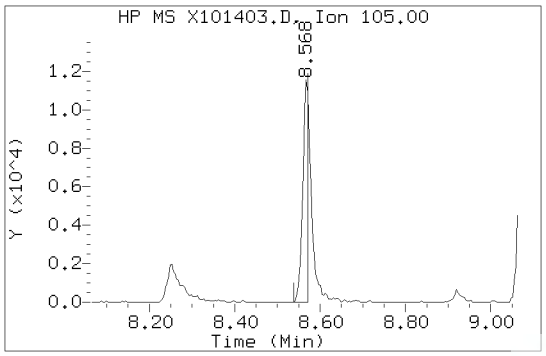
BEFORE

MASS
105
AREA
16551
HEIGHT
11554
19-Oct-2022
16:03
linh
pham



AFTER

MASS
105
AREA
10442
HEIGHT
11554
27-Oct-2022
15:16

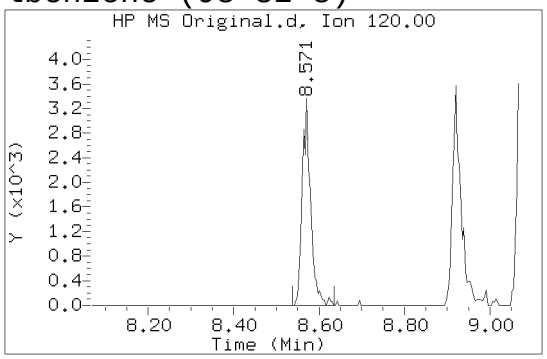


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

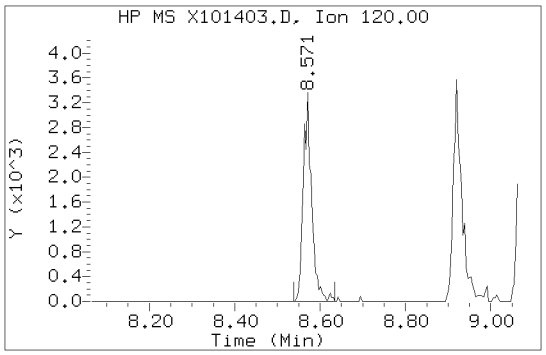
Isopropylbenzene (98-82-8)

Reason Code:

BEFORE
MASS
120
AREA
4685
HEIGHT
3363
19-Oct-2022
16:03
linh
pham



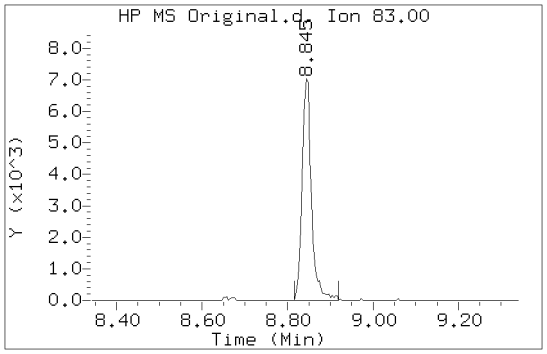
AFTER
MASS
120
AREA
4685
HEIGHT
3363
27-Oct-2022
15:16



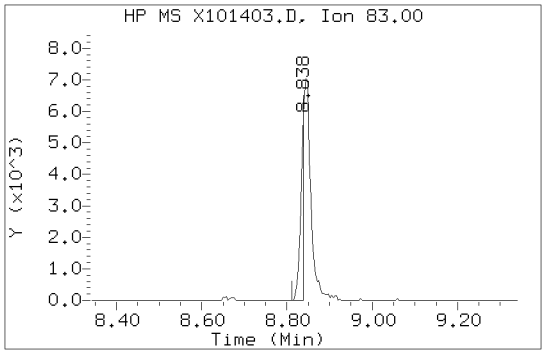
1,1,2,2-Tetrachloroethane (79-34-5)

Reason Code:

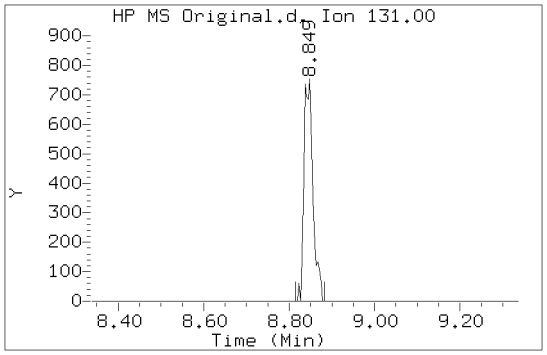
BEFORE
MASS
83
AREA
11025
HEIGHT
7037
19-Oct-2022
16:03
linh
pham



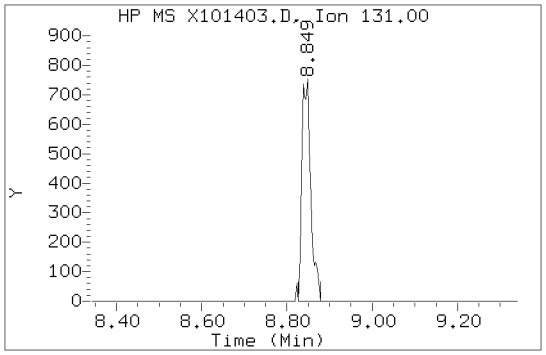
AFTER
MASS
83
AREA
3092
HEIGHT
5911
27-Oct-2022
15:16



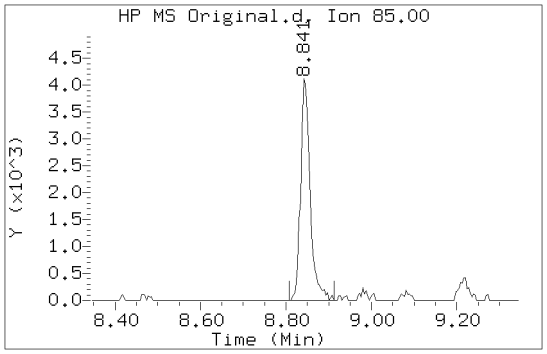
BEFORE
MASS
131
AREA
1126
HEIGHT
754
19-Oct-2022
16:03
linh
pham



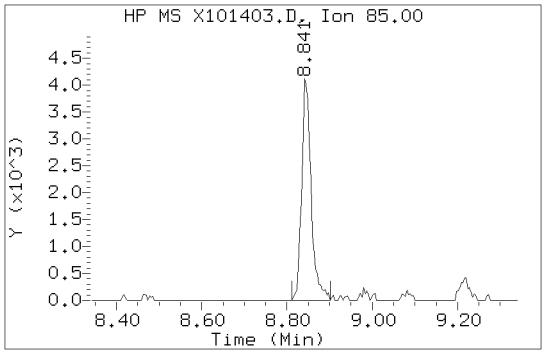
AFTER
MASS
131
AREA
1112
HEIGHT
754
27-Oct-2022
15:16



BEFORE
MASS
85
AREA
6586
HEIGHT
4119
19-Oct-2022
16:03
linh
pham



AFTER
MASS
85
AREA
6554
HEIGHT
4119
27-Oct-2022
15:16

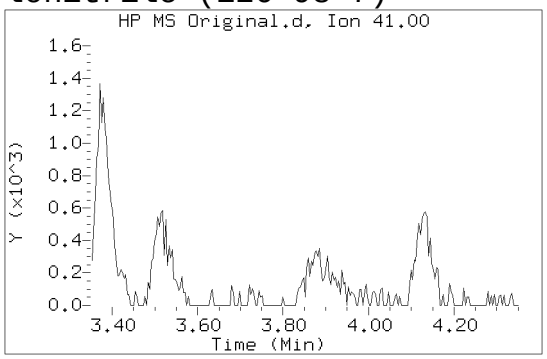


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

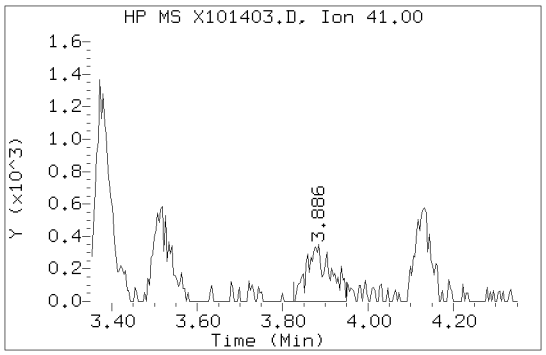
Methacrylonitrile (126-98-7)

Reason Code:

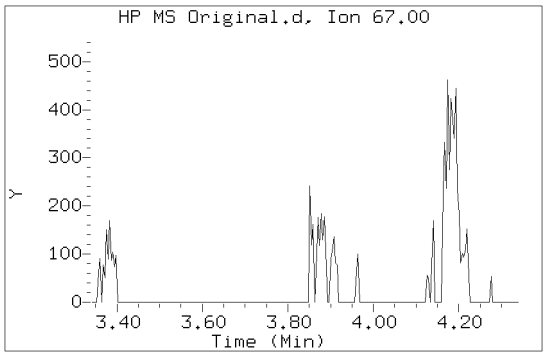
BEFORE
MASS
41
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



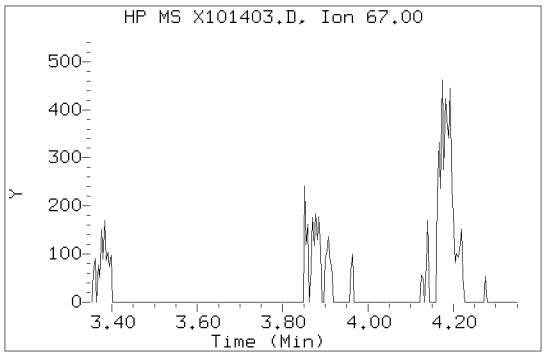
AFTER
MASS
41
AREA
1331
HEIGHT
352
27-Oct-2022
15:16



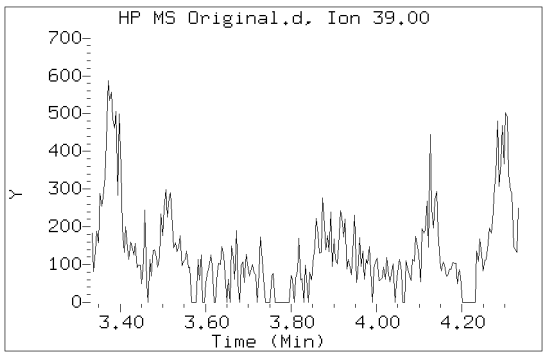
BEFORE
MASS
67
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



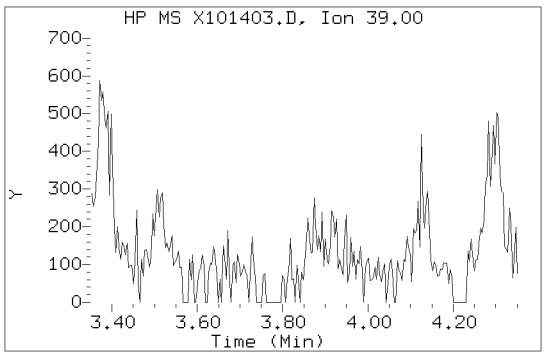
AFTER
MASS
67
AREA
0
HEIGHT
0
27-Oct-2022
15:16



BEFORE
MASS
39
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



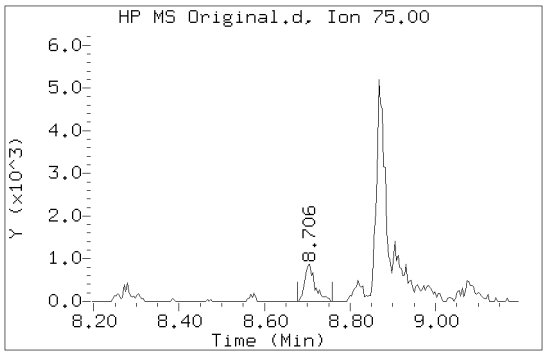
AFTER
MASS
39
AREA
0
HEIGHT
0
27-Oct-2022
15:16



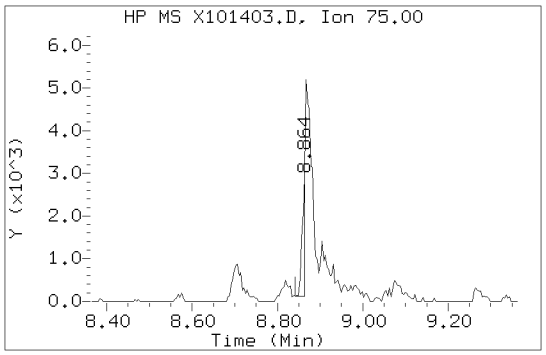
1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE
MASS
75
AREA
1467
HEIGHT
876
19-Oct-2022
16:03
linh
pham



AFTER
MASS
75
AREA
1476
HEIGHT
2830
27-Oct-2022
15:16



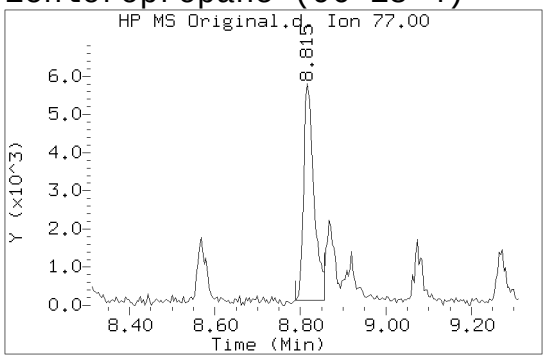
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

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

Reason Code:

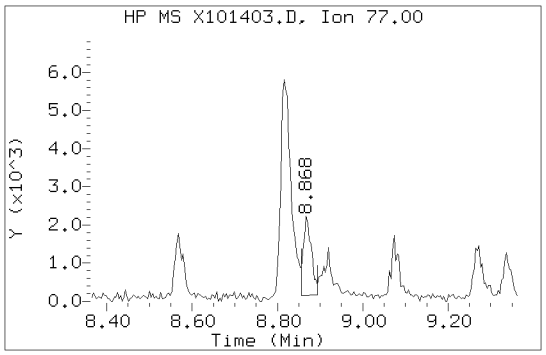
BEFORE

MASS
77
AREA
9779
HEIGHT
5676
19-Oct-2022
16:03
linh
pham



AFTER

MASS
77
AREA
2801
HEIGHT
2077
27-Oct-2022
15:16

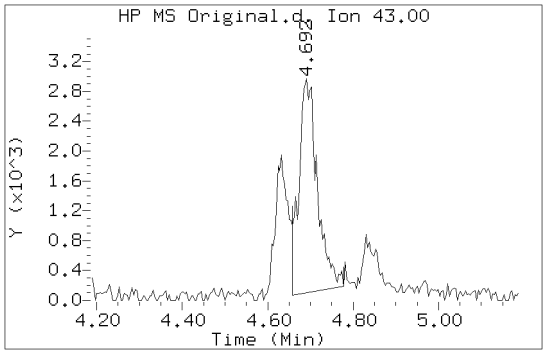


Isobutyl Alcohol (78-83-1)

Reason Code:

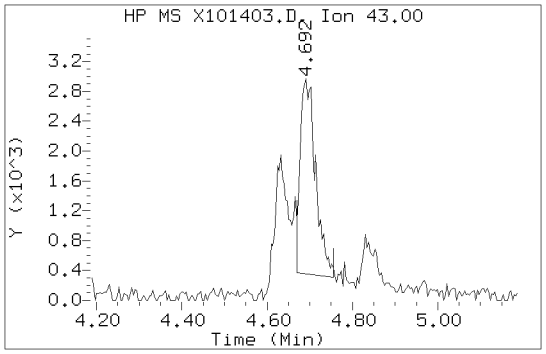
BEFORE

MASS
43
AREA
8814
HEIGHT
2868
19-Oct-2022
16:03
linh
pham



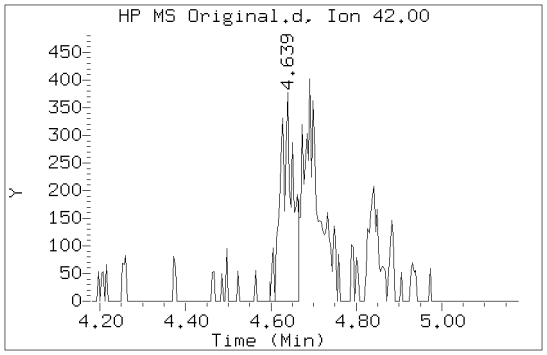
AFTER

MASS
43
AREA
6709
HEIGHT
2613
27-Oct-2022
15:16



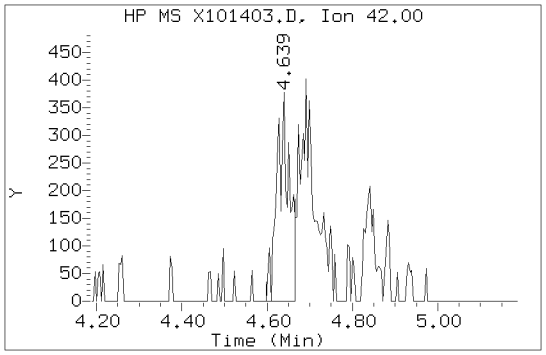
BEFORE

MASS
42
AREA
753
HEIGHT
378
19-Oct-2022
16:03
linh
pham



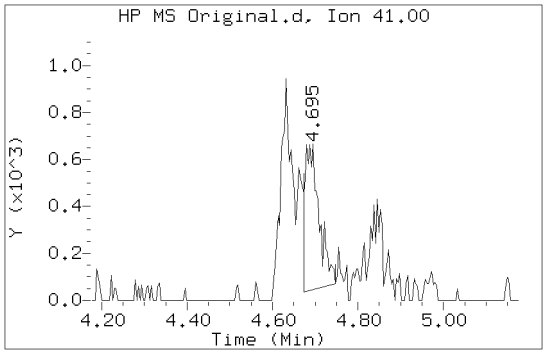
AFTER

MASS
42
AREA
753
HEIGHT
378
27-Oct-2022
15:16



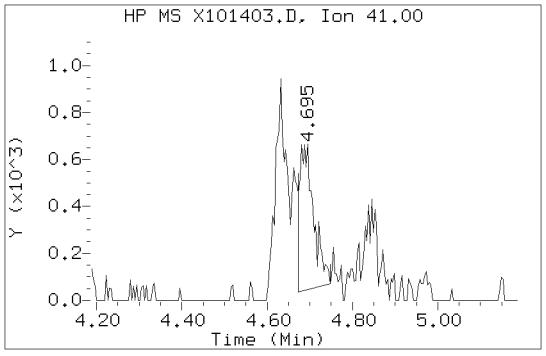
BEFORE

MASS
41
AREA
1464
HEIGHT
620
19-Oct-2022
16:03
linh
pham



AFTER

MASS
41
AREA
1464
HEIGHT
620
27-Oct-2022
15:16



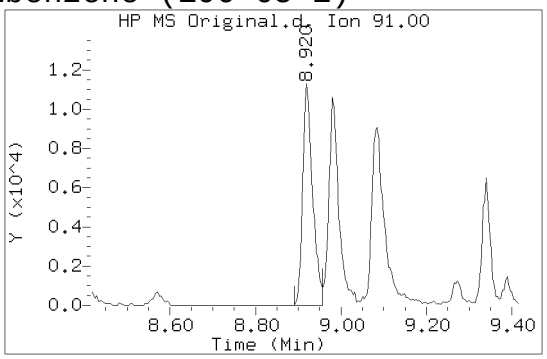
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

n-Propylbenzene (106-65-1)

Reason Code:

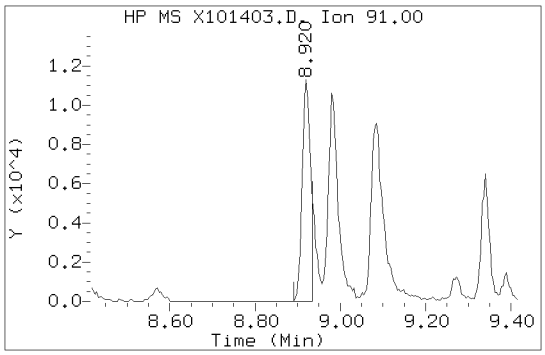
BEFORE

MASS
91
AREA
18619
HEIGHT
11298
19-Oct-2022
16:03
linh
pham



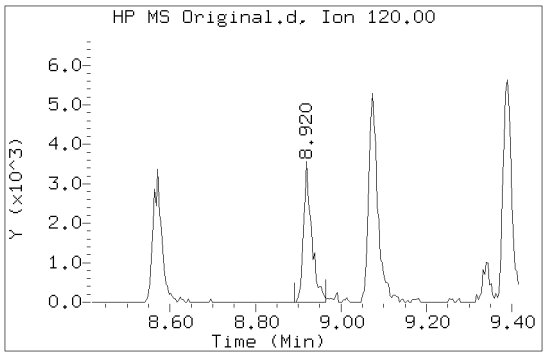
AFTER

MASS
91
AREA
15732
HEIGHT
11298
27-Oct-2022
15:16



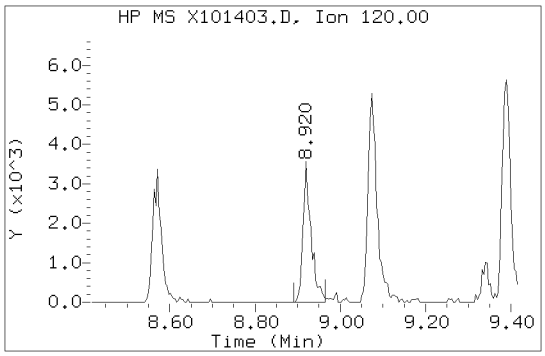
BEFORE

MASS
120
AREA
4806
HEIGHT
3572
19-Oct-2022
16:03
linh
pham



AFTER

MASS
120
AREA
4806
HEIGHT
3572
27-Oct-2022
15:16

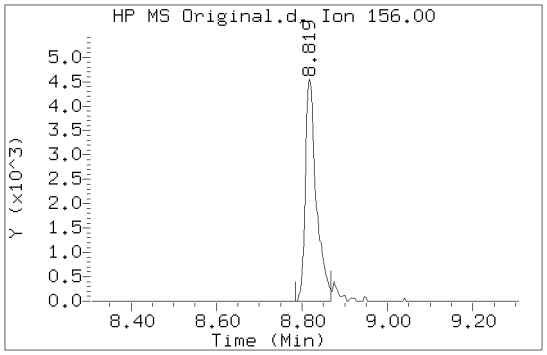


Bromobenzene (108-86-1)

Reason Code:

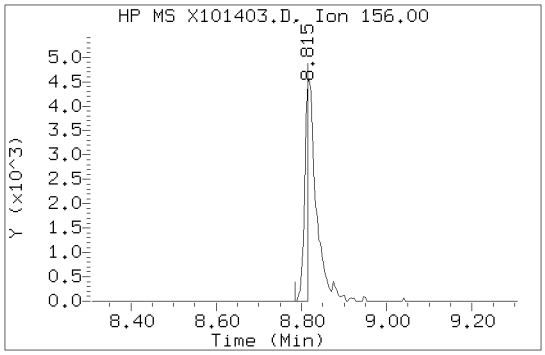
BEFORE

MASS
156
AREA
8225
HEIGHT
4559
19-Oct-2022
16:03
linh
pham



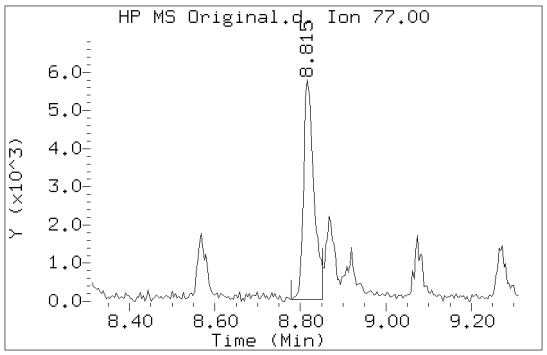
AFTER

MASS
156
AREA
2829
HEIGHT
4478
27-Oct-2022
15:16



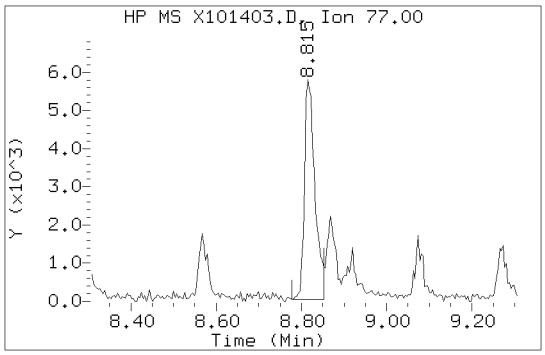
BEFORE

MASS
77
AREA
9940
HEIGHT
5753
19-Oct-2022
16:03
linh
pham



AFTER

MASS
77
AREA
9940
HEIGHT
5753
27-Oct-2022
15:16



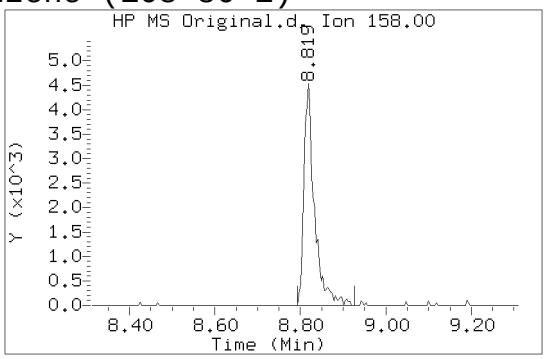
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Bromobenzene (108-86-1)

Reason Code:

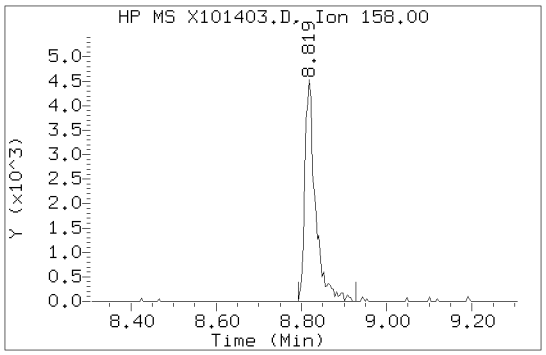
BEFORE

MASS
158
AREA
7949
HEIGHT
4532
19-Oct-2022
16:03
linh
pham



AFTER

MASS
158
AREA
7949
HEIGHT
4532
27-Oct-2022
15:16

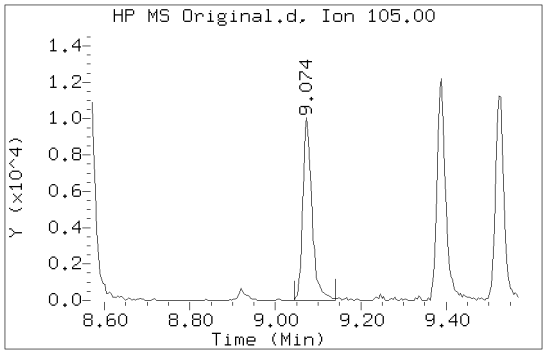


1,3,5-Trimethylbenzene (108-67-8)

Reason Code:

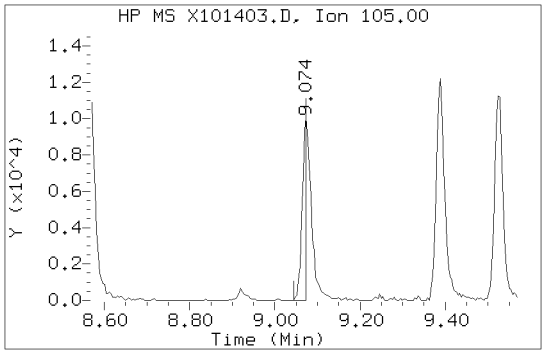
BEFORE

MASS
105
AREA
15347
HEIGHT
10041
19-Oct-2022
16:03
linh
pham



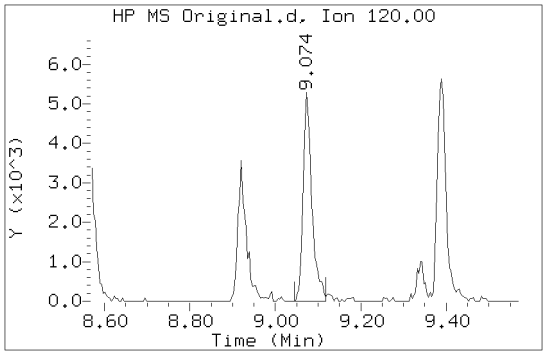
AFTER

MASS
105
AREA
7703
HEIGHT
10041
27-Oct-2022
15:16



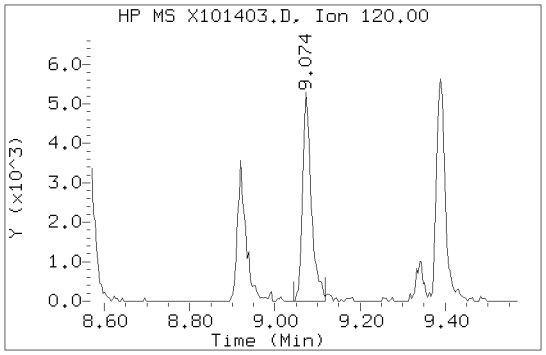
BEFORE

MASS
120
AREA
7763
HEIGHT
5288
19-Oct-2022
16:03
linh
pham



AFTER

MASS
120
AREA
7763
HEIGHT
5288
27-Oct-2022
15:16

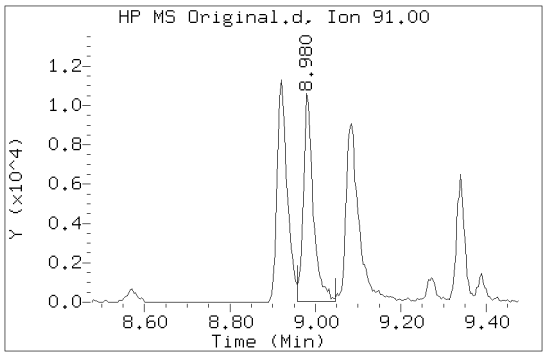


2-Chlorotoluene (95-49-8)

Reason Code:

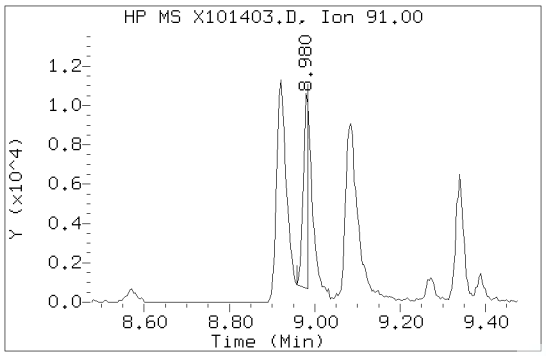
BEFORE

MASS
91
AREA
17302
HEIGHT
10582
19-Oct-2022
16:03
linh
pham



AFTER

MASS
91
AREA
8168
HEIGHT
9908
27-Oct-2022
15:16



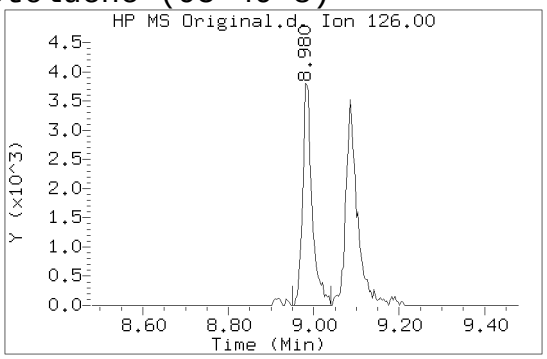
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InstruID : voa6.i
LabSampID : VSTD000.5

2-Chlorotoluene (95-49-8)

Reason Code:

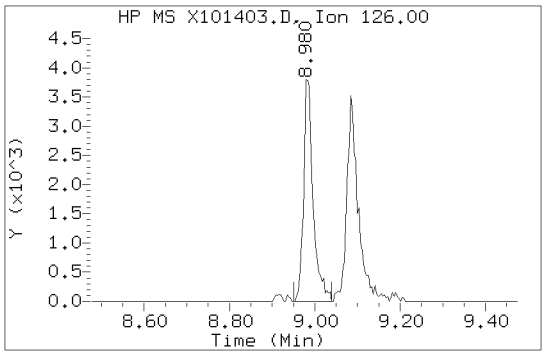
BEFORE

MASS
126
AREA
6018
HEIGHT
3797
19-Oct-2022
16:03
linh
pham



AFTER

MASS
126
AREA
6018
HEIGHT
3797
27-Oct-2022
15:16

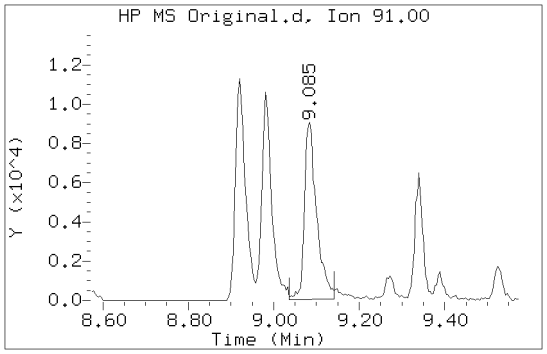


4-Chlorotoluene (106-43-4)

Reason Code:

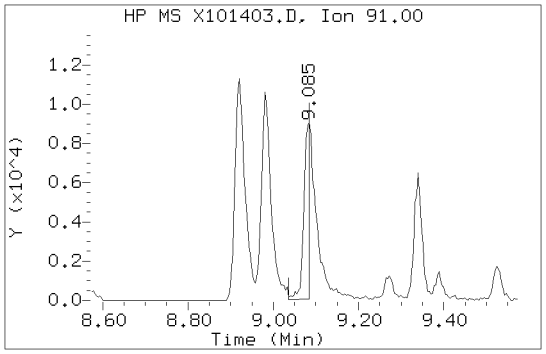
BEFORE

MASS
91
AREA
18146
HEIGHT
9029
19-Oct-2022
16:03
linh
pham



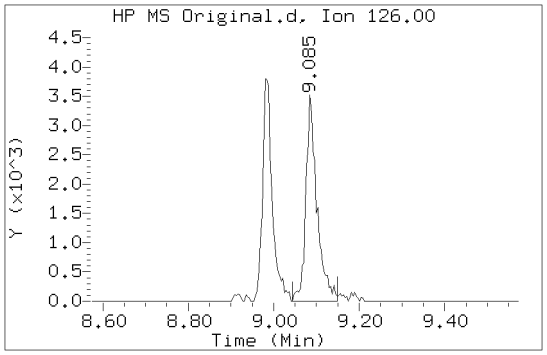
AFTER

MASS
91
AREA
9007
HEIGHT
9030
27-Oct-2022
15:16



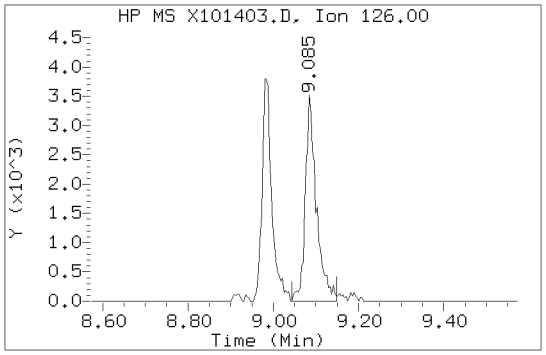
BEFORE

MASS
126
AREA
6417
HEIGHT
3523
19-Oct-2022
16:03
linh
pham



AFTER

MASS
126
AREA
6417
HEIGHT
3523
27-Oct-2022
15:16

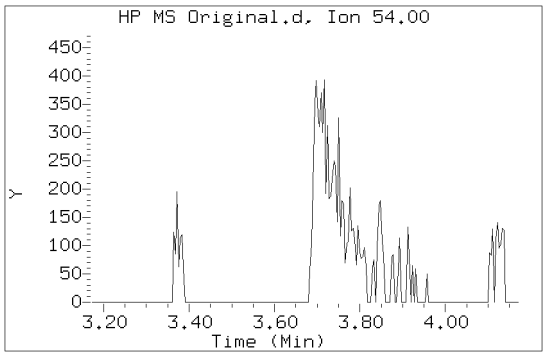


Propionitrile (107-12-0)

Reason Code:

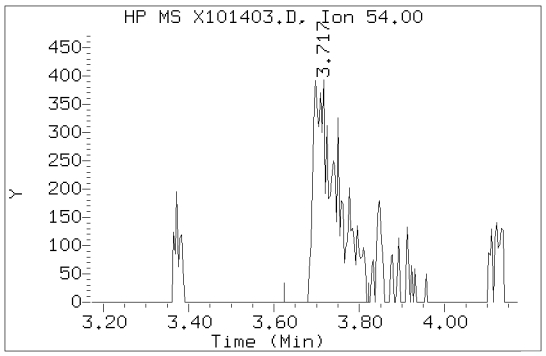
BEFORE

MASS
54
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
54
AREA
1528
HEIGHT
393
27-Oct-2022
15:16

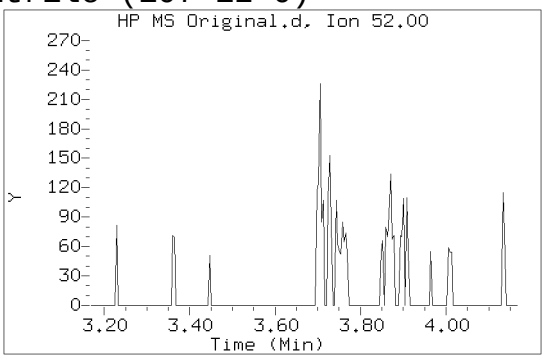


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

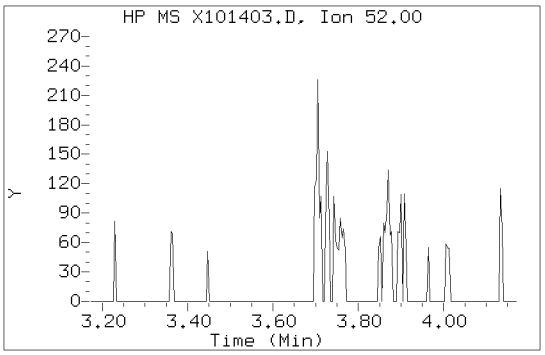
Propionitrile (107-12-0)

Reason Code:

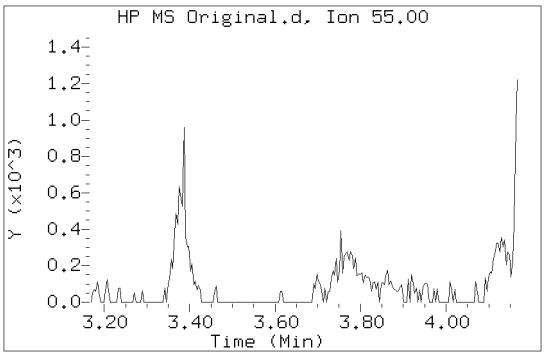
BEFORE
MASS
52
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



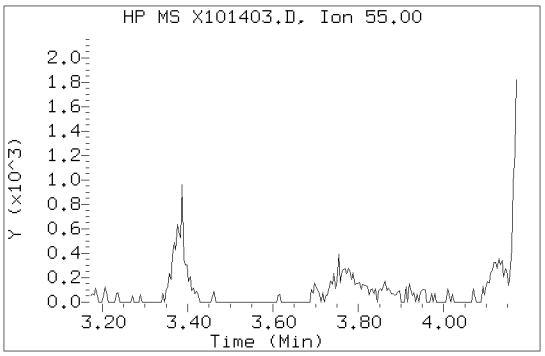
AFTER
MASS
52
AREA
0
HEIGHT
0
27-Oct-2022
15:16



BEFORE
MASS
55
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



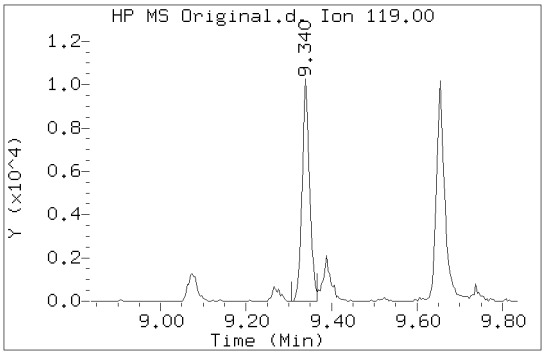
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MASS
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HEIGHT
0
27-Oct-2022
15:16



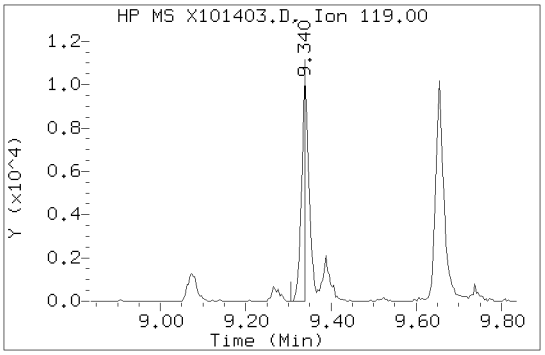
tert-Butylbenzene (98-06-6)

Reason Code:

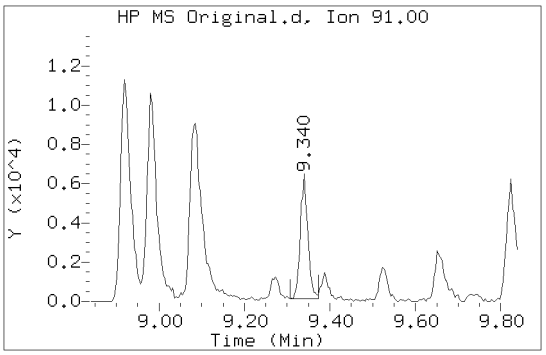
BEFORE
MASS
119
AREA
12805
HEIGHT
10266
19-Oct-2022
16:03
linh
pham



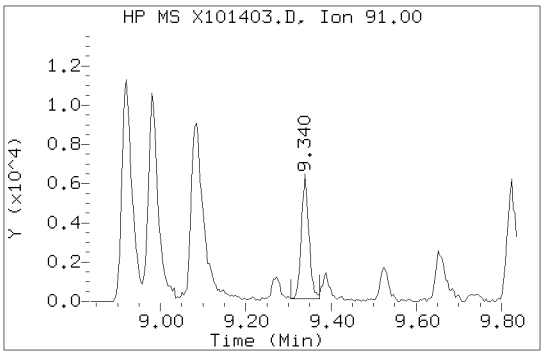
AFTER
MASS
119
AREA
7379
HEIGHT
10266
27-Oct-2022
15:16



BEFORE
MASS
91
AREA
8056
HEIGHT
6380
19-Oct-2022
16:03
linh
pham



AFTER
MASS
91
AREA
8056
HEIGHT
6380
27-Oct-2022
15:16



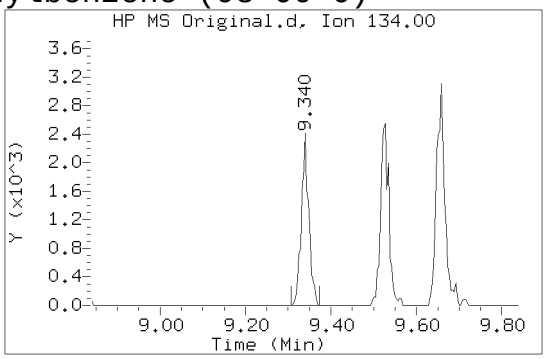
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

tert-Butylbenzene (98-06-6)

Reason Code:

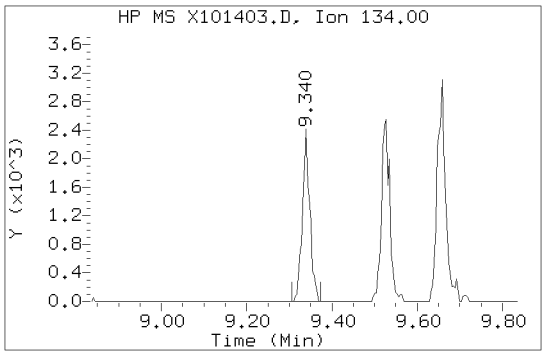
BEFORE

MASS
134
AREA
2991
HEIGHT
2420
19-Oct-2022
16:03
linh
pham



AFTER

MASS
134
AREA
2991
HEIGHT
2420
27-Oct-2022
15:16

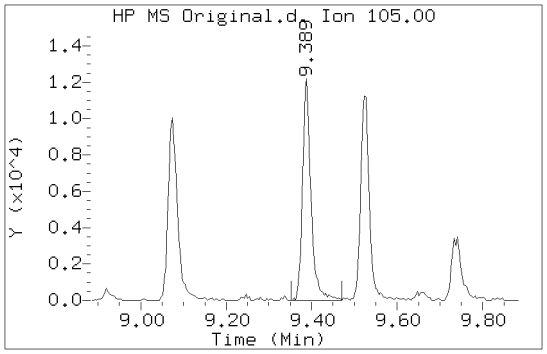


1,2,4-Trimethylbenzene (95-63-6)

Reason Code:

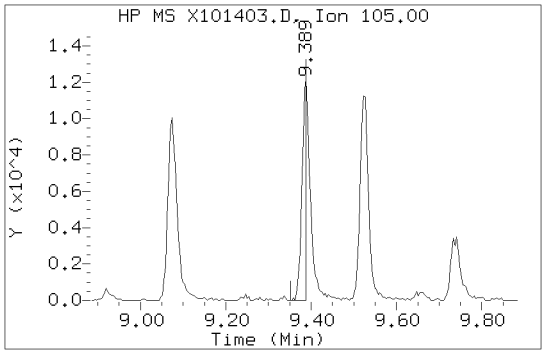
BEFORE

MASS
105
AREA
17183
HEIGHT
12197
19-Oct-2022
16:03
linh
pham



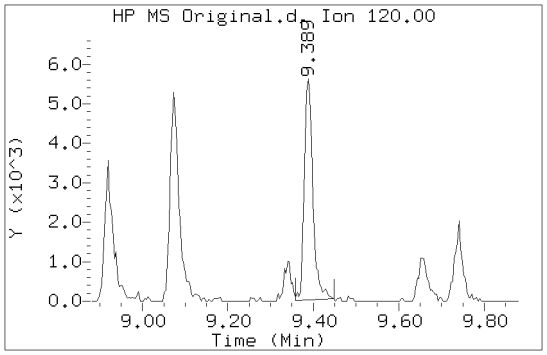
AFTER

MASS
105
AREA
9741
HEIGHT
12197
27-Oct-2022
15:16



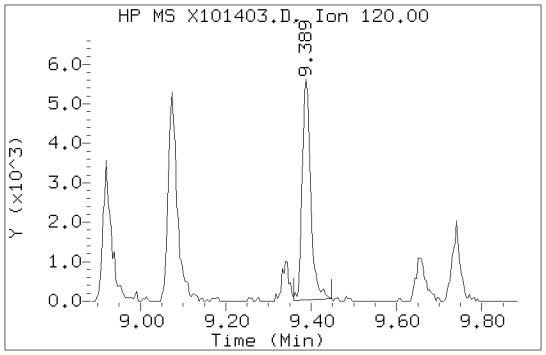
BEFORE

MASS
120
AREA
7987
HEIGHT
5595
19-Oct-2022
16:03
linh
pham



AFTER

MASS
120
AREA
7987
HEIGHT
5595
27-Oct-2022
15:16

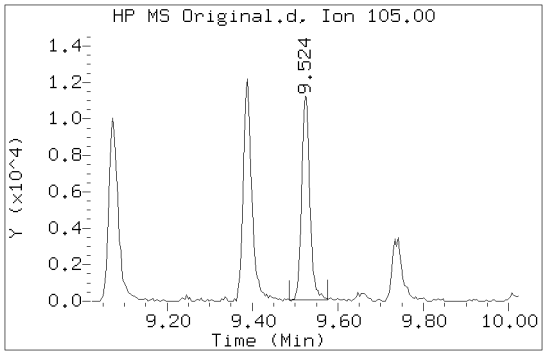


sec-Butylbenzene (135-98-8)

Reason Code:

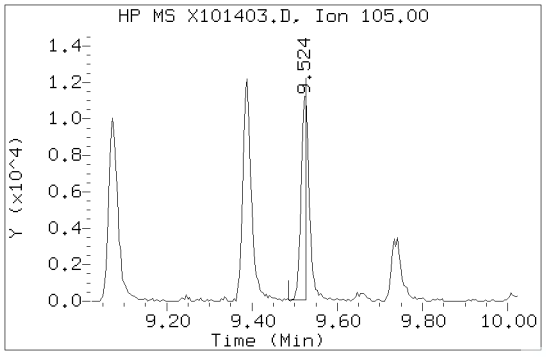
BEFORE

MASS
105
AREA
15463
HEIGHT
11195
19-Oct-2022
16:03
linh
pham



AFTER

MASS
105
AREA
10477
HEIGHT
11195
27-Oct-2022
15:16



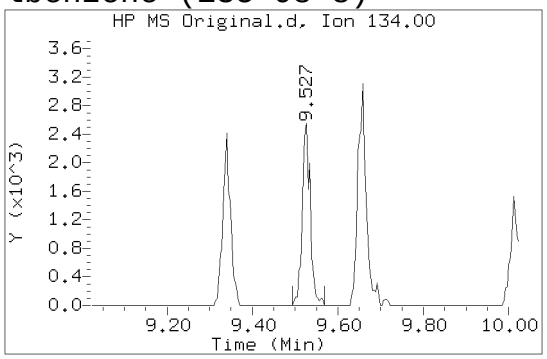
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

sec-Butylbenzene (135-98-8)

Reason Code:

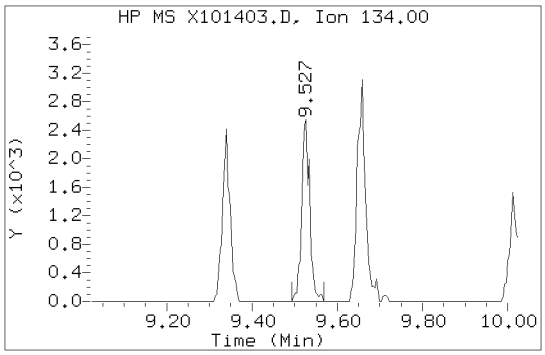
BEFORE

MASS
134
AREA
3436
HEIGHT
2554
19-Oct-2022
16:03
linh
pham



AFTER

MASS
134
AREA
3436
HEIGHT
2554
27-Oct-2022
15:16

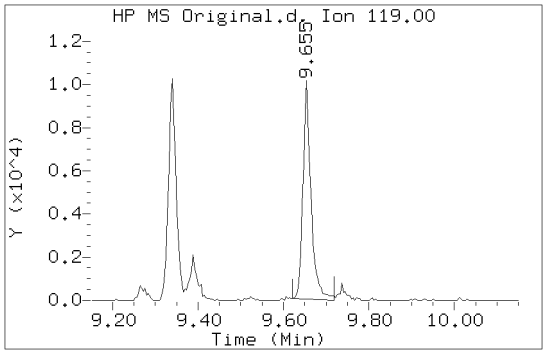


p-Isopropyltoluene (99-87-6)

Reason Code:

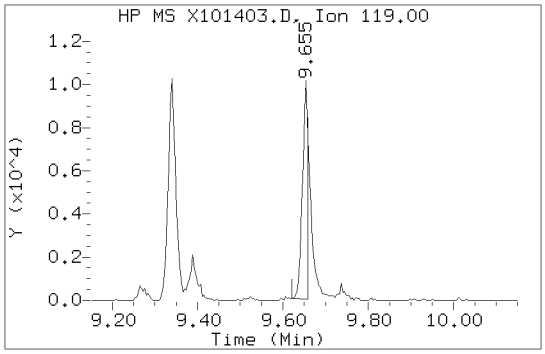
BEFORE

MASS
119
AREA
13550
HEIGHT
10132
19-Oct-2022
16:03
linh
pham



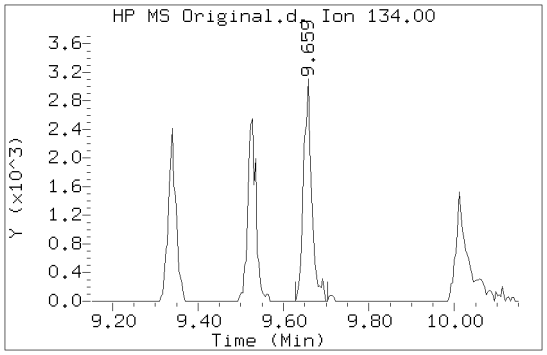
AFTER

MASS
119
AREA
9059
HEIGHT
10132
27-Oct-2022
15:16



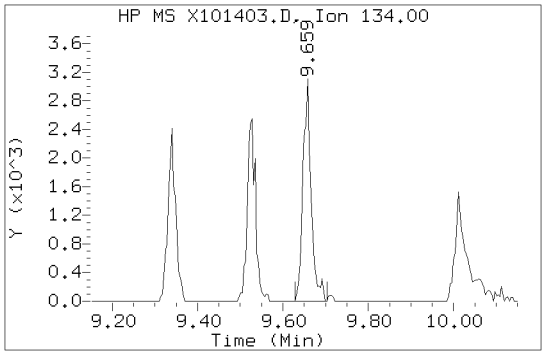
BEFORE

MASS
134
AREA
4218
HEIGHT
3108
19-Oct-2022
16:03
linh
pham



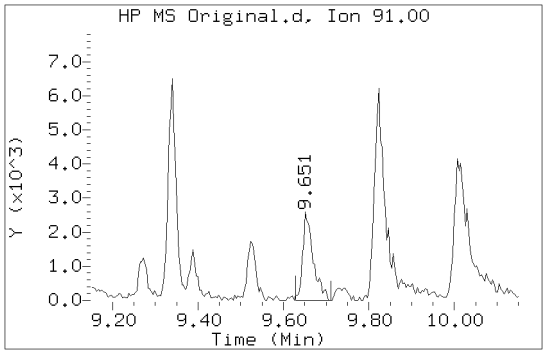
AFTER

MASS
134
AREA
4218
HEIGHT
3108
27-Oct-2022
15:16



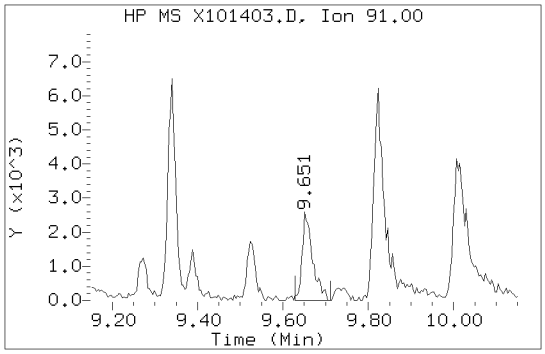
BEFORE

MASS
91
AREA
4526
HEIGHT
2597
19-Oct-2022
16:03
linh
pham



AFTER

MASS
91
AREA
4526
HEIGHT
2597
27-Oct-2022
15:16

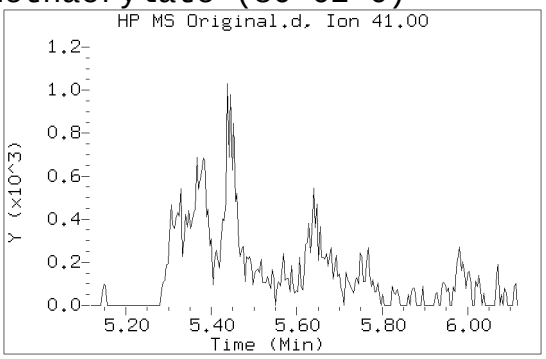


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

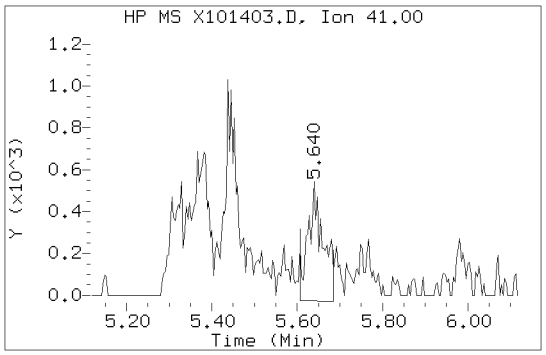
Methyl Methacrylate (80-62-6)

Reason Code:

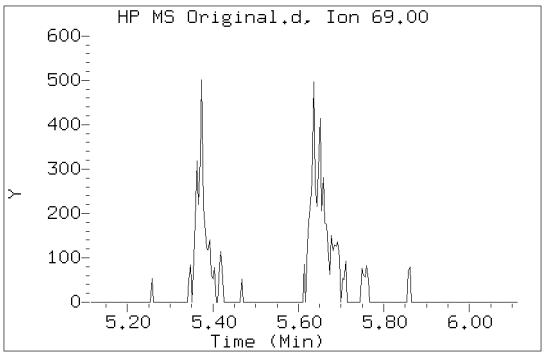
BEFORE
MASS
41
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



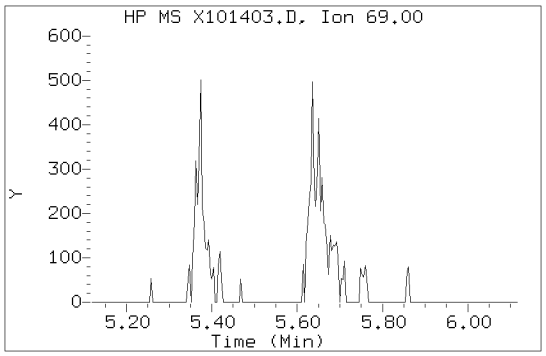
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AREA
1431
HEIGHT
572
27-Oct-2022
15:16



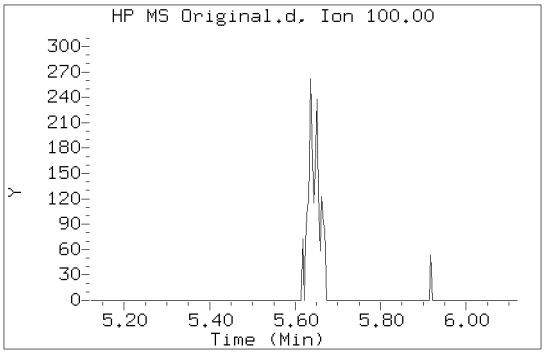
BEFORE
MASS
69
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



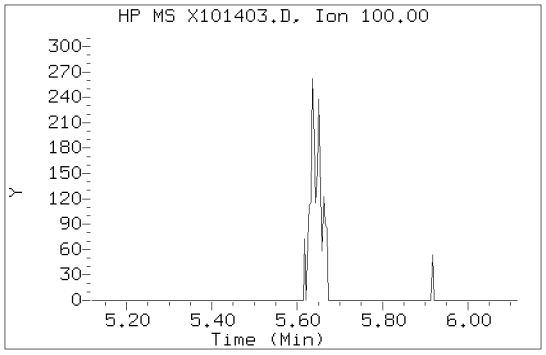
AFTER
MASS
69
AREA
0
HEIGHT
0
27-Oct-2022
15:16



BEFORE
MASS
100
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



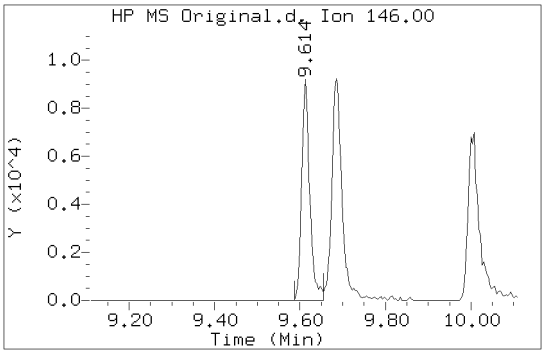
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MASS
100
AREA
0
HEIGHT
0
27-Oct-2022
15:16



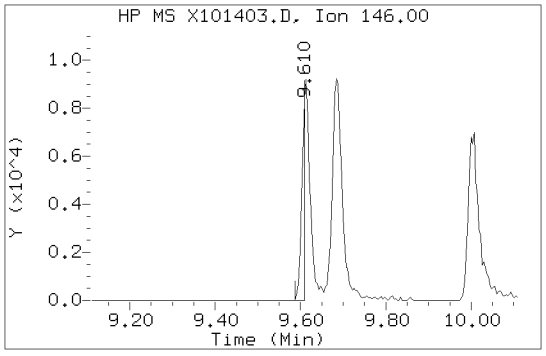
1,3-Dichlorobenzene (541-73-1)

Reason Code:

BEFORE
MASS
146
AREA
12432
HEIGHT
9203
19-Oct-2022
16:03
linh
pham



AFTER
MASS
146
AREA
5063
HEIGHT
8361
27-Oct-2022
15:16



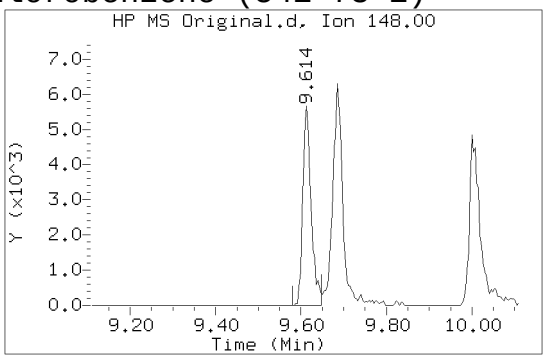
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,3-Dichlorobenzene (541-73-1)

Reason Code:

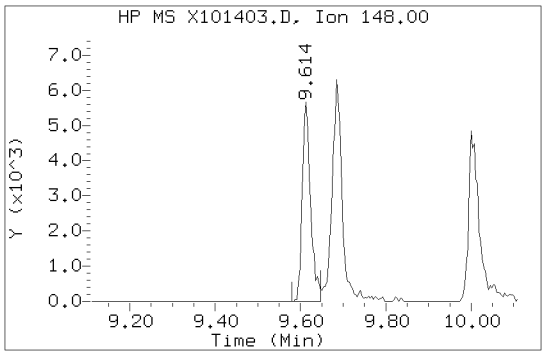
BEFORE

MASS
148
AREA
7934
HEIGHT
5663
19-Oct-2022
16:03
linh
pham



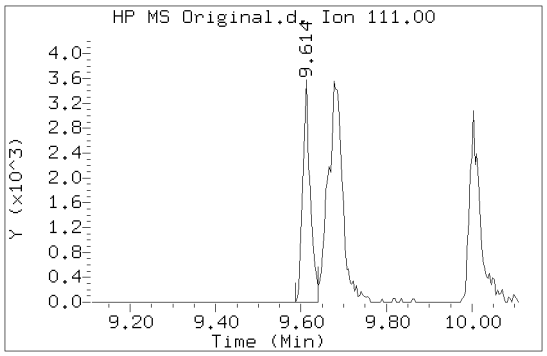
AFTER

MASS
148
AREA
7934
HEIGHT
5663
27-Oct-2022
15:16



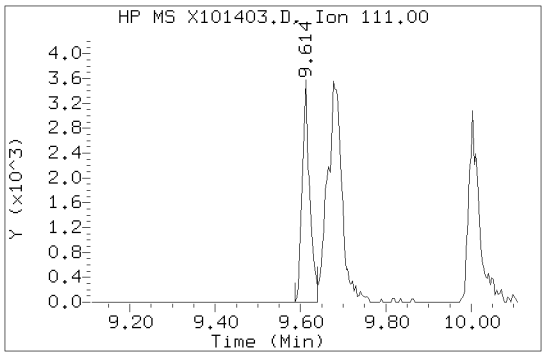
BEFORE

MASS
111
AREA
4462
HEIGHT
3578
19-Oct-2022
16:03
linh
pham



AFTER

MASS
111
AREA
4462
HEIGHT
3578
27-Oct-2022
15:16

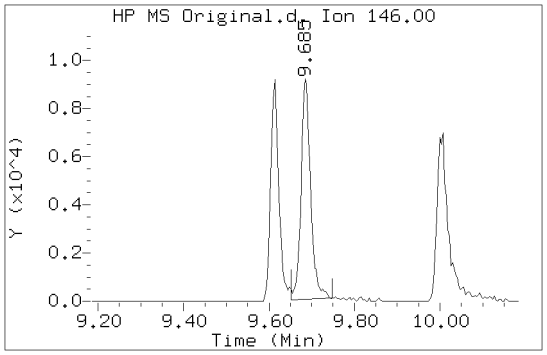


1,4-Dichlorobenzene (106-46-7)

Reason Code:

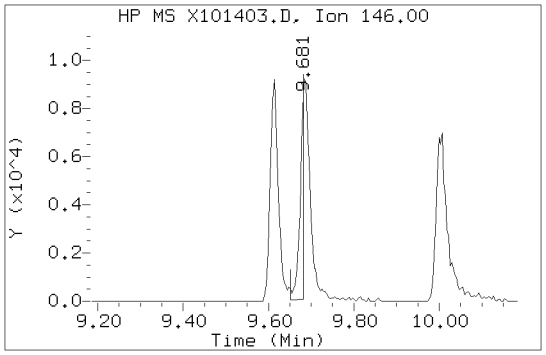
BEFORE

MASS
146
AREA
14667
HEIGHT
9151
19-Oct-2022
16:03
linh
pham



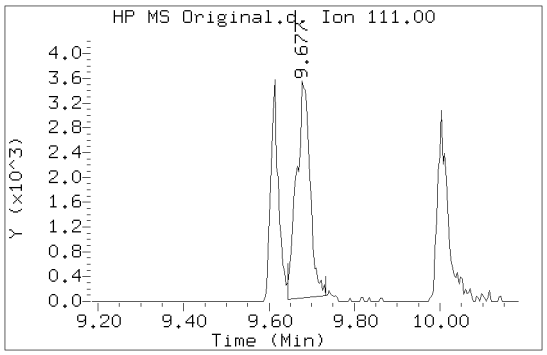
AFTER

MASS
146
AREA
5375
HEIGHT
8547
27-Oct-2022
15:16



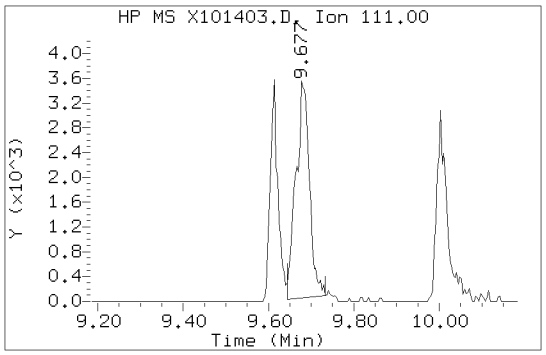
BEFORE

MASS
111
AREA
7865
HEIGHT
3505
19-Oct-2022
16:03
linh
pham



AFTER

MASS
111
AREA
7865
HEIGHT
3505
27-Oct-2022
15:16



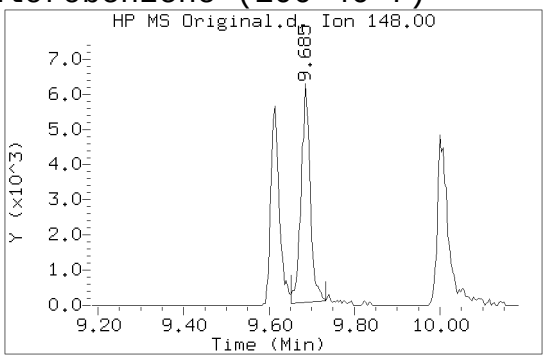
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,4-Dichlorobenzene (106-46-7)

Reason Code:

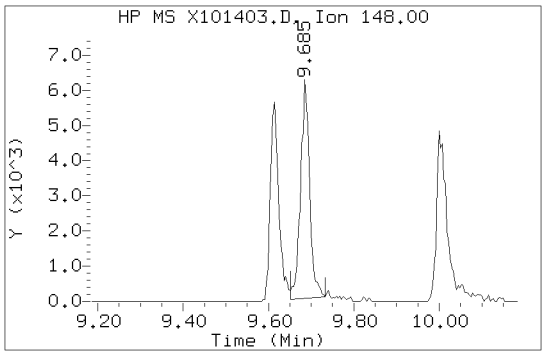
BEFORE

MASS
148
AREA
9470
HEIGHT
6218
19-Oct-2022
16:03
linh
pham



AFTER

MASS
148
AREA
9470
HEIGHT
6218
27-Oct-2022
15:16

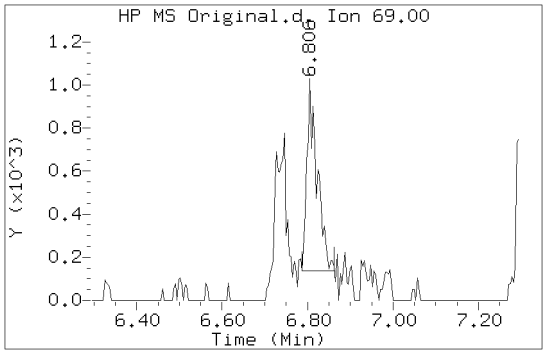


Ethyl Methacrylate (97-63-2)

Reason Code:

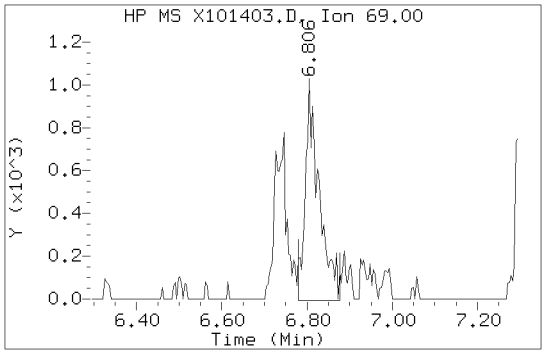
BEFORE

MASS
69
AREA
1473
HEIGHT
891
19-Oct-2022
16:03
linh
pham



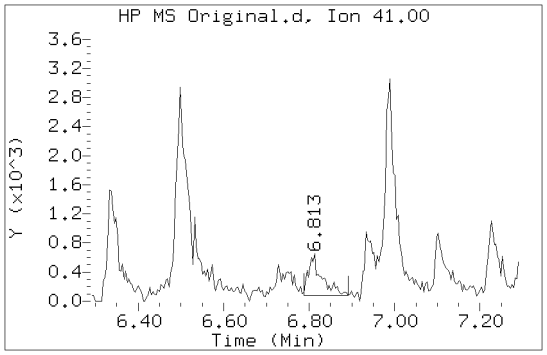
AFTER

MASS
69
AREA
2349
HEIGHT
1036
27-Oct-2022
15:16



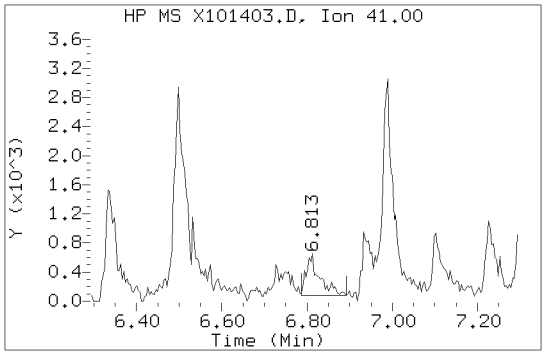
BEFORE

MASS
41
AREA
1259
HEIGHT
580
19-Oct-2022
16:03
linh
pham



AFTER

MASS
41
AREA
1259
HEIGHT
580
27-Oct-2022
15:16

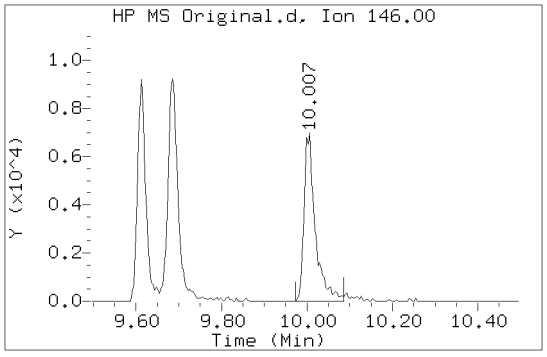


1,2-Dichlorobenzene (95-50-1)

Reason Code:

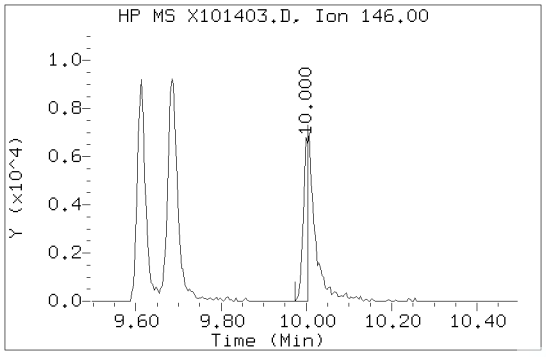
BEFORE

MASS
146
AREA
12994
HEIGHT
6986
19-Oct-2022
16:03
linh
pham



AFTER

MASS
146
AREA
5627
HEIGHT
6794
27-Oct-2022
15:16



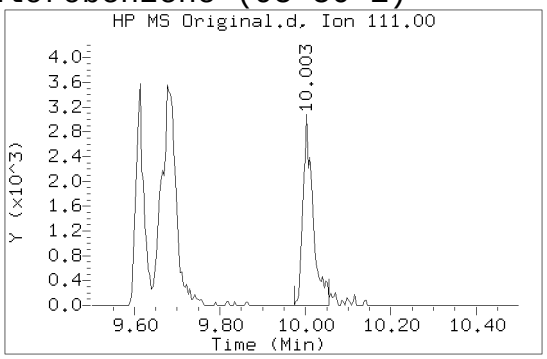
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,2-Dichlorobenzene (95-50-1)

Reason Code:

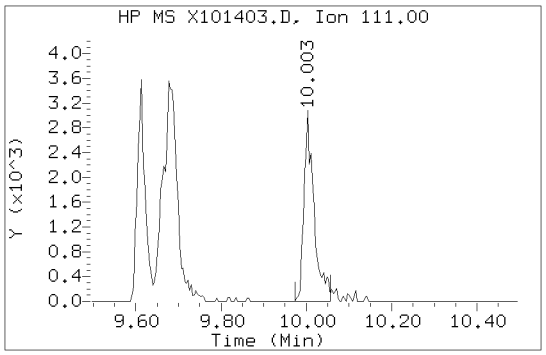
BEFORE

MASS
111
AREA
5091
HEIGHT
3083
19-Oct-2022
16:03
linh
pham



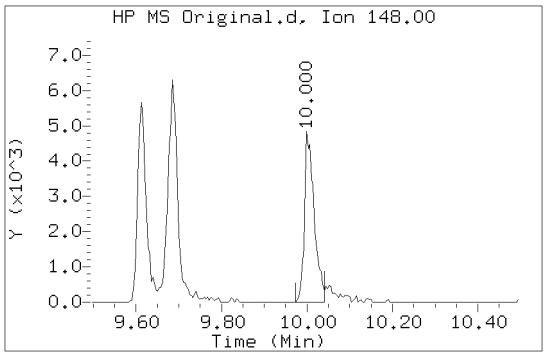
AFTER

MASS
111
AREA
5091
HEIGHT
3083
27-Oct-2022
15:16



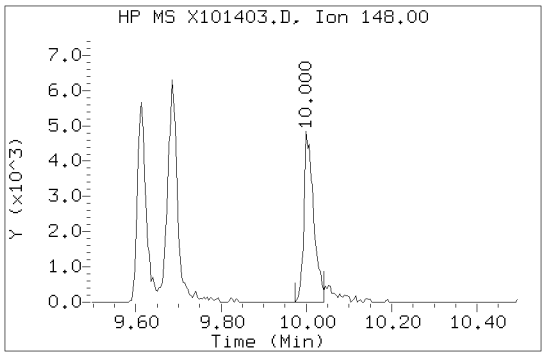
BEFORE

MASS
148
AREA
7816
HEIGHT
4854
19-Oct-2022
16:03
linh
pham



AFTER

MASS
148
AREA
7816
HEIGHT
4854
27-Oct-2022
15:16

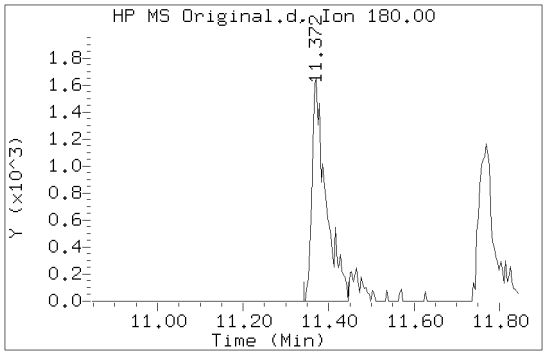


1,2,4-Trichlorobenzene (120-82-1)

Reason Code:

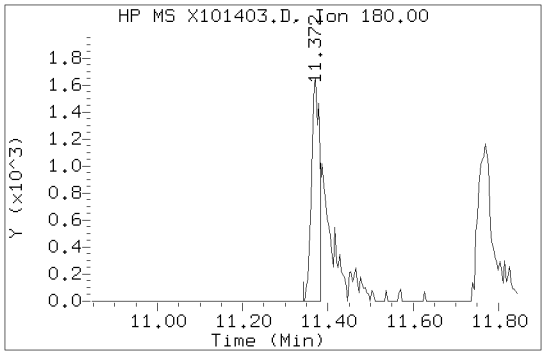
BEFORE

MASS
180
AREA
3714
HEIGHT
1645
19-Oct-2022
16:03
linh
pham



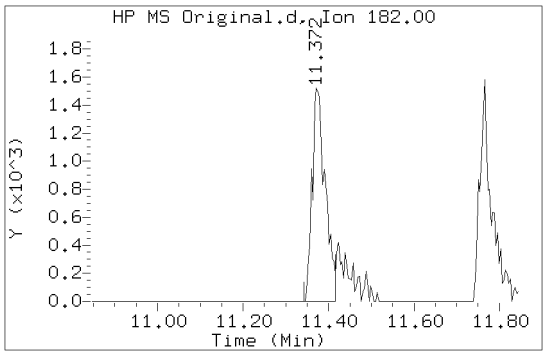
AFTER

MASS
180
AREA
2124
HEIGHT
1645
27-Oct-2022
15:16



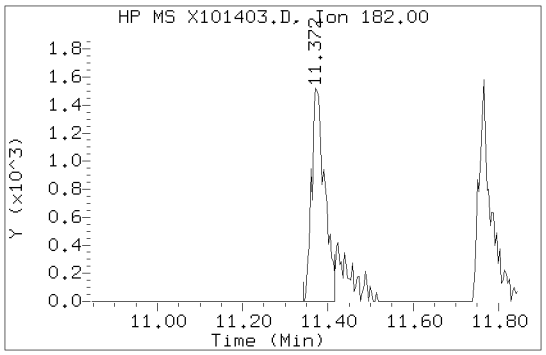
BEFORE

MASS
182
AREA
3241
HEIGHT
1524
19-Oct-2022
16:03
linh
pham



AFTER

MASS
182
AREA
3241
HEIGHT
1524
27-Oct-2022
15:16



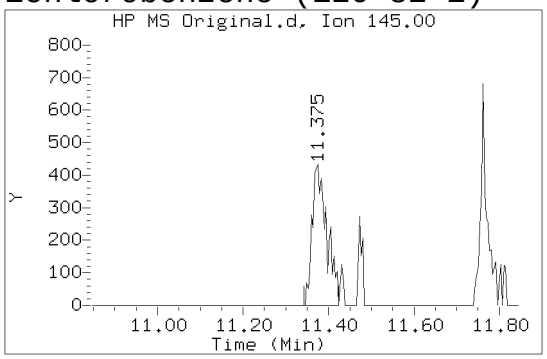
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,2,4-Trichlorobenzene (120-82-1)

Reason Code:

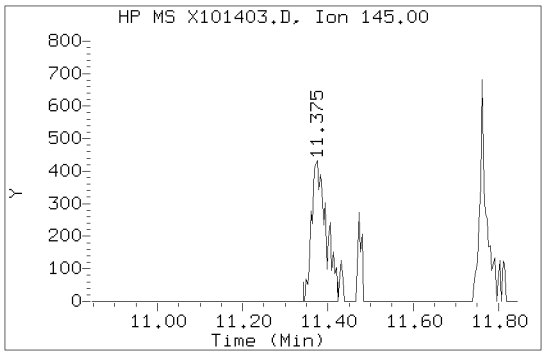
BEFORE

MASS
145
AREA
1028
HEIGHT
433
19-Oct-2022
16:03
linh
pham



AFTER

MASS
145
AREA
1028
HEIGHT
433
27-Oct-2022
15:16

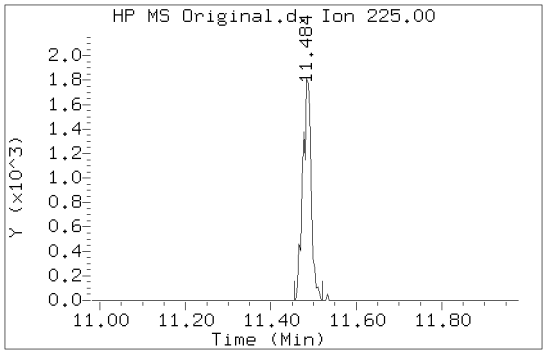


Hexachlorobutadiene (87-68-3)

Reason Code:

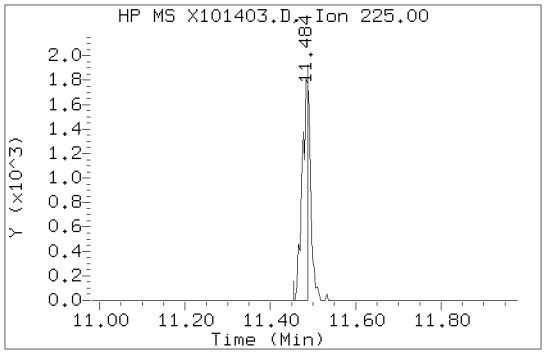
BEFORE

MASS
225
AREA
2534
HEIGHT
1812
19-Oct-2022
16:03
linh
pham



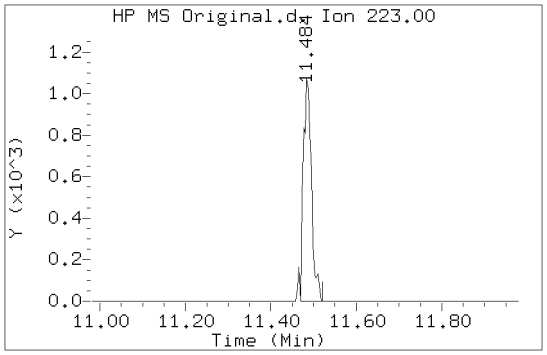
AFTER

MASS
225
AREA
1814
HEIGHT
1812
27-Oct-2022
15:16



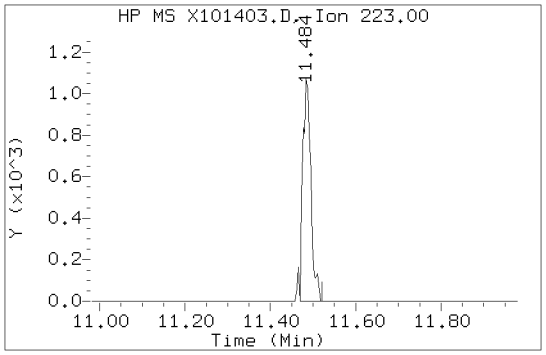
BEFORE

MASS
223
AREA
1437
HEIGHT
1071
19-Oct-2022
16:03
linh
pham



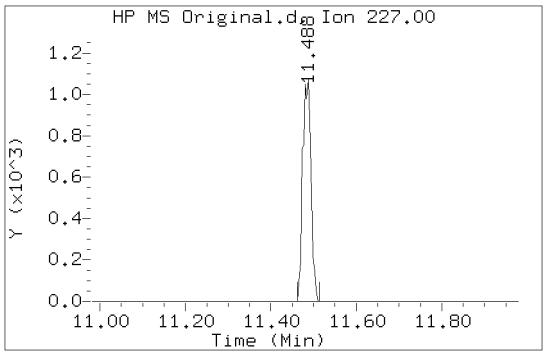
AFTER

MASS
223
AREA
1437
HEIGHT
1071
27-Oct-2022
15:16



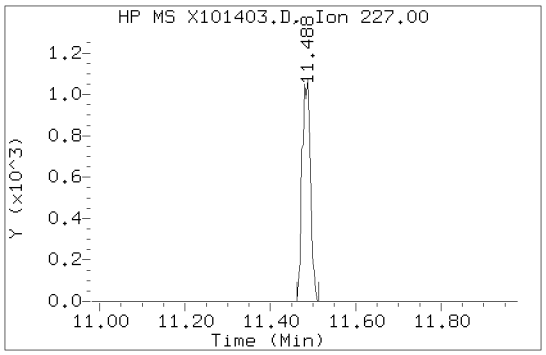
BEFORE

MASS
227
AREA
1503
HEIGHT
1071
19-Oct-2022
16:03
linh
pham



AFTER

MASS
227
AREA
1503
HEIGHT
1071
27-Oct-2022
15:16

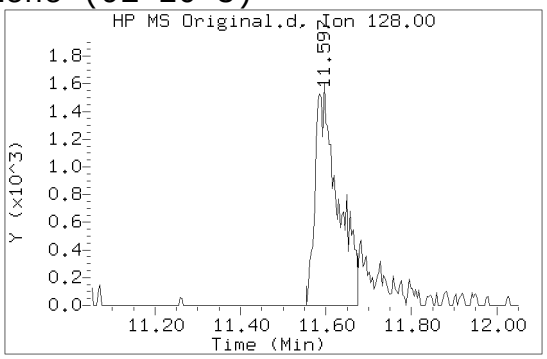


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InstruID : voa6.i
LabSampID : VSTD000.5

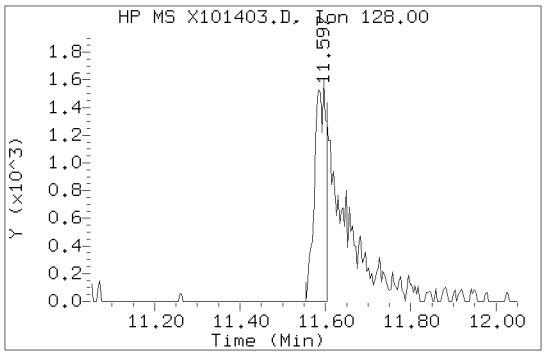
Naphthalene (91-20-3)

Reason Code:

BEFORE
MASS
128
AREA
5799
HEIGHT
1601
19-Oct-2022
16:03
linh
pham



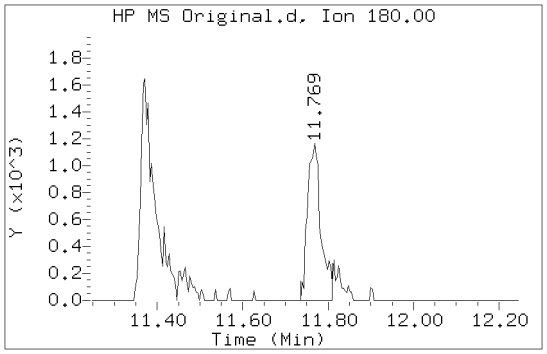
AFTER
MASS
128
AREA
2948
HEIGHT
1601
27-Oct-2022
15:16



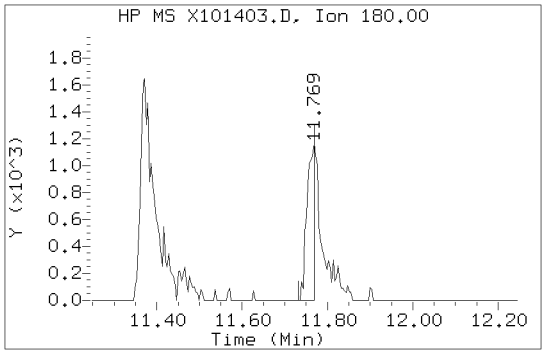
1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

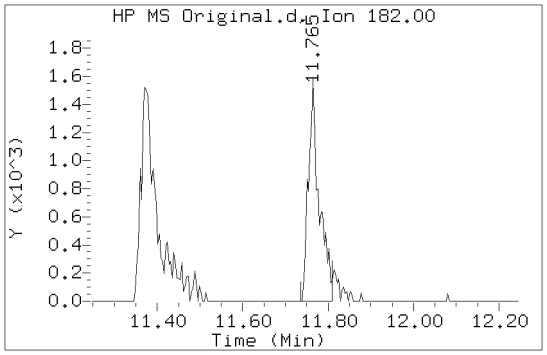
BEFORE
MASS
180
AREA
2582
HEIGHT
1165
19-Oct-2022
16:03
linh
pham



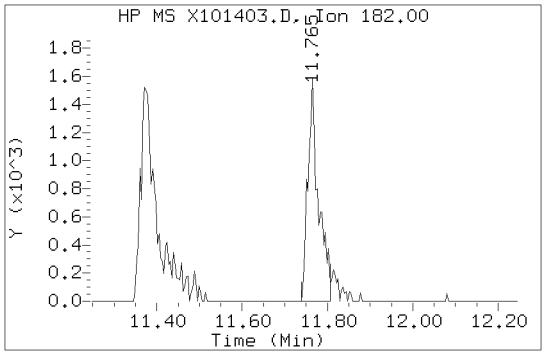
AFTER
MASS
180
AREA
1462
HEIGHT
1165
27-Oct-2022
15:16



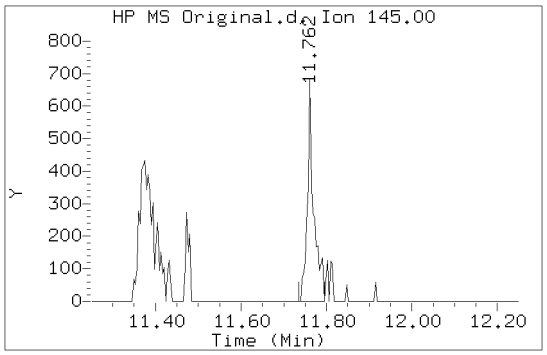
BEFORE
MASS
182
AREA
2803
HEIGHT
1581
19-Oct-2022
16:03
linh
pham



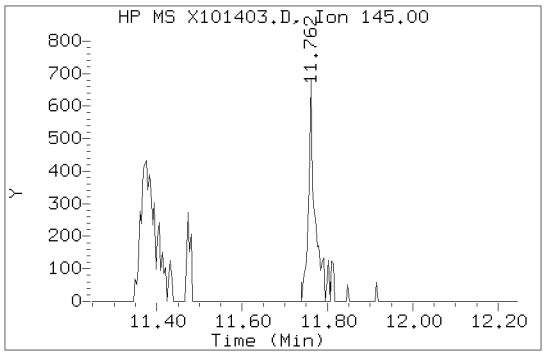
AFTER
MASS
182
AREA
2769
HEIGHT
1581
27-Oct-2022
15:16



BEFORE
MASS
145
AREA
701
HEIGHT
681
19-Oct-2022
16:03
linh
pham



AFTER
MASS
145
AREA
743
HEIGHT
681
27-Oct-2022
15:16

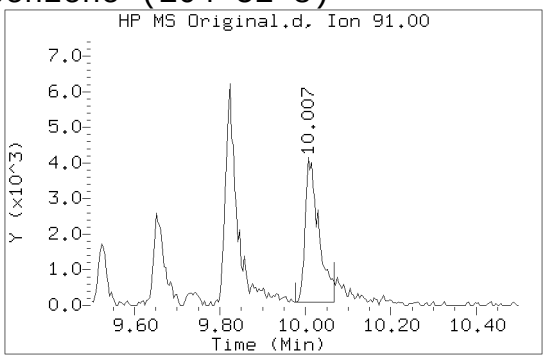


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LabSampID : VSTD000.5

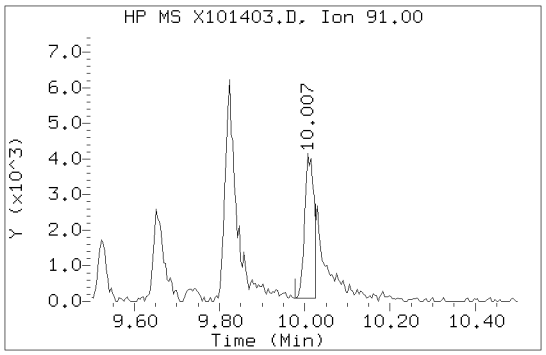
n-Butylbenzene (104-51-8)

Reason Code:

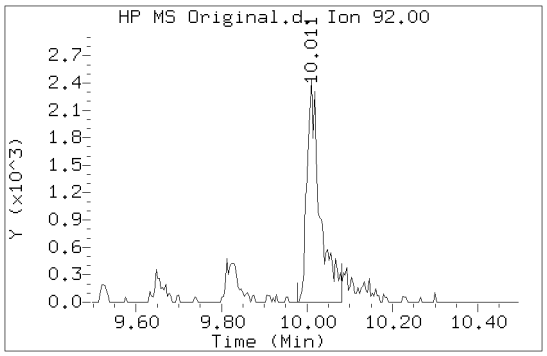
BEFORE
MASS
91
AREA
9015
HEIGHT
4066
19-Oct-2022
16:03
linh
pham



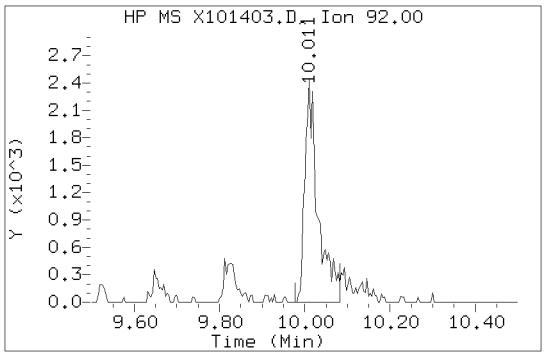
AFTER
MASS
91
AREA
6228
HEIGHT
4066
27-Oct-2022
15:16



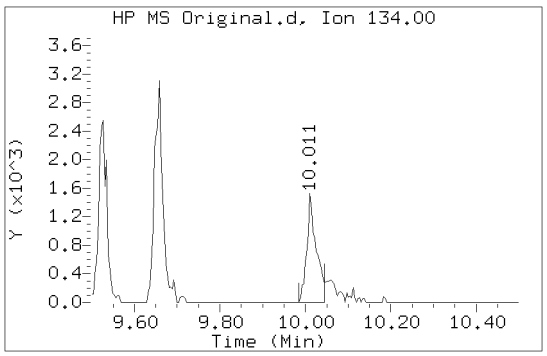
BEFORE
MASS
92
AREA
5256
HEIGHT
2434
19-Oct-2022
16:03
linh
pham



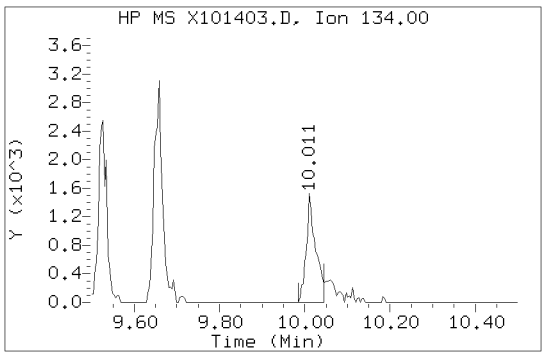
AFTER
MASS
92
AREA
5256
HEIGHT
2434
27-Oct-2022
15:16



BEFORE
MASS
134
AREA
2381
HEIGHT
1531
19-Oct-2022
16:03
linh
pham



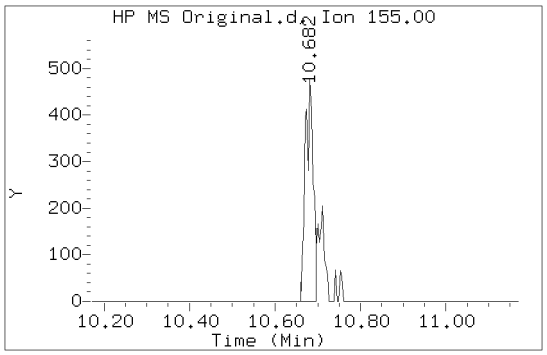
AFTER
MASS
134
AREA
2381
HEIGHT
1531
27-Oct-2022
15:16



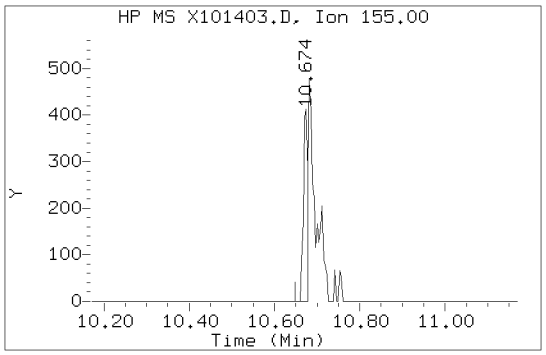
1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

BEFORE
MASS
155
AREA
635
HEIGHT
476
19-Oct-2022
16:03
linh
pham



AFTER
MASS
155
AREA
303
HEIGHT
413
27-Oct-2022
15:16



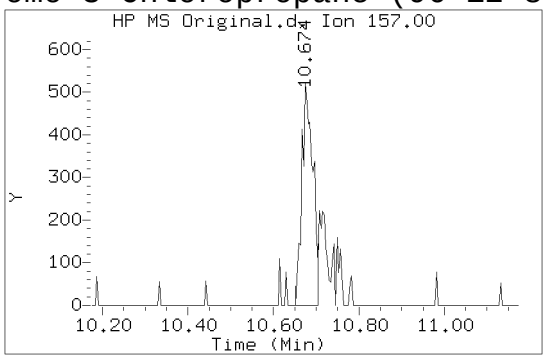
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

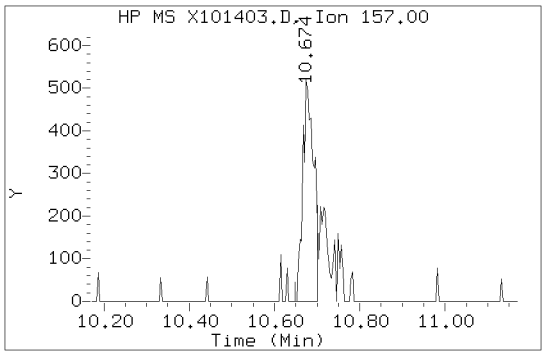
BEFORE

MASS
157
AREA
956
HEIGHT
520
19-Oct-2022
16:03
linh
pham



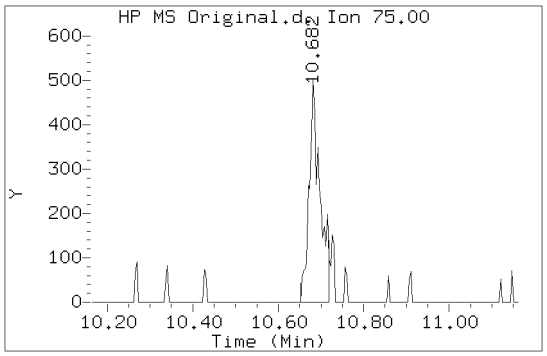
AFTER

MASS
157
AREA
933
HEIGHT
520
27-Oct-2022
15:16



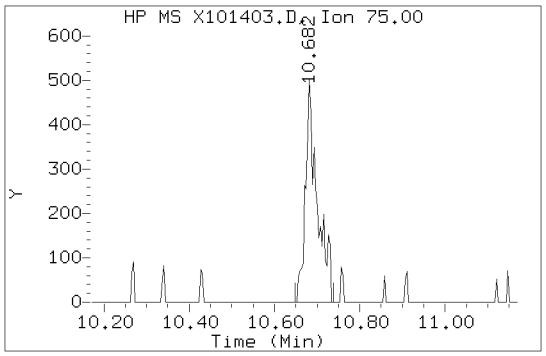
BEFORE

MASS
75
AREA
886
HEIGHT
501
19-Oct-2022
16:03
linh
pham



AFTER

MASS
75
AREA
968
HEIGHT
501
27-Oct-2022
15:16

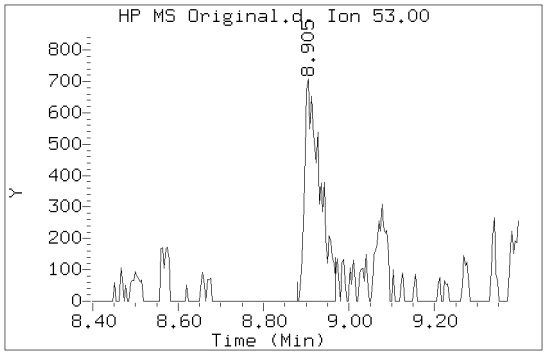


trans-1,4-Dichloro-2-butene (110-57-6)

Reason Code:

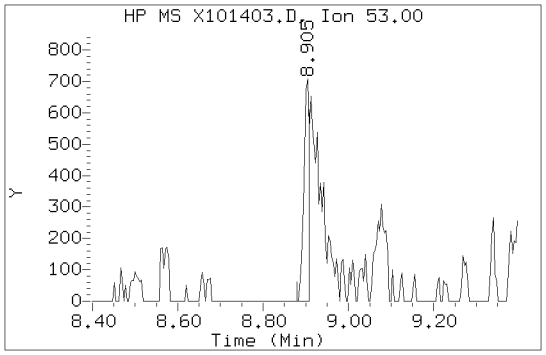
BEFORE

MASS
53
AREA
1798
HEIGHT
708
19-Oct-2022
16:03
linh
pham



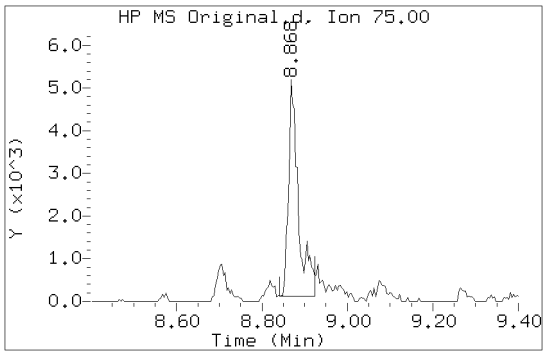
AFTER

MASS
53
AREA
654
HEIGHT
708
27-Oct-2022
15:16



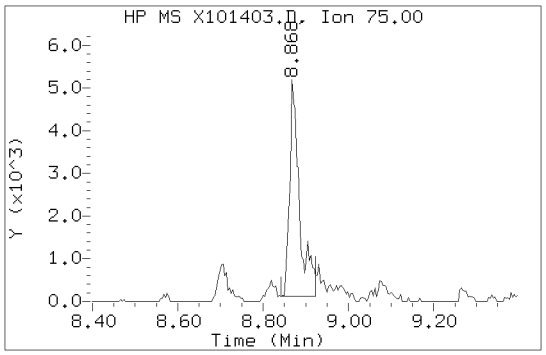
BEFORE

MASS
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AREA
8120
HEIGHT
5072
19-Oct-2022
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linh
pham



AFTER

MASS
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AREA
8120
HEIGHT
5072
27-Oct-2022
15:16



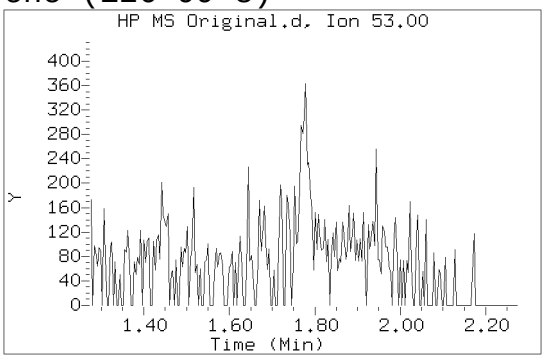
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Chloroprene (126-99-8)

Reason Code:

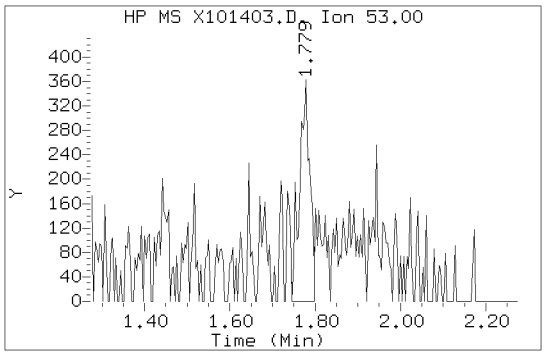
BEFORE

MASS
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AREA
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



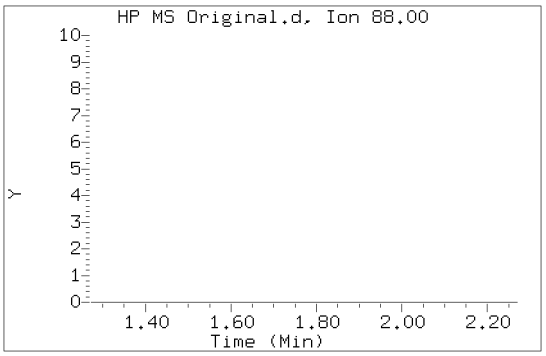
AFTER

MASS
53
AREA
621
HEIGHT
363
27-Oct-2022
15:16



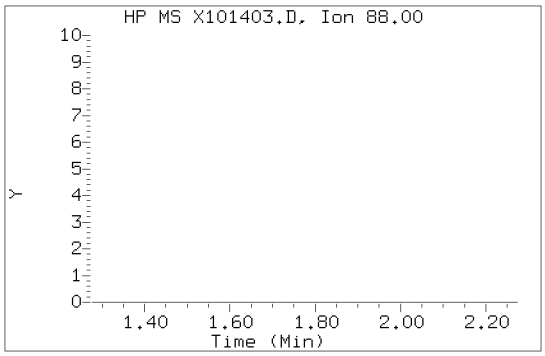
BEFORE

MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
88
AREA
0
HEIGHT
0
27-Oct-2022
15:16

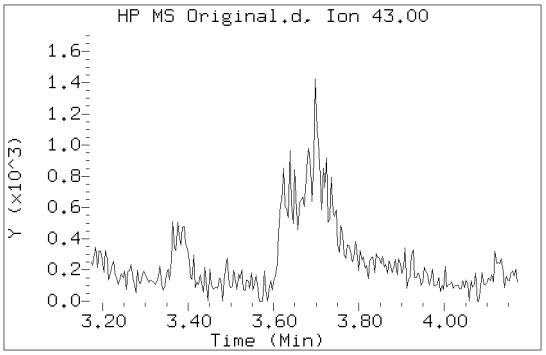


Ethyl Acetate (141-78-6)

Reason Code:

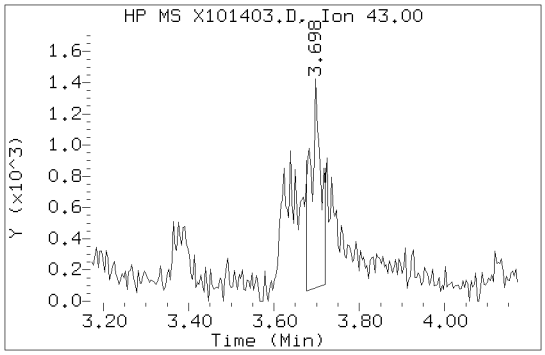
BEFORE

MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



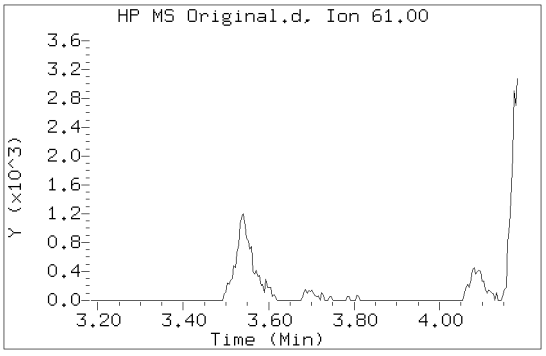
AFTER

MASS
43
AREA
2349
HEIGHT
1337
27-Oct-2022
15:16



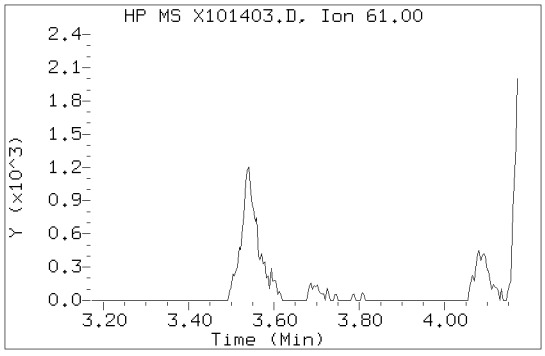
BEFORE

MASS
61
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
61
AREA
0
HEIGHT
0
27-Oct-2022
15:16



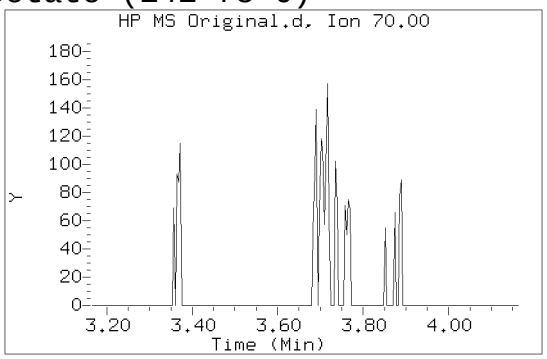
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Ethyl Acetate (141-78-6)

Reason Code:

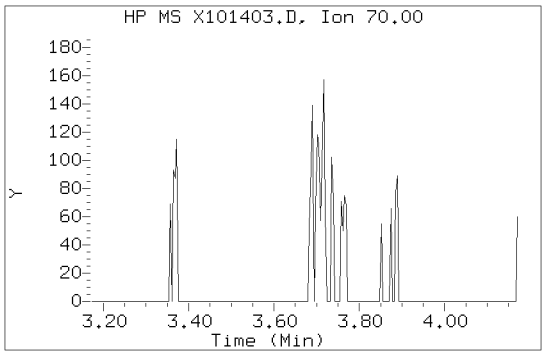
BEFORE

MASS
70
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
70
AREA
0
HEIGHT
0
27-Oct-2022
15:16

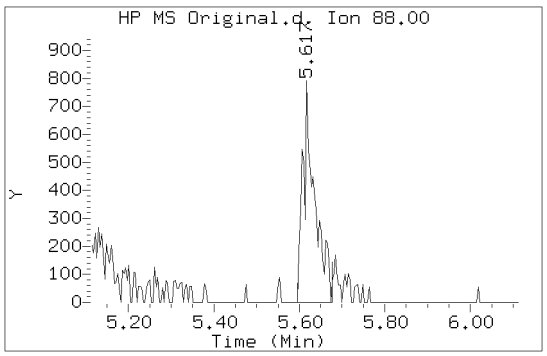


1,4-Dioxane ()

Reason Code:

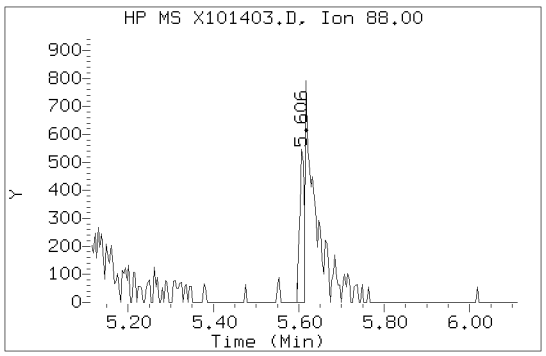
BEFORE

MASS
88
AREA
1554
HEIGHT
792
19-Oct-2022
16:03
linh
pham



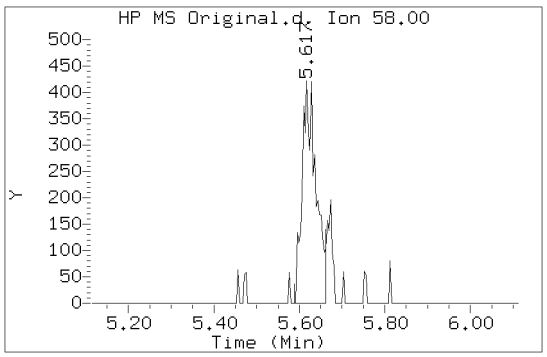
AFTER

MASS
88
AREA
417
HEIGHT
548
27-Oct-2022
15:16



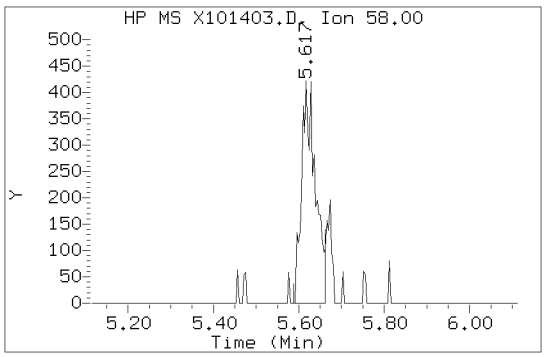
BEFORE

MASS
58
AREA
969
HEIGHT
422
19-Oct-2022
16:03
linh
pham



AFTER

MASS
58
AREA
969
HEIGHT
422
27-Oct-2022
15:16

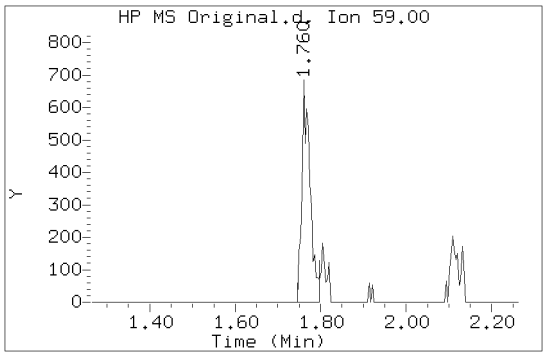


Diethyl ether (60-29-7)

Reason Code:

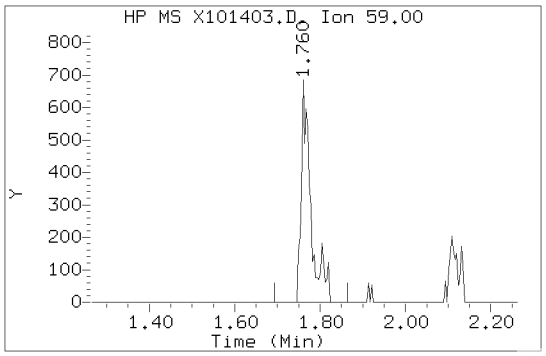
BEFORE

MASS
59
AREA
935
HEIGHT
685
19-Oct-2022
16:03
linh
pham



AFTER

MASS
59
AREA
1081
HEIGHT
685
27-Oct-2022
15:16

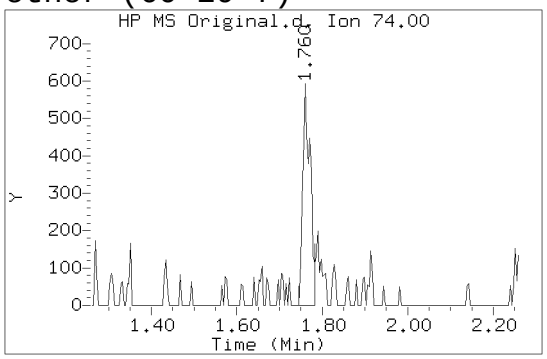


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

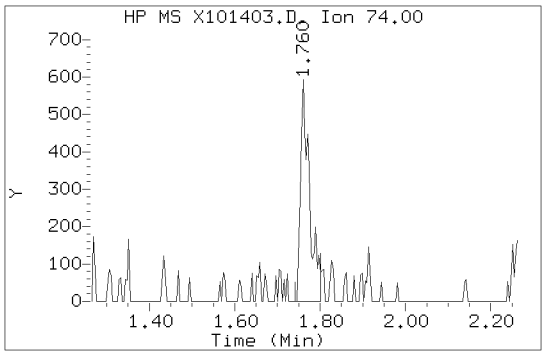
Diethyl ether (60-29-7)

Reason Code:

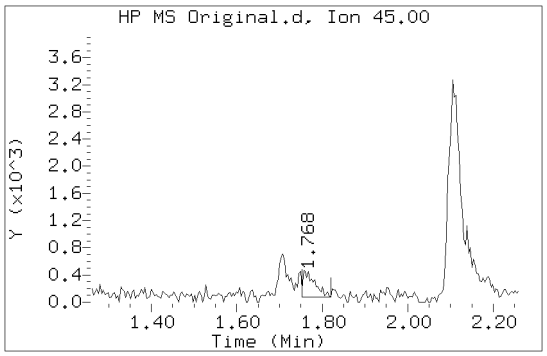
BEFORE
MASS
74
AREA
744
HEIGHT
593
19-Oct-2022
16:03
linh
pham



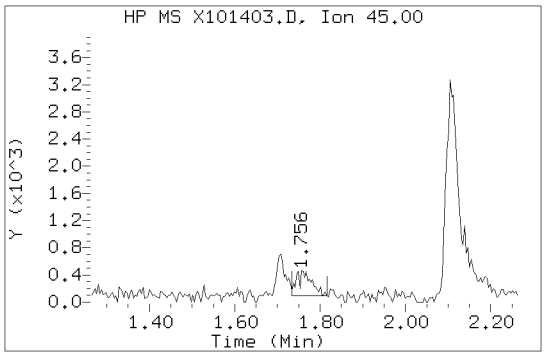
AFTER
MASS
74
AREA
883
HEIGHT
593
27-Oct-2022
15:16



BEFORE
MASS
45
AREA
736
HEIGHT
380
19-Oct-2022
16:03
linh
pham



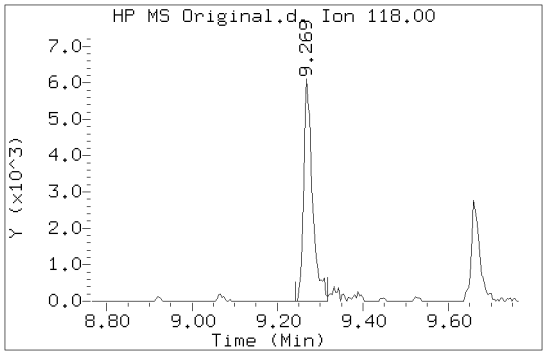
AFTER
MASS
45
AREA
927
HEIGHT
375
27-Oct-2022
15:16



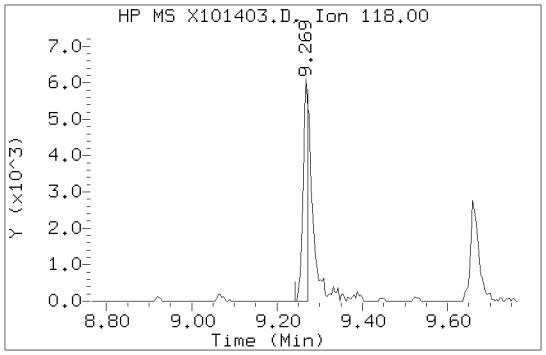
alpha-Methylstyrene (98-83-9)

Reason Code:

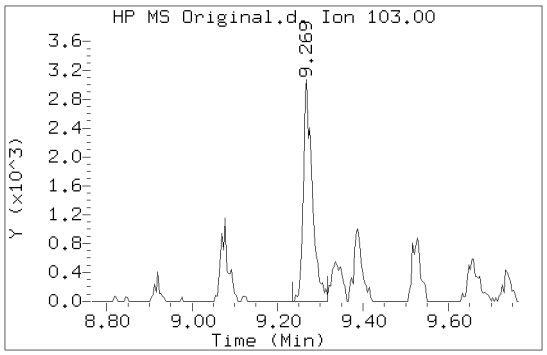
BEFORE
MASS
118
AREA
8942
HEIGHT
6107
19-Oct-2022
16:03
linh
pham



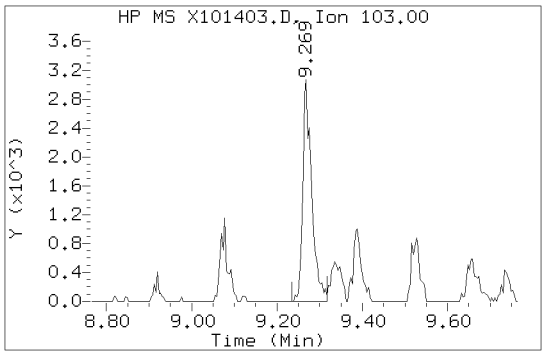
AFTER
MASS
118
AREA
5074
HEIGHT
6107
27-Oct-2022
15:16



BEFORE
MASS
103
AREA
4562
HEIGHT
3070
19-Oct-2022
16:03
linh
pham



AFTER
MASS
103
AREA
4562
HEIGHT
3070
27-Oct-2022
15:16



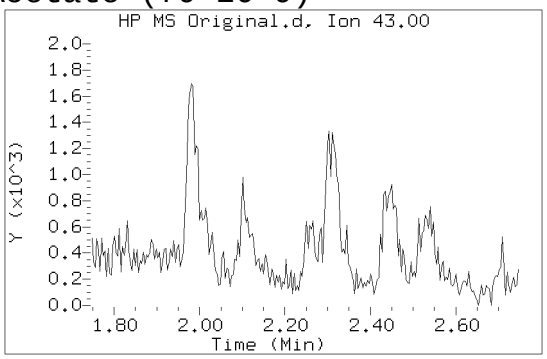
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Methyl Acetate (79-20-9)

Reason Code:

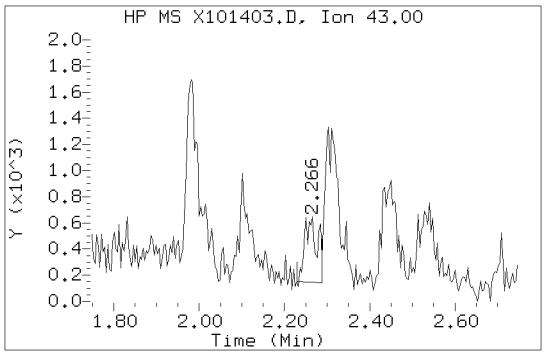
BEFORE

MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



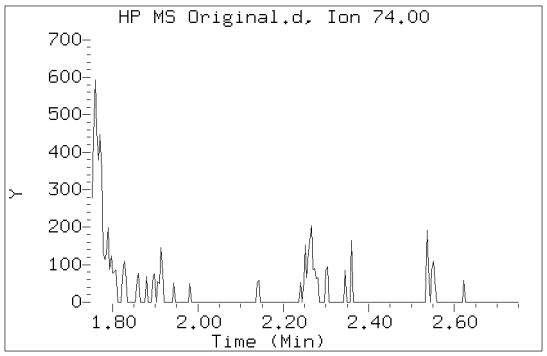
AFTER

MASS
43
AREA
1043
HEIGHT
500
27-Oct-2022
15:16



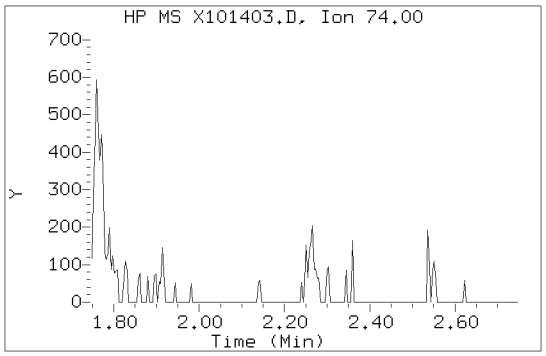
BEFORE

MASS
74
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
74
AREA
0
HEIGHT
0
27-Oct-2022
15:16

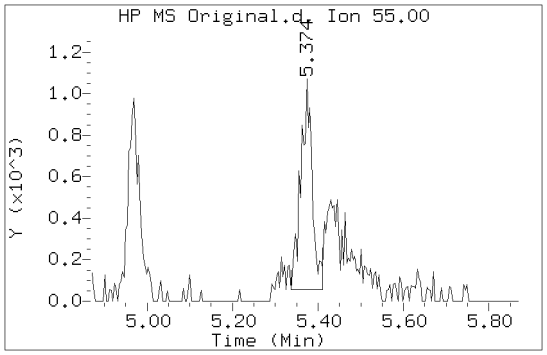


Methylcyclohexane (108-87-2)

Reason Code:

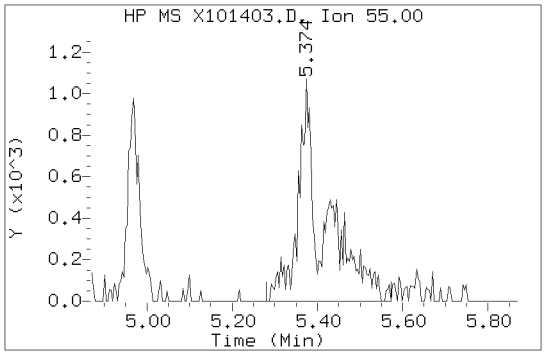
BEFORE

MASS
55
AREA
1898
HEIGHT
1014
19-Oct-2022
16:03
linh
pham



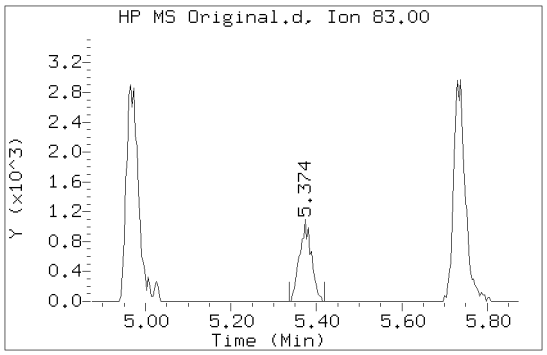
AFTER

MASS
55
AREA
4465
HEIGHT
1071
27-Oct-2022
15:16



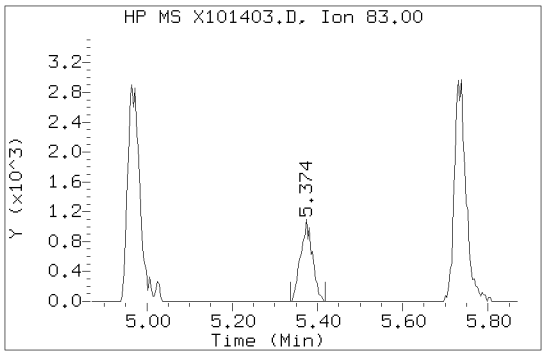
BEFORE

MASS
83
AREA
2109
HEIGHT
1096
19-Oct-2022
16:03
linh
pham



AFTER

MASS
83
AREA
2109
HEIGHT
1096
27-Oct-2022
15:16



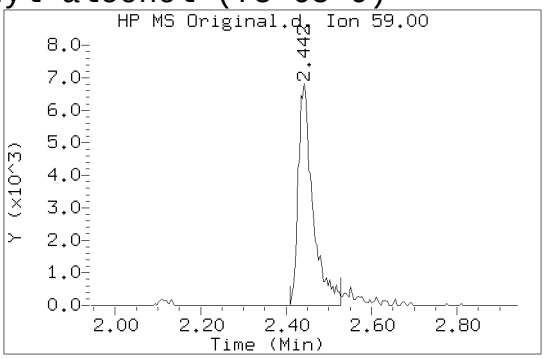
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Tert-Butyl alcohol (75-65-0)

Reason Code:

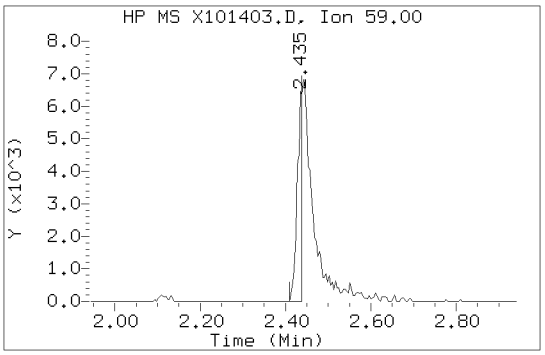
BEFORE

MASS
59
AREA
16421
HEIGHT
6820
19-Oct-2022
16:03
linh
pham



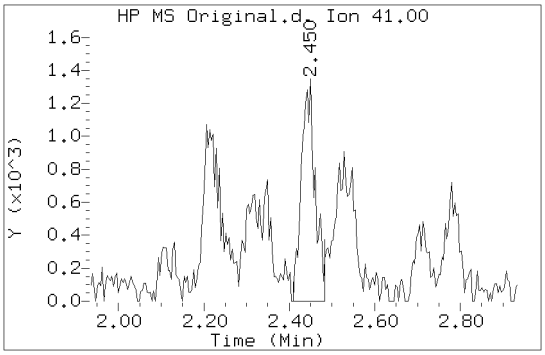
AFTER

MASS
59
AREA
5696
HEIGHT
6477
27-Oct-2022
15:16



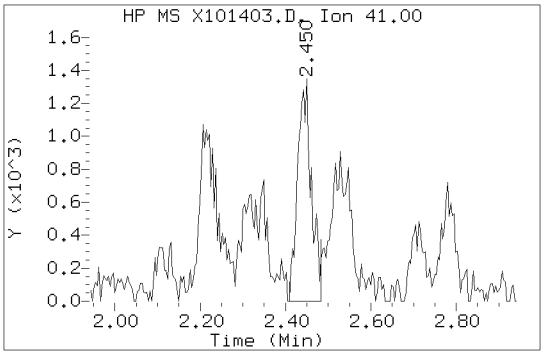
BEFORE

MASS
41
AREA
3048
HEIGHT
1348
19-Oct-2022
16:03
linh
pham



AFTER

MASS
41
AREA
3048
HEIGHT
1348
27-Oct-2022
15:16

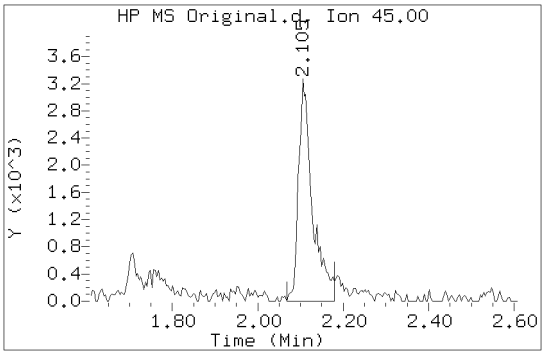


Isopropyl Alcohol (67-63-0)

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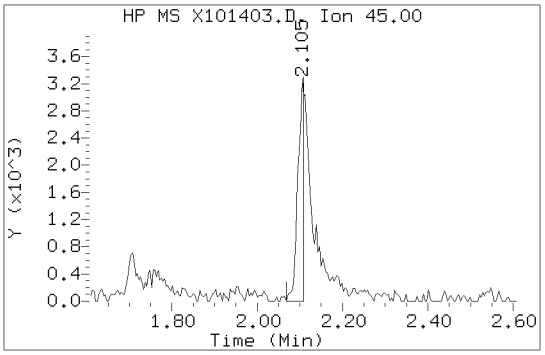
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19-Oct-2022
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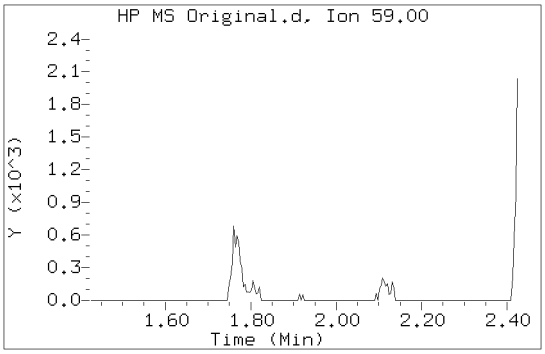
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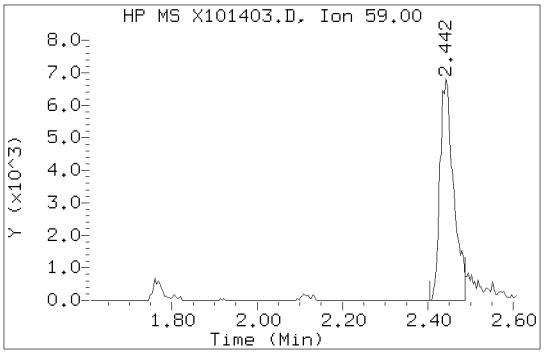
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AFTER

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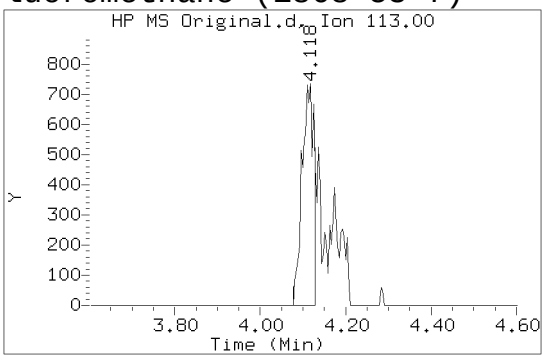
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Dibromofluoromethane (1868-53-7)

Reason Code:

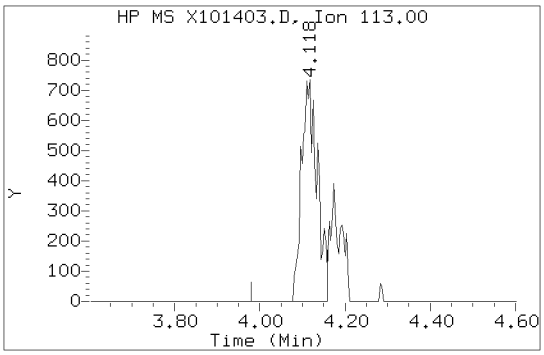
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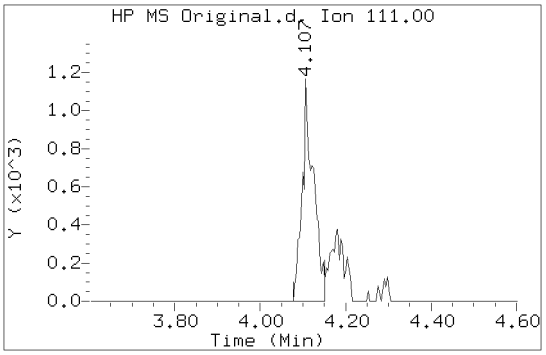
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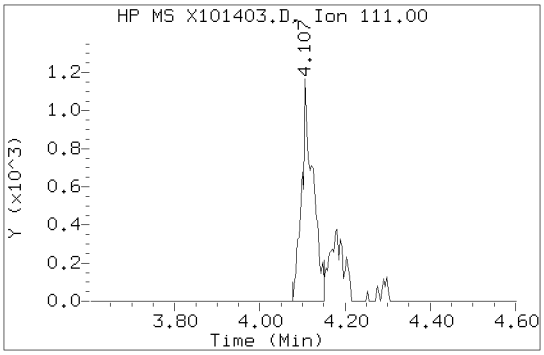
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AFTER

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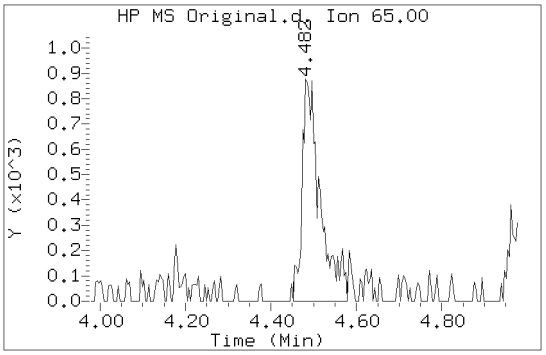


1,2-Dichloroethane-d4 (17060-07-0)

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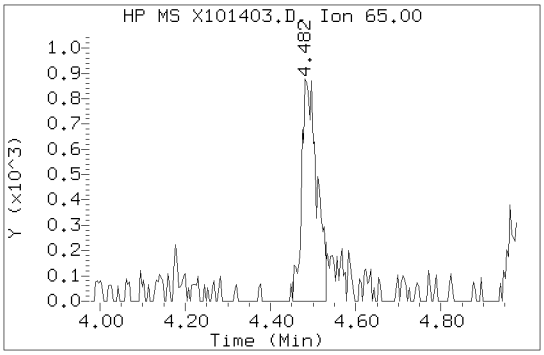
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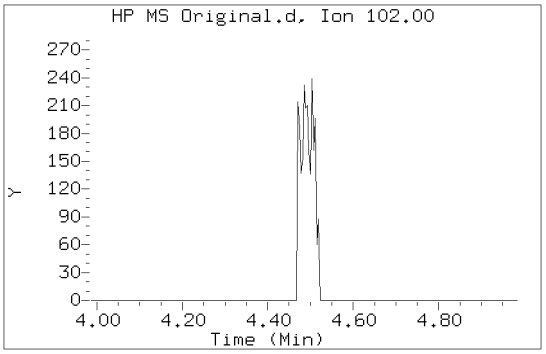
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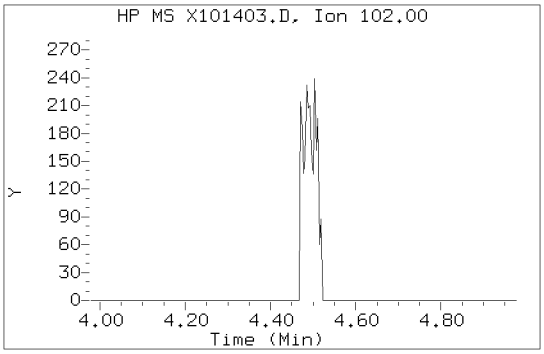
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AFTER

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27-Oct-2022
15:16



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D Page 1
Report Date: 27-Oct-2022 15:16

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D
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Inj Date : 14-OCT-2022 12:29
Operator : PC Inst ID: voa6.i
Smp Info : VSTD001;VSTD001;1;3;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\8260W.m
Meth Date : 27-Oct-2022 15:16 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 12:08 Cal File: X101403.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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

		QUANT SIG					AMOUNTS	
	Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.185	4.185	(1.000)	425004	50.0000	
	135 1,4-Dioxane	88	5.621	5.621	(1.343)	643	20.0000	19.88(M)
	140 1,3-Butadiene	54	1.167	1.167	(0.279)	2264	1.00000	0.98
	25 Methacrylonitrile	41	3.855	3.855	(0.921)	2902	1.00000	1.09(M)
	12 Isobutyl Alcohol	43	4.695	4.695	(1.122)	10330	20.0000	13.86
	13 Acetonitrile	39	2.206	2.206	(0.527)	3165	10.0000	9.55
	14 Allyl Chloride	41	2.213	2.213	(0.529)	7427	1.00000	1.01
	4 Propionitrile	54	3.683	3.683	(0.880)	3574	10.0000	9.57(M)
	136 n-Hexane	57	2.775	2.775	(0.663)	3541	1.00000	0.93
	72 trans-1,4-Dichloro-2-butene	53	8.916	8.916	(1.162)	967	1.00000	2.42(M)
	23 Chloroprene	53	1.771	1.771	(0.423)	1039	1.00000	0.95(M)
	145 alpha-Methylstyrene	118	9.272	9.272	(0.959)	7155	1.00000	1.28
	200 Dimethyl Disulfide	94	6.209	6.209	(0.809)	7670	1.00000	0.95
	139 Diethyl ether	59	1.760	1.760	(0.421)	2038	1.00000	0.99
	130 Ethyl Acetate	43	3.705	3.705	(0.885)	3696	1.00000	0.12(M)
	40 Methyl Methacrylate	41	5.624	5.624	(1.344)	2537	1.00000	0.96
	49 Ethyl Methacrylate	69	6.802	6.802	(1.369)	5403	1.00000	1.07(M)
	132 n-Butanol	56	5.321	5.321	(1.271)	687	20.0000	13.65
	150 Allyl alcohol	57	2.775	2.775	(0.663)	3541	20.0000	18.79
	166 1,2,3-Trimethylbenzene	105	9.737	9.737	(1.007)	12984	1.00000	0.99

162	Butyl acrylate	55	8.286	8.286 (1.080)	4975	1.00000	0.86
2	Dichlorodifluoromethane	85	0.976	0.976 (0.233)	3165	1.00000	(M)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D Page 2
Report Date: 27-Oct-2022 15:16

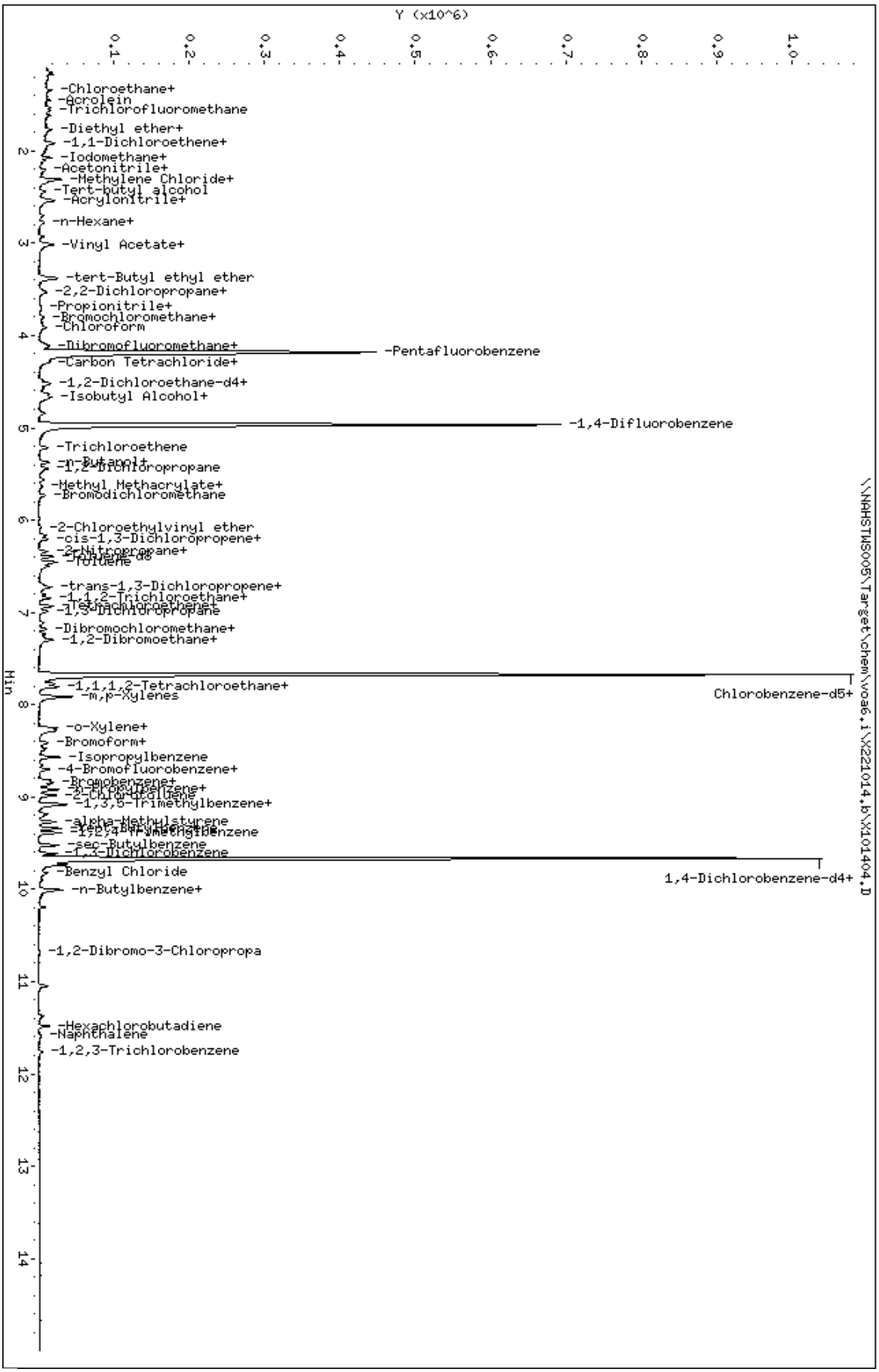
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	3 Chloromethane	50	1.081	1.081	(0.258)	4414	1.00000	0.89
	5 Vinyl Chloride	62	1.145	1.145	(0.274)	3501	1.00000	1.08
	6 Bromomethane	94	1.344	1.344	(0.321)	3052	1.00000	0.78(M)
	7 Chloroethane	64	1.407	1.407	(0.336)	1960	1.00000	1.00
	8 Trichlorofluoromethane	101	1.565	1.565	(0.374)	4411	1.00000	1.02
	9 Acrolein	56	1.452	1.452	(0.347)	571	2.00000	2.40(M)
	10 Acetone	43	1.981	1.981	(0.473)	1718	2.00000	1.83(M)
	11 1,1-Dichloroethene	96	1.913	1.913	(0.457)	2604	1.00000	0.94
	15 Iodomethane	142	2.030	2.030	(0.485)	3290	2.00000	4.07(T)
	16 Acrylonitrile	53	2.573	2.573	(0.615)	1067	2.00000	2.23
	17 Methylene Chloride	84	2.307	2.307	(0.551)	5391	1.00000	0.02(M)
	18 Methyl tert-butyl ether	73	2.543	2.543	(0.608)	10921	1.00000	1.07
	19 Carbon Disulfide	76	2.074	2.074	(0.496)	18801	2.00000	1.95
	20 trans-1,2-Dichloroethene	96	2.539	2.539	(0.607)	3392	1.00000	0.90
	21 Vinyl Acetate	43	3.027	3.027	(0.723)	15307	2.00000	1.81
	22 1,1-Dichloroethane	63	2.933	2.933	(0.701)	6356	1.00000	0.99
	24 2-Butanone	43	3.638	3.638	(0.869)	1847	2.00000	1.80(M)
	26 2,2-Dichloropropane	77	3.510	3.510	(0.839)	4773	1.00000	0.92
	27 cis-1,2-Dichloroethene	96	3.536	3.536	(0.845)	4390	1.00000	0.98
	28 Chloroform	83	3.911	3.911	(0.935)	6977	1.00000	1.00
	29 Bromochloromethane	128	3.803	3.803	(0.909)	2480	1.00000	1.01
$	30 Dibromofluoromethane	113	4.106	4.106	(0.981)	3430	1.00000	0.25
	31 1,1,1-Trichloroethane	97	4.084	4.084	(0.976)	5219	1.00000	0.95
	32 1,1-Dichloropropene	75	4.290	4.290	(0.863)	4945	1.00000	0.98(M)
	33 1,2-Dichloroethane	62	4.567	4.567	(0.919)	4175	1.00000	0.90(M)
	34 Carbon Tetrachloride	117	4.267	4.267	(0.859)	5474	1.00000	1.09
$	35 1,2-Dichloroethane-d4	65	4.492	4.492	(1.073)	4127	1.00000	0.32
*	36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	628491	50.0000	
	37 Benzene	78	4.519	4.519	(0.909)	16558	1.00000	1.04
	38 Trichloroethene	130	5.212	5.212	(1.049)	4672	1.00000	0.98
	39 Bromodichloromethane	83	5.729	5.729	(1.153)	5217	1.00000	1.00(M)
	41 2-Chloroethylvinyl ether	63	6.082	6.082	(1.224)	2521	2.00000	4.98(M)
	42 1,2-Dichloropropane	63	5.445	5.445	(1.096)	4201	1.00000	1.02(M)
	44 Dibromomethane	93	5.564	5.564	(1.120)	2801	1.00000	1.14
	45 4-Methyl-2-Pentanone	43	6.337	6.337	(0.826)	8728	2.00000	3.38
	46 cis-1,3-Dichloropropene	75	6.164	6.164	(1.241)	5733	1.00000	0.86
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	572034	50.0000	
$	48 Toluene-d8	98	6.397	6.397	(0.834)	12221	1.00000	0.85
	50 Toluene	91	6.453	6.453	(0.841)	16783	1.00000	0.98
	51 trans-1,3-Dichloropropene	75	6.693	6.693	(1.347)	4770	1.00000	0.90
	52 2-Hexanone	43	7.109	7.109	(0.927)	4026	2.00000	2.13(M)
	53 1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	3519	1.00000	1.11
	54 1,3-Dichloropropane	76	6.989	6.989	(0.911)	6899	1.00000	1.08
	55 Dibromochloromethane	129	7.176	7.176	(0.936)	5151	1.00000	1.71
	56 Tetrachloroethene	164	6.929	6.929	(0.903)	3980	1.00000	1.00
	57 1,2-Dibromoethane	107	7.270	7.270	(0.948)	3881	1.00000	0.98
	58 1-Chlorohexane	55	7.671	7.671	(1.544)	3958	1.00000	1.08
	59 Chlorobenzene	112	7.697	7.697	(1.003)	12650	1.00000	1.06
	60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	4923	1.00000	1.13
	61 Ethylbenzene	106	7.806	7.806	(1.018)	6198	1.00000	1.01
	62 m,p-Xylenes	106	7.911	7.911	(1.031)	15437	2.00000	2.08
	63 o-Xylene	106	8.249	8.249	(1.075)	7774	1.00000	1.07

64 Styrene	104	8.278	8.278 (1.079)	11888	1.00000	1.02
66 Bromoform	173	8.417	8.417 (1.097)	3244	1.00000	2.25(T)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
67	Isopropylbenzene	105	8.567	8.567	(1.117)	17676	1.00000	1.00
68	1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	4913	1.00000	0.99(M)
$ 69	4-Bromofluorobenzene	95	8.706	8.706	(1.135)	5261	1.00000	0.68
* 70	1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	281322	50.0000	
71	1,2,3-Trichloropropane	75	8.871	8.871	(0.918)	3342	1.00000	1.12(MH)
73	n-Propylbenzene	91	8.920	8.920	(0.923)	19374	1.00000	0.77
74	Bromobenzene	156	8.818	8.818	(0.912)	5909	1.00000	1.12
75	1,3,5-Trimethylbenzene	105	9.073	9.073	(0.939)	14692	1.00000	1.03
76	2-Chlorotoluene	91	8.979	8.979	(0.929)	14051	1.00000	1.10
77	4-Chlorotoluene	91	9.084	9.084	(0.940)	15347	1.00000	1.09
78	tert-Butylbenzene	119	9.343	9.343	(0.967)	12861	1.00000	1.03
79	1,2,4-Trimethylbenzene	105	9.384	9.384	(0.971)	14933	1.00000	1.01
81	sec-Butylbenzene	105	9.523	9.523	(0.985)	16994	1.00000	1.01
82	p-Isopropyltoluene	119	9.650	9.650	(0.998)	14463	1.00000	0.97
83	1,3-Dichlorobenzene	146	9.613	9.613	(0.995)	9499	1.00000	1.07
84	1,4-Dichlorobenzene	146	9.688	9.688	(1.002)	11292	1.00000	1.22
86	Benzyl Chloride	91	9.827	9.827	(1.281)	7112	1.00000	0.98
87	n-Butylbenzene	91	10.010	10.010	(1.036)	11035	1.00000	0.94
88	1,2-Dichlorobenzene	146	10.003	10.003	(1.035)	10311	1.00000	1.14
89	1,2-Dibromo-3-Chloropropane	155	10.681	10.681	(1.105)	475	1.00000	2.92(M)
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	2554	1.00000	0.53
92	Naphthalene	128	11.596	11.596	(1.200)	5559	1.00000	1.16(M)
93	1,2,3-Trichlorobenzene	180	11.765	11.765	(1.217)	2577	1.00000	1.10(M)
M 94	1,2-Dichloroethylene (total)	96				7782	2.00000	
M 95	Xylenes (total)	106				23211	3.00000	
141	Cyclohexane	56	4.129	4.129	(0.987)	4474	1.00000	0.91(H)
138	Freon TF	101	1.925	1.925	(0.460)	2367	1.00000	0.90
147	Methylcyclohexane	55	5.370	5.370	(1.081)	7819	1.00000	0.93(M)
146	Methyl Acetate	43	2.258	2.258	(0.540)	1619	1.00000	0.87(M)
148	Tert-Butyl alcohol	59	2.442	2.442	(0.584)	7925	20.0000	32.69(aM)
149	Isopropyl Alcohol	45	2.108	2.108	(0.504)	4080	20.0000	37.79(M)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTMS005\Target\chem\voa6.i\X221014.b\X101404.D
Date : 14-OCT-2022 12:29
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;3;
Purge Volume: 5.0
Column phase: DB624

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

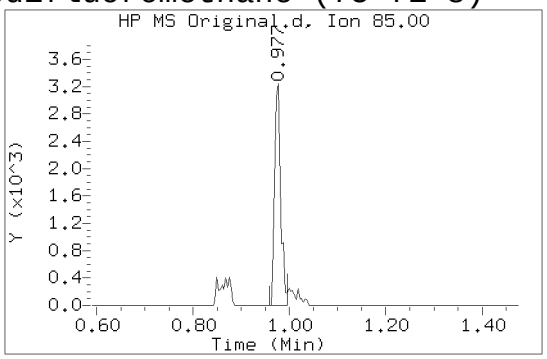
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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

Dichlorodifluoromethane (75-71-8)

Reason Code:

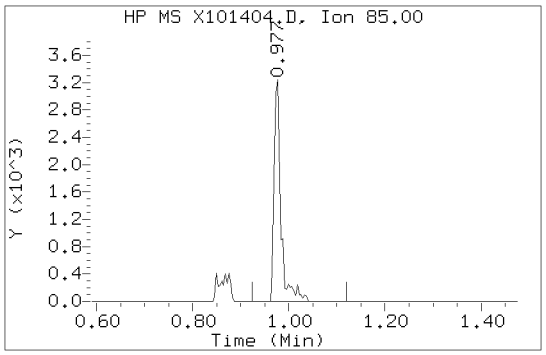
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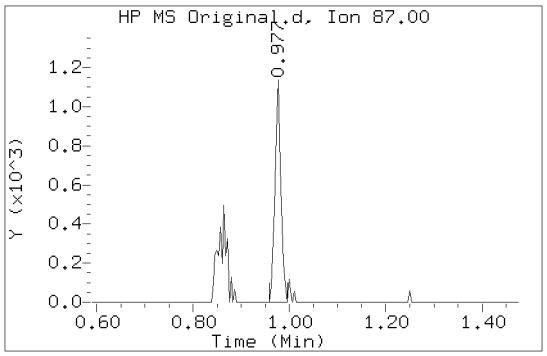
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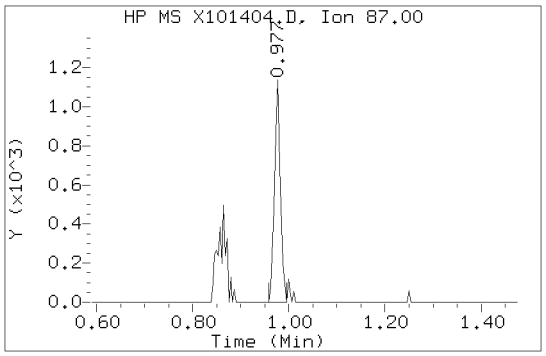
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linh
pham



AFTER

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27-Oct-2022
15:16

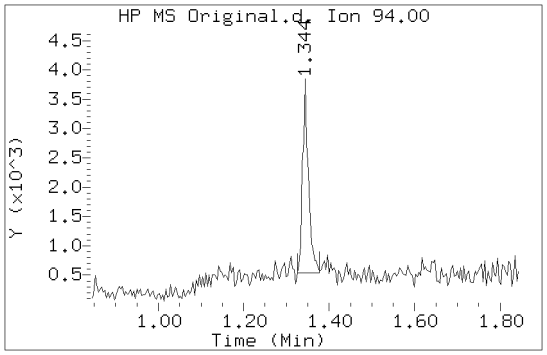


Bromomethane (74-83-9)

Reason Code:

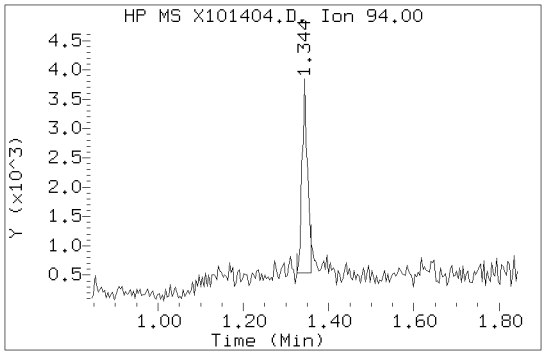
BEFORE

MASS
94
AREA
3270
HEIGHT
3309
19-Oct-2022
16:03
linh
pham



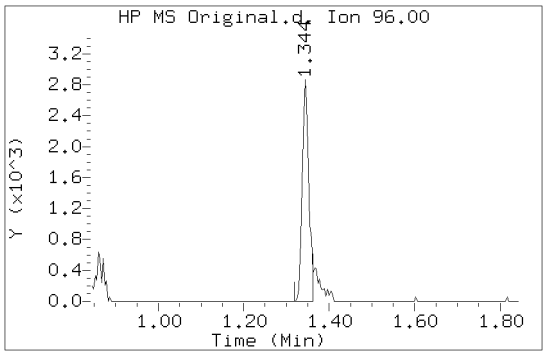
AFTER

MASS
94
AREA
3052
HEIGHT
3309
27-Oct-2022
15:16



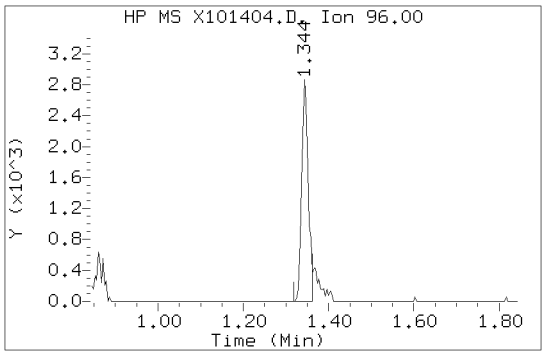
BEFORE

MASS
96
AREA
3203
HEIGHT
2865
19-Oct-2022
16:03
linh
pham



AFTER

MASS
96
AREA
3203
HEIGHT
2865
27-Oct-2022
15:16

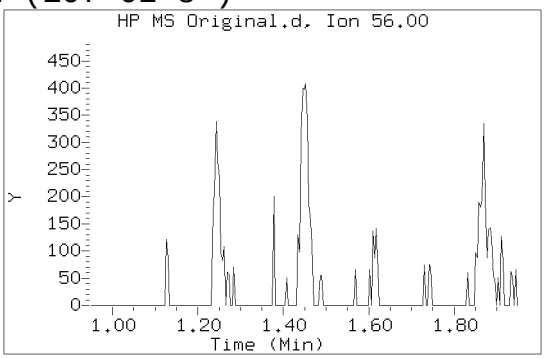


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InstruID : voa6.i
LabSampID : VSTD001

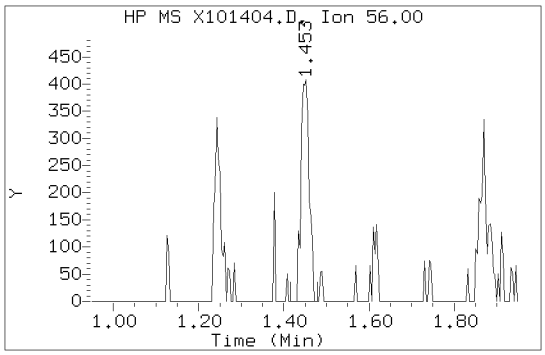
Acrolein (107-02-8)

Reason Code:

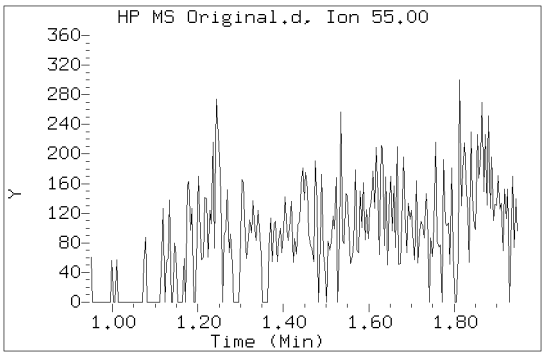
BEFORE
MASS
56
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



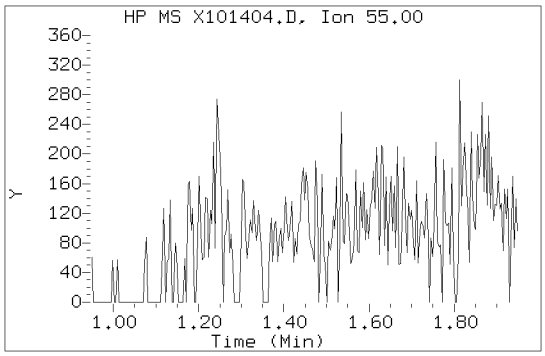
AFTER
MASS
56
AREA
571
HEIGHT
408
27-Oct-2022
15:16



BEFORE
MASS
55
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



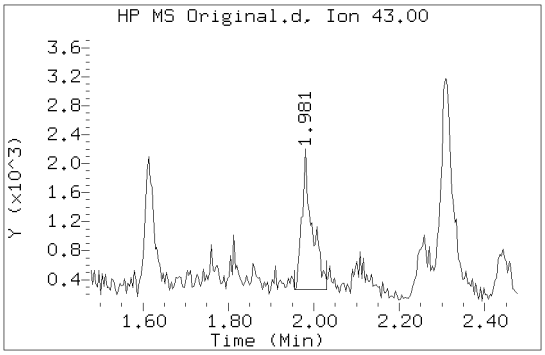
AFTER
MASS
55
AREA
0
HEIGHT
0
27-Oct-2022
15:16



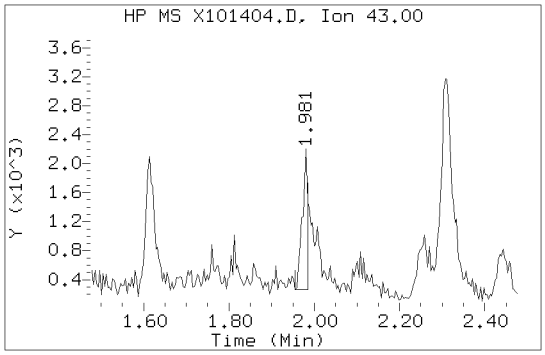
Acetone (67-64-1)

Reason Code:

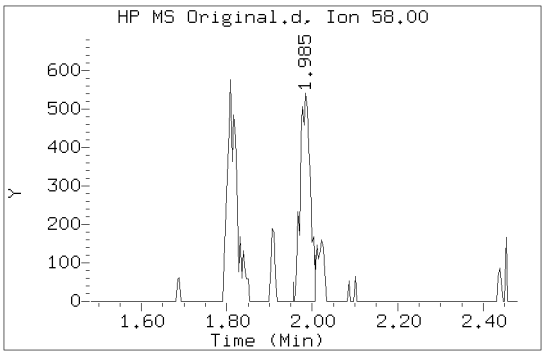
BEFORE
MASS
43
AREA
3293
HEIGHT
1945
19-Oct-2022
16:03
linh
pham



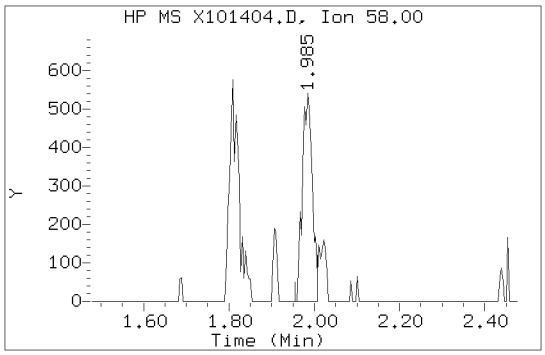
AFTER
MASS
43
AREA
1718
HEIGHT
1945
27-Oct-2022
15:16



BEFORE
MASS
58
AREA
905
HEIGHT
543
19-Oct-2022
16:03
linh
pham



AFTER
MASS
58
AREA
905
HEIGHT
543
27-Oct-2022
15:16

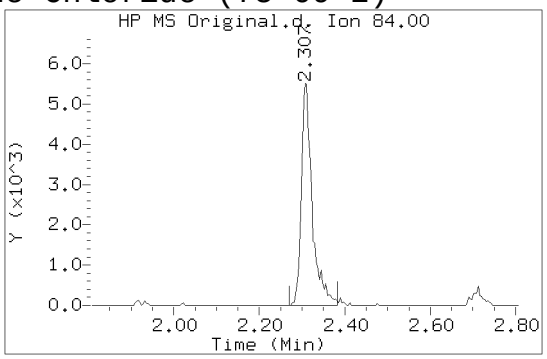


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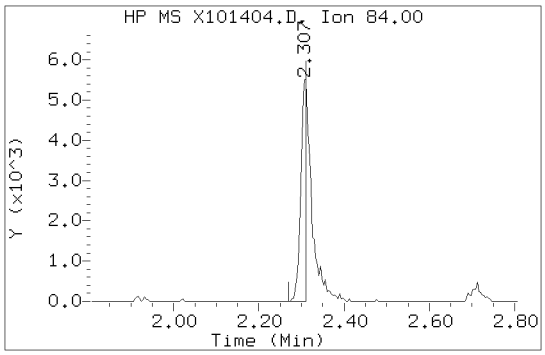
Methylene Chloride (75-09-2)

Reason Code:

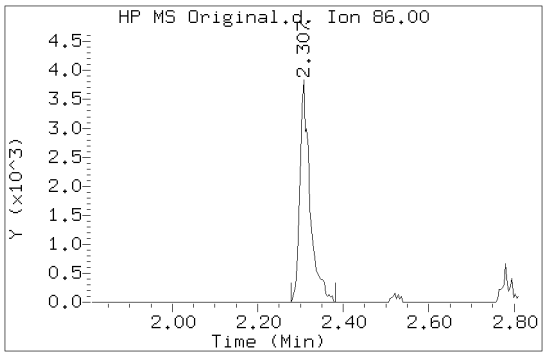
BEFORE
MASS
84
AREA
9976
HEIGHT
5505
19-Oct-2022
16:03
linh
pham



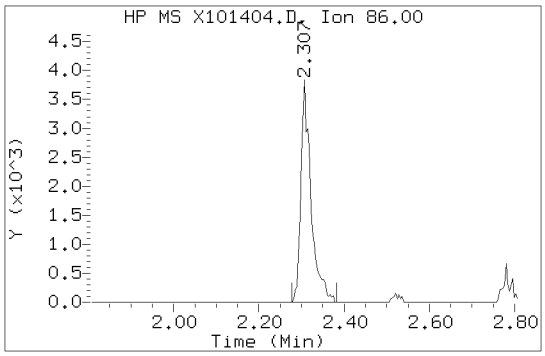
AFTER
MASS
84
AREA
5391
HEIGHT
5505
27-Oct-2022
15:16



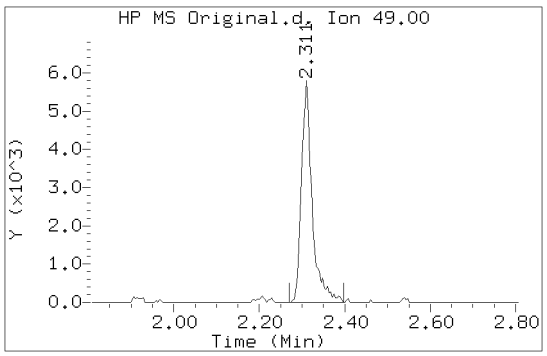
BEFORE
MASS
86
AREA
6509
HEIGHT
3836
19-Oct-2022
16:03
linh
pham



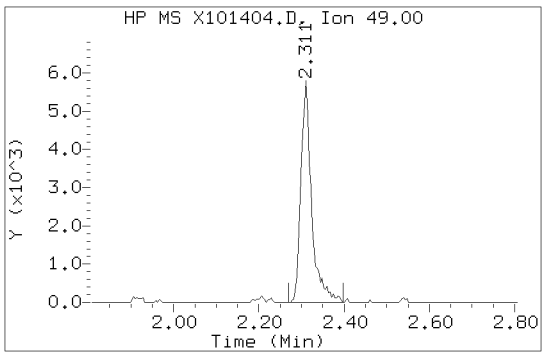
AFTER
MASS
86
AREA
6509
HEIGHT
3836
27-Oct-2022
15:16



BEFORE
MASS
49
AREA
10373
HEIGHT
5799
19-Oct-2022
16:03
linh
pham



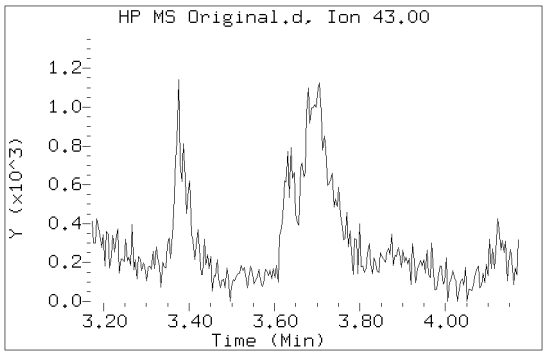
AFTER
MASS
49
AREA
10373
HEIGHT
5799
27-Oct-2022
15:16



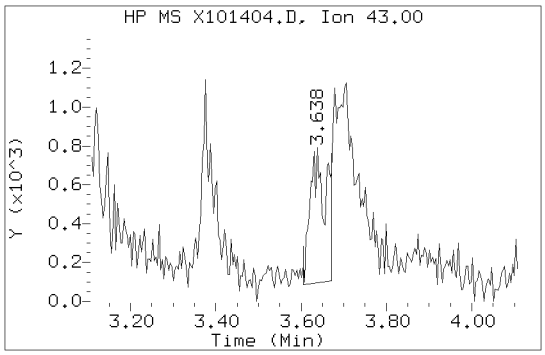
2-Butanone (78-93-3)

Reason Code:

BEFORE
MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
43
AREA
1847
HEIGHT
697
27-Oct-2022
15:16



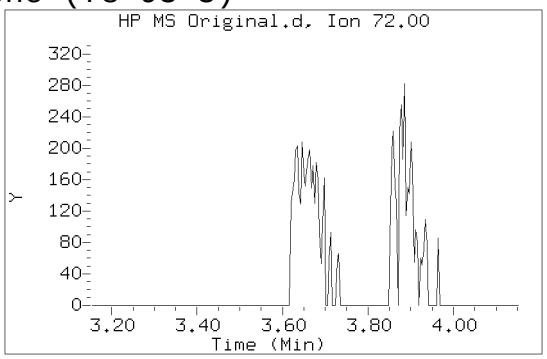
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InstruID : voa6.i
LabSampID : VSTD001

2-Butanone (78-93-3)

Reason Code:

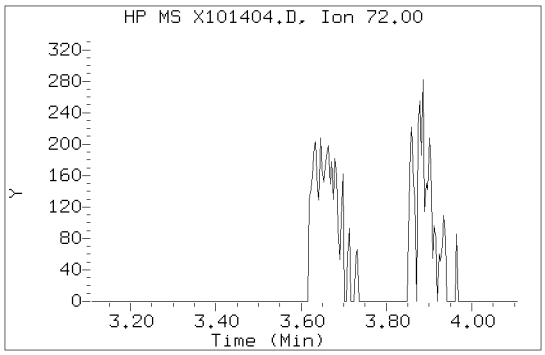
BEFORE

MASS
72
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
72
AREA
0
HEIGHT
0
27-Oct-2022
15:16

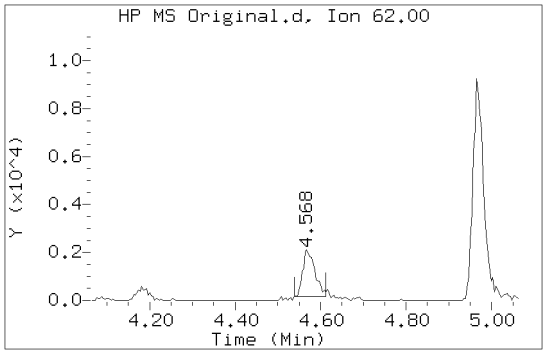


1,2-Dichloroethane (107-06-2)

Reason Code:

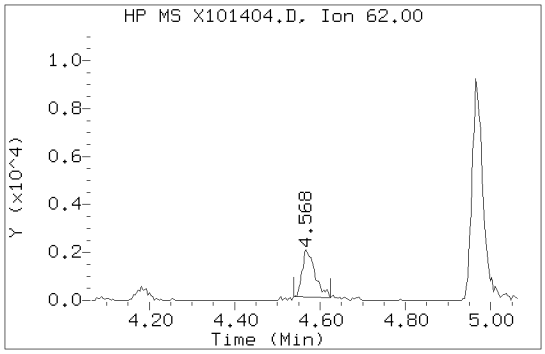
BEFORE

MASS
62
AREA
3920
HEIGHT
1945
19-Oct-2022
16:03
linh
pham



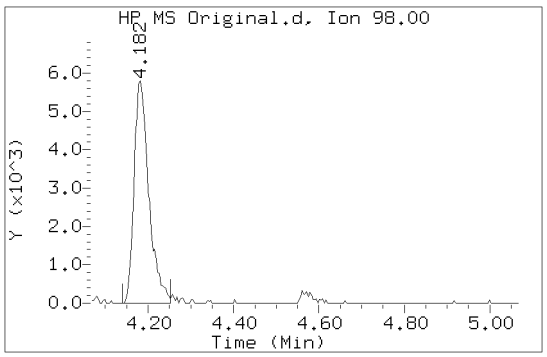
AFTER

MASS
62
AREA
4175
HEIGHT
1966
27-Oct-2022
15:16



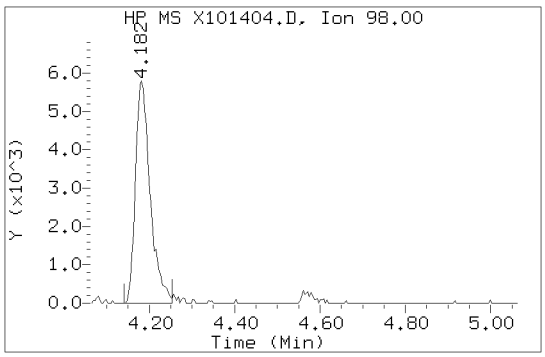
BEFORE

MASS
98
AREA
13920
HEIGHT
5797
19-Oct-2022
16:03
linh
pham



AFTER

MASS
98
AREA
13920
HEIGHT
5797
27-Oct-2022
15:16

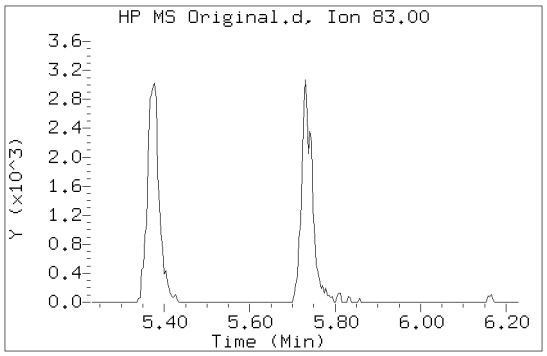


Bromodichloromethane (75-27-4)

Reason Code:

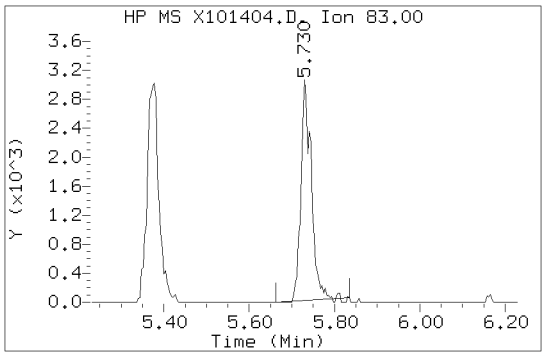
BEFORE

MASS
83
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
83
AREA
5217
HEIGHT
3043
27-Oct-2022
15:16

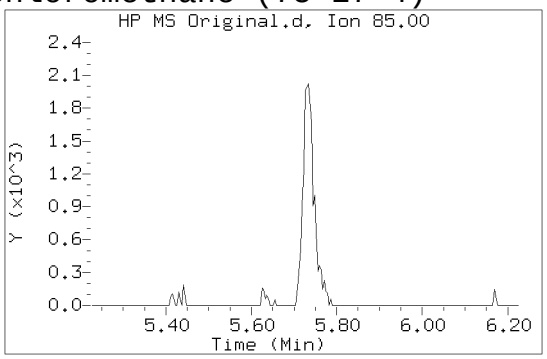


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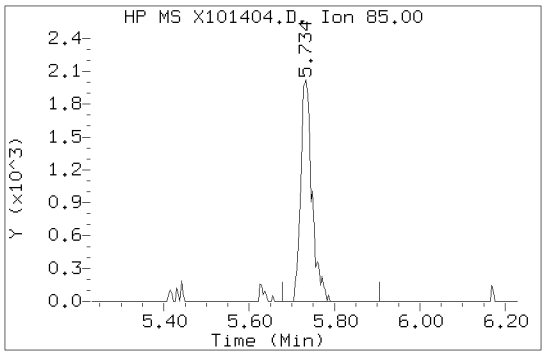
Bromodichloromethane (75-27-4)

Reason Code:

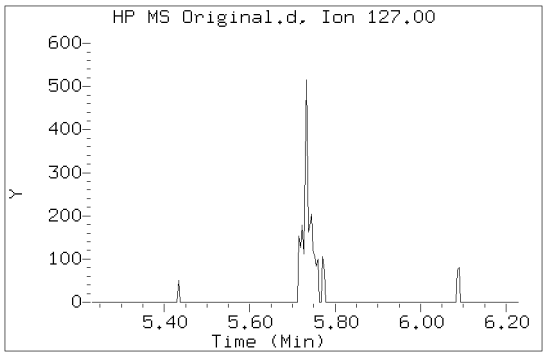
BEFORE
MASS
85
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



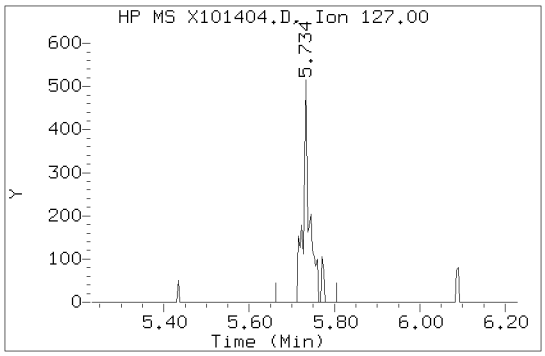
AFTER
MASS
85
AREA
3799
HEIGHT
2023
27-Oct-2022
15:16



BEFORE
MASS
127
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



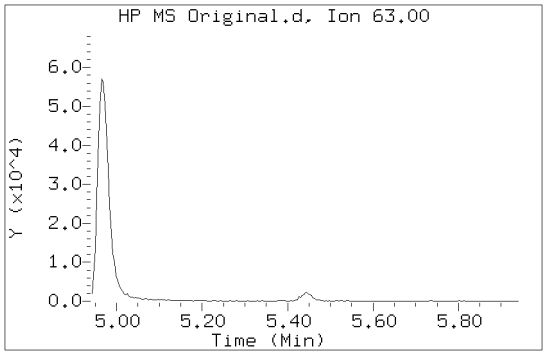
AFTER
MASS
127
AREA
571
HEIGHT
515
27-Oct-2022
15:16



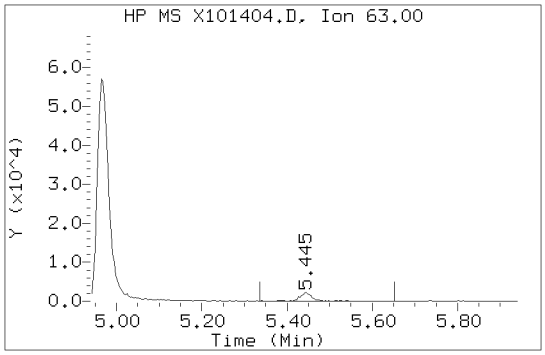
1,2-Dichloropropane (78-87-5)

Reason Code:

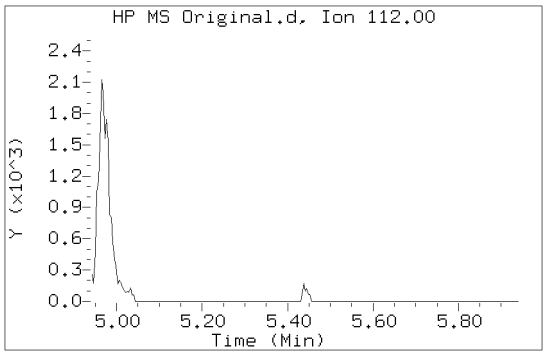
BEFORE
MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



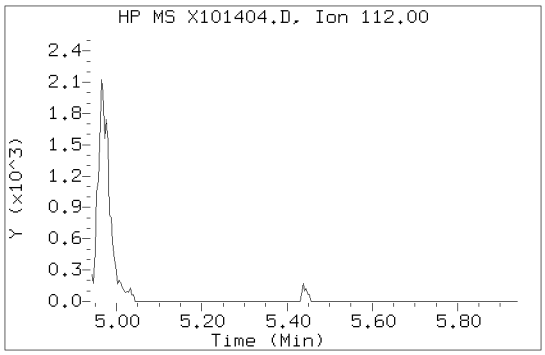
AFTER
MASS
63
AREA
4201
HEIGHT
2220
27-Oct-2022
15:16



BEFORE
MASS
112
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
112
AREA
0
HEIGHT
0
27-Oct-2022
15:16

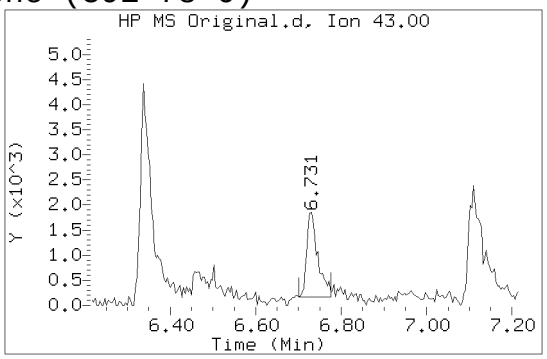


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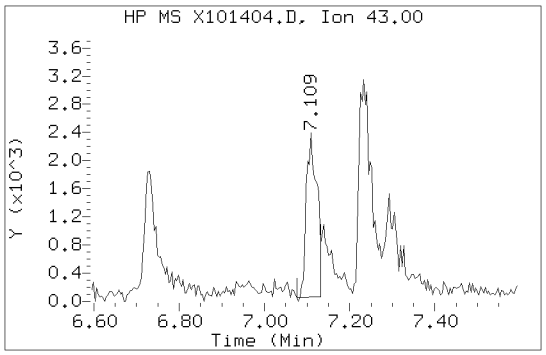
2-Hexanone (591-78-6)

Reason Code:

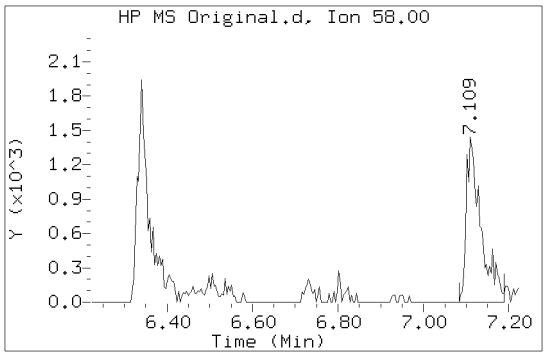
BEFORE
MASS
43
AREA
3060
HEIGHT
1677
19-Oct-2022
16:03
linh
pham



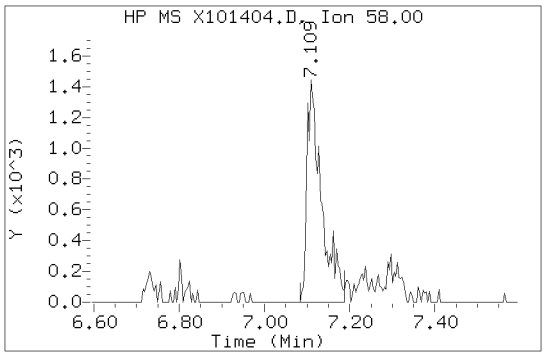
AFTER
MASS
43
AREA
4026
HEIGHT
2333
27-Oct-2022
15:16



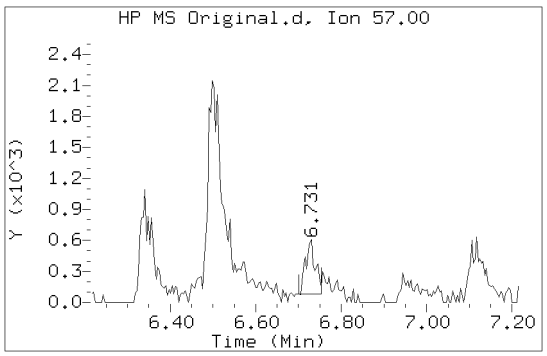
BEFORE
MASS
58
AREA
3406
HEIGHT
1444
19-Oct-2022
16:03
linh
pham



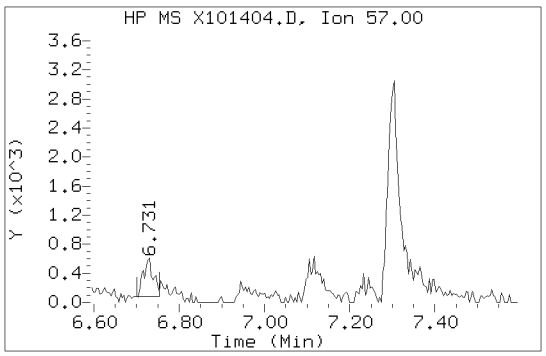
AFTER
MASS
58
AREA
3406
HEIGHT
1444
27-Oct-2022
15:16



BEFORE
MASS
57
AREA
844
HEIGHT
526
19-Oct-2022
16:03
linh
pham



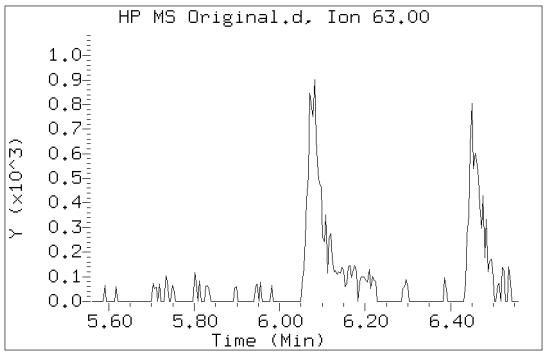
AFTER
MASS
57
AREA
844
HEIGHT
526
27-Oct-2022
15:16



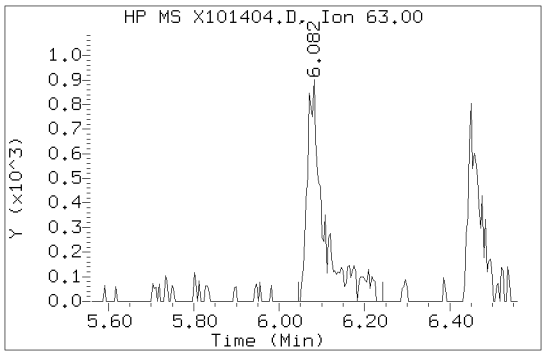
2-Chloroethylvinyl ether (110-75-8)

Reason Code:

BEFORE
MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
63
AREA
2521
HEIGHT
901
27-Oct-2022
15:16



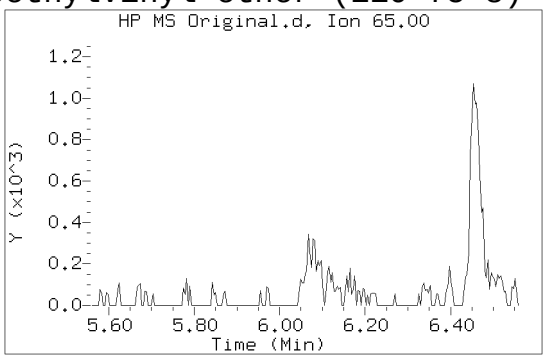
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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

2-Chloroethylvinyl ether (110-75-8)

Reason Code:

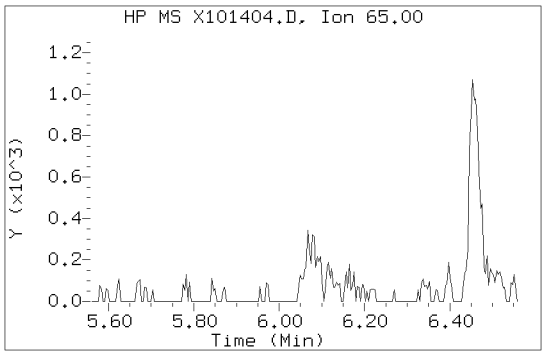
BEFORE

MASS
65
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



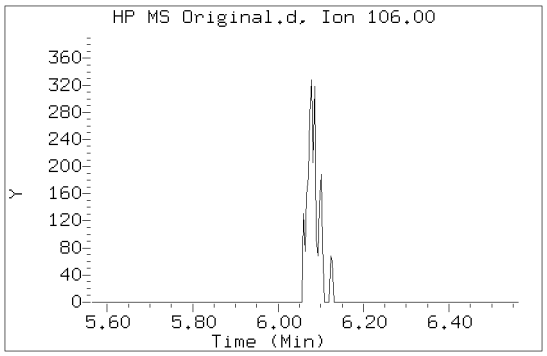
AFTER

MASS
65
AREA
0
HEIGHT
0
27-Oct-2022
15:16



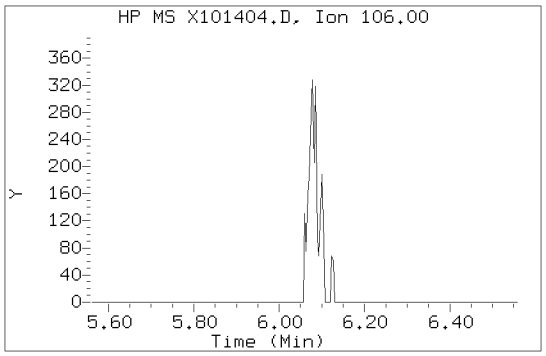
BEFORE

MASS
106
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
106
AREA
0
HEIGHT
0
27-Oct-2022
15:16

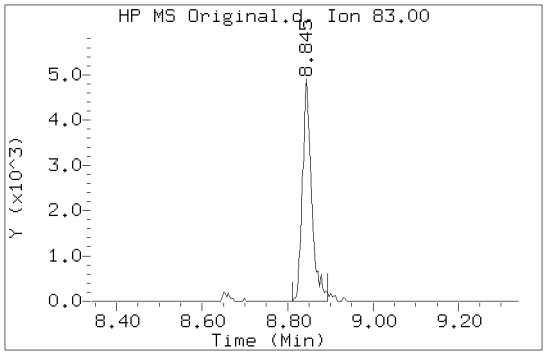


1,1,2,2-Tetrachloroethane (79-34-5)

Reason Code:

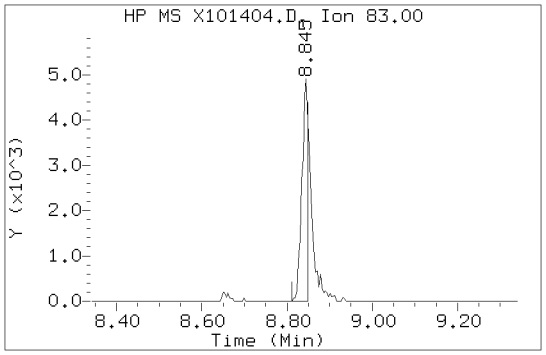
BEFORE

MASS
83
AREA
7488
HEIGHT
4910
19-Oct-2022
16:03
linh
pham



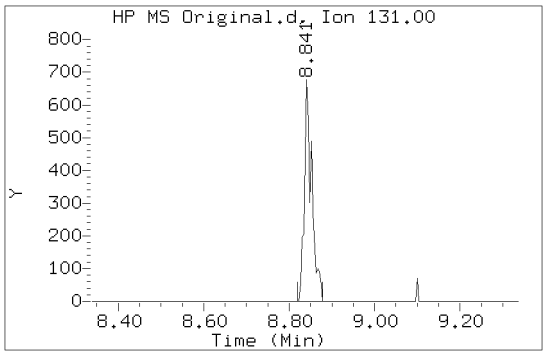
AFTER

MASS
83
AREA
4913
HEIGHT
4910
27-Oct-2022
15:16



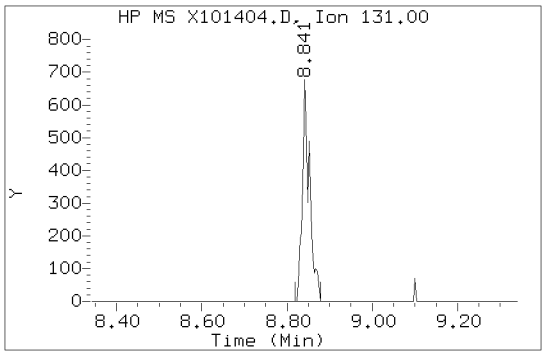
BEFORE

MASS
131
AREA
827
HEIGHT
677
19-Oct-2022
16:03
linh
pham



AFTER

MASS
131
AREA
827
HEIGHT
677
27-Oct-2022
15:16

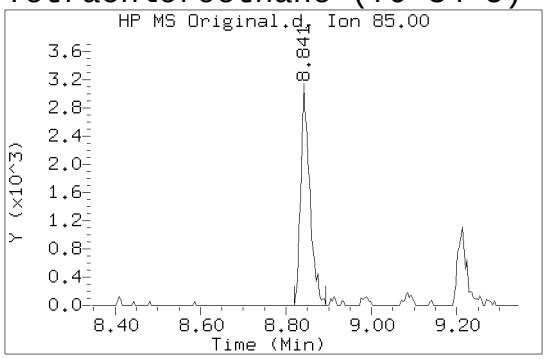


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D
Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

1,1,2,2-Tetrachloroethane (79-34-5)

BEFORE

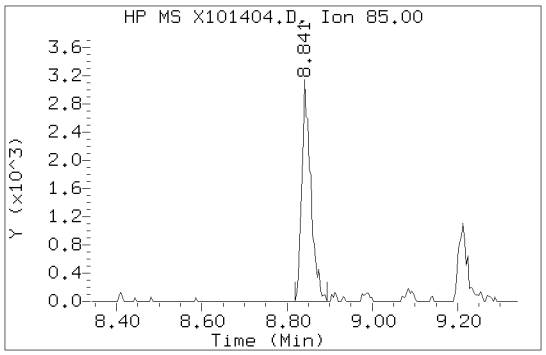
MASS
85
AREA
4723
HEIGHT
3147
19-Oct-2022
16:03
linh
pham



Reason Code:

AFTER

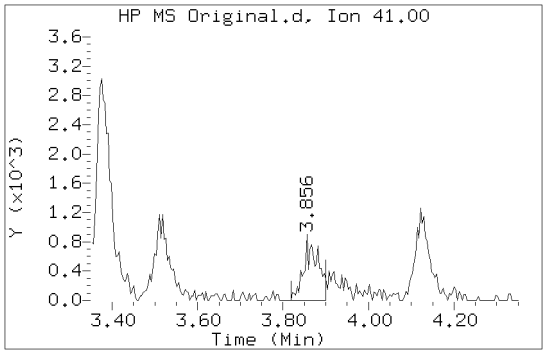
MASS
85
AREA
4723
HEIGHT
3147
27-Oct-2022
15:16



Methacrylonitrile (126-98-7)

BEFORE

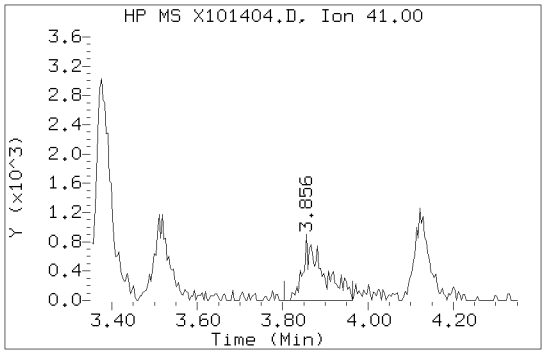
MASS
41
AREA
2040
HEIGHT
906
19-Oct-2022
16:03
linh
pham



Reason Code:

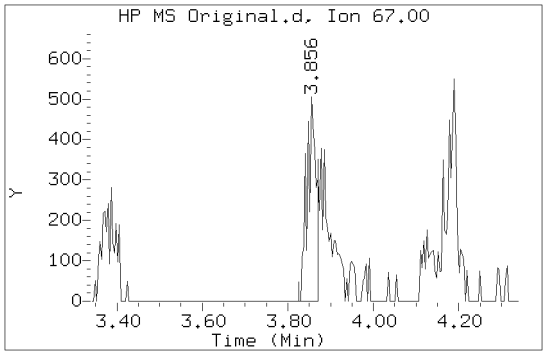
AFTER

MASS
41
AREA
2902
HEIGHT
906
27-Oct-2022
15:16



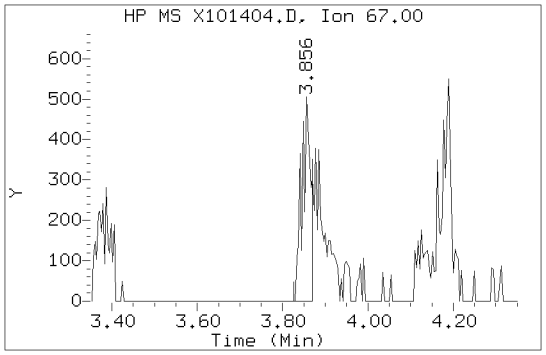
BEFORE

MASS
67
AREA
741
HEIGHT
505
19-Oct-2022
16:03
linh
pham



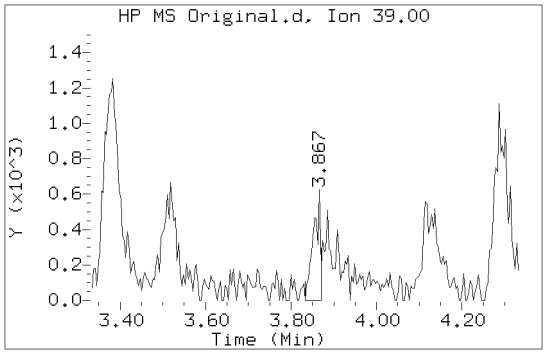
AFTER

MASS
67
AREA
741
HEIGHT
505
27-Oct-2022
15:16



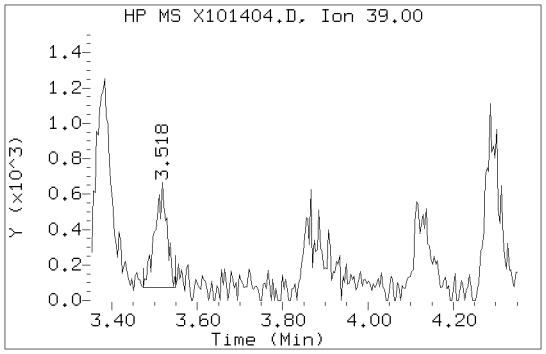
BEFORE

MASS
39
AREA
697
HEIGHT
626
19-Oct-2022
16:03
linh
pham



AFTER

MASS
39
AREA
1160
HEIGHT
595
27-Oct-2022
15:16



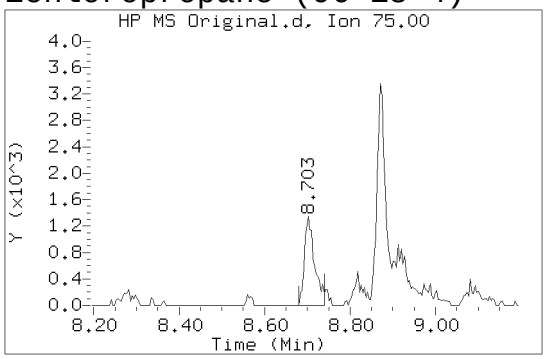
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D
Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

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

Reason Code:

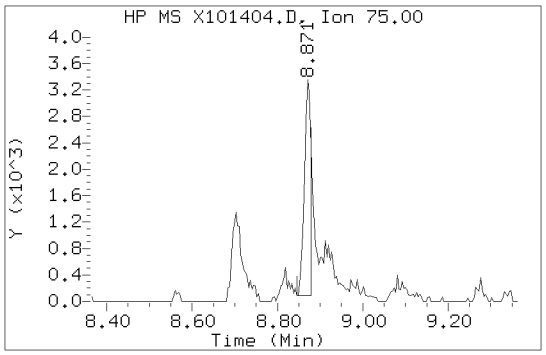
BEFORE

MASS
75
AREA
2267
HEIGHT
1348
19-Oct-2022
16:03
linh
pham



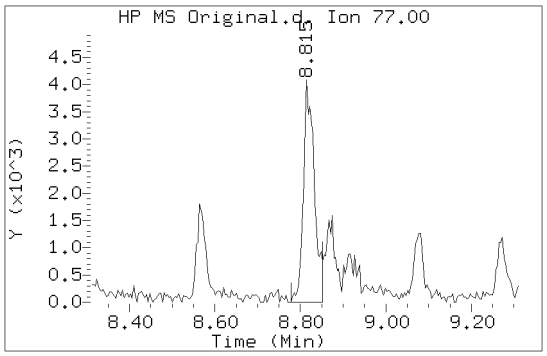
AFTER

MASS
75
AREA
3342
HEIGHT
3263
27-Oct-2022
15:16



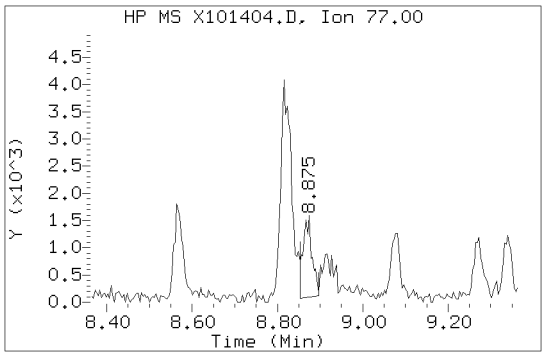
BEFORE

MASS
77
AREA
7413
HEIGHT
4084
19-Oct-2022
16:03
linh
pham



AFTER

MASS
77
AREA
2292
HEIGHT
1501
27-Oct-2022
15:16

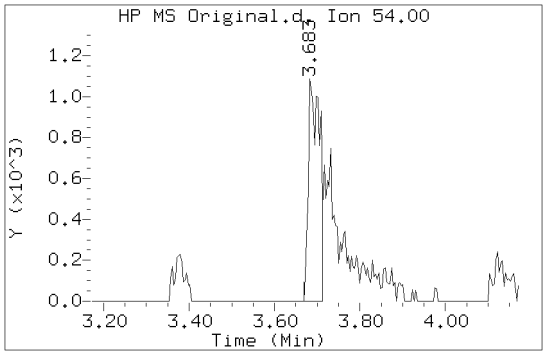


Propionitrile (107-12-0)

Reason Code:

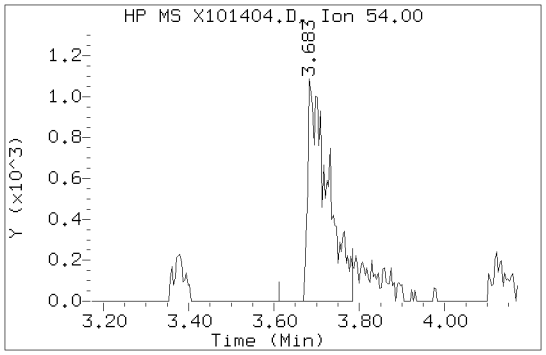
BEFORE

MASS
54
AREA
2013
HEIGHT
1087
19-Oct-2022
16:03
linh
pham



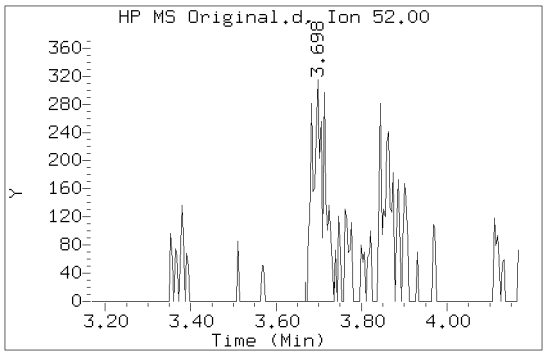
AFTER

MASS
54
AREA
3574
HEIGHT
1087
27-Oct-2022
15:16



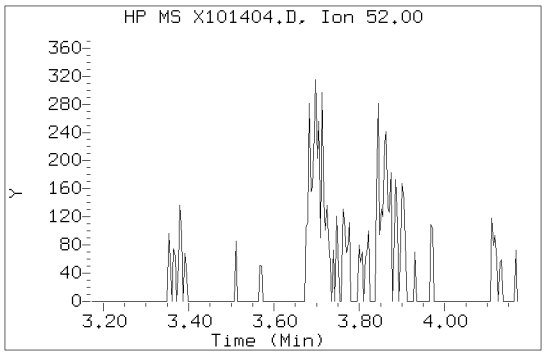
BEFORE

MASS
52
AREA
617
HEIGHT
315
19-Oct-2022
16:03
linh
pham



AFTER

MASS
52
AREA
0
HEIGHT
0
27-Oct-2022
15:16

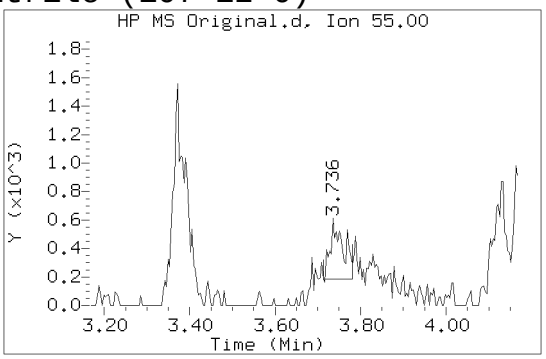


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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

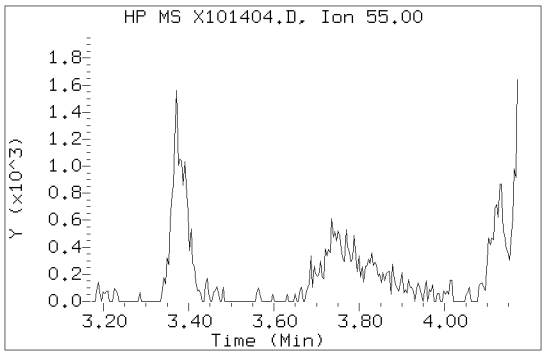
Propionitrile (107-12-0)

Reason Code:

BEFORE
MASS
55
AREA
893
HEIGHT
430
19-Oct-2022
16:03
linh
pham



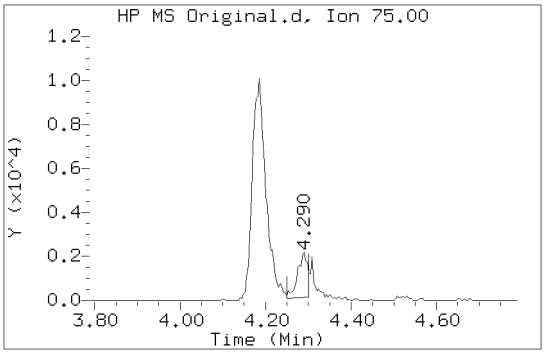
AFTER
MASS
55
AREA
0
HEIGHT
0
27-Oct-2022
15:16



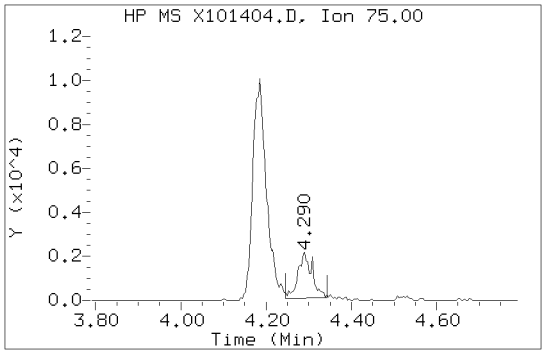
1,1-Dichloropropene (563-58-6)

Reason Code:

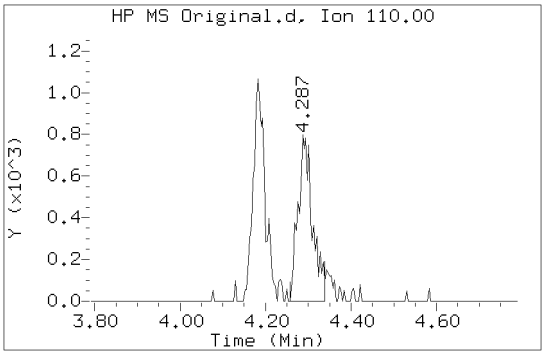
BEFORE
MASS
75
AREA
3405
HEIGHT
2032
19-Oct-2022
16:03
linh
pham



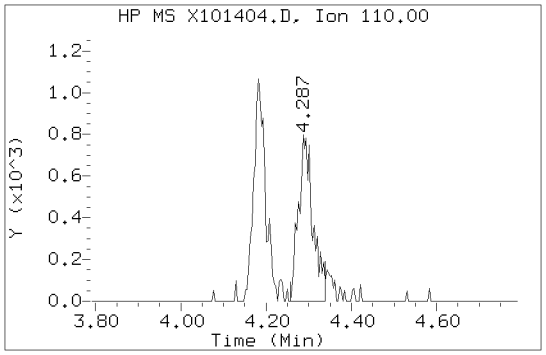
AFTER
MASS
75
AREA
4945
HEIGHT
2078
27-Oct-2022
15:16



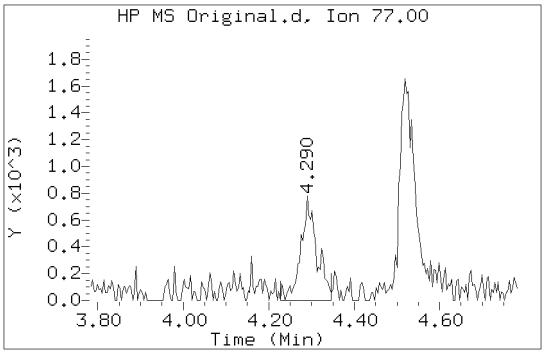
BEFORE
MASS
110
AREA
1889
HEIGHT
799
19-Oct-2022
16:03
linh
pham



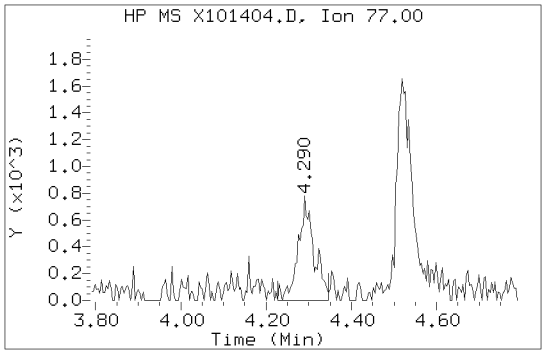
AFTER
MASS
110
AREA
1889
HEIGHT
799
27-Oct-2022
15:16



BEFORE
MASS
77
AREA
2039
HEIGHT
782
19-Oct-2022
16:03
linh
pham



AFTER
MASS
77
AREA
2039
HEIGHT
782
27-Oct-2022
15:16



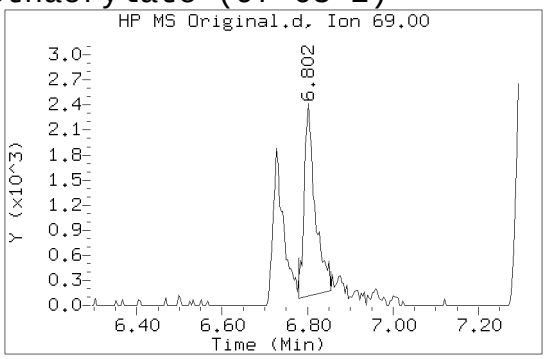
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D
Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

Ethyl Methacrylate (97-63-2)

Reason Code:

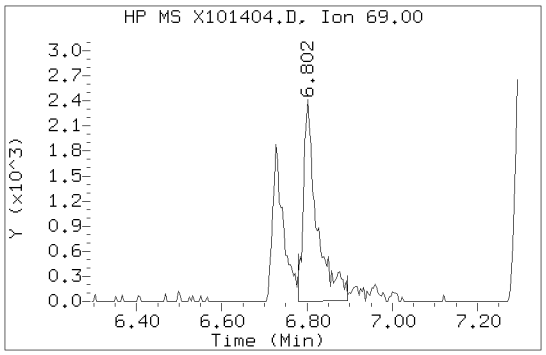
BEFORE

MASS
69
AREA
4175
HEIGHT
2305
19-Oct-2022
16:03
linh
pham



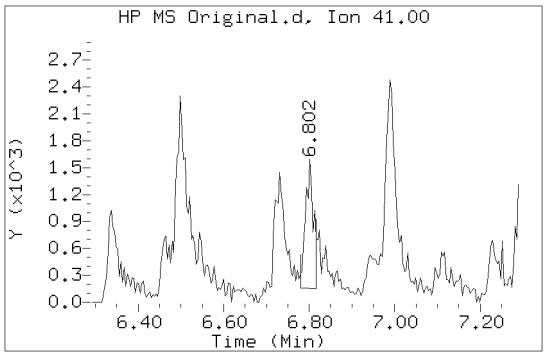
AFTER

MASS
69
AREA
5403
HEIGHT
2419
27-Oct-2022
15:16



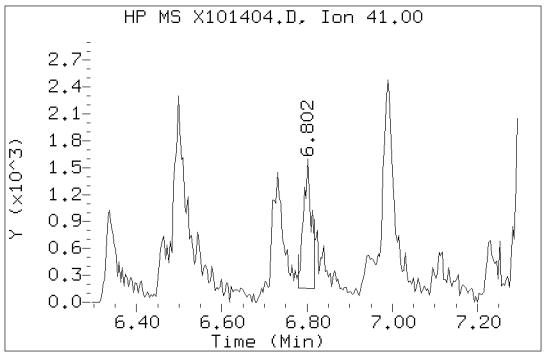
BEFORE

MASS
41
AREA
1887
HEIGHT
1445
19-Oct-2022
16:03
linh
pham



AFTER

MASS
41
AREA
1887
HEIGHT
1445
27-Oct-2022
15:16

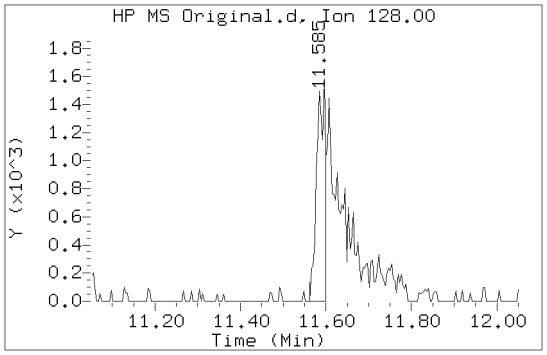


Naphthalene (91-20-3)

Reason Code:

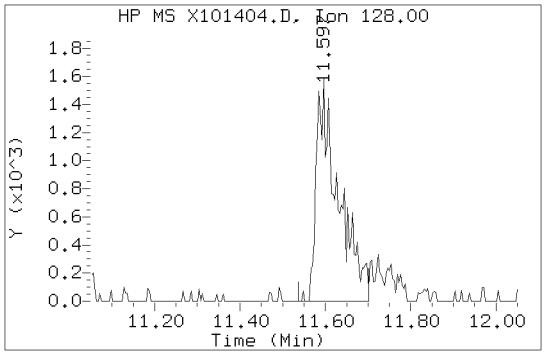
BEFORE

MASS
128
AREA
2150
HEIGHT
1497
19-Oct-2022
16:03
linh
pham



AFTER

MASS
128
AREA
5559
HEIGHT
1582
27-Oct-2022
15:16

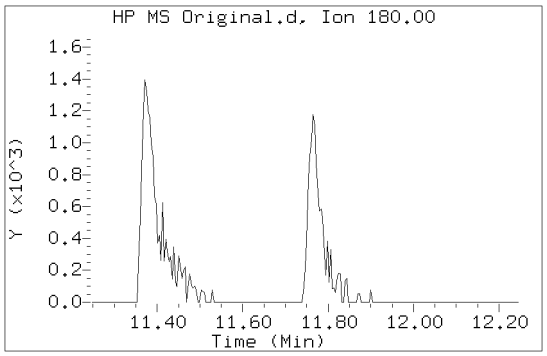


1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

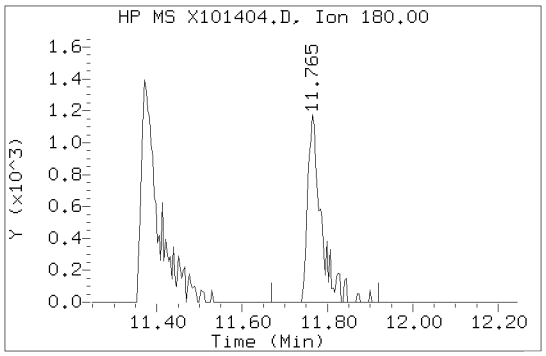
BEFORE

MASS
180
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
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AREA
2577
HEIGHT
1176
27-Oct-2022
15:16

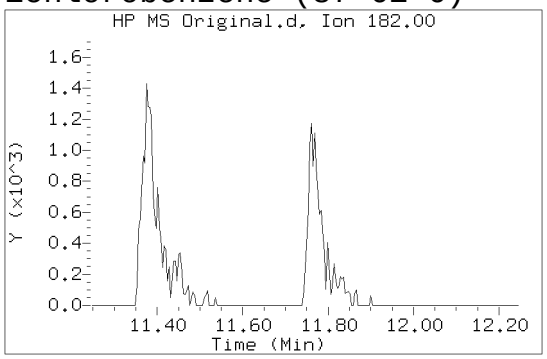


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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

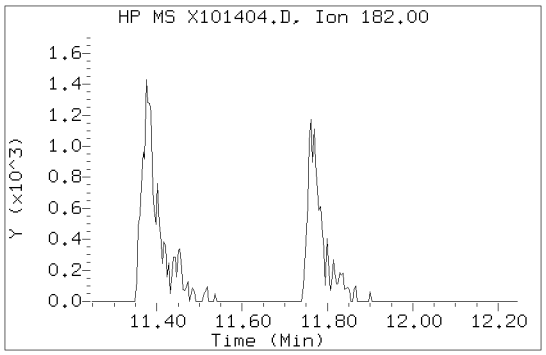
1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

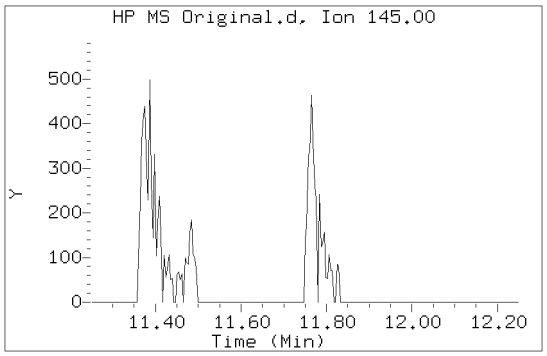
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182
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



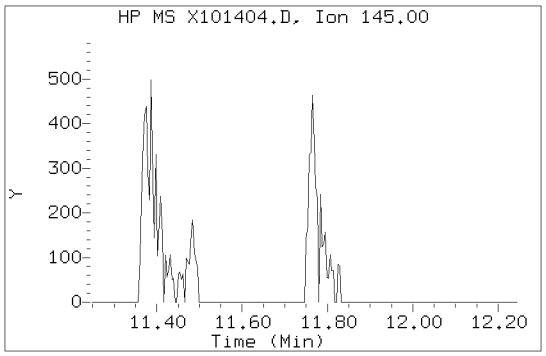
AFTER
MASS
182
AREA
0
HEIGHT
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27-Oct-2022
15:16



BEFORE
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145
AREA
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



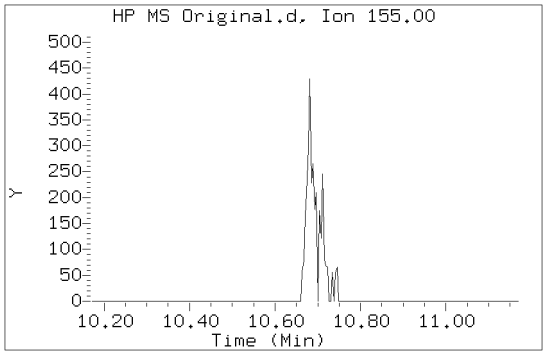
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HEIGHT
0
27-Oct-2022
15:16



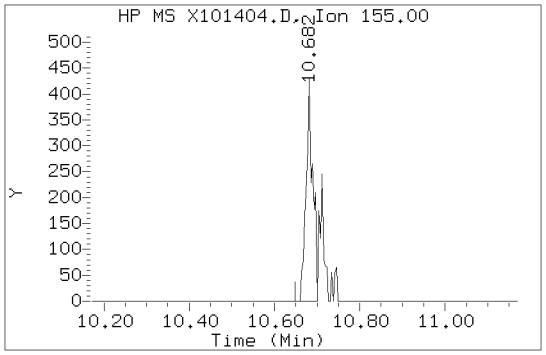
1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

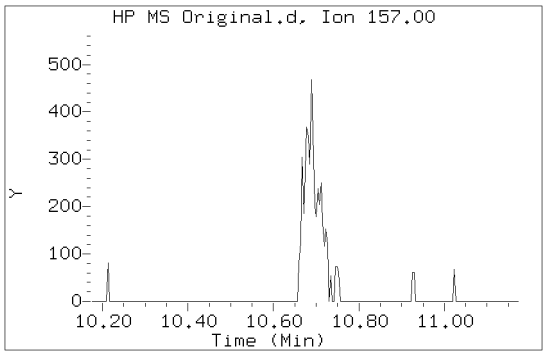
BEFORE
MASS
155
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



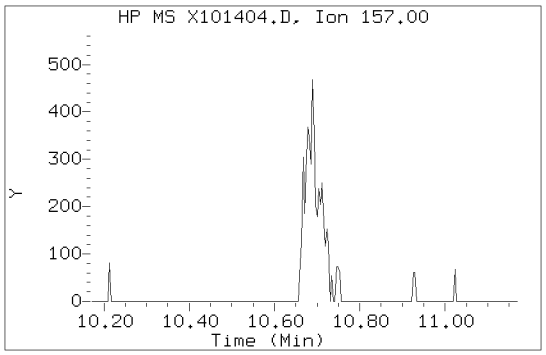
AFTER
MASS
155
AREA
475
HEIGHT
429
27-Oct-2022
15:16



BEFORE
MASS
157
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
157
AREA
0
HEIGHT
0
27-Oct-2022
15:16



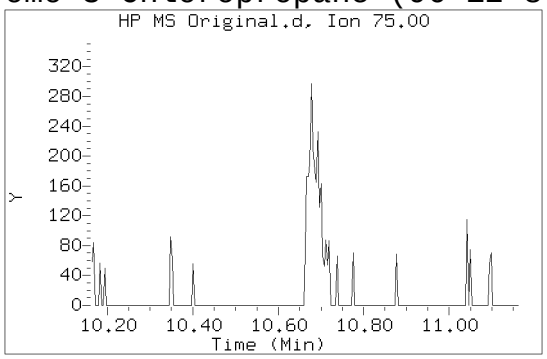
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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

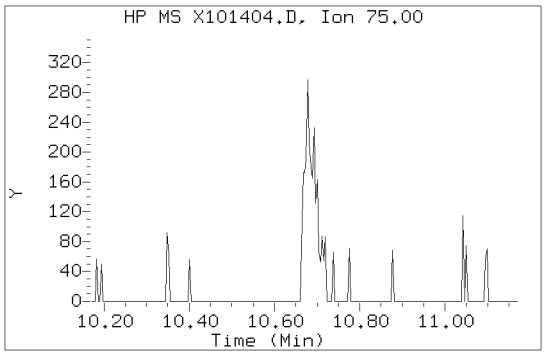
BEFORE

MASS
75
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
75
AREA
0
HEIGHT
0
27-Oct-2022
15:16

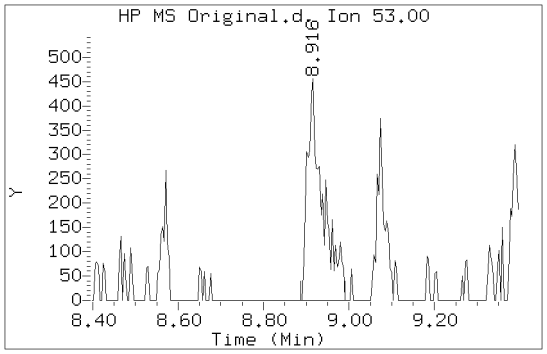


trans-1,4-Dichloro-2-butene (110-57-6)

Reason Code:

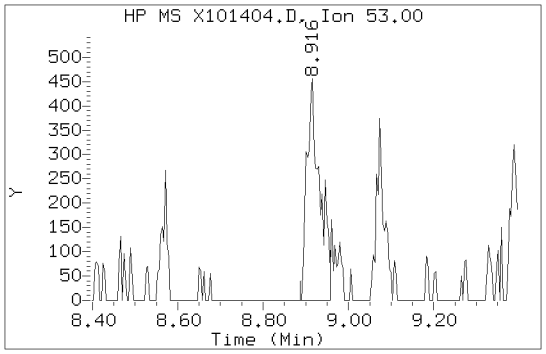
BEFORE

MASS
53
AREA
1136
HEIGHT
456
19-Oct-2022
16:03
linh
pham



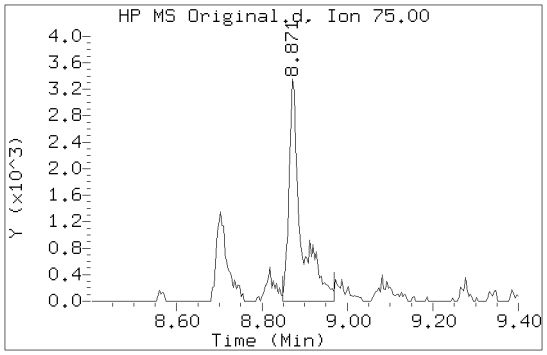
AFTER

MASS
53
AREA
967
HEIGHT
456
27-Oct-2022
15:16



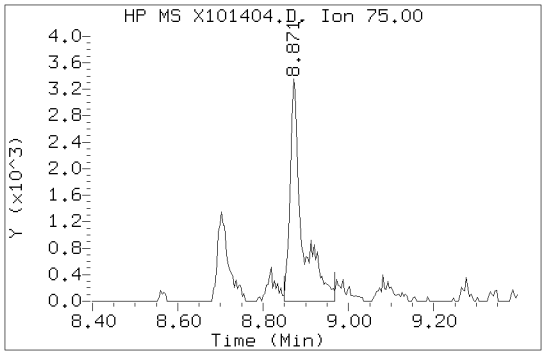
BEFORE

MASS
75
AREA
6618
HEIGHT
3355
19-Oct-2022
16:03
linh
pham



AFTER

MASS
75
AREA
6618
HEIGHT
3355
27-Oct-2022
15:16

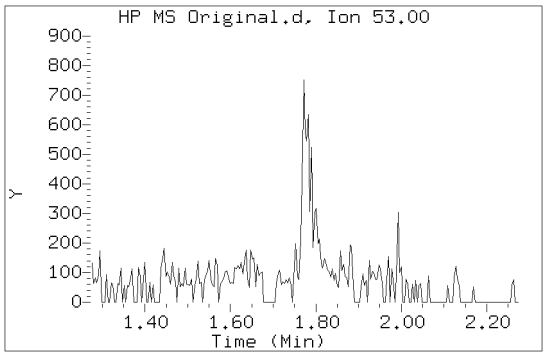


Chloroprene (126-99-8)

Reason Code:

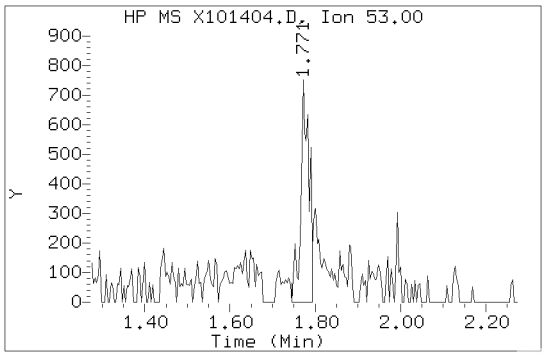
BEFORE

MASS
53
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
53
AREA
1039
HEIGHT
751
27-Oct-2022
15:16



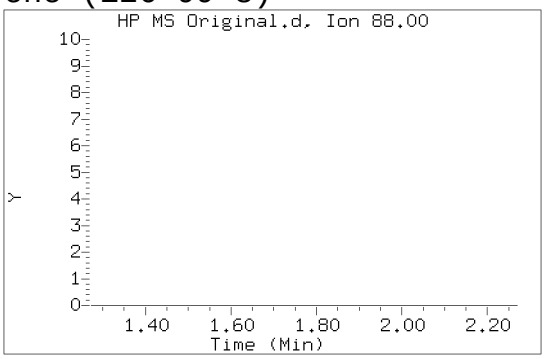
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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

Chloroprene (126-99-8)

Reason Code:

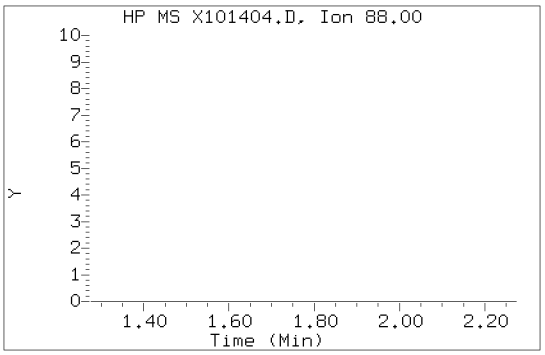
BEFORE

MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
88
AREA
0
HEIGHT
0
27-Oct-2022
15:16

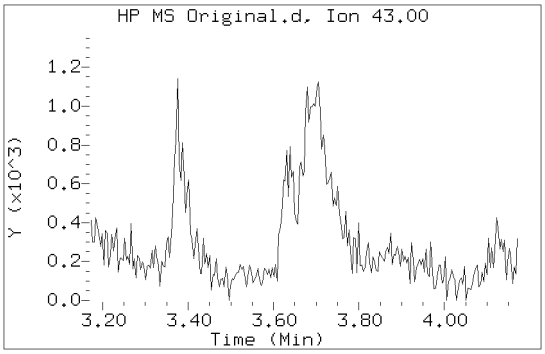


Ethyl Acetate (141-78-6)

Reason Code:

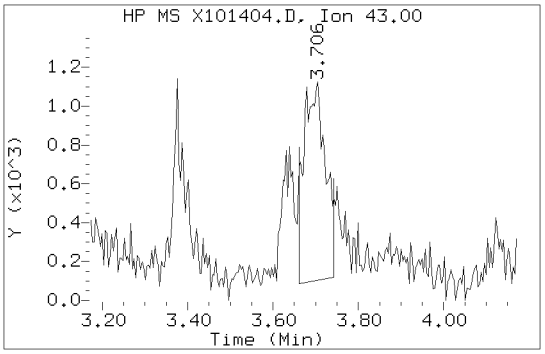
BEFORE

MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



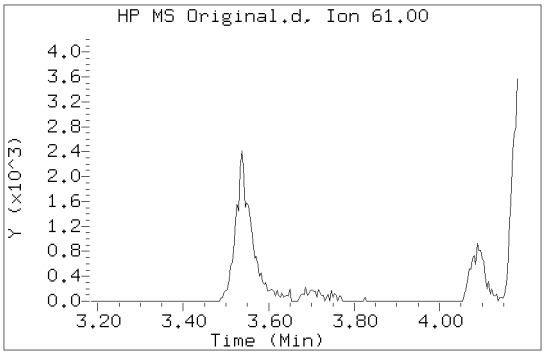
AFTER

MASS
43
AREA
3696
HEIGHT
1021
27-Oct-2022
15:16



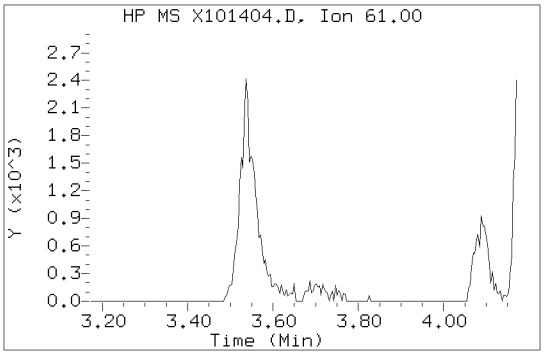
BEFORE

MASS
61
AREA
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



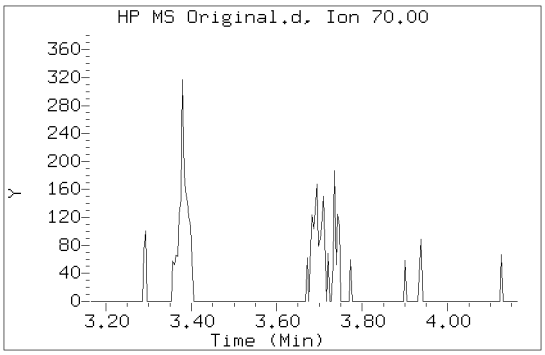
AFTER

MASS
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AREA
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HEIGHT
0
27-Oct-2022
15:16



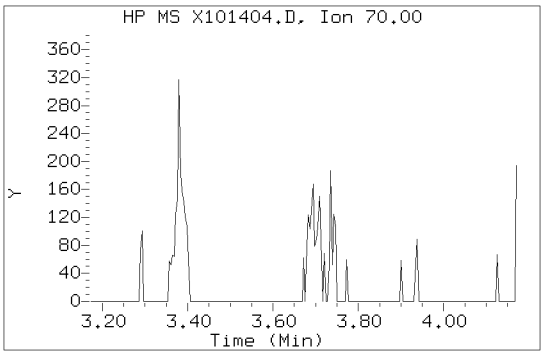
BEFORE

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70
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
70
AREA
0
HEIGHT
0
27-Oct-2022
15:16

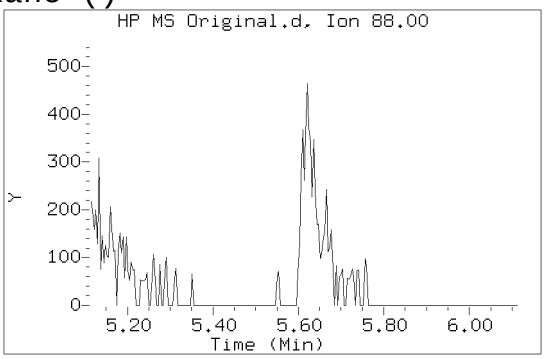


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InstruID : voa6.i
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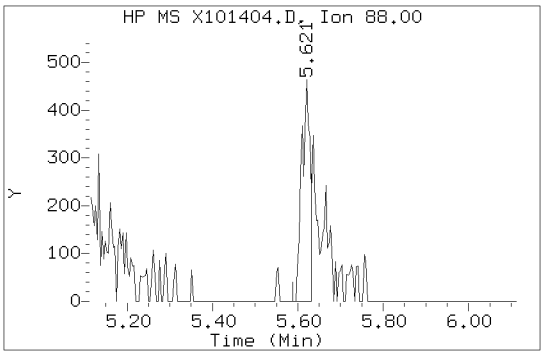
1,4-Dioxane ()

Reason Code:

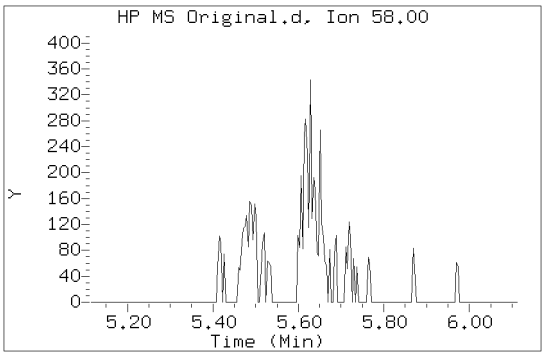
BEFORE
MASS
88
AREA
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



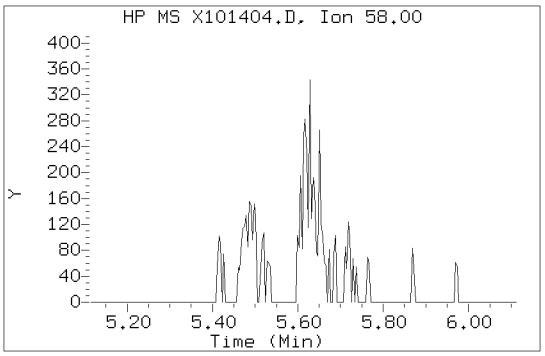
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MASS
88
AREA
643
HEIGHT
464
27-Oct-2022
15:16



BEFORE
MASS
58
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



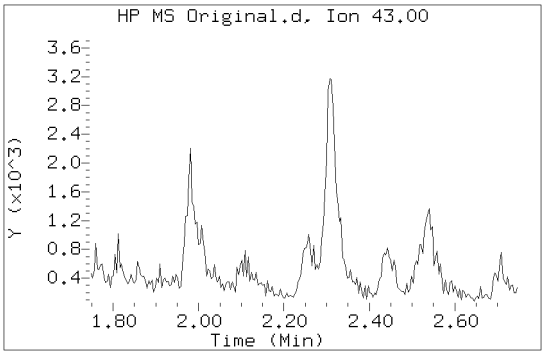
AFTER
MASS
58
AREA
0
HEIGHT
0
27-Oct-2022
15:16



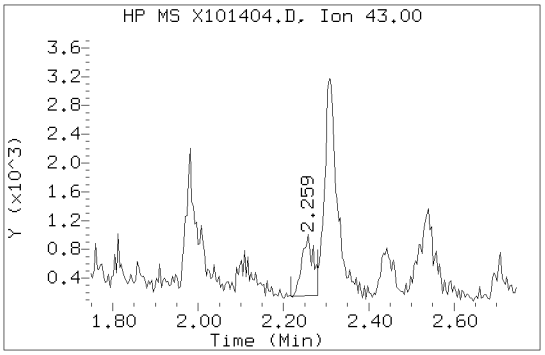
Methyl Acetate (79-20-9)

Reason Code:

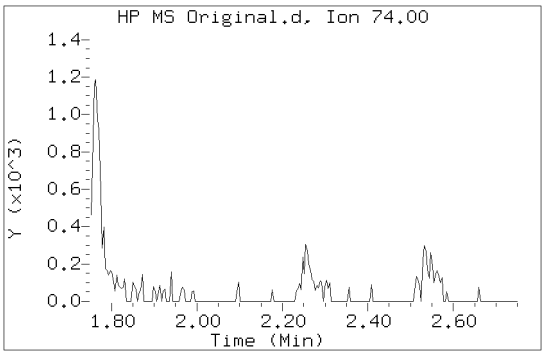
BEFORE
MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



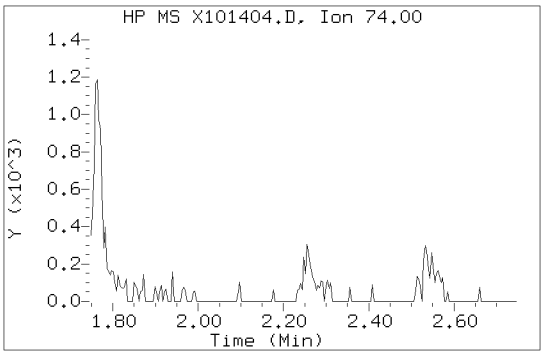
AFTER
MASS
43
AREA
1619
HEIGHT
856
27-Oct-2022
15:16



BEFORE
MASS
74
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
74
AREA
0
HEIGHT
0
27-Oct-2022
15:16

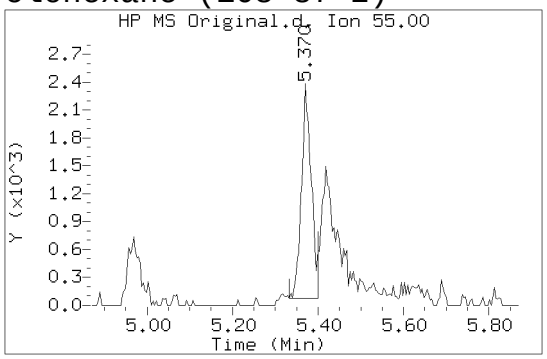


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InstruID : voa6.i
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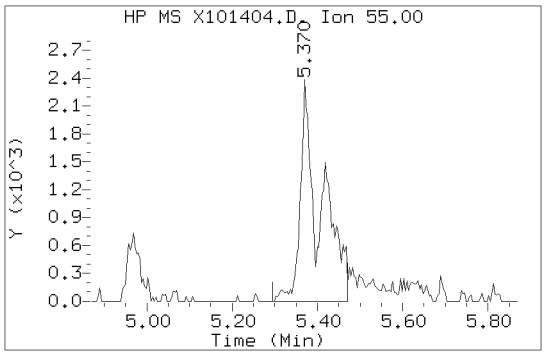
Methylcyclohexane (108-87-2)

Reason Code:

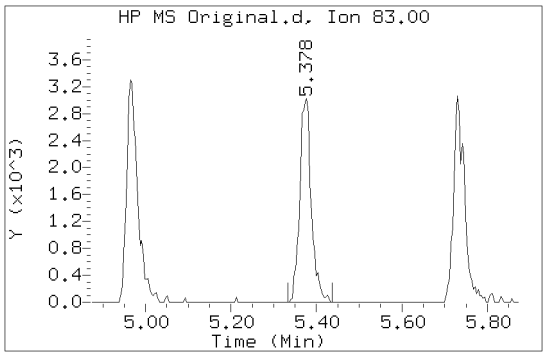
BEFORE
MASS
55
AREA
3782
HEIGHT
2307
19-Oct-2022
16:03
linh
pham



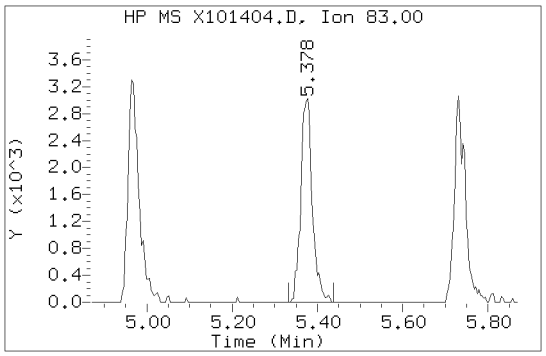
AFTER
MASS
55
AREA
7819
HEIGHT
2384
27-Oct-2022
15:16



BEFORE
MASS
83
AREA
5841
HEIGHT
3025
19-Oct-2022
16:03
linh
pham



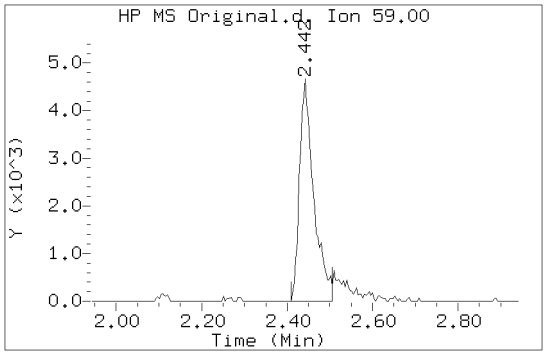
AFTER
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83
AREA
5841
HEIGHT
3025
27-Oct-2022
15:16



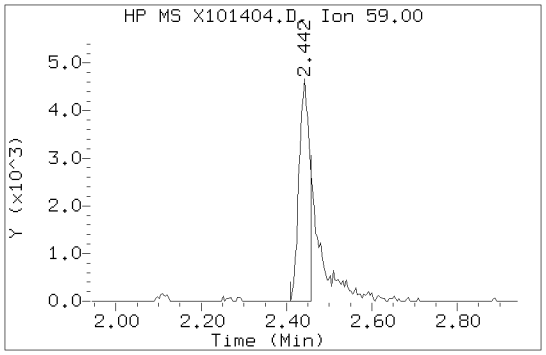
Tert-Butyl alcohol (75-65-0)

Reason Code:

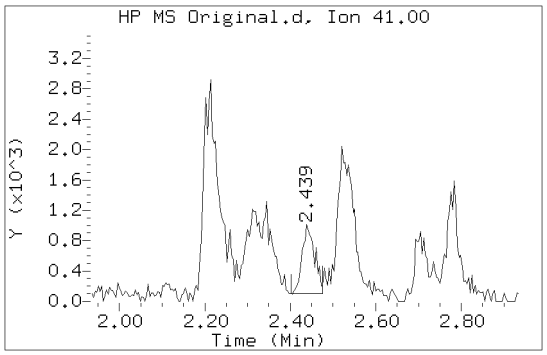
BEFORE
MASS
59
AREA
10958
HEIGHT
4665
19-Oct-2022
16:03
linh
pham



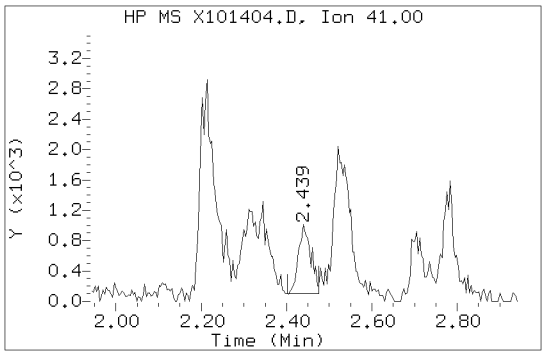
AFTER
MASS
59
AREA
7925
HEIGHT
4665
27-Oct-2022
15:16



BEFORE
MASS
41
AREA
1857
HEIGHT
906
19-Oct-2022
16:03
linh
pham



AFTER
MASS
41
AREA
1857
HEIGHT
906
27-Oct-2022
15:16



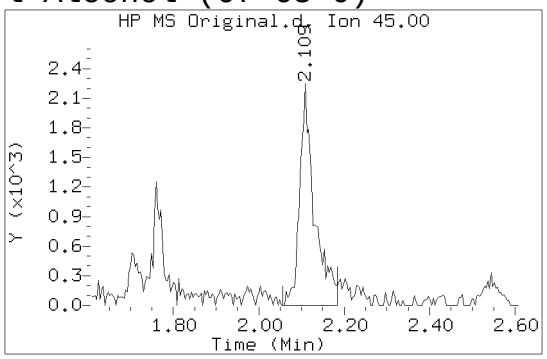
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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

Isopropyl Alcohol (67-63-0)

Reason Code:

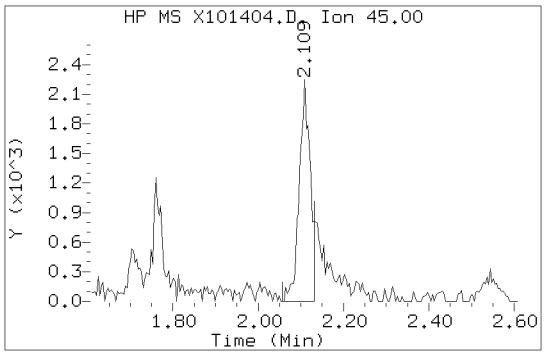
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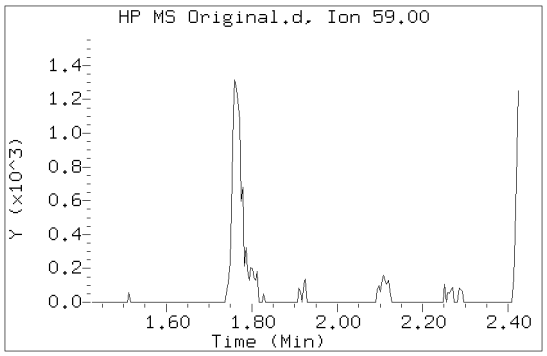
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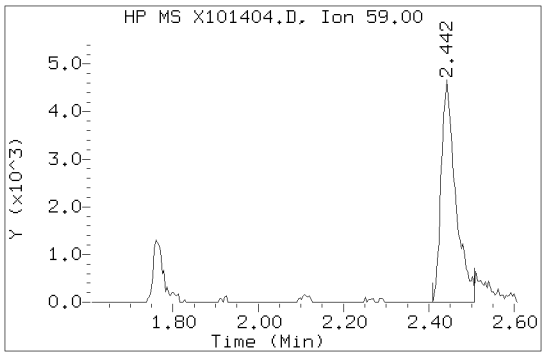
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AFTER

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15:16



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D Page 1
Report Date: 27-Oct-2022 15:16

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D
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Inj Date : 14-OCT-2022 12:50
Operator : PC Inst ID: voa6.i
Smp Info : VSTD002;VSTD002;1;4;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
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Cal Date : 14-OCT-2022 12:29 Cal File: X101404.D
Als bottle: 6 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.181	4.181	(1.000)	424182	50.0000	
135	1,4-Dioxane	88	5.621	5.621	(1.344)	1309	40.0000	40.55(M)
140	1,3-Butadiene	54	1.167	1.167	(0.279)	4348	2.00000	1.88
25	Methacrylonitrile	41	3.863	3.863	(0.924)	6328	2.00000	2.38(M)
12	Isobutyl Alcohol	43	4.687	4.687	(1.121)	17194	40.0000	29.81(M)
13	Acetonitrile	39	2.206	2.206	(0.528)	5922	20.0000	17.91
14	Allyl Chloride	41	2.210	2.210	(0.528)	15225	2.00000	2.08
4	Propionitrile	54	3.675	3.675	(0.879)	8300	20.0000	22.28
136	n-Hexane	57	2.776	2.776	(0.664)	6740	2.00000	1.79
72	trans-1,4-Dichloro-2-butene	53	8.901	8.901	(1.160)	1568	2.00000	3.01
194	Acetaldehyde	44	1.216	1.216	(0.291)	4205	8.00000	2.15(M)
23	Chloroprene	53	1.778	1.778	(0.425)	2461	2.00000	2.26(M)
145	alpha-Methylstyrene	118	9.268	9.268	(0.959)	11366	2.00000	1.85
200	Dimethyl Disulfide	94	6.202	6.202	(0.808)	14277	2.00000	1.74
139	Diethyl ether	59	1.760	1.760	(0.421)	4504	2.00000	2.20
130	Ethyl Acetate	43	3.679	3.679	(0.880)	5696	2.00000	0.79(M)
40	Methyl Methacrylate	41	5.621	5.621	(1.344)	4882	2.00000	1.85
49	Ethyl Methacrylate	69	6.794	6.794	(1.367)	9246	2.00000	1.83
132	n-Butanol	56	5.306	5.306	(1.269)	1152	40.0000	22.94
142	Tetrahydrofuran	42	3.870	3.870	(0.926)	1927	4.00000	4.42

150 Allyl alcohol	57	2.776	2.776 (0.664)	6740	40.0000	35.84
166 1,2,3-Trimethylbenzene	105	9.733	9.733 (1.007)	27583	2.00000	2.07

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D Page 2
Report Date: 27-Oct-2022 15:16

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
131	Methyl Acrylate	55	3.694	3.694	(0.883)	889	2.00000	2.22
162	Butyl acrylate	55	8.267	8.267	(1.078)	11415	2.00000	1.95
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	5960	2.00000	0.79(M)
3	Chloromethane	50	1.081	1.081	(0.259)	8169	2.00000	1.94
5	Vinyl Chloride	62	1.145	1.145	(0.274)	5939	2.00000	1.83
6	Bromomethane	94	1.344	1.344	(0.321)	5824	2.00000	2.04(M)
7	Chloroethane	64	1.407	1.407	(0.337)	3693	2.00000	1.88
8	Trichlorofluoromethane	101	1.565	1.565	(0.374)	7094	2.00000	1.65
9	Acrolein	56	1.452	1.452	(0.347)	867	4.00000	3.66
10	Acetone	43	1.981	1.981	(0.474)	3884	4.00000	4.36(M)
11	1,1-Dichloroethene	96	1.925	1.925	(0.460)	5362	2.00000	1.95(M)
15	Iodomethane	142	2.030	2.030	(0.485)	6956	4.00000	4.81
16	Acrylonitrile	53	2.566	2.566	(0.614)	2845	4.00000	3.86
17	Methylene Chloride	84	2.311	2.311	(0.553)	9699	2.00000	1.11(M)
18	Methyl tert-butyl ether	73	2.539	2.539	(0.607)	23237	2.00000	2.29
19	Carbon Disulfide	76	2.075	2.075	(0.496)	35370	4.00000	3.68
20	trans-1,2-Dichloroethene	96	2.539	2.539	(0.607)	7022	2.00000	1.87
21	Vinyl Acetate	43	3.019	3.019	(0.722)	34095	4.00000	4.04
22	1,1-Dichloroethane	63	2.926	2.926	(0.700)	12049	2.00000	1.88
24	2-Butanone	43	3.627	3.627	(0.867)	3823	4.00000	3.73(M)
26	2,2-Dichloropropane	77	3.518	3.518	(0.841)	8756	2.00000	1.70
27	cis-1,2-Dichloroethene	96	3.537	3.537	(0.846)	8164	2.00000	1.84
28	Chloroform	83	3.915	3.915	(0.936)	13107	2.00000	1.89
29	Bromochloromethane	128	3.806	3.806	(0.910)	4509	2.00000	1.84
$ 30	Dibromofluoromethane	113	4.106	4.106	(0.982)	8012	2.00000	1.47
31	1,1,1-Trichloroethane	97	4.084	4.084	(0.977)	10054	2.00000	1.83
32	1,1-Dichloropropene	75	4.290	4.290	(0.863)	9103	2.00000	1.80
33	1,2-Dichloroethane	62	4.567	4.567	(0.919)	8800	2.00000	1.88
34	Carbon Tetrachloride	117	4.264	4.264	(0.858)	9382	2.00000	1.86
$ 35	1,2-Dichloroethane-d4	65	4.477	4.477	(1.071)	7583	2.00000	1.25
* 36	1,4-Difluorobenzene	114	4.969	4.969	(1.000)	632871	50.0000	
37	Benzene	78	4.519	4.519	(0.909)	30218	2.00000	1.88
38	Trichloroethene	130	5.212	5.212	(1.049)	8623	2.00000	1.81
39	Bromodichloromethane	83	5.733	5.733	(1.154)	9711	2.00000	1.85
41	2-Chloroethylvinyl ether	63	6.071	6.071	(1.222)	3536	4.00000	5.72
42	1,2-Dichloropropane	63	5.445	5.445	(1.096)	7383	2.00000	1.78(M)
44	Dibromomethane	93	5.561	5.561	(1.119)	5028	2.00000	2.03
45	4-Methyl-2-Pentanone	43	6.333	6.333	(0.826)	12989	4.00000	4.84(M)
46	cis-1,3-Dichloropropene	75	6.164	6.164	(1.241)	12411	2.00000	1.85
* 47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	582490	50.0000	
$ 48	Toluene-d8	98	6.397	6.397	(0.834)	30635	2.00000	2.09
50	Toluene	91	6.449	6.449	(0.841)	31885	2.00000	1.84
51	trans-1,3-Dichloropropene	75	6.693	6.693	(1.347)	9592	2.00000	1.81
52	2-Hexanone	43	7.102	7.102	(0.926)	7717	4.00000	4.02(M)
53	1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	6132	2.00000	1.91
54	1,3-Dichloropropane	76	6.989	6.989	(0.911)	12305	2.00000	1.89
55	Dibromochloromethane	129	7.177	7.177	(0.936)	8098	2.00000	2.33
56	Tetrachloroethene	164	6.933	6.933	(0.904)	7430	2.00000	1.84
57	1,2-Dibromoethane	107	7.270	7.270	(0.948)	7395	2.00000	1.84
58	1-Chlorohexane	55	7.671	7.671	(1.544)	4099	2.00000	1.11
59	Chlorobenzene	112	7.694	7.694	(1.003)	22542	2.00000	1.85
60	1,1,1,2-Tetrachloroethane	131	7.780	7.780	(1.014)	8028	2.00000	1.81

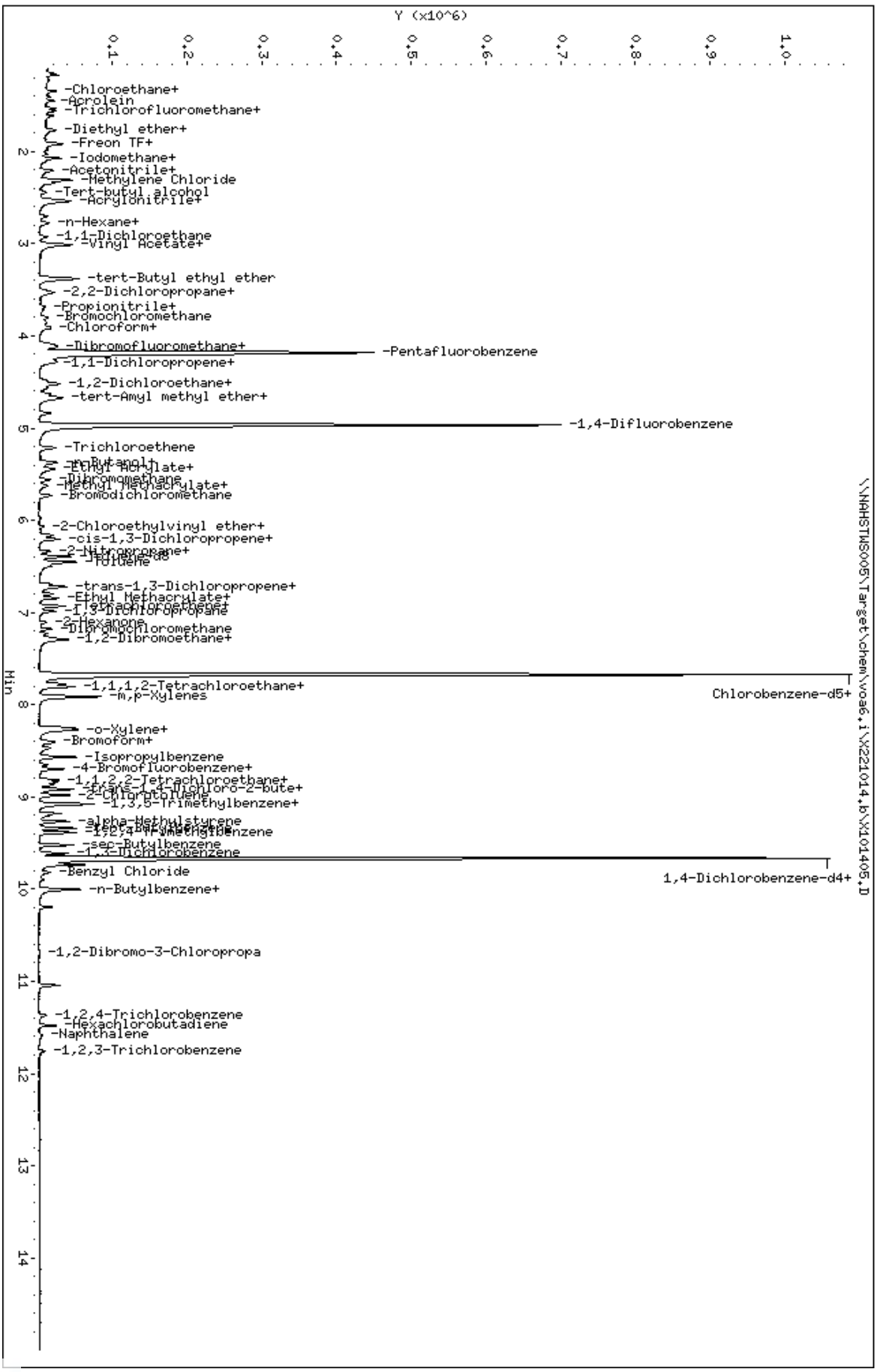
61 Ethylbenzene	106	7.806	7.806 (1.018)	11012	2.00000	1.76
62 m,p-Xylenes	106	7.907	7.907 (1.031)	26293	4.00000	3.48

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D Page 3
Report Date: 27-Oct-2022 15:16

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	63 o-Xylene	106	8.252	8.252	(1.076)	13469	2.00000	1.83
	64 Styrene	104	8.271	8.271	(1.078)	18202	2.00000	1.54
	66 Bromoform	173	8.417	8.417	(1.097)	4836	2.00000	2.77(T)
	67 Isopropylbenzene	105	8.567	8.567	(1.117)	31253	2.00000	1.74
	68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	8718	2.00000	1.94
$	69 4-Bromofluorobenzene	95	8.698	8.698	(1.134)	10456	2.00000	1.67
*	70 1,4-Dichlorobenzene-d4	152	9.666	9.666	(1.000)	287431	50.0000	
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	6086	2.00000	2.01(M)
	73 n-Propylbenzene	91	8.920	8.920	(0.923)	32397	2.00000	1.42
	74 Bromobenzene	156	8.815	8.815	(0.912)	9659	2.00000	1.80
	75 1,3,5-Trimethylbenzene	105	9.073	9.073	(0.939)	26012	2.00000	1.78
	76 2-Chlorotoluene	91	8.980	8.980	(0.929)	24479	2.00000	1.88
	77 4-Chlorotoluene	91	9.081	9.081	(0.940)	24845	2.00000	1.73
	78 tert-Butylbenzene	119	9.336	9.336	(0.966)	22314	2.00000	1.76
	79 1,2,4-Trimethylbenzene	105	9.384	9.384	(0.971)	25776	2.00000	1.71
	81 sec-Butylbenzene	105	9.523	9.523	(0.985)	28749	2.00000	1.67
	82 p-Isopropyltoluene	119	9.651	9.651	(0.998)	24904	2.00000	1.64
	83 1,3-Dichlorobenzene	146	9.613	9.613	(0.995)	15837	2.00000	1.75
	84 1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	16062	2.00000	1.70
	86 Benzyl Chloride	91	9.823	9.823	(1.280)	9413	2.00000	1.27
	87 n-Butylbenzene	91	10.007	10.007	(1.035)	18216	2.00000	1.53
	88 1,2-Dichlorobenzene	146	10.003	10.003	(1.035)	15019	2.00000	1.72
	89 1,2-Dibromo-3-Chloropropane	155	10.685	10.685	(1.105)	903	2.00000	3.85(M)
	90 1,2,4-Trichlorobenzene	180	11.367	11.367	(1.176)	3514	2.00000	2.76
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	4115	2.00000	1.11
	92 Naphthalene	128	11.585	11.585	(1.199)	8605	2.00000	1.75(M)
	93 1,2,3-Trichlorobenzene	180	11.757	11.757	(1.216)	4070	2.00000	1.70(M)
M	94 1,2-Dichloroethylene (total)	96				15186	4.00000	
M	95 Xylenes (total)	106				39762	6.00000	
	141 Cyclohexane	56	4.121	4.121	(0.986)	8723	2.00000	1.79(H)
	138 Freon TF	101	1.921	1.921	(0.459)	4918	2.00000	1.88
	147 Methylcyclohexane	55	5.373	5.373	(1.081)	16071	2.00000	1.90(M)
	146 Methyl Acetate	43	2.251	2.251	(0.538)	3315	2.00000	1.79
	148 Tert-Butyl alcohol	59	2.442	2.442	(0.584)	12326	40.0000	49.75(a)
	149 Isopropyl Alcohol	45	2.108	2.108	(0.504)	5094	40.0000	45.33

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



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Sample Info: VSTD002;VSTD002;1;4;
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Column phase: DB624

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

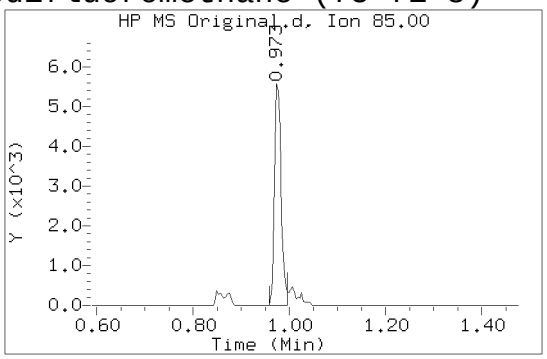
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InstruID : voa6.i
LabSampID : VSTD002

Dichlorodifluoromethane (75-71-8)

Reason Code:

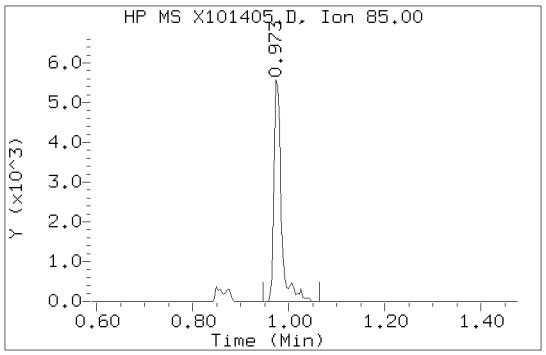
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pham



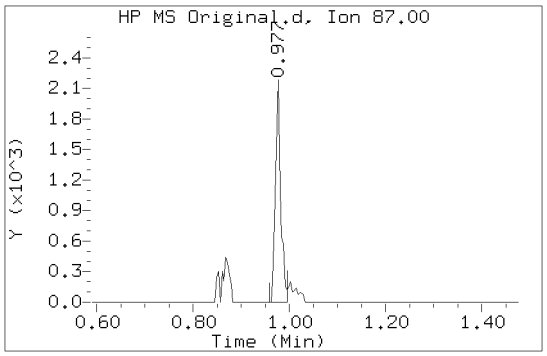
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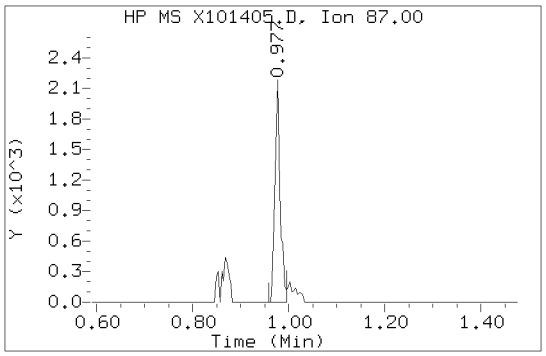
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AFTER

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27-Oct-2022
15:16

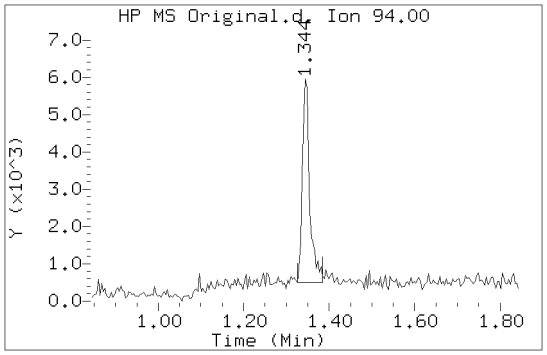


Bromomethane (74-83-9)

Reason Code:

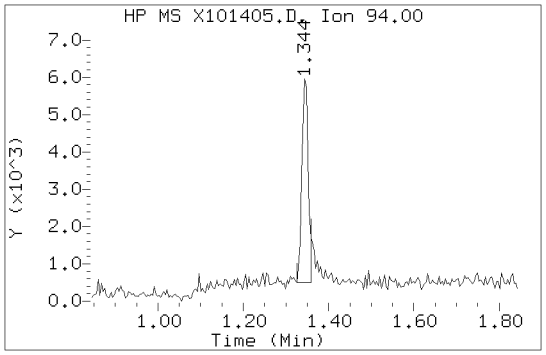
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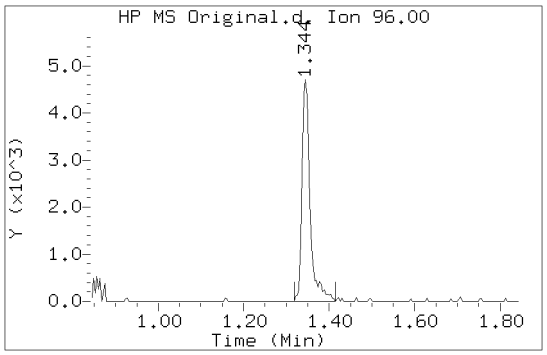
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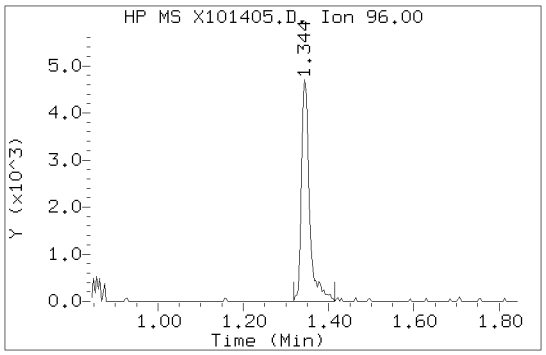
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AFTER

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27-Oct-2022
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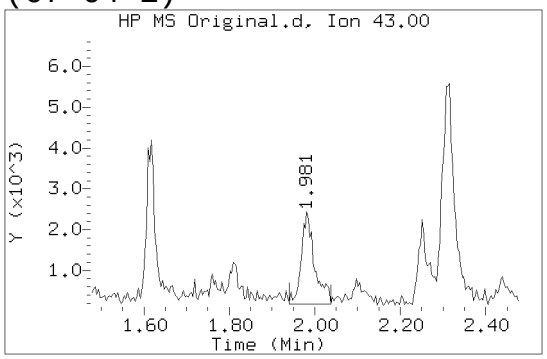
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InstruID : voa6.i
LabSampID : VSTD002

Acetone (67-64-1)

Reason Code:

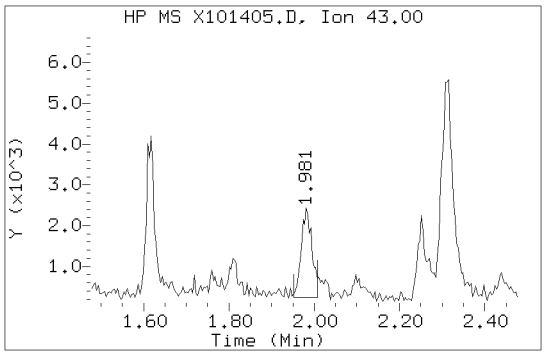
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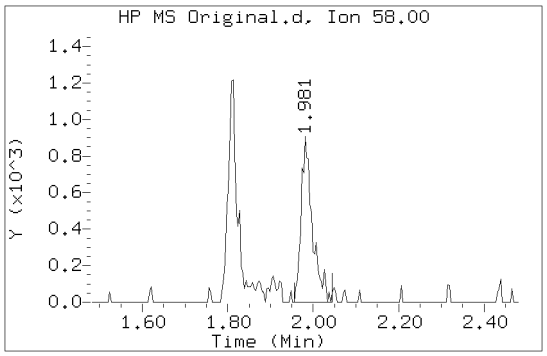
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27-Oct-2022
15:16



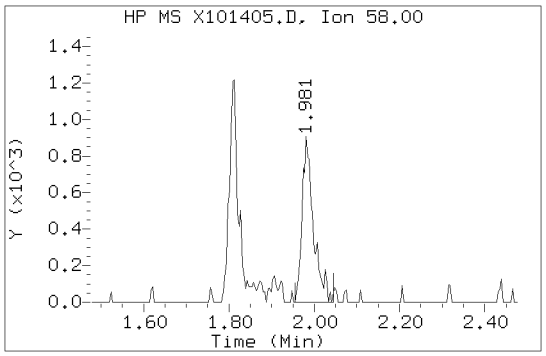
BEFORE

MASS
58
AREA
1700
HEIGHT
907
19-Oct-2022
16:03
linh
pham



AFTER

MASS
58
AREA
1700
HEIGHT
907
27-Oct-2022
15:16

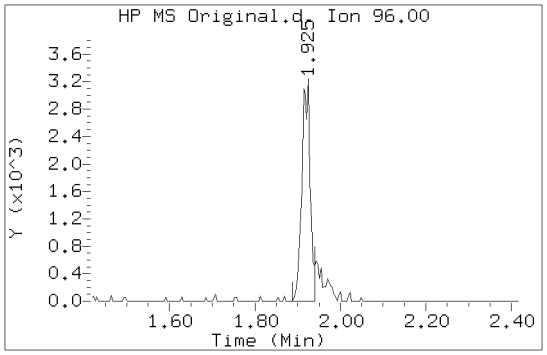


1,1-Dichloroethene (75-35-4)

Reason Code:

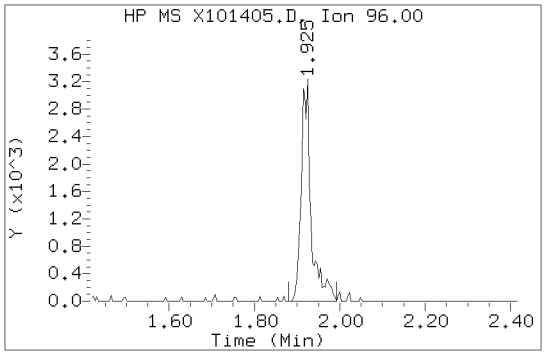
BEFORE

MASS
96
AREA
4517
HEIGHT
3240
19-Oct-2022
16:03
linh
pham



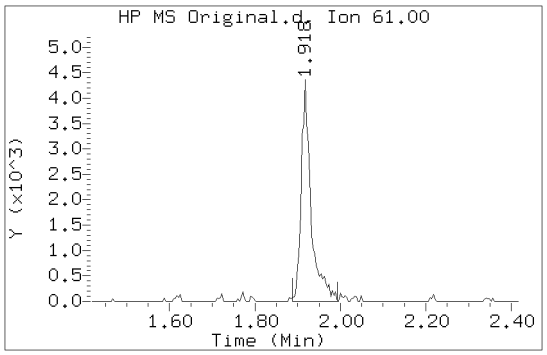
AFTER

MASS
96
AREA
5362
HEIGHT
3240
27-Oct-2022
15:16



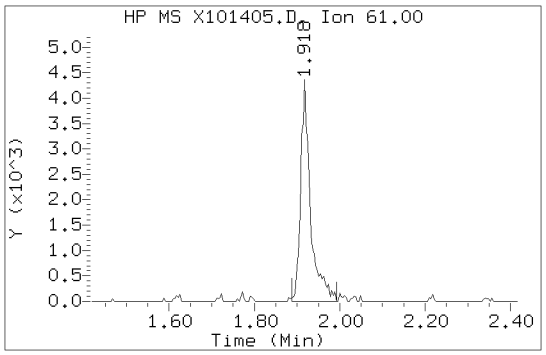
BEFORE

MASS
61
AREA
7183
HEIGHT
4362
19-Oct-2022
16:03
linh
pham



AFTER

MASS
61
AREA
7183
HEIGHT
4362
27-Oct-2022
15:16



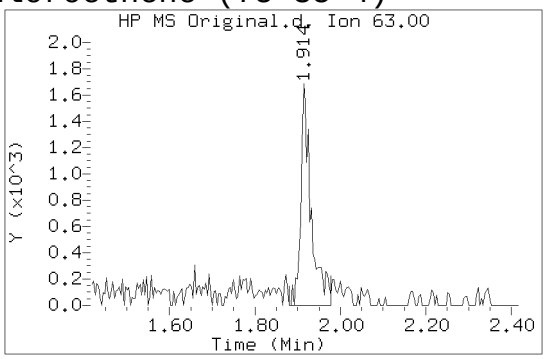
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Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

1,1-Dichloroethene (75-35-4)

Reason Code:

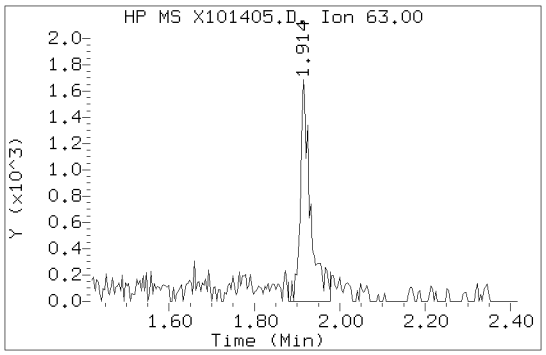
BEFORE

MASS
63
AREA
2864
HEIGHT
1686
19-Oct-2022
16:03
linh
pham



AFTER

MASS
63
AREA
2864
HEIGHT
1686
27-Oct-2022
15:16

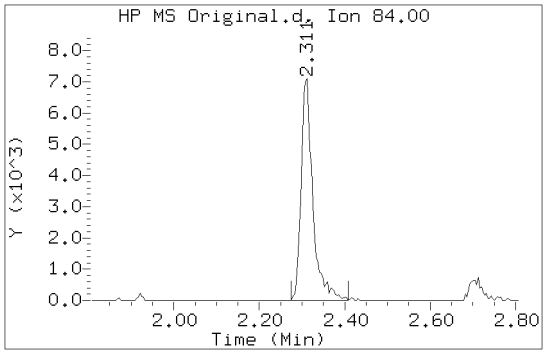


Methylene Chloride (75-09-2)

Reason Code:

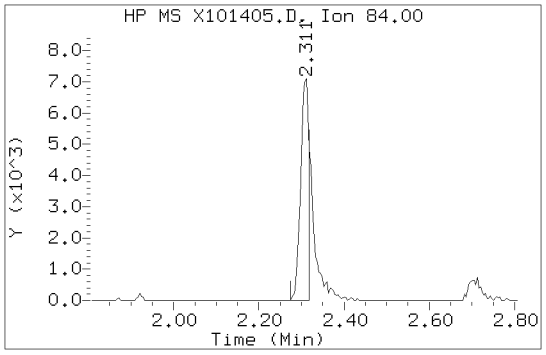
BEFORE

MASS
84
AREA
13791
HEIGHT
7100
19-Oct-2022
16:03
linh
pham



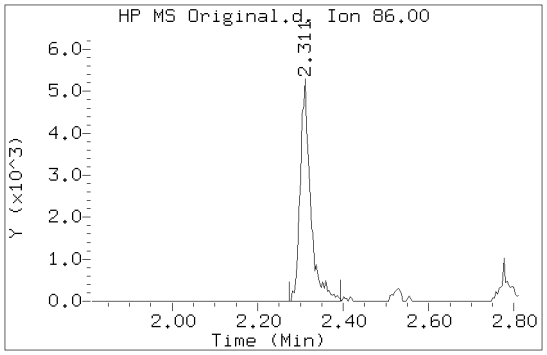
AFTER

MASS
84
AREA
9699
HEIGHT
7100
27-Oct-2022
15:16



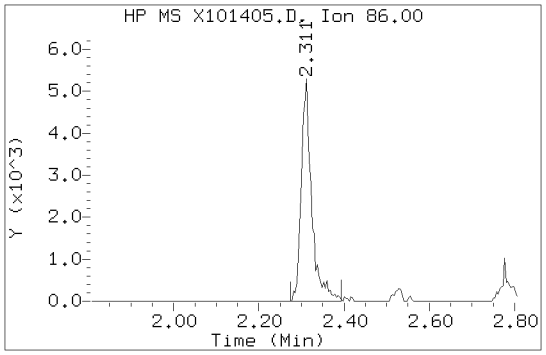
BEFORE

MASS
86
AREA
9120
HEIGHT
5295
19-Oct-2022
16:03
linh
pham



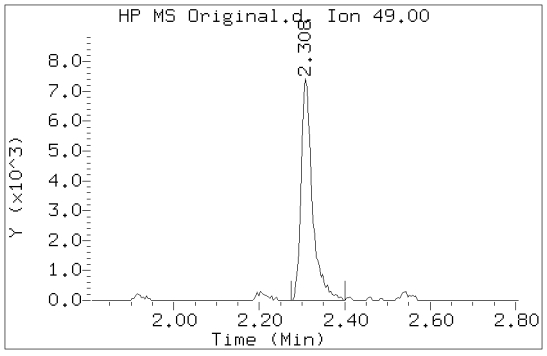
AFTER

MASS
86
AREA
9120
HEIGHT
5295
27-Oct-2022
15:16



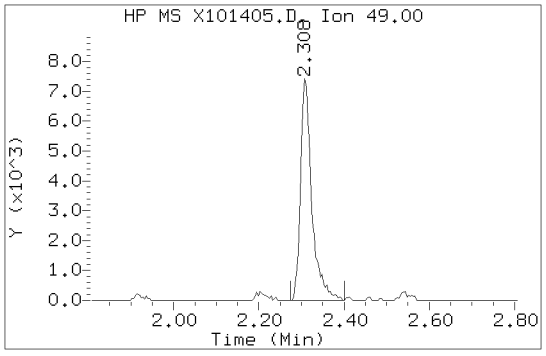
BEFORE

MASS
49
AREA
13933
HEIGHT
7423
19-Oct-2022
16:03
linh
pham



AFTER

MASS
49
AREA
13933
HEIGHT
7423
27-Oct-2022
15:16



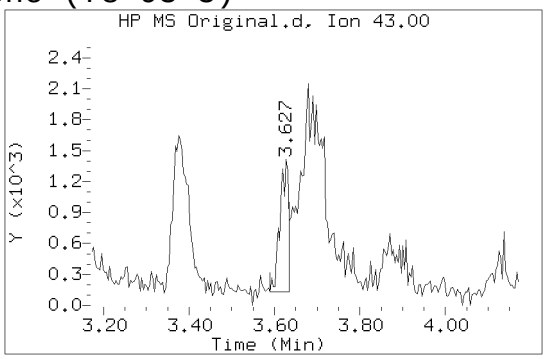
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Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

2-Butanone (78-93-3)

Reason Code:

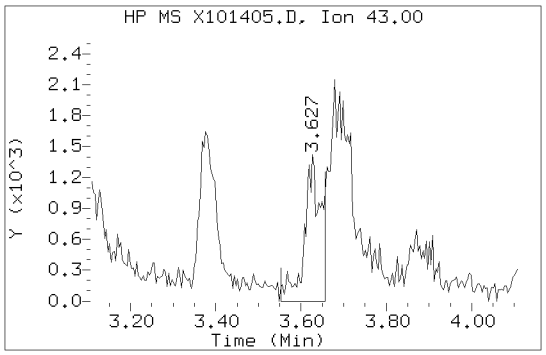
BEFORE

MASS
43
AREA
1790
HEIGHT
1286
19-Oct-2022
16:03
linh
pham



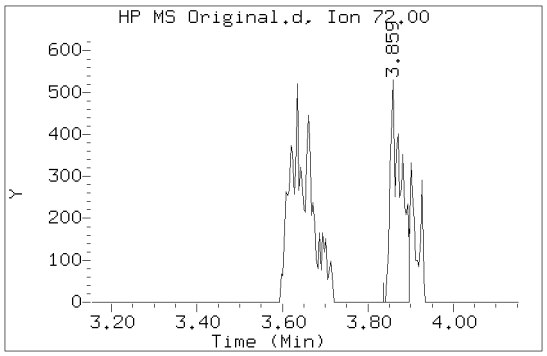
AFTER

MASS
43
AREA
3823
HEIGHT
1422
27-Oct-2022
15:16



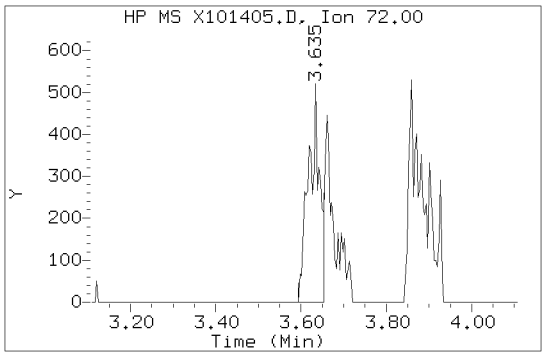
BEFORE

MASS
72
AREA
933
HEIGHT
530
19-Oct-2022
16:03
linh
pham



AFTER

MASS
72
AREA
950
HEIGHT
521
27-Oct-2022
15:16

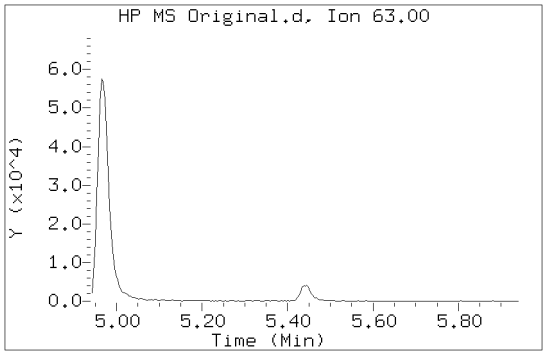


1,2-Dichloropropane (78-87-5)

Reason Code:

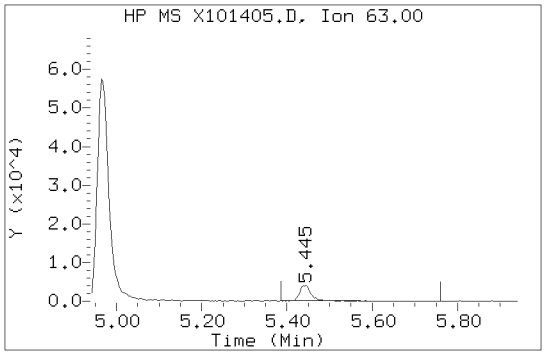
BEFORE

MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



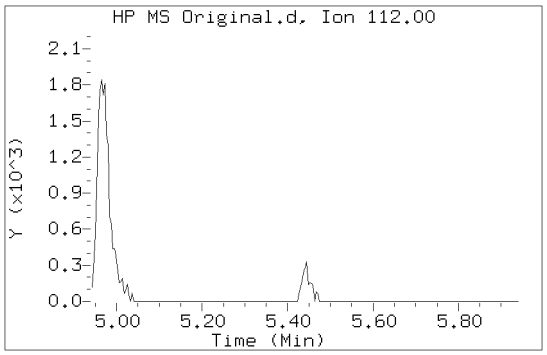
AFTER

MASS
63
AREA
7383
HEIGHT
4067
27-Oct-2022
15:16



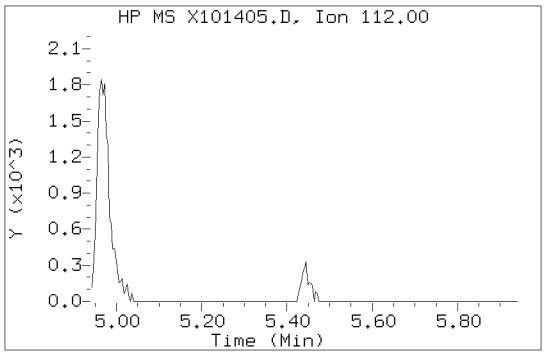
BEFORE

MASS
112
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
112
AREA
0
HEIGHT
0
27-Oct-2022
15:16

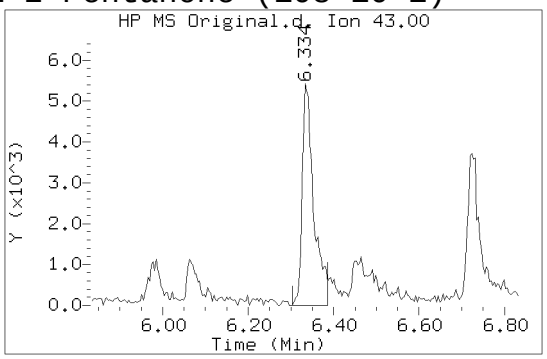


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Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

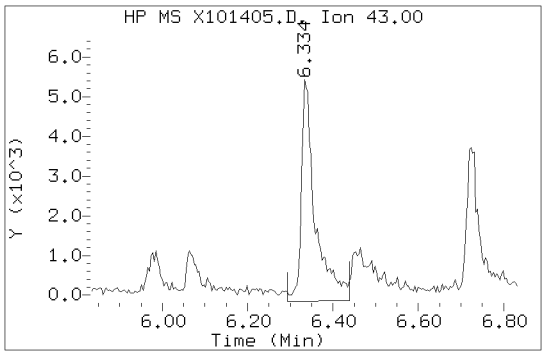
4-Methyl-2-Pentanone (108-10-1)

Reason Code:

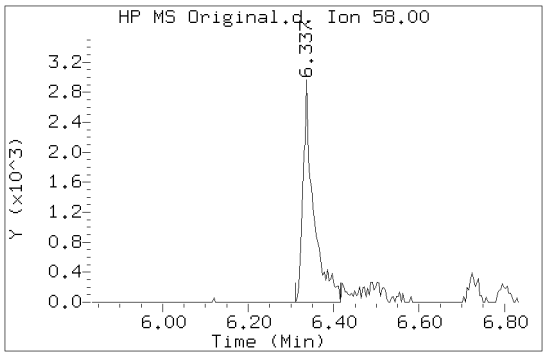
BEFORE
MASS
43
AREA
10406
HEIGHT
5428
19-Oct-2022
16:03
linh
pham



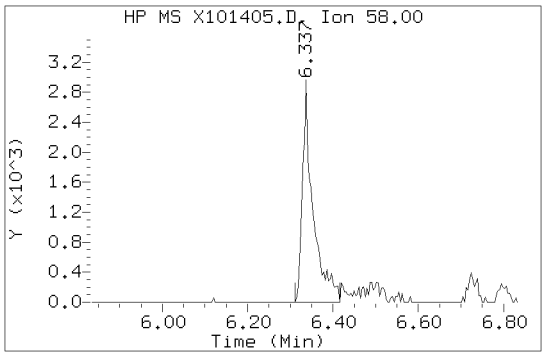
AFTER
MASS
43
AREA
12989
HEIGHT
5575
27-Oct-2022
15:16



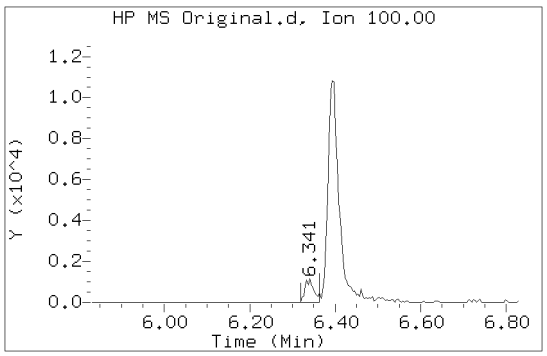
BEFORE
MASS
58
AREA
5171
HEIGHT
2965
19-Oct-2022
16:03
linh
pham



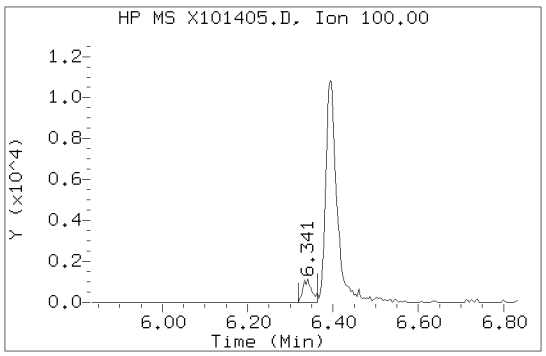
AFTER
MASS
58
AREA
5171
HEIGHT
2965
27-Oct-2022
15:16



BEFORE
MASS
100
AREA
1712
HEIGHT
1169
19-Oct-2022
16:03
linh
pham



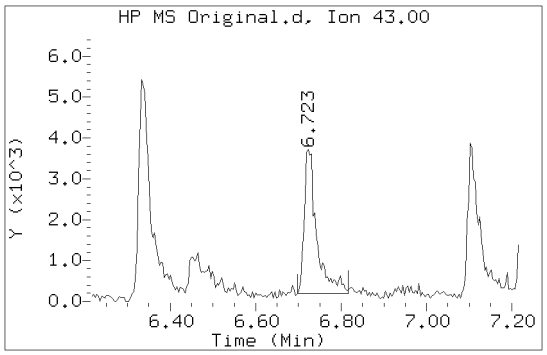
AFTER
MASS
100
AREA
1712
HEIGHT
1169
27-Oct-2022
15:16



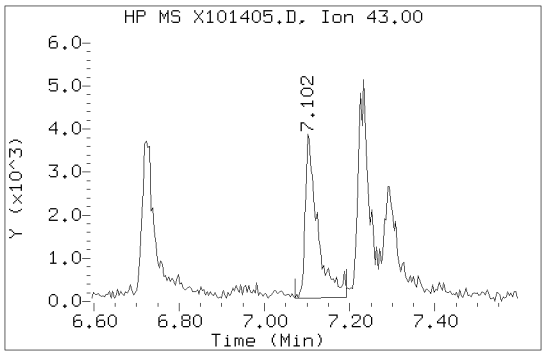
2-Hexanone (591-78-6)

Reason Code:

BEFORE
MASS
43
AREA
7294
HEIGHT
3529
19-Oct-2022
16:03
linh
pham



AFTER
MASS
43
AREA
7717
HEIGHT
3808
27-Oct-2022
15:16



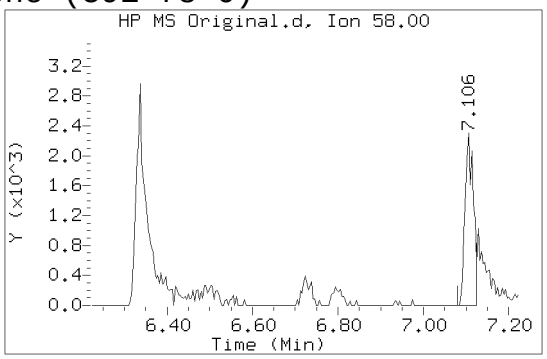
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Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

2-Hexanone (591-78-6)

Reason Code:

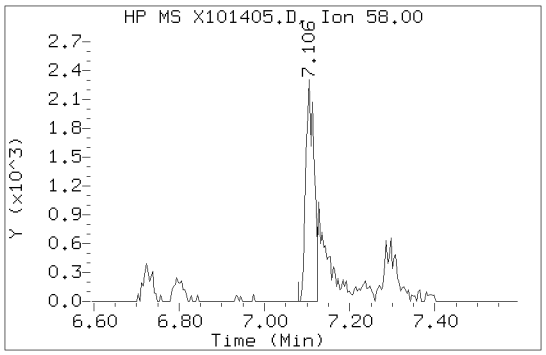
BEFORE

MASS
58
AREA
3131
HEIGHT
2303
19-Oct-2022
16:03
linh
pham



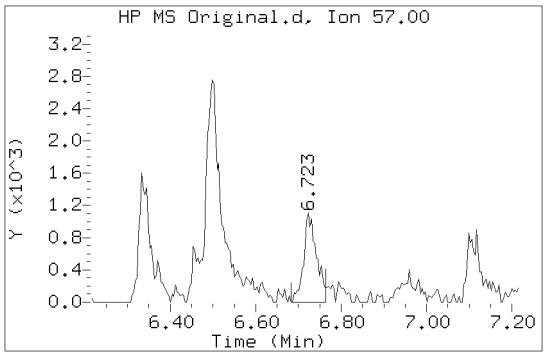
AFTER

MASS
58
AREA
3131
HEIGHT
2303
27-Oct-2022
15:16



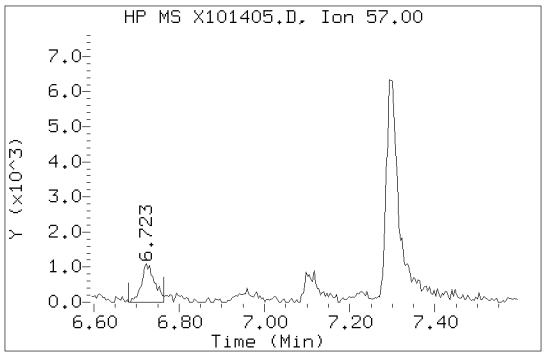
BEFORE

MASS
57
AREA
2363
HEIGHT
1107
19-Oct-2022
16:03
linh
pham



AFTER

MASS
57
AREA
2363
HEIGHT
1107
27-Oct-2022
15:16

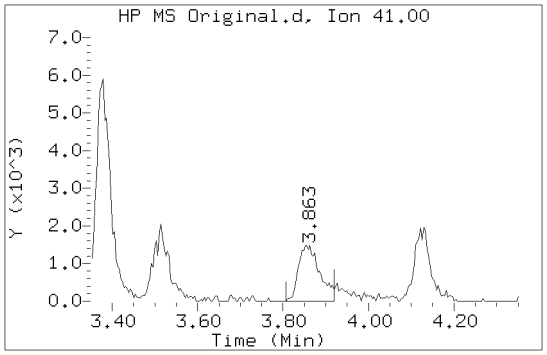


Methacrylonitrile (126-98-7)

Reason Code:

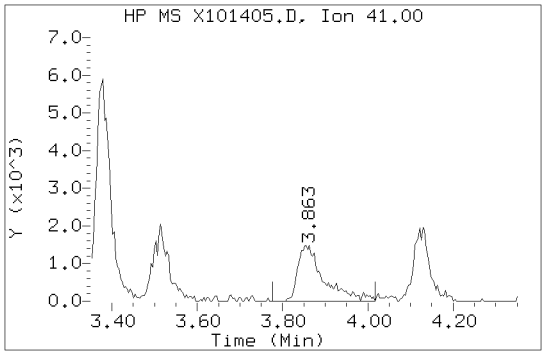
BEFORE

MASS
41
AREA
5182
HEIGHT
1492
19-Oct-2022
16:03
linh
pham



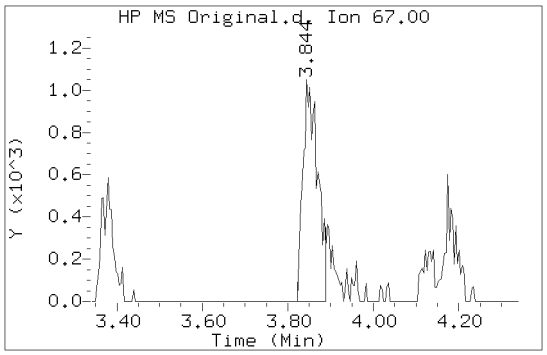
AFTER

MASS
41
AREA
6328
HEIGHT
1492
27-Oct-2022
15:16



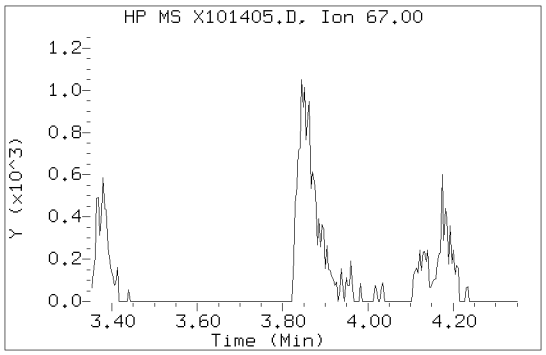
BEFORE

MASS
67
AREA
2556
HEIGHT
1050
19-Oct-2022
16:03
linh
pham



AFTER

MASS
67
AREA
1045
HEIGHT
586
27-Oct-2022
15:16

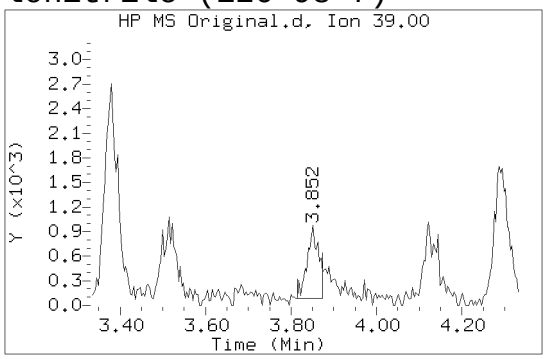


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Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

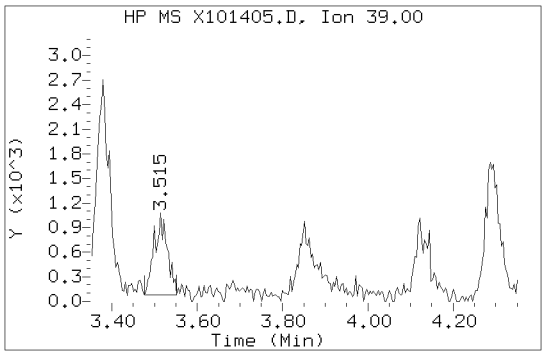
Methacrylonitrile (126-98-7)

Reason Code:

BEFORE
MASS
39
AREA
1641
HEIGHT
890
19-Oct-2022
16:03
linh
pham



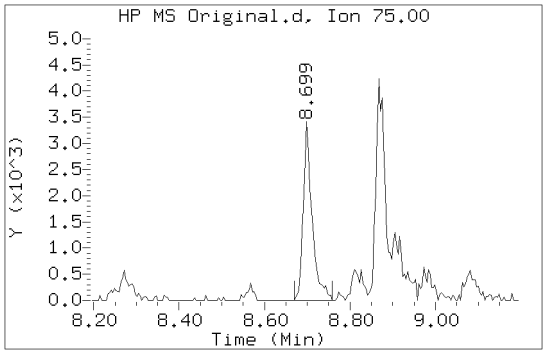
AFTER
MASS
39
AREA
2104
HEIGHT
1004
27-Oct-2022
15:16



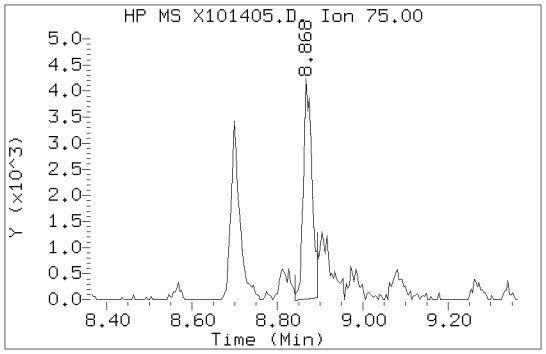
1,2,3-Trichloropropane (96-18-4)

Reason Code:

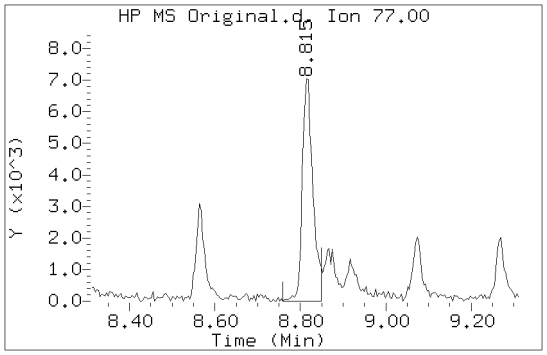
BEFORE
MASS
75
AREA
4974
HEIGHT
3423
19-Oct-2022
16:03
linh
pham



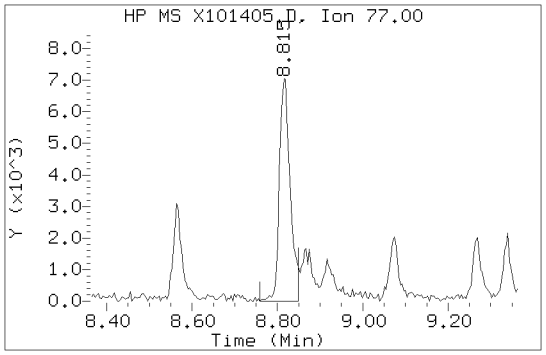
AFTER
MASS
75
AREA
6086
HEIGHT
4222
27-Oct-2022
15:16



BEFORE
MASS
77
AREA
12462
HEIGHT
7040
19-Oct-2022
16:03
linh
pham



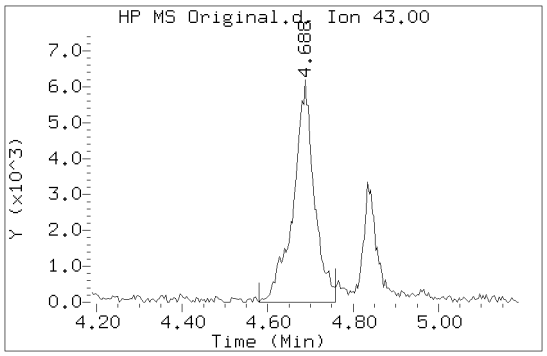
AFTER
MASS
77
AREA
12462
HEIGHT
7040
27-Oct-2022
15:16



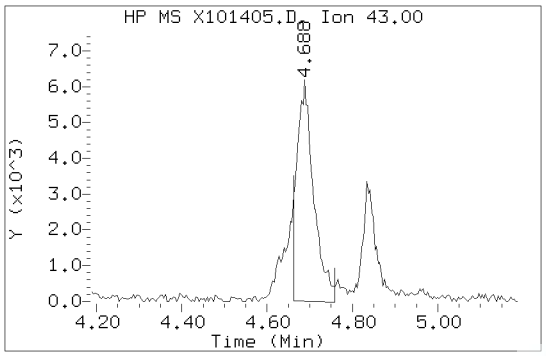
Isobutyl Alcohol (78-83-1)

Reason Code:

BEFORE
MASS
43
AREA
21369
HEIGHT
6191
19-Oct-2022
16:03
linh
pham



AFTER
MASS
43
AREA
17194
HEIGHT
6180
27-Oct-2022
15:16

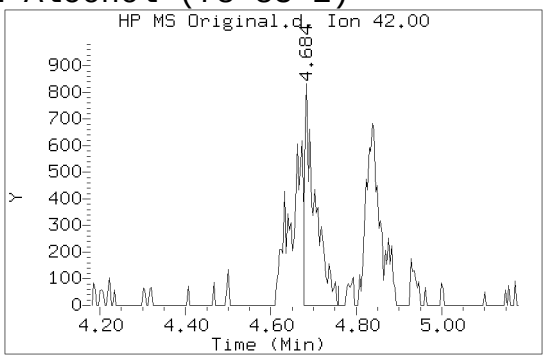


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D
Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

Isobutyl Alcohol (78-83-1)

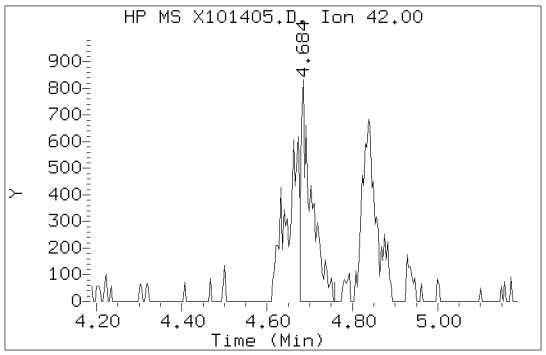
BEFORE

MASS
42
AREA
1451
HEIGHT
833
19-Oct-2022
16:03
linh
pham



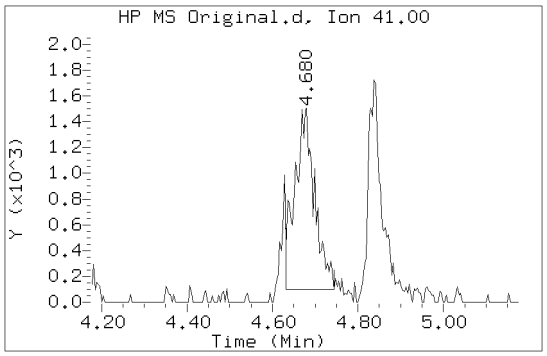
AFTER

MASS
42
AREA
1451
HEIGHT
833
27-Oct-2022
15:16



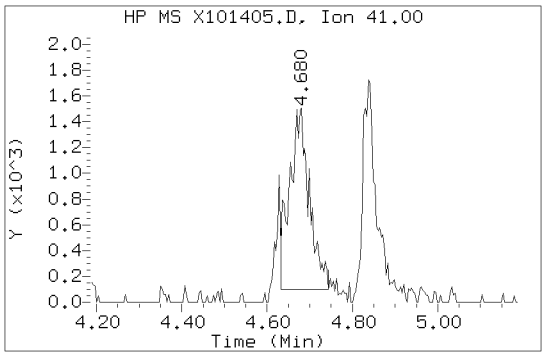
BEFORE

MASS
41
AREA
4583
HEIGHT
1405
19-Oct-2022
16:03
linh
pham



AFTER

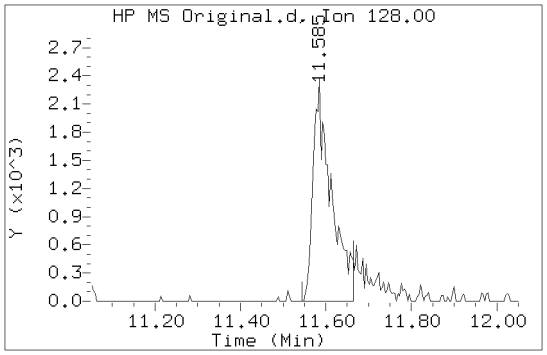
MASS
41
AREA
4583
HEIGHT
1405
27-Oct-2022
15:16



Naphthalene (91-20-3)

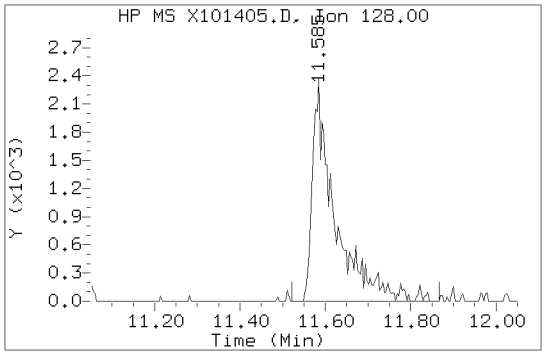
BEFORE

MASS
128
AREA
6990
HEIGHT
2367
19-Oct-2022
16:03
linh
pham



AFTER

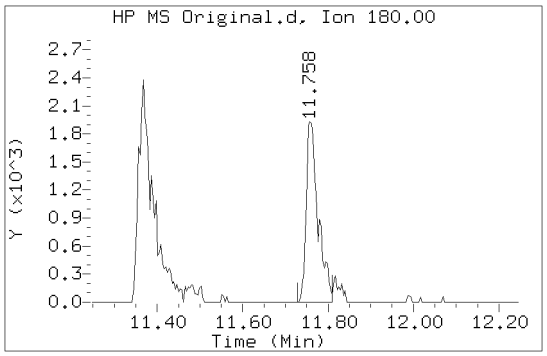
MASS
128
AREA
8605
HEIGHT
2367
27-Oct-2022
15:16



1,2,3-Trichlorobenzene (87-61-6)

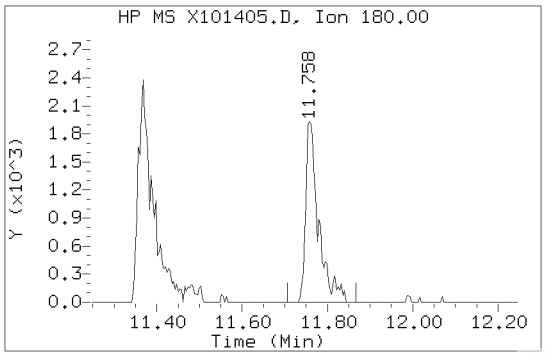
BEFORE

MASS
180
AREA
3769
HEIGHT
1932
19-Oct-2022
16:03
linh
pham



AFTER

MASS
180
AREA
4070
HEIGHT
1932
27-Oct-2022
15:16



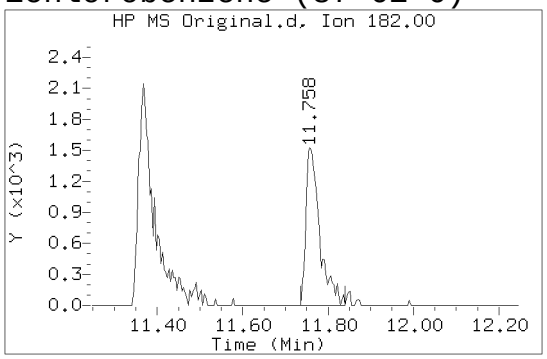
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Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

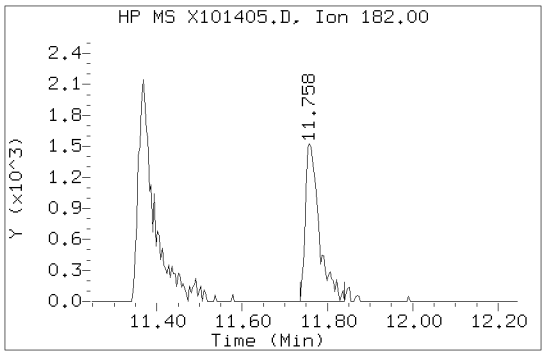
BEFORE

MASS
182
AREA
3459
HEIGHT
1528
19-Oct-2022
16:03
linh
pham



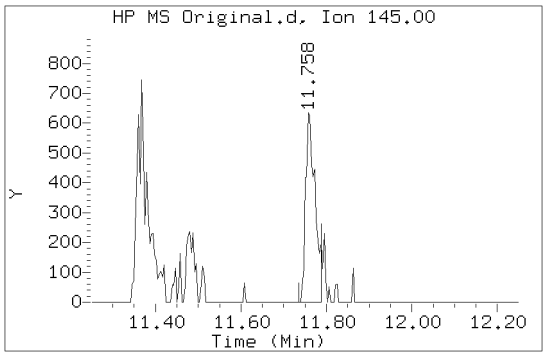
AFTER

MASS
182
AREA
3459
HEIGHT
1528
27-Oct-2022
15:16



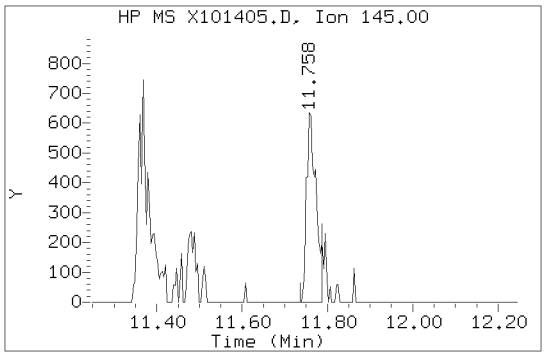
BEFORE

MASS
145
AREA
997
HEIGHT
636
19-Oct-2022
16:03
linh
pham



AFTER

MASS
145
AREA
997
HEIGHT
636
27-Oct-2022
15:16

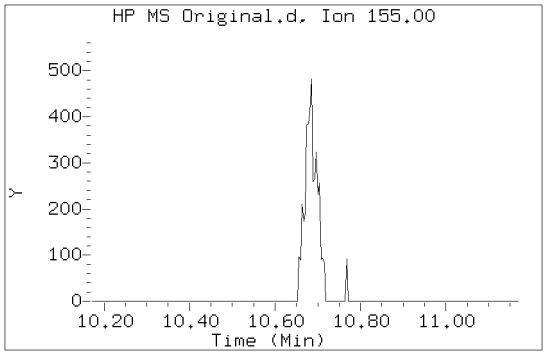


1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

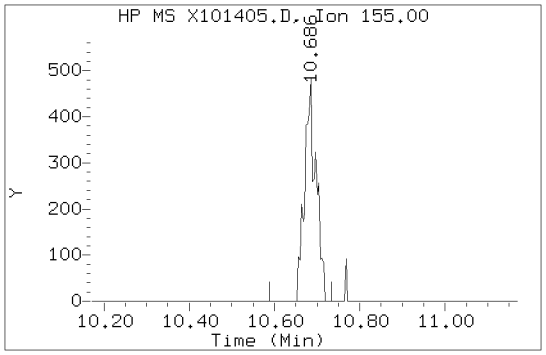
BEFORE

MASS
155
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



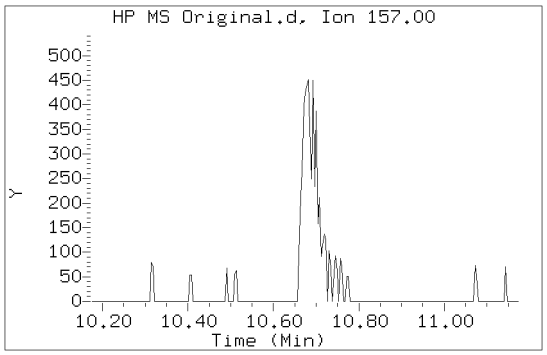
AFTER

MASS
155
AREA
903
HEIGHT
482
27-Oct-2022
15:16



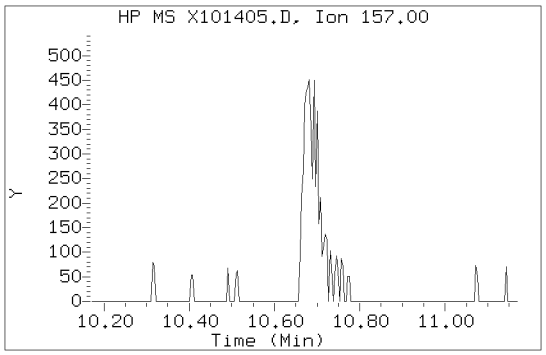
BEFORE

MASS
157
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
157
AREA
0
HEIGHT
0
27-Oct-2022
15:16



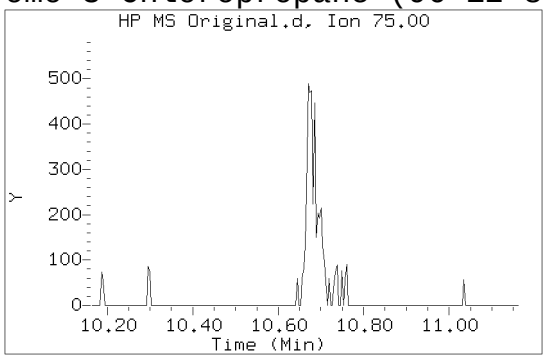
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Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

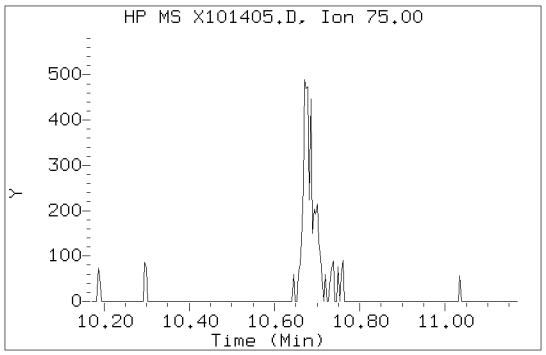
BEFORE

MASS
75
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
75
AREA
0
HEIGHT
0
27-Oct-2022
15:16

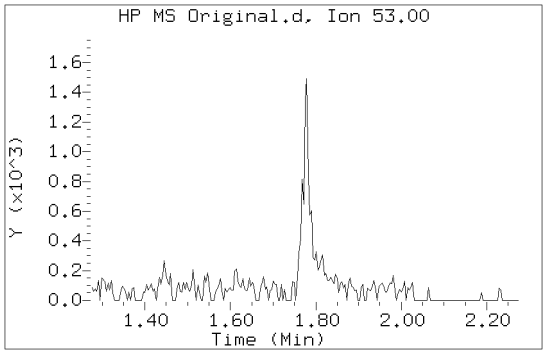


Chloroprene (126-99-8)

Reason Code:

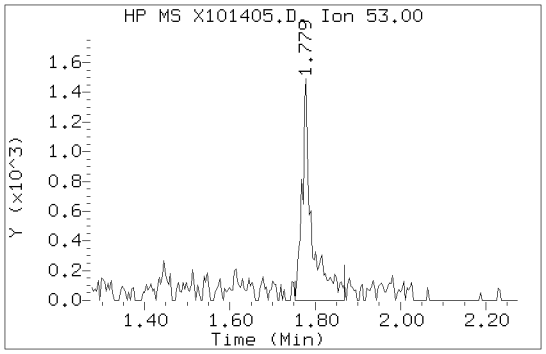
BEFORE

MASS
53
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



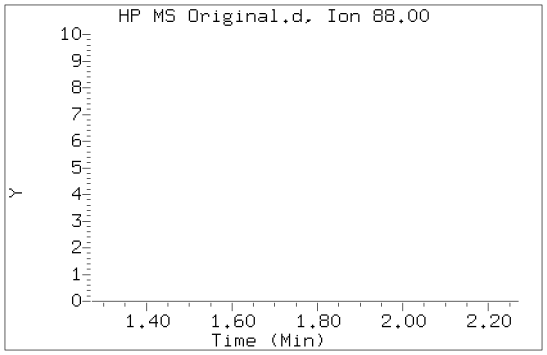
AFTER

MASS
53
AREA
2461
HEIGHT
1492
27-Oct-2022
15:16



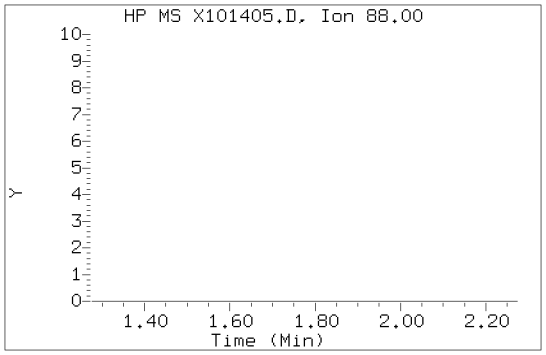
BEFORE

MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
88
AREA
0
HEIGHT
0
27-Oct-2022
15:16

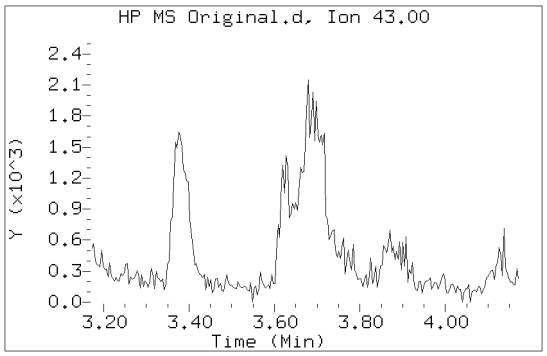


Ethyl Acetate (141-78-6)

Reason Code:

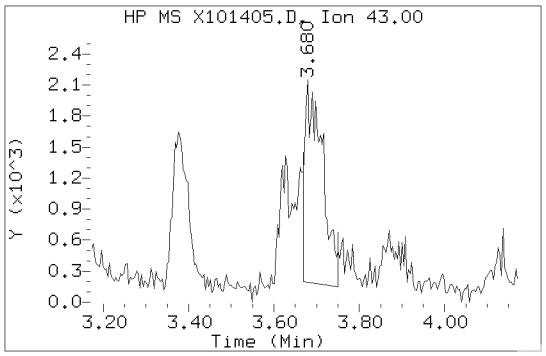
BEFORE

MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
43
AREA
5696
HEIGHT
1956
27-Oct-2022
15:16



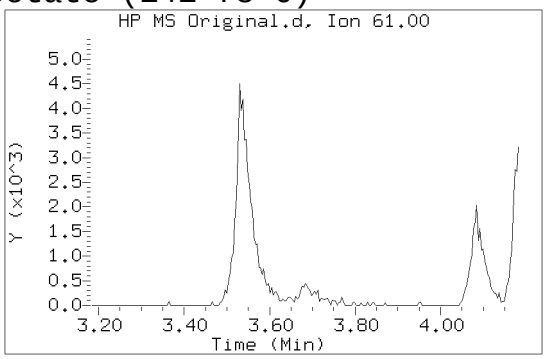
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Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

Ethyl Acetate (141-78-6)

Reason Code:

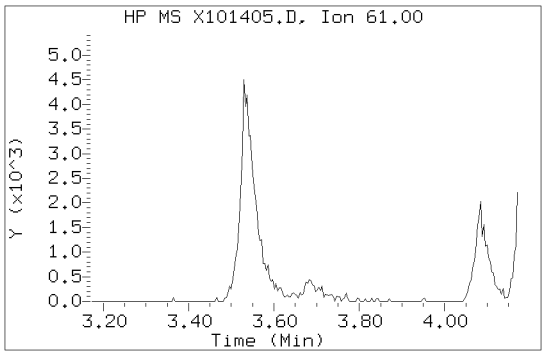
BEFORE

MASS
61
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



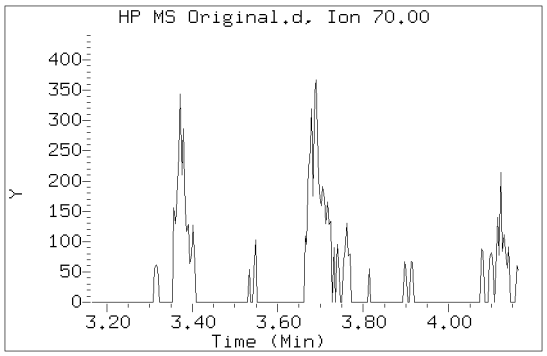
AFTER

MASS
61
AREA
0
HEIGHT
0
27-Oct-2022
15:16



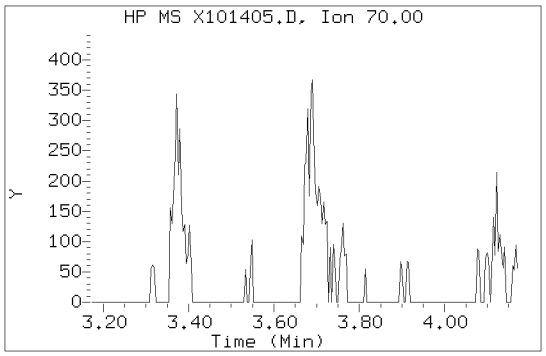
BEFORE

MASS
70
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
70
AREA
0
HEIGHT
0
27-Oct-2022
15:16

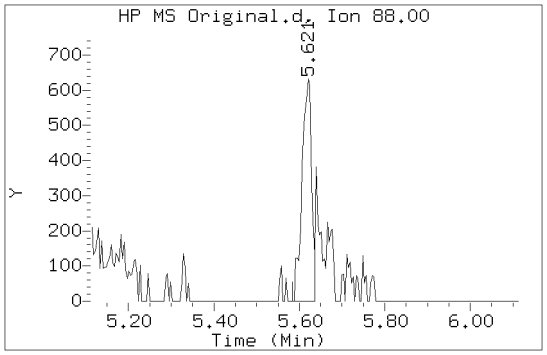


1,4-Dioxane ()

Reason Code:

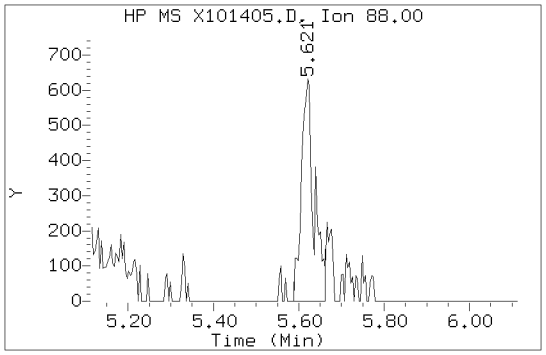
BEFORE

MASS
88
AREA
1013
HEIGHT
632
19-Oct-2022
16:03
linh
pham



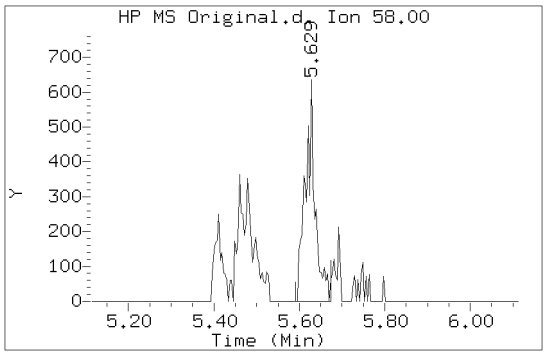
AFTER

MASS
88
AREA
1309
HEIGHT
632
27-Oct-2022
15:16



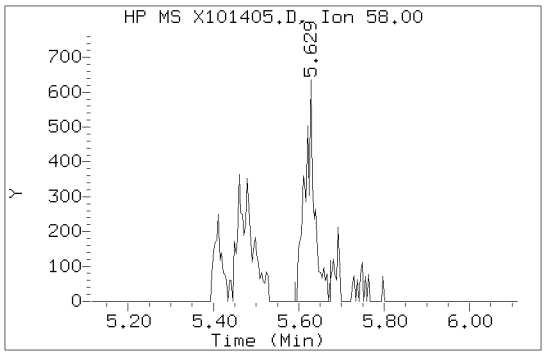
BEFORE

MASS
58
AREA
1002
HEIGHT
636
19-Oct-2022
16:03
linh
pham



AFTER

MASS
58
AREA
1002
HEIGHT
636
27-Oct-2022
15:16

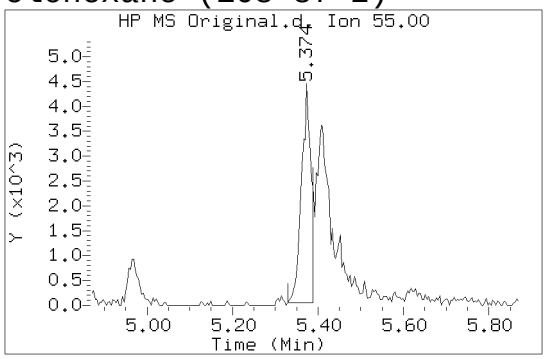


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Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

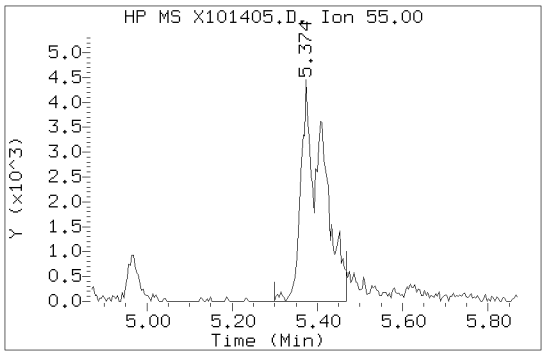
Methylcyclohexane (108-87-2)

Reason Code:

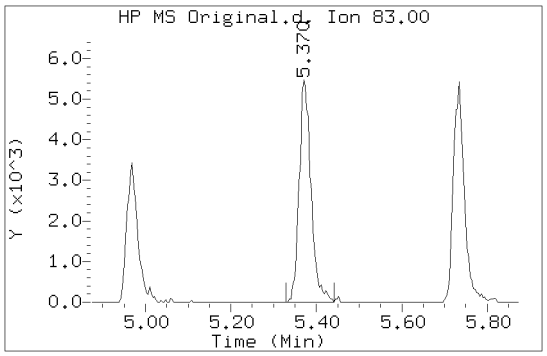
BEFORE
MASS
55
AREA
6929
HEIGHT
4407
19-Oct-2022
16:03
linh
pham



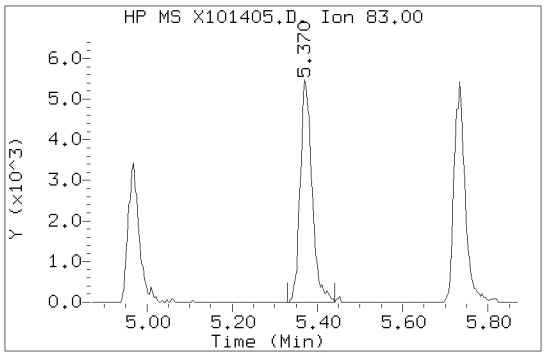
AFTER
MASS
55
AREA
16071
HEIGHT
4457
27-Oct-2022
15:16



BEFORE
MASS
83
AREA
10806
HEIGHT
5474
19-Oct-2022
16:03
linh
pham



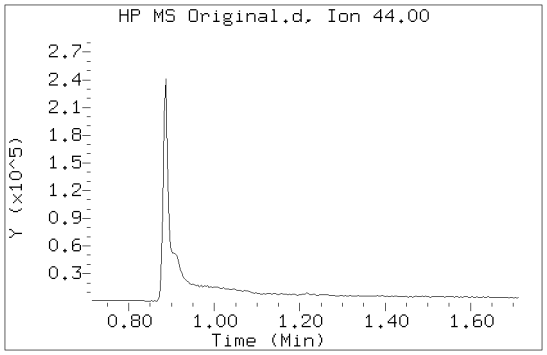
AFTER
MASS
83
AREA
10806
HEIGHT
5474
27-Oct-2022
15:16



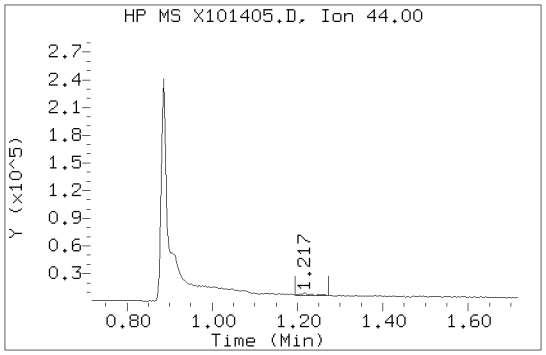
Acetaldehyde (75-07-0)

Reason Code:

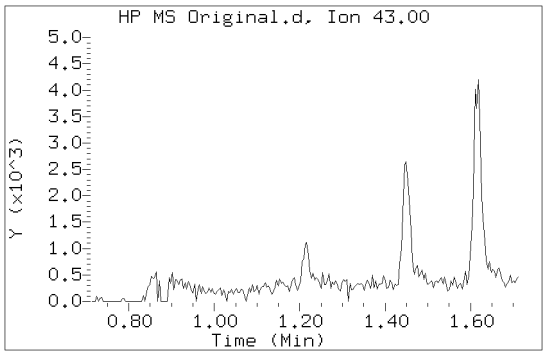
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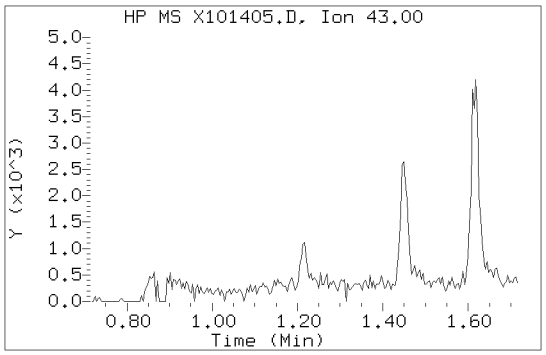
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AFTER
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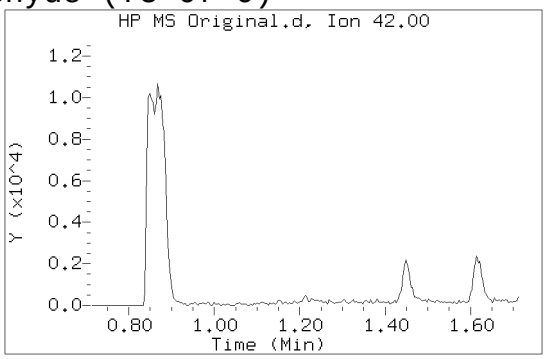
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LabSampID : VSTD002

Acetaldehyde (75-07-0)

Reason Code:

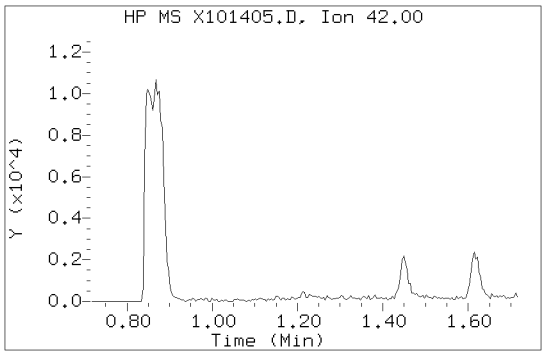
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AFTER

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27-Oct-2022
15:16



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101407.D Page 1
Report Date: 27-Oct-2022 15:16

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101407.D
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Inj Date : 14-OCT-2022 13:32
Operator : PC Inst ID: voa6.i
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Cal Date : 14-OCT-2022 15:59 Cal File: X101414.D
Als bottle: 8 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.181	4.181	(1.000)	411669	50.0000	
135 1,4-Dioxane	88	5.598	5.598	(1.339)	13119	400.000	24.86(M)
140 1,3-Butadiene	54	1.167	1.167	(0.279)	46305	20.0000	1.03
25 Methacrylonitrile	41	3.829	3.829	(0.916)	50399	20.0000	0.99(M)
12 Isobutyl Alcohol	43	4.680	4.680	(1.119)	177006	400.000	
13 Acetonitrile	39	2.202	2.202	(0.527)	70236	200.000	8.88
14 Allyl Chloride	41	2.202	2.202	(0.527)	145377	20.0000	0.91
4 Propionitrile	54	3.656	3.656	(0.875)	76808	200.000	9.17
136 n-Hexane	57	2.772	2.772	(0.663)	75577	20.0000	0.89
72 trans-1,4-Dichloro-2-butene	53	8.890	8.890	(1.159)	16478	20.0000	42.21
194 Acetaldehyde	44	1.212	1.212	(0.290)	17646	80.0000	85.48(M)
23 Chloroprene	53	1.775	1.775	(0.424)	19609	20.0000	18.49(M)
145 alpha-Methylstyrene	118	9.261	9.261	(0.958)	134711	20.0000	13.98
200 Dimethyl Disulfide	94	6.198	6.198	(0.808)	164849	20.0000	2.07
139 Diethyl ether	59	1.760	1.760	(0.421)	40827	20.0000	0.84
130 Ethyl Acetate	43	3.660	3.660	(0.875)	66369	20.0000	
40 Methyl Methacrylate	41	5.609	5.609	(1.342)	51446	20.0000	0.94
49 Ethyl Methacrylate	69	6.787	6.787	(1.367)	98146	20.0000	0.98
132 n-Butanol	56	5.265	5.265	(1.259)	20683	400.000	23.69
142 Tetrahydrofuran	42	3.848	3.848	(0.920)	17620	40.0000	1.44

150	Allyl alcohol	57	2.772	2.772 (0.663)	75577	400.000	17.92
166	1,2,3-Trimethylbenzene	105	9.729	9.729 (1.007)	268638	20.0000	5.36

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101407.D Page 2
Report Date: 27-Oct-2022 15:16

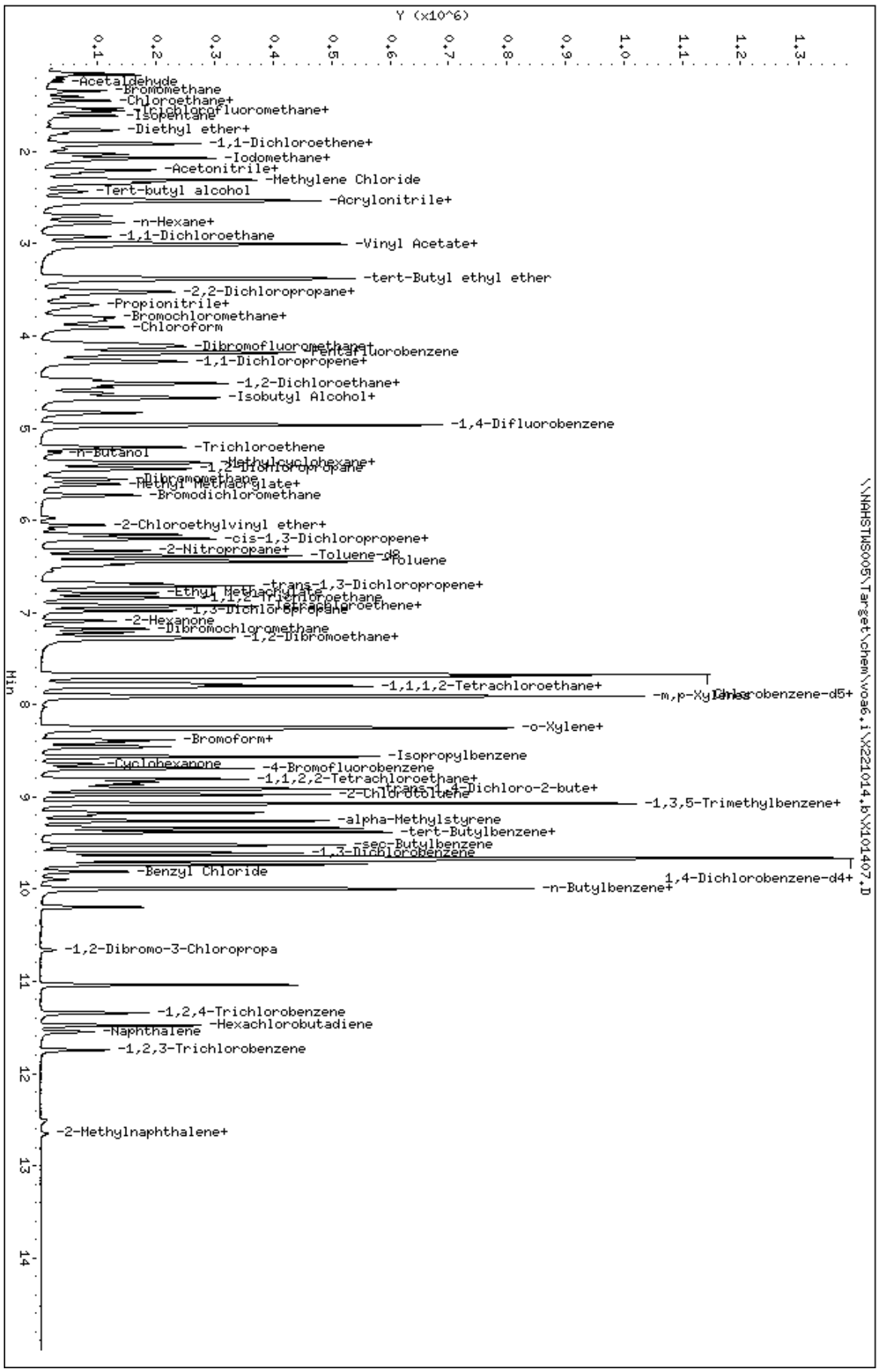
		QUANT SIG					AMOUNTS	
	Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
	131 Methyl Acrylate	55	3.698	3.698	(0.884)	66109	20.0000	
	162 Butyl acrylate	55	8.252	8.252	(1.076)	115158	20.0000	1.76
	2 Dichlorodifluoromethane	85	0.976	0.976	(0.234)	64041	20.0000	
	3 Chloromethane	50	1.081	1.081	(0.259)	75278	20.0000	
	5 Vinyl Chloride	62	1.145	1.145	(0.274)	62546	20.0000	0.84
	6 Bromomethane	94	1.343	1.343	(0.321)	48128	20.0000	
	7 Chloroethane	64	1.407	1.407	(0.337)	39987	20.0000	0.89
	8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	87931	20.0000	0.91
	9 Acrolein	56	1.445	1.445	(0.346)	9200	40.0000	1.57
	10 Acetone	43	1.977	1.977	(0.473)	34498	40.0000	(M)
	11 1,1-Dichloroethene	96	1.917	1.917	(0.459)	54431	20.0000	0.91
	15 Iodomethane	142	2.029	2.029	(0.485)	155126	40.0000	38.34
	16 Acrylonitrile	53	2.543	2.543	(0.608)	36550	40.0000	117.10
	17 Methylene Chloride	84	2.307	2.307	(0.552)	87632	20.0000	
	18 Methyl tert-butyl ether	73	2.536	2.536	(0.606)	200787	20.0000	0.90
	19 Carbon Disulfide	76	2.071	2.071	(0.495)	376330	40.0000	1.77
	20 trans-1,2-Dichloroethene	96	2.532	2.532	(0.606)	75261	20.0000	0.89
	21 Vinyl Acetate	43	3.004	3.004	(0.719)	350834	40.0000	1.83
	22 1,1-Dichloroethane	63	2.925	2.925	(0.700)	127349	20.0000	0.86
	24 2-Butanone	43	3.585	3.585	(0.857)	37133	40.0000	1.97(H)
	26 2,2-Dichloropropane	77	3.510	3.510	(0.840)	105263	20.0000	0.93
	27 cis-1,2-Dichloroethene	96	3.529	3.529	(0.844)	88117	20.0000	0.90
	28 Chloroform	83	3.908	3.908	(0.935)	135891	20.0000	0.87
	29 Bromochloromethane	128	3.799	3.799	(0.909)	46927	20.0000	0.83
$	30 Dibromofluoromethane	113	4.102	4.102	(0.981)	77480	20.0000	
	31 1,1,1-Trichloroethane	97	4.087	4.087	(0.978)	107858	20.0000	0.89
	32 1,1-Dichloropropene	75	4.282	4.282	(0.863)	99117	20.0000	1.01
	33 1,2-Dichloroethane	62	4.556	4.556	(0.918)	96085	20.0000	0.99
	34 Carbon Tetrachloride	117	4.264	4.264	(0.859)	93662	20.0000	1.00
$	35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	76679	20.0000	
*	36 1,4-Difluorobenzene	114	4.965	4.965	(1.000)	621533	50.0000	
	37 Benzene	78	4.511	4.511	(0.909)	312679	20.0000	0.99
	38 Trichloroethene	130	5.208	5.208	(1.049)	92088	20.0000	0.97
	39 Bromodichloromethane	83	5.729	5.729	(1.154)	99941	20.0000	0.98
	41 2-Chloroethylvinyl ether	63	6.052	6.052	(1.219)	46277	40.0000	111.65
	42 1,2-Dichloropropane	63	5.437	5.437	(1.095)	79357	20.0000	0.96
	44 Dibromomethane	93	5.553	5.553	(1.119)	48664	20.0000	0.96
	45 4-Methyl-2-Pentanone	43	6.325	6.325	(0.825)	107201	40.0000	96.52
	46 cis-1,3-Dichloropropene	75	6.157	6.157	(1.240)	130360	20.0000	1.00
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	568135	50.0000	
$	48 Toluene-d8	98	6.389	6.389	(0.833)	284885	20.0000	1.90
	50 Toluene	91	6.449	6.449	(0.841)	333191	20.0000	1.87
	51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	104273	20.0000	0.98
	52 2-Hexanone	43	7.090	7.090	(0.924)	64668	40.0000	3.92(M)
	53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	59369	20.0000	1.80
	54 1,3-Dichloropropane	76	6.981	6.981	(0.910)	120300	20.0000	1.82
	55 Dibromochloromethane	129	7.176	7.176	(0.936)	85257	20.0000	45.48
	56 Tetrachloroethene	164	6.929	6.929	(0.903)	79277	20.0000	1.89
	57 1,2-Dibromoethane	107	7.263	7.263	(0.947)	75245	20.0000	1.91
	58 1-Chlorohexane	55	7.697	7.697	(1.550)	59036	20.0000	1.04
	59 Chlorobenzene	112	7.694	7.694	(1.003)	229285	20.0000	1.92
	60 1,1,1,2-Tetrachloroethane	131	7.772	7.772	(1.013)	83530	20.0000	1.89

61 Ethylbenzene	106	7.802	7.802 (1.017)	116661	20.0000	1.87
62 m,p-Xylenes	106	7.904	7.904 (1.030)	295735	40.0000	3.80

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	63 o-Xylene	106	8.241	8.241	(1.074)	142000	20.0000	1.85
	64 Styrene	104	8.260	8.260	(1.077)	236802	20.0000	1.96
	66 Bromoform	173	8.410	8.410	(1.096)	51773	20.0000	44.37
	67 Isopropylbenzene	105	8.563	8.563	(1.116)	344589	20.0000	1.85
	68 1,1,2,2-Tetrachloroethane	83	8.837	8.837	(0.915)	79481	20.0000	15.97
$	69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	101212	20.0000	47.62
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	281137	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	55563	20.0000	6.03(MH)
	73 n-Propylbenzene	91	8.912	8.912	(0.922)	386450	20.0000	14.91
	74 Bromobenzene	156	8.807	8.807	(0.912)	103734	20.0000	5.26
	75 1,3,5-Trimethylbenzene	105	9.066	9.066	(0.938)	287417	20.0000	5.23
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	243826	20.0000	5.02
	77 4-Chlorotoluene	91	9.073	9.073	(0.939)	274070	20.0000	5.28
	78 tert-Butylbenzene	119	9.336	9.336	(0.966)	241557	20.0000	5.21
	79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	288923	20.0000	5.27
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	322430	20.0000	5.19
	82 p-Isopropyltoluene	119	9.650	9.650	(0.999)	291427	20.0000	5.23
	83 1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	168287	20.0000	5.19
	84 1,4-Dichlorobenzene	146	9.680	9.680	(1.002)	176612	20.0000	5.39
	86 Benzyl Chloride	91	9.812	9.812	(1.279)	95688	20.0000	1.83
	87 n-Butylbenzene	91	9.995	9.995	(1.035)	230738	20.0000	5.41
	88 1,2-Dichlorobenzene	146	9.995	9.995	(1.035)	154590	20.0000	15.06
	89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	7513	20.0000	12.24
	90 1,2,4-Trichlorobenzene	180	11.341	11.341	(1.174)	63618	20.0000	11.82
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	51139	20.0000	13.29
	92 Naphthalene	128	11.547	11.547	(1.195)	78009	20.0000	5.18
	93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.216)	40683	20.0000	5.13
M	94 1,2-Dichloroethylene (total)	96				163378	40.0000	
M	95 Xylenes (total)	106				437735	60.0000	
	141 Cyclohexane	56	4.125	4.125	(0.987)	105454	20.0000	0.92
	138 Freon TF	101	1.917	1.917	(0.459)	53969	20.0000	0.88
	147 Methylcyclohexane	55	5.385	5.385	(1.085)	168439	20.0000	1.03
	146 Methyl Acetate	43	2.239	2.239	(0.536)	36504	20.0000	1.05

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


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11
12
13
14
-Acetaldehyde
-Bromomethane
-Chloroethane+
-Trichlorofluoromethane+
-Isopentane
-Diethyl ether+
-1,1-Dichloroethene+
-Iodomethane+
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane+
-1,1-Dichloroethane
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-Pentafluorobenzene
-1,1-Dichloropropene+
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-Isobutyl Alcohol+
-1,4-Difluorobenzene
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-Methylcyclohexane+
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-1,3-Dichloropropane
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-Bromoform+
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-Cyclohexanone
-4-Bromofluorobenzene
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-2-Chlorotoluene
-1,3,5-Trimethylbenzene+
-alpha-Methylstyrene
-tert-Butylbenzene+
-sec-Butylbenzene
-1,3-Dichlorobenzene
-Benzyl Chloride
1,4-Dichlorobenzene-d4+
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
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Instrument: voa6,i
Operator: PC
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Page 1

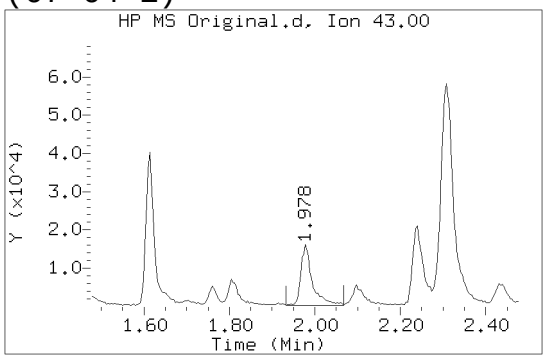
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Acetone (67-64-1)

Reason Code:

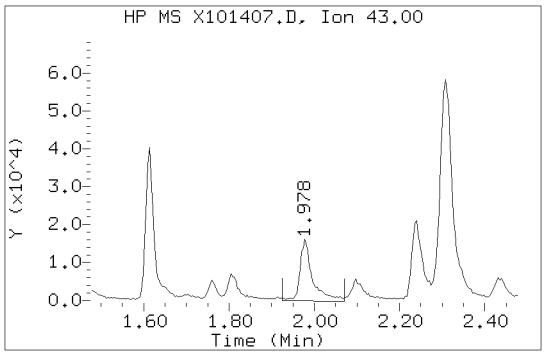
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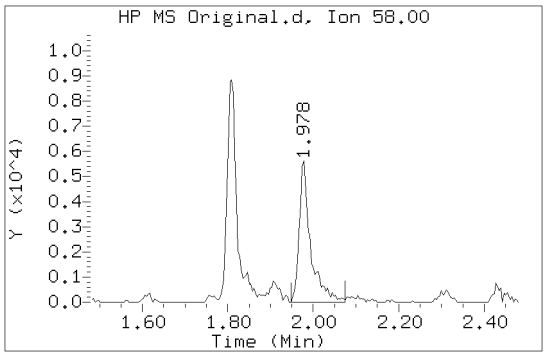
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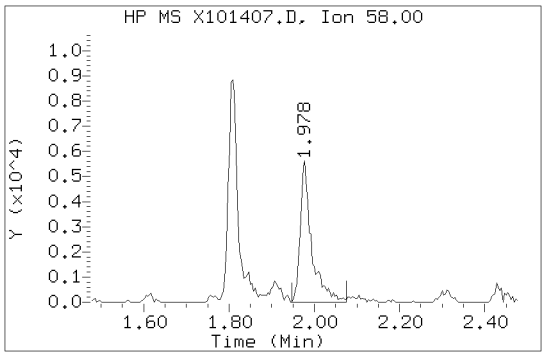
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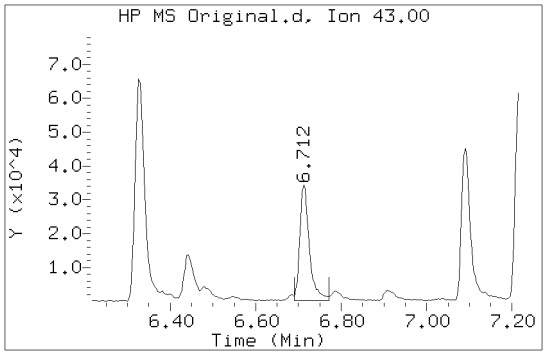


2-Hexanone (591-78-6)

Reason Code:

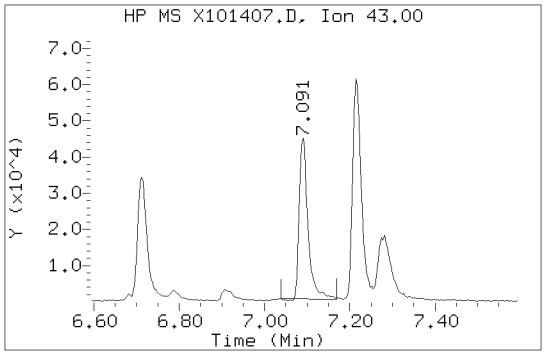
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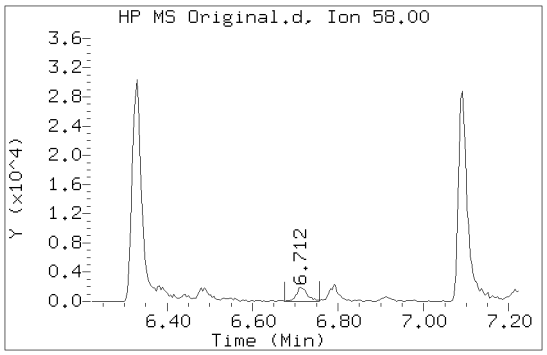
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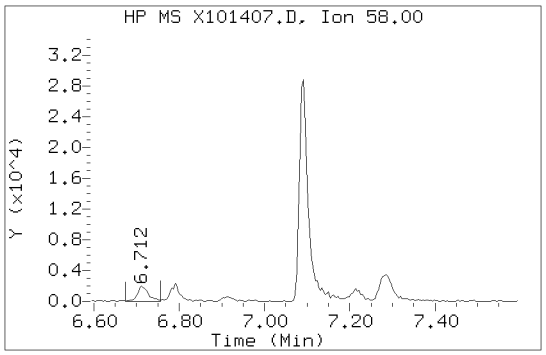
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AFTER

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27-Oct-2022
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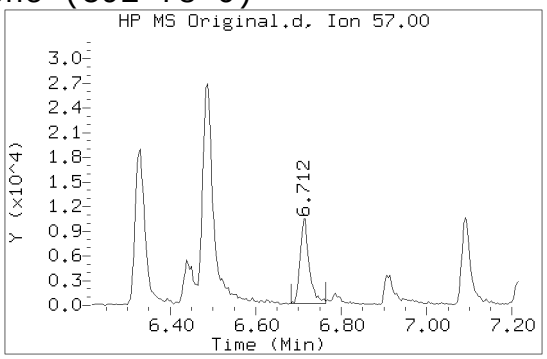
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InstruID : voa6.i
LabSampID : VSTD020

2-Hexanone (591-78-6)

Reason Code:

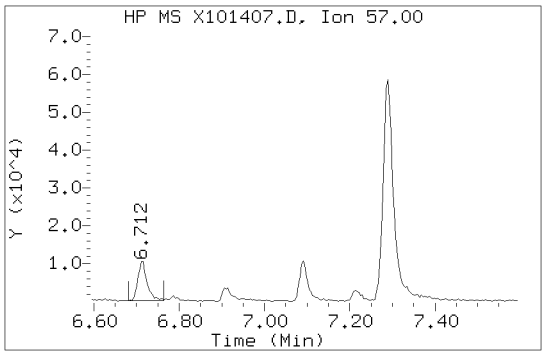
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AFTER

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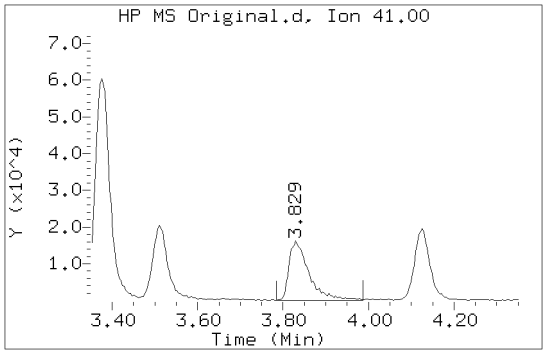


Methacrylonitrile (126-98-7)

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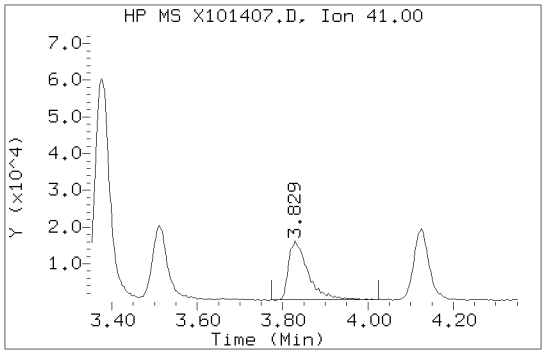
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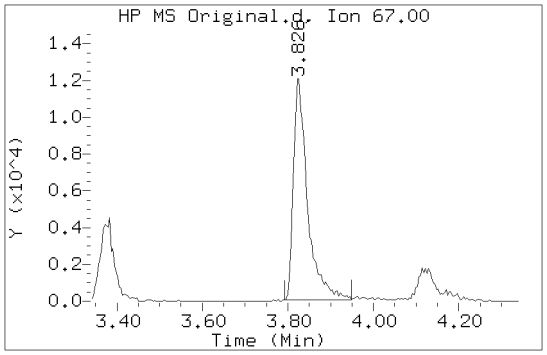
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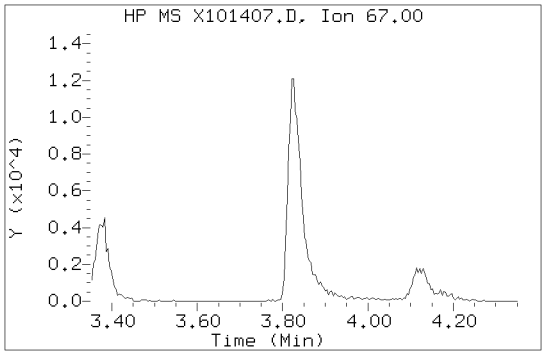
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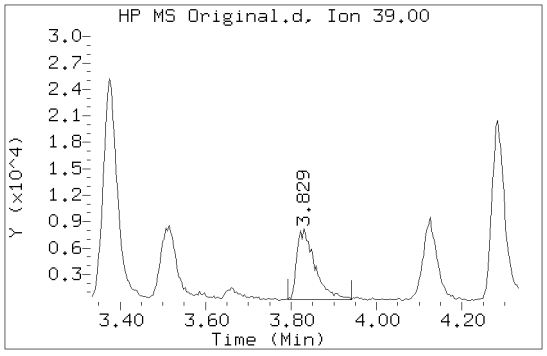
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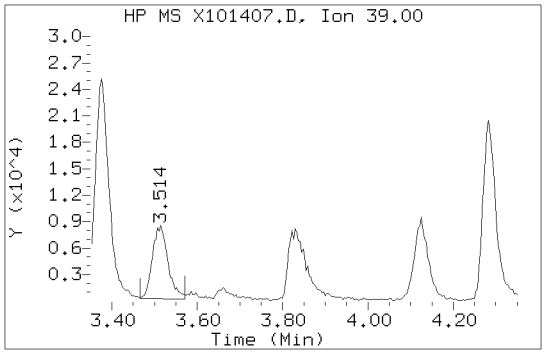
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AFTER

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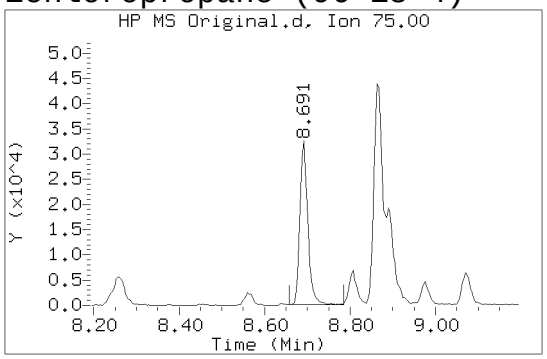


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LabSampID : VSTD020

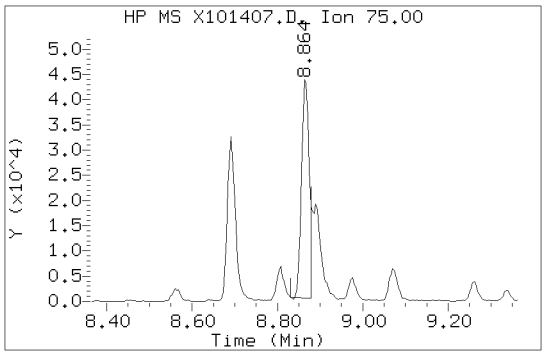
1,2,3-Trichloropropane (96-18-4)

Reason Code:

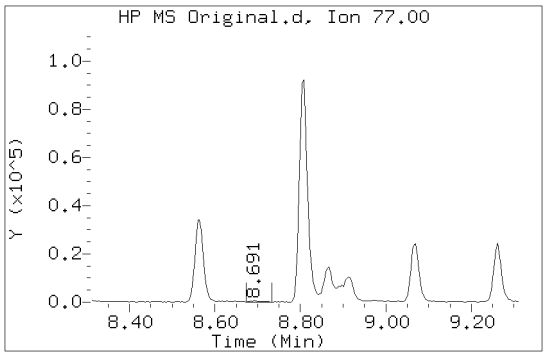
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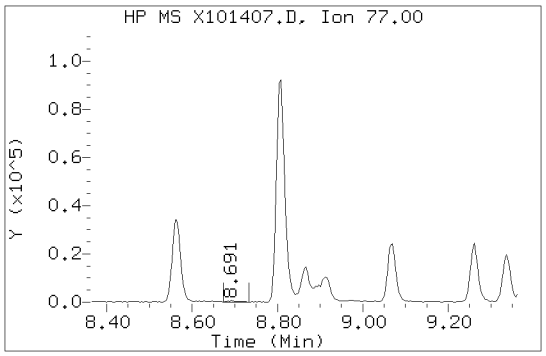
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HEIGHT
43224
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BEFORE
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743
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622
19-Oct-2022
16:03
linh
pham



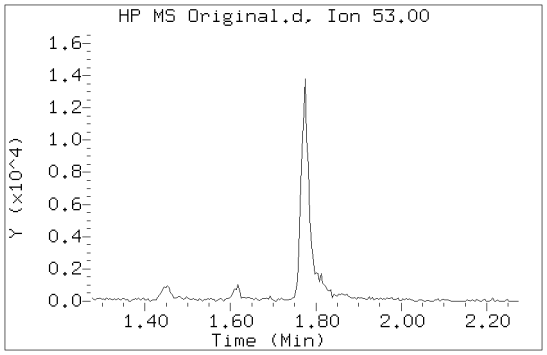
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27-Oct-2022
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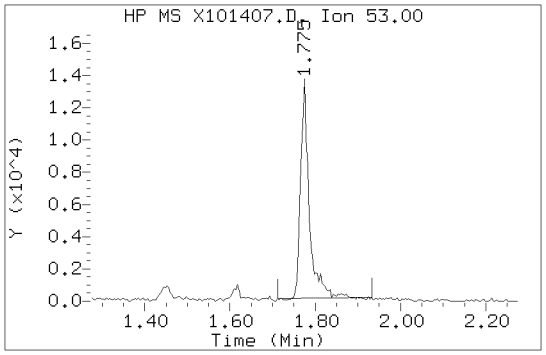
Chloroprene (126-99-8)

Reason Code:

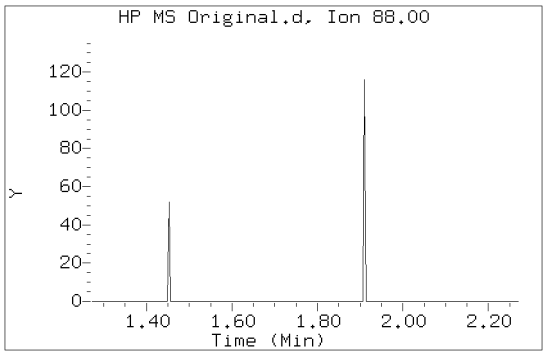
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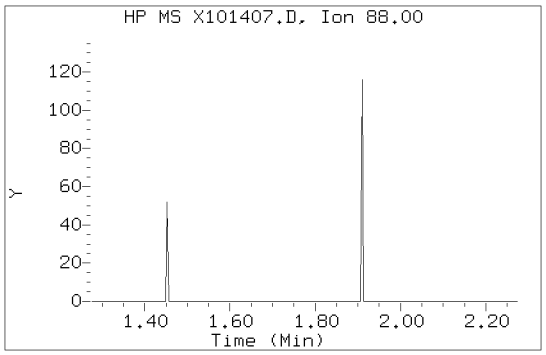
AFTER
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13623
27-Oct-2022
15:16



BEFORE
MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
88
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27-Oct-2022
15:16

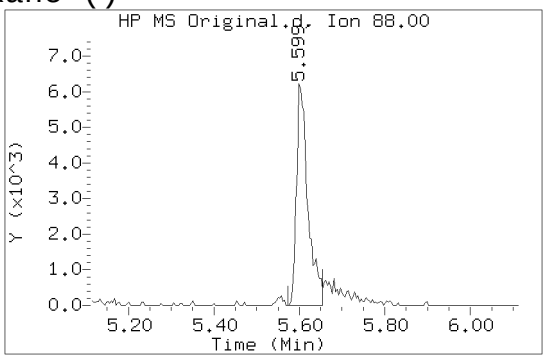


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Inj Date : 14-OCT-2022 13:32
InstruID : voa6.i
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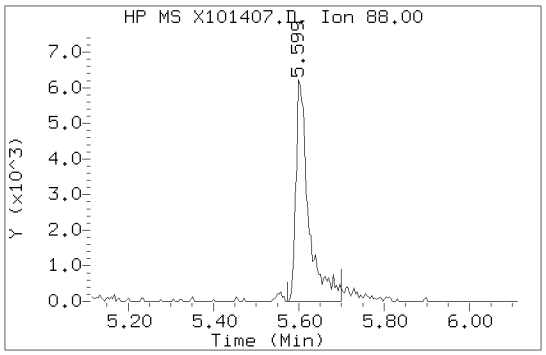
1,4-Dioxane ()

Reason Code:

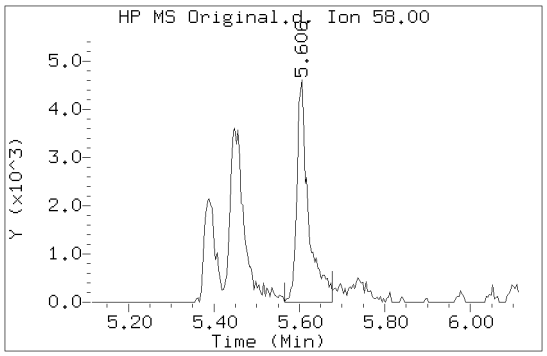
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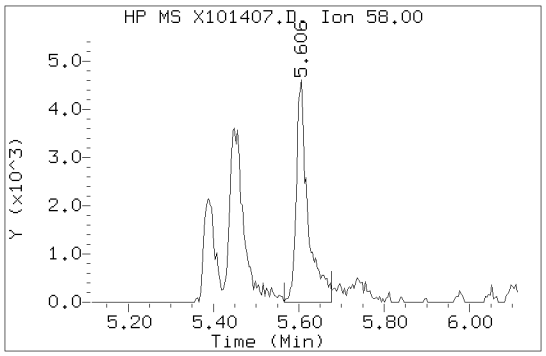
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BEFORE
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19-Oct-2022
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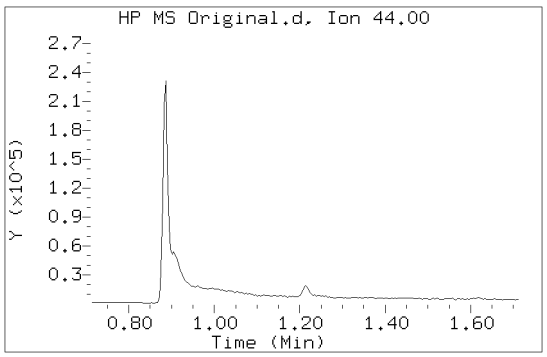
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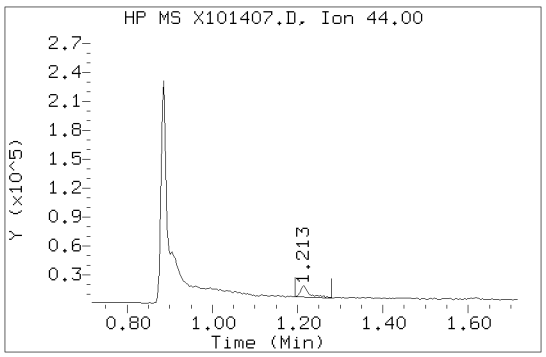
Acetaldehyde (75-07-0)

Reason Code:

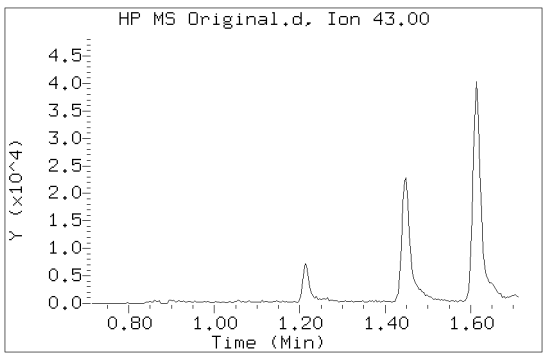
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19-Oct-2022
16:03
linh
pham



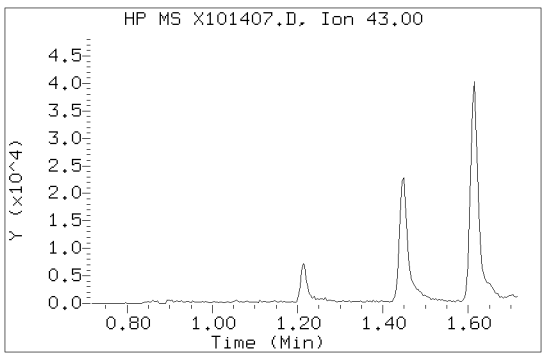
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27-Oct-2022
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BEFORE
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linh
pham



AFTER
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HEIGHT
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15:16



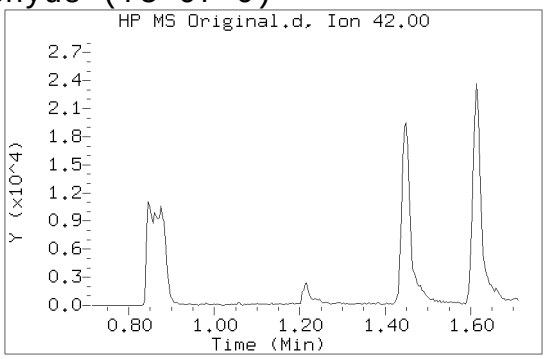
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Inj Date : 14-OCT-2022 13:32
InstruID : voa6.i
LabSampID : VSTD020

Acetaldehyde (75-07-0)

Reason Code:

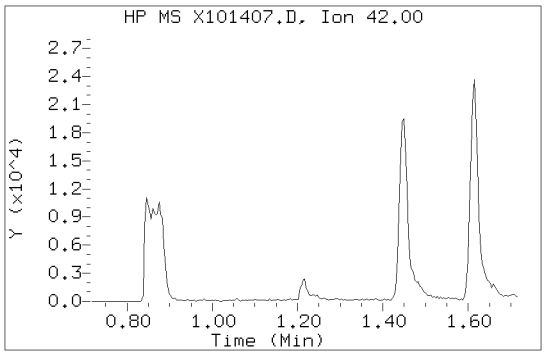
BEFORE

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19-Oct-2022
16:03
linh
pham



AFTER

MASS
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AREA
0
HEIGHT
0
27-Oct-2022
15:16



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101408.D Page 1
Report Date: 27-Oct-2022 15:16

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101408.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 14-OCT-2022 13:53
Operator : PC Inst ID: voa6.i
Smp Info : VSTD050;VSTD050;1;7;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
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Meth Date : 27-Oct-2022 15:16 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:32 Cal File: X101407.D
Als bottle: 9 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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)	416644	50.0000	
135 1,4-Dioxane	88	5.598	5.598	(1.338)	32986	1000.00	61.77(M)
140 1,3-Butadiene	54	1.167	1.167	(0.279)	113271	50.0000	2.50
25 Methacrylonitrile	41	3.829	3.829	(0.915)	124603	50.0000	2.43(M)
12 Isobutyl Alcohol	43	4.680	4.680	(1.118)	425892	1000.00	
13 Acetonitrile	39	2.202	2.202	(0.526)	172921	500.000	21.61
14 Allyl Chloride	41	2.202	2.202	(0.526)	357174	50.0000	2.22
4 Propionitrile	54	3.653	3.653	(0.873)	186736	500.000	22.04
136 n-Hexane	57	2.776	2.776	(0.663)	194851	50.0000	2.28
72 trans-1,4-Dichloro-2-butene	53	8.890	8.890	(1.159)	43736	50.0000	48.06
194 Acetaldehyde	44	1.212	1.212	(0.290)	36228	200.000	203.55(M)
23 Chloroprene	53	1.775	1.775	(0.424)	52673	50.0000	49.08(M)
145 alpha-Methylstyrene	118	9.257	9.257	(0.958)	340672	50.0000	38.61
200 Dimethyl Disulfide	94	6.198	6.198	(0.808)	422781	50.0000	5.34
139 Diethyl ether	59	1.760	1.760	(0.421)	96795	50.0000	1.98
130 Ethyl Acetate	43	3.657	3.657	(0.874)	147790	50.0000	
40 Methyl Methacrylate	41	5.606	5.606	(1.339)	124950	50.0000	2.26
49 Ethyl Methacrylate	69	6.787	6.787	(1.366)	238999	50.0000	2.41
132 n-Butanol	56	5.257	5.257	(1.256)	55638	1000.00	62.98
142 Tetrahydrofuran	42	3.848	3.848	(0.919)	41907	100.000	3.39

150	Allyl alcohol	57	2.776	2.776 (0.663)	194851	1000.00	45.65
166	1,2,3-Trimethylbenzene	105	9.729	9.729 (1.007)	646544	50.0000	12.67

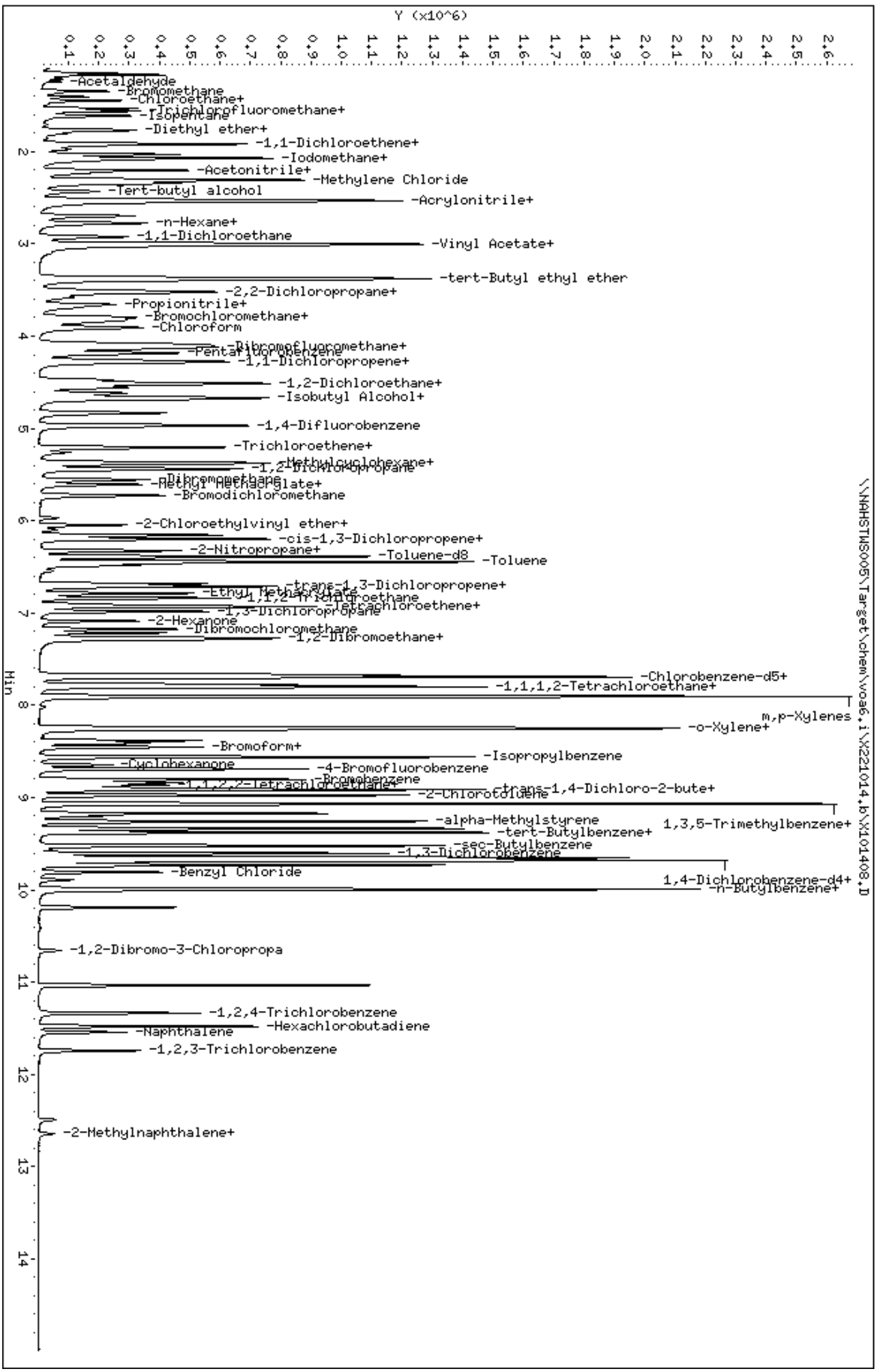
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	131 Methyl Acrylate	55	3.687	3.687	(0.881)	145777	50.0000	
	162 Butyl acrylate	55	8.252	8.252	(1.076)	278458	50.0000	4.26
	2 Dichlorodifluoromethane	85	0.976	0.976	(0.233)	162160	50.0000	
	3 Chloromethane	50	1.081	1.081	(0.258)	179926	50.0000	
	5 Vinyl Chloride	62	1.145	1.145	(0.274)	159397	50.0000	2.14
	6 Bromomethane	94	1.344	1.344	(0.321)	107545	50.0000	
	7 Chloroethane	64	1.407	1.407	(0.336)	98720	50.0000	2.18
	8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	221735	50.0000	2.27
	9 Acrolein	56	1.445	1.445	(0.345)	23489	100.000	3.97
	10 Acetone	43	1.977	1.977	(0.472)	78599	100.000	(M)
	11 1,1-Dichloroethene	96	1.917	1.917	(0.458)	133668	50.0000	2.21
	15 Iodomethane	142	2.030	2.030	(0.485)	473427	100.000	111.89
	16 Acrylonitrile	53	2.536	2.536	(0.606)	107044	100.000	117.19
	17 Methylene Chloride	84	2.307	2.307	(0.551)	202027	50.0000	
	18 Methyl tert-butyl ether	73	2.539	2.539	(0.607)	481616	50.0000	2.14
	19 Carbon Disulfide	76	2.071	2.071	(0.495)	947886	100.000	4.42
	20 trans-1,2-Dichloroethene	96	2.532	2.532	(0.605)	187026	50.0000	2.20
	21 Vinyl Acetate	43	3.001	3.001	(0.717)	858304	100.000	4.44
	22 1,1-Dichloroethane	63	2.922	2.922	(0.698)	316032	50.0000	2.13
	24 2-Butanone	43	3.582	3.582	(0.856)	101872	100.000	5.35(H)
	26 2,2-Dichloropropane	77	3.510	3.510	(0.839)	257879	50.0000	2.26
	27 cis-1,2-Dichloroethene	96	3.529	3.529	(0.843)	218682	50.0000	2.21
	28 Chloroform	83	3.904	3.904	(0.933)	331178	50.0000	2.11
	29 Bromochloromethane	128	3.795	3.795	(0.907)	114606	50.0000	2.01
$	30 Dibromofluoromethane	113	4.099	4.099	(0.979)	182656	50.0000	
	31 1,1,1-Trichloroethane	97	4.084	4.084	(0.976)	272922	50.0000	2.24
	32 1,1-Dichloropropene	75	4.279	4.279	(0.861)	247898	50.0000	2.57
	33 1,2-Dichloroethane	62	4.560	4.560	(0.918)	236726	50.0000	2.47
	34 Carbon Tetrachloride	117	4.268	4.268	(0.859)	234850	50.0000	2.53
$	35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	180049	50.0000	
*	36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	614929	50.0000	
	37 Benzene	78	4.515	4.515	(0.909)	759136	50.0000	2.43
	38 Trichloroethene	130	5.209	5.209	(1.048)	223485	50.0000	2.39
	39 Bromodichloromethane	83	5.726	5.726	(1.152)	246525	50.0000	2.46
	41 2-Chloroethylvinyl ether	63	6.048	6.048	(1.217)	117091	100.000	113.05
	42 1,2-Dichloropropane	63	5.437	5.437	(1.094)	189255	50.0000	2.33
	44 Dibromomethane	93	5.553	5.553	(1.118)	120717	50.0000	2.42
	45 4-Methyl-2-Pentanone	43	6.326	6.326	(0.825)	260737	100.000	103.17
	46 cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	321464	50.0000	2.50
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	567103	50.0000	
$	48 Toluene-d8	98	6.386	6.386	(0.832)	676997	50.0000	4.52
	50 Toluene	91	6.446	6.446	(0.840)	822269	50.0000	4.63
	51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.345)	262268	50.0000	2.51
	52 2-Hexanone	43	7.087	7.087	(0.924)	164065	100.000	9.98(M)
	53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	144287	50.0000	4.39
	54 1,3-Dichloropropane	76	6.982	6.982	(0.910)	290271	50.0000	4.41
	55 Dibromochloromethane	129	7.173	7.173	(0.935)	211264	50.0000	49.96
	56 Tetrachloroethene	164	6.929	6.929	(0.903)	191037	50.0000	4.58
	57 1,2-Dibromoethane	107	7.259	7.259	(0.946)	183920	50.0000	4.69
	58 1-Chlorohexane	55	7.698	7.698	(1.549)	148250	50.0000	2.65
	59 Chlorobenzene	112	7.694	7.694	(1.003)	559004	50.0000	4.69
	60 1,1,1,2-Tetrachloroethane	131	7.773	7.773	(1.013)	203906	50.0000	4.62

61 Ethylbenzene	106	7.799	7.799 (1.017)	287573	50.0000	4.63
62 m,p-Xylenes	106	7.904	7.904 (1.030)	722247	100.000	9.30

			QUANT SIG					AMOUNTS	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
	63	o-Xylene	106	8.241	8.241	(1.074)	344528	50.0000	4.51
	64	Styrene	104	8.260	8.260	(1.077)	585343	50.0000	4.87
	66	Bromoform	173	8.410	8.410	(1.096)	131593	50.0000	49.26
	67	Isopropylbenzene	105	8.560	8.560	(1.116)	853148	50.0000	4.60
	68	1,1,2,2-Tetrachloroethane	83	8.837	8.837	(0.915)	191262	50.0000	38.81
$	69	4-Bromofluorobenzene	95	8.687	8.687	(1.132)	241297	50.0000	51.18
*	70	1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	286452	50.0000	
	71	1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	139168	50.0000	14.83(MH)
	73	n-Propylbenzene	91	8.912	8.912	(0.922)	965817	50.0000	39.65
	74	Bromobenzene	156	8.803	8.803	(0.911)	254738	50.0000	12.68
	75	1,3,5-Trimethylbenzene	105	9.066	9.066	(0.938)	712198	50.0000	12.73
	76	2-Chlorotoluene	91	8.976	8.976	(0.929)	594417	50.0000	12.01
	77	4-Chlorotoluene	91	9.070	9.070	(0.939)	671511	50.0000	12.69
	78	tert-Butylbenzene	119	9.336	9.336	(0.966)	600993	50.0000	12.74
	79	1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	706596	50.0000	12.65
	81	sec-Butylbenzene	105	9.519	9.519	(0.985)	815549	50.0000	12.90
	82	p-Isopropyltoluene	119	9.651	9.651	(0.999)	730128	50.0000	12.86
	83	1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	422732	50.0000	12.81
	84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	430136	50.0000	12.89
	86	Benzyl Chloride	91	9.808	9.808	(1.279)	246798	50.0000	4.73
	87	n-Butylbenzene	91	9.992	9.992	(1.034)	594845	50.0000	13.70
	88	1,2-Dichlorobenzene	146	9.992	9.992	(1.034)	376934	50.0000	38.74
	89	1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	19399	50.0000	36.70
	90	1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	166885	50.0000	36.14
	91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	128928	50.0000	25.88
	92	Naphthalene	128	11.544	11.544	(1.195)	212429	50.0000	13.84
	93	1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	105379	50.0000	13.06
M	94	1,2-Dichloroethylene (total)	96				405708	100.000	
M	95	Xylenes (total)	106				1066775	150.000	
	141	Cyclohexane	56	4.121	4.121	(0.985)	259971	50.0000	2.26
	138	Freon TF	101	1.917	1.917	(0.458)	138908	50.0000	2.26
	147	Methylcyclohexane	55	5.381	5.381	(1.083)	408984	50.0000	2.53
	146	Methyl Acetate	43	2.236	2.236	(0.534)	92342	50.0000	2.64

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTNS005\Target\chem\voa6,i\X221014,b\X101408,D
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Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;
Purge Volume: 5.0
Column phase: DB624

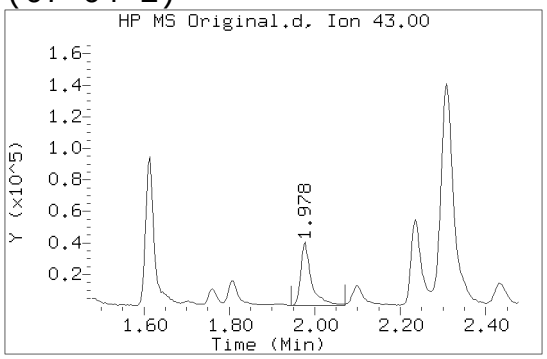
Instrument: voa6,i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101408.D
Inj Date : 14-OCT-2022 13:53
InstruID : voa6.i
LabSampID : VSTD050

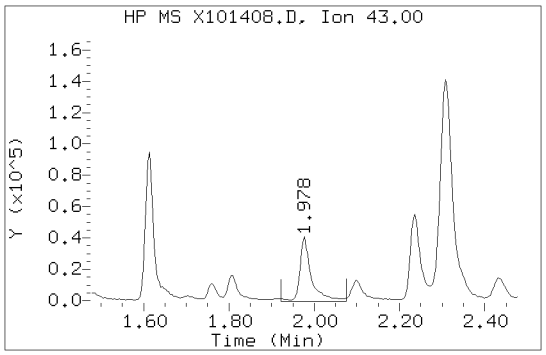
Acetone (67-64-1)

Reason Code:

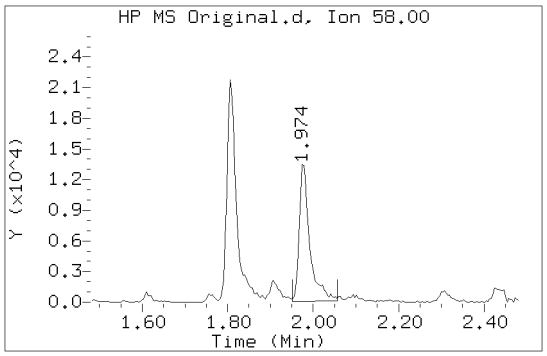
BEFORE
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HEIGHT
40272
19-Oct-2022
16:03
linh
pham



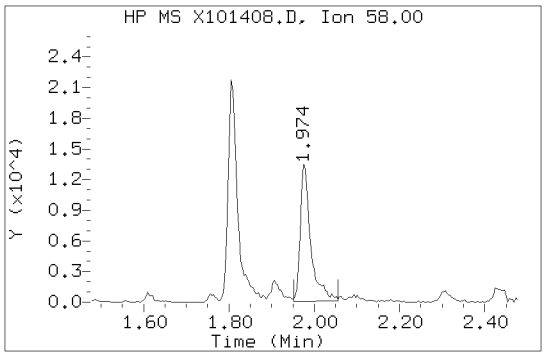
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BEFORE
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19-Oct-2022
16:03
linh
pham



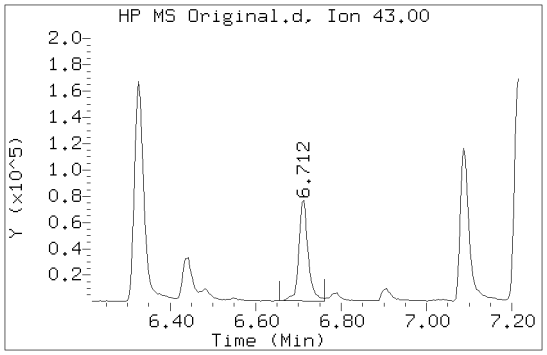
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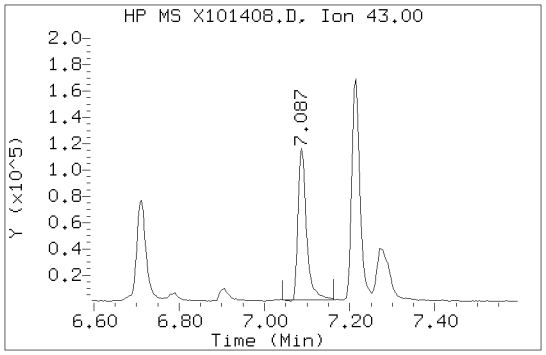
2-Hexanone (591-78-6)

Reason Code:

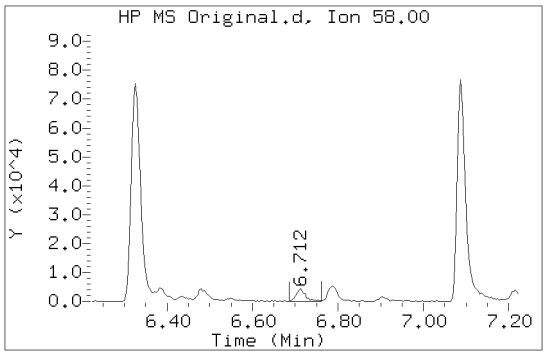
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19-Oct-2022
16:03
linh
pham



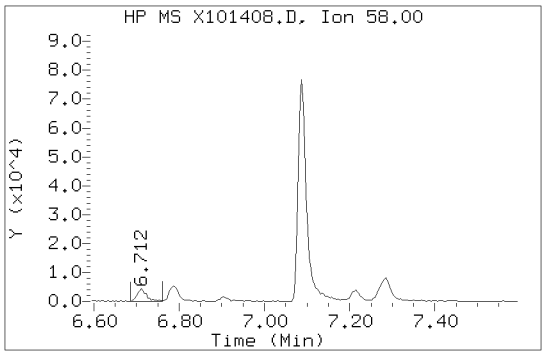
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27-Oct-2022
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BEFORE
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AREA
6608
HEIGHT
4448
19-Oct-2022
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linh
pham



AFTER
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AREA
6608
HEIGHT
4448
27-Oct-2022
15:16



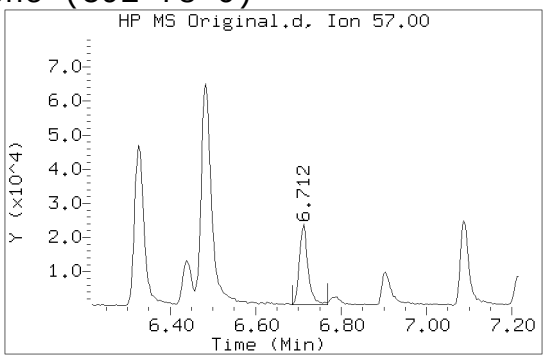
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Inj Date : 14-OCT-2022 13:53
InstruID : voa6.i
LabSampID : VSTD050

2-Hexanone (591-78-6)

Reason Code:

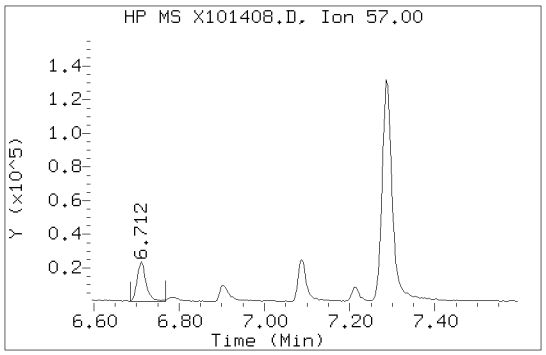
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23582
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pham



AFTER

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27-Oct-2022
15:16

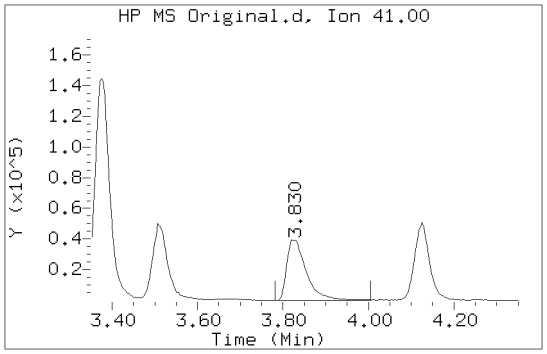


Methacrylonitrile (126-98-7)

Reason Code:

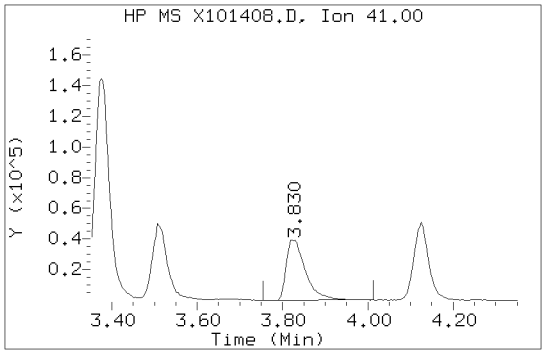
BEFORE

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AREA
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19-Oct-2022
16:03
linh
pham



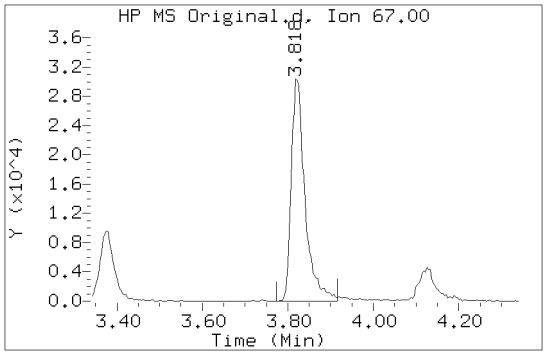
AFTER

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39229
27-Oct-2022
15:16



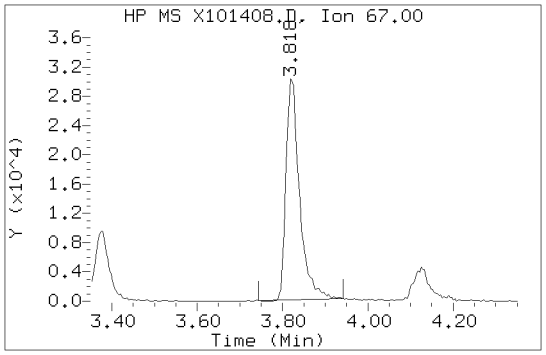
BEFORE

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AREA
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19-Oct-2022
16:03
linh
pham



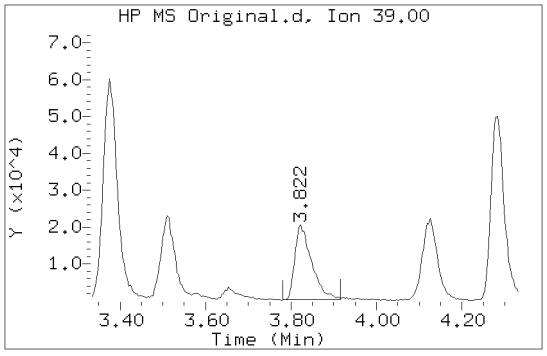
AFTER

MASS
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27-Oct-2022
15:16



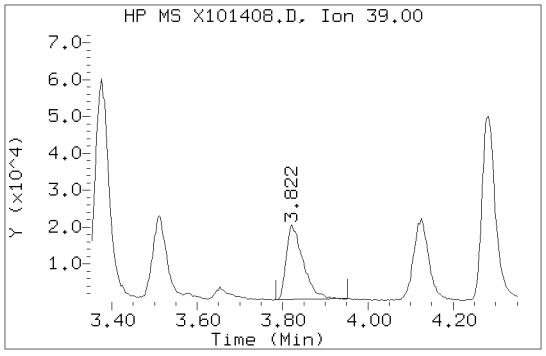
BEFORE

MASS
39
AREA
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20335
19-Oct-2022
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linh
pham



AFTER

MASS
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AREA
55518
HEIGHT
20279
27-Oct-2022
15:16



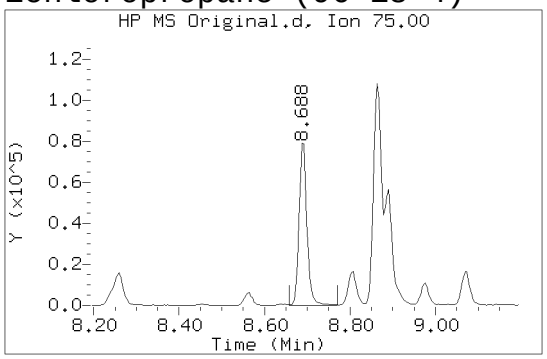
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Inj Date : 14-OCT-2022 13:53
InstruID : voa6.i
LabSampID : VSTD050

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

Reason Code:

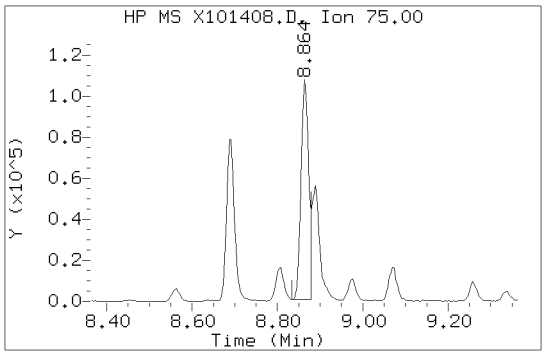
BEFORE

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75
AREA
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19-Oct-2022
16:03
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pham



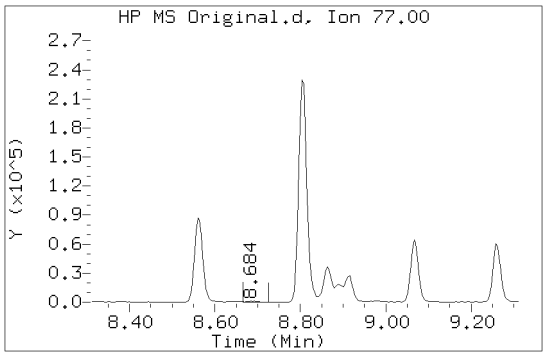
AFTER

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27-Oct-2022
15:16



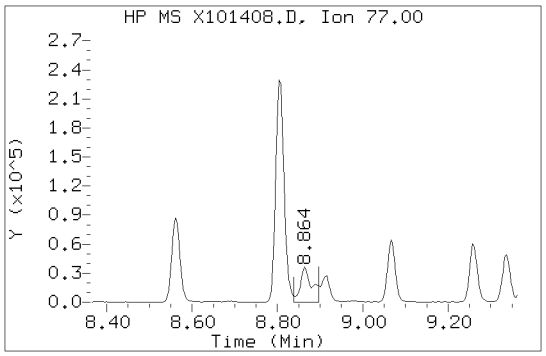
BEFORE

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pham



AFTER

MASS
77
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70884
HEIGHT
36054
27-Oct-2022
15:16

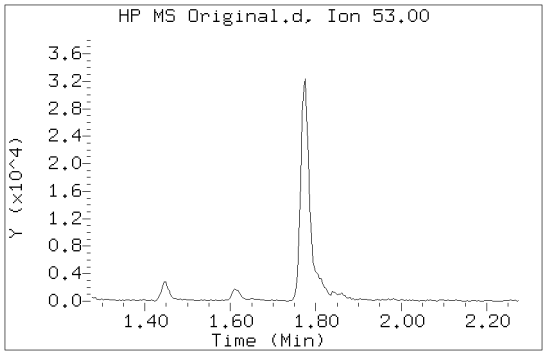


Chloroprene (126-99-8)

Reason Code:

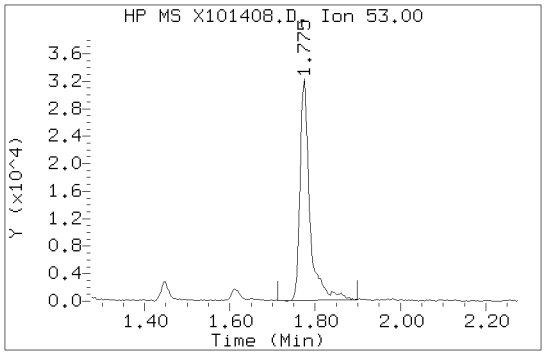
BEFORE

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16:03
linh
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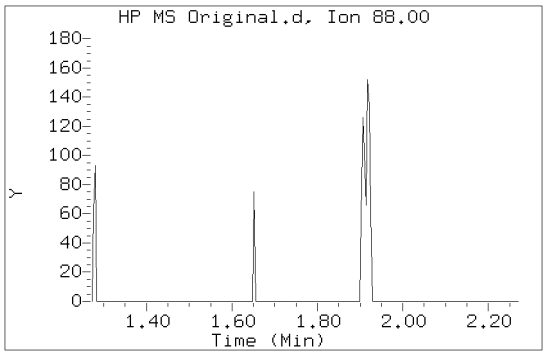
AFTER

MASS
53
AREA
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32186
27-Oct-2022
15:16



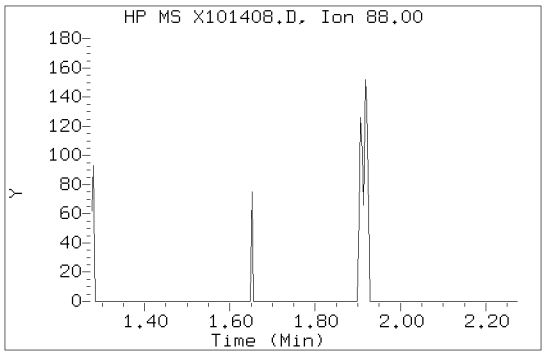
BEFORE

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AREA
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0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
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AREA
0
HEIGHT
0
27-Oct-2022
15:16



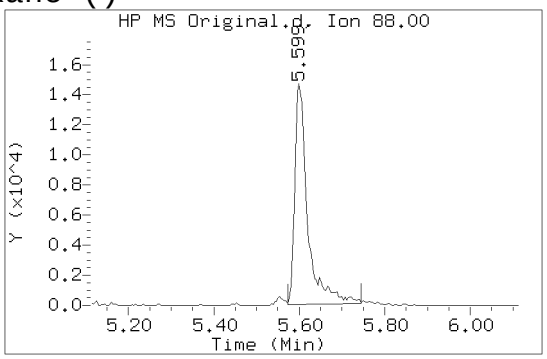
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Inj Date : 14-OCT-2022 13:53
InstruID : voa6.i
LabSampID : VSTD050

1,4-Dioxane ()

Reason Code:

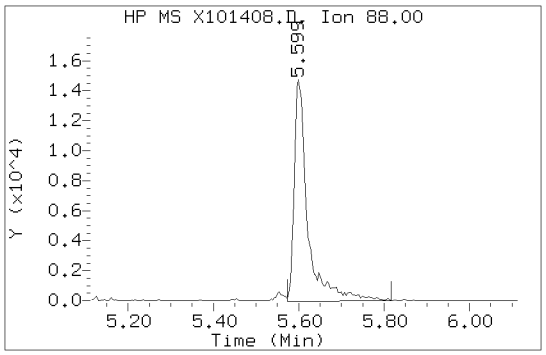
BEFORE

MASS
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19-Oct-2022
16:03
linh
pham



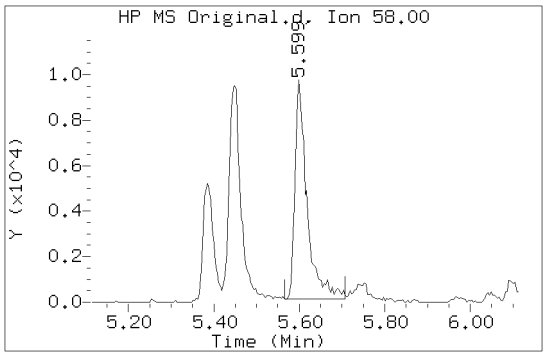
AFTER

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15:16



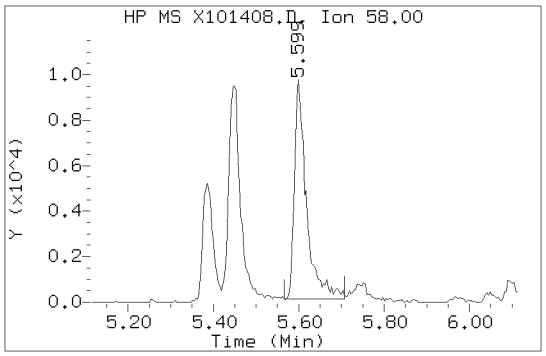
BEFORE

MASS
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19-Oct-2022
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pham



AFTER

MASS
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19108
HEIGHT
9627
27-Oct-2022
15:16

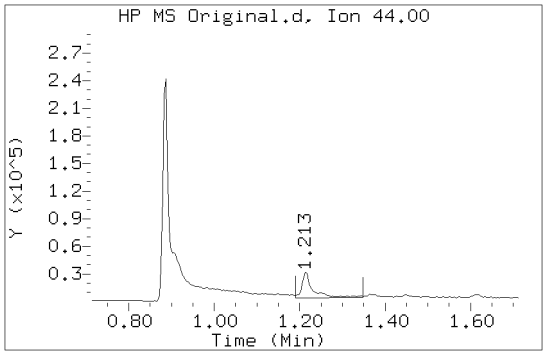


Acetaldehyde (75-07-0)

Reason Code:

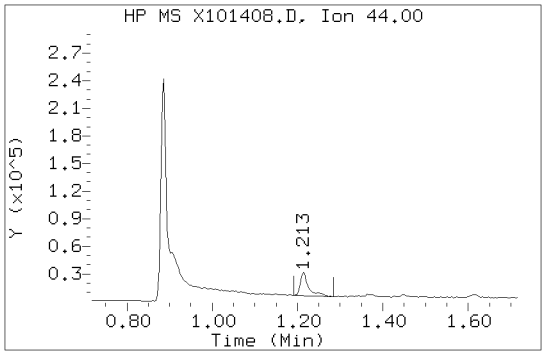
BEFORE

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19-Oct-2022
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linh
pham



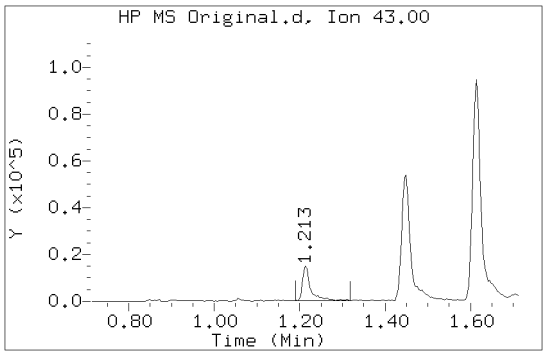
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27-Oct-2022
15:16



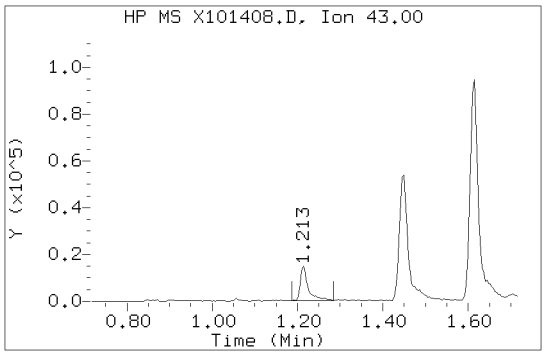
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AFTER

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27-Oct-2022
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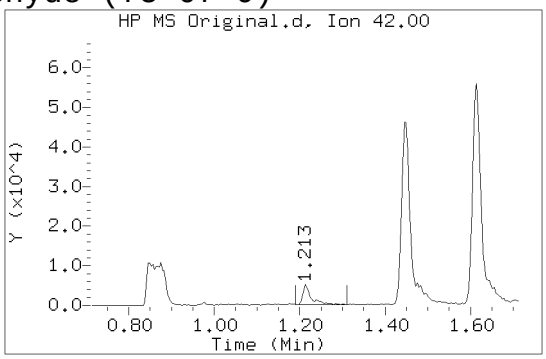
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Inj Date : 14-OCT-2022 13:53
InstruID : voa6.i
LabSampID : VSTD050

Acetaldehyde (75-07-0)

Reason Code:

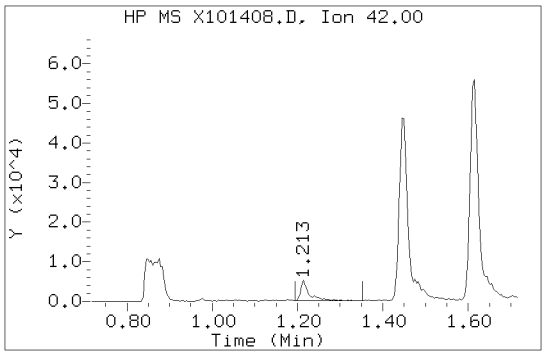
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linh
pham



AFTER

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HEIGHT
5123
27-Oct-2022
15:16



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101409.D Page 1
Report Date: 27-Oct-2022 15:16

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101409.D
Lab Smp Id: VSTD100 Client Smp ID: VSTD100
Inj Date : 14-OCT-2022 14:14
Operator : PC Inst ID: voa6.i
Smp Info : VSTD100;VSTD100;1;8;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
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Meth Date : 27-Oct-2022 15:16 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 10 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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)	420244	50.0000	
135 1,4-Dioxane	88	5.598	5.598	(1.338)	65787	2000.00	122.15
140 1,3-Butadiene	54	1.167	1.167	(0.279)	219323	100.000	4.80
25 Methacrylonitrile	41	3.825	3.825	(0.914)	242793	100.000	4.69(M)
12 Isobutyl Alcohol	43	4.676	4.676	(1.117)	870462	2000.00	
13 Acetonitrile	39	2.198	2.198	(0.525)	337012	1000.00	41.77
14 Allyl Chloride	41	2.198	2.198	(0.525)	705196	100.000	4.35
4 Propionitrile	54	3.653	3.653	(0.873)	376171	1000.00	44.02
136 n-Hexane	57	2.772	2.772	(0.662)	376638	100.000	4.37
72 trans-1,4-Dichloro-2-butene	53	8.889	8.889	(1.159)	91591	100.000	58.43
194 Acetaldehyde	44	1.212	1.212	(0.290)	69355	400.000	412.66(M)
23 Chloroprene	53	1.771	1.771	(0.423)	104192	100.000	96.26(M)
145 alpha-Methylstyrene	118	9.261	9.261	(0.958)	703458	100.000	82.60
200 Dimethyl Disulfide	94	6.198	6.198	(0.808)	848254	100.000	10.78
139 Diethyl ether	59	1.760	1.760	(0.421)	187603	100.000	3.82
130 Ethyl Acetate	43	3.656	3.656	(0.874)	309571	100.000	
40 Methyl Methacrylate	41	5.606	5.606	(1.339)	259349	100.000	4.66
49 Ethyl Methacrylate	69	6.786	6.786	(1.366)	497866	100.000	5.06
132 n-Butanol	56	5.253	5.253	(1.255)	122944	2000.00	137.98
142 Tetrahydrofuran	42	3.848	3.848	(0.919)	85215	200.000	6.84

150	Allyl alcohol	57	2.772	2.772 (0.662)	376638	2000.00	87.49
166	1,2,3-Trimethylbenzene	105	9.729	9.729 (1.007)	1264839	100.000	24.81

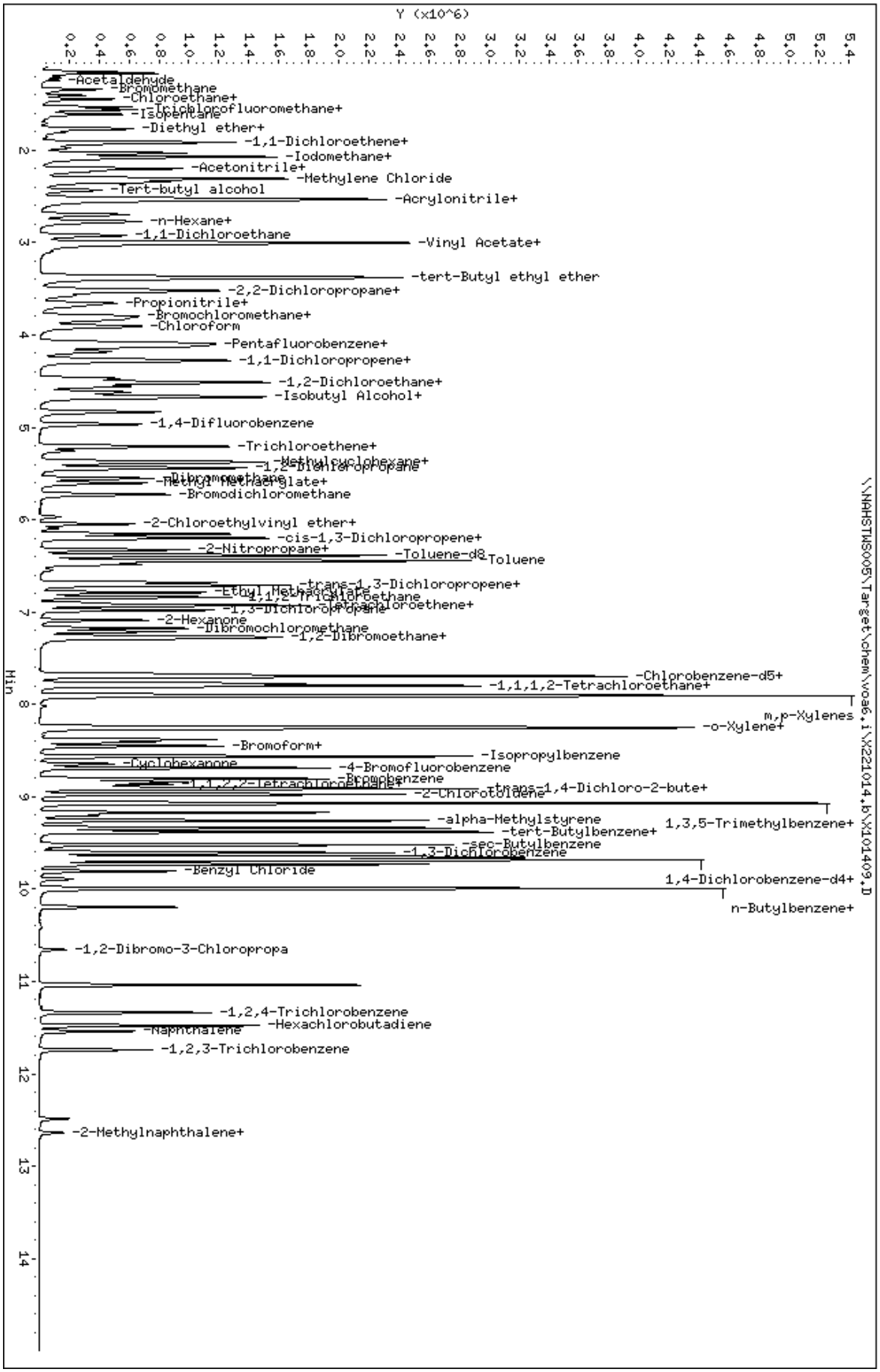
			QUANT SIG					AMOUNTS	
								CAL-AMT	ON-COL
	Compounds		MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
	131	Methyl Acrylate	55	3.686	3.686	(0.881)	329295	100.000	
	162	Butyl acrylate	55	8.252	8.252	(1.076)	612991	100.000	9.45
	2	Dichlorodifluoromethane	85	0.976	0.976	(0.233)	313626	100.000	
	3	Chloromethane	50	1.081	1.081	(0.258)	345134	100.000	
	5	Vinyl Chloride	62	1.145	1.145	(0.274)	312693	100.000	4.16
	6	Bromomethane	94	1.343	1.343	(0.321)	211517	100.000	
	7	Chloroethane	64	1.403	1.403	(0.335)	191909	100.000	4.22
	8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	434016	100.000	4.42
	9	Acrolein	56	1.445	1.445	(0.345)	42271	200.000	7.09
	10	Acetone	43	1.973	1.973	(0.472)	175831	200.000	(M)
	11	1,1-Dichloroethene	96	1.917	1.917	(0.458)	266300	100.000	4.38
	15	Iodomethane	142	2.029	2.029	(0.485)	1041949	200.000	215.78
	16	Acrylonitrile	53	2.536	2.536	(0.606)	215625	200.000	117.31
	17	Methylene Chloride	84	2.307	2.307	(0.551)	399989	100.000	
	18	Methyl tert-butyl ether	73	2.539	2.539	(0.607)	955407	100.000	4.22
	19	Carbon Disulfide	76	2.071	2.071	(0.495)	1908597	200.000	8.83
	20	trans-1,2-Dichloroethene	96	2.532	2.532	(0.605)	370319	100.000	4.33
	21	Vinyl Acetate	43	3.000	3.000	(0.717)	1667777	200.000	8.56
	22	1,1-Dichloroethane	63	2.922	2.922	(0.698)	629715	100.000	4.21
	24	2-Butanone	43	3.578	3.578	(0.855)	216176	200.000	11.26(H)
	26	2,2-Dichloropropane	77	3.514	3.514	(0.840)	520684	100.000	4.53
	27	cis-1,2-Dichloroethene	96	3.525	3.525	(0.842)	434823	100.000	4.37
	28	Chloroform	83	3.908	3.908	(0.934)	667874	100.000	4.22
	29	Bromochloromethane	128	3.795	3.795	(0.907)	235557	100.000	4.09
$	30	Dibromofluoromethane	113	4.099	4.099	(0.979)	391368	100.000	
	31	1,1,1-Trichloroethane	97	4.084	4.084	(0.976)	548951	100.000	4.48
	32	1,1-Dichloropropene	75	4.282	4.282	(0.862)	483879	100.000	5.05
	33	1,2-Dichloroethane	62	4.556	4.556	(0.917)	459609	100.000	4.83
	34	Carbon Tetrachloride	117	4.267	4.267	(0.859)	469606	100.000	5.10
$	35	1,2-Dichloroethane-d4	65	4.470	4.470	(1.068)	390623	100.000	
*	36	1,4-Difluorobenzene	114	4.968	4.968	(1.000)	611103	50.0000	
	37	Benzene	78	4.511	4.511	(0.908)	1514452	100.000	4.88
	38	Trichloroethene	130	5.208	5.208	(1.048)	455345	100.000	4.90
	39	Bromodichloromethane	83	5.726	5.726	(1.152)	509495	100.000	5.12
	41	2-Chloroethylvinyl ether	63	6.048	6.048	(1.217)	250016	200.000	115.69
	42	1,2-Dichloropropane	63	5.437	5.437	(1.094)	381514	100.000	4.73
	44	Dibromomethane	93	5.553	5.553	(1.118)	244895	100.000	4.94
	45	4-Methyl-2-Pentanone	43	6.325	6.325	(0.825)	544315	200.000	115.58
	46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	664839	100.000	5.20
*	47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	563592	50.0000	
$	48	Toluene-d8	98	6.385	6.385	(0.832)	1440641	100.000	9.69
	50	Toluene	91	6.445	6.445	(0.840)	1643611	100.000	9.31
	51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.345)	541171	100.000	5.21
	52	2-Hexanone	43	7.086	7.086	(0.924)	358477	200.000	21.94(H)
	53	1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	289913	100.000	8.87
	54	1,3-Dichloropropane	76	6.981	6.981	(0.910)	590798	100.000	9.04
	55	Dibromochloromethane	129	7.176	7.176	(0.936)	440505	100.000	58.21
	56	Tetrachloroethene	164	6.929	6.929	(0.903)	378887	100.000	9.15
	57	1,2-Dibromoethane	107	7.259	7.259	(0.946)	376418	100.000	9.66
	58	1-Chlorohexane	55	7.697	7.697	(1.549)	298474	100.000	5.38
	59	Chlorobenzene	112	7.694	7.694	(1.003)	1118626	100.000	9.44
	60	1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	420272	100.000	9.58

61 Ethylbenzene	106	7.799	7.799 (1.017)	574656	100.000	9.31
62 m,p-Xylenes	106	7.904	7.904 (1.030)	1427253	200.000	18.50

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	63 o-Xylene	106	8.241	8.241	(1.074)	688296	100.000	9.07
	64 Styrene	104	8.260	8.260	(1.077)	1189042	100.000	9.96
	66 Bromoform	173	8.410	8.410	(1.096)	275605	100.000	58.16
	67 Isopropylbenzene	105	8.560	8.560	(1.116)	1697982	100.000	9.22
	68 1,1,2,2-Tetrachloroethane	83	8.837	8.837	(0.915)	392179	100.000	80.49
$	69 4-Bromofluorobenzene	95	8.687	8.687	(1.132)	515729	100.000	58.22
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	286259	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	299689	100.000	31.97(MH)
	73 n-Propylbenzene	91	8.912	8.912	(0.922)	1931706	100.000	81.46
	74 Bromobenzene	156	8.803	8.803	(0.911)	519722	100.000	25.88
	75 1,3,5-Trimethylbenzene	105	9.066	9.066	(0.938)	1419088	100.000	25.38
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	1189575	100.000	24.06
	77 4-Chlorotoluene	91	9.069	9.069	(0.939)	1345640	100.000	25.46
	78 tert-Butylbenzene	119	9.336	9.336	(0.966)	1201935	100.000	25.49
	79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	1414597	100.000	25.35
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	1639120	100.000	25.94
	82 p-Isopropyltoluene	119	9.650	9.650	(0.999)	1468831	100.000	25.89
	83 1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	862334	100.000	26.16
	84 1,4-Dichlorobenzene	146	9.680	9.680	(1.002)	866266	100.000	25.98
	86 Benzyl Chloride	91	9.808	9.808	(1.279)	539870	100.000	10.41
	87 n-Butylbenzene	91	9.992	9.992	(1.034)	1190321	100.000	27.45
	88 1,2-Dichlorobenzene	146	9.992	9.992	(1.034)	770867	100.000	81.32
	89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	41420	100.000	82.62
	90 1,2,4-Trichlorobenzene	180	11.337	11.337	(1.173)	357352	100.000	81.57
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	270788	100.000	63.18
	92 Naphthalene	128	11.544	11.544	(1.195)	461798	100.000	30.11
	93 1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	230130	100.000	28.54
M	94 1,2-Dichloroethylene (total)	96				805142	200.000	
M	95 Xylenes (total)	106				2115549	300.000	
	141 Cyclohexane	56	4.125	4.125	(0.986)	483557	100.000	4.17
	138 Freon TF	101	1.917	1.917	(0.458)	268182	100.000	4.33
	147 Methylcyclohexane	55	5.381	5.381	(1.083)	801270	100.000	5.00
	146 Methyl Acetate	43	2.232	2.232	(0.533)	190729	100.000	5.42

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^6)
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Date : 14-OCT-2022 14:14
Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1;8;
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18
\\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101409.D
Min
-Acetaldehyde
-Bromomethane
-Chloroethane+
-Trichlorofluoromethane+
-Isopentane
-Diethyl ether+
-1,1-Dichloroethene+
-Iodomethane+
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane+
-1,1-Dichloroethane
-Vinyl Acetate+
-tert-Butyl ethyl ether
-2,2-Dichloropropane+
-Propionitrile+
-Bromochloromethane+
-Chloroform
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-Isobutyl Alcohol+
-1,4-Difluorobenzene
-Trichloroethene+
-Methylcyclohexane+
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether+
-cis-1,3-Dichloropropene+
-2-Nitropropane+
-Toluene-d8
Toluene
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate
1,1,2-Trichloroethane
-Tetrachloroethene+
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
m,p-Xylenes
-o-Xylene+
-Bromoform+
-Isopropylbenzene
-Cyclohexanone
-4-Bromofluorobenzene
-Bromobenzene
-1,1,2,2-Tetrachloroethane+
-trans-1,4-Dichloro-2-bute+
-2-Chlorotoluene
-alpha-Methylstyrene
1,3,5-Trimethylbenzene+
-tert-Butylbenzene+
-sec-Butylbenzene
-1,3-Dichlorobenzene
-Benzyl Chloride
1,4-Dichlorobenzene-d4+
n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene+

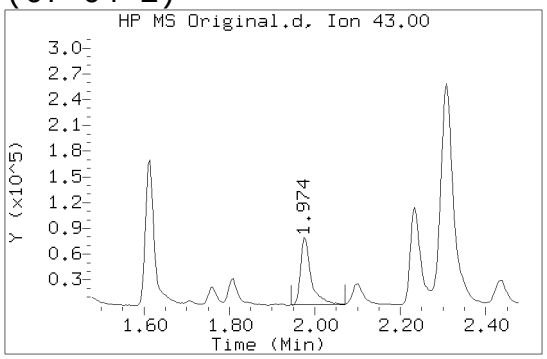
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InstruID : voa6.i
LabSampID : VSTD100

Acetone (67-64-1)

Reason Code:

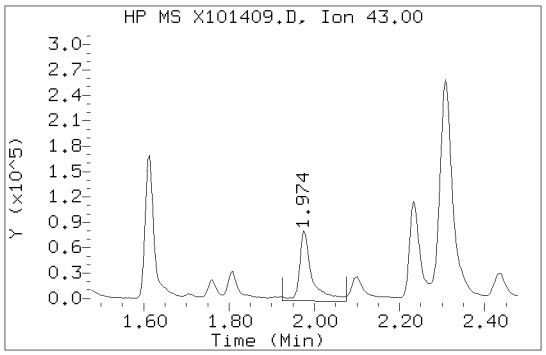
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16:03
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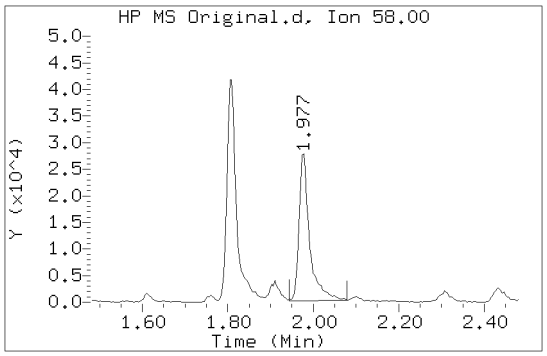
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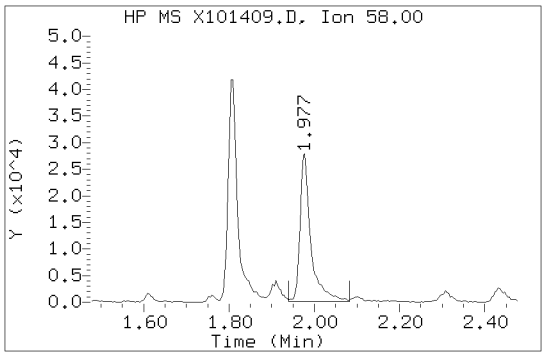
BEFORE

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AFTER

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15:16

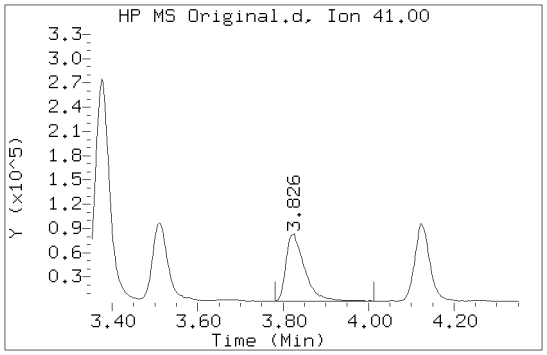


Methacrylonitrile (126-98-7)

Reason Code:

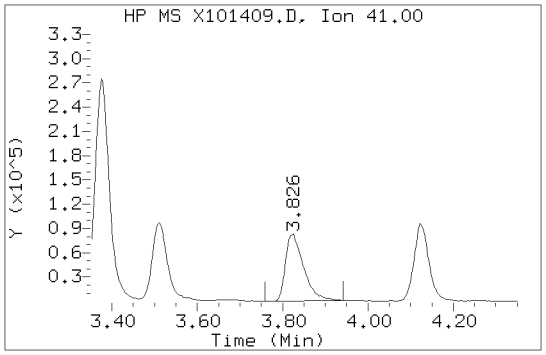
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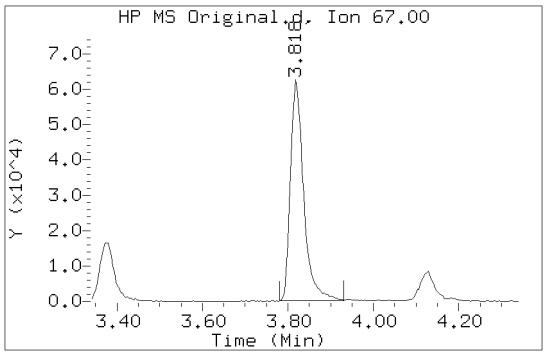
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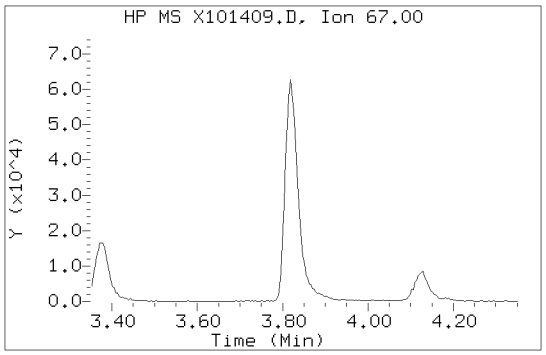
BEFORE

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19-Oct-2022
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pham



AFTER

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HEIGHT
16552
27-Oct-2022
15:16



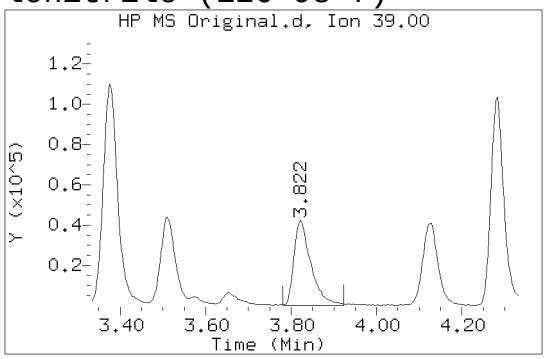
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Inj Date : 14-OCT-2022 14:14
InstruID : voa6.i
LabSampID : VSTD100

Methacrylonitrile (126-98-7)

Reason Code:

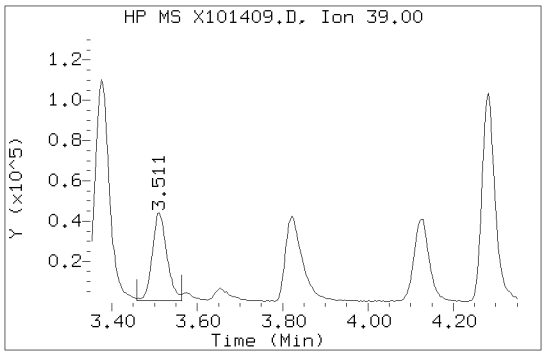
BEFORE

MASS
39
AREA
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HEIGHT
42066
19-Oct-2022
16:03
linh
pham



AFTER

MASS
39
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105003
HEIGHT
43705
27-Oct-2022
15:16

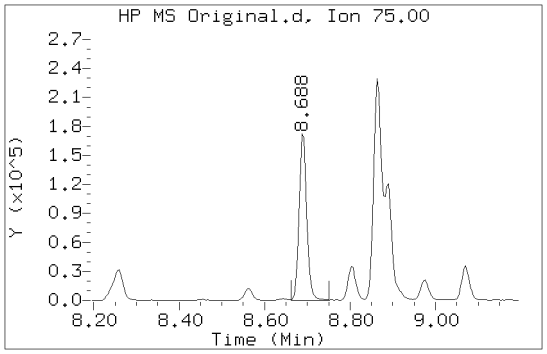


1,2,3-Trichloropropane (96-18-4)

Reason Code:

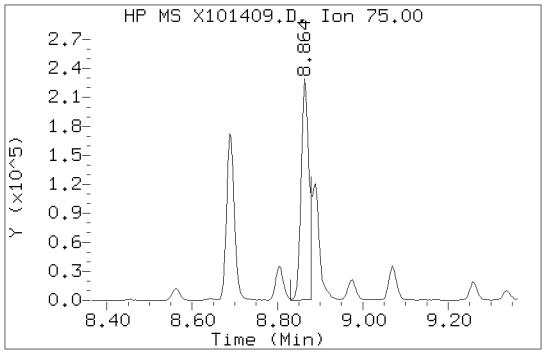
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172197
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16:03
linh
pham



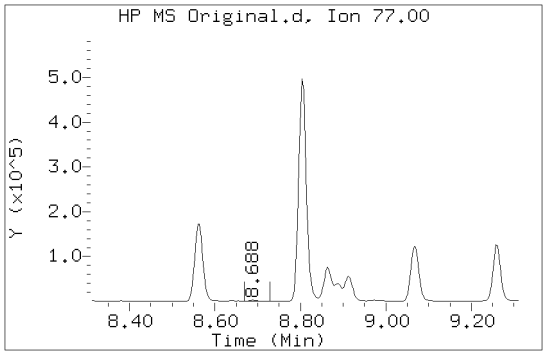
AFTER

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AREA
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229113
27-Oct-2022
15:16



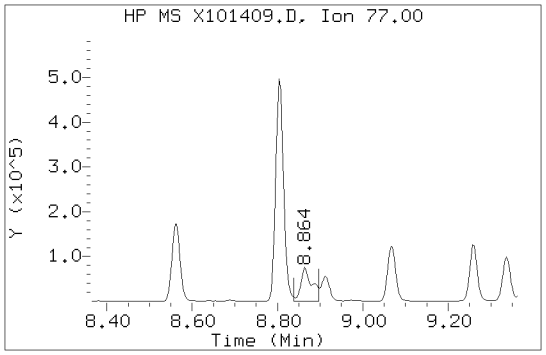
BEFORE

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AREA
2425
HEIGHT
2535
19-Oct-2022
16:03
linh
pham



AFTER

MASS
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143331
HEIGHT
75174
27-Oct-2022
15:16

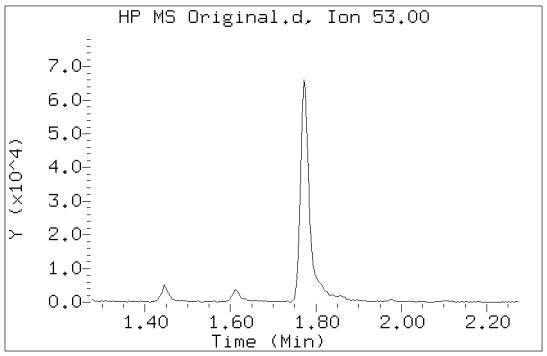


Chloroprene (126-99-8)

Reason Code:

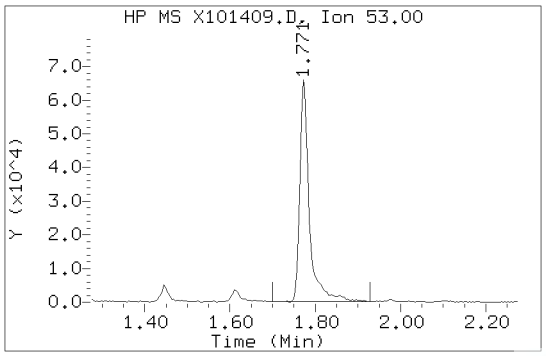
BEFORE

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HEIGHT
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19-Oct-2022
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linh
pham



AFTER

MASS
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AREA
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HEIGHT
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27-Oct-2022
15:16



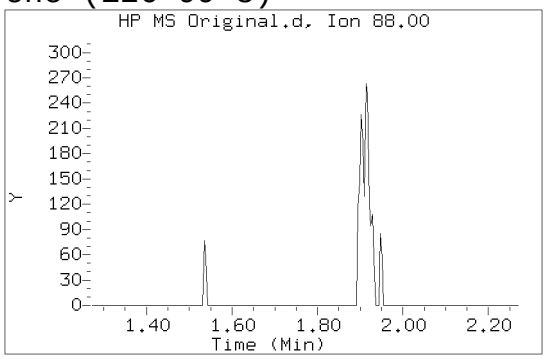
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Inj Date : 14-OCT-2022 14:14
InstruID : voa6.i
LabSampID : VSTD100

Chloroprene (126-99-8)

Reason Code:

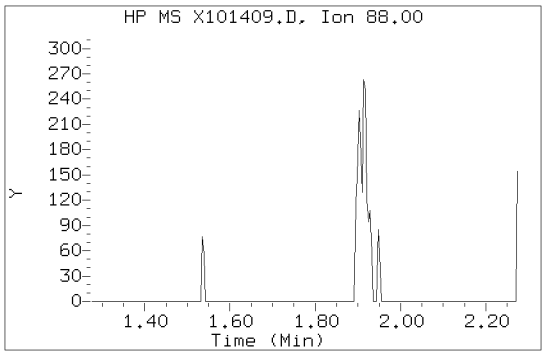
BEFORE

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AREA
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
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AREA
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HEIGHT
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27-Oct-2022
15:16

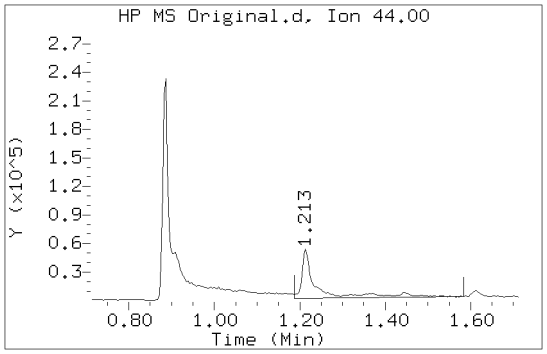


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Reason Code:

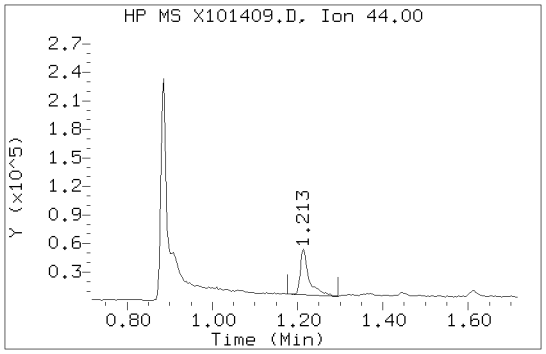
BEFORE

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AREA
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HEIGHT
51852
19-Oct-2022
16:03
linh
pham



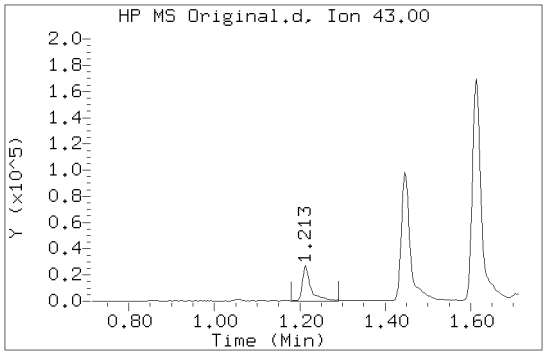
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HEIGHT
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27-Oct-2022
15:16



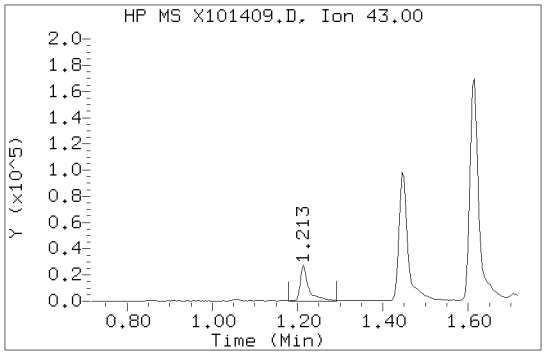
BEFORE

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HEIGHT
27288
19-Oct-2022
16:03
linh
pham



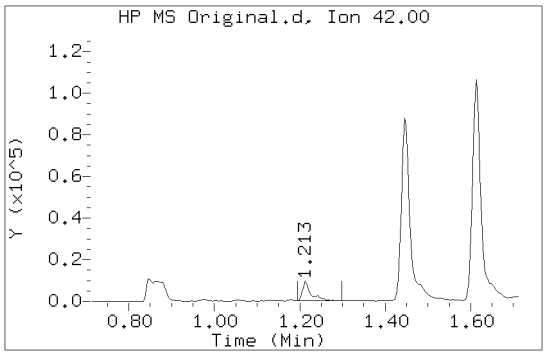
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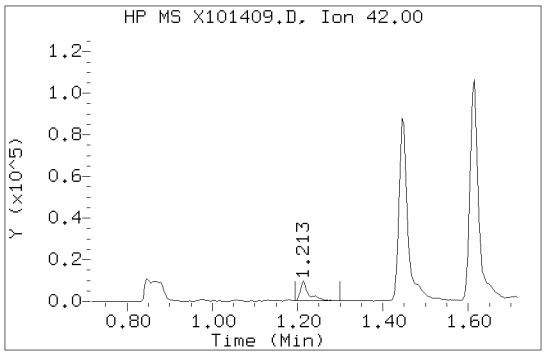
BEFORE

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AREA
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HEIGHT
9507
19-Oct-2022
16:03
linh
pham



AFTER

MASS
42
AREA
13677
HEIGHT
9507
27-Oct-2022
15:16



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101410.D Page 1
Report Date: 27-Oct-2022 15:16

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101410.D
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Inj Date : 14-OCT-2022 14:35
Operator : PC Inst ID: voa6.i
Smp Info : VSTD150;VSTD150;1;9;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\8260W.m
Meth Date : 27-Oct-2022 15:16 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 14:14 Cal File: X101409.D
Als bottle: 11 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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

		QUANT SIG					AMOUNTS	
	Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.185	4.185	(1.000)	413791	50.0000	
	135 1,4-Dioxane	88	5.598	5.598	(1.338)	102298	3000.00	192.90
	140 1,3-Butadiene	54	1.167	1.167	(0.279)	333956	150.000	7.43
	25 Methacrylonitrile	41	3.818	3.818	(0.912)	372951	150.000	7.32(M)
	12 Isobutyl Alcohol	43	4.676	4.676	(1.117)	1270958	3000.00	
	13 Acetonitrile	39	2.198	2.198	(0.525)	504870	1500.00	63.55
	14 Allyl Chloride	41	2.198	2.198	(0.525)	1070230	150.000	6.71
	4 Propionitrile	54	3.653	3.653	(0.873)	567730	1500.00	67.47
	136 n-Hexane	57	2.772	2.772	(0.662)	562398	150.000	6.63
	72 trans-1,4-Dichloro-2-butene	53	8.889	8.889	(1.159)	141358	150.000	69.33
	194 Acetaldehyde	44	1.212	1.212	(0.290)	95544	600.000	589.05(M)
	23 Chloroprene	53	1.771	1.771	(0.423)	159901	150.000	150.03(M)
	145 alpha-Methylstyrene	118	9.257	9.257	(0.958)	1066358	150.000	126.37
	200 Dimethyl Disulfide	94	6.198	6.198	(0.808)	1294734	150.000	16.54
	139 Diethyl ether	59	1.760	1.760	(0.421)	281059	150.000	5.81
	130 Ethyl Acetate	43	3.656	3.656	(0.874)	446269	150.000	
	40 Methyl Methacrylate	41	5.606	5.606	(1.339)	389277	150.000	7.10
	49 Ethyl Methacrylate	69	6.786	6.786	(1.366)	764295	150.000	7.82
	132 n-Butanol	56	5.253	5.253	(1.255)	198825	3000.00	226.62
	142 Tetrahydrofuran	42	3.844	3.844	(0.918)	127721	300.000	10.41

150	Allyl alcohol	57	2.772	2.772 (0.662)	562398	3000.00	132.67
166	1,2,3-Trimethylbenzene	105	9.733	9.733 (1.007)	1924414	150.000	37.70

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101410.D Page 2
Report Date: 27-Oct-2022 15:16

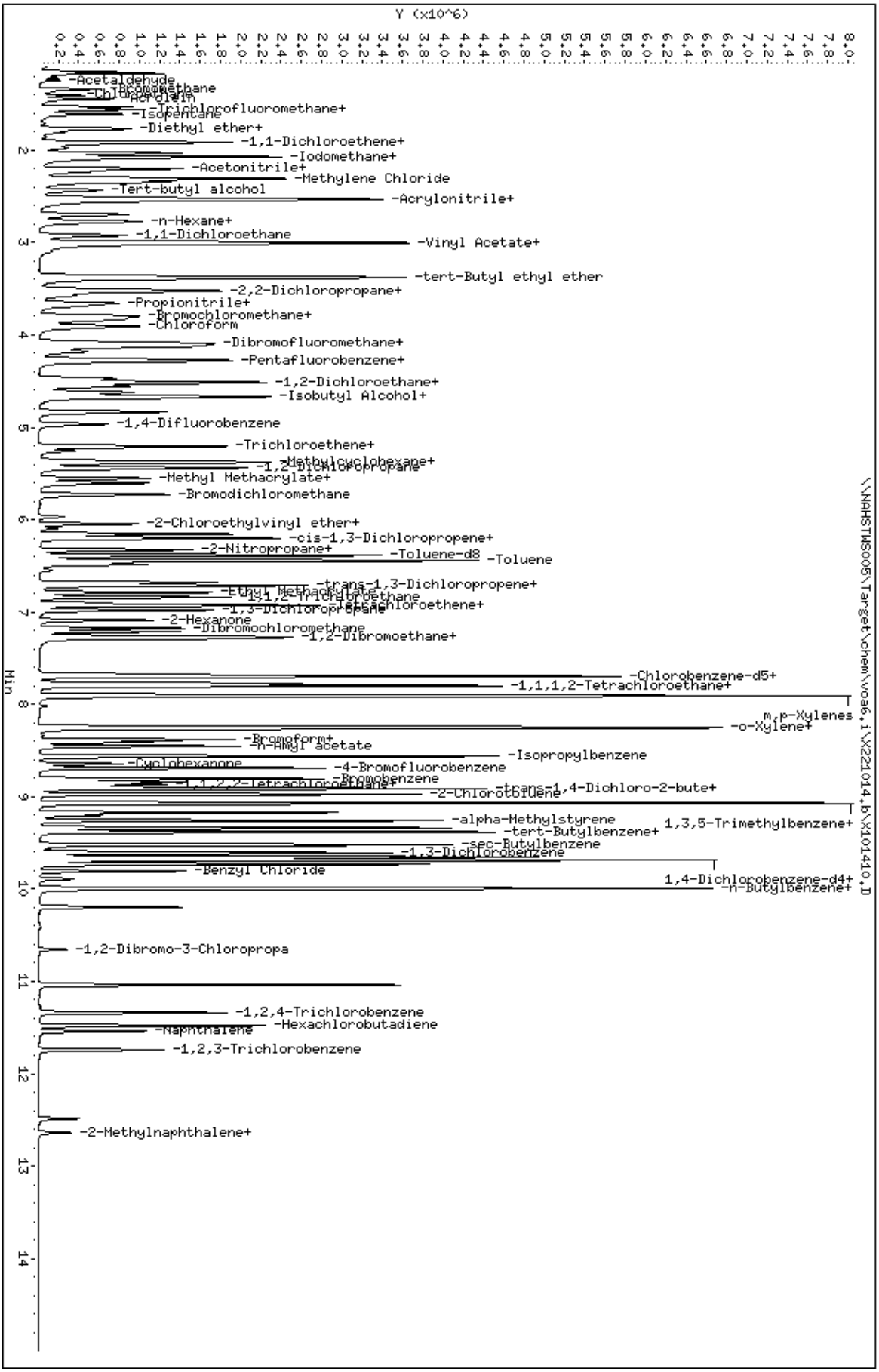
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
131	Methyl Acrylate	55	3.686	3.686	(0.881)	493482	150.000	
162	Butyl acrylate	55	8.252	8.252	(1.076)	972301	150.000	15.08
2	Dichlorodifluoromethane	85	0.976	0.976	(0.233)	468527	150.000	
3	Chloromethane	50	1.081	1.081	(0.258)	522756	150.000	
5	Vinyl Chloride	62	1.145	1.145	(0.274)	476182	150.000	6.43
6	Bromomethane	94	1.340	1.340	(0.320)	329295	150.000	
7	Chloroethane	64	1.403	1.403	(0.335)	287280	150.000	6.41
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	656475	150.000	6.79
9	Acrolein	56	1.445	1.445	(0.345)	65372	300.000	11.14
10	Acetone	43	1.977	1.977	(0.472)	248410	300.000	(M)
11	1,1-Dichloroethene	96	1.913	1.913	(0.457)	396293	150.000	6.62
15	Iodomethane	142	2.029	2.029	(0.485)	1553365	300.000	283.43
16	Acrylonitrile	53	2.535	2.535	(0.606)	322717	300.000	117.45
17	Methylene Chloride	84	2.303	2.303	(0.550)	591753	150.000	
18	Methyl tert-butyl ether	73	2.539	2.539	(0.607)	1434152	150.000	6.44
19	Carbon Disulfide	76	2.071	2.071	(0.495)	2886781	300.000	13.57
20	trans-1,2-Dichloroethene	96	2.528	2.528	(0.604)	552673	150.000	6.56
21	Vinyl Acetate	43	3.000	3.000	(0.717)	2432799	300.000	12.68
22	1,1-Dichloroethane	63	2.922	2.922	(0.698)	933106	150.000	6.34
24	2-Butanone	43	3.578	3.578	(0.855)	330811	300.000	17.51(H)
26	2,2-Dichloropropane	77	3.510	3.510	(0.839)	779494	150.000	6.89
27	cis-1,2-Dichloroethene	96	3.529	3.529	(0.843)	641800	150.000	6.55
28	Chloroform	83	3.904	3.904	(0.933)	978201	150.000	6.27
29	Bromochloromethane	128	3.795	3.795	(0.907)	339317	150.000	5.99
$ 30	Dibromofluoromethane	113	4.099	4.099	(0.979)	563177	150.000	
31	1,1,1-Trichloroethane	97	4.084	4.084	(0.976)	830444	150.000	6.89
32	1,1-Dichloropropene	75	4.282	4.282	(0.862)	736465	150.000	7.74
33	1,2-Dichloroethane	62	4.556	4.556	(0.917)	677353	150.000	7.17
34	Carbon Tetrachloride	117	4.267	4.267	(0.859)	719737	150.000	7.88
$ 35	1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	556716	150.000	
* 36	1,4-Difluorobenzene	114	4.968	4.968	(1.000)	606896	50.0000	
37	Benzene	78	4.515	4.515	(0.909)	2241701	150.000	7.27
38	Trichloroethene	130	5.205	5.205	(1.048)	688011	150.000	7.46
39	Bromodichloromethane	83	5.726	5.726	(1.152)	755014	150.000	7.64
41	2-Chloroethylvinyl ether	63	6.048	6.048	(1.217)	389632	300.000	118.50
42	1,2-Dichloropropane	63	5.437	5.437	(1.094)	556786	150.000	6.95
44	Dibromomethane	93	5.553	5.553	(1.118)	356189	150.000	7.24
45	4-Methyl-2-Pentanone	43	6.325	6.325	(0.825)	810393	300.000	127.35
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	989784	150.000	7.80
* 47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	560448	50.0000	
$ 48	Toluene-d8	98	6.385	6.385	(0.832)	2084763	150.000	14.10
50	Toluene	91	6.449	6.449	(0.841)	2437506	150.000	13.89
51	trans-1,3-Dichloropropene	75	6.681	6.681	(1.345)	807999	150.000	7.84
52	2-Hexanone	43	7.086	7.086	(0.924)	544334	300.000	33.51(M)
53	1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	425508	150.000	13.10
54	1,3-Dichloropropane	76	6.981	6.981	(0.910)	869589	150.000	13.39
55	Dibromochloromethane	129	7.176	7.176	(0.936)	650961	150.000	65.87
56	Tetrachloroethene	164	6.929	6.929	(0.903)	577019	150.000	14.01
57	1,2-Dibromoethane	107	7.259	7.259	(0.946)	552015	150.000	14.25
58	1-Chlorohexane	55	7.697	7.697	(1.549)	454721	150.000	8.26
59	Chlorobenzene	112	7.694	7.694	(1.003)	1660792	150.000	14.10
60	1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	622475	150.000	14.27

61 Ethylbenzene	106	7.799	7.799 (1.017)	863918	150.000	14.07
62 m,p-Xylenes	106	7.904	7.904 (1.030)	2153443	300.000	28.07

			QUANT SIG					AMOUNTS	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
	63	o-Xylene	106	8.241	8.241	(1.074)	1028951	150.000	13.64
	64	Styrene	104	8.260	8.260	(1.077)	1759007	150.000	14.82
	66	Bromoform	173	8.410	8.410	(1.096)	416750	150.000	66.99
	67	Isopropylbenzene	105	8.563	8.563	(1.116)	2586639	150.000	14.12
	68	1,1,2,2-Tetrachloroethane	83	8.837	8.837	(0.915)	578090	150.000	118.83
$	69	4-Bromofluorobenzene	95	8.687	8.687	(1.132)	754914	150.000	64.43
*	70	1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	286717	50.0000	
	71	1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	433198	150.000	46.14(M)
	73	n-Propylbenzene	91	8.912	8.912	(0.922)	2927124	150.000	124.33
	74	Bromobenzene	156	8.807	8.807	(0.912)	776685	150.000	38.62
	75	1,3,5-Trimethylbenzene	105	9.069	9.069	(0.939)	2127404	150.000	37.99
	76	2-Chlorotoluene	91	8.976	8.976	(0.929)	1771765	150.000	35.78
	77	4-Chlorotoluene	91	9.069	9.069	(0.939)	2001171	150.000	37.80
	78	tert-Butylbenzene	119	9.339	9.339	(0.967)	1817093	150.000	38.48
	79	1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	2138819	150.000	38.27
	81	sec-Butylbenzene	105	9.523	9.523	(0.986)	2485336	150.000	39.28
	82	p-Isopropyltoluene	119	9.650	9.650	(0.999)	2229955	150.000	39.24
	83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	1300241	150.000	39.38
	84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	1311054	150.000	39.25
	86	Benzyl Chloride	91	9.808	9.808	(1.279)	845527	150.000	16.40
	87	n-Butylbenzene	91	9.995	9.995	(1.035)	1799690	150.000	41.43
	88	1,2-Dichlorobenzene	146	9.992	9.992	(1.034)	1158123	150.000	122.94
	89	1,2-Dibromo-3-Chloropropane	155	10.655	10.655	(1.103)	65930	150.000	133.48
	90	1,2,4-Trichlorobenzene	180	11.337	11.337	(1.173)	563938	150.000	130.60
	91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	408156	150.000	116.29
	92	Naphthalene	128	11.540	11.540	(1.194)	761809	150.000	49.60
	93	1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	370569	150.000	45.88
M	94	1,2-Dichloroethylene (total)	96				1194473	300.000	
M	95	Xylenes (total)	106				3182394	450.000	
	141	Cyclohexane	56	4.125	4.125	(0.986)	736596	150.000	6.46
	138	Freon TF	101	1.917	1.917	(0.458)	402648	150.000	6.60
	147	Methylcyclohexane	55	5.381	5.381	(1.083)	1213431	150.000	7.63
	146	Methyl Acetate	43	2.232	2.232	(0.533)	274821	150.000	7.93

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS005\Target\chem\voa6,i\X221014,b\X101410,D
Date : 14-OCT-2022 14:35
Client ID: VSTD150
Sample Info: VSTD150;VSTD150;1;9;
Purge Volume: 5.0
Column phase: DB624

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

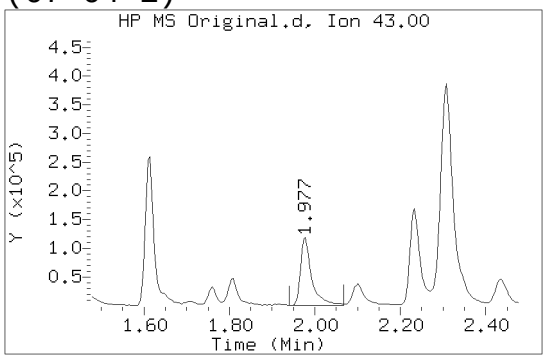
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Inj Date : 14-OCT-2022 14:35
InstruID : voa6.i
LabSampID : VSTD150

Acetone (67-64-1)

Reason Code:

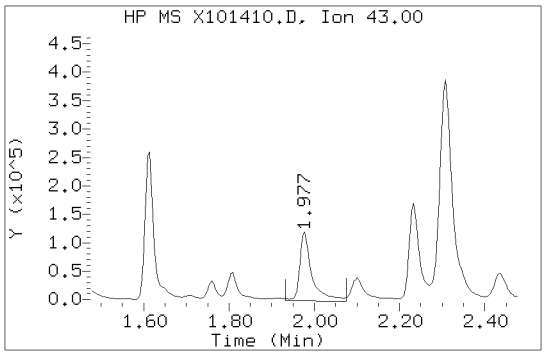
BEFORE

MASS
43
AREA
217304
HEIGHT
117891
19-Oct-2022
16:03
linh
pham



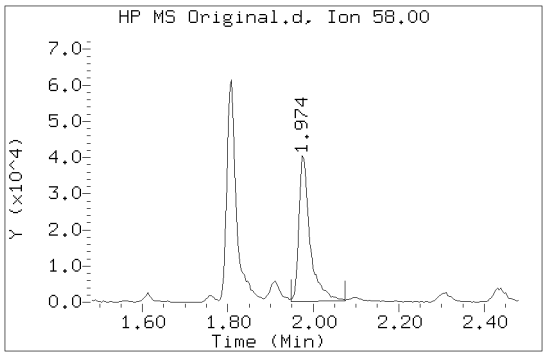
AFTER

MASS
43
AREA
248410
HEIGHT
121143
27-Oct-2022
15:16



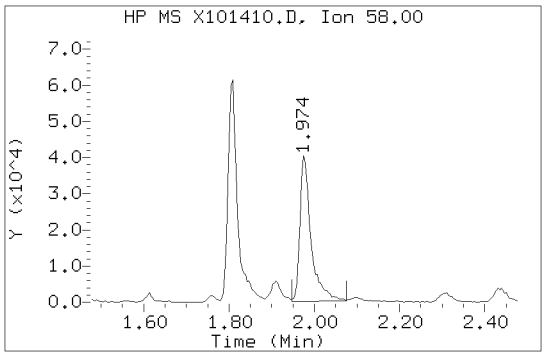
BEFORE

MASS
58
AREA
75287
HEIGHT
40273
19-Oct-2022
16:03
linh
pham



AFTER

MASS
58
AREA
75287
HEIGHT
40273
27-Oct-2022
15:16

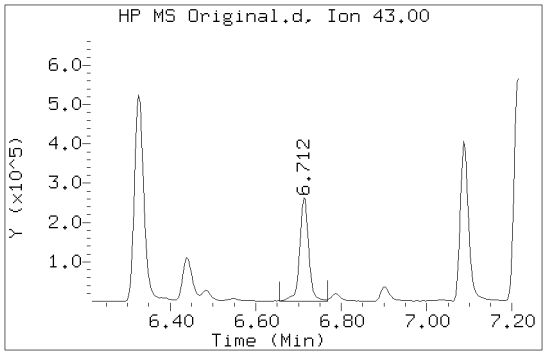


2-Hexanone (591-78-6)

Reason Code:

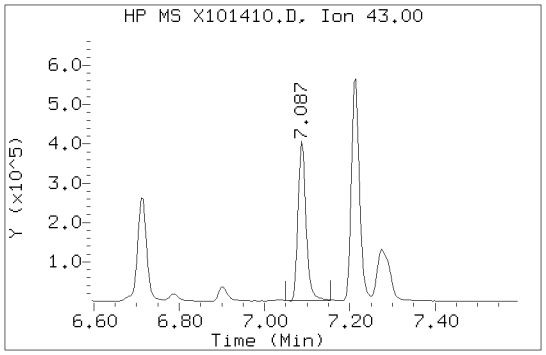
BEFORE

MASS
43
AREA
393882
HEIGHT
261686
19-Oct-2022
16:03
linh
pham



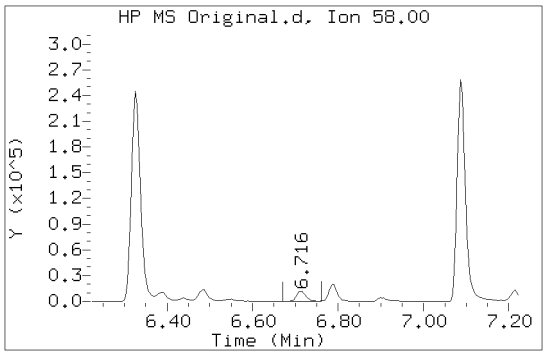
AFTER

MASS
43
AREA
544334
HEIGHT
404831
27-Oct-2022
15:16



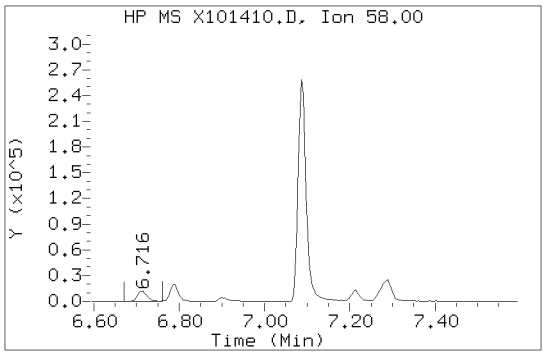
BEFORE

MASS
58
AREA
18341
HEIGHT
11622
19-Oct-2022
16:03
linh
pham



AFTER

MASS
58
AREA
18341
HEIGHT
11622
27-Oct-2022
15:16



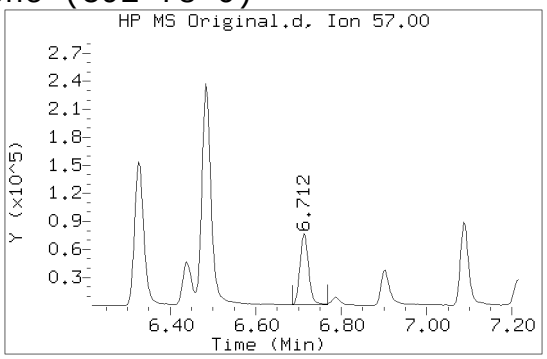
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Inj Date : 14-OCT-2022 14:35
InstruID : voa6.i
LabSampID : VSTD150

2-Hexanone (591-78-6)

Reason Code:

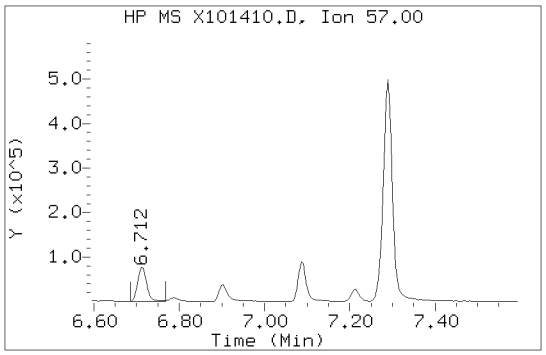
BEFORE

MASS
57
AREA
109840
HEIGHT
75864
19-Oct-2022
16:03
linh
pham



AFTER

MASS
57
AREA
109840
HEIGHT
75864
27-Oct-2022
15:16

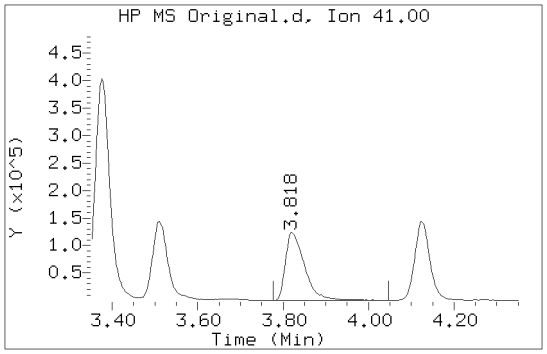


Methacrylonitrile (126-98-7)

Reason Code:

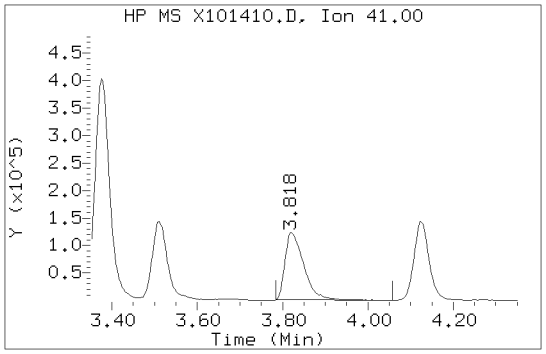
BEFORE

MASS
41
AREA
380280
HEIGHT
123258
19-Oct-2022
16:03
linh
pham



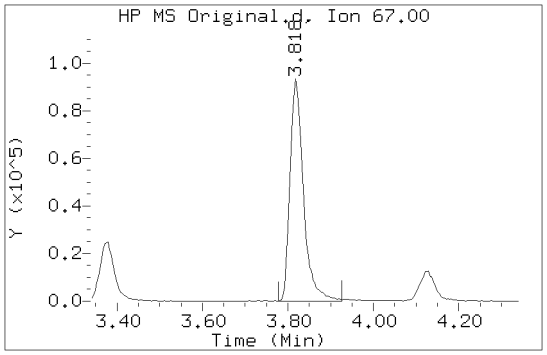
AFTER

MASS
41
AREA
372951
HEIGHT
122569
27-Oct-2022
15:16



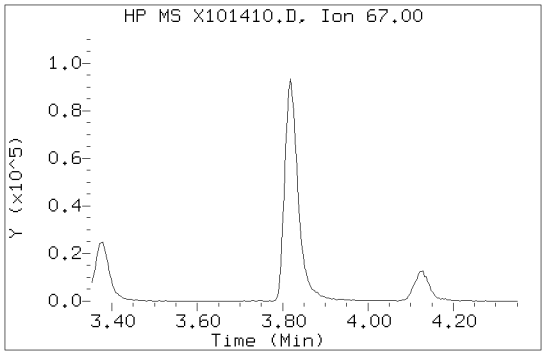
BEFORE

MASS
67
AREA
205450
HEIGHT
93379
19-Oct-2022
16:03
linh
pham



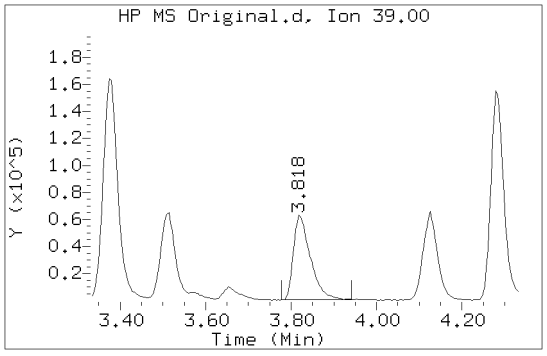
AFTER

MASS
67
AREA
59957
HEIGHT
24944
27-Oct-2022
15:16



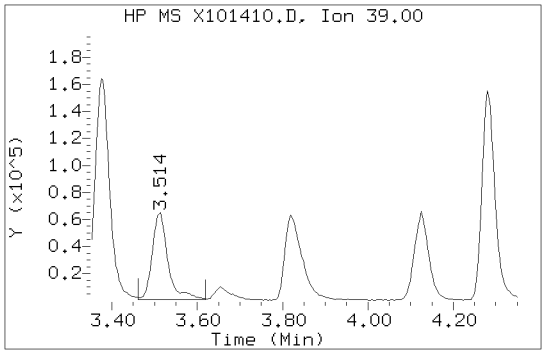
BEFORE

MASS
39
AREA
173919
HEIGHT
62546
19-Oct-2022
16:03
linh
pham



AFTER

MASS
39
AREA
166039
HEIGHT
64463
27-Oct-2022
15:16



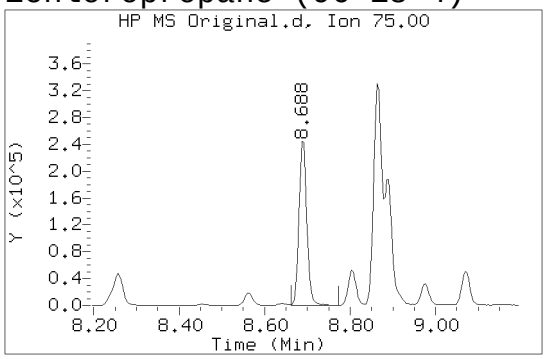
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101410.D
Inj Date : 14-OCT-2022 14:35
InstruID : voa6.i
LabSampID : VSTD150

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

Reason Code:

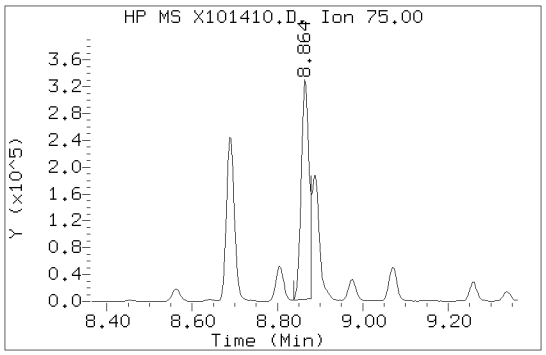
BEFORE

MASS
75
AREA
317598
HEIGHT
244564
19-Oct-2022
16:03
linh
pham



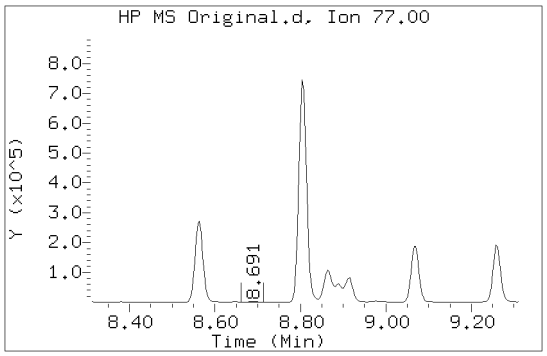
AFTER

MASS
75
AREA
433198
HEIGHT
327444
27-Oct-2022
15:16



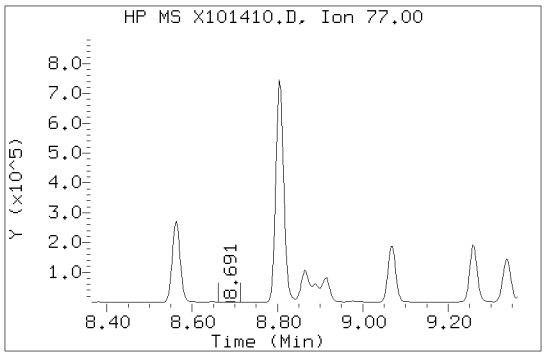
BEFORE

MASS
77
AREA
4214
HEIGHT
3125
19-Oct-2022
16:03
linh
pham



AFTER

MASS
77
AREA
4214
HEIGHT
3125
27-Oct-2022
15:16

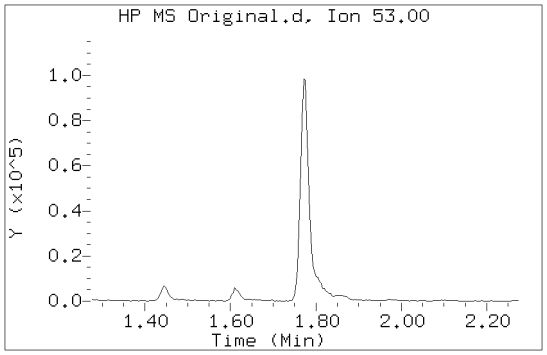


Chloroprene (126-99-8)

Reason Code:

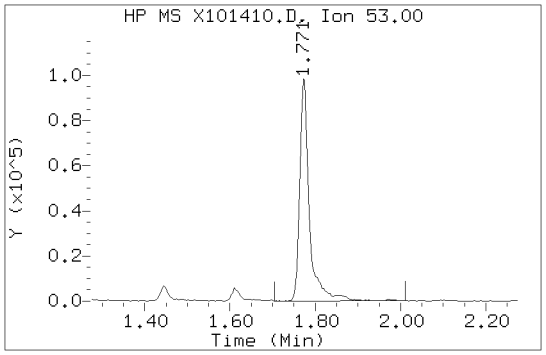
BEFORE

MASS
53
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



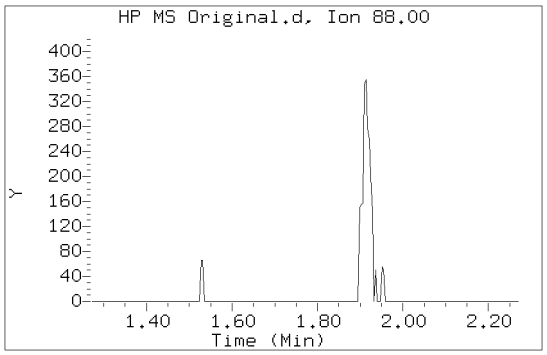
AFTER

MASS
53
AREA
159901
HEIGHT
98343
27-Oct-2022
15:16



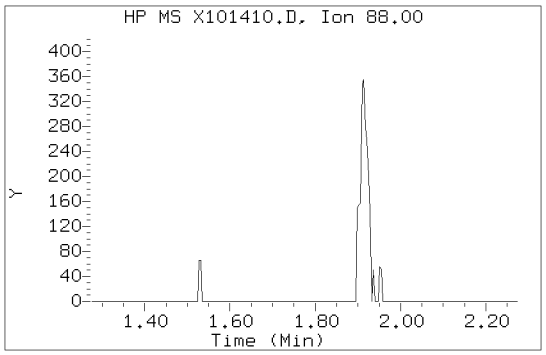
BEFORE

MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
88
AREA
0
HEIGHT
0
27-Oct-2022
15:16



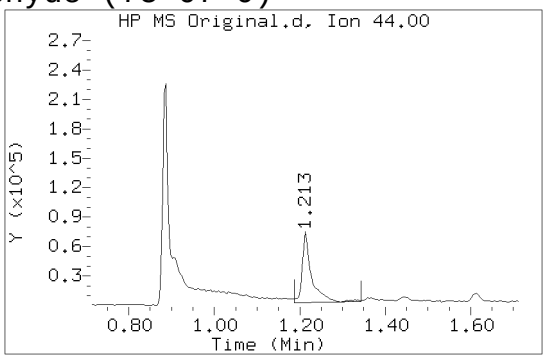
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Inj Date : 14-OCT-2022 14:35
InstruID : voa6.i
LabSampID : VSTD150

Acetaldehyde (75-07-0)

Reason Code:

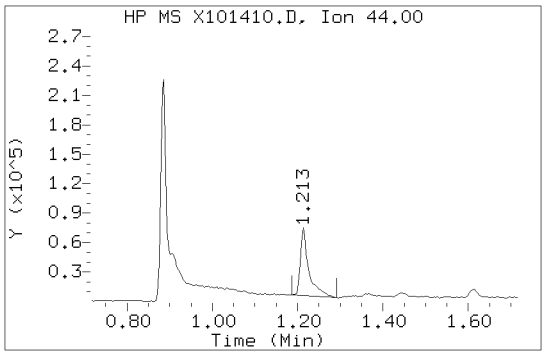
BEFORE

MASS
44
AREA
111054
HEIGHT
71834
19-Oct-2022
16:03
linh
pham



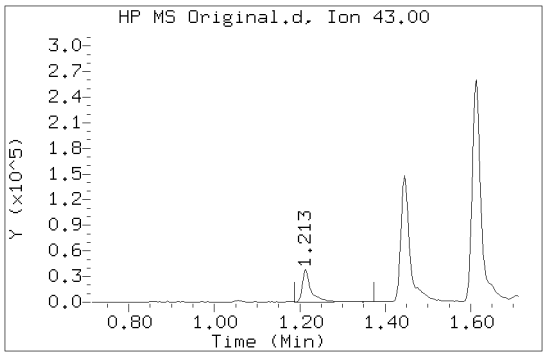
AFTER

MASS
44
AREA
95544
HEIGHT
68911
27-Oct-2022
15:16



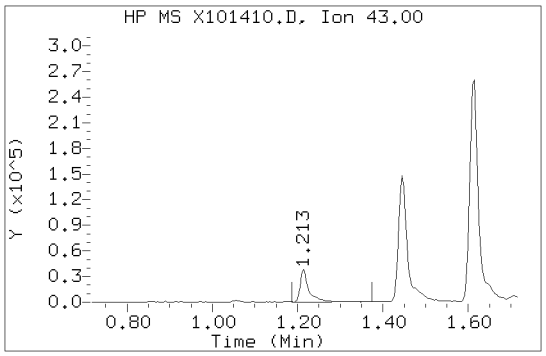
BEFORE

MASS
43
AREA
55641
HEIGHT
38125
19-Oct-2022
16:03
linh
pham



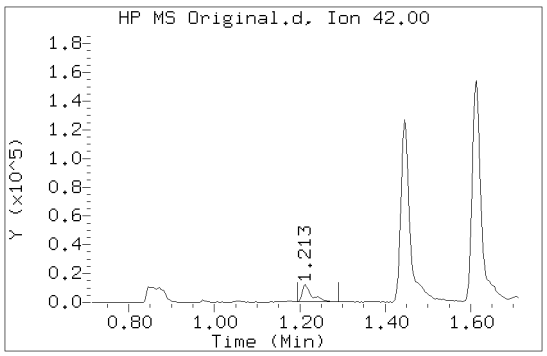
AFTER

MASS
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AREA
55641
HEIGHT
38125
27-Oct-2022
15:16



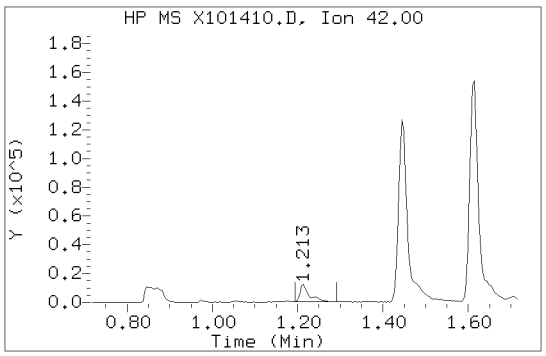
BEFORE

MASS
42
AREA
19410
HEIGHT
12406
19-Oct-2022
16:03
linh
pham



AFTER

MASS
42
AREA
19410
HEIGHT
12406
27-Oct-2022
15:16



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101411.D Page 1
Report Date: 27-Oct-2022 15:17

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101411.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 14-OCT-2022 14:56
Operator : PC Inst ID: voa6.i
Smp Info : VSTD200;VSTD200;1;10;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\8260W.m
Meth Date : 27-Oct-2022 15:17 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 14:35 Cal File: X101410.D
Als bottle: 12 Calibration Sample, Level: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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)	416563	50.0000	
135 1,4-Dioxane	88	5.598	5.598	(1.338)	129222	4000.00	242.05
140 1,3-Butadiene	54	1.167	1.167	(0.279)	424162	200.000	9.38
25 Methacrylonitrile	41	3.818	3.818	(0.912)	493131	200.000	9.62(M)
12 Isobutyl Alcohol	43	4.676	4.676	(1.117)	1690451	4000.00	
13 Acetonitrile	39	2.198	2.198	(0.525)	702172	2000.00	87.79
14 Allyl Chloride	41	2.198	2.198	(0.525)	1432006	200.000	8.92
4 Propionitrile	54	3.653	3.653	(0.873)	748902	2000.00	88.41
136 n-Hexane	57	2.772	2.772	(0.662)	695156	200.000	8.14
72 trans-1,4-Dichloro-2-butene	53	8.890	8.890	(1.159)	187111	200.000	79.96
194 Acetaldehyde	44	1.212	1.212	(0.290)	139189	800.000	865.52(A)
23 Chloroprene	53	1.771	1.771	(0.423)	194824	200.000	181.58(M)
145 alpha-Methylstyrene	118	9.261	9.261	(0.958)	1360092	200.000	167.66
200 Dimethyl Disulfide	94	6.198	6.198	(0.808)	1742722	200.000	22.66
139 Diethyl ether	59	1.760	1.760	(0.421)	375315	200.000	7.71
130 Ethyl Acetate	43	3.657	3.657	(0.874)	579438	200.000	
40 Methyl Methacrylate	41	5.606	5.606	(1.339)	519882	200.000	9.43
49 Ethyl Methacrylate	69	6.790	6.790	(1.367)	1011988	200.000	10.49
132 n-Butanol	56	5.253	5.253	(1.255)	265551	4000.00	300.66
142 Tetrahydrofuran	42	3.844	3.844	(0.919)	167939	400.000	13.60

150	Allyl alcohol	57	2.772	2.772 (0.662)	695156	4000.00	162.90
166	1,2,3-Trimethylbenzene	105	9.733	9.733 (1.007)	2555769	200.000	51.81

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101411.D Page 2
Report Date: 27-Oct-2022 15:17

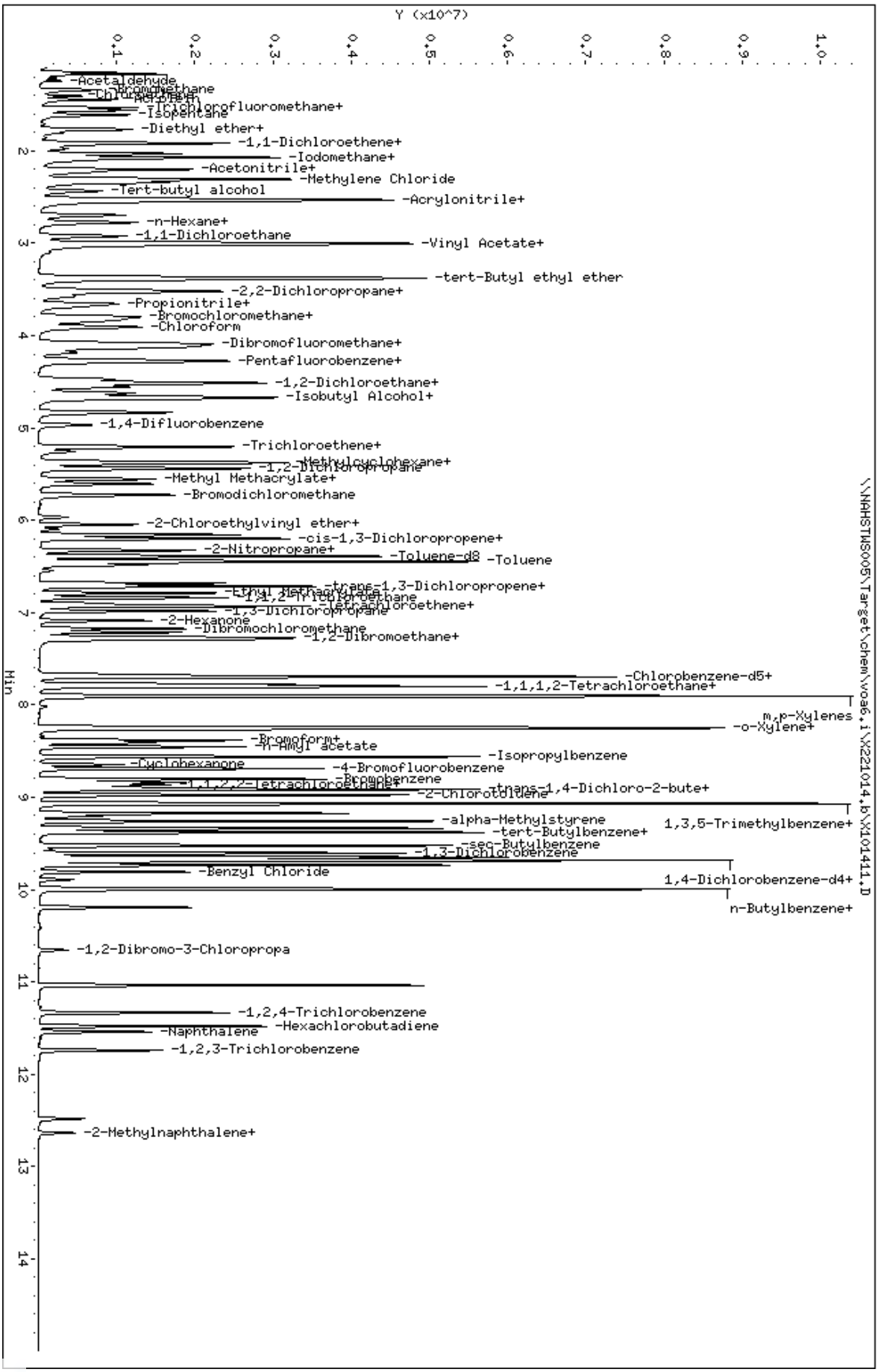
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
131	Methyl Acrylate	55	3.687	3.687	(0.881)	650975	200.000	
162	Butyl acrylate	55	8.252	8.252	(1.076)	1306929	200.000	20.62
2	Dichlorodifluoromethane	85	0.973	0.973	(0.232)	585094	200.000	
3	Chloromethane	50	1.081	1.081	(0.258)	708783	200.000	
5	Vinyl Chloride	62	1.145	1.145	(0.274)	610114	200.000	8.19
6	Bromomethane	94	1.336	1.336	(0.319)	434479	200.000	
7	Chloroethane	64	1.404	1.404	(0.335)	362899	200.000	8.05
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	827440	200.000	8.50
9	Acrolein	56	1.445	1.445	(0.345)	91241	400.000	15.44
10	Acetone	43	1.977	1.977	(0.472)	311608	400.000	(M)
11	1,1-Dichloroethene	96	1.913	1.913	(0.457)	506917	200.000	8.41
15	Iodomethane	142	2.030	2.030	(0.485)	2054869	400.000	319.18
16	Acrylonitrile	53	2.536	2.536	(0.606)	422900	400.000	117.57
17	Methylene Chloride	84	2.303	2.303	(0.550)	773591	200.000	
18	Methyl tert-butyl ether	73	2.539	2.539	(0.607)	1906067	200.000	8.50
19	Carbon Disulfide	76	2.071	2.071	(0.495)	3703597	400.000	17.29
20	trans-1,2-Dichloroethene	96	2.528	2.528	(0.604)	714828	200.000	8.43
21	Vinyl Acetate	43	3.001	3.001	(0.717)	3194039	400.000	16.54
22	1,1-Dichloroethane	63	2.922	2.922	(0.698)	1205792	200.000	8.13
24	2-Butanone	43	3.578	3.578	(0.855)	430323	400.000	22.63(H)
26	2,2-Dichloropropane	77	3.510	3.510	(0.839)	985724	200.000	8.66
27	cis-1,2-Dichloroethene	96	3.525	3.525	(0.842)	839765	200.000	8.52
28	Chloroform	83	3.908	3.908	(0.934)	1284804	200.000	8.19
29	Bromochloromethane	128	3.795	3.795	(0.907)	435052	200.000	7.63
$ 30	Dibromofluoromethane	113	4.099	4.099	(0.979)	729143	200.000	
31	1,1,1-Trichloroethane	97	4.084	4.084	(0.976)	1064483	200.000	8.77
32	1,1-Dichloropropene	75	4.283	4.283	(0.862)	926090	200.000	9.86
33	1,2-Dichloroethane	62	4.556	4.556	(0.917)	918224	200.000	9.84
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	909171	200.000	10.08
$ 35	1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	714756	200.000	
* 36	1,4-Difluorobenzene	114	4.969	4.969	(1.000)	599307	50.0000	
37	Benzene	78	4.515	4.515	(0.909)	2899553	200.000	9.53
38	Trichloroethene	130	5.209	5.209	(1.048)	879281	200.000	9.66
39	Bromodichloromethane	83	5.726	5.726	(1.152)	997609	200.000	10.22
41	2-Chloroethylvinyl ether	63	6.048	6.048	(1.217)	508948	400.000	121.00
42	1,2-Dichloropropane	63	5.437	5.437	(1.094)	729819	200.000	9.23
44	Dibromomethane	93	5.553	5.553	(1.118)	469741	200.000	9.68
45	4-Methyl-2-Pentanone	43	6.326	6.326	(0.825)	1062135	400.000	139.17
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	1300315	200.000	10.37
* 47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	550835	50.0000	
$ 48	Toluene-d8	98	6.389	6.389	(0.833)	2683811	200.000	18.47
50	Toluene	91	6.449	6.449	(0.841)	3124151	200.000	18.12
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.345)	1068751	200.000	10.50
52	2-Hexanone	43	7.087	7.087	(0.924)	715821	400.000	44.83(M)
53	1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	554575	200.000	17.37
54	1,3-Dichloropropane	76	6.982	6.982	(0.910)	1135839	200.000	17.80
55	Dibromochloromethane	129	7.177	7.177	(0.936)	870695	200.000	74.32
56	Tetrachloroethene	164	6.929	6.929	(0.903)	720514	200.000	17.80
57	1,2-Dibromoethane	107	7.259	7.259	(0.946)	727581	200.000	19.11
58	1-Chlorohexane	55	7.698	7.698	(1.549)	563932	200.000	10.37
59	Chlorobenzene	112	7.694	7.694	(1.003)	2155085	200.000	18.62
60	1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	821754	200.000	19.17

61 Ethylbenzene	106	7.799	7.799 (1.017)	1101709	200.000	18.26
62 m,p-Xylenes	106	7.904	7.904 (1.030)	2723687	400.000	36.12

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	63 o-Xylene	106	8.241	8.241	(1.074)	1318908	200.000	17.79
	64 Styrene	104	8.260	8.260	(1.077)	2263274	200.000	19.41
	66 Bromoform	173	8.410	8.410	(1.096)	556325	200.000	76.22
	67 Isopropylbenzene	105	8.564	8.564	(1.116)	3270148	200.000	18.17
	68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	755347	200.000	160.98
$	69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	966365	200.000	70.28
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	277035	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	567768	200.000	62.58(H)
	73 n-Propylbenzene	91	8.912	8.912	(0.922)	3699223	200.000	163.26
	74 Bromobenzene	156	8.807	8.807	(0.912)	1012690	200.000	52.12
	75 1,3,5-Trimethylbenzene	105	9.070	9.070	(0.939)	2694602	200.000	49.80
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	2259566	200.000	47.23
	77 4-Chlorotoluene	91	9.070	9.070	(0.939)	2564651	200.000	50.14
	78 tert-Butylbenzene	119	9.340	9.340	(0.967)	2315734	200.000	50.76
	79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	2719090	200.000	50.35
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	3145713	200.000	51.45
	82 p-Isopropyltoluene	119	9.651	9.651	(0.999)	2822110	200.000	51.40
	83 1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	1669777	200.000	52.34
	84 1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	1668675	200.000	51.71
	86 Benzyl Chloride	91	9.808	9.808	(1.279)	1130937	200.000	22.32
	87 n-Butylbenzene	91	9.996	9.996	(1.035)	2282434	200.000	54.38
	88 1,2-Dichlorobenzene	146	9.992	9.992	(1.034)	1492210	200.000	164.59
	89 1,2-Dibromo-3-Chloropropane	155	10.655	10.655	(1.103)	87502	200.000	184.72
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	749105	200.000	180.90
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	534882	200.000	191.16
	92 Naphthalene	128	11.540	11.540	(1.194)	1012149	200.000	68.21
	93 1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	495745	200.000	63.53
M	94 1,2-Dichloroethylene (total)	96				1554593	400.000	
M	95 Xylenes (total)	106				4042595	600.000	
	141 Cyclohexane	56	4.125	4.125	(0.986)	911053	200.000	7.93
	138 Freon TF	101	1.913	1.913	(0.457)	496674	200.000	8.09
	147 Methylcyclohexane	55	5.381	5.381	(1.083)	1642114	200.000	10.45
	146 Methyl Acetate	43	2.232	2.232	(0.533)	368782	200.000	10.57

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101411.D
Date : 14-OCT-2022 14:56
Client ID: VSTD200
Sample Info: VSTD200;VSTD200;1;10;
Purge Volume: 5.0
Column phase: DB624

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

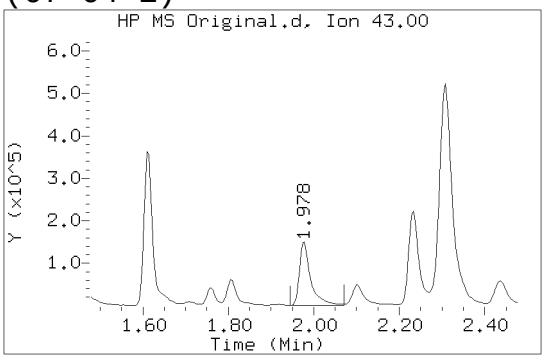
Page 1

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Inj Date : 14-OCT-2022 14:56
InstruID : voa6.i
LabSampID : VSTD200

Acetone (67-64-1)

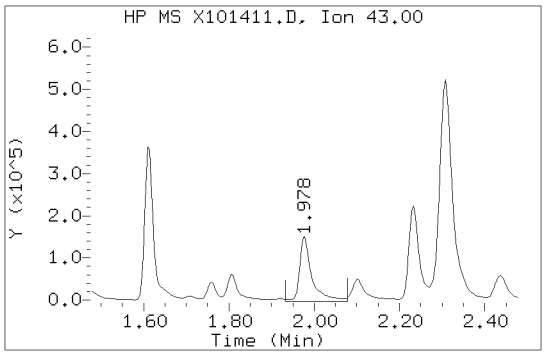
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HEIGHT
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19-Oct-2022
16:03
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pham



AFTER

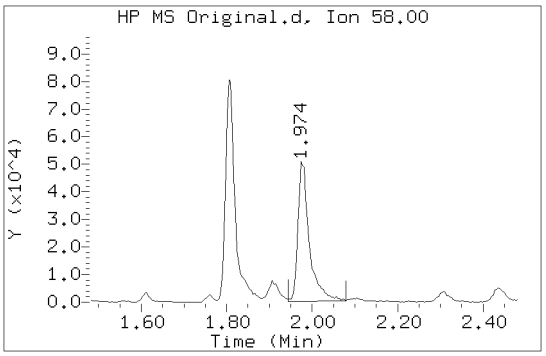
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27-Oct-2022
15:16



Reason Code:

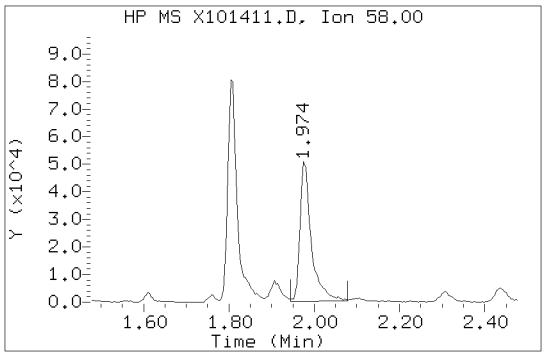
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pham



AFTER

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27-Oct-2022
15:16

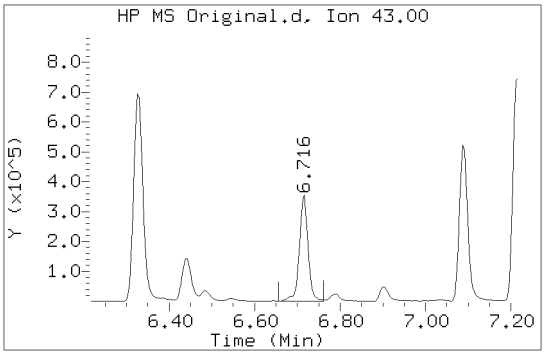


Reason Code:

2-Hexanone (591-78-6)

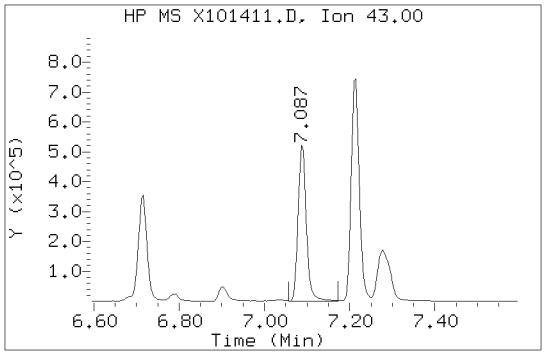
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19-Oct-2022
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pham



AFTER

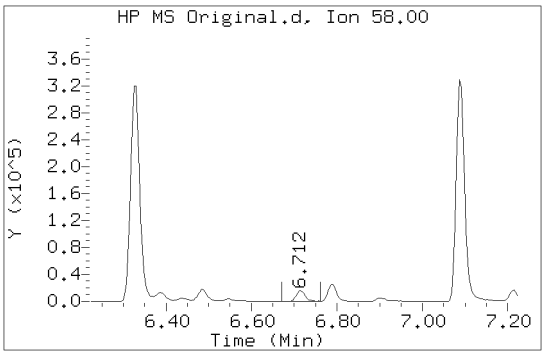
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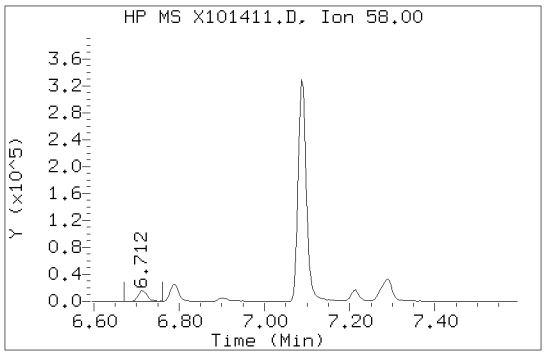
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HEIGHT
15674
19-Oct-2022
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linh
pham



AFTER

MASS
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23112
HEIGHT
15674
27-Oct-2022
15:16



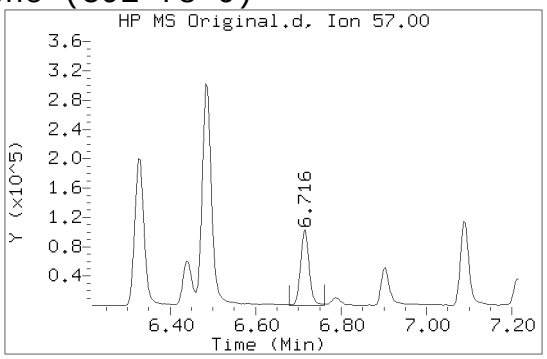
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InstruID : voa6.i
LabSampID : VSTD200

2-Hexanone (591-78-6)

Reason Code:

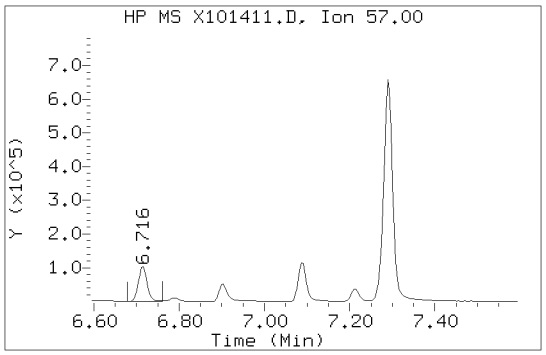
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HEIGHT
103251
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16:03
linh
pham



AFTER

MASS
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AREA
146797
HEIGHT
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27-Oct-2022
15:16

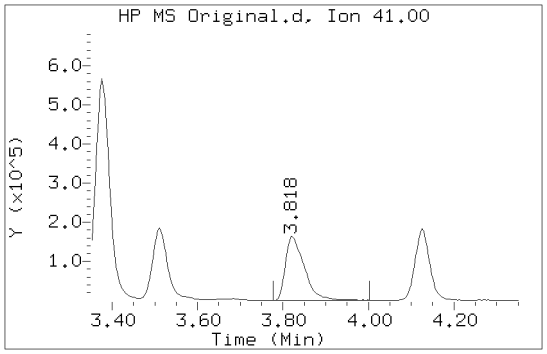


Methacrylonitrile (126-98-7)

Reason Code:

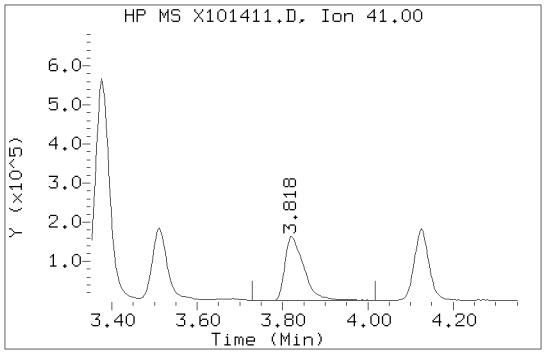
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linh
pham



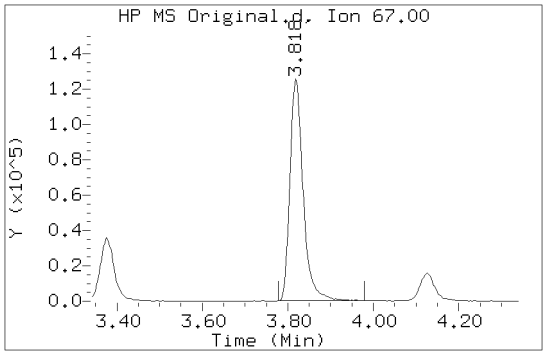
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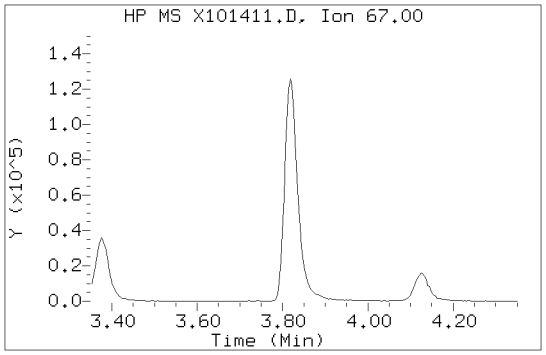
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pham



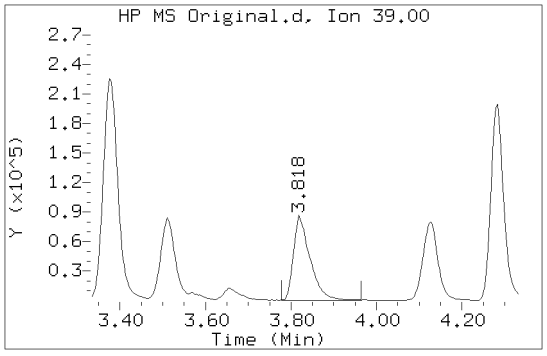
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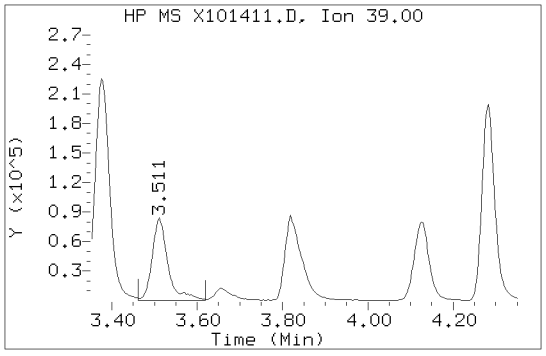
BEFORE

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pham



AFTER

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212254
HEIGHT
83610
27-Oct-2022
15:16



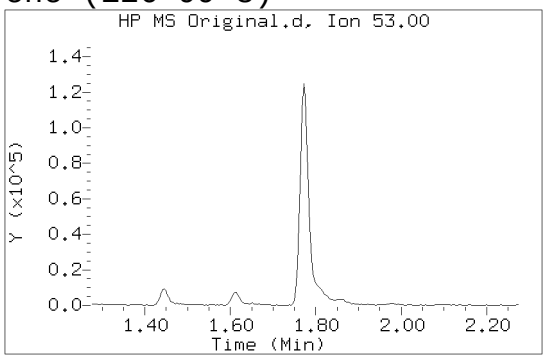
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Inj Date : 14-OCT-2022 14:56
InstruID : voa6.i
LabSampID : VSTD200

Chloroprene (126-99-8)

Reason Code:

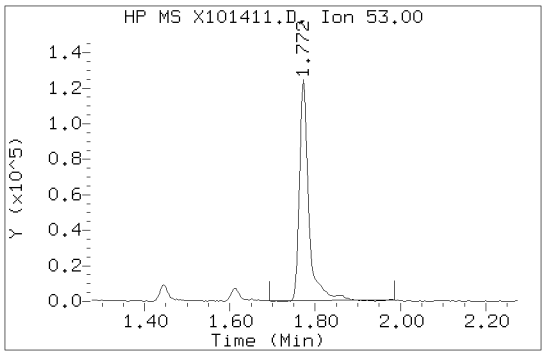
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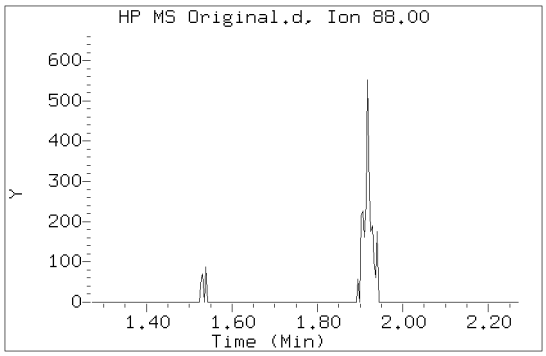
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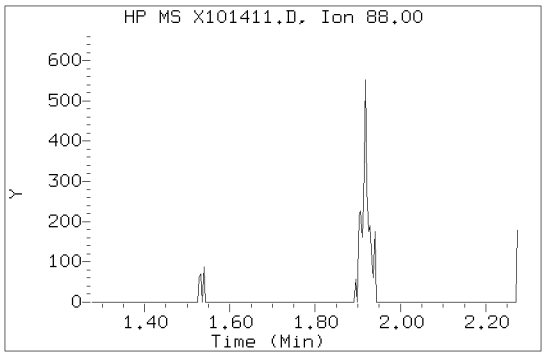
BEFORE

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linh
pham



AFTER

MASS
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AREA
0
HEIGHT
0
27-Oct-2022
15:16



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101414.D Page 1
Report Date: 27-Oct-2022 15:17

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101414.D
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Inj Date : 14-OCT-2022 15:59
Operator : PC Inst ID: voa6.i
Smp Info : VSTD005;VSTD005;1;5;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
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Meth Date : 27-Oct-2022 15:17 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 14:56 Cal File: X101411.D
Als bottle: 15 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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)	435773	50.0000	
135 1,4-Dioxane	88	5.613	5.613	(1.341)	3391	100.000	6.07(M)
140 1,3-Butadiene	54	1.167	1.167	(0.279)	11421	5.00000	0.24(M)
25 Methacrylonitrile	41	3.851	3.851	(0.920)	12898	5.00000	0.24(H)
12 Isobutyl Alcohol	43	4.687	4.687	(1.120)	47767	100.000	
13 Acetonitrile	39	2.202	2.202	(0.526)	17853	50.0000	2.13
14 Allyl Chloride	41	2.209	2.209	(0.528)	36693	5.00000	0.21
4 Propionitrile	54	3.671	3.671	(0.877)	17792	50.0000	2.00
136 n-Hexane	57	2.775	2.775	(0.663)	19554	5.00000	0.21
72 trans-1,4-Dichloro-2-butene	53	8.897	8.897	(1.160)	4568	5.00000	39.64
194 Acetaldehyde	44	1.216	1.216	(0.291)	5574	20.0000	4.94(M)
23 Chloroprene	53	1.775	1.775	(0.424)	5275	5.00000	4.69(M)
145 alpha-Methylstyrene	118	9.264	9.264	(0.959)	38182	5.00000	1.86
200 Dimethyl Disulfide	94	6.202	6.202	(0.808)	39867	5.00000	0.49
139 Diethyl ether	59	1.763	1.763	(0.421)	10699	5.00000	0.21
130 Ethyl Acetate	43	3.671	3.671	(0.877)	17751	5.00000	
40 Methyl Methacrylate	41	5.617	5.617	(1.342)	13701	5.00000	0.23
49 Ethyl Methacrylate	69	6.794	6.794	(1.367)	24330	5.00000	0.23
132 n-Butanol	56	5.294	5.294	(1.265)	3186	100.000	3.44
142 Tetrahydrofuran	42	3.855	3.855	(0.921)	4017	10.0000	0.31

150 Allyl alcohol	57	2.775	2.775 (0.663)	19554	100.000	4.38
166 1,2,3-Trimethylbenzene	105	9.729	9.729 (1.007)	79559	5.00000	1.51

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101414.D Page 2
Report Date: 27-Oct-2022 15:17

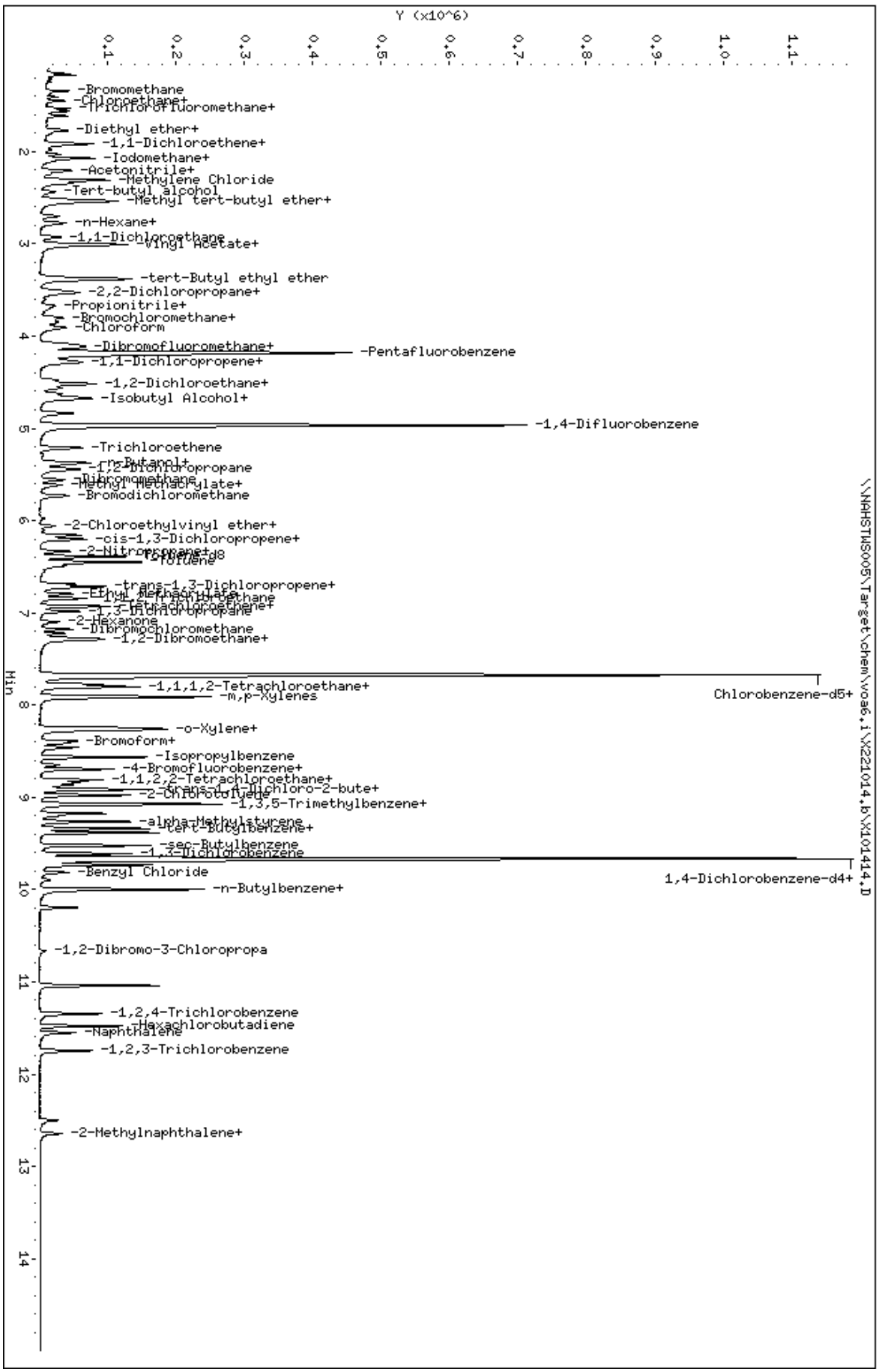
			QUANT SIG					AMOUNTS	
								CAL-AMT	ON-COL
	Compounds		MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
	131	Methyl Acrylate	55	3.724	3.724	(0.890)	10862	5.00000	
	162	Butyl acrylate	55	8.260	8.260	(1.077)	31866	5.00000	0.47
	2	Dichlorodifluoromethane	85	0.976	0.976	(0.233)	15457	5.00000	
	3	Chloromethane	50	1.081	1.081	(0.258)	20317	5.00000	
	5	Vinyl Chloride	62	1.145	1.145	(0.274)	16054	5.00000	0.20
	6	Bromomethane	94	1.343	1.343	(0.321)	15054	5.00000	(M)
	7	Chloroethane	64	1.407	1.407	(0.336)	10184	5.00000	0.21
	8	Trichlorofluoromethane	101	1.565	1.565	(0.374)	20981	5.00000	0.20
	9	Acrolein	56	1.448	1.448	(0.346)	2817	10.0000	0.45
	10	Acetone	43	1.977	1.977	(0.472)	10022	10.0000	(M)
	11	1,1-Dichloroethene	96	1.917	1.917	(0.458)	13316	5.00000	0.21
	15	Iodomethane	142	2.029	2.029	(0.485)	27348	10.0000	4.79
	16	Acrylonitrile	53	2.554	2.554	(0.610)	10352	10.0000	117.07(H)
	17	Methylene Chloride	84	2.307	2.307	(0.551)	26716	5.00000	
	18	Methyl tert-butyl ether	73	2.539	2.539	(0.607)	52551	5.00000	0.22
	19	Carbon Disulfide	76	2.074	2.074	(0.496)	102410	10.0000	0.45
	20	trans-1,2-Dichloroethene	96	2.536	2.536	(0.606)	19440	5.00000	0.21
	21	Vinyl Acetate	43	3.008	3.008	(0.719)	87665	10.0000	0.43
	22	1,1-Dichloroethane	63	2.929	2.929	(0.700)	32780	5.00000	0.21
	24	2-Butanone	43	3.608	3.608	(0.862)	8096	10.0000	0.40(H)
	26	2,2-Dichloropropane	77	3.514	3.514	(0.840)	28521	5.00000	0.23
	27	cis-1,2-Dichloroethene	96	3.529	3.529	(0.843)	23468	5.00000	0.22
	28	Chloroform	83	3.911	3.911	(0.935)	34399	5.00000	0.20
	29	Bromochloromethane	128	3.803	3.803	(0.909)	12619	5.00000	0.21
$	30	Dibromofluoromethane	113	4.102	4.102	(0.980)	21880	5.00000	
	31	1,1,1-Trichloroethane	97	4.084	4.084	(0.976)	28109	5.00000	0.22
	32	1,1-Dichloropropene	75	4.290	4.290	(0.863)	23650	5.00000	0.23
	33	1,2-Dichloroethane	62	4.564	4.564	(0.919)	23376	5.00000	0.23
	34	Carbon Tetrachloride	117	4.264	4.264	(0.858)	23688	5.00000	0.24
$	35	1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	20670	5.00000	
*	36	1,4-Difluorobenzene	114	4.968	4.968	(1.000)	633970	50.0000	
	37	Benzene	78	4.515	4.515	(0.909)	78901	5.00000	0.24
	38	Trichloroethene	130	5.212	5.212	(1.049)	23694	5.00000	0.24
	39	Bromodichloromethane	83	5.729	5.729	(1.153)	25802	5.00000	0.24
	41	2-Chloroethylvinyl ether	63	6.059	6.059	(1.220)	10768	10.0000	110.95
	42	1,2-Dichloropropane	63	5.441	5.441	(1.095)	21068	5.00000	0.25
	44	Dibromomethane	93	5.561	5.561	(1.119)	12881	5.00000	0.25
	45	4-Methyl-2-Pentanone	43	6.333	6.333	(0.826)	28218	10.0000	93.09
	46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	34257	5.00000	0.25
*	47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	581917	50.0000	
$	48	Toluene-d8	98	6.389	6.389	(0.833)	80565	5.00000	0.52
	50	Toluene	91	6.449	6.449	(0.841)	89663	5.00000	0.49
	51	trans-1,3-Dichloropropene	75	6.689	6.689	(1.346)	26703	5.00000	0.24
	52	2-Hexanone	43	7.094	7.094	(0.925)	18219	10.0000	1.08(M)
	53	1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	16001	5.00000	0.47
	54	1,3-Dichloropropane	76	6.985	6.985	(0.911)	32166	5.00000	0.47
	55	Dibromochloromethane	129	7.176	7.176	(0.935)	21891	5.00000	43.21
	56	Tetrachloroethene	164	6.925	6.925	(0.903)	20292	5.00000	0.47
	57	1,2-Dibromoethane	107	7.263	7.263	(0.947)	19666	5.00000	0.48
	58	1-Chlorohexane	55	7.697	7.697	(1.549)	15425	5.00000	0.26
	59	Chlorobenzene	112	7.694	7.694	(1.003)	63096	5.00000	0.51
	60	1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	22086	5.00000	0.48

61 Ethylbenzene	106	7.802	7.802 (1.017)	31013	5.00000	0.48
62 m,p-Xylenes	106	7.907	7.907 (1.031)	77013	10.0000	0.96

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	63 o-Xylene	106	8.245	8.245	(1.075)	38163	5.00000	0.48
	64 Styrene	104	8.267	8.267	(1.078)	63018	5.00000	0.51
	66 Bromoform	173	8.413	8.413	(1.097)	12900	5.00000	41.98
	67 Isopropylbenzene	105	8.563	8.563	(1.116)	94437	5.00000	0.49
	68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	22472	5.00000	3.72
$	69 4-Bromofluorobenzene	95	8.695	8.695	(1.133)	33148	5.00000	45.88
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	294324	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	16755	5.00000	1.73(M)
	73 n-Propylbenzene	91	8.916	8.916	(0.923)	105117	5.00000	2.31
	74 Bromobenzene	156	8.807	8.807	(0.912)	28225	5.00000	1.36
	75 1,3,5-Trimethylbenzene	105	9.069	9.069	(0.939)	81965	5.00000	1.42
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	69339	5.00000	1.36
	77 4-Chlorotoluene	91	9.073	9.073	(0.939)	75615	5.00000	1.39
	78 tert-Butylbenzene	119	9.336	9.336	(0.966)	70785	5.00000	1.46
	79 1,2,4-Trimethylbenzene	105	9.384	9.384	(0.971)	81267	5.00000	1.41
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	96907	5.00000	1.49
	82 p-Isopropyltoluene	119	9.650	9.650	(0.999)	87791	5.00000	1.50
	83 1,3-Dichlorobenzene	146	9.609	9.609	(0.995)	51349	5.00000	1.51
	84 1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	52768	5.00000	1.53
	86 Benzyl Chloride	91	9.815	9.815	(1.279)	28171	5.00000	0.52
	87 n-Butylbenzene	91	9.999	9.999	(1.035)	74011	5.00000	1.66
	88 1,2-Dichlorobenzene	146	9.995	9.995	(1.035)	48078	5.00000	3.11
	89 1,2-Dibromo-3-Chloropropane	155	10.670	10.670	(1.104)	2467	5.00000	1.30(M)
	90 1,2,4-Trichlorobenzene	180	11.345	11.345	(1.174)	33011	5.00000	4.03
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	22062	5.00000	9.75
	92 Naphthalene	128	11.551	11.551	(1.196)	24797	5.00000	1.57(M)
	93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.216)	12036	5.00000	1.45(M)
M	94 1,2-Dichloroethylene (total)	96				42908	10.0000	
M	95 Xylenes (total)	106				115176	15.0000	
	141 Cyclohexane	56	4.125	4.125	(0.986)	23914	5.00000	0.19
	138 Freon TF	101	1.921	1.921	(0.459)	12987	5.00000	0.20
	147 Methylcyclohexane	55	5.369	5.369	(1.081)	42838	5.00000	0.25(M)
	146 Methyl Acetate	43	2.247	2.247	(0.537)	9025	5.00000	0.24

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



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Column phase: DB624

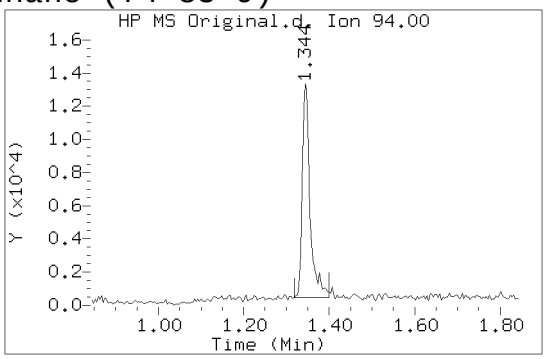
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Operator: PC
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Inj Date : 14-OCT-2022 15:59
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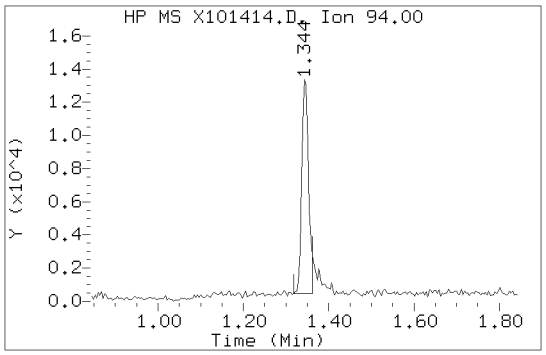
Bromomethane (74-83-9)

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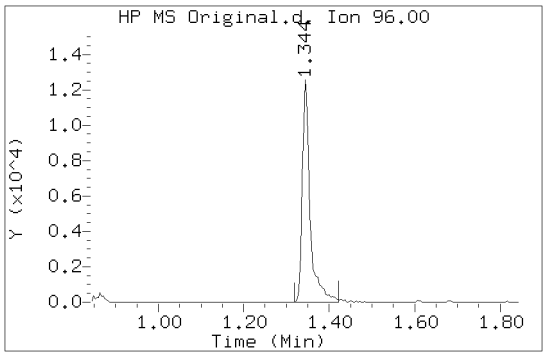
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19-Oct-2022
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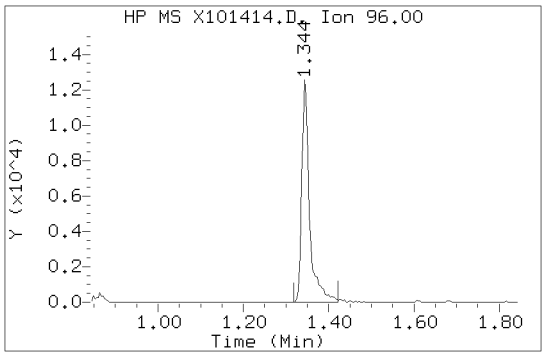
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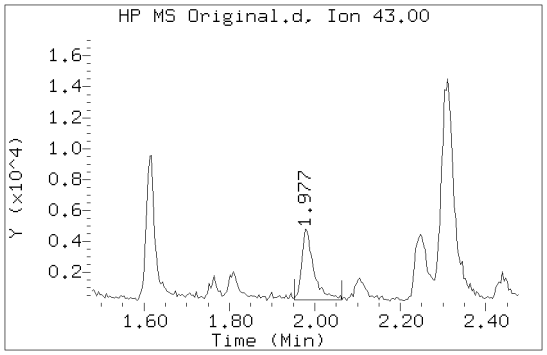
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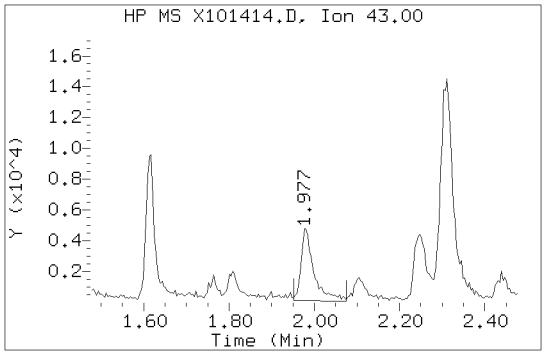
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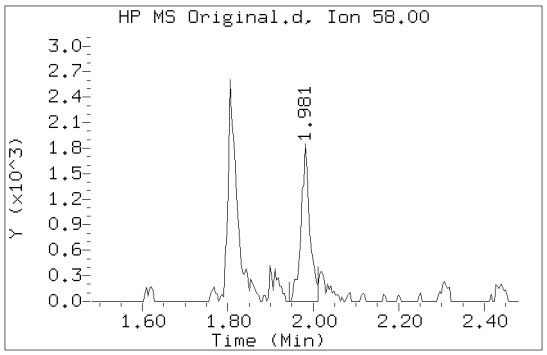
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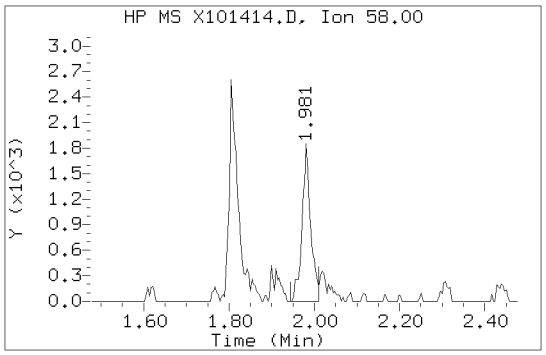
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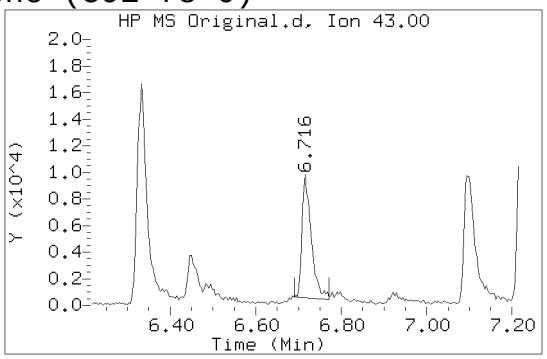


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LabSampID : ICV

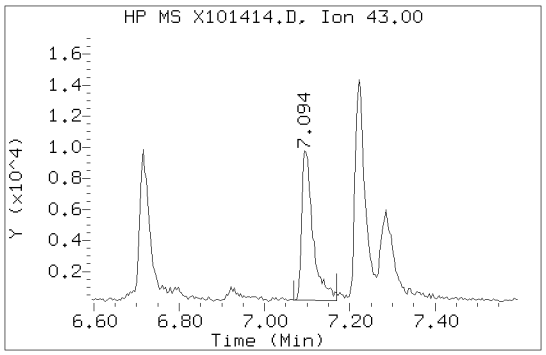
2-Hexanone (591-78-6)

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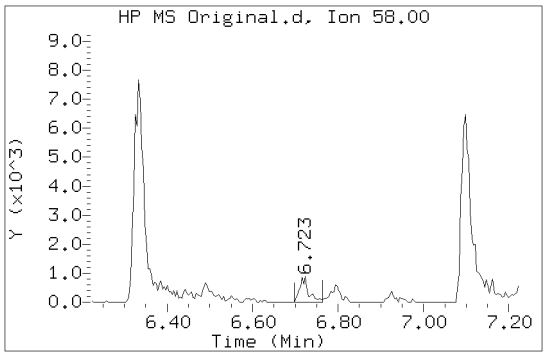
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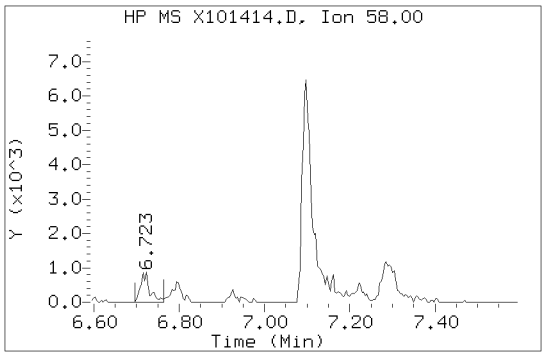
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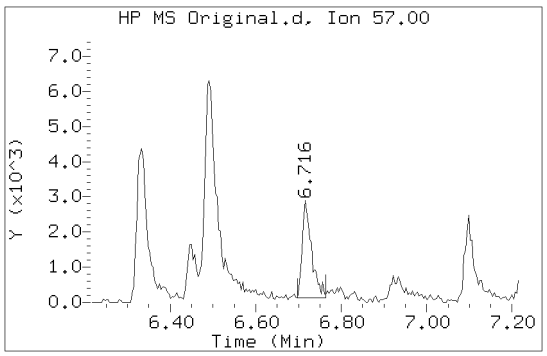
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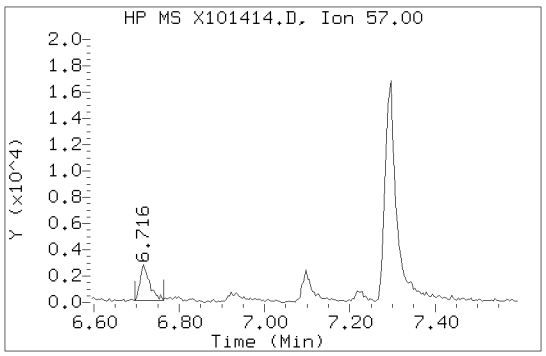
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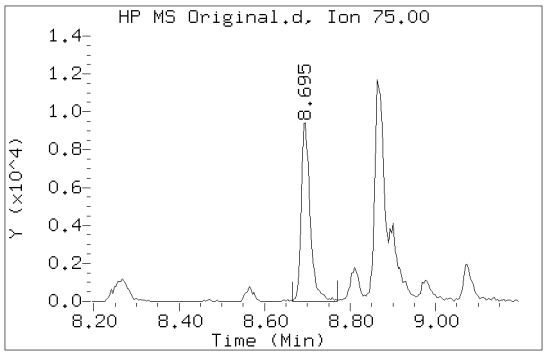
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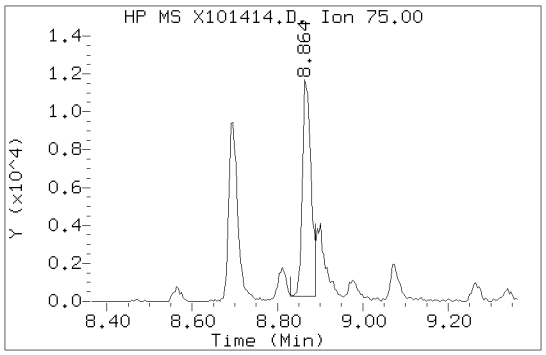
1,2,3-Trichloropropane (96-18-4)

Reason Code:

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AFTER
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27-Oct-2022
15:16



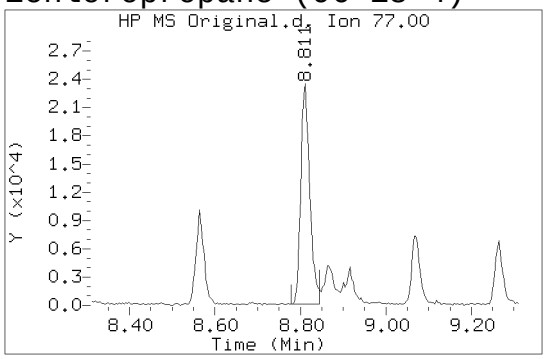
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Inj Date : 14-OCT-2022 15:59
InstruID : voa6.i
LabSampID : ICV

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

Reason Code:

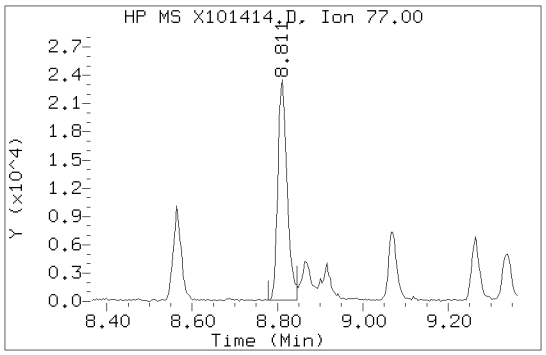
BEFORE

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AFTER

MASS
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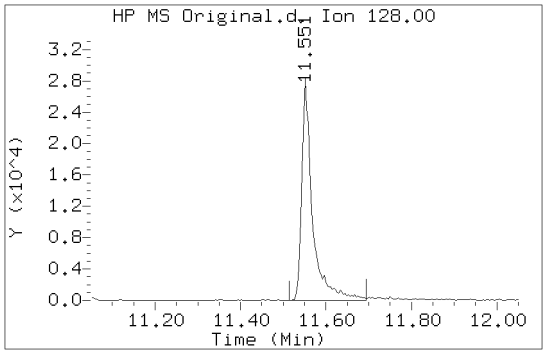


Naphthalene (91-20-3)

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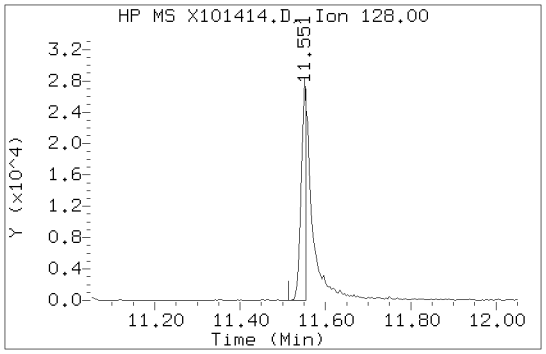
BEFORE

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pham



AFTER

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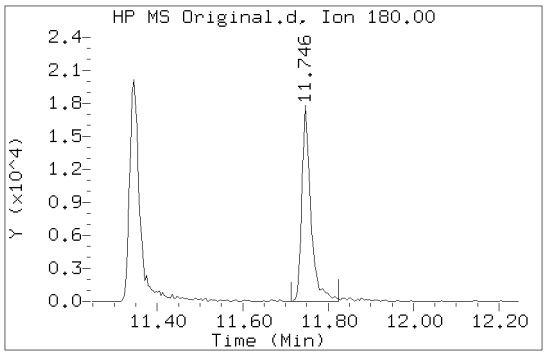


1,2,3-Trichlorobenzene (87-61-6)

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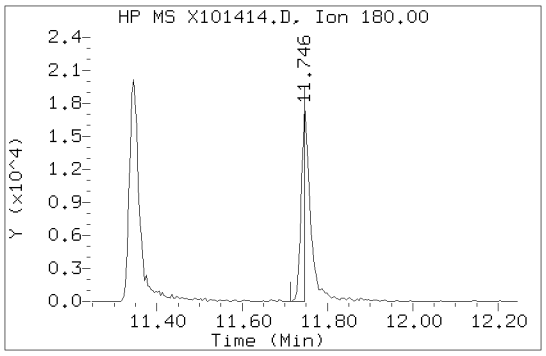
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linh
pham



AFTER

MASS
180
AREA
12036
HEIGHT
17840
27-Oct-2022
15:16

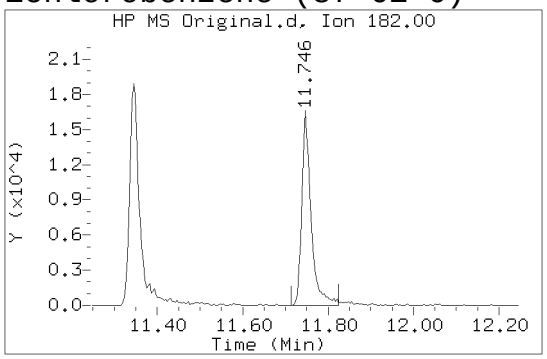


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Inj Date : 14-OCT-2022 15:59
InstruID : voa6.i
LabSampID : ICV

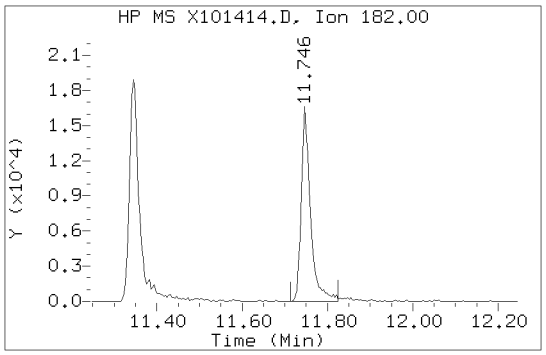
1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

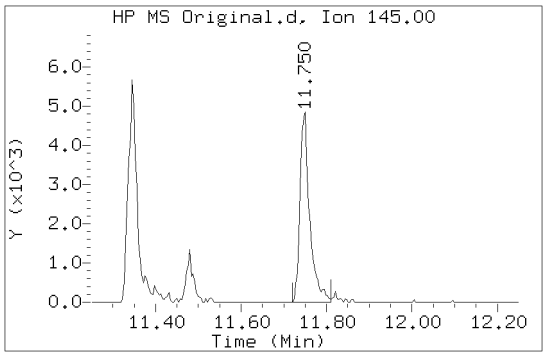
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HEIGHT
16608
19-Oct-2022
16:03
linh
pham



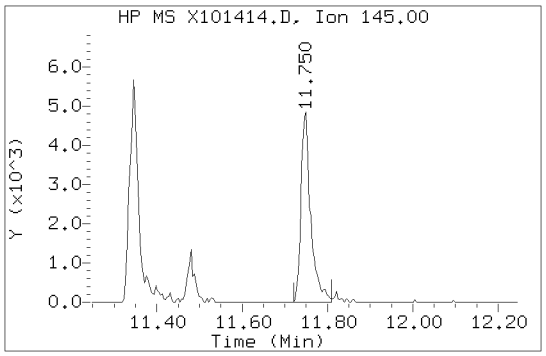
AFTER
MASS
182
AREA
25642
HEIGHT
16608
27-Oct-2022
15:16



BEFORE
MASS
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AREA
7901
HEIGHT
4859
19-Oct-2022
16:03
linh
pham



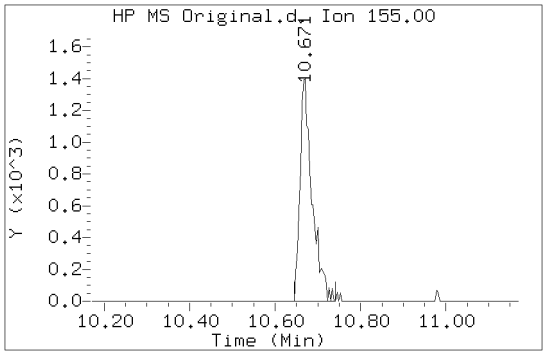
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7901
HEIGHT
4859
27-Oct-2022
15:16



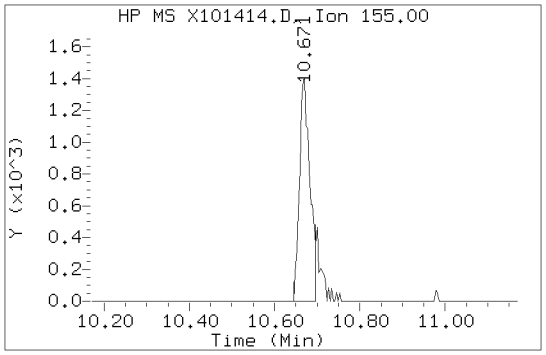
1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

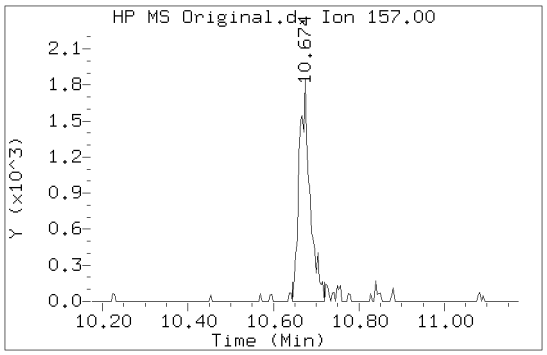
BEFORE
MASS
155
AREA
2810
HEIGHT
1398
19-Oct-2022
16:03
linh
pham



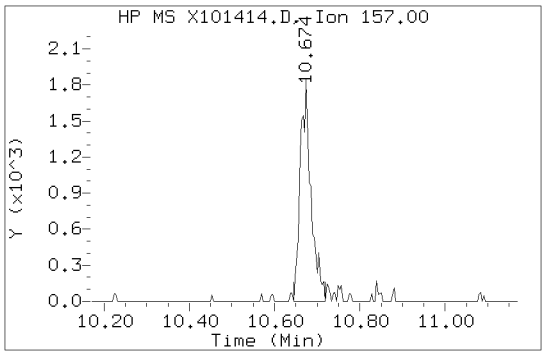
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MASS
155
AREA
2467
HEIGHT
1398
27-Oct-2022
15:16



BEFORE
MASS
157
AREA
3278
HEIGHT
1844
19-Oct-2022
16:03
linh
pham



AFTER
MASS
157
AREA
3278
HEIGHT
1844
27-Oct-2022
15:16



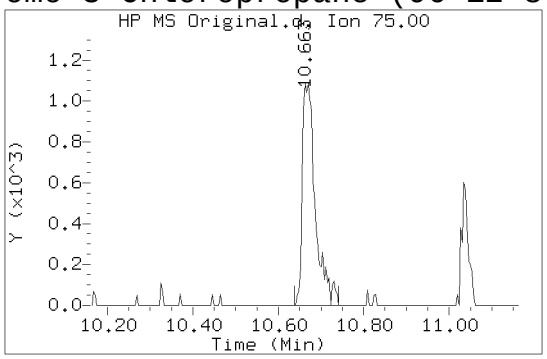
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Inj Date : 14-OCT-2022 15:59
InstruID : voa6.i
LabSampID : ICV

1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

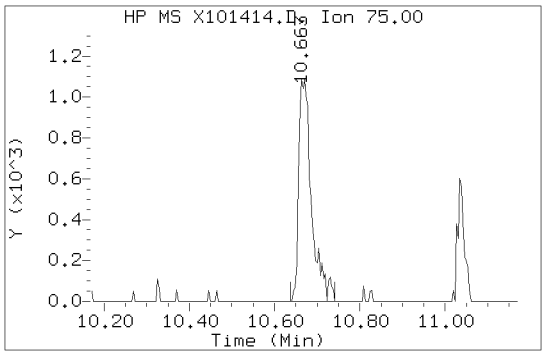
BEFORE

MASS
75
AREA
2331
HEIGHT
1085
19-Oct-2022
16:03
linh
pham



AFTER

MASS
75
AREA
2331
HEIGHT
1085
27-Oct-2022
15:16

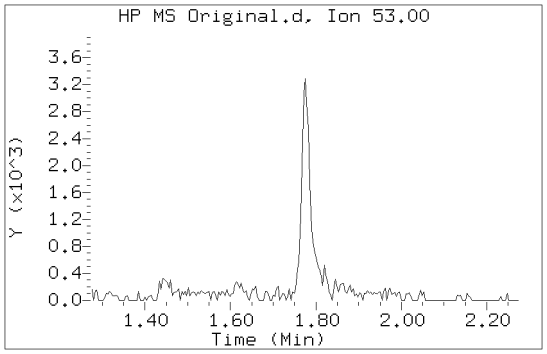


Chloroprene (126-99-8)

Reason Code:

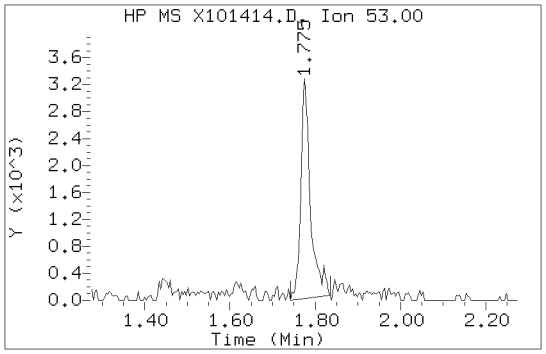
BEFORE

MASS
53
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



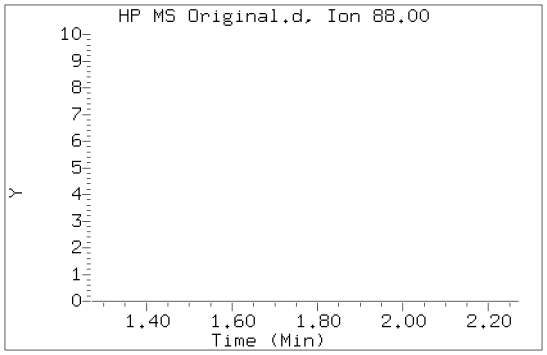
AFTER

MASS
53
AREA
5275
HEIGHT
3259
27-Oct-2022
15:16



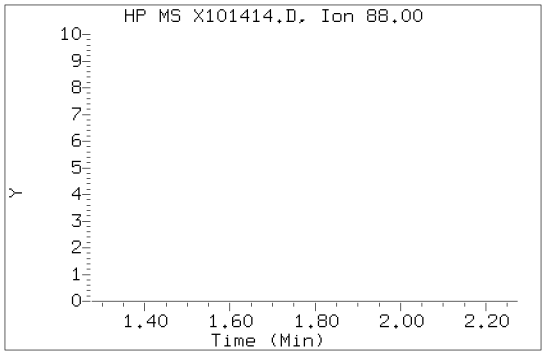
BEFORE

MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
88
AREA
0
HEIGHT
0
27-Oct-2022
15:16

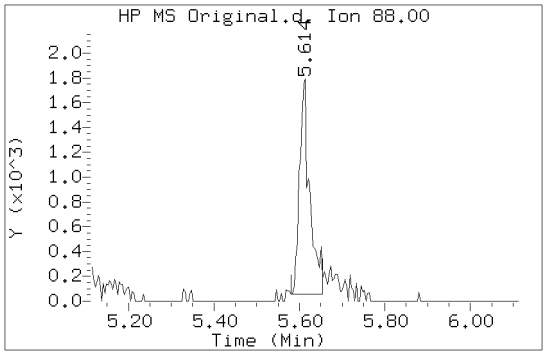


1,4-Dioxane ()

Reason Code:

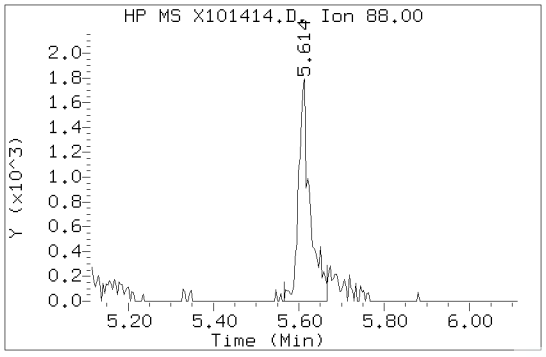
BEFORE

MASS
88
AREA
2926
HEIGHT
1733
19-Oct-2022
16:03
linh
pham



AFTER

MASS
88
AREA
3391
HEIGHT
1792
27-Oct-2022
15:16

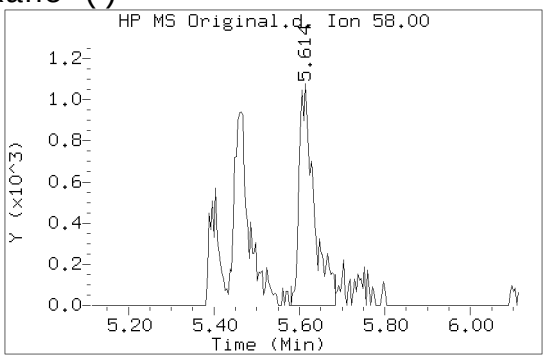


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Inj Date : 14-OCT-2022 15:59
InstruID : voa6.i
LabSampID : ICV

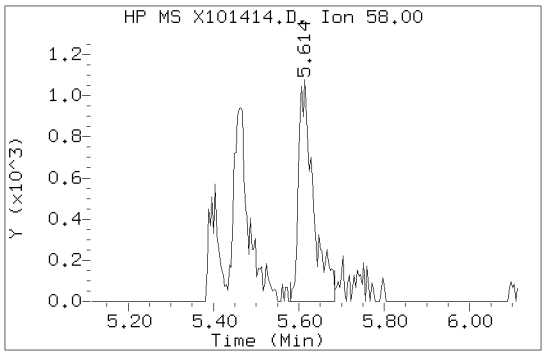
1,4-Dioxane ()

Reason Code:

BEFORE
MASS
58
AREA
2640
HEIGHT
1078
19-Oct-2022
16:03
linh
pham



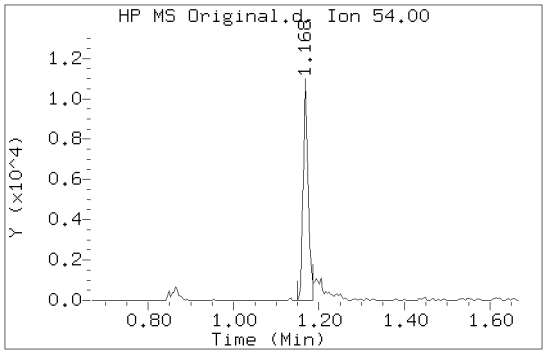
AFTER
MASS
58
AREA
2640
HEIGHT
1078
27-Oct-2022
15:16



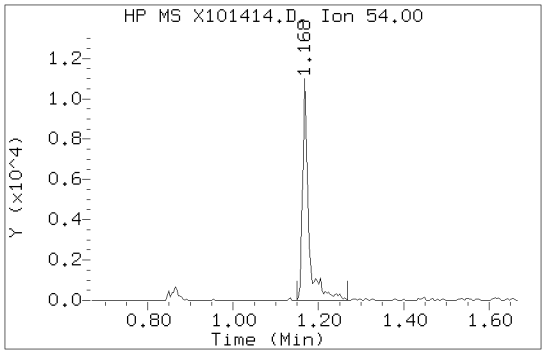
1,3-Butadiene (106-99-0)

Reason Code:

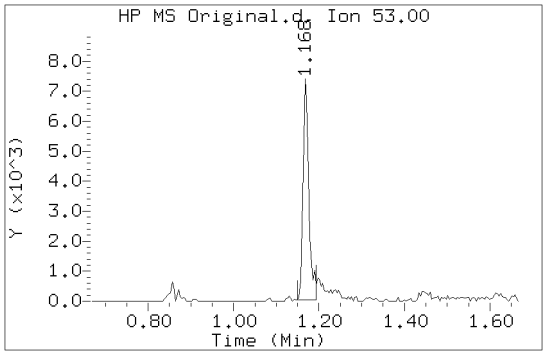
BEFORE
MASS
54
AREA
9353
HEIGHT
10997
19-Oct-2022
16:03
linh
pham



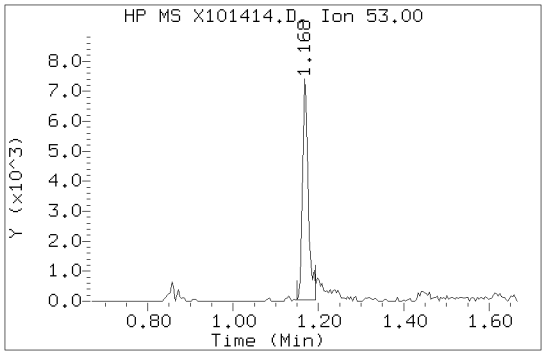
AFTER
MASS
54
AREA
11421
HEIGHT
10997
27-Oct-2022
15:16



BEFORE
MASS
53
AREA
7225
HEIGHT
7359
19-Oct-2022
16:03
linh
pham



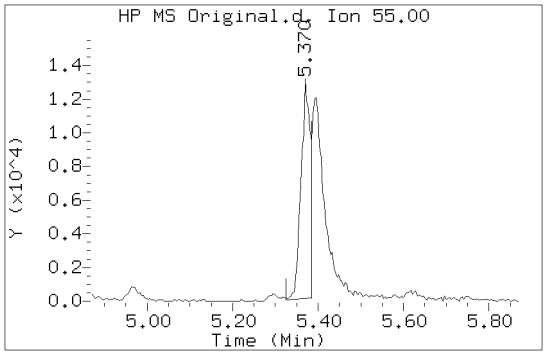
AFTER
MASS
53
AREA
7225
HEIGHT
7359
27-Oct-2022
15:16



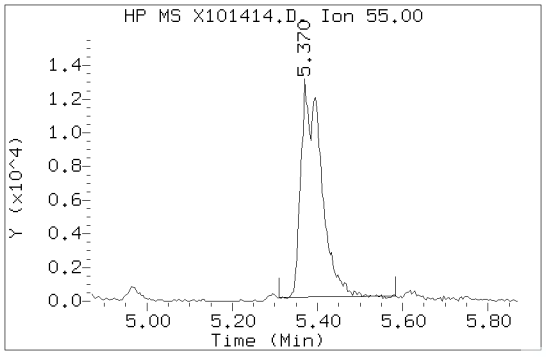
Methylcyclohexane (108-87-2)

Reason Code:

BEFORE
MASS
55
AREA
20372
HEIGHT
13044
19-Oct-2022
16:03
linh
pham



AFTER
MASS
55
AREA
42838
HEIGHT
12943
27-Oct-2022
15:16



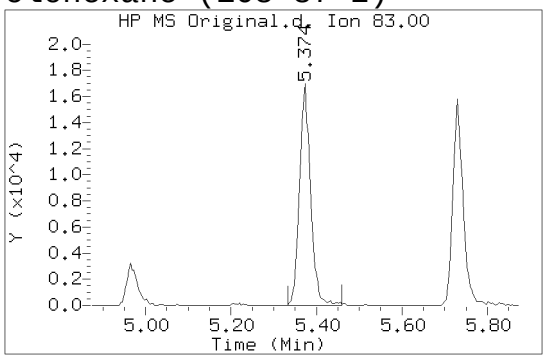
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Inj Date : 14-OCT-2022 15:59
InstruID : voa6.i
LabSampID : ICV

Methylcyclohexane (108-87-2)

Reason Code:

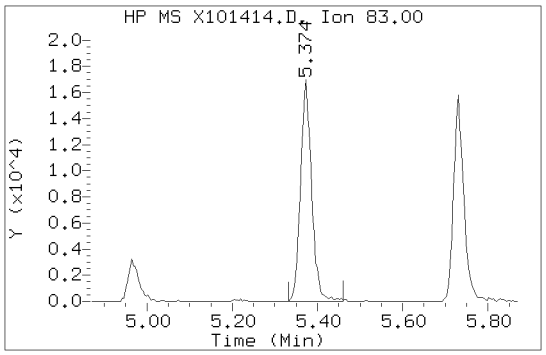
BEFORE

MASS
83
AREA
31273
HEIGHT
16976
19-Oct-2022
16:03
linh
pham



AFTER

MASS
83
AREA
31273
HEIGHT
16976
27-Oct-2022
15:16

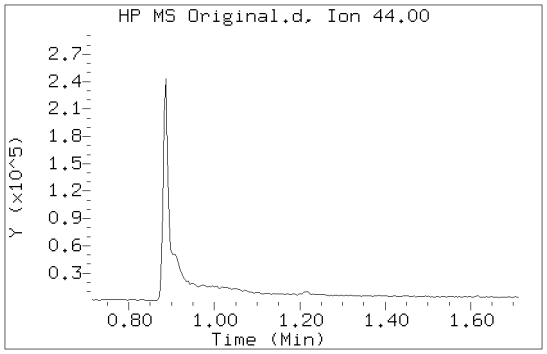


Acetaldehyde (75-07-0)

Reason Code:

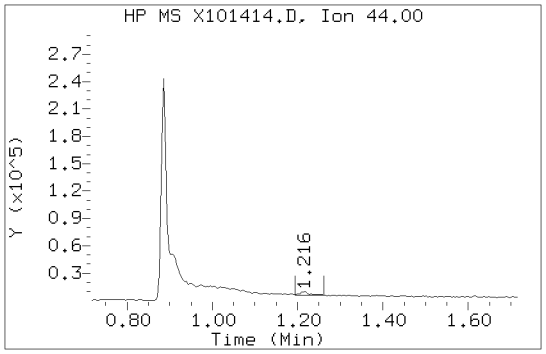
BEFORE

MASS
44
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



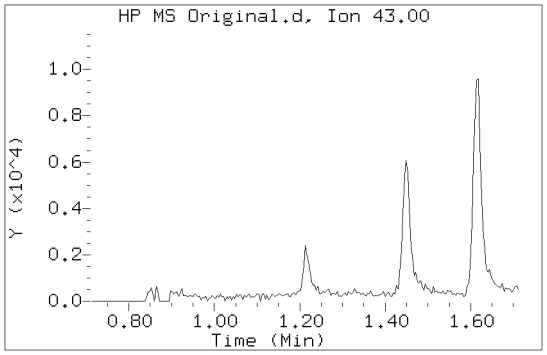
AFTER

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44
AREA
5574
HEIGHT
4214
27-Oct-2022
15:16



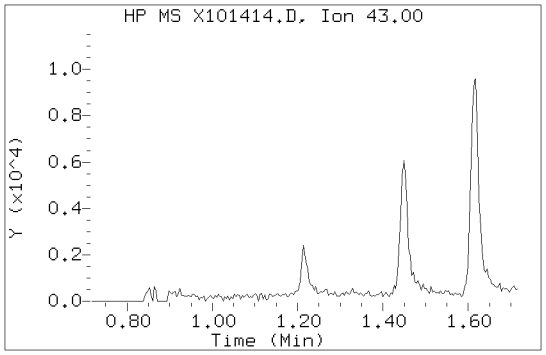
BEFORE

MASS
43
AREA
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



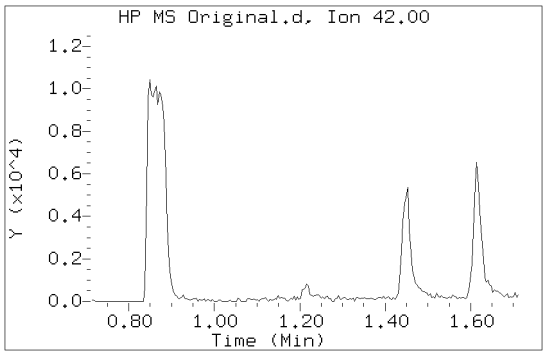
AFTER

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43
AREA
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HEIGHT
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27-Oct-2022
15:16



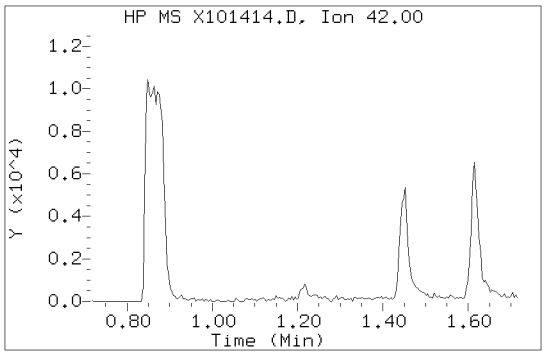
BEFORE

MASS
42
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
42
AREA
0
HEIGHT
0
27-Oct-2022
15:16



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101416.D Page 1
Report Date: 19-Oct-2022 16:05

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101416.D
Lab Smp Id: ICV Client Smp ID: ICV
Inj Date : 14-OCT-2022 16:41
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;ICV
Misc Info : HS22052000V6;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\8260W.m
Meth Date : 19-Oct-2022 16:05 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 15:59 Cal File: X101414.D
Als bottle: 17 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.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	4.181	4.185	(1.000)	435867	50.0000	
135 1,4-Dioxane	88	5.602	5.613	(1.340)	31293	943.530	943.52
140 1,3-Butadiene	54	1.167	1.167	(0.279)	107141	45.2340	45.23
25 Methacrylonitrile	41	3.821	3.851	(0.914)	123431	45.2307	45.23
12 Isobutyl Alcohol	43	4.680	4.687	(1.119)	430749	961.528	961.52
13 Acetonitrile	39	2.202	2.202	(0.527)	174343	513.288	513.28
14 Allyl Chloride	41	2.202	2.209	(0.527)	352305	46.8587	46.85
4 Propionitrile	54	3.653	3.671	(0.874)	189060	494.094	494.09
136 n-Hexane	57	2.772	2.775	(0.663)	191992	49.6839	49.68
72 trans-1,4-Dichloro-2-butene	53	8.889	8.897	(1.159)	44858	47.3695	47.36
194 Acetaldehyde	44	1.212	1.216	(0.290)	31684	168.427	168.42(M)
23 Chloroprene	53	1.771	1.775	(0.424)	51795	46.4477	46.44(M)
145 alpha-Methylstyrene	118	9.257	9.264	(0.958)	348498	48.4584	48.45
200 Dimethyl Disulfide	94	6.198	6.202	(0.808)	423713	52.3737	52.37
139 Diethyl ether	59	1.760	1.763	(0.421)	91935	43.8807	43.88
130 Ethyl Acetate	43	3.656	3.671	(0.874)	152798	48.6915	48.69
40 Methyl Methacrylate	41	5.606	5.617	(1.341)	128520	47.5998	47.59
49 Ethyl Methacrylate	69	6.786	6.794	(1.367)	245670	49.4551	49.45
132 n-Butanol	56	5.257	5.294	(1.257)	53784	1042.65	1042.64
142 Tetrahydrofuran	42	3.851	3.855	(0.921)	43717	97.7299	97.72

150	Allyl alcohol	57	2.772	2.775 (0.663)	191992	993.677	993.67
166	1,2,3-Trimethylbenzene	105	9.729	9.729 (1.007)	672740	49.5729	49.57

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101416.D Page 2
Report Date: 19-Oct-2022 16:05

		QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
Compounds								
131	Methyl Acrylate	55	3.686	3.724	(0.882)	161590	48.6409	48.64
162	Butyl acrylate	55	8.252	8.260	(1.076)	294501	50.8976	50.89
2	Dichlorodifluoromethane	85	0.976	0.976	(0.234)	155815	48.3747	48.37
3	Chloromethane	50	1.081	1.081	(0.259)	173191	46.7813	46.78
5	Vinyl Chloride	62	1.145	1.145	(0.274)	151368	45.5910	45.59
6	Bromomethane	94	1.343	1.343	(0.321)	111078	48.4132	48.41
7	Chloroethane	64	1.407	1.407	(0.337)	94071	46.8528	46.85
8	Trichlorofluoromethane	101	1.561	1.565	(0.373)	213514	48.4485	48.44
9	Acrolein	56	1.445	1.448	(0.346)	23273	95.7032	95.70
10	Acetone	43	1.973	1.977	(0.472)	90055	102.120	102.11(M)
11	1,1-Dichloroethene	96	1.913	1.917	(0.458)	129159	45.8154	45.81
15	Iodomethane	142	2.029	2.029	(0.485)	461319	91.6208	91.62
16	Acrylonitrile	53	2.536	2.554	(0.606)	106182	96.0073	96.00
17	Methylene Chloride	84	2.303	2.307	(0.551)	203039	48.6079	48.60
18	Methyl tert-butyl ether	73	2.536	2.539	(0.606)	486961	46.7685	46.76
19	Carbon Disulfide	76	2.071	2.074	(0.495)	921984	93.3933	93.39
20	trans-1,2-Dichloroethene	96	2.528	2.536	(0.605)	184320	47.9781	47.97
21	Vinyl Acetate	43	3.000	3.008	(0.718)	837136	96.6385	96.63
22	1,1-Dichloroethane	63	2.922	2.929	(0.699)	307516	46.8680	46.86
24	2-Butanone	43	3.581	3.608	(0.857)	103208	98.2112	98.21(H)
26	2,2-Dichloropropane	77	3.510	3.514	(0.840)	263682	49.8918	49.89
27	cis-1,2-Dichloroethene	96	3.529	3.529	(0.844)	215000	47.2252	47.22
28	Chloroform	83	3.908	3.911	(0.935)	328556	46.1475	46.14
29	Bromochloromethane	128	3.795	3.803	(0.908)	116203	46.3566	46.35
$ 30	Dibromofluoromethane	113	4.099	4.102	(0.980)	194700	49.5897	49.58
31	1,1,1-Trichloroethane	97	4.087	4.084	(0.978)	268703	47.7620	47.76
32	1,1-Dichloropropene	75	4.282	4.290	(0.863)	239232	48.1163	48.11
33	1,2-Dichloroethane	62	4.556	4.564	(0.918)	232289	50.4884	50.48
34	Carbon Tetrachloride	117	4.264	4.264	(0.859)	230780	46.6340	46.63
$ 35	1,2-Dichloroethane-d4	65	4.474	4.477	(1.070)	188555	48.6210	48.62
* 36	1,4-Difluorobenzene	114	4.965	4.968	(1.000)	623520	50.0000	
37	Benzene	78	4.515	4.515	(0.909)	747678	47.4536	47.45
38	Trichloroethene	130	5.205	5.212	(1.048)	221800	47.2926	47.29
39	Bromodichloromethane	83	5.726	5.729	(1.153)	247028	48.0163	48.01
41	2-Chloroethylvinyl ether	63	6.048	6.059	(1.218)	120622	93.7928	93.79
42	1,2-Dichloropropane	63	5.437	5.441	(1.095)	190372	46.8449	46.84
44	Dibromomethane	93	5.553	5.561	(1.119)	117852	48.4527	48.45
45	4-Methyl-2-Pentanone	43	6.325	6.333	(0.825)	260438	94.0475	94.04
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.240)	328363	49.9160	49.91
* 47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	576128	50.0000	
$ 48	Toluene-d8	98	6.385	6.389	(0.832)	715271	49.5397	49.53
50	Toluene	91	6.449	6.449	(0.841)	821439	48.0352	48.03
51	trans-1,3-Dichloropropene	75	6.682	6.689	(1.346)	263831	50.6055	50.60
52	2-Hexanone	43	7.086	7.094	(0.924)	166672	87.7961	87.79(M)
53	1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	142280	44.8810	44.88
54	1,3-Dichloropropane	76	6.981	6.985	(0.910)	290388	45.2123	45.21
55	Dibromochloromethane	129	7.176	7.176	(0.936)	211548	47.2892	47.28
56	Tetrachloroethene	164	6.929	6.925	(0.903)	193255	48.4995	48.49
57	1,2-Dibromoethane	107	7.263	7.263	(0.947)	183591	46.3599	46.35
58	1-Chlorohexane	55	7.694	7.697	(1.550)	151114	41.8508	41.85
59	Chlorobenzene	112	7.694	7.694	(1.003)	561654	46.7409	46.74
60	1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	206345	47.1157	47.11

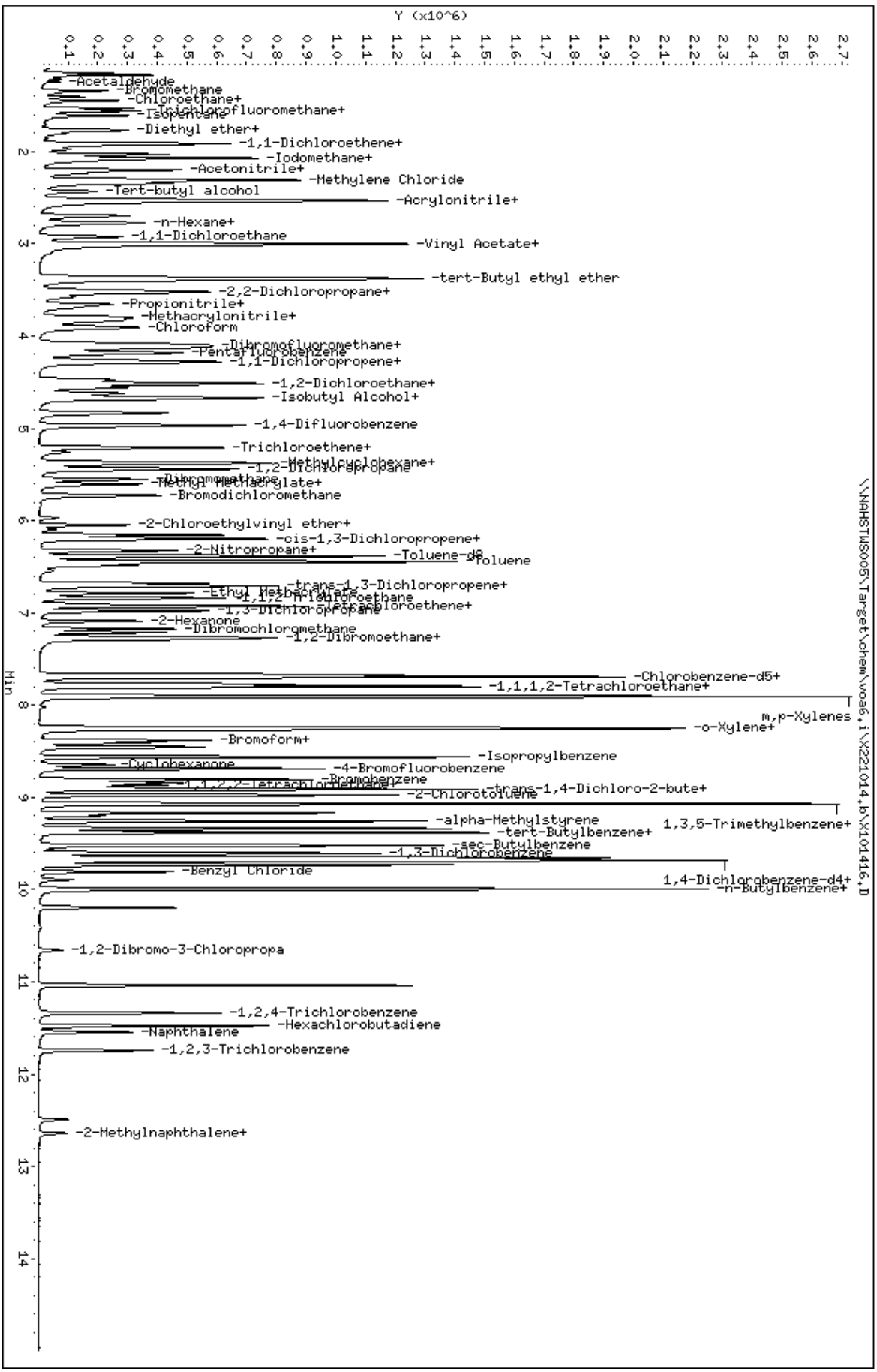
61 Ethylbenzene	106	7.799	7.802 (1.017)	291517	47.2035	47.20
62 m,p-Xylenes	106	7.904	7.907 (1.030)	729219	97.7220	97.72

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101416.D Page 3
Report Date: 19-Oct-2022 16:05

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	63 o-Xylene	106	8.241	8.245	(1.074)	347415	47.7464	47.74
	64 Styrene	104	8.260	8.267	(1.077)	591942	50.8961	50.89
	66 Bromoform	173	8.410	8.413	(1.096)	132054	46.7327	46.73
	67 Isopropylbenzene	105	8.563	8.563	(1.116)	859626	48.4681	48.46
	68 1,1,2,2-Tetrachloroethane	83	8.837	8.841	(0.915)	193256	48.3114	48.31
$	69 4-Bromofluorobenzene	95	8.691	8.695	(1.133)	259977	50.5885	50.58
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	293379	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	143418	46.4803	46.48(M)
	73 n-Propylbenzene	91	8.912	8.916	(0.922)	974498	49.2003	49.20
	74 Bromobenzene	156	8.807	8.807	(0.912)	260647	47.6858	47.68
	75 1,3,5-Trimethylbenzene	105	9.066	9.069	(0.938)	723053	48.6377	48.63
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	596573	45.1110	45.11
	77 4-Chlorotoluene	91	9.069	9.073	(0.939)	679033	46.4792	46.47
	78 tert-Butylbenzene	119	9.336	9.336	(0.966)	604989	46.9067	46.90
	79 1,2,4-Trimethylbenzene	105	9.381	9.384	(0.971)	718064	46.7856	46.78
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	825064	47.1933	47.19
	82 p-Isopropyltoluene	119	9.650	9.650	(0.999)	748690	48.3300	48.33
	83 1,3-Dichlorobenzene	146	9.605	9.609	(0.994)	432880	47.1109	47.11
	84 1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	439203	45.8008	45.80
	86 Benzyl Chloride	91	9.808	9.815	(1.279)	268458	36.8372	36.83
	87 n-Butylbenzene	91	9.995	9.999	(1.035)	605877	49.9170	49.91
	88 1,2-Dichlorobenzene	146	9.992	9.995	(1.034)	385204	48.6365	48.63
	89 1,2-Dibromo-3-Chloropropane	155	10.659	10.670	(1.103)	20317	46.1991	46.19
	90 1,2,4-Trichlorobenzene	180	11.337	11.345	(1.173)	181340	48.0454	48.04
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	138734	51.0124	51.01
	92 Naphthalene	128	11.544	11.551	(1.195)	241205	48.2984	48.29
	93 1,2,3-Trichlorobenzene	180	11.742	11.746	(1.215)	122129	49.9989	49.99
M	94 1,2-Dichloroethylene (total)	96				399320	95.2033	95.20
M	95 Xylenes (total)	106				1076634	145.468	145.46
	141 Cyclohexane	56	4.125	4.125	(0.987)	249254	49.8132	49.81
	138 Freon TF	101	1.917	1.921	(0.459)	133157	49.6473	49.64
	147 Methylcyclohexane	55	5.381	5.369	(1.084)	419936	50.5767	50.57
	146 Methyl Acetate	43	2.236	2.247	(0.535)	86875	45.9004	45.90
	148 Tert-Butyl alcohol	59	2.431	2.442	(0.581)	238738	899.803	899.80
	149 Isopropyl Alcohol	45	2.097	2.108	(0.502)	121616	880.734	880.73

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



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Sample Info: CCV;CCV;2;;ICV
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Column phase: DB624

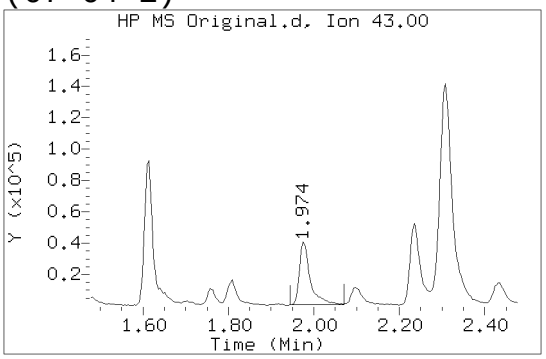
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Operator: PC
Column diameter: 0.18

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Inj Date : 14-OCT-2022 16:41
InstruID : voa6.i
LabSampID : ICV

Acetone (67-64-1)

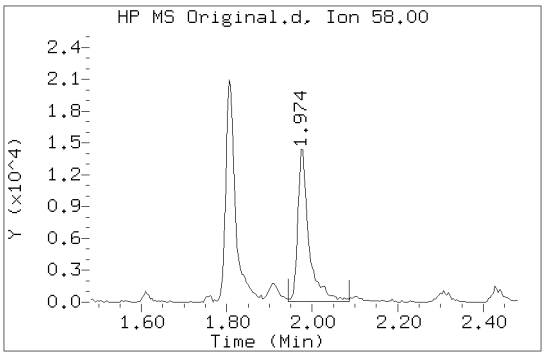
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BEFORE

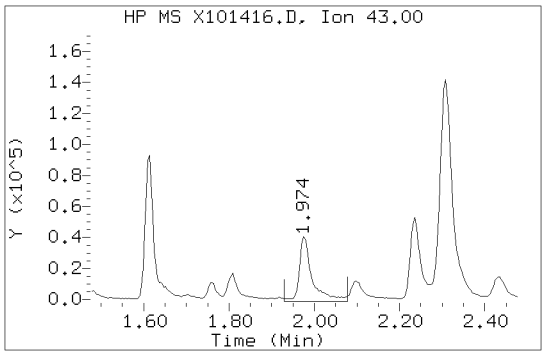
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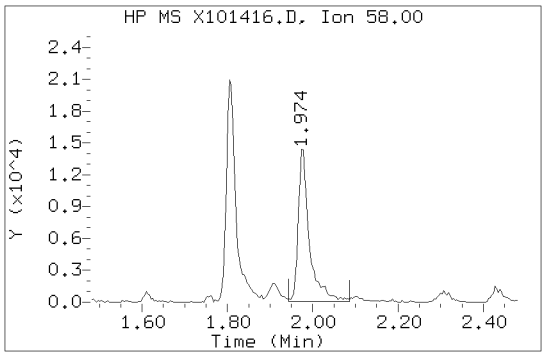
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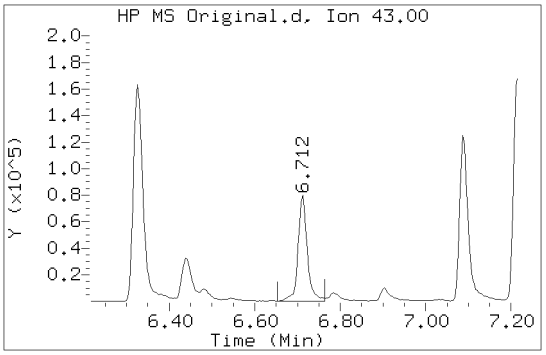
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2-Hexanone (591-78-6)

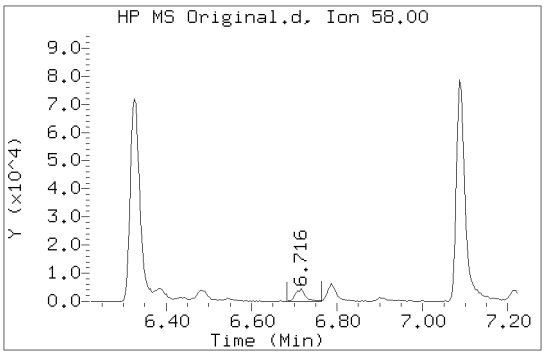
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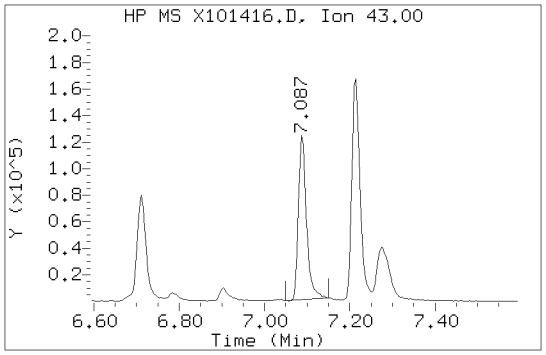
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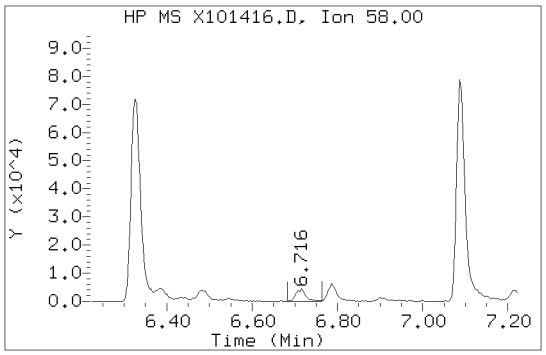
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AFTER

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16:05
linh
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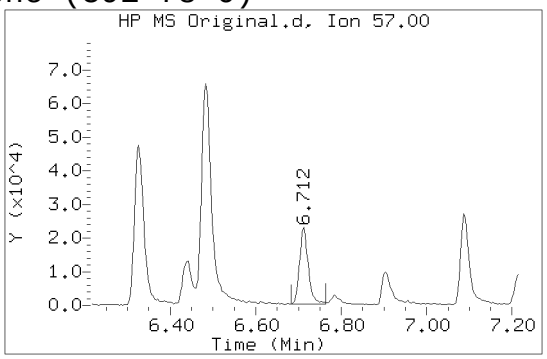
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InstruID : voa6.i
LabSampID : ICV

2-Hexanone (591-78-6)

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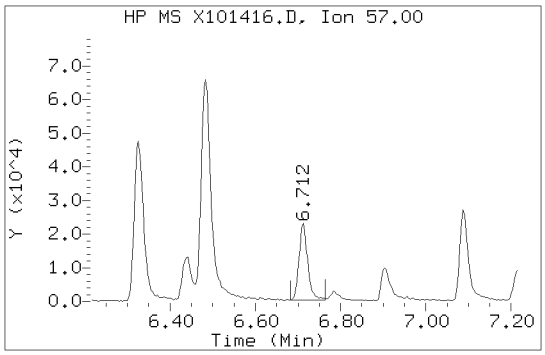
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AFTER

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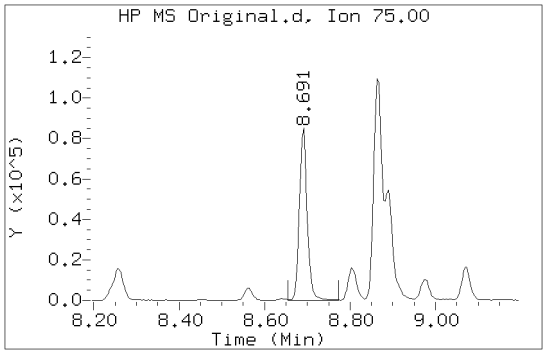


1,2,3-Trichloropropane (96-18-4)

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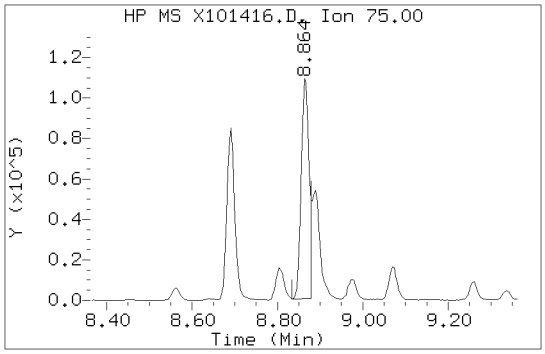
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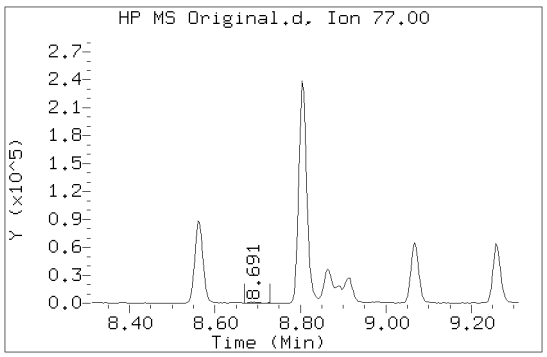
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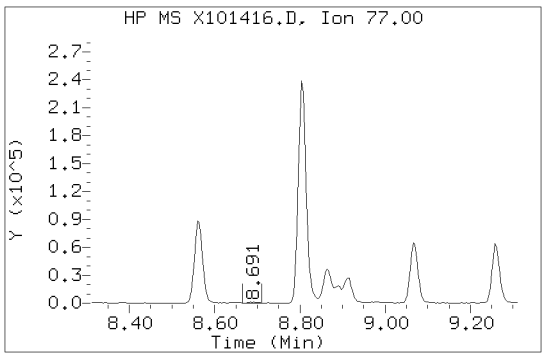
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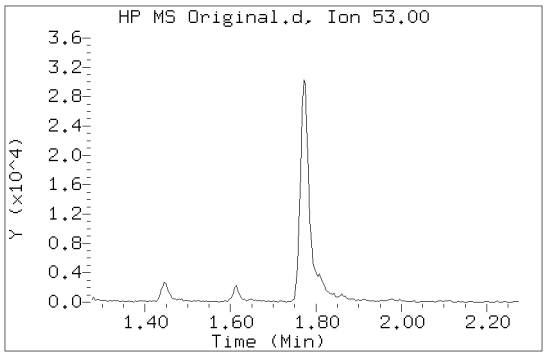


Chloroprene (126-99-8)

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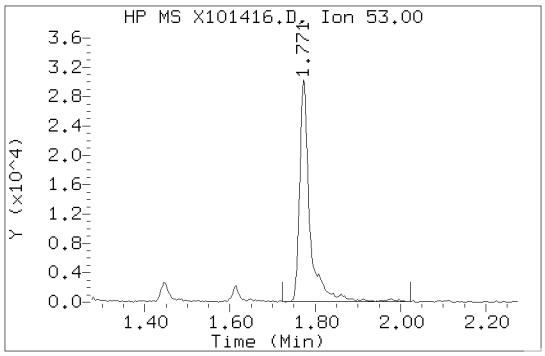
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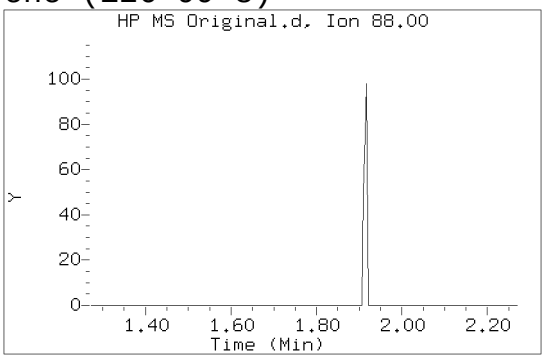
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Chloroprene (126-99-8)

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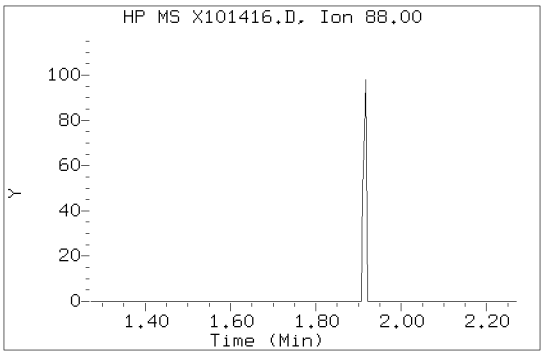
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AFTER

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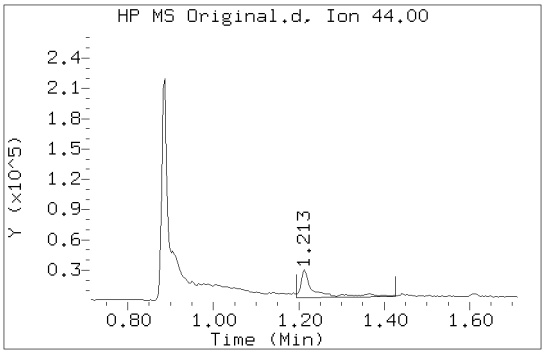


Acetaldehyde (75-07-0)

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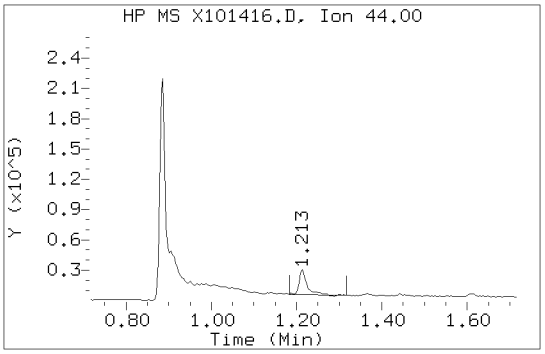
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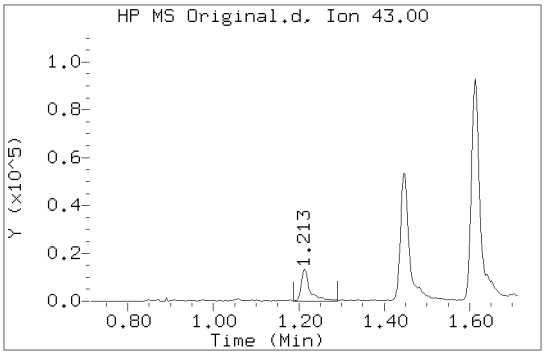
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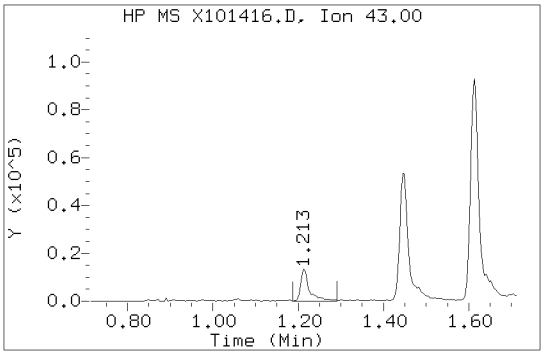
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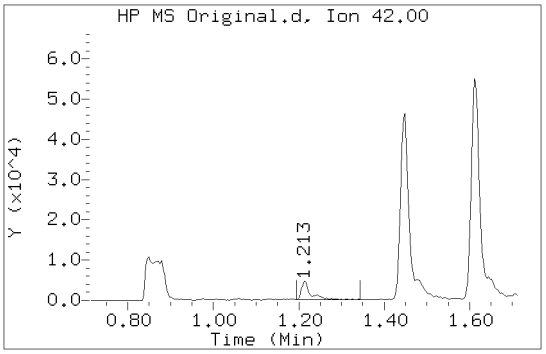
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linh
pham



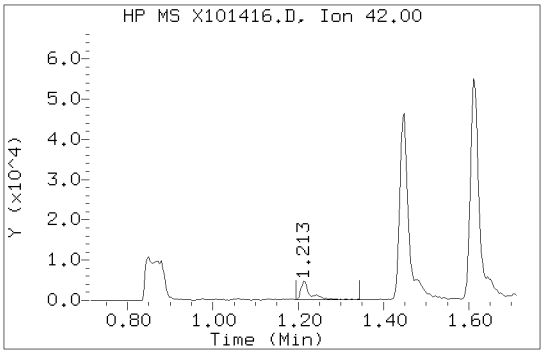
BEFORE

MASS
42
AREA
7535
HEIGHT
4687
19-Oct-2022
16:03
linh
pham



AFTER

MASS
42
AREA
7535
HEIGHT
4687
19-Oct-2022
16:05
linh
pham



right solutions.
right partner.

Raw Data VOA6 419507

Volatiles by by EPA 8260

Workorder

HS22100575

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101501.D Page 1
Report Date: 15-Oct-2022 13:15

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101501.D
Lab Smp Id: BFB Client Smp ID: BFB
Inj Date : 15-OCT-2022 11:04
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\X221015.b\bfb.m
Meth Date : 27-Sep-2022 15:10 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

RT	EXP RT	REL RT	MASS	RESPONSE	CONCENTRATIONS ON-COL (ug/L)	CONCENTRATIONS FINAL (ug/l)	TARGET RANGE	RATIO
1 bfb						CAS #: 460-00-4		
8.691	8.889	(0.000)	95	21887			0.00- 100.00	97.38
8.691	8.889	(0.000)	50	3360			15.00- 40.00	15.35
8.691	8.889	(0.000)	75	9592			30.00- 60.00	43.83
8.691	8.889	(0.000)	96	1579			5.00- 9.00	7.21
8.691	8.889	(0.000)	173	138			0.00- 2.00	0.61
8.691	8.889	(0.000)	174	22475			50.00- 0.00	102.69
8.691	8.889	(0.000)	175	1623			5.00- 9.00	7.22
8.691	8.889	(0.000)	176	21866			95.00- 101.00	97.29
8.691	8.889	(0.000)	177	1430			5.00- 9.00	6.54

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101501.D Page 1

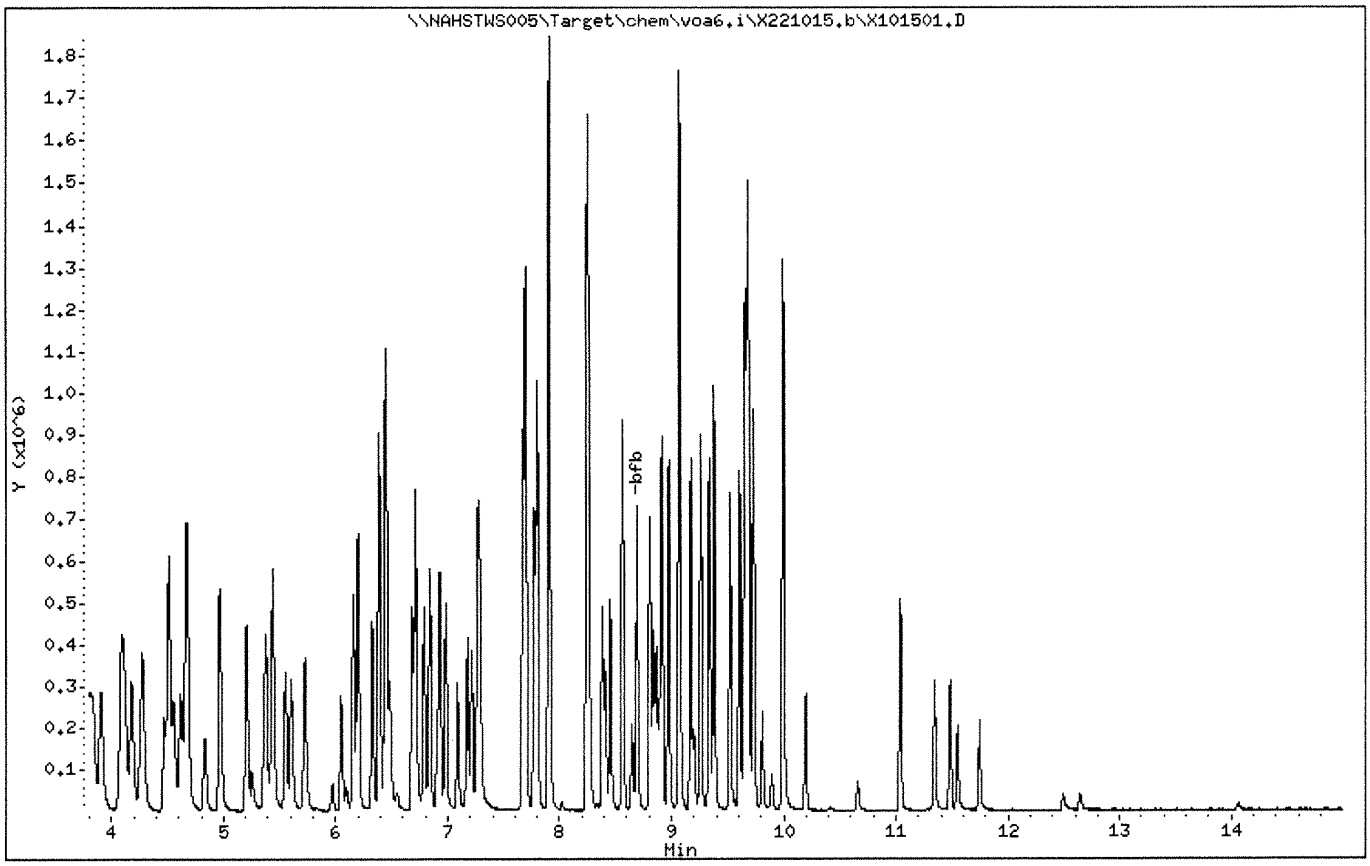
Date : 15-OCT-2022 11:04

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\X221015.b\X101501.D

Date : 15-OCT-2022 11:04

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

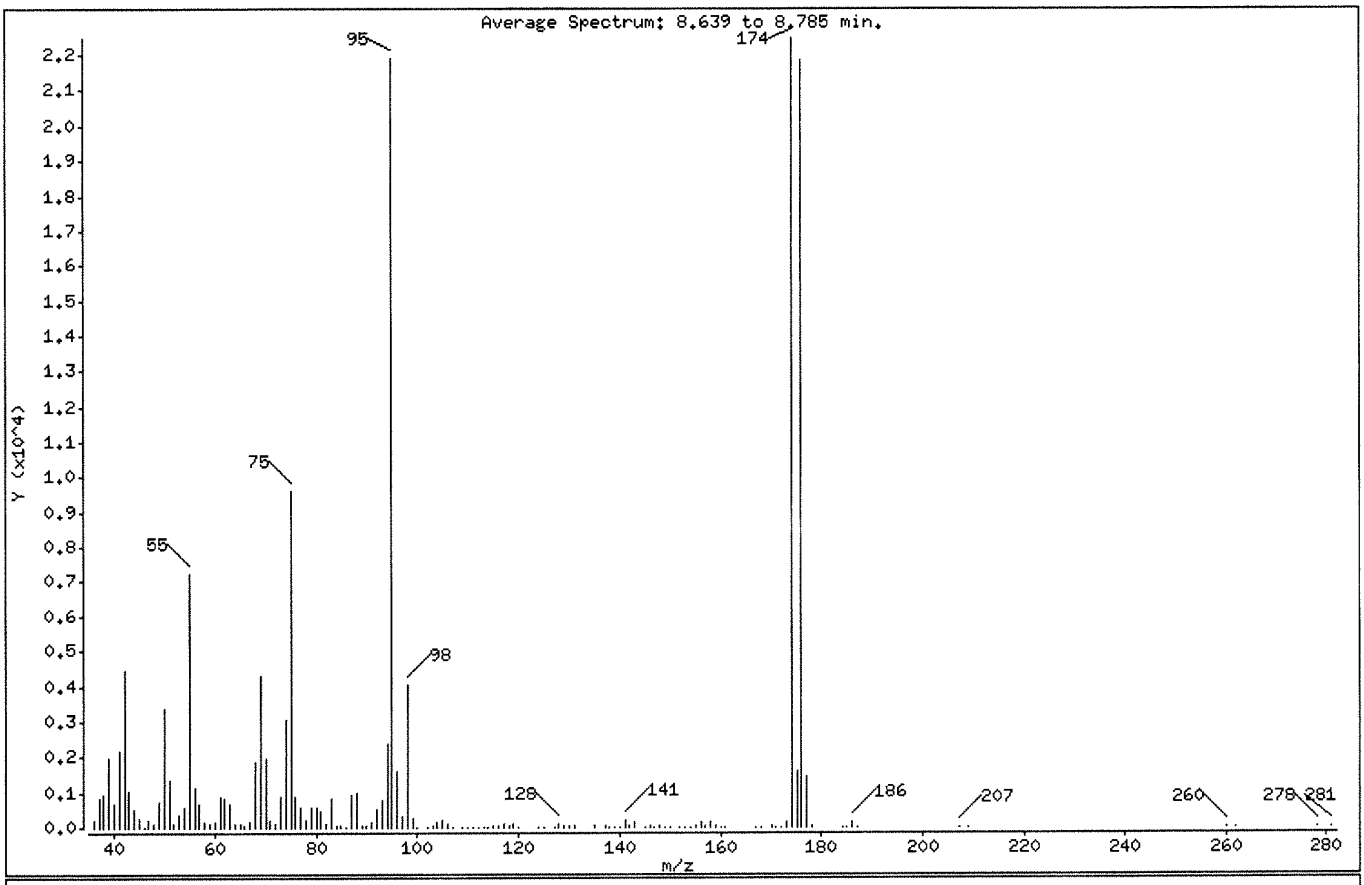
Volume Injected (uL): 2.0

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	15.35
75	30.00 - 60.00% of mass 95	43.83
96	5.00 - 9.00% of mass 95	7.21
173	Less than 2.00% of mass 174	0.63 (0.61)
174	Greater than 50.00% of mass 95	102.69
175	5.00 - 9.00% of mass 174	7.42 (7.22)
176	95.00 - 101.00% of mass 174	99.90 (97.29)
177	5.00 - 9.00% of mass 176	6.53 (6.54)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101501.D Page 3

Date : 15-OCT-2022 11:04

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: X101501.D
Spectrum: Average Spectrum: 8.639 to 8.785 min.
Location of Maximum: 174.00
Number of points: 135

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	204	70.00	1951	105.00	206	149.00	17
37.00	842	71.00	218	106.00	110	150.00	11
38.00	911	72.00	91	107.00	25	152.00	8
39.00	1965	73.00	853	109.00	3	153.00	8
40.00	652	74.00	3037	110.00	2	154.00	8
41.00	2168	75.00	9592	111.00	7	155.00	62
42.00	4418	76.00	904	112.00	4	156.00	180
43.00	1051	77.00	592	113.00	12	157.00	57
44.00	494	78.00	219	114.00	5	158.00	171
45.00	237	79.00	543	115.00	68	159.00	43
46.00	8	80.00	545	116.00	65	160.00	1
47.00	227	81.00	472	117.00	108	161.00	18
48.00	113	82.00	109	118.00	70	167.00	1
49.00	719	83.00	827	119.00	97	168.00	6
50.00	3360	84.00	52	120.00	20	170.00	47
51.00	1336	85.00	42	124.00	8	171.00	2
52.00	112	86.00	21	125.00	1	172.00	10
53.00	356	87.00	928	127.00	13	173.00	138
54.00	574	88.00	997	128.00	116	174.00	22472
55.00	7252	89.00	47	129.00	69	175.00	1623
56.00	1139	90.00	31	130.00	61	176.00	21864
57.00	671	91.00	143	131.00	32	177.00	1430
58.00	155	92.00	524	135.00	34	178.00	42
59.00	90	93.00	783	137.00	43	184.00	1
60.00	179	94.00	2352	138.00	1	185.00	1
61.00	874	95.00	21880	139.00	18	186.00	168
62.00	830	96.00	1579	140.00	18	187.00	5
63.00	664	97.00	307	141.00	211	207.00	3
64.00	84	98.00	4024	142.00	31	209.00	1
65.00	128	99.00	255	143.00	167	260.00	1
66.00	48	100.00	17	145.00	7	262.00	21
67.00	160	102.00	4	146.00	30	278.00	24
68.00	1836	103.00	60	147.00	13	281.00	5
69.00	4289	104.00	140	148.00	60		

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101501.D
Inj Date : 15-OCT-2022 11:04
InstruID : voa6.i
LabSampID : BFB

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101503.D Page 1
Report Date: 28-Oct-2022 13:51

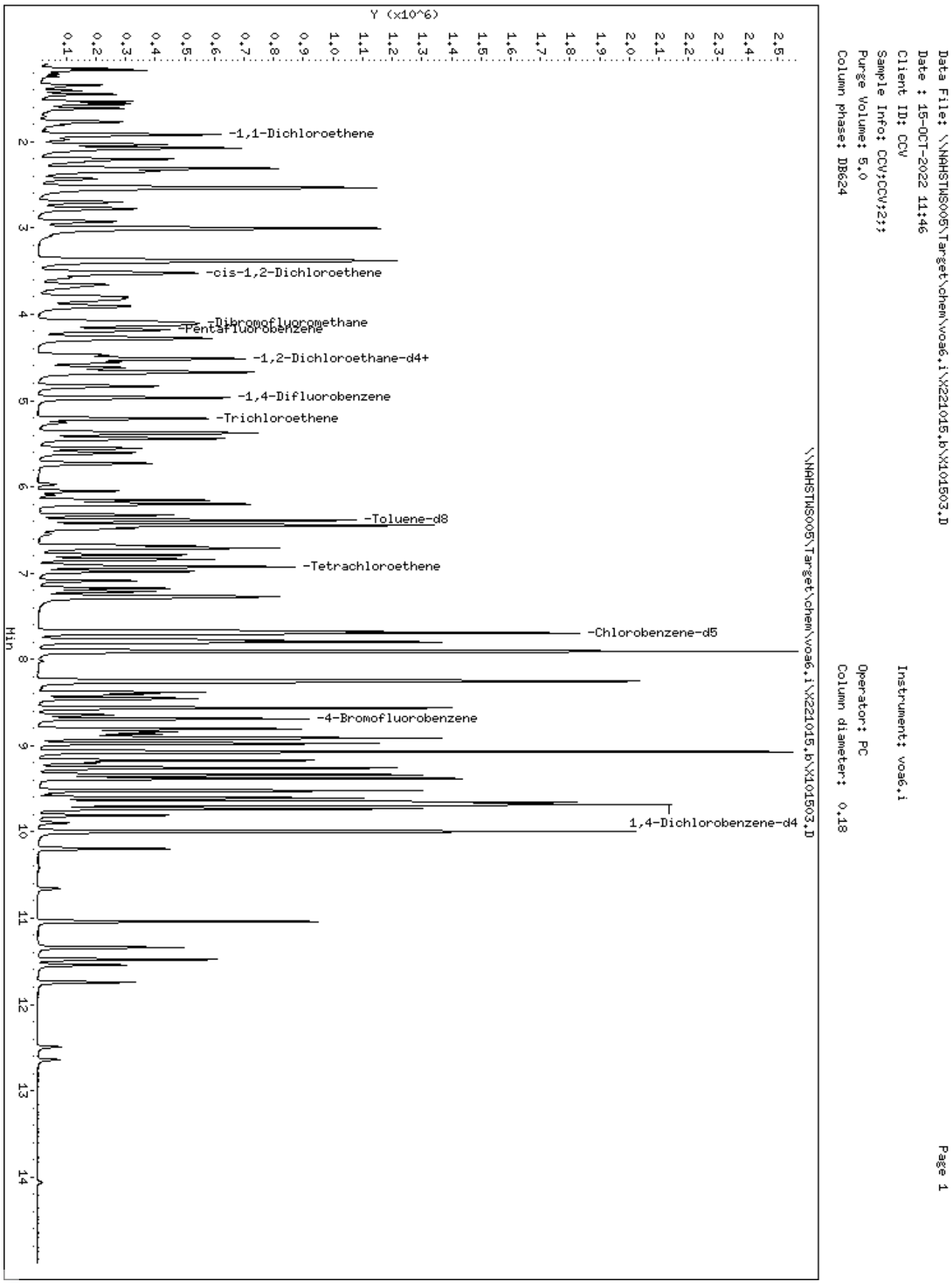
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101503.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 15-OCT-2022 11:46
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	4.181	(1.000)	401535	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	180078	50.0000	49.78
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	175953	50.0000	49.26
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	586680	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	550362	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	664904	50.0000	48.20
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	243332	50.0000	49.55
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	277678	50.0000	
5 Vinyl Chloride	62	1.149	1.149	(0.275)	145434	50.0000	47.54
11 1,1-Dichloroethene	96	1.917	1.917	(0.459)	122141	50.0000	47.03
27 cis-1,2-Dichloroethene	96	3.529	3.529	(0.844)	200418	50.0000	47.78
33 1,2-Dichloroethane	62	4.556	4.556	(0.917)	214487	50.0000	49.54
38 Trichloroethene	130	5.208	5.208	(1.048)	210133	50.0000	47.61
56 Tetrachloroethene	164	6.929	6.929	(0.903)	182766	50.0000	48.01


Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101503.D
Date : 15-OCT-2022 11:46
Client ID: CCV
Sample Info: CCV,CCV,2,,
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18
Page 1
Y (x10^6)
Min
-1,1-Dichloroethene
-cis-1,2-Dichloroethene
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane-d4+
-1,4-Difluorobenzene
-Trichloroethene
-Toluene-d8
-Tetrachloroethene
-Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101503.D

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101503.D
Inj Date : 15-OCT-2022 11:46
InstruID : voa6.i
LabSampID : CCV

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101504.D Page 1
Report Date: 16-Oct-2022 23:12

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101504.D
Lab Smp Id: CCB Client Smp ID: CCB
Inj Date : 15-OCT-2022 12:07
Operator : PC Inst ID: voa6.i
Smp Info : CCB;CCB;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 16-Oct-2022 23:11 pcabasca Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	(1.000)	484661	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.099	(0.980)	191998	43.9044	43.90
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	182376	42.1911	42.19
* 36 1,4-Difluorobenzene	114	4.968	4.965	(1.000)	652593	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.668	(1.000)	563355	50.0000	
$ 48 Toluene-d8	98	6.389	6.386	(0.833)	741366	52.5112	52.51
$ 69 4-Bromofluorobenzene	95	8.691	8.687	(1.133)	238998	47.5394	47.53
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	258430	50.0000	

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101505.D Page 1
Report Date: 28-Oct-2022 13:51

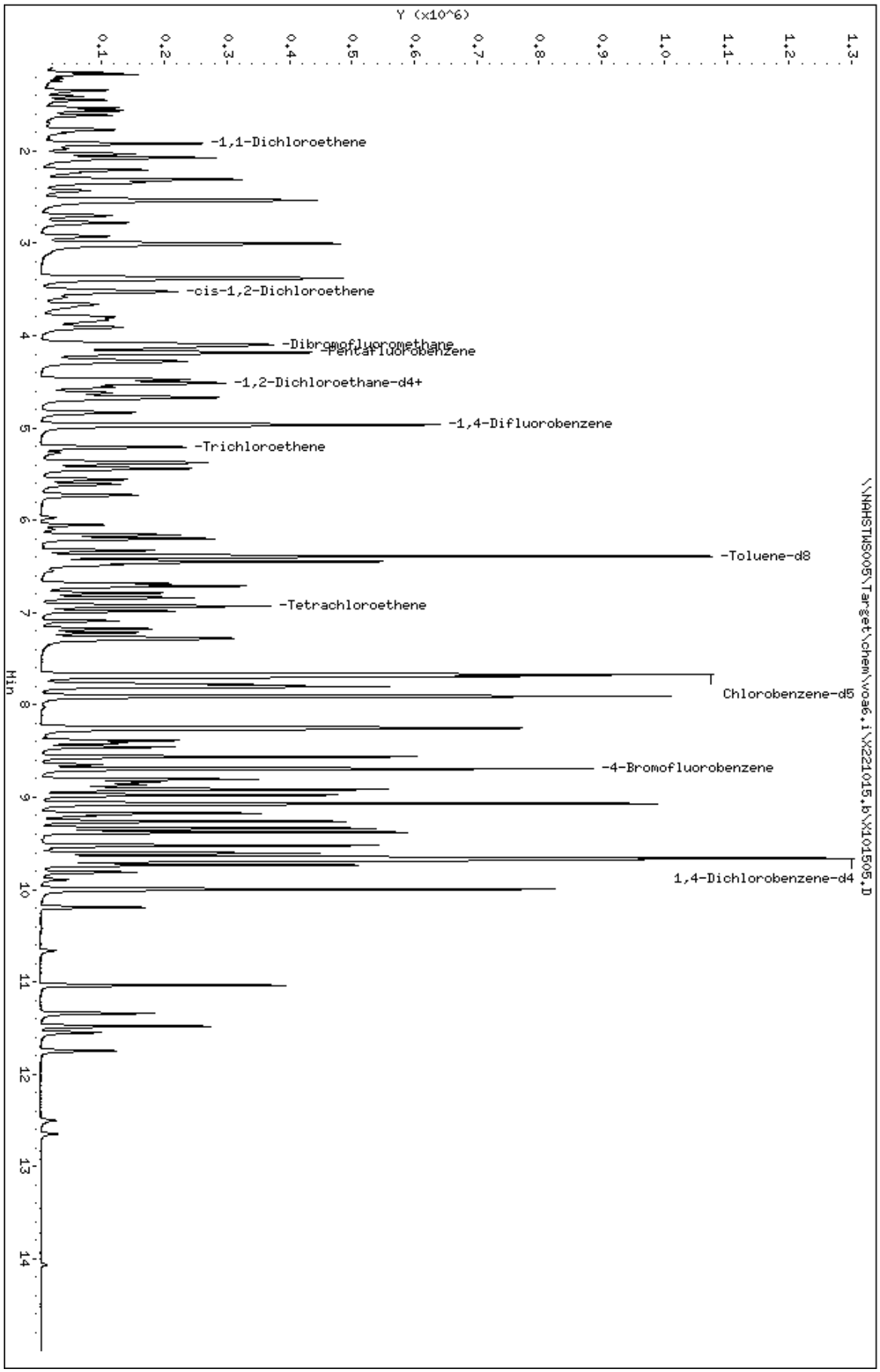
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101505.D
Lab Smp Id: VLCSW-221015 Client Smp ID: VLCSW-221015
Inj Date : 15-OCT-2022 12:28
Operator : PC Inst ID: voa6.i
Smp Info : VLCSW-221015;VLCSW-221015;3;;LCS
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	(1.000)	397881	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	183032	51.0881	51.08
$ 35 1,2-Dichloroethane-d4	65	4.477	4.474	(1.070)	185159	52.3629	52.36
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	583073	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	546961	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	683567	49.8685	49.86
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	247134	50.6542	50.65
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	270277	50.0000	
5 Vinyl Chloride	62	1.149	1.149	(0.275)	60299	19.8956	19.89
11 1,1-Dichloroethene	96	1.917	1.917	(0.458)	51242	19.9119	19.91
27 cis-1,2-Dichloroethene	96	3.533	3.529	(0.844)	84232	20.2681	20.26
33 1,2-Dichloroethane	62	4.560	4.556	(0.918)	88957	20.6762	20.67
38 Trichloroethene	130	5.208	5.208	(1.048)	85849	19.5747	19.57
56 Tetrachloroethene	164	6.929	6.929	(0.903)	74180	19.6090	19.60


Y (x10^6)
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
-1,1-Dichloroethene
-cis-1,2-Dichloroethene
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane-d4+
-1,4-Difluorobenzene
-Trichloroethene
-Toluene-d8
-Tetrachloroethene
Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
Min
2
3
4
5
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7
8
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12
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14
\\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101505.D
Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101505.D
Date : 15-OCT-2022 12:28
Client ID: VLCSW-221015
Sample Info: VLCSW-221015;VLCSW-221015;3;;LCS
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18
Page 1

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101505.D
Inj Date : 15-OCT-2022 12:28
InstruID : voa6.i
LabSampID : VLCSW-221015

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101507.D Page 1
Report Date: 28-Oct-2022 13:51

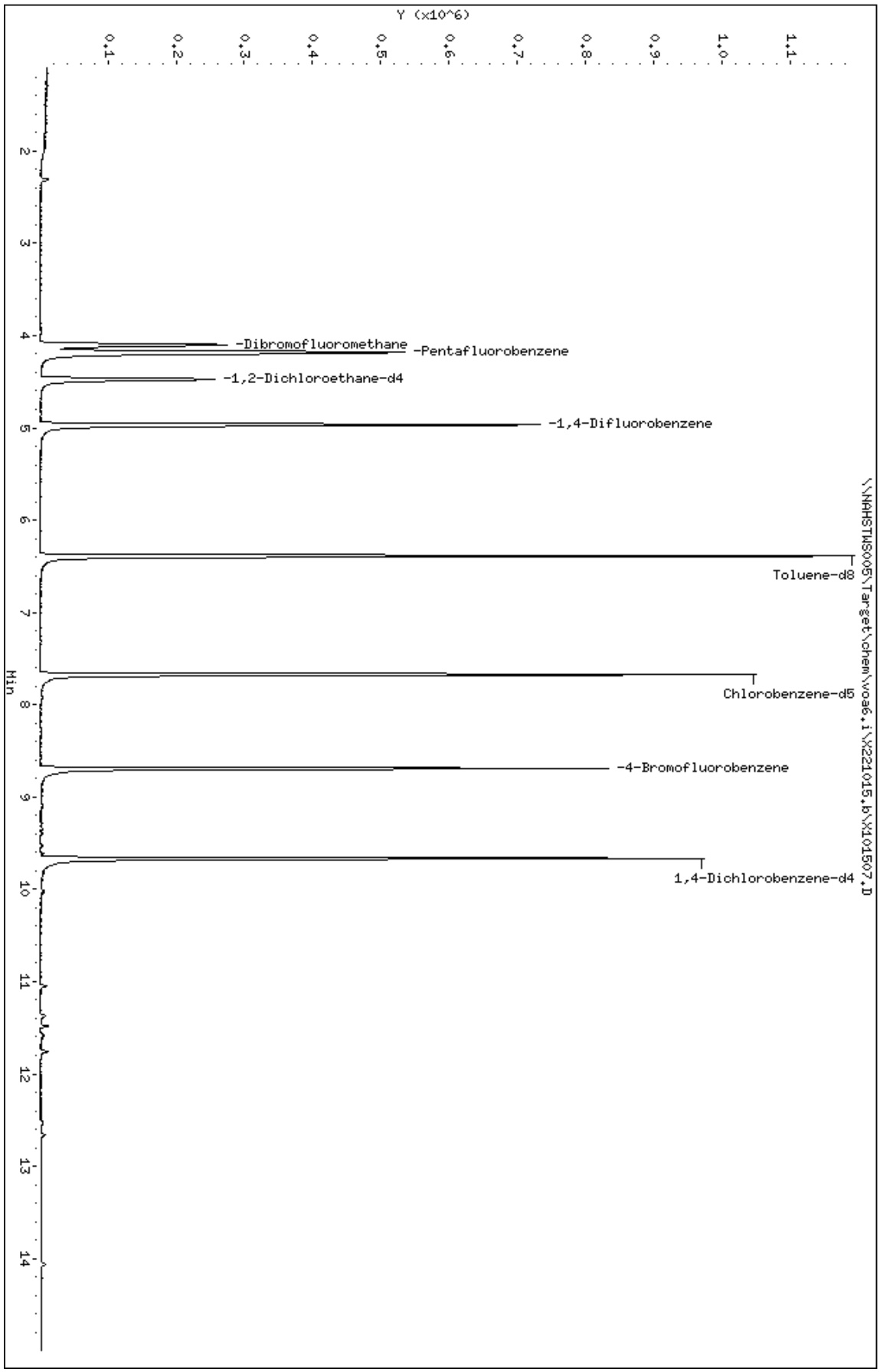
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101507.D
Lab Smp Id: VBLKW-221015 Client Smp ID: VBLKW-221015
Inj Date : 15-OCT-2022 13:10
Operator : PC Inst ID: voa6.i
Smp Info : VBLKW-221015;VBLKW-221015;3;;BLANK
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	(1.000)	497692	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	198706	44.2537	44.25
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	187210	42.1751	42.17
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	664702	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	581083	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	770419	52.9042	52.90
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	252300	48.6626	48.66
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	272159	50.0000	



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101507.D
Date : 15-OCT-2022 13:10
Client ID: VBLKW-221015
Sample Info: VBLKW-221015;VBLKW-221015;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

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

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101507.D
Inj Date : 15-OCT-2022 13:10
InstruID : voa6.i
LabSampID : VBLKW-221015

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101509.D Page 1
Report Date: 28-Oct-2022 13:51

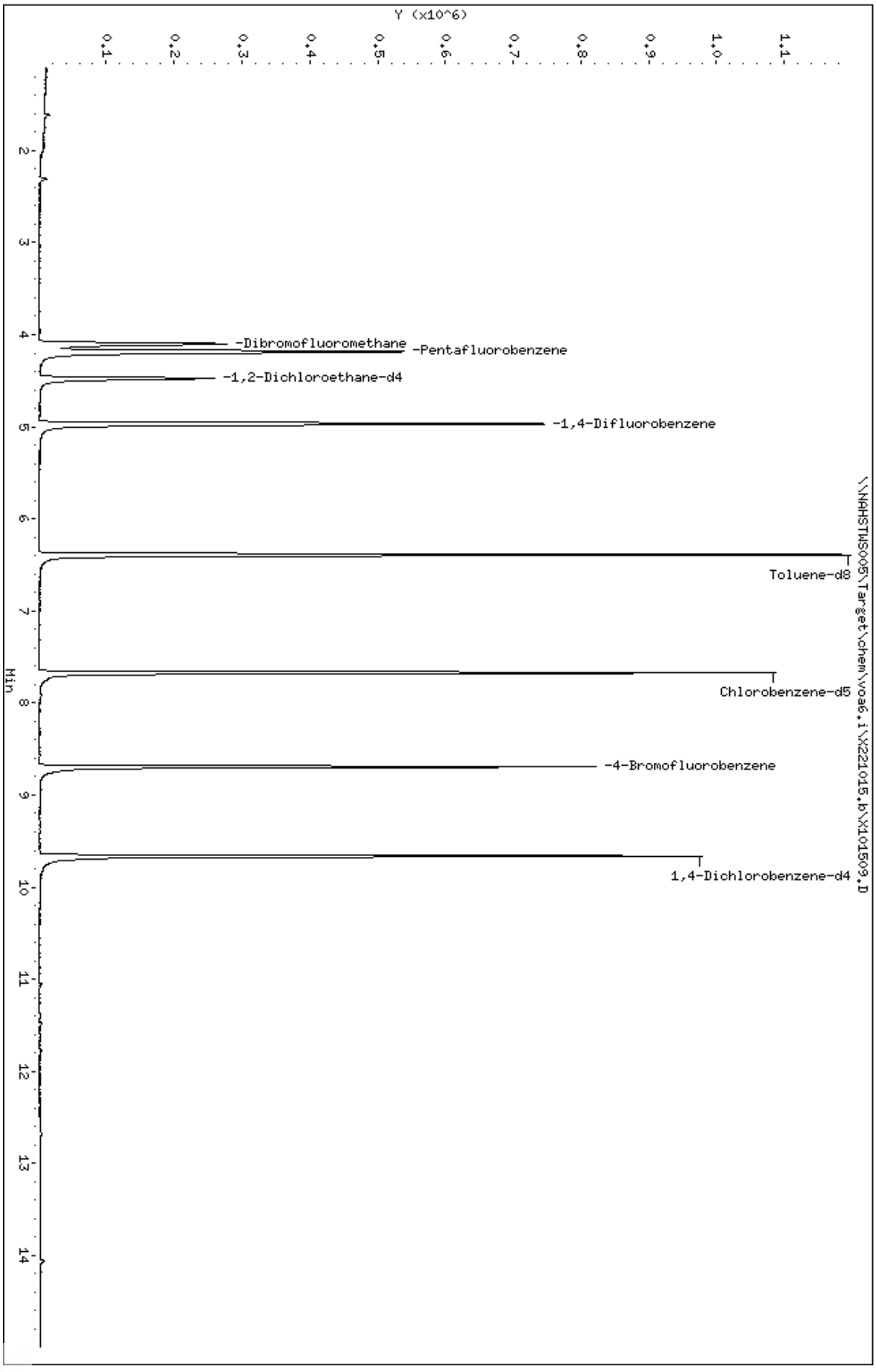
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101509.D
Lab Smp Id: HS22100575-10 Client Smp ID: HS22100575-10
Inj Date : 15-OCT-2022 13:52
Operator : PC Inst ID: voa6.i
Smp Info : HS22100575-10;HS22100575-10;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	(1.000)	507668	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	198737	43.3782	43.37
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	194531	42.9779	42.97
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	672731	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	597550	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	780662	52.1303	52.13
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	259073	48.5914	48.59
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	274493	50.0000	



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101509.D
Date : 15-OCT-2022 13:52
Client ID: HS22100575-10
Sample Info: HS22100575-10;HS22100575-10;;;
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101509.D
Inj Date : 15-OCT-2022 13:52
InstruID : voa6.i
LabSampID : HS22100575-10

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101513.D Page 1
Report Date: 28-Oct-2022 13:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101513.D
Lab Smp Id: HS22100575-01 Client Smp ID: HS22100575-01
Inj Date : 15-OCT-2022 15:17
Operator : PC Inst ID: voa6.i
Smp Info : HS22100575-01;HS22100575-01;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 13
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7056

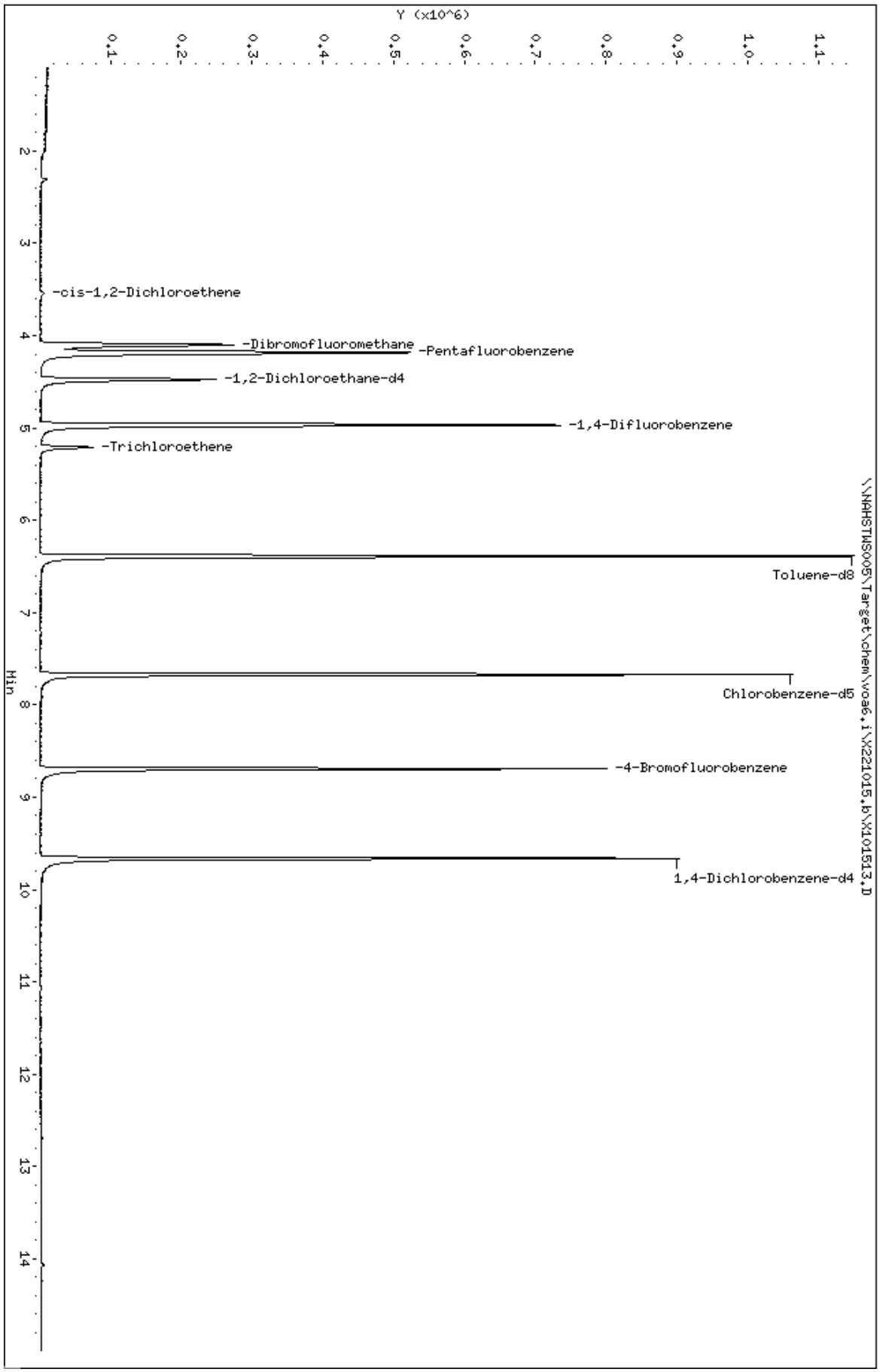
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.181	4.181	(1.000)	498382	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.103	(0.980)	197395	43.8957	43.89
$ 35 1,2-Dichloroethane-d4	65	4.470	4.474	(1.069)	192044	43.2234	43.22
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	658594	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	572994	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	759527	52.8926	52.89
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	245929	48.0993	48.09
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	265792	50.0000	
27 cis-1,2-Dichloroethene	96	3.537	3.529	(0.846)	2836	0.54479	0.54(a)
38 Trichloroethene	130	5.212	5.208	(1.049)	28605	5.77439	5.77

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa6,i\X221015,b\X101513,D
Date : 15-OCT-2022 15:17
Client ID: HS22100575-01
Sample Info: HS22100575-01;HS22100575-01;;;
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101513.D Page 2

Date : 15-OCT-2022 15:17

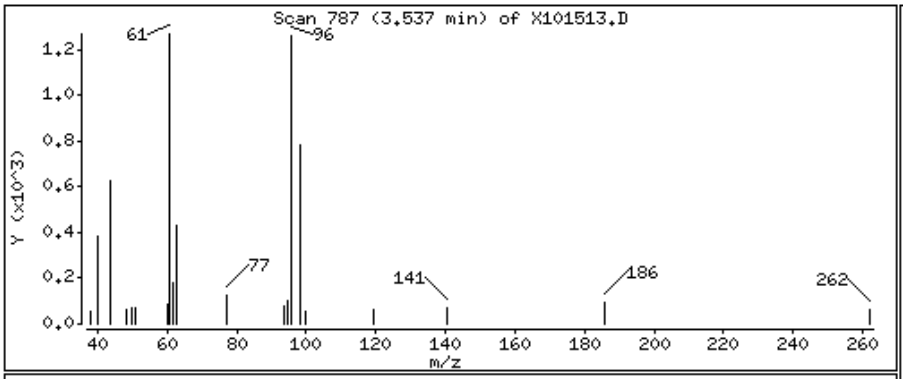
Client ID: HS22100575-01 Instrument: voa6.i

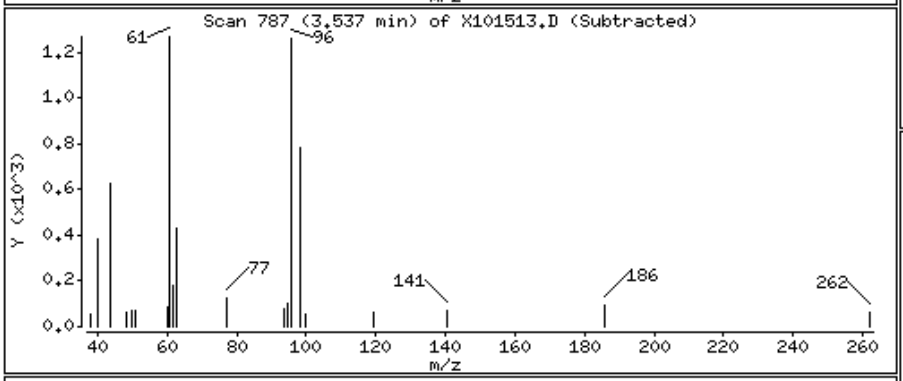
Sample Info: HS22100575-01;HS22100575-01;;;

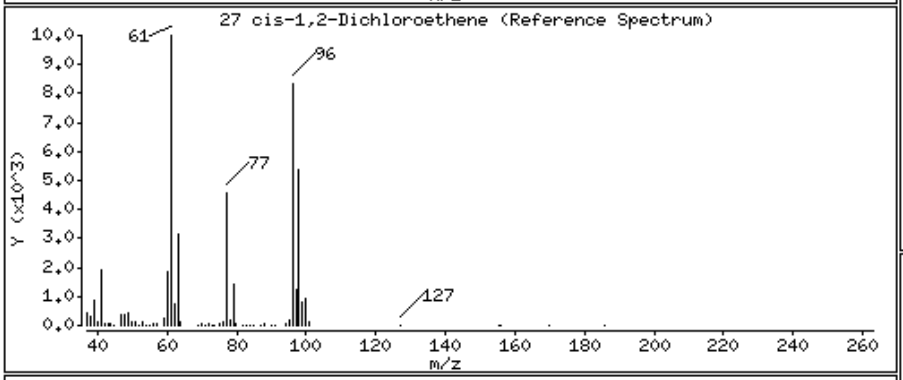
Purge Volume: 5.0 Operator: PC

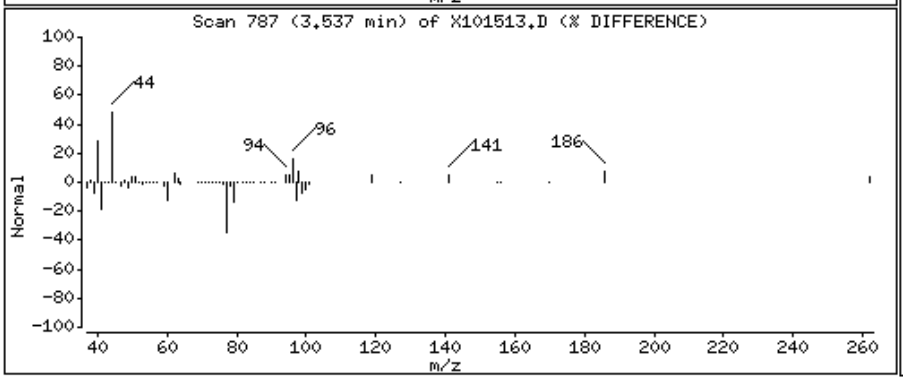
Column phase: DB624 Column diameter: 0.18

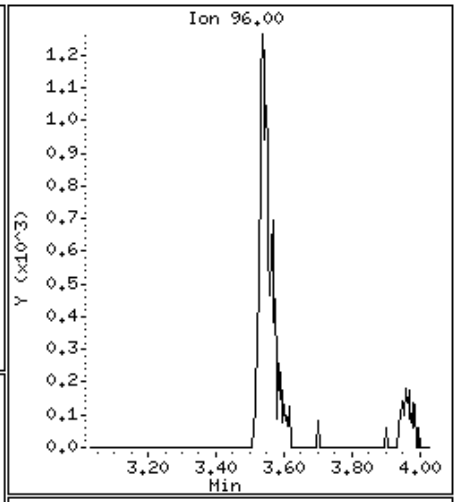
27 cis-1,2-Dichloroethene Concentration: 0.54 ug/l

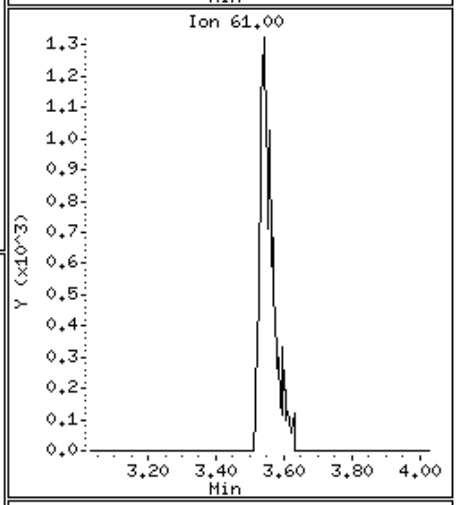


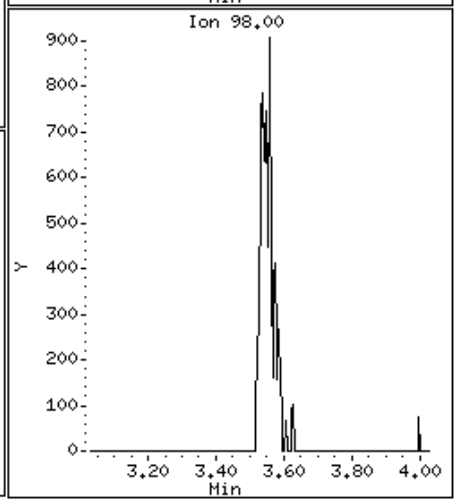












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101513.D Page 3

Date : 15-OCT-2022 15:17

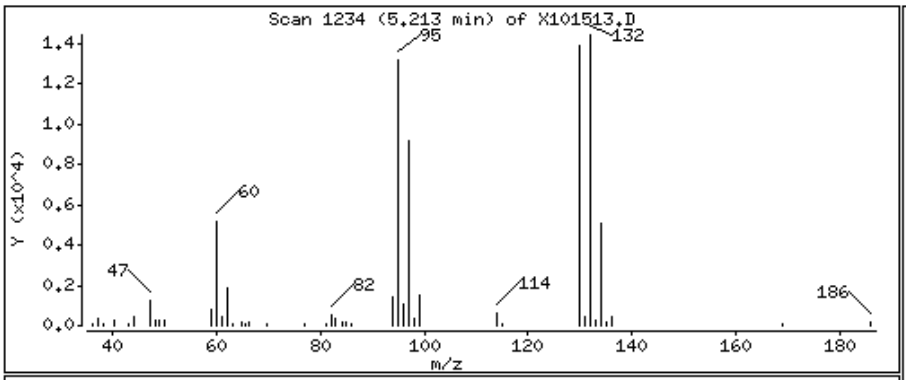
Client ID: HS22100575-01 Instrument: voa6.i

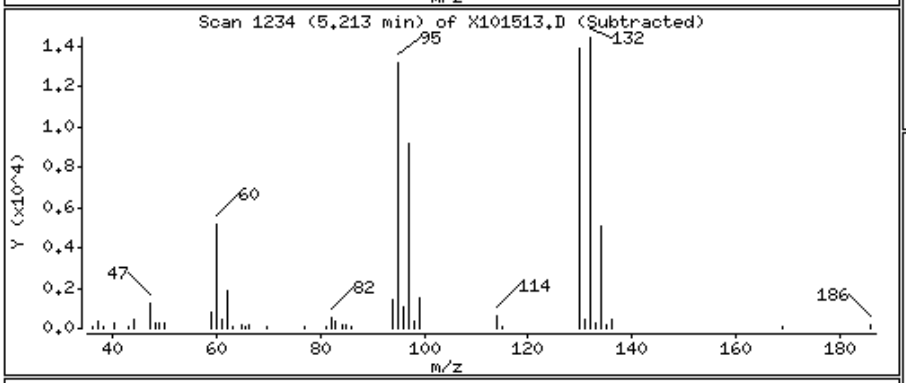
Sample Info: HS22100575-01;HS22100575-01;;;

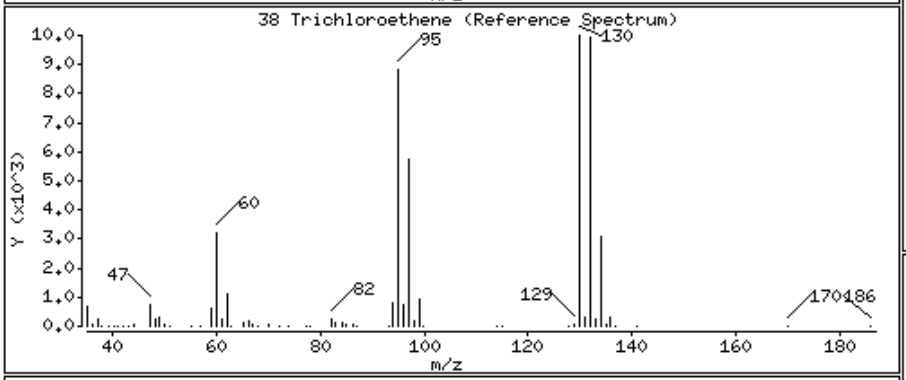
Purge Volume: 5.0 Operator: PC

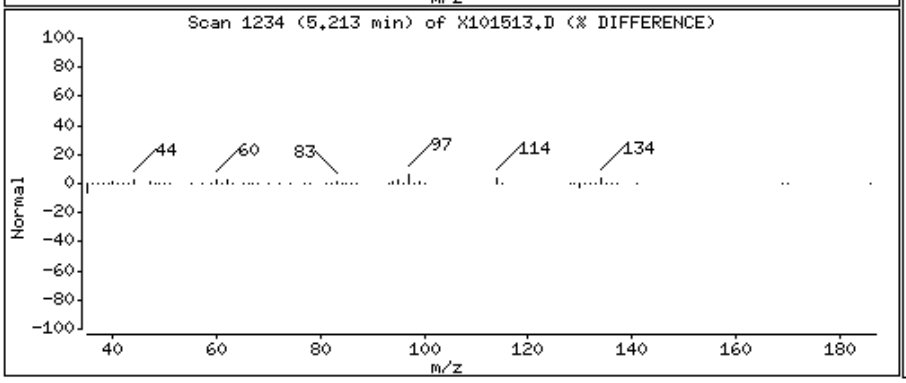
Column phase: DB624 Column diameter: 0.18

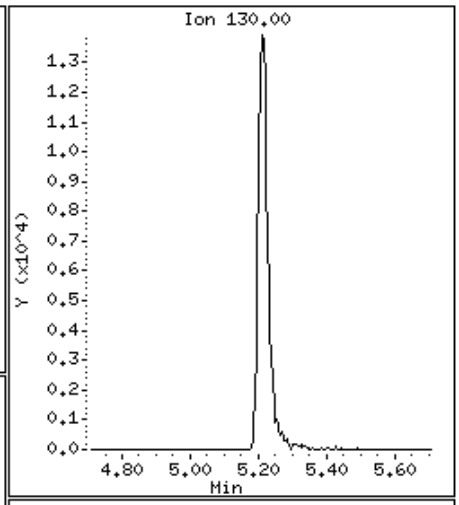
38 Trichloroethene Concentration: 5.77 ug/l

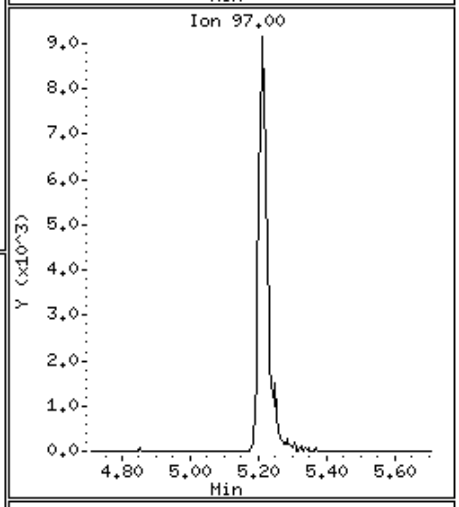


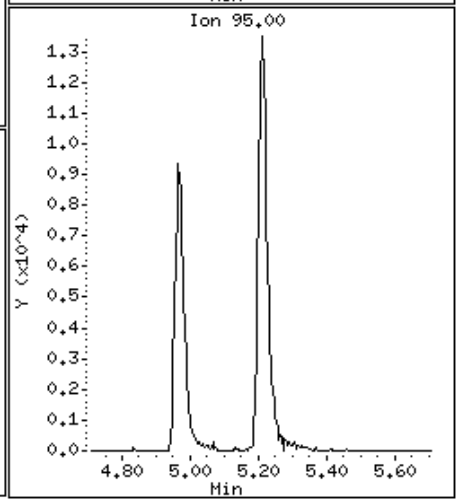












Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101513.D
Inj Date : 15-OCT-2022 15:17
InstruID : voa6.i
LabSampID : HS22100575-01

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101514.D Page 1
Report Date: 28-Oct-2022 13:51

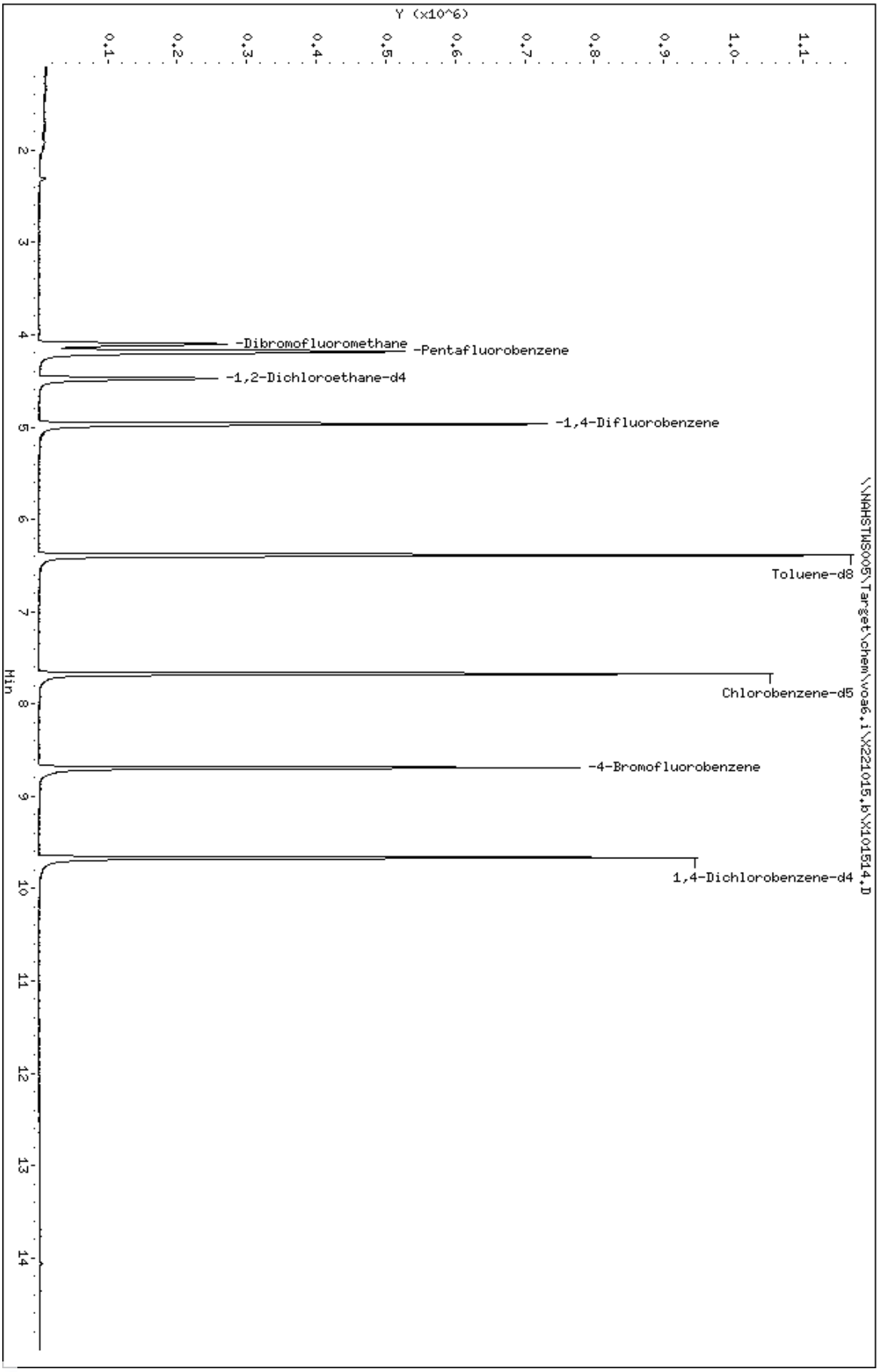
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101514.D
Lab Smp Id: HS22100575-03 Client Smp ID: HS22100575-03
Inj Date : 15-OCT-2022 15:38
Operator : PC Inst ID: voa6.i
Smp Info : HS22100575-03;HS22100575-03;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 14
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	4.181	(1.000)	493781	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.103	(0.980)	198006	44.4500	44.44
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	191665	43.5458	43.54
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	664404	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	581081	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	770332	52.8984	52.89
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	248129	47.8524	47.85
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	270517	50.0000	



Data File: \\NAHSTWS005\Target\chem\voa6,i\X221015,b\X101514.D
Date : 15-OCT-2022 15:38
Client ID: HS22100575-03
Sample Info: HS22100575-03;HS22100575-03;;;
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101514.D
Inj Date : 15-OCT-2022 15:38
InstruID : voa6.i
LabSampID : HS22100575-03

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101515.D Page 1
Report Date: 28-Oct-2022 13:51

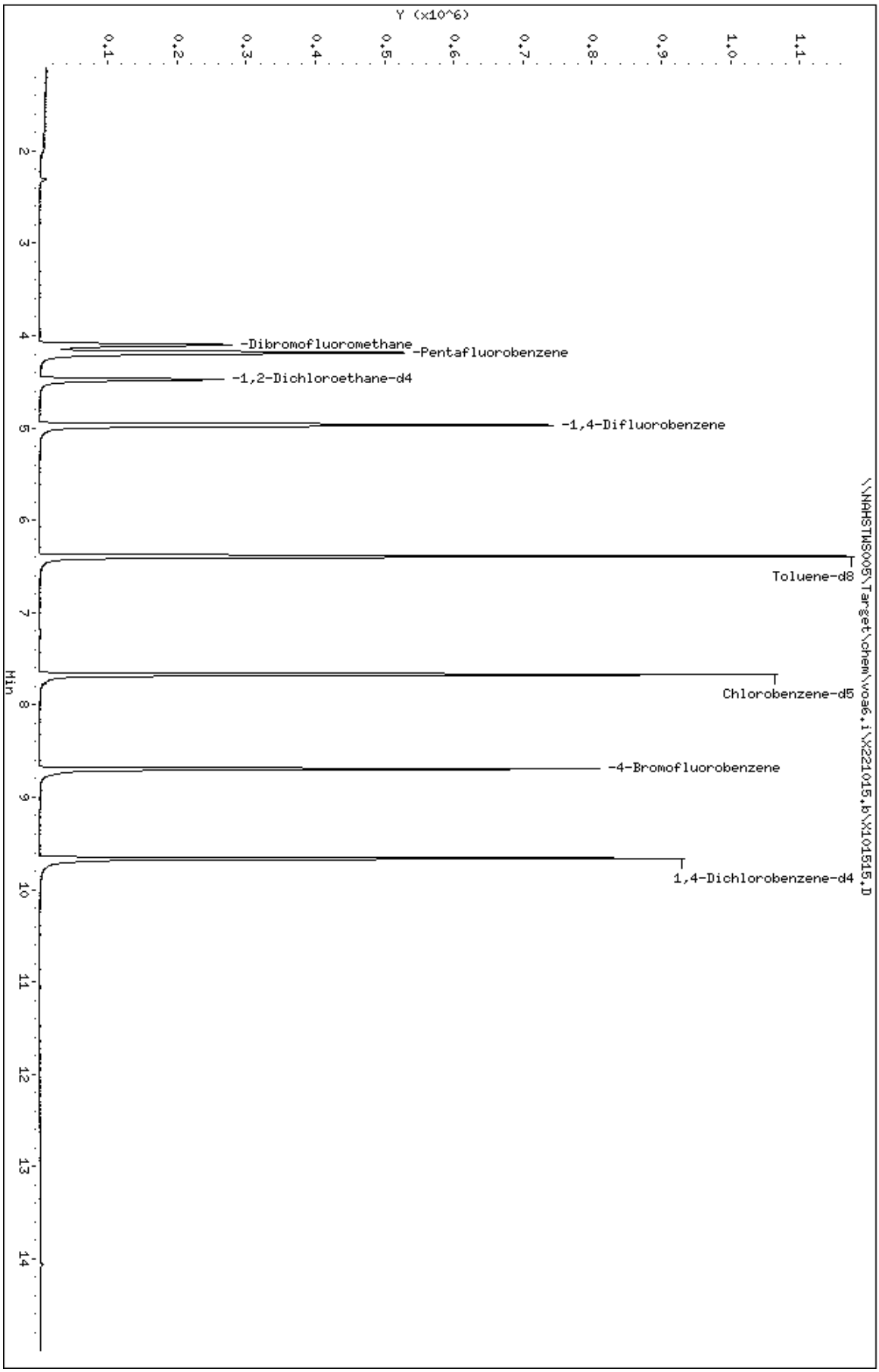
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101515.D
Lab Smp Id: HS22100575-04 Client Smp ID: HS22100575-04
Inj Date : 15-OCT-2022 15:59
Operator : PC Inst ID: voa6.i
Smp Info : HS22100575-04;HS22100575-04;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 15
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	(1.000)	494096	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.103	(0.979)	200081	44.8936	44.89
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	194539	44.1818	44.18
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	666839	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	578404	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	775626	53.5085	53.50
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	248377	48.1239	48.12
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	274591	50.0000	



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101515.D
Date : 15-OCT-2022 15:59
Client ID: HS221000575-04
Sample Info: HS221000575-04;HS221000575-04;;;
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101515.D
Inj Date : 15-OCT-2022 15:59
InstruID : voa6.i
LabSampID : HS22100575-04

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101516.D Page 1
Report Date: 28-Oct-2022 13:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101516.D
Lab Smp Id: HS22100575-06 Client Smp ID: HS22100575-06
Inj Date : 15-OCT-2022 16:20
Operator : PC Inst ID: voa6.i
Smp Info : HS22100575-06;HS22100575-06;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 16
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7056

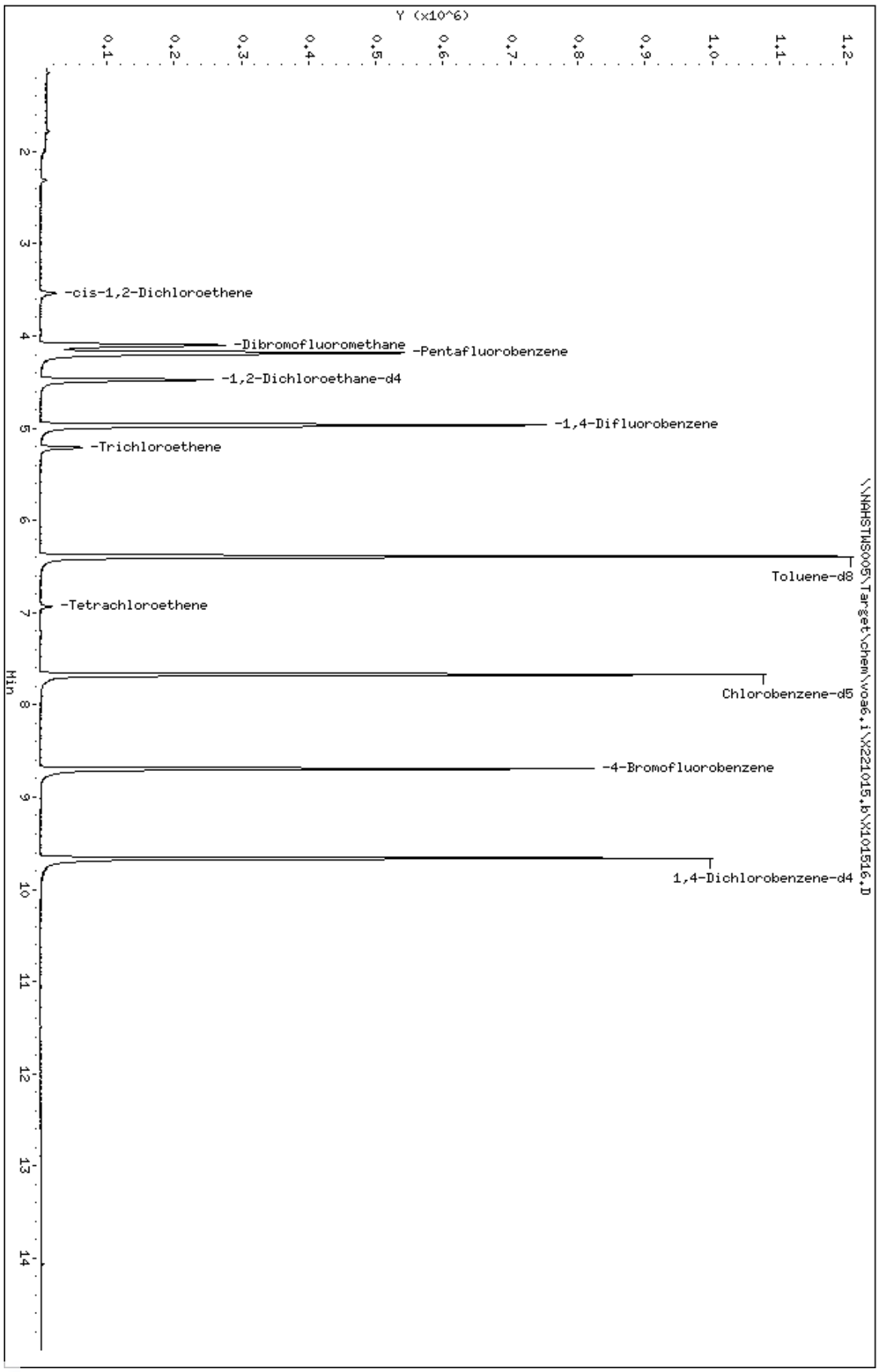
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.181	4.181	(1.000)	506635	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.103	(0.980)	199087	43.5456	43.54
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	194075	42.9643	42.96
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	674005	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	594958	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	783586	52.5535	52.55
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	256890	48.3904	48.39
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	281006	50.0000	
5 Vinyl Chloride	62	1.145	1.149	(0.274)	2146	0.55608	0.55(a)
27 cis-1,2-Dichloroethene	96	3.537	3.529	(0.846)	14264	2.69547	2.69(a)
38 Trichloroethene	130	5.212	5.208	(1.049)	24766	4.88512	4.88(a)
56 Tetrachloroethene	164	6.929	6.929	(0.903)	4116	1.00026	1.00(a)

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa6,i\X221015,b\X101516.D
Date : 15-OCT-2022 16:20
Client ID: HS22100575-06
Sample Info: HS22100575-06;HS22100575-06;;;
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101516.D Page 2

Date : 15-OCT-2022 16:20

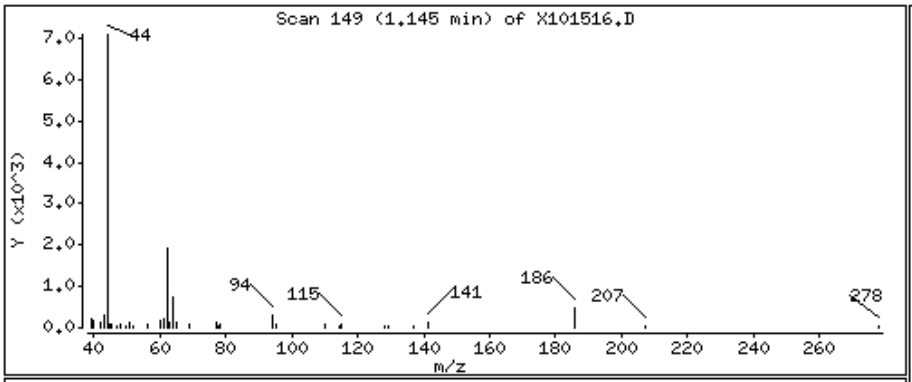
Client ID: HS22100575-06 Instrument: voa6.i

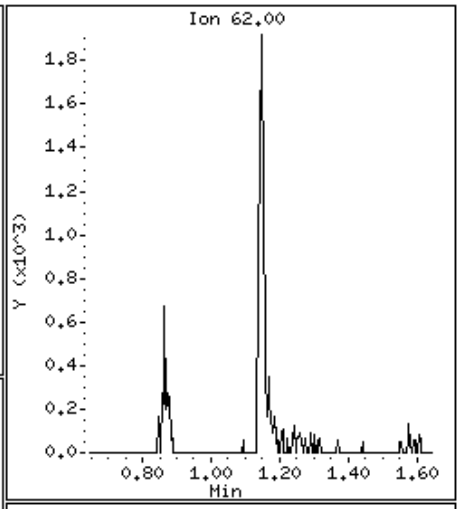
Sample Info: HS22100575-06;HS22100575-06;;;

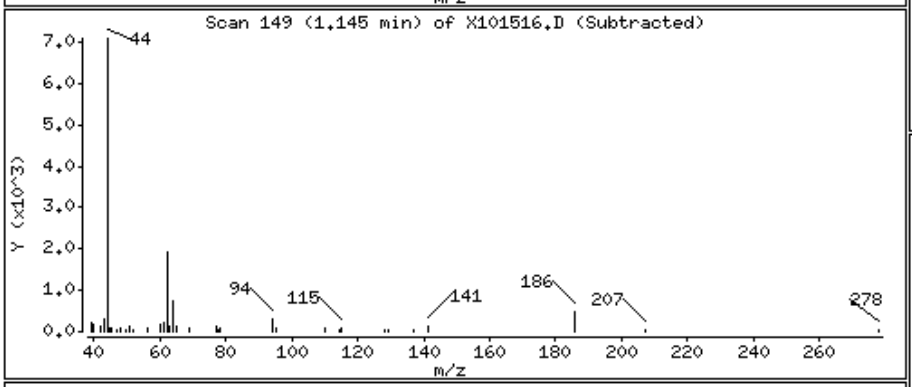
Purge Volume: 5.0 Operator: PC

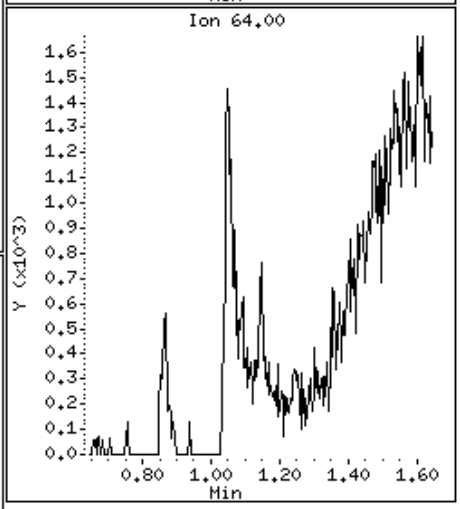
Column phase: DB624 Column diameter: 0.18

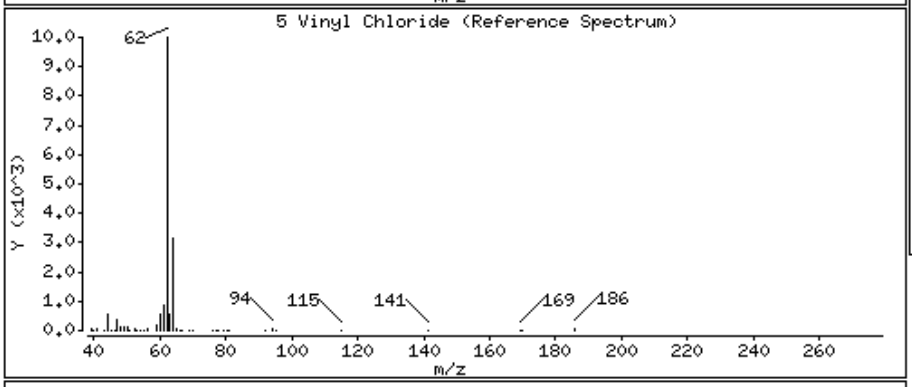
5 Vinyl Chloride Concentration: 0.55 ug/l

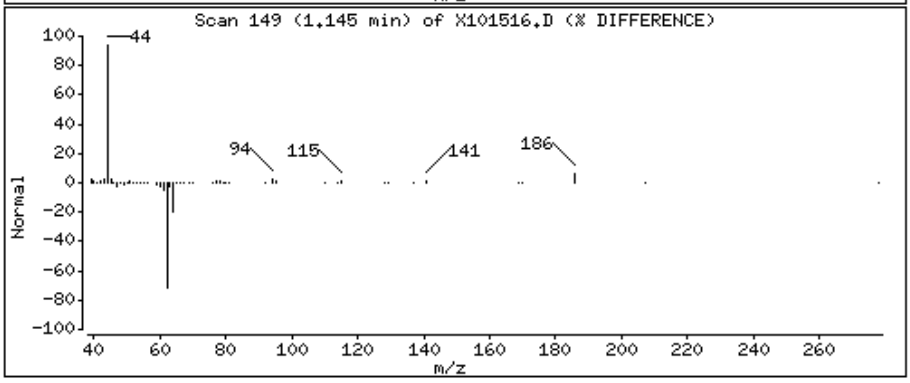












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101516.D Page 3

Date : 15-OCT-2022 16:20

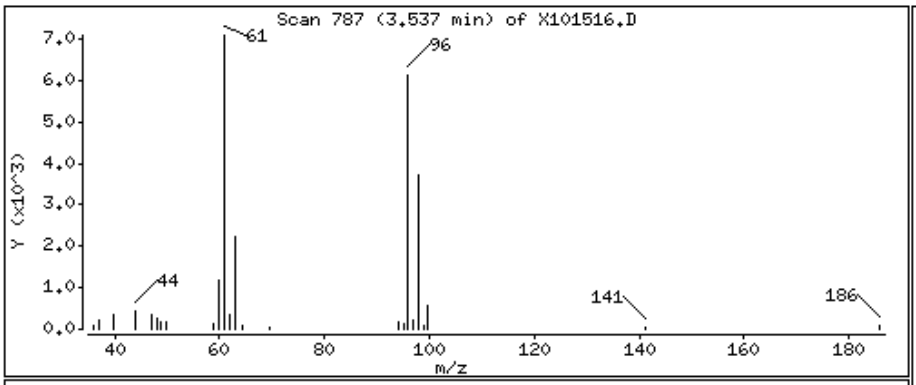
Client ID: HS22100575-06 Instrument: voa6.i

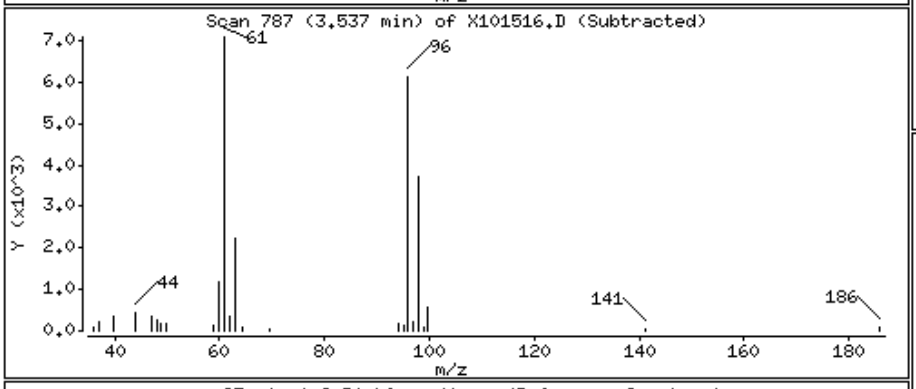
Sample Info: HS22100575-06;HS22100575-06;;;

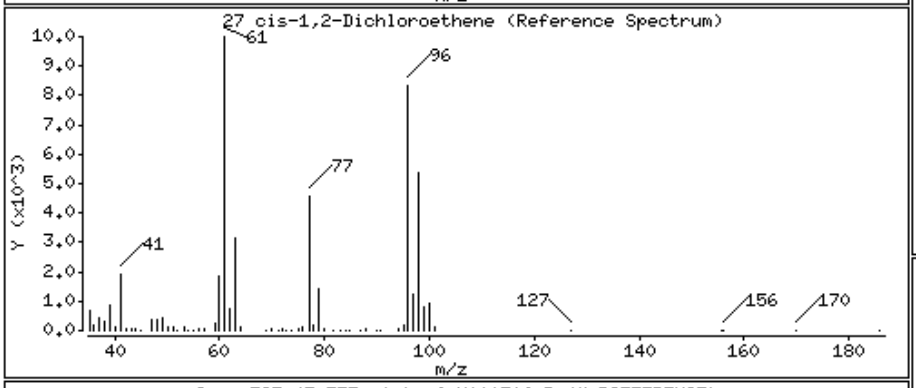
Purge Volume: 5.0 Operator: PC

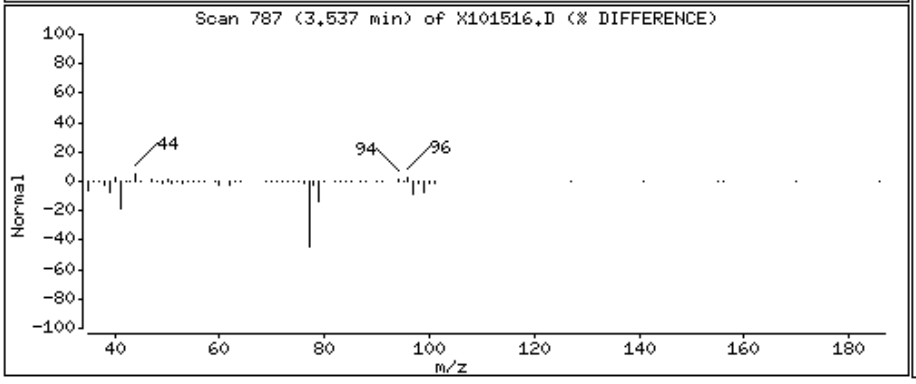
Column phase: DB624 Column diameter: 0.18

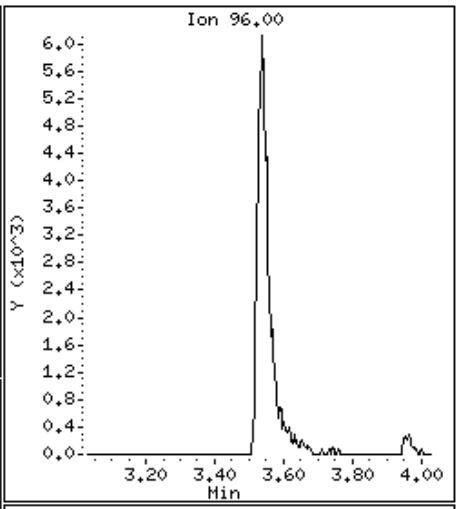
27 cis-1,2-Dichloroethene Concentration: 2.69 ug/l

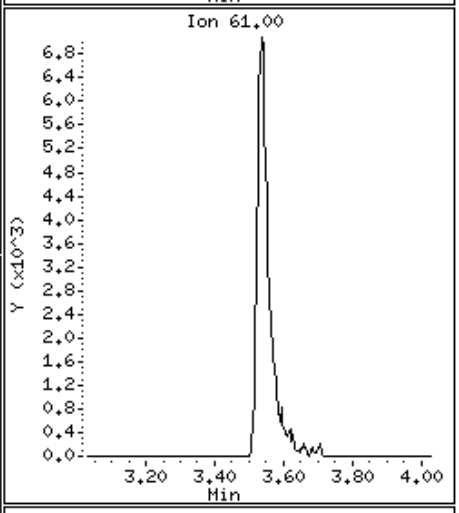


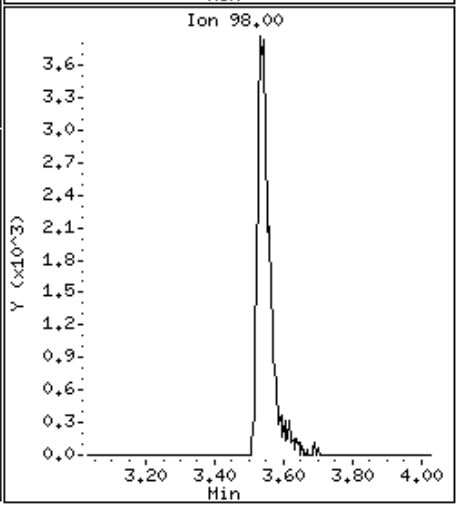












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101516.D Page 4

Date : 15-OCT-2022 16:20

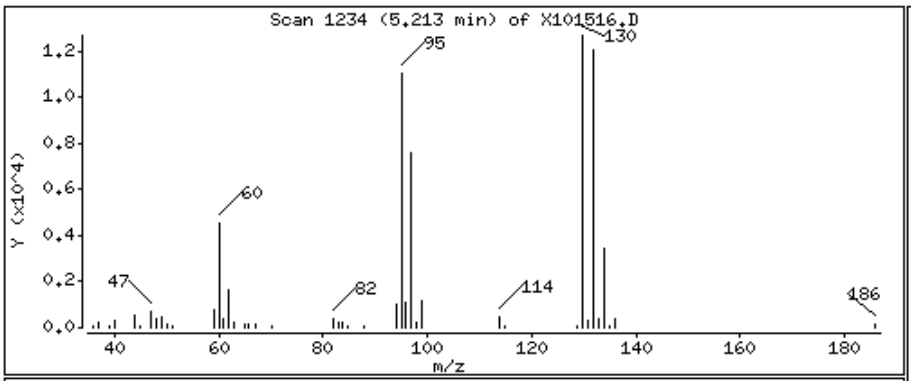
Client ID: HS22100575-06 Instrument: voa6.i

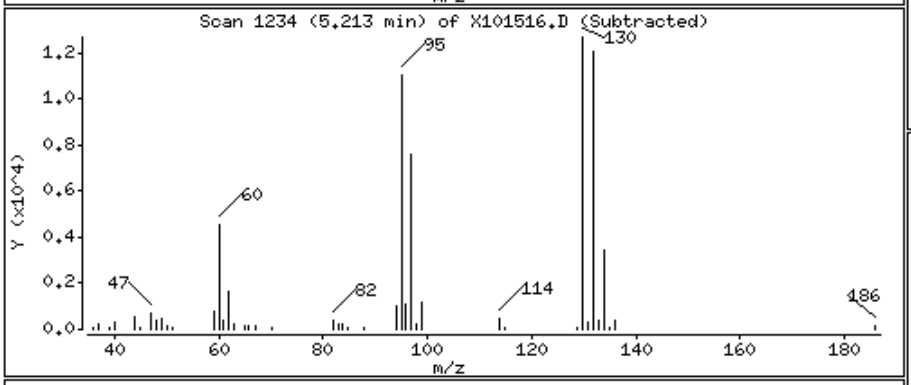
Sample Info: HS22100575-06;HS22100575-06;;;

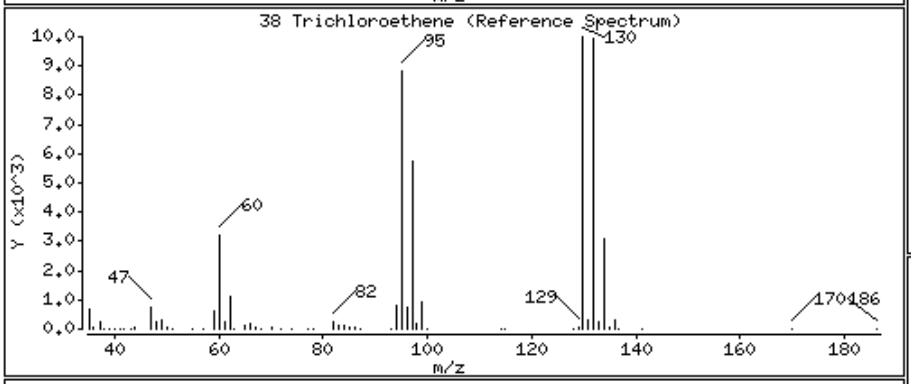
Purge Volume: 5.0 Operator: PC

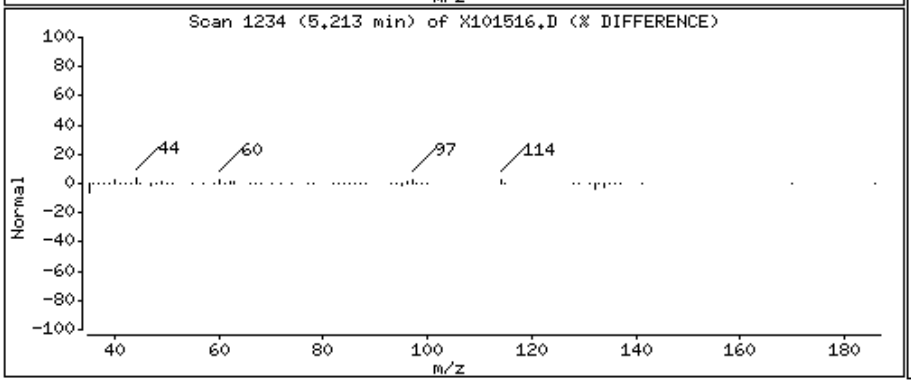
Column phase: DB624 Column diameter: 0.18

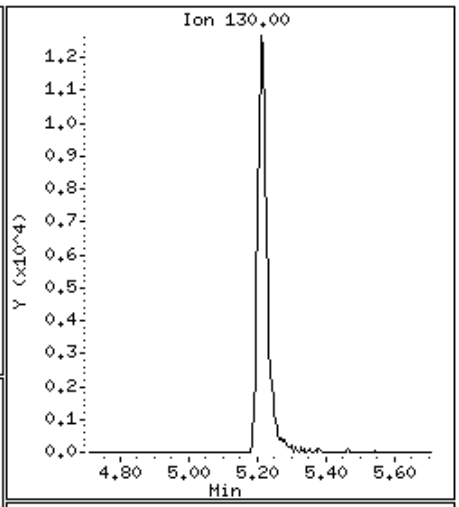
38 Trichloroethene Concentration: 4.88 ug/l

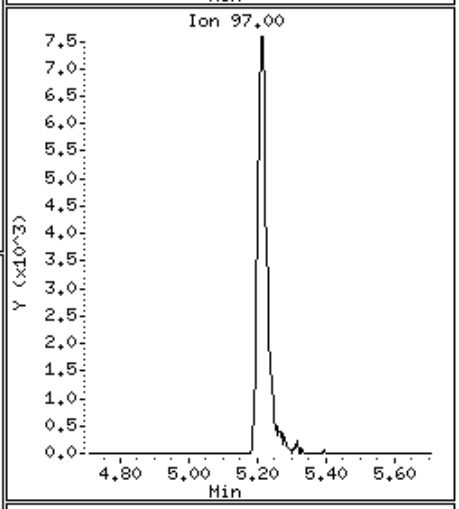


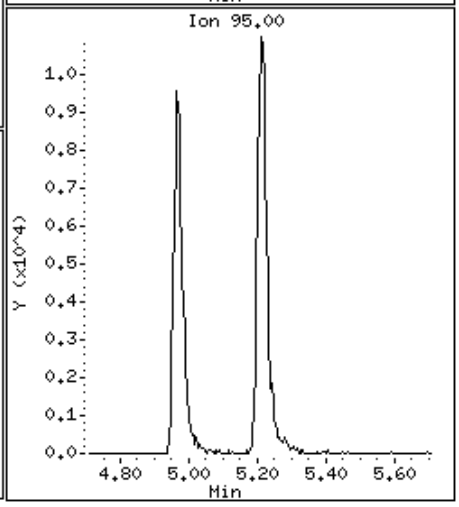












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101516.D Page 5

Date : 15-OCT-2022 16:20

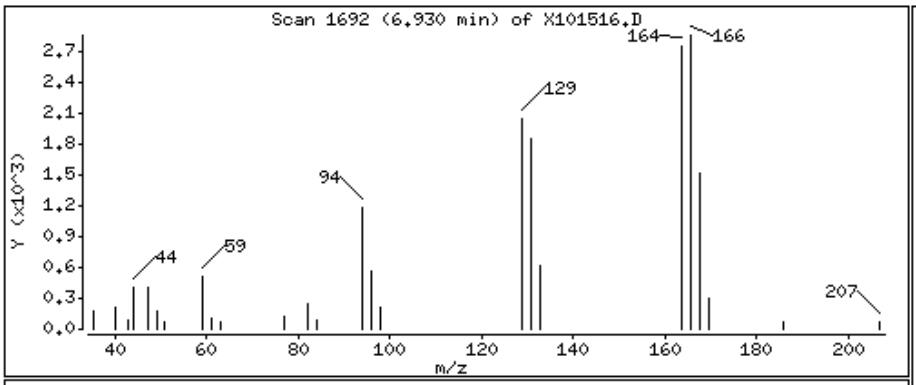
Client ID: HS22100575-06 Instrument: voa6.i

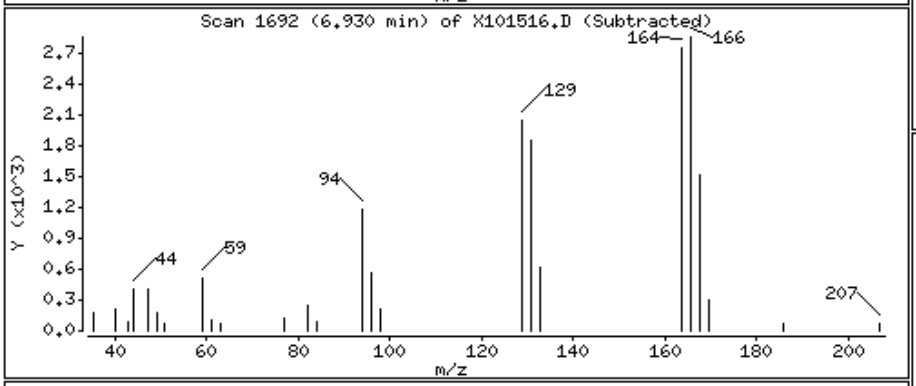
Sample Info: HS22100575-06;HS22100575-06;;;

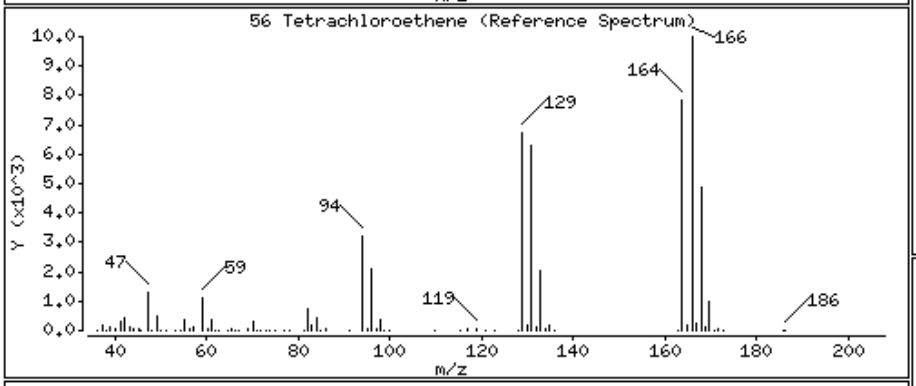
Purge Volume: 5.0 Operator: PC

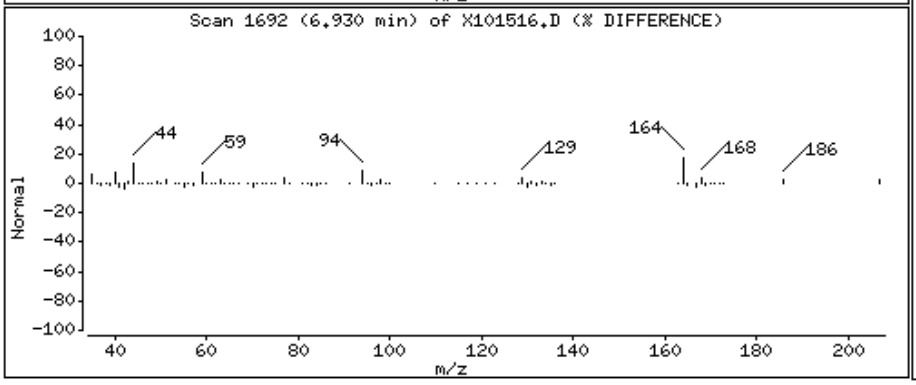
Column phase: DB624 Column diameter: 0.18

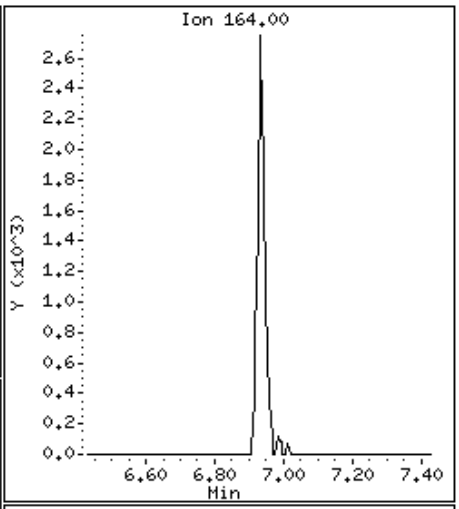
56 Tetrachloroethene Concentration: 1.00 ug/l

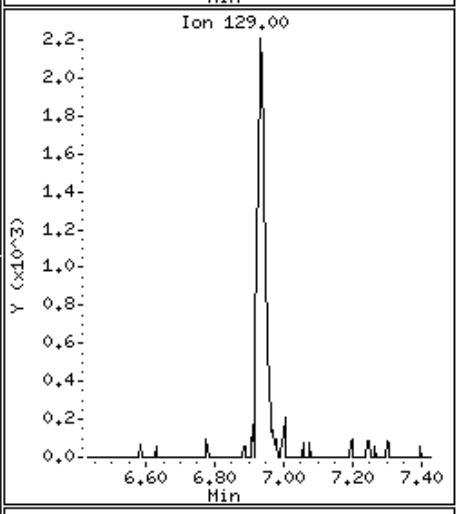


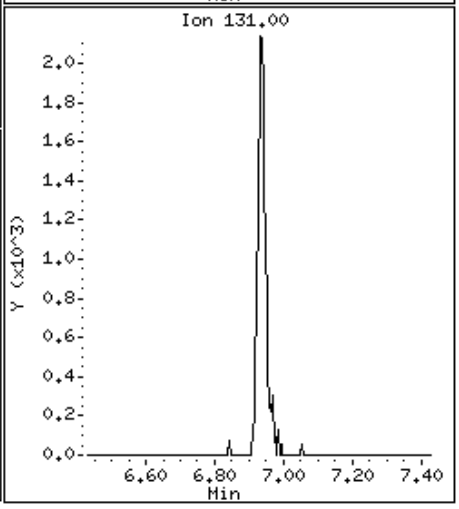












Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101516.D
Inj Date : 15-OCT-2022 16:20
InstruID : voa6.i
LabSampID : HS22100575-06

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101517.D Page 1
Report Date: 28-Oct-2022 13:51

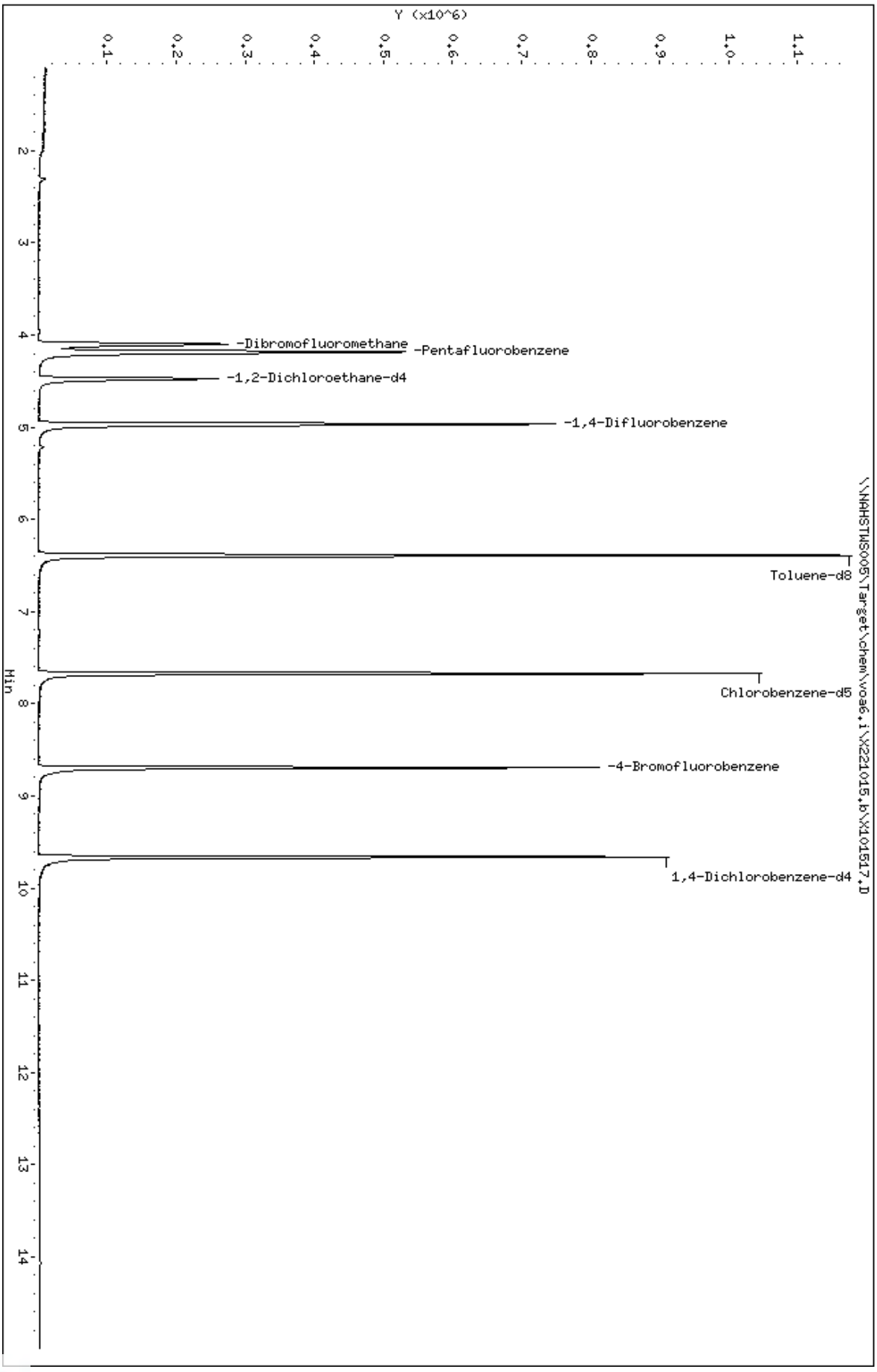
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101517.D
Lab Smp Id: HS22100575-07 Client Smp ID: HS22100575-07
Inj Date : 15-OCT-2022 16:41
Operator : PC Inst ID: voa6.i
Smp Info : HS22100575-07;HS22100575-07;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 17
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	4.181	(1.000)	496553	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	200930	44.8605	44.86
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	194066	43.8505	43.85
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	664950	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	578002	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	772775	53.3489	53.34
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	249757	48.4272	48.42
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	269947	50.0000	



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101517.D
Date : 15-OCT-2022 16:41
Client ID: HS22100575-07
Sample Info: HS22100575-07;HS22100575-07;;;
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101517.D
Inj Date : 15-OCT-2022 16:41
InstruID : voa6.i
LabSampID : HS22100575-07

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101518.D Page 1
Report Date: 28-Oct-2022 13:51

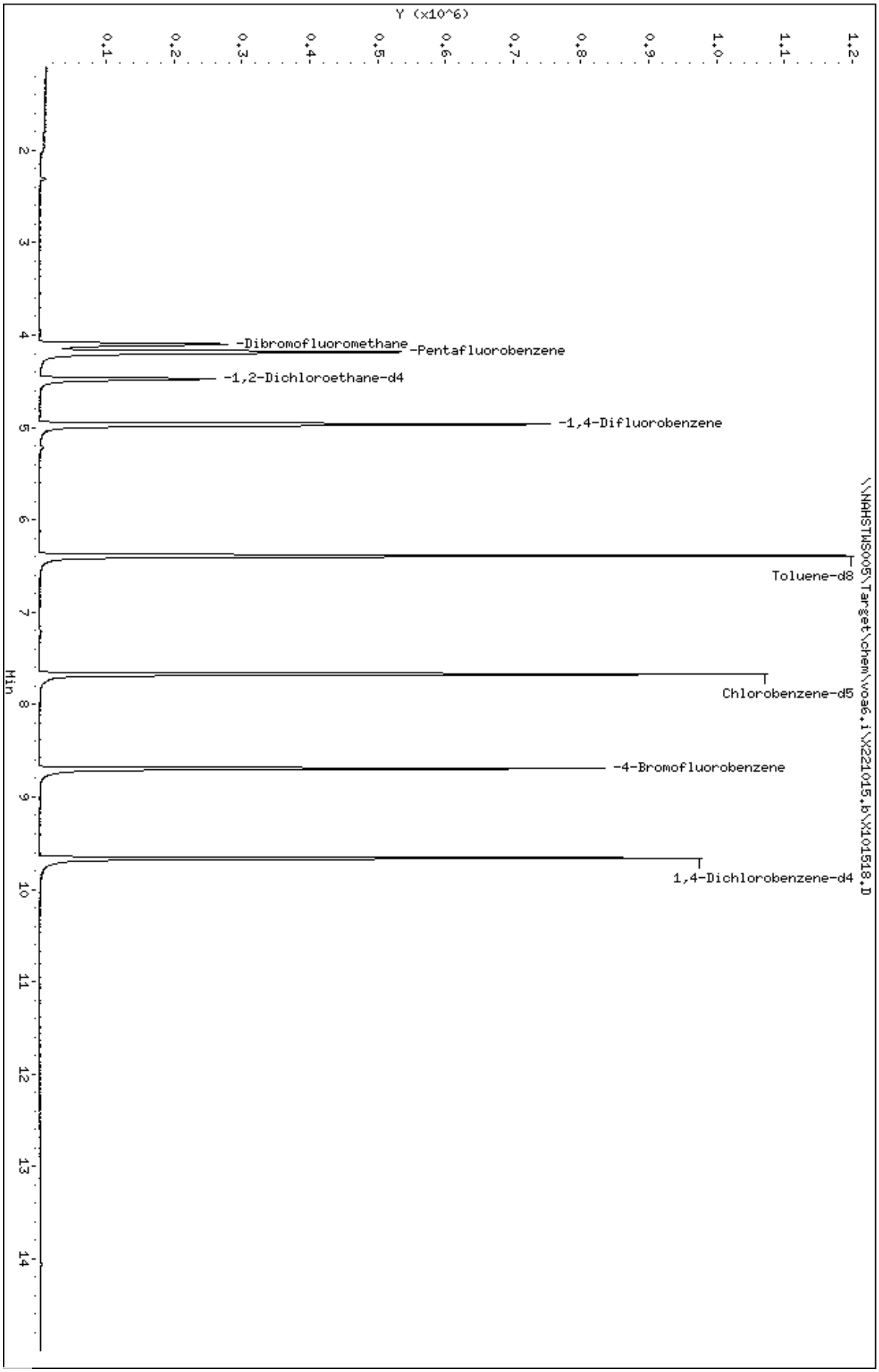
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101518.D
Lab Smp Id: HS22100575-08 Client Smp ID: HS22100575-08
Inj Date : 15-OCT-2022 17:02
Operator : PC Inst ID: voa6.i
Smp Info : HS22100575-08;HS22100575-08;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 18
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	4.181	(1.000)	511044	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.103	(0.980)	203023	44.0306	44.03
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	195065	42.8081	42.80
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	678186	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	593574	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	785586	52.8105	52.81
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	250892	47.3633	47.36
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	277889	50.0000	



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101518.D
Date : 15-OCT-2022 17:02
Client ID: HS22100575-08
Sample Info: HS22100575-08;HS22100575-08;;;
Purge Volume: 5.0
Column phase: DB624

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

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101518.D
Inj Date : 15-OCT-2022 17:02
InstruID : voa6.i
LabSampID : HS22100575-08

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101519.D Page 1
Report Date: 28-Oct-2022 13:51

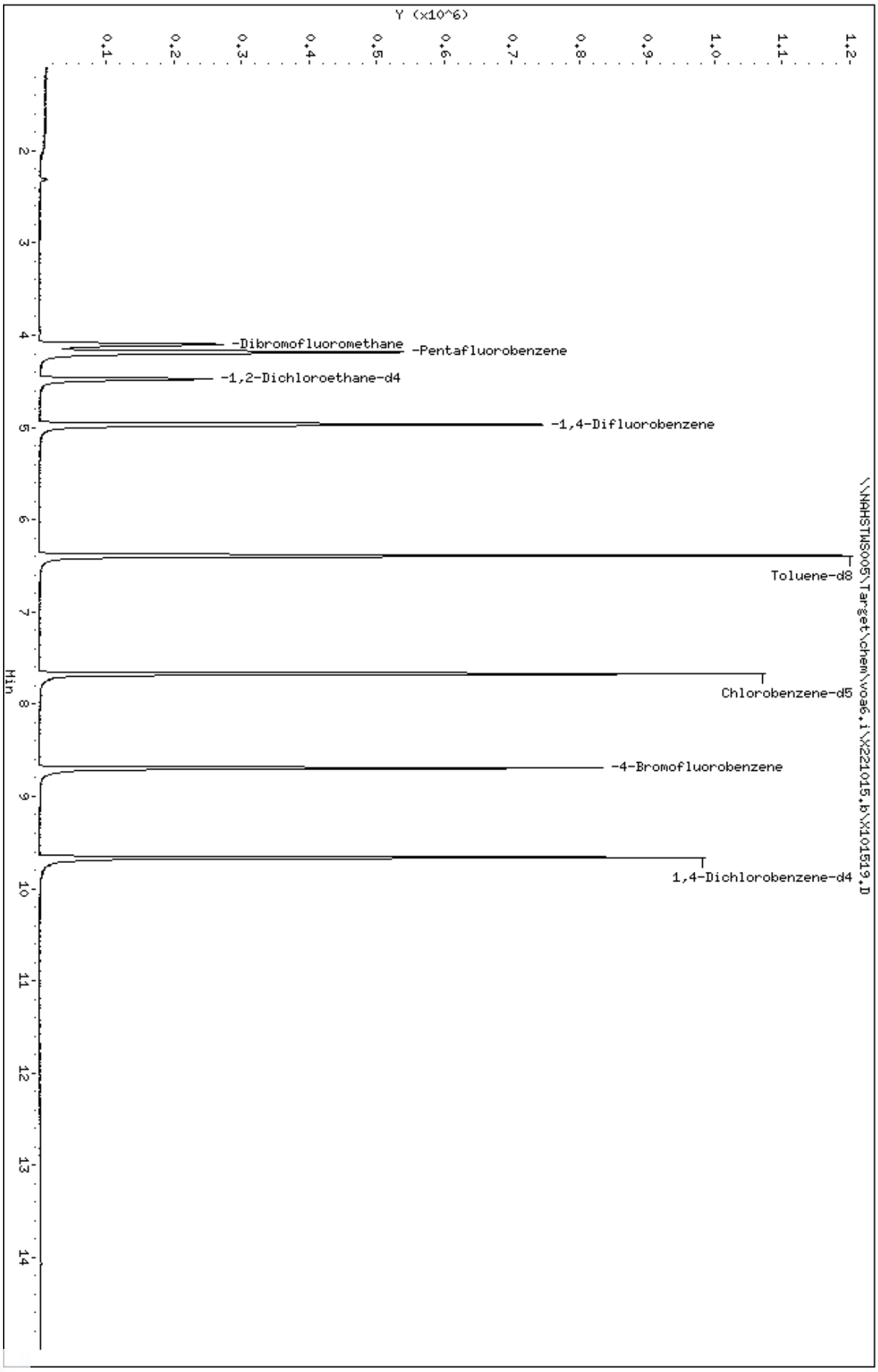
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101519.D
Lab Smp Id: HS22100575-09 Client Smp ID: HS22100575-09
Inj Date : 15-OCT-2022 17:23
Operator : PC Inst ID: voa6.i
Smp Info : HS22100575-09;HS22100575-09;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	4.181	(1.000)	503846	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.103	(0.980)	201214	44.2651	44.26
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	191925	42.7192	42.71
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	670212	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	598793	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	781020	52.0460	52.04
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	260637	48.7846	48.78
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	286854	50.0000	


Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101519.D
Date : 15-OCT-2022 17:23
Client ID: HS2210057S-09
Sample Info: HS2210057S-09;HS2210057S-09;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6.i
Operator: PC
Column diameter: 0.18
Page 1
Y (x10^6)
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
2
3
4
5
6
7
8
9
10
11
12
13
14
Min
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101519.D

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101519.D
Inj Date : 15-OCT-2022 17:23
InstruID : voa6.i
LabSampID : HS22100575-09

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101522.D Page 1
Report Date: 28-Oct-2022 13:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101522.D
Lab Smp Id: HS22100575-05 Client Smp ID: HS22100575-05
Inj Date : 15-OCT-2022 18:26
Operator : PC Inst ID: voa6.i
Smp Info : HS22100575-05;HS22100575-05;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 22
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7056

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

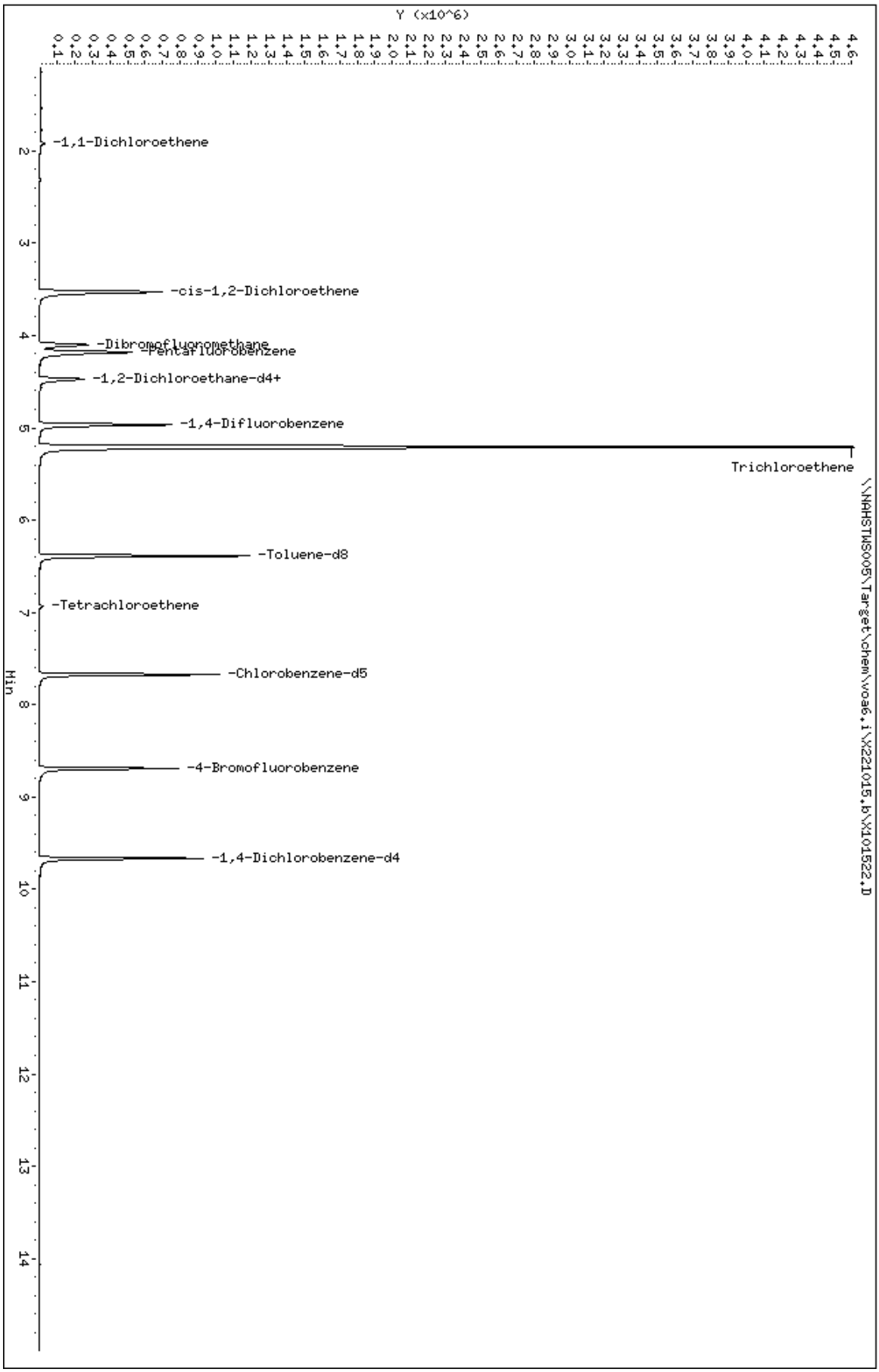
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.185	4.181	(1.000)	497519	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.103	(0.980)	200671	44.7136	44.71
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	192331	43.3656	43.36
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	665776	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	576663	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	762973	52.7945	52.79
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	252306	49.0394	49.03
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	268178	50.0000	
11 1,1-Dichloroethene	96	1.917	1.917	(0.458)	10515	3.26769	3.26(a)
27 cis-1,2-Dichloroethene	96	3.529	3.529	(0.843)	399644	76.9047	76.90
33 1,2-Dichloroethane	62	4.564	4.556	(0.919)	8287	1.68687	1.68(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	1654051	330.296	330.29(A)
56 Tetrachloroethene	164	6.936	6.929	(0.904)	4639	1.16313	1.16(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.



Data File: \\NAHSTWS005\Target\chem\voa6.i\x221015.b\x101522.D
Date : 15-OCT-2022 18:26
Client ID: HS22100575-05
Sample Info: HS22100575-05;HS22100575-05;;;
Purge Volume: 5.0
Column phase: DB624

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

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101522.D Page 2

Date : 15-OCT-2022 18:26

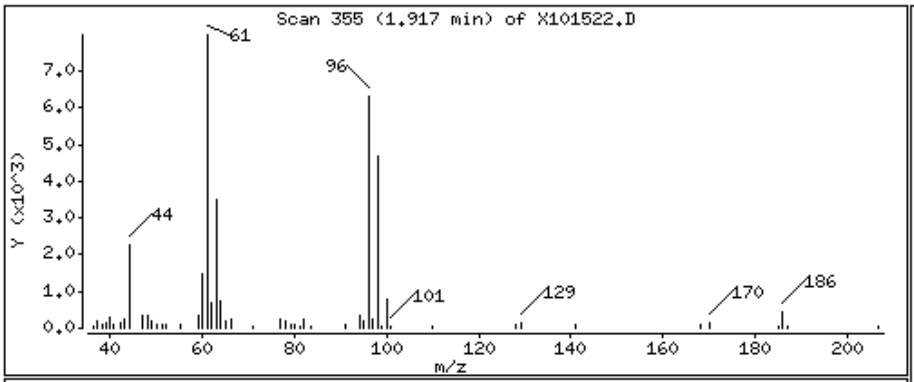
Client ID: HS22100575-05 Instrument: voa6.i

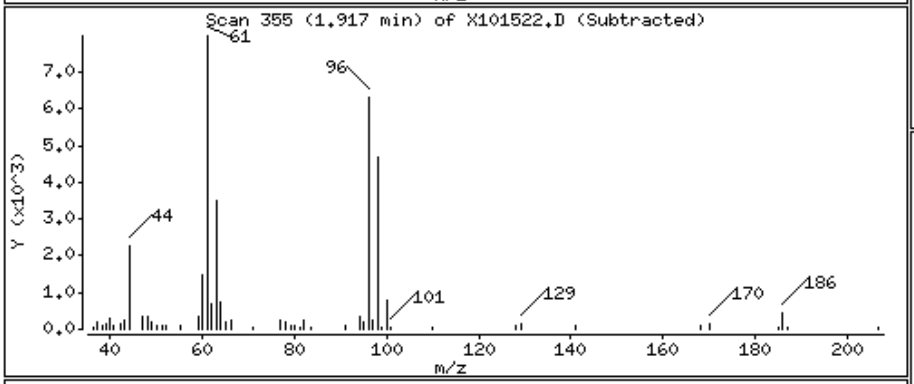
Sample Info: HS22100575-05;HS22100575-05;;;

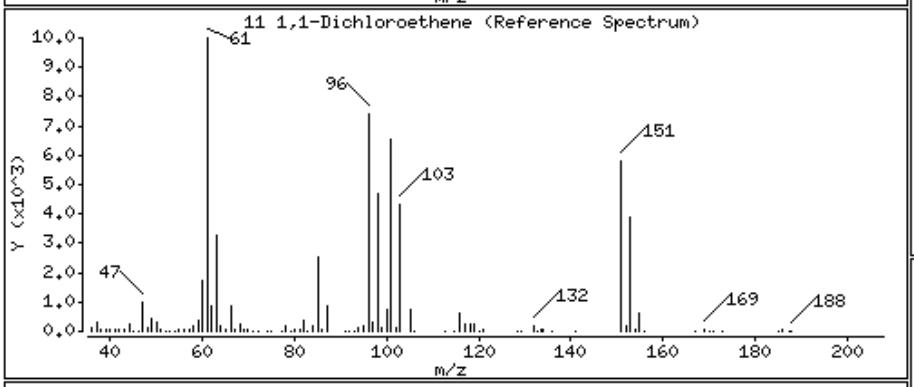
Purge Volume: 5.0 Operator: PC

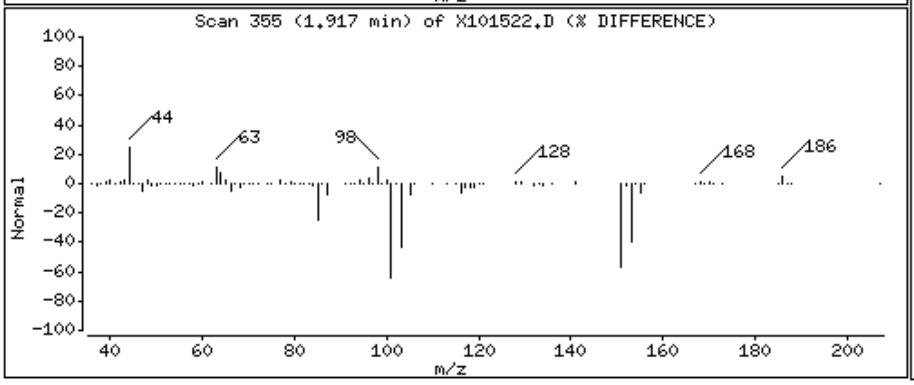
Column phase: DB624 Column diameter: 0.18

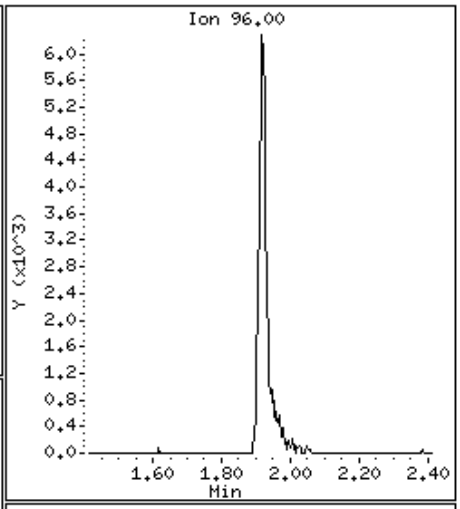
11 1,1-Dichloroethene Concentration: 3.26 ug/l

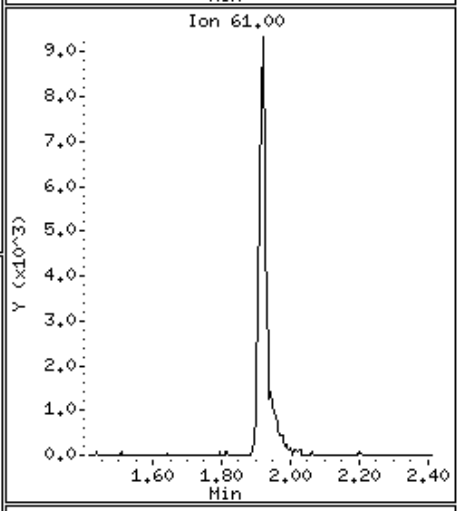


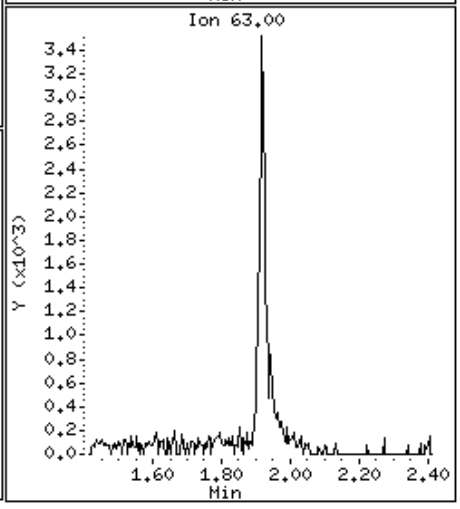












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101522.D Page 3

Date : 15-OCT-2022 18:26

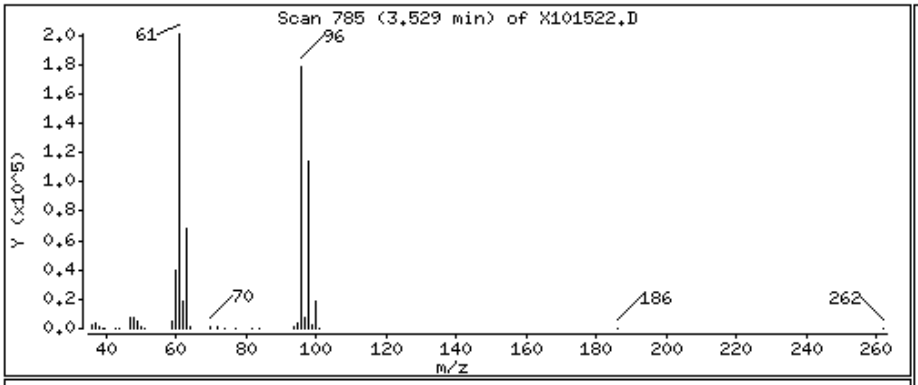
Client ID: HS22100575-05 Instrument: voa6.i

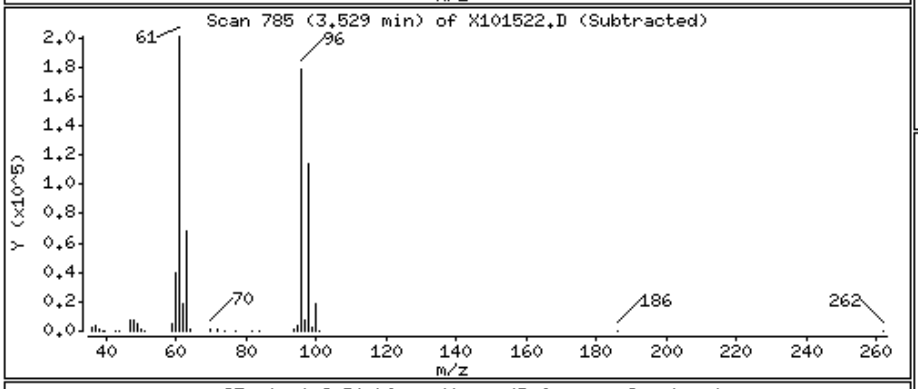
Sample Info: HS22100575-05;HS22100575-05;;;

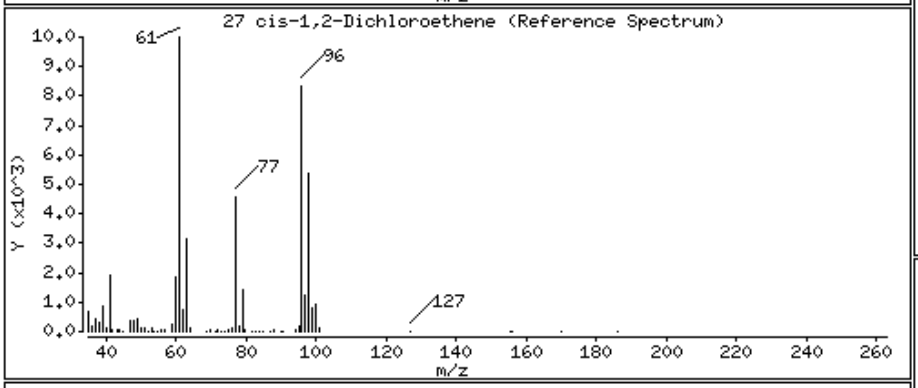
Purge Volume: 5.0 Operator: PC

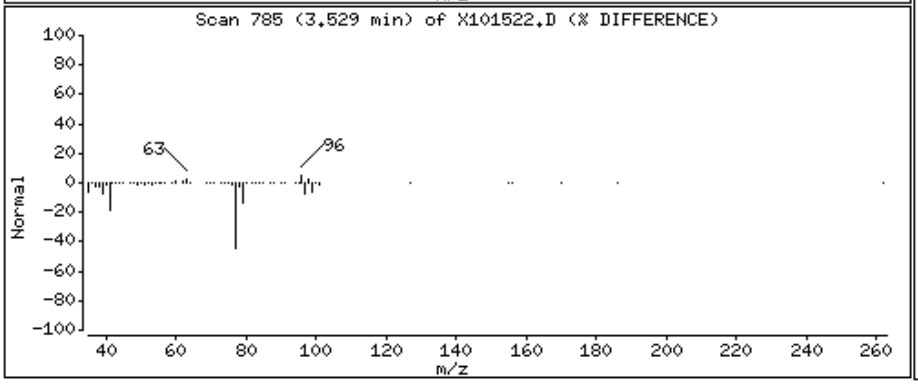
Column phase: DB624 Column diameter: 0.18

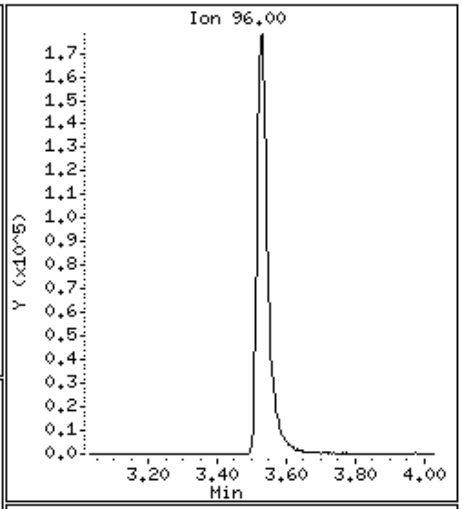
27 cis-1,2-Dichloroethene Concentration: 76.90 ug/l

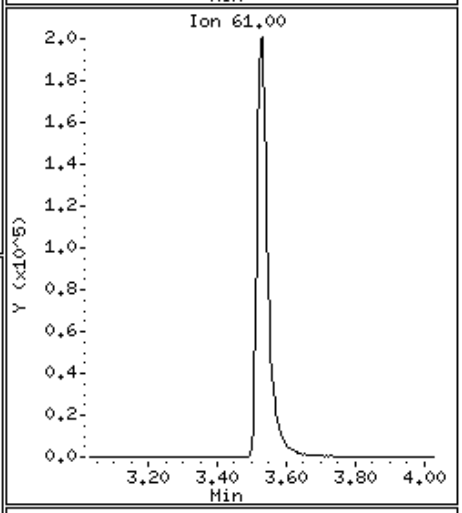


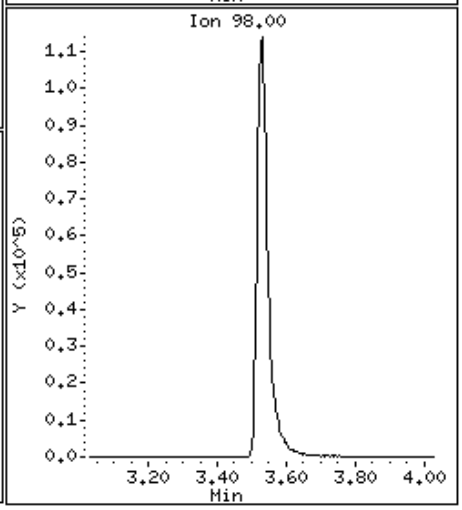












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101522.D Page 4

Date : 15-OCT-2022 18:26

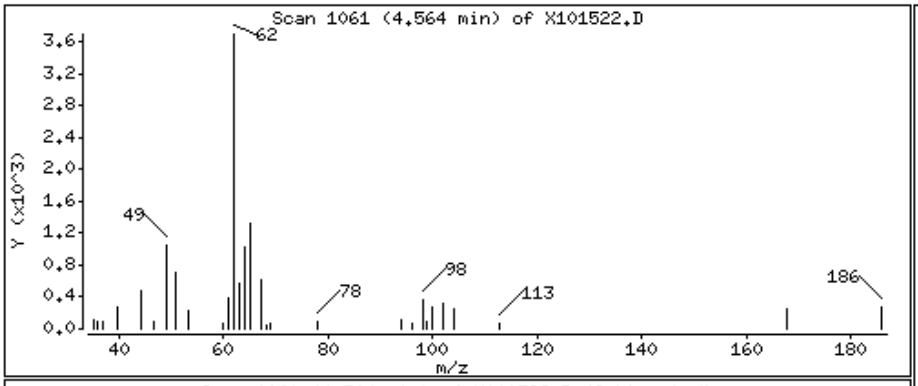
Client ID: HS22100575-05 Instrument: voa6.i

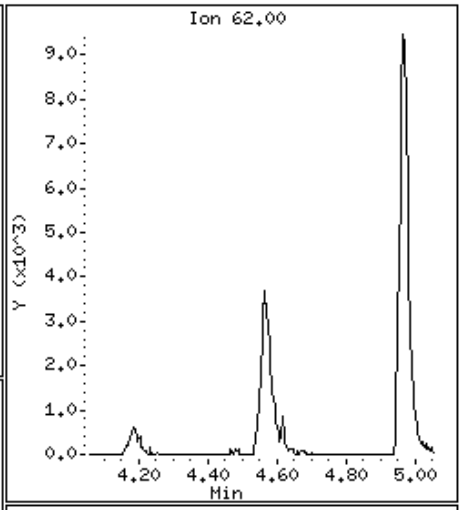
Sample Info: HS22100575-05;HS22100575-05;;;

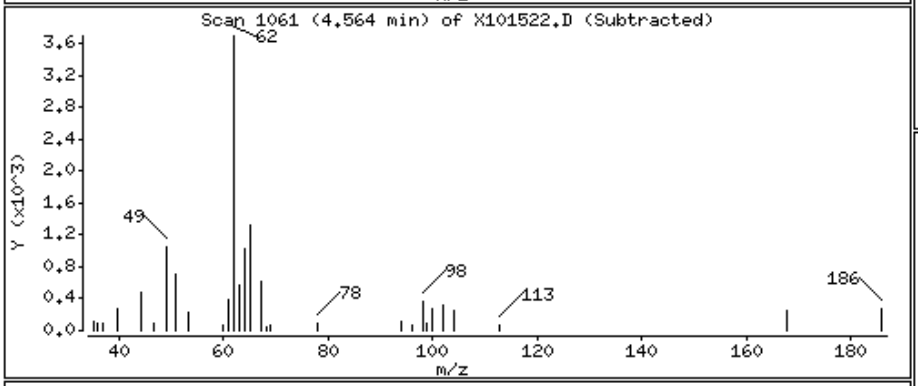
Purge Volume: 5.0 Operator: PC

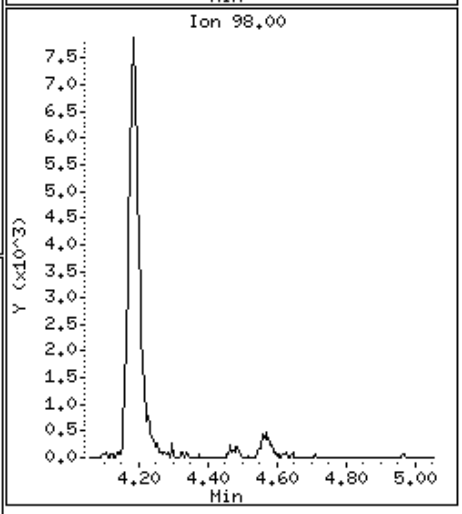
Column phase: DB624 Column diameter: 0.18

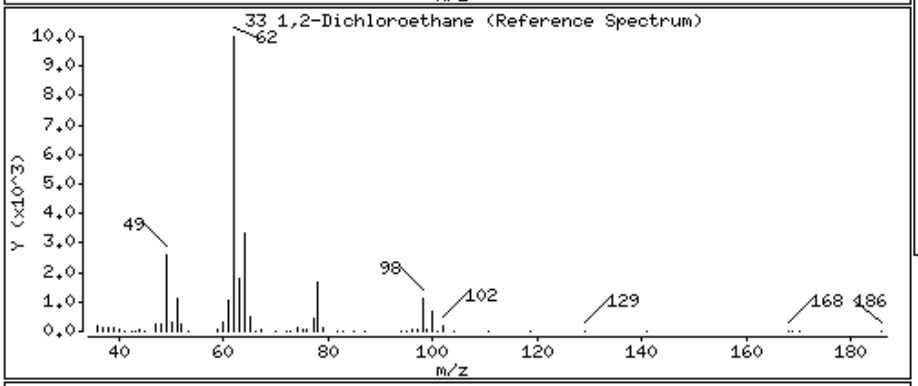
33 1,2-Dichloroethane Concentration: 1.68 ug/l

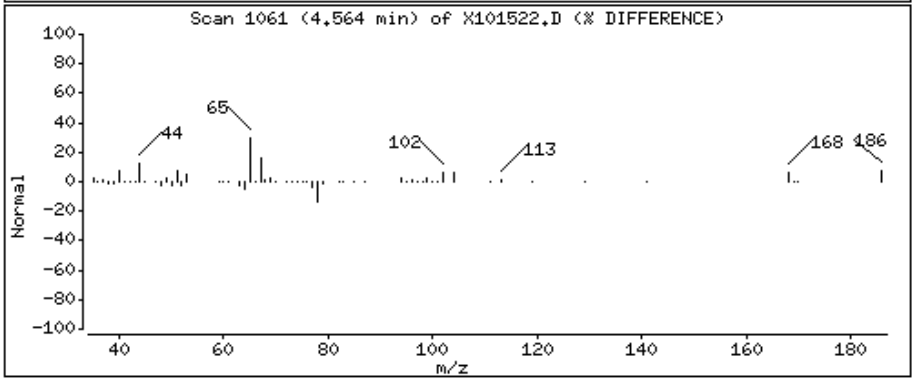












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101522.D Page 5

Date : 15-OCT-2022 18:26

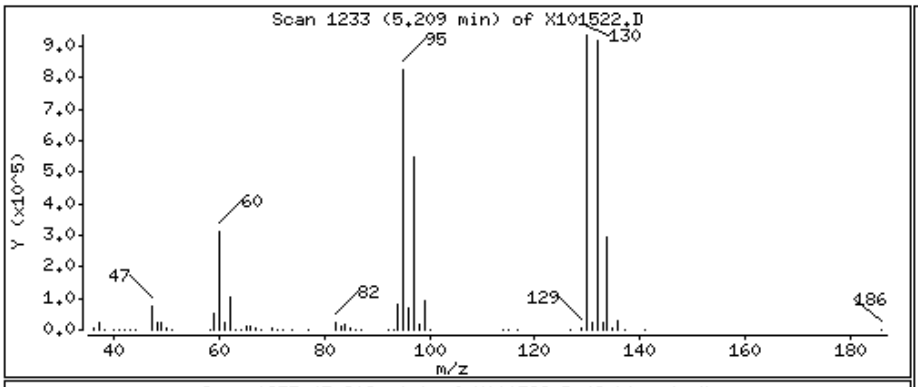
Client ID: HS22100575-05 Instrument: voa6.i

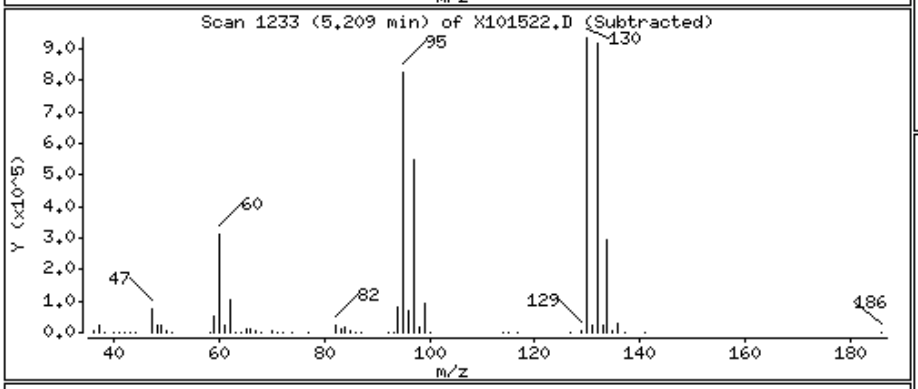
Sample Info: HS22100575-05;HS22100575-05;;;

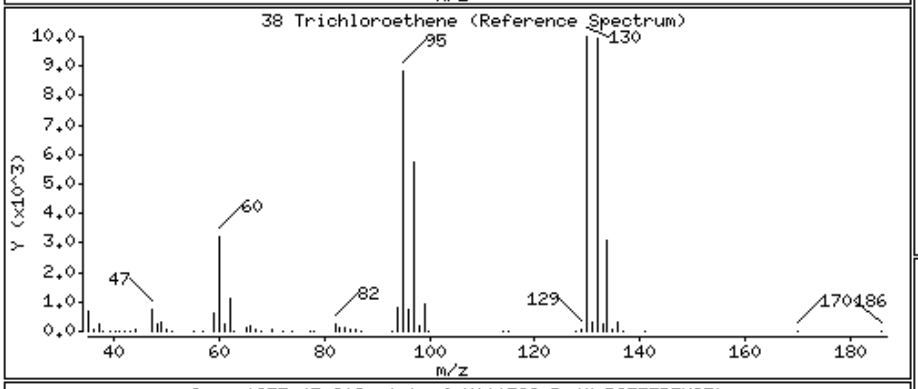
Purge Volume: 5.0 Operator: PC

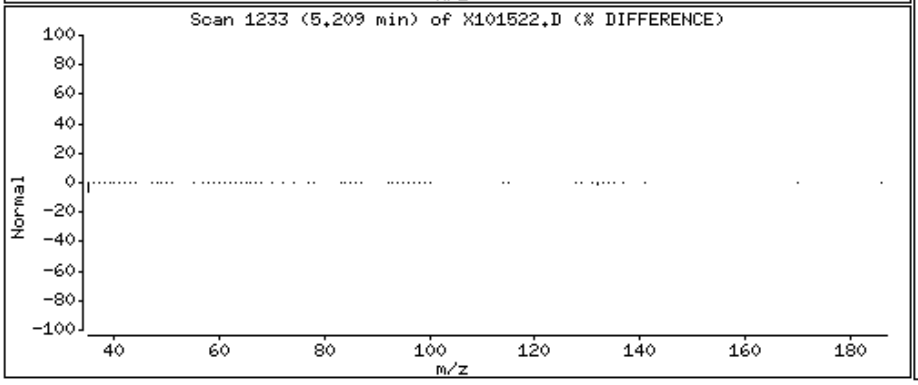
Column phase: DB624 Column diameter: 0.18

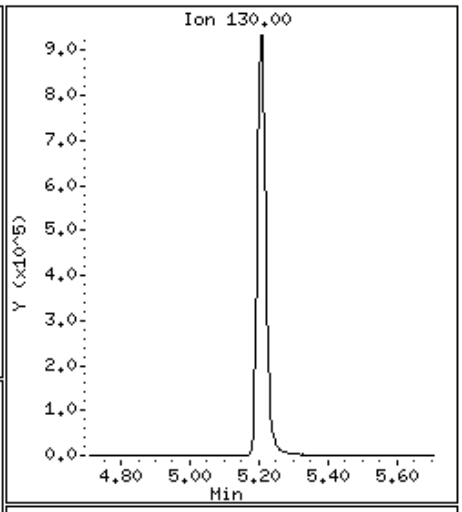
38 Trichloroethene Concentration: 330.29 ug/l

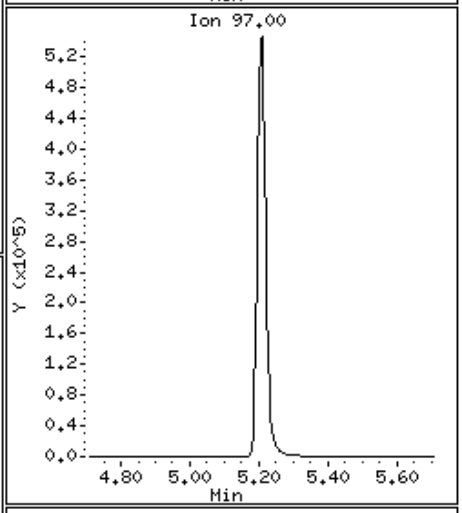


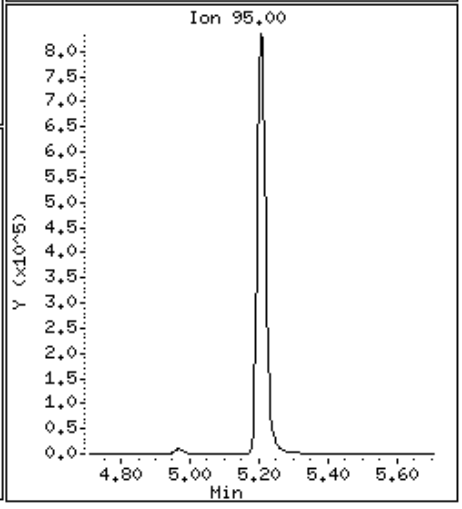












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101522.D Page 6

Date : 15-OCT-2022 18:26

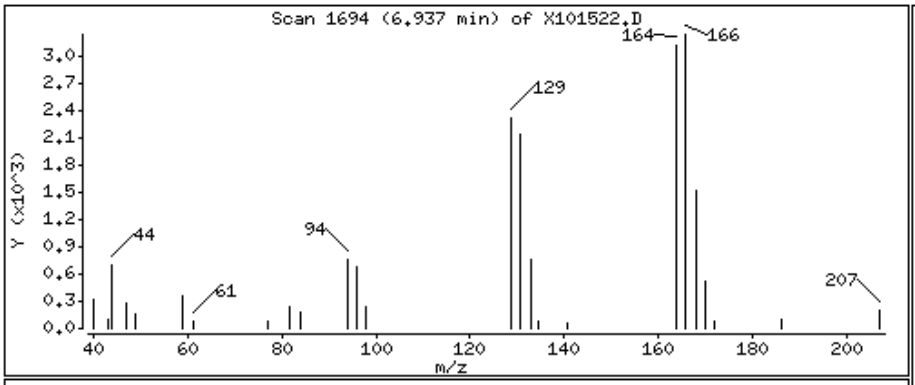
Client ID: HS22100575-05 Instrument: voa6.i

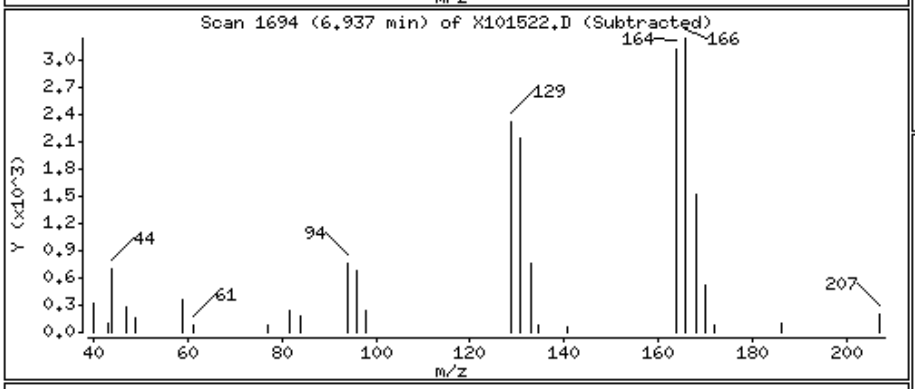
Sample Info: HS22100575-05;HS22100575-05;;;

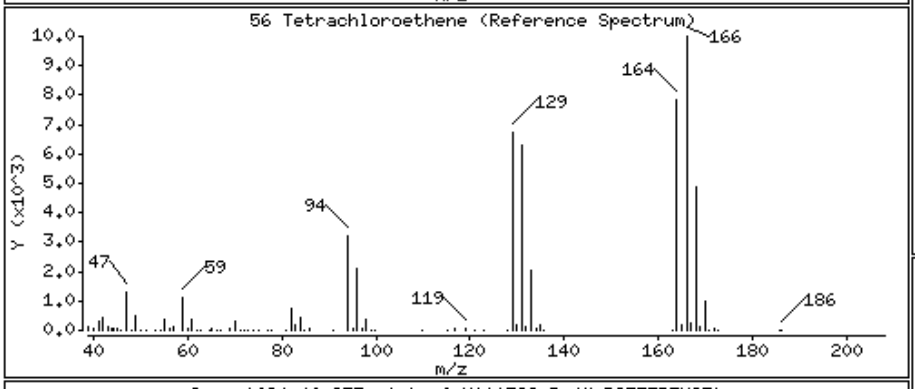
Purge Volume: 5.0 Operator: PC

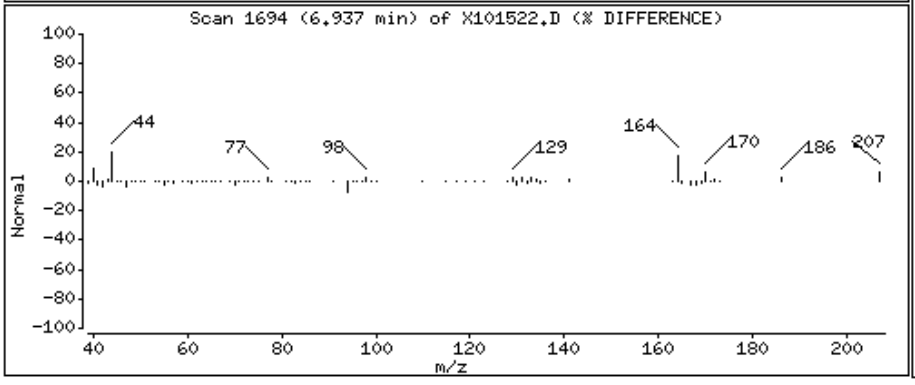
Column phase: DB624 Column diameter: 0.18

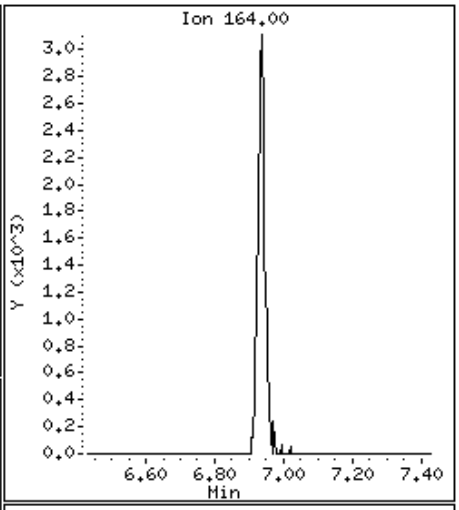
56 Tetrachloroethene Concentration: 1.16 ug/l

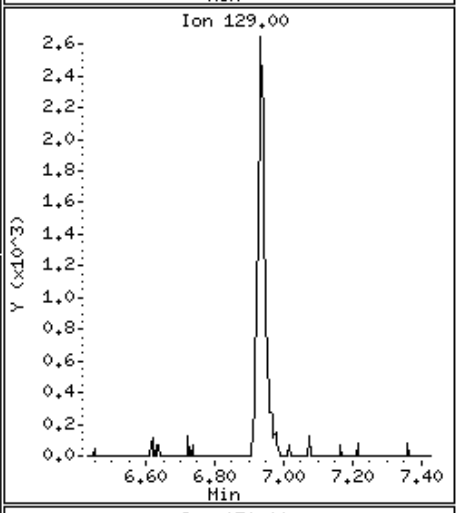


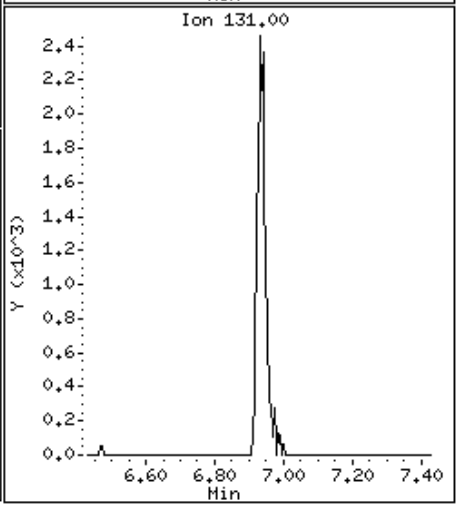












Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101522.D
Inj Date : 15-OCT-2022 18:26
InstruID : voa6.i
LabSampID : HS22100575-05

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101523.D Page 1
Report Date: 28-Oct-2022 13:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101523.D
Lab Smp Id: HS22100575-02 Client Smp ID: HS22100575-02
Inj Date : 15-OCT-2022 18:47
Operator : PC Inst ID: voa6.i
Smp Info : HS22100575-02;HS22100575-02;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 23
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7056

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

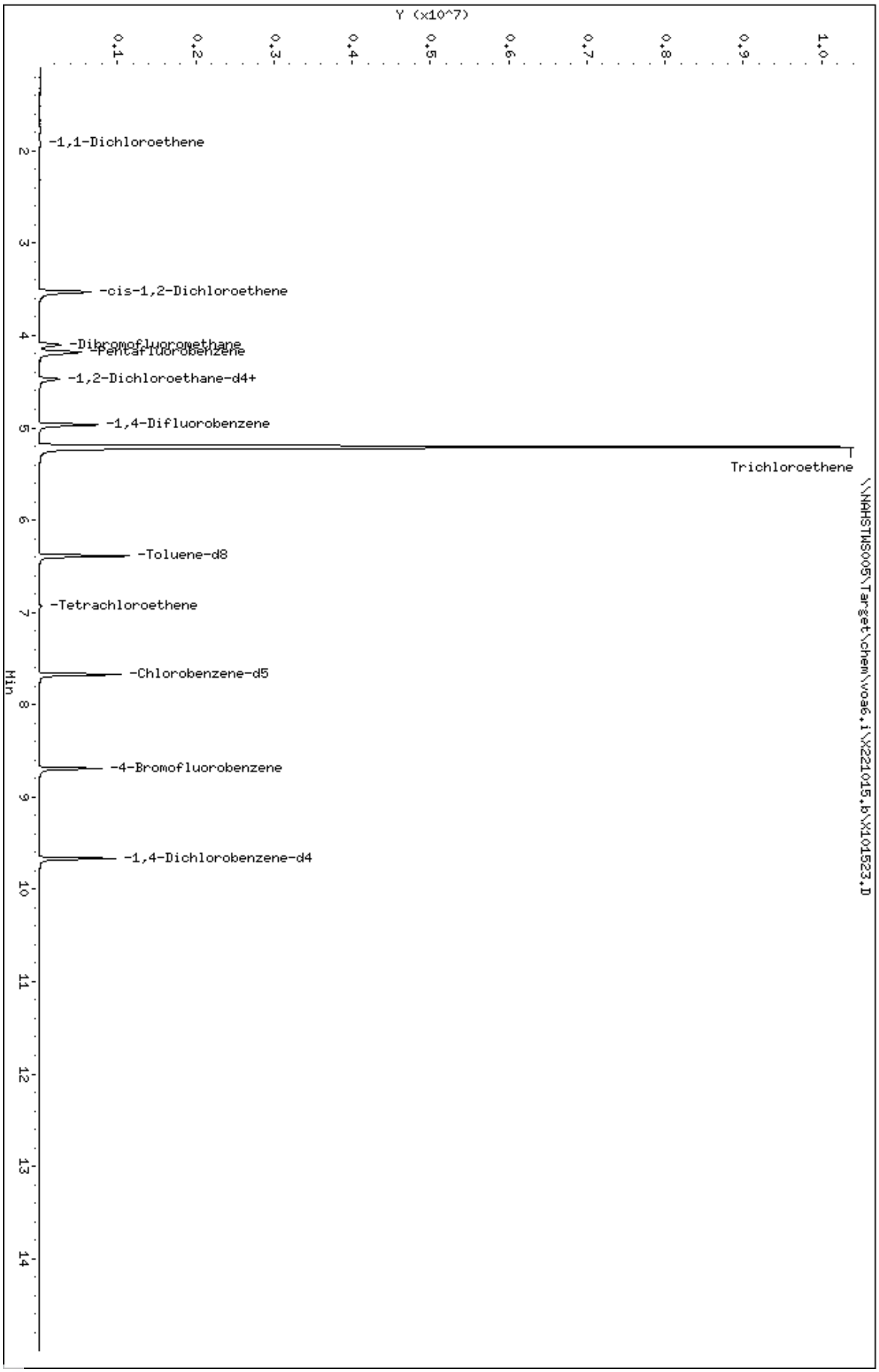
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.181	4.181	(1.000)	498852	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	198538	44.1114	44.11
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	190425	42.8113	42.81
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	664721	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	573480	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	761894	53.0125	53.01
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	249189	48.7000	48.69
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	272750	50.0000	
11 1,1-Dichloroethene	96	1.913	1.917	(0.458)	3239	1.00388	1.00(a)
27 cis-1,2-Dichloroethene	96	3.529	3.529	(0.844)	382870	73.4799	73.47
33 1,2-Dichloroethane	62	4.567	4.556	(0.919)	5274	1.07526	1.07(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	3733834	746.789	746.78(A)
56 Tetrachloroethene	164	6.936	6.929	(0.904)	6952	1.75274	1.75(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.



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101523.D
Date : 15-OCT-2022 18:47
Client ID: HS22100575-02
Sample Info: HS22100575-02;HS22100575-02;;;
Purge Volume: 5.0
Column phase: DB624

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

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101523.D Page 2

Date : 15-OCT-2022 18:47

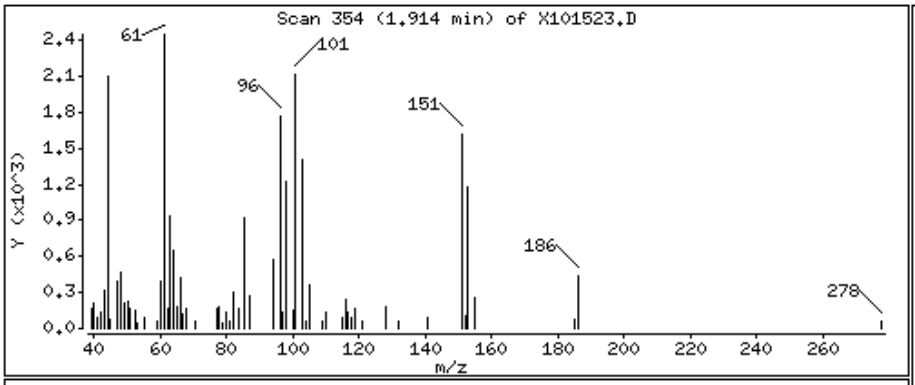
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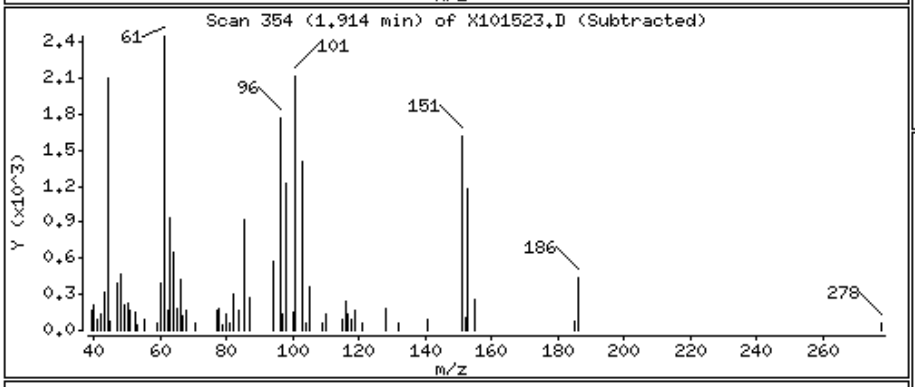
Sample Info: HS22100575-02;HS22100575-02;;;

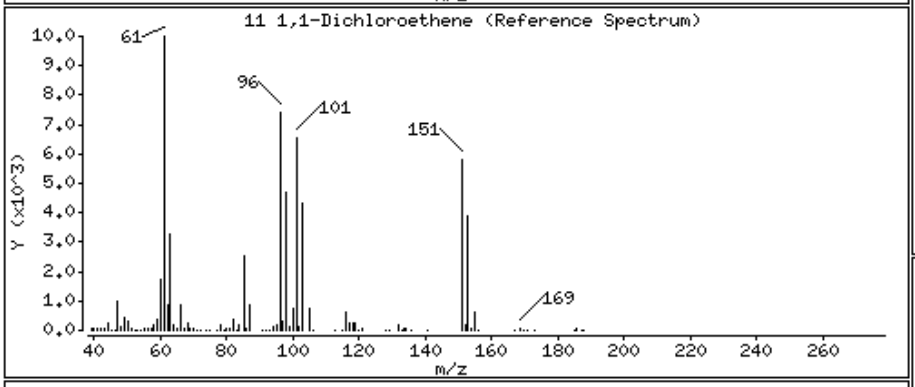
Purge Volume: 5.0 Operator: PC

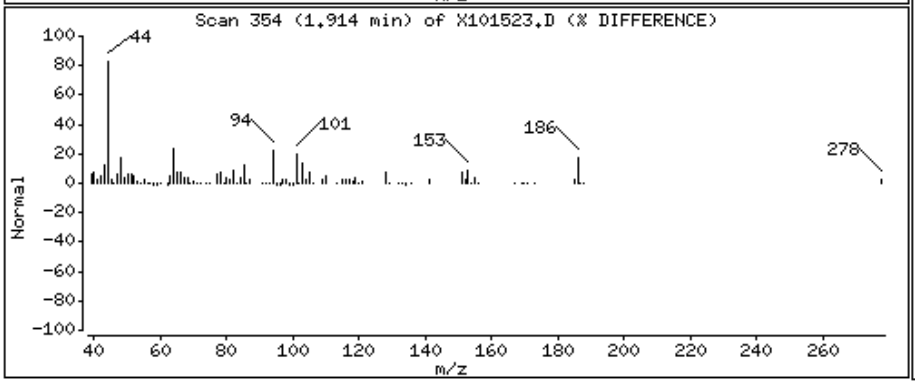
Column phase: DB624 Column diameter: 0.18

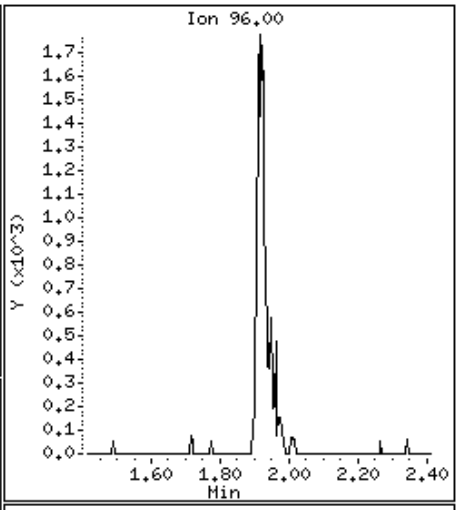
11 1,1-Dichloroethene Concentration: 1.00 ug/l

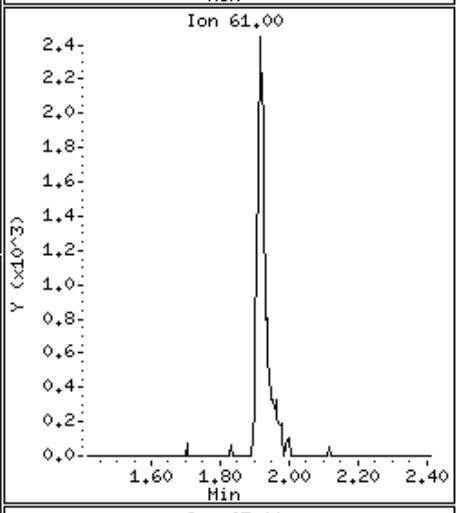


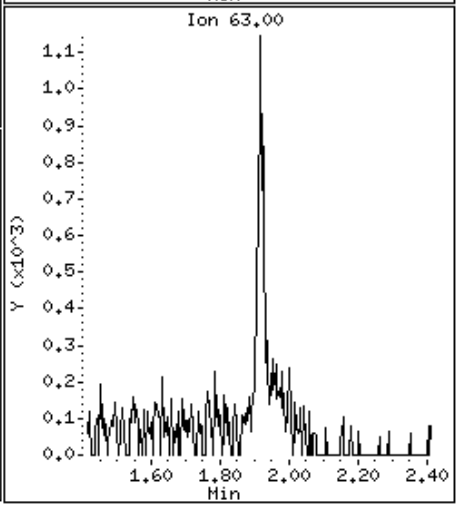












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101523.D Page 3

Date : 15-OCT-2022 18:47

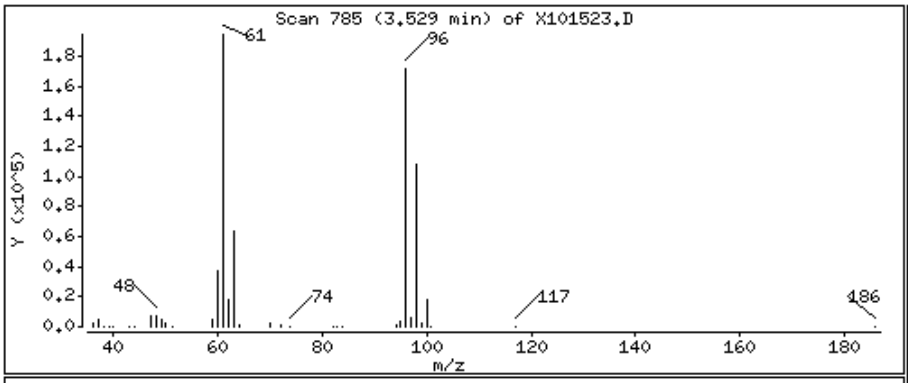
Client ID: HS22100575-02 Instrument: voa6.i

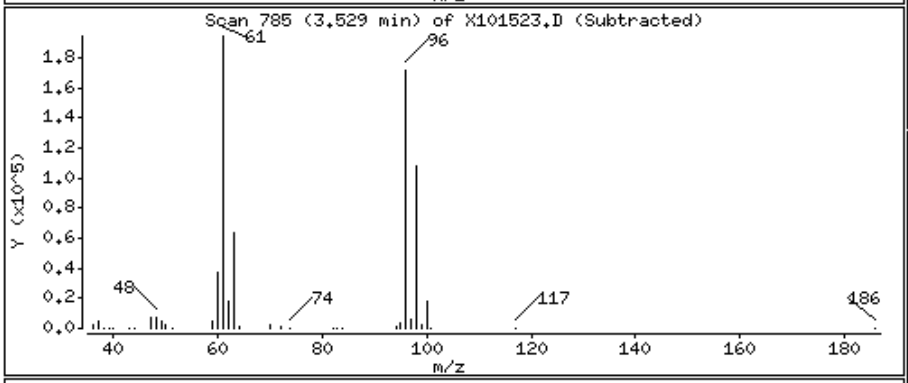
Sample Info: HS22100575-02;HS22100575-02;;;

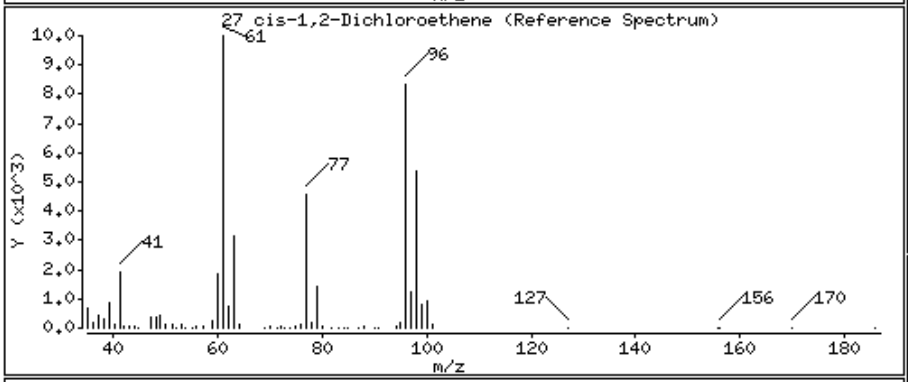
Purge Volume: 5.0 Operator: PC

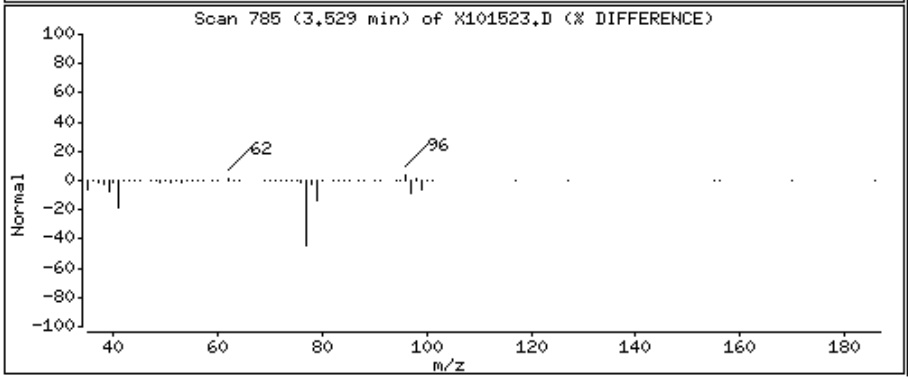
Column phase: DB624 Column diameter: 0.18

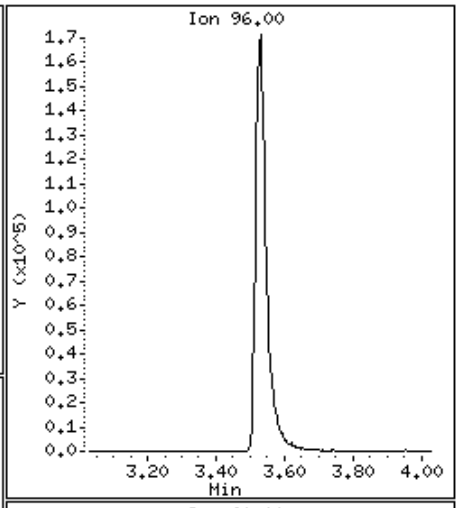
27 cis-1,2-Dichloroethene Concentration: 73.47 ug/l

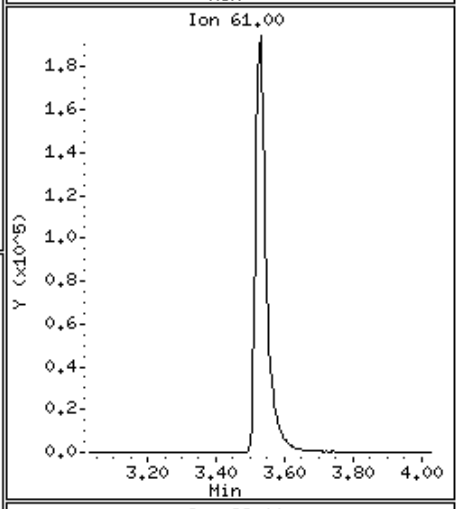


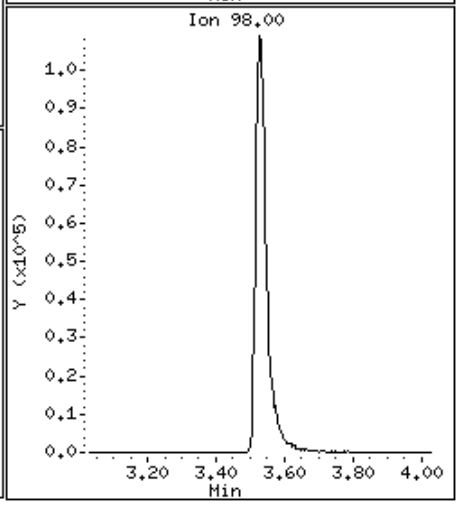












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101523.D Page 4

Date : 15-OCT-2022 18:47

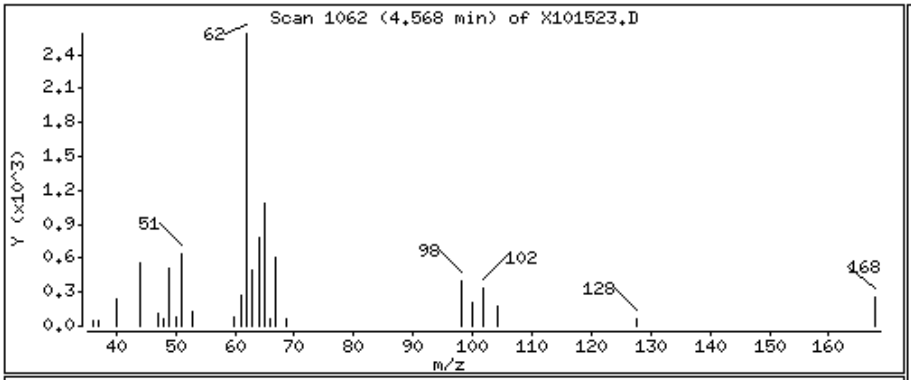
Client ID: HS22100575-02 Instrument: voa6.i

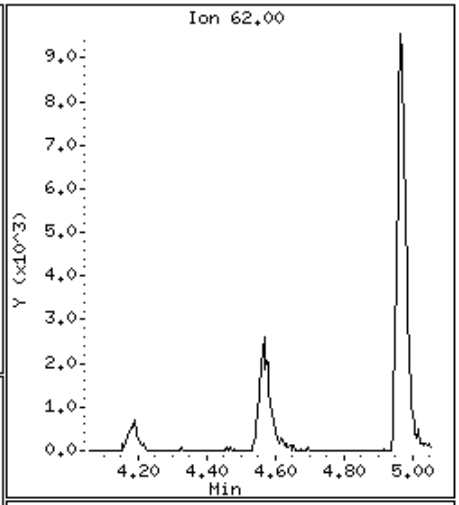
Sample Info: HS22100575-02;HS22100575-02;;;

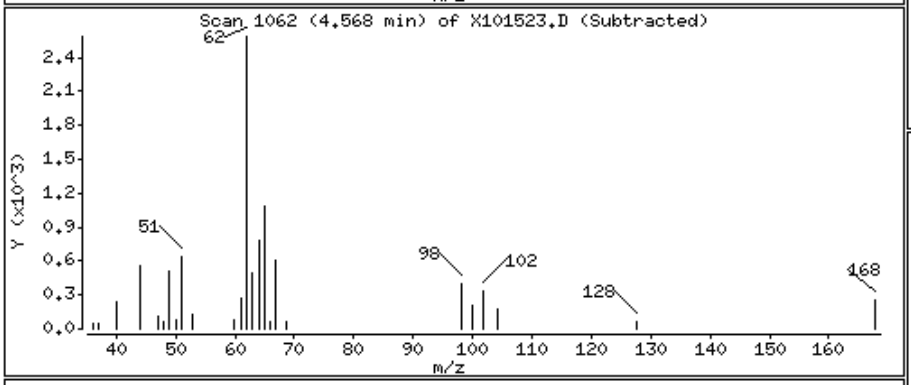
Purge Volume: 5.0 Operator: PC

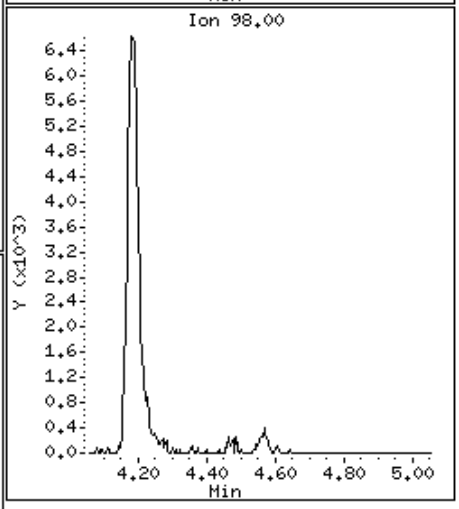
Column phase: DB624 Column diameter: 0.18

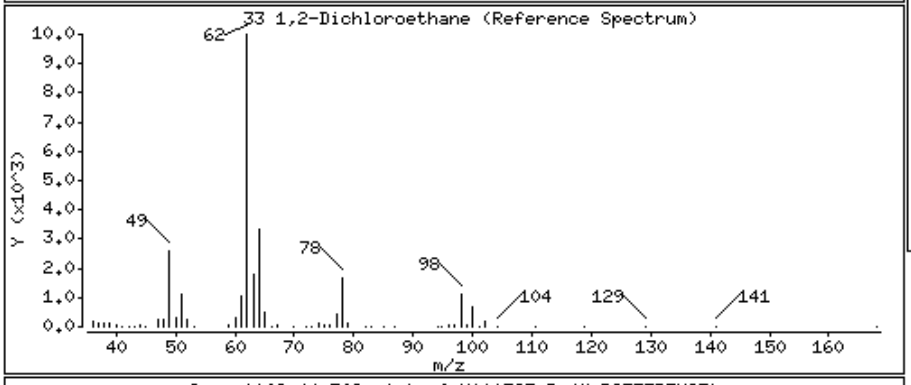
33 1,2-Dichloroethane Concentration: 1.07 ug/l

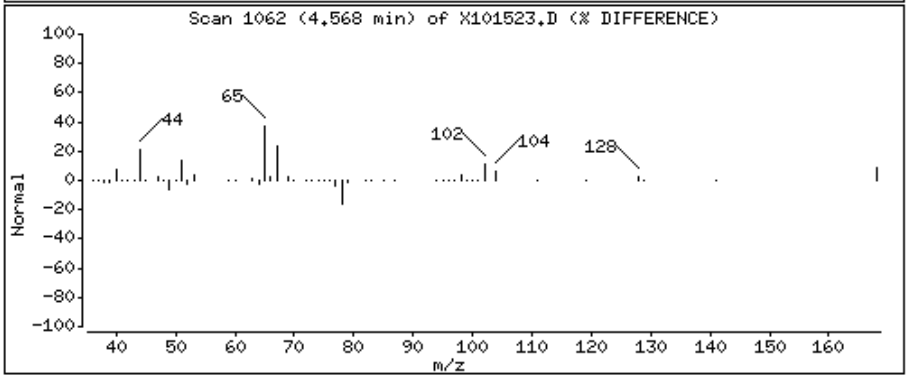












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101523.D Page 5

Date : 15-OCT-2022 18:47

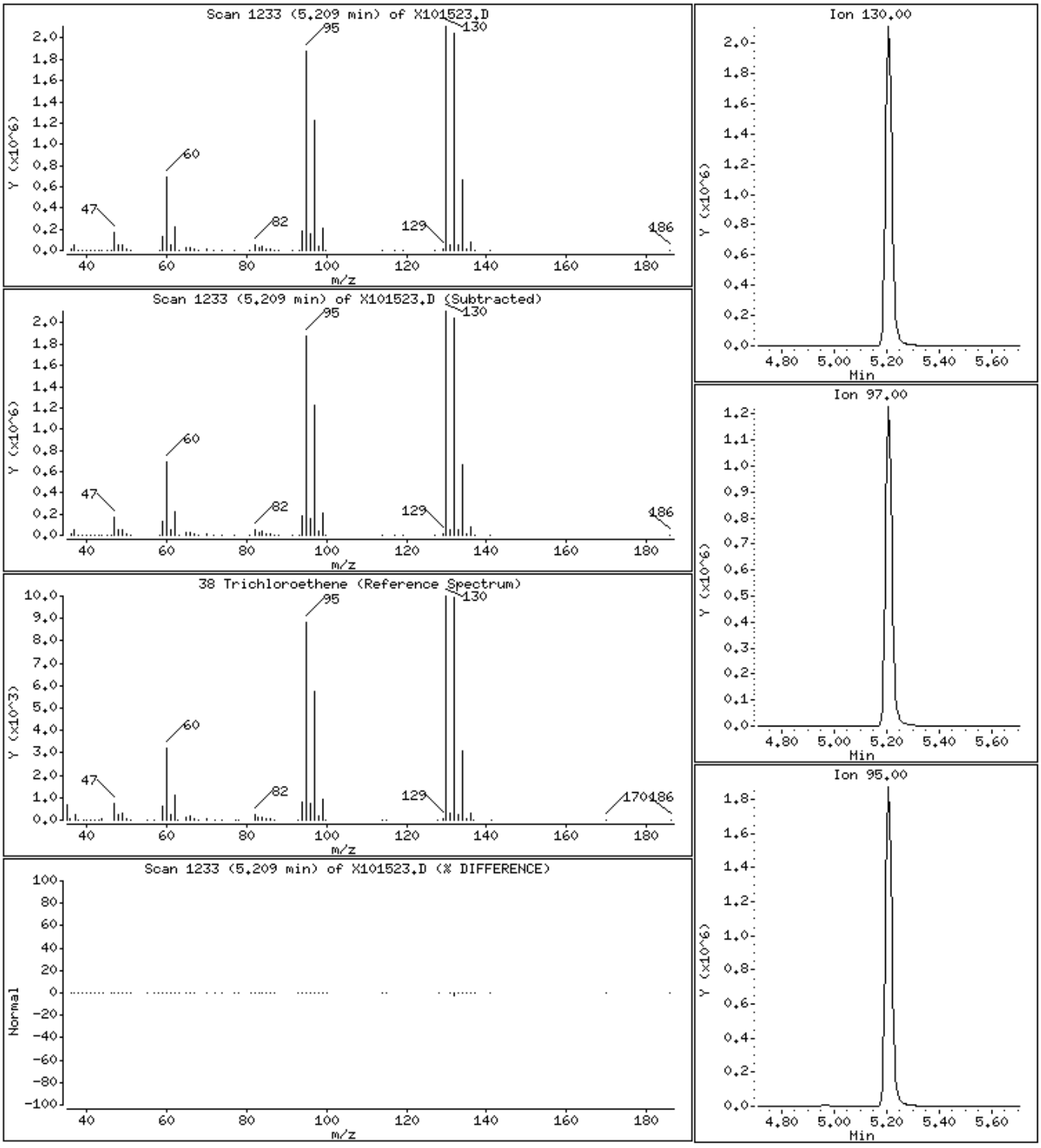
Client ID: HS22100575-02 Instrument: voa6.i

Sample Info: HS22100575-02;HS22100575-02;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

38 Trichloroethene Concentration: 746.78 ug/l



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101523.D Page 6

Date : 15-OCT-2022 18:47

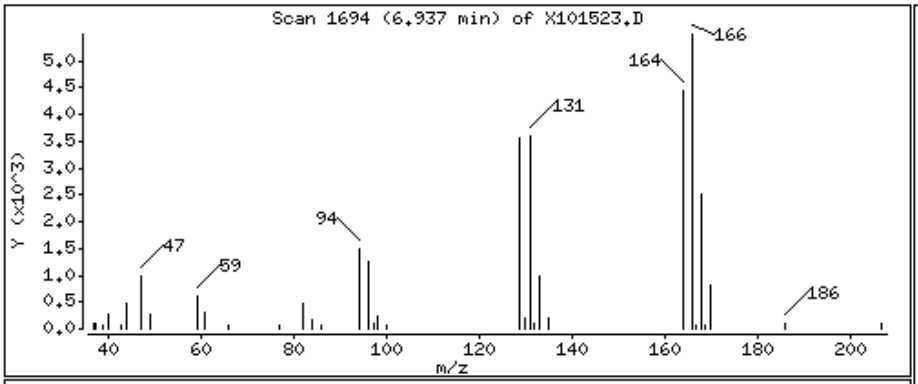
Client ID: HS22100575-02 Instrument: voa6.i

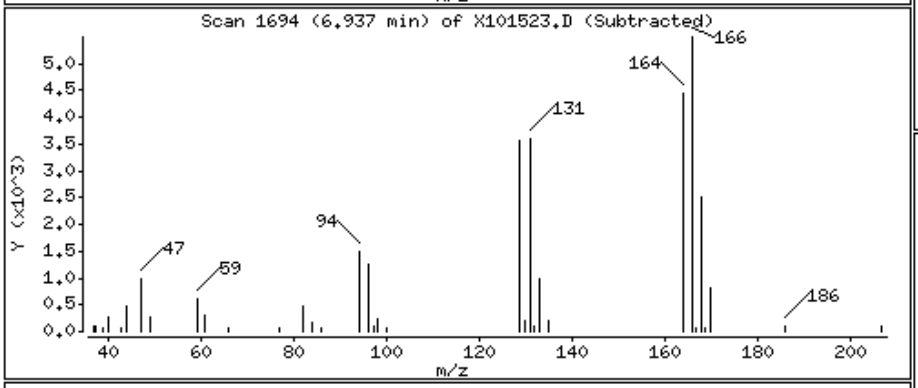
Sample Info: HS22100575-02;HS22100575-02;;;

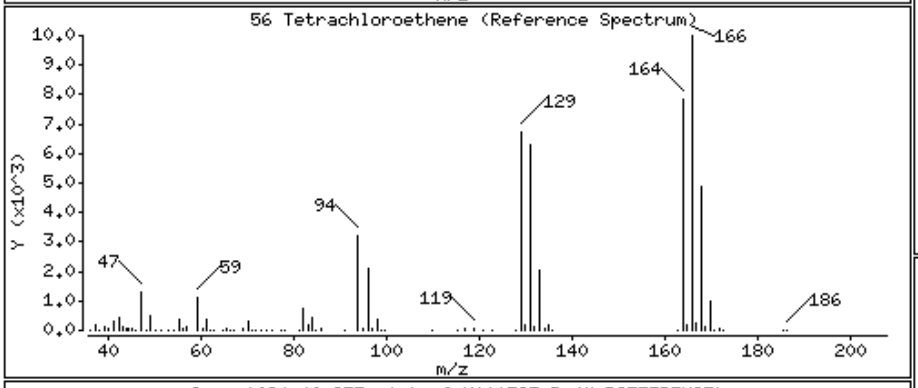
Purge Volume: 5.0 Operator: PC

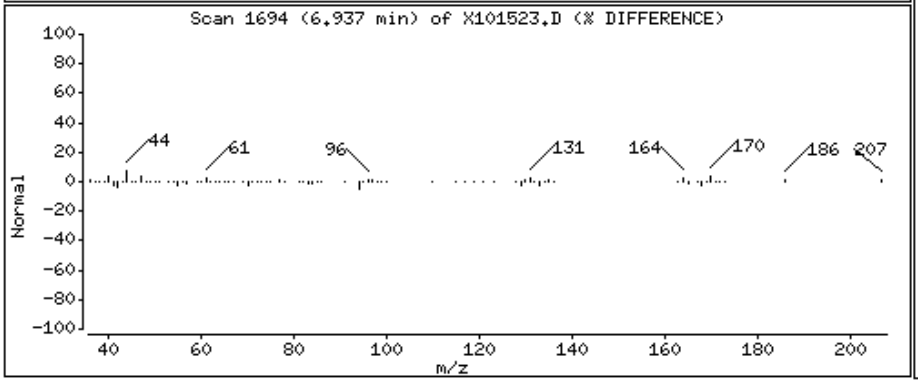
Column phase: DB624 Column diameter: 0.18

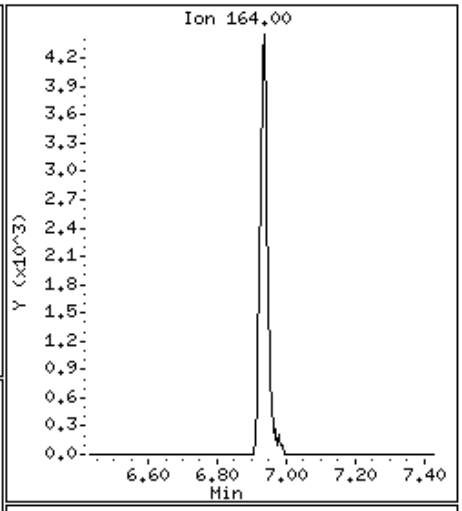
56 Tetrachloroethene Concentration: 1.75 ug/l

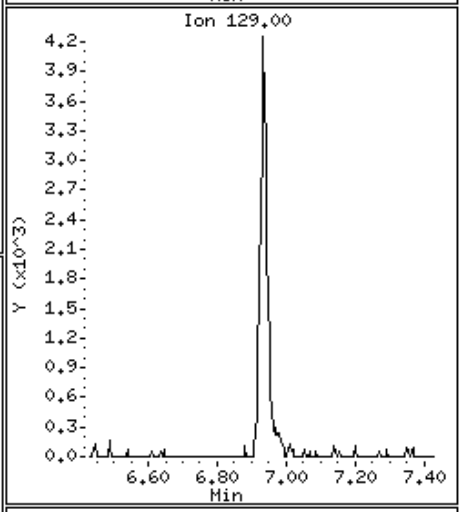


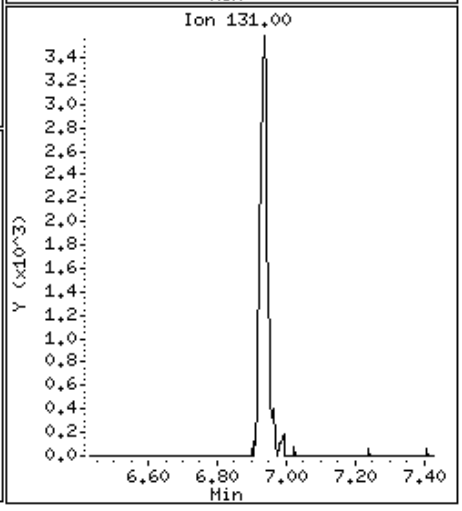












Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101523.D
Inj Date : 15-OCT-2022 18:47
InstruID : voa6.i
LabSampID : HS22100575-02

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101528.D Page 1
Report Date: 28-Oct-2022 13:51

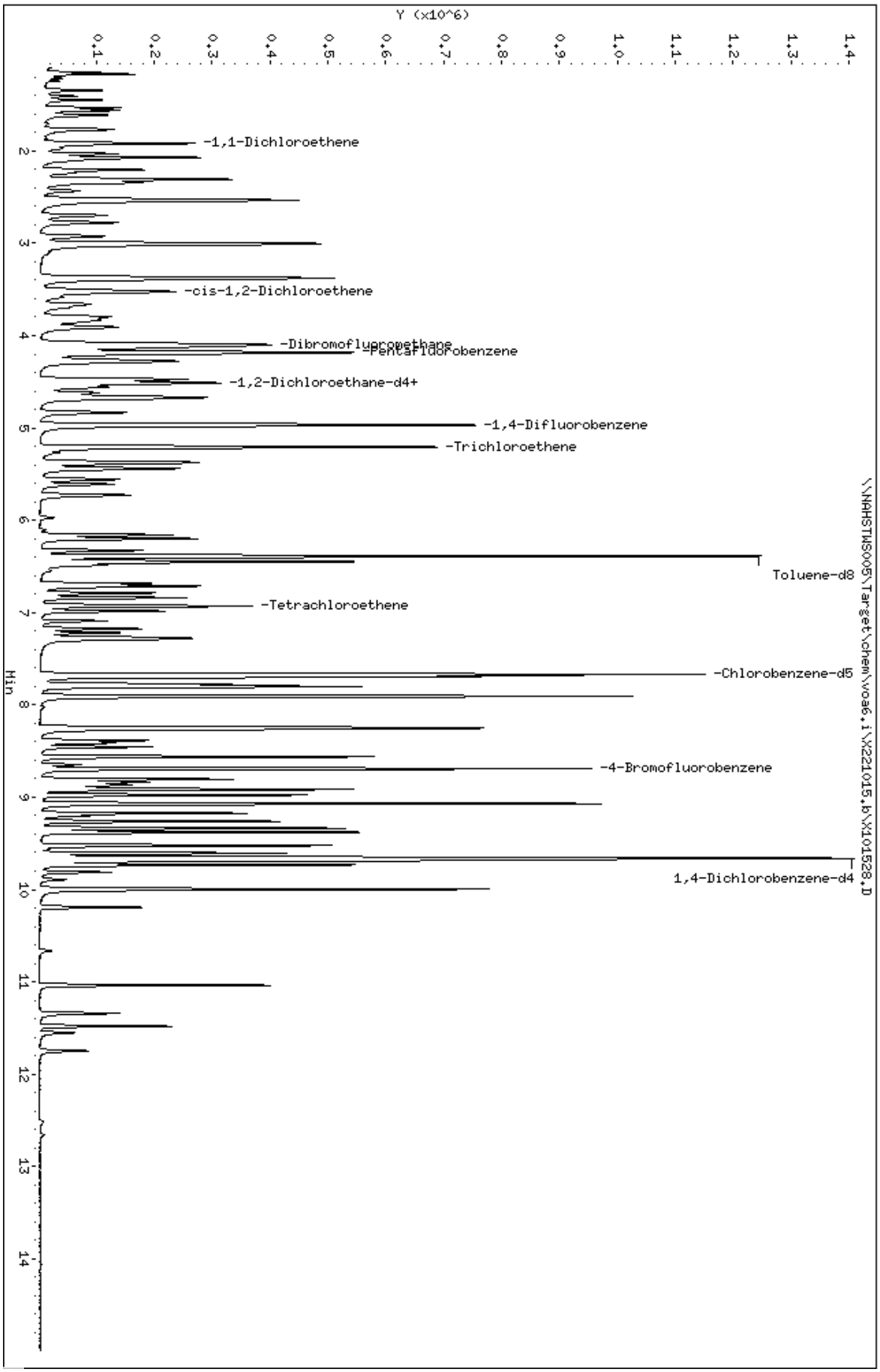
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101528.D
Lab Smp Id: HS22100577-01MS Client Smp ID: HS22100577-01MS
Inj Date : 15-OCT-2022 20:33
Operator : PC Inst ID: voa6.i
Smp Info : HS22100577-01MS;HS22100577-01MS;3;;MS
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 28 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	(1.000)	505702	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	199964	43.8222	43.82
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	193011	42.8048	42.80
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	678373	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	600147	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	787911	52.3867	52.38
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	262891	49.0978	49.09
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	300865	50.0000	
5 Vinyl Chloride	62	1.145	1.149	(0.274)	61158	15.8766	15.87
11 1,1-Dichloroethene	96	1.917	1.917	(0.458)	52787	16.1389	16.13
27 cis-1,2-Dichloroethene	96	3.525	3.529	(0.842)	98403	18.6296	18.62
33 1,2-Dichloroethane	62	4.560	4.556	(0.918)	94433	18.8655	18.86
38 Trichloroethene	130	5.209	5.208	(1.048)	253787	49.7374	49.73
56 Tetrachloroethene	164	6.929	6.929	(0.903)	75349	18.1529	18.15



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101528.D
Date : 15-OCT-2022 20:33
Client ID: HS22100577-01MS
Sample Info: HS22100577-01MS;HS22100577-01MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101528.D
Inj Date : 15-OCT-2022 20:33
InstruID : voa6.i
LabSampID : HS22100577-01MS

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101529.D Page 1
Report Date: 28-Oct-2022 13:51

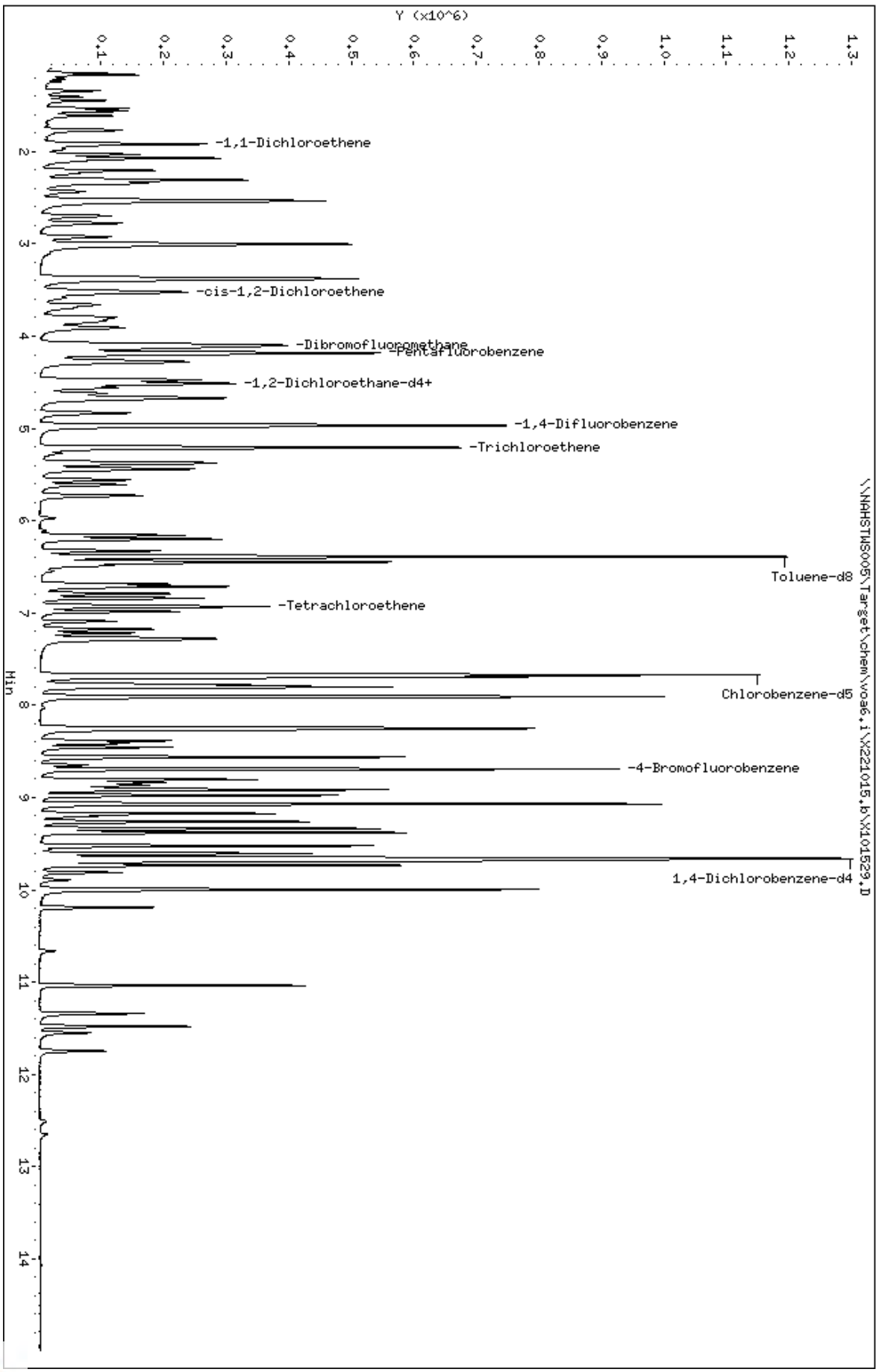
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101529.D
Lab Smp Id: HS22100577-01MSD Client Smp ID: HS22100577-01MSD
Inj Date : 15-OCT-2022 20:54
Operator : PC Inst ID: voa6.i
Smp Info : HS22100577-01MSD;HS22100577-01MSD;3;;MSD
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 28 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	4.181	(1.000)	498848	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.103	(0.980)	199626	44.3571	44.35
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	198300	44.6145	44.61
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	668634	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	586328	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	767943	52.2625	52.26
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	256262	48.9869	48.98
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	281159	50.0000	
5 Vinyl Chloride	62	1.145	1.149	(0.274)	61940	16.3006	16.30
11 1,1-Dichloroethene	96	1.917	1.917	(0.459)	52907	16.3978	16.39
27 cis-1,2-Dichloroethene	96	3.529	3.529	(0.844)	99110	19.0212	19.02
33 1,2-Dichloroethane	62	4.560	4.556	(0.918)	96012	19.4603	19.46
38 Trichloroethene	130	5.208	5.208	(1.048)	246604	49.0336	49.03
56 Tetrachloroethene	164	6.929	6.929	(0.903)	75616	18.6465	18.64



Data File: \\NAHSTWS005\Target\chem\voa6.i\%221015.b\%101529.D
Date : 15-OCT-2022 20:54
Client ID: HS2210057?-01HSD
Sample Info: HS2210057?-01HSD;HS2210057?-01HSD;3;;HSD
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101529.D
Inj Date : 15-OCT-2022 20:54
InstruID : voa6.i
LabSampID : HS22100577-01MSD

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101530.D Page 1
Report Date: 28-Oct-2022 13:51

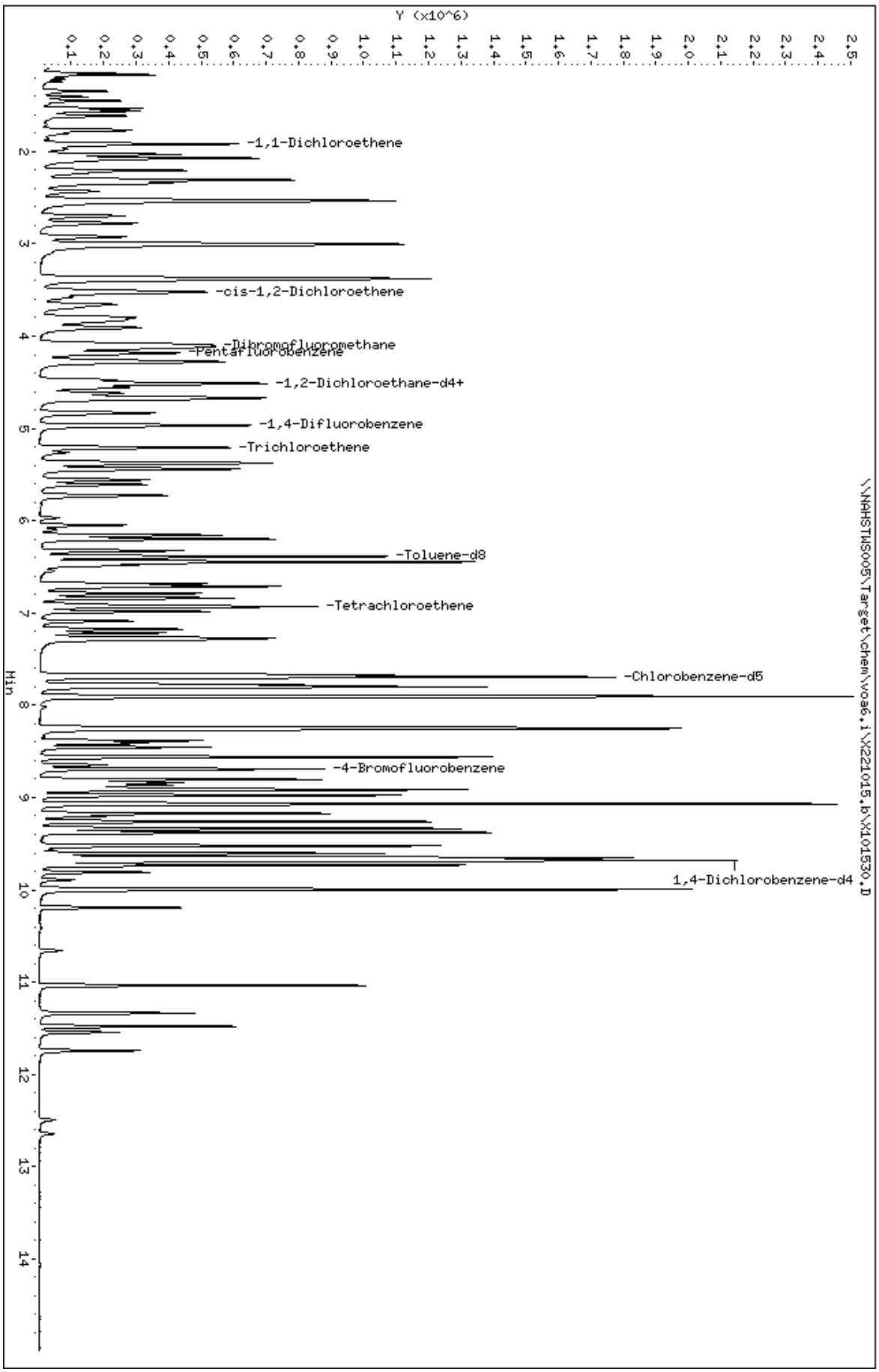
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101530.D
Lab Smp Id: CCV-END Client Smp ID: CCV-END
Inj Date : 15-OCT-2022 21:15
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\X221015.b\8260W.m
Meth Date : 28-Oct-2022 13:51 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 29 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	4.181	(1.000)	382154	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.099	(0.980)	181891	50.0000	52.88
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	175908	50.0000	51.78
* 36 1,4-Difluorobenzene	114	4.965	4.965	(1.000)	581716	50.0000	
* 47 Chlorobenzene-d5	117	7.668	7.668	(1.000)	541345	50.0000	
$ 48 Toluene-d8	98	6.386	6.386	(0.833)	667428	50.0000	49.19
$ 69 4-Bromofluorobenzene	95	8.687	8.687	(1.133)	244094	50.0000	50.54
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	276403	50.0000	
5 Vinyl Chloride	62	1.145	1.145	(0.274)	141550	50.0000	48.62
11 1,1-Dichloroethene	96	1.917	1.917	(0.459)	123810	50.0000	50.09
27 cis-1,2-Dichloroethene	96	3.529	3.529	(0.844)	201877	50.0000	50.57
33 1,2-Dichloroethane	62	4.556	4.556	(0.918)	214984	50.0000	50.08
38 Trichloroethene	130	5.208	5.208	(1.049)	214438	50.0000	49.00
56 Tetrachloroethene	164	6.929	6.929	(0.904)	180196	50.0000	48.12



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101530.D
Date : 15-OCT-2022 21:15
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\X221015.b\X101530.D
Inj Date : 15-OCT-2022 21:15
InstruID : voa6.i
LabSampID : CCV-END

NO MANUAL INTEGRATIONS

right solutions.
right partner.

Raw Data VOA6 419606

Volatiles by by EPA 8260

Workorder

HS22100575

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101701.D Page 1
Report Date: 17-Oct-2022 11:58

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101701.D
Lab Smp Id: BFB Client Smp ID: BFB
Inj Date : 17-OCT-2022 10:29
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\X221017.b\bfb.m
Meth Date : 27-Sep-2022 15:10 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	26305			0.00- 100.00	100.00
8.691	8.889	(0.000)	50	3983			15.00- 40.00	15.14
8.691	8.889	(0.000)	75	11502			30.00- 60.00	43.73
8.691	8.889	(0.000)	96	1743			5.00- 9.00	6.63
8.691	8.889	(0.000)	173	150			0.00- 2.00	0.58
8.691	8.889	(0.000)	174	25796			50.00- 0.00	98.07
8.691	8.889	(0.000)	175	1859			5.00- 9.00	7.21
8.691	8.889	(0.000)	176	25288			95.00- 101.00	98.03
8.691	8.889	(0.000)	177	1668			5.00- 9.00	6.60

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	15.14
75	30.00 - 60.00% of mass 95	43.73
96	5.00 - 9.00% of mass 95	6.63
173	Less than 2.00% of mass 174	0.57 (0.58)
174	Greater than 50.00% of mass 95	98.07
175	5.00 - 9.00% of mass 174	7.07 (7.21)
176	95.00 - 101.00% of mass 174	96.13 (98.03)
177	5.00 - 9.00% of mass 176	6.34 (6.60)

Data File: X101701.D
Spectrum: Average Spectrum: 8.646 to 8.744 min.
Location of Maximum: 95.00
Number of points: 130

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	244	69.00	5287	104.00	147	148.00	52
37.00	1046	70.00	2393	105.00	195	149.00	2
38.00	1049	71.00	238	106.00	103	150.00	14
39.00	2286	72.00	135	107.00	43	152.00	11
40.00	806	73.00	1018	109.00	12	153.00	13
41.00	2597	74.00	3696	110.00	28	154.00	13
42.00	5379	75.00	11502	111.00	11	155.00	74
43.00	1230	76.00	1042	112.00	4	157.00	73
44.00	662	77.00	368	113.00	10	159.00	17
45.00	278	78.00	234	114.00	3	161.00	15
46.00	19	79.00	642	115.00	82	168.00	14
47.00	276	80.00	667	116.00	88	169.00	4
48.00	122	81.00	553	117.00	133	170.00	39
49.00	864	82.00	162	118.00	86	171.00	7
50.00	3983	83.00	1037	119.00	116	172.00	17
51.00	1467	84.00	51	120.00	19	173.00	150
52.00	166	85.00	63	124.00	2	174.00	25792
53.00	438	86.00	27	127.00	27	175.00	1859
54.00	657	87.00	1108	128.00	136	176.00	25288
55.00	8748	88.00	1097	129.00	82	177.00	1668
56.00	1446	89.00	29	130.00	94	178.00	49
57.00	835	90.00	23	131.00	49	185.00	7
58.00	168	91.00	183	135.00	31	186.00	234
59.00	104	92.00	641	137.00	44	187.00	1
60.00	193	93.00	964	139.00	13	202.00	4
61.00	1087	94.00	2761	140.00	26	207.00	14
62.00	1057	95.00	26304	141.00	277	262.00	25
63.00	806	96.00	1743	142.00	47	270.00	2
64.00	120	97.00	373	143.00	213	278.00	101
65.00	164	98.00	4587	144.00	2	279.00	4
66.00	94	99.00	323	145.00	6	281.00	6
67.00	181	100.00	10	146.00	40		
68.00	2377	103.00	33	147.00	5		

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101701.D Page 1

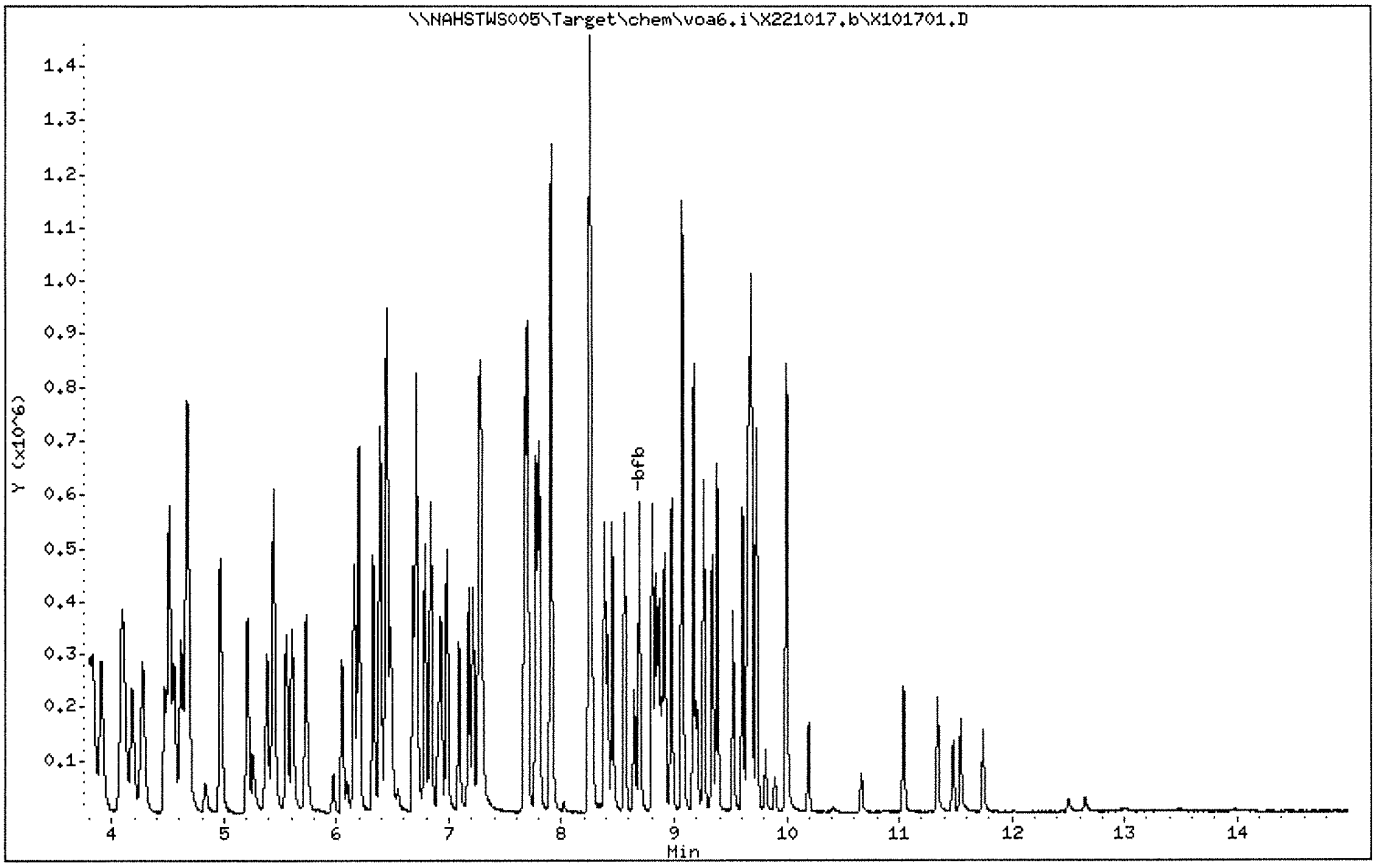
Date : 17-OCT-2022 10:29

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\X221017.b\X101701.D Page 2

Date : 17-OCT-2022 10:29

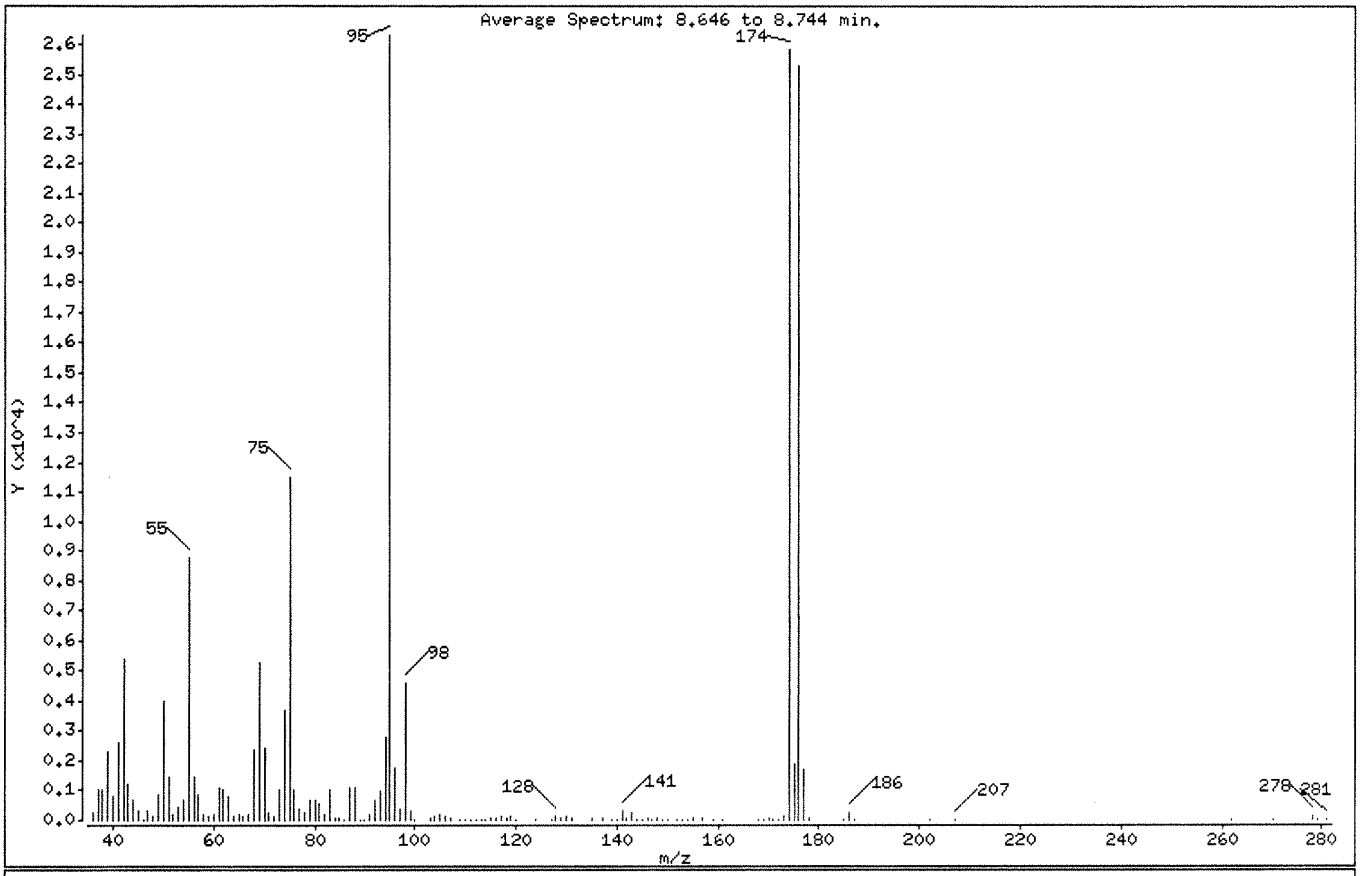
Client ID: BFB Instrument: voa6.i

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	15.14
75	30.00 - 60.00% of mass 95	43.73
96	5.00 - 9.00% of mass 95	6.63
173	Less than 2.00% of mass 174	0.57 (0.58)
174	Greater than 50.00% of mass 95	98.07
175	5.00 - 9.00% of mass 174	7.07 (7.21)
176	95.00 - 101.00% of mass 174	96.13 (98.03)
177	5.00 - 9.00% of mass 176	6.34 (6.60)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101701.D Page 3

Date : 17-OCT-2022 10:29

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: X101701.D
Spectrum: Average Spectrum: 8.646 to 8.744 min.
Location of Maximum: 95.00
Number of points: 130

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	244	69.00	5287	104.00	147	148.00	52
37.00	1046	70.00	2393	105.00	195	149.00	2
38.00	1049	71.00	238	106.00	103	150.00	14
39.00	2286	72.00	135	107.00	43	152.00	11
40.00	806	73.00	1018	109.00	12	153.00	13
41.00	2597	74.00	3696	110.00	28	154.00	13
42.00	5379	75.00	11502	111.00	11	155.00	74
43.00	1230	76.00	1042	112.00	4	157.00	73
44.00	662	77.00	368	113.00	10	159.00	17
45.00	278	78.00	234	114.00	3	161.00	15
46.00	19	79.00	642	115.00	82	168.00	14
47.00	276	80.00	667	116.00	88	169.00	4
48.00	122	81.00	553	117.00	133	170.00	39
49.00	864	82.00	162	118.00	86	171.00	7
50.00	3983	83.00	1037	119.00	116	172.00	17
51.00	1467	84.00	51	120.00	19	173.00	150
52.00	166	85.00	63	124.00	2	174.00	25792
53.00	438	86.00	27	127.00	27	175.00	1859
54.00	657	87.00	1108	128.00	136	176.00	25288
55.00	8748	88.00	1097	129.00	82	177.00	1668
56.00	1446	89.00	29	130.00	94	178.00	49
57.00	835	90.00	23	131.00	49	185.00	7
58.00	168	91.00	183	135.00	31	186.00	234
59.00	104	92.00	641	137.00	44	187.00	1
60.00	193	93.00	964	139.00	13	202.00	4
61.00	1087	94.00	2761	140.00	26	207.00	14
62.00	1057	95.00	26304	141.00	277	262.00	25
63.00	806	96.00	1743	142.00	47	270.00	2
64.00	120	97.00	373	143.00	213	278.00	101
65.00	164	98.00	4587	144.00	2	279.00	4
66.00	94	99.00	323	145.00	6	281.00	6
67.00	181	100.00	10	146.00	40		
68.00	2377	103.00	33	147.00	5		

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101701.D
Inj Date : 17-OCT-2022 10:29
InstruID : voa6.i
LabSampID : BFB

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101703.D Page 1
Report Date: 27-Oct-2022 17:18

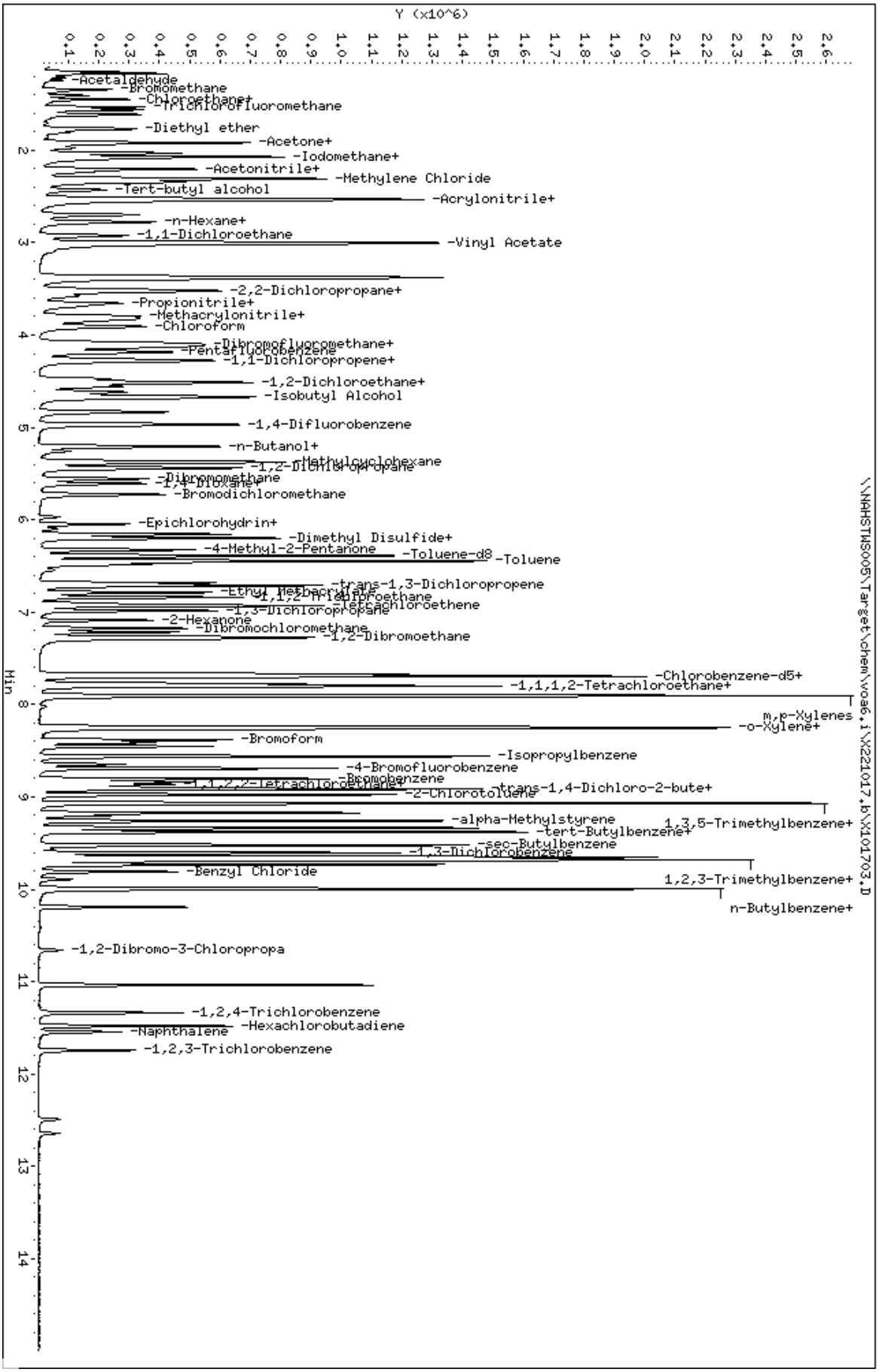
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101703.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 17-OCT-2022 11:11
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\8260W.m
Meth Date : 27-Oct-2022 17:18 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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)	399449	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.099	(0.979)	181430	50.0000	50.43
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	174379	50.0000	49.07
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	592013	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	560455	50.0000	
$ 48 Toluene-d8	98	6.386	6.386	(0.832)	735522	50.0000	52.36
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	269617	50.0000	53.95
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	290556	50.0000	
5 Vinyl Chloride	62	1.145	1.145	(0.274)	162001	50.0000	53.24
11 1,1-Dichloroethene	96	1.917	1.917	(0.458)	137247	50.0000	53.12
27 cis-1,2-Dichloroethene	96	3.525	3.525	(0.842)	218605	50.0000	52.39
33 1,2-Dichloroethane	62	4.556	4.556	(0.917)	218983	50.0000	50.12
38 Trichloroethene	130	5.208	5.208	(1.048)	220468	50.0000	49.51
56 Tetrachloroethene	164	6.929	6.929	(0.903)	199818	50.0000	51.54



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101703.D
Date : 17-OCT-2022 11:11
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\X221017.b\X101703.D
Inj Date : 17-OCT-2022 11:11
InstruID : voa6.i
LabSampID : CCV

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101704.D Page 1
Report Date: 27-Oct-2022 17:27

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101704.D
Lab Smp Id: CCB Client Smp ID: CCB
Inj Date : 17-OCT-2022 11:32
Operator : PC Inst ID: voa6.i
Smp Info : CCB;CCB;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221017.b\8260W.m
Meth Date : 27-Oct-2022 17:22 kori.bagsb Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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)	522380	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.099	(0.979)	214563	45.5457	45.54
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	207868	44.6612	44.66
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	698486	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	586779	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	812536	55.2548	55.25
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	263301	50.3033	50.30
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	269128	50.0000	

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101704.D
Inj Date : 17-OCT-2022 11:32
InstruID : voa6.i
LabSampID : CCB

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101705.D Page 1
Report Date: 27-Oct-2022 17:18

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101705.D
Lab Smp Id: VLCSW-184775 Client Smp ID: VLCSW-184775
Inj Date : 17-OCT-2022 11:53
Operator : PC Inst ID: voa6.i
Smp Info : VLCSW-221017;VLCSW-221017;3;;LCS
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\8260W.m
Meth Date : 27-Oct-2022 17:18 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 8260_GB.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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)	422560	50.0000	
2 Dichlorodifluoromethane	85	0.976	0.976	(0.233)	59960	18.5069	18.50
3 Chloromethane	50	1.081	1.081	(0.258)	71812	19.8136	19.81
5 Vinyl Chloride	62	1.145	1.145	(0.274)	59885	18.6050	18.60
6 Bromomethane	94	1.344	1.344	(0.321)	48258	21.3693	21.36
7 Chloroethane	64	1.407	1.407	(0.336)	38938	20.0041	20.00
8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	82092	19.2141	19.21
9 Acrolein	56	1.448	1.449	(0.346)	8644	36.6652	36.66
10 Acetone	43	1.977	1.977	(0.472)	31713	36.9878	36.98
11 1,1-Dichloroethene	96	1.913	1.917	(0.457)	52334	19.1486	19.14
15 Iodomethane	142	2.030	2.030	(0.485)	167352	36.8832	36.88
16 Acrylonitrile	53	2.543	2.536	(0.608)	42572	40.4422	40.44
17 Methylene Chloride	84	2.303	2.307	(0.550)	87574	20.8835	20.88
18 Methyl tert-butyl ether	73	2.539	2.536	(0.607)	207305	20.5369	20.53
19 Carbon Disulfide	76	2.071	2.071	(0.495)	381595	39.8713	39.87
20 trans-1,2-Dichloroethene	96	2.532	2.532	(0.605)	77717	20.8666	20.86
21 Vinyl Acetate	43	3.000	3.001	(0.717)	335490	39.9484	39.94
22 1,1-Dichloroethane	63	2.925	2.922	(0.699)	119721	18.8211	18.82
24 2-Butanone	43	3.589	3.578	(0.858)	36937	36.2556	36.25
26 2,2-Dichloropropane	77	3.510	3.510	(0.839)	103894	20.2771	20.27

27	cis-1,2-Dichloroethene	96	3.533	3.525 (0.844)	85266	19.3186	19.31
28	Chloroform	83	3.908	3.908 (0.934)	129568	18.7716	18.77

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101705.D Page 2
Report Date: 27-Oct-2022 17:18

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	29 Bromochloromethane	128	3.799	3.795	(0.908)	45567	18.7504	18.75
$	30 Dibromofluoromethane	113	4.099	4.099	(0.979)	197539	51.9276	51.92
	31 1,1,1-Trichloroethane	97	4.084	4.084	(0.976)	103706	19.0143	19.01
	32 1,1-Dichloropropene	75	4.279	4.283	(0.861)	93323	18.5183	18.51
	33 1,2-Dichloroethane	62	4.564	4.556	(0.919)	92544	19.8450	19.84
	34 Carbon Tetrachloride	117	4.267	4.268	(0.859)	90724	18.0870	18.08
$	35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	199231	53.0622	53.06
*	36 1,4-Difluorobenzene	114	4.968	4.969	(1.000)	631991	50.0000	
	37 Benzene	78	4.515	4.515	(0.909)	299525	18.7554	18.75
	38 Trichloroethene	130	5.208	5.208	(1.048)	88900	18.7014	18.70
	39 Bromodichloromethane	83	5.726	5.726	(1.152)	102313	19.6206	19.62
	41 2-Chloroethylvinyl ether	63	6.052	6.048	(1.218)	44878	36.3937	36.39
	42 1,2-Dichloropropane	63	5.437	5.437	(1.094)	80807	19.6177	19.61
	44 Dibromomethane	93	5.553	5.553	(1.118)	48866	19.8211	19.82
	45 4-Methyl-2-Pentanone	43	6.329	6.326	(0.825)	115462	42.0925	42.09
	46 cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	134318	20.1446	20.14
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	572313	50.0000	
$	48 Toluene-d8	98	6.385	6.386	(0.832)	769196	53.6297	53.62
	50 Toluene	91	6.449	6.446	(0.841)	337541	19.8699	19.86
	51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.345)	108282	20.4912	20.49
	52 2-Hexanone	43	7.090	7.087	(0.924)	75828	40.2094	40.20
	53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	61177	19.4264	19.42
	54 1,3-Dichloropropane	76	6.981	6.982	(0.910)	123257	19.3186	19.31
	55 Dibromochloromethane	129	7.176	7.177	(0.935)	85614	19.6028	19.60
	56 Tetrachloroethene	164	6.929	6.929	(0.903)	76765	19.3934	19.39
	57 1,2-Dibromoethane	107	7.263	7.259	(0.947)	75334	19.1500	19.14
	58 1-Chlorohexane	55	7.697	7.698	(1.549)	60220	16.4543	16.45
	59 Chlorobenzene	112	7.694	7.694	(1.003)	221860	18.5863	18.58
	60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	84467	19.4153	19.41
	61 Ethylbenzene	106	7.802	7.799	(1.017)	118076	19.2468	19.24
	62 m,p-Xylenes	106	7.904	7.904	(1.030)	295890	39.9163	39.91
	63 o-Xylene	106	8.245	8.241	(1.075)	144423	19.9809	19.98
	64 Styrene	104	8.264	8.260	(1.077)	242572	20.9958	20.99
	66 Bromoform	173	8.413	8.410	(1.097)	51572	19.0544	19.05
	67 Isopropylbenzene	105	8.563	8.564	(1.116)	354867	20.1417	20.14
	68 1,1,2,2-Tetrachloroethane	83	8.837	8.841	(0.915)	81418	20.2058	20.20
$	69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	269328	52.7727	52.77
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	293024	50.0000	
	71 1,2,3-Trichloropropane	75	8.867	8.863	(0.918)	62049	20.1338	20.13(M)
	73 n-Propylbenzene	91	8.912	8.912	(0.922)	397335	19.9343	19.93
	74 Bromobenzene	156	8.807	8.803	(0.912)	102491	18.7736	18.77
	75 1,3,5-Trimethylbenzene	105	9.066	9.066	(0.938)	297072	20.0074	20.00
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	249459	18.8862	18.88
	77 4-Chlorotoluene	91	9.073	9.070	(0.939)	282320	19.3479	19.34
	78 tert-Butylbenzene	119	9.336	9.336	(0.966)	247950	19.2476	19.24
	79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	288709	18.8337	18.83
	81 sec-Butylbenzene	105	9.519	9.523	(0.985)	337040	19.3019	19.30
	82 p-Isopropyltoluene	119	9.650	9.651	(0.999)	303366	19.6069	19.60
	83 1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	168843	18.3977	18.39
	84 1,4-Dichlorobenzene	146	9.684	9.681	(1.002)	175103	18.2822	18.28
	87 n-Butylbenzene	91	9.995	9.995	(1.035)	217832	17.9685	17.96
	88 1,2-Dichlorobenzene	146	9.995	9.992	(1.035)	139664	17.5155	17.51

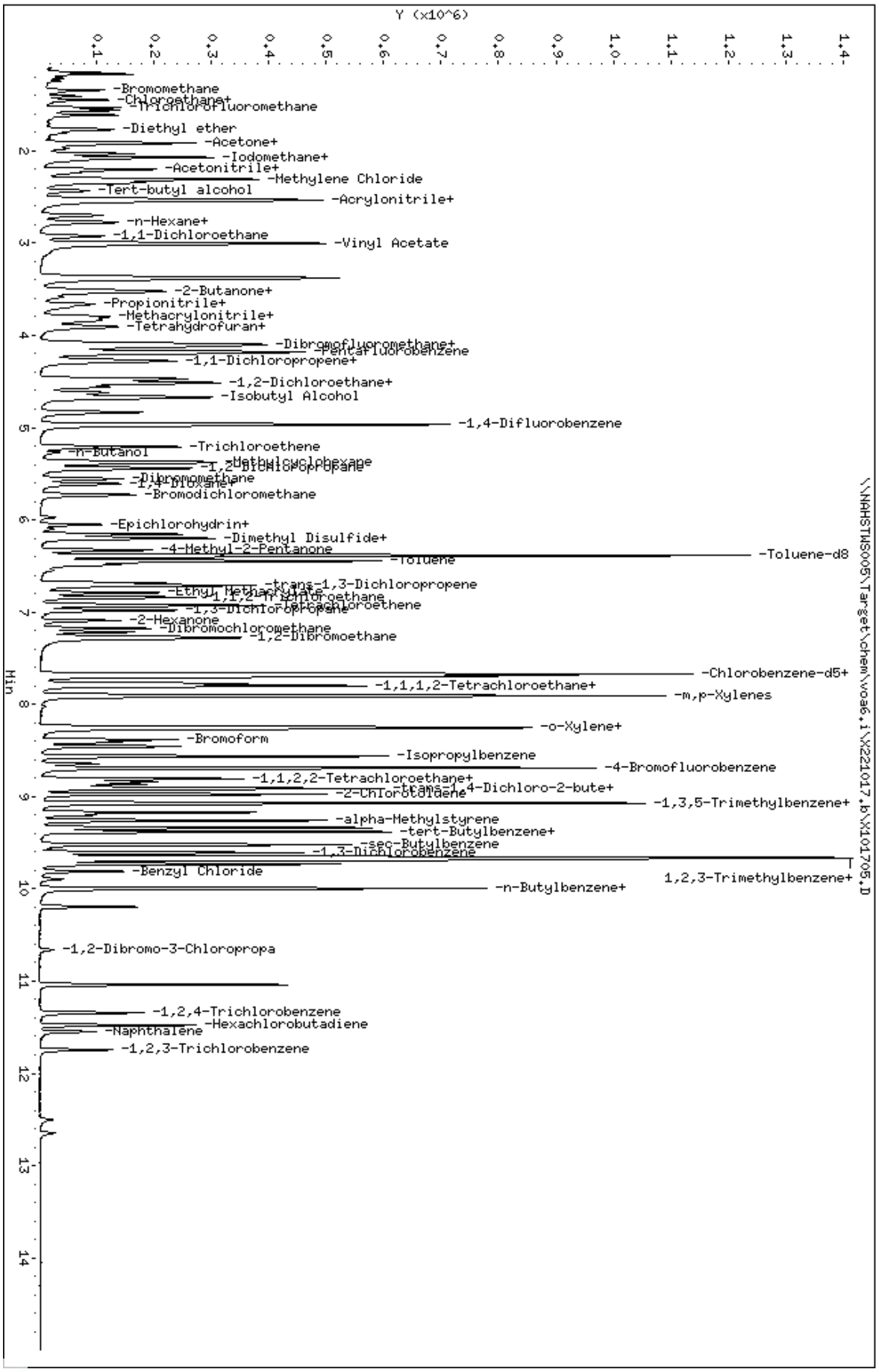
89	1,2-Dibromo-3-Chloropropane	155	10.663	10.663 (1.104)	6925	16.9779	16.97
90	1,2,4-Trichlorobenzene	180	11.341	11.337 (1.174)	58777	16.8400	16.84

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101705.D Page 3
Report Date: 27-Oct-2022 17:18

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	50191	18.3602	18.36
	92 Naphthalene	128	11.547	11.544	(1.195)	83615	16.7632	16.76
	93 1,2,3-Trichlorobenzene	180	11.746	11.742	(1.216)	41197	16.8863	16.88
M	94 1,2-Dichloroethylene (total)	96				162983	40.1853	40.18
M	95 Xylenes (total)	106				440313	59.8971	59.89
	141 Cyclohexane	56	4.129	4.125	(0.987)	101003	20.8210	20.82
	138 Freon TF	101	1.917	1.917	(0.458)	52562	20.2148	20.21
	147 Methylcyclohexane	55	5.381	5.381	(1.083)	176041	20.9180	20.91
	146 Methyl Acetate	43	2.236	2.236	(0.534)	36126	19.6882	19.68
	148 Tert-Butyl alcohol	59	2.431	2.431	(0.581)	104447	407.228	407.22
	149 Isopropyl Alcohol	45	2.101	2.097	(0.502)	50307	380.244	380.24

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101705.D
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Client ID: VLCSW-184775
Sample Info: VLCSW-221017;VLCSW-221017;3;;LCS
Purge Volume: 5.0
Column phase: DB624

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

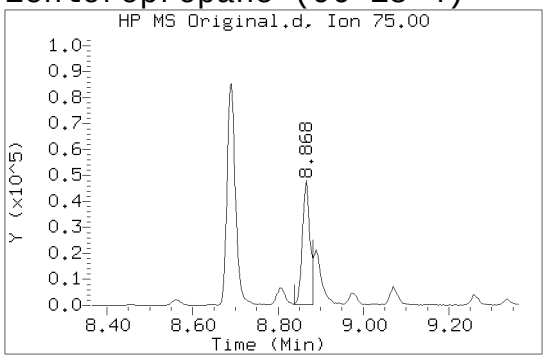
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Inj Date : 17-OCT-2022 11:53
InstruID : voa6.i
LabSampID : VLCSW-184775

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

Reason Code:

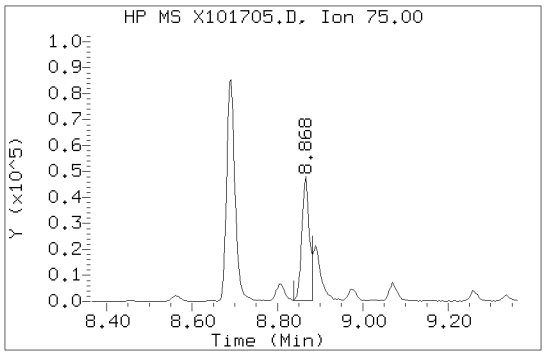
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HEIGHT
47865
24-Oct-2022
12:49
Linh
Pham



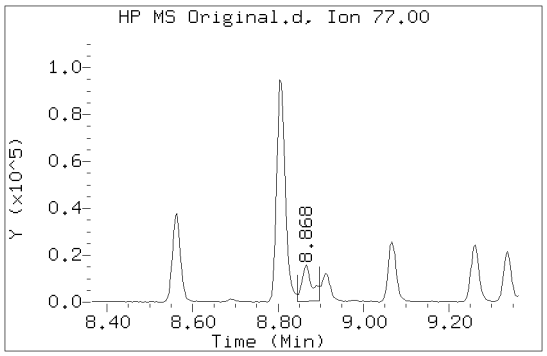
AFTER

MASS
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27-Oct-2022
17:18



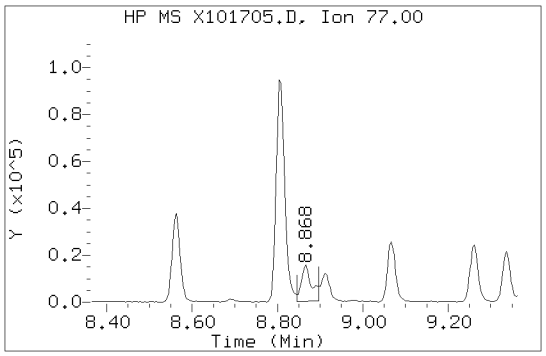
BEFORE

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15399
24-Oct-2022
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Pham



AFTER

MASS
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AREA
27562
HEIGHT
15399
27-Oct-2022
17:18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101707.D Page 1
Report Date: 27-Oct-2022 17:18

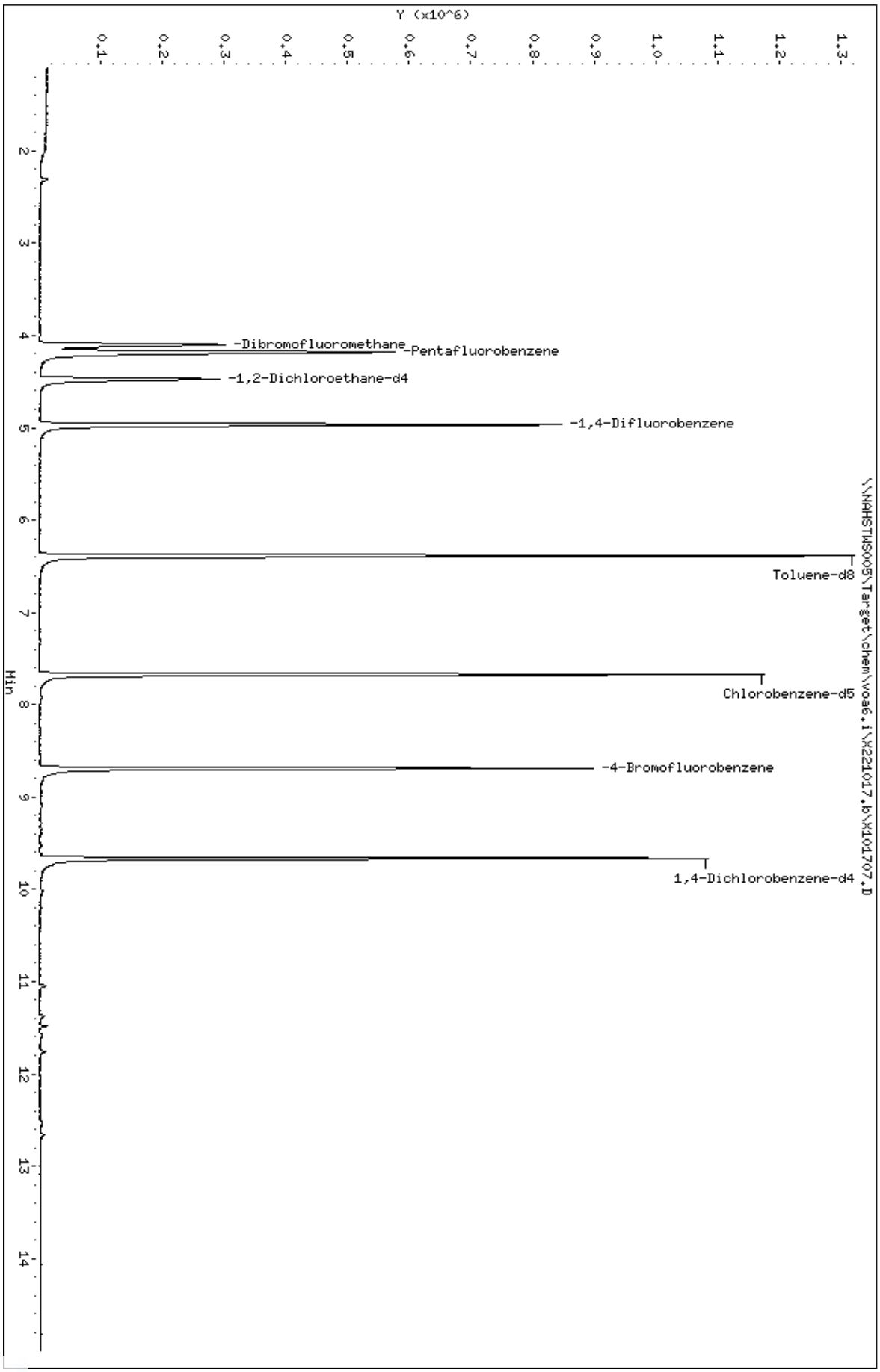
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101707.D
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Inj Date : 17-OCT-2022 12:35
Operator : PC Inst ID: voa6.i
Smp Info : VBLKW-221017;VBLKW-221017;3;;BLANK
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221017.b\8260W.m
Meth Date : 27-Oct-2022 17:18 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 8260_GB.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.181	4.185	(1.000)	534344	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.099	(0.981)	221640	46.0010	46.00
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	217460	45.6938	45.69
* 36 1,4-Difluorobenzene	114	4.968	4.969	(1.000)	742665	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	627087	50.0000	
$ 48 Toluene-d8	98	6.389	6.386	(0.833)	865435	55.0691	55.06
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	285711	51.0816	51.08
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	298047	50.0000	


Data File: \\NAHSTWS005\Target\chem\voa6,i\X221017,b\X101707.D
Date : 17-OCT-2022 12:35
Client ID: VBLKW-221017
Sample Info: VBLKW-221017;VBLKW-221017;3;;BLANK
Purge Volume: 5.0
Column phase: DB624
Instrument: voa6,i
Operator: PC
Column diameter: 0.18
Page 1
Y (x10^6)
Min
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS005\Target\chem\voa6,i\X221017,b\X101707.D

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101707.D
Inj Date : 17-OCT-2022 12:35
InstruID : voa6.i
LabSampID : VBLKW-221017

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101719.D Page 1
Report Date: 27-Oct-2022 17:18

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101719.D
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Inj Date : 17-OCT-2022 16:48
Operator : PC Inst ID: voa6.i
Smp Info : HS22100604-02MS;HS22100604-02MS;3;;MS
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\8260W.m
Meth Date : 27-Oct-2022 17:18 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 19 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 8260_GB.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.181	4.185	(1.000)	534860	50.0000	
2	Dichlorodifluoromethane	85	0.976	0.976	(0.234)	67737	16.3937	16.39
3	Chloromethane	50	1.081	1.081	(0.259)	85741	18.6705	18.67
5	Vinyl Chloride	62	1.145	1.145	(0.274)	77004	18.9005	18.90
6	Bromomethane	94	1.344	1.344	(0.321)	54836	19.1233	19.12
7	Chloroethane	64	1.407	1.407	(0.337)	47152	19.1379	19.13
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	105487	19.5059	19.50
9	Acrolein	56	1.449	1.449	(0.347)	11181	37.4687	37.46
10	Acetone	43	1.977	1.977	(0.473)	23362	21.4571	21.45
11	1,1-Dichloroethene	96	1.917	1.917	(0.459)	65740	19.0034	19.00
15	Iodomethane	142	2.030	2.030	(0.485)	178168	31.6026	31.60
16	Acrylonitrile	53	2.539	2.536	(0.607)	50342	37.8651	37.86
17	Methylene Chloride	84	2.307	2.307	(0.552)	97064	18.1205	18.12
18	Methyl tert-butyl ether	73	2.536	2.536	(0.606)	236865	18.5385	18.53
19	Carbon Disulfide	76	2.071	2.071	(0.495)	456665	37.6968	37.69
20	trans-1,2-Dichloroethene	96	2.532	2.532	(0.606)	89289	18.9401	18.94
21	Vinyl Acetate	43	3.001	3.001	(0.718)	389255	36.6187	36.61
22	1,1-Dichloroethane	63	2.922	2.922	(0.699)	152700	18.9654	18.96
24	2-Butanone	43	3.585	3.578	(0.857)	41793	32.4089	32.40
26	2,2-Dichloropropane	77	3.510	3.510	(0.840)	127638	19.6808	19.68

27 cis-1,2-Dichloroethene	96	3.529	3.525 (0.844)	101288	18.1304	18.13
28 Chloroform	83	3.908	3.908 (0.935)	154908	17.7307	17.73

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101719.D Page 2
Report Date: 27-Oct-2022 17:18

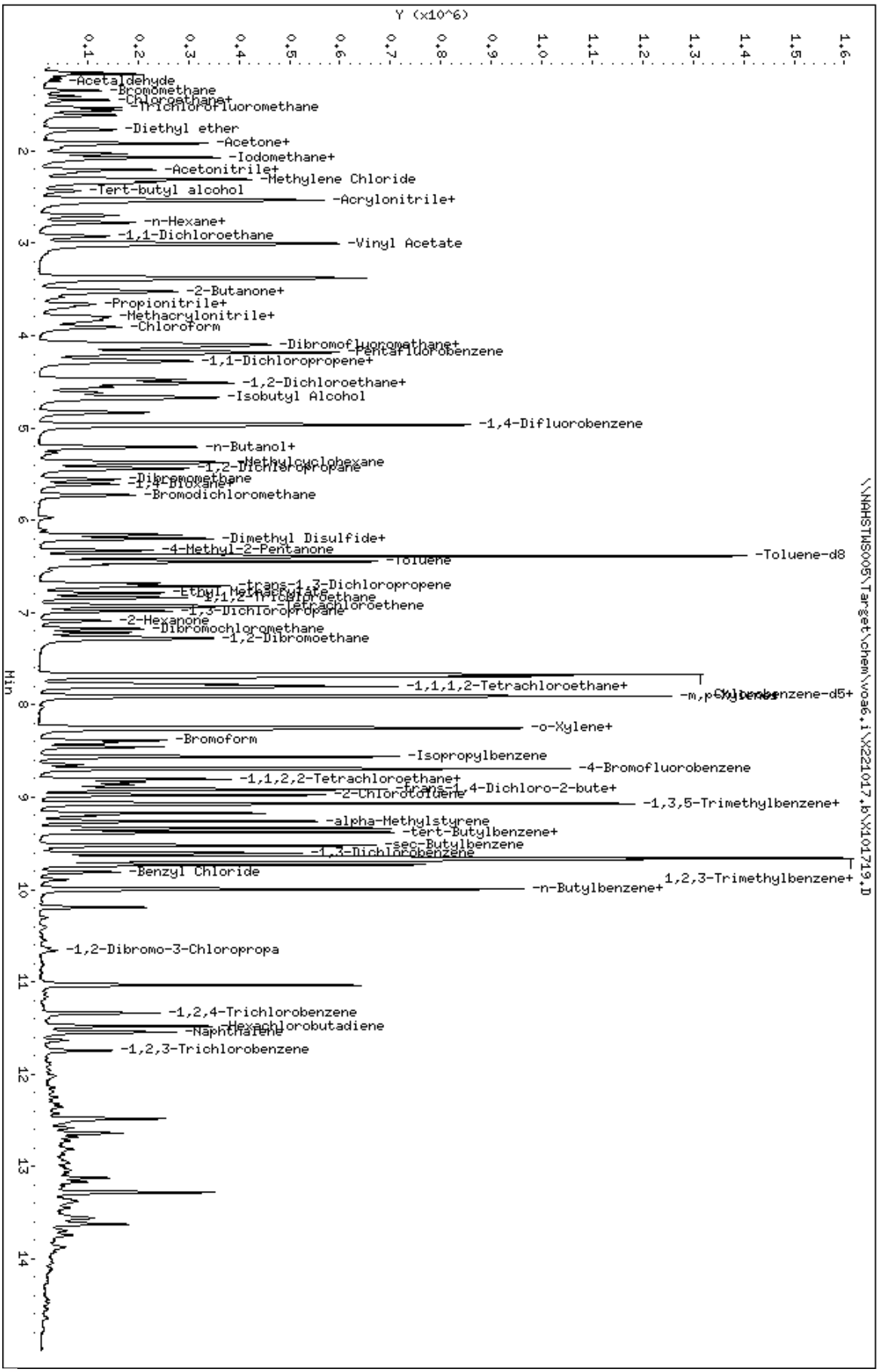
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
29	Bromochloromethane	128	3.799	3.795	(0.909)	52499	17.0671	17.06
$ 30	Dibromofluoromethane	113	4.103	4.099	(0.981)	219147	45.4317	45.43
31	1,1,1-Trichloroethane	97	4.084	4.084	(0.977)	132817	19.2388	19.23
32	1,1-Dichloropropene	75	4.283	4.283	(0.863)	118612	19.7946	19.79
33	1,2-Dichloroethane	62	4.560	4.556	(0.918)	113992	20.5581	20.55
34	Carbon Tetrachloride	117	4.264	4.268	(0.859)	114083	19.1280	19.12
$ 35	1,2-Dichloroethane-d4	65	4.470	4.474	(1.069)	226199	47.5149	47.51
* 36	1,4-Difluorobenzene	114	4.965	4.969	(1.000)	751460	50.0000	
37	Benzene	78	4.515	4.515	(0.909)	370656	19.5196	19.51
38	Trichloroethene	130	5.209	5.208	(1.049)	114643	20.2826	20.28
39	Bromodichloromethane	83	5.726	5.726	(1.153)	113294	18.2723	18.27
42	1,2-Dichloropropane	63	5.437	5.437	(1.095)	92249	18.8350	18.83
44	Dibromomethane	93	5.557	5.553	(1.119)	54625	18.6345	18.63
45	4-Methyl-2-Pentanone	43	6.326	6.326	(0.825)	131112	41.8959	41.89
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.240)	148209	18.6941	18.69
* 47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	652951	50.0000	
$ 48	Toluene-d8	98	6.386	6.386	(0.832)	869149	53.1148	53.11
50	Toluene	91	6.446	6.446	(0.840)	394997	20.3806	20.38
51	trans-1,3-Dichloropropene	75	6.685	6.682	(1.347)	118939	18.9295	18.92
52	2-Hexanone	43	7.090	7.087	(0.924)	80340	37.3407	37.34
53	1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	66688	18.5612	18.56
54	1,3-Dichloropropane	76	6.982	6.982	(0.910)	136379	18.7354	18.73
55	Dibromochloromethane	129	7.177	7.177	(0.936)	95137	19.1079	19.10
56	Tetrachloroethene	164	6.929	6.929	(0.903)	94262	20.8728	20.87
57	1,2-Dibromoethane	107	7.263	7.259	(0.947)	84197	18.7597	18.75
58	1-Chlorohexane	55	7.698	7.698	(1.550)	76846	17.6589	17.65
59	Chlorobenzene	112	7.694	7.694	(1.003)	262624	19.2842	19.28
60	1,1,1,2-Tetrachloroethane	131	7.773	7.776	(1.013)	93860	18.9100	18.90
61	Ethylbenzene	106	7.799	7.799	(1.017)	140434	20.0642	20.06
62	m,p-Xylenes	106	7.904	7.904	(1.030)	344011	40.6766	40.67
63	o-Xylene	106	8.245	8.241	(1.075)	163820	19.8654	19.86
64	Styrene	104	8.260	8.260	(1.077)	271522	20.5991	20.59
66	Bromoform	173	8.410	8.410	(1.096)	55045	17.8984	17.89
67	Isopropylbenzene	105	8.564	8.564	(1.116)	419812	20.8852	20.88
68	1,1,2,2-Tetrachloroethane	83	8.837	8.841	(0.915)	83889	18.6721	18.67
$ 69	4-Bromofluorobenzene	95	8.691	8.691	(1.133)	297044	51.0036	51.00
* 70	1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	326328	50.0000	
71	1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	59898	17.4523	17.45(M)
73	n-Propylbenzene	91	8.912	8.912	(0.922)	454913	20.5009	20.50
74	Bromobenzene	156	8.807	8.803	(0.912)	111039	18.2636	18.26
75	1,3,5-Trimethylbenzene	105	9.066	9.066	(0.938)	334757	20.2445	20.24
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	276437	18.7927	18.79
77	4-Chlorotoluene	91	9.070	9.070	(0.939)	312204	19.2124	19.21
78	tert-Butylbenzene	119	9.336	9.336	(0.966)	295516	20.5989	20.59
79	1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	336642	19.7193	19.71
81	sec-Butylbenzene	105	9.519	9.523	(0.985)	406134	20.8851	20.88
82	p-Isopropyltoluene	119	9.651	9.651	(0.999)	358035	20.7786	20.77
83	1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	194181	18.9992	18.99
84	1,4-Dichlorobenzene	146	9.681	9.681	(1.002)	192783	18.0739	18.07
87	n-Butylbenzene	91	9.996	9.995	(1.035)	275100	20.3765	20.37
88	1,2-Dichlorobenzene	146	9.996	9.992	(1.035)	159673	17.9871	17.98
89	1,2-Dibromo-3-Chloropropane	155	10.663	10.663	(1.104)	7205	15.9826	15.98

90 1,2,4-Trichlorobenzene	180	11.341	11.337 (1.174)	68743	17.5925	17.59
91 Hexachlorobutadiene	225	11.480	11.480 (1.188)	60592	19.9326	19.93

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
	92 Naphthalene	128	11.544	11.544	(1.195)	204626	36.8368	36.83
	93 1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	42195	15.5302	15.53
M	94 1,2-Dichloroethylene (total)	96				190577	37.0705	37.07
M	95 Xylenes (total)	106				507831	60.5420	60.54
	141 Cyclohexane	56	4.125	4.125	(0.987)	137603	22.4101	22.41
	138 Freon TF	101	1.917	1.917	(0.459)	67889	20.6274	20.62
	147 Methylcyclohexane	55	5.381	5.381	(1.084)	209259	20.9120	20.91
	146 Methyl Acetate	43	2.236	2.236	(0.535)	39420	16.9727	16.97
	148 Tert-Butyl alcohol	59	2.435	2.431	(0.582)	101091	311.891	311.89
	149 Isopropyl Alcohol	45	2.097	2.097	(0.502)	48026	288.694	288.69

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTMS005\Target\chem\voa6.i\X221017.b\X101719.D
Date : 17-OCT-2022 16:48
Client ID: HS2210604-02MS
Sample Info: HS2210604-02MS;HS2210604-02MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

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

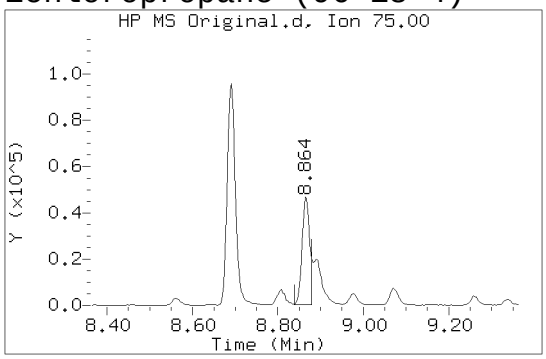
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Inj Date : 17-OCT-2022 16:48
InstruID : voa6.i
LabSampID : HS22100604-02MS

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

Reason Code:

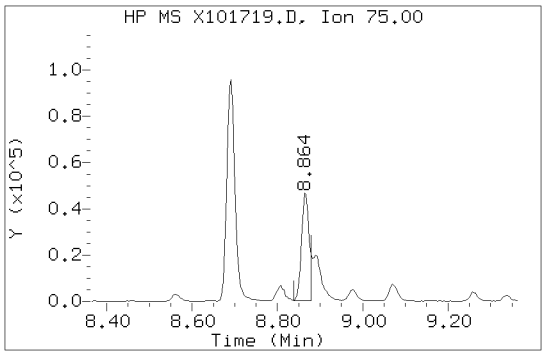
BEFORE

MASS
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HEIGHT
46644
24-Oct-2022
12:49
Linh
Pham



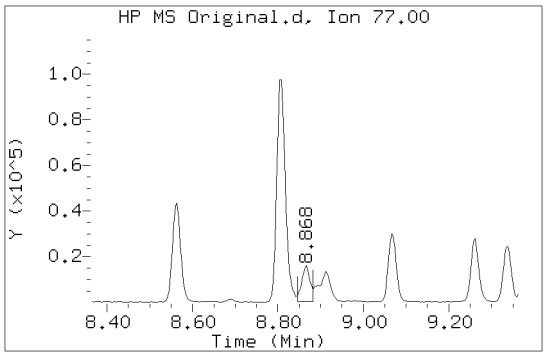
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AREA
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HEIGHT
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27-Oct-2022
17:18



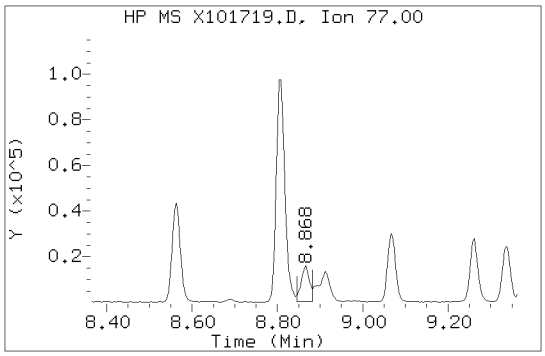
BEFORE

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24-Oct-2022
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Linh
Pham



AFTER

MASS
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AREA
22378
HEIGHT
15823
27-Oct-2022
17:18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101720.D Page 1
Report Date: 27-Oct-2022 17:18

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101720.D
Lab Smp Id: HS22100604-02MSD Client Smp ID: HS22100604-02MSD
Inj Date : 17-OCT-2022 17:09
Operator : PC Inst ID: voa6.i
Smp Info : HS22100604-02MSD;HS22100604-02MSD;3;;MSD
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221017.b\8260W.m
Meth Date : 27-Oct-2022 17:18 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 19 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 8260_GB.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.181	4.185	(1.000)	549671	50.0000	
2	Dichlorodifluoromethane	85	0.976	0.976	(0.234)	62396	14.5748	14.57
3	Chloromethane	50	1.081	1.081	(0.259)	79909	16.9000	16.90
5	Vinyl Chloride	62	1.145	1.145	(0.274)	69922	16.6998	16.69
6	Bromomethane	94	1.340	1.344	(0.321)	47543	16.0408	16.04
7	Chloroethane	64	1.404	1.407	(0.336)	43408	17.1435	17.14
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	97535	17.5495	17.54
9	Acrolein	56	1.445	1.449	(0.346)	10507	34.2613	34.26
10	Acetone	43	1.977	1.977	(0.473)	23120	20.6565	20.65
11	1,1-Dichloroethene	96	1.917	1.917	(0.459)	60224	16.9398	16.93
15	Iodomethane	142	2.030	2.030	(0.485)	187700	32.3053	32.30
16	Acrylonitrile	53	2.539	2.536	(0.607)	43270	31.8747	31.87
17	Methylene Chloride	84	2.307	2.307	(0.552)	90517	16.3192	16.31
18	Methyl tert-butyl ether	73	2.539	2.536	(0.607)	218526	16.6423	16.64
19	Carbon Disulfide	76	2.071	2.071	(0.495)	412214	33.1106	33.11
20	trans-1,2-Dichloroethene	96	2.532	2.532	(0.606)	81091	16.7376	16.73
21	Vinyl Acetate	43	3.001	3.001	(0.718)	358028	32.7735	32.77
22	1,1-Dichloroethane	63	2.922	2.922	(0.699)	134313	16.2322	16.23
24	2-Butanone	43	3.582	3.578	(0.857)	38202	28.8260	28.82
26	2,2-Dichloropropane	77	3.510	3.510	(0.840)	113514	17.0314	17.03

27	cis-1,2-Dichloroethene	96	3.529	3.525 (0.844)	92362	16.0872	16.08
28	Chloroform	83	3.908	3.908 (0.935)	142697	15.8930	15.89

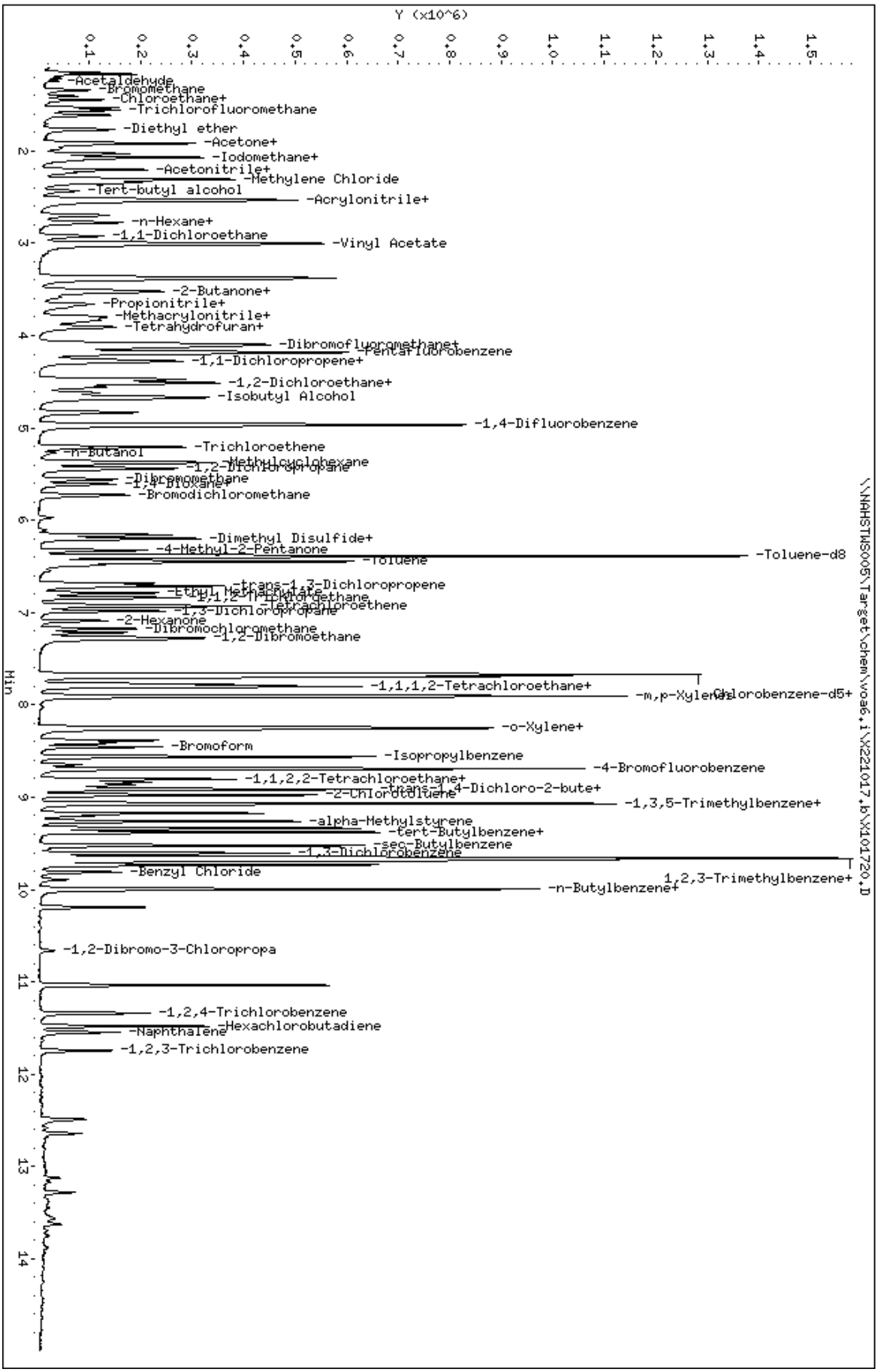
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
	29 Bromochloromethane	128	3.795	3.795	(0.908)	49089	15.5285	15.52
$	30 Dibromofluoromethane	113	4.099	4.099	(0.980)	221257	44.6217	44.62
	31 1,1,1-Trichloroethane	97	4.080	4.084	(0.976)	121653	17.1468	17.14
	32 1,1-Dichloropropene	75	4.283	4.283	(0.863)	106385	17.8866	17.88
	33 1,2-Dichloroethane	62	4.556	4.556	(0.918)	100999	18.3508	18.35
	34 Carbon Tetrachloride	117	4.268	4.268	(0.860)	103510	17.4849	17.48
$	35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	220068	44.9397	44.93
*	36 1,4-Difluorobenzene	114	4.965	4.969	(1.000)	745890	50.0000	
	37 Benzene	78	4.515	4.515	(0.909)	331285	17.5765	17.57
	38 Trichloroethene	130	5.208	5.208	(1.049)	105116	18.7360	18.73
	39 Bromodichloromethane	83	5.726	5.726	(1.153)	105709	17.1763	17.17
	42 1,2-Dichloropropane	63	5.437	5.437	(1.095)	83386	17.1525	17.15
	44 Dibromomethane	93	5.553	5.553	(1.119)	51748	17.7848	17.78
	45 4-Methyl-2-Pentanone	43	6.326	6.326	(0.825)	120888	38.2818	38.28
	46 cis-1,3-Dichloropropene	75	6.157	6.157	(1.240)	136867	17.3924	17.39
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	659194	50.0000	
$	48 Toluene-d8	98	6.386	6.386	(0.832)	865201	52.3728	52.37
	50 Toluene	91	6.446	6.446	(0.840)	359539	18.3754	18.37
	51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	109960	17.6312	17.63
	52 2-Hexanone	43	7.090	7.087	(0.924)	74863	34.4656	34.46
	53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	63365	17.4692	17.46
	54 1,3-Dichloropropane	76	6.982	6.982	(0.910)	127559	17.3578	17.35
	55 Dibromochloromethane	129	7.177	7.177	(0.936)	88984	17.7447	17.74
	56 Tetrachloroethene	164	6.929	6.929	(0.903)	86827	19.0444	19.04
	57 1,2-Dibromoethane	107	7.263	7.259	(0.947)	79091	17.4552	17.45
	58 1-Chlorohexane	55	7.698	7.698	(1.550)	69519	16.0945	16.09
	59 Chlorobenzene	112	7.694	7.694	(1.003)	242725	17.6542	17.65
	60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	88661	17.6934	17.69
	61 Ethylbenzene	106	7.803	7.799	(1.017)	128882	18.2393	18.23
	62 m,p-Xylenes	106	7.908	7.904	(1.031)	318501	37.3036	37.30
	63 o-Xylene	106	8.241	8.241	(1.074)	152772	18.3502	18.35
	64 Styrene	104	8.260	8.260	(1.077)	255211	19.1783	19.17
	66 Bromoform	173	8.414	8.410	(1.097)	53853	17.3797	17.37
	67 Isopropylbenzene	105	8.564	8.564	(1.116)	383176	18.8821	18.88
	68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	83974	18.5916	18.59
$	69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	294887	50.1478	50.14
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	328050	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	64756	18.7687	18.76(M)
	73 n-Propylbenzene	91	8.916	8.912	(0.923)	431940	19.3493	19.34
	74 Bromobenzene	156	8.807	8.803	(0.912)	111583	18.2568	18.25
	75 1,3,5-Trimethylbenzene	105	9.070	9.066	(0.939)	321195	19.3224	19.32
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	266509	18.0227	18.02
	77 4-Chlorotoluene	91	9.073	9.070	(0.939)	297902	18.2360	18.23
	78 tert-Butylbenzene	119	9.336	9.336	(0.966)	271799	18.8462	18.84
	79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	314357	18.3173	18.31
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	373012	19.0811	19.08
	82 p-Isopropyltoluene	119	9.651	9.651	(0.999)	330565	19.0836	19.08
	83 1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	185011	18.0069	18.00
	84 1,4-Dichlorobenzene	146	9.684	9.681	(1.002)	190800	17.7941	17.79
	87 n-Butylbenzene	91	9.996	9.995	(1.035)	269615	19.8654	19.86
	88 1,2-Dichlorobenzene	146	9.996	9.992	(1.035)	165811	18.5877	18.58
	89 1,2-Dibromo-3-Chloropropane	155	10.663	10.663	(1.104)	7877	17.2205	17.22

90 1,2,4-Trichlorobenzene	180	11.341	11.337 (1.174)	72251	18.3091	18.30
91 Hexachlorobutadiene	225	11.480	11.480 (1.188)	59311	19.3997	19.39

		QUANT SIG					CONCENTRATIONS ON-COLUMN	CONCENTRATIONS FINAL
	Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
	92 Naphthalene	128	11.547	11.544	(1.195)	123270	22.0746	22.07
	93 1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	46017	16.8480	16.84
M	94 1,2-Dichloroethylene (total)	96				173453	32.8248	32.82
M	95 Xylenes (total)	106				471273	55.6538	55.65
	141 Cyclohexane	56	4.125	4.125	(0.987)	121238	19.2129	19.21
	138 Freon TF	101	1.917	1.917	(0.459)	62542	18.4908	18.49
	147 Methylcyclohexane	55	5.381	5.381	(1.084)	189290	19.0577	19.05
	146 Methyl Acetate	43	2.236	2.236	(0.535)	36096	15.1228	15.12
	148 Tert-Butyl alcohol	59	2.435	2.431	(0.582)	95864	287.959	287.95
	149 Isopropyl Alcohol	45	2.101	2.097	(0.502)	47057	275.609	275.60

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101720.D
Date : 17-OCT-2022 17:09
Client ID: HS22100604-02MSD
Sample Info: HS22100604-02MSD;HS22100604-02MSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624

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

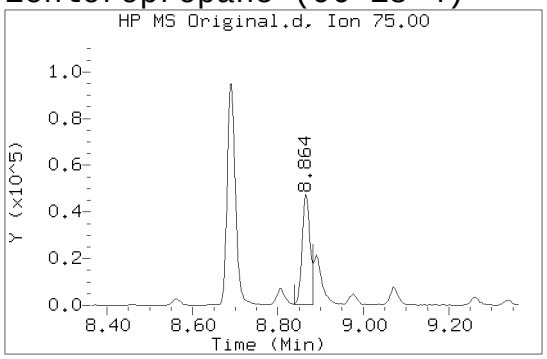
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Inj Date : 17-OCT-2022 17:09
InstruID : voa6.i
LabSampID : HS22100604-02MSD

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

Reason Code:

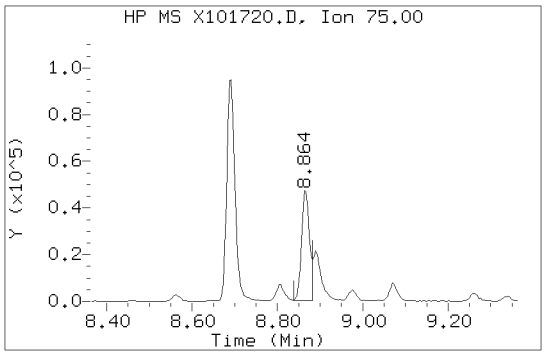
BEFORE

MASS
75
AREA
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HEIGHT
47259
27-Oct-2022
17:18
Kori
Bagsby



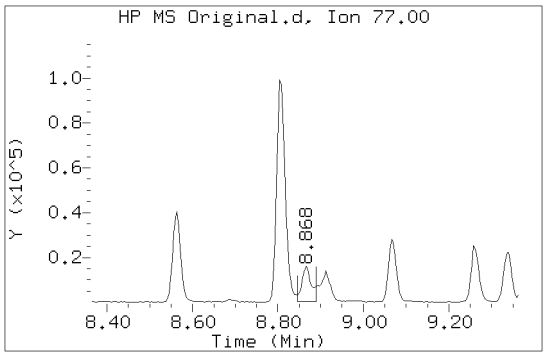
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HEIGHT
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27-Oct-2022
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Bagsby



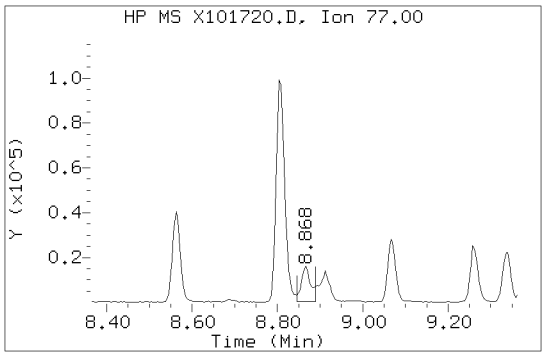
BEFORE

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HEIGHT
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27-Oct-2022
17:18
Kori
Bagsby



AFTER

MASS
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25607
HEIGHT
15951
27-Oct-2022
17:18
Kori
Bagsby



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101721.D Page 1
Report Date: 28-Oct-2022 13:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101721.D
Lab Smp Id: HS22100575-05 Client Smp ID: HS22100575-05
Inj Date : 17-OCT-2022 17:30
Operator : PC Inst ID: voa6.i
Smp Info : HS22100575-05;HS22100575-05;;;
Misc Info : HS22052000V6;WATER;0;5;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\8260W.m
Meth Date : 28-Oct-2022 13:39 kori.bagsb Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 20
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7056

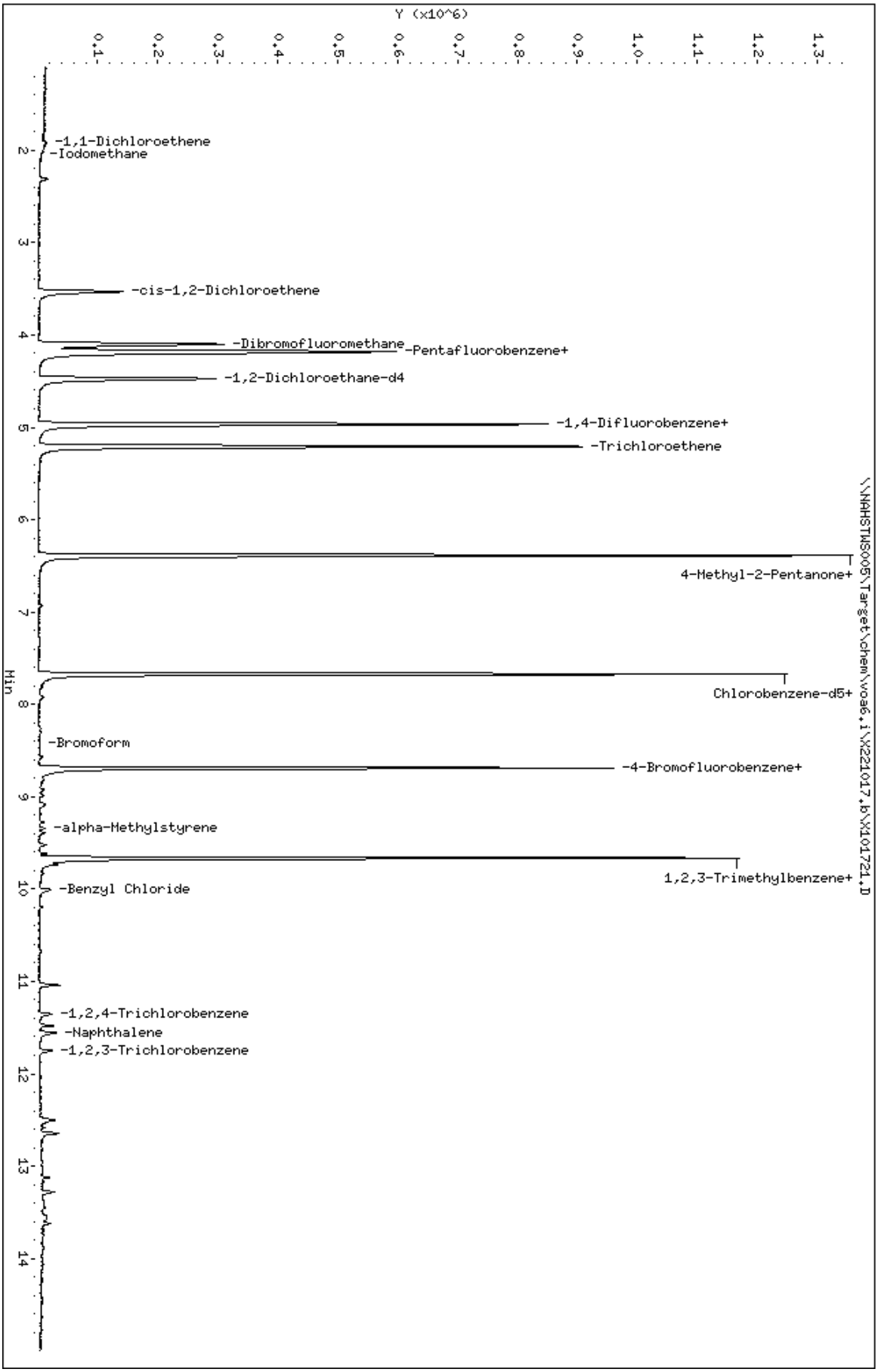
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.181	(1.000)	543909	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.099	(0.980)	226353	46.1551	46.15
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	223867	46.2217	46.22
* 36 1,4-Difluorobenzene	114	4.969	4.965	(1.000)	755748	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	663309	50.0000	
$ 48 Toluene-d8	98	6.386	6.385	(0.832)	867554	52.1894	52.18
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	287790	48.6265	48.62
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	312648	50.0000	
5 Vinyl Chloride	62	Compound Not Detected.					
11 1,1-Dichloroethene	96	1.913	1.917	(0.457)	2147	0.61030	3.05(a)
27 cis-1,2-Dichloroethene	96	3.529	3.529	(0.843)	82227	14.4736	72.36
33 1,2-Dichloroethane	62	Compound Not Detected.					
38 Trichloroethene	130	5.205	5.208	(1.048)	326120	57.3697	286.84
56 Tetrachloroethene	164	Compound Not Detected.					

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101721.D
Date : 17-OCT-2022 17:30
Client ID: HS22100575-05
Sample Info: HS22100575-05;HS22100575-05;;;
Purge Volume: 5.0
Column phase: DB624

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

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101721.D Page 2

Date : 17-OCT-2022 17:30

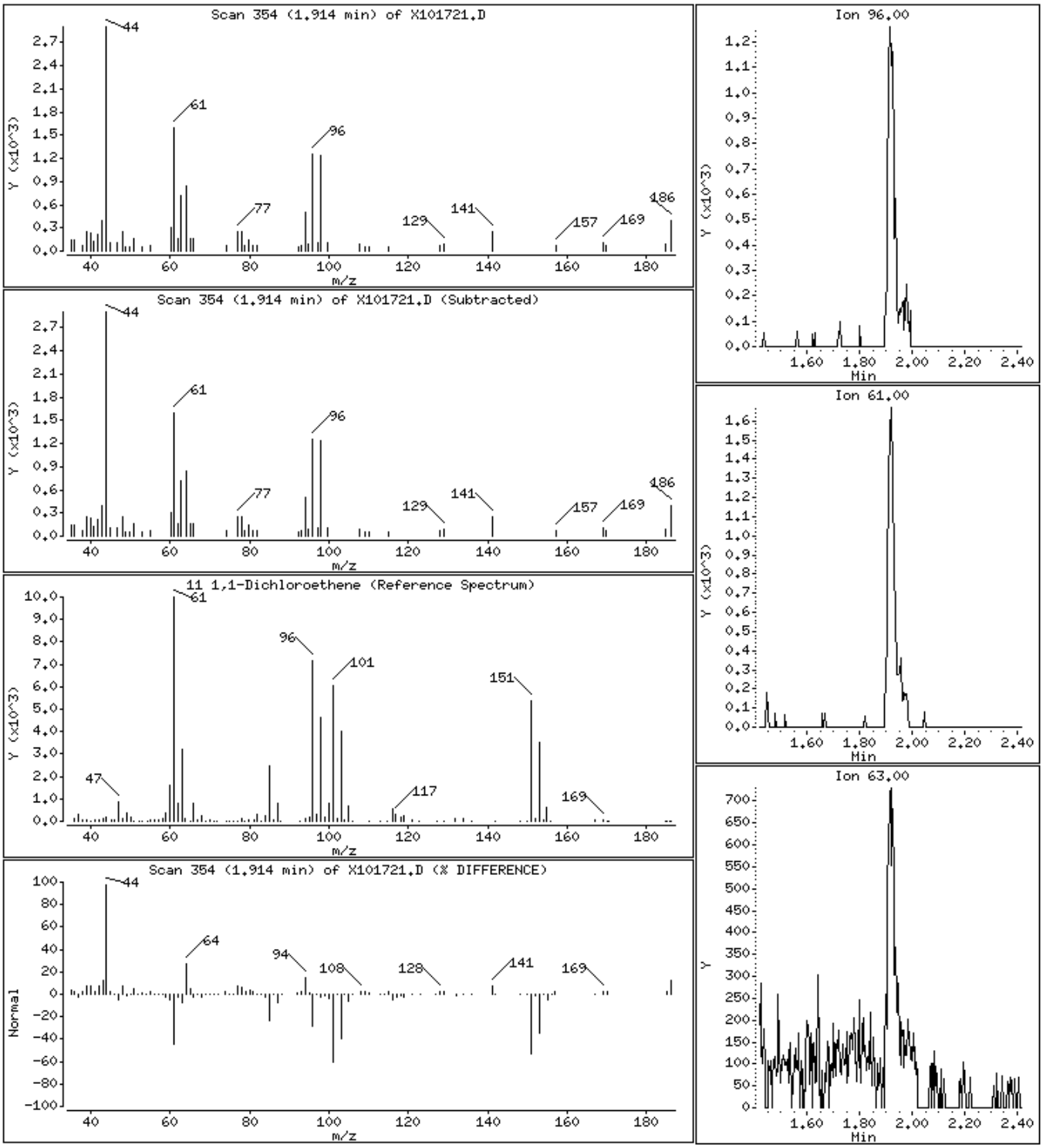
Client ID: HS22100575-05 Instrument: voa6.i

Sample Info: HS22100575-05;HS22100575-05;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

11 1,1-Dichloroethene Concentration: 3.05 ug/l



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101721.D Page 3

Date : 17-OCT-2022 17:30

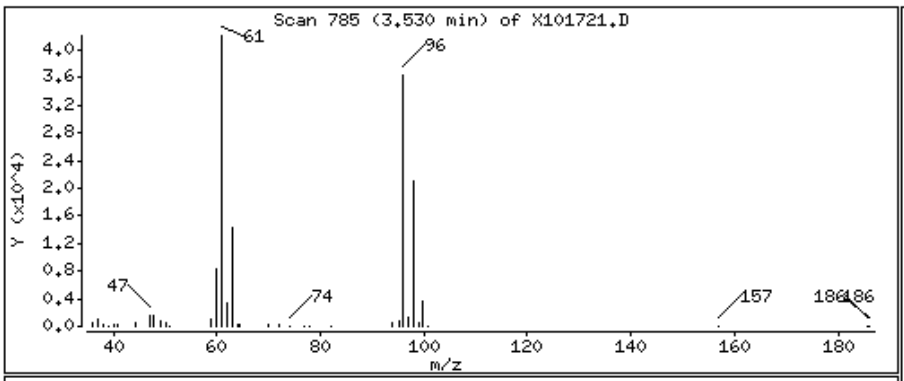
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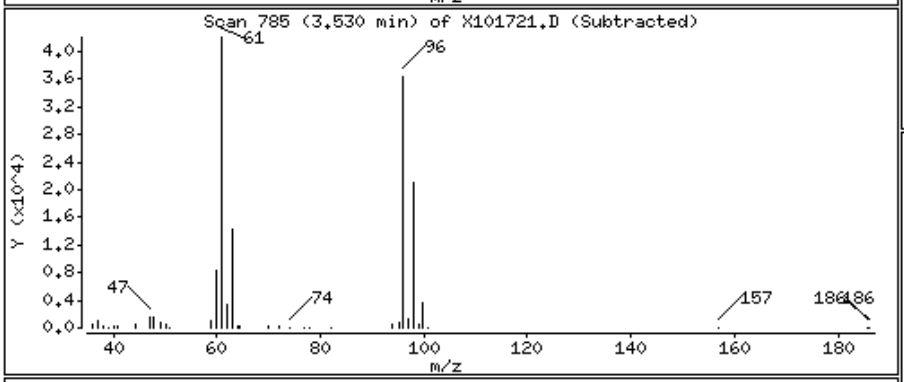
Sample Info: HS22100575-05;HS22100575-05;;;

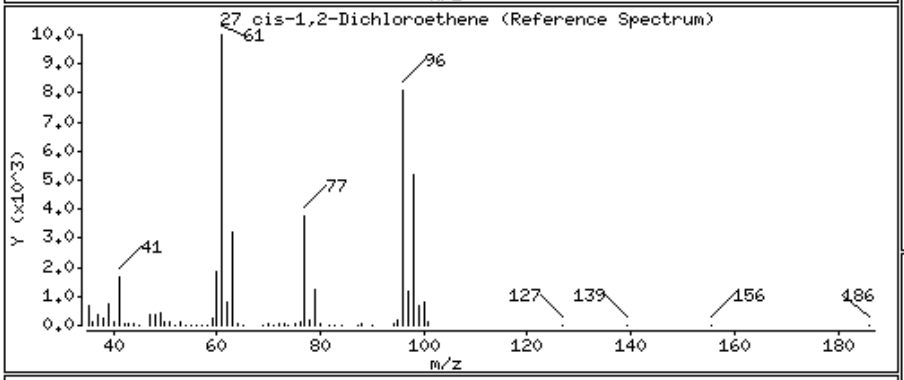
Purge Volume: 5.0 Operator: PC

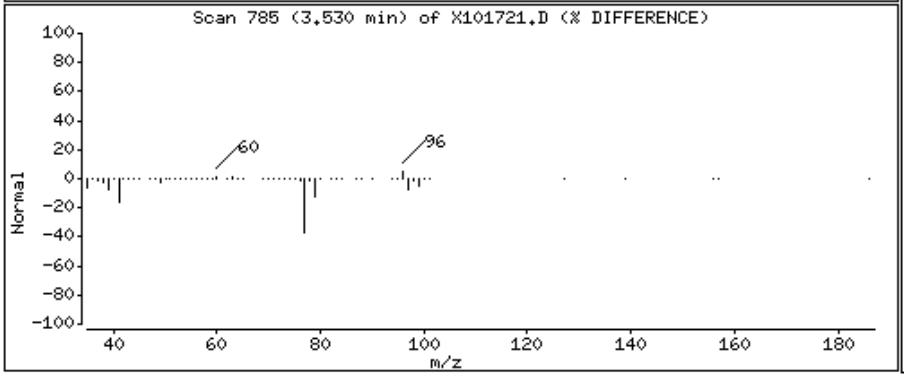
Column phase: DB624 Column diameter: 0.18

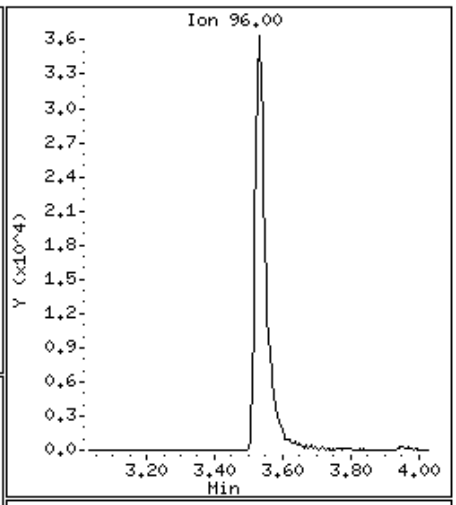
27 cis-1,2-Dichloroethene Concentration: 72.36 ug/l

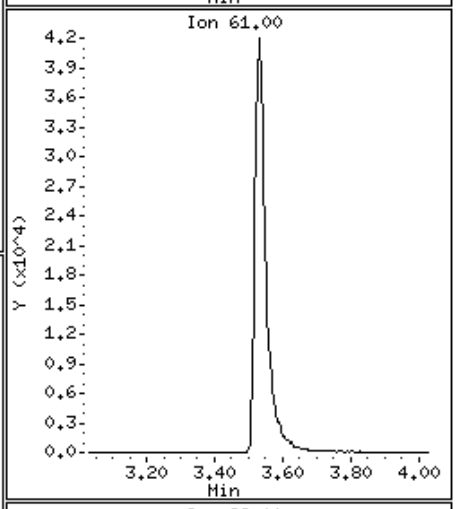


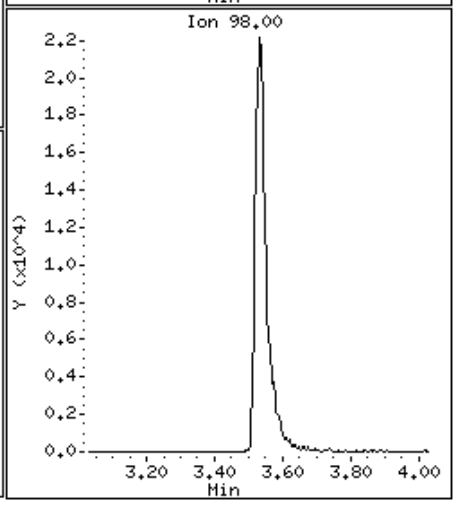












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101721.D Page 4

Date : 17-OCT-2022 17:30

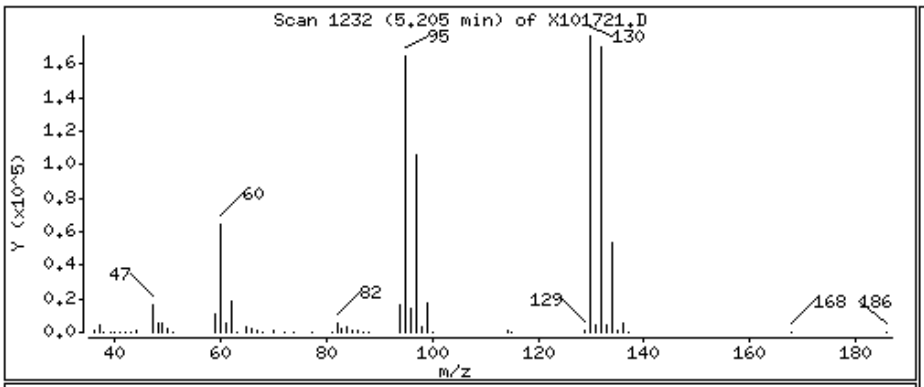
Client ID: HS22100575-05 Instrument: voa6.i

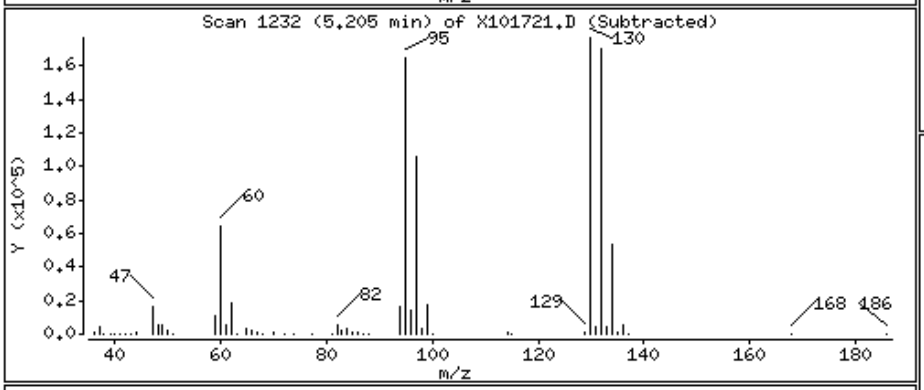
Sample Info: HS22100575-05;HS22100575-05;;;

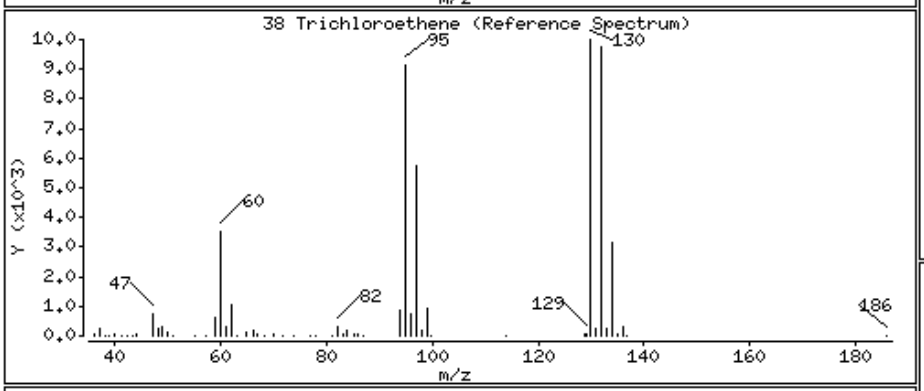
Purge Volume: 5.0 Operator: PC

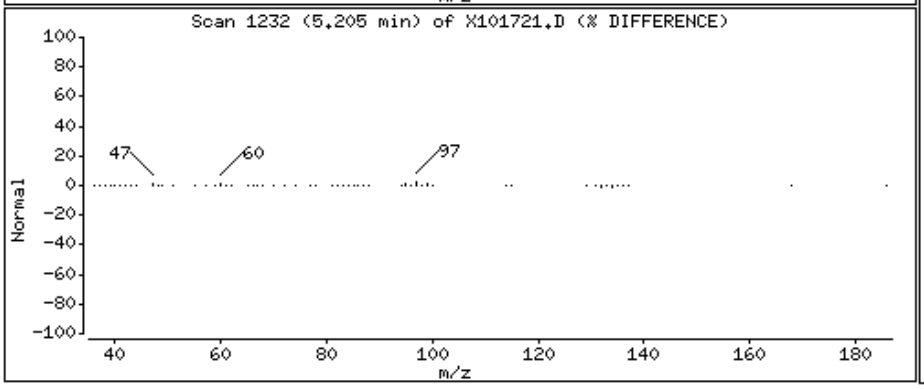
Column phase: DB624 Column diameter: 0.18

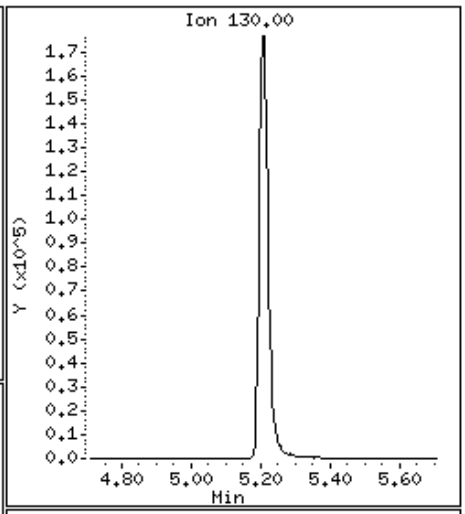
38 Trichloroethene Concentration: 286.84 ug/l

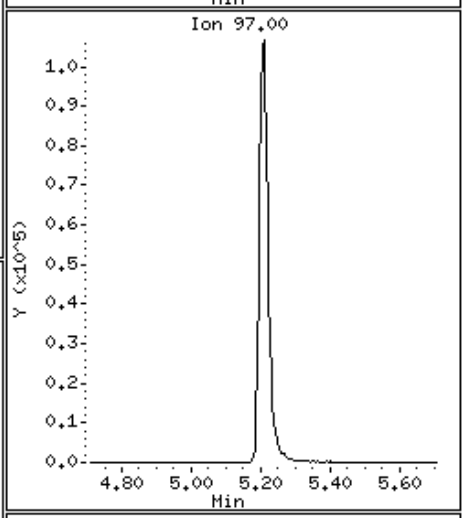


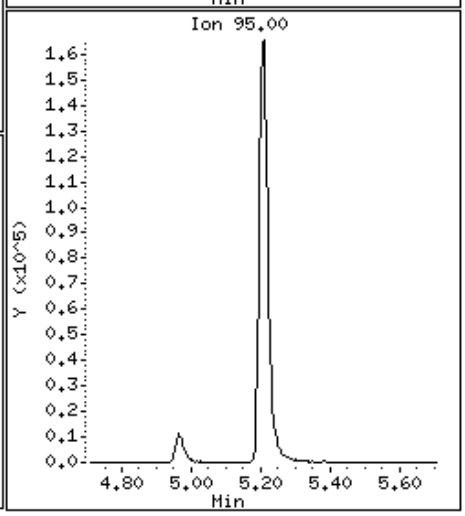












Data File : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101721.D
Inj Date : 17-OCT-2022 17:30
InstruID : voa6.i
LabSampID : HS22100575-05

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101722.D Page 1
Report Date: 28-Oct-2022 13:51

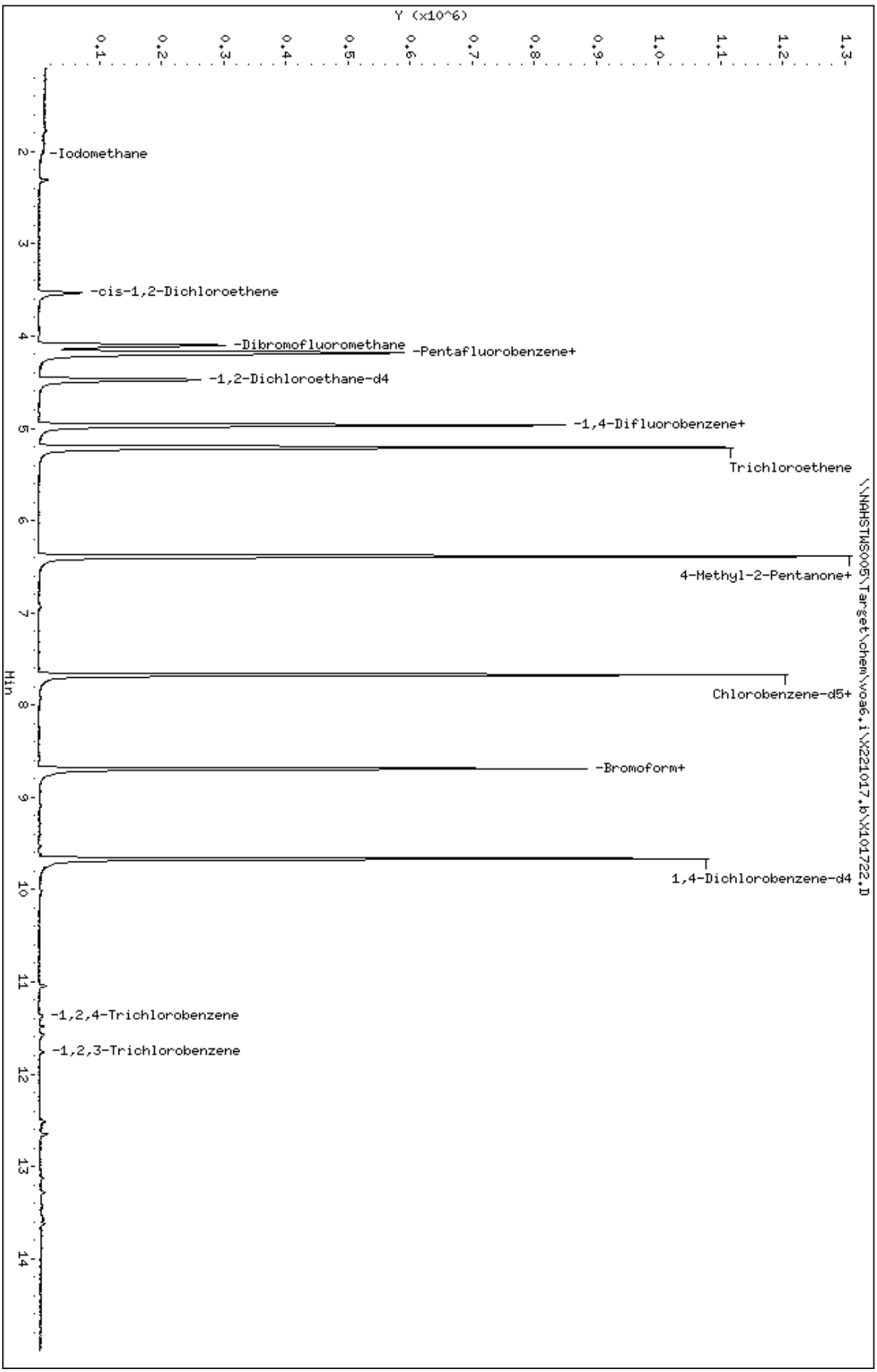
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101722.D
Lab Smp Id: HS22100575-02 Client Smp ID: HS22100575-02
Inj Date : 17-OCT-2022 17:51
Operator : PC Inst ID: voa6.i
Smp Info : HS22100575-02;HS22100575-02;;;
Misc Info : HS22052000V6;WATER;0;10;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\8260W.m
Meth Date : 28-Oct-2022 13:39 kori.bagsb Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 21
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 0575-dod.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	4.181	(1.000)	544229	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.099	(0.980)	222224	45.2743	45.27
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	202236	41.6549	41.65
* 36 1,4-Difluorobenzene	114	4.965	4.965	(1.000)	748397	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	649655	50.0000	
$ 48 Toluene-d8	98	6.385	6.385	(0.832)	858934	52.7568	52.75
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	278506	48.0427	48.04
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	295770	50.0000	
5 Vinyl Chloride	62	Compound Not Detected.					
11 1,1-Dichloroethene	96	Compound Not Detected.					
27 cis-1,2-Dichloroethene	96	3.533	3.529	(0.844)	41162	7.24109	72.41
33 1,2-Dichloroethane	62	Compound Not Detected.					
38 Trichloroethene	130	5.208	5.208	(1.049)	404638	71.8815	718.81
56 Tetrachloroethene	164	Compound Not Detected.					



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101722.D
Date : 17-OCT-2022 17:51
Client ID: HS22100575-02
Sample Info: HS22100575-02;HS22100575-02;;;
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101722.D Page 2

Date : 17-OCT-2022 17:51

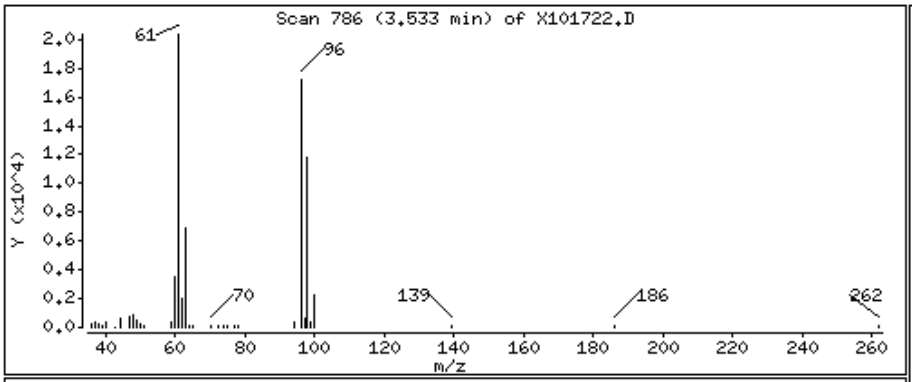
Client ID: HS22100575-02 Instrument: voa6.i

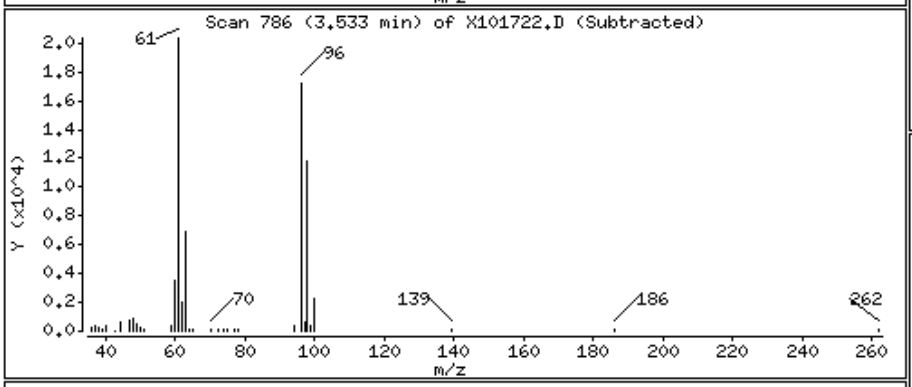
Sample Info: HS22100575-02;HS22100575-02;;;

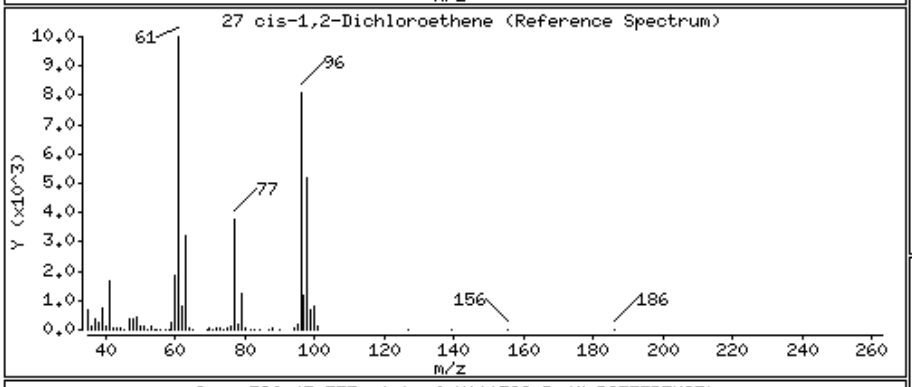
Purge Volume: 5.0 Operator: PC

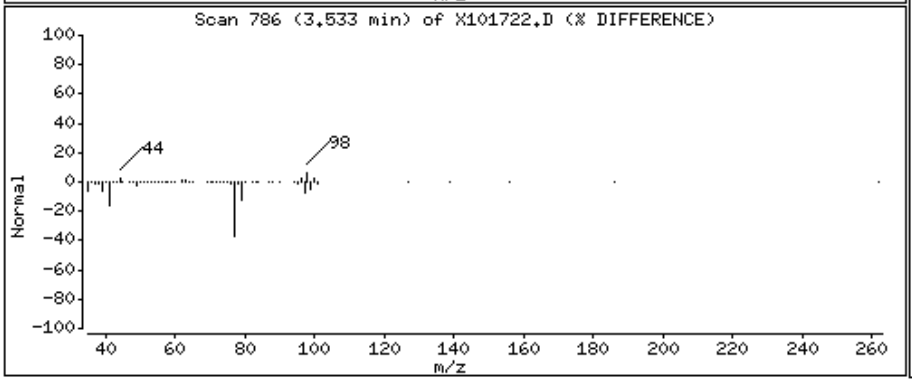
Column phase: DB624 Column diameter: 0.18

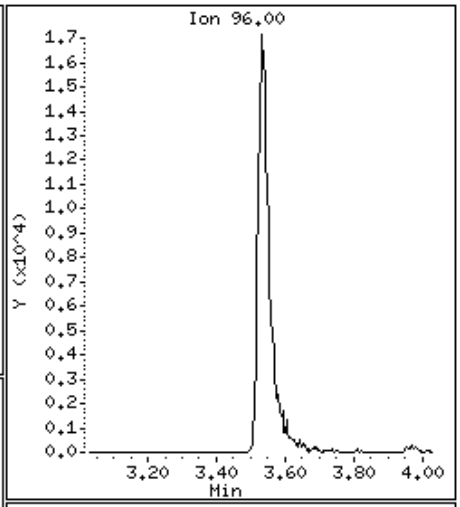
27 cis-1,2-Dichloroethene Concentration: 72.41 ug/l

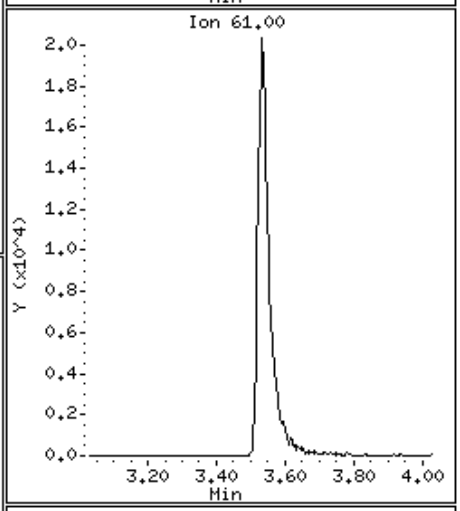


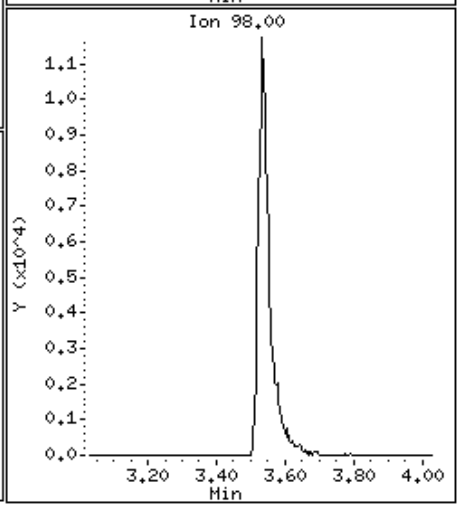












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101722.D Page 3

Date : 17-OCT-2022 17:51

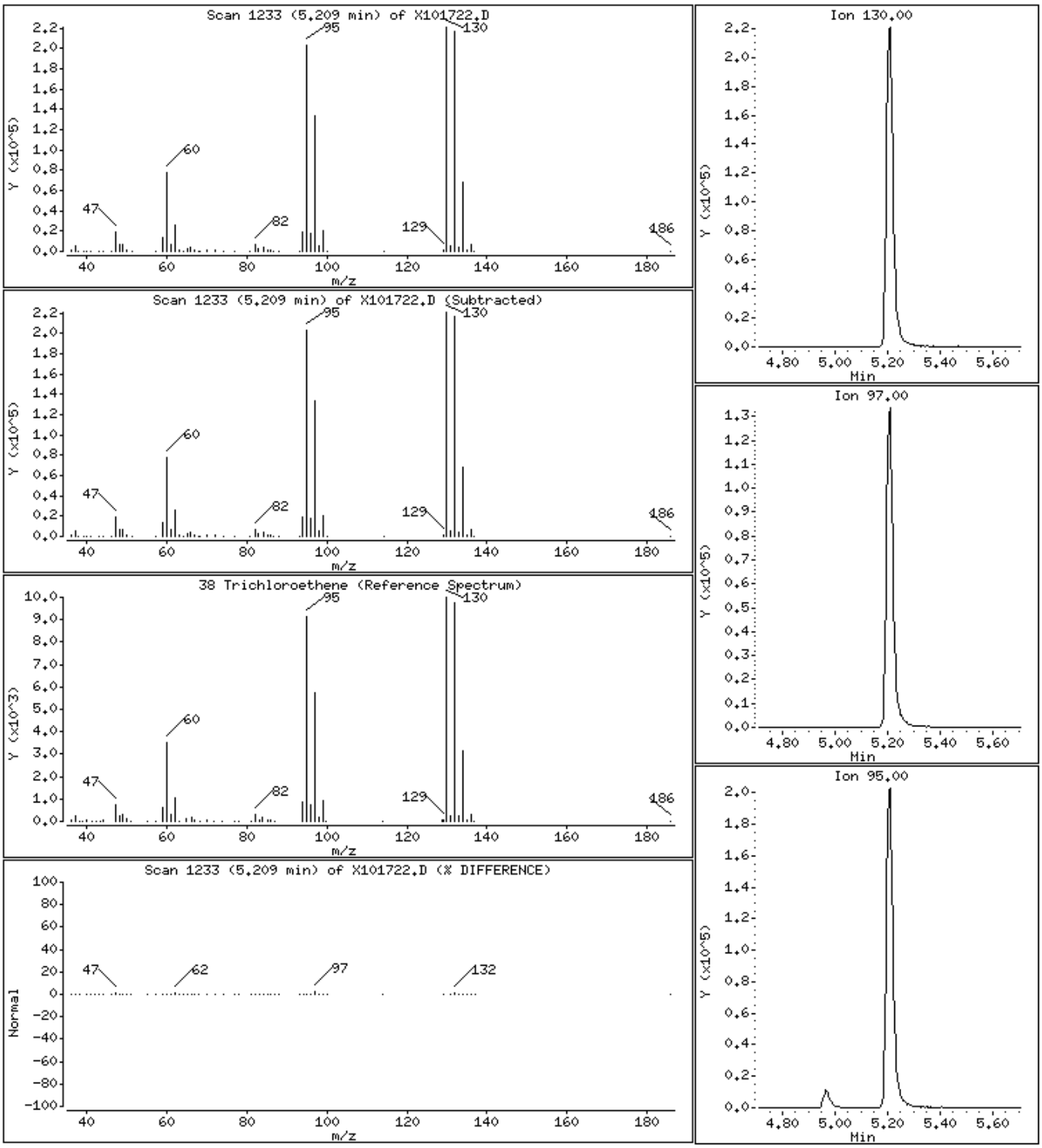
Client ID: HS22100575-02 Instrument: voa6.i

Sample Info: HS22100575-02;HS22100575-02;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

38 Trichloroethene Concentration: 718.81 ug/l



Data File : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101722.D
Inj Date : 17-OCT-2022 17:51
InstruID : voa6.i
LabSampID : HS22100575-02

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101723.D Page 1
Report Date: 27-Oct-2022 17:18

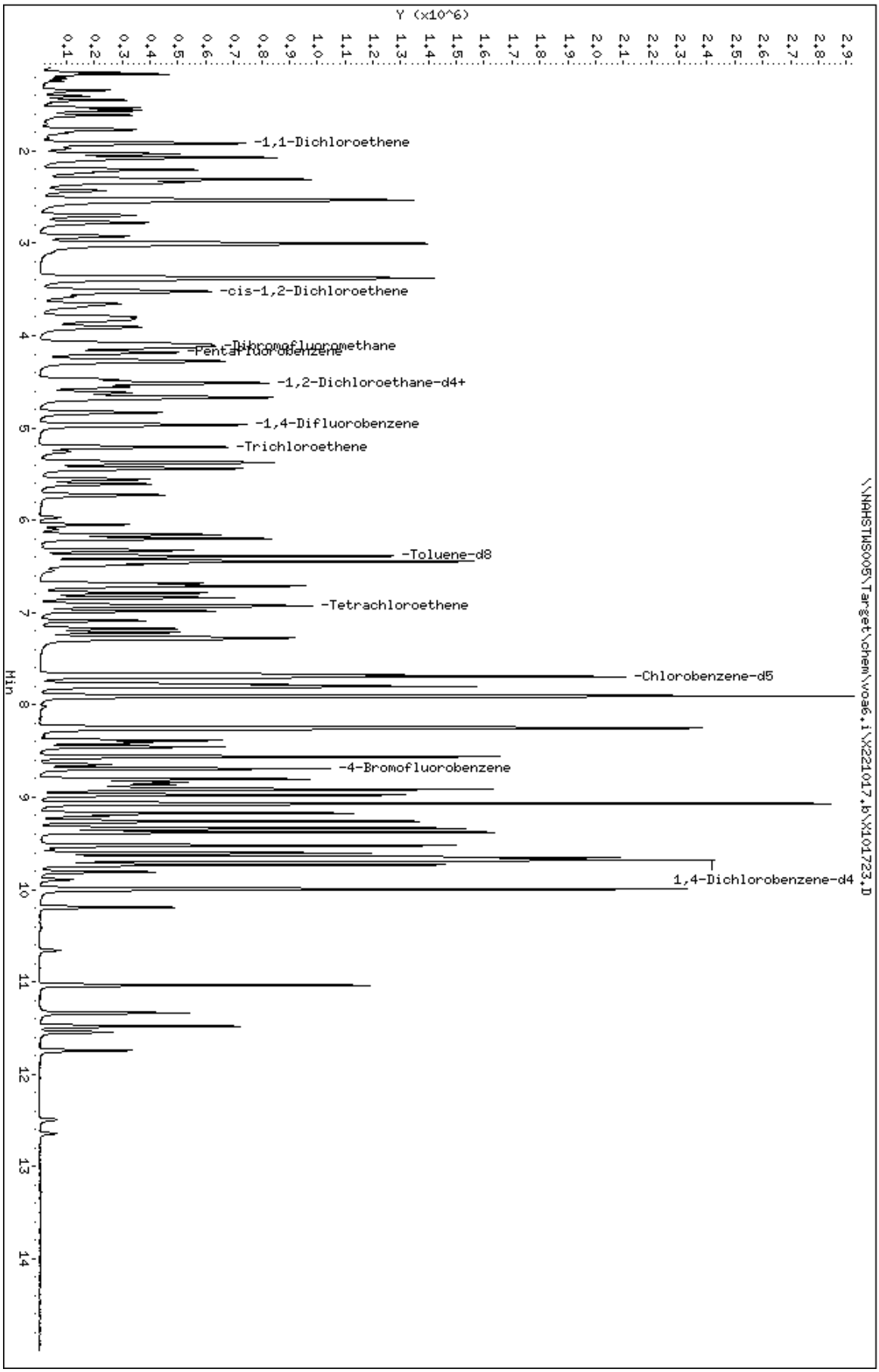
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101723.D
Lab Smp Id: CCV-END Client Smp ID: CCV-END
Inj Date : 17-OCT-2022 18:12
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\X221017.b\8260W.m
Meth Date : 27-Oct-2022 17:18 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 22 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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)	442220	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.099	(0.979)	204116	50.0000	51.26
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	201852	50.0000	51.34
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	655525	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	607836	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	768854	50.0000	50.47
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	287202	50.0000	52.98
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	306642	50.0000	
5 Vinyl Chloride	62	1.145	1.145	(0.274)	177581	50.0000	52.71
11 1,1-Dichloroethene	96	1.917	1.917	(0.458)	148702	50.0000	51.98
27 cis-1,2-Dichloroethene	96	3.529	3.529	(0.843)	230828	50.0000	49.97
33 1,2-Dichloroethane	62	4.556	4.556	(0.917)	248426	50.0000	51.35
38 Trichloroethene	130	5.208	5.208	(1.048)	240357	50.0000	48.74
56 Tetrachloroethene	164	6.929	6.929	(0.903)	202289	50.0000	48.11



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221017.b\X101723.D
Date : 17-OCT-2022 18:12
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\X221017.b\X101723.D
Inj Date : 17-OCT-2022 18:12
InstruID : voa6.i
LabSampID : CCV-END

NO MANUAL INTEGRATIONS

HS22100575-E2200994 Perchlorate Level IV Report

ALS WO# HS22100575

October 19, 2022 Service Request No:E2200994

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

Laboratory Results for: HS22100575

Dear Dane,

Enclosed are the results of the sample(s) submitted to our laboratory October 13, 2022
For your reference, these analyses have been assigned our service request number **E2200994.**

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.

Please contact me if you have any questions. My extension is 2188. You may also contact me via email at James.Guin@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

James Guin

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.:**	E2200994
Project:	HS22100575	**Date Received:**	10/13/22
Sample Matrix:	GW		

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

Nine samples were received for analysis at ALS Environmental in Houston on 10/13/22.

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:

EQ2200469-02/03: 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 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:**E2200994
Project: HS22100575

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2200994-001	50WW09-221010	10/10/2022	0750
E2200994-002	50WW08-221010	10/10/2022	0830
E2200994-003	50WW22-221010	10/10/2022	0910
E2200994-004	50WW23-221010	10/10/2022	0950
E2200994-005	50WW05-221010	10/10/2022	1035
E2200994-006	50WW15-221010	10/10/2022	1115
E2200994-007	50WW16-221010	10/10/2022	1200
E2200994-008	50WW16-221010-FD	10/10/2022	1200
E2200994-009	50WW18-221010	10/10/2022	1245

Service Request Summary

Folder #: **E2200994**
Client Name: ALS Environmental - US
Project Name: HS22100575
Project Number:

Report To: Dane Wacasey
ALS Group USA, Corp.
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-575-2190
Cell Number:
Fax Number: 281-530-5887
E-mail: dane.wacasey@alsglobal.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 10/13/22
Internal Due Date: 10/26/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS22100575
EDD: EQUIS
EFWEDD_LHAAP

9 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2200994-001	50WW09-221010	Ground Water	10/10/22 0750	**IV**
E2200994-002	50WW08-221010	Ground Water	10/10/22 0830	**IV**
E2200994-003	50WW22-221010	Ground Water	10/10/22 0910	**IV**
E2200994-004	50WW23-221010	Ground Water	10/10/22 0950	**IV**
E2200994-005	50WW05-221010	Ground Water	10/10/22 1035	**IV**
E2200994-006	50WW15-221010	Ground Water	10/10/22 1115	**IV**
E2200994-007	50WW16-221010	Ground Water	10/10/22 1200	**IV**
E2200994-008	50WW16-221010-FD	Ground Water	10/10/22 1200	**IV**
E2200994-009	50WW18-221010	Ground Water	10/10/22 1245	**IV**

Service Request Summary

Folder #: **E2200994**
Client Name: ALS Environmental - US
Project Name: HS22100575
Project Number:

Report To: Dane Wacasey
ALS Group USA, Corp.
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-575-2190
Cell Number:
Fax Number: 281-530-5887
E-mail: dane.wacasey@alsglobal.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 10/13/22
Internal Due Date: 10/26/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS22100575
EDD: EQUIS
EFWEDD_LHAAP

9 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	9	Level IV Due 11/2

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
Utah Department of Health Environmental Laboratory Certification	TX026932022-13	7/31/2023
Washington Department of Health	C819-2022	11/14/2022

Chain of Custody

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Subcontract Chain of Custody

SAMPLING STATE: Dept of Defense **COC ID:** 20092

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:	HS22100575
TSR:	Ron Martino

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS22100575-01**	**50WW09-221010**	**Groundwater**	**10 Oct 2022 07:50**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
2.	**HS22100575-02**	**50WW08-221010**	**Groundwater**	**10 Oct 2022 08:30**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
3.	**HS22100575-03**	**50WW22-221010**	**Groundwater**	**10 Oct 2022 09:10**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
4.	**HS22100575-04**	**50WW23-221010**	**Groundwater**	**10 Oct 2022 09:50**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
5.	**HS22100575-05**	**50WW05-221010**	**Groundwater**	**10 Oct 2022 10:35**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
6.	**HS22100575-06**	**50WW15-221010**	**Groundwater**	**10 Oct 2022 11:15**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
7.	**HS22100575-07**	**50WW16-221010**	**Groundwater**	**10 Oct 2022 12:00**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
8.	**HS22100575-08**	**50WW16-221010-FD**	**Groundwater**	**10 Oct 2022 12:00**

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID: 20092**

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
9.	**HS22100575-09**	**50WW18-221010**	**Groundwater**	**10 Oct 2022 12:45**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022

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

QC Level: DOD IV (DoD Data Package)

Relinquished By: NR Date/Time:

Received By: COREY G Date/Time: 10/11/22 0911

Cooler ID(s): Temperature(s):

12 Oct 2022 Page 1 of 2

ALS Environmental

Cooler Receipt Form

Project Chemist JG

Client/Project ALS

Thermometer ID IR41

Date/Time Received: 10/13/22 Initials: CA

Date/Time Logged in: 10/13/22 Initials CA

1. Method of delivery: ○ US Mail ○ Fed Ex ○ UPS ○ DHL ☒ Courier (ALS) ○ Client

2. Samples received in: ☒ Cooler ○ Box ○ Envelope ○ Other

3. Were custody seals on coolers? ○ Yes ☒ No

If yes, how many and where?

Were they intact? ○ Yes ○ No ☒ N/A

Were they signed and dated? ○ Yes ○ No ☒ N/A

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?
NA		10/13/22	0800	CA	4.8C	☒
						☐
						☐
						☐

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#: 408149 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 10/14/22 10:12

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2200993-001	50WW14-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
2	E2200993-002	50WW13-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
3	E2200993-003	50WW11-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
4	E2200993-004	50WW06-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
5	E2200993-005	50WW12-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
6	E2200993-006	50WW12-221011-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
7	E2200993-007	50WW29-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
8	E2200994-001	50WW09-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
9	E2200994-002	50WW08-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
10	E2200994-003	50WW22-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
11	E2200994-004	50WW23-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
12	E2200994-005	50WW05-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
13	E2200994-006	50WW15-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
14	E2200994-007	50WW16-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
15	E2200994-008	50WW16-221010-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
16	E2200994-009	50WW18-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
17	EQ2200469-01	MB		6850/ClO4 DOD			Liquid	10mL	
18	EQ2200469-02	LCS		6850/ClO4 DOD			Liquid	10mL	
19	EQ2200469-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
20	EQ2200469-04	50WW14-221011 MS	.01	6850/ClO4 DOD			Liquid	10mL	
21	EQ2200469-05	50WW14-221011 DMS	.01	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Perchlorate Intermediate Stock1 Inventory ID 222798 Logbook Ref: Perchlorate (1st Source) Expires On: 10/29/2022

EQ2200469-02	1.00µL	EQ2200469-03	1.00µL	EQ2200469-04	1.00µL	EQ2200469-05	1.00µL

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 225266 Logbook Ref: Perchlorate Internal Standard Expires On: 01/31/2023

E2200993-001	100.00µL	E2200993-002	100.00µL	E2200993-003	100.00µL	E2200993-004	100.00µL	E2200993-005	100.00µL	E2200993-006	100.00µL
E2200993-007	100.00µL	E2200994-001	100.00µL	E2200994-002	100.00µL	E2200994-003	100.00µL	E2200994-004	100.00µL	E2200994-005	100.00µL
E2200994-006	100.00µL	E2200994-007	100.00µL	E2200994-008	100.00µL	E2200994-009	100.00µL	EQ2200469-01	100.00µL	EQ2200469-02	100.00µL
EQ2200469-03	100.00µL	EQ2200469-04	100.00µL	EQ2200469-05	100.00µL						

Printed 10/19/22 11:18

Preparation Information Benchsheet

Prep Run#: 408149 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 10/14/22 10:12

Preparation Materials

Water HPLC Grade	09/22/22 Water (225106)	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: 10/14/22 10:12
Finished: 10/14/22 10:31
By: XMI
Comments

Comments:

Reviewed By: GR Date: 10/14/22

Chain of Custody

Relinquished By: Date:

Received By: Date:

Extracts Examined
Yes No

Analytical Results

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ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 0750
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW09-221010	**Units:**	µg/L
Lab Code:	E2200994-001	**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	**0.118**		0.100	0.0500	0.0250	1	10/14/22	10/18/22 10:46	408149	781799	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 0830
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW08-221010	**Units:**	µg/L
Lab Code:	E2200994-002	**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	**31.1**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 19:29	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 0910
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW22-221010	**Units:**	µg/L
Lab Code:	E2200994-003	**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	**0.269**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 19:37	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 0950
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW23-221010	**Units:**	µg/L
Lab Code:	E2200994-004	**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	**0.142**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 19:46	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 1035
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW05-221010	**Units:**	µg/L
Lab Code:	E2200994-005	**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	**0.109**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 19:54	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 1115
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW15-221010	**Units:**	µg/L
Lab Code:	E2200994-006	**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	**0.0301**	J	0.100	0.0500	0.0250	1	10/14/22	10/17/22 20:02	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 1200
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW16-221010	**Units:**	µg/L
Lab Code:	E2200994-007	**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	ND	U	0.100	0.0500	0.0250	1	10/14/22	10/17/22 20:11	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 1200
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW16-221010-FD	**Units:**	µg/L
Lab Code:	E2200994-008	**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	ND	U	0.100	0.0500	0.0250	1	10/14/22	10/17/22 20:28	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	10/10/22 1245
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW18-221010	**Units:**	µg/L
Lab Code:	E2200994-009	**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	ND	U	0.100	0.0500	0.0250	1	10/14/22	10/17/22 20:36	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2200469-01	**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	10/14/22	10/17/22 17:23	408149	781288	

Accuracy & Precision

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

QA/QC Report

Client: ALS Environmental - US
Project: HS22100575
Sample Matrix: Ground Water

Service Request: E2200994
Date Analyzed: 10/17/22

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: 408149

	Lab Control Sample EQ2200469-02			Duplicate Lab Control Sample EQ2200469-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.114	0.100	114	0.103	0.100	103	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:**	E2200994
Project:	HS22100575	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200469-02	**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	**0.114**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 17:31	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200469-03	**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	**0.103**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 17:40	408149	781288	

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

20221013

1st Review: XMI
2nd Review: Kneir

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 10/13/2022
Cal. Std. xp: 1/31/2023
ICAL ID: EC2200014

Mobile Phases A:0.10% Formic Acid/Water 3210301-02 B:MeOH 224417

	Sample Name	File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	PERCHLORATE1	20221013_016	Perchlorate6850c.lcm	1x	☒	225390	10/13/2022 10:53
2	PERCHLORATE2	20221013_017	Perchlorate6850c.lcm	1x	☒	225392	10/13/2022 11:02
3	PERCHLORATE3	20221013_018	Perchlorate6850c.lcm	1x	☒	225393	10/13/2022 11:10
4	PERCHLORATE4	20221013_019	Perchlorate6850c.lcm	1x	☒	225394	10/13/2022 11:19
5	PERCHLORATE5	20221013_020	Perchlorate6850c.lcm	1x	☒	225395	10/13/2022 11:27
6	PERCHLORATE6	20221013_021	Perchlorate6850c.lcm	1x	☒	225396	10/13/2022 11:35
7	PERCHLORATE7	20221013_022	Perchlorate6850c.lcm	1x	☒	225398	10/13/2022 11:44
8	PERCHLORATE8	20221013_023	Perchlorate6850c.lcm	1x	☒	225400	10/13/2022 11:52
9	PERCHLORATE9	20221013_024	Perchlorate6850c.lcm	1x	☒	225401	10/13/2022 12:01
10	PERCHLORATE10	20221013_025	Perchlorate6850c.lcm	1x	☒	225402	10/13/2022 12:09
11	PERCHLORATEICV	20221013_026	Perchlorate6850c.lcm	1x	☒	225404	10/13/2022 12:17
12	LODV	20221013_027	Perchlorate6850c.lcm	1x	☒	DNU-IR	10/13/2022 12:26
13	MB	20221013_028	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 12:34
14	LCS	20221013_029	Perchlorate6850c.lcm	1x	☒	IDOC-DNU-IR	10/13/2022 12:42
15	DLCS	20221013_030	Perchlorate6850c.lcm	1x	☒	IDOC-DNU-IR	10/13/2022 12:51
16	IB	20221013_031	Perchlorate6850c.lcm	1x	☒		10/13/2022 12:59
17	IB	20221013_032	Perchlorate6850c.lcm	1x	☒		10/13/2022 13:08
18	IB	20221013_033	Perchlorate6850c.lcm	1x	☒		10/13/2022 13:16
19	null	20221013_034	Perchlorate6850c.lcm	1x	☒		10/13/2022 13:21
20	null	20221013_035	Perchlorate6850c.lcm	1x	☒		10/13/2022 13:27
21	IB	20221013_036	Perchlorate6850c.lcm	1x	☒		10/13/2022 14:02
22	IB	20221013_037	Perchlorate6850c.lcm	1x	☒		10/13/2022 14:10
23	LODV	20221013_038	Perchlorate6850c.lcm	1x	☒	225199	10/13/2022 14:19
24	PERCHLORATE7	20221013_039	Perchlorate6850c.lcm	1x	☒	225398	10/13/2022 14:27
25	MB	20221013_040	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 14:44
26	LCS	20221013_041	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 14:52
27	DLCS	20221013_042	Perchlorate6850c.lcm	1x	☒	IDOC-DNU-IR	10/13/2022 15:01
28	LCS	20221013_043	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 15:09
29	DLCS	20221013_044	Perchlorate6850c.lcm	1x	☒	IDOC	10/13/2022 15:17
30	MB WIPE-1013PREP	20221013_045	Perchlorate6850c.lcm	1x	☒	DNU-IR	10/13/2022 15:26
31	MB WIPE-1013PREP	20221013_046	Perchlorate6850c.lcm	1x	☒	DNU-IR	10/13/2022 14:35
32	PERCHLORATE7	20221013_047	Perchlorate6850c.lcm	1x	☒	225398	10/13/2022 15:34
33	IB	20221013_048	Perchlorate6850c.lcm	1x	☒		10/13/2022 15:43
34	IB	20221013_049	Perchlorate6850c.lcm	1x	☒		10/13/2022 15:51
35	null	20221013_050	Perchlorate6850c.lcm	1x	☒		10/13/2022 15:56
36	null	20221013_051	Perchlorate6850c.lcm	1x	☒		10/13/2022 16:02

Initial Calibration - Detailed Report

Calibration ID: EC2200014 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2200014-01	PERCHLORATE1	20221013_016	10/13/2022 10:53
02	EC2200014-02	PERCHLORATE2	20221013_017	10/13/2022 11:02
03	EC2200014-03	PERCHLORATE3	20221013_018	10/13/2022 11:10
04	EC2200014-04	PERCHLORATE4	20221013_019	10/13/2022 11:19
05	EC2200014-05	PERCHLORATE5	20221013_020	10/13/2022 11:27
06	EC2200014-06	PERCHLORATE6	20221013_021	10/13/2022 11:35
07	EC2200014-07	PERCHLORATE7	20221013_022	10/13/2022 11:44
08	EC2200014-08	PERCHLORATE8	20221013_023	10/13/2022 11:52
09	EC2200014-09	PERCHLORATE9	20221013_024	10/13/2022 12:01
10	EC2200014-10	PERCHLORATE10	20221013_025	10/13/2022 12:09

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 5.871** **Average RF = 0.1347**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1373	02	0.5000	0.1357	03	0.7000	0.1336	04	1.0000	0.1416
05	2.0000	0.1235	06	5.0000	0.1283	07	10.0000	0.1522	08	20.0000	0.1315
09	30.0000	0.1332	10	50.0000	0.1302						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.102	1.9	02	0.5000	0.504	0.7	03	0.7000	0.694	-0.8
04	1.0000	1.05	5.1	05	2.0000	1.83	-8.3	06	5.0000	4.76	-4.8
07	10.0000	11.3	13.0	08	20.0000	19.5	-2.4	09	30.0000	29.7	-1.1
10	50.0000	48.3	-3.3								

Initial Calibration Verification Summary Report

Calibration ID:	EC2200014	**Instrument ID:**	E-LCMS-01
Datafile ID:	20221013_026	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2200014-11	T	Average RF	10	10.918	ng/mL	9.2	<= 15

Insight Report

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Project File: I:\LCMS01\DATA\20221013ICAL\10132022_ICAL.damlp

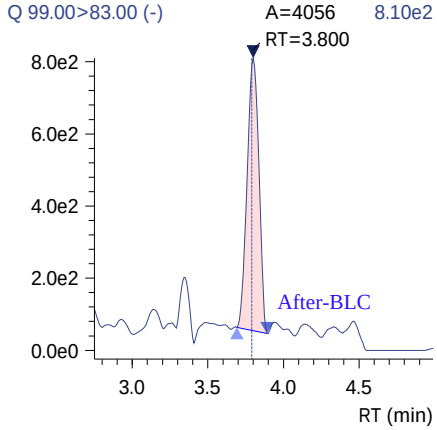
PERCHLORATE1

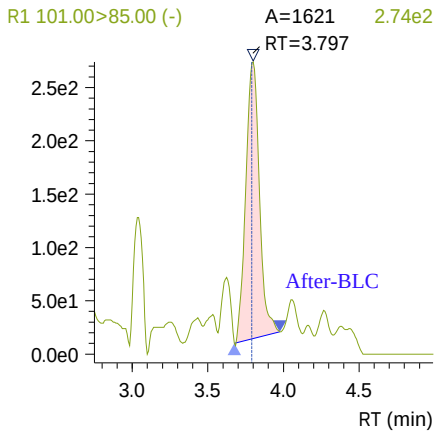
Sample ID: PERCHLORATE1
Date Acquired: 10/13/2022 10:53:53 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_016.lcd
Vial: 38 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.800	4056	295377	0.1019	ng/mL	101.00 >85.00	39.97	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	295377	295377	1.0000	ng/mL	----	----	

Perchlorate

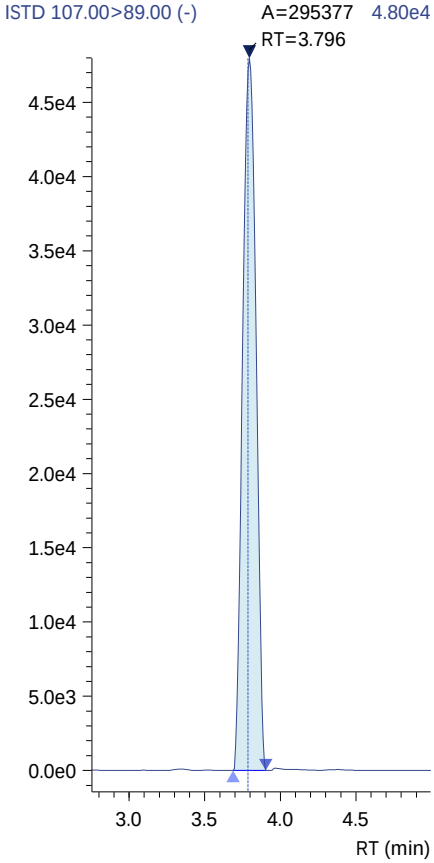
Conc 0.1019
R#1 39.97 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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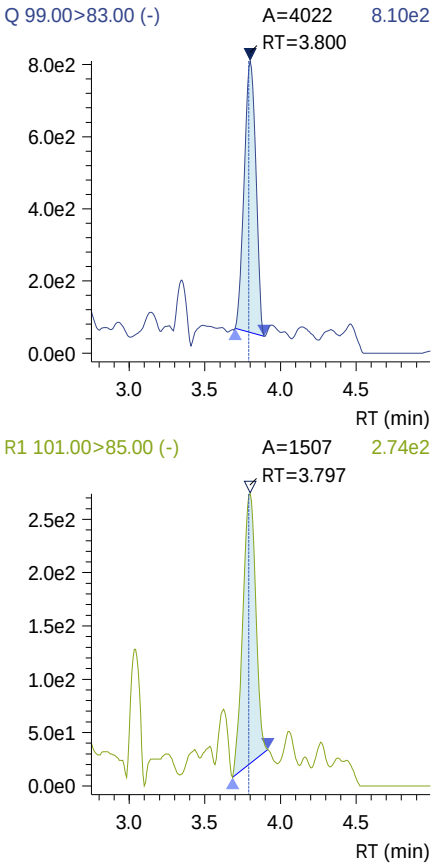
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Project File: I:\LCMS01\DATA\20221013ICAL\20221013ICAL.damlp

PERCHLORATE1

Sample ID: PERCHLORATE1
Date Acquired: 10/13/2022 10:53:53 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_016.lcd
Vial: 38 | Inj. Volume: 25.0000uL | Tray: 1

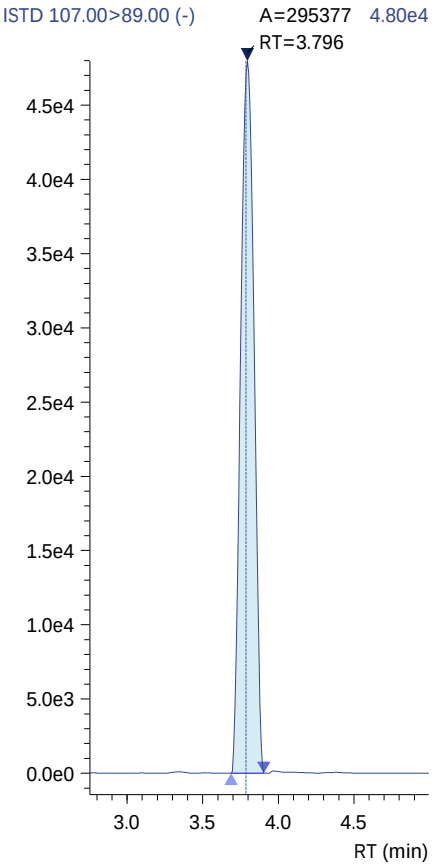
Perchlorate

Conc 0.1012
R#1 37.47 (33.91)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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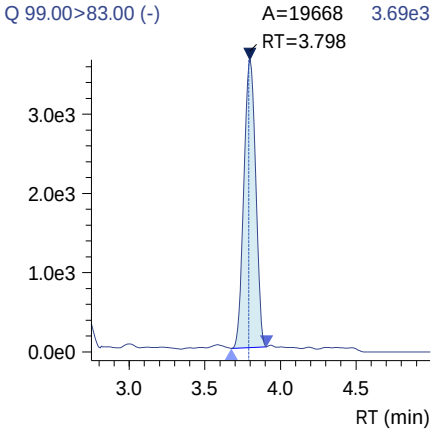
PERCHLORATE2

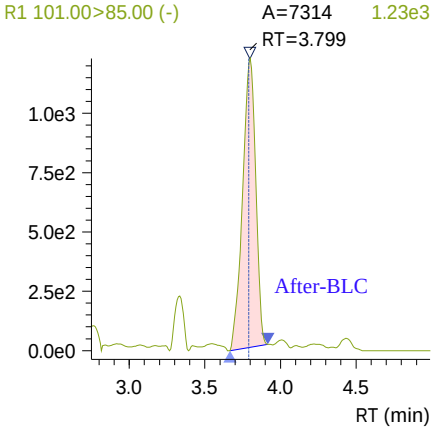
Sample ID: PERCHLORATE2
Date Acquired: 10/13/2022 11:02:18 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_017.lcd
Vial: 39 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.798	19668	289981	0.5035	ng/mL	101.00 >85.00	37.19	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	289981	289981	1.0000	ng/mL	----	----	

Perchlorate

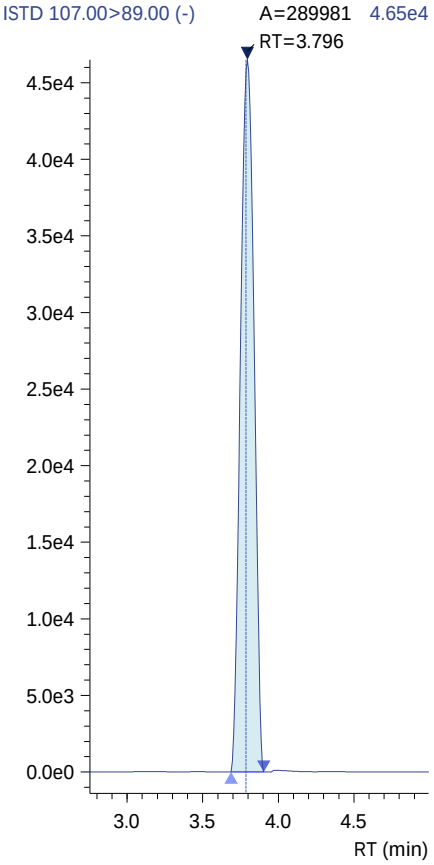
Conc 0.5035
R#1 37.19 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 9:43:49 AM

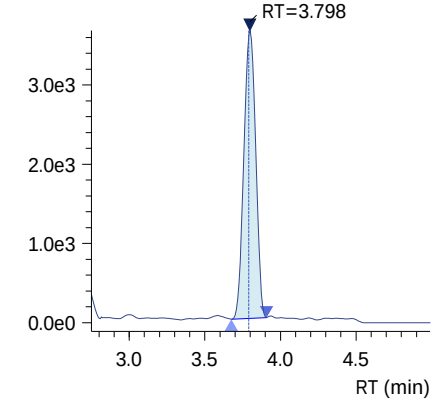
PERCHLORATE2

Sample ID: PERCHLORATE2
Date Acquired: 10/13/2022 11:02:18 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_017.lcd
Vial: 39 | Inj. Volume: 25.0000uL | Tray: 1

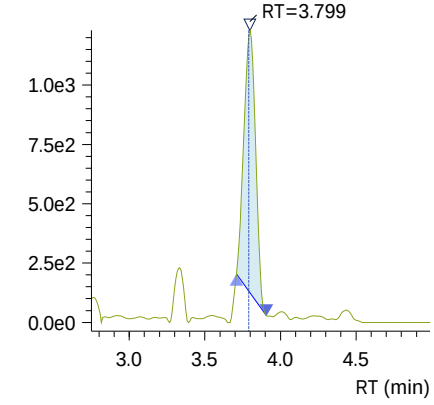
Perchlorate

Conc 0.5040
R#1 29.91 (33.91)

Q 99.00>83.00 (-) A=19668 3.69e3
RT=3.798



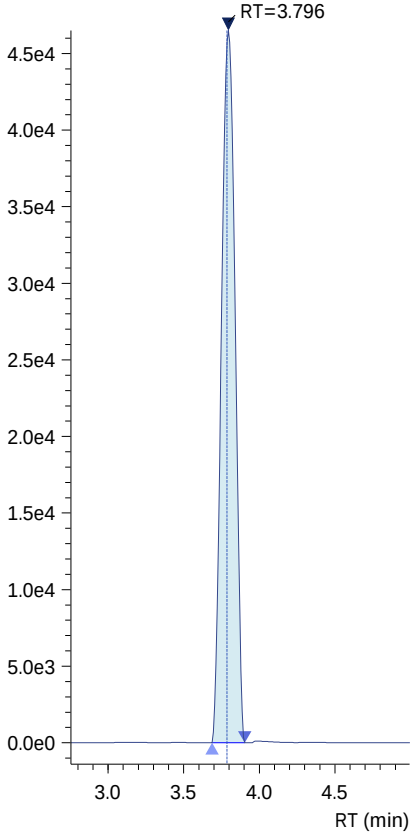
R1 101.00>85.00 (-) A=5882 1.23e3
RT=3.799



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=289981 4.65e4
RT=3.796



Insight Report

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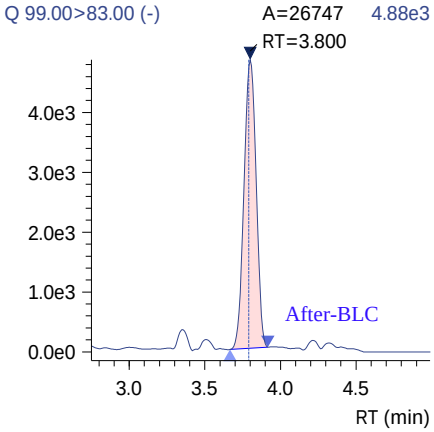
PERCHLORATE3

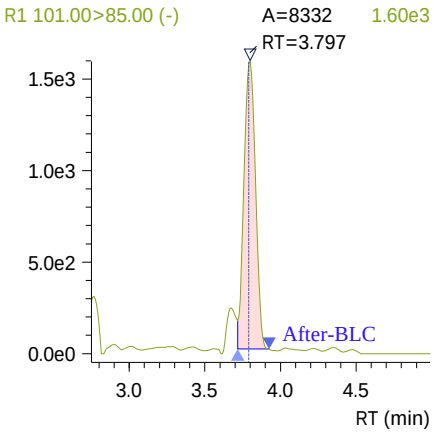
Sample ID: PERCHLORATE3
Date Acquired: 10/13/2022 11:10:43 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_018.lcd
Vial: 40 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.800	26747	286041	0.6942	ng/mL	101.00 >85.00	31.15	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	286041	286041	1.0000	ng/mL	----	----	

Perchlorate

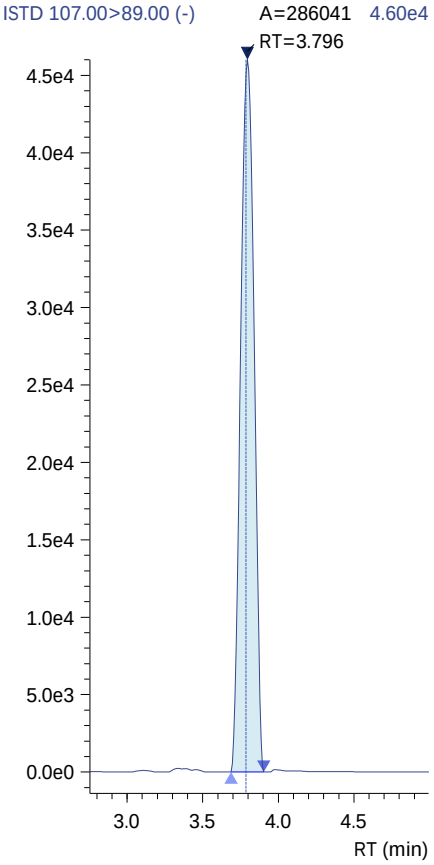
Conc 0.6942
R#1 31.15 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 9:43:49 AM

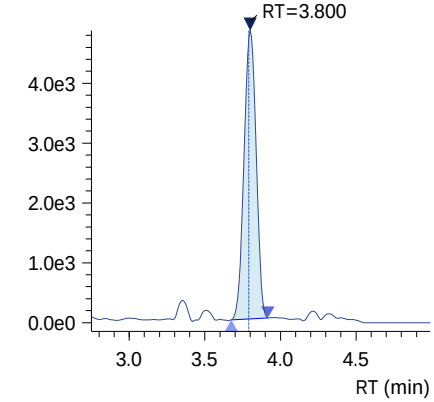
PERCHLORATE3

Sample ID: PERCHLORATE3
Date Acquired: 10/13/2022 11:10:43 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_018.lcd
Vial: 40 | Inj. Volume: 25.0000uL | Tray: 1

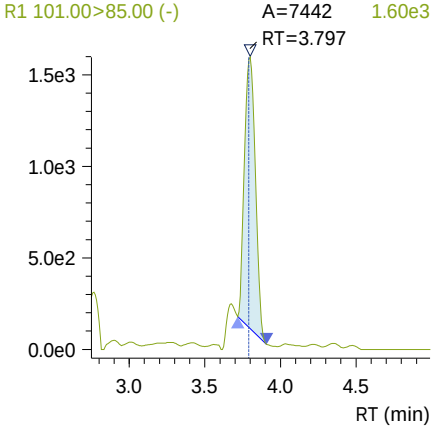
Perchlorate

Conc 0.6936
R#1 27.88 (33.91)

Q 99.00>83.00 (-) A=26697 4.88e3



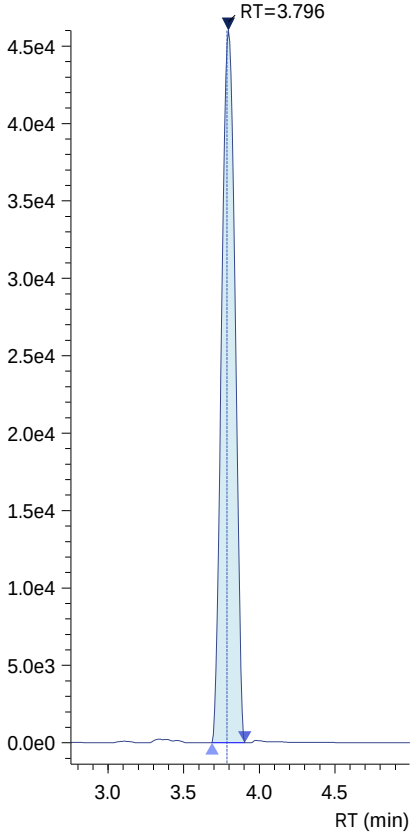
R1 101.00>85.00 (-) A=7442 1.60e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=286041 4.60e4



Insight Report

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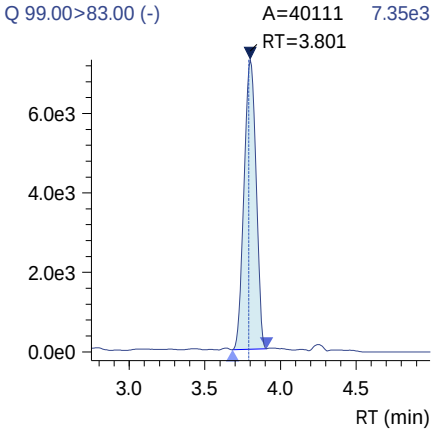
PERCHLORATE4

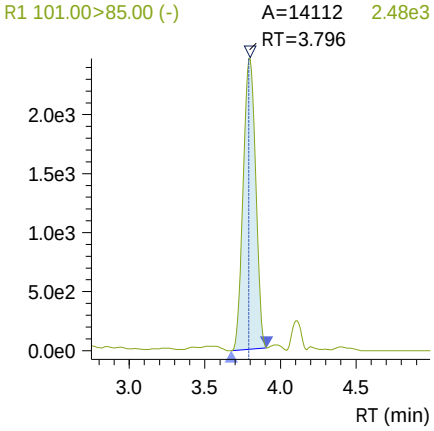
Sample ID: PERCHLORATE4
Date Acquired: 10/13/2022 11:19:07 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_019.lcd
Vial: 41 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.801	40111	283200	1.0514	ng/mL	101.00 >85.00	35.18	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.797	283200	283200	1.0000	ng/mL	----	----	

Perchlorate

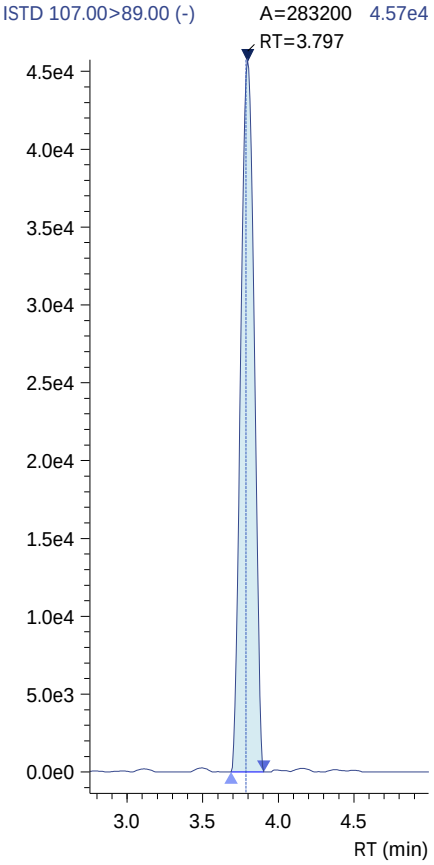
Conc 1.0514
R#1 35.18 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

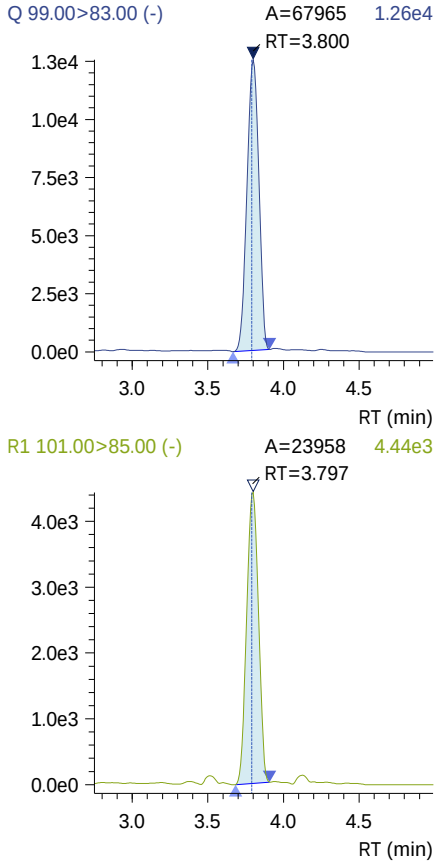
PERCHLORATE5

Sample ID: PERCHLORATE5
Date Acquired: 10/13/2022 11:27:29 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_020.lcd
Vial: 42 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.800	67965	275186	1.8335	ng/mL	101.00 >85.00	35.25	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	275186	275186	1.0000	ng/mL	----	----	

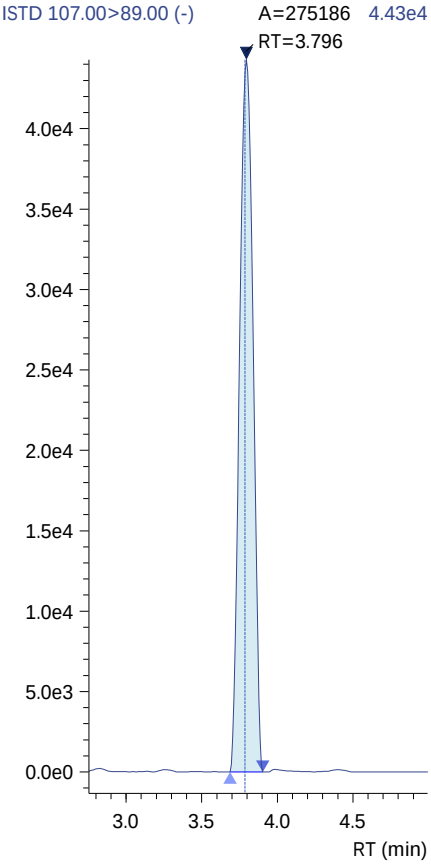
Perchlorate

Conc 1.8335
R#1 35.25 (34.20)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

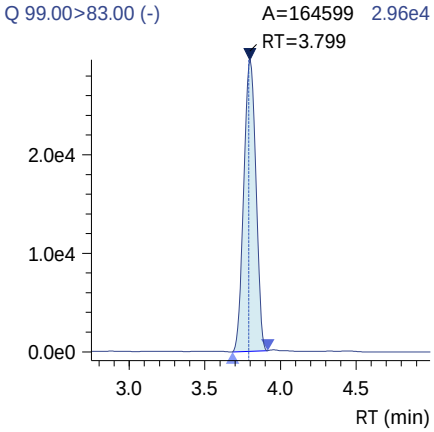
PERCHLORATE6

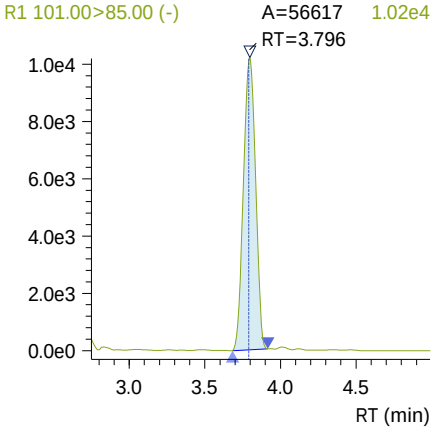
Sample ID: PERCHLORATE6
Date Acquired: 10/13/2022 11:35:51 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_021.lcd
Vial: 43 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.799	164599	256637	4.7613	ng/mL	101.00 >85.00	34.40	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	256637	256637	1.0000	ng/mL	----	----	

Perchlorate

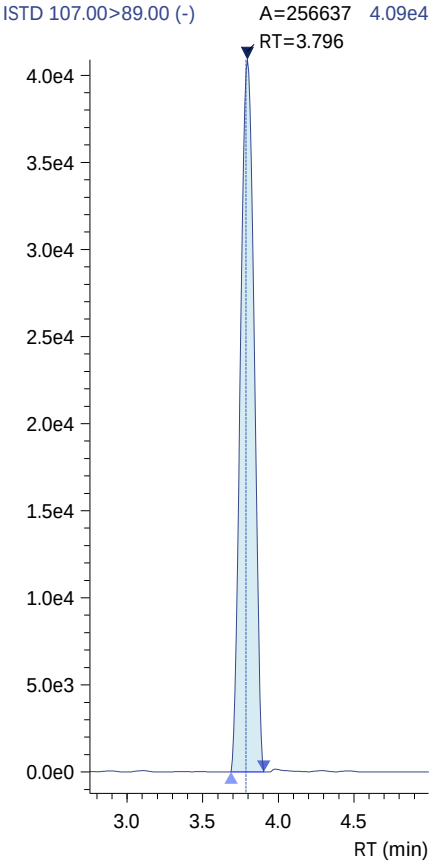
Conc 4.7613
R#1 34.40 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

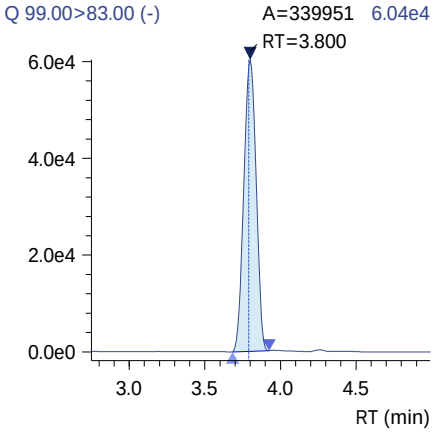
PERCHLORATE7

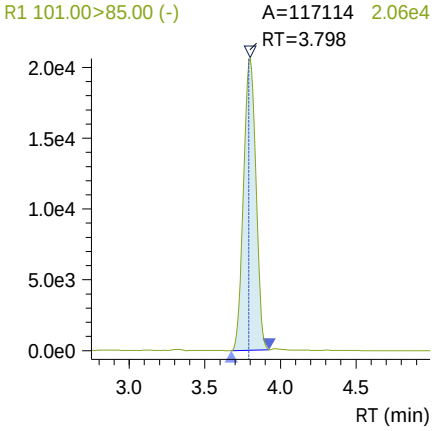
Sample ID: PERCHLORATE7
Date Acquired: 10/13/2022 11:44:14 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_022.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.800	339951	223356	11.2988	ng/mL	101.00 >85.00	34.45	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.796	223356	223356	1.0000	ng/mL	----	----	

Perchlorate

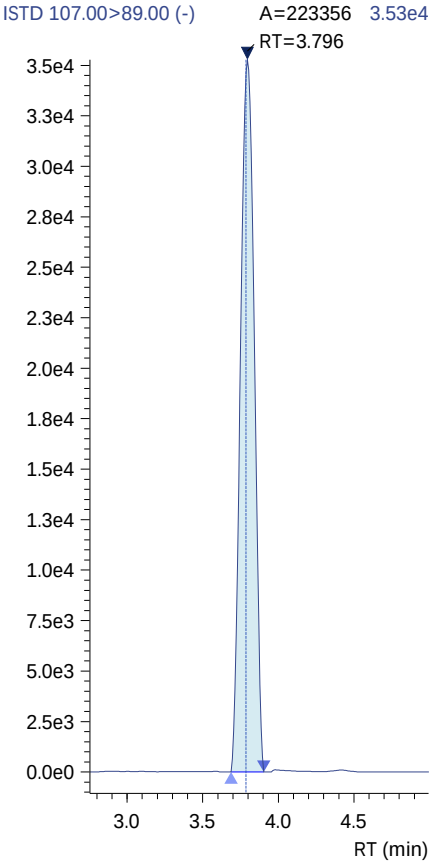
Conc 11.2988
R#1 34.45 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

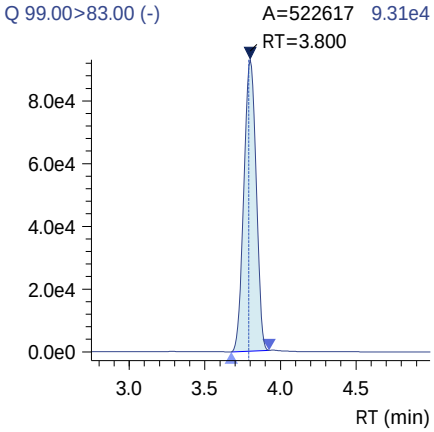
PERCHLORATE8

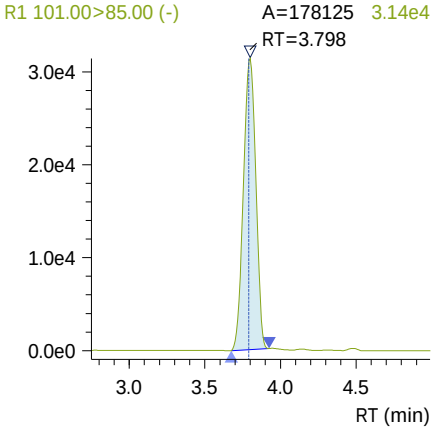
Sample ID: PERCHLORATE8
Date Acquired: 10/13/2022 11:52:37 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_023.lcd
Vial: 45 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.800	522617	198677	19.5 276	ng/mL	101.00 >85.00	34.08	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.797	198677	198677	1.0000	ng/mL	----	----	

Perchlorate

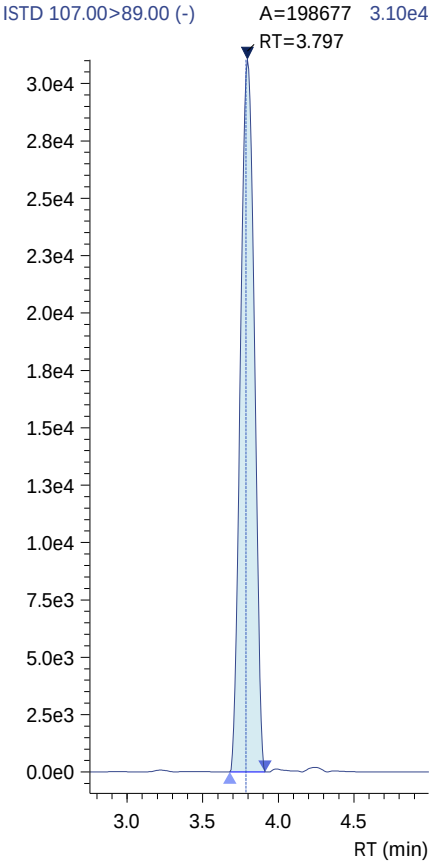
Conc 19.5276
R#1 34.08 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

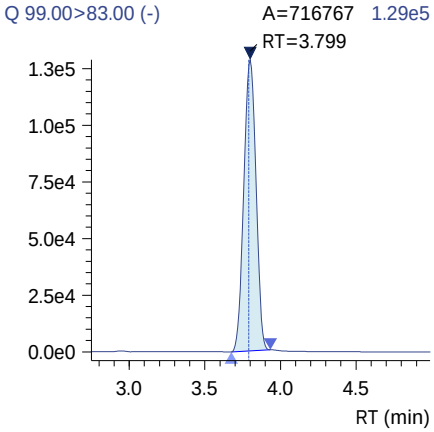
PERCHLORATE9

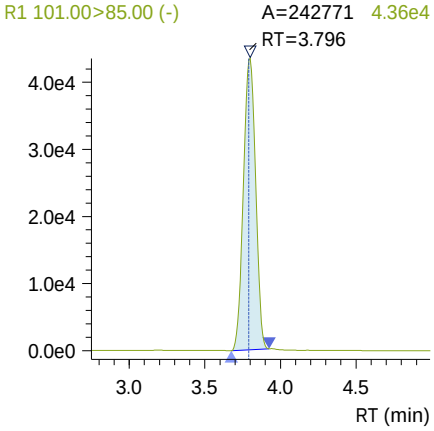
Sample ID: PERCHLORATE9
Date Acquired: 10/13/2022 12:01:03 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_024.lcd
Vial: 46 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.799	716767	179402	29.6596	ng/mL	101.00 >85.00	33.87	23.94 -44.46
Sodium Perchlorate-18O4_IS	Auto	3.796	179402	179402	1.0000	ng/mL	----	----	

Perchlorate

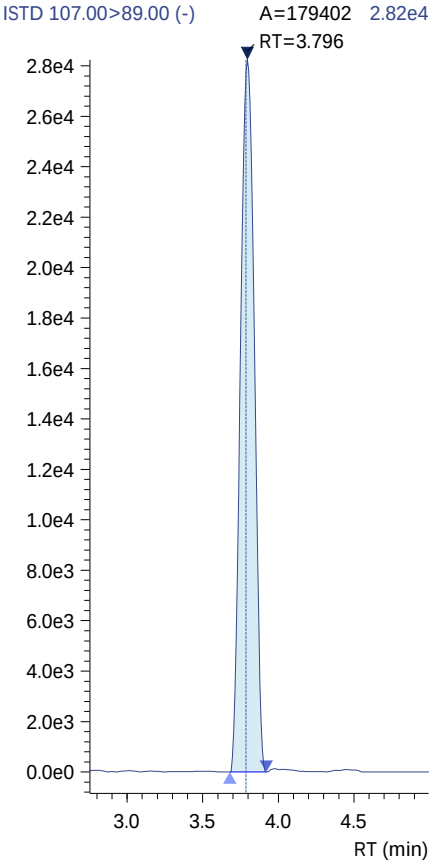
Conc 29.6596
R#1 33.87 (34.20)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/24/2022 11:16:28 AM

PERCHLORATE10

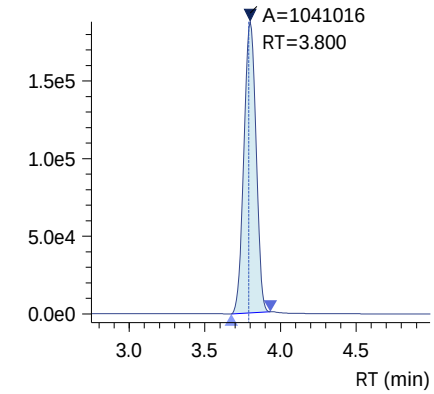
Sample ID: PERCHLORATE10
Date Acquired: 10/13/2022 12:09:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_025.lcd
Vial: 47 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.800	10410	159903	48.3	ng/mL	101.00	34.31	23.94
			16		299		>85.00		-44.46
Sodium Perchlorate -18O4_IS	Auto	3.796	159903	159903	1.0000	ng/mL	----	----	

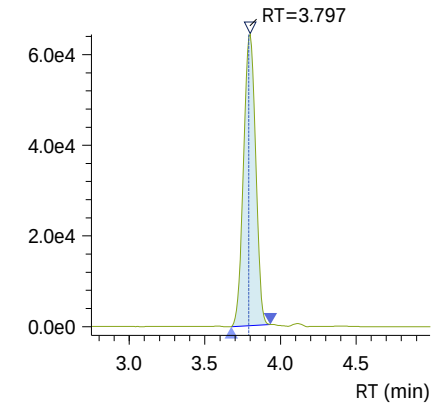
Perchlorate

Conc 48.3299
R#1 34.31 (34.20)

Q 99.00>83.00 (-) 1.88e5



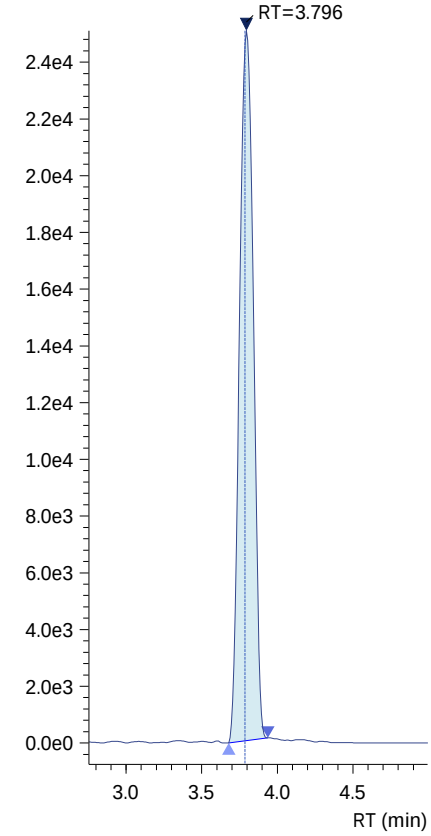
R1 101.00>85.00 (-) A=357160 6.44e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=159903 2.51e4



Insight Report

Printed at 10/24/2022 11:16:28 AM

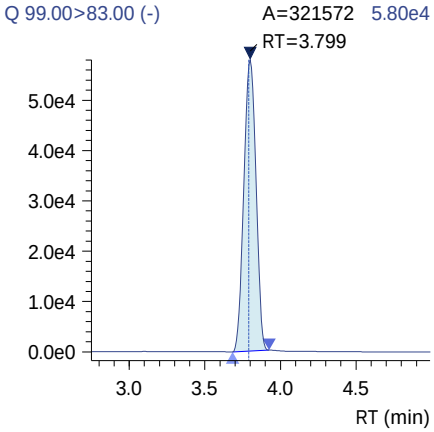
PERCHLORATEICV

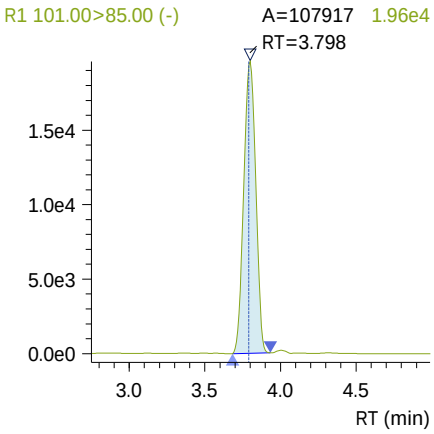
Sample ID: PERCHLORATEICV
Date Acquired: 10/13/2022 12:17:49 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221013ICAL\20221013_026.lcd
Vial: 48 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.799	321572	218649	10.9 180	ng/mL	101.00 >85.00	33.56	23.94 -44.46
Sodium Perchlorate -18O4_IS	Auto	3.797	218649	218649	1.0000	ng/mL	----	----	

Perchlorate

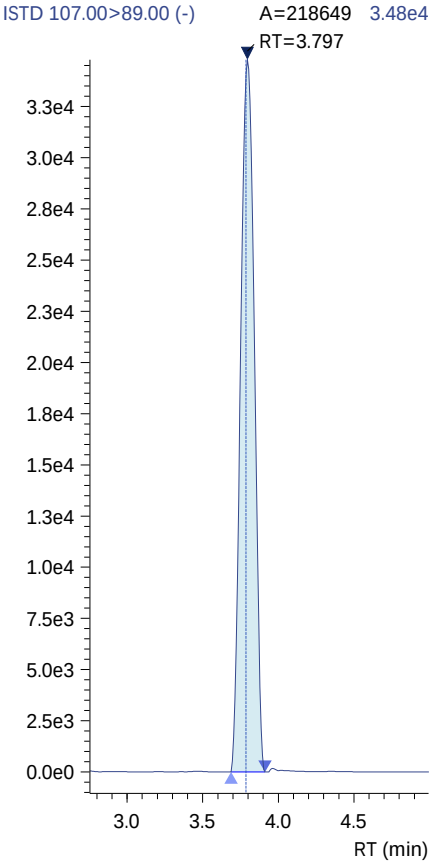
Conc 10.9180
R#1 33.56 (34.20)





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

20221017

1st Review: XMI
2nd Review: Kneir

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 10/13/2022
Cal. Std. xp: 1/31/2023
ICAL ID: EC2200014

Mobile Phases A:0.10% Formic Acid/Water 3210301-02 B:MeOH 224417

	Sample Name	File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	IB	20221017_006	Perchlorate6850c.lcm	1x	☒		10/17/2022 9:48
2	IB	20221017_007	Perchlorate6850c.lcm	1x	☒		10/17/2022 9:56
3	ICS	20221017_008	Perchlorate6850c.lcm	1x	☒	DNU-reinject	10/17/2022 10:05
4	LODV	20221017_009	Perchlorate6850c.lcm	1x	☒	225199	10/17/2022 10:13
5	ICS	20221017_010	Perchlorate6850c.lcm	1x	☒		10/17/2022 14:02
6	PERCHLORATE7	20221017_011	Perchlorate6850c.lcm	1x	☒	225398	10/17/2022 14:10
7	EQ2200467-01	20221017_012	Perchlorate6850c.lcm	1x	☒		10/17/2022 14:18
8	EQ2200467-02	20221017_013	Perchlorate6850c.lcm	1x	☒		10/17/2022 14:27
9	EQ2200467-03	20221017_014	Perchlorate6850c.lcm	1x	☒		10/17/2022 14:35
10	EQ2200467-04	20221017_015	Perchlorate6850c.lcm	1x	☒		10/17/2022 14:44
11	EQ2200467-05	20221017_016	Perchlorate6850c.lcm	1x	☒		10/17/2022 14:52
12	E2200988-001	20221017_017	Perchlorate6850c.lcm	1x	☒		10/17/2022 15:00
13	E2200988-002	20221017_018	Perchlorate6850c.lcm	1x	☒		10/17/2022 15:09
14	E2200974-001	20221017_019	Perchlorate6850c.lcm	1x	☒		10/17/2022 15:17
15	E2200974-002	20221017_020	Perchlorate6850c.lcm	1x	☒	DNU-reinject for IR	10/17/2022 15:25
16	E2200974-003	20221017_021	Perchlorate6850c.lcm	1x	☒		10/17/2022 15:34
17	PERCHLORATE7	20221017_022	Perchlorate6850c.lcm	1x	☒	225398	10/17/2022 15:42
18	E2200974-004	20221017_023	Perchlorate6850c.lcm	1x	☒		10/17/2022 15:51
19	E2200974-005	20221017_024	Perchlorate6850c.lcm	1000x	☒		10/17/2022 15:59
20	E2200974-006	20221017_025	Perchlorate6850c.lcm	5000x	☒		10/17/2022 16:07
21	R2209422-006	20221017_026	Perchlorate6850c.lcm	1x	☒		10/17/2022 16:16
22	R2209422-013	20221017_027	Perchlorate6850c.lcm	1x	☒		10/17/2022 16:24
23	R2209491-019	20221017_028	Perchlorate6850c.lcm	1x	☒		10/17/2022 16:33
24	R2209491-023	20221017_029	Perchlorate6850c.lcm	1x	☒		10/17/2022 16:41
25	R2209637-008	20221017_030	Perchlorate6850c.lcm	1x	☒		10/17/2022 16:49
26	R2209637-016	20221017_031	Perchlorate6850c.lcm	1x	☒		10/17/2022 16:58
27	E2200974-002	20221017_032	Perchlorate6850c.lcm	1x	☒	DNU-reinject for IR	10/17/2022 17:06
28	PERCHLORATE7	20221017_033	Perchlorate6850c.lcm	1x	☒	225398	10/17/2022 17:14
29	EQ2200469-01	20221017_034	Perchlorate6850c.lcm	1x	☒		10/17/2022 17:23
30	EQ2200469-02	20221017_035	Perchlorate6850c.lcm	1x	☒		10/17/2022 17:31
31	EQ2200469-03	20221017_036	Perchlorate6850c.lcm	1x	☒		10/17/2022 17:40
32	EQ2200469-04	20221017_037	Perchlorate6850c.lcm	1x	☒		10/17/2022 17:48
33	EQ2200469-05	20221017_038	Perchlorate6850c.lcm	1x	☒	DNU-reinject	10/17/2022 17:56
34	E2200993-001	20221017_039	Perchlorate6850c.lcm	1x	☒		10/17/2022 18:05
35	E2200993-002	20221017_040	Perchlorate6850c.lcm	200x	☒		10/17/2022 18:13
36	E2200993-003	20221017_041	Perchlorate6850c.lcm	200x	☒		10/17/2022 18:22
37	E2200993-004	20221017_042	Perchlorate6850c.lcm	10x	☒		10/17/2022 18:30
38	E2200993-005	20221017_043	Perchlorate6850c.lcm	1000x	☒		10/17/2022 18:38
39	PERCHLORATE7	20221017_044	Perchlorate6850c.lcm	1x	☒	225398	10/17/2022 18:47
40	E2200993-006	20221017_045	Perchlorate6850c.lcm	1000x	☒		10/17/2022 18:55
41	IB	20221017_046	Perchlorate6850c.lcm	1x	☒		10/17/2022 19:04
42	E2200993-007	20221017_047	Perchlorate6850c.lcm	1x	☒		10/17/2022 19:12
43	E2200994-001	20221017_048	Perchlorate6850c.lcm	1x	☒	DNU-reinject for IR	10/17/2022 19:20
44	E2200994-002	20221017_049	Perchlorate6850c.lcm	1x	☒		10/17/2022 19:29
45	E2200994-003	20221017_050	Perchlorate6850c.lcm	1x	☒		10/17/2022 19:37
46	E2200994-004	20221017_051	Perchlorate6850c.lcm	1x	☒		10/17/2022 19:46
47	E2200994-005	20221017_052	Perchlorate6850c.lcm	1x	☒		10/17/2022 19:54
48	E2200994-006	20221017_053	Perchlorate6850c.lcm	1x	☒		10/17/2022 20:02
49	E2200994-007	20221017_054	Perchlorate6850c.lcm	1x	☒		10/17/2022 20:11
50	PERCHLORATE7	20221017_055	Perchlorate6850c.lcm	1x	☒	225398	10/17/2022 20:19

I:\LCMS01\InjectionLogs\LCMS01_20221017injection log

20221017

1st Review: XMI
2nd Review: Kneir

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 10/13/2022
Cal. Std. xp: 1/31/2023
ICAL ID: EC2200014

Mobile Phases A:0.10% Formic Acid/Water 3210301-02 B:MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
51	E2200994-008		20221017_056	Perchlorate6850c.lcm	1x	☒		10/17/2022 20:28
52	E2200994-009		20221017_057	Perchlorate6850c.lcm	1x	☒		10/17/2022 20:36
53	E2200807-003		20221017_058	Perchlorate6850c.lcm	1x	☒		10/17/2022 20:44
54	E2200807-004		20221017_059	Perchlorate6850c.lcm	1x	☒		10/17/2022 20:53
55	PERCHLORATE7		20221017_060	Perchlorate6850c.lcm	1x	☒	225398	10/17/2022 21:01
56	IB		20221017_061	Perchlorate6850c.lcm	1x	☒		10/17/2022 21:09
57	IB		20221017_062	Perchlorate6850c.lcm	1x	☒		10/17/2022 21:18
58	null		20221017_063	Perchlorate6850c.lcm	1x	☒		10/17/2022 21:23
59	null		20221017_064	Perchlorate6850c.lcm	1x	☒		10/17/2022 21:29

20221018

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XMI
2nd Review: Kneir

ICAL Date: 10/13/2022
Cal. Std. xp: 1/31/2023
ICAL ID: EC2200014

Mobile Phases A:0.10% Formic Acid/Water 3210301-02 B:MeOH 224417

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	IB		20221018_006	Perchlorate6850c.lcm	1x	☒		10/18/2022 10:12
2	IB		20221018_007	Perchlorate6850c.lcm	1x	☒		10/18/2022 10:21
3	ICS		20221018_008	Perchlorate6850c.lcm	1x	☒		10/18/2022 10:29
4	LODV		20221018_009	Perchlorate6850c.lcm	1x	☒	225199	10/18/2022 10:37
5	PERCHLORATE7		20221018_010	Perchlorate6850c.lcm	1x	☒	225398	10/18/2022 10:46
6	E2200994-001		20221018_012	Perchlorate6850c.lcm	1x	☒		10/18/2022 10:54
7	EQ2200469-05		20221018_014	Perchlorate6850c.lcm	1x	☒		10/18/2022 11:03
8	PERCHLORATE7		20221018_015	Perchlorate6850c.lcm	1x	☒	225398	10/18/2022 11:11
9	IB		20221018_016	Perchlorate6850c.lcm	1x	☒		10/18/2022 11:19
10	IB		20221018_017	Perchlorate6850c.lcm	1x	☒		10/18/2022 11:28
11	null		20221018_018	Perchlorate6850c.lcm	1x	☒		10/18/2022 11:33
12	null		20221018_019	Perchlorate6850c.lcm	1x	☒		10/18/2022 11:39

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Analyzed:**	10/17/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	10/13/22
File ID:	I:\LCMS01\DATA\20221017\20221017_044	**Calibration ID:**	EC2200014
		Analysis Lot:	781288
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.7	0.1347	0.1448	7.5	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS22100575

Service Request: E2200994
Date Analyzed: 10/17/22

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\20221017\20221017_055

Calibration Date: 10/13/22
Calibration ID: EC2200014
Analysis Lot: 781288
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.8	0.1347	0.1461	8.5	NA	± 15 %	Average RF

Printed 10/20/22 10:16

\\alprews001\starlims$\LIMSReps\CCVSummary.rpt

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS22100575

Service Request: E2200994
Date Analyzed: 10/17/22

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\20221017\20221017_060

Calibration Date: 10/13/22
Calibration ID: EC2200014
Analysis Lot: 781288
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.8	0.1347	0.1448	7.5	NA	± 15 %	Average RF

Printed 10/20/22 10:16

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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Analyzed:**	10/18/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	10/13/22
File ID:	I:\LCMS01\DATA\20221018\20221018_010	**Calibration ID:**	EC2200014
		Analysis Lot:	781799
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.4	0.1347	0.1401	4.0	NA	± 15 %	Average RF

Printed 10/20/22 10:16

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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS22100575

Service Request: E2200994
Date Analyzed: 10/18/22

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\20221018\20221018_015

Calibration Date: 10/13/22
Calibration ID: EC2200014
Analysis Lot: 781799
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.6	0.1347	0.1424	5.7	NA	± 15 %	Average RF

Printed 10/20/22 10:16

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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200994
Project:	HS22100575	**Date Analyzed:**	10/17/22 17:14

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20221017\20221017_033	**Lab Code:**	EQ2200476-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	781288
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	244,776	3.80
	Upper Limit ==>	367,164	5.80
	Lower Limit ==>	122,388	1.80
Associated Analyses			
Continuing Calibration Verification	EQ2200476-03	183,794	3.79
Method Blank	EQ2200469-01	232,774	3.79
Lab Control Sample	EQ2200469-02	238,567	3.79
Duplicate Lab Control Sample	EQ2200469-03	235,402	3.79

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:**	E2200994
Project:	HS22100575	**Date Analyzed:**	10/17/22 18:47

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20221017\20221017_044	**Lab Code:**	EQ2200476-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	781288
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	244,776	3.80
	Upper Limit ==>	367,164	5.80
	Lower Limit ==>	122,388	1.80
Associated Analyses			
Continuing Calibration Verification	EQ2200476-04	183,243	3.79
50WW08-221010	E2200994-002	144,933	3.72
50WW22-221010	E2200994-003	199,788	3.71
50WW23-221010	E2200994-004	220,367	3.69
50WW05-221010	E2200994-005	208,078	3.73
50WW15-221010	E2200994-006	206,259	3.73
50WW16-221010	E2200994-007	217,938	3.75

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:**	E2200994
Project:	HS22100575	**Date Analyzed:**	10/17/22 20:19

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20221017\20221017_055	**Lab Code:**	EQ2200476-05
Instrument ID:	E-LCMS-01	**Analysis Lot:**	781288
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	244,776	3.80
	Upper Limit ==>	367,164	5.80
	Lower Limit ==>	122,388	1.80
Associated Analyses			
Continuing Calibration Verification	EQ2200476-05	179,081	3.79
50WW16-221010-FD	E2200994-008	220,927	3.75
50WW18-221010	E2200994-009	207,736	3.72

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:**	E2200994
Project:	HS22100575	**Date Analyzed:**	10/17/22 21:01

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20221017\20221017_060	**Lab Code:**	EQ2200476-06
Instrument ID:	E-LCMS-01	**Analysis Lot:**	781288
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	244,776	3.80
	Upper Limit ==>	367,164	5.80
	Lower Limit ==>	122,388	1.80
Associated Analyses			
Continuing Calibration Verification	EQ2200476-06	179,466	3.79

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:**	E2200994
Project:	HS22100575	**Date Analyzed:**	10/18/22 10:29

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20221018\20221018_010	**Lab Code:**	EQ2200477-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	781799
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	244,776	3.80
	Upper Limit ==>	367,164	5.80
	Lower Limit ==>	122,388	1.80
Associated Analyses			
Continuing Calibration Verification	EQ2200477-01	205,201	3.78
50WW09-221010	E2200994-001	232,781	3.72

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:**	E2200994
Project:	HS22100575	**Date Analyzed:**	10/18/22 11:11

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20221018\20221018_015	**Lab Code:**	EQ2200477-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	781799
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	244,776	3.80
	Upper Limit ==>	367,164	5.80
	Lower Limit ==>	122,388	1.80
Associated Analyses			
Continuing Calibration Verification	EQ2200477-02	203,736	3.79

Results flagged with an asterisk (*) indicate values outside control criteria.

Insight Report

Printed at 10/19/2022 10:19:52 AM

Method File: I:\LCMS01\DATA\20221017\Perchlorate6850i-intensity 10172.lcm
Project File: I:\LCMS01\DATA\20221017\10172022.damlp

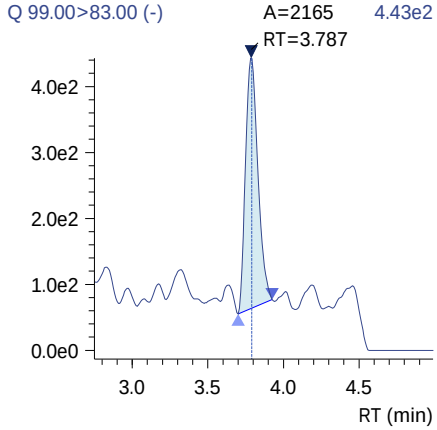
LODV

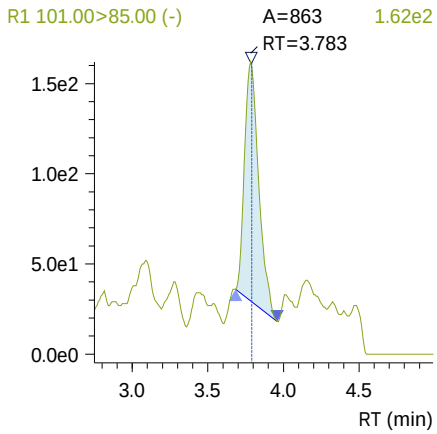
Sample ID: LODV
Date Acquired: 10/17/2022 10:13:23 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_009.lcd
Vial: 37 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.787	2165	280903	0.0572	ng/mL	101.00 >85.00	39.84	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.785	280903	280903	1.0000	ng/mL	----	----	

Perchlorate

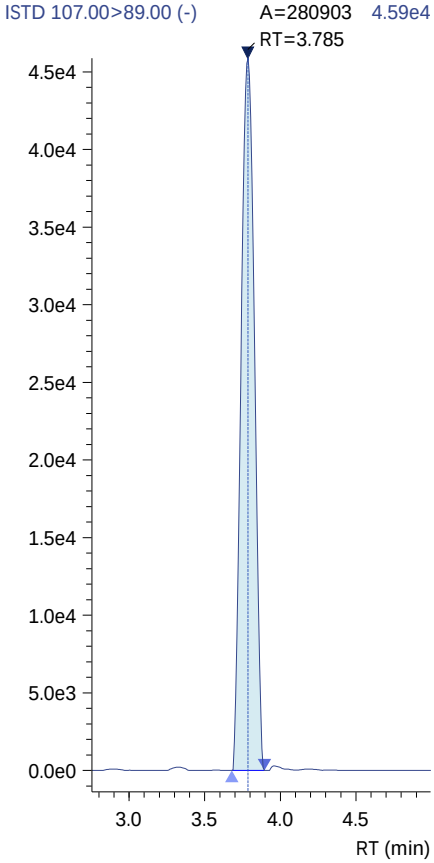
Conc 0.0572
R#1 39.84 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

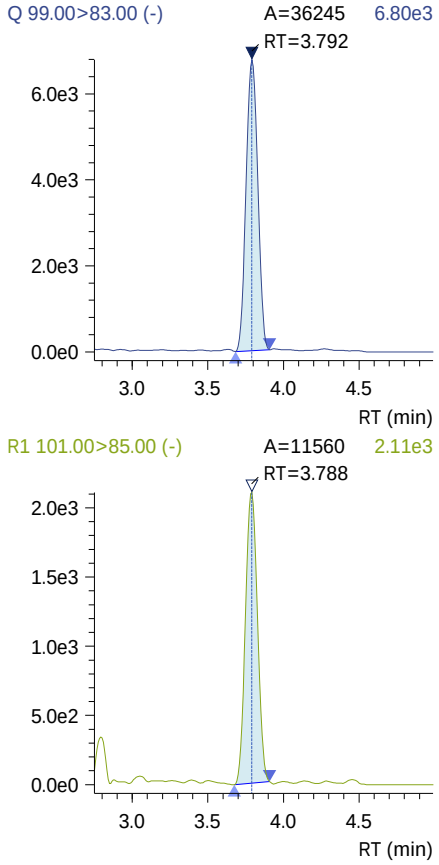
ICS

Sample ID: ICS
Date Acquired: 10/17/2022 2:02:11 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_010.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.792	36245	244852	1.0989	ng/mL	101.00 >85.00	31.89	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.787	2448 52	244852	1.0000	ng/mL	----	----	

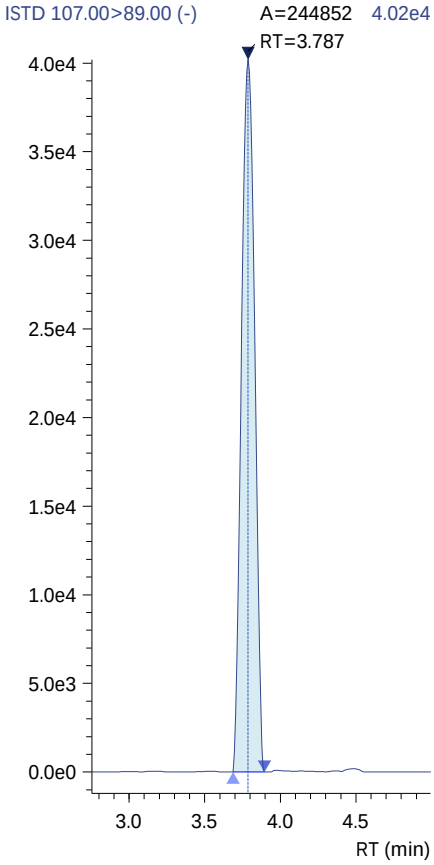
Perchlorate

Conc 1.0989
R#1 31.89 (34.61)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

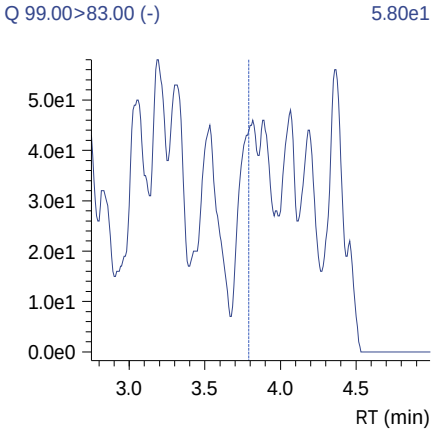
EQ2200469-01

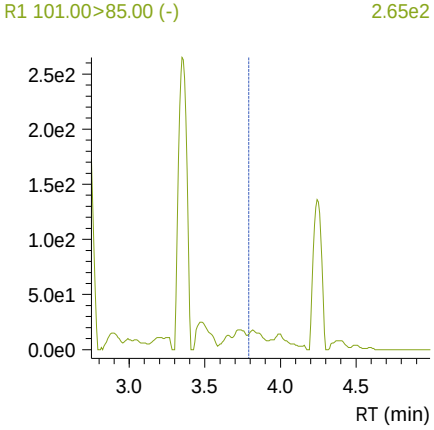
Sample ID: EQ2200469-01
Date Acquired: 10/17/2022 5:23:22 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_034.lcd
Vial: 20 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	232774	----	ng/mL	101.00 >85.00	0.00	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.788	232774	232774	1.0000	ng/mL	----	----	

Perchlorate

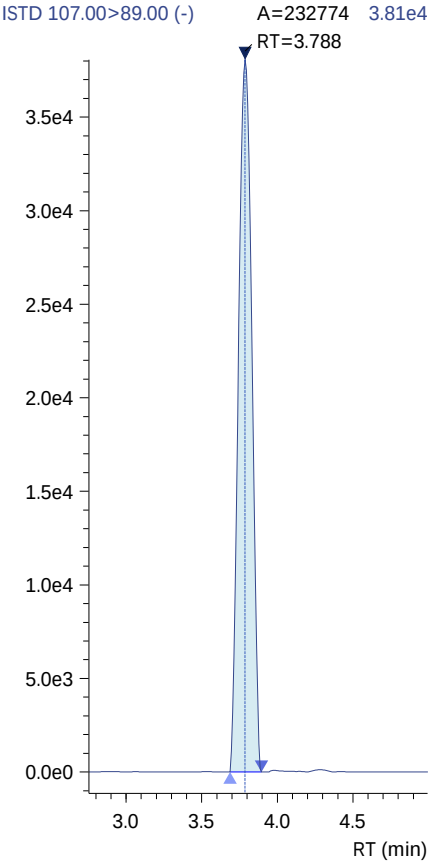
Conc ----
R#1 0.00 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

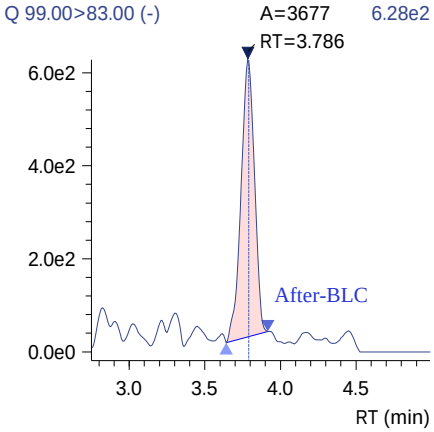
EQ2200469-02

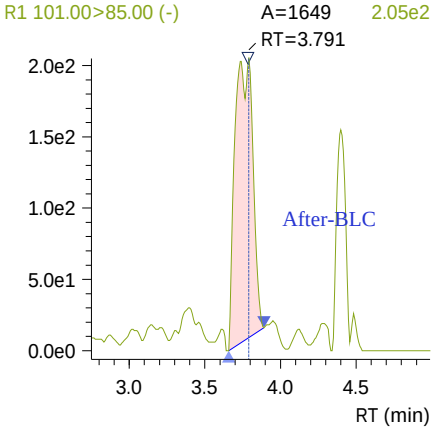
Sample ID: EQ2200469-02
Date Acquired: 10/17/2022 5:31:45 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_035.lcd
Vial: 21 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.786	3677	238567	0.1144	ng/mL	101.00 >85.00	44.85	24.22 -44.99
Sodium Perchlorate-18O4 _IS	Auto	3.787	238567	238567	1.0000	ng/mL	----	----	

Perchlorate

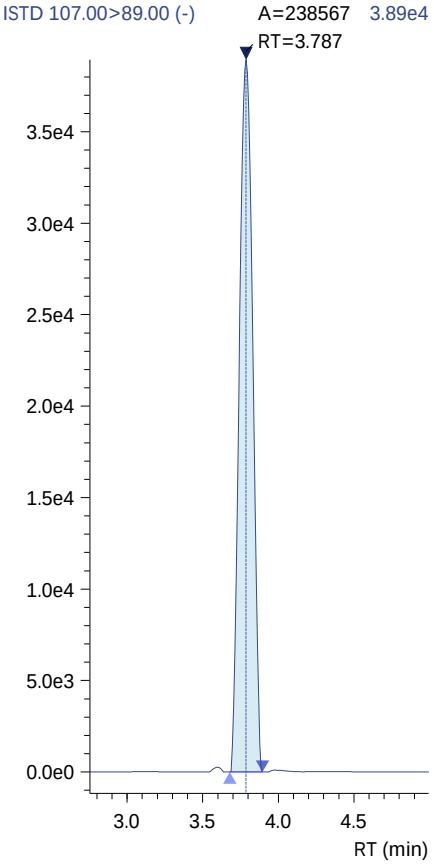
Conc 0.1144
R#1 44.85 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:21:27 AM

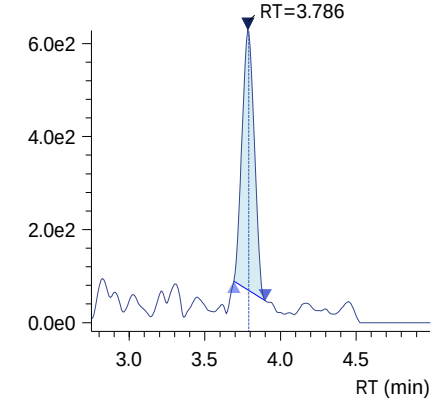
EQ2200469-02

Sample ID: EQ2200469-02
Date Acquired: 10/17/2022 5:31:45 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_035.lcd
Vial: 21 | Inj. Volume: 25.0000uL | Tray: 3

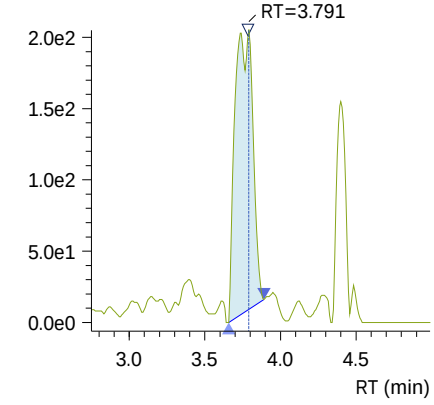
Perchlorate

Conc 0.0982
R#1 52.30 (34.61)

Q 99.00>83.00 (-) A=3153 6.28e2
RT=3.786



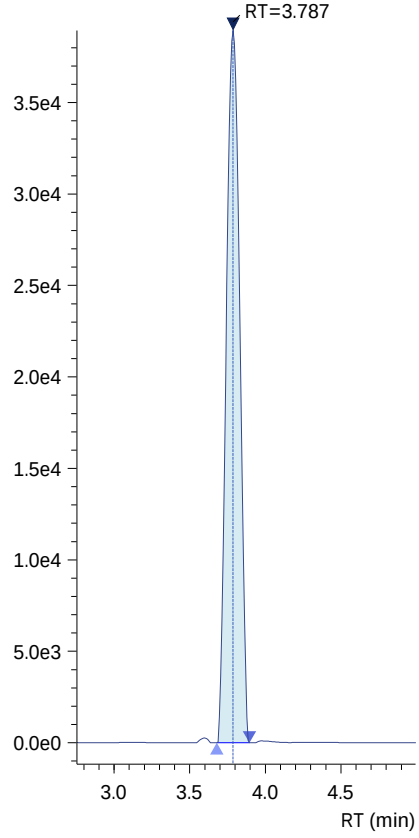
R1 101.00>85.00 (-) A=1649 2.05e2
RT=3.791



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=238567 3.89e4
RT=3.787



Insight Report

Printed at 10/19/2022 10:19:52 AM

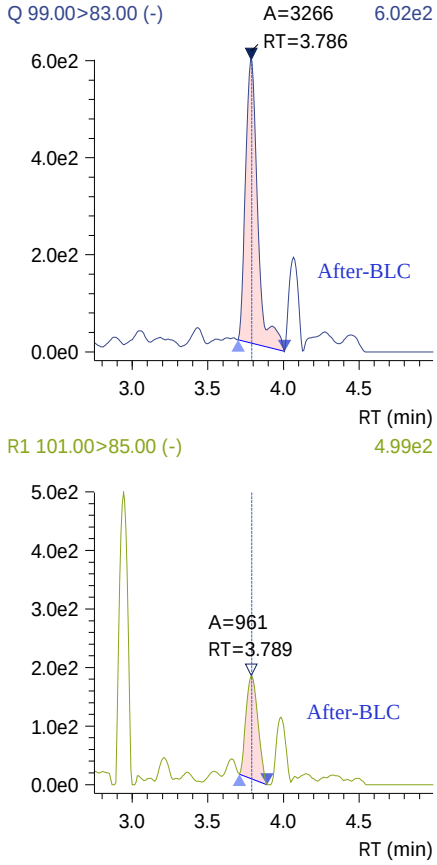
EQ2200469-03

Sample ID: EQ2200469-03
Date Acquired: 10/17/2022 5:40:07 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_036.lcd
Vial: 22 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.786	3266	235402	0.1030	ng/mL	101.00 >85.00	29.41	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.787	235402	235402	1.0000	ng/mL	----	----	

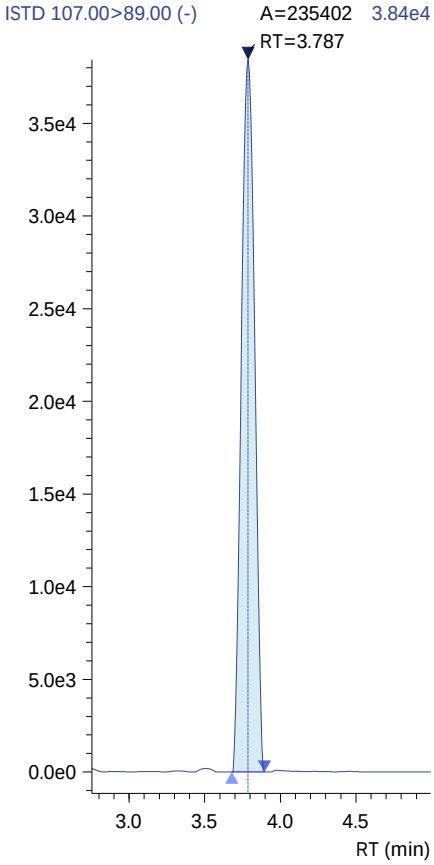
Perchlorate

Conc 0.1030
R#1 29.41 (34.61)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:21:27 AM

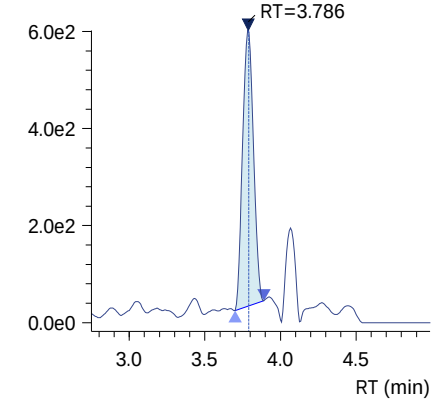
EQ2200469-03

Sample ID: EQ2200469-03
Date Acquired: 10/17/2022 5:40:07 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_036.lcd
Vial: 22 | Inj. Volume: 25.0000uL | Tray: 3

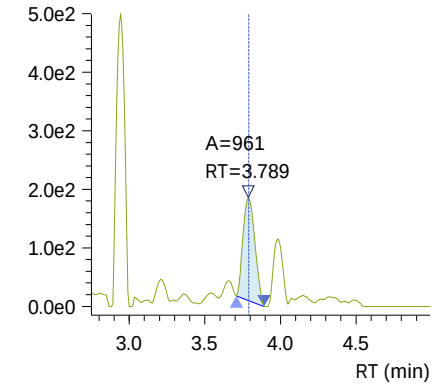
Perchlorate

Conc 0.0895
R#1 33.89 (34.61)

Q 99.00>83.00 (-) A=2834 6.02e2



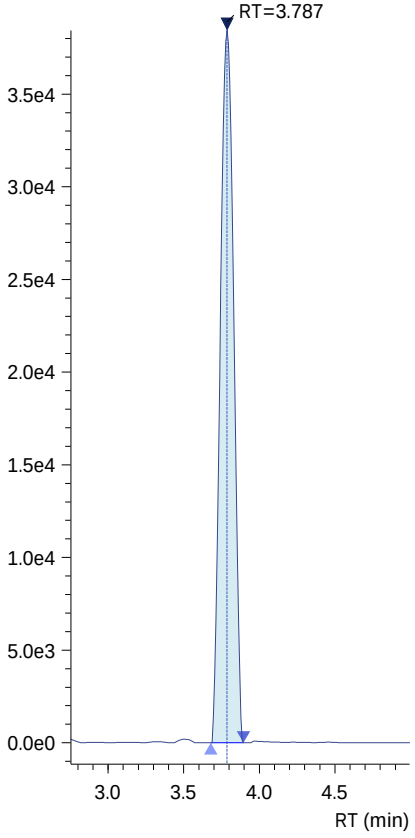
R1 101.00>85.00 (-) 4.99e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=235402 3.84e4



Insight Report

Printed at 10/19/2022 10:19:52 AM

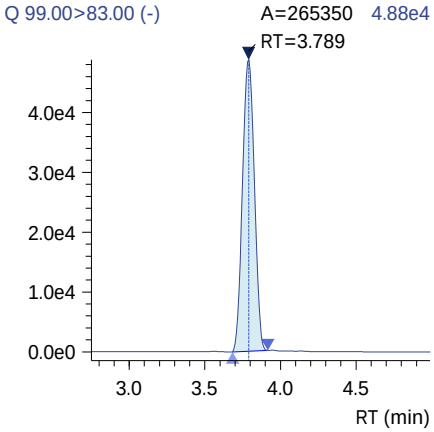
PERCHLORATE7

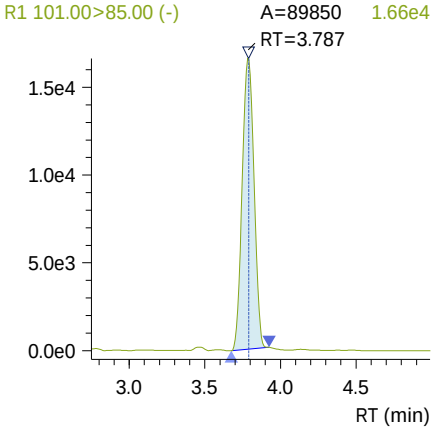
Sample ID: PERCHLORATE7
Date Acquired: 10/17/2022 6:47:16 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_044.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.789	2653 50	183243	10.7 499	ng/mL	101.00 >85.00	33.86	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.786	1832 43	183243	1.0000	ng/mL	----	----	

Perchlorate

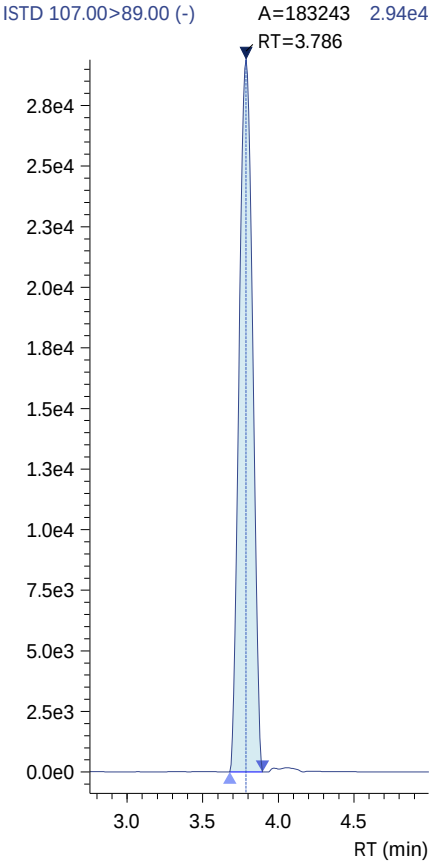
Conc 10.7499
R#1 33.86 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

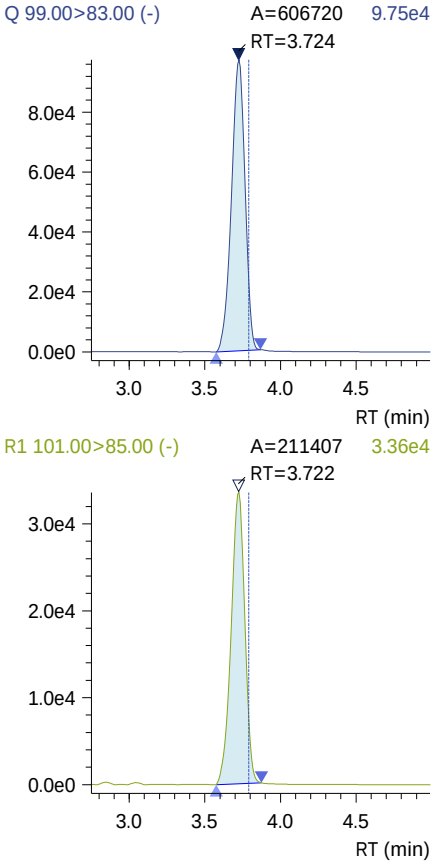
E2200994-002

Sample ID: E2200994-002
Date Acquired: 10/17/2022 7:29:14 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_049.lcd
Vial: 33 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.724	6067 20	144933	31.0 767	ng/mL	101.00 >85.00	34.84	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.720	1449 33	144933	1.0000	ng/mL	----	----	

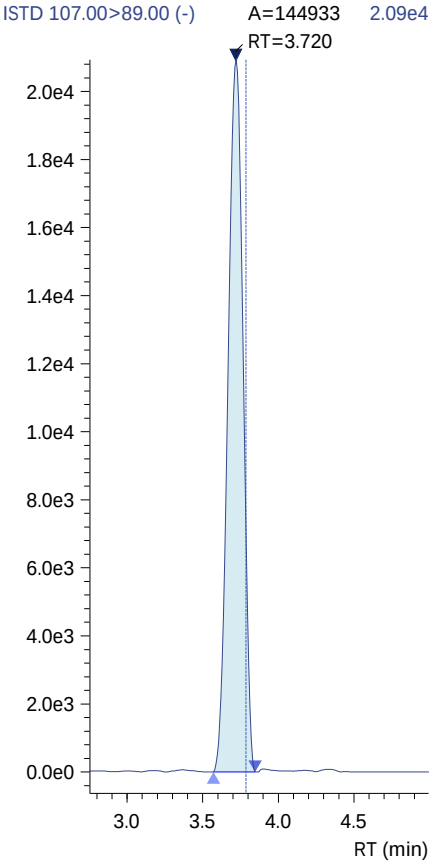
Perchlorate

Conc 31.0767
R#1 34.84 (34.61)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

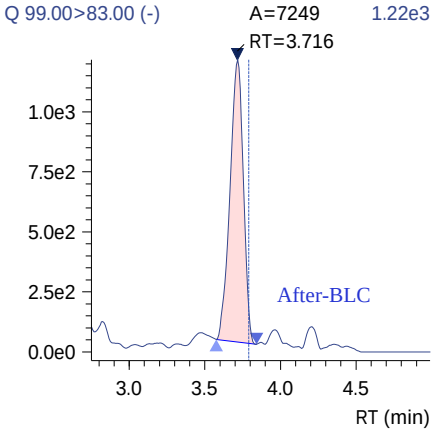
E2200994-003

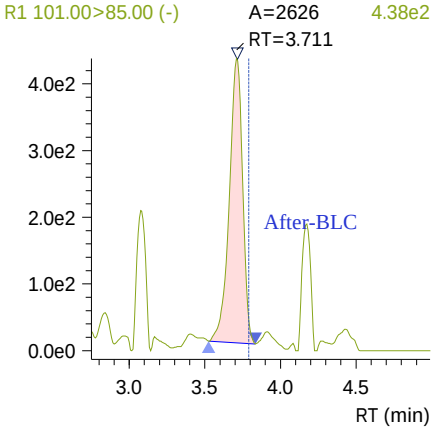
Sample ID: E2200994-003
Date Acquired: 10/17/2022 7:37:37 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_050.lcd
Vial: 34 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.716	7249	199788	0.2693	ng/mL	101.00 >85.00	36.22	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.709	199788	199788	1.0000	ng/mL	----	----	

Perchlorate

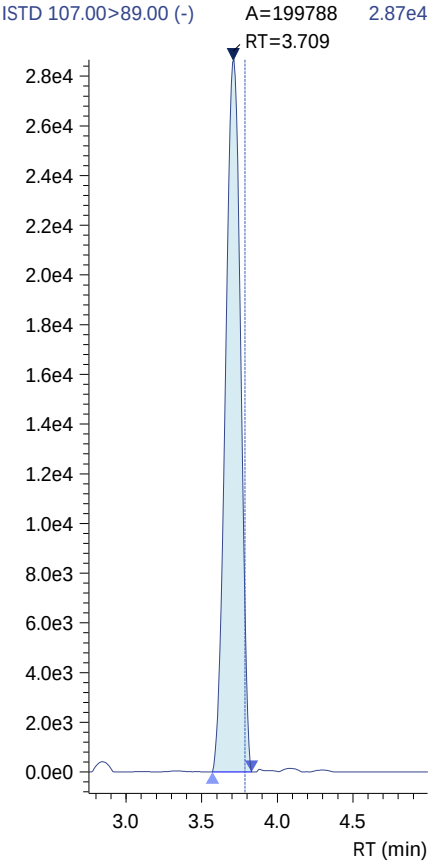
Conc 0.2693
R#1 36.22 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

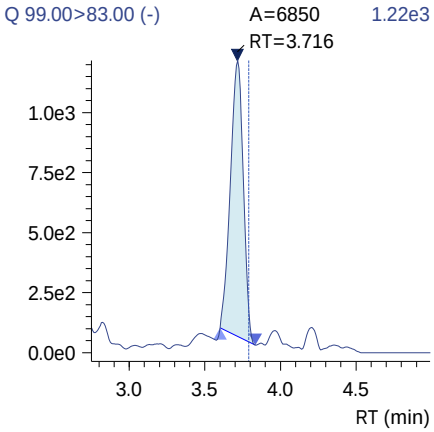
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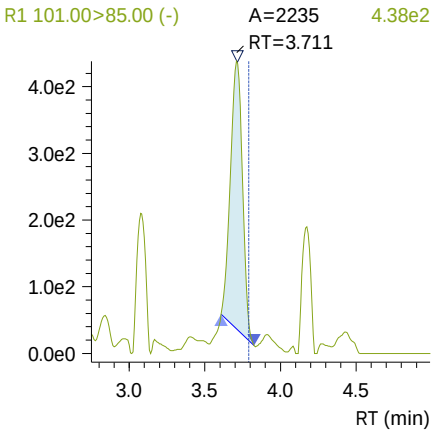
E2200994-003

Sample ID: E2200994-003
Date Acquired: 10/17/2022 7:37:37 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_050.lcd
Vial: 34 | Inj. Volume: 25.0000uL | Tray: 3

Perchlorate

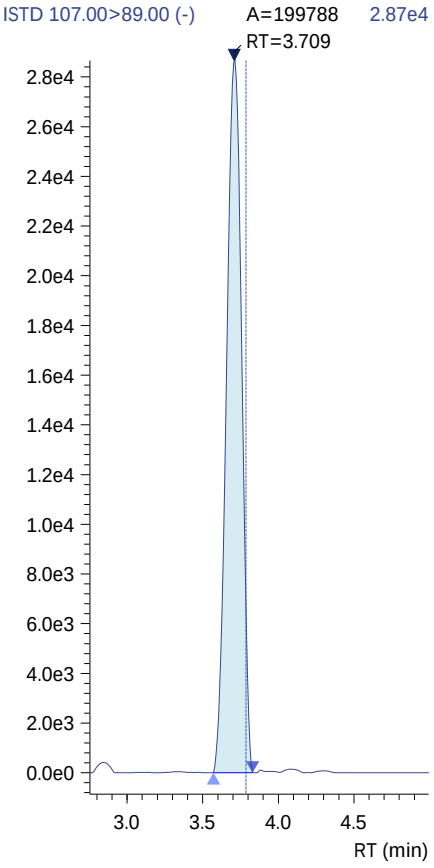
Conc 0.2548
R#1 32.63 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

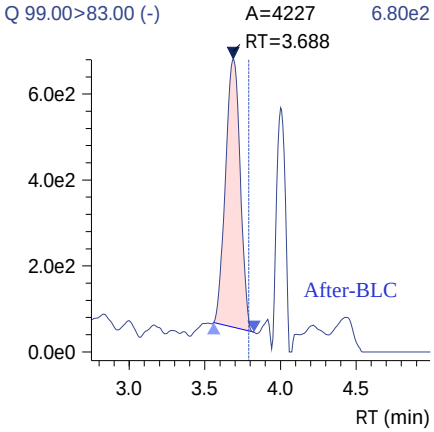
E2200994-004

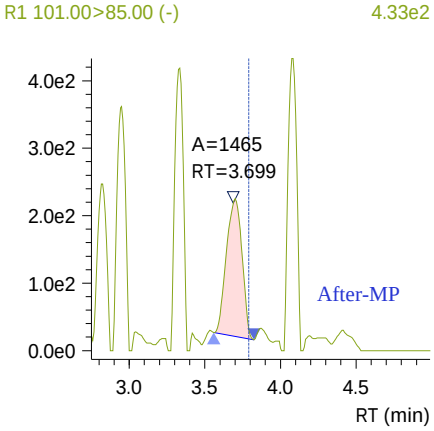
Sample ID: E2200994-004
Date Acquired: 10/17/2022 7:46:00 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_051.lcd
Vial: 35 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.688	4227	220367	0.1424	ng/mL	101.00 >85.00	34.66	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.689	220367	220367	1.0000	ng/mL	----	----	

Perchlorate

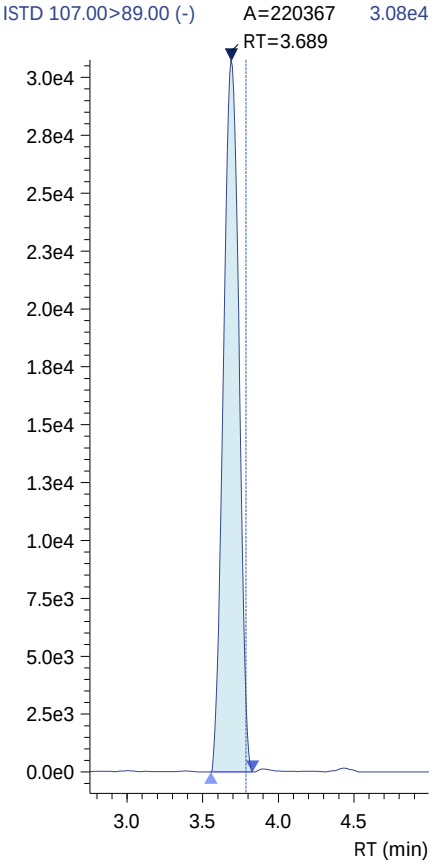
Conc 0.1424
R#1 34.66 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

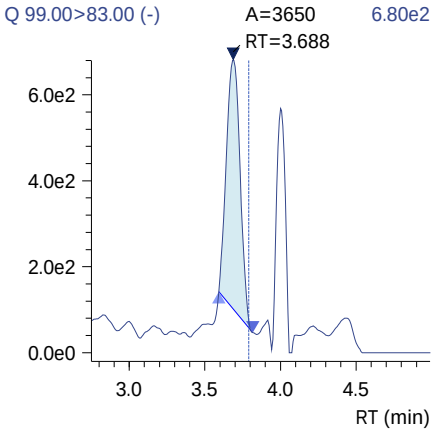
Printed at 10/19/2022 10:21:27 AM

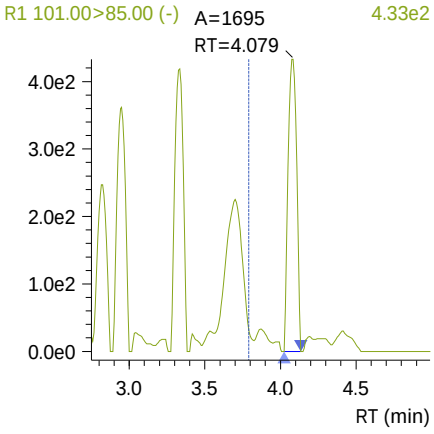
E2200994-004

Sample ID: E2200994-004
Date Acquired: 10/17/2022 7:46:00 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_051.lcd
Vial: 35 | Inj. Volume: 25.0000uL | Tray: 3

Perchlorate

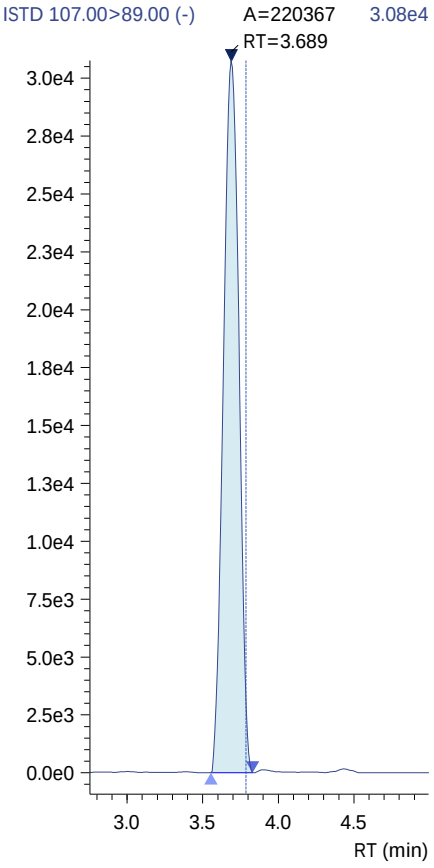
Conc 0.1231
R#1 0.00 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

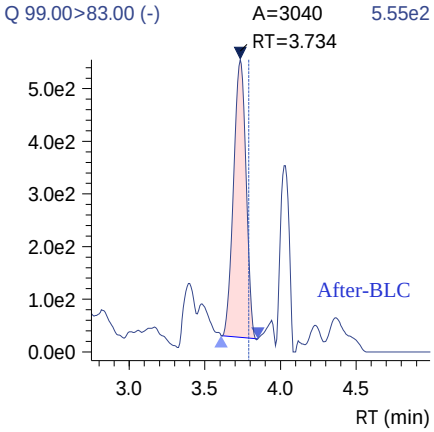
E2200994-005

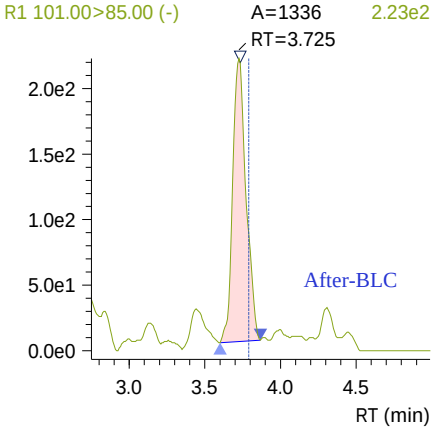
Sample ID: E2200994-005
Date Acquired: 10/17/2022 7:54:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_052.lcd
Vial: 36 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.734	3040	208078	0.1085	ng/mL	101.00 >85.00	43.93	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.730	2080 78	208078	1.0000	ng/mL	----	----	

Perchlorate

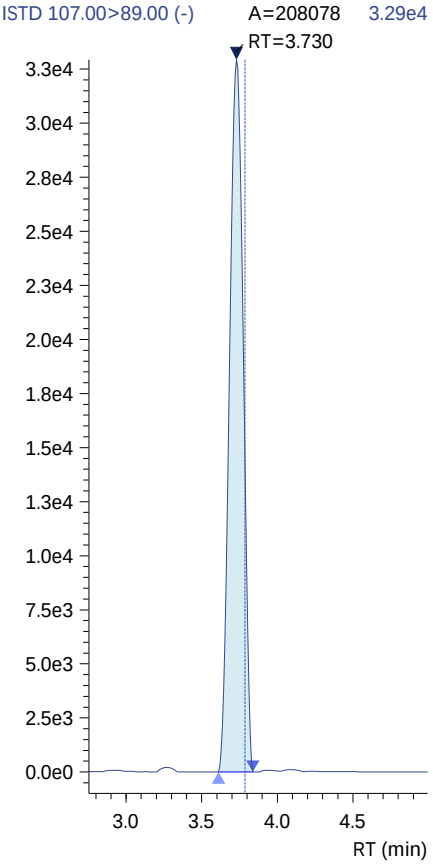
Conc 0.1085
R#1 43.93 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

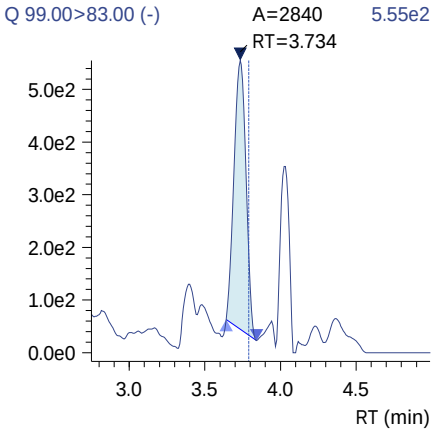
Printed at 10/19/2022 10:21:27 AM

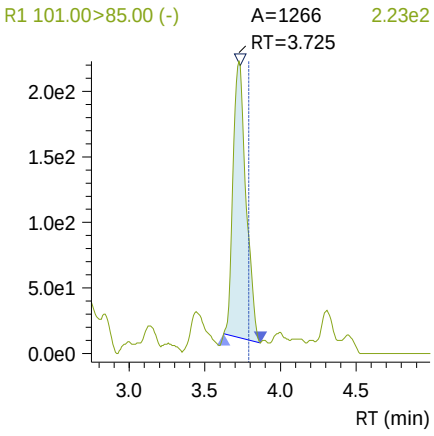
E2200994-005

Sample ID: E2200994-005
Date Acquired: 10/17/2022 7:54:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_052.lcd
Vial: 36 | Inj. Volume: 25.0000uL | Tray: 3

Perchlorate

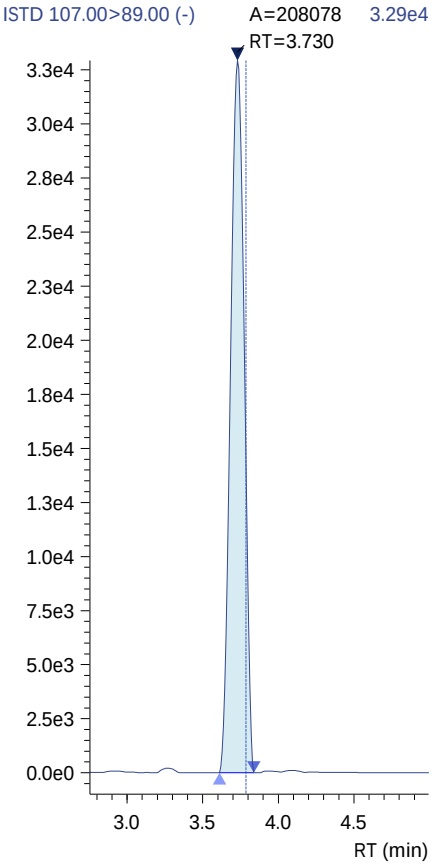
Conc 0.1014
R#1 44.58 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

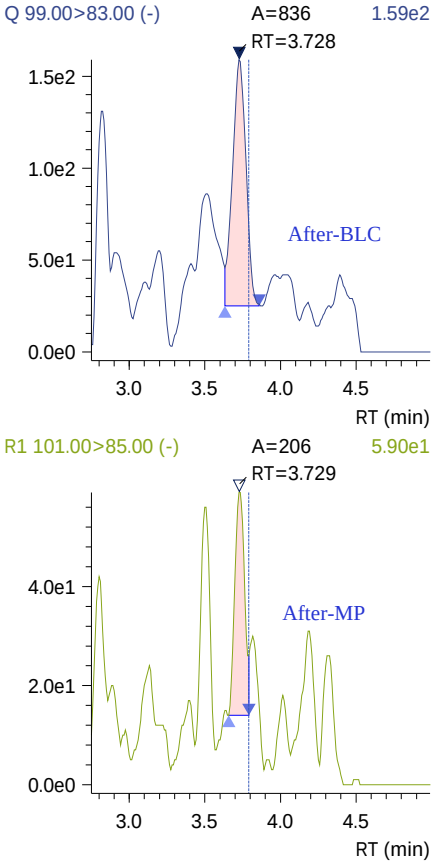
E2200994-006

Sample ID: E2200994-006
Date Acquired: 10/17/2022 8:02:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_053.lcd
Vial: 37 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.728	836	206259	0.0301	ng/mL	101.00 >85.00	24.58	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.725	206259	206259	1.0000	ng/mL	----	----	

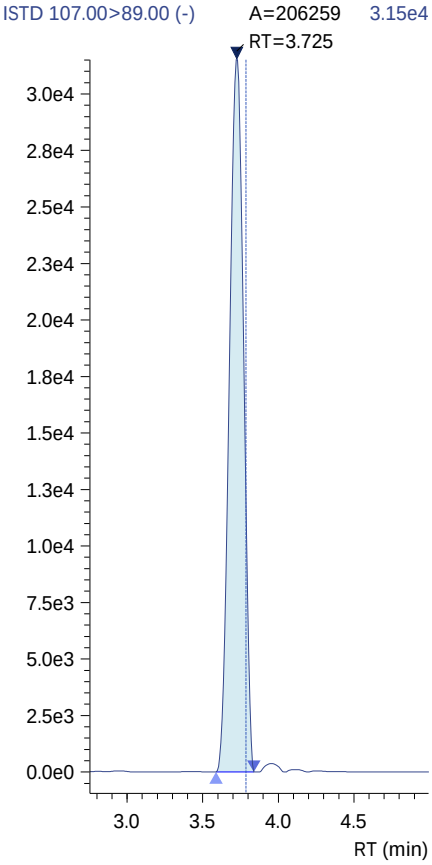
Perchlorate

Conc 0.0301
R#1 24.58 (34.61)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:21:27 AM

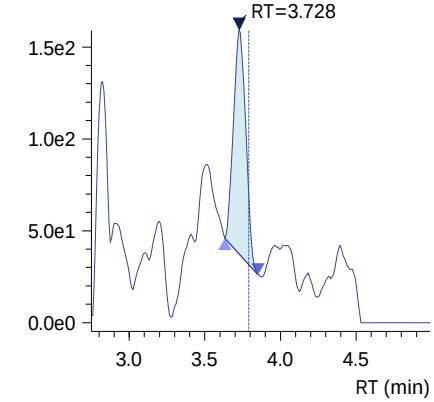
E2200994-006

Sample ID: E2200994-006
Date Acquired: 10/17/2022 8:02:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_053.lcd
Vial: 37 | Inj. Volume: 25.0000uL | Tray: 3

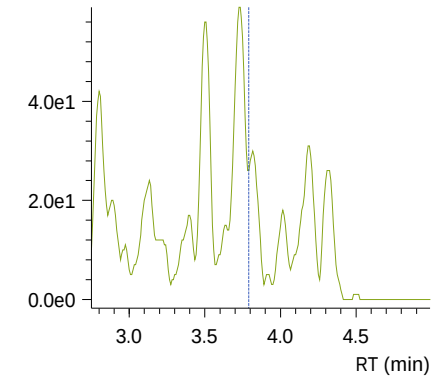
Perchlorate

Conc 0.0250
R#1 0.00 (34.61)

Q 99.00>83.00 (-) A=693 1.59e2



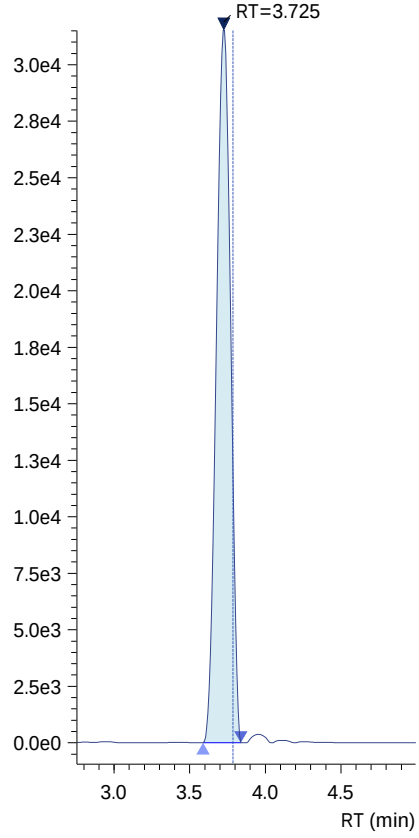
R1 101.00>85.00 (-) 5.90e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=206259 3.15e4



Insight Report

Printed at 10/19/2022 10:19:52 AM

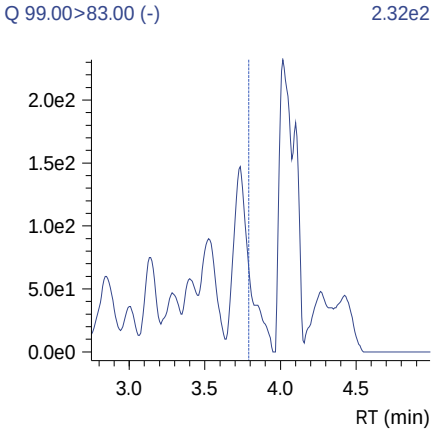
E2200994-007

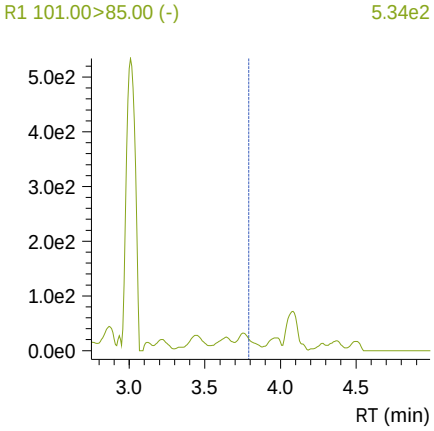
Sample ID: E2200994-007
Date Acquired: 10/17/2022 8:11:12 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_054.lcd
Vial: 38 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	217938	----	ng/mL	101.00 >85.00	0.00	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.751	217938	217938	1.0000	ng/mL	----	----	

Perchlorate

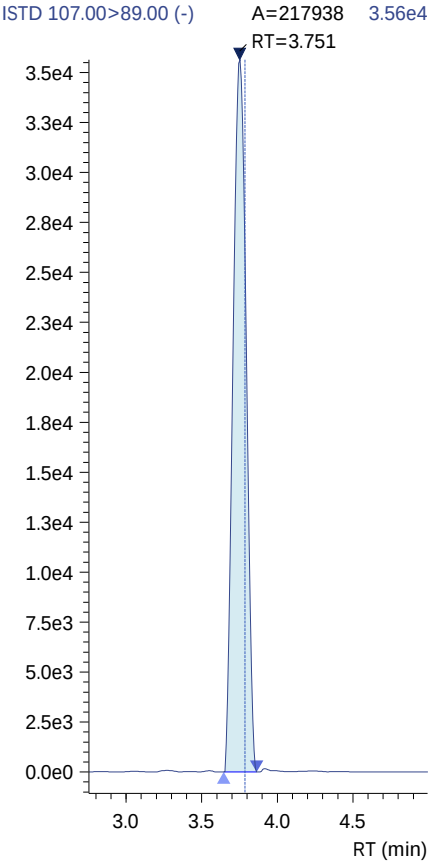
Conc ----
R#1 0.00 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

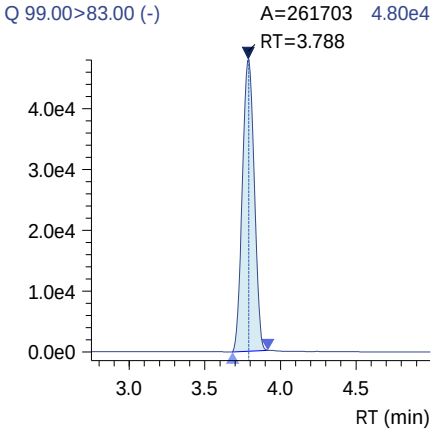
PERCHLORATE7

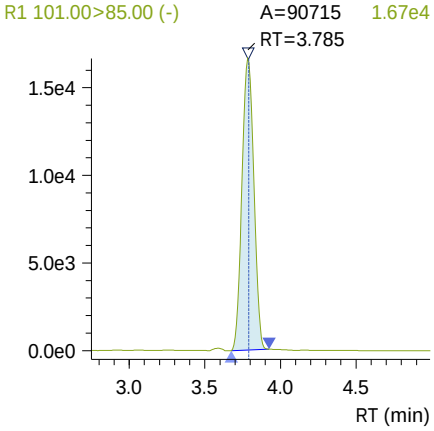
Sample ID: PERCHLORATE7
Date Acquired: 10/17/2022 8:19:35 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_055.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.788	261703	179081	10.8486	ng/mL	101.00 >85.00	34.66	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.785	179081	179081	1.0000	ng/mL	----	----	

Perchlorate

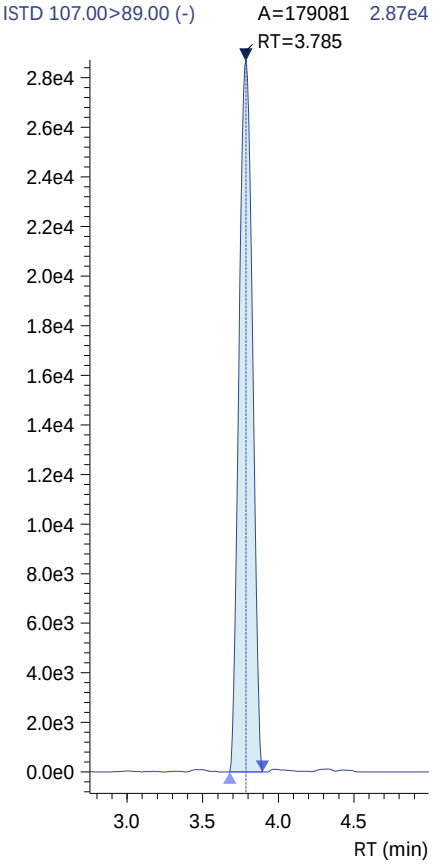
Conc 10.8486
R#1 34.66 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:19:52 AM

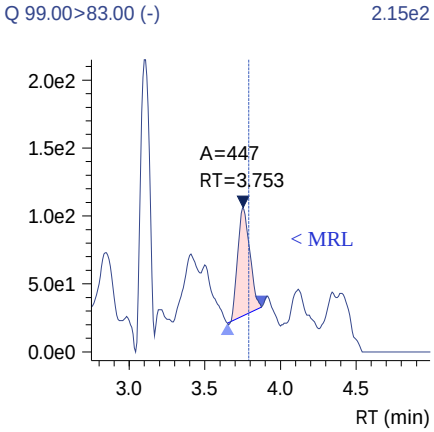
E2200994-008

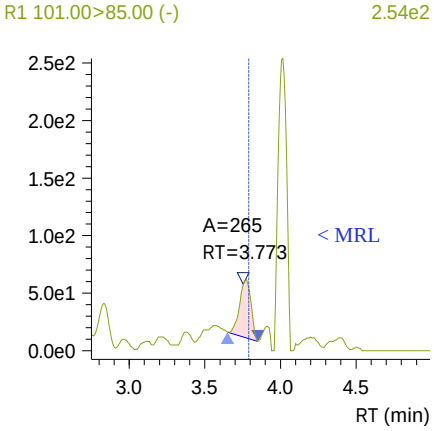
Sample ID: E2200994-008
Date Acquired: 10/17/2022 8:28:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_056.lcd
Vial: 39 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.753	447	220927	0.0150	ng/mL	101.00 >85.00	59.24	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.751	220927	220927	1.0000	ng/mL	----	----	

Perchlorate

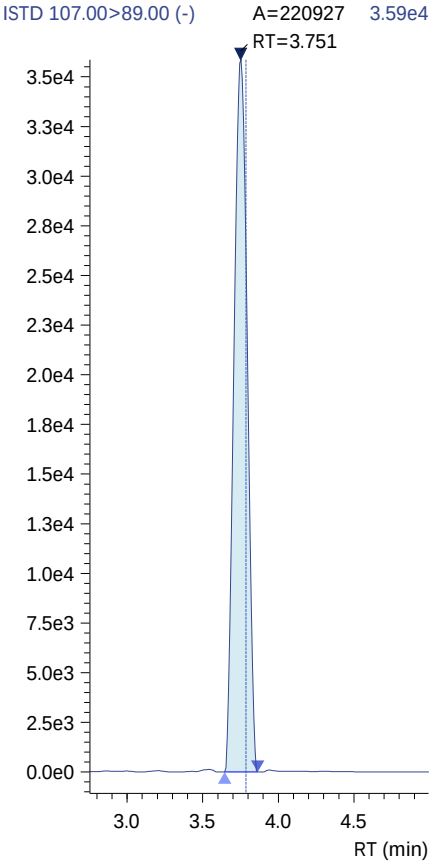
Conc 0.0150
R#1 59.24 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:21:27 AM

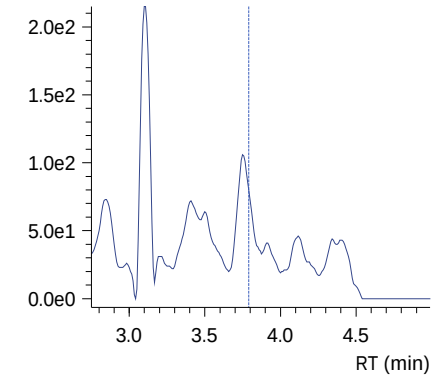
E2200994-008

Sample ID: E2200994-008
Date Acquired: 10/17/2022 8:28:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_056.lcd
Vial: 39 | Inj. Volume: 25.0000uL | Tray: 3

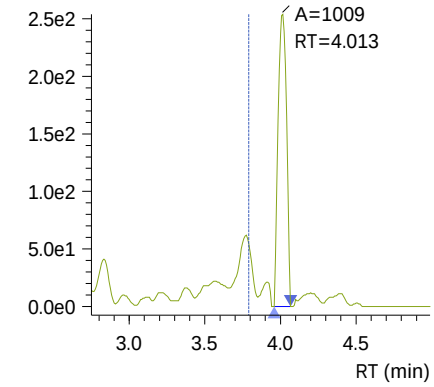
Perchlorate

Conc ----
R#1 0.00 (34.61)

Q 99.00>83.00 (-) 2.15e2



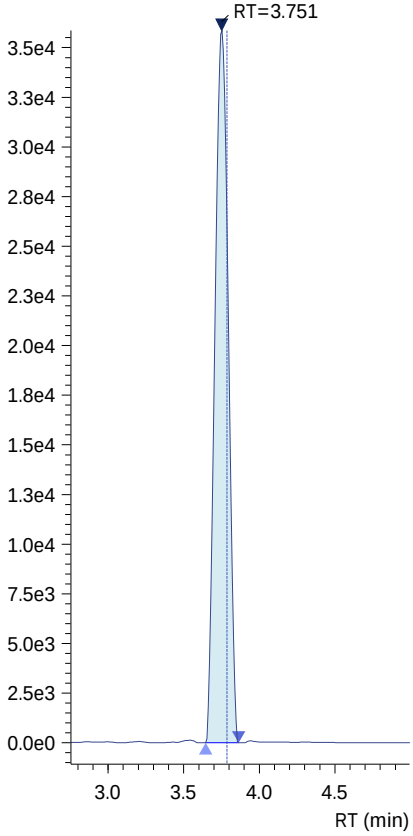
R1 101.00>85.00 (-) 2.54e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=220927 3.59e4



Insight Report

Printed at 10/19/2022 10:19:52 AM

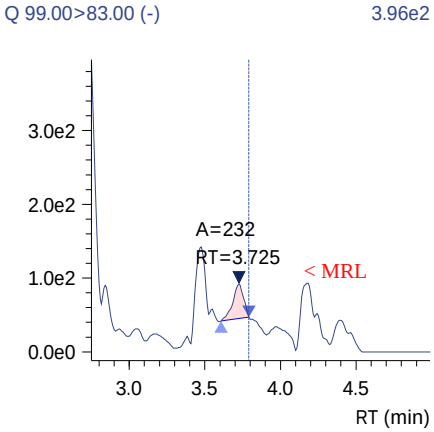
E2200994-009

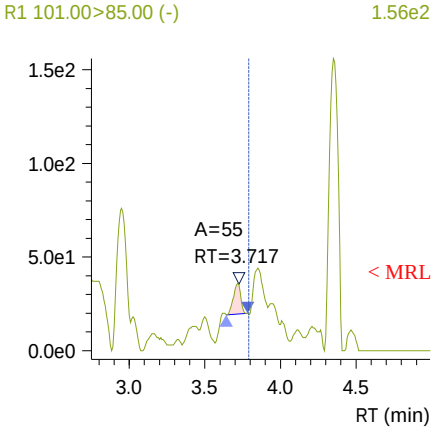
Sample ID: E2200994-009
Date Acquired: 10/17/2022 8:36:22 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_057.lcd
Vial: 40 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.725	232	207736	0.0083	ng/mL	101.00 >85.00	23.73	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.720	207736	207736	1.0000	ng/mL	----	----	

Perchlorate

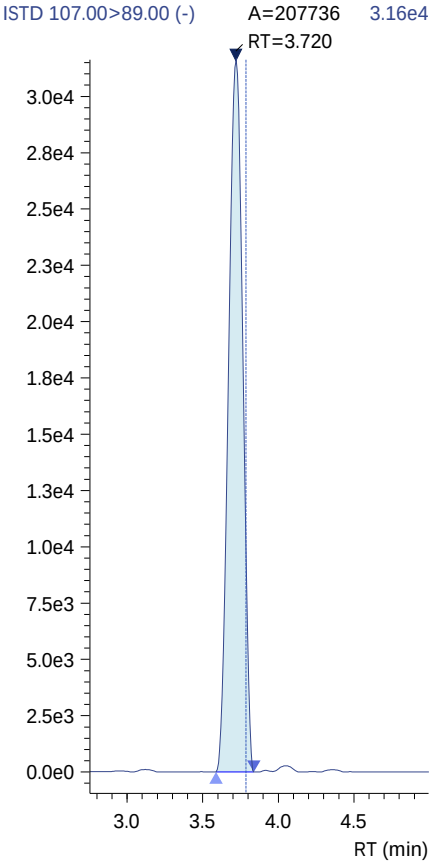
Conc 0.0083
R#1 23.73 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/19/2022 10:21:27 AM

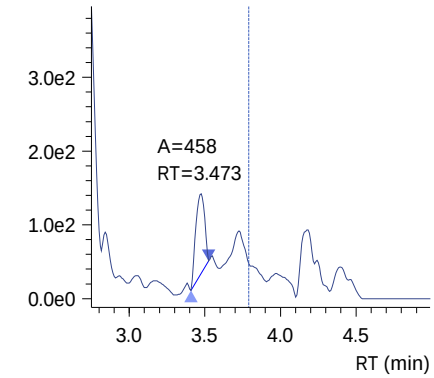
E2200994-009

Sample ID: E2200994-009
Date Acquired: 10/17/2022 8:36:22 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_057.lcd
Vial: 40 | Inj. Volume: 25.0000uL | Tray: 3

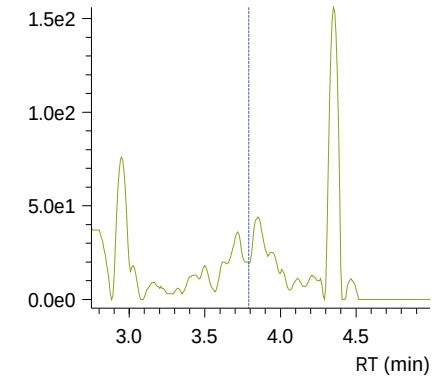
Perchlorate

Conc ----
R#1 0.00 (34.61)

Q 99.00>83.00 (-) 3.96e2



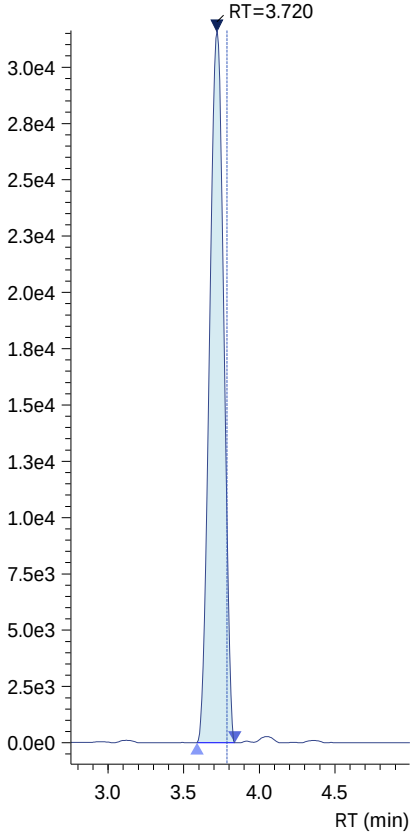
R1 101.00>85.00 (-) 1.56e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=207736 3.16e4



Insight Report

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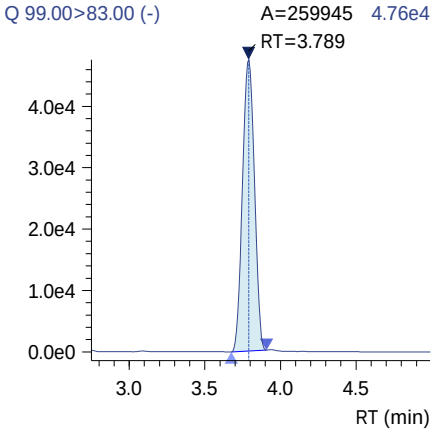
PERCHLORATE7

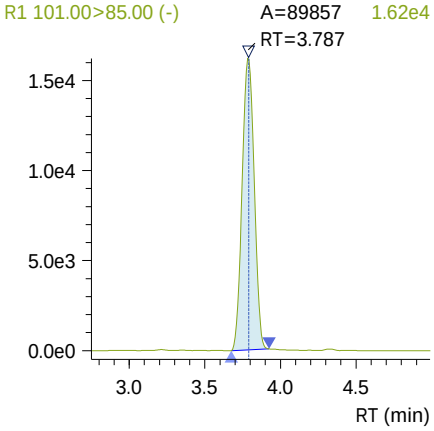
Sample ID: PERCHLORATE7
Date Acquired: 10/17/2022 9:01:33 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221017\20221017_060.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.789	2599 45	179466	10.7 526	ng/mL	101.00 >85.00	34.57	24.22 -44.99
Sodium Perchlorate-18O4_IS	Auto	3.786	1794 66	179466	1.0000	ng/mL	----	----	

Perchlorate

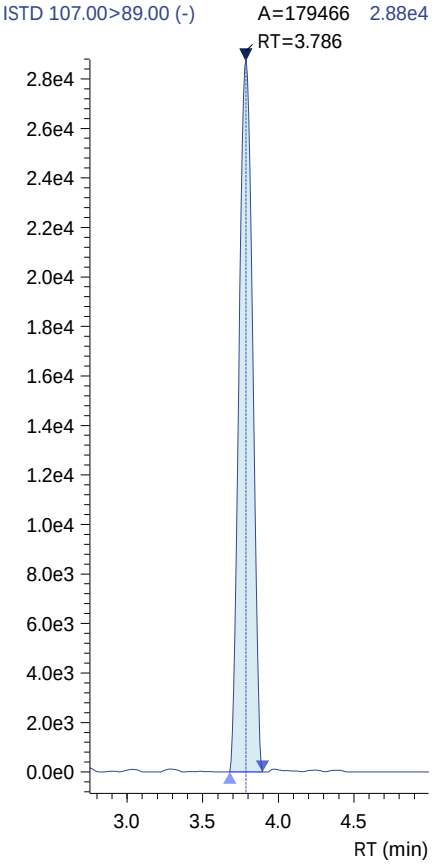
Conc 10.7526
R#1 34.57 (34.61)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/21/2022 3:26:39 PM

Method File: I:\LCMS01\DATA\20221018\Perchlorate6850i-intensity 10172.lcm
Project File: I:\LCMS01\DATA\20221018\20221018.damlp

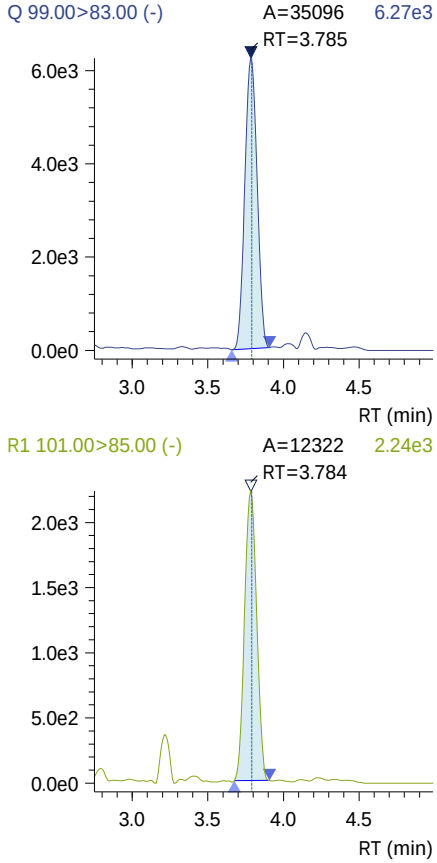
ICS

Sample ID: ICS
Date Acquired: 10/18/2022 10:12:37 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221018\20221018_008.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.785	35096	255889	1.0182	ng/mL	101.00 >85.00	35.11	24.24 -45.01
Sodium Perchlorate-18O4 _IS	Auto	3.783	255889	255889	1.0000	ng/mL	----	----	

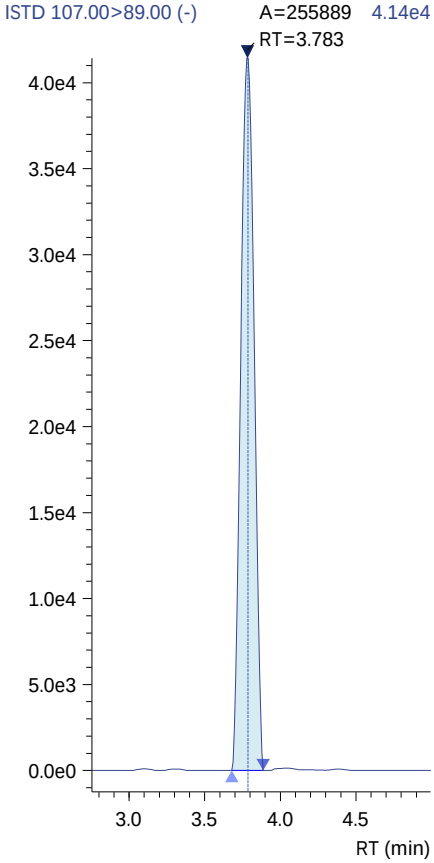
Perchlorate

Conc 1.0182
R#1 35.11 (34.63)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/21/2022 3:26:39 PM

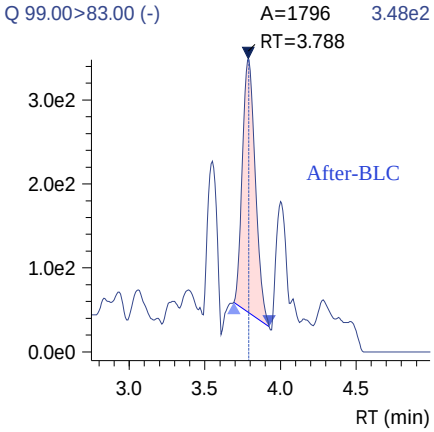
LODV

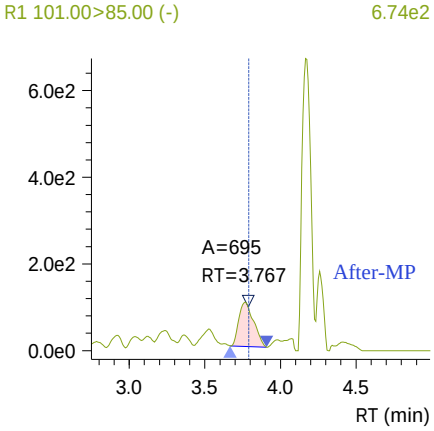
Sample ID: LODV
Date Acquired: 10/18/2022 10:21:00 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221018\20221018_009.lcd
Vial: 37 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI	3.788	1796	262591	0.0508	ng/mL	101.00 >85.00	38.66	24.24 -45.01
Sodium Perchlorate-18O4_IS	Auto	3.783	262591	262591	1.0000	ng/mL	----	----	

Perchlorate

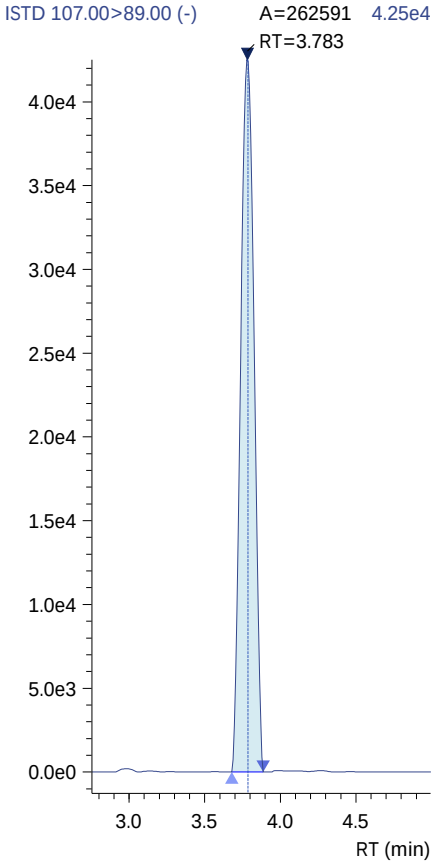
Conc 0.0508
R#1 38.66 (34.63)





Sodium Perchlorate-18O4_IS

Conc 1.0000



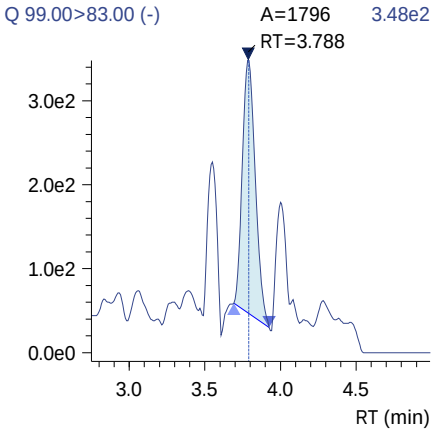
Insight Report

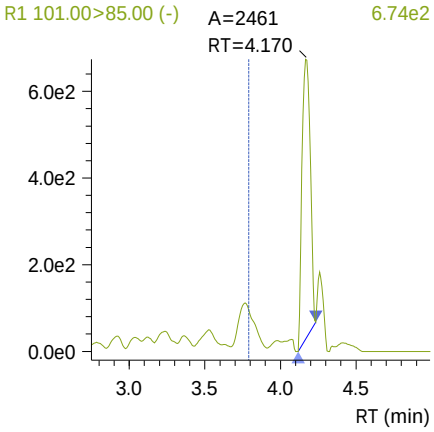
LODV

Sample ID: LODV
Date Acquired: 10/18/2022 10:21:00 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221018\20221018_009.lcd
Vial: 37 | Inj. Volume: 25.0000uL | Tray: 1

Perchlorate

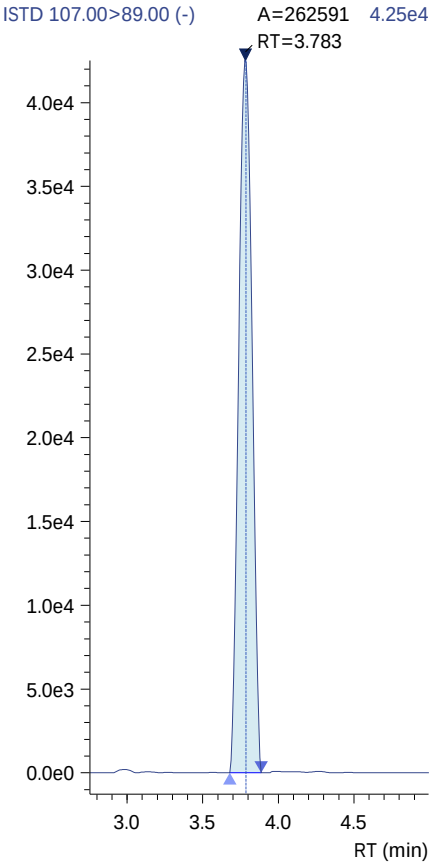
Conc 0.0508
R#1 0.00 (34.63)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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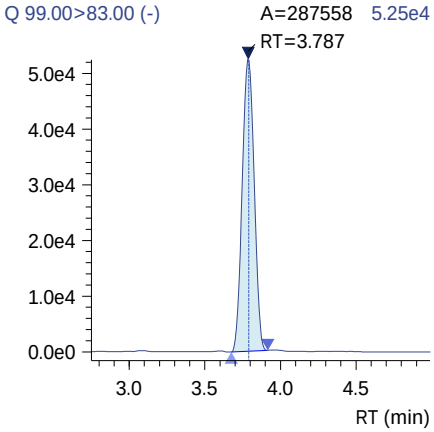
PERCHLORATE7

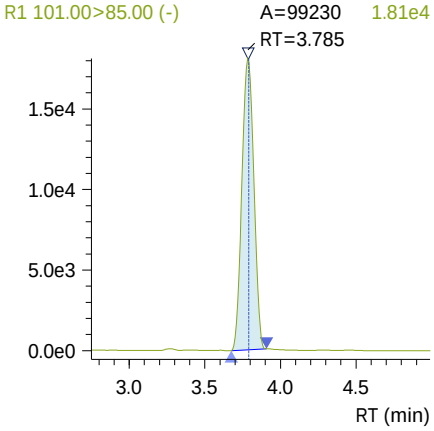
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Date Acquired: 10/18/2022 10:29:24 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221018\20221018_010.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.787	287558	205201	10.4030	ng/mL	101.00 >85.00	34.51	24.24 -45.01
Sodium Perchlorate-18O4_IS	Auto	3.784	205201	205201	1.0000	ng/mL	----	----	

Perchlorate

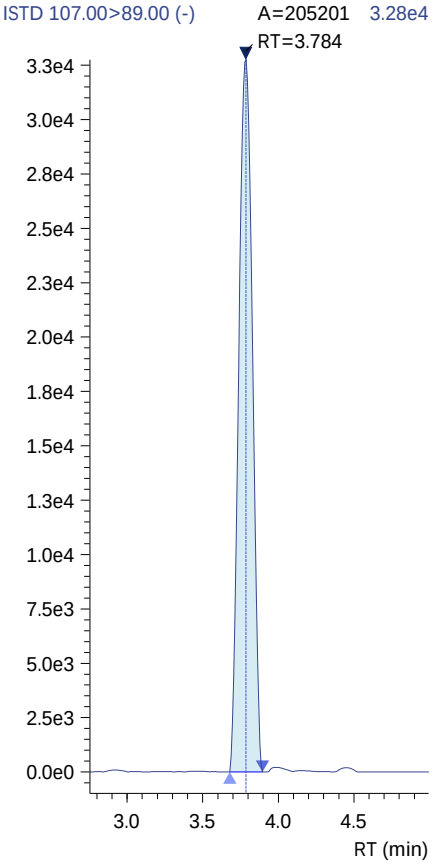
Conc 10.4030
R#1 34.51 (34.63)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 10/21/2022 3:26:39 PM

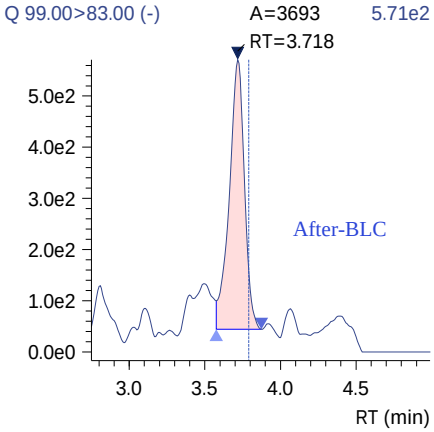
E2200994-001

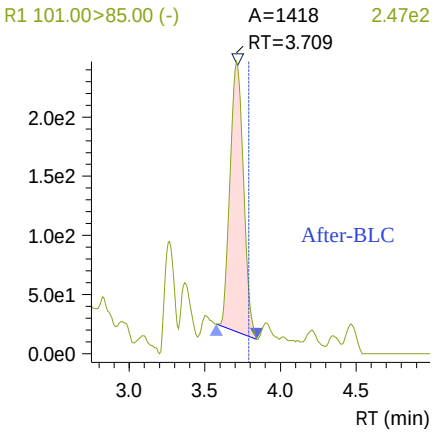
Sample ID: E2200994-001
Date Acquired: 10/18/2022 10:46:16 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221018\20221018_012.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.718	3693	232781	0.1178	ng/mL	101.00 >85.00	38.40	24.24 -45.01
Sodium Perchlorate-18O4_IS	Auto	3.715	232781	232781	1.0000	ng/mL	----	----	

Perchlorate

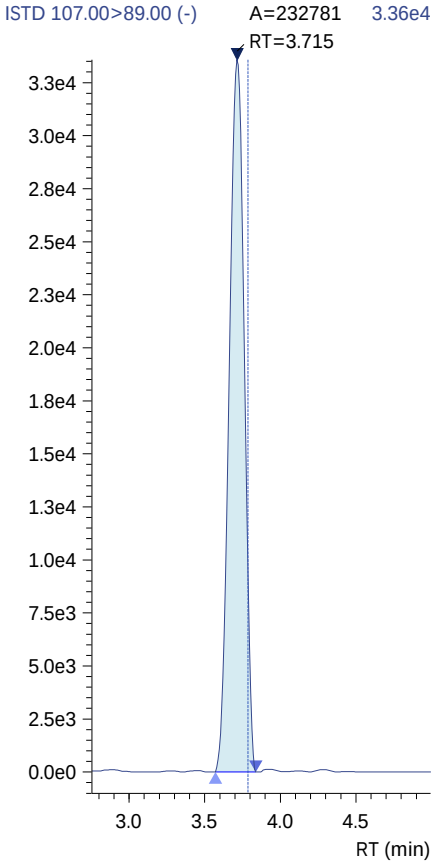
Conc 0.1178
R#1 38.40 (34.63)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

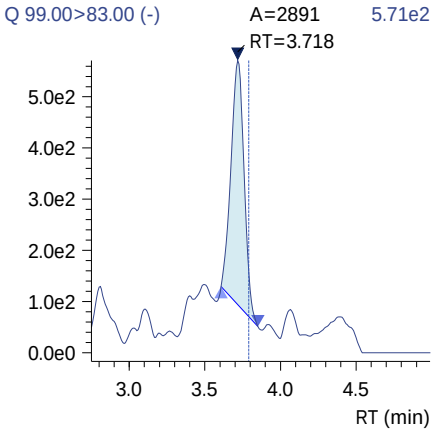
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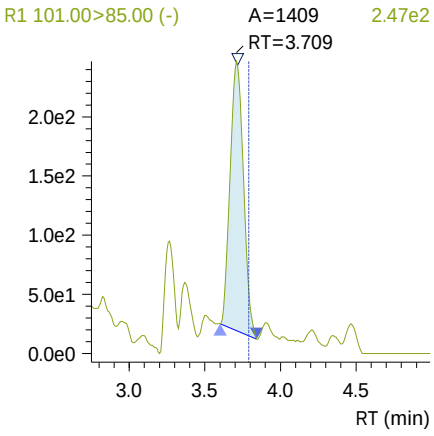
E2200994-001

Sample ID: E2200994-001
Date Acquired: 10/18/2022 10:46:16 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221018\20221018_012.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 3

Perchlorate

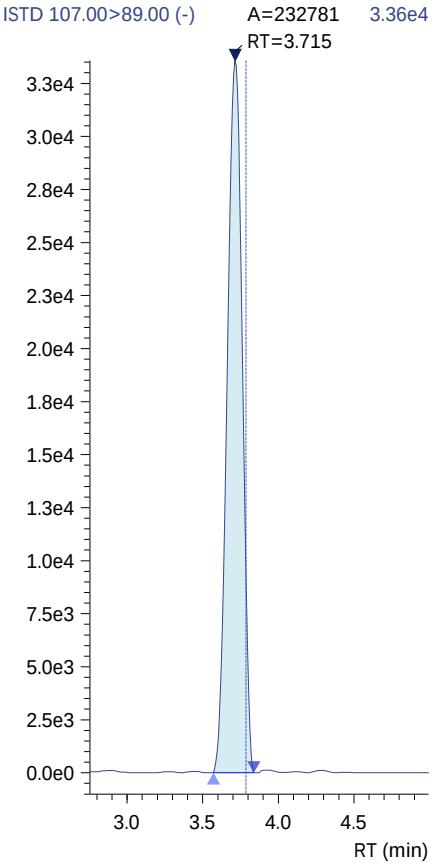
Conc 0.0923
R#1 48.72 (34.63)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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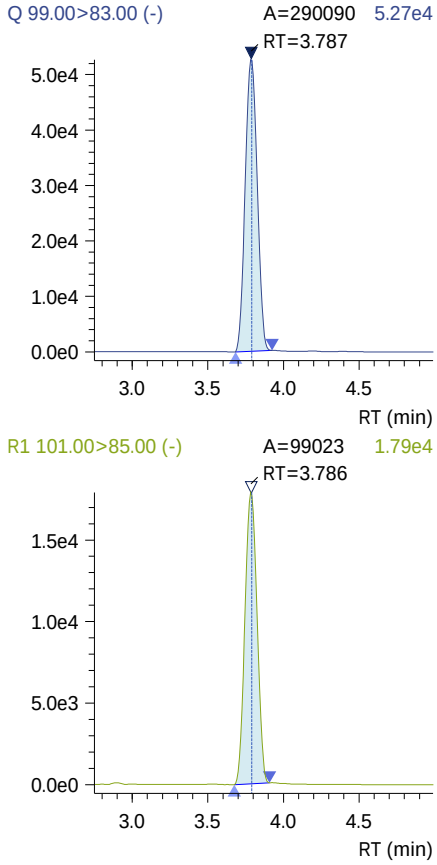
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 10/18/2022 11:11:30 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20221018\20221018_015.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.787	2900 90	203736	10.5 701	ng/mL	101.00 >85.00	34.14	24.24 -45.01
Sodium Perchlorate-18O4 _IS	Auto	3.785	2037 36	203736	1.0000	ng/mL	----	----	

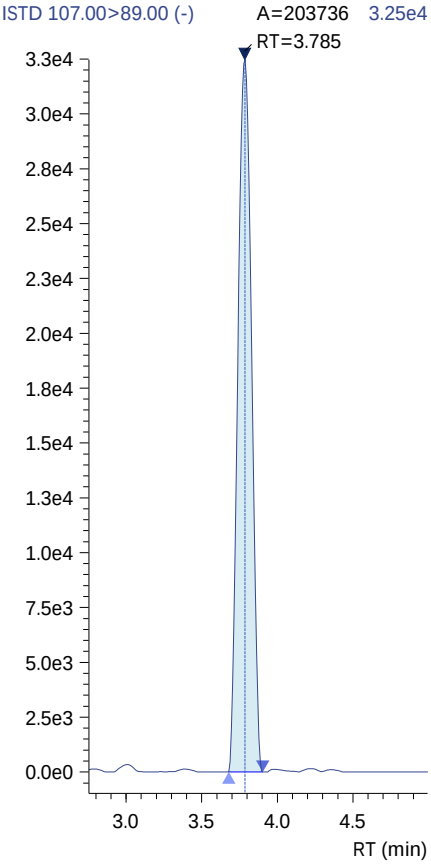
Perchlorate

Conc 10.5701
R#1 34.14 (34.63)



Sodium Perchlorate-18O4_IS

Conc 1.0000



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right solutions.
right partner.

WorkOrder: HS22100577

LHAAP50 October 2022

Aptim Environmental & Infrastucture, Inc.

Vicki Graves
10333 Richmond Ave Ste 1030
Houston TX 77042

25-Oct-2022

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HS22100577 LHAAP50 October 2022 Final

ALS WO# HS22100577

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October 28, 2022

Vicki Graves
Aptim Environmental & Infrastucture, Inc.
10333 Richmond Ave
Ste 1030
Houston, TX 77042

Work Order: **HS22100577**

Laboratory Results for: **LHAAP50 October 2022**

Dear Vicki Graves ,

ALS Environmental received 8 sample(s) on Oct 12, 2022 for the analysis presented in the following report.

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

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

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

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
Work Order: HS22100577

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22100577-01	50WW14-221011	Groundwater		11-Oct-2022 07:55	12-Oct-2022 09:00	☐
HS22100577-02	50WW13-221011	Groundwater		11-Oct-2022 08:55	12-Oct-2022 09:00	☐
HS22100577-03	50WW11-221011	Groundwater		11-Oct-2022 09:40	12-Oct-2022 09:00	☐
HS22100577-04	50WW06-221011	Groundwater		11-Oct-2022 10:30	12-Oct-2022 09:00	☐
HS22100577-05	50WW12-221011	Groundwater		11-Oct-2022 11:20	12-Oct-2022 09:00	☐
HS22100577-06	50WW12-221011-FD	Groundwater		11-Oct-2022 11:20	12-Oct-2022 09:00	☐
HS22100577-07	50WW29-221011	Groundwater		11-Oct-2022 12:15	12-Oct-2022 09:00	☐
HS22100577-08	Trip Blank-221011	Water	cg-102720-263	11-Oct-2022 00:00	12-Oct-2022 09:00	☐

ALS Houston, US Date: 10-Jan-23

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP 50 October 2022
Work Order: HS22100577

Work Order Comments

- The analysis for CO2 by RSK-175 was subcontracted to Eurofins located in Lancaster, PA. The final report is appended.

Work Order Comments

- The analysis of Perchlorate was performed by ALS Houston Specialty Lab. The final report is appended.
- This report was revised in order to correct the case narrative comment for the location of RSK-175 CO2 analysis.

GC Semivolatiles by Method RSK-175

Batch ID: R420187

Sample ID: HS22100970-03MS

- MS and MSD are for an unrelated sample.

GCMS Volatiles by Method SW8260

Batch ID: R419507

Sample ID: 50WW14-221011 (HS22100577-01MSD)

- MSD recovered outside control limits for Trichloroethene due to possible matrix effect.

WetChemistry by Method SM5310B

Batch ID: R420432

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

WetChemistry by Method SW9056

Batch ID: R419273

Sample ID: 50WW12-221011 (HS22100577-05)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes.

Sample ID: 50WW12-221011-FD (HS22100577-06)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes.

Sample ID: 50WW14-221011 (HS22100577-01MS)

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

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
Sample ID: 50WW14-221011
Collection Date: 11-Oct-2022 07:55

ANALYTICAL REPORT
WorkOrder:HS22100577
Lab ID:HS22100577-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 14:13
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 14:13
cis-1,2-Dichloroethene	**2.4**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 14:13
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	15-Oct-2022 14:13
Trichloroethene	**33**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 14:13
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 14:13
Surr: 1,2-Dichloroethane-d4	*86.1*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 14:13*
Surr: 4-Bromofluorobenzene	*96.6*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 14:13*
Surr: Dibromofluoromethane	*87.3*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 14:13*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 14:13*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	**0.00143**		**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	24-Oct-2022 09:41
Ethene	0.000500	U	0.000234	0.000500	0.00100	mg/L	1	24-Oct-2022 09:41
Methane	**0.00567**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	24-Oct-2022 09:41
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**1.23**		**0.500**	**1.00**	**1.00**	**mg/L**	1	27-Oct-2022 14:04
ANIONS BY SW9056A		**Method:SW9056**						Analyst: TH
Chloride	**418**		**2.00**	**5.00**	**5.00**	**mg/L**	10	12-Oct-2022 17:13
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	12-Oct-2022 16:57
Sulfate	**394**		**2.00**	**5.00**	**5.00**	**mg/L**	10	12-Oct-2022 17:13
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	25-Oct-2022 11:01

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

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
Sample ID: 50WW13-221011
Collection Date: 11-Oct-2022 08:55

ANALYTICAL REPORT
WorkOrder:HS22100577
Lab ID:HS22100577-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	**14**	J	**5.0**	**25**	**25**	**ug/L**	25	15-Oct-2022 19:50
1,2-Dichloroethane	**46**		**5.0**	**25**	**25**	**ug/L**	25	15-Oct-2022 19:50
cis-1,2-Dichloroethene	**280**		**5.0**	**25**	**25**	**ug/L**	25	15-Oct-2022 19:50
Tetrachloroethene	25	U	7.5	25	25	ug/L	25	15-Oct-2022 19:50
Trichloroethene	**8,600**		**50**	**250**	**250**	**ug/L**	250	15-Oct-2022 20:11
Vinyl chloride	25	U	5.0	25	25	ug/L	25	15-Oct-2022 19:50
Surr: 1,2-Dichloroethane-d4	*87.9*			**0**	*81-118*	*%REC*	*25*	*15-Oct-2022 19:50*
Surr: 1,2-Dichloroethane-d4	*86.9*			**0**	*81-118*	*%REC*	*250*	*15-Oct-2022 20:11*
Surr: 4-Bromofluorobenzene	*96.4*			**0**	*85-114*	*%REC*	*25*	*15-Oct-2022 19:50*
Surr: 4-Bromofluorobenzene	*96.8*			**0**	*85-114*	*%REC*	*250*	*15-Oct-2022 20:11*
Surr: Dibromofluoromethane	*88.3*			**0**	*80-119*	*%REC*	*250*	*15-Oct-2022 20:11*
Surr: Dibromofluoromethane	*88.6*			**0**	*80-119*	*%REC*	*25*	*15-Oct-2022 19:50*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*25*	*15-Oct-2022 19:50*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*250*	*15-Oct-2022 20:11*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	0.000500	U	0.000144	0.000500	0.00100	mg/L	1	24-Oct-2022 10:07
Ethene	**0.00187**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	24-Oct-2022 10:07
Methane	**0.0219**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	24-Oct-2022 10:07
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**2.07**		**0.500**	**1.00**	**1.00**	**mg/L**	1	27-Oct-2022 14:31
ANIONS BY SW9056A		**Method:SW9056**						Analyst: TH
Chloride	**291**		**2.00**	**5.00**	**5.00**	**mg/L**	10	12-Oct-2022 17:24
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	12-Oct-2022 17:19
Sulfate	**332**		**2.00**	**5.00**	**5.00**	**mg/L**	10	12-Oct-2022 17:24
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	25-Oct-2022 11:01

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

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
Sample ID: 50WW11-221011
Collection Date: 11-Oct-2022 09:40

ANALYTICAL REPORT
WorkOrder:HS22100577
Lab ID:HS22100577-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	**22**		**2.0**	**10**	**10**	**ug/L**	10	15-Oct-2022 19:08
1,2-Dichloroethane	**25**		**2.0**	**10**	**10**	**ug/L**	10	15-Oct-2022 19:08
cis-1,2-Dichloroethene	**65**		**2.0**	**10**	**10**	**ug/L**	10	15-Oct-2022 19:08
Tetrachloroethene	**6.5**	J	**3.0**	**10**	**10**	**ug/L**	10	15-Oct-2022 19:08
Trichloroethene	**3,100**		**20**	**100**	**100**	**ug/L**	100	15-Oct-2022 19:29
Vinyl chloride	10	U	2.0	10	10	ug/L	10	15-Oct-2022 19:08
Surr: 1,2-Dichloroethane-d4	*87.4*			**0**	*81-118*	*%REC*	*10*	*15-Oct-2022 19:08*
Surr: 1,2-Dichloroethane-d4	*85.6*			**0**	*81-118*	*%REC*	*100*	*15-Oct-2022 19:29*
Surr: 4-Bromofluorobenzene	*96.0*			**0**	*85-114*	*%REC*	*10*	*15-Oct-2022 19:08*
Surr: 4-Bromofluorobenzene	*95.0*			**0**	*85-114*	*%REC*	*100*	*15-Oct-2022 19:29*
Surr: Dibromofluoromethane	*88.3*			**0**	*80-119*	*%REC*	*10*	*15-Oct-2022 19:08*
Surr: Dibromofluoromethane	*87.9*			**0**	*80-119*	*%REC*	*100*	*15-Oct-2022 19:29*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*10*	*15-Oct-2022 19:08*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*100*	*15-Oct-2022 19:29*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	0.000500	U	0.000144	0.000500	0.00100	mg/L	1	24-Oct-2022 10:20
Ethene	**0.103**		**0.0117**	**0.0250**	**0.0500**	**mg/L**	50	24-Oct-2022 12:23
Methane	**0.484**		**0.00535**	**0.0250**	**0.0250**	**mg/L**	50	24-Oct-2022 12:23
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**1.78**		**0.500**	**1.00**	**1.00**	**mg/L**	1	27-Oct-2022 14:47
ANIONS BY SW9056A		**Method:SW9056**						Analyst: TH
Chloride	**308**		**2.00**	**5.00**	**5.00**	**mg/L**	10	12-Oct-2022 17:56
Nitrogen, Nitrate (As N)	**0.0498**	J	**0.0300**	**0.100**	**0.100**	**mg/L**	1	12-Oct-2022 17:50
Sulfate	**389**		**2.00**	**5.00**	**5.00**	**mg/L**	10	12-Oct-2022 17:56
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	25-Oct-2022 11:01

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

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
Sample ID: 50WW06-221011
Collection Date: 11-Oct-2022 10:30

ANALYTICAL REPORT
WorkOrder:HS22100577
Lab ID:HS22100577-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 14:55
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 14:55
cis-1,2-Dichloroethene	**1.0**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 14:55
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	15-Oct-2022 14:55
Trichloroethene	**20**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 14:55
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 14:55
Surr: 1,2-Dichloroethane-d4	*86.7*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 14:55*
Surr: 4-Bromofluorobenzene	*95.5*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 14:55*
Surr: Dibromofluoromethane	*87.8*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 14:55*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 14:55*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	0.000500	U	0.000144	0.000500	0.00100	mg/L	1	24-Oct-2022 10:30
Ethene	**0.00313**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	24-Oct-2022 10:30
Methane	**0.0491**		**0.000428**	**0.00200**	**0.00200**	**mg/L**	4	24-Oct-2022 12:33
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**2.42**		**0.500**	**1.00**	**1.00**	**mg/L**	1	27-Oct-2022 15:05
ANIONS BY SW9056A		**Method:SW9056**						Analyst: TH
Chloride	**72.7**		**0.200**	**0.500**	**0.500**	**mg/L**	1	12-Oct-2022 18:01
Nitrogen, Nitrate (As N)	**0.133**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	12-Oct-2022 18:01
Sulfate	**31.5**		**0.200**	**0.500**	**0.500**	**mg/L**	1	12-Oct-2022 18:01
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	25-Oct-2022 11:01

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

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
Sample ID: 50WW12-221011
Collection Date: 11-Oct-2022 11:20

ANALYTICAL REPORT
WorkOrder:HS22100577
Lab ID:HS22100577-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	**4.5**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 17:44
1,2-Dichloroethane	**0.79**	J	**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 17:44
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 17:44
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	15-Oct-2022 17:44
Trichloroethene	**180**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 17:44
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 17:44
Surr: 1,2-Dichloroethane-d4	*86.8*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 17:44*
Surr: 4-Bromofluorobenzene	*95.0*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 17:44*
Surr: Dibromofluoromethane	*88.0*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 17:44*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 17:44*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	0.000500	U	0.000144	0.000500	0.00100	mg/L	1	24-Oct-2022 10:38
Ethene	0.000500	U	0.000234	0.000500	0.00100	mg/L	1	24-Oct-2022 10:38
Methane	**9.86**		**0.0535**	**0.250**	**0.250**	**mg/L**	500	24-Oct-2022 12:55
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**1.69**		**0.500**	**1.00**	**1.00**	**mg/L**	1	27-Oct-2022 15:53
ANIONS BY SW9056A		**Method:SW9056**						Analyst: TH
Chloride	**1,160**		**10.0**	**25.0**	**25.0**	**mg/L**	50	12-Oct-2022 18:17
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	12-Oct-2022 18:11
Sulfate	**563**		**10.0**	**25.0**	**25.0**	**mg/L**	50	12-Oct-2022 18:17
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	25-Oct-2022 11:01

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

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
Sample ID: 50WW12-221011-FD
Collection Date: 11-Oct-2022 11:20

ANALYTICAL REPORT
WorkOrder:HS22100577
Lab ID:HS22100577-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	**4.5**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 18:05
1,2-Dichloroethane	**0.82**	J	**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 18:05
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 18:05
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	15-Oct-2022 18:05
Trichloroethene	**180**		**0.20**	**1.0**	**1.0**	**ug/L**	1	15-Oct-2022 18:05
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 18:05
Surr: 1,2-Dichloroethane-d4	*85.7*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 18:05*
Surr: 4-Bromofluorobenzene	*97.2*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 18:05*
Surr: Dibromofluoromethane	*87.4*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 18:05*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 18:05*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	0.000500	U	0.000144	0.000500	0.00100	mg/L	1	24-Oct-2022 11:06
Ethene	0.000500	U	0.000234	0.000500	0.00100	mg/L	1	24-Oct-2022 11:06
Methane	**8.29**		**0.0535**	**0.250**	**0.250**	**mg/L**	500	24-Oct-2022 13:06
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**1.66**		**0.500**	**1.00**	**1.00**	**mg/L**	1	27-Oct-2022 16:09
ANIONS BY SW9056A		**Method:SW9056**						Analyst: TH
Chloride	**1,150**		**10.0**	**25.0**	**25.0**	**mg/L**	50	12-Oct-2022 18:27
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	12-Oct-2022 18:22
Sulfate	**568**		**10.0**	**25.0**	**25.0**	**mg/L**	50	12-Oct-2022 18:27
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	25-Oct-2022 11:01

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

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
Sample ID: 50WW29-221011
Collection Date: 11-Oct-2022 12:15

ANALYTICAL REPORT
WorkOrder:HS22100577
Lab ID:HS22100577-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 14:34
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 14:34
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 14:34
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	15-Oct-2022 14:34
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 14:34
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 14:34
Surr: 1,2-Dichloroethane-d4	*85.5*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 14:34*
Surr: 4-Bromofluorobenzene	*95.9*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 14:34*
Surr: Dibromofluoromethane	*88.4*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 14:34*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 14:34*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	20-Oct-2022 15:53

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

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
Sample ID: Trip Blank-221011
Collection Date: 11-Oct-2022 00:00

ANALYTICAL REPORT
WorkOrder:HS22100577
Lab ID:HS22100577-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 13:31
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 13:31
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 13:31
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	15-Oct-2022 13:31
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 13:31
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	15-Oct-2022 13:31
Surr: 1,2-Dichloroethane-d4	*85.4*			**0**	*81-118*	*%REC*	*1*	*15-Oct-2022 13:31*
Surr: 4-Bromofluorobenzene	*96.1*			**0**	*85-114*	*%REC*	*1*	*15-Oct-2022 13:31*
Surr: Dibromofluoromethane	*88.2*			**0**	*80-119*	*%REC*	*1*	*15-Oct-2022 13:31*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*15-Oct-2022 13:31*

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

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
WorkOrder: HS22100577

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R419273 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS22100577-01	50WW14-221011	11 Oct 2022 07:55			12 Oct 2022 17:13	10
HS22100577-01	50WW14-221011	11 Oct 2022 07:55			12 Oct 2022 16:57	1
HS22100577-02	50WW13-221011	11 Oct 2022 08:55			12 Oct 2022 17:24	10
HS22100577-02	50WW13-221011	11 Oct 2022 08:55			12 Oct 2022 17:19	1
HS22100577-03	50WW11-221011	11 Oct 2022 09:40			12 Oct 2022 17:56	10
HS22100577-03	50WW11-221011	11 Oct 2022 09:40			12 Oct 2022 17:50	1
HS22100577-04	50WW06-221011	11 Oct 2022 10:30			12 Oct 2022 18:01	1
HS22100577-05	50WW12-221011	11 Oct 2022 11:20			12 Oct 2022 18:17	50
HS22100577-05	50WW12-221011	11 Oct 2022 11:20			12 Oct 2022 18:11	5
HS22100577-06	50WW12-221011-FD	11 Oct 2022 11:20			12 Oct 2022 18:27	50
HS22100577-06	50WW12-221011-FD	11 Oct 2022 11:20			12 Oct 2022 18:22	5
Batch ID: R419507 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS22100577-08	Trip Blank-221011	11 Oct 2022 00:00			15 Oct 2022 13:31	1
Batch ID: R419507 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS22100577-01	50WW14-221011	11 Oct 2022 07:55			15 Oct 2022 14:13	1
HS22100577-02	50WW13-221011	11 Oct 2022 08:55			15 Oct 2022 20:11	250
HS22100577-02	50WW13-221011	11 Oct 2022 08:55			15 Oct 2022 19:50	25
HS22100577-03	50WW11-221011	11 Oct 2022 09:40			15 Oct 2022 19:29	100
HS22100577-03	50WW11-221011	11 Oct 2022 09:40			15 Oct 2022 19:08	10
HS22100577-04	50WW06-221011	11 Oct 2022 10:30			15 Oct 2022 14:55	1
HS22100577-05	50WW12-221011	11 Oct 2022 11:20			15 Oct 2022 17:44	1
HS22100577-06	50WW12-221011-FD	11 Oct 2022 11:20			15 Oct 2022 18:05	1
HS22100577-07	50WW29-221011	11 Oct 2022 12:15			15 Oct 2022 14:34	1
Batch ID: R419878 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS22100577-01	50WW14-221011	11 Oct 2022 07:55			20 Oct 2022 15:53	1
HS22100577-02	50WW13-221011	11 Oct 2022 08:55			20 Oct 2022 15:53	1
HS22100577-03	50WW11-221011	11 Oct 2022 09:40			20 Oct 2022 15:53	1
HS22100577-04	50WW06-221011	11 Oct 2022 10:30			20 Oct 2022 15:53	1
HS22100577-05	50WW12-221011	11 Oct 2022 11:20			20 Oct 2022 15:53	1
HS22100577-06	50WW12-221011-FD	11 Oct 2022 11:20			20 Oct 2022 15:53	1
HS22100577-07	50WW29-221011	11 Oct 2022 12:15			20 Oct 2022 15:53	1

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022 **DATES REPORT**
WorkOrder: HS22100577

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R420173 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS22100577-01	50WW14-221011	11 Oct 2022 07:55			25 Oct 2022 11:01	1
HS22100577-02	50WW13-221011	11 Oct 2022 08:55			25 Oct 2022 11:01	1
HS22100577-03	50WW11-221011	11 Oct 2022 09:40			25 Oct 2022 11:01	1
HS22100577-04	50WW06-221011	11 Oct 2022 10:30			25 Oct 2022 11:01	1
HS22100577-05	50WW12-221011	11 Oct 2022 11:20			25 Oct 2022 11:01	1
HS22100577-06	50WW12-221011-FD	11 Oct 2022 11:20			25 Oct 2022 11:01	1
Batch ID: R420187 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Groundwater	
HS22100577-01	50WW14-221011	11 Oct 2022 07:55			24 Oct 2022 09:41	1
HS22100577-02	50WW13-221011	11 Oct 2022 08:55			24 Oct 2022 10:07	1
HS22100577-03	50WW11-221011	11 Oct 2022 09:40			24 Oct 2022 12:23	50
HS22100577-03	50WW11-221011	11 Oct 2022 09:40			24 Oct 2022 10:20	1
HS22100577-04	50WW06-221011	11 Oct 2022 10:30			24 Oct 2022 12:33	4
HS22100577-04	50WW06-221011	11 Oct 2022 10:30			24 Oct 2022 10:30	1
HS22100577-05	50WW12-221011	11 Oct 2022 11:20			24 Oct 2022 12:55	500
HS22100577-05	50WW12-221011	11 Oct 2022 11:20			24 Oct 2022 10:38	1
HS22100577-06	50WW12-221011-FD	11 Oct 2022 11:20			24 Oct 2022 13:06	500
HS22100577-06	50WW12-221011-FD	11 Oct 2022 11:20			24 Oct 2022 11:06	1
Batch ID: R420432 (0)	**Test Name :** TOTAL ORGANIC CARBON - SM5310B-2011				**Matrix:** Groundwater	
HS22100577-01	50WW14-221011	11 Oct 2022 07:55			27 Oct 2022 14:04	1
HS22100577-02	50WW13-221011	11 Oct 2022 08:55			27 Oct 2022 14:31	1
HS22100577-03	50WW11-221011	11 Oct 2022 09:40			27 Oct 2022 14:47	1
HS22100577-04	50WW06-221011	11 Oct 2022 10:30			27 Oct 2022 15:05	1
HS22100577-05	50WW12-221011	11 Oct 2022 11:20			27 Oct 2022 15:53	1
HS22100577-06	50WW12-221011-FD	11 Oct 2022 11:20			27 Oct 2022 16:09	1

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
WorkOrder: HS22100577

QC BATCH REPORT

Batch ID: R420187 (0) **Instrument:** FID-4 **Method:** DISSOLVED GASES BY RSK-175

MBLK Sample ID: **MBLK-221024** Units: **mg/L** Analysis Date: **24-Oct-2022 09:23**
Client ID: Run ID: **FID-4_420187** SeqNo: **6940899** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.000500	0.00100								U
Ethene	0.000500	0.00100								U
Methane	0.000500	0.000500								U

LCS Sample ID: **LCS-221024** Units: **mg/L** Analysis Date: **24-Oct-2022 09:32**
Client ID: Run ID: **FID-4_420187** SeqNo: **6940900** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0216	0.00100	0.01804	0	120	75 - 125				
Ethene	0.0193	0.00100	0.0168	0	115	75 - 125				
Methane	0.00930	0.000500	0.009647	0	96.4	75 - 125				

MS Sample ID: **HS22100970-03MS** Units: **mg/L** Analysis Date: **24-Oct-2022 13:50**
Client ID: Run ID: **FID-4_420187** SeqNo: **6940925** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0236	0.00100	0.01804	0	131	75 - 125				S
Ethene	0.0272	0.00100	0.0168	0	162	75 - 125				S
Methane	2.16	0.000500	0.009647	2.138	275	75 - 125				SEO

MS Sample ID: **HS22100577-01MS** Units: **mg/L** Analysis Date: **24-Oct-2022 09:50**
Client ID: **50WW14-221011** Run ID: **FID-4_420187** SeqNo: **6940902** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0198	0.00100	0.01804	0.001430	102	75 - 125				
Ethene	0.0189	0.00100	0.0168	0	112	75 - 125				
Methane	0.0134	0.000500	0.009647	0.005669	80.3	75 - 125				

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
WorkOrder: HS22100577

QC BATCH REPORT

Batch ID: R420187 (0) **Instrument:** FID-4 **Method:** DISSOLVED GASES BY RSK-175

MSD Sample ID: **HS22100970-03MSD** Units: **mg/L** Analysis Date: **24-Oct-2022 13:58**
Client ID: Run ID: **FID-4_420187** SeqNo: **6940926** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0246	0.00100	0.01804	0	137	75 - 125	0.02356	4.48	30	S
Ethene	0.0314	0.00100	0.0168	0	187	75 - 125	0.02715	14.4	30	S
Methane	2.17	0.000500	0.009647	2.138	294	75 - 125	2.165	0.0866	30	SEO

MSD Sample ID: **HS22100577-01MSD** Units: **mg/L** Analysis Date: **24-Oct-2022 09:58**
Client ID: **50WW14-221011** Run ID: **FID-4_420187** SeqNo: **6940903** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0198	0.00100	0.01804	0.001430	102	75 - 125	0.01982	0.14	30	
Ethene	0.0199	0.00100	0.0168	0	118	75 - 125	0.01886	5.22	30	
Methane	0.0139	0.000500	0.009647	0.005669	85.7	75 - 125	0.01342	3.78	30	

The following samples were analyzed in this batch: HS22100577-01 HS22100577-02 HS22100577-03 HS22100577-04 HS22100577-05 HS22100577-06

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
WorkOrder: HS22100577

QC BATCH REPORT

Batch ID: R419507 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-221015** Units: **ug/L** Analysis Date: **15-Oct-2022 13:10**
Client ID: Run ID: **VOA6_419507** SeqNo: **6923902** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	1.0	1.0								U
1,2-Dichloroethane	1.0	1.0								U
cis-1,2-Dichloroethene	1.0	1.0								U
Tetrachloroethene	1.0	1.0								U
Trichloroethene	1.0	1.0								U
Vinyl chloride	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*42.18*	*1.0*	*50*	*0*	*84.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.66*	*1.0*	*50*	*0*	*97.3*	*85 - 114*				
Surr: Dibromofluoromethane	*44.25*	*1.0*	*50*	*0*	*88.5*	*80 - 119*				
Surr: Toluene-d8	*52.9*	*1.0*	*50*	*0*	*106*	*89 - 112*				

LCS Sample ID: **VLCSW-221015** Units: **ug/L** Analysis Date: **15-Oct-2022 12:28**
Client ID: Run ID: **VOA6_419507** SeqNo: **6923901** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	19.91	1.0	20	0	99.6	71 - 131				
1,2-Dichloroethane	20.68	1.0	20	0	103	73 - 128				
cis-1,2-Dichloroethene	20.27	1.0	20	0	101	78 - 123				
Tetrachloroethene	19.61	1.0	20	0	98.0	74 - 129				
Trichloroethene	19.57	1.0	20	0	97.9	79 - 123				
Vinyl chloride	19.9	1.0	20	0	99.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.36*	*1.0*	*50*	*0*	*105*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.65*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*51.09*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*49.87*	*1.0*	*50*	*0*	*99.7*	*89 - 112*				

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
WorkOrder: HS22100577

QC BATCH REPORT

Batch ID: R419507 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS22100577-01MS** Units: **ug/L** Analysis Date: **15-Oct-2022 20:33**
Client ID: **50WW14-221011** Run ID: **VOA6_419507** SeqNo: **6923923** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	16.14	1.0	20	0	80.7	71 - 131				
1,2-Dichloroethane	18.87	1.0	20	0	94.3	73 - 128				
cis-1,2-Dichloroethene	18.63	1.0	20	2.417	81.1	78 - 123				
Tetrachloroethene	18.15	1.0	20	0	90.8	74 - 129				
Trichloroethene	49.74	1.0	20	33.33	82.0	79 - 123				
Vinyl chloride	15.88	1.0	20	0	79.4	58 - 137				
Surr: 1,2-Dichloroethane-d4	*42.8*	*1.0*	*50*	*0*	*85.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.1*	*1.0*	*50*	*0*	*98.2*	*85 - 114*				
Surr: Dibromofluoromethane	*43.82*	*1.0*	*50*	*0*	*87.6*	*80 - 119*				
Surr: Toluene-d8	*52.39*	*1.0*	*50*	*0*	*105*	*89 - 112*				

MSD Sample ID: **HS22100577-01MSD** Units: **ug/L** Analysis Date: **15-Oct-2022 20:54**
Client ID: **50WW14-221011** Run ID: **VOA6_419507** SeqNo: **6923924** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	16.4	1.0	20	0	82.0	71 - 131	16.14	1.59	20	
1,2-Dichloroethane	19.46	1.0	20	0	97.3	73 - 128	18.87	3.1	20	
cis-1,2-Dichloroethene	19.02	1.0	20	2.417	83.0	78 - 123	18.63	2.08	20	
Tetrachloroethene	18.65	1.0	20	0	93.2	74 - 129	18.15	2.68	20	
Trichloroethene	49.03	1.0	20	33.33	78.5	79 - 123	49.74	1.43	20	S
Vinyl chloride	16.3	1.0	20	0	81.5	58 - 137	15.88	2.64	20	
Surr: 1,2-Dichloroethane-d4	*44.61*	*1.0*	*50*	*0*	*89.2*	*81 - 118*	*42.8*	*4.14*	*20*	
Surr: 4-Bromofluorobenzene	*48.99*	*1.0*	*50*	*0*	*98.0*	*85 - 114*	*49.1*	*0.226*	*20*	
Surr: Dibromofluoromethane	*44.36*	*1.0*	*50*	*0*	*88.7*	*80 - 119*	*43.82*	*1.21*	*20*	
Surr: Toluene-d8	*52.26*	*1.0*	*50*	*0*	*105*	*89 - 112*	*52.39*	*0.237*	*20*	

The following samples were analyzed in this batch:

HS22100577-01	HS22100577-02	HS22100577-03	HS22100577-04
HS22100577-05	HS22100577-06	HS22100577-07	HS22100577-08

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
WorkOrder: HS22100577

QC BATCH REPORT

Batch ID: R419273 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **12-Oct-2022 16:33**
Client ID: Run ID: **ICS-Integrion_419273** SeqNo: **6916846** PrepDate: DF: **1**

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

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **12-Oct-2022 16:47**
Client ID: Run ID: **ICS-Integrion_419273** SeqNo: **6916847** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	21.02	0.500	20	0	105	80 - 120				
Nitrogen, Nitrate (As N)	4.254	0.100	4	0	106	80 - 120				
Sulfate	21.2	0.500	20	0	106	80 - 120				

LCSD Sample ID: **LCSD** Units: **mg/L** Analysis Date: **12-Oct-2022 16:52**
Client ID: Run ID: **ICS-Integrion_419273** SeqNo: **6916848** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.81	0.500	20	0	104	80 - 120	21.02	1.04	20	
Nitrogen, Nitrate (As N)	4.219	0.100	4	0	105	80 - 120	4.254	0.847	20	
Sulfate	20.94	0.500	20	0	105	80 - 120	21.2	1.24	20	

MS Sample ID: **HS22100577-01MS** Units: **mg/L** Analysis Date: **12-Oct-2022 17:03**
Client ID: **50WW14-221011** Run ID: **ICS-Integrion_419273** SeqNo: **6916850** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	412.7	0.500	10	412.3	4.31	80 - 120				SEO
Nitrogen, Nitrate (As N)	2.028	0.100	2	0.0164	101	80 - 120				
Sulfate	377.7	0.500	10	376.4	13.1	80 - 120				SEO

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
WorkOrder: HS22100577

QC BATCH REPORT

Batch ID: R419273 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY SW9056A

MSD Sample ID: **HS22100577-01MSD** Units: **mg/L** Analysis Date: **12-Oct-2022 17:08**
Client ID: **50WW14-221011** Run ID: **ICS-Integrion_419273** SeqNo: **6916851** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	414.5	0.500	10	412.3	22.4	80 - 120	412.7	0.438	20	SEO
Nitrogen, Nitrate (As N)	2.05	0.100	2	0.0164	102	80 - 120	2.028	1.07	20	
Sulfate	380.1	0.500	10	376.4	37.5	80 - 120	377.7	0.646	20	SEO

The following samples were analyzed in this batch: HS22100577-01 HS22100577-02 HS22100577-03 HS22100577-04 HS22100577-05 HS22100577-06

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
WorkOrder: HS22100577

QC BATCH REPORT

Batch ID: R420432 (0) **Instrument:** TOC_05 **Method:** TOTAL ORGANIC CARBON - SM5310B-2011

MBLK Sample ID: **MBLK-10272022** Units: **mg/L** Analysis Date: **27-Oct-2022 12:55**
Client ID: Run ID: **TOC_05_420432** SeqNo: **6946238** PrepDate: DF: **1**

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

LCS Sample ID: **LCS-10272022** Units: **mg/L** Analysis Date: **27-Oct-2022 13:09**
Client ID: Run ID: **TOC_05_420432** SeqNo: **6946239** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.731	1.00	10	0	97.3	85 - 115				

LCSD Sample ID: **LCSD-10272022** Units: **mg/L** Analysis Date: **27-Oct-2022 13:23**
Client ID: Run ID: **TOC_05_420432** SeqNo: **6946240** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.737	1.00	10	0	97.4	85 - 115	9.731	0.0616	20	

MS Sample ID: **HS22100577-01MS** Units: **mg/L** Analysis Date: **27-Oct-2022 14:18**
Client ID: **50WW14-221011** Run ID: **TOC_05_420432** SeqNo: **6946244** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.83	1.00	10	1.233	96.0	80 - 120				

The following samples were analyzed in this batch: HS22100577-01 HS22100577-02 HS22100577-03 HS22100577-04 HS22100577-05 HS22100577-06

ALS Houston, US Date: 28-Oct-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP50 October 2022
WorkOrder: **HS22100577**

QUALIFIERS, ACRONYMS, UNITS

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	22-041-0	27-Mar-2023
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-36	30-Jun-2023
Illinois	2000322022-9	09-May-2023
Kansas	E-10352; 2022-2023	31-Jul-2023
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2022-2023	30-Jun-2023
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
North Dakota	R-193 2022-2023	30-Apr-2023
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932022-13	31-Jul-2023

ALS Houston, US Date: 28-Oct-22

Sample Receipt Checklist

Work Order ID: HS22100577 **Date/Time Received:** 12-Oct-2022 09:00

Client Name: CBI-Houston **Received by:** Corey Grandits

Completed By:	/S/ Corey Grandits	12-Oct-2022 13:11	**Reviewed by:**	/S/ Ragen Giga	25-Oct-2022 13:14
	eSignature	Date/Time		eSignature	Date/Time

Matrices: W Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:Client
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.6uc/2.4c	IR31	
Cooler(s)/Kit(s):	49824		
Date/Time sample(s) sent to storage:	10/12/2022		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (280) 575-2190 ATTN: Dane Wacasey

Project: APTIM LONGHORN
ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: LHAAP50 October 2022

Prepared By: Scott Beesinger

P.O. Number

HS22100577
Aptim Environmental & Infrastucture, Inc.
LHAAP50 October 2022

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (chloride sulfate, nitrate) by SW9056	CO2 by RSK 175	Perchlorate by SW 6850	Remarks (Preservatives, etc.)	Lab I.D.#
50WW14-221011	WG	10/11/22 0755		13	X	X	X	X	X	X		
50WW14-221011-MS	WG	10/11/22 0755		13	X	X	X	X	X	X		
50WW14-221011-MSD	WG	10/11/22 0755		13	X	X	X	X	X	X		
50WW13-221011	WG	10/11/22 0855		13	X	X	X	X	X	X		
50WW11-221011	WG	10/11/22 0940		13	X	X	X	X	X	X		
50WW06-221011	WG	10/11/22 1030		13	X	X	X	X	X	X		
50WW12-221011	WG	10/11/22 1120		13	X	X	X	X	X	X		
50WW12-221011-FD	WG	10/11/22 1120		13	X	X	X	X	X	X		

Additional Remarks: **Standard TAT on all parameters. Please email results to Vicki.Graves@aptim.com and invoices to fedinvoices@aptim.com**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	10/11/22	1430	[illegible]	10-12-22	0900						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

49824 2.6°
1241
CF=-0.2

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (280) 575-2190 ATTN: Dane Wacasey

Project: APTIM LONGHORN
ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: LHAAP50 October 2022

Prepared By: Scott Beesinger

P.O. Number

HS22100577

Aptim Environmental & Infrastucture, Inc.
LHAAP50 October 2022

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (chloride sulfate, nitrate) by SW9056	CO2 by RSK 175	Perchlorate by SW 6850	Remarks (Preservatives, etc.)	Lab I.D.#
50WW29-221011	WG	10/11/22 1215		4	X					X		
TRIP BLANK-221011	W	10/11/22		2	X							

Analyses

Additional Remarks: **Standard TAT on all parameters. Please email results to Vicki.Graves@aptim.com and invoices to fedinvoices@aptim.com**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
	10/11/22	1430									

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

49824

CUSTODY SEAL

Date: 10/11/22 Time: 1430
Name: Scott Beesinger
Company: APTIM

Seal Broken By:
Date: 10/12/22

49824 OCT 12 2022

49824

ORIGIN ID:SGRA (903) 530-6193
SCOTT BEESINGER
APTIM ENVIROMENTAL & INFASTRUCTURE
1203-B EAST GRAND AVE
PMB 202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 26SEP22
ACTWGT: 1.00 LB MAN
CAD: 0221247/CAFE3616
DIMS: 19x16x13 IN

TO SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP 50-BO 87980-DW

RMA:

FedEx Express

FedEx
TRK# 0221 5789 1998 4310

RETURNS MON-SAT
WED - 12 OCT AA
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

eurofins | Environment Testing America



ANALYTICAL REPORT

Eurofins Lancaster Laboratories Environment Testing, LLC
2425 New Holland Pike
Lancaster, PA 17601
Tel: (717)656-2300

Laboratory Job ID: 410-102567-1
Client Project/Site: HS22100577

For:
ALS Group USA, Corp
10450 Stancliff Rd.
Suite 210
Houston, Texas 77099

Attn: Dane Wacasey

Authorized for release by:
10/24/2022 9:12:30 PM

Kelly Bauer, Project Manager
(717)556-7262
Kelly.Bauer@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

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Kelly Bauer
Project Manager
10/24/2022 9:12:30 PM

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Definitions/Glossary

Client: ALS Group USA, Corp
Job ID: 410-102567-1
Project/Site: HS22100577

Qualifiers

GC VOA

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ALS Group USA, Corp
Project/Site: HS22100577

Job ID: 410-102567-1

Job ID: 410-102567-1

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

Narrative

Job Narrative
410-102567-1

Receipt
The samples were received on 10/20/2022 10:35 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.6°C

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: ALS Group USA, Corp
Project/Site: HS22100577

Job ID: 410-102567-1

Client Sample ID: 50WW14-221011 — Lab Sample ID: 410-102567-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	75000		12000	2600	ug/L	1		RSK-175	Total/NA

Client Sample ID: 50WW13-221011 — Lab Sample ID: 410-102567-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	67000		12000	2600	ug/L	1		RSK-175	Total/NA

Client Sample ID: 50WW11-221011 — Lab Sample ID: 410-102567-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	74000		12000	2600	ug/L	1		RSK-175	Total/NA

Client Sample ID: 50WW06-221011 — Lab Sample ID: 410-102567-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	72000		12000	2600	ug/L	1		RSK-175	Total/NA

Client Sample ID: 50WW12-221011 — Lab Sample ID: 410-102567-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	80000		12000	2600	ug/L	1		RSK-175	Total/NA

Client Sample ID: 50WW12-221011-FD — Lab Sample ID: 410-102567-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	78000		12000	2600	ug/L	1		RSK-175	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: ALS Group USA, Corp
Project/Site: HS22100577

Job ID: 410-102567-1

Client Sample ID: 50WW14-221011
Lab Sample ID: 410-102567-1
Date Collected: 10/11/22 07:55
Matrix: Water
Date Received: 10/20/22 10:35

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	75000		12000	2600	ug/L		10/21/22 08:17	10/21/22 09:23	1

Client Sample ID: 50WW13-221011
Lab Sample ID: 410-102567-2
Date Collected: 10/11/22 08:55
Matrix: Water
Date Received: 10/20/22 10:35

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	67000		12000	2600	ug/L		10/21/22 08:17	10/21/22 09:46	1

Client Sample ID: 50WW11-221011
Lab Sample ID: 410-102567-3
Date Collected: 10/11/22 09:40
Matrix: Water
Date Received: 10/20/22 10:35

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	74000		12000	2600	ug/L		10/21/22 08:17	10/21/22 09:53	1

Client Sample ID: 50WW06-221011
Lab Sample ID: 410-102567-4
Date Collected: 10/11/22 10:30
Matrix: Water
Date Received: 10/20/22 10:35

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	72000		12000	2600	ug/L		10/21/22 08:17	10/21/22 10:01	1

Client Sample ID: 50WW12-221011
Lab Sample ID: 410-102567-5
Date Collected: 10/11/22 11:20
Matrix: Water
Date Received: 10/20/22 10:35

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	80000		12000	2600	ug/L		10/21/22 08:17	10/21/22 10:09	1

Client Sample ID: 50WW12-221011-FD
Lab Sample ID: 410-102567-6
Date Collected: 10/11/22 11:20
Matrix: Water
Date Received: 10/20/22 10:35

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	78000		12000	2600	ug/L		10/21/22 08:17	10/21/22 10:16	1

QC Sample Results

Client: ALS Group USA, Corp
Project/Site: HS22100577

Job ID: 410-102567-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 410-309055/1-A
Matrix: Water
Analysis Batch: 309068

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 309055

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	2600	U	12000	2600	ug/L		10/21/22 08:17	10/21/22 08:52	1

Lab Sample ID: LCS 410-309055/2-A
Matrix: Water
Analysis Batch: 309068

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 309055

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Carbon dioxide	35800	38500		ug/L		108	80 - 122

Lab Sample ID: 410-102567-1 MS
Matrix: Water
Analysis Batch: 309068

Client Sample ID: 50WW14-221011
Prep Type: Total/NA
Prep Batch: 309055

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Carbon dioxide	75000		35800	110000		ug/L		97	80 - 122

Lab Sample ID: 410-102567-1 MSD
Matrix: Water
Analysis Batch: 309068

Client Sample ID: 50WW14-221011
Prep Type: Total/NA
Prep Batch: 309055

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Carbon dioxide	75000		35800	113000		ug/L		106	80 - 122	3	30

Lab Sample ID: MB 410-309112/1-A
Matrix: Water
Analysis Batch: 309068

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 309112

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	2600	U	12000	2600	ug/L		10/21/22 09:33	10/21/22 21:10	1

Lab Sample ID: LCSD 410-309112/3-A
Matrix: Water
Analysis Batch: 309068

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 309112

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Carbon dioxide	35800	33700		ug/L		94	80 - 122	2	20

QC Association Summary

Client: ALS Group USA, Corp
Project/Site: HS22100577

Job ID: 410-102567-1

GC VOA

Prep Batch: 309055

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-102567-1	50WW14-221011	Total/NA	Water	RSK-175	
410-102567-2	50WW13-221011	Total/NA	Water	RSK-175	
410-102567-3	50WW11-221011	Total/NA	Water	RSK-175	
410-102567-4	50WW06-221011	Total/NA	Water	RSK-175	
410-102567-5	50WW12-221011	Total/NA	Water	RSK-175	
410-102567-6	50WW12-221011-FD	Total/NA	Water	RSK-175	
MB 410-309055/1-A	Method Blank	Total/NA	Water	RSK-175	
LCS 410-309055/2-A	Lab Control Sample	Total/NA	Water	RSK-175	
410-102567-1 MS	50WW14-221011	Total/NA	Water	RSK-175	
410-102567-1 MSD	50WW14-221011	Total/NA	Water	RSK-175	

Analysis Batch: 309068

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-102567-1	50WW14-221011	Total/NA	Water	RSK-175	309055
410-102567-2	50WW13-221011	Total/NA	Water	RSK-175	309055
410-102567-3	50WW11-221011	Total/NA	Water	RSK-175	309055
410-102567-4	50WW06-221011	Total/NA	Water	RSK-175	309055
410-102567-5	50WW12-221011	Total/NA	Water	RSK-175	309055
410-102567-6	50WW12-221011-FD	Total/NA	Water	RSK-175	309055
MB 410-309055/1-A	Method Blank	Total/NA	Water	RSK-175	309055
MB 410-309112/1-A	Method Blank	Total/NA	Water	RSK-175	309112
LCS 410-309055/2-A	Lab Control Sample	Total/NA	Water	RSK-175	309055
LCSD 410-309112/3-A	Lab Control Sample Dup	Total/NA	Water	RSK-175	309112
410-102567-1 MS	50WW14-221011	Total/NA	Water	RSK-175	309055
410-102567-1 MSD	50WW14-221011	Total/NA	Water	RSK-175	309055

Prep Batch: 309112

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 410-309112/1-A	Method Blank	Total/NA	Water	RSK-175	
LCSD 410-309112/3-A	Lab Control Sample Dup	Total/NA	Water	RSK-175	

Lab Chronicle

Client: ALS Group USA, Corp
Project/Site: HS22100577

Job ID: 410-102567-1

Client Sample ID: 50WW14-221011
Date Collected: 10/11/22 07:55
Date Received: 10/20/22 10:35

Lab Sample ID: 410-102567-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			309055	SE2A	ELLE	10/21/22 08:17
Total/NA	Analysis	RSK-175		1	309068	LXF2	ELLE	10/21/22 09:23

Client Sample ID: 50WW13-221011
Date Collected: 10/11/22 08:55
Date Received: 10/20/22 10:35

Lab Sample ID: 410-102567-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			309055	SE2A	ELLE	10/21/22 08:17
Total/NA	Analysis	RSK-175		1	309068	LXF2	ELLE	10/21/22 09:46

Client Sample ID: 50WW11-221011
Date Collected: 10/11/22 09:40
Date Received: 10/20/22 10:35

Lab Sample ID: 410-102567-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			309055	SE2A	ELLE	10/21/22 08:17
Total/NA	Analysis	RSK-175		1	309068	LXF2	ELLE	10/21/22 09:53

Client Sample ID: 50WW06-221011
Date Collected: 10/11/22 10:30
Date Received: 10/20/22 10:35

Lab Sample ID: 410-102567-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			309055	SE2A	ELLE	10/21/22 08:17
Total/NA	Analysis	RSK-175		1	309068	LXF2	ELLE	10/21/22 10:01

Client Sample ID: 50WW12-221011
Date Collected: 10/11/22 11:20
Date Received: 10/20/22 10:35

Lab Sample ID: 410-102567-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			309055	SE2A	ELLE	10/21/22 08:17
Total/NA	Analysis	RSK-175		1	309068	LXF2	ELLE	10/21/22 10:09

Client Sample ID: 50WW12-221011-FD
Date Collected: 10/11/22 11:20
Date Received: 10/20/22 10:35

Lab Sample ID: 410-102567-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			309055	SE2A	ELLE	10/21/22 08:17
Total/NA	Analysis	RSK-175		1	309068	LXF2	ELLE	10/21/22 10:16

Laboratory References:
ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: ALS Group USA, Corp
Project/Site: HS22100577

Job ID: 410-102567-1

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-22

Method Summary

Client: ALS Group USA, Corp
Project/Site: HS22100577

Job ID: 410-102567-1

Method	Method Description	Protocol	Laboratory
RSK-175	Dissolved Gases (GC)	RSK	ELLE
RSK-175	Dissolved Gases Prep	RSK	ELLE

Protocol References:

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: ALS Group USA, Corp
Project/Site: HS22100577

Job ID: 410-102567-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-102567-1	50WW14-221011	Water	10/11/22 07:55	10/20/22 10:35
410-102567-2	50WW13-221011	Water	10/11/22 08:55	10/20/22 10:35
410-102567-3	50WW11-221011	Water	10/11/22 09:40	10/20/22 10:35
410-102567-4	50WW06-221011	Water	10/11/22 10:30	10/20/22 10:35
410-102567-5	50WW12-221011	Water	10/11/22 11:20	10/20/22 10:35
410-102567-6	50WW12-221011-FD	Water	10/11/22 11:20	10/20/22 10:35

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

410-102567 Chain of Custody

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **20093**

SUBCONTRACT TO:

Eurofins Lancaster Laboratories Envt Testing
2425 New Holland Pike
Lancaster, PA 17601 **Phone:** +1 717 656 2300

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:	HS22100577
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS22100577-01**	**50WW14-221011**	**Groundwater**	**11 Oct 2022 07:55**
	RSK175 CO2; LHAAP; DoD Level IV, LHAAP EQUIS EDD			26 Oct 2022
	XXX SUB			26 Oct 2022
2.	**HS22100577-02**	**50WW13-221011**	**Groundwater**	**11 Oct 2022 08:55**
	RSK175 CO2; LHAAP; DoD Level IV, LHAAP EQUIS EDD			26 Oct 2022
	XXX SUB			26 Oct 2022
3.	**HS22100577-03**	**50WW11-221011**	**Groundwater**	**11 Oct 2022 09:40**
	RSK175 CO2; LHAAP; DoD Level IV, LHAAP EQUIS EDD			26 Oct 2022
	XXX SUB			26 Oct 2022
4.	**HS22100577-04**	**50WW06-221011**	**Groundwater**	**11 Oct 2022 10:30**
	RSK175 CO2; LHAAP; DoD Level IV, LHAAP EQUIS EDD			26 Oct 2022
	XXX SUB			26 Oct 2022
5.	**HS22100577-05**	**50WW12-221011**	**Groundwater**	**11 Oct 2022 11:20**
	RSK175 CO2; LHAAP; DoD Level IV, LHAAP EQUIS EDD			26 Oct 2022
	XXX SUB			26 Oct 2022
6.	**HS22100577-06**	**50WW12-221011-FD**	**Groundwater**	**11 Oct 2022 11:20**
	RSK175 CO2; LHAAP; DoD Level IV, LHAAP EQUIS EDD			26 Oct 2022
	XXX SUB			26 Oct 2022

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **20093**

LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
ANALYSIS REQUESTED			DUE DATE

Comments: 50WW14-221011 (HS22100577-01) designate as MS/MSD
3 Week TAT for Level IV Data Package

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

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 10/19/22 1800

Received By: _____ Date/Time: 10/20/22 1035

Cooler ID(s): _____ Temperature(s): _____

19 Oct 2022 Page 2 of 2

MB

1.4

Login Sample Receipt Checklist

Client: ALS Group USA, Corp

Job Number: 410-102567-1

Login Number: 102567
List Number: 1
Creator: Ballard, Megan

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	True	

October 19, 2022 Service Request No:E2200993

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

Laboratory Results for: HS22100577

Dear Dane,

Enclosed are the results of the sample(s) submitted to our laboratory October 13, 2022
For your reference, these analyses have been assigned our service request number **E2200993.**

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.

Please contact me if you have any questions. My extension is 2188. You may also contact me via email at James.Guin@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

James Guin

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.:**	E2200993
Project:	HS22100577	**Date Received:**	10/13/22
Sample Matrix:	GW		

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 II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Seven samples were received for analysis at ALS Environmental in Houston on 10/13/22.

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:

EQ2200469-02/03: 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 batch precision (MS/DMS) measurements were determined on another sample E2200993-001 in the extraction batch. The MS/DMS results are included.

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:**E2200993
Project: HS22100577

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2200993-001	50WW14-221011	10/11/2022	0755
E2200993-002	50WW13-221011	10/11/2022	0855
E2200993-003	50WW11-221011	10/11/2022	0940
E2200993-004	50WW06-221011	10/11/2022	1030
E2200993-005	50WW12-221011	10/11/2022	1120
E2200993-006	50WW12-221011-FD	10/11/2022	1120
E2200993-007	50WW29-221011	10/11/2022	1215

Service Request Summary

Folder #: **E2200993**
Client Name: ALS Environmental - US
Project Name: HS22100577
Project Number:

Report To: Dane Wacasey
ALS Group USA, Corp.
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-575-2190
Cell Number:
Fax Number: 281-530-5887
E-mail: dane.wacasey@alsglobal.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 10/13/22
Internal Due Date: 10/26/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS22100577
EDD: EQUIS
EFWEDD_LHAAP

9 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2200993-001	50WW14-221011	Ground Water	10/11/22 0755	**IV**
E2200993-002	50WW13-221011	Ground Water	10/11/22 0855	**IV**
E2200993-003	50WW11-221011	Ground Water	10/11/22 0940	**IV**
E2200993-004	50WW06-221011	Ground Water	10/11/22 1030	**IV**
E2200993-005	50WW12-221011	Ground Water	10/11/22 1120	**IV**
E2200993-006	50WW12-221011-FD	Ground Water	10/11/22 1120	**IV**
E2200993-007	50WW29-221011	Ground Water	10/11/22 1215	**IV**

Service Request Summary

Folder #: **E2200993**
Client Name: ALS Environmental - US
Project Name: HS22100577
Project Number:

Report To: Dane Wacasey
ALS Group USA, Corp.
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-575-2190
Cell Number:
Fax Number: 281-530-5887
E-mail: dane.wacasey@alsglobal.com

Project Chemist: James Guin
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 10/13/22
Internal Due Date: 10/26/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS22100577
EDD: EQUIS
EFWEDD_LHAAP

9 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	6	Level IV Due 11/2
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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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
Utah Department of Health Environmental Laboratory Certification	TX026932022-13	7/31/2023
Washington Department of Health	C819-2022	11/14/2022

Chain of Custody

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Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **20094**

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:	HS22100577
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS22100577-01**	**50WW14-221011**	**Groundwater**	**11 Oct 2022 07:55**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
2.	**HS22100577-02**	**50WW13-221011**	**Groundwater**	**11 Oct 2022 08:55**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
3.	**HS22100577-03**	**50WW11-221011**	**Groundwater**	**11 Oct 2022 09:40**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
4.	**HS22100577-04**	**50WW06-221011**	**Groundwater**	**11 Oct 2022 10:30**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
5.	**HS22100577-05**	**50WW12-221011**	**Groundwater**	**11 Oct 2022 11:20**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
6.	**HS22100577-06**	**50WW12-221011-FD**	**Groundwater**	**11 Oct 2022 11:20**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022
7.	**HS22100577-07**	**50WW29-221011**	**Groundwater**	**11 Oct 2022 12:15**
	Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			26 Oct 2022

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **20094**

Comments: 50WW14-221011 (HS22100577-01) designate as MS/MSD
3 Week TAT for Level IV Data Package

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

QC Level: DOD IV (DoD Data Package)

Relinquished By: NR Date/Time:

Received By: Date/Time: 10/13/22 1500

Cooler ID(s): Temperature(s):

Cooler Receipt Form

ALS Environmental

Project Chemist JG

Client/Project ALS

Thermometer ID IR31

Date/Time Received: 10/13/22 Initials: CG

Date/Time Logged in: 10/13/22 Initials CG

1. Method of delivery: ◯ US Mail ◯ Fed Ex ◯ UPS ◯ DHL ☒ Courier (ALS) ◯ 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?
NA		10/13/22	0800	CG	4.8C	☒
						☐
						☐
						☐

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

ALS Environmental - Houston HRMS
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Phone (713)266-1599 Fax (713)266-0130
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Preparation Information Benchsheet

Prep Run#: 408149 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 10/14/22 10:12

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2200993-001	50WW14-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
2	E2200993-002	50WW13-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
3	E2200993-003	50WW11-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
4	E2200993-004	50WW06-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
5	E2200993-005	50WW12-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
6	E2200993-006	50WW12-221011-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
7	E2200993-007	50WW29-221011	.01	6850/ClO4 DOD			Ground Water	10mL	
8	E2200994-001	50WW09-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
9	E2200994-002	50WW08-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
10	E2200994-003	50WW22-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
11	E2200994-004	50WW23-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
12	E2200994-005	50WW05-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
13	E2200994-006	50WW15-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
14	E2200994-007	50WW16-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
15	E2200994-008	50WW16-221010-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
16	E2200994-009	50WW18-221010	.01	6850/ClO4 DOD			Ground Water	10mL	
17	EQ2200469-01	MB		6850/ClO4 DOD			Liquid	10mL	
18	EQ2200469-02	LCS		6850/ClO4 DOD			Liquid	10mL	
19	EQ2200469-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
20	EQ2200469-04	50WW14-221011 MS	.01	6850/ClO4 DOD			Liquid	10mL	
21	EQ2200469-05	50WW14-221011 DMS	.01	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Perchlorate Intermediate Stock1 Inventory ID 222798 Logbook Ref: Perchlorate (1st Source) Expires On: 10/29/2022

EQ2200469-02	1.00µL	EQ2200469-03	1.00µL	EQ2200469-04	1.00µL	EQ2200469-05	1.00µL

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 225266 Logbook Ref: Perchlorate Internal Standard Expires On: 01/31/2023

E2200993-001	100.00µL	E2200993-002	100.00µL	E2200993-003	100.00µL	E2200993-004	100.00µL	E2200993-005	100.00µL	E2200993-006	100.00µL
E2200993-007	100.00µL	E2200994-001	100.00µL	E2200994-002	100.00µL	E2200994-003	100.00µL	E2200994-004	100.00µL	E2200994-005	100.00µL
E2200994-006	100.00µL	E2200994-007	100.00µL	E2200994-008	100.00µL	E2200994-009	100.00µL	EQ2200469-01	100.00µL	EQ2200469-02	100.00µL
EQ2200469-03	100.00µL	EQ2200469-04	100.00µL	EQ2200469-05	100.00µL						

Preparation Information Benchsheet

Prep Run#: 408149 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** Method **Prep Date/Time:** 10/14/22 10:12

Preparation Materials

Water HPLC Grade	09/22/22 Water (225106)	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: 10/14/22 10:12
Finished: 10/14/22 10:31
By: XMI
Comments

Comments: _____

Reviewed By: TW Date: 10/14/22

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Analytical Results

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ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200993
Project:	HS22100577	**Date Collected:**	10/11/22 0755
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW14-221011	**Units:**	µg/L
Lab Code:	E2200993-001	**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	**0.101**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 18:05	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200993
Project:	HS22100577	**Date Collected:**	10/11/22 0855
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW13-221011	**Units:**	µg/L
Lab Code:	E2200993-002	**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	**5310**		20.0	10.0	5.00	200	10/14/22	10/17/22 18:13	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200993
Project:	HS22100577	**Date Collected:**	10/11/22 0940
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW11-221011	**Units:**	µg/L
Lab Code:	E2200993-003	**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	**6280**		20.0	10.0	5.00	200	10/14/22	10/17/22 18:22	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200993
Project:	HS22100577	**Date Collected:**	10/11/22 1030
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW06-221011	**Units:**	µg/L
Lab Code:	E2200993-004	**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	**257**		1.00	0.500	0.250	10	10/14/22	10/17/22 18:30	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200993
Project:	HS22100577	**Date Collected:**	10/11/22 1120
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW12-221011	**Units:**	µg/L
Lab Code:	E2200993-005	**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	**17600**		100	50.0	25.0	1000	10/14/22	10/17/22 18:38	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200993
Project:	HS22100577	**Date Collected:**	10/11/22 1120
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW12-221011-FD	**Units:**	µg/L
Lab Code:	E2200993-006	**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	**17900**		100	50.0	25.0	1000	10/14/22	10/17/22 18:55	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200993
Project:	HS22100577	**Date Collected:**	10/11/22 1215
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW29-221011	**Units:**	µg/L
Lab Code:	E2200993-007	**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	**0.138**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 19:12	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200993
Project:	HS22100577	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2200469-01	**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	10/14/22	10/17/22 17:23	408149	781288	

Accuracy & Precision

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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS22100577
Sample Matrix: Ground Water

Service Request: E2200993
Date Analyzed: 10/17/22

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: 408149

	Lab Control Sample EQ2200469-02			Duplicate Lab Control Sample EQ2200469-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.114	0.100	114	0.103	0.100	103	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.

Printed 10/20/22 10:09

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200993
Project:	HS22100577	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200469-02	**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	**0.114**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 17:31	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200993
Project:	HS22100577	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200469-03	**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	**0.103**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 17:40	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200993
Project:	HS22100577	**Date Collected:**	10/11/22
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
		Date Analyzed:	10/17/22 - 10/18/22

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	50WW14-221011	**Units:**	µg/L
Lab Code:	E2200993-001	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		50WW14-221011MS				50WW14-221011DMS					
		Matrix Spike				**Duplicate Matrix Spike**					
		EQ2200469-04				EQ2200469-05					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.101	0.187	0.100	86	0.200	0.100	99	84 - 119	7	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.

Printed 10/20/22 10:09

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200993
Project:	HS22100577	**Date Collected:**	10/11/22 0755
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW14-221011	**Units:**	µg/L
Lab Code:	EQ2200469-04	**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	**0.187**		0.100	0.0500	0.0250	1	10/14/22	10/17/22 17:48	408149	781288	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200993
Project:	HS22100577	**Date Collected:**	10/11/22 0755
Sample Matrix:	Ground Water	**Date Received:**	10/13/22
Sample Name:	50WW14-221011	**Units:**	µg/L
Lab Code:	EQ2200469-05	**Basis:**	NA
Run Type:	Duplicate 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	**0.200**		0.100	0.0500	0.0250	1	10/14/22	10/18/22 11:03	408149	781799	

HS22100577-MSVOA-SW8260

ALS WO# HS22100577

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Form 1

Organic Analysis Data Sheet

Volatiles by by EPA 8260

Workorder

HS22100577

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

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Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

Volatiles by by EPA 8260

HS22100577-01		Collected	Received	Matrix	Basis
50WW14-221011		10/11/22 07:55	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 14:13	VOA6_419507	X101510
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 14:13	VOA6_419507	X101510
cis-1,2-Dichloroethene	ug/L	2.4		0.20	1.0	1.0	1	10/15/22 14:13	VOA6_419507	X101510
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 14:13	VOA6_419507	X101510
Trichloroethene	ug/L	33		0.20	1.0	1.0	1	10/15/22 14:13	VOA6_419507	X101510
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 14:13	VOA6_419507	X101510

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Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

Volatiles by by EPA 8260

HS22100577-02	Collected	Received	Matrix	Basis
50WW13-221011	10/11/22 08:55	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	14	J	5.0	25	25	25	10/15/22 19:50	VOA6_419507	X101526
1,2-Dichloroethane	ug/L	46		5.0	25	25	25	10/15/22 19:50	VOA6_419507	X101526
cis-1,2-Dichloroethene	ug/L	280		5.0	25	25	25	10/15/22 19:50	VOA6_419507	X101526
Tetrachloroethene	ug/L	1.0	U	7.5	25	25	25	10/15/22 19:50	VOA6_419507	X101526
Trichloroethene	ug/L	8,600		50	250	250	250	10/15/22 20:11	VOA6_419507	X101527
Vinyl chloride	ug/L	1.0	U	5.0	25	25	25	10/15/22 19:50	VOA6_419507	X101526

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Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

Volatiles by by EPA 8260

HS22100577-03		Collected	Received	Matrix	Basis
50WW11-221011		10/11/22 09:40	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	22		2.0	10	10	10	10/15/22 19:08	VOA6_419507	X101524
1,2-Dichloroethane	ug/L	25		2.0	10	10	10	10/15/22 19:08	VOA6_419507	X101524
cis-1,2-Dichloroethene	ug/L	65		2.0	10	10	10	10/15/22 19:08	VOA6_419507	X101524
Tetrachloroethene	ug/L	6.5	J	3.0	10	10	10	10/15/22 19:08	VOA6_419507	X101524
Trichloroethene	ug/L	3,100		20	100	100	100	10/15/22 19:29	VOA6_419507	X101525
Vinyl chloride	ug/L	1.0	U	2.0	10	10	10	10/15/22 19:08	VOA6_419507	X101524

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Volatiles by by EPA 8260

HS22100577-04	Collected	Received	Matrix	Basis
50WW06-221011	10/11/22 10:30	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 14:55	VOA6_419507	X101512
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 14:55	VOA6_419507	X101512
cis-1,2-Dichloroethene	ug/L	1.0		0.20	1.0	1.0	1	10/15/22 14:55	VOA6_419507	X101512
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 14:55	VOA6_419507	X101512
Trichloroethene	ug/L	20		0.20	1.0	1.0	1	10/15/22 14:55	VOA6_419507	X101512
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 14:55	VOA6_419507	X101512

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Project LHAAP50 October 2022

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HS22100577

Volatiles by by EPA 8260

HS22100577-05	Collected	Received	Matrix	Basis
50WW12-221011	10/11/22 11:20	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	4.5		0.20	1.0	1.0	1	10/15/22 17:44	VOA6_419507	X101520
1,2-Dichloroethane	ug/L	0.79	J	0.20	1.0	1.0	1	10/15/22 17:44	VOA6_419507	X101520
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 17:44	VOA6_419507	X101520
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 17:44	VOA6_419507	X101520
Trichloroethene	ug/L	180		0.20	1.0	1.0	1	10/15/22 17:44	VOA6_419507	X101520
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 17:44	VOA6_419507	X101520

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Project LHAAP50 October 2022

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HS22100577

Volatiles by by EPA 8260

HS22100577-06	Collected	Received	Matrix	Basis
50WW12-221011-FD	10/11/22 11:20	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	4.5		0.20	1.0	1.0	1	10/15/22 18:05	VOA6_419507	X101521
1,2-Dichloroethane	ug/L	0.82	J	0.20	1.0	1.0	1	10/15/22 18:05	VOA6_419507	X101521
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 18:05	VOA6_419507	X101521
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 18:05	VOA6_419507	X101521
Trichloroethene	ug/L	180		0.20	1.0	1.0	1	10/15/22 18:05	VOA6_419507	X101521
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 18:05	VOA6_419507	X101521

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Volatiles by by EPA 8260

HS22100577-07		Collected	Received	Matrix	Basis
50WW29-221011		10/11/22 12:15	10/12/22 09:00	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 14:34	VOA6_419507	X101511
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 14:34	VOA6_419507	X101511
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 14:34	VOA6_419507	X101511
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 14:34	VOA6_419507	X101511
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 14:34	VOA6_419507	X101511
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 14:34	VOA6_419507	X101511

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Project LHAAP50 October 2022

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Volatiles by by EPA 8260

HS22100577-08	Collected	Received	Matrix	Basis
Trip Blank-221011	10/11/22 00:00	10/12/22 09:00	Water	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:31	VOA6_419507	X101508
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:31	VOA6_419507	X101508
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:31	VOA6_419507	X101508
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 13:31	VOA6_419507	X101508
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:31	VOA6_419507	X101508
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:31	VOA6_419507	X101508

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Volatiles by by EPA 8260

VBLKW-221015	Collected	Received	Matrix	Basis
VBLKW-221015	NA	NA	Aqueous	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:10	VOA6_419507	X101507
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:10	VOA6_419507	X101507
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:10	VOA6_419507	X101507
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	10/15/22 13:10	VOA6_419507	X101507
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:10	VOA6_419507	X101507
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	10/15/22 13:10	VOA6_419507	X101507

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Form 2

System Monitoring Compound Recovery

Volatiles by by EPA 8260

Workorder

HS22100577

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
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Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

RunID
VOA6_419507

Volatiles by by EPA 8260

CCV	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	49.26	50	98.5	80-120	
4-Bromofluorobenzene	49.56	50	99.1	80-120	
Dibromofluoromethane	49.79	50	99.6	80-120	
Toluene-d8	48.21	50	96.4	80-120	

CCB	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	42.19	50	84.4	80-120	
4-Bromofluorobenzene	47.54	50	95.1	80-120	
Dibromofluoromethane	43.9	50	87.8	80-120	
Toluene-d8	52.51	50	105	80-120	

VLCSW-221015	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	52.36	50	105	81-118	
4-Bromofluorobenzene	50.65	50	101	85-114	
Dibromofluoromethane	51.09	50	102	80-119	
Toluene-d8	49.87	50	99.7	89-112	

VBLKW-221015	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	42.18	50	84.4	81-118	
4-Bromofluorobenzene	48.66	50	97.3	85-114	
Dibromofluoromethane	44.25	50	88.5	80-119	
Toluene-d8	52.9	50	106	89-112	

Q - Surrogate %Recovery Flag * - %Recovery / RPD Outside Limits

Form 2 - System Monitoring Compound Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

RunID
VOA6_419507

Volatiles by by EPA 8260

HS22100577-08	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	43	50	85.4	81-118	
4-Bromofluorobenzene	48	50	96.1	85-114	
Dibromofluoromethane	44	50	88.2	80-119	
Toluene-d8	53	50	106	89-112	

HS22100577-01	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	43	50	86.1	81-118	
4-Bromofluorobenzene	48	50	96.6	85-114	
Dibromofluoromethane	44	50	87.3	80-119	
Toluene-d8	52	50	104	89-112	

HS22100577-07	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	43	50	85.5	81-118	
4-Bromofluorobenzene	48	50	95.9	85-114	
Dibromofluoromethane	44	50	88.4	80-119	
Toluene-d8	53	50	105	89-112	

HS22100577-04	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	43	50	86.7	81-118	
4-Bromofluorobenzene	48	50	95.5	85-114	
Dibromofluoromethane	44	50	87.8	80-119	
Toluene-d8	52	50	105	89-112	

Q - Surrogate %Recovery Flag * - %Recovery / RPD Outside Limits

Form 2 - System Monitoring Compound Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

RunID
VOA6_419507

Volatiles by by EPA 8260

HS22100577-05	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	43	50	86.8	81-118	
4-Bromofluorobenzene	47	50	95.0	85-114	
Dibromofluoromethane	44	50	88.0	80-119	
Toluene-d8	53	50	106	89-112	

HS22100577-06	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	43	50	85.7	81-118	
4-Bromofluorobenzene	49	50	97.2	85-114	
Dibromofluoromethane	44	50	87.4	80-119	
Toluene-d8	53	50	106	89-112	

HS22100577-03	Analyzed 10/15/22		Conc Units µg/L		DF 10
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	440	500	87.4	81-118	
4-Bromofluorobenzene	480	500	96.0	85-114	
Dibromofluoromethane	440	500	88.3	80-119	
Toluene-d8	520	500	105	89-112	
1,2-Dichloroethane-d4	4,300	5000	85.6	81-118	
4-Bromofluorobenzene	4,800	5000	95.0	85-114	
Dibromofluoromethane	4,400	5000	87.9	80-119	
Toluene-d8	5,300	5000	106	89-112	

Q - Surrogate %Recovery Flag * - %Recovery / RPD Outside Limits

Form 2 - System Monitoring Compound Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

RunID
VOA6_419507

Volatiles by by EPA 8260

HS22100577-02	Analyzed 10/15/22		Conc Units µg/L		DF 25
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	1,100	1250	87.9	81-118	
4-Bromofluorobenzene	1,200	1250	96.4	85-114	
Dibromofluoromethane	1,100	1250	88.6	80-119	
Toluene-d8	1,300	1250	105	89-112	
1,2-Dichloroethane-d4	11,000	12500	86.9	81-118	
4-Bromofluorobenzene	12,000	12500	96.8	85-114	
Dibromofluoromethane	11,000	12500	88.3	80-119	
Toluene-d8	13,000	12500	106	89-112	

HS22100577-01MS	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	42.8	50	85.6	81-118	
4-Bromofluorobenzene	49.1	50	98.2	85-114	
Dibromofluoromethane	43.82	50	87.6	80-119	
Toluene-d8	52.39	50	105	89-112	

HS22100577-01MSD	Analyzed 10/15/22		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	44.61	50	89.2	81-118	
4-Bromofluorobenzene	48.99	50	98.0	85-114	
Dibromofluoromethane	44.36	50	88.7	80-119	
Toluene-d8	52.26	50	105	89-112	

Q - Surrogate %Recovery Flag * - %Recovery / RPD Outside Limits

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Form 3A

Matrix Spike/Spike Duplicate Recovery

Workorder

HS22100577

Client

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Project

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10/28/2022

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Form 3A - Matrix Spike/Spike Duplicate Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

50WW14-221011		HS22100577-01		HS22100577-01MS				HS22100577-01MSD						
Sample Matrix Aqueous		**Run Date**	10/15/22	10/15/22				10/15/22						
Units µg/L		**Run Time**	14:13	20:33				20:54						
		Data File	X101510.D	X101528.D				X101529.D						
Analyte	%R Limits	DF	Result	MS Result	Spike Added	%R	Q	MSD Result	Spike Added	%R	Q	RPD Limit	RPD	Q
1,1-Dichloroethene	71-131	1	0	16.14	20.00	81		16.4	20.00	82		20	1.60	
1,2-Dichloroethane	73-128	1	0	18.87	20.00	94		19.46	20.00	97		20	3.10	
cis-1,2-Dichloroethene	78-123	1	2.417	18.63	20.00	81		19.02	20.00	83		20	2.10	
Tetrachloroethene	74-129	1	0	18.15	20.00	91		18.65	20.00	93		20	2.70	
Trichloroethene	79-123	1	33.33	49.74	20.00	82		49.03	20.00	79	*	20	1.40	
Vinyl chloride	58-137	1	0	15.88	20.00	79		16.3	20.00	82		20	2.60	

- %Recovery / RPD Flag * - %Recovery / RPD Outside Limits OL - Outside Limits

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Form 3B

Laboratory Control Sample Recovery

Volatiles by by EPA 8260

Workorder

HS22100577

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Form 3B - Laboratory Control Sample Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

Volatiles by by EPA 8260

VOA6_419507		QC ID	VLCSW-221015			
QC Matrix Aqueous	Units	Run Date	10/15/22			
	ug/L	Run Time	12:28			
Analyte	%R Limits	Spike Added	LCS Result	%R	Q	
1,1-Dichloroethene	71-131	20	19.91	100		
1,2-Dichloroethane	73-128	20	20.68	103		
1,2-Dichloroethane-d4	81-118	50	52.36	105		
4-Bromofluorobenzene	85-114	50	50.65	101		
cis-1,2-Dichloroethene	78-123	20	20.27	101		
Dibromofluoromethane	80-119	50	51.09	102		
Tetrachloroethene	74-129	20	19.61	98		
Toluene-d8	89-112	50	49.87	100		
Trichloroethene	79-123	20	19.57	98		
Vinyl chloride	58-137	20	19.9	100		

- %Recovery / RPD Flag * - %Recovery / RPD Outside Limits

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Form 4

Method Blank Summary

Volatiles by by EPA 8260

Workorder

HS22100577

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
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Form 4 - Method Blank Summary

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

Volatiles by by EPA 8260

Client Sample ID	Type	Lab Sample ID	File ID	Date Analyzed	Run ID
METHOD BLANK	MBLK	VBLKW-221015	X101507.D	10/15/22 13:10	VOA6_419507
VLCSW-221015	LCS	VLCSW-221015	X101505.D	10/15/22 12:28	VOA6_419507
Trip Blank-221011	SAMP	HS22100577-08	X101508.D	10/15/22 13:31	VOA6_419507
50WW14-221011	SAMP	HS22100577-01	X101510.D	10/15/22 14:13	VOA6_419507
50WW29-221011	SAMP	HS22100577-07	X101511.D	10/15/22 14:34	VOA6_419507
50WW06-221011	SAMP	HS22100577-04	X101512.D	10/15/22 14:55	VOA6_419507
50WW12-221011	SAMP	HS22100577-05	X101520.D	10/15/22 17:44	VOA6_419507
50WW12-221011-FD	SAMP	HS22100577-06	X101521.D	10/15/22 18:05	VOA6_419507
50WW11-221011	SAMP	HS22100577-03	X101524.D	10/15/22 19:08	VOA6_419507
50WW11-221011	SAMP	HS22100577-03	X101525.D	10/15/22 19:29	VOA6_419507
50WW13-221011	SAMP	HS22100577-02	X101526.D	10/15/22 19:50	VOA6_419507
50WW13-221011	SAMP	HS22100577-02	X101527.D	10/15/22 20:11	VOA6_419507
50WW14-221011	MS	HS22100577-01MS	X101528.D	10/15/22 20:33	VOA6_419507
50WW14-221011	MSD	HS22100577-01MSD	X101529.D	10/15/22 20:54	VOA6_419507

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Form 5

Instrument Performance Check

Workorder

HS22100577

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Form 5 - Instrument Performance Check

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

RunID
VOA6_419504

Tune File X101401.D 10/14/22 11:05

m / e	Ion Abundance Criterion	%RA
50	15.0 - 40.0% of mass 95	15.8 (15.8)
75	30.0 - 60.0% of mass 95	43.2 (43.2)
95	Base peak, 100% RA	100 (100)
96	5.0 - 9.0% of mass 95	6.7 (6.73)
173	Less than 2.0% of mass 174	0.4 (0.41) 1
174	50.0 - 120.0% of mass 95	99.6 (99.6)
175	4.0 - 9.0% of mass 174	6.5 (6.5) 1
176	93.0 - 101.0% of mass 174	97.7 (98.1) 1
177	5.0 - 9.0% of mass 176	6.1 (6.21) 2

Value is % of mass 1) 174 2) 176 RA - Relative Abundance

This check applies to the following analyses

	Type	Date Analyzed	Lab File ID	Sample ID
1	ICAL1	10/14/22 11:26	X101402	VSTD000.25
2	ICAL2	10/14/22 12:08	X101403	VSTD000.5
3	ICAL3	10/14/22 12:29	X101404	VSTD001
4	ICAL4	10/14/22 12:50	X101405	VSTD002
5	ICAL6	10/14/22 13:32	X101407	VSTD020
6	ICAL7	10/14/22 13:53	X101408	VSTD050
7	ICAL8	10/14/22 14:14	X101409	VSTD100
8	ICAL9	10/14/22 14:35	X101410	VSTD150
9	ICAL	10/14/22 14:56	X101411	VSTD200
10	ICAL5	10/14/22 15:59	X101414	VSTD005
11	ICV	10/14/22 16:41	X101416	CCV

Form 5 - Instrument Performance Check

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

RunID
VOA6_419507

Tune File X101501.D 10/15/22 11:04

m / e	Ion Abundance Criterion	%RA
50	15.0 - 40.0% of mass 95	15.4 (15.4)
75	30.0 - 60.0% of mass 95	43.8 (43.8)
95	Base peak, 100% RA	100 (97.4)
96	5.0 - 9.0% of mass 95	7.2 (7.21)
173	Less than 2.0% of mass 174	0.6 (0.614) 1
174	50.0 - 120.0% of mass 95	102.7 (103)
175	4.0 - 9.0% of mass 174	7.4 (7.22) 1
176	93.0 - 101.0% of mass 174	99.9 (97.3) 1
177	5.0 - 9.0% of mass 176	6.5 (6.54) 2

Value is % of mass 1) 174 2) 176 RA - Relative Abundance

This check applies to the following analyses

	Type	Date Analyzed	Lab File ID	Sample ID
1	CCV	10/15/22 11:46	X101503	CCV
2	CCB	10/15/22 12:07	X101504	CCB
3	LCS	10/15/22 12:28	X101505	VLCSW-221015
4	MBLK	10/15/22 13:10	X101507	VBLKW-221015
5	SAMP	10/15/22 13:31	X101508	Trip Blank-221011
6	SAMP	10/15/22 14:13	X101510	50WW14-221011
7	SAMP	10/15/22 14:34	X101511	50WW29-221011
8	SAMP	10/15/22 14:55	X101512	50WW06-221011
9	SAMP	10/15/22 17:44	X101520	50WW12-221011
10	SAMP	10/15/22 18:05	X101521	50WW12-221011-FD
11	SAMP	10/15/22 19:08	X101524	50WW11-221011
12	SAMP	10/15/22 19:29	X101525	50WW11-221011
13	SAMP	10/15/22 19:50	X101526	50WW13-221011
14	SAMP	10/15/22 20:11	X101527	50WW13-221011
15	MS	10/15/22 20:33	X101528	HS22100577-01MS
16	MSD	10/15/22 20:54	X101529	HS22100577-01MSD
17	CCV_EN	10/15/22 21:15	X101530	CCV-END

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Form 6

Initial Calibration Data

Workorder

HS22100577

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Initial Calibration Data

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126
ICAL End Date 14-OCT-2022 1559

Calibration Files

Level 1 ..voa6.i\X221014.b\X101402.D
Level 2 ..voa6.i\X221014.b\X101403.D
Level 3 ..voa6.i\X221014.b\X101404.D
Level 4 ..voa6.i\X221014.b\X101405.D
Level 5 ..voa6.i\X221014.b\X101414.D
Level 6 ..voa6.i\X221014.b\X101407.D
Level 7 ..voa6.i\X221014.b\X101408.D
Level 8 ..voa6.i\X221014.b\X101409.D
Level 9 ..voa6.i\X221014.b\X101410.D
Level 10 ..voa6.i\X221014.b\X101411.D

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Dichlorodifluoromethane	NE 162160	1958 313626	3165 468527	5960 585094	15457	64041	LINR	-0.02304	0.36090		0.99789	
Chloromethane	NE 179926	2218 345134	4414 522756	8169 708783	20317	75278	LINR	-0.00680	0.42162		0.99969	
Propionitrile	NE 0.04482	0.03636 0.04476	0.04205 0.04573	0.04892 0.04495	0.04083	0.04664	AVRG		0.04389		8.39144	
Vinyl Chloride	NE 0.38257	0.41328 0.37204	0.41188 0.38359	0.35003 0.36616	0.36840	0.37983	AVRG		0.38086		5.43214	
Bromomethane	NE 107545	1461 211517	3052 329295	5824 434479	15054	48128	LINR	-0.01183	0.26002		0.99941	
Chloroethane	NE 0.23694	0.23364 0.22833	0.23059 0.23142	0.21765 0.21779	0.23370	0.24283	AVRG		0.23032		3.58520	
Trichlorofluoromethane	NE 0.53219	0.52344 0.51639	0.51894 0.52883	0.41810 0.49659	0.48147	0.53399	AVRG		0.50555		7.32991	
Acrolein	NE 0.02819	0.02463 0.02515	0.03359 0.02633	0.02555 0.02738	0.03232	0.02794	AVRG		0.02790		11.23309	
Acetone	NE 78599	1015 175831	1718 248410	3884 NE	10022	34498	LINR	-0.00334	0.10100		0.99878	*
1,1-Dichloroethene	NE 0.32082	0.39091 0.31684	0.30635 0.31924	0.31602 0.30423	0.30557	0.33055	AVRG		0.32339		8.25882	

NE - Not Evaluated, AVRG - Averaged, LINR - Linear Regression, WLIN - Weighted Linear, QUAD - Quadratic, * - Curve Fit Outside Limits

Initial Calibration Data

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Isobutyl Alcohol	NE 425892	6709 870462	10330 1270958	17194 1690451	47767	177006	LINR	-0.20064	0.05086		0.99991	
Acetonitrile	NE 0.04150	0.03050 0.04010	0.03723 0.04067	0.03490 0.04214	0.04097	0.04265	AVRG		0.03896		10.32411	
Allyl Chloride	NE 0.85726	0.84844 0.83903	0.87376 0.86213	0.89732 0.85942	0.84202	0.88285	AVRG		0.86247		2.22942	
Iodomethane	NE 473427	1369 1041949	3290 1553365	6956 NE	27348	155126	QUAD	0.06840	1.70374	-0.03500	0.99935	
Acrylonitrile	NE 107044	699 215625	1067 322717	2845 422900	10352	36550	LINR	0.02515	0.12855		0.99968	
Methylene Chloride	NE 202027	3314 399989	5391 591753	9699 773591	26716	87632	LINR	-0.02674	0.46634		0.99967	
Methyl tert-butyl ether	NE 1.15594	1.07828 1.13673	1.28481 1.15529	1.36952 1.14392	1.20593	1.21935	AVRG		1.19442		7.36817	
Carbon Disulfide	NE 1.13753	1.17916 1.13541	1.10593 1.16274	1.04230 1.11136	1.17504	1.14270	AVRG		1.13246		3.73697	
trans-1,2-Dichloroethene	NE 0.44889	0.48656 0.44060	0.39906 0.44521	0.41386 0.42900	0.44610	0.45705	AVRG		0.44070		5.71716	
Vinyl Acetate	NE 1.03002	1.00666 0.99215	0.90040 0.97988	1.00473 0.95845	1.00586	1.06528	AVRG		0.99371		4.64172	
1,1-Dichloroethane	NE 0.75852	0.80752 0.74923	0.74776 0.75167	0.71013 0.72366	0.75223	0.77337	AVRG		0.75268		3.68665	
Chloroprene	NE 0.12642	0.14775 0.12397	0.12223 0.12881	0.14504 0.11692	0.12105	0.11908	AVRG		0.12792		8.66885	

NE - Not Evaluated, AVRG - Averaged, LINR - Linear Regression, WLIN - Weighted Linear, QUAD - Quadratic, * - Curve Fit Outside Limits

Initial Calibration Data

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559 ICAL Summary Page 3 / 11

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
2-Butanone	NE 0.12225	0.14478 0.12860	0.10865 0.13324	0.11266 0.12913	0.09289	0.11275	AVRG		0.12055		12.84834	*
Methacrylonitrile	NE 0.29906	0.31668 0.28887	0.34141 0.30043	0.37295 0.29595	0.29598	0.30607	AVRG		0.31305		8.73199	
2,2-Dichloropropane	NE 0.61894	0.62717 0.61950	0.56152 0.62793	0.51605 0.59158	0.65449	0.63925	AVRG		0.60627		7.14501	
cis-1,2-Dichloroethene	NE 0.52487	0.56579 0.51735	0.51647 0.51701	0.48116 0.50398	0.53854	0.53512	AVRG		0.52225		4.51102	
Chloroform	NE 0.79487	0.99405 0.79463	0.82082 0.78800	0.77249 0.77107	0.78938	0.82524	AVRG		0.81673		8.45133	
Bromochloromethane	NE 0.27507	0.36617 0.28026	0.29176 0.27334	0.26575 0.26110	0.28958	0.28498	AVRG		0.28756		10.85543	
1,1,1-Trichloroethane	NE 0.65505	0.68570 0.65313	0.61399 0.66897	0.59255 0.63885	0.64504	0.65500	AVRG		0.64537		4.33008	
1,1-Dichloropropene	NE 0.40313	0.47373 0.39591	0.39340 0.40450	0.35959 0.38632	0.37305	0.39868	AVRG		0.39870		7.96090	
1,2-Dichloroethane	NE 0.38496	0.36941 0.37605	0.33214 0.37203	0.34762 0.38304	0.36872	0.38648	AVRG		0.36894		4.91630	
Carbon Tetrachloride	NE 0.38191	0.47437 0.38423	0.43549 0.39531	0.37061 0.37926	0.37365	0.37674	AVRG		0.39684		8.83184	
Benzene	NE 1.23451	1.44361 1.23911	1.31728 1.23124	1.19369 1.20954	1.24455	1.25769	AVRG		1.26347		6.00071	
Trichloroethene	NE 0.36343	0.44765 0.37256	0.37168 0.37789	0.34063 0.36679	0.37374	0.37041	AVRG		0.37609		7.69366	

NE - Not Evaluated, AVRG - Averaged, LINR - Linear Regression, WLIN - Weighted Linear, QUAD - Quadratic, * - Curve Fit Outside Limits

Initial Calibration Data

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Bromodichloromethane	NE	0.45671	0.41504	0.38361	0.40699	0.40199						
	0.40090	0.41687	0.41469	0.41615			AVRG		0.41255		4.77805	
Methyl Methacrylate	NE	0.34047	0.29847	0.28773	0.31441	0.31242						
	0.29990	0.30857	0.31359	0.31201			AVRG		0.30973		4.71081	
2-Chloroethylvinyl ether	NE	2105	2521	3536	10768	46277						
	117091	250016	389632	508948			LINR	0.06210	0.10666		0.99925	
1,2-Dichloropropane	NE	0.42539	0.33421	0.29165	0.33232	0.31920						
	0.30777	0.31215	0.30581	0.30444			AVRG		0.32588		12.18189	
2-Nitropropane	NE	3.05901	1.02681	0.61330	0.64754	0.65101						
	0.62580	0.64762	0.65282	0.63744			AVRG		0.95126		84.18592	*
Dibromomethane	NE	0.14678	0.22284	0.19862	0.20318	0.19574						
	0.19631	0.20037	0.19563	0.19595			AVRG		0.19505		10.27405	
4-Methyl-2-Pentanone	NE	4892	8728	12989	28218	107201						
	260737	544315	810393	1062135			LINR	0.00433	0.24088		0.99987	
cis-1,3-Dichloropropene	NE	0.58377	0.45609	0.49027	0.54036	0.52435						
	0.52277	0.54397	0.54363	0.54242			AVRG		0.52751		6.90165	
Ethyl Methacrylate	NE	0.37354	0.42984	0.36524	0.38377	0.39477						
	0.38866	0.40735	0.41978	0.42215			AVRG		0.39835		5.70324	
Toluene	NE	1.73884	1.46696	1.36848	1.54082	1.46616						
	1.44995	1.45816	1.44974	1.41792			AVRG		1.48411		7.12667	
trans-1,3-Dichloropropene	NE	0.40471	0.37948	0.37891	0.42120	0.41942						
	0.42650	0.44278	0.44379	0.44583			AVRG		0.41807		6.17204	
2-Hexanone	NE	0.21443	0.17595	0.16560	0.15654	0.14228						
	0.14465	0.15901	0.16187	0.16244			AVRG		0.16475		12.90658	

NE - Not Evaluated, AVRG - Averaged, LINR - Linear Regression, WLIN - Weighted Linear, QUAD - Quadratic, * - Curve Fit Outside Limits

Initial Calibration Data

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
1,1,2-Trichloroethane	NE 0.25443	0.35275 0.25720	0.30759 0.25308	0.26318 0.25170	0.27497	0.26125	AVRG		0.27513		12.32553	
1,3-Dichloropropane	NE 0.51185	0.73471 0.52414	0.60302 0.51720	0.52812 0.51551	0.55276	0.52936	AVRG		0.55741		12.95834	
Dibromochloromethane	NE 211264	3780 440505	5151 650961	8098 870695	21891	85257	LINR	0.01138	0.39297		0.99974	
Tetrachloroethene	NE 0.33686	0.40481 0.33614	0.34788 0.34319	0.31889 0.32701	0.34871	0.34885	AVRG		0.34582		7.05507	
1,2-Dibromoethane	NE 0.32431	0.45069 0.33395	0.33923 0.32832	0.31739 0.33022	0.33795	0.33111	AVRG		0.34368		11.83699	
1-Chlorohexane	NE 0.24108	0.67807 0.24421	0.31488 0.24975	0.16192 0.23524	0.24331	0.23746	AVRG		0.28955		52.04473	*
Chlorobenzene	NE 0.98572	1.27526 0.99241	1.10570 0.98778	0.96748 0.97810	1.08428	1.00894	AVRG		1.04285		9.56193	
1,1,1,2-Tetrachloroethane	NE 0.35956	0.42320 0.37285	0.43031 0.37022	0.34456 0.37296	0.37954	0.36756	AVRG		0.38008		7.45446	
Ethylbenzene	NE 0.50709	0.73231 0.50982	0.54175 0.51383	0.47263 0.50002	0.53295	0.51335	AVRG		0.53597		14.21170	
m,p-Xylenes	NE 0.63679	0.74889 0.63311	0.67465 0.64039	0.56424 0.61808	0.66172	0.65067	AVRG		0.64761		7.60383	
o-Xylene	NE 0.60752	0.71633 0.61063	0.67951 0.61198	0.57808 0.59859	0.65582	0.62485	AVRG		0.63148		6.96223	
Styrene	NE 1.03216	0.97853 1.05488	1.03910 1.04619	0.78122 1.02720	1.08294	1.04201	AVRG		1.00936		8.90498	

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Initial Calibration Data

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Bromoform	NE 131593	1906 275605	3244 416750	4836 556325	12900	51773	LINR	0.02247	0.25128		0.99956	
Isopropylbenzene	NE 1.50440	1.79417 1.50639	1.54501 1.53844	1.34135 1.48418	1.62286	1.51632	AVRG		1.53923		7.85755	
1,1,2,2-Tetrachloroethane	NE 191262	3092 392179	4913 578090	8718 755347	22472	79481	LINR	-0.00596	0.67757		0.99988	
1,2,3-Trichloropropane	NE 0.48583	0.52083 0.52346	0.59398 0.50363	0.52934 0.51236	0.56927	0.49409	AVRG		0.52587		6.67464	
trans-1,4-Dichloro-2-butene	NE 43736	654 91591	967 141358	1568 187111	4568	16478	LINR	0.02851	0.08473		0.99935	
n-Propylbenzene	NE 965817	15732 1931706	19374 2927124	32397 3699223	105117	386450	LINR	-0.00509	3.35826		0.99987	
Bromobenzene	NE 0.88929	0.99826 0.90778	1.05022 0.90296	0.84011 0.91386	0.95898	0.92245	AVRG		0.93155		6.70486	
1,3,5-Trimethylbenzene	NE 2.48627	2.71812 2.47868	2.61124 2.47329	2.26246 2.43164	2.78486	2.55584	AVRG		2.53360		6.18598	
2-Chlorotoluene	NE 2.07510	2.88221 2.07779	2.49732 2.05983	2.12912 2.03906	2.35587	2.16821	AVRG		2.25384		12.49173	
4-Chlorotoluene	NE 2.34424	3.17826 2.35039	2.72766 2.32653	2.16095 2.31437	2.56911	2.43716	AVRG		2.48985		12.26296	
tert-Butylbenzene	NE 2.09806	2.60380 2.09938	2.28581 2.11253	1.94081 2.08975	2.40500	2.14804	AVRG		2.19813		9.13567	
1,2,4-Trimethylbenzene	NE 2.46672	3.43726 2.47083	2.65408 2.48656	2.24193 2.45374	2.76114	2.56924	AVRG		2.61572		13.00356	

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Initial Calibration Data

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
sec-Butylbenzene	NE 2.84707	3.69697 2.86300	3.02038 2.88942	2.50051 2.83873	3.29253	2.86720	AVRG		2.97954		11.35369	
p-Isopropyltoluene	NE 2.54887	3.19661 2.56556	2.57054 2.59252	2.16609 2.54671	2.98280	2.59150	AVRG		2.64013		11.07456	
1,3-Dichlorobenzene	NE 1.47575	1.78656 1.50621	1.68828 1.51164	1.37746 1.50683	1.74464	1.49649	AVRG		1.56598		8.86177	
1,4-Dichlorobenzene	NE 1.50160	1.89665 1.51308	2.00695 1.52421	1.39703 1.50583	1.79285	1.57052	AVRG		1.63430		12.87370	
Benzyl Chloride	NE 0.43519	1.83111 0.47895	0.62164 0.50289	0.40400 0.51328	0.48411	0.42106	AVRG		0.63247		71.78882	*
n-Butylbenzene	NE 2.07660	2.19765 2.07910	1.96128 2.09230	1.58438 2.05970	2.51461	2.05183	AVRG		2.06860		11.62544	
1,2-Dichlorobenzene	NE 376934	5627 770867	10311 1158123	15019 1492210	48078	154590	LINR	-0.00440	1.34373		0.99994	
1,2-Dibromo-3-Chloropropane	NE 19399	303 41420	475 65930	903 87502	2467	7513	LINR	0.03680	0.07806		0.99802	
1,2,4-Trichlorobenzene	NE 166885	2124 357352	NE 563938	3514 749105	33011	63618	LINR	0.03696	0.66899		0.99767	*
Hexachlorobutadiene	NE 128928	1814 270788	2554 408156	4115 534882	22062	51139	QUAD	-0.00930	2.20996	-0.06935	0.99973	
Naphthalene	NE 0.74159	1.04025 0.80661	0.98801 0.88567	0.74844 0.91338	0.84251	0.69369	AVRG		0.85113		13.71169	
1,2,3-Trichlorobenzene	NE 0.36788	0.51589 0.40196	0.45802 0.43082	0.35400 0.44737	0.40894	0.36177	AVRG		0.41629		12.68082	

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Initial Calibration Data

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Ethyl Acetate	NE 147790	2349 309571	3696 446269	5696 579438	17751	66369	LINR	-0.02221	0.35196		0.99919	
Methyl Acrylate	NE 145777	NE 329295	NE 493482	889 650975	10862	66109	LINR	0.03920	0.39709		0.99924	*
n-Butanol	NE 0.00668	NE 0.00731	0.00404 0.00801	0.00339 0.00797	0.00366	0.00628	AVRG		0.00592		32.71740	*
Ethyl Acrylate	NE 0.98161	NE 0.95334	NE 0.97749	0.38521 0.98551	0.46749	1.01088	AVRG		0.82308		33.11604	*
Cyclohexanone	NE 0.01526	0.01653 0.01516	0.02327 0.01645	0.01919 0.01659	0.01903	0.01646	AVRG		0.01755		14.65734	
1,4-Dioxane	0.00170 0.00396	0.00496 0.00391	0.00378 0.00412	0.00386 0.00388	0.00389	0.00398	AVRG		0.00380		21.36261	*
n-Hexane	NE 0.46767	0.48204 0.44812	0.41658 0.45305	0.39724 0.41720	0.44872	0.45897	AVRG		0.44329		6.18028	
Freon TF	NE 0.33340	0.30002 0.31908	0.27847 0.32436	0.28985 0.29808	0.29802	0.32775	AVRG		0.30767		6.17471	
Methyl Acetate	NE 0.22163	0.24816 0.22693	0.19047 0.22138	0.19538 0.22132	0.20710	0.22168	AVRG		0.21712		8.01052	
Methylcyclohexane	NE 0.66509	0.71004 0.65559	0.62205 0.66647	0.63485 0.68501	0.67571	0.67751	AVRG		0.66581		3.95203	
Isopropyl alcohol	NE 126400	3311 261455	4080 402867	5094 530448	13792	50397	LINR	0.15528	0.01598		0.99956	
Amyl alcohol	NE 0.00503	0.01795 0.00554	0.00599 0.00607	0.00401 0.00604	0.00607	0.00495	AVRG		0.00685		61.60967	*

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Initial Calibration Data

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Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Allyl alcohol	NE 0.02338	0.02410 0.02241	0.02083 0.02265	0.01986 0.02086	0.02244	0.02295	AVRG		0.02216		6.18028	
4-Methyl-2-pentanol	NE 0.03866	0.04259 0.04039	0.04907 0.04383	0.05542 0.04368	0.05202	0.04364	AVRG		0.04548		12.15642	
Tert-butyl alcohol	NE 241419	5696 498491	7925 769833	12326 1015592	30141	100144	LINR	0.04267	0.03051		0.99952	
Diethyl ether	NE 0.23232	0.25720 0.22321	0.23976 0.22641	0.26545 0.22525	0.24552	0.24794	AVRG		0.24034		6.20536	
1,3-Butadiene	NE 0.27187	0.32310 0.26095	0.26635 0.26902	0.25626 0.25456	0.26209	0.28120	AVRG		0.27171		7.70764	
Cyclohexane	NE 0.62396	0.59696 0.57533	0.52635 0.59337	0.51411 0.54677	0.54877	0.64041	AVRG		0.57400		7.55531	
Tetrahydrofuran	NE 0.05029	NE 0.05069	NE 0.05144	0.05679 0.05039	0.04609	0.05350	AVRG		0.05131		6.37980	*
alpha-Methylstyrene	NE 340672	5074 703458	7155 1066358	11366 1360092	38182	134711	LINR	0.00504	1.23208		0.99990	
Diisopropyl ether	NE 1.21951	NE 1.16415	1.27281 1.18527	1.37005 1.16505	1.25767	1.28319	AVRG		1.23971		5.69993	*
Dichlorofluoromethane	NE 0.58679	NE 0.54886	NE 0.57677	NE 0.58573	NE	0.62114	AVRG		0.58386		4.43085	*
Propylene oxide	NE 0.02960	NE 0.03021	0.04218 0.03099	0.04453 0.02918	0.02781	0.03501	AVRG		0.03369		18.84591	*
3-Methyl-1-butanol	NE 0.00484	0.02260 0.00571	0.00639 0.00606	0.00617 0.00610	0.00476	0.00506	AVRG		0.00752		75.62682	*

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Project LHAAP50 October 2022

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RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Butyl acrylate	NE 0.49102	0.33402 0.54383	0.43485 0.57829	0.48992 0.59316	0.54760	0.50674	AVRG		0.50216		15.89583	*
1,2,3-Trimethylbenzene	NE 2.25708	2.00675 2.20926	2.30768 2.23730	2.39910 2.30636	2.70311	2.38885	AVRG		2.31283		8.07209	
Ethanol	NE 0.00179	NE 0.00187	NE 0.00180	NE 0.00165	0.00226	0.00184	AVRG		0.00187		11.01001	*
1-Propanol	NE 0.00885	NE 0.00693	NE 0.00706	0.00888 0.00723	0.00789	0.00833	AVRG		0.00788		10.55118	*
tert-Butyl formate	NE 0.23371	NE 0.24156	NE 0.25471	NE 0.24882	0.31093	0.24534	AVRG		0.25584		10.90160	*
3,3-Dimethyl-1-butanol	NE 0.01942	NE 0.02066	NE 0.02243	NE 0.02234	0.02714	0.02193	AVRG		0.02232		11.78123	*
tert-Amyl methyl ether	NE 1.29907	3.35428 0.26866	2.05457 0.30973	1.60144 0.29935	0.21585	1.45981	AVRG		1.20697		88.11652	*
tert-Butyl ethyl ether	NE 1.26866	1.17274 1.22140	1.40740 1.24940	1.48374 1.23070	1.33521	1.35326	AVRG		1.30250		7.67914	
tert-Amyl alcohol	NE 0.02337	0.18756 0.02416	0.06652 0.02547	0.03814 0.02488	0.03109	0.02453	AVRG		0.04953		108	*
Epichlorohydrin	NE 0.01876	0.02576 0.01857	0.02574 0.02000	0.02373 0.01949	0.02269	0.01841	AVRG		0.02146		14.21554	
Isoprene	NE 0.09163	NE 0.09240	0.12670 0.09339	0.12047 0.08727	0.10182	0.10000	AVRG		0.10171		14.12900	*
n-Amyl acetate	NE 0.41712	NE 0.45908	NE 0.47676	NE 0.48671	NE	0.44368	AVRG		0.45667		6.04115	*

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Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419504

Volatiles Organics by Method 8260C

ICAL Start Date 14-OCT-2022 1126 **ICAL End Date** 14-OCT-2022 1559

Compound	Level 1 0.250 Level 7 50.0	Level 2 0.500 Level 8 100.0	Level 3 1.00 Level 9 150.0	Level 4 2.00 Level 10 200.0	Level 5 5.00	Level 6 20.00	Curve	b	m1	m2	%RSD or R^2	Q
Isopropyl acetate	NE 0.69207	1.12588 0.71261	0.82181 0.69869	0.84413 0.70609	0.72417	0.71336	AVRG		0.78209		17.93276	*
n-Butyl acetate	NE 0.15787	NE 0.15460	0.32201 0.16833	0.31322 0.16344	0.20273	0.17995	AVRG		0.20777		33.44908	*
Acetaldehyde	NE 36228	NE 69355	NE 95544	4205 NE	5574	17646	LINR	-0.48198	0.01888		0.99790	*
Methyl Amyl Ketone	NE 0.44930	NE 0.50438	0.39176 0.54945	0.46615 0.56126	0.51748	0.47218	AVRG		0.48899		11.40192	*
Dimethyl Disulfide	NE 0.74551	0.56633 0.75254	0.67041 0.77006	0.61276 0.79095	0.68510	0.72540	AVRG		0.70212		10.70490	
1,2-Dichloroethylene (total)	NE 0.48688	0.52617 0.47897	0.45776 0.48111	0.44751 0.46649	0.49232	0.49608	AVRG		0.48148		4.81803	
Xylenes (total)	NE 0.57826	0.68306 0.57698	0.61552 0.58264	0.52357 0.56212	0.60558	0.58690	AVRG		0.59051		7.36042	
Dibromofluoromethane	NE 182656	1913 391368	3430 563177	8012 729143	21880	77480	LINR	-0.01306	0.44454		0.99909	
1,2-Dichloroethane-d4	NE 180049	2199 390623	4127 556716	7583 714756	20670	76679	LINR	-0.01567	0.43781		0.99855	
Toluene-d8	NE 1.19378	1.32647 1.27809	1.06821 1.23994	1.31483 1.21806	1.38448	1.25360	AVRG		1.25305		7.25871	
4-Bromofluorobenzene	NE 241297	3195 515729	5261 754914	10456 966365	33148	101212	LINR	-0.00710	0.44289		0.99946	

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Form 6I

Initial Calibration Verification (ICV)

Workorder

HS22100577

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Initial Calibration Verification (ICV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419504

Volatiles Organics by Method 8260C

Instrument ID voa6.i ICAL Date 14-OCT-2022
Lab File ID X101416.D ICAL Time 1353
?VAL? ?VAL? Conc Units ug/L
Analysis Type VOA Level LOW

Compound	Amount Added	Amount Recovered	% Recovered	Limits	Q
1,1,1,2-Tetrachlor	50.00	47.11	94.23	80-120	
1,1,1-Trichloroeth	50.00	47.76	95.52	80-120	
1,1,2,2-Tetrachlor	50.00	48.31	96.62	80-120	
Freon TF	50.00	49.64	99.29	80-120	
Methyl Acetate	50.00	45.90	91.80	80-120	
Cyclohexane	50.00	49.81	99.63	80-120	
Methylcyclohexane	50.00	50.57	101.15	80-120	
Carbon Disulfide	100.00	93.39	93.39	80-120	
2-Hexanone	100.00	87.79	87.80	80-120	
1,1,2-Trichloroeth	50.00	44.88	89.76	80-120	
1,1-Dichloroethane	50.00	46.86	93.74	80-120	
1,1-Dichloroethene	50.00	45.81	91.63	80-120	
1,1-Dichloropropen	50.00	48.11	96.23	80-120	
1,2,3-Trichloroben	50.00	49.99	100.00	80-120	
1,2,3-Trichloropro	50.00	46.48	92.96	80-120	
1,2,4-Trichloroben	50.00	48.04	96.09	80-120	
1,2,4-Trimethylben	50.00	46.78	93.57	80-120	
1,2-Dibromo-3-Chlo	50.00	46.19	92.40	80-120	
1,2-Dibromoethane	50.00	46.35	92.72	80-120	
Acrolein	100.00	95.70	95.70	80-120	
Acrylonitrile	100.00	96.00	96.01	80-120	
1,2-Dichlorobenzen	50.00	48.63	97.27	80-120	
1,2-Dichloroethane	50.00	50.48	100.98	80-120	
1,2-Dichloropropan	50.00	46.84	93.69	80-120	
1,3,5-Trimethylben	50.00	48.63	97.28	80-120	
1,3-Dichlorobenzen	50.00	47.11	94.22	80-120	
1,3-Dichloropropan	50.00	45.21	90.42	80-120	
1,4-Dichlorobenzen	50.00	45.80	91.60	80-120	
1-Chlorohexane	50.00	41.85	83.70	80-120	
2,2-Dichloropropan	50.00	49.89	99.78	80-120	
2-Butanone	100.00	98.21	98.21	80-120	
2-Chlorotoluene	50.00	45.11	90.22	80-120	
4-Chlorotoluene	50.00	46.47	92.96	80-120	
p-Isopropyltoluene	50.00	48.33	96.66	80-120	

Initial Calibration Verification (ICV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419504

Volatiles Organics by Method 8260C

Instrument ID voa6.i ICAL Date 14-OCT-2022
Lab File ID X101416.D ICAL Time 1353
?VAL? ?VAL? Conc Units ug/L
Analysis Type VOA Level LOW

Compound	Amount Added	Amount Recovered	% Recovered	Limits	Q
4-Methyl-2-Pentano	100.00	94.04	94.05	80-120	
Acetone	100.00	102.11	102.12	80-120	
Benzene	50.00	47.45	94.91	80-120	
Bromobenzene	50.00	47.68	95.37	80-120	
Bromochloromethane	50.00	46.35	92.71	80-120	
Bromodichlorometha	50.00	48.01	96.03	80-120	
Bromoform	50.00	46.73	93.47	80-120	
Bromomethane	50.00	48.41	96.83	80-120	
Carbon Tetrachlori	50.00	46.63	93.27	80-120	
Chlorobenzene	50.00	46.74	93.48	80-120	
Chloroethane	50.00	46.85	93.71	80-120	
Chloroform	50.00	46.14	92.29	80-120	
Chloromethane	50.00	46.78	93.56	80-120	
cis-1,2-Dichloroet	50.00	47.22	94.45	80-120	
cis-1,3-Dichloropr	50.00	49.91	99.83	80-120	
Dibromochlorometha	50.00	47.28	94.58	80-120	
Dibromomethane	50.00	48.45	96.91	80-120	
Dichlorodifluorome	50.00	48.37	96.75	80-120	
Ethylbenzene	50.00	47.20	94.41	80-120	
Hexachlorobutadien	50.00	51.01	102.02	80-120	
Isopropylbenzene	50.00	48.46	96.94	80-120	
m,p-Xylenes	100.00	97.72	97.72	80-120	
Methyl tert-butyl	50.00	46.76	93.54	80-120	
Methylene Chloride	50.00	48.60	97.22	80-120	
n-Butylbenzene	50.00	49.91	99.83	80-120	
n-Propylbenzene	50.00	49.20	98.40	80-120	
Naphthalene	50.00	48.29	96.60	80-120	
o-Xylene	50.00	47.74	95.49	80-120	
sec-Butylbenzene	50.00	47.19	94.39	80-120	
Styrene	50.00	50.89	101.79	80-120	
tert-Butylbenzene	50.00	46.90	93.81	80-120	
Tetrachloroethene	50.00	48.49	97.00	80-120	
Toluene	50.00	48.03	96.07	80-120	
trans-1,2-Dichloro	50.00	47.97	95.96	80-120	

Initial Calibration Verification (ICV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419504

Volatiles Organics by Method 8260C

Instrument ID voa6.i ICAL Date 14-OCT-2022
Lab File ID X101416.D ICAL Time 1353
?VAL? ?VAL? Conc Units ug/L
Analysis Type VOA Level LOW

Compound	Amount Added	Amount Recovered	% Recovered	Limits	Q
trans-1,3-Dichloro	50.00	50.60	101.21	80-120	
Trichloroethene	50.00	47.29	94.59	80-120	
Trichlorofluoromet	50.00	48.44	96.90	80-120	
Vinyl Chloride	50.00	45.59	91.18	80-120	
1,2-Dichloroethyle	100.00	95.20	95.20	80-120	
Xylenes (total)	150.00	145.46	96.98	80-120	
1,4-Dioxane	1000.00	943.52	94.35	80-120	
Dibromofluorometha	50.00	49.58	99.18	71-125	
1,2-Dichloroethane	50.00	48.62	97.24	70-125	
Toluene-d8	50.00	49.53	99.08	75-125	
4-Bromofluorobenze	50.00	50.58	101.18	72-125	

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Form 7

Continuing Calibration Verification (CCV)

Workorder

HS22100577

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Continuing Calibration Verification (CCV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419507

Volatiles Organics by Method 8260C

Instrument ID voa6.i Injection Date 15-OCT-2022 1146
Lab File ID X101503.D ICAL Date(s) 14-OCT-2022 14-OCT-2022
Analysis Type WATER ICAL Times 1126 1559
Lab Sample ID CCV Quant Type ISTD

Compound	$\overline{RRF}$ / Amount	RF50	CCV RRF50	Min RRF	%D / %Drift	Max %D / %Drift	Curve Type	Q
Dibromofluoromethane	50.0	49.78974	0.44847	0.100	0.42053	20.0	Linear	
1,2-Dichloroethane-d4	50.0	49.26091	0.43820	0.100	1.47818	20.0	Linear	
Toluene-d8	1.25305	1.20812	1.20812	0.100	3.58554	20.0	Averaged	
4-Bromofluorobenzene	50.0	49.55912	0.44213	0.100	0.88176	20.0	Linear	
Vinyl Chloride	0.38086	0.36220	0.36220	0.100	4.90186	20.0	Averaged	
1,1-Dichloroethene	0.32339	0.30419	0.30419	0.100	5.93920	20.0	Averaged	
cis-1,2-Dichloroethene	0.52225	0.49913	0.49913	0.100	4.42761	20.0	Averaged	
1,2-Dichloroethane	0.36894	0.36559	0.36559	0.100	0.90695	20.0	Averaged	
Trichloroethene	0.37609	0.35817	0.35817	0.200	4.76311	20.0	Averaged	
Tetrachloroethene	0.34582	0.33208	0.33208	0.200	3.97102	20.0	Averaged	

Continuing Calibration Verification (CCV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP50 October 2022

Workorder HS22100577

RunID VOA6_419507

Volatiles Organics by Method 8260C

Instrument ID voa6.i Injection Date 15-OCT-2022 2115
Lab File ID X101530.D ICAL Date(s) 14-OCT-2022 14-OCT-2022
Analysis Type WATER ICAL Times 1126 1559
Lab Sample ID CCV-END Quant Type ISTD

Compound	$\overline{RRF}$ / Amount	RF50	CCV RRF50	Min RRF	%D / %Drift	Max %D / %Drift	Curve Type	Q
Dibromofluoromethane	50.0	52.88157	0.47596	0.100	-5.76313	50.0	Linear	
1,2-Dichloroethane-d4	50.0	51.78547	0.46031	0.100	-3.57095	50.0	Linear	
Toluene-d8	1.25305	1.23291	1.23291	0.100	1.60751	50.0	Averaged	
4-Bromofluorobenzene	50.0	50.54944	0.45090	0.100	-1.09888	50.0	Linear	
Vinyl Chloride	0.38086	0.37040	0.37040	0.100	2.74746	50.0	Averaged	
1,1-Dichloroethene	0.32339	0.32398	0.32398	0.100	-0.18159	50.0	Averaged	
cis-1,2-Dichloroethene	0.52225	0.52826	0.52826	0.100	-1.15039	50.0	Averaged	
1,2-Dichloroethane	0.36894	0.36957	0.36957	0.100	-0.17022	50.0	Averaged	
Trichloroethene	0.37609	0.36863	0.36863	0.200	1.98265	50.0	Averaged	
Tetrachloroethene	0.34582	0.33287	0.33287	0.200	3.74432	50.0	Averaged	

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Form 8

Internal Standard Area and RT Summary

Workorder

HS22100577

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Form 8 - Internal Standard Area and RT Summary

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

RunID
VOA6_419507

		IS1				IS2				IS3				IS4			
Sample ID	File ID	Area		RT		Area		RT		Area		RT		Area		RT	
12-HOUR STD (CCV)	X101503	401535	#	4.18	#	586680	#	4.97	#	550362	#	7.67	#	277678	#	9.66	#
CCB	X101504	484661		4.19		652593		4.97		563355		7.67		258430		9.67	
VLCSW-221015	X101505	397881		4.19		583073		4.97		546961		7.67		270277		9.67	
VBLKW-221015	X101507	497692		4.19		664702		4.97		581083		7.67		272159		9.67	
HS22100577-08	X101508	498655		4.18		667660		4.97		583611		7.67		269800		9.67	
HS22100577-01	X101510	505073		4.18		676479		4.97		597542		7.67		278461		9.66	
HS22100577-07	X101511	503505		4.18		678921		4.97		591183		7.67		275859		9.67	
HS22100577-04	X101512	499452		4.19		661488		4.97		587640		7.67		281301		9.67	
HS22100577-05	X101520	503586		4.18		668739		4.97		586804		7.67		259479		9.67	
HS22100577-06	X101521	511383		4.19		684908		4.97		595577		7.67		274842		9.67	
HS22100577-03	X101524	507512		4.18		687680		4.97		594976		7.67		273528		9.67	
HS22100577-03	X101525	505981		4.19		676338		4.97		587920		7.67		273899		9.67	
HS22100577-02	X101526	505032		4.18		675474		4.97		597525		7.67		279572		9.67	
HS22100577-02	X101527	503311		4.18		675366		4.97		587809		7.67		265184		9.67	
HS22100577-01MS	X101528	505702		4.19		678373		4.97		600147		7.67		300865		9.66	
HS22100577-01MSD	X101529	498848		4.18		668634		4.97		586328		7.67		281159		9.67	
CCV-END	X101530	382154		4.18		581716		4.97		541345		7.67		276403		9.66	

IS1 - Pentafluorobenzene IS2 - 1,4-Difluorobenzene IS3 - Chlorobenzene-d5 IS4 - 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of 12H STD IS Area
AREA LOWER LIMIT = - 50% of 12H STD IS Area
RT - Retention Time IS - Internal Standard

RT UPPER LIMIT = + 0.50 of 12H STD IS RT
RT LOWER LIMIT = - 0.50 of 12H STD IS RT
CCV - Continuing Calibration Verification

- Area or RT Limit Flag
* - Value Outside Area or RT limits
H - Hour STD - Standard

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Analysis Run Log

Volatiles by by EPA 8260

Workorder

HS22100577

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

MSVOA06 -Logbook

Batch: 51631 **Analyst:** Presenta Cabascango

Date: 10-14-2022 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	10-14-2022 11:05 am	1.00	0.00 mL	0.00 mL	X101401.D	Liquid	Y	NA
2	VSTD000.25	ICAL1	10-14-2022 11:26 am	1.00	5.00 mL	0.00 mL	X101402.D	Liquid	Y	NA
3	VSTD000.5	ICAL2	10-14-2022 12:08 pm	1.00	5.00 mL	0.00 mL	X101403.D	Liquid	Y	NA
4	VSTD001	ICAL3	10-14-2022 12:29 pm	1.00	5.00 mL	0.00 mL	X101404.D	Liquid	Y	NA
5	VSTD002	ICAL4	10-14-2022 12:50 pm	1.00	5.00 mL	0.00 mL	X101405.D	Liquid	Y	NA
6	VSTD005	ICAL5	10-14-2022 01:11 pm	1.00	5.00 mL	0.00 mL	X101406a.D	Liquid	Y	NA
7	VSTD020	ICAL6	10-14-2022 01:32 pm	1.00	5.00 mL	0.00 mL	X101407.D	Liquid	Y	NA
8	VSTD050	ICAL7	10-14-2022 01:53 pm	1.00	5.00 mL	0.00 mL	X101408.D	Liquid	Y	NA
9	VSTD100	ICAL8	10-14-2022 02:14 pm	1.00	5.00 mL	0.00 mL	X101409.D	Liquid	Y	NA
10	VSTD150	ICAL9	10-14-2022 02:35 pm	1.00	5.00 mL	0.00 mL	X101410.D	Liquid	Y	NA
11	VSTD200	ICAL	10-14-2022 02:56 pm	1.00	5.00 mL	0.00 mL	X101411.D	Liquid	Y	NA
12	BLANK	SAMP	10-14-2022 03:17 pm	1.00	5.00 mL	0.00 mL	X101412.D	Liquid	Y	NA
13	BLANK	SAMP	10-14-2022 03:38 pm	1.00	5.00 mL	0.00 mL	X101413.D	Liquid	Y	NA
14	VSTD005	ICAL5	10-14-2022 03:59 pm	1.00	5.00 mL	0.00 mL	X101414.D	Liquid	Y	NA
15	BLANK	SAMP	10-14-2022 04:20 pm	1.00	5.00 mL	0.00 mL	X101415.D	Liquid	Y	NA
16	CCV	CCV	10-14-2022 04:41 pm	1.00	5.00 mL	0.00 mL	X101416.D	Liquid	Y	NA
17	BLANK	SAMP	10-14-2022 05:02 pm	1.00	5.00 mL	0.00 mL	X101417.D	Liquid	Y	NA
18	VLCSW-221014	LCS	10-14-2022 05:23 pm	1.00	5.00 mL	0.00 mL	X101418.D	Liquid	Y	NA
19	BLANK	SAMP	10-14-2022 05:44 pm	1.00	5.00 mL	0.00 mL	X101419.D	Liquid	Y	NA
20	VBLKM-221014	MBLK	10-14-2022 06:05 pm	50.00	5.00 mL	0.00 mL	X101420.D	Liquid	Y	NA
21	VBLKW-221014	MBLK	10-14-2022 06:26 pm	1.00	5.00 mL	0.00 mL	X101421.D	Liquid	Y	NA
22	HS22100259-01	SAMP	10-14-2022 06:47 pm	1.00	5.00 mL	0.00 mL	X101422.D	Liquid	Y	NA
23	HS22100259-02	SAMP	10-14-2022 07:08 pm	1.00	5.00 mL	0.00 mL	X101423.D	Liquid	Y	NA
24	HS22100259-03	SAMP	10-14-2022 07:29 pm	1.00	5.00 mL	0.00 mL	X101424.D	Liquid	Y	NA
25	HS22100259-04	SAMP	10-14-2022 07:50 pm	1.00	5.00 mL	0.00 mL	X101425.D	Liquid	Y	NA
26	HS22100259-05	SAMP	10-14-2022 08:11 pm	1.00	5.00 mL	0.00 mL	X101426.D	Liquid	Y	NA
27	HS22100259-06	SAMP	10-14-2022 08:32 pm	1.00	5.00 mL	0.00 mL	X101427.D	Liquid	Y	NA
28	HS22100229-01	SAMP	10-14-2022 08:53 pm	1000.0	5.00 mL	0.00 mL	X101428.D	Liquid	Y	NA
29	HS22100259-02MS	MS	10-14-2022 09:14 pm	1.00	5.00 mL	0.00 mL	X101429.D	Liquid	Y	NA
30	HS22100259-02MSD	MSD	10-14-2022 09:35 pm	1.00	5.00 mL	0.00 mL	X101430.D	Liquid	Y	NA
31	CCV-END	CCV	10-14-2022 09:56 pm	1.00	5.00 mL	0.00 mL	X101431.D	Liquid	Y	NA
32	BLANK	SAMP	10-14-2022 10:17 pm	1.00	5.00 mL	0.00 mL	X101432.D	Liquid	Y	NA
33	BLANK	SAMP	10-15-2022 10:14 am	1.00	5.00 mL	0.00 mL	X101433.D	Liquid	Y	NA

Form 13 - Analysis Run Log

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP50 October 2022

Workorder
HS22100577

Volatiles by by EPA 8260

RUNID
VOA6_419507

Run ID VOA6_419507 **Start Date** 10/15/22 **EndDate** 10/15/22 **Matrix** Aqueous

Client Sample ID	Type	Lab Sample ID	File ID	Analysis Date	DF
CCV	CCV	CCV	X101503.D	10/15/22 11:46	1
CCB	CCB	CCB	X101504.D	10/15/22 12:07	1
VLCSW-221015	LCS	VLCSW-221015	X101505.D	10/15/22 12:28	1
VBLKW-221015	MBLK	VBLKW-221015	X101507.D	10/15/22 13:10	1
Trip Blank-221011	SAMP	HS22100577-08	X101508.D	10/15/22 13:31	1
50WW14-221011	SAMP	HS22100577-01	X101510.D	10/15/22 14:13	1
50WW29-221011	SAMP	HS22100577-07	X101511.D	10/15/22 14:34	1
50WW06-221011	SAMP	HS22100577-04	X101512.D	10/15/22 14:55	1
50WW12-221011	SAMP	HS22100577-05	X101520.D	10/15/22 17:44	1
50WW12-221011-FD	SAMP	HS22100577-06	X101521.D	10/15/22 18:05	1
50WW11-221011	SAMP	HS22100577-03	X101524.D	10/15/22 19:08	10
50WW11-221011	SAMP	HS22100577-03	X101525.D	10/15/22 19:29	100
50WW13-221011	SAMP	HS22100577-02	X101526.D	10/15/22 19:50	25
50WW13-221011	SAMP	HS22100577-02	X101527.D	10/15/22 20:11	250
50WW14-221011	MS	HS22100577-01MS	X101528.D	10/15/22 20:33	1
50WW14-221011	MSD	HS22100577-01MSD	X101529.D	10/15/22 20:54	1

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Raw Data VOA6 419504

Volatiles by by EPA 8260

Workorder

HS22100577

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
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www.alsglobal.com

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101401.D Page 1
Report Date: 16-Oct-2022 22:26

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101401.D
Lab Smp Id: BFB Client Smp ID: BFB
Inj Date : 14-OCT-2022 11:05
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\X221014.b\bfb.m
Meth Date : 27-Sep-2022 15:10 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	
8.695	8.889	(0.000)	95	1961			0.00- 100.00	100.00
8.695	8.889	(0.000)	50	310			15.00- 40.00	15.81
8.695	8.889	(0.000)	75	847			30.00- 60.00	43.19
8.695	8.889	(0.000)	96	132			5.00- 9.00	6.73
8.695	8.889	(0.000)	173	8			0.00- 2.00	0.41
8.695	8.889	(0.000)	174	1953			50.00- 0.00	99.59
8.695	8.889	(0.000)	175	127			5.00- 9.00	6.50
8.695	8.889	(0.000)	176	1915			95.00- 101.00	98.05
8.695	8.889	(0.000)	177	119			5.00- 9.00	6.21

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	15.81
75	30.00 - 60.00% of mass 95	43.19
96	5.00 - 9.00% of mass 95	6.73
173	Less than 2.00% of mass 174	0.41 (0.41)
174	Greater than 50.00% of mass 95	99.59
175	5.00 - 9.00% of mass 174	6.48 (6.50)
176	95.00 - 101.00% of mass 174	97.65 (98.05)
177	5.00 - 9.00% of mass 176	6.07 (6.21)

Data File: X101401.D
Spectrum: Average Spectrum: 8.721 to 8.935 min.
Location of Maximum: 95.00
Number of points: 86

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	4	62.00	66	91.00	2	143.00	4
37.00	55	63.00	69	92.00	46	157.00	2
38.00	57	64.00	14	93.00	70	165.00	1
39.00	60	65.00	17	94.00	291	168.00	1
40.00	307	66.00	8	95.00	1961	169.00	0.000
41.00	6	68.00	161	96.00	132	170.00	11
42.00	1	69.00	171	97.00	0.000	173.00	8
43.00	29	70.00	6	98.00	0.000	174.00	1953
44.00	480	72.00	7	100.00	1	175.00	127
45.00	10	73.00	58	105.00	3	176.00	1915
47.00	7	74.00	272	109.00	0.000	177.00	119
48.00	1	75.00	847	110.00	2	184.00	2
49.00	48	76.00	84	115.00	29	186.00	146
50.00	310	77.00	116	117.00	2	187.00	2
51.00	154	78.00	32	127.00	0.000	207.00	15
52.00	3	79.00	20	128.00	7	262.00	14
54.00	2	80.00	7	129.00	9	263.00	0.000
56.00	11	81.00	32	130.00	4	278.00	16
57.00	25	82.00	1	133.00	1	281.00	39
58.00	2	86.00	1	139.00	11	282.00	3
60.00	3	87.00	83	141.00	53		
61.00	56	88.00	68	142.00	1		

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101401.D

Date : 14-OCT-2022 11:05

Client ID: BFB

Instrument: voa6.i

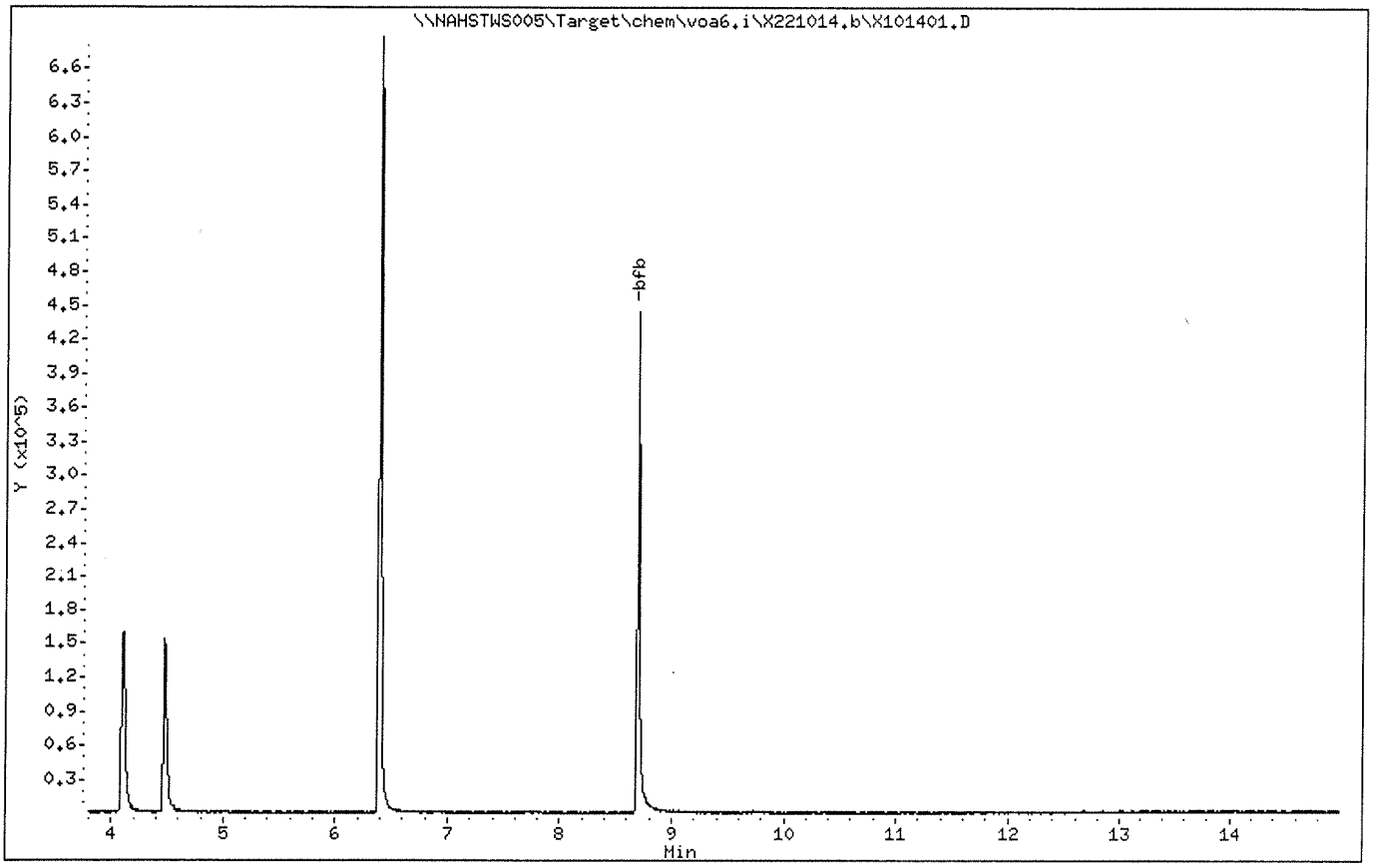
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101401.D

Date : 14-OCT-2022 11:05

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

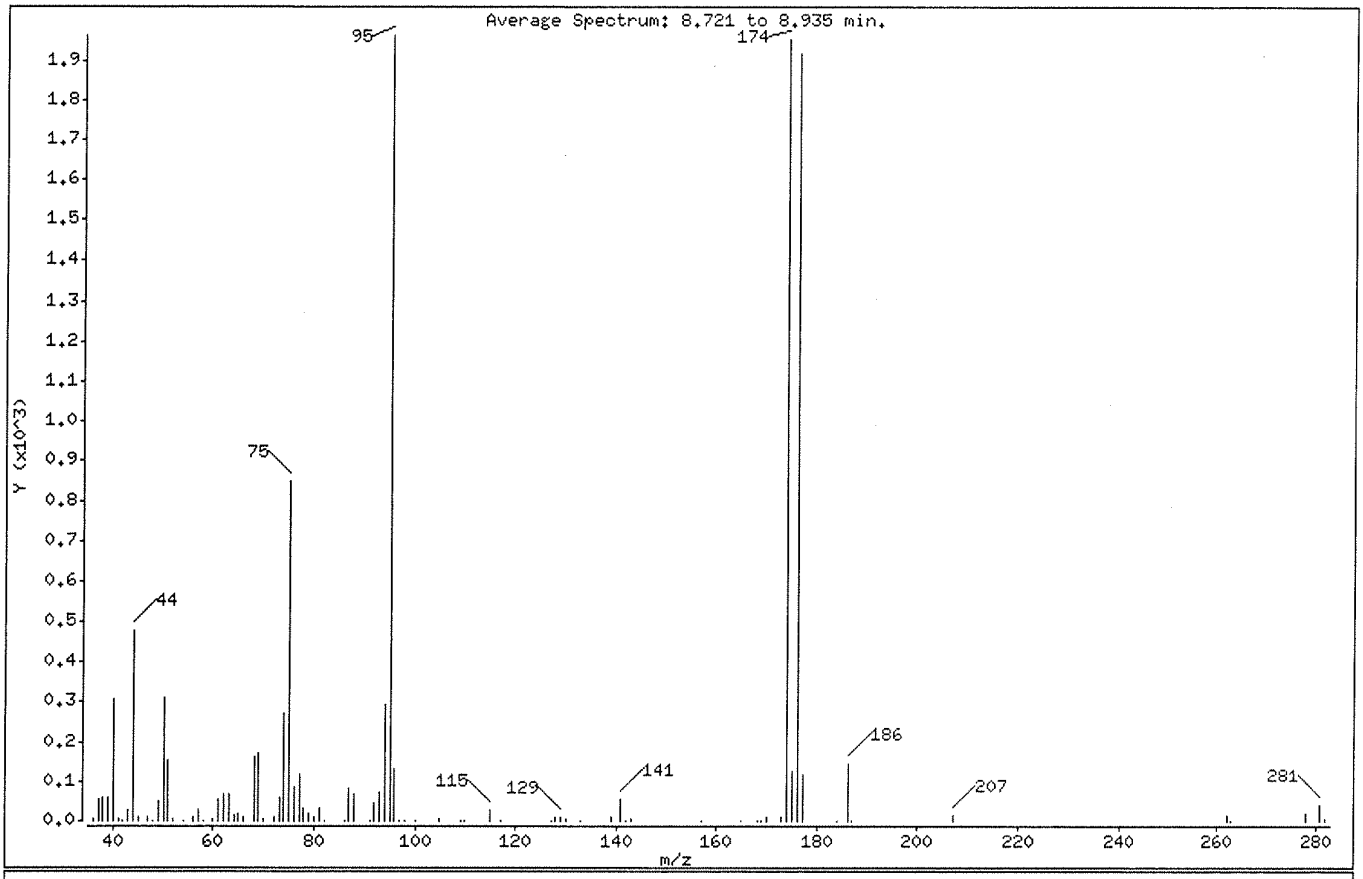
Volume Injected (uL): 2.0

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	15.81
75	30.00 - 60.00% of mass 95	43.19
96	5.00 - 9.00% of mass 95	6.73
173	Less than 2.00% of mass 174	0.41 (0.41)
174	Greater than 50.00% of mass 95	99.59
175	5.00 - 9.00% of mass 174	6.48 (6.50)
176	95.00 - 101.00% of mass 174	97.65 (98.05)
177	5.00 - 9.00% of mass 176	6.07 (6.21)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101401.D

Date : 14-OCT-2022 11:05

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: X101401.D
Spectrum: Average Spectrum: 8.721 to 8.935 min.
Location of Maximum: 95.00
Number of points: 86

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	4	62.00	66	91.00	2	143.00	4
37.00	55	63.00	69	92.00	46	157.00	2
38.00	57	64.00	14	93.00	70	165.00	1
39.00	60	65.00	17	94.00	291	168.00	1
40.00	307	66.00	8	95.00	1961	169.00	0.000
41.00	6	68.00	161	96.00	132	170.00	11
42.00	1	69.00	171	97.00	0.000	173.00	8
43.00	29	70.00	6	98.00	0.000	174.00	1953
44.00	480	72.00	7	100.00	1	175.00	127
45.00	10	73.00	58	105.00	3	176.00	1915
47.00	7	74.00	272	109.00	0.000	177.00	119
48.00	1	75.00	847	110.00	2	184.00	2
49.00	48	76.00	84	115.00	29	186.00	146
50.00	310	77.00	116	117.00	2	187.00	2
51.00	154	78.00	32	127.00	0.000	207.00	15
52.00	3	79.00	20	128.00	7	262.00	14
54.00	2	80.00	7	129.00	9	263.00	0.000
56.00	11	81.00	32	130.00	4	278.00	16
57.00	25	82.00	1	133.00	1	281.00	39
58.00	2	86.00	1	139.00	11	282.00	3
60.00	3	87.00	83	141.00	53		
61.00	56	88.00	68	142.00	1		

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101401.D
Inj Date : 14-OCT-2022 11:05
InstruID : voa6.i
LabSampID : BFB

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D Page 1
Report Date: 28-Oct-2022 16:41

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D
Lab Smp Id: VSTD000.25 Client Smp ID: VSTD000.251
Inj Date : 14-OCT-2022 11:26
Operator : PC Inst ID: voa6.i
Smp Info : VSTD000.25;VSTD000.25;1;1;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\8260W.m
Meth Date : 28-Oct-2022 16:41 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 15:59 Cal File: X101414.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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

		QUANT SIG					AMOUNTS CAL-AMT	ON-COL
	Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
*	1 Pentafluorobenzene	168	4.185	4.185	(1.000)	435041	50.0000	
	135 1,4-Dioxane	88	5.636	5.636	(1.347)	74	5.00000	2.23(M)
	140 1,3-Butadiene	54	1.171	1.171	(0.280)	518	0.25000	0.21(M)
	25 Methacrylonitrile	41	3.885	3.885	(0.928)	416	0.25000	0.15(M)
	12 Isobutyl Alcohol	43	4.699	4.699	(1.123)	1453	5.00000	(TM)
	13 Acetonitrile	39	2.206	2.206	(0.527)	836	2.50000	2.46(M)
	14 Allyl Chloride	41	2.209	2.209	(0.528)	1002	0.25000	0.13
	4 Propionitrile	54	3.709	3.709	(0.886)	743	2.50000	1.94(M)
	136 n-Hexane	57	2.779	2.779	(0.664)	819	0.25000	0.21(T)
	145 alpha-Methylstyrene	118	9.283	9.283	(0.960)	1303	0.25000	0.43
	200 Dimethyl Disulfide	94	6.205	6.205	(0.809)	2040	0.25000	0.24
	139 Diethyl ether	59	1.760	1.760	(0.421)	517	0.25000	0.24(M)
	49 Ethyl Methacrylate	69	6.813	6.813	(1.371)	746	0.25000	0.14
	150 Allyl alcohol	57	2.779	2.779	(0.664)	819	5.00000	4.24
	166 1,2,3-Trimethylbenzene	105	9.737	9.737	(1.007)	3054	0.25000	0.23
	2 Dichlorodifluoromethane	85	0.976	0.976	(0.233)	706	0.25000	(M)
	3 Chloromethane	50	1.077	1.077	(0.258)	1186	0.25000	(M)
	5 Vinyl Chloride	62	1.149	1.149	(0.275)	904	0.25000	0.27
	6 Bromomethane	94	1.343	1.343	(0.321)	768	0.25000	(M)
	8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	1058	0.25000	0.24

9	Acrolein	56	1.471	1.471 (0.352)	62	0.50000	0.25(M)
10	Acetone	43	1.977	1.977 (0.472)	356	0.50000	0.23(M)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D Page 2
Report Date: 28-Oct-2022 16:41

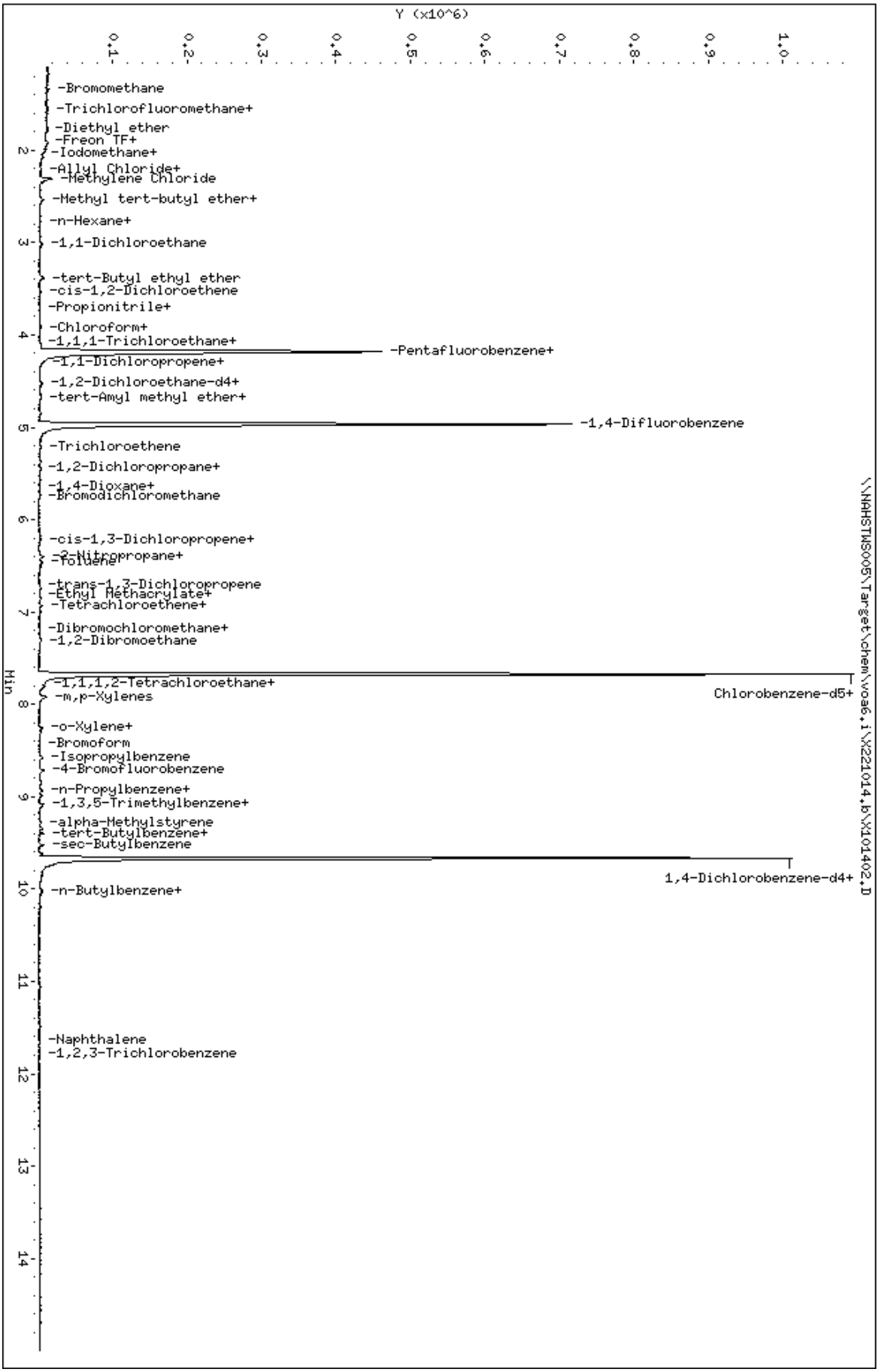
			QUANT SIG					AMOUNTS	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
	11	1,1-Dichloroethene	96	1.921	1.921	(0.459)	882	0.25000	0.31(M)
	15	Iodomethane	142	2.033	2.033	(0.486)	716	0.50000	3.56(T)
	17	Methylene Chloride	84	2.303	2.303	(0.550)	2239	0.25000	(M)
	18	Methyl tert-butyl ether	73	2.543	2.543	(0.608)	2796	0.25000	0.26
	19	Carbon Disulfide	76	2.071	2.071	(0.495)	4806	0.50000	0.48
	20	trans-1,2-Dichloroethene	96	2.536	2.536	(0.606)	893	0.25000	0.23(T)
	22	1,1-Dichloroethane	63	2.929	2.929	(0.700)	1777	0.25000	0.27(M)
	27	cis-1,2-Dichloroethene	96	3.548	3.548	(0.848)	885	0.25000	0.19
	28	Chloroform	83	3.919	3.919	(0.936)	1428	0.25000	0.20
	29	Bromochloromethane	128	3.806	3.806	(0.910)	540	0.25000	0.21(M)
$	30	Dibromofluoromethane	113	4.125	4.125	(0.986)	1067	0.25000	
	31	1,1,1-Trichloroethane	97	4.080	4.080	(0.975)	1091	0.25000	0.19
	32	1,1-Dichloropropene	75	4.290	4.290	(0.863)	989	0.25000	0.19
	33	1,2-Dichloroethane	62	4.575	4.575	(0.921)	1411	0.25000	0.29(M)
	34	Carbon Tetrachloride	117	4.256	4.256	(0.857)	2056	0.25000	0.40
$	35	1,2-Dichloroethane-d4	65	4.500	4.500	(1.075)	1303	0.25000	(T)
*	36	1,4-Difluorobenzene	114	4.968	4.968	(1.000)	647192	50.0000	
	37	Benzene	78	4.526	4.526	(0.911)	4079	0.25000	0.24
	38	Trichloroethene	130	5.216	5.216	(1.050)	1246	0.25000	0.25(M)
	39	Bromodichloromethane	83	5.741	5.741	(1.155)	1228	0.25000	0.22(M)
	42	1,2-Dichloropropane	63	5.437	5.437	(1.094)	1289	0.25000	0.30
	44	Dibromomethane	93	5.564	5.564	(1.120)	599	0.25000	0.23(M)
	46	cis-1,3-Dichloropropene	75	6.175	6.175	(1.243)	1525	0.25000	0.22
*	47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	599885	50.0000	
$	48	Toluene-d8	98	6.397	6.397	(0.834)	4917	0.25000	0.32(T)
	50	Toluene	91	6.460	6.460	(0.842)	4388	0.25000	0.24
	51	trans-1,3-Dichloropropene	75	6.712	6.712	(1.351)	1118	0.25000	0.20(M)
	52	2-Hexanone	43	7.146	7.146	(0.932)	863	0.50000	0.43(TM)
	53	1,1,2-Trichloroethane	83	6.854	6.854	(0.893)	780	0.25000	0.23
	54	1,3-Dichloropropane	76	6.993	6.993	(0.912)	1570	0.25000	0.23(M)
	55	Dibromochloromethane	129	7.188	7.188	(0.937)	1077	0.25000	0.79
	56	Tetrachloroethene	164	6.933	6.933	(0.904)	948	0.25000	0.22
	57	1,2-Dibromoethane	107	7.274	7.274	(0.948)	915	0.25000	0.22
	58	1-Chlorohexane	55	7.671	7.671	(1.544)	5057	0.25000	1.34
	59	Chlorobenzene	112	7.694	7.694	(1.003)	2980	0.25000	0.23
	60	1,1,1,2-Tetrachloroethane	131	7.780	7.780	(1.014)	1000	0.25000	0.21
	61	Ethylbenzene	106	7.814	7.814	(1.019)	1439	0.25000	0.22
	62	m,p-Xylenes	106	7.919	7.919	(1.032)	3311	0.50000	0.42
	63	o-Xylene	106	8.260	8.260	(1.077)	1620	0.25000	0.21
	64	Styrene	104	8.308	8.308	(1.083)	2311	0.25000	0.19(M)
	66	Bromoform	173	8.428	8.428	(1.099)	495	0.25000	1.28(M)
	67	Isopropylbenzene	105	8.571	8.571	(1.117)	3786	0.25000	0.20
	68	1,1,2,2-Tetrachloroethane	83	8.856	8.856	(0.916)	1251	0.25000	0.02(M)
$	69	4-Bromofluorobenzene	95	8.717	8.717	(1.136)	2408	0.25000	0.09
*	70	1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	285946	50.0000	
	71	1,2,3-Trichloropropane	75	8.878	8.878	(0.919)	355	0.25000	0.11(MH)
	73	n-Propylbenzene	91	8.931	8.931	(0.924)	3551	0.25000	
	74	Bromobenzene	156	8.841	8.841	(0.915)	914	0.25000	0.17
	75	1,3,5-Trimethylbenzene	105	9.084	9.084	(0.940)	3330	0.25000	0.22
	76	2-Chlorotoluene	91	8.998	8.998	(0.931)	3169	0.25000	0.24
	77	4-Chlorotoluene	91	9.107	9.107	(0.942)	2460	0.25000	0.17
	78	tert-Butylbenzene	119	9.339	9.339	(0.966)	2899	0.25000	0.23

79 1,2,4-Trimethylbenzene	105	9.392	9.392 (0.972)	3080	0.25000	0.20
81 sec-Butylbenzene	105	9.527	9.527 (0.986)	3600	0.25000	0.21

		QUANT SIG					AMOUNTS CAL-AMT	ON-COL
	Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
	82 p-Isopropyltoluene	119	9.654	9.654	(0.999)	2935	0.25000	0.19
	83 1,3-Dichlorobenzene	146	9.613	9.613	(0.995)	1708	0.25000	0.19
	84 1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	2383	0.25000	0.25
	87 n-Butylbenzene	91	10.025	10.025	(1.037)	1096	0.25000	0.09
	88 1,2-Dichlorobenzene	146	10.022	10.022	(1.037)	1638	0.25000	
	92 Naphthalene	128	11.637	11.637	(1.204)	477	0.25000	0.09(M)
	93 1,2,3-Trichlorobenzene	180	11.787	11.787	(1.220)	326	0.25000	0.13(M)
M	94 1,2-Dichloroethylene (total)	96				1778	0.50000	
M	95 Xylenes (total)	106				4931	0.75000	
	141 Cyclohexane	56	4.121	4.121	(0.985)	1143	0.25000	0.22(M)
	138 Freon TF	101	1.906	1.906	(0.455)	684	0.25000	0.25
	147 Methylcyclohexane	55	5.362	5.362	(1.079)	1012	0.25000	0.11

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D
Date : 14-OCT-2022 11:26
Client ID: VSTD000.251
Sample Info: VSTD000.25;VSTD000.25;1;1;
Purge Volume: 5.0
Column phase: DB624

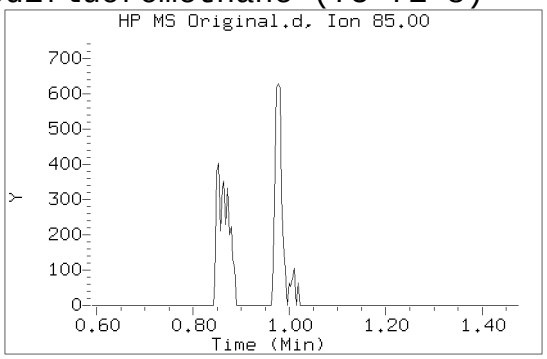
Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D
Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

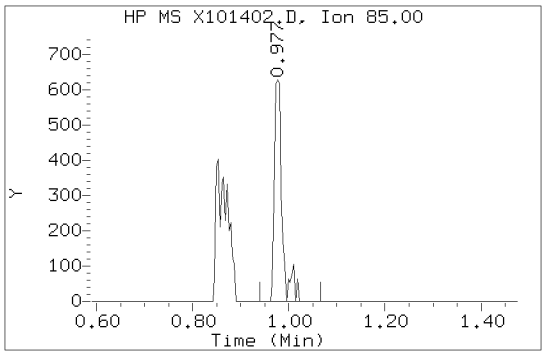
Dichlorodifluoromethane (75-71-8)

Reason Code:

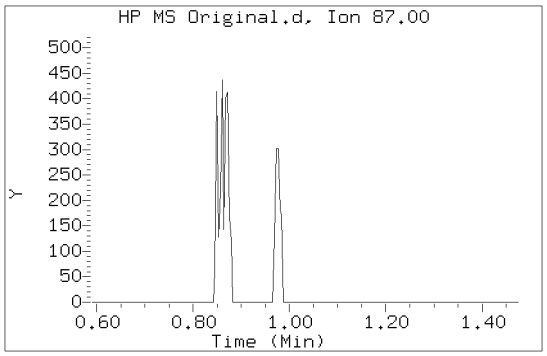
BEFORE
MASS
85
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



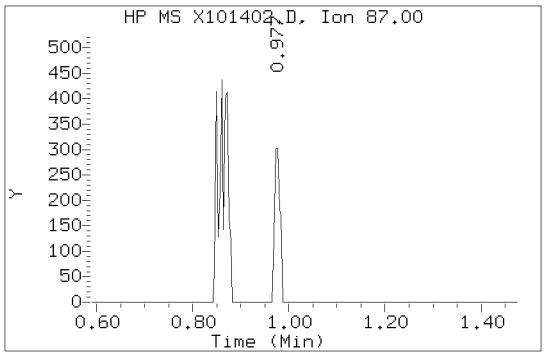
AFTER
MASS
85
AREA
706
HEIGHT
628
28-Oct-2022
16:41



BEFORE
MASS
87
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



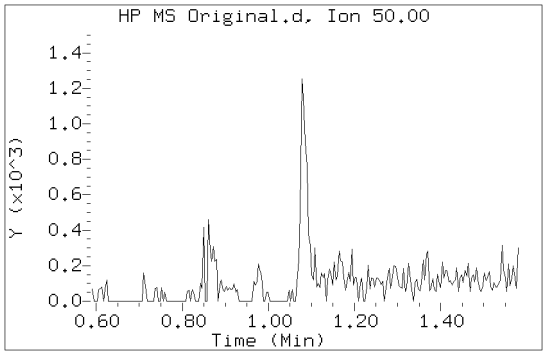
AFTER
MASS
87
AREA
0
HEIGHT
0
28-Oct-2022
16:41



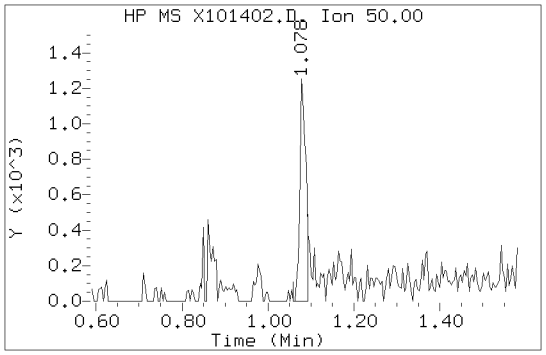
Chloromethane (74-87-3)

Reason Code:

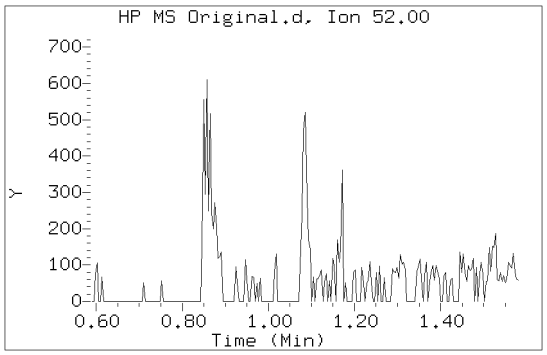
BEFORE
MASS
50
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



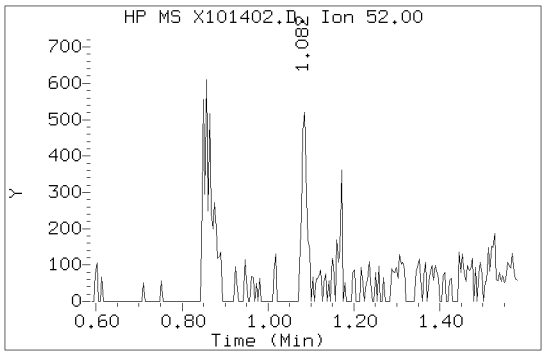
AFTER
MASS
50
AREA
1186
HEIGHT
1253
28-Oct-2022
16:41



BEFORE
MASS
52
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
52
AREA
0
HEIGHT
0
28-Oct-2022
16:41



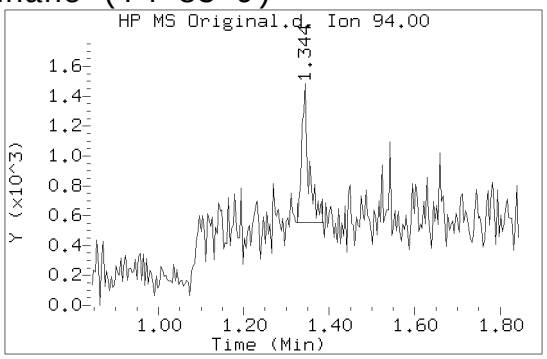
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101402.D
Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

Bromomethane (74-83-9)

Reason Code:

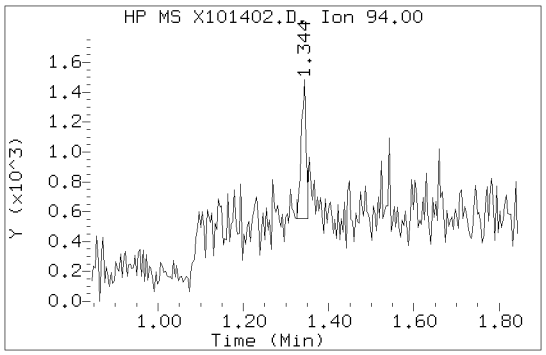
BEFORE

MASS
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AREA
1082
HEIGHT
929
19-Oct-2022
16:03
linh
pham



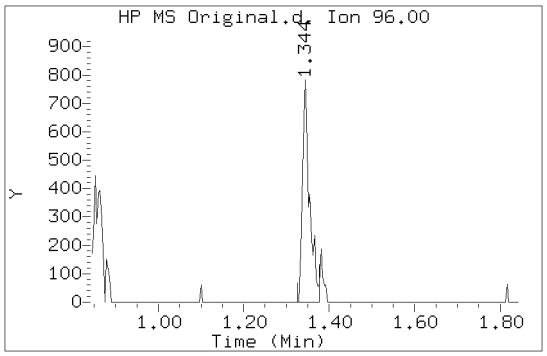
AFTER

MASS
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AREA
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HEIGHT
929
28-Oct-2022
16:41



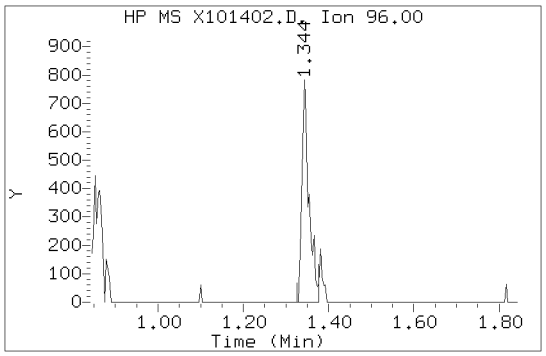
BEFORE

MASS
96
AREA
934
HEIGHT
783
19-Oct-2022
16:03
linh
pham



AFTER

MASS
96
AREA
934
HEIGHT
783
28-Oct-2022
16:41

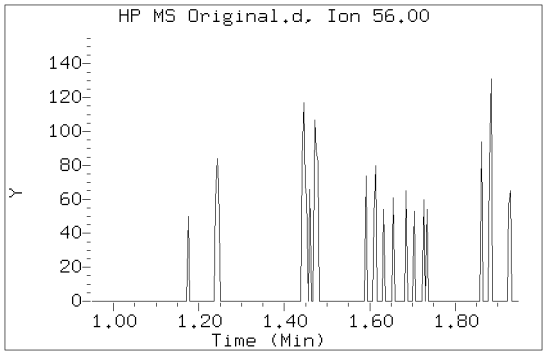


Acrolein (107-02-8)

Reason Code:

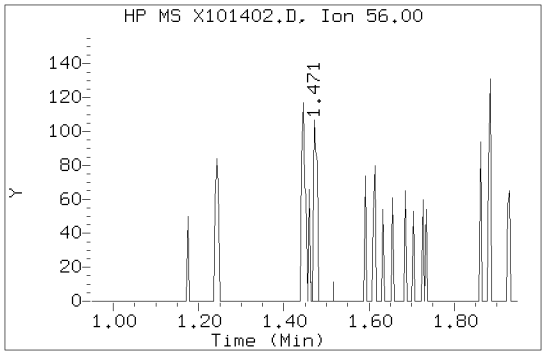
BEFORE

MASS
56
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



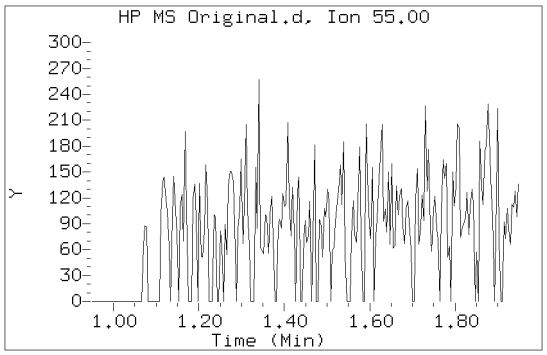
AFTER

MASS
56
AREA
62
HEIGHT
107
28-Oct-2022
16:41



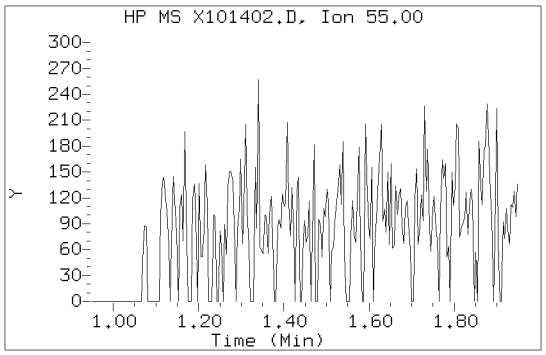
BEFORE

MASS
55
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
55
AREA
0
HEIGHT
0
28-Oct-2022
16:41

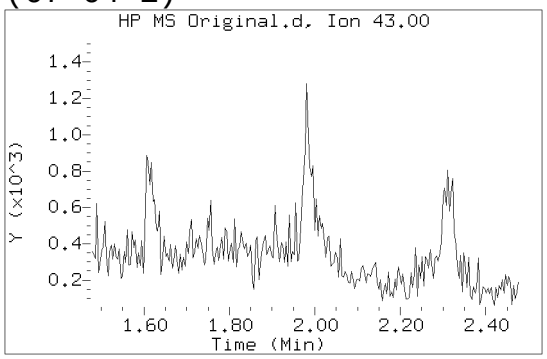


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

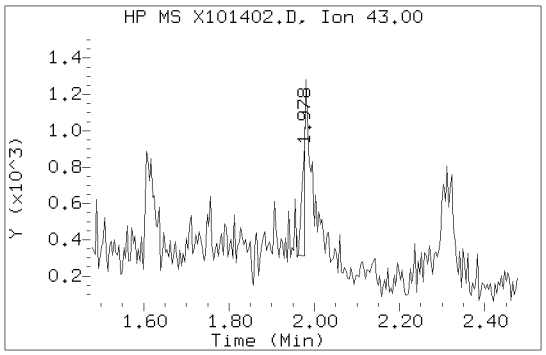
Acetone (67-64-1)

Reason Code:

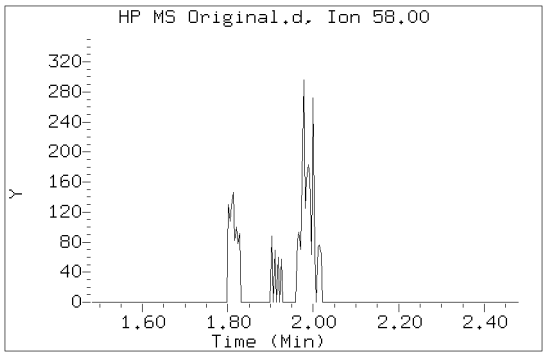
BEFORE
MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



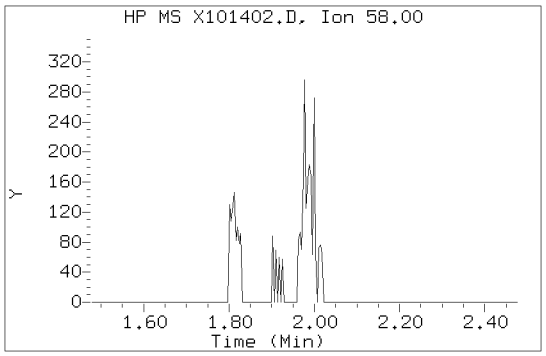
AFTER
MASS
43
AREA
356
HEIGHT
602
28-Oct-2022
16:41



BEFORE
MASS
58
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



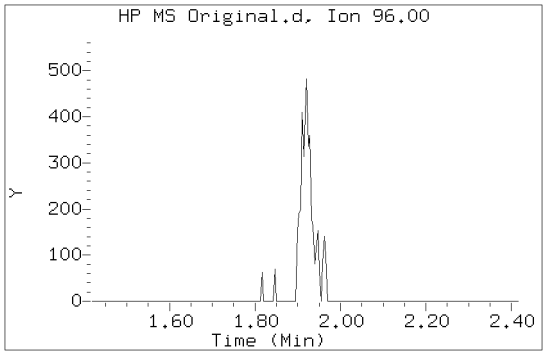
AFTER
MASS
58
AREA
0
HEIGHT
0
28-Oct-2022
16:41



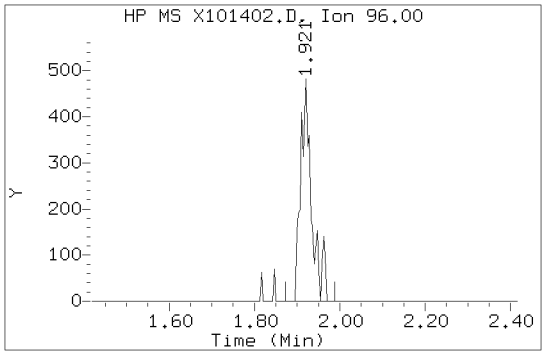
1,1-Dichloroethene (75-35-4)

Reason Code:

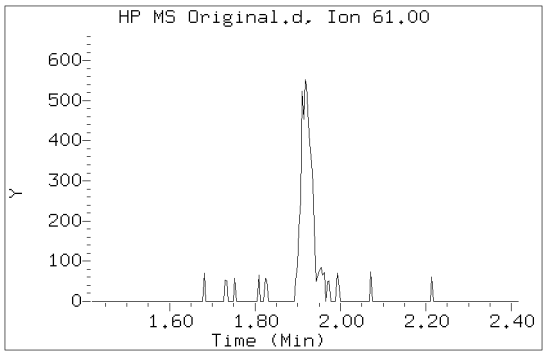
BEFORE
MASS
96
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



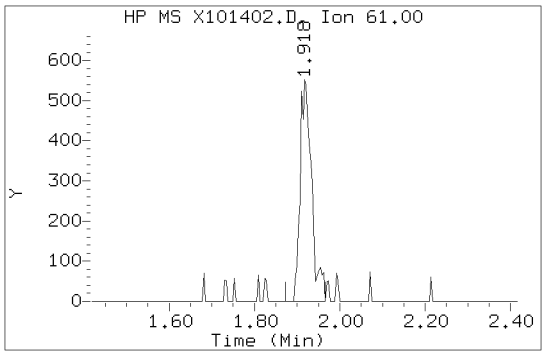
AFTER
MASS
96
AREA
882
HEIGHT
482
28-Oct-2022
16:41



BEFORE
MASS
61
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
61
AREA
1048
HEIGHT
552
28-Oct-2022
16:41

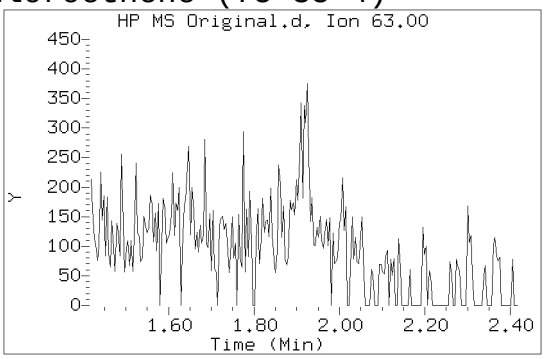


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

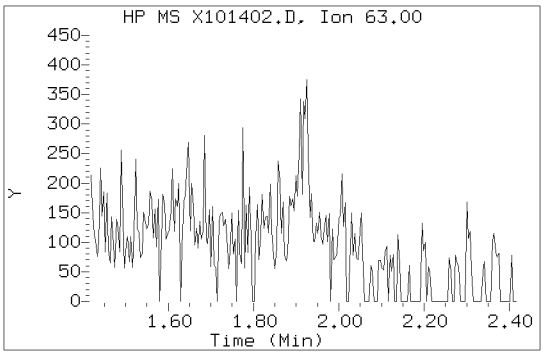
1,1-Dichloroethene (75-35-4)

Reason Code:

BEFORE
MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



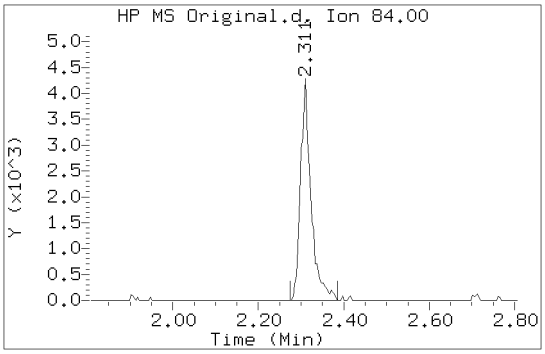
AFTER
MASS
63
AREA
0
HEIGHT
0
28-Oct-2022
16:41



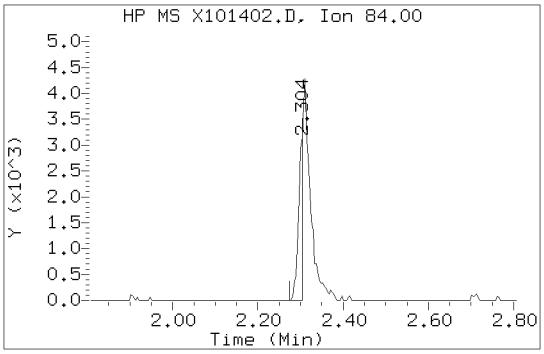
Methylene Chloride (75-09-2)

Reason Code:

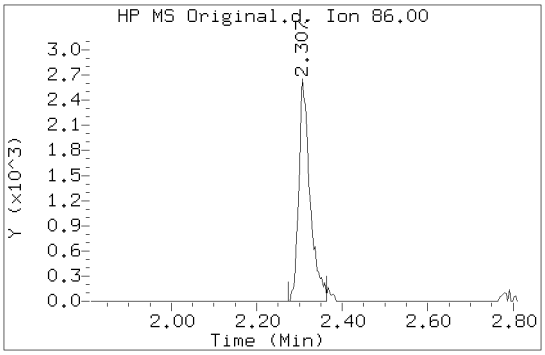
BEFORE
MASS
84
AREA
7458
HEIGHT
4284
19-Oct-2022
16:03
linh
pham



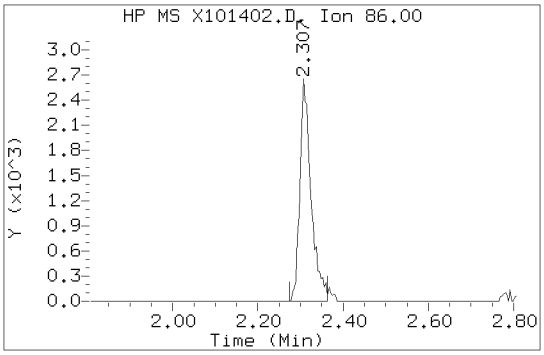
AFTER
MASS
84
AREA
2239
HEIGHT
3151
28-Oct-2022
16:41



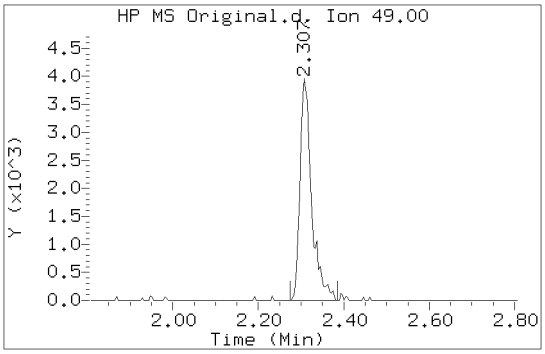
BEFORE
MASS
86
AREA
4929
HEIGHT
2654
19-Oct-2022
16:03
linh
pham



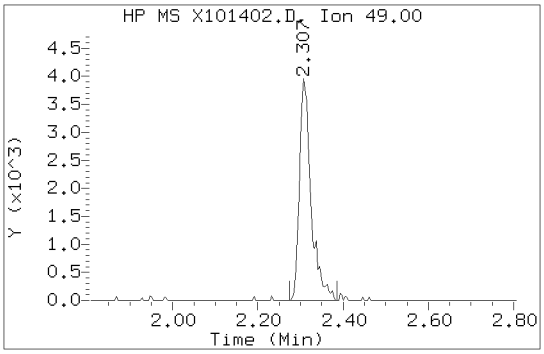
AFTER
MASS
86
AREA
4929
HEIGHT
2654
28-Oct-2022
16:41



BEFORE
MASS
49
AREA
7690
HEIGHT
3958
19-Oct-2022
16:03
linh
pham



AFTER
MASS
49
AREA
7690
HEIGHT
3958
28-Oct-2022
16:41

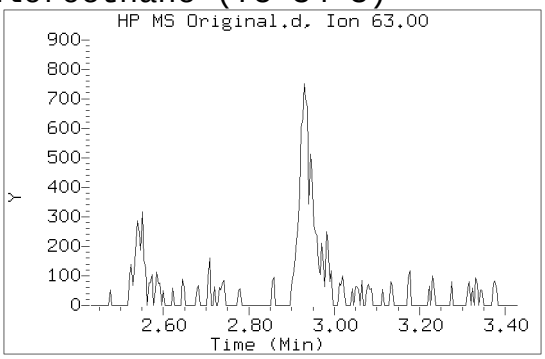


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
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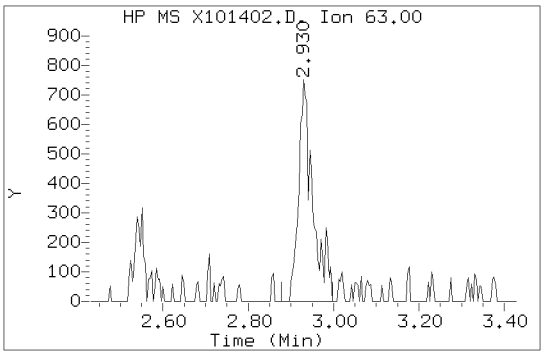
1,1-Dichloroethane (75-34-3)

Reason Code:

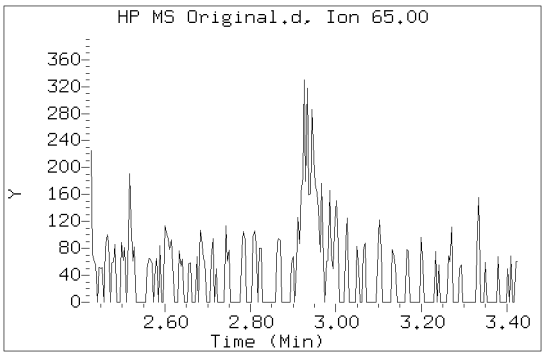
BEFORE
MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



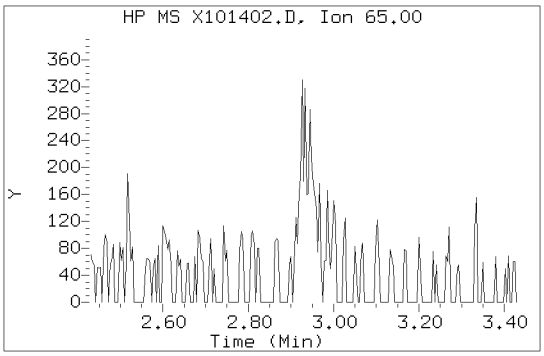
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MASS
63
AREA
1777
HEIGHT
751
28-Oct-2022
16:41



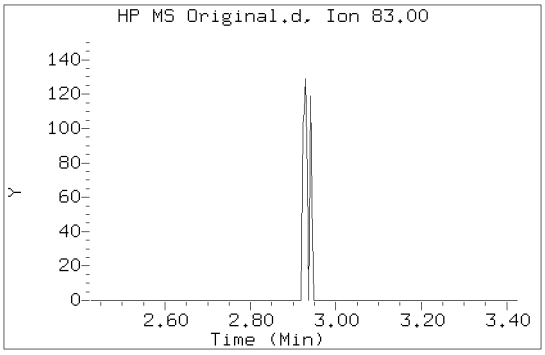
BEFORE
MASS
65
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



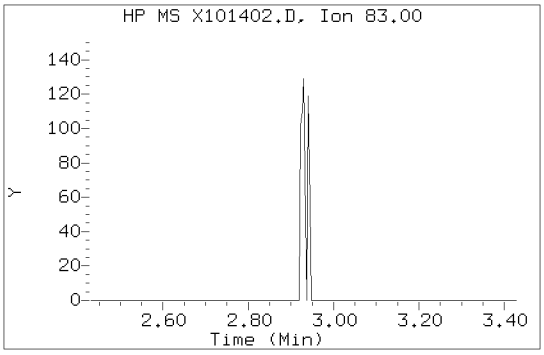
AFTER
MASS
65
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
83
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



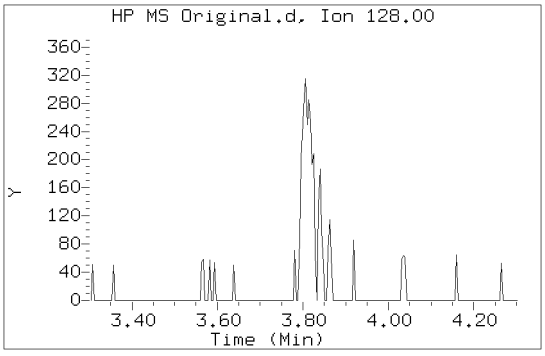
AFTER
MASS
83
AREA
0
HEIGHT
0
28-Oct-2022
16:41



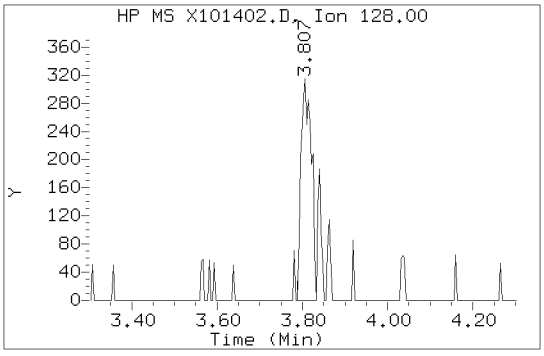
Bromochloromethane (74-97-5)

Reason Code:

BEFORE
MASS
128
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



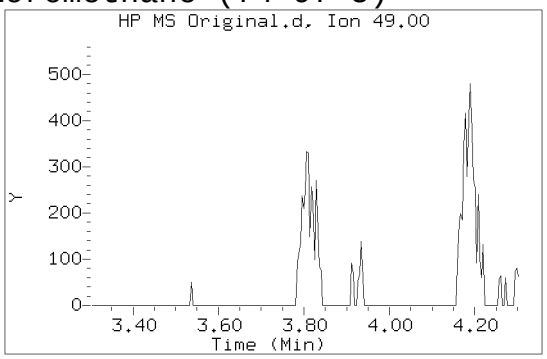
AFTER
MASS
128
AREA
540
HEIGHT
315
28-Oct-2022
16:41



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Inj Date : 14-OCT-2022 11:26
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LabSampID : VSTD000.25

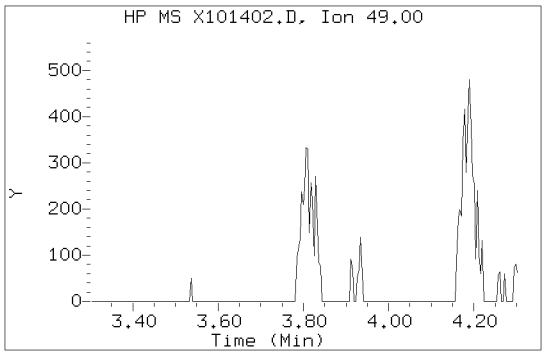
Bromochloromethane (74-97-5)

BEFORE
MASS
49
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham

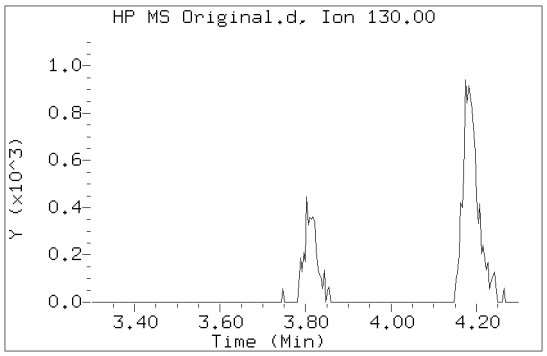


Reason Code:

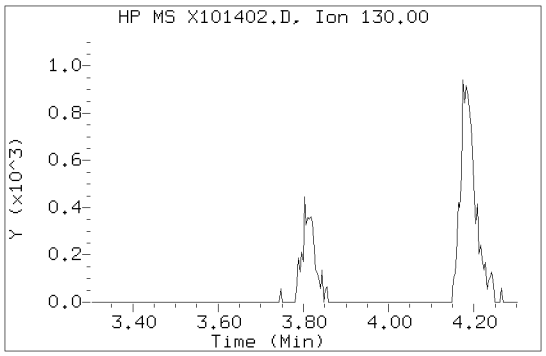
AFTER
MASS
49
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
130
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham

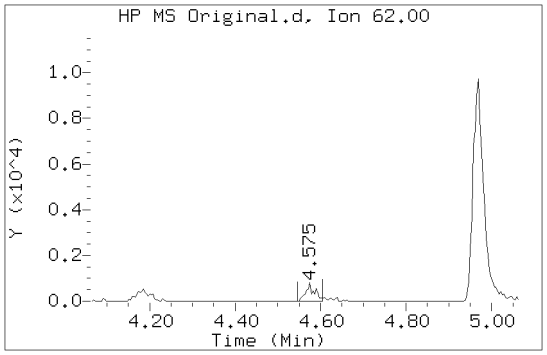


AFTER
MASS
130
AREA
0
HEIGHT
0
28-Oct-2022
16:41



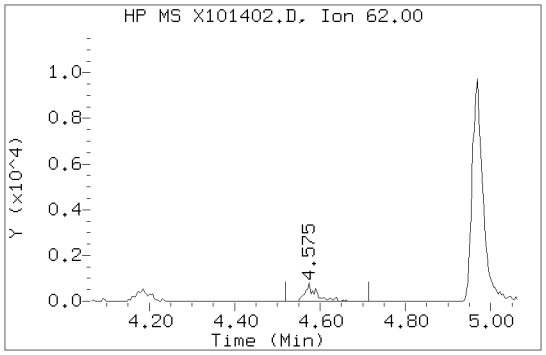
1,2-Dichloroethane (107-06-2)

BEFORE
MASS
62
AREA
1160
HEIGHT
824
19-Oct-2022
16:03
linh
pham

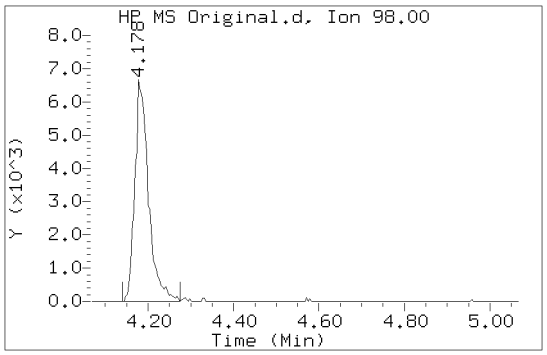


Reason Code:

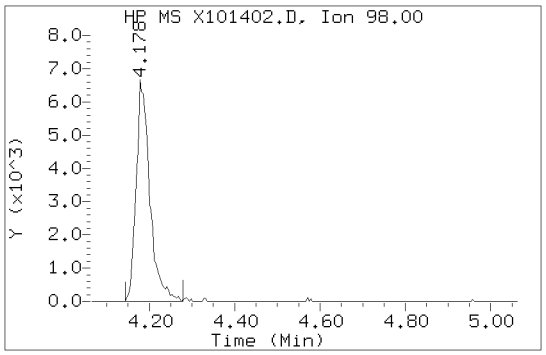
AFTER
MASS
62
AREA
1411
HEIGHT
824
28-Oct-2022
16:41



BEFORE
MASS
98
AREA
14787
HEIGHT
6667
19-Oct-2022
16:03
linh
pham



AFTER
MASS
98
AREA
14800
HEIGHT
6667
28-Oct-2022
16:41

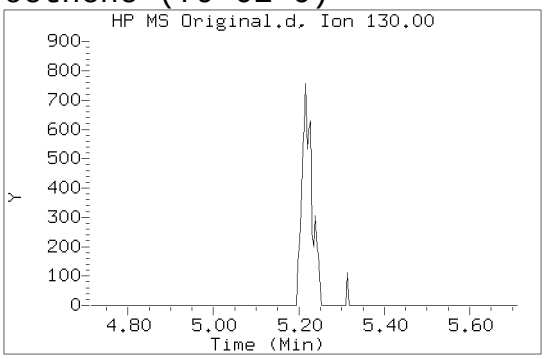


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

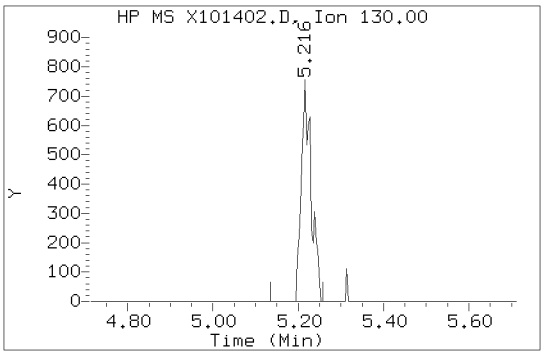
Trichloroethene (79-01-6)

Reason Code:

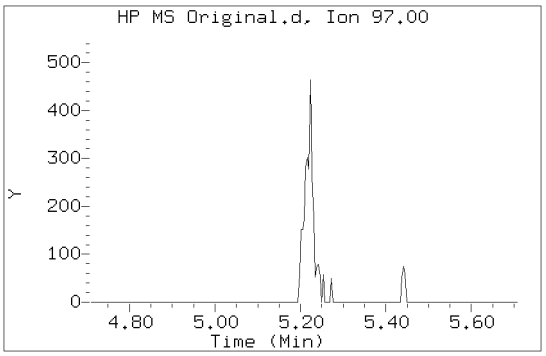
BEFORE
MASS
130
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



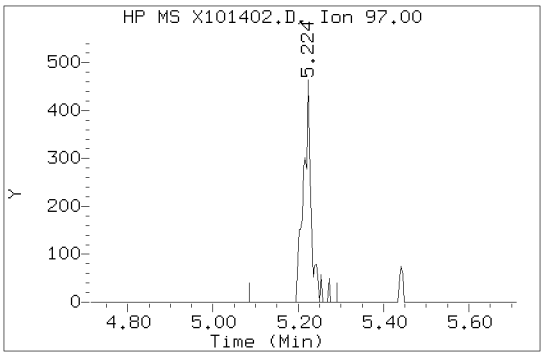
AFTER
MASS
130
AREA
1246
HEIGHT
756
28-Oct-2022
16:41



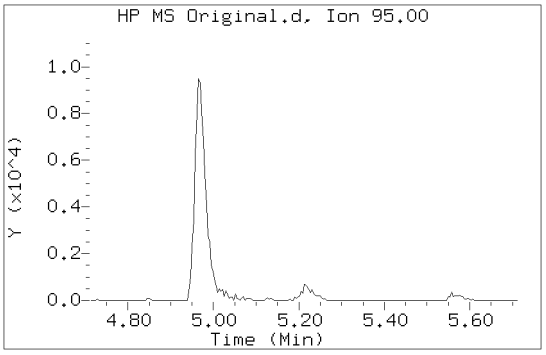
BEFORE
MASS
97
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



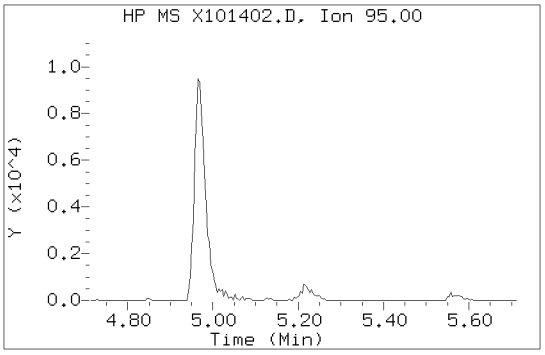
AFTER
MASS
97
AREA
600
HEIGHT
464
28-Oct-2022
16:41



BEFORE
MASS
95
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



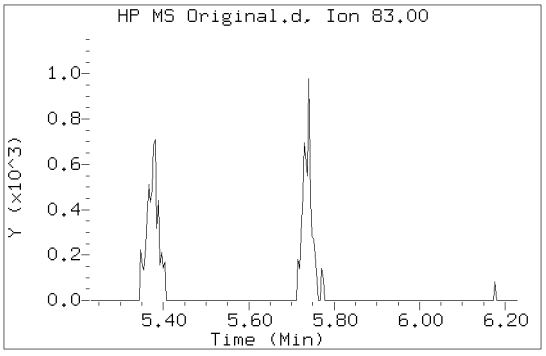
AFTER
MASS
95
AREA
0
HEIGHT
0
28-Oct-2022
16:41



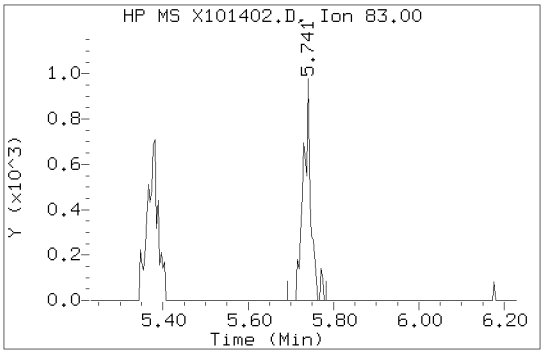
Bromodichloromethane (75-27-4)

Reason Code:

BEFORE
MASS
83
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
83
AREA
1228
HEIGHT
978
28-Oct-2022
16:41

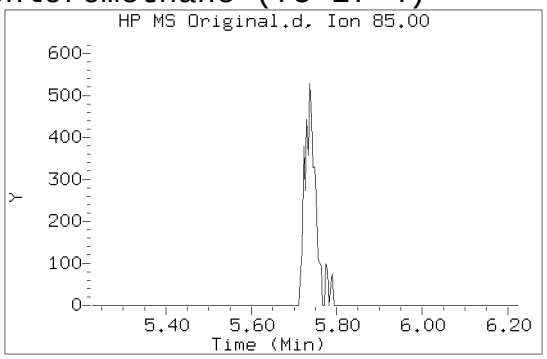


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

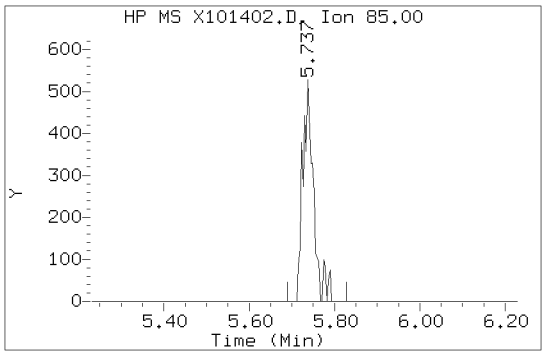
Bromodichloromethane (75-27-4)

Reason Code:

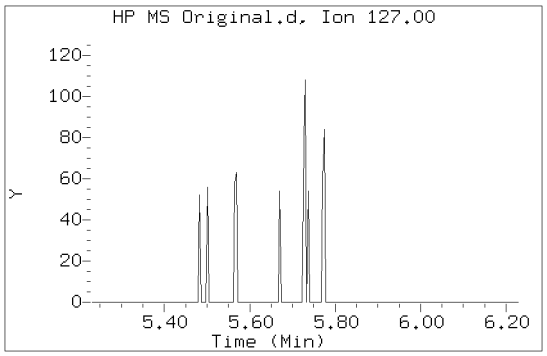
BEFORE
MASS
85
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



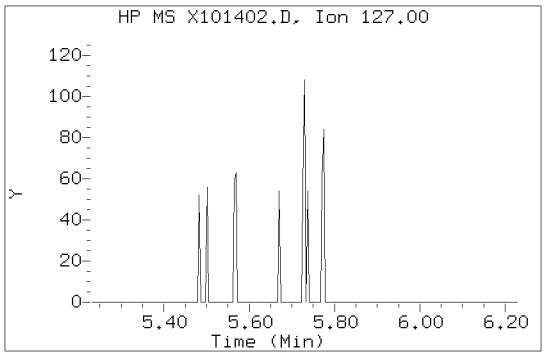
AFTER
MASS
85
AREA
938
HEIGHT
528
28-Oct-2022
16:41



BEFORE
MASS
127
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



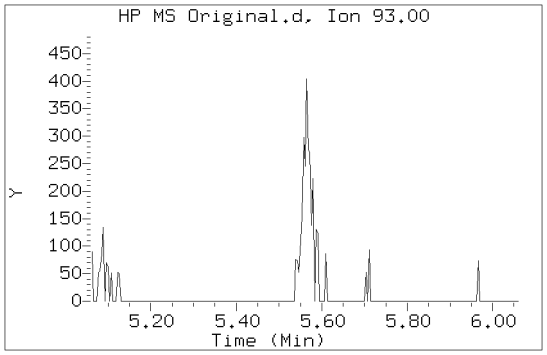
AFTER
MASS
127
AREA
0
HEIGHT
0
28-Oct-2022
16:41



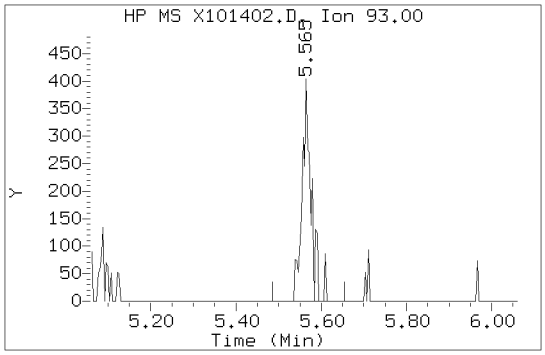
Dibromomethane (74-95-3)

Reason Code:

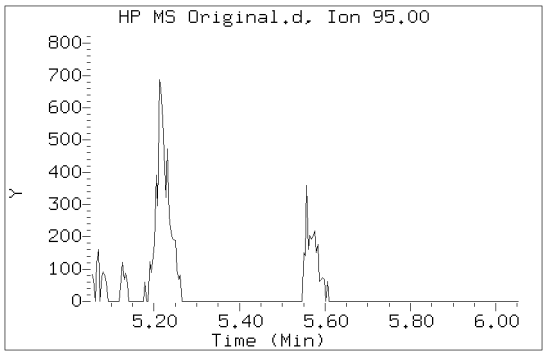
BEFORE
MASS
93
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



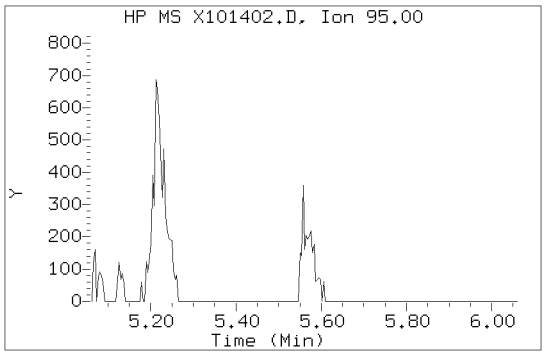
AFTER
MASS
93
AREA
599
HEIGHT
404
28-Oct-2022
16:41



BEFORE
MASS
95
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
95
AREA
0
HEIGHT
0
28-Oct-2022
16:41

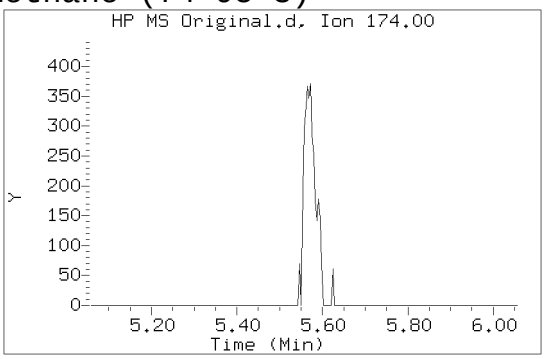


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

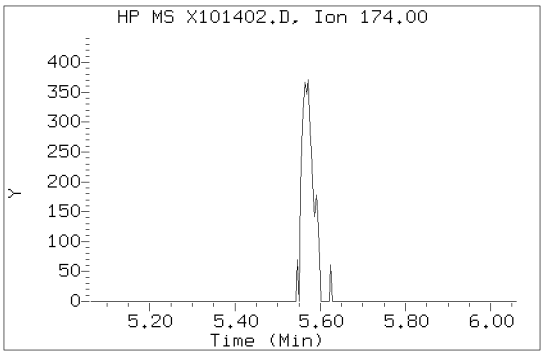
Dibromomethane (74-95-3)

Reason Code:

BEFORE
MASS
174
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



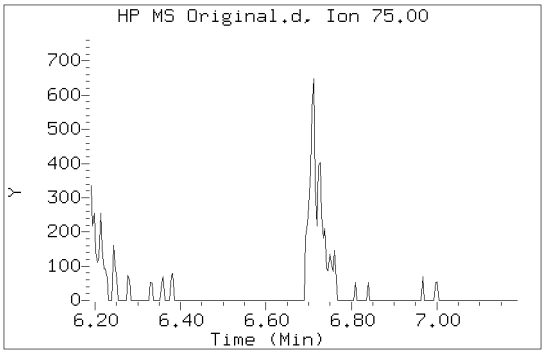
AFTER
MASS
174
AREA
0
HEIGHT
0
28-Oct-2022
16:41



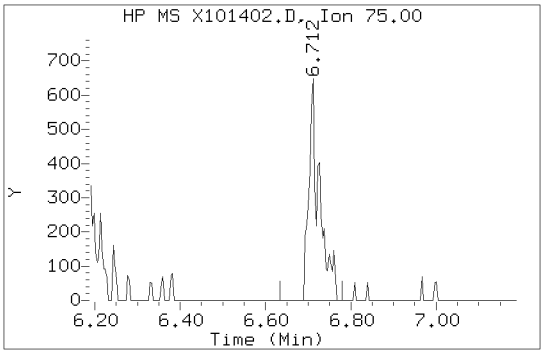
trans-1,3-Dichloropropene (10061-02-6)

Reason Code:

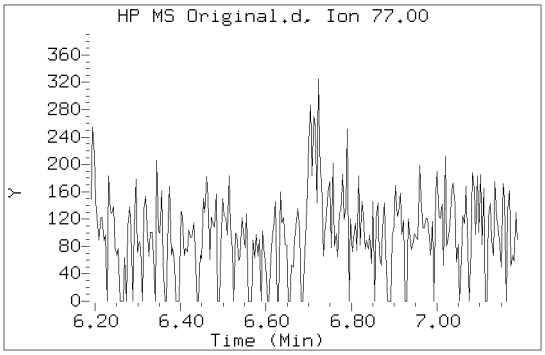
BEFORE
MASS
75
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



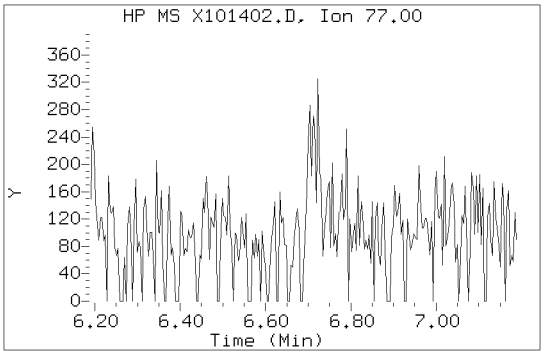
AFTER
MASS
75
AREA
1118
HEIGHT
648
28-Oct-2022
16:41



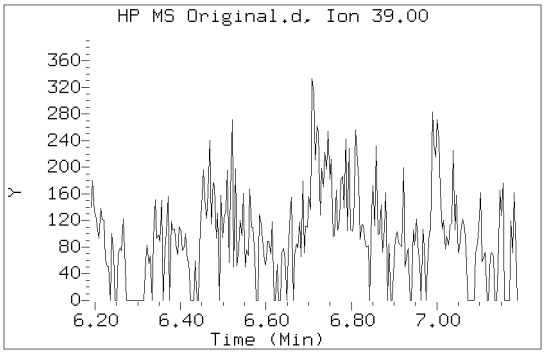
BEFORE
MASS
77
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



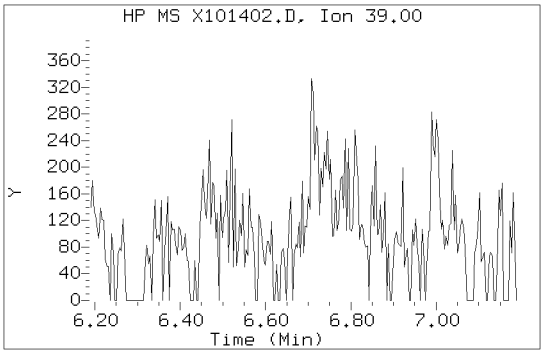
AFTER
MASS
77
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
39
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
39
AREA
0
HEIGHT
0
28-Oct-2022
16:41



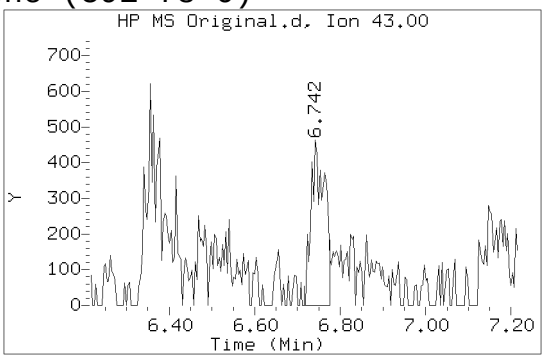
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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

2-Hexanone (591-78-6)

Reason Code:

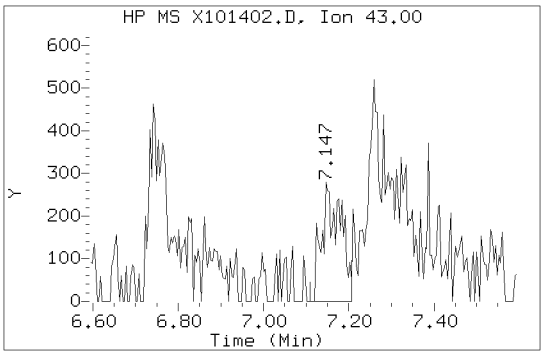
BEFORE

MASS
43
AREA
1019
HEIGHT
463
19-Oct-2022
16:03
linh
pham



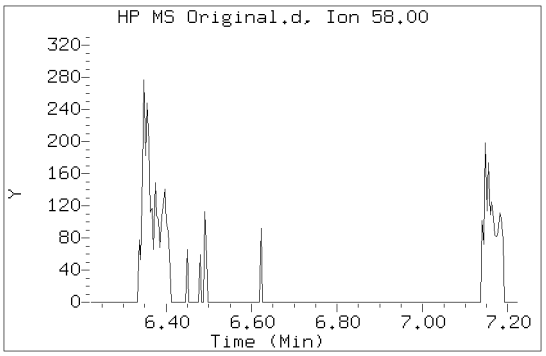
AFTER

MASS
43
AREA
863
HEIGHT
280
28-Oct-2022
16:41



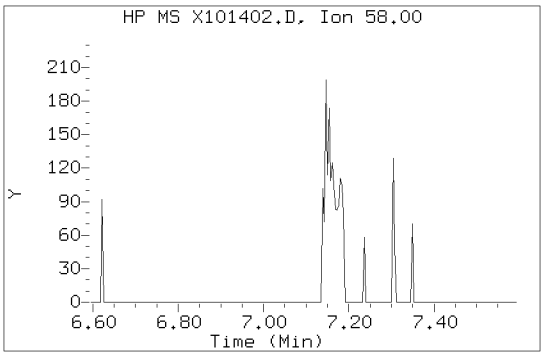
BEFORE

MASS
58
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



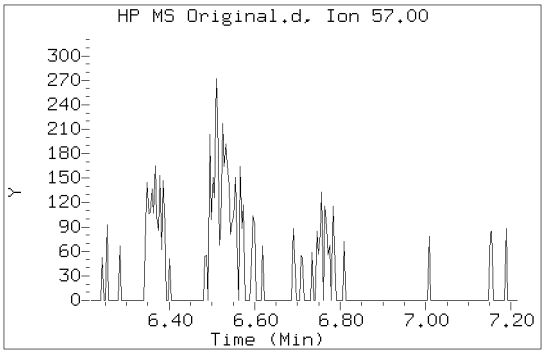
AFTER

MASS
58
AREA
0
HEIGHT
0
28-Oct-2022
16:41



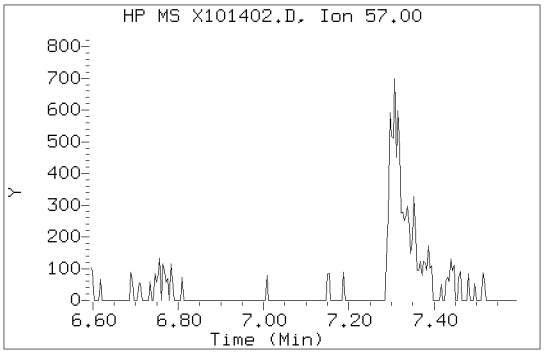
BEFORE

MASS
57
AREA
1144
HEIGHT
699
19-Oct-2022
16:03
linh
pham



AFTER

MASS
57
AREA
0
HEIGHT
0
28-Oct-2022
16:41

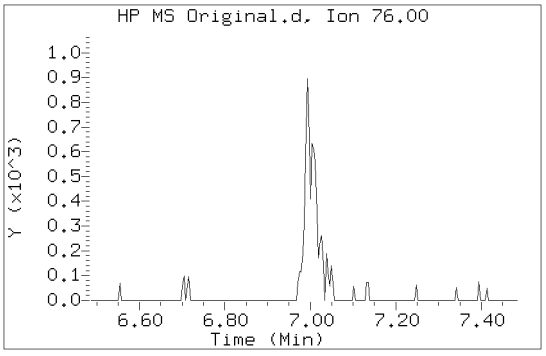


1,3-Dichloropropane (142-28-9)

Reason Code:

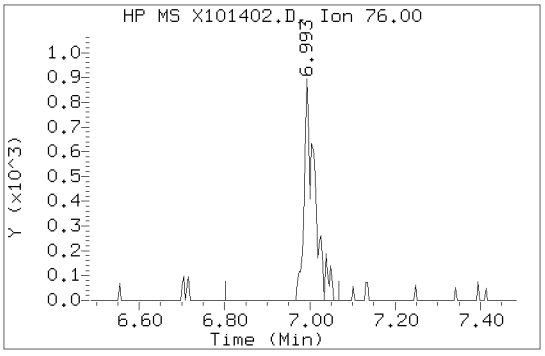
BEFORE

MASS
76
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
76
AREA
1570
HEIGHT
895
28-Oct-2022
16:41

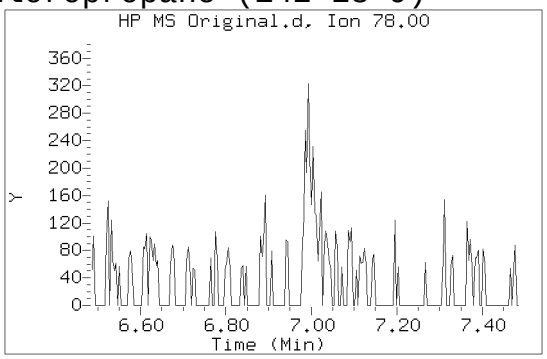


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Inj Date : 14-OCT-2022 11:26
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LabSampID : VSTD000.25

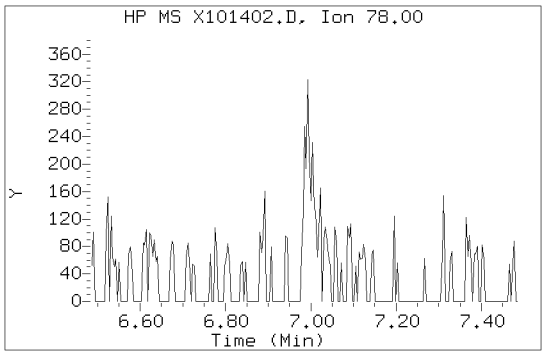
1,3-Dichloropropane (142-28-9)

Reason Code:

BEFORE
MASS
78
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



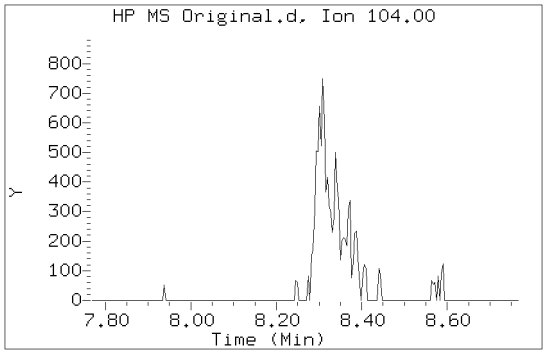
AFTER
MASS
78
AREA
0
HEIGHT
0
28-Oct-2022
16:41



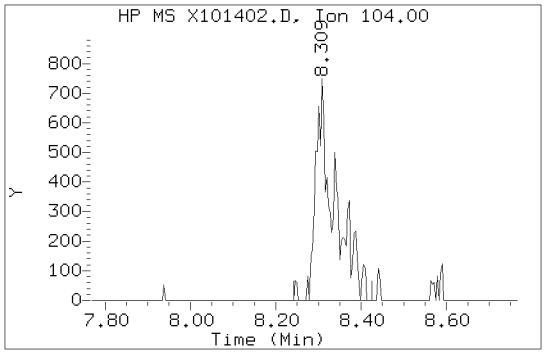
Styrene (100-42-5)

Reason Code:

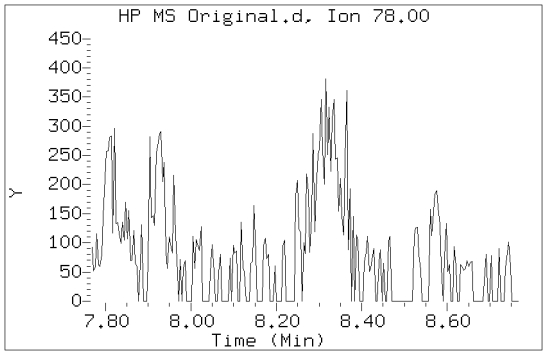
BEFORE
MASS
104
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



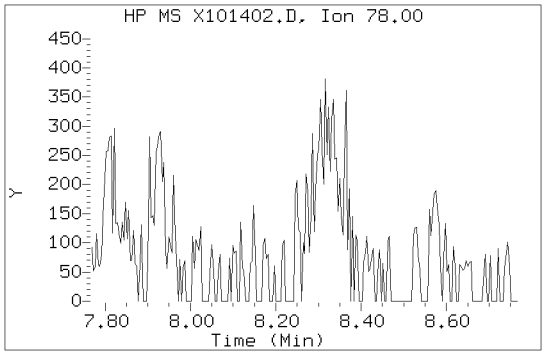
AFTER
MASS
104
AREA
2311
HEIGHT
749
28-Oct-2022
16:41



BEFORE
MASS
78
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



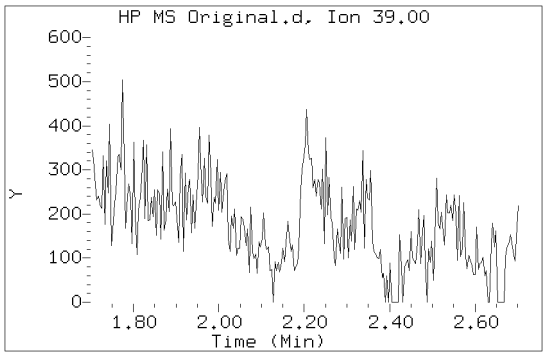
AFTER
MASS
78
AREA
0
HEIGHT
0
28-Oct-2022
16:41



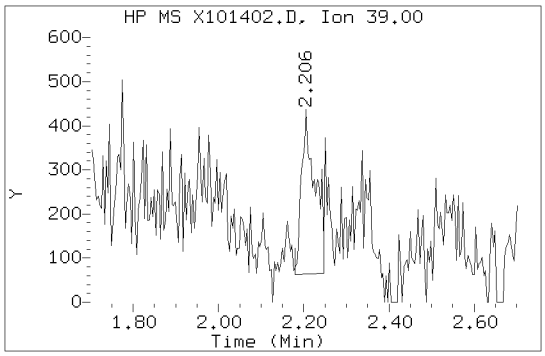
Acetonitrile (75-05-8)

Reason Code:

BEFORE
MASS
39
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
39
AREA
836
HEIGHT
373
28-Oct-2022
16:41

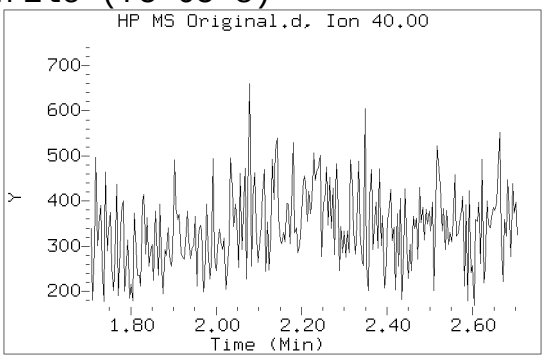


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

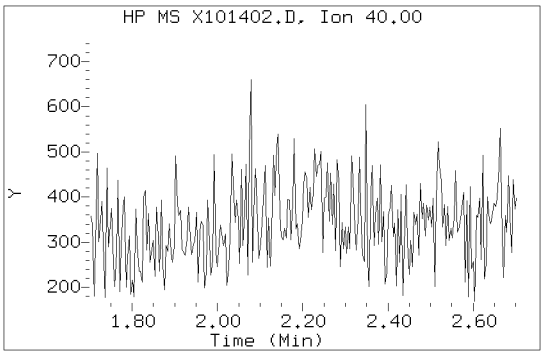
Acetonitrile (75-05-8)

Reason Code:

BEFORE
MASS
40
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



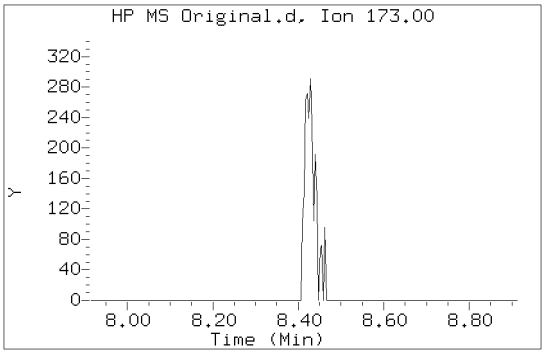
AFTER
MASS
40
AREA
0
HEIGHT
0
28-Oct-2022
16:41



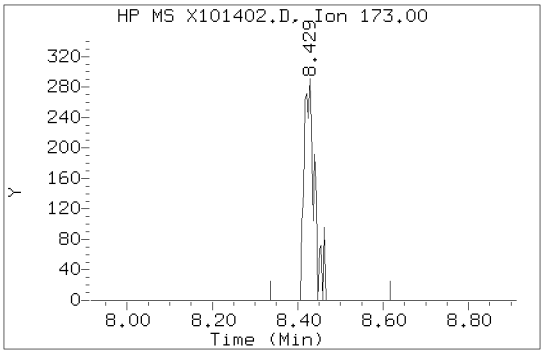
Bromoform (75-25-2)

Reason Code:

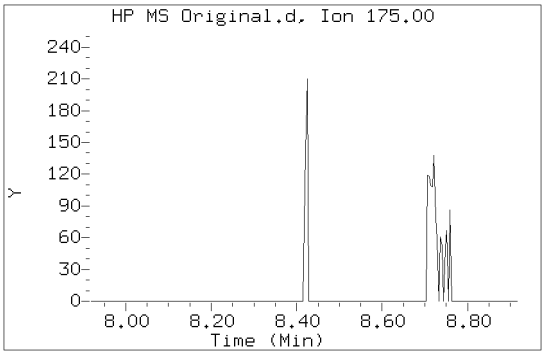
BEFORE
MASS
173
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



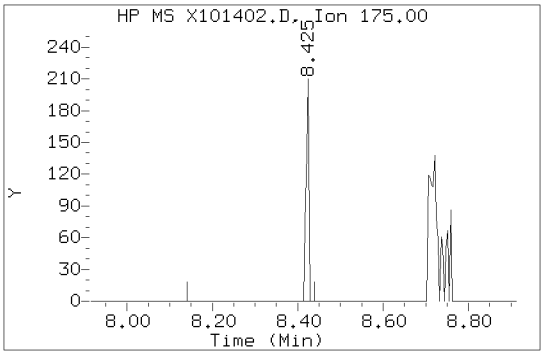
AFTER
MASS
173
AREA
495
HEIGHT
291
28-Oct-2022
16:41



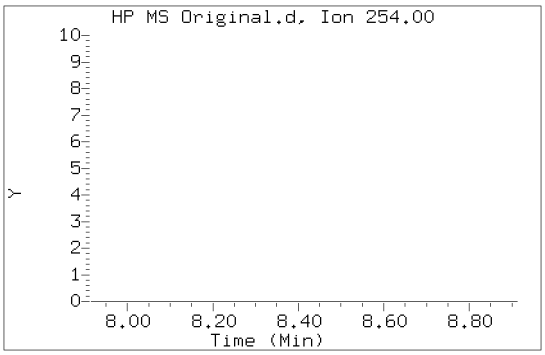
BEFORE
MASS
175
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



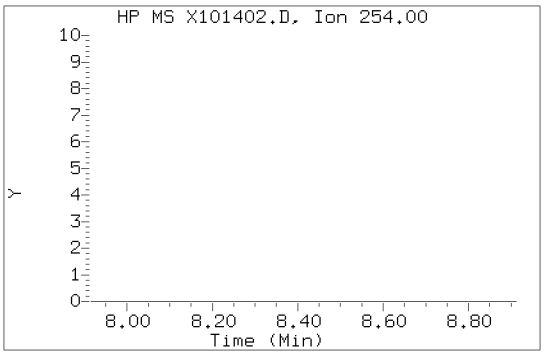
AFTER
MASS
175
AREA
95
HEIGHT
210
28-Oct-2022
16:41



BEFORE
MASS
254
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
254
AREA
0
HEIGHT
0
28-Oct-2022
16:41

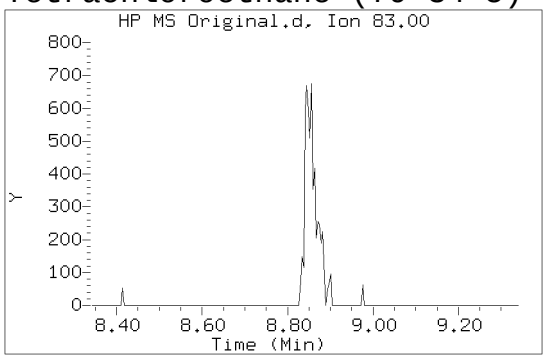


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

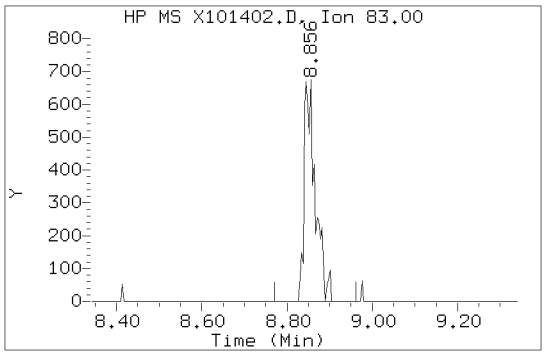
1,1,2,2-Tetrachloroethane (79-34-5)

Reason Code:

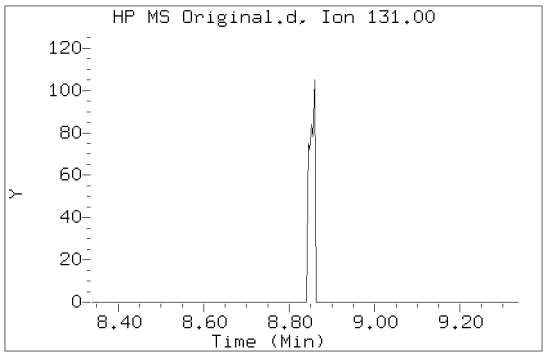
BEFORE
MASS
83
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



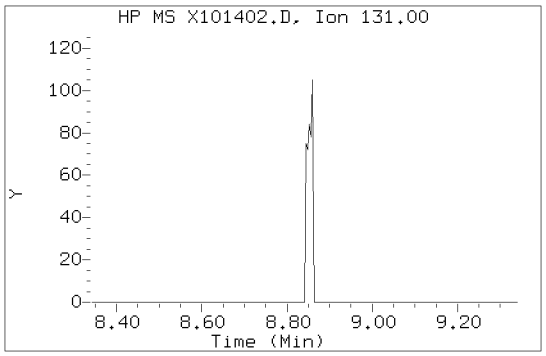
AFTER
MASS
83
AREA
1251
HEIGHT
675
28-Oct-2022
16:41



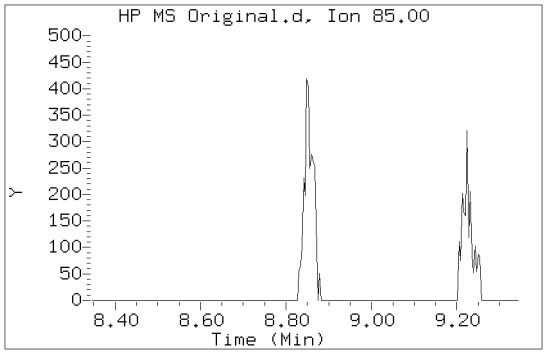
BEFORE
MASS
131
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



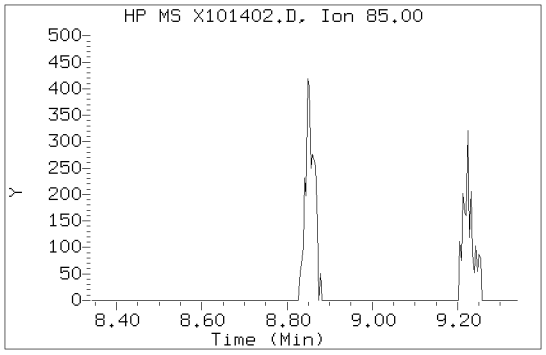
AFTER
MASS
131
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
85
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



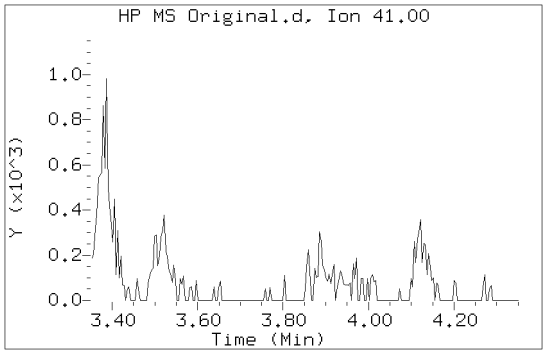
AFTER
MASS
85
AREA
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HEIGHT
0
28-Oct-2022
16:41



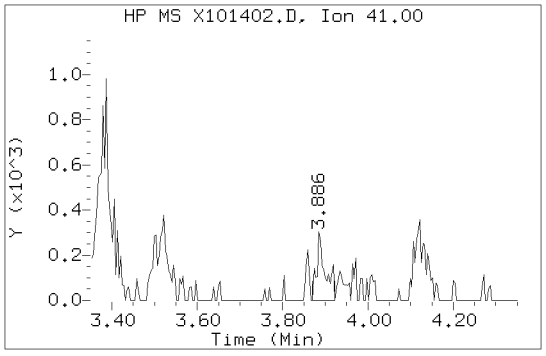
Methacrylonitrile (126-98-7)

Reason Code:

BEFORE
MASS
41
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



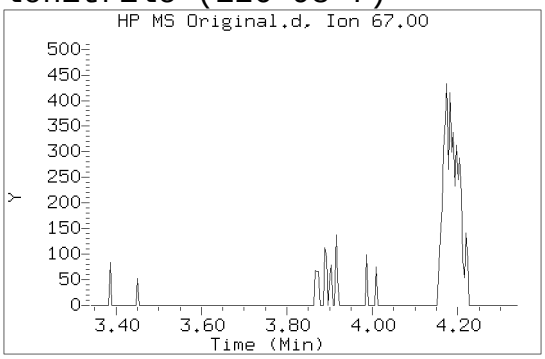
AFTER
MASS
41
AREA
416
HEIGHT
304
28-Oct-2022
16:41



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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

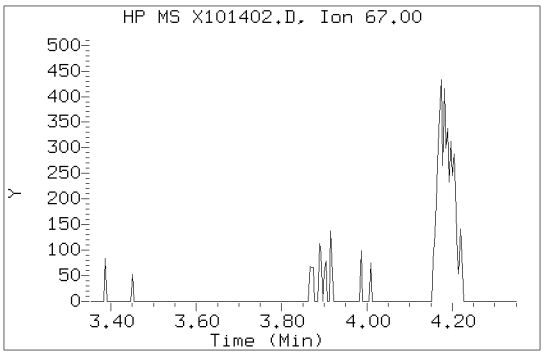
Methacrylonitrile (126-98-7)

BEFORE
MASS
67
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham

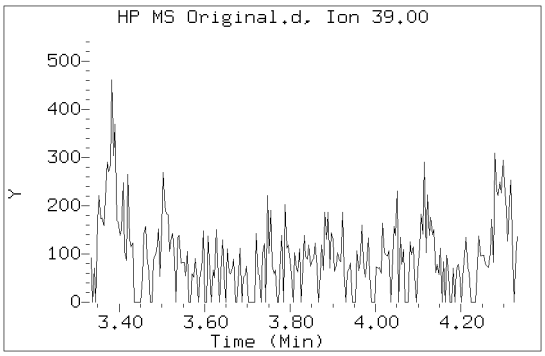


Reason Code:

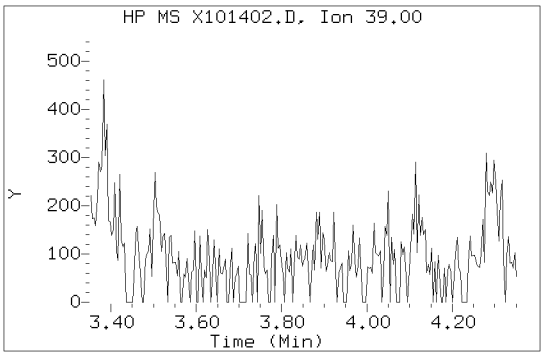
AFTER
MASS
67
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
39
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



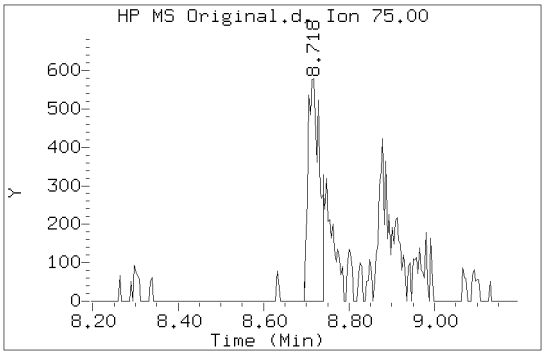
AFTER
MASS
39
AREA
0
HEIGHT
0
28-Oct-2022
16:41



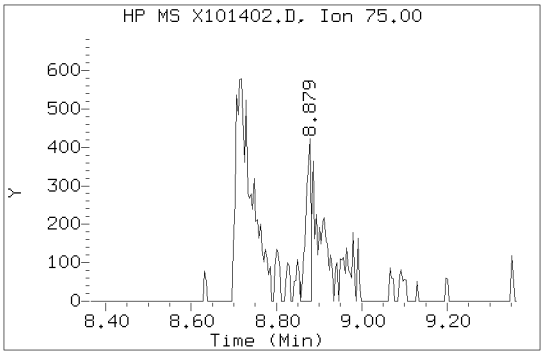
1,2,3-Trichloropropane (96-18-4)

Reason Code:

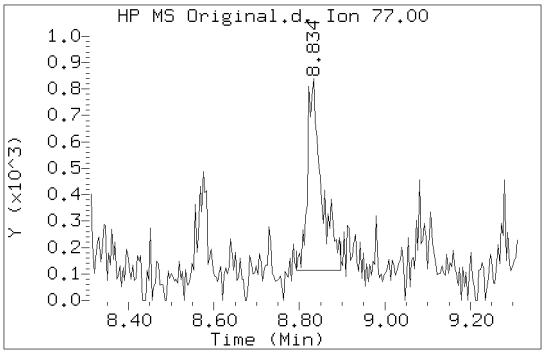
BEFORE
MASS
75
AREA
1071
HEIGHT
578
19-Oct-2022
16:03
linh
pham



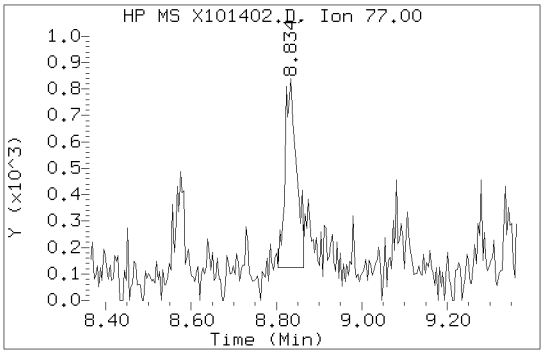
AFTER
MASS
75
AREA
355
HEIGHT
423
28-Oct-2022
16:41



BEFORE
MASS
77
AREA
1675
HEIGHT
726
19-Oct-2022
16:03
linh
pham



AFTER
MASS
77
AREA
1321
HEIGHT
715
28-Oct-2022
16:41

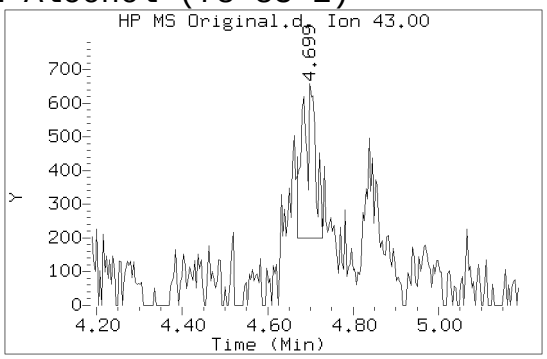


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

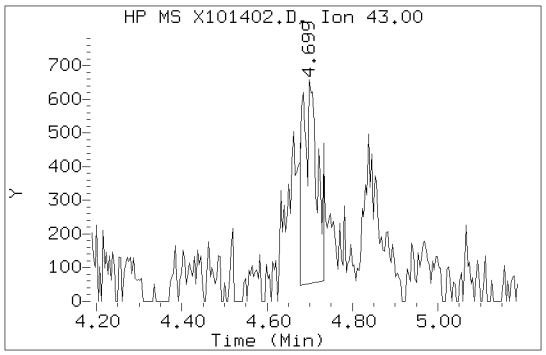
Isobutyl Alcohol (78-83-1)

Reason Code:

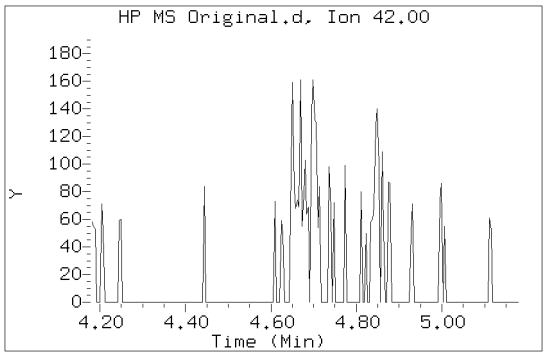
BEFORE
MASS
43
AREA
965
HEIGHT
458
19-Oct-2022
16:03
linh
pham



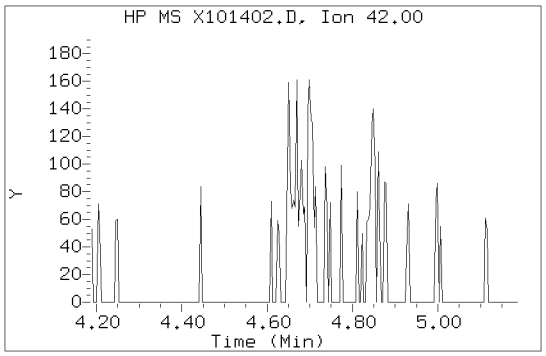
AFTER
MASS
43
AREA
1453
HEIGHT
605
28-Oct-2022
16:41



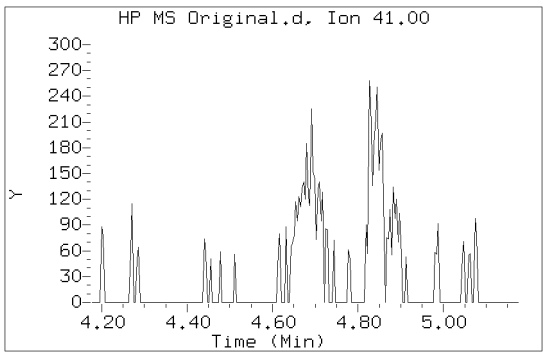
BEFORE
MASS
42
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



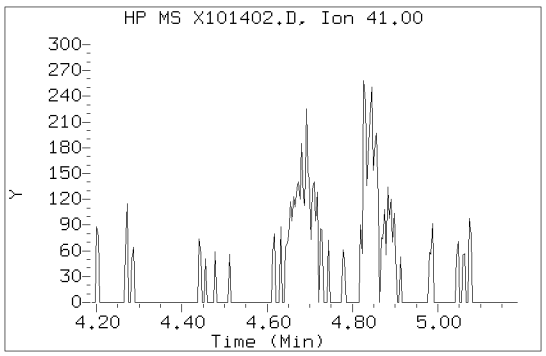
AFTER
MASS
42
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
41
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



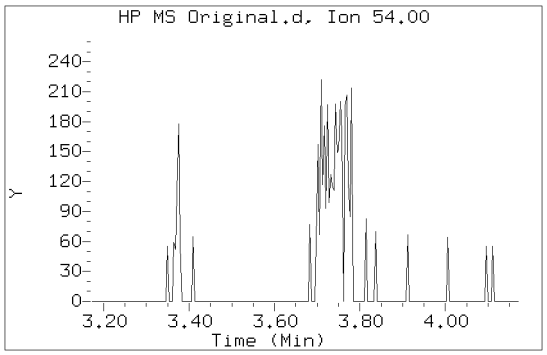
AFTER
MASS
41
AREA
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HEIGHT
0
28-Oct-2022
16:41



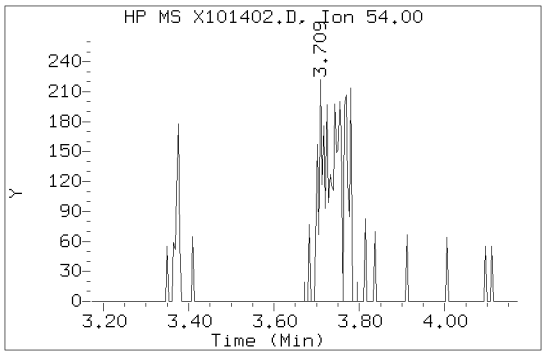
Propionitrile (107-12-0)

Reason Code:

BEFORE
MASS
54
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
54
AREA
743
HEIGHT
222
28-Oct-2022
16:41

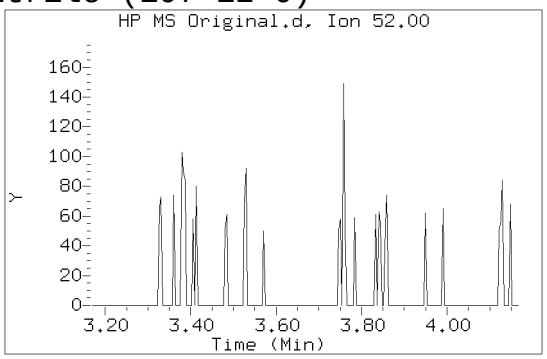


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

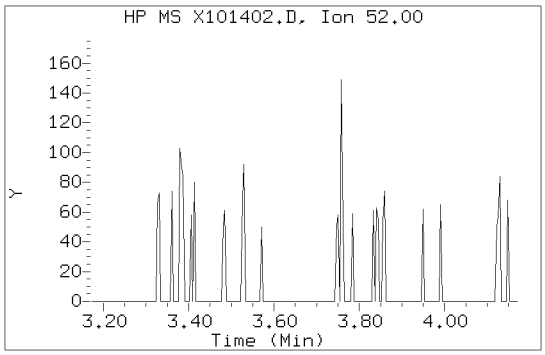
Propionitrile (107-12-0)

Reason Code:

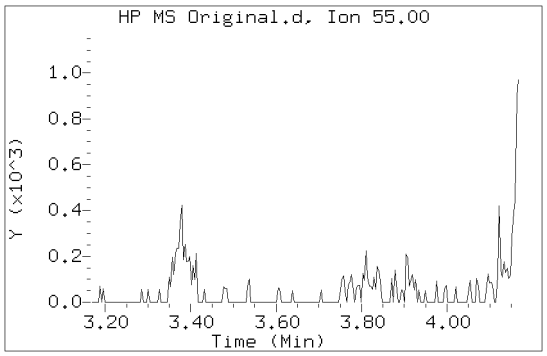
BEFORE
MASS
52
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



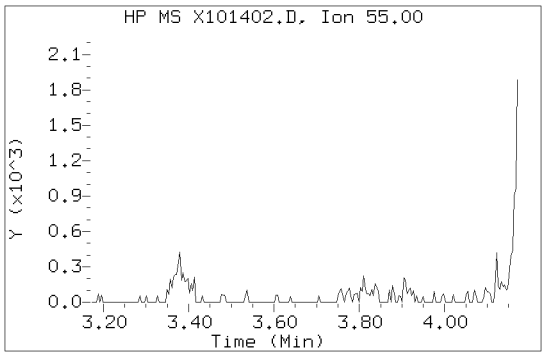
AFTER
MASS
52
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
55
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



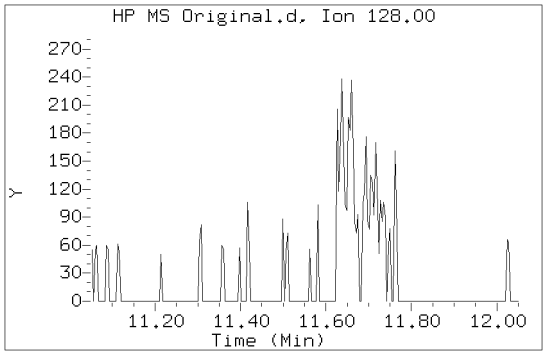
AFTER
MASS
55
AREA
0
HEIGHT
0
28-Oct-2022
16:41



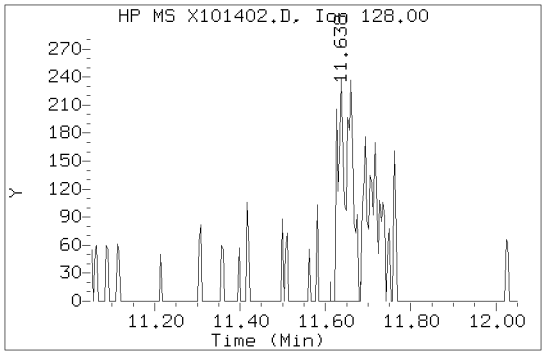
Naphthalene (91-20-3)

Reason Code:

BEFORE
MASS
128
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



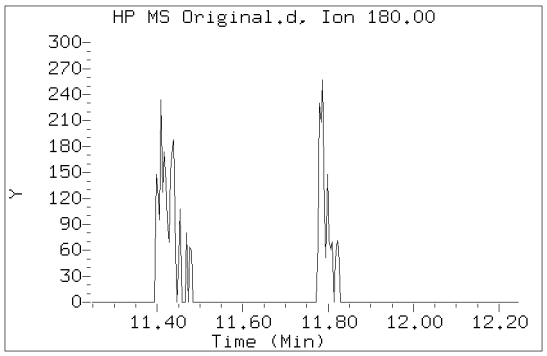
AFTER
MASS
128
AREA
477
HEIGHT
238
28-Oct-2022
16:41



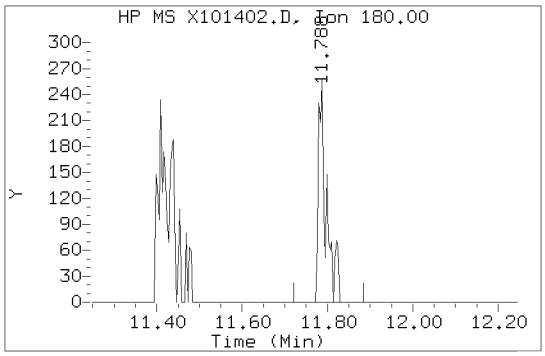
1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

BEFORE
MASS
180
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
180
AREA
326
HEIGHT
257
28-Oct-2022
16:41

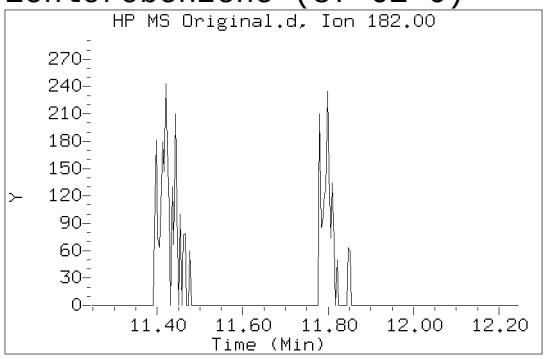


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

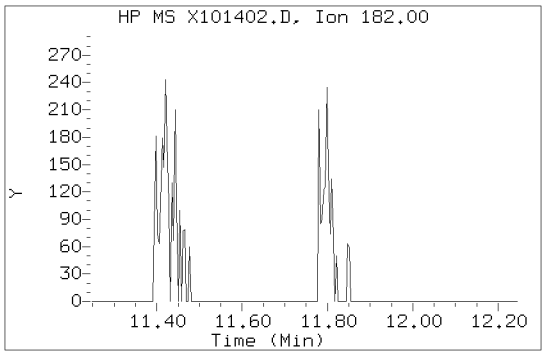
1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

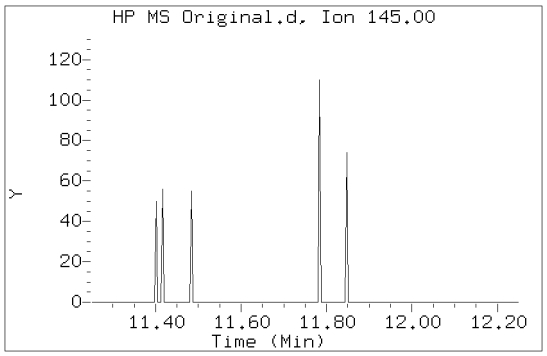
BEFORE
MASS
182
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



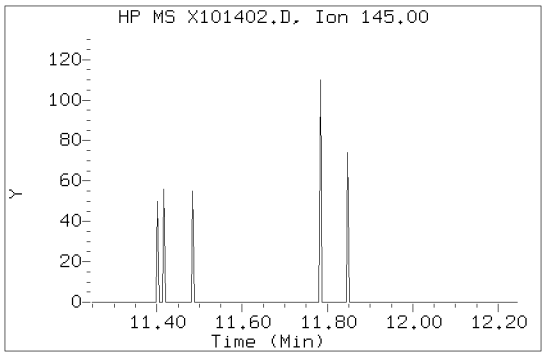
AFTER
MASS
182
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
145
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



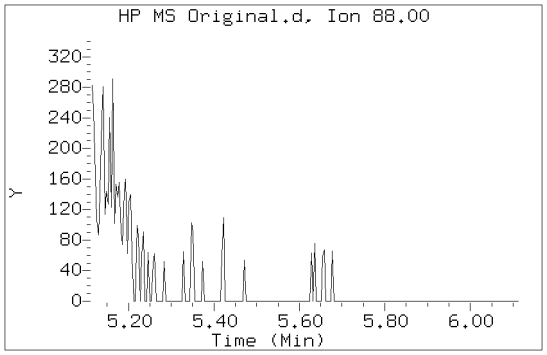
AFTER
MASS
145
AREA
0
HEIGHT
0
28-Oct-2022
16:41



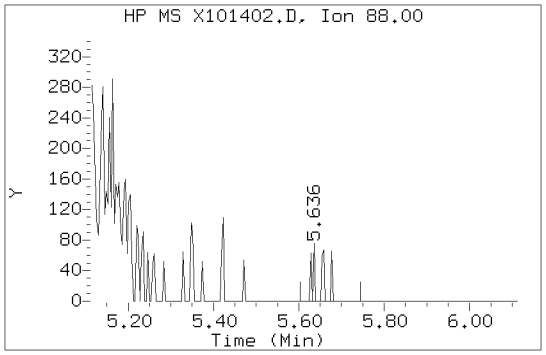
1,4-Dioxane ()

Reason Code:

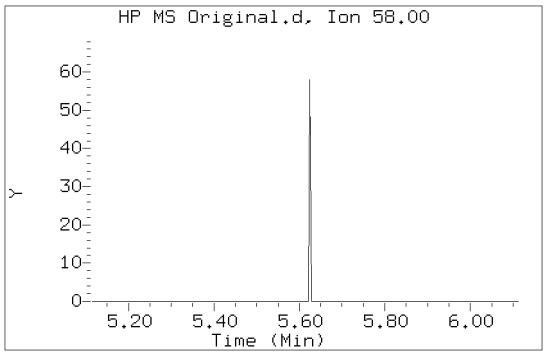
BEFORE
MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



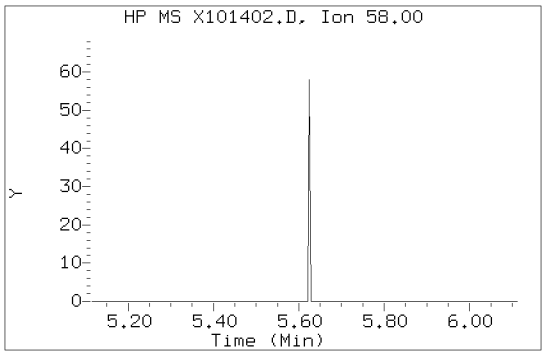
AFTER
MASS
88
AREA
74
HEIGHT
76
28-Oct-2022
16:41



BEFORE
MASS
58
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
58
AREA
0
HEIGHT
0
28-Oct-2022
16:41

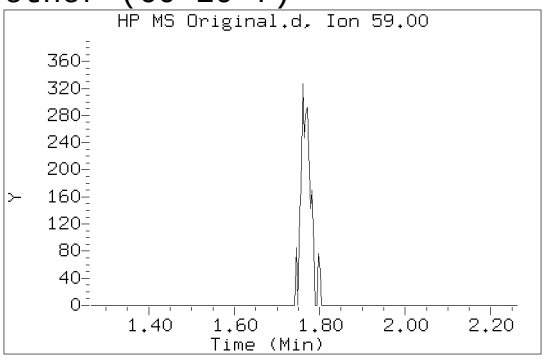


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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

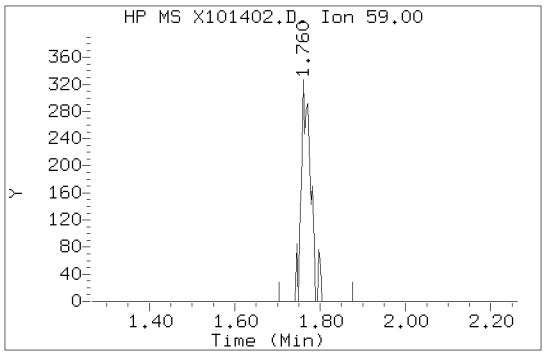
Diethyl ether (60-29-7)

Reason Code:

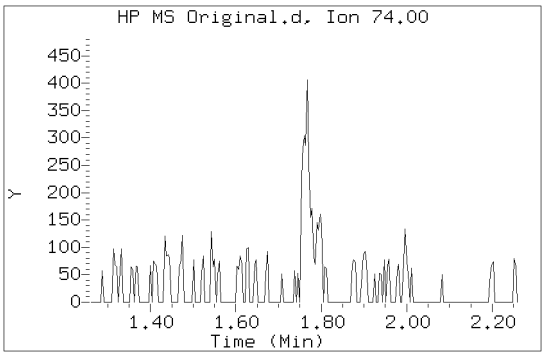
BEFORE
MASS
59
AREA
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HEIGHT
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19-Oct-2022
16:03
linh
pham



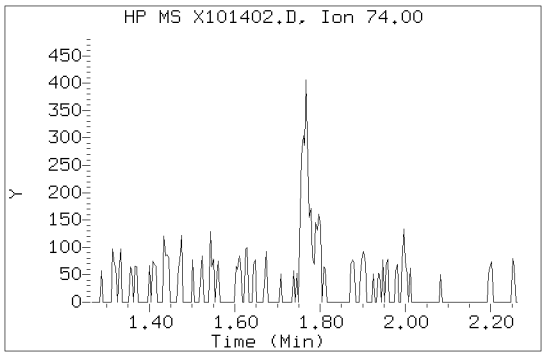
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28-Oct-2022
16:41



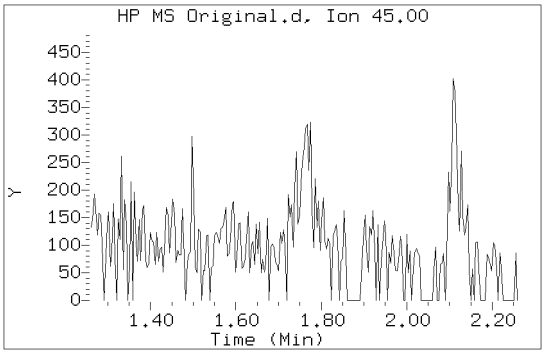
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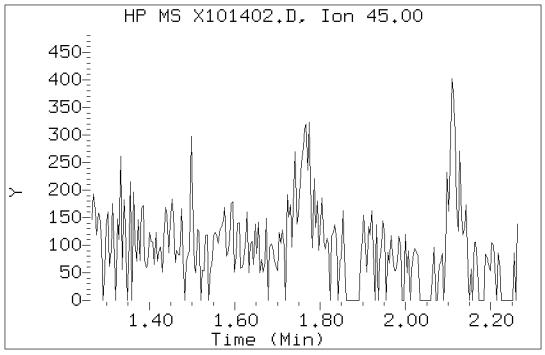
AFTER
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BEFORE
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HEIGHT
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19-Oct-2022
16:03
linh
pham



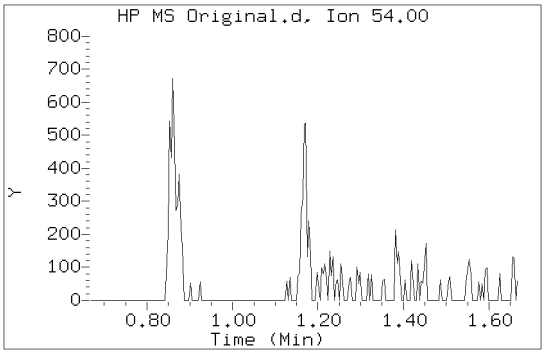
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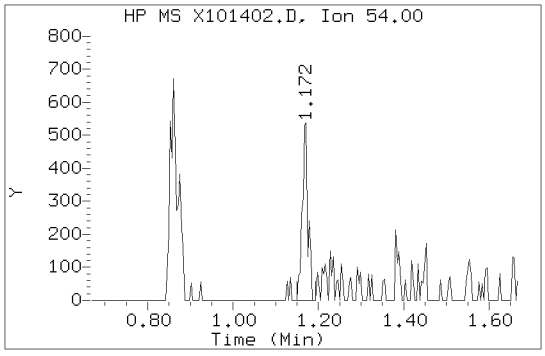
1,3-Butadiene (106-99-0)

Reason Code:

BEFORE
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AREA
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HEIGHT
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16:03
linh
pham



AFTER
MASS
54
AREA
518
HEIGHT
538
28-Oct-2022
16:41



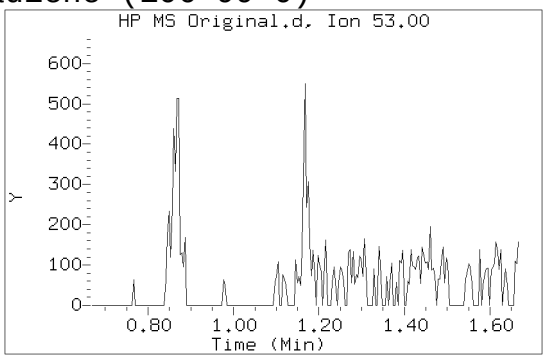
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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

1,3-Butadiene (106-99-0)

Reason Code:

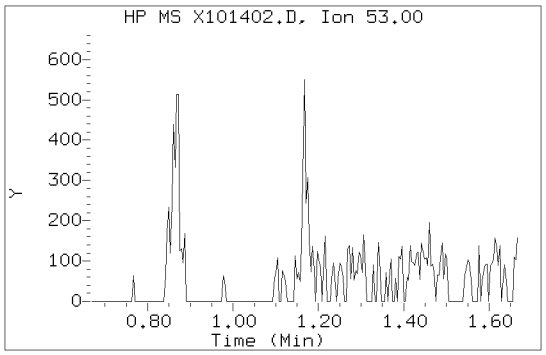
BEFORE

MASS
53
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HEIGHT
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19-Oct-2022
16:03
linh
pham



AFTER

MASS
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AREA
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HEIGHT
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28-Oct-2022
16:41

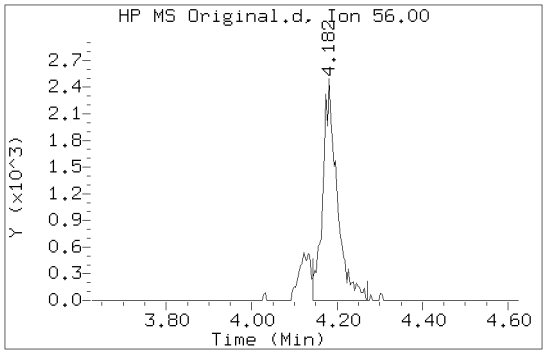


Cyclohexane (110-82-7)

Reason Code:

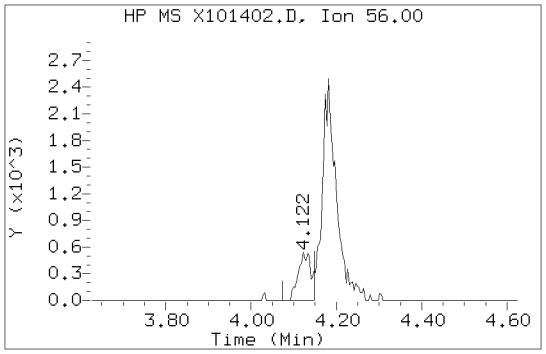
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16:03
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pham



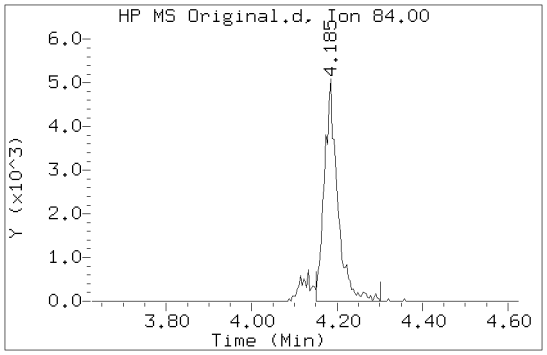
AFTER

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AREA
1143
HEIGHT
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28-Oct-2022
16:41



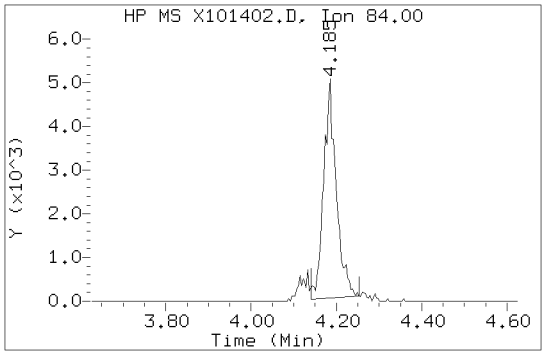
BEFORE

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19-Oct-2022
16:03
linh
pham



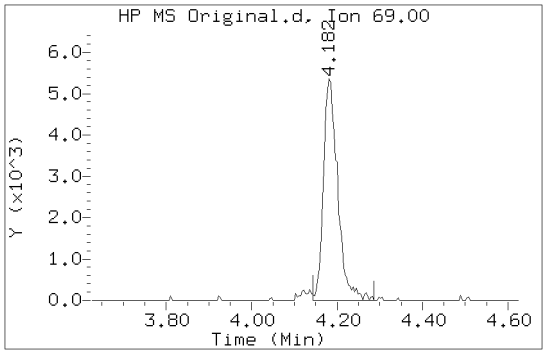
AFTER

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AREA
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28-Oct-2022
16:41



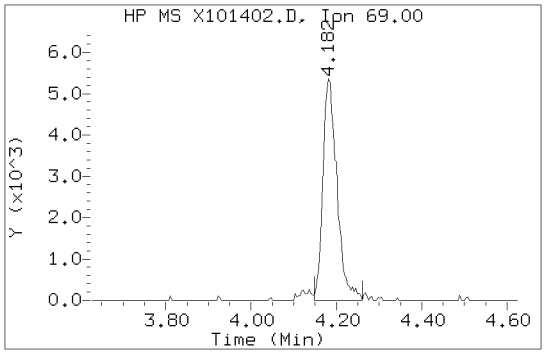
BEFORE

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AREA
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linh
pham



AFTER

MASS
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AREA
12267
HEIGHT
5363
28-Oct-2022
16:41



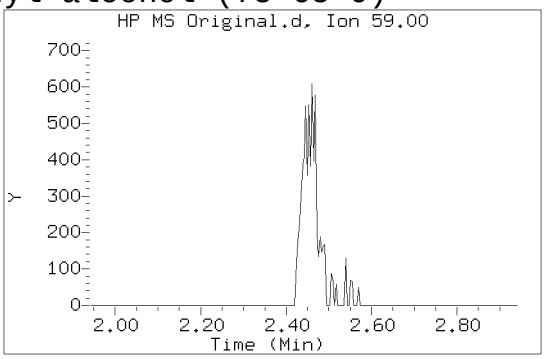
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Inj Date : 14-OCT-2022 11:26
InstruID : voa6.i
LabSampID : VSTD000.25

Tert-Butyl alcohol (75-65-0)

Reason Code:

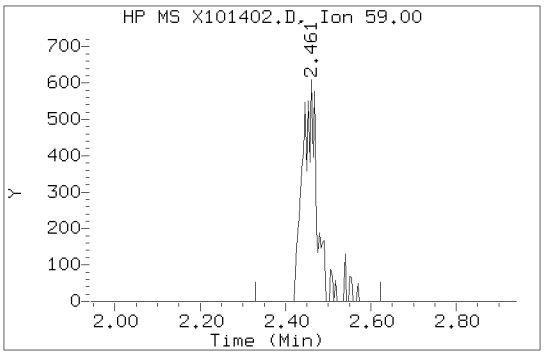
BEFORE

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HEIGHT
0
19-Oct-2022
16:03
linh
pham



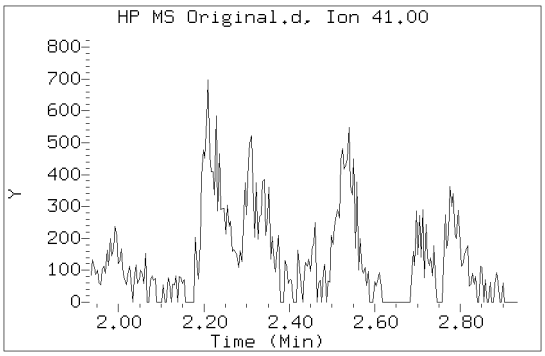
AFTER

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HEIGHT
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28-Oct-2022
16:41



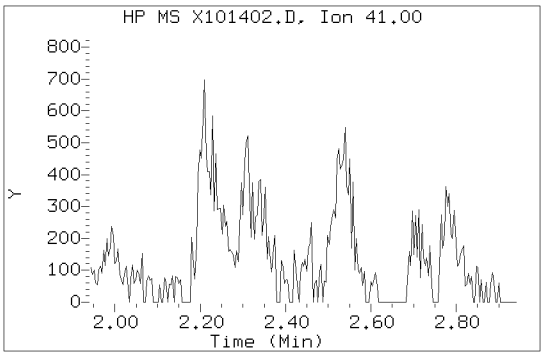
BEFORE

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AREA
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HEIGHT
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19-Oct-2022
16:03
linh
pham



AFTER

MASS
41
AREA
0
HEIGHT
0
28-Oct-2022
16:41



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D Page 1
Report Date: 28-Oct-2022 16:41

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Lab Smp Id: VSTD000.5 Client Smp ID: VSTD000.51
Inj Date : 14-OCT-2022 12:08
Operator : PC Inst ID: voa6.i
Smp Info : VSTD000.5;VSTD000.5;1;2;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
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Meth Date : 28-Oct-2022 16:41 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 11:26 Cal File: X101402.D
Als bottle: 4 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.181	4.181	(1.000)	420299	50.0000	
135	1,4-Dioxane	88	5.606	5.606	(1.341)	417	10.0000	13.03(M)
140	1,3-Butadiene	54	1.167	1.167	(0.279)	1358	0.50000	0.59
25	Methacrylonitrile	41	3.885	3.885	(0.929)	1331	0.50000	0.50(M)
12	Isobutyl Alcohol	43	4.691	4.691	(1.122)	6709	10.0000	5.66(M)
13	Acetonitrile	39	2.206	2.206	(0.528)	1282	5.00000	3.91(M)
14	Allyl Chloride	41	2.206	2.206	(0.528)	3566	0.50000	0.49(M)
4	Propionitrile	54	3.716	3.716	(0.889)	1528	5.00000	4.14(M)
136	n-Hexane	57	2.787	2.787	(0.667)	2026	0.50000	0.54
72	trans-1,4-Dichloro-2-butene	53	8.905	8.905	(1.161)	654	0.50000	2.08(M)
23	Chloroprene	53	1.778	1.778	(0.425)	621	0.50000	0.57(M)
145	alpha-Methylstyrene	118	9.268	9.268	(0.959)	5074	0.50000	0.97(M)
200	Dimethyl Disulfide	94	6.206	6.206	(0.809)	3296	0.50000	0.40
139	Diethyl ether	59	1.760	1.760	(0.421)	1081	0.50000	0.53(M)
130	Ethyl Acetate	43	3.698	3.698	(0.884)	2349	0.50000	(M)
40	Methyl Methacrylate	41	5.639	5.639	(1.349)	1431	0.50000	0.54(M)
49	Ethyl Methacrylate	69	6.805	6.805	(1.370)	2349	0.50000	0.46(M)
150	Allyl alcohol	57	2.787	2.787	(0.667)	2026	10.0000	10.87
166	1,2,3-Trimethylbenzene	105	9.740	9.740	(1.008)	5687	0.50000	0.43
162	Butyl acrylate	55	8.294	8.294	(1.081)	1944	0.50000	0.33

2 Dichlorodifluoromethane	85	0.976	0.976 (0.234)	1958	0.50000		(M)
3 Chloromethane	50	1.081	1.081 (0.259)	2218	0.50000	0.28	

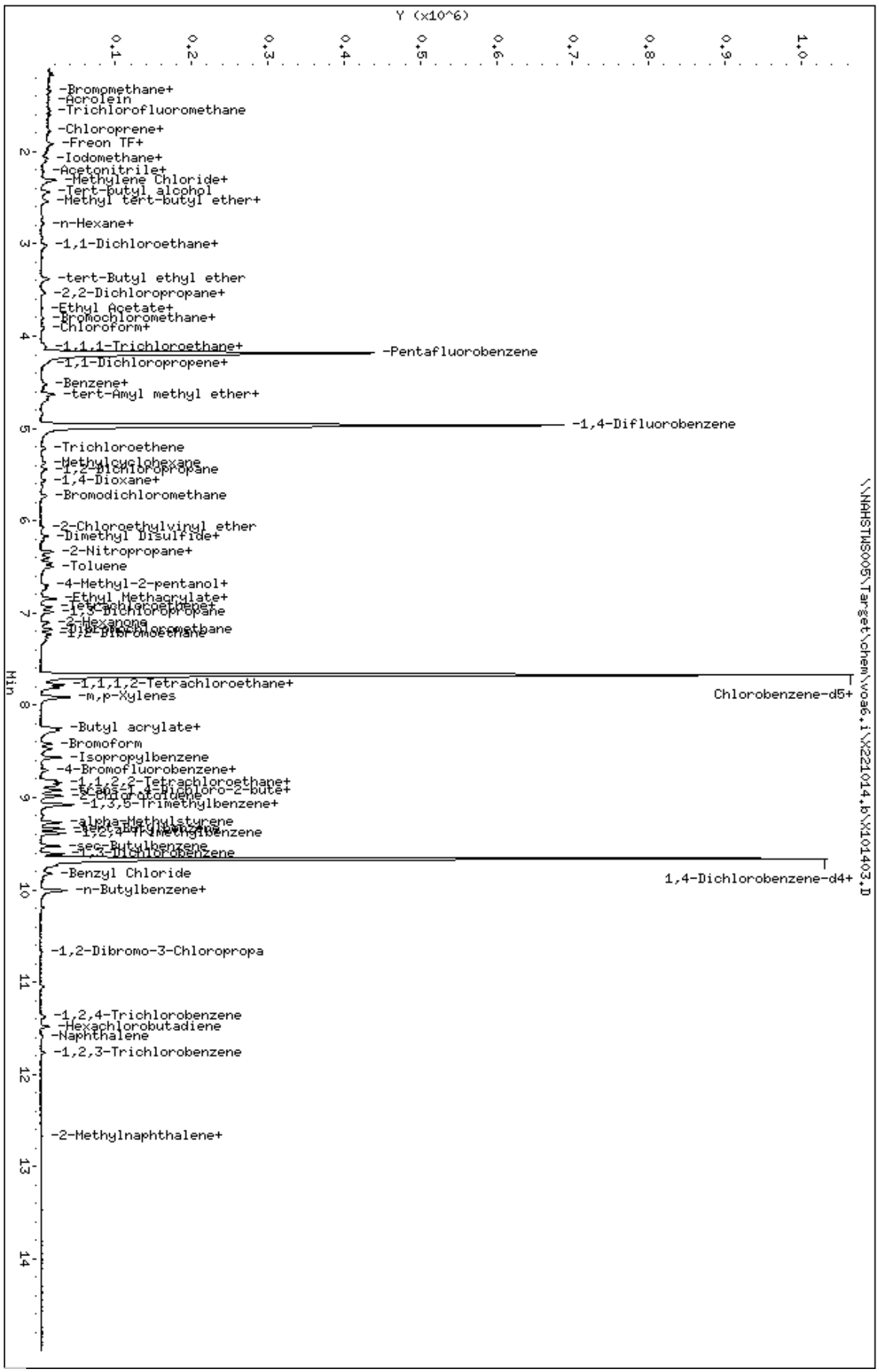
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	5 Vinyl Chloride	62	1.145	1.145	(0.274)	1737	0.50000	0.54
	6 Bromomethane	94	1.344	1.344	(0.321)	1461	0.50000	0.07(M)
	7 Chloroethane	64	1.407	1.407	(0.337)	982	0.50000	0.50(M)
	8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	2200	0.50000	0.51
	9 Acrolein	56	1.445	1.445	(0.346)	207	1.00000	0.88(M)
	10 Acetone	43	1.981	1.981	(0.474)	1015	1.00000	1.02(M)
	11 1,1-Dichloroethene	96	1.925	1.925	(0.460)	1643	0.50000	0.60(M)
	15 Iodomethane	142	2.030	2.030	(0.485)	1369	1.00000	3.69(T)
	16 Acrylonitrile	53	2.592	2.592	(0.620)	699	1.00000	1.90(M)
	17 Methylene Chloride	84	2.307	2.307	(0.552)	3314	0.50000	(M)
	18 Methyl tert-butyl ether	73	2.543	2.543	(0.608)	4532	0.50000	0.45
	19 Carbon Disulfide	76	2.071	2.071	(0.495)	9912	1.00000	1.04
	20 trans-1,2-Dichloroethene	96	2.551	2.551	(0.610)	2045	0.50000	0.55(M)
	21 Vinyl Acetate	43	3.030	3.030	(0.725)	8462	1.00000	1.01(M)
	22 1,1-Dichloroethane	63	2.925	2.925	(0.700)	3394	0.50000	0.53(T)
	24 2-Butanone	43	3.623	3.623	(0.866)	1217	1.00000	1.20(M)
	26 2,2-Dichloropropane	77	3.507	3.507	(0.839)	2636	0.50000	0.51
	27 cis-1,2-Dichloroethene	96	3.540	3.540	(0.847)	2378	0.50000	0.54
	28 Chloroform	83	3.915	3.915	(0.936)	4178	0.50000	0.60
	29 Bromochloromethane	128	3.810	3.810	(0.911)	1539	0.50000	0.63
$	30 Dibromofluoromethane	113	4.118	4.118	(0.985)	1913	0.50000	(M)
	31 1,1,1-Trichloroethane	97	4.080	4.080	(0.976)	2882	0.50000	0.53
	32 1,1-Dichloropropene	75	4.290	4.290	(0.863)	2979	0.50000	0.59
	33 1,2-Dichloroethane	62	4.571	4.571	(0.920)	2323	0.50000	0.50(M)
	34 Carbon Tetrachloride	117	4.260	4.260	(0.857)	2983	0.50000	0.59
$	35 1,2-Dichloroethane-d4	65	4.481	4.481	(1.072)	2199	0.50000	(TM)
*	36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	628840	50.0000	
	37 Benzene	78	4.522	4.522	(0.910)	9078	0.50000	0.57
	38 Trichloroethene	130	5.212	5.212	(1.049)	2815	0.50000	0.59
	39 Bromodichloromethane	83	5.729	5.729	(1.153)	2872	0.50000	0.55(M)
	41 2-Chloroethylvinyl ether	63	6.078	6.078	(1.223)	2105	1.00000	4.67
	42 1,2-Dichloropropane	63	5.441	5.441	(1.095)	2675	0.50000	0.65(M)
	44 Dibromomethane	93	5.557	5.557	(1.118)	923	0.50000	0.37(M)
	45 4-Methyl-2-Pentanone	43	6.333	6.333	(0.826)	4892	1.00000	1.96(M)
	46 cis-1,3-Dichloropropene	75	6.164	6.164	(1.241)	3671	0.50000	0.55(M)
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	581997	50.0000	
$	48 Toluene-d8	98	6.400	6.400	(0.834)	7720	0.50000	0.52
	50 Toluene	91	6.457	6.457	(0.842)	10120	0.50000	0.58(M)
	51 trans-1,3-Dichloropropene	75	6.693	6.693	(1.347)	2545	0.50000	0.48(M)
	52 2-Hexanone	43	7.101	7.101	(0.926)	2496	1.00000	1.30(MH)
	53 1,1,2-Trichloroethane	83	6.843	6.843	(0.892)	2053	0.50000	0.64(M)
	54 1,3-Dichloropropane	76	6.985	6.985	(0.911)	4276	0.50000	0.65(M)
	55 Dibromochloromethane	129	7.180	7.180	(0.936)	3780	0.50000	1.39(M)
	56 Tetrachloroethene	164	6.933	6.933	(0.904)	2356	0.50000	0.58
	57 1,2-Dibromoethane	107	7.266	7.266	(0.947)	2623	0.50000	0.65(M)
	58 1-Chlorohexane	55	7.671	7.671	(1.544)	4264	0.50000	1.17
	59 Chlorobenzene	112	7.694	7.694	(1.003)	7422	0.50000	0.61(M)
	60 1,1,1,2-Tetrachloroethane	131	7.772	7.772	(1.013)	2463	0.50000	0.55(M)
	61 Ethylbenzene	106	7.810	7.810	(1.018)	4262	0.50000	0.68(M)
	62 m,p-Xylenes	106	7.915	7.915	(1.032)	8717	1.00000	1.15(M)
	63 o-Xylene	106	8.252	8.252	(1.076)	4169	0.50000	0.56(M)
	64 Styrene	104	8.275	8.275	(1.079)	5695	0.50000	0.48(M)

66 Bromoform	173	8.413	8.413 (1.097)	1906	0.50000	1.77(TM)
67 Isopropylbenzene	105	8.567	8.567 (1.117)	10442	0.50000	0.58(M)

			QUANT SIG					AMOUNTS	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
	68	1,1,2,2-Tetrachloroethane	83	8.837	8.837	(0.915)	3092	0.50000	0.50(M)
$	69	4-Bromofluorobenzene	95	8.706	8.706	(1.135)	3195	0.50000	0.26
*	70	1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	283394	50.0000	
	71	1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	1476	0.50000	0.49(MH)
	73	n-Propylbenzene	91	8.920	8.920	(0.923)	15732	0.50000	0.57(M)
	74	Bromobenzene	156	8.815	8.815	(0.912)	2829	0.50000	0.53(M)
	75	1,3,5-Trimethylbenzene	105	9.073	9.073	(0.939)	7703	0.50000	0.53(M)
	76	2-Chlorotoluene	91	8.980	8.980	(0.929)	8168	0.50000	0.63(M)
	77	4-Chlorotoluene	91	9.084	9.084	(0.940)	9007	0.50000	0.63(M)
	78	tert-Butylbenzene	119	9.339	9.339	(0.967)	7379	0.50000	0.59(M)
	79	1,2,4-Trimethylbenzene	105	9.388	9.388	(0.972)	9741	0.50000	0.65(M)
	81	sec-Butylbenzene	105	9.523	9.523	(0.986)	10477	0.50000	0.62(M)
	82	p-Isopropyltoluene	119	9.654	9.654	(0.999)	9059	0.50000	0.60(M)
	83	1,3-Dichlorobenzene	146	9.609	9.609	(0.995)	5063	0.50000	0.57(M)
	84	1,4-Dichlorobenzene	146	9.681	9.681	(1.002)	5375	0.50000	0.58(M)
	86	Benzyl Chloride	91	9.823	9.823	(1.280)	10657	0.50000	1.44
	87	n-Butylbenzene	91	10.007	10.007	(1.036)	6228	0.50000	0.53(M)
	88	1,2-Dichlorobenzene	146	9.999	9.999	(1.035)	5627	0.50000	0.51(M)
	89	1,2-Dibromo-3-Chloropropane	155	10.674	10.674	(1.105)	303	0.50000	2.52(M)
	90	1,2,4-Trichlorobenzene	180	11.371	11.371	(1.177)	2124	0.50000	2.40(M)
	91	Hexachlorobutadiene	225	11.484	11.484	(1.189)	1814	0.50000	0.24(M)
	92	Naphthalene	128	11.596	11.596	(1.200)	2948	0.50000	0.61(M)
	93	1,2,3-Trichlorobenzene	180	11.769	11.769	(1.218)	1462	0.50000	0.61(M)
M	94	1,2-Dichloroethylene (total)	96				4423	1.00000	
M	95	Xylenes (total)	106				12886	1.50000	
	141	Cyclohexane	56	4.121	4.121	(0.986)	2509	0.50000	0.51(H)
	138	Freon TF	101	1.913	1.913	(0.458)	1261	0.50000	0.48
	147	Methylcyclohexane	55	5.373	5.373	(1.081)	4465	0.50000	0.53(M)
	146	Methyl Acetate	43	2.266	2.266	(0.542)	1043	0.50000	0.57(M)
	148	Tert-Butyl alcohol	59	2.434	2.434	(0.582)	5696	10.0000	24.34(aM)
	149	Isopropyl Alcohol	45	2.105	2.105	(0.503)	3311	10.0000	32.41(M)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS005\Target\chem\voa6,i\X221014,b\X101403,D
Date : 14-OCT-2022 12:08
Client ID: VSTD000,51
Sample Info: VSTD000,5;VSTD000,5;1;2;
Purge Volume: 5.0
Column phase: DB624

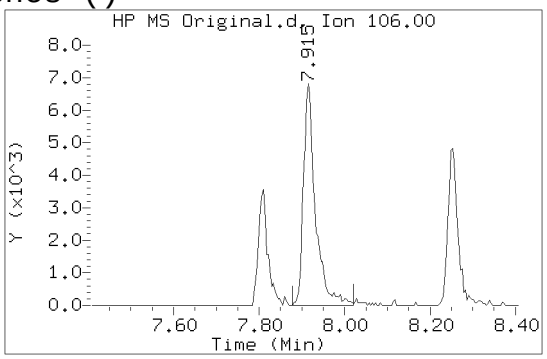
Instrument: voa6,i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

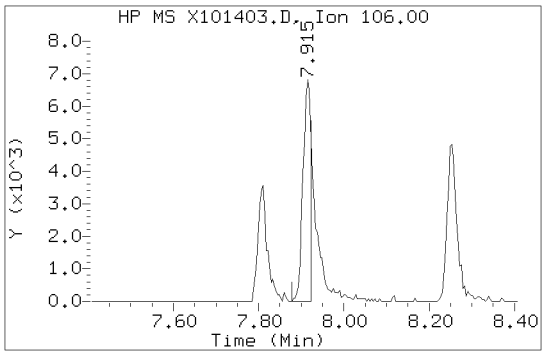
m,p-Xylenes ()

Reason Code:

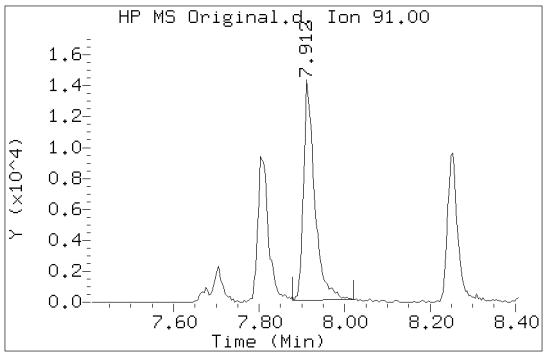
BEFORE
MASS
106
AREA
13478
HEIGHT
6816
19-Oct-2022
16:03
linh
pham



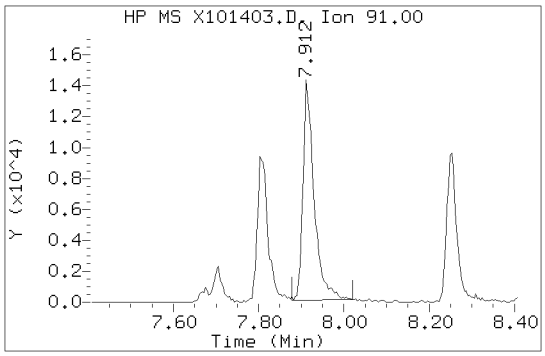
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8717
HEIGHT
6816
28-Oct-2022
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BEFORE
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HEIGHT
14264
19-Oct-2022
16:03
linh
pham



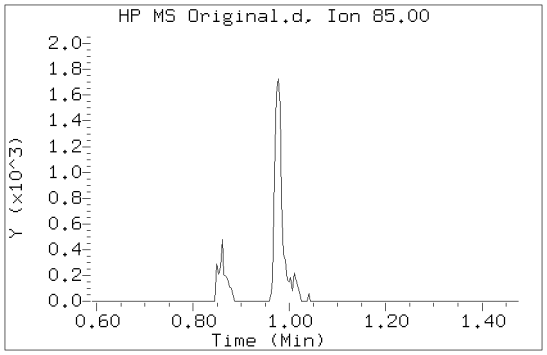
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16:41



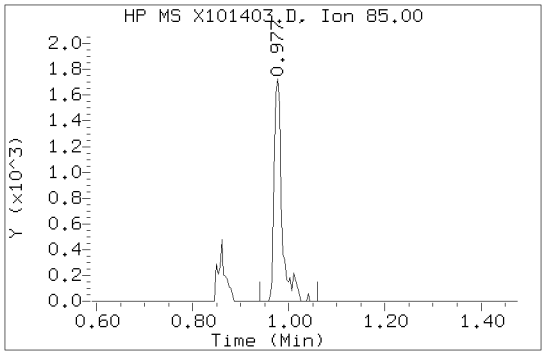
Dichlorodifluoromethane (75-71-8)

Reason Code:

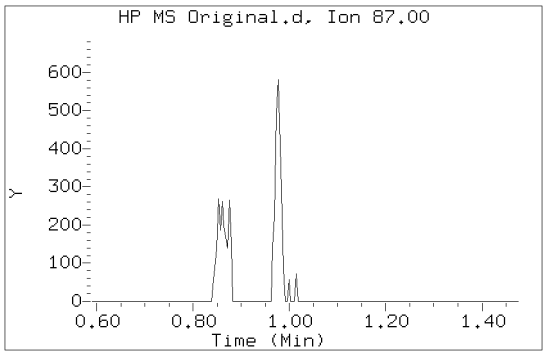
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HEIGHT
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19-Oct-2022
16:03
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pham



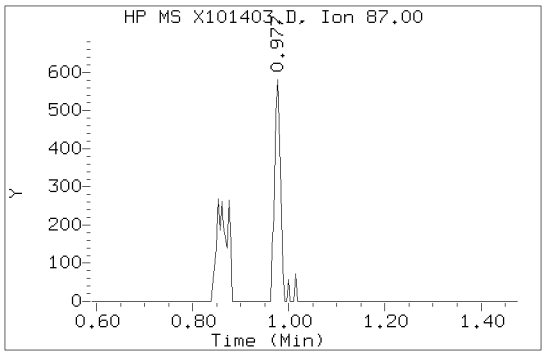
AFTER
MASS
85
AREA
1958
HEIGHT
1726
28-Oct-2022
16:41



BEFORE
MASS
87
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
87
AREA
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HEIGHT
0
28-Oct-2022
16:41

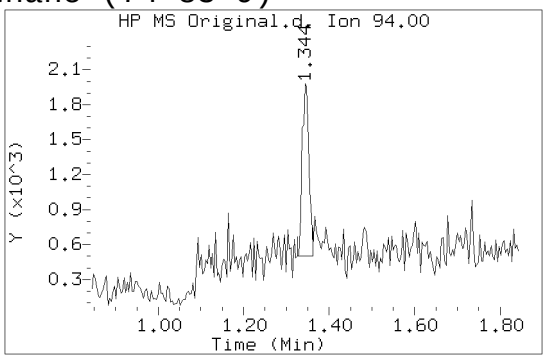


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InstruID : voa6.i
LabSampID : VSTD000.5

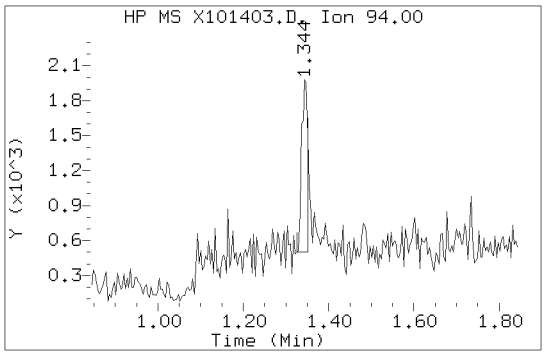
Bromomethane (74-83-9)

Reason Code:

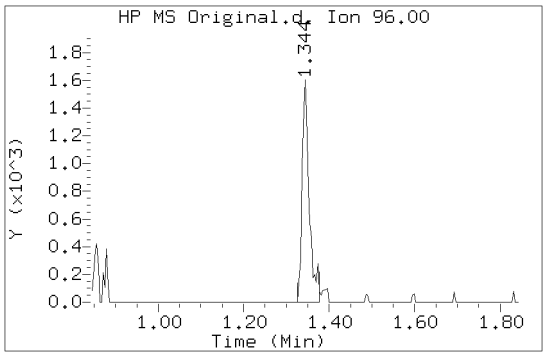
BEFORE
MASS
94
AREA
1682
HEIGHT
1480
19-Oct-2022
16:03
linh
pham



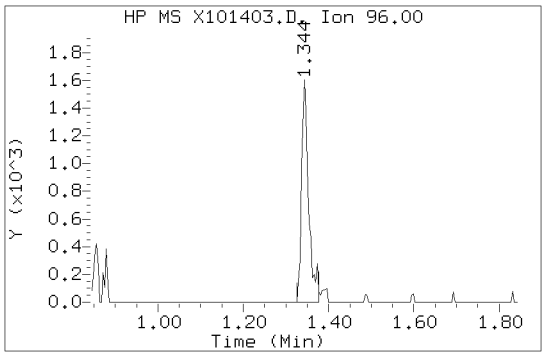
AFTER
MASS
94
AREA
1461
HEIGHT
1480
28-Oct-2022
16:41



BEFORE
MASS
96
AREA
1913
HEIGHT
1603
19-Oct-2022
16:03
linh
pham



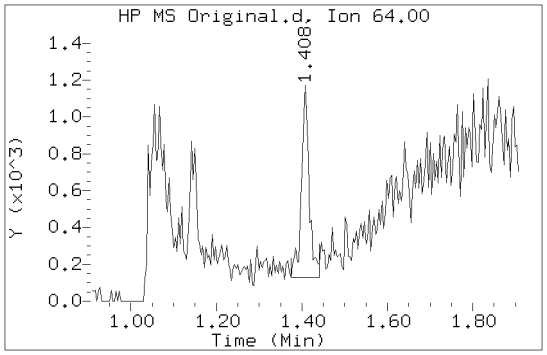
AFTER
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AREA
1913
HEIGHT
1603
28-Oct-2022
16:41



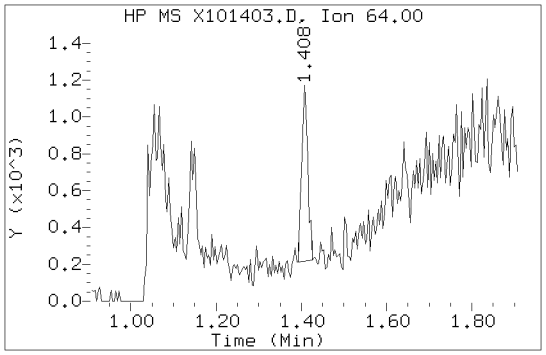
Chloroethane (75-00-3)

Reason Code:

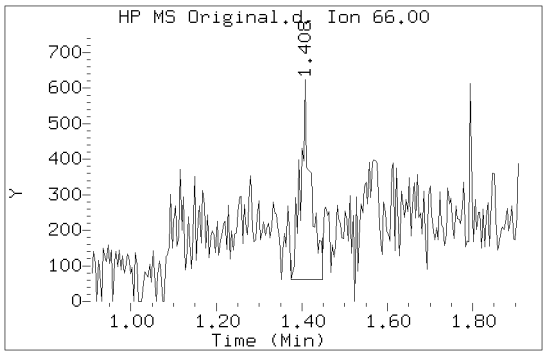
BEFORE
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AREA
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HEIGHT
1042
19-Oct-2022
16:03
linh
pham



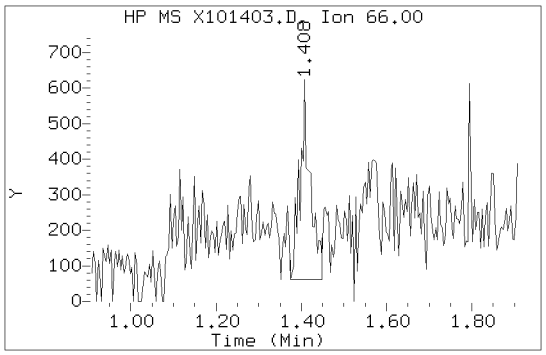
AFTER
MASS
64
AREA
982
HEIGHT
954
28-Oct-2022
16:41



BEFORE
MASS
66
AREA
954
HEIGHT
562
19-Oct-2022
16:03
linh
pham



AFTER
MASS
66
AREA
954
HEIGHT
562
28-Oct-2022
16:41

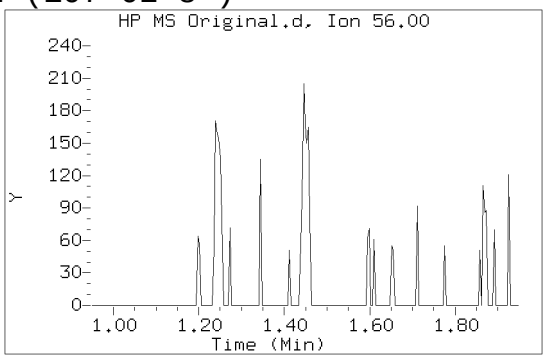


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

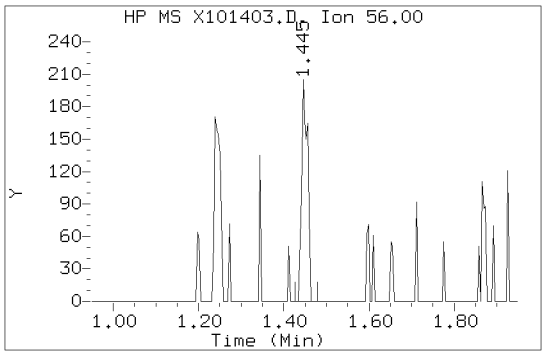
Acrolein (107-02-8)

Reason Code:

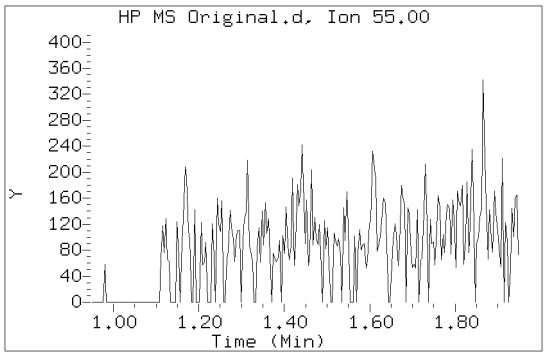
BEFORE
MASS
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AREA
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



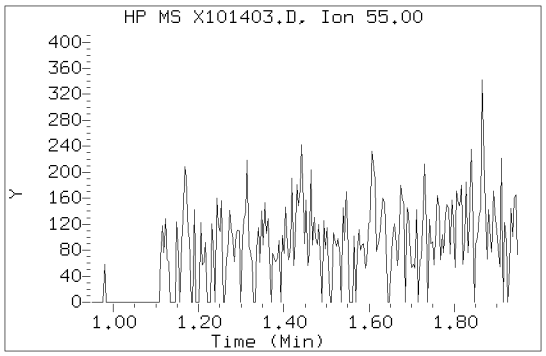
AFTER
MASS
56
AREA
207
HEIGHT
205
28-Oct-2022
16:41



BEFORE
MASS
55
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



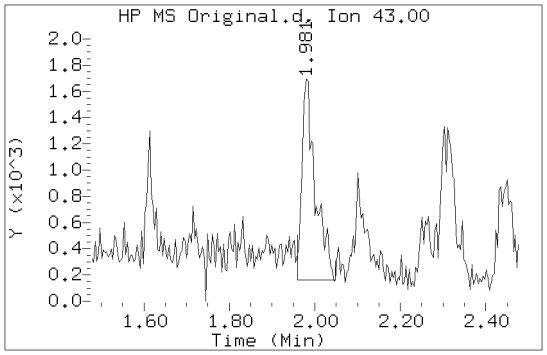
AFTER
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AREA
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HEIGHT
0
28-Oct-2022
16:41



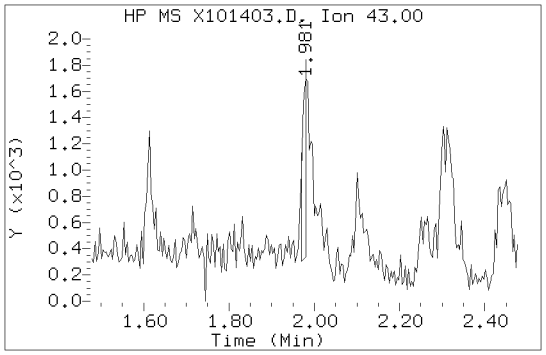
Acetone (67-64-1)

Reason Code:

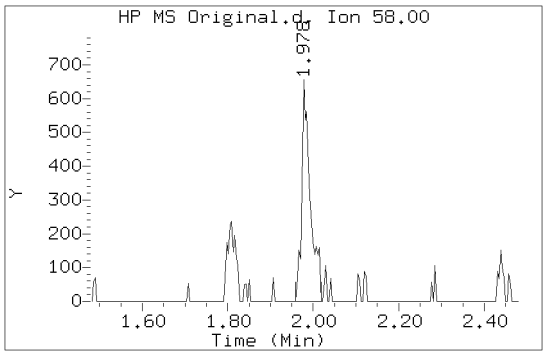
BEFORE
MASS
43
AREA
3421
HEIGHT
1533
19-Oct-2022
16:03
linh
pham



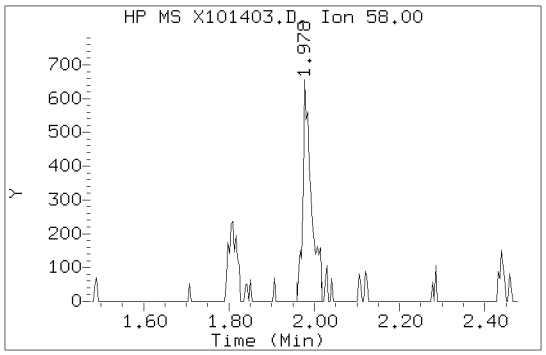
AFTER
MASS
43
AREA
1015
HEIGHT
1355
28-Oct-2022
16:41



BEFORE
MASS
58
AREA
936
HEIGHT
656
19-Oct-2022
16:03
linh
pham



AFTER
MASS
58
AREA
936
HEIGHT
656
28-Oct-2022
16:41



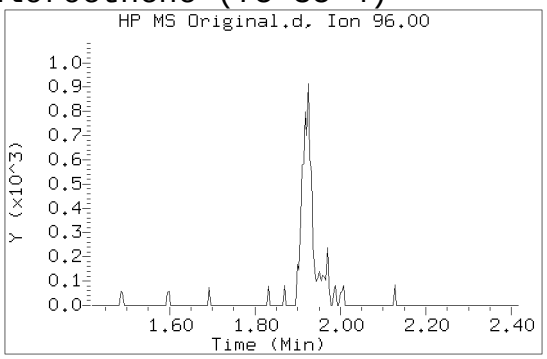
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,1-Dichloroethene (75-35-4)

Reason Code:

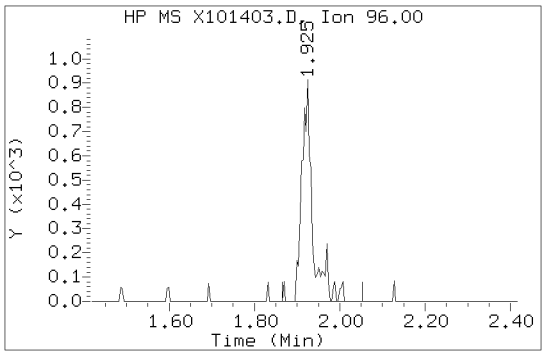
BEFORE

MASS
96
AREA
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



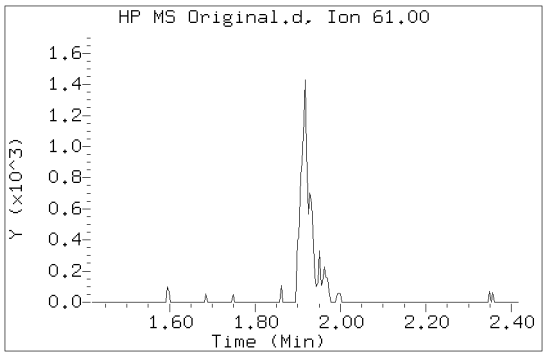
AFTER

MASS
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HEIGHT
914
28-Oct-2022
16:41



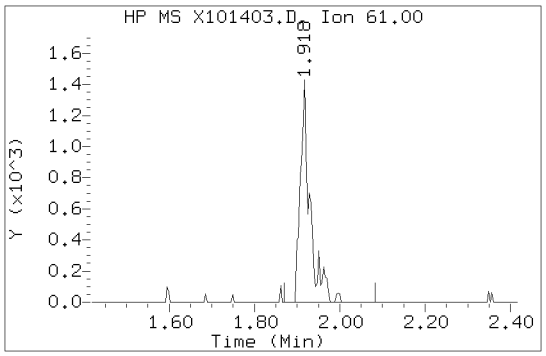
BEFORE

MASS
61
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



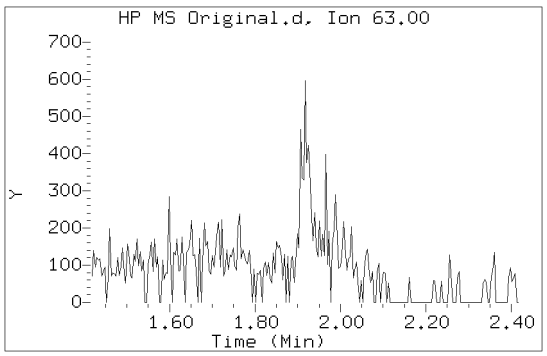
AFTER

MASS
61
AREA
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HEIGHT
1429
28-Oct-2022
16:41



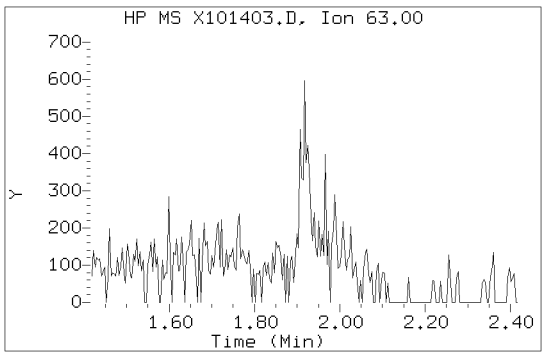
BEFORE

MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
63
AREA
0
HEIGHT
0
28-Oct-2022
16:41

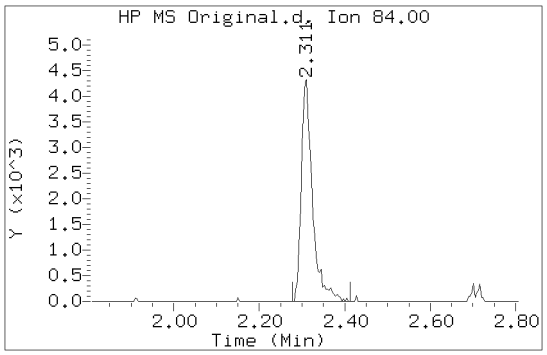


Methylene Chloride (75-09-2)

Reason Code:

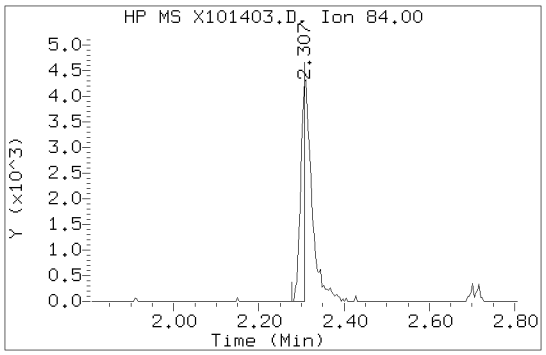
BEFORE

MASS
84
AREA
8076
HEIGHT
4325
19-Oct-2022
16:03
linh
pham



AFTER

MASS
84
AREA
3314
HEIGHT
4285
28-Oct-2022
16:41

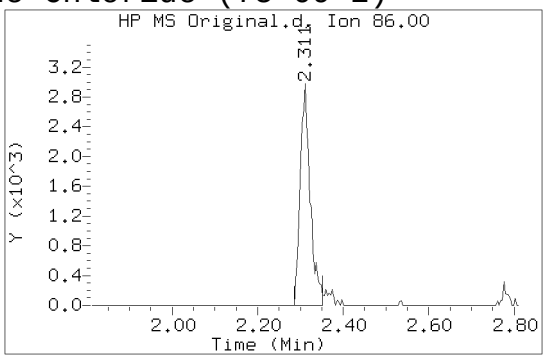


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

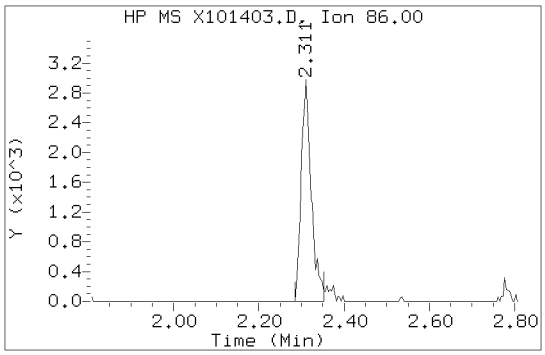
Methylene Chloride (75-09-2)

Reason Code:

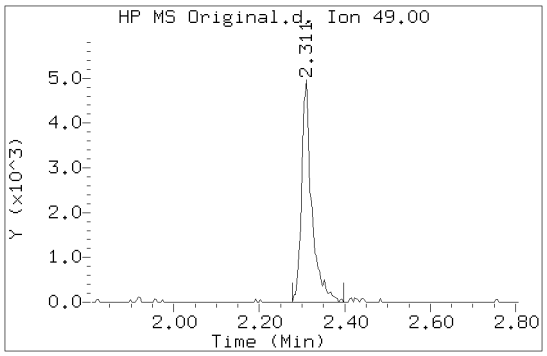
BEFORE
MASS
86
AREA
4986
HEIGHT
2979
19-Oct-2022
16:03
linh
pham



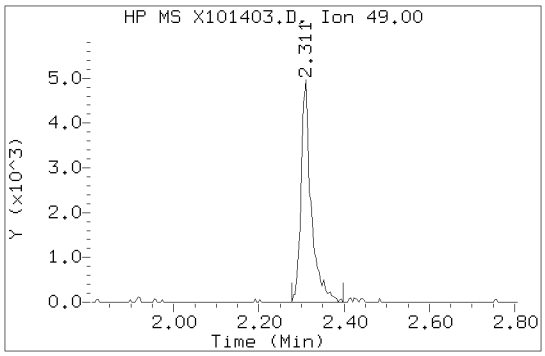
AFTER
MASS
86
AREA
4986
HEIGHT
2979
28-Oct-2022
16:41



BEFORE
MASS
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AREA
8404
HEIGHT
4964
19-Oct-2022
16:03
linh
pham



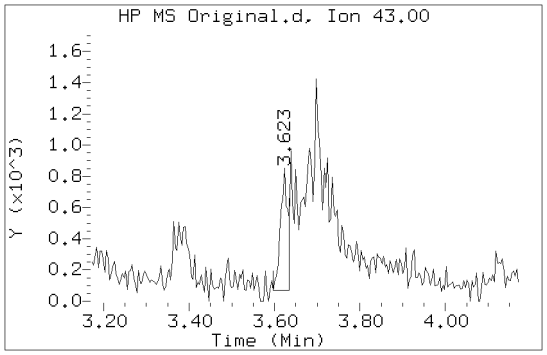
AFTER
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49
AREA
8404
HEIGHT
4964
28-Oct-2022
16:41



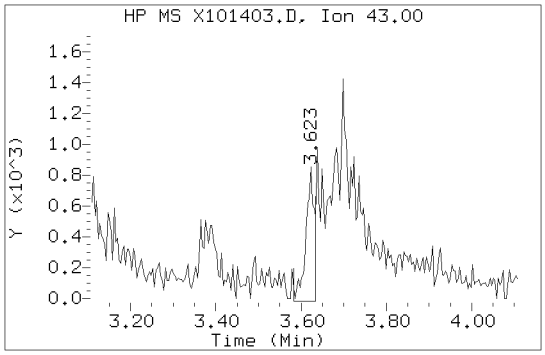
2-Butanone (78-93-3)

Reason Code:

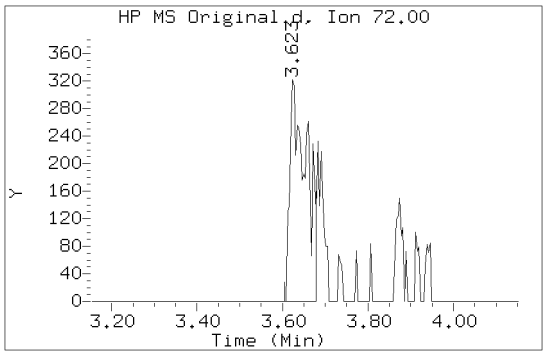
BEFORE
MASS
43
AREA
925
HEIGHT
782
19-Oct-2022
16:03
linh
pham



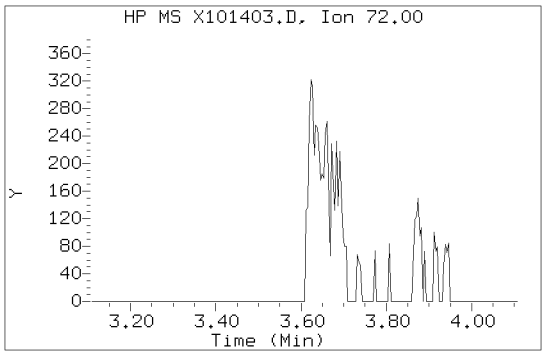
AFTER
MASS
43
AREA
1217
HEIGHT
869
28-Oct-2022
16:41



BEFORE
MASS
72
AREA
884
HEIGHT
322
19-Oct-2022
16:03
linh
pham



AFTER
MASS
72
AREA
0
HEIGHT
0
28-Oct-2022
16:41



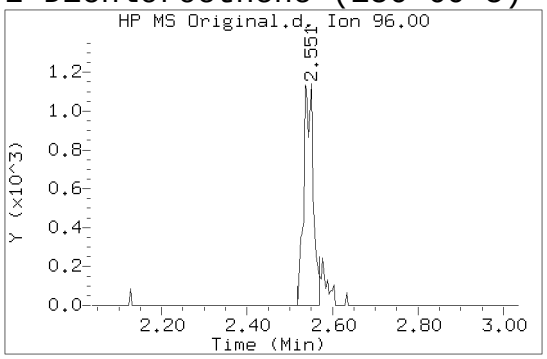
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

trans-1,2-Dichloroethene (156-60-5)

Reason Code:

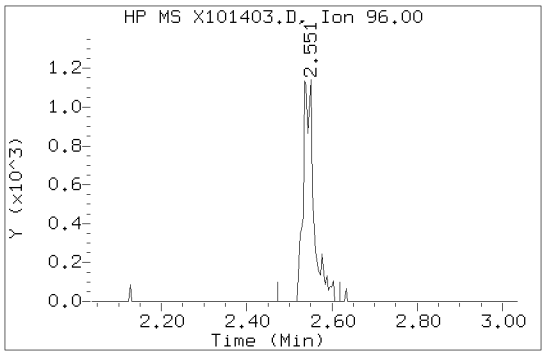
BEFORE

MASS
96
AREA
1810
HEIGHT
1141
19-Oct-2022
16:03
linh
pham



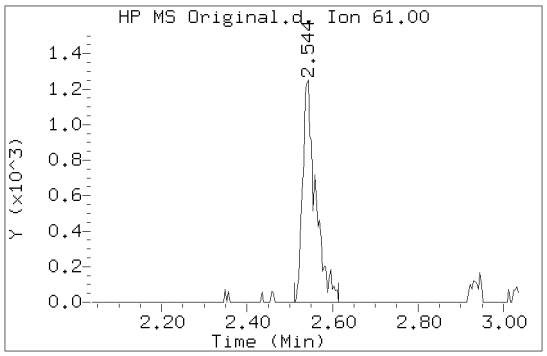
AFTER

MASS
96
AREA
2045
HEIGHT
1141
28-Oct-2022
16:41



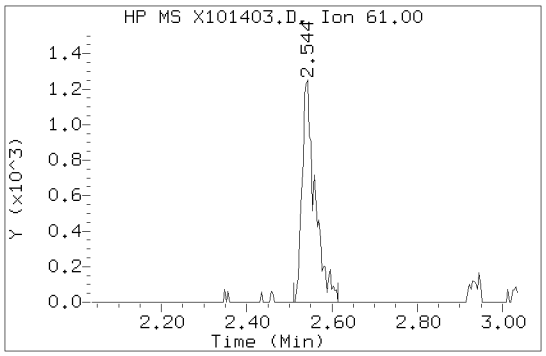
BEFORE

MASS
61
AREA
2676
HEIGHT
1252
19-Oct-2022
16:03
linh
pham



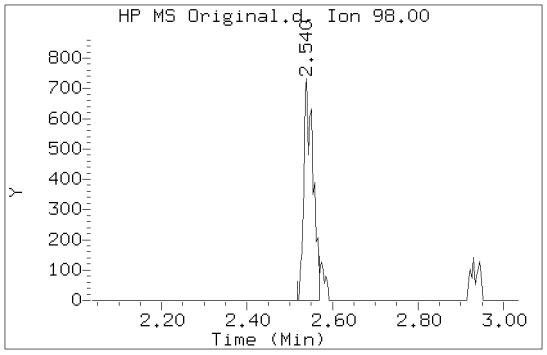
AFTER

MASS
61
AREA
2676
HEIGHT
1252
28-Oct-2022
16:41



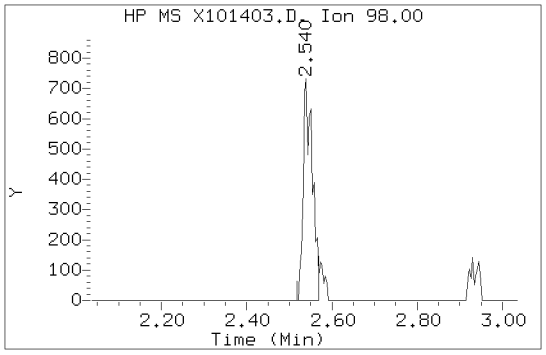
BEFORE

MASS
98
AREA
1127
HEIGHT
732
19-Oct-2022
16:03
linh
pham



AFTER

MASS
98
AREA
1127
HEIGHT
732
28-Oct-2022
16:41

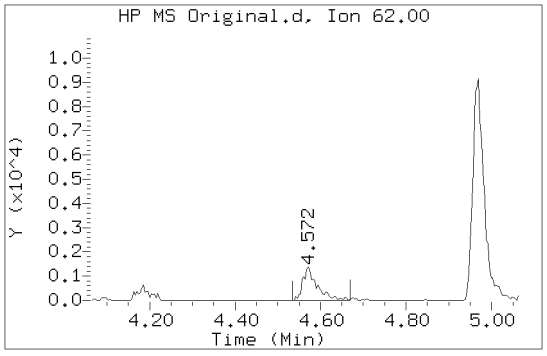


1,2-Dichloroethane (107-06-2)

Reason Code:

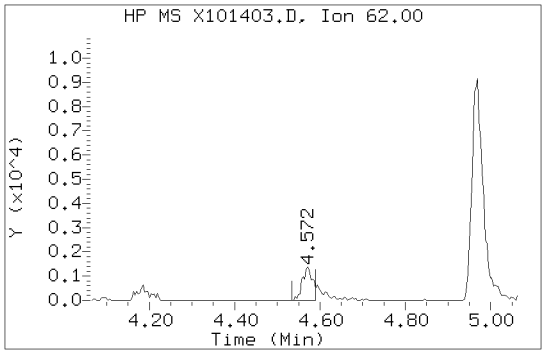
BEFORE

MASS
62
AREA
3213
HEIGHT
1364
19-Oct-2022
16:03
linh
pham



AFTER

MASS
62
AREA
2323
HEIGHT
1364
28-Oct-2022
16:41



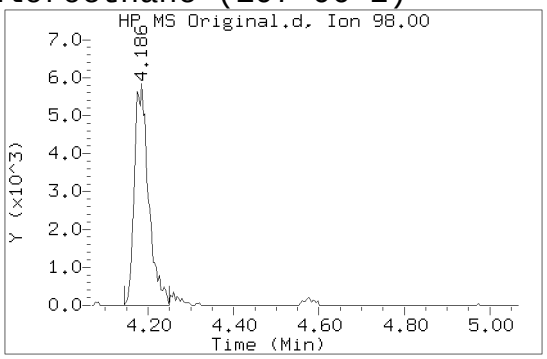
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,2-Dichloroethane (107-06-2)

Reason Code:

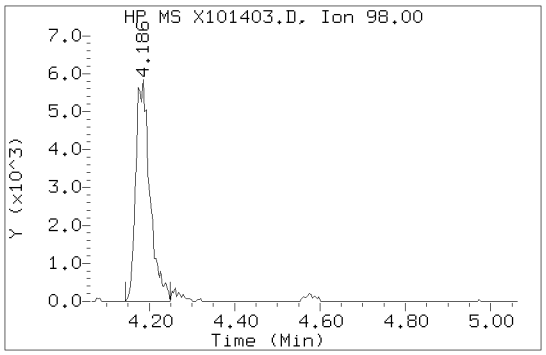
BEFORE

MASS
98
AREA
13451
HEIGHT
5842
19-Oct-2022
16:03
linh
pham



AFTER

MASS
98
AREA
13451
HEIGHT
5842
28-Oct-2022
16:41

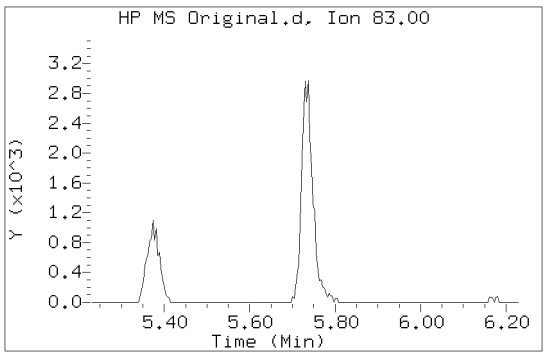


Bromodichloromethane (75-27-4)

Reason Code:

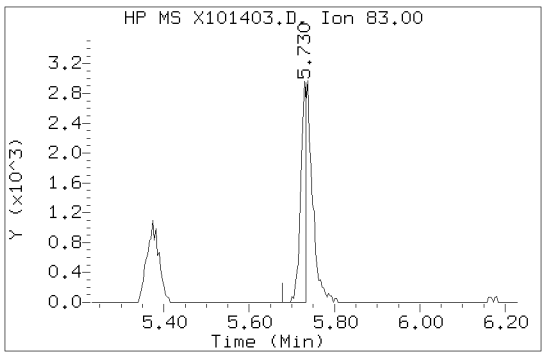
BEFORE

MASS
83
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



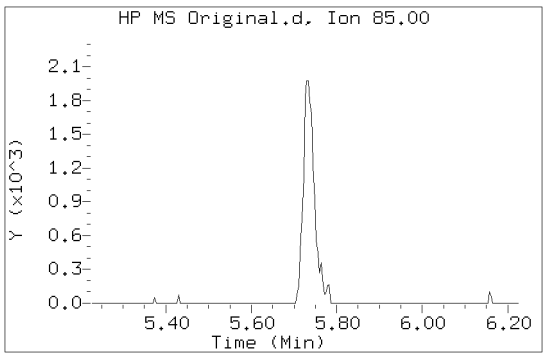
AFTER

MASS
83
AREA
2872
HEIGHT
2967
28-Oct-2022
16:41



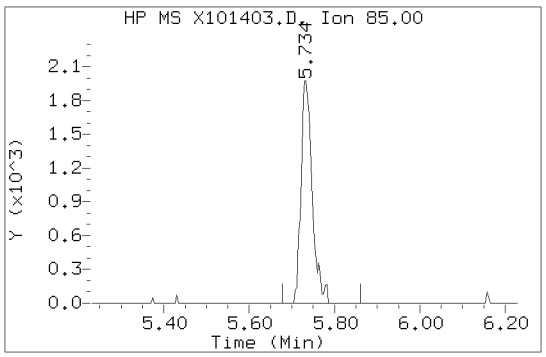
BEFORE

MASS
85
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



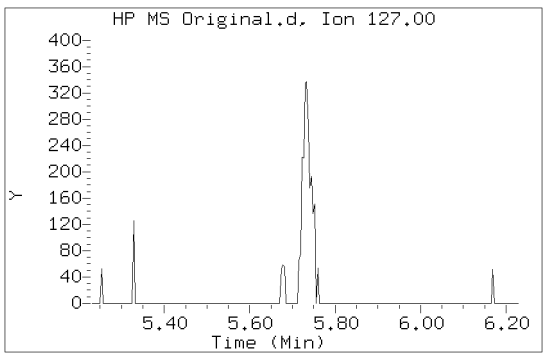
AFTER

MASS
85
AREA
3702
HEIGHT
1975
28-Oct-2022
16:41



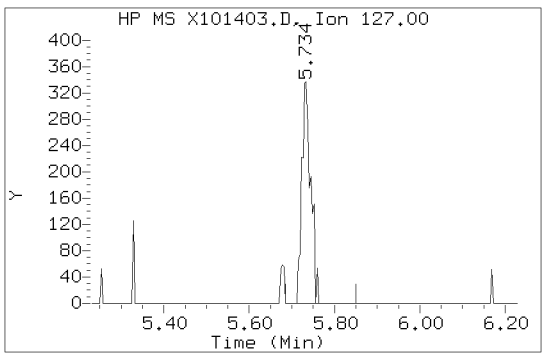
BEFORE

MASS
127
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
127
AREA
502
HEIGHT
337
28-Oct-2022
16:41

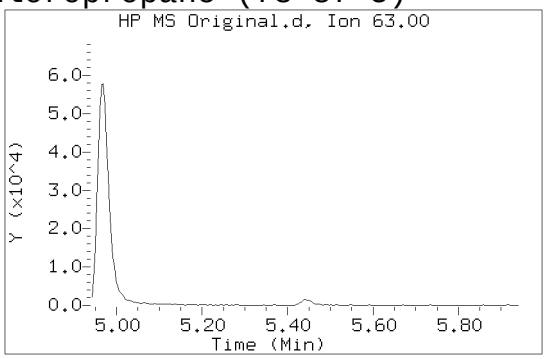


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InstruID : voa6.i
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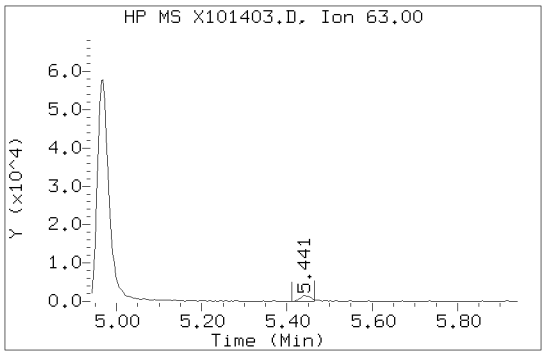
1,2-Dichloropropane (78-87-5)

Reason Code:

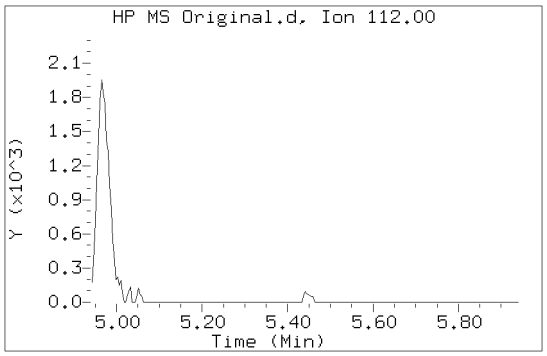
BEFORE
MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



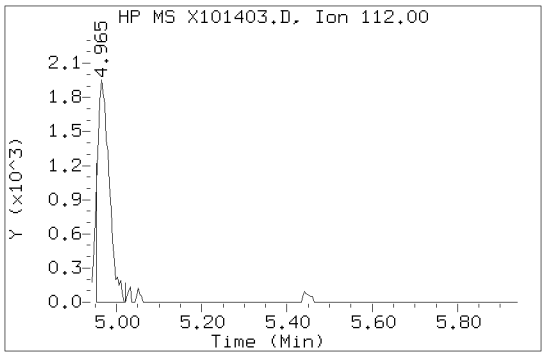
AFTER
MASS
63
AREA
2675
HEIGHT
1532
28-Oct-2022
16:41



BEFORE
MASS
112
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



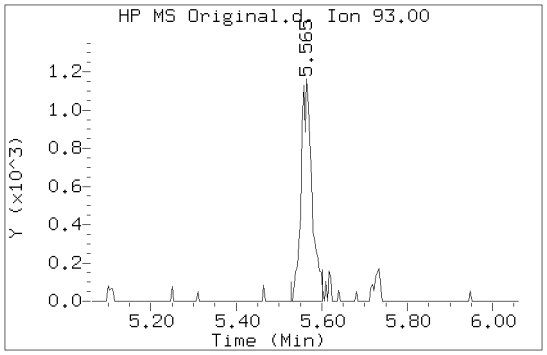
AFTER
MASS
112
AREA
3629
HEIGHT
1953
28-Oct-2022
16:41



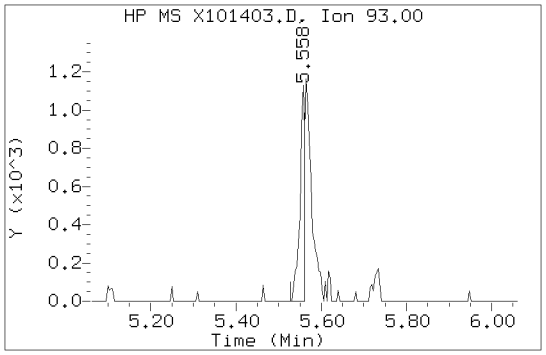
Dibromomethane (74-95-3)

Reason Code:

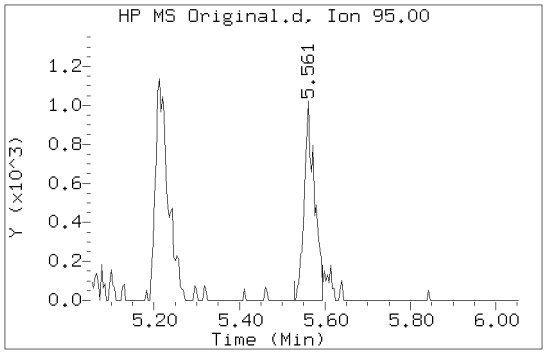
BEFORE
MASS
93
AREA
2094
HEIGHT
1163
19-Oct-2022
16:03
linh
pham



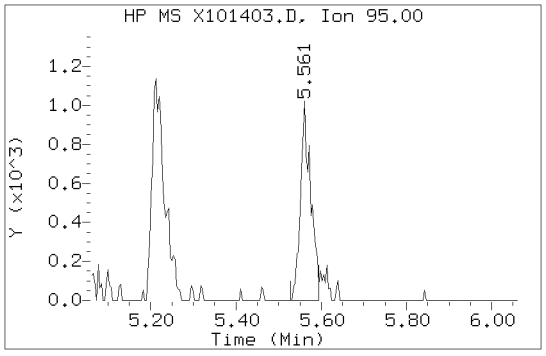
AFTER
MASS
93
AREA
923
HEIGHT
1129
28-Oct-2022
16:41



BEFORE
MASS
95
AREA
1740
HEIGHT
1023
19-Oct-2022
16:03
linh
pham



AFTER
MASS
95
AREA
1740
HEIGHT
1023
28-Oct-2022
16:41

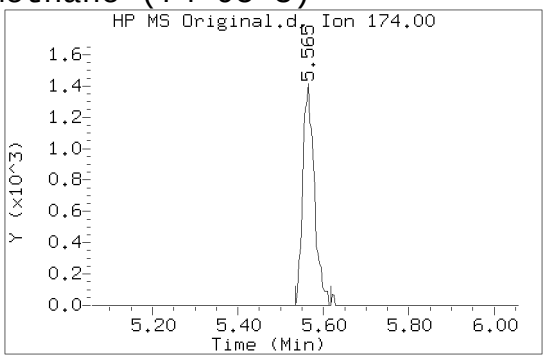


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LabSampID : VSTD000.5

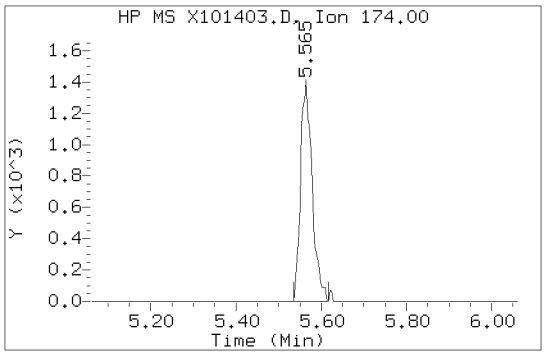
Dibromomethane (74-95-3)

Reason Code:

BEFORE
MASS
174
AREA
2711
HEIGHT
1415
19-Oct-2022
16:03
linh
pham



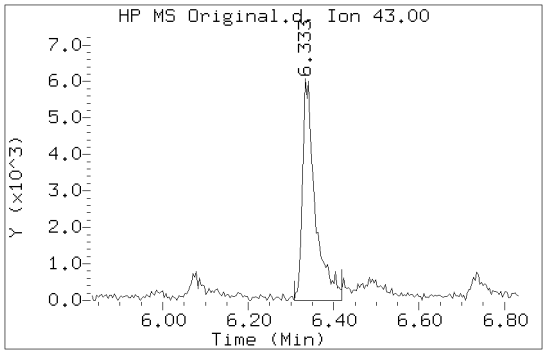
AFTER
MASS
174
AREA
2711
HEIGHT
1415
28-Oct-2022
16:41



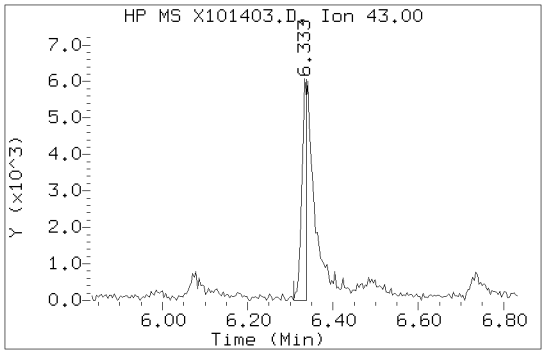
4-Methyl-2-Pentanone (108-10-1)

Reason Code:

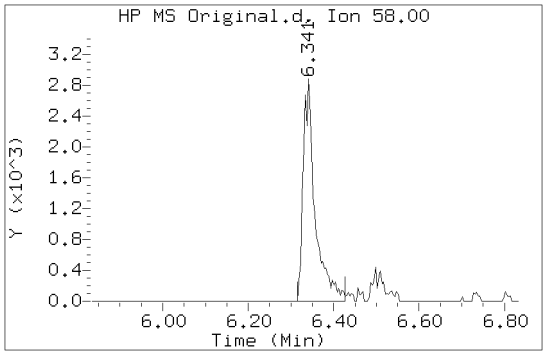
BEFORE
MASS
43
AREA
12857
HEIGHT
6076
19-Oct-2022
16:03
linh
pham



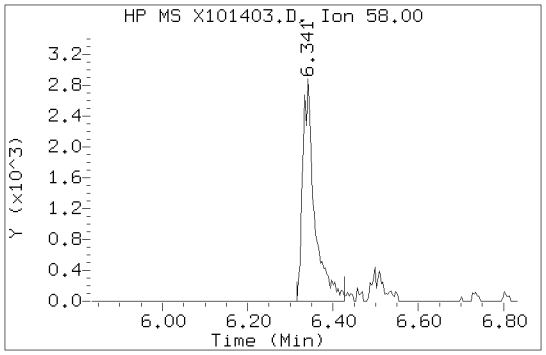
AFTER
MASS
43
AREA
4892
HEIGHT
6076
28-Oct-2022
16:41



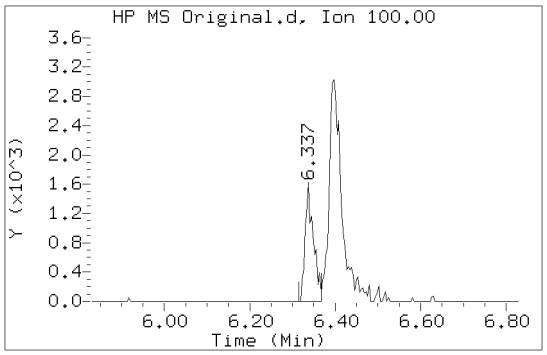
BEFORE
MASS
58
AREA
5721
HEIGHT
2884
19-Oct-2022
16:03
linh
pham



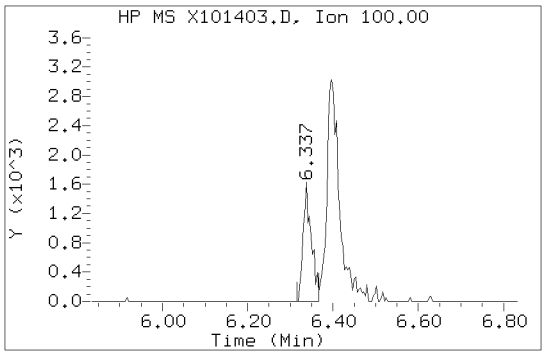
AFTER
MASS
58
AREA
5721
HEIGHT
2884
28-Oct-2022
16:41



BEFORE
MASS
100
AREA
2203
HEIGHT
1627
19-Oct-2022
16:03
linh
pham



AFTER
MASS
100
AREA
2203
HEIGHT
1627
28-Oct-2022
16:41

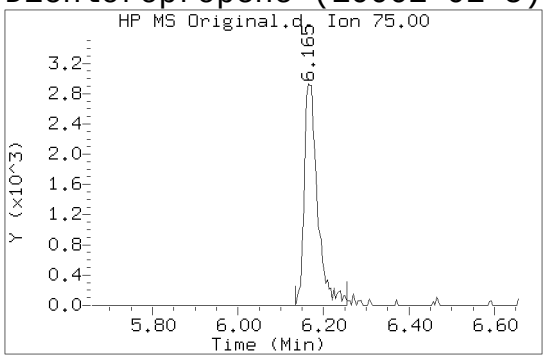


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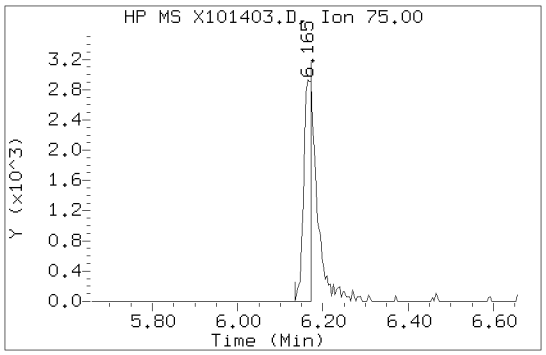
cis-1,3-Dichloropropene (10061-01-5)

Reason Code:

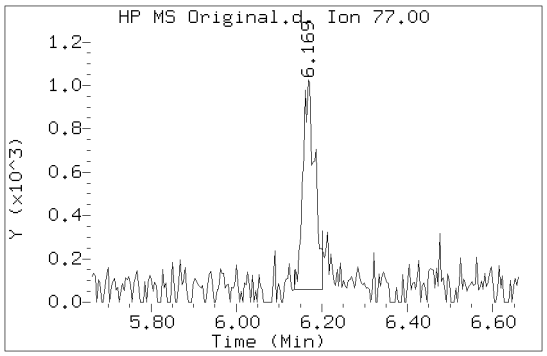
BEFORE
MASS
75
AREA
6452
HEIGHT
2932
19-Oct-2022
16:03
linh
pham



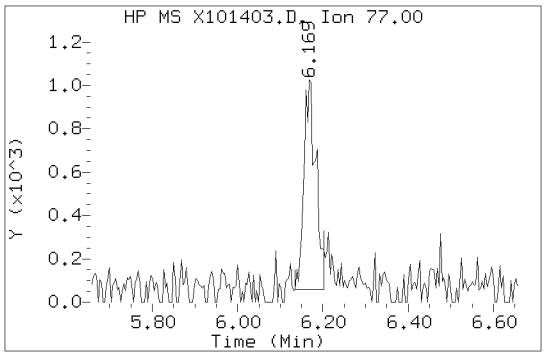
AFTER
MASS
75
AREA
3671
HEIGHT
2932
28-Oct-2022
16:41



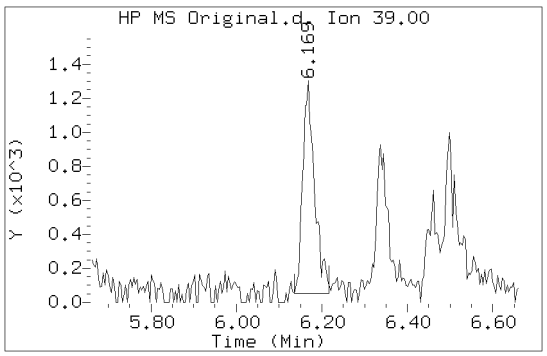
BEFORE
MASS
77
AREA
1904
HEIGHT
966
19-Oct-2022
16:03
linh
pham



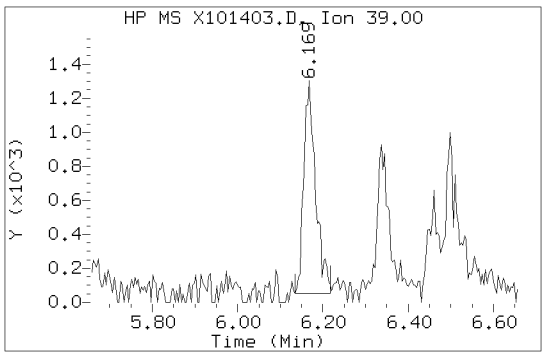
AFTER
MASS
77
AREA
1904
HEIGHT
966
28-Oct-2022
16:41



BEFORE
MASS
39
AREA
2455
HEIGHT
1252
19-Oct-2022
16:03
linh
pham



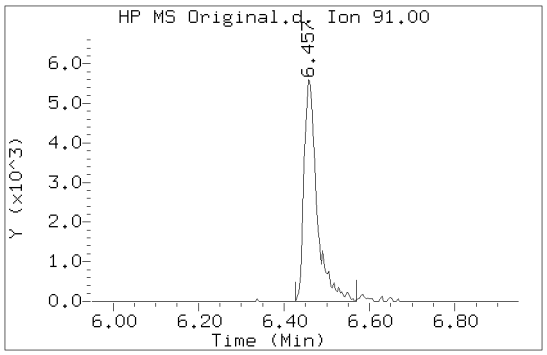
AFTER
MASS
39
AREA
2455
HEIGHT
1252
28-Oct-2022
16:41



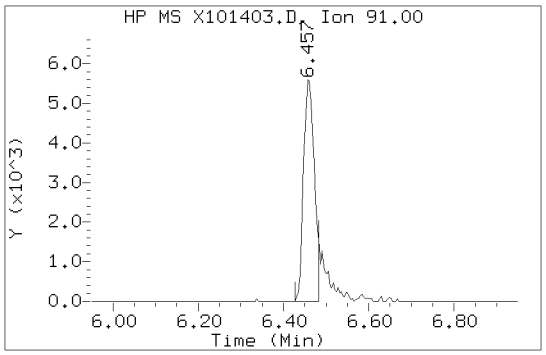
Toluene (108-88-3)

Reason Code:

BEFORE
MASS
91
AREA
12093
HEIGHT
5597
19-Oct-2022
16:03
linh
pham



AFTER
MASS
91
AREA
10120
HEIGHT
5597
28-Oct-2022
16:41

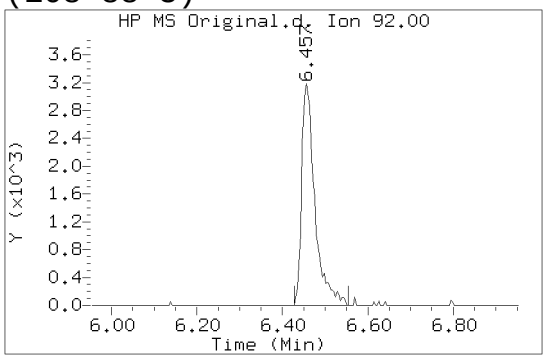


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

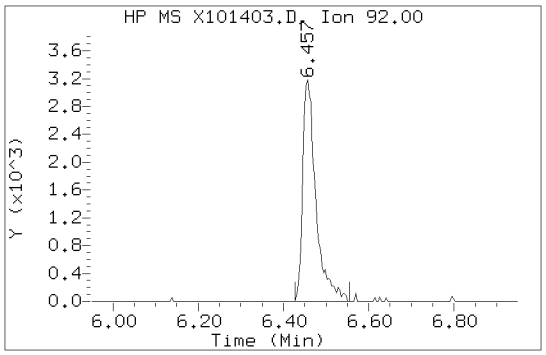
Toluene (108-88-3)

Reason Code:

BEFORE
MASS
92
AREA
7009
HEIGHT
3185
19-Oct-2022
16:03
linh
pham



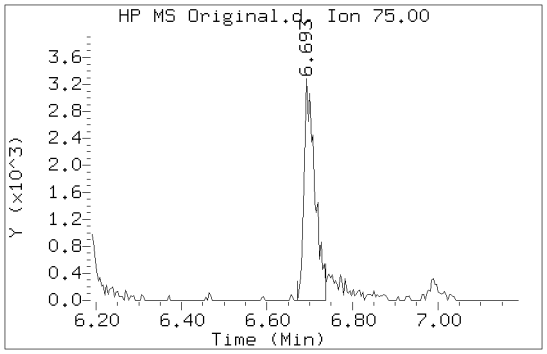
AFTER
MASS
92
AREA
7009
HEIGHT
3185
28-Oct-2022
16:41



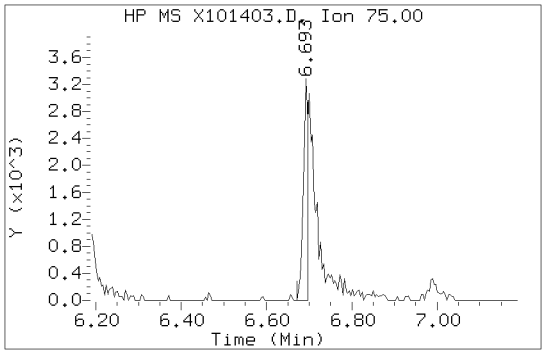
trans-1,3-Dichloropropene (10061-02-6)

Reason Code:

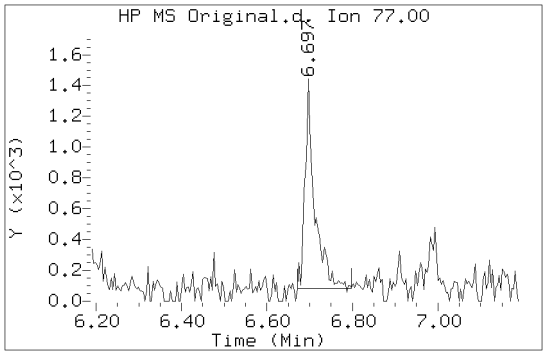
BEFORE
MASS
75
AREA
5872
HEIGHT
3285
19-Oct-2022
16:03
linh
pham



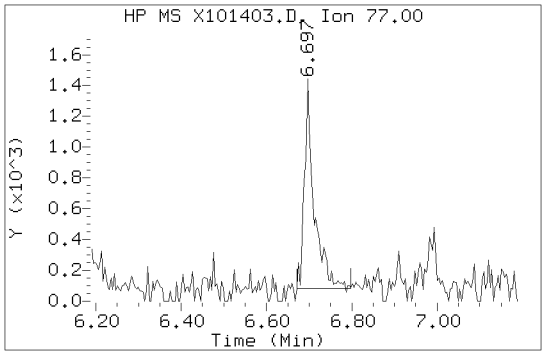
AFTER
MASS
75
AREA
2545
HEIGHT
3285
28-Oct-2022
16:41



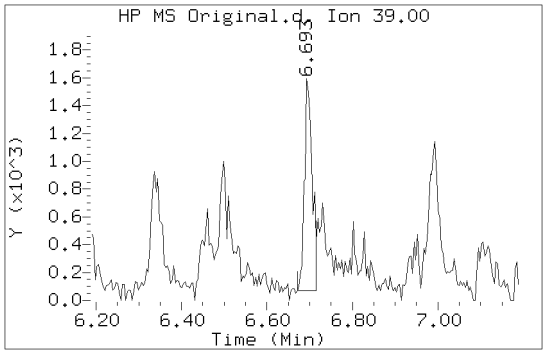
BEFORE
MASS
77
AREA
2163
HEIGHT
1361
19-Oct-2022
16:03
linh
pham



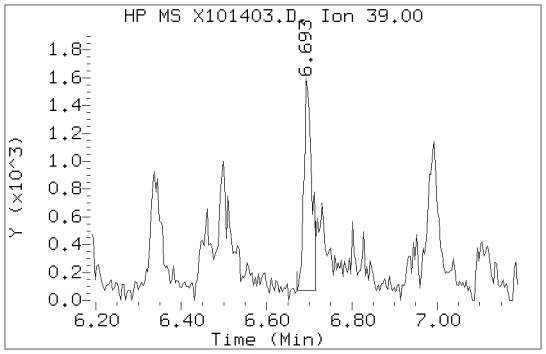
AFTER
MASS
77
AREA
2163
HEIGHT
1361
28-Oct-2022
16:41



BEFORE
MASS
39
AREA
1966
HEIGHT
1526
19-Oct-2022
16:03
linh
pham



AFTER
MASS
39
AREA
1966
HEIGHT
1526
28-Oct-2022
16:41



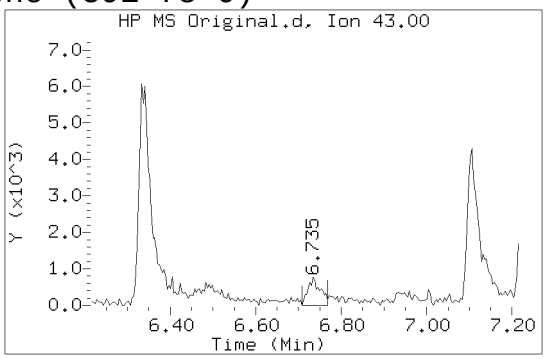
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

2-Hexanone (591-78-6)

Reason Code:

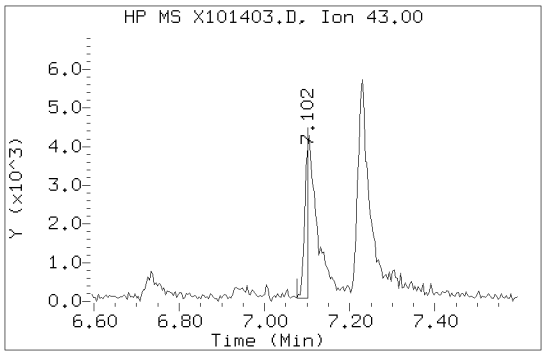
BEFORE

MASS
43
AREA
1554
HEIGHT
778
19-Oct-2022
16:03
linh
pham



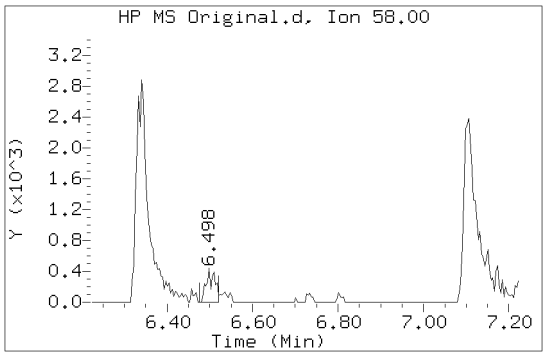
AFTER

MASS
43
AREA
2496
HEIGHT
3900
28-Oct-2022
16:41



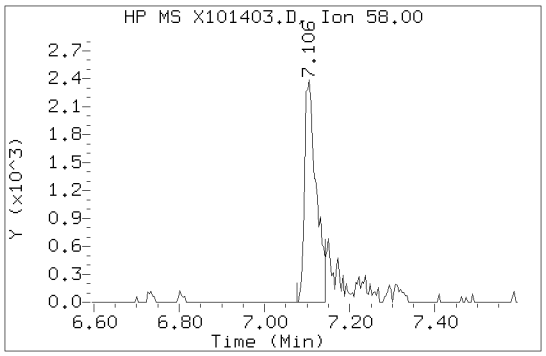
BEFORE

MASS
58
AREA
601
HEIGHT
443
19-Oct-2022
16:03
linh
pham



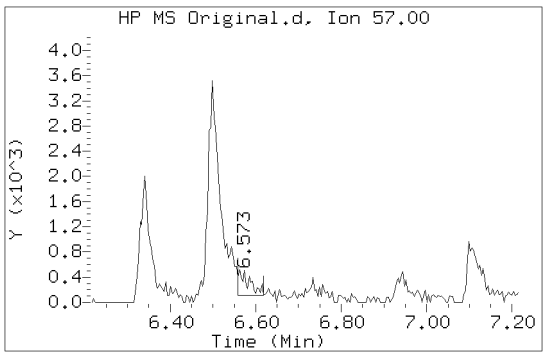
AFTER

MASS
58
AREA
4590
HEIGHT
2388
28-Oct-2022
16:41



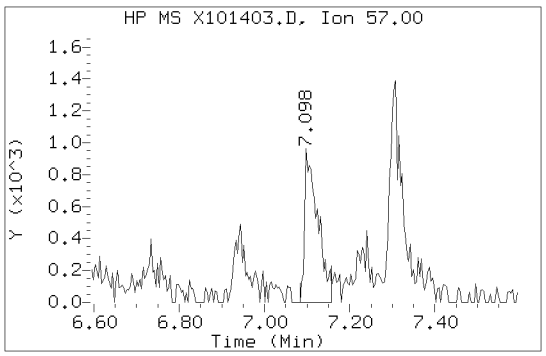
BEFORE

MASS
57
AREA
696
HEIGHT
392
19-Oct-2022
16:03
linh
pham



AFTER

MASS
57
AREA
2067
HEIGHT
962
28-Oct-2022
16:41

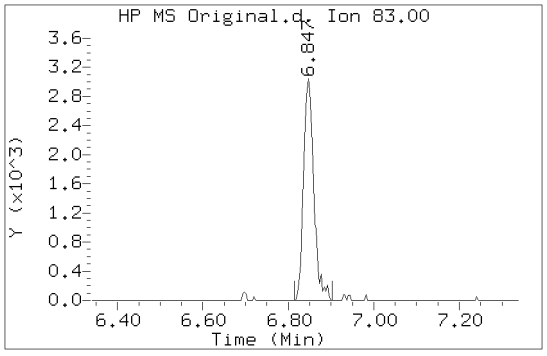


1,1,2-Trichloroethane (79-00-5)

Reason Code:

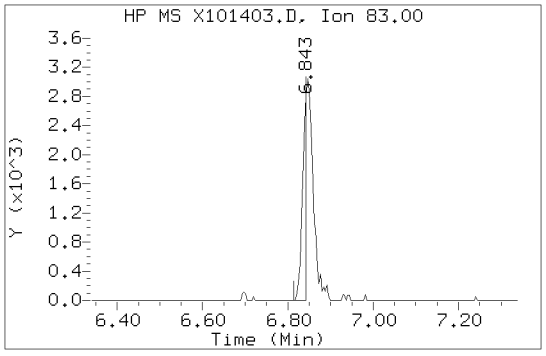
BEFORE

MASS
83
AREA
5189
HEIGHT
3043
19-Oct-2022
16:03
linh
pham



AFTER

MASS
83
AREA
2053
HEIGHT
2809
28-Oct-2022
16:41



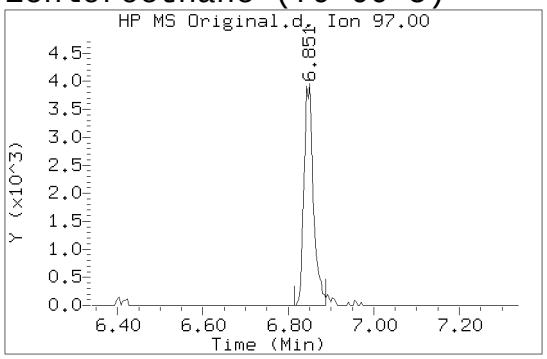
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,1,2-Trichloroethane (79-00-5)

Reason Code:

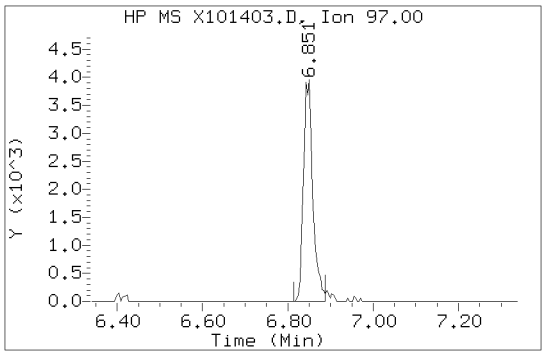
BEFORE

MASS
97
AREA
6196
HEIGHT
3957
19-Oct-2022
16:03
linh
pham



AFTER

MASS
97
AREA
6196
HEIGHT
3957
28-Oct-2022
16:41

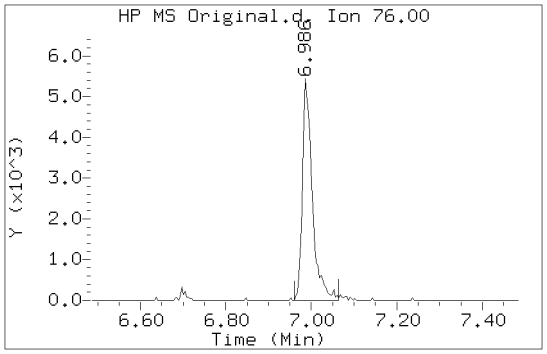


1,3-Dichloropropane (142-28-9)

Reason Code:

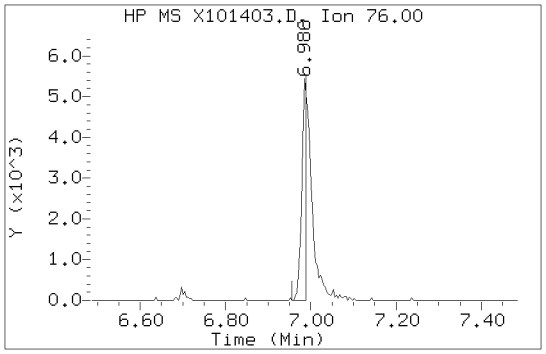
BEFORE

MASS
76
AREA
8879
HEIGHT
5441
19-Oct-2022
16:03
linh
pham



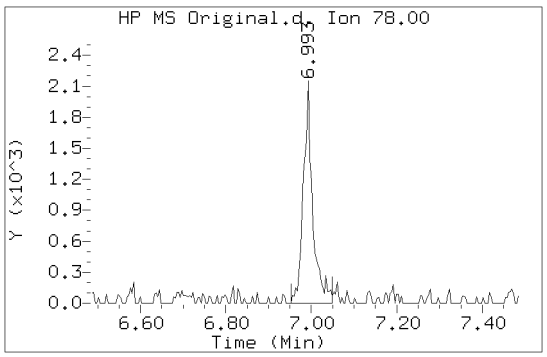
AFTER

MASS
76
AREA
4276
HEIGHT
5441
28-Oct-2022
16:41



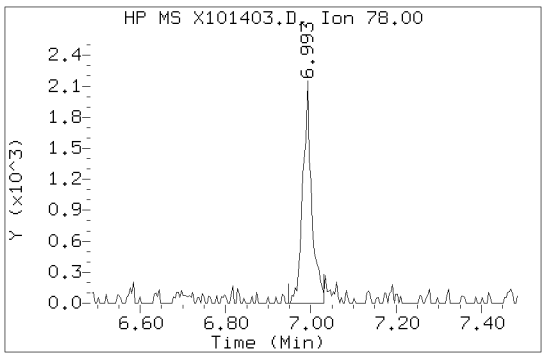
BEFORE

MASS
78
AREA
3299
HEIGHT
2152
19-Oct-2022
16:03
linh
pham



AFTER

MASS
78
AREA
3143
HEIGHT
2152
28-Oct-2022
16:41

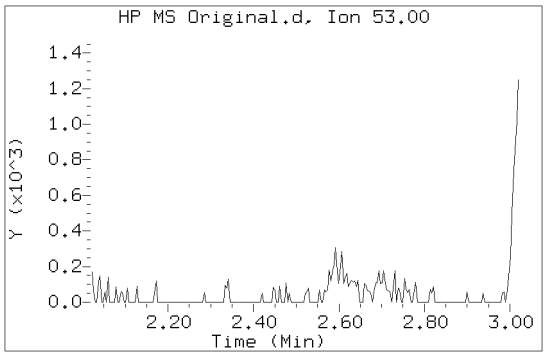


Acrylonitrile (107-13-1)

Reason Code:

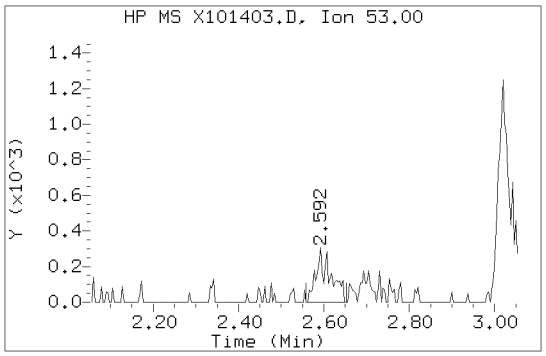
BEFORE

MASS
53
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
53
AREA
699
HEIGHT
308
28-Oct-2022
16:41

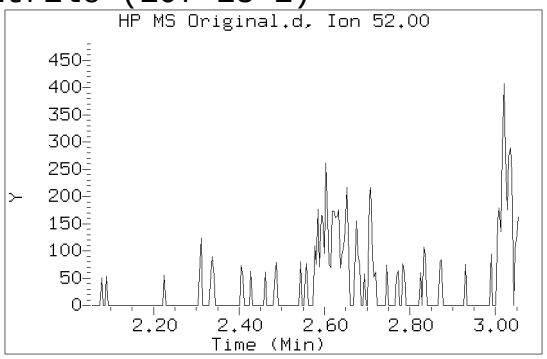


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

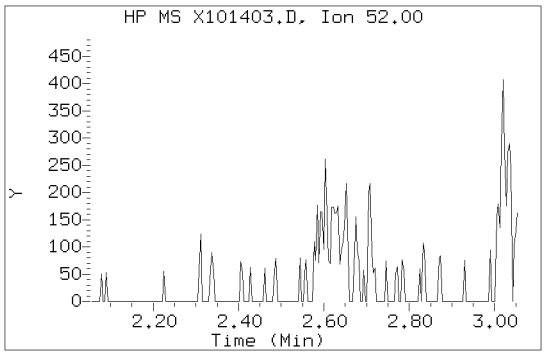
Acrylonitrile (107-13-1)

Reason Code:

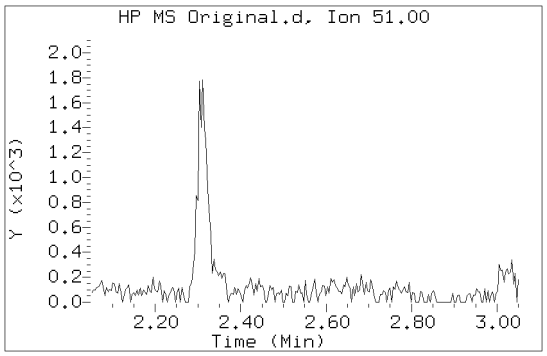
BEFORE
MASS
52
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



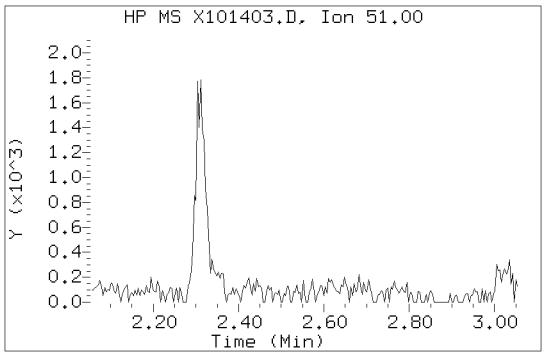
AFTER
MASS
52
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
51
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



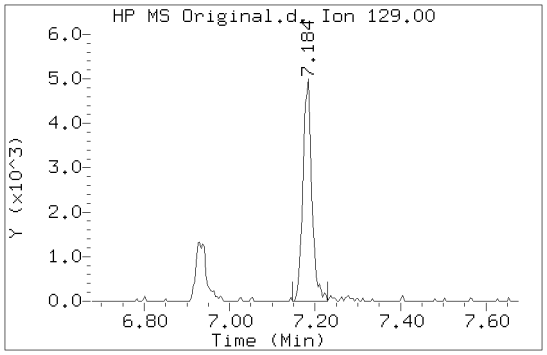
AFTER
MASS
51
AREA
0
HEIGHT
0
28-Oct-2022
16:41



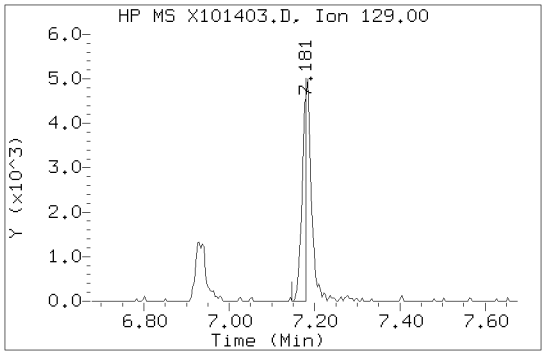
Dibromochloromethane (124-48-1)

Reason Code:

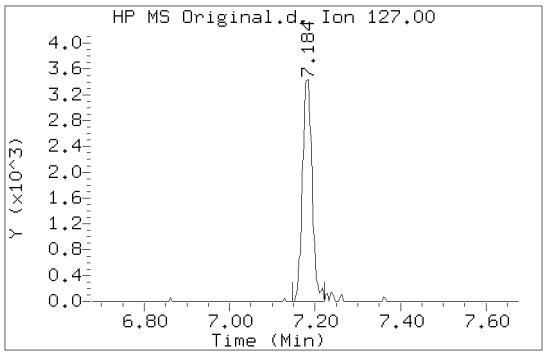
BEFORE
MASS
129
AREA
7442
HEIGHT
4999
19-Oct-2022
16:03
linh
pham



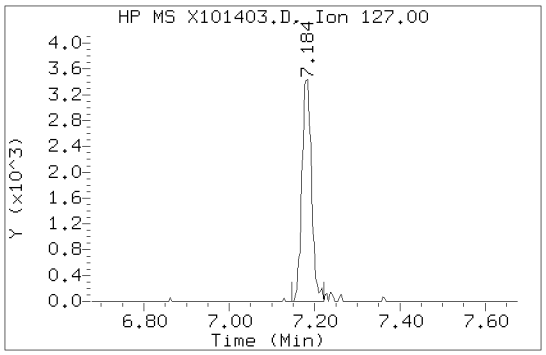
AFTER
MASS
129
AREA
3780
HEIGHT
4585
28-Oct-2022
16:41



BEFORE
MASS
127
AREA
5537
HEIGHT
3434
19-Oct-2022
16:03
linh
pham



AFTER
MASS
127
AREA
5537
HEIGHT
3434
28-Oct-2022
16:41



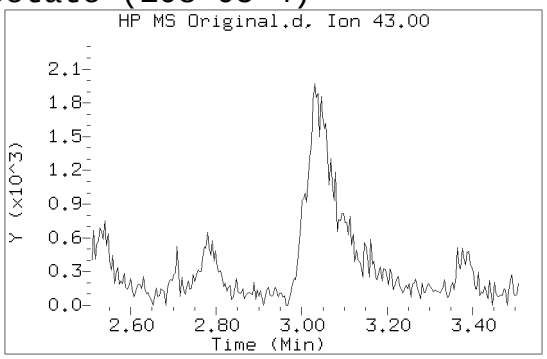
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Vinyl Acetate (108-05-4)

Reason Code:

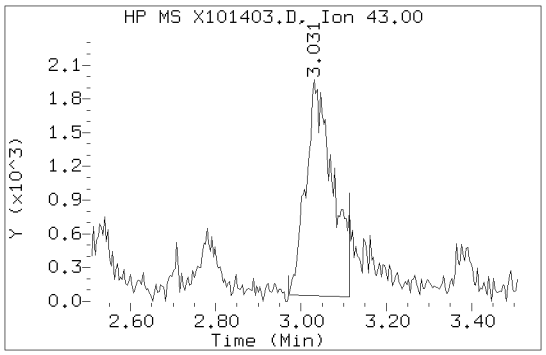
BEFORE

MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



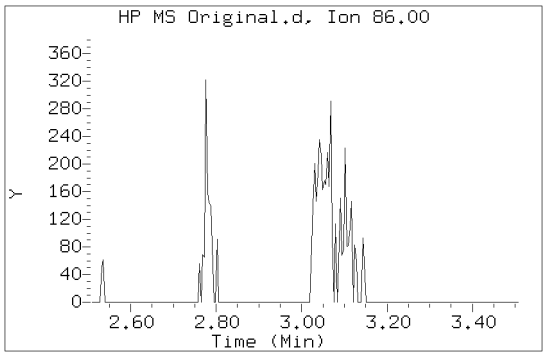
AFTER

MASS
43
AREA
8462
HEIGHT
1921
28-Oct-2022
16:41



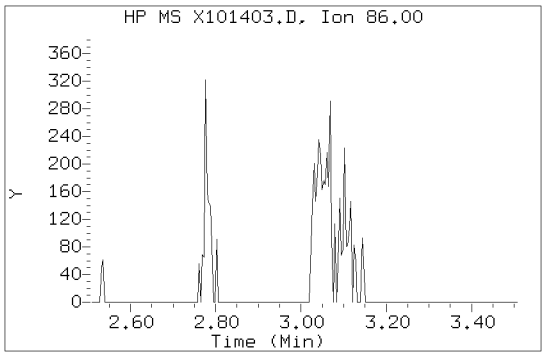
BEFORE

MASS
86
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
86
AREA
0
HEIGHT
0
28-Oct-2022
16:41

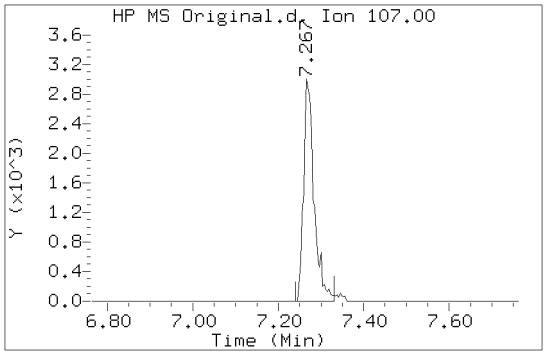


1,2-Dibromoethane (106-93-4)

Reason Code:

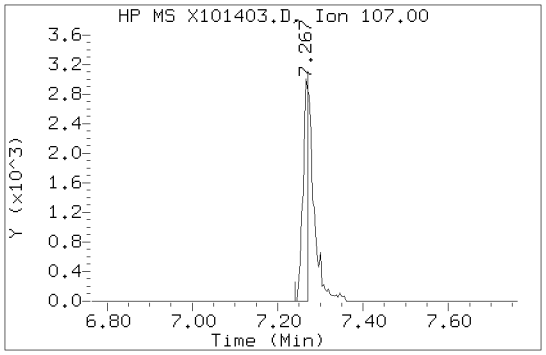
BEFORE

MASS
107
AREA
5191
HEIGHT
3004
19-Oct-2022
16:03
linh
pham



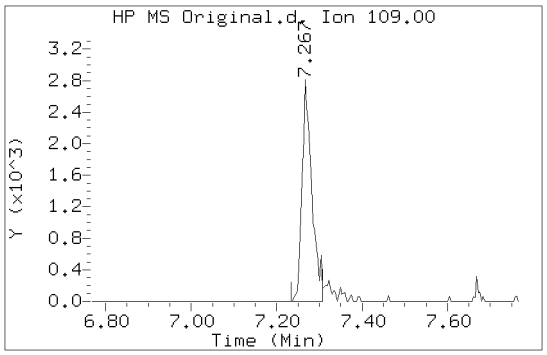
AFTER

MASS
107
AREA
2623
HEIGHT
3004
28-Oct-2022
16:41



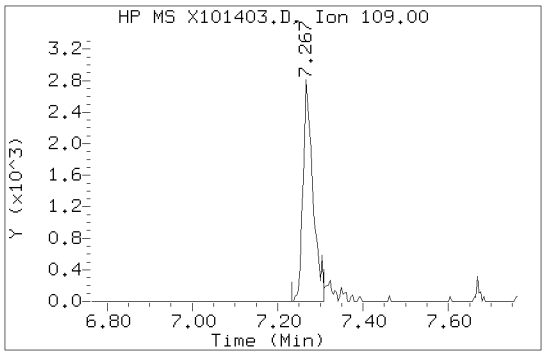
BEFORE

MASS
109
AREA
4605
HEIGHT
2812
19-Oct-2022
16:03
linh
pham



AFTER

MASS
109
AREA
4605
HEIGHT
2812
28-Oct-2022
16:41



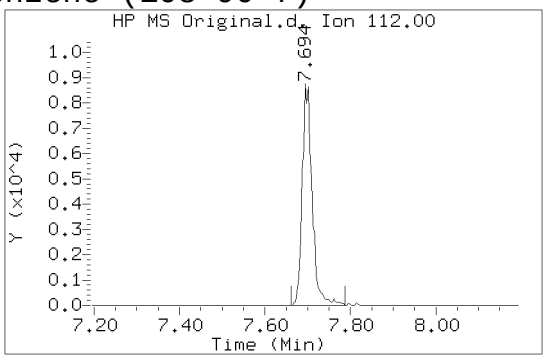
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Chlorobenzene (108-90-7)

Reason Code:

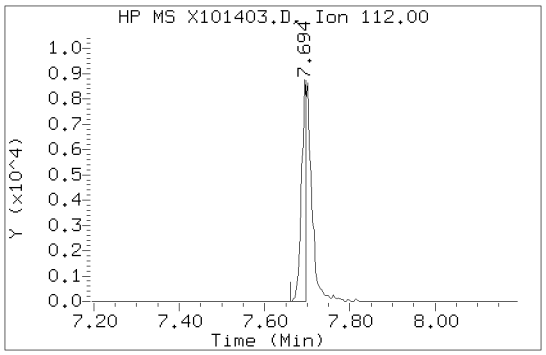
BEFORE

MASS
112
AREA
14470
HEIGHT
8762
19-Oct-2022
16:03
linh
pham



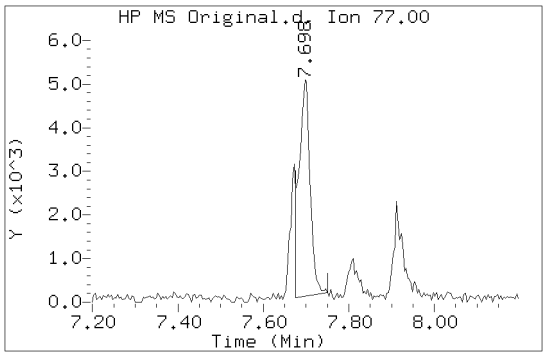
AFTER

MASS
112
AREA
7422
HEIGHT
8762
28-Oct-2022
16:41



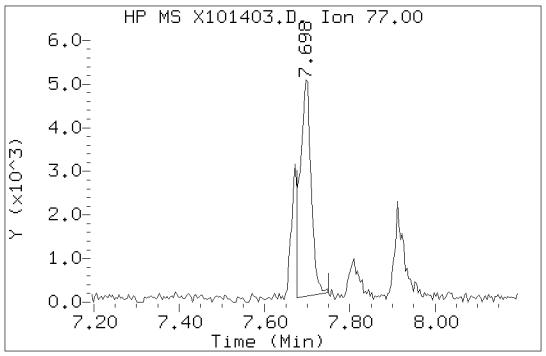
BEFORE

MASS
77
AREA
9210
HEIGHT
4953
19-Oct-2022
16:03
linh
pham



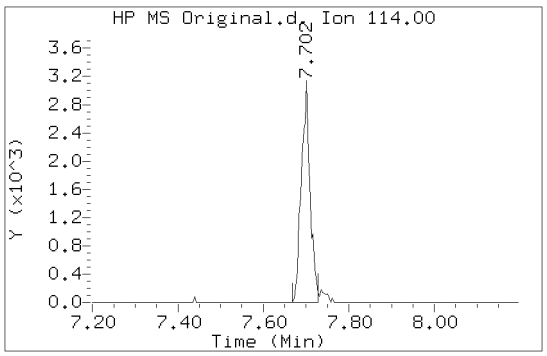
AFTER

MASS
77
AREA
9210
HEIGHT
4953
28-Oct-2022
16:41



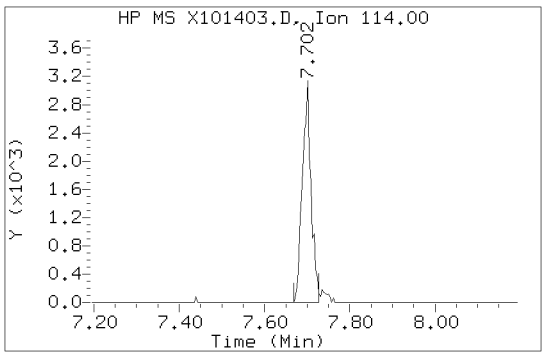
BEFORE

MASS
114
AREA
4544
HEIGHT
3139
19-Oct-2022
16:03
linh
pham



AFTER

MASS
114
AREA
4544
HEIGHT
3139
28-Oct-2022
16:41

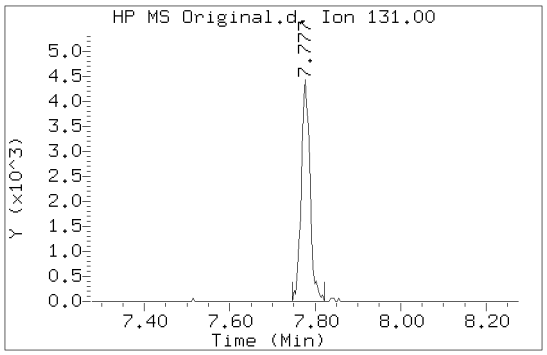


1,1,1,2-Tetrachloroethane (630-20-6)

Reason Code:

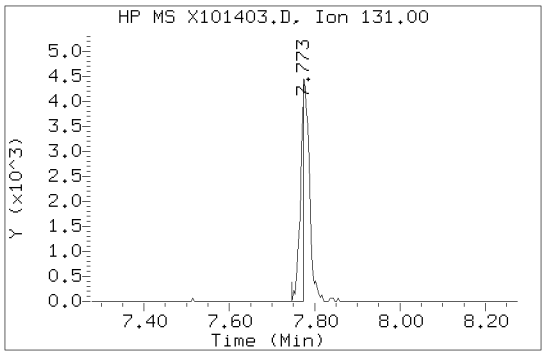
BEFORE

MASS
131
AREA
6513
HEIGHT
4433
19-Oct-2022
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linh
pham



AFTER

MASS
131
AREA
2463
HEIGHT
4059
28-Oct-2022
16:41

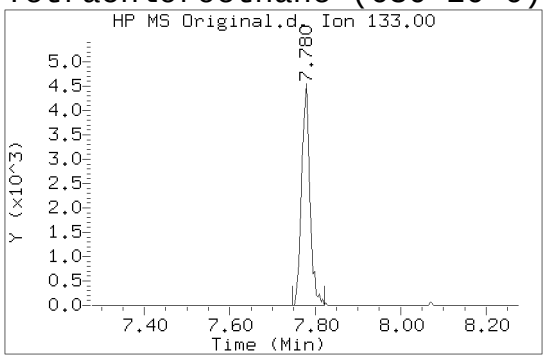


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

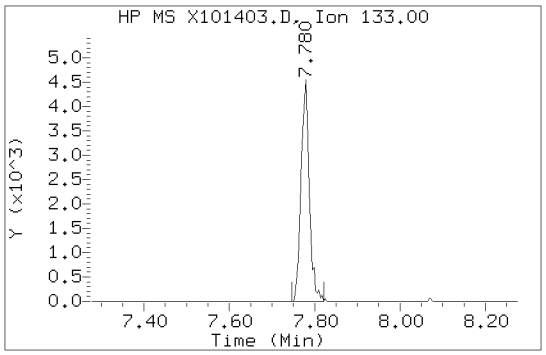
1,1,1,2-Tetrachloroethane (630-20-6)

Reason Code:

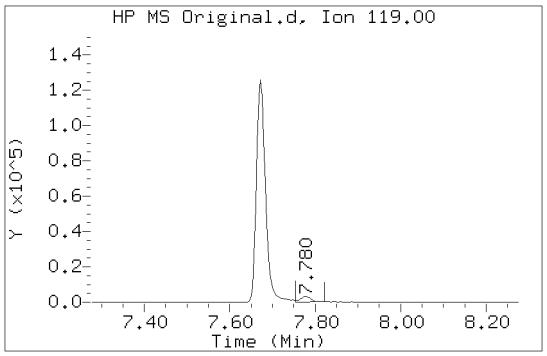
BEFORE
MASS
133
AREA
6302
HEIGHT
4550
19-Oct-2022
16:03
linh
pham



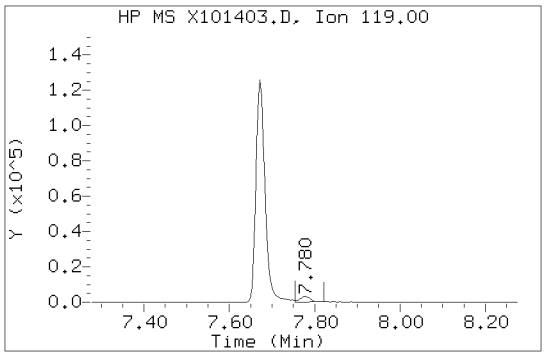
AFTER
MASS
133
AREA
6302
HEIGHT
4550
28-Oct-2022
16:41



BEFORE
MASS
119
AREA
5496
HEIGHT
3276
19-Oct-2022
16:03
linh
pham



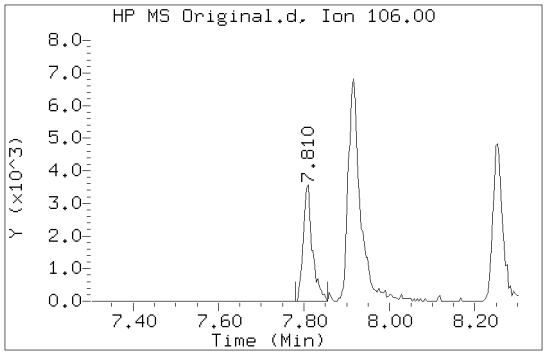
AFTER
MASS
119
AREA
5496
HEIGHT
3276
28-Oct-2022
16:41



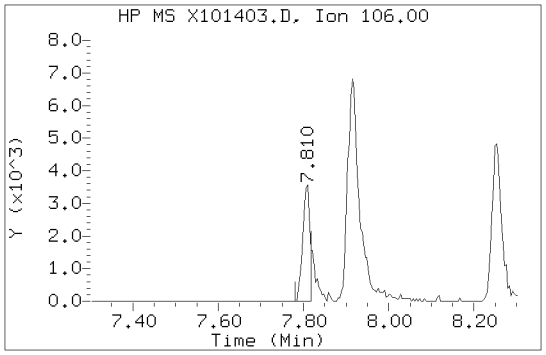
Ethylbenzene (100-41-4)

Reason Code:

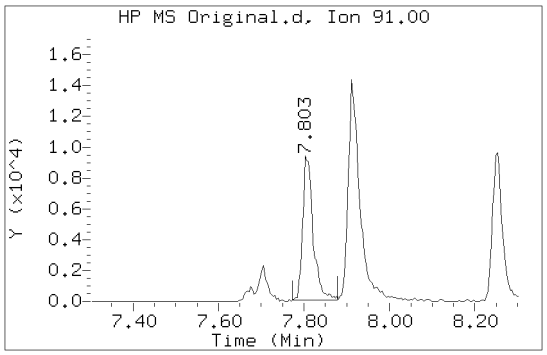
BEFORE
MASS
106
AREA
5434
HEIGHT
3566
19-Oct-2022
16:03
linh
pham



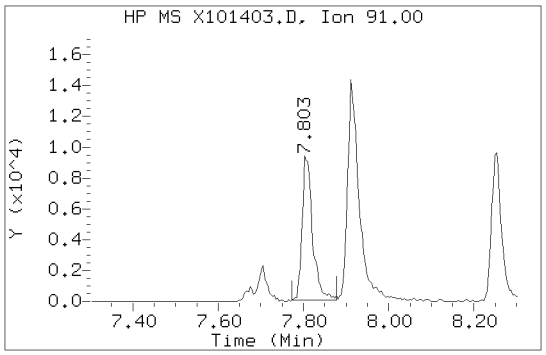
AFTER
MASS
106
AREA
4262
HEIGHT
3566
28-Oct-2022
16:41



BEFORE
MASS
91
AREA
16395
HEIGHT
9376
19-Oct-2022
16:03
linh
pham



AFTER
MASS
91
AREA
16395
HEIGHT
9376
28-Oct-2022
16:41



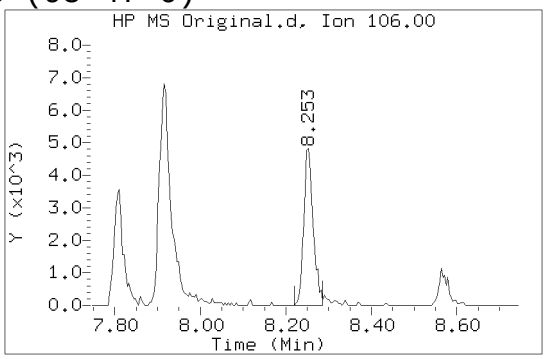
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

o-Xylene (95-47-6)

Reason Code:

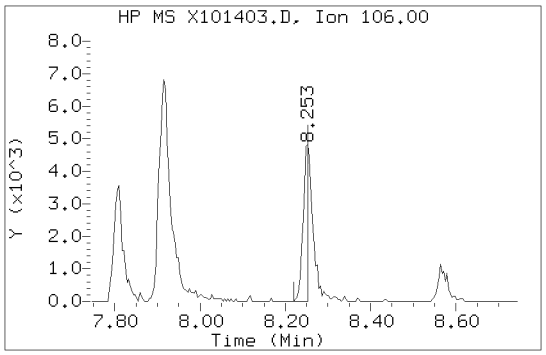
BEFORE

MASS
106
AREA
7578
HEIGHT
4831
19-Oct-2022
16:03
linh
pham



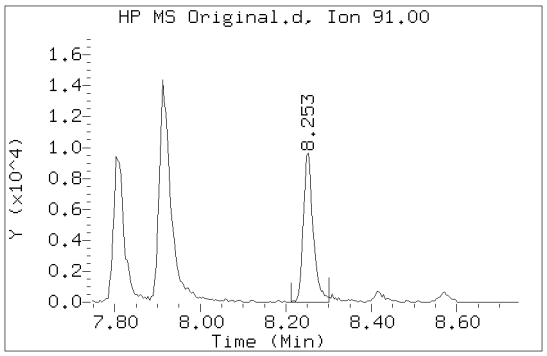
AFTER

MASS
106
AREA
4169
HEIGHT
4831
28-Oct-2022
16:41



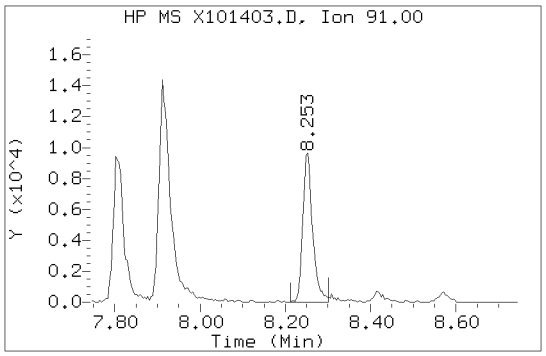
BEFORE

MASS
91
AREA
15841
HEIGHT
9647
19-Oct-2022
16:03
linh
pham



AFTER

MASS
91
AREA
15841
HEIGHT
9647
28-Oct-2022
16:41

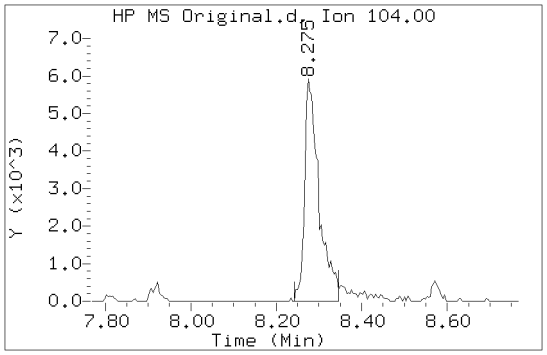


Styrene (100-42-5)

Reason Code:

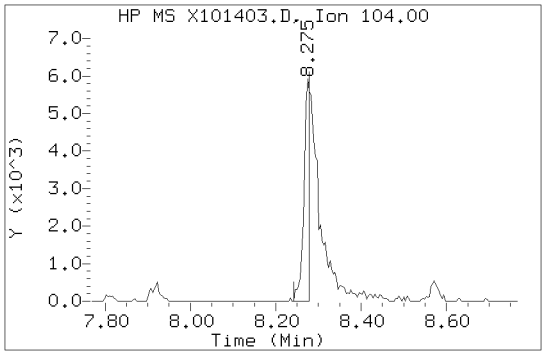
BEFORE

MASS
104
AREA
14011
HEIGHT
5923
19-Oct-2022
16:03
linh
pham



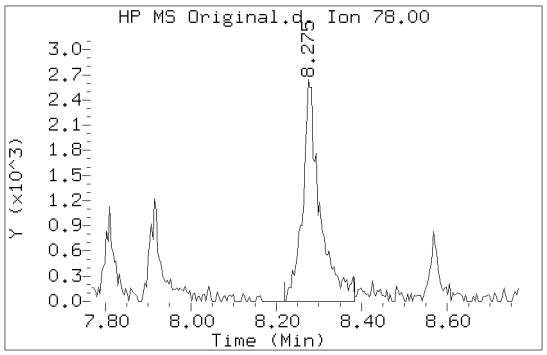
AFTER

MASS
104
AREA
5695
HEIGHT
5923
28-Oct-2022
16:41



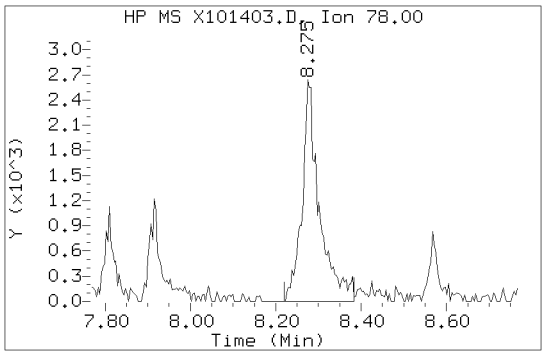
BEFORE

MASS
78
AREA
7490
HEIGHT
2642
19-Oct-2022
16:03
linh
pham



AFTER

MASS
78
AREA
7490
HEIGHT
2642
28-Oct-2022
16:41



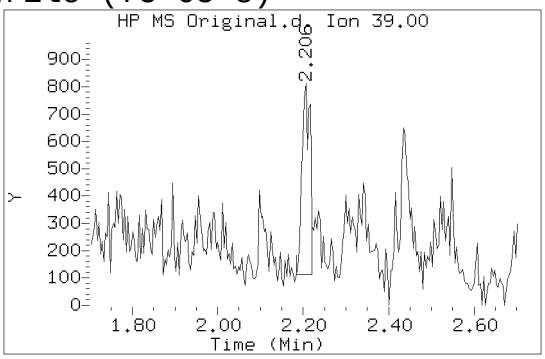
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Acetonitrile (75-05-8)

Reason Code:

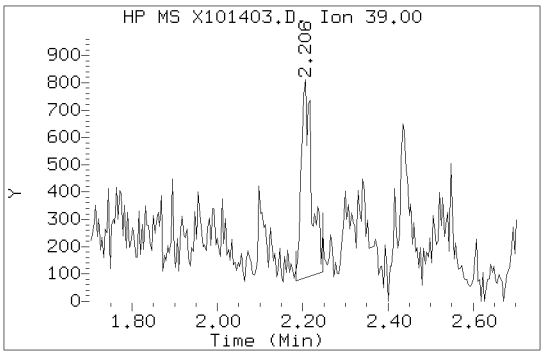
BEFORE

MASS
39
AREA
940
HEIGHT
698
19-Oct-2022
16:03
linh
pham



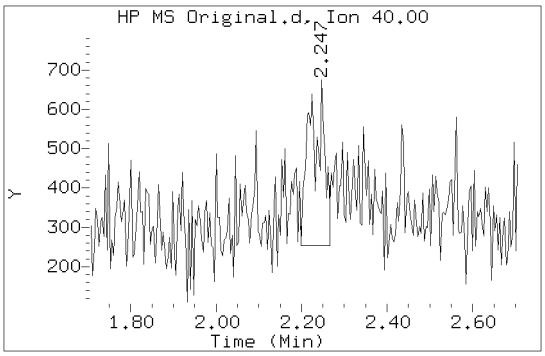
AFTER

MASS
39
AREA
1282
HEIGHT
724
28-Oct-2022
16:41



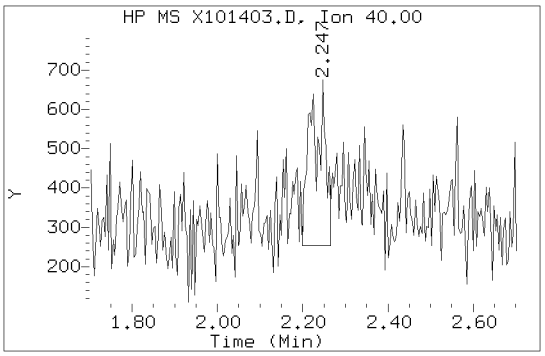
BEFORE

MASS
40
AREA
991
HEIGHT
422
19-Oct-2022
16:03
linh
pham



AFTER

MASS
40
AREA
991
HEIGHT
422
28-Oct-2022
16:41

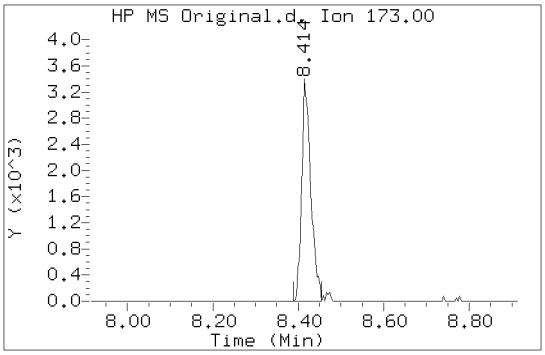


Bromoform (75-25-2)

Reason Code:

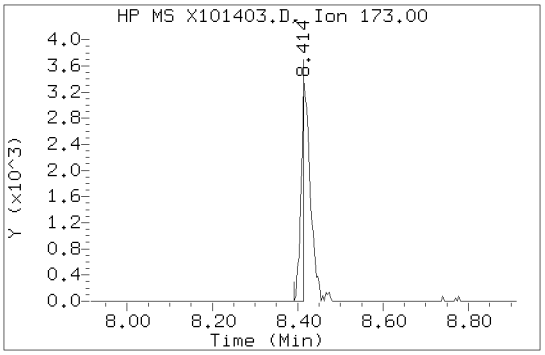
BEFORE

MASS
173
AREA
5149
HEIGHT
3401
19-Oct-2022
16:03
linh
pham



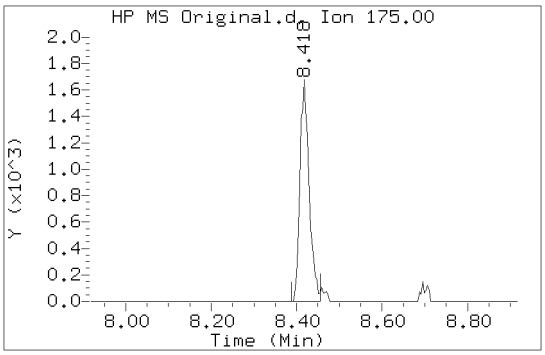
AFTER

MASS
173
AREA
1906
HEIGHT
3401
28-Oct-2022
16:41



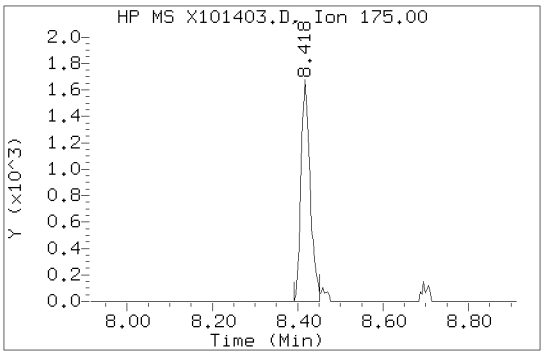
BEFORE

MASS
175
AREA
2581
HEIGHT
1677
19-Oct-2022
16:03
linh
pham



AFTER

MASS
175
AREA
2567
HEIGHT
1677
28-Oct-2022
16:41



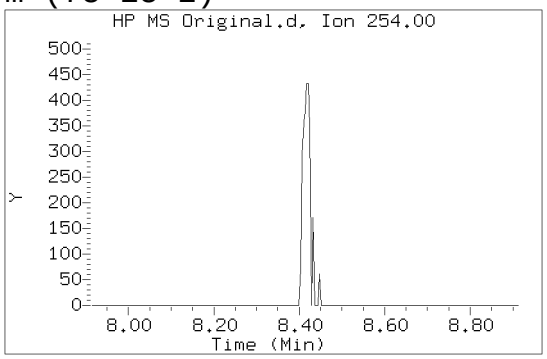
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Bromoform (75-25-2)

Reason Code:

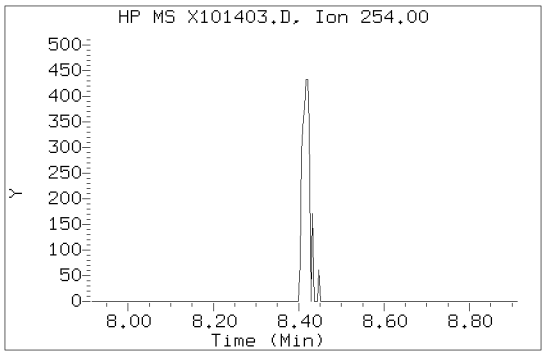
BEFORE

MASS
254
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
254
AREA
0
HEIGHT
0
28-Oct-2022
16:41

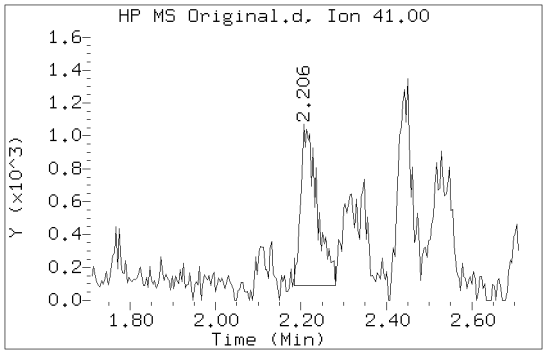


Allyl Chloride (107-05-1)

Reason Code:

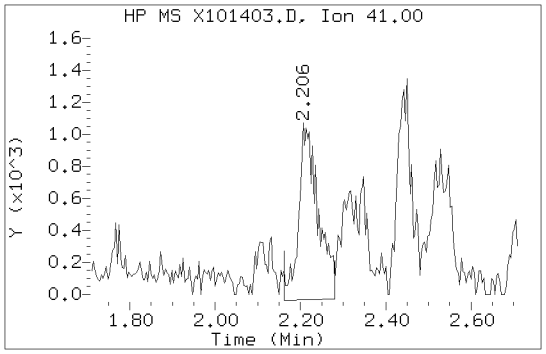
BEFORE

MASS
41
AREA
2641
HEIGHT
983
19-Oct-2022
16:03
linh
pham



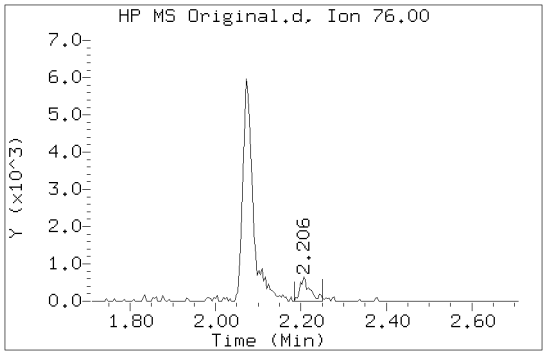
AFTER

MASS
41
AREA
3566
HEIGHT
1106
28-Oct-2022
16:41



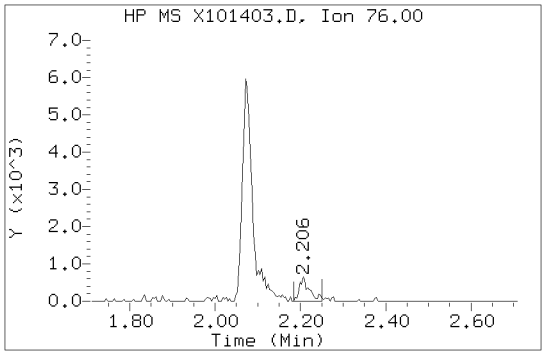
BEFORE

MASS
76
AREA
1072
HEIGHT
653
19-Oct-2022
16:03
linh
pham



AFTER

MASS
76
AREA
1072
HEIGHT
653
28-Oct-2022
16:41

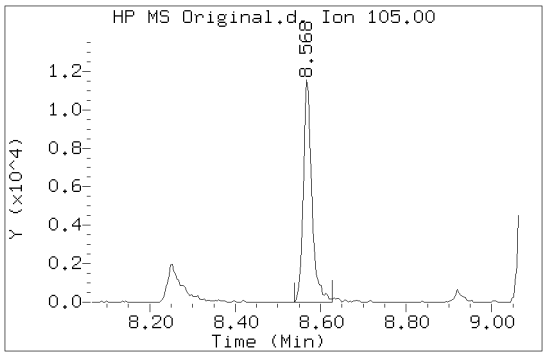


Isopropylbenzene (98-82-8)

Reason Code:

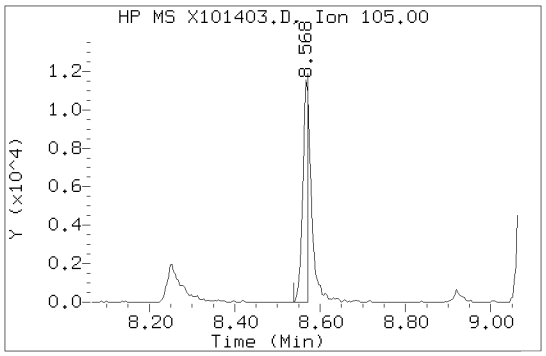
BEFORE

MASS
105
AREA
16551
HEIGHT
11554
19-Oct-2022
16:03
linh
pham



AFTER

MASS
105
AREA
10442
HEIGHT
11554
28-Oct-2022
16:41

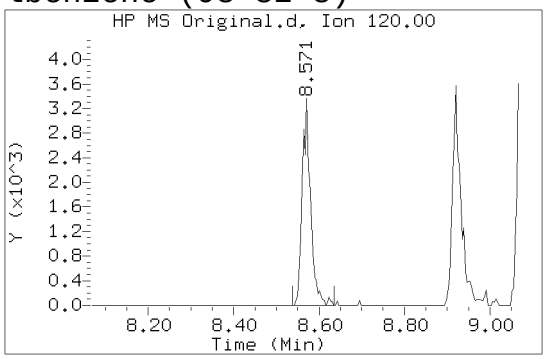


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

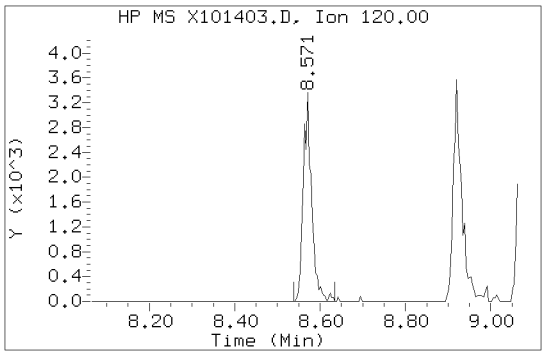
Isopropylbenzene (98-82-8)

Reason Code:

BEFORE
MASS
120
AREA
4685
HEIGHT
3363
19-Oct-2022
16:03
linh
pham



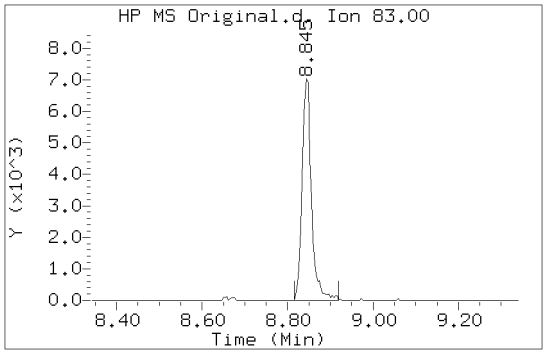
AFTER
MASS
120
AREA
4685
HEIGHT
3363
28-Oct-2022
16:41



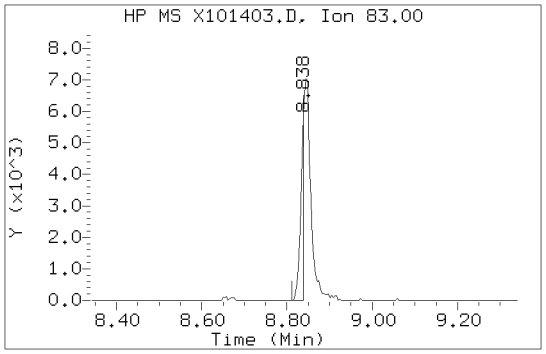
1,1,2,2-Tetrachloroethane (79-34-5)

Reason Code:

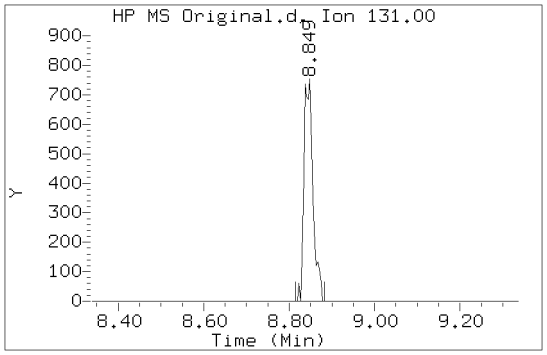
BEFORE
MASS
83
AREA
11025
HEIGHT
7037
19-Oct-2022
16:03
linh
pham



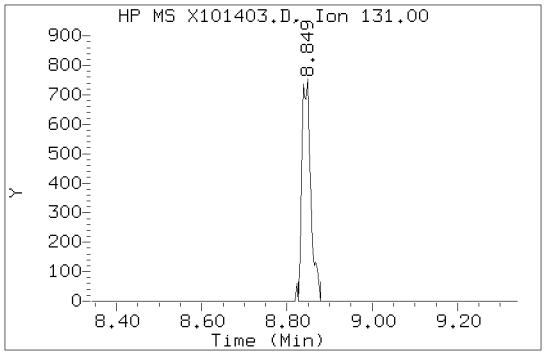
AFTER
MASS
83
AREA
3092
HEIGHT
5911
28-Oct-2022
16:41



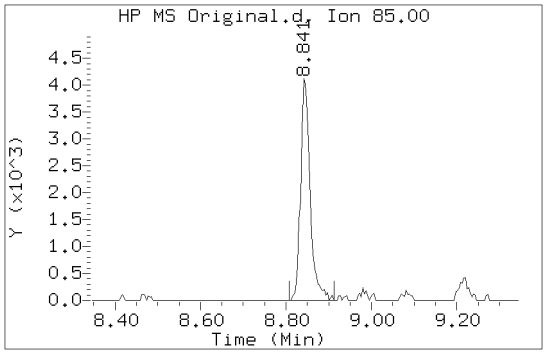
BEFORE
MASS
131
AREA
1126
HEIGHT
754
19-Oct-2022
16:03
linh
pham



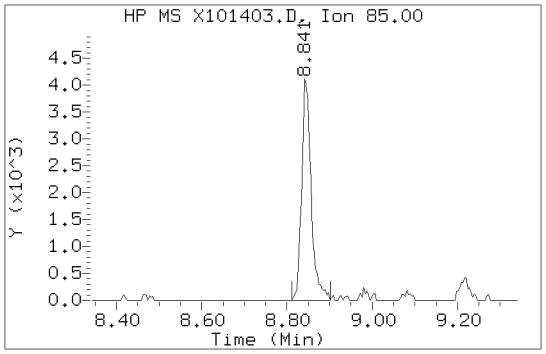
AFTER
MASS
131
AREA
1112
HEIGHT
754
28-Oct-2022
16:41



BEFORE
MASS
85
AREA
6586
HEIGHT
4119
19-Oct-2022
16:03
linh
pham



AFTER
MASS
85
AREA
6554
HEIGHT
4119
28-Oct-2022
16:41

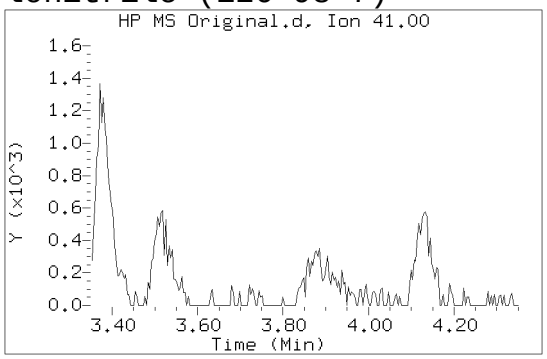


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

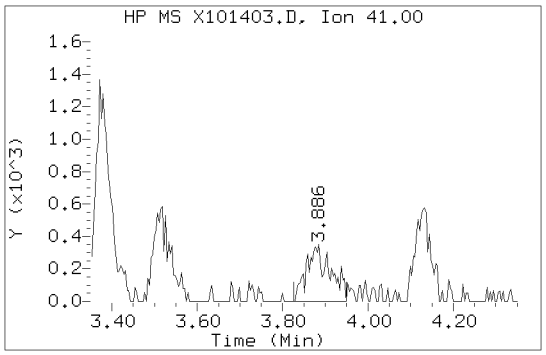
Methacrylonitrile (126-98-7)

Reason Code:

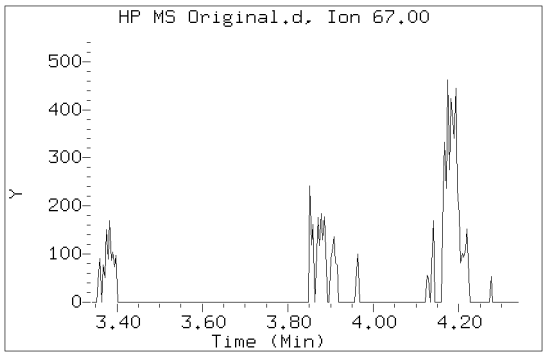
BEFORE
MASS
41
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



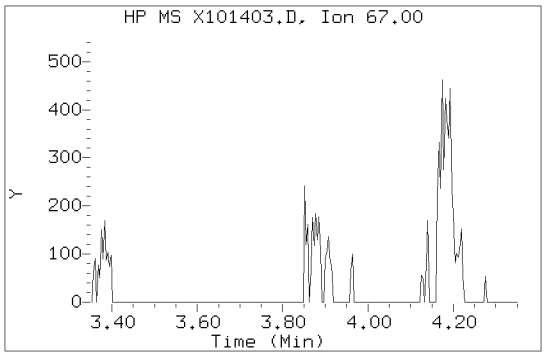
AFTER
MASS
41
AREA
1331
HEIGHT
352
28-Oct-2022
16:41



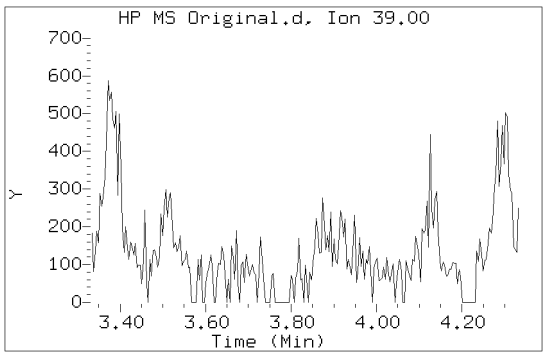
BEFORE
MASS
67
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



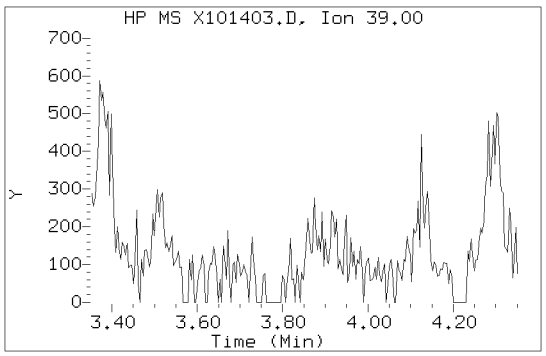
AFTER
MASS
67
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
39
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



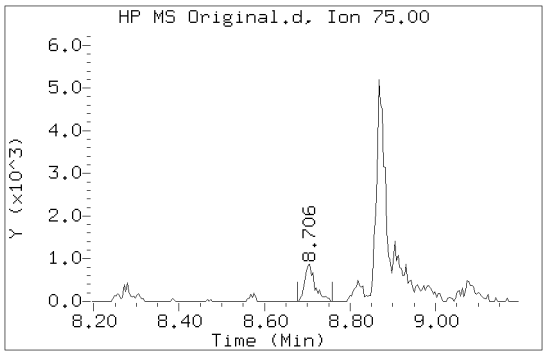
AFTER
MASS
39
AREA
0
HEIGHT
0
28-Oct-2022
16:41



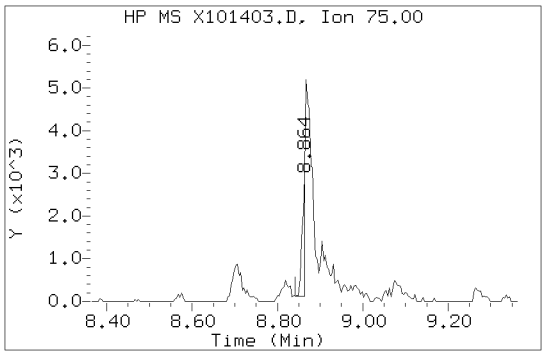
1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE
MASS
75
AREA
1467
HEIGHT
876
19-Oct-2022
16:03
linh
pham



AFTER
MASS
75
AREA
1476
HEIGHT
2830
28-Oct-2022
16:41



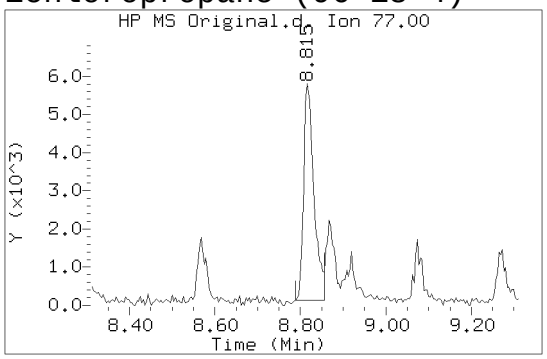
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

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

Reason Code:

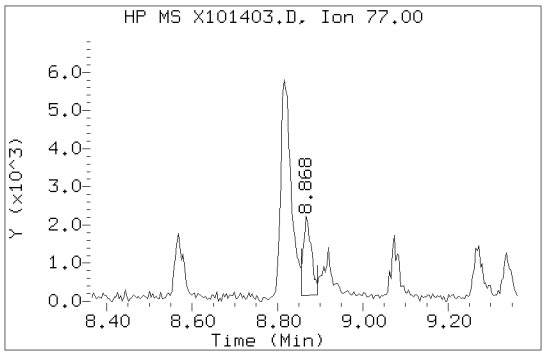
BEFORE

MASS
77
AREA
9779
HEIGHT
5676
19-Oct-2022
16:03
linh
pham



AFTER

MASS
77
AREA
2801
HEIGHT
2077
28-Oct-2022
16:41

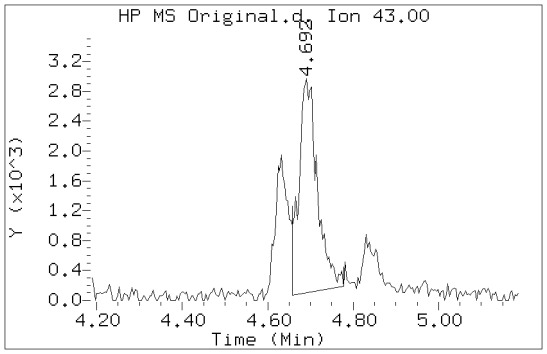


Isobutyl Alcohol (78-83-1)

Reason Code:

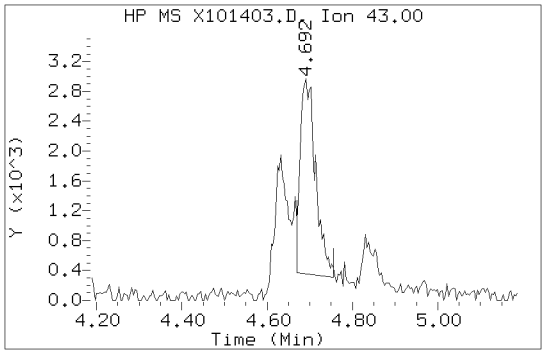
BEFORE

MASS
43
AREA
8814
HEIGHT
2868
19-Oct-2022
16:03
linh
pham



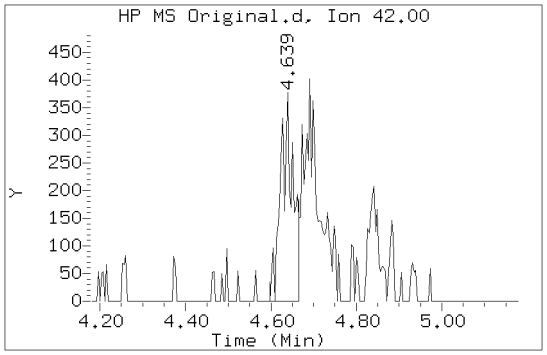
AFTER

MASS
43
AREA
6709
HEIGHT
2613
28-Oct-2022
16:41



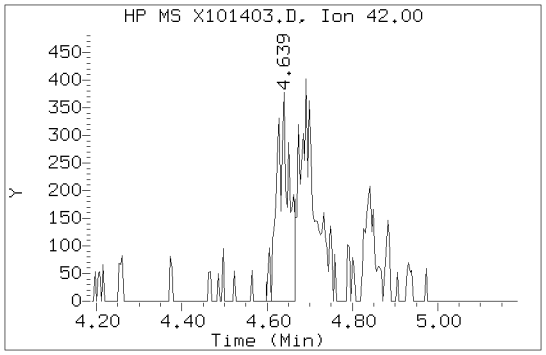
BEFORE

MASS
42
AREA
753
HEIGHT
378
19-Oct-2022
16:03
linh
pham



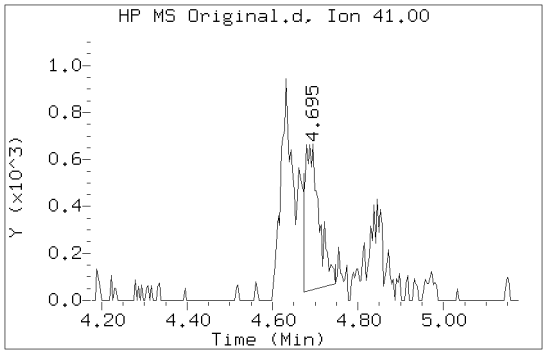
AFTER

MASS
42
AREA
753
HEIGHT
378
28-Oct-2022
16:41



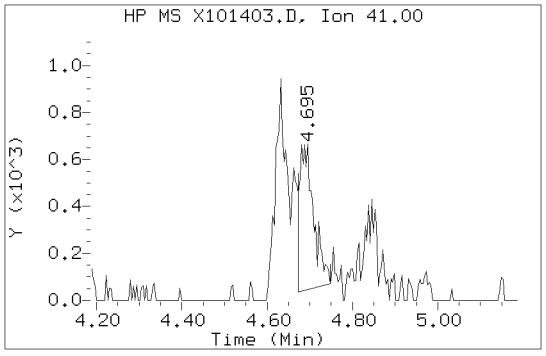
BEFORE

MASS
41
AREA
1464
HEIGHT
620
19-Oct-2022
16:03
linh
pham



AFTER

MASS
41
AREA
1464
HEIGHT
620
28-Oct-2022
16:41

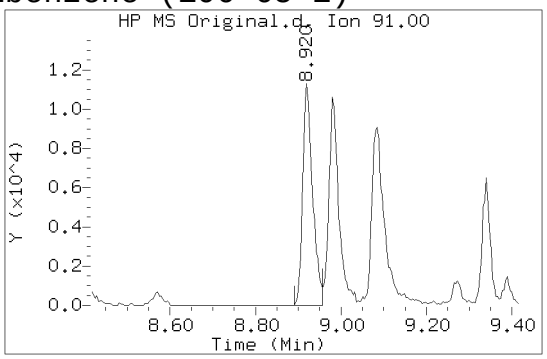


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

n-Propylbenzene (106-65-1)

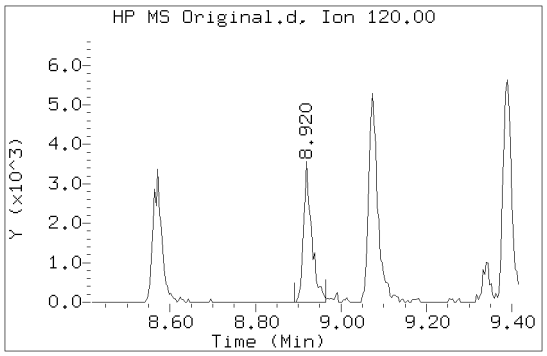
BEFORE

MASS
91
AREA
18619
HEIGHT
11298
19-Oct-2022
16:03
linh
pham



BEFORE

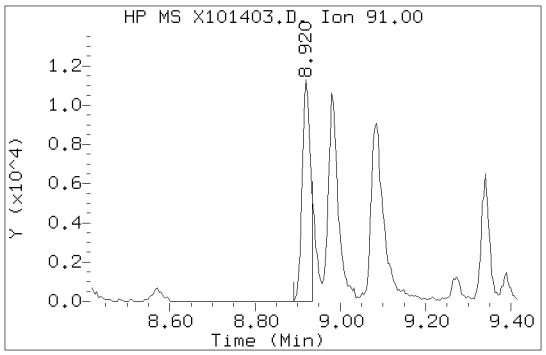
MASS
120
AREA
4806
HEIGHT
3572
19-Oct-2022
16:03
linh
pham



Reason Code:

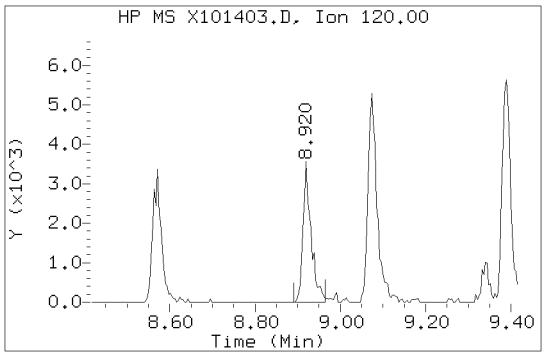
AFTER

MASS
91
AREA
15732
HEIGHT
11298
28-Oct-2022
16:41



AFTER

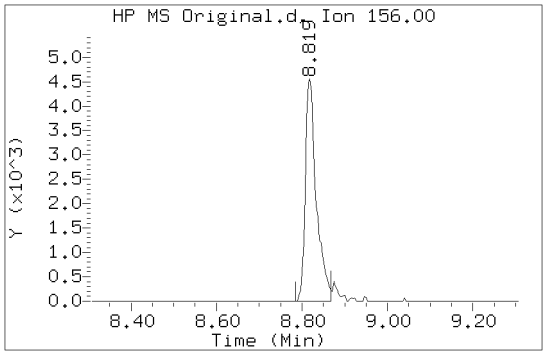
MASS
120
AREA
4806
HEIGHT
3572
28-Oct-2022
16:41



Bromobenzene (108-86-1)

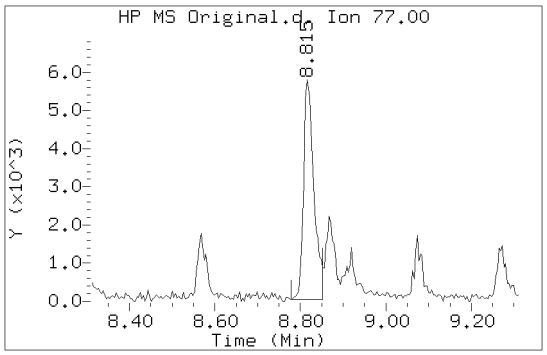
BEFORE

MASS
156
AREA
8225
HEIGHT
4559
19-Oct-2022
16:03
linh
pham



BEFORE

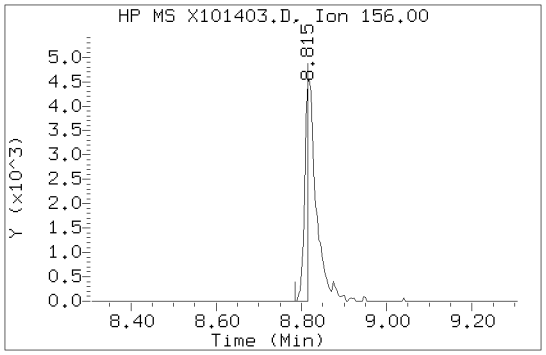
MASS
77
AREA
9940
HEIGHT
5753
19-Oct-2022
16:03
linh
pham



Reason Code:

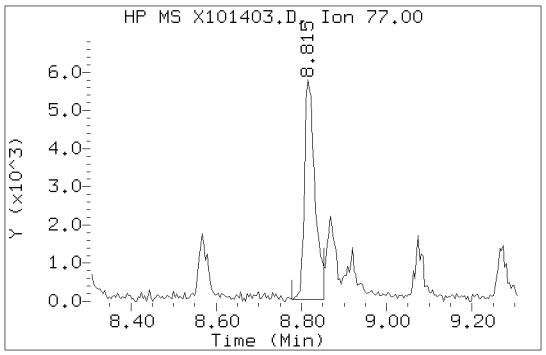
AFTER

MASS
156
AREA
2829
HEIGHT
4478
28-Oct-2022
16:41



AFTER

MASS
77
AREA
9940
HEIGHT
5753
28-Oct-2022
16:41



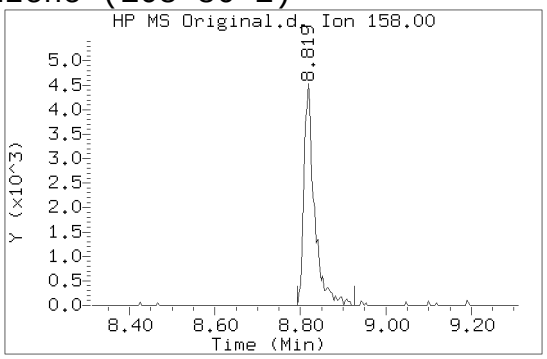
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Bromobenzene (108-86-1)

Reason Code:

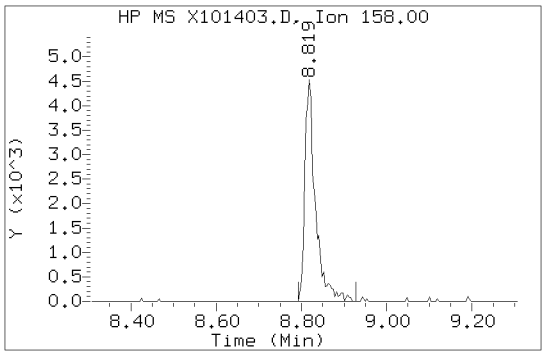
BEFORE

MASS
158
AREA
7949
HEIGHT
4532
19-Oct-2022
16:03
linh
pham



AFTER

MASS
158
AREA
7949
HEIGHT
4532
28-Oct-2022
16:41

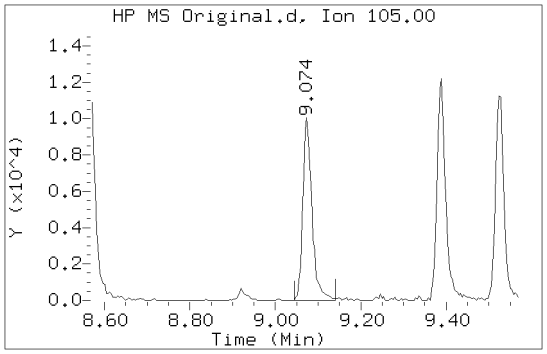


1,3,5-Trimethylbenzene (108-67-8)

Reason Code:

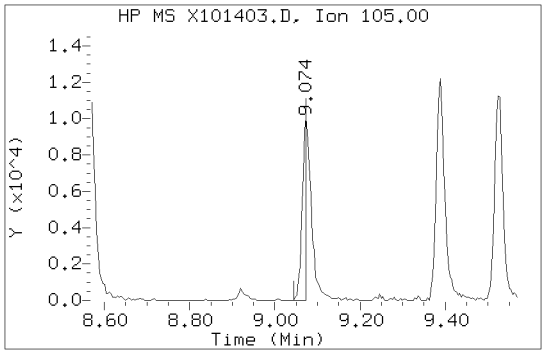
BEFORE

MASS
105
AREA
15347
HEIGHT
10041
19-Oct-2022
16:03
linh
pham



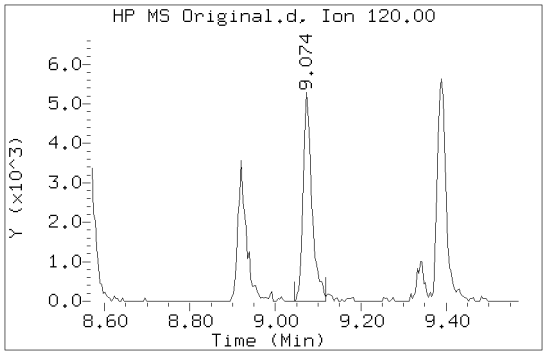
AFTER

MASS
105
AREA
7703
HEIGHT
10041
28-Oct-2022
16:41



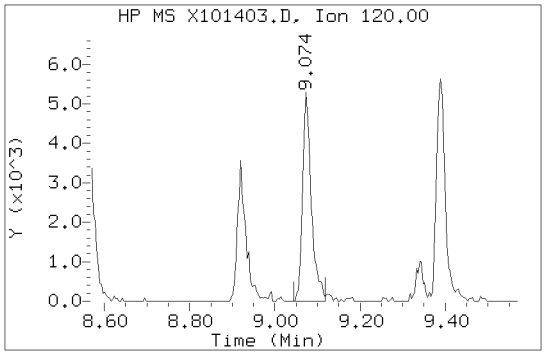
BEFORE

MASS
120
AREA
7763
HEIGHT
5288
19-Oct-2022
16:03
linh
pham



AFTER

MASS
120
AREA
7763
HEIGHT
5288
28-Oct-2022
16:41

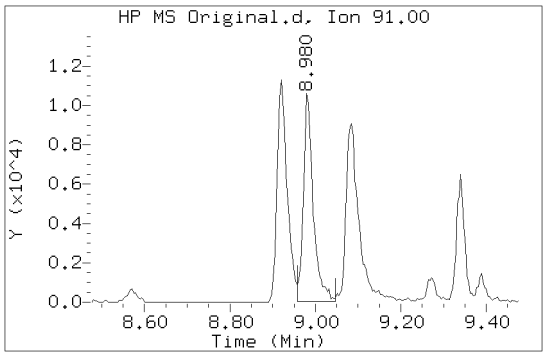


2-Chlorotoluene (95-49-8)

Reason Code:

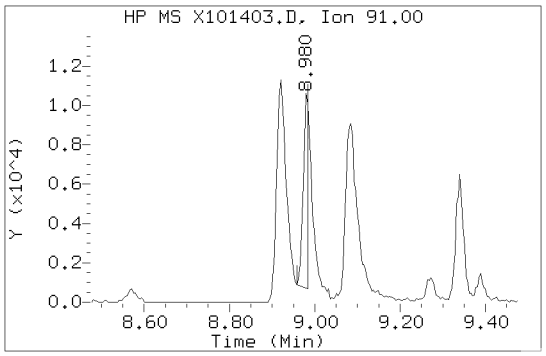
BEFORE

MASS
91
AREA
17302
HEIGHT
10582
19-Oct-2022
16:03
linh
pham



AFTER

MASS
91
AREA
8168
HEIGHT
9908
28-Oct-2022
16:41



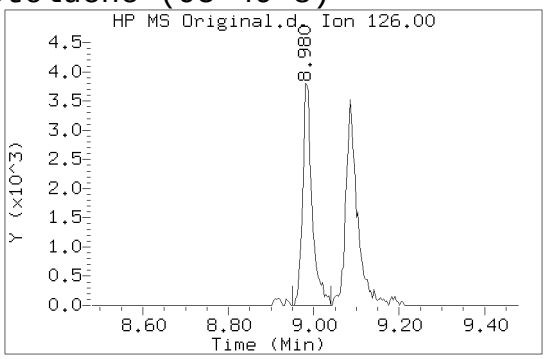
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

2-Chlorotoluene (95-49-8)

Reason Code:

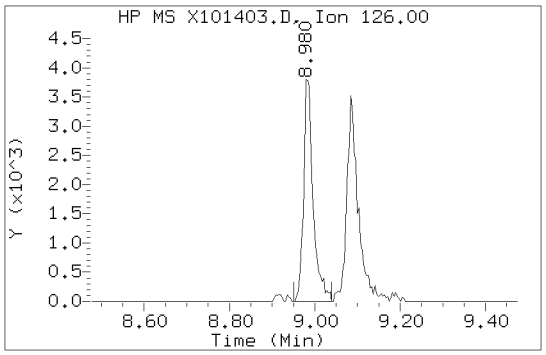
BEFORE

MASS
126
AREA
6018
HEIGHT
3797
19-Oct-2022
16:03
linh
pham



AFTER

MASS
126
AREA
6018
HEIGHT
3797
28-Oct-2022
16:41

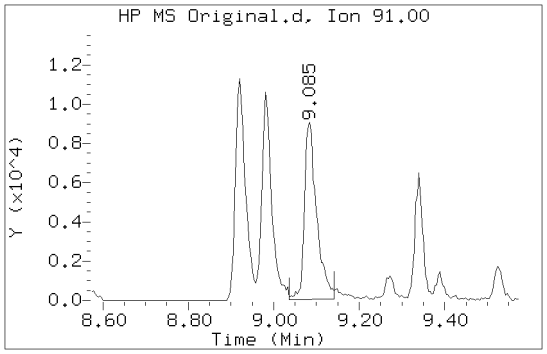


4-Chlorotoluene (106-43-4)

Reason Code:

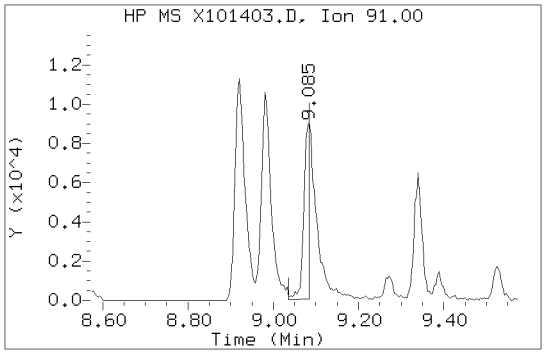
BEFORE

MASS
91
AREA
18146
HEIGHT
9029
19-Oct-2022
16:03
linh
pham



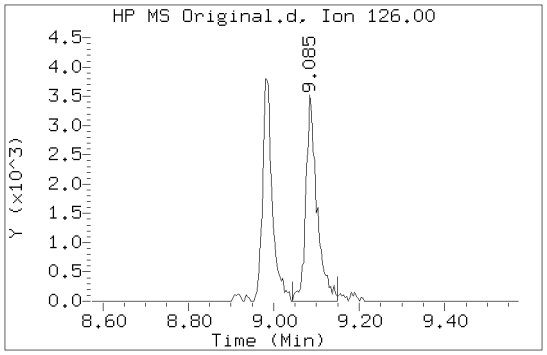
AFTER

MASS
91
AREA
9007
HEIGHT
9030
28-Oct-2022
16:41



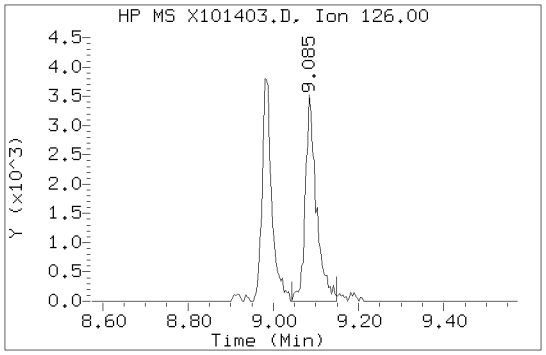
BEFORE

MASS
126
AREA
6417
HEIGHT
3523
19-Oct-2022
16:03
linh
pham



AFTER

MASS
126
AREA
6417
HEIGHT
3523
28-Oct-2022
16:41

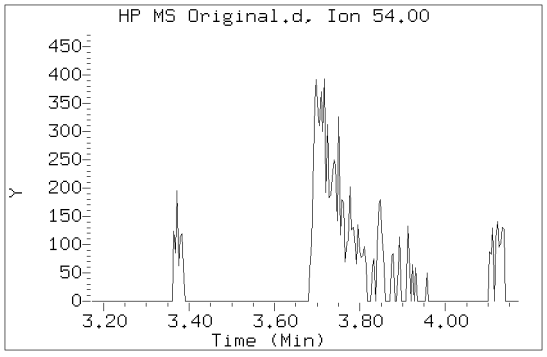


Propionitrile (107-12-0)

Reason Code:

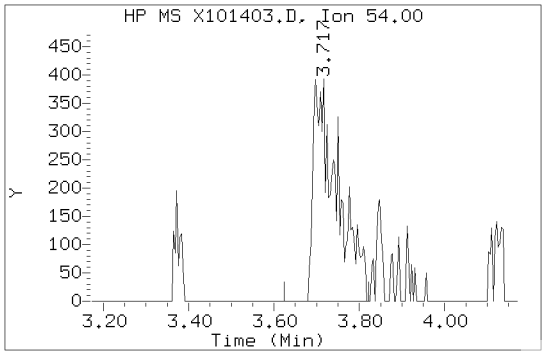
BEFORE

MASS
54
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
54
AREA
1528
HEIGHT
393
28-Oct-2022
16:41

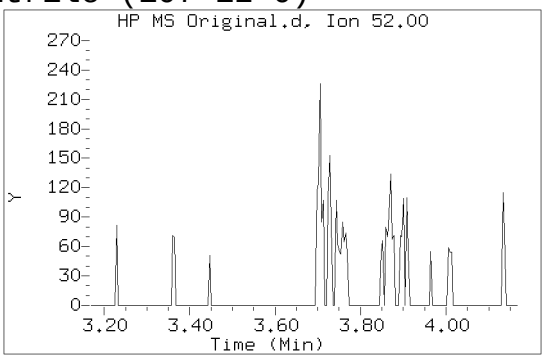


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

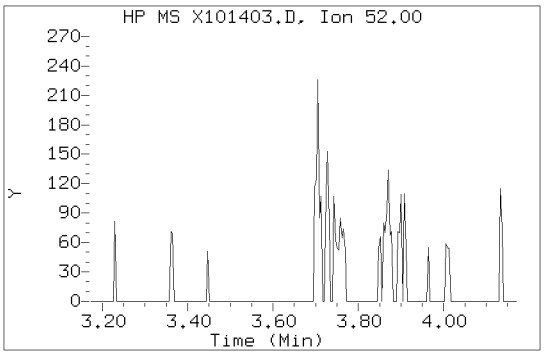
Propionitrile (107-12-0)

Reason Code:

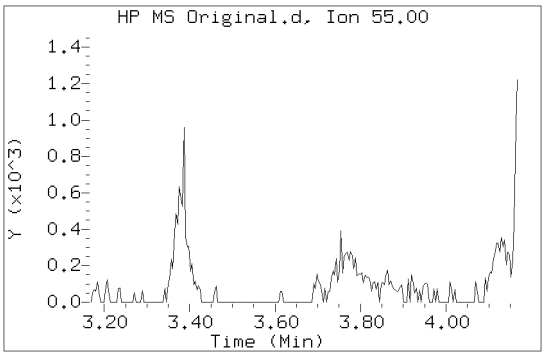
BEFORE
MASS
52
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



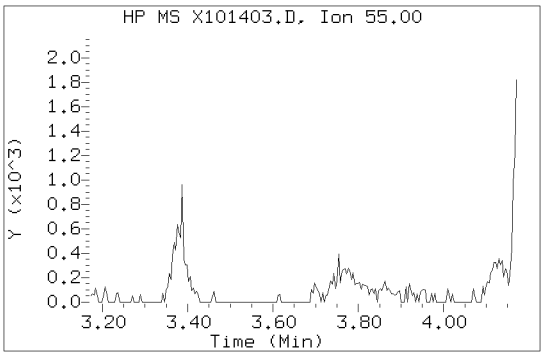
AFTER
MASS
52
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
55
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



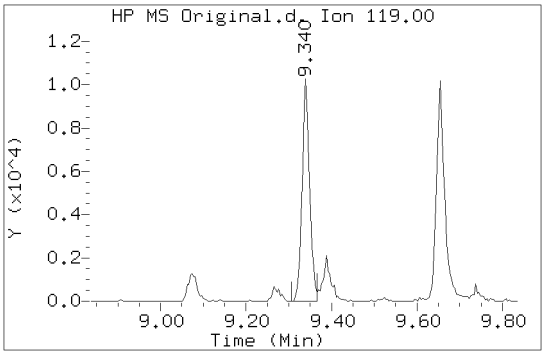
AFTER
MASS
55
AREA
0
HEIGHT
0
28-Oct-2022
16:41



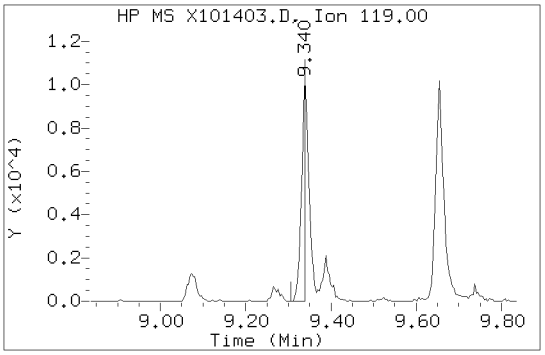
tert-Butylbenzene (98-06-6)

Reason Code:

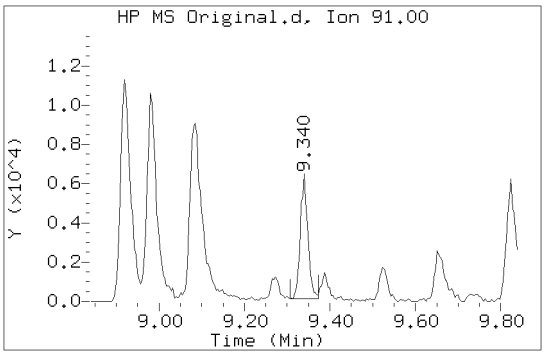
BEFORE
MASS
119
AREA
12805
HEIGHT
10266
19-Oct-2022
16:03
linh
pham



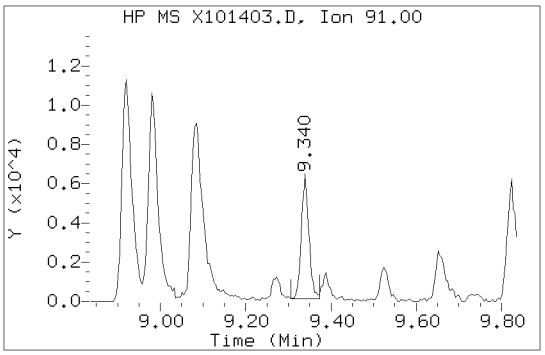
AFTER
MASS
119
AREA
7379
HEIGHT
10266
28-Oct-2022
16:41



BEFORE
MASS
91
AREA
8056
HEIGHT
6380
19-Oct-2022
16:03
linh
pham



AFTER
MASS
91
AREA
8056
HEIGHT
6380
28-Oct-2022
16:41



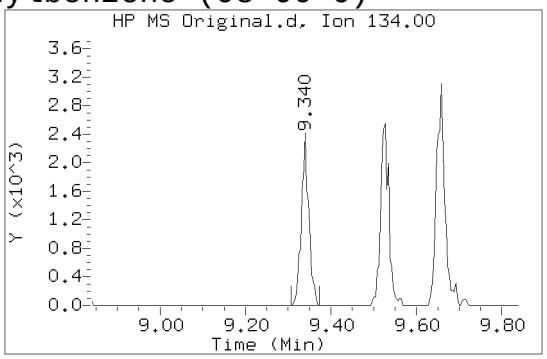
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

tert-Butylbenzene (98-06-6)

Reason Code:

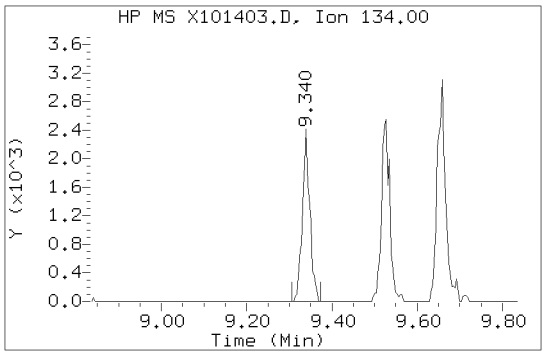
BEFORE

MASS
134
AREA
2991
HEIGHT
2420
19-Oct-2022
16:03
linh
pham



AFTER

MASS
134
AREA
2991
HEIGHT
2420
28-Oct-2022
16:41

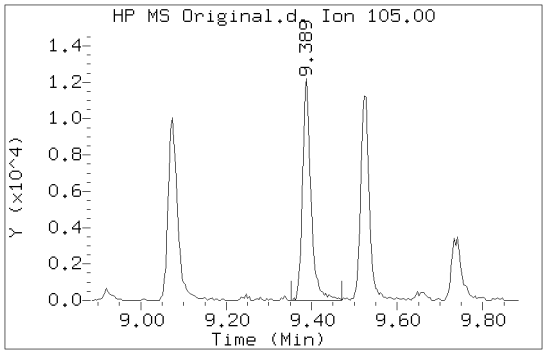


1,2,4-Trimethylbenzene (95-63-6)

Reason Code:

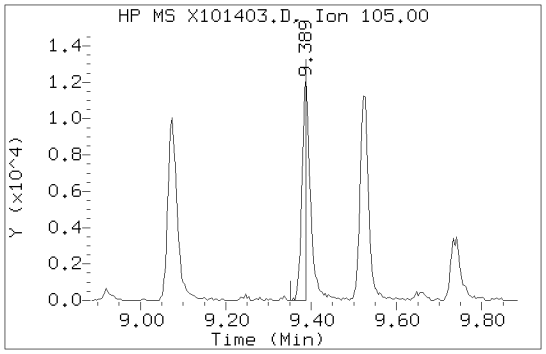
BEFORE

MASS
105
AREA
17183
HEIGHT
12197
19-Oct-2022
16:03
linh
pham



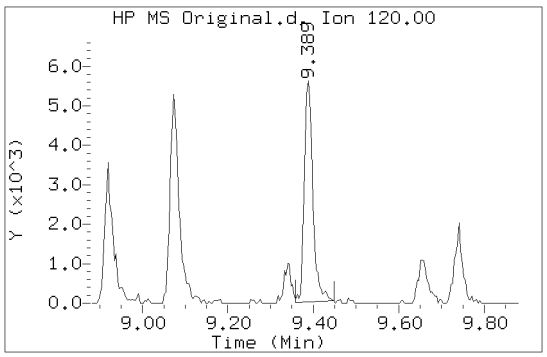
AFTER

MASS
105
AREA
9741
HEIGHT
12197
28-Oct-2022
16:41



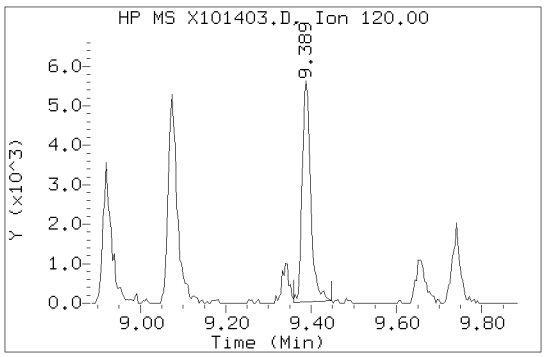
BEFORE

MASS
120
AREA
7987
HEIGHT
5595
19-Oct-2022
16:03
linh
pham



AFTER

MASS
120
AREA
7987
HEIGHT
5595
28-Oct-2022
16:41

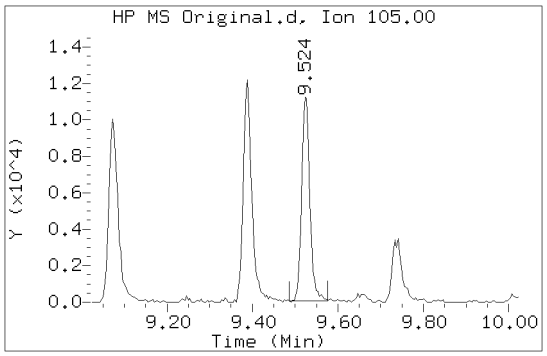


sec-Butylbenzene (135-98-8)

Reason Code:

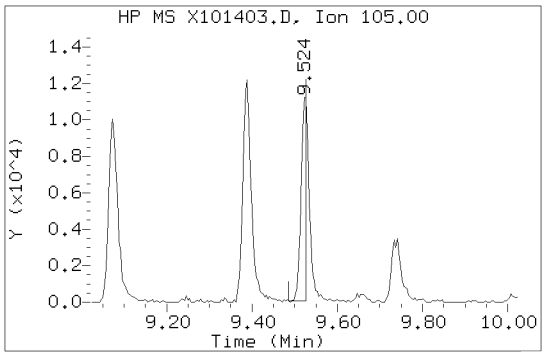
BEFORE

MASS
105
AREA
15463
HEIGHT
11195
19-Oct-2022
16:03
linh
pham



AFTER

MASS
105
AREA
10477
HEIGHT
11195
28-Oct-2022
16:41



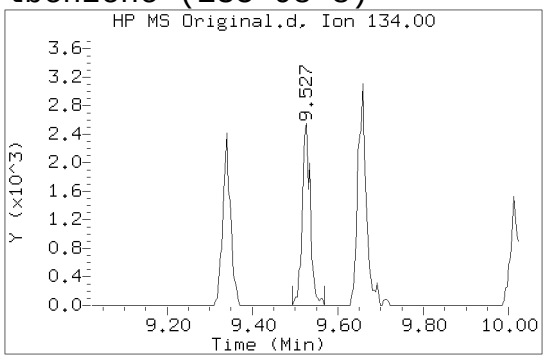
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

sec-Butylbenzene (135-98-8)

Reason Code:

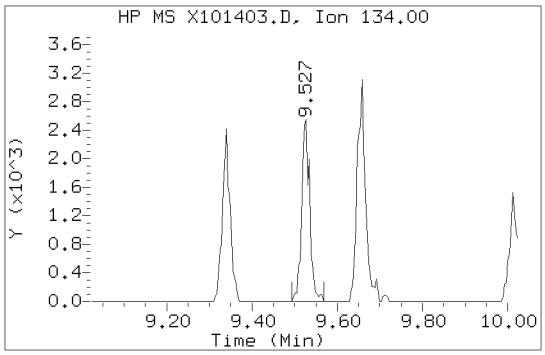
BEFORE

MASS
134
AREA
3436
HEIGHT
2554
19-Oct-2022
16:03
linh
pham



AFTER

MASS
134
AREA
3436
HEIGHT
2554
28-Oct-2022
16:41

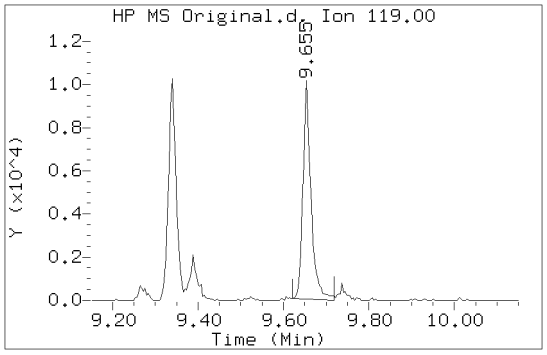


p-Isopropyltoluene (99-87-6)

Reason Code:

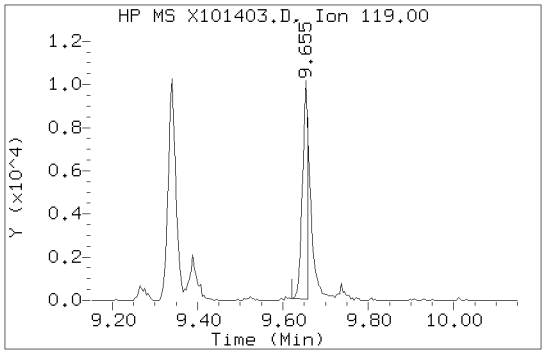
BEFORE

MASS
119
AREA
13550
HEIGHT
10132
19-Oct-2022
16:03
linh
pham



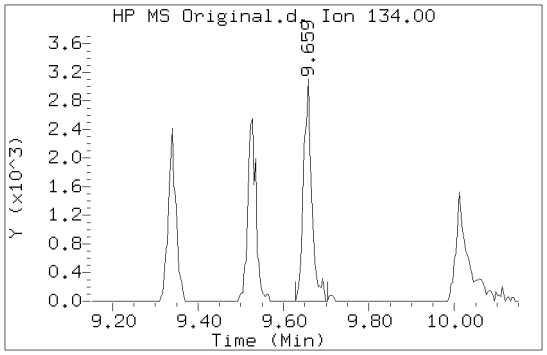
AFTER

MASS
119
AREA
9059
HEIGHT
10132
28-Oct-2022
16:41



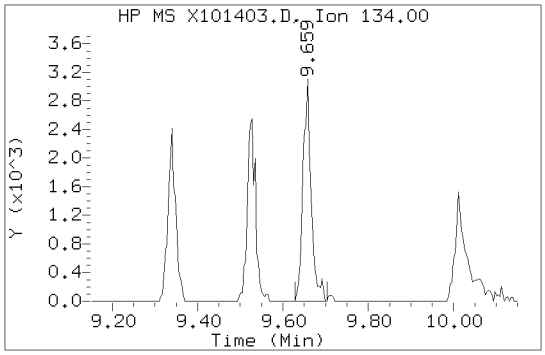
BEFORE

MASS
134
AREA
4218
HEIGHT
3108
19-Oct-2022
16:03
linh
pham



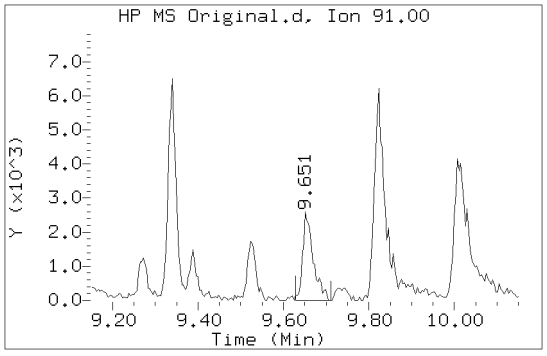
AFTER

MASS
134
AREA
4218
HEIGHT
3108
28-Oct-2022
16:41



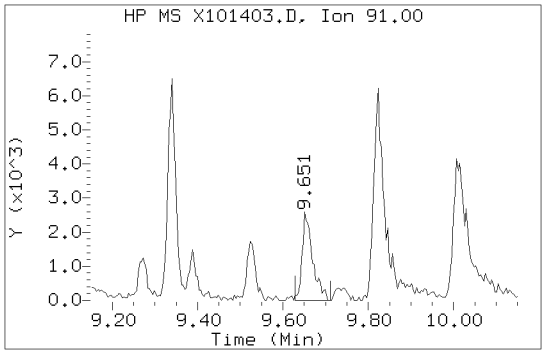
BEFORE

MASS
91
AREA
4526
HEIGHT
2597
19-Oct-2022
16:03
linh
pham



AFTER

MASS
91
AREA
4526
HEIGHT
2597
28-Oct-2022
16:41

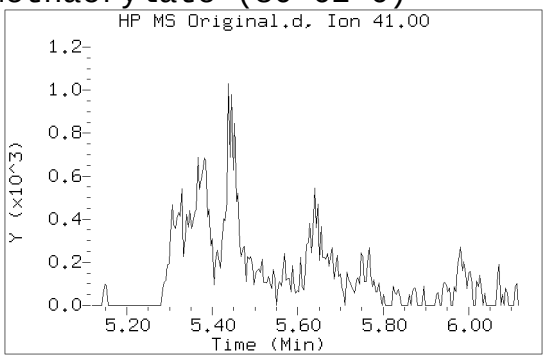


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

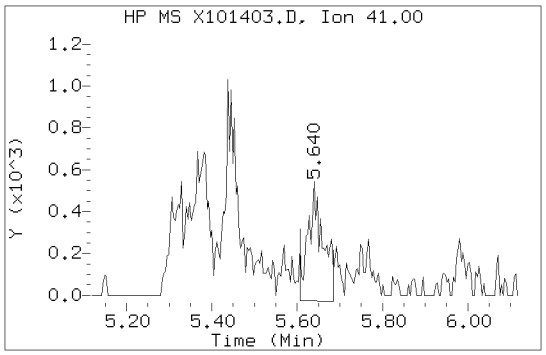
Methyl Methacrylate (80-62-6)

Reason Code:

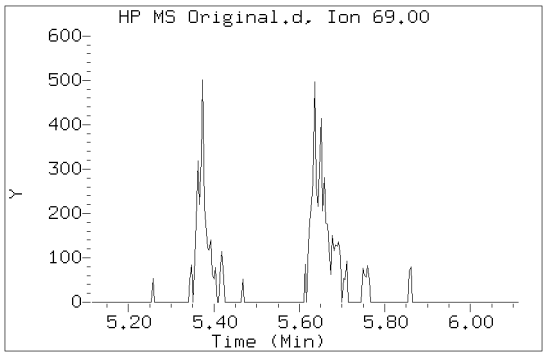
BEFORE
MASS
41
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



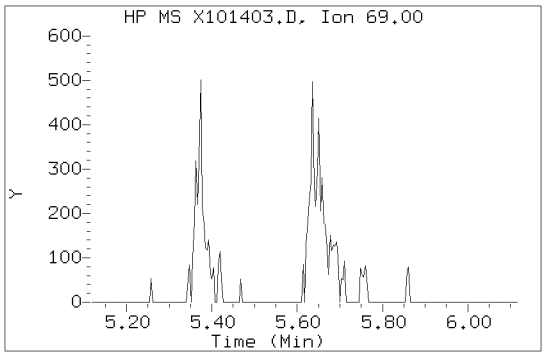
AFTER
MASS
41
AREA
1431
HEIGHT
572
28-Oct-2022
16:41



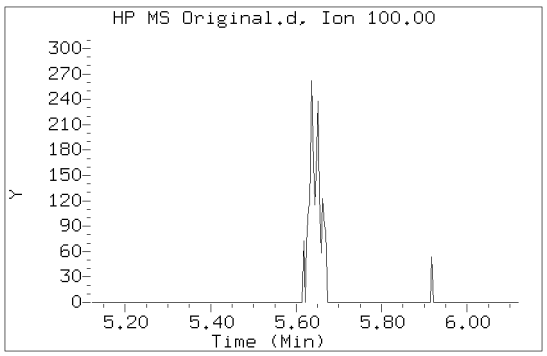
BEFORE
MASS
69
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



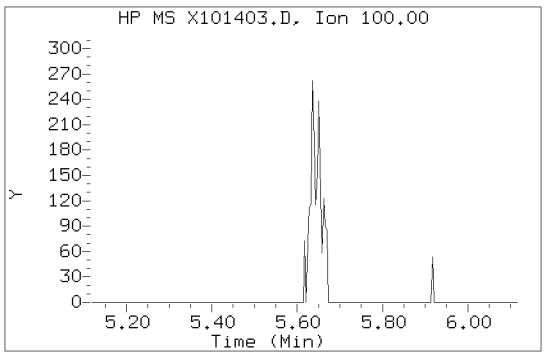
AFTER
MASS
69
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
100
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



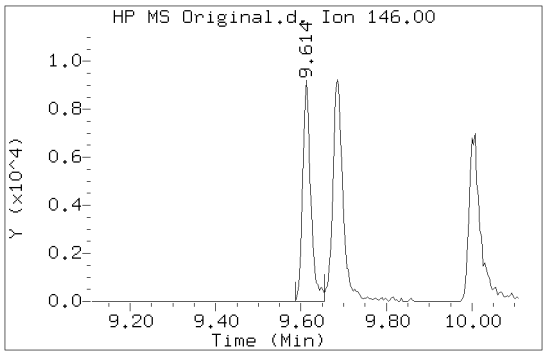
AFTER
MASS
100
AREA
0
HEIGHT
0
28-Oct-2022
16:41



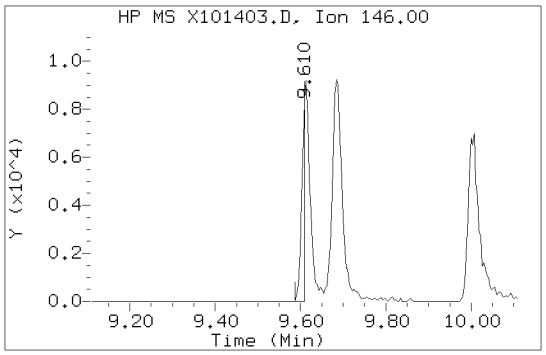
1,3-Dichlorobenzene (541-73-1)

Reason Code:

BEFORE
MASS
146
AREA
12432
HEIGHT
9203
19-Oct-2022
16:03
linh
pham



AFTER
MASS
146
AREA
5063
HEIGHT
8361
28-Oct-2022
16:41

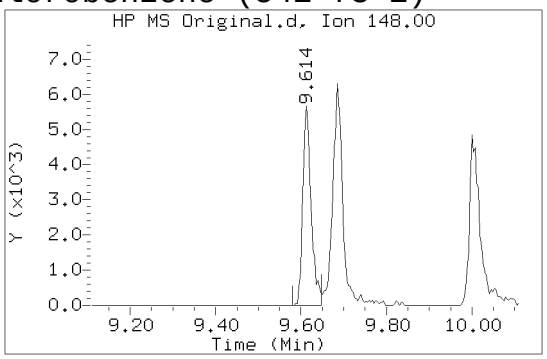


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InstruID : voa6.i
LabSampID : VSTD000.5

1,3-Dichlorobenzene (541-73-1)

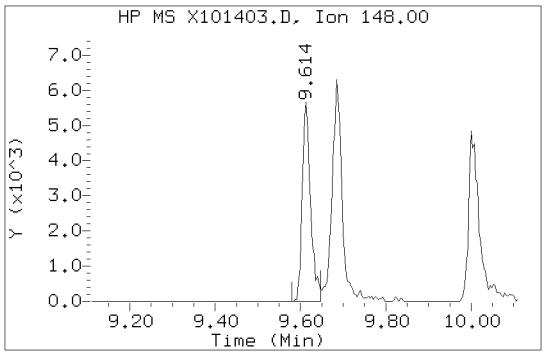
BEFORE

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148
AREA
7934
HEIGHT
5663
19-Oct-2022
16:03
linh
pham



AFTER

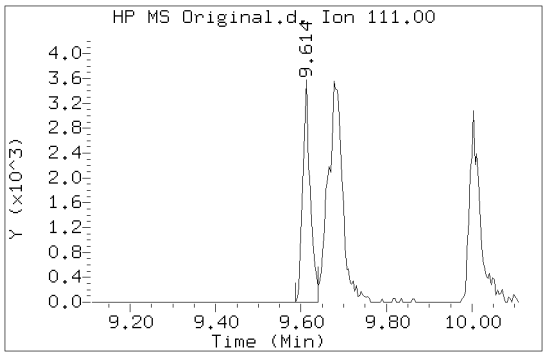
MASS
148
AREA
7934
HEIGHT
5663
28-Oct-2022
16:41



Reason Code:

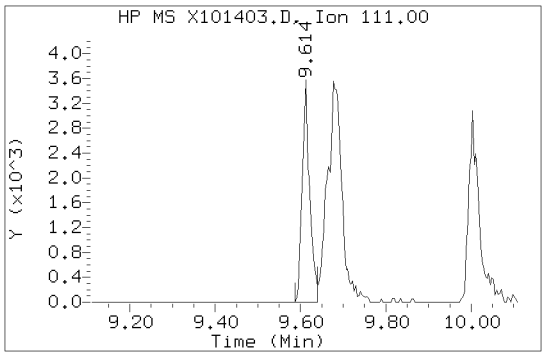
BEFORE

MASS
111
AREA
4462
HEIGHT
3578
19-Oct-2022
16:03
linh
pham



AFTER

MASS
111
AREA
4462
HEIGHT
3578
28-Oct-2022
16:41

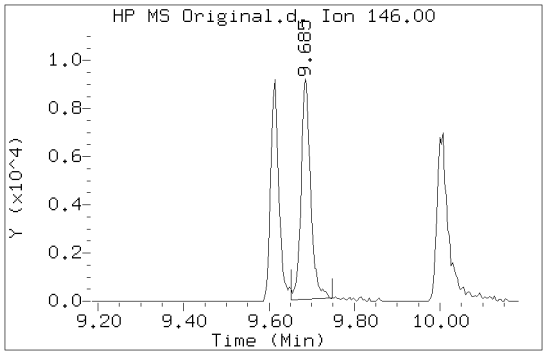


Reason Code:

1,4-Dichlorobenzene (106-46-7)

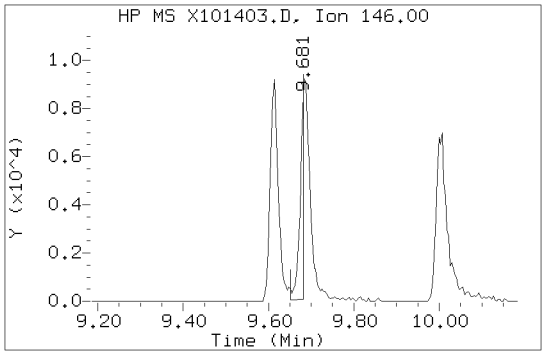
BEFORE

MASS
146
AREA
14667
HEIGHT
9151
19-Oct-2022
16:03
linh
pham



AFTER

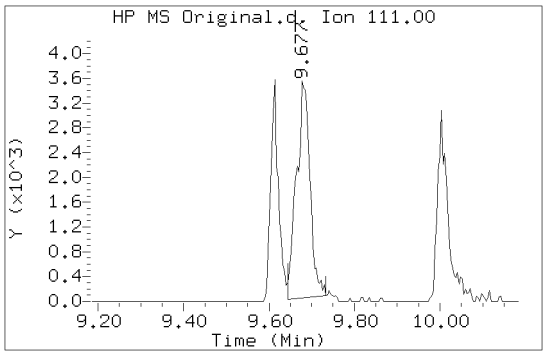
MASS
146
AREA
5375
HEIGHT
8547
28-Oct-2022
16:41



Reason Code:

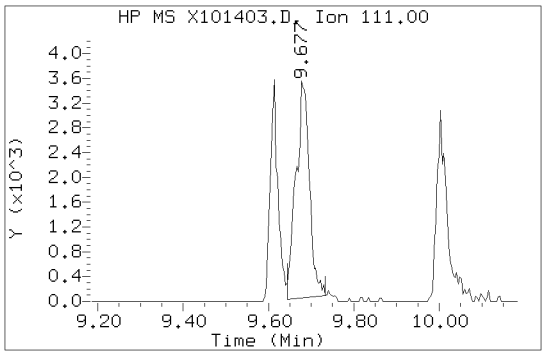
BEFORE

MASS
111
AREA
7865
HEIGHT
3505
19-Oct-2022
16:03
linh
pham



AFTER

MASS
111
AREA
7865
HEIGHT
3505
28-Oct-2022
16:41



Reason Code:

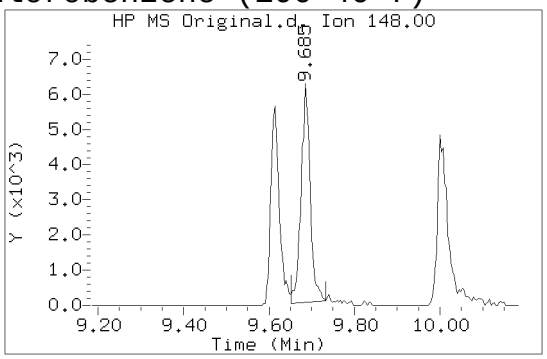
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,4-Dichlorobenzene (106-46-7)

Reason Code:

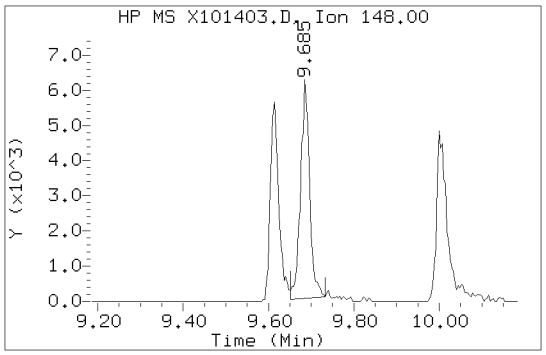
BEFORE

MASS
148
AREA
9470
HEIGHT
6218
19-Oct-2022
16:03
linh
pham



AFTER

MASS
148
AREA
9470
HEIGHT
6218
28-Oct-2022
16:41

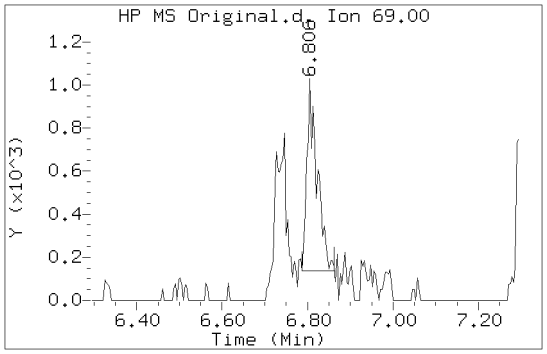


Ethyl Methacrylate (97-63-2)

Reason Code:

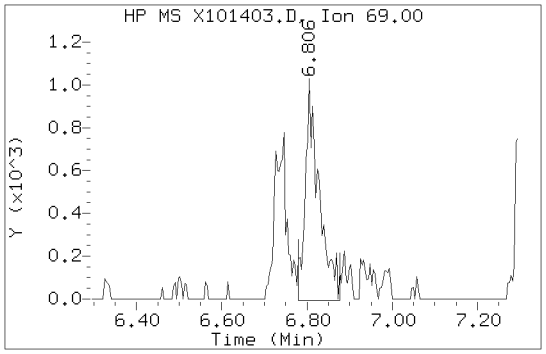
BEFORE

MASS
69
AREA
1473
HEIGHT
891
19-Oct-2022
16:03
linh
pham



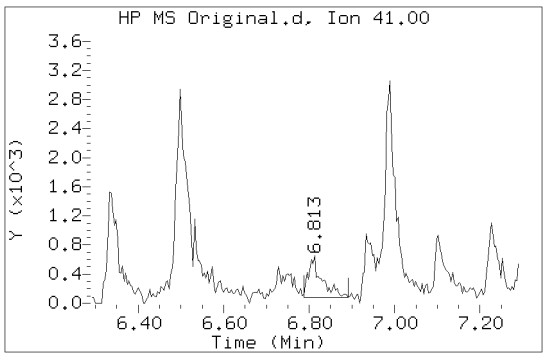
AFTER

MASS
69
AREA
2349
HEIGHT
1036
28-Oct-2022
16:41



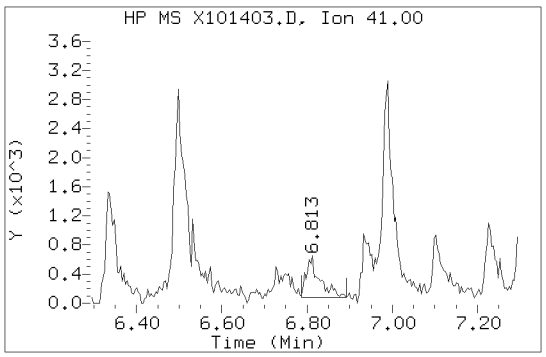
BEFORE

MASS
41
AREA
1259
HEIGHT
580
19-Oct-2022
16:03
linh
pham



AFTER

MASS
41
AREA
1259
HEIGHT
580
28-Oct-2022
16:41

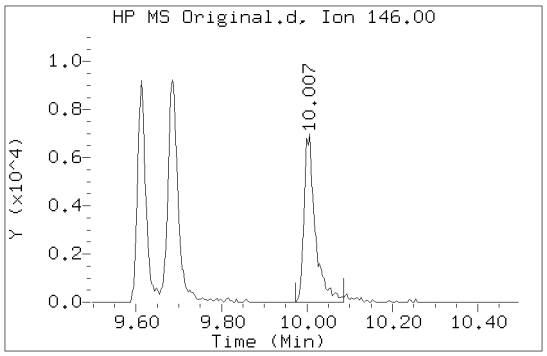


1,2-Dichlorobenzene (95-50-1)

Reason Code:

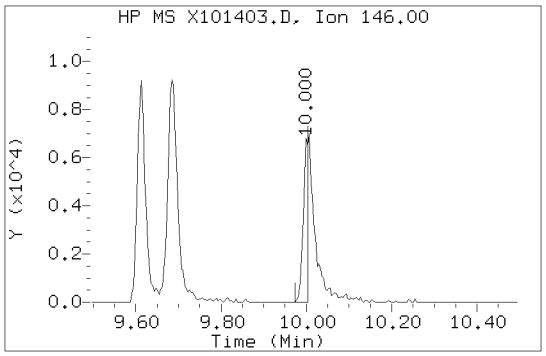
BEFORE

MASS
146
AREA
12994
HEIGHT
6986
19-Oct-2022
16:03
linh
pham



AFTER

MASS
146
AREA
5627
HEIGHT
6794
28-Oct-2022
16:41



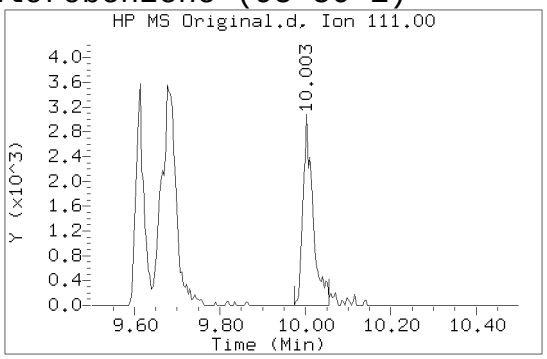
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,2-Dichlorobenzene (95-50-1)

Reason Code:

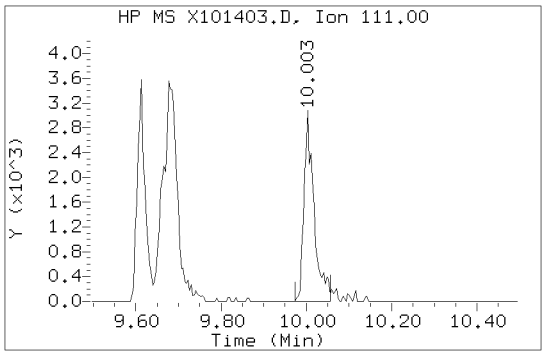
BEFORE

MASS
111
AREA
5091
HEIGHT
3083
19-Oct-2022
16:03
linh
pham



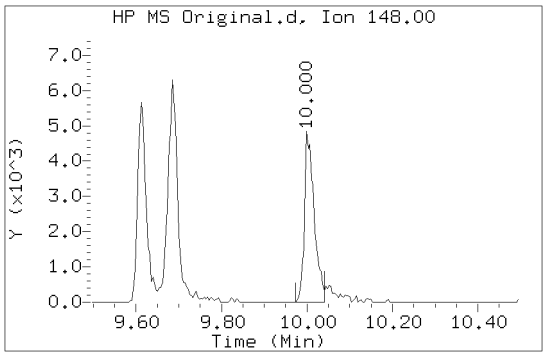
AFTER

MASS
111
AREA
5091
HEIGHT
3083
28-Oct-2022
16:41



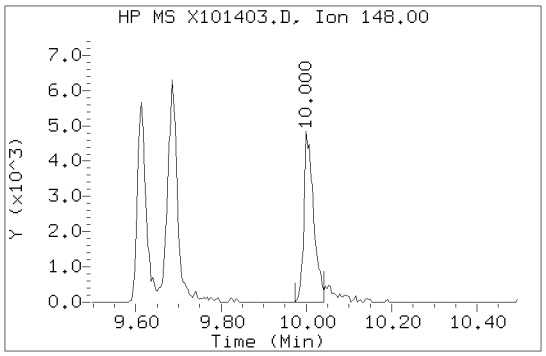
BEFORE

MASS
148
AREA
7816
HEIGHT
4854
19-Oct-2022
16:03
linh
pham



AFTER

MASS
148
AREA
7816
HEIGHT
4854
28-Oct-2022
16:41

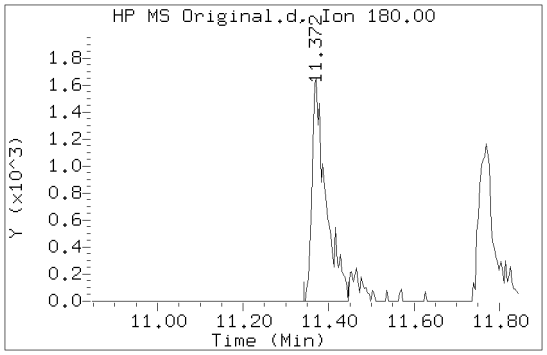


1,2,4-Trichlorobenzene (120-82-1)

Reason Code:

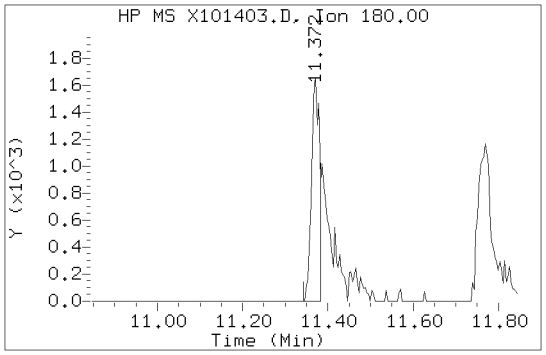
BEFORE

MASS
180
AREA
3714
HEIGHT
1645
19-Oct-2022
16:03
linh
pham



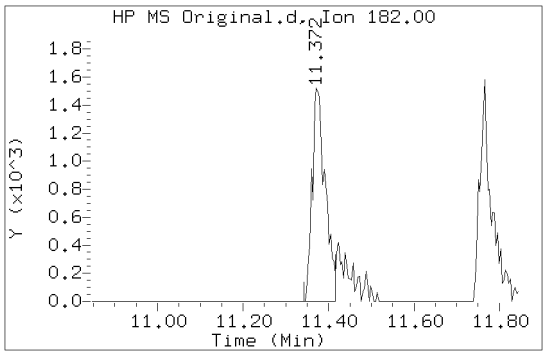
AFTER

MASS
180
AREA
2124
HEIGHT
1645
28-Oct-2022
16:41



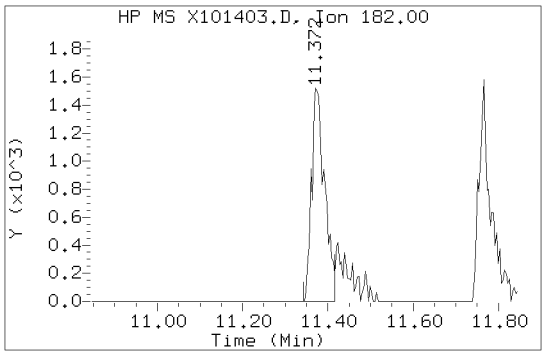
BEFORE

MASS
182
AREA
3241
HEIGHT
1524
19-Oct-2022
16:03
linh
pham



AFTER

MASS
182
AREA
3241
HEIGHT
1524
28-Oct-2022
16:41



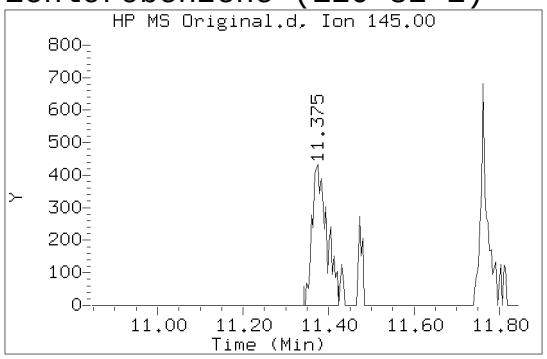
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,2,4-Trichlorobenzene (120-82-1)

Reason Code:

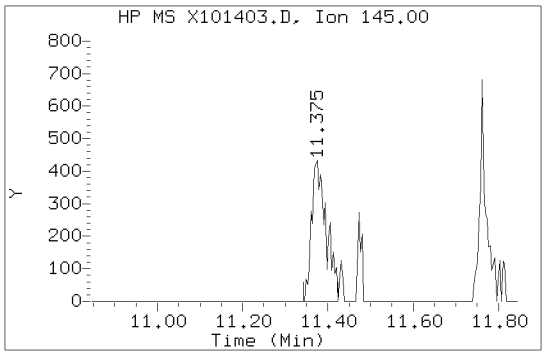
BEFORE

MASS
145
AREA
1028
HEIGHT
433
19-Oct-2022
16:03
linh
pham



AFTER

MASS
145
AREA
1028
HEIGHT
433
28-Oct-2022
16:41

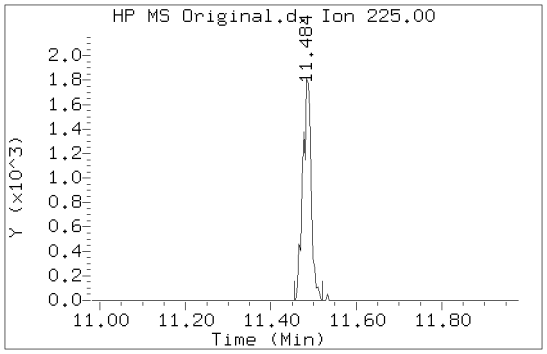


Hexachlorobutadiene (87-68-3)

Reason Code:

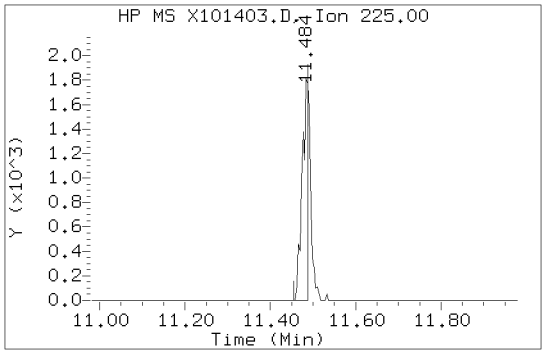
BEFORE

MASS
225
AREA
2534
HEIGHT
1812
19-Oct-2022
16:03
linh
pham



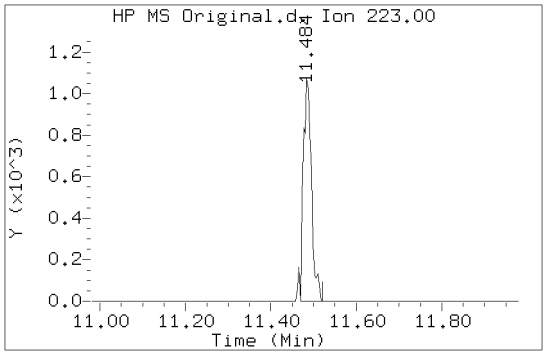
AFTER

MASS
225
AREA
1814
HEIGHT
1812
28-Oct-2022
16:41



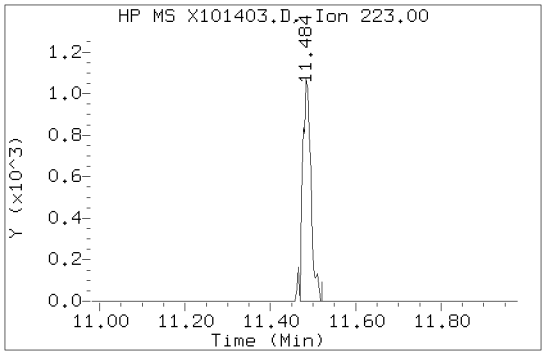
BEFORE

MASS
223
AREA
1437
HEIGHT
1071
19-Oct-2022
16:03
linh
pham



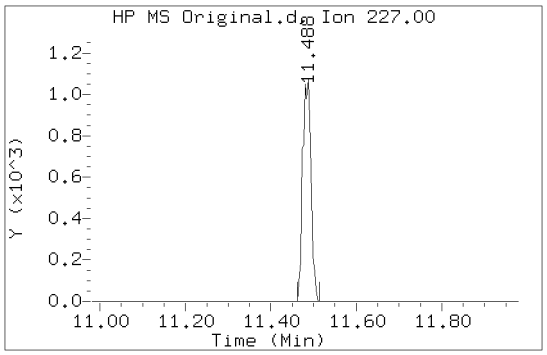
AFTER

MASS
223
AREA
1437
HEIGHT
1071
28-Oct-2022
16:41



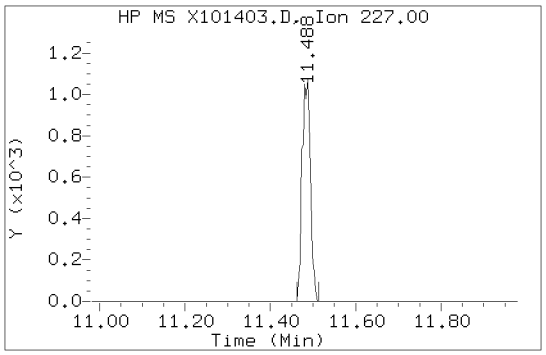
BEFORE

MASS
227
AREA
1503
HEIGHT
1071
19-Oct-2022
16:03
linh
pham



AFTER

MASS
227
AREA
1503
HEIGHT
1071
28-Oct-2022
16:41

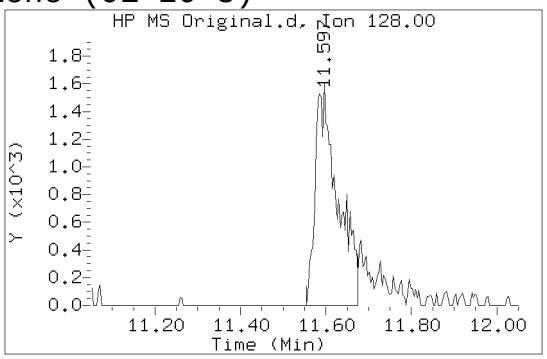


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InstruID : voa6.i
LabSampID : VSTD000.5

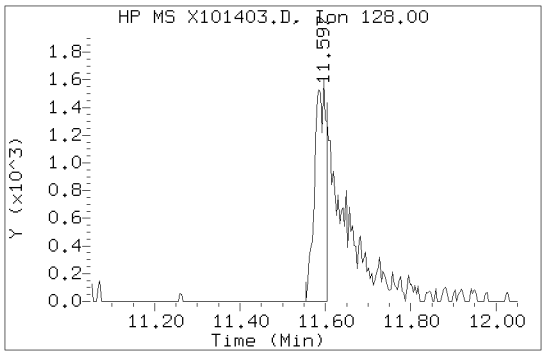
Naphthalene (91-20-3)

Reason Code:

BEFORE
MASS
128
AREA
5799
HEIGHT
1601
19-Oct-2022
16:03
linh
pham



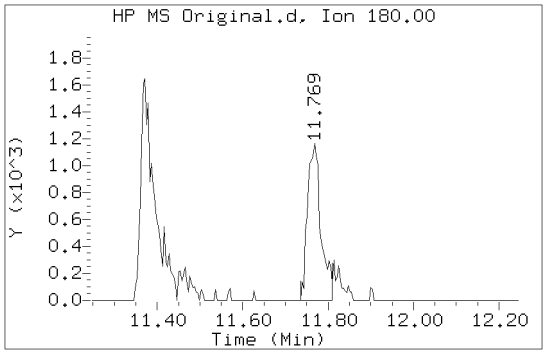
AFTER
MASS
128
AREA
2948
HEIGHT
1601
28-Oct-2022
16:41



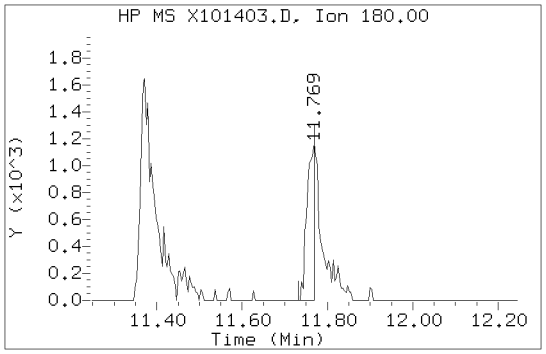
1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

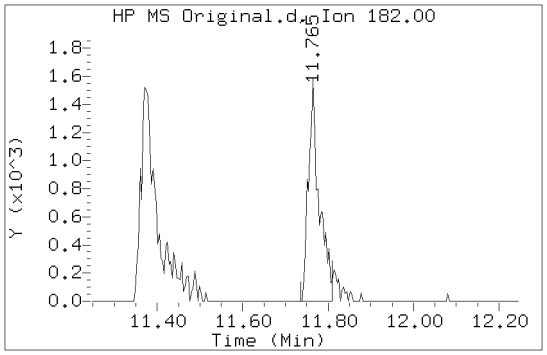
BEFORE
MASS
180
AREA
2582
HEIGHT
1165
19-Oct-2022
16:03
linh
pham



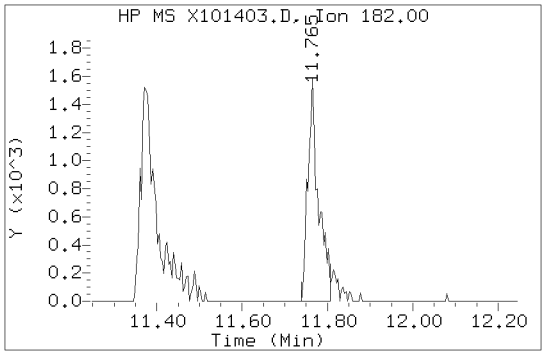
AFTER
MASS
180
AREA
1462
HEIGHT
1165
28-Oct-2022
16:41



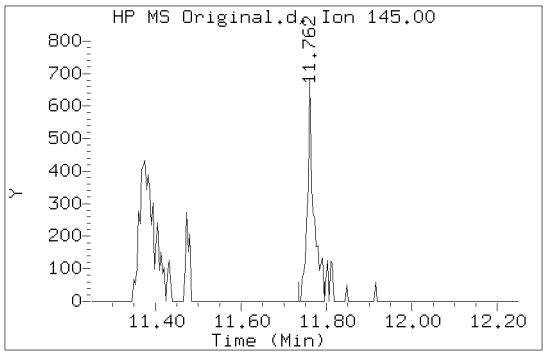
BEFORE
MASS
182
AREA
2803
HEIGHT
1581
19-Oct-2022
16:03
linh
pham



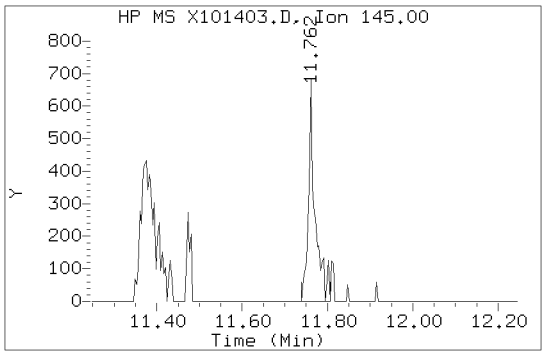
AFTER
MASS
182
AREA
2769
HEIGHT
1581
28-Oct-2022
16:41



BEFORE
MASS
145
AREA
701
HEIGHT
681
19-Oct-2022
16:03
linh
pham



AFTER
MASS
145
AREA
743
HEIGHT
681
28-Oct-2022
16:41

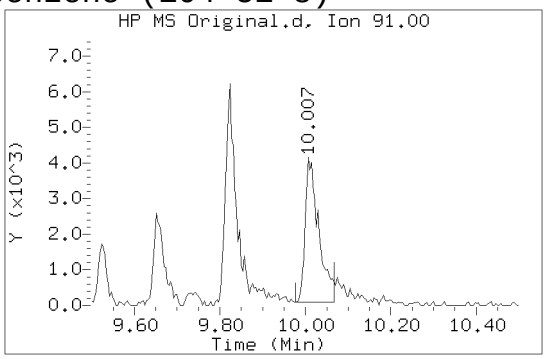


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

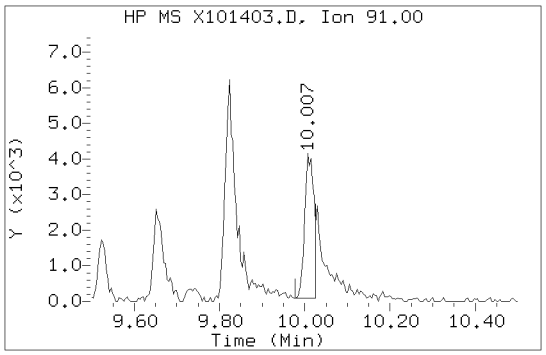
n-Butylbenzene (104-51-8)

Reason Code:

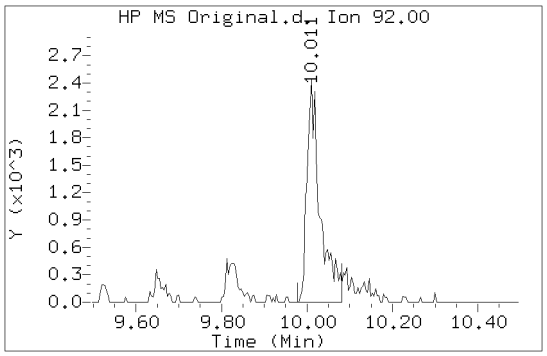
BEFORE
MASS
91
AREA
9015
HEIGHT
4066
19-Oct-2022
16:03
linh
pham



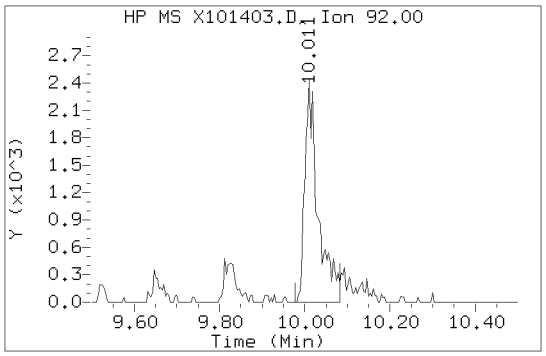
AFTER
MASS
91
AREA
6228
HEIGHT
4066
28-Oct-2022
16:41



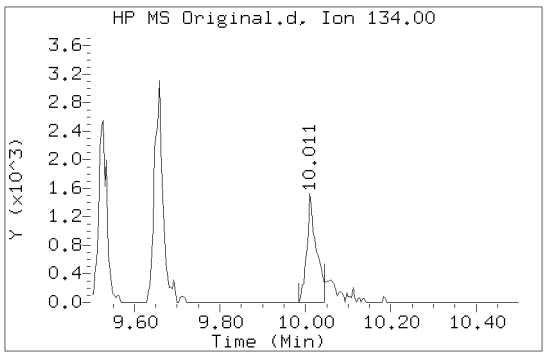
BEFORE
MASS
92
AREA
5256
HEIGHT
2434
19-Oct-2022
16:03
linh
pham



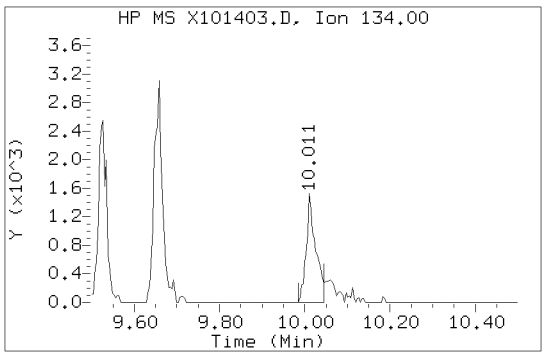
AFTER
MASS
92
AREA
5256
HEIGHT
2434
28-Oct-2022
16:41



BEFORE
MASS
134
AREA
2381
HEIGHT
1531
19-Oct-2022
16:03
linh
pham



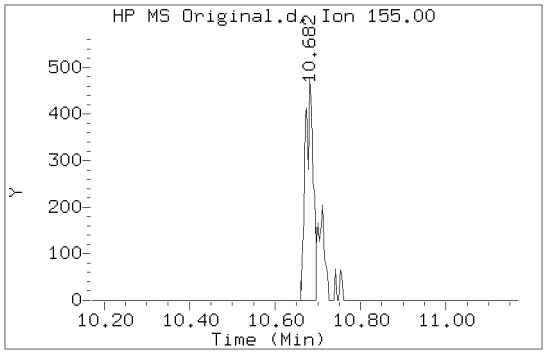
AFTER
MASS
134
AREA
2381
HEIGHT
1531
28-Oct-2022
16:41



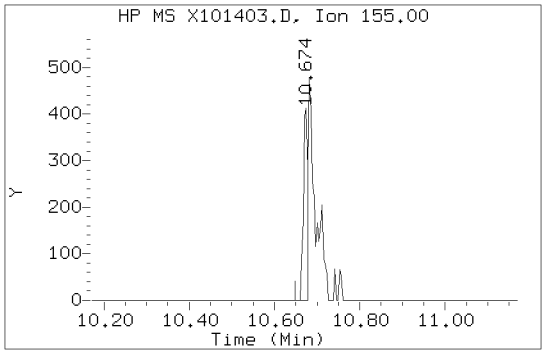
1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

BEFORE
MASS
155
AREA
635
HEIGHT
476
19-Oct-2022
16:03
linh
pham



AFTER
MASS
155
AREA
303
HEIGHT
413
28-Oct-2022
16:41



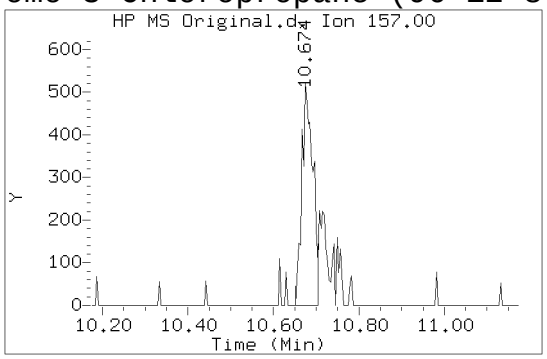
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101403.D
Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

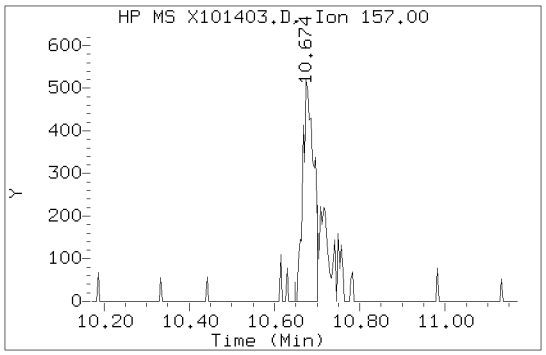
BEFORE

MASS
157
AREA
956
HEIGHT
520
19-Oct-2022
16:03
linh
pham



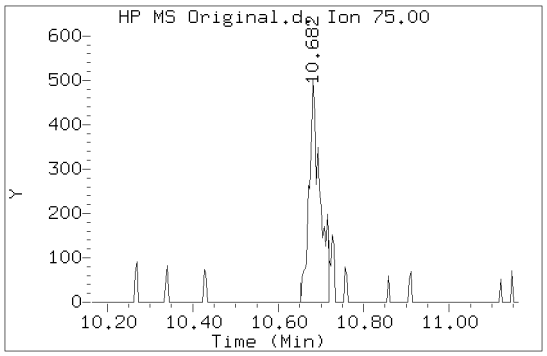
AFTER

MASS
157
AREA
933
HEIGHT
520
28-Oct-2022
16:41



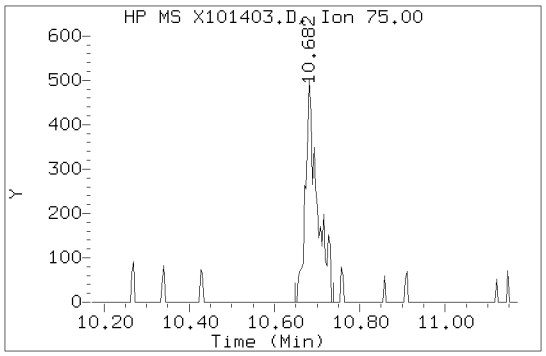
BEFORE

MASS
75
AREA
886
HEIGHT
501
19-Oct-2022
16:03
linh
pham



AFTER

MASS
75
AREA
968
HEIGHT
501
28-Oct-2022
16:41

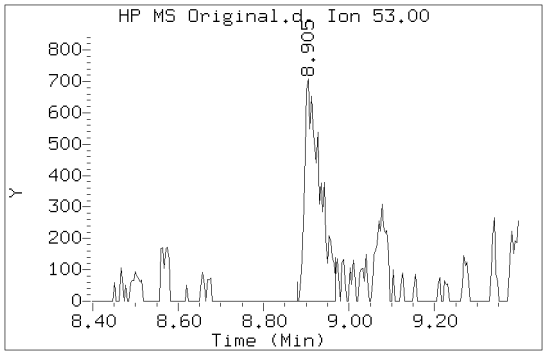


trans-1,4-Dichloro-2-butene (110-57-6)

Reason Code:

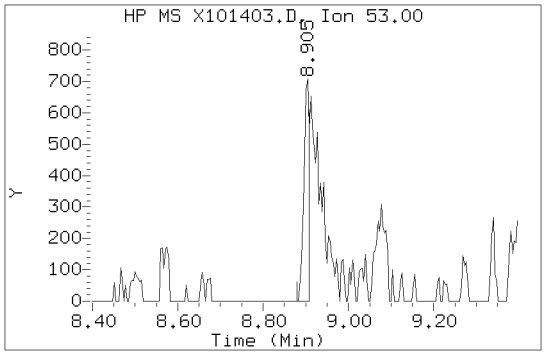
BEFORE

MASS
53
AREA
1798
HEIGHT
708
19-Oct-2022
16:03
linh
pham



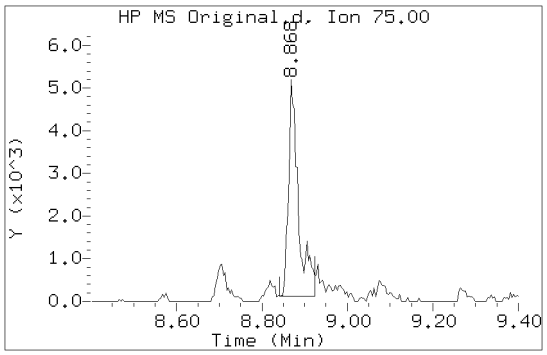
AFTER

MASS
53
AREA
654
HEIGHT
708
28-Oct-2022
16:41



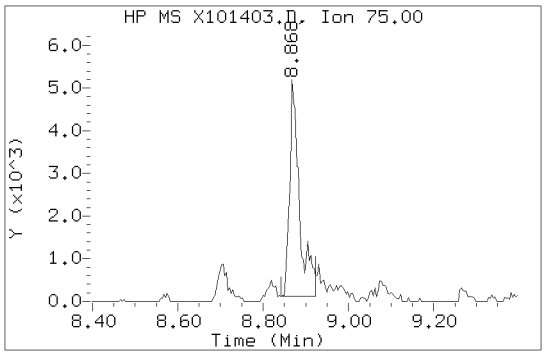
BEFORE

MASS
75
AREA
8120
HEIGHT
5072
19-Oct-2022
16:03
linh
pham



AFTER

MASS
75
AREA
8120
HEIGHT
5072
28-Oct-2022
16:41



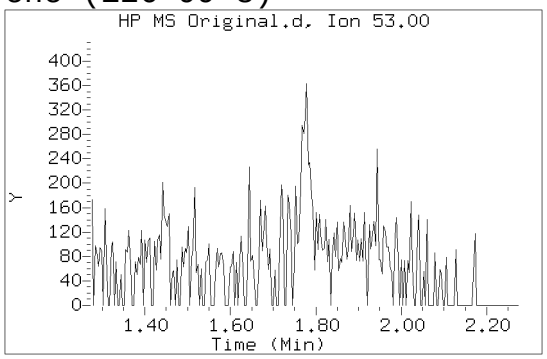
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Chloroprene (126-99-8)

Reason Code:

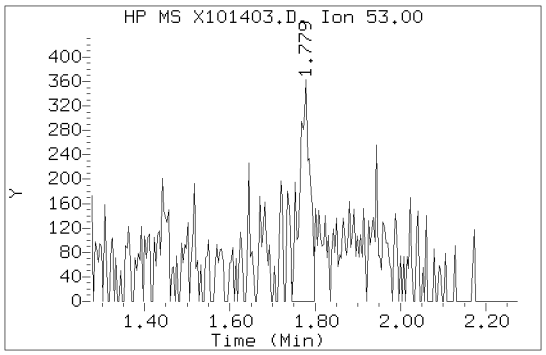
BEFORE

MASS
53
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



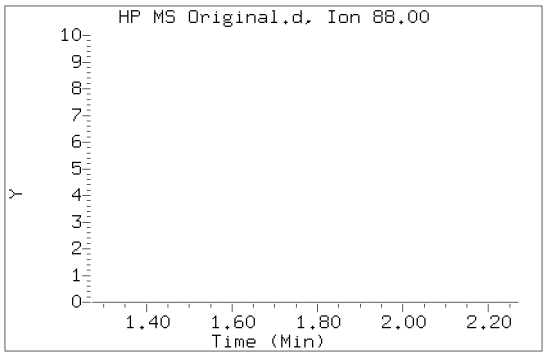
AFTER

MASS
53
AREA
621
HEIGHT
363
28-Oct-2022
16:41



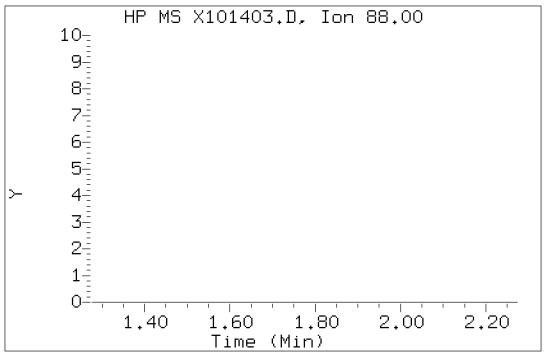
BEFORE

MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
88
AREA
0
HEIGHT
0
28-Oct-2022
16:41

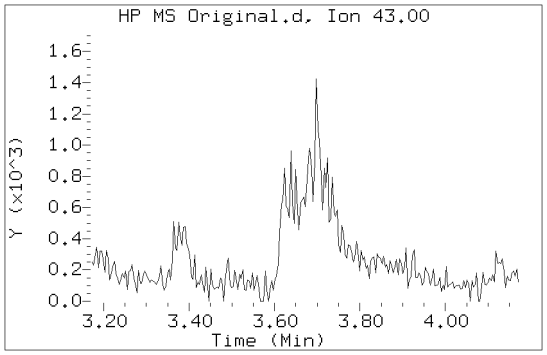


Ethyl Acetate (141-78-6)

Reason Code:

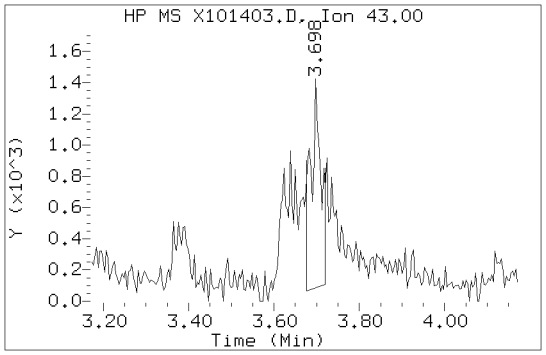
BEFORE

MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



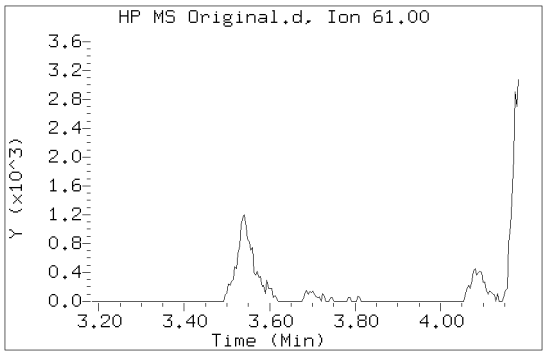
AFTER

MASS
43
AREA
2349
HEIGHT
1337
28-Oct-2022
16:41



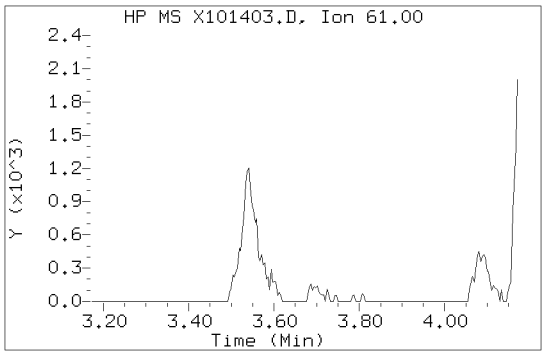
BEFORE

MASS
61
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
61
AREA
0
HEIGHT
0
28-Oct-2022
16:41



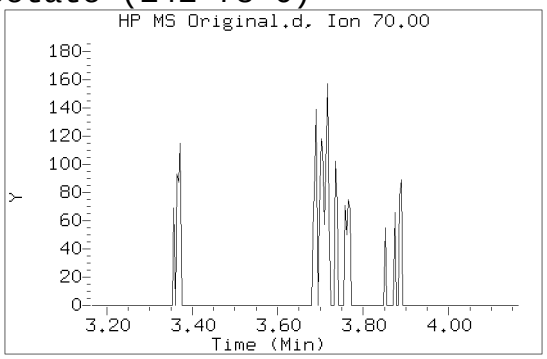
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Ethyl Acetate (141-78-6)

Reason Code:

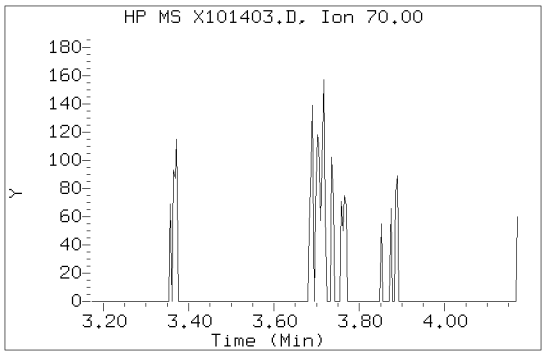
BEFORE

MASS
70
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
70
AREA
0
HEIGHT
0
28-Oct-2022
16:41

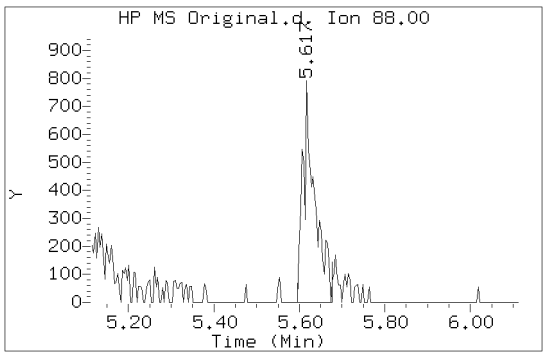


1,4-Dioxane ()

Reason Code:

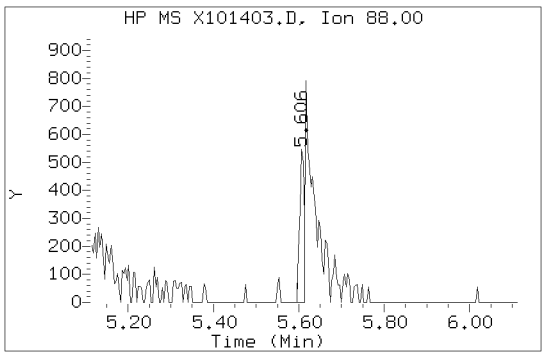
BEFORE

MASS
88
AREA
1554
HEIGHT
792
19-Oct-2022
16:03
linh
pham



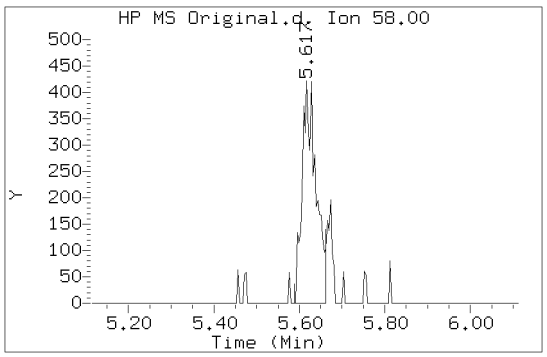
AFTER

MASS
88
AREA
417
HEIGHT
548
28-Oct-2022
16:41



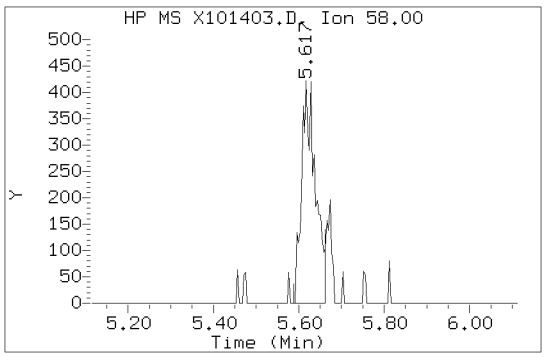
BEFORE

MASS
58
AREA
969
HEIGHT
422
19-Oct-2022
16:03
linh
pham



AFTER

MASS
58
AREA
969
HEIGHT
422
28-Oct-2022
16:41

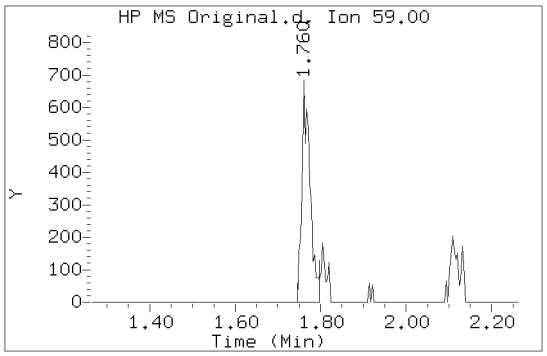


Diethyl ether (60-29-7)

Reason Code:

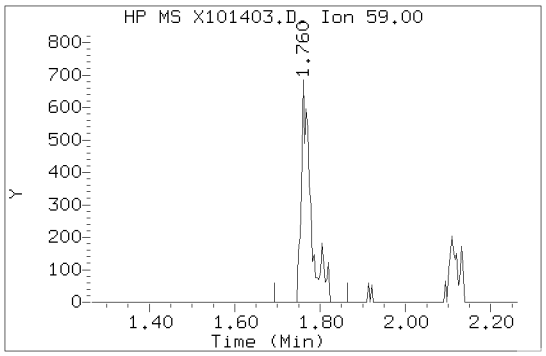
BEFORE

MASS
59
AREA
935
HEIGHT
685
19-Oct-2022
16:03
linh
pham



AFTER

MASS
59
AREA
1081
HEIGHT
685
28-Oct-2022
16:41

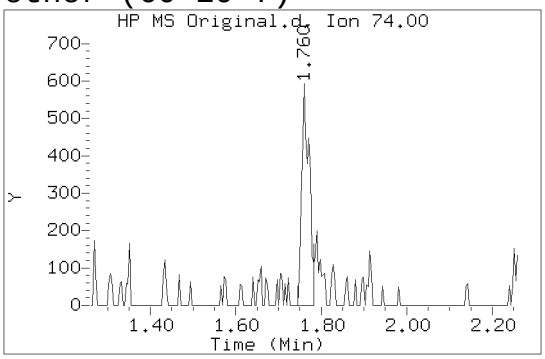


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

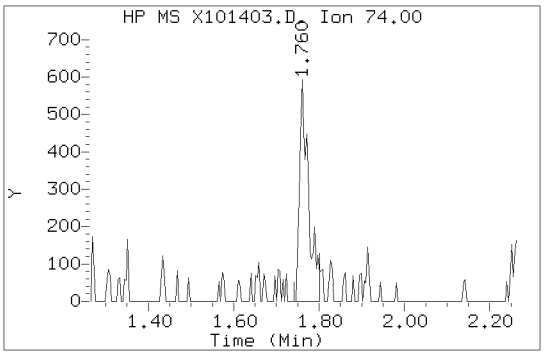
Diethyl ether (60-29-7)

Reason Code:

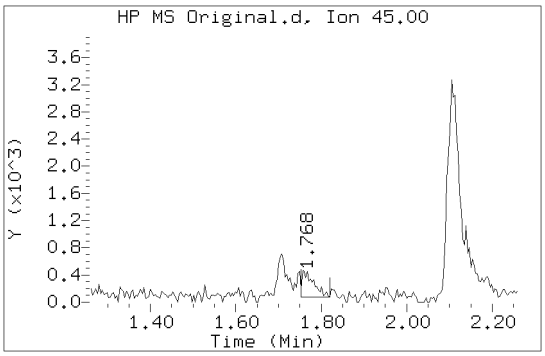
BEFORE
MASS
74
AREA
744
HEIGHT
593
19-Oct-2022
16:03
linh
pham



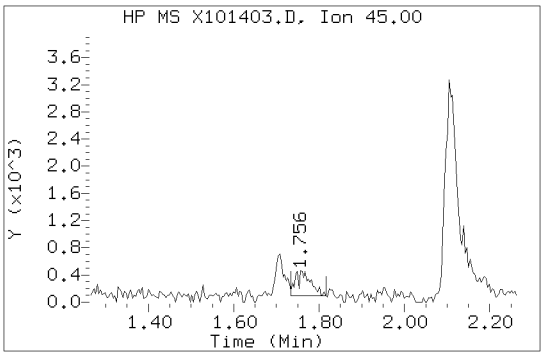
AFTER
MASS
74
AREA
883
HEIGHT
593
28-Oct-2022
16:41



BEFORE
MASS
45
AREA
736
HEIGHT
380
19-Oct-2022
16:03
linh
pham



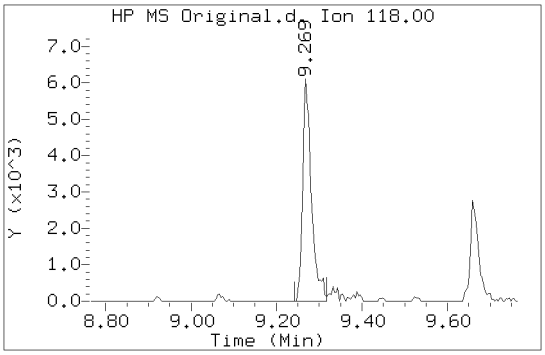
AFTER
MASS
45
AREA
927
HEIGHT
375
28-Oct-2022
16:41



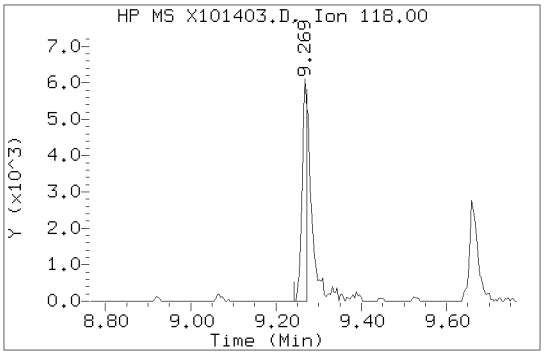
alpha-Methylstyrene (98-83-9)

Reason Code:

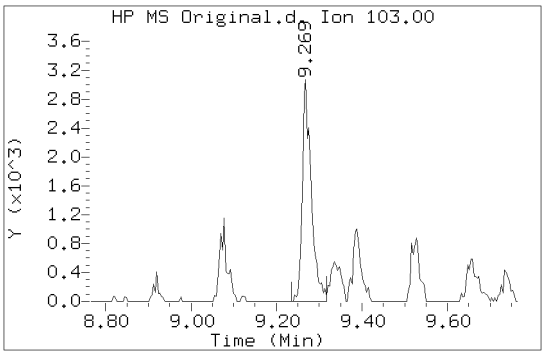
BEFORE
MASS
118
AREA
8942
HEIGHT
6107
19-Oct-2022
16:03
linh
pham



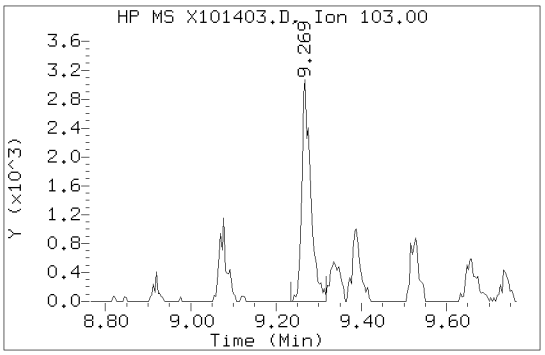
AFTER
MASS
118
AREA
5074
HEIGHT
6107
28-Oct-2022
16:41



BEFORE
MASS
103
AREA
4562
HEIGHT
3070
19-Oct-2022
16:03
linh
pham



AFTER
MASS
103
AREA
4562
HEIGHT
3070
28-Oct-2022
16:41

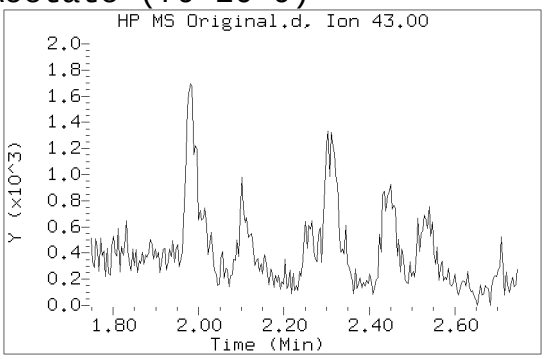


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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Methyl Acetate (79-20-9)

BEFORE

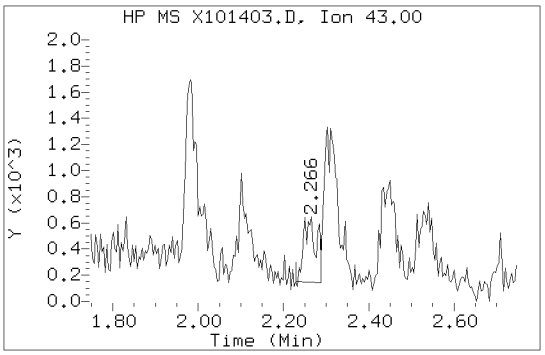
MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

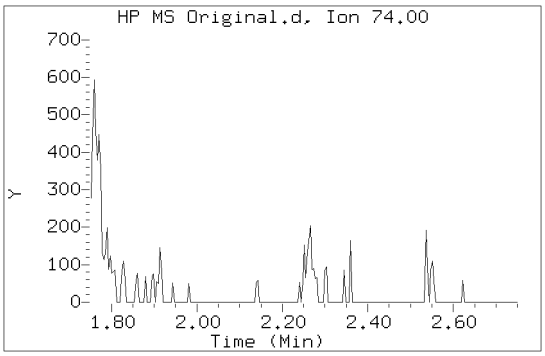
MASS
43
AREA
1043
HEIGHT
500
28-Oct-2022
16:41

Reason Code:



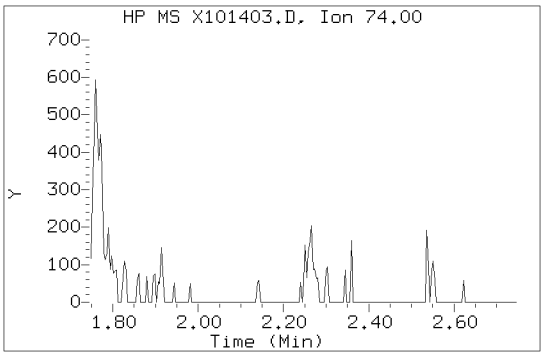
BEFORE

MASS
74
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

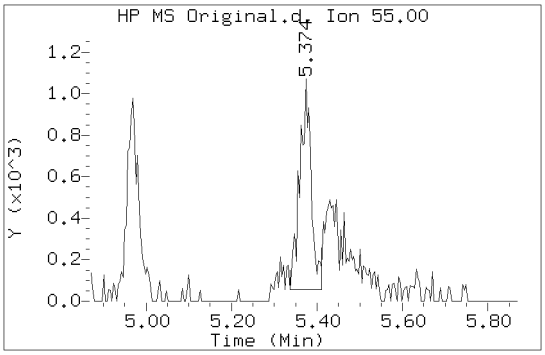
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AREA
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HEIGHT
0
28-Oct-2022
16:41



Methylcyclohexane (108-87-2)

BEFORE

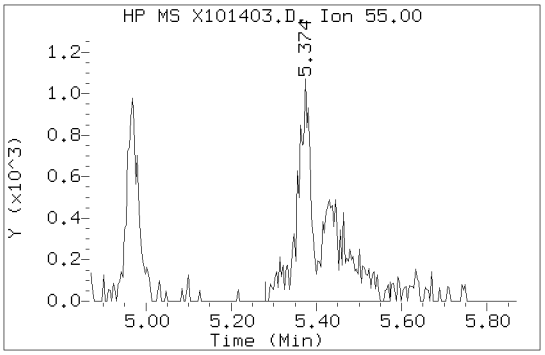
MASS
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AREA
1898
HEIGHT
1014
19-Oct-2022
16:03
linh
pham



AFTER

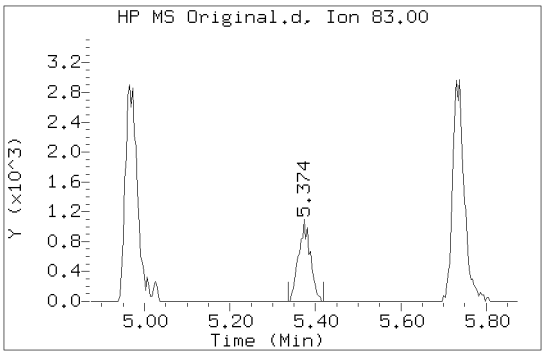
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HEIGHT
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28-Oct-2022
16:41

Reason Code:



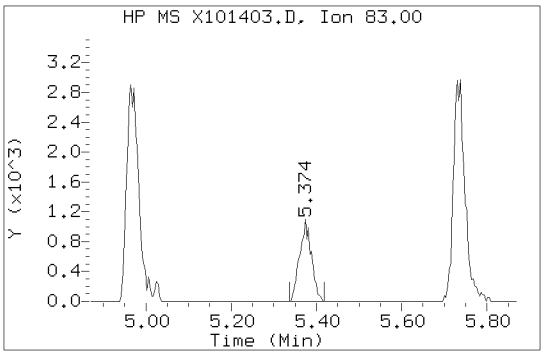
BEFORE

MASS
83
AREA
2109
HEIGHT
1096
19-Oct-2022
16:03
linh
pham



AFTER

MASS
83
AREA
2109
HEIGHT
1096
28-Oct-2022
16:41



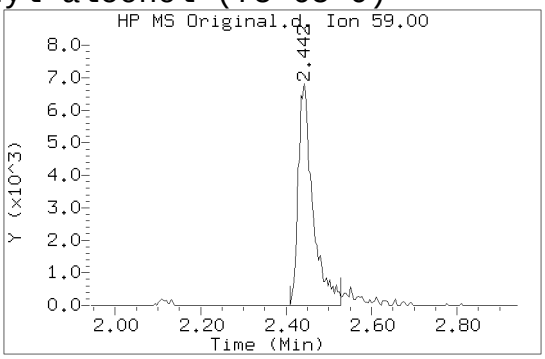
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Tert-Butyl alcohol (75-65-0)

Reason Code:

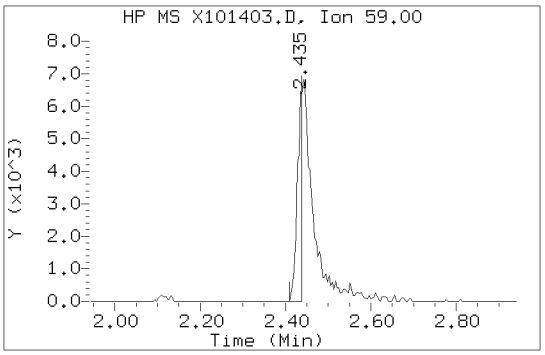
BEFORE

MASS
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AREA
16421
HEIGHT
6820
19-Oct-2022
16:03
linh
pham



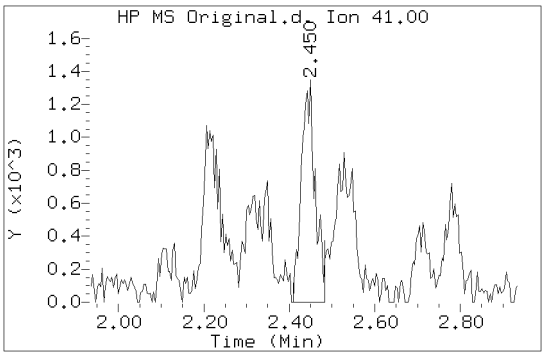
AFTER

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AREA
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6477
28-Oct-2022
16:41



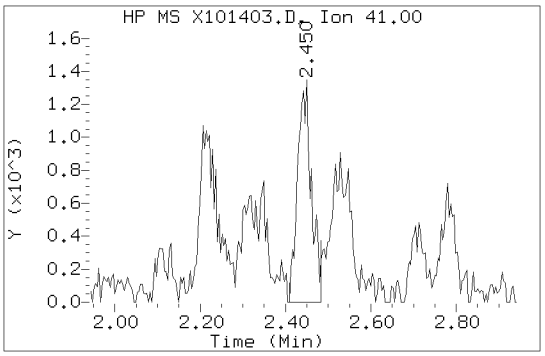
BEFORE

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AREA
3048
HEIGHT
1348
19-Oct-2022
16:03
linh
pham



AFTER

MASS
41
AREA
3048
HEIGHT
1348
28-Oct-2022
16:41

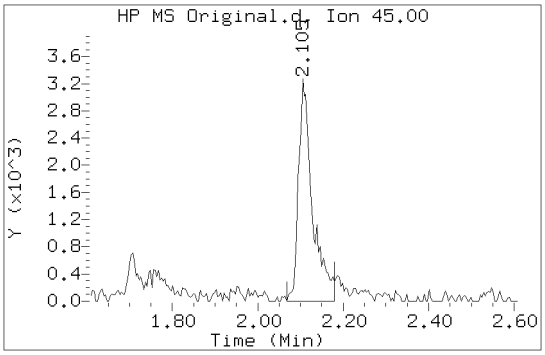


Isopropyl Alcohol (67-63-0)

Reason Code:

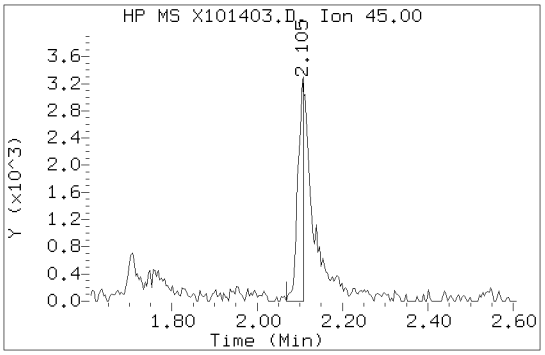
BEFORE

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AREA
7554
HEIGHT
3270
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16:03
linh
pham



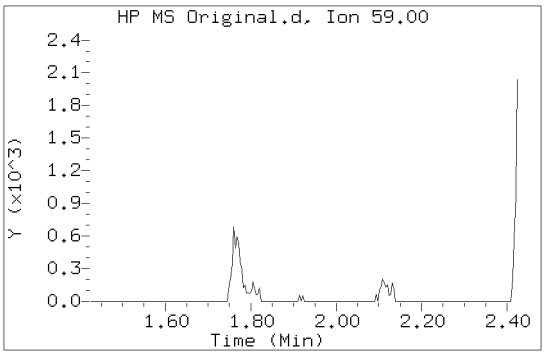
AFTER

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HEIGHT
3270
28-Oct-2022
16:41



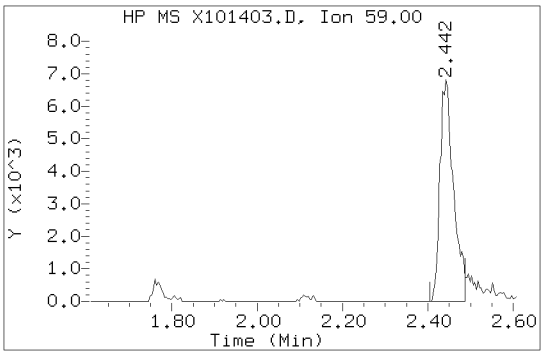
BEFORE

MASS
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AREA
15046
HEIGHT
6820
19-Oct-2022
16:03
linh
pham



AFTER

MASS
59
AREA
15046
HEIGHT
6820
28-Oct-2022
16:41



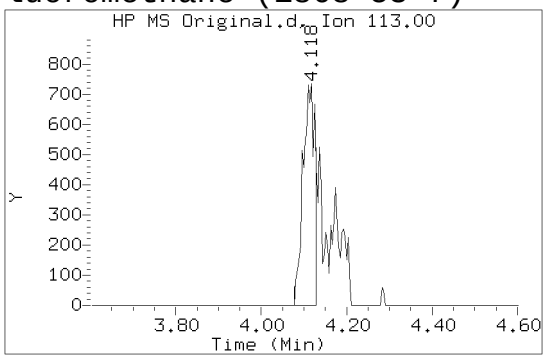
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Inj Date : 14-OCT-2022 12:08
InstruID : voa6.i
LabSampID : VSTD000.5

Dibromofluoromethane (1868-53-7)

Reason Code:

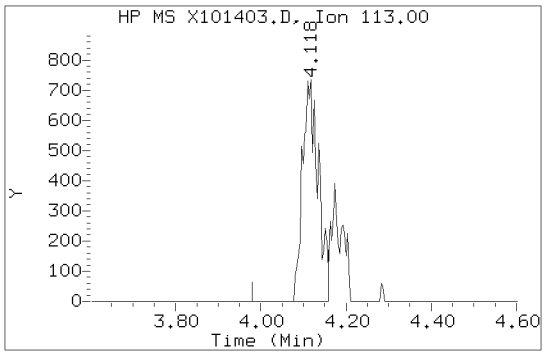
BEFORE

MASS
113
AREA
1438
HEIGHT
735
19-Oct-2022
16:03
linh
pham



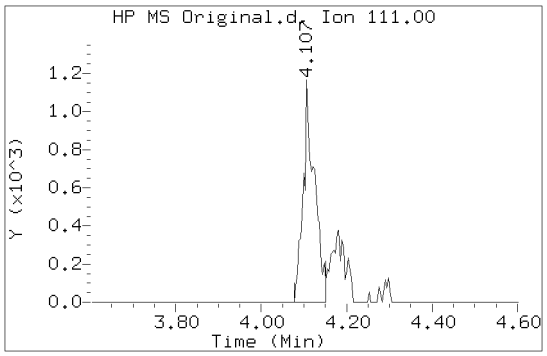
AFTER

MASS
113
AREA
1913
HEIGHT
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28-Oct-2022
16:41



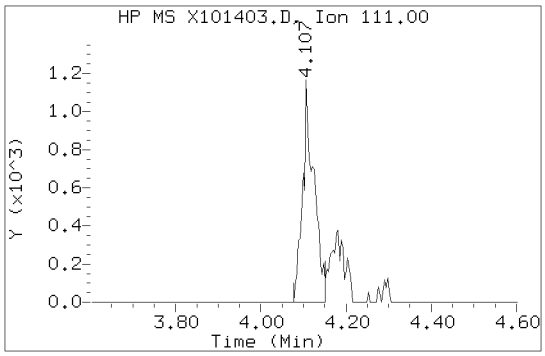
BEFORE

MASS
111
AREA
2163
HEIGHT
1166
19-Oct-2022
16:03
linh
pham



AFTER

MASS
111
AREA
2163
HEIGHT
1166
28-Oct-2022
16:41

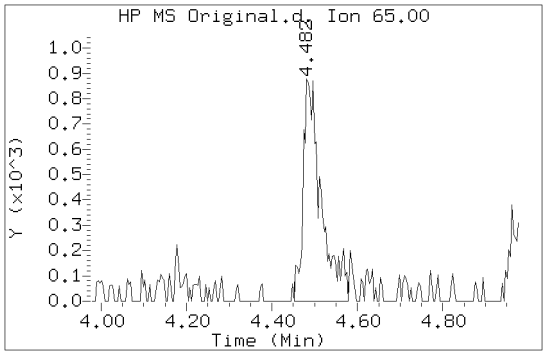


1,2-Dichloroethane-d4 (17060-07-0)

Reason Code:

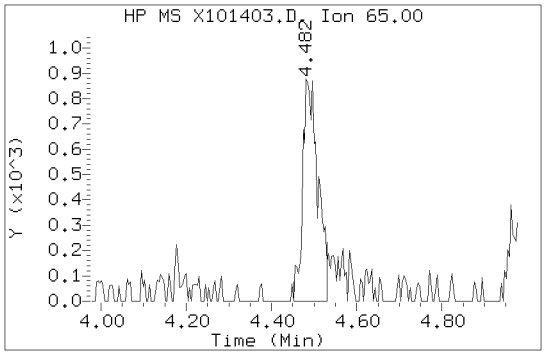
BEFORE

MASS
65
AREA
2591
HEIGHT
878
19-Oct-2022
16:03
linh
pham



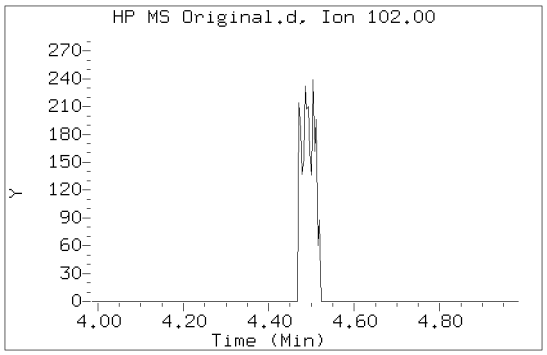
AFTER

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AREA
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28-Oct-2022
16:41



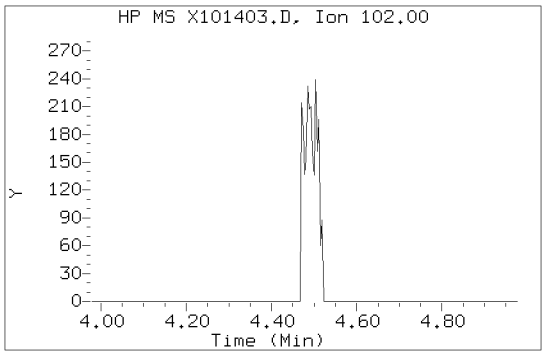
BEFORE

MASS
102
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
102
AREA
0
HEIGHT
0
28-Oct-2022
16:41



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D Page 1
Report Date: 28-Oct-2022 16:41

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 14-OCT-2022 12:29
Operator : PC Inst ID: voa6.i
Smp Info : VSTD001;VSTD001;1;3;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
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Meth Date : 28-Oct-2022 16:41 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 12:08 Cal File: X101403.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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)	425004	50.0000	
135 1,4-Dioxane	88	5.621	5.621	(1.343)	643	20.0000	19.88(M)
140 1,3-Butadiene	54	1.167	1.167	(0.279)	2264	1.00000	0.98
25 Methacrylonitrile	41	3.855	3.855	(0.921)	2902	1.00000	1.09(M)
12 Isobutyl Alcohol	43	4.695	4.695	(1.122)	10330	20.0000	13.86
13 Acetonitrile	39	2.206	2.206	(0.527)	3165	10.0000	9.55
14 Allyl Chloride	41	2.213	2.213	(0.529)	7427	1.00000	1.01
4 Propionitrile	54	3.683	3.683	(0.880)	3574	10.0000	9.57(M)
136 n-Hexane	57	2.775	2.775	(0.663)	3541	1.00000	0.93
72 trans-1,4-Dichloro-2-butene	53	8.916	8.916	(1.162)	967	1.00000	2.42(M)
23 Chloroprene	53	1.771	1.771	(0.423)	1039	1.00000	0.95(M)
145 alpha-Methylstyrene	118	9.272	9.272	(0.959)	7155	1.00000	1.28
200 Dimethyl Disulfide	94	6.209	6.209	(0.809)	7670	1.00000	0.95
139 Diethyl ether	59	1.760	1.760	(0.421)	2038	1.00000	0.99
130 Ethyl Acetate	43	3.705	3.705	(0.885)	3696	1.00000	0.12(M)
40 Methyl Methacrylate	41	5.624	5.624	(1.344)	2537	1.00000	0.96
49 Ethyl Methacrylate	69	6.802	6.802	(1.369)	5403	1.00000	1.07(M)
132 n-Butanol	56	5.321	5.321	(1.271)	687	20.0000	13.65
150 Allyl alcohol	57	2.775	2.775	(0.663)	3541	20.0000	18.79
166 1,2,3-Trimethylbenzene	105	9.737	9.737	(1.007)	12984	1.00000	0.99

162	Butyl acrylate	55	8.286	8.286 (1.080)	4975	1.00000	0.86
2	Dichlorodifluoromethane	85	0.976	0.976 (0.233)	3165	1.00000	(M)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D Page 2
Report Date: 28-Oct-2022 16:41

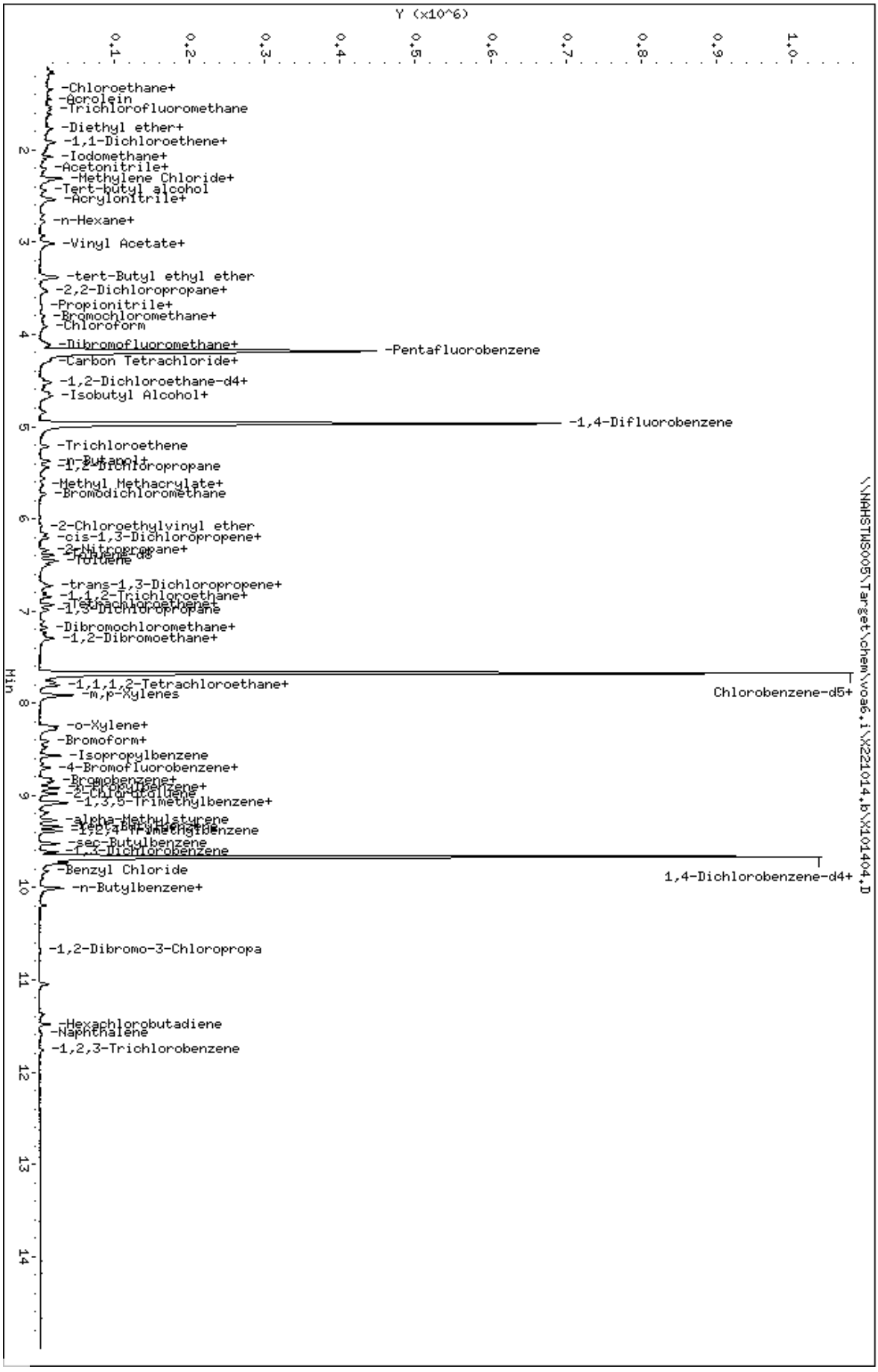
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	3 Chloromethane	50	1.081	1.081	(0.258)	4414	1.00000	0.89
	5 Vinyl Chloride	62	1.145	1.145	(0.274)	3501	1.00000	1.08
	6 Bromomethane	94	1.344	1.344	(0.321)	3052	1.00000	0.78(M)
	7 Chloroethane	64	1.407	1.407	(0.336)	1960	1.00000	1.00
	8 Trichlorofluoromethane	101	1.565	1.565	(0.374)	4411	1.00000	1.02
	9 Acrolein	56	1.452	1.452	(0.347)	571	2.00000	2.40(M)
	10 Acetone	43	1.981	1.981	(0.473)	1718	2.00000	1.83(M)
	11 1,1-Dichloroethene	96	1.913	1.913	(0.457)	2604	1.00000	0.94
	15 Iodomethane	142	2.030	2.030	(0.485)	3290	2.00000	4.07(T)
	16 Acrylonitrile	53	2.573	2.573	(0.615)	1067	2.00000	2.23
	17 Methylene Chloride	84	2.307	2.307	(0.551)	5391	1.00000	0.02(M)
	18 Methyl tert-butyl ether	73	2.543	2.543	(0.608)	10921	1.00000	1.07
	19 Carbon Disulfide	76	2.074	2.074	(0.496)	18801	2.00000	1.95
	20 trans-1,2-Dichloroethene	96	2.539	2.539	(0.607)	3392	1.00000	0.90
	21 Vinyl Acetate	43	3.027	3.027	(0.723)	15307	2.00000	1.81
	22 1,1-Dichloroethane	63	2.933	2.933	(0.701)	6356	1.00000	0.99
	24 2-Butanone	43	3.638	3.638	(0.869)	1847	2.00000	1.80(M)
	26 2,2-Dichloropropane	77	3.510	3.510	(0.839)	4773	1.00000	0.92
	27 cis-1,2-Dichloroethene	96	3.536	3.536	(0.845)	4390	1.00000	0.98
	28 Chloroform	83	3.911	3.911	(0.935)	6977	1.00000	1.00
	29 Bromochloromethane	128	3.803	3.803	(0.909)	2480	1.00000	1.01
$	30 Dibromofluoromethane	113	4.106	4.106	(0.981)	3430	1.00000	0.25
	31 1,1,1-Trichloroethane	97	4.084	4.084	(0.976)	5219	1.00000	0.95
	32 1,1-Dichloropropene	75	4.290	4.290	(0.863)	4945	1.00000	0.98(M)
	33 1,2-Dichloroethane	62	4.567	4.567	(0.919)	4175	1.00000	0.90(M)
	34 Carbon Tetrachloride	117	4.267	4.267	(0.859)	5474	1.00000	1.09
$	35 1,2-Dichloroethane-d4	65	4.492	4.492	(1.073)	4127	1.00000	0.32
*	36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	628491	50.0000	
	37 Benzene	78	4.519	4.519	(0.909)	16558	1.00000	1.04
	38 Trichloroethene	130	5.212	5.212	(1.049)	4672	1.00000	0.98
	39 Bromodichloromethane	83	5.729	5.729	(1.153)	5217	1.00000	1.00(M)
	41 2-Chloroethylvinyl ether	63	6.082	6.082	(1.224)	2521	2.00000	4.98(M)
	42 1,2-Dichloropropane	63	5.445	5.445	(1.096)	4201	1.00000	1.02(M)
	44 Dibromomethane	93	5.564	5.564	(1.120)	2801	1.00000	1.14
	45 4-Methyl-2-Pentanone	43	6.337	6.337	(0.826)	8728	2.00000	3.38
	46 cis-1,3-Dichloropropene	75	6.164	6.164	(1.241)	5733	1.00000	0.86
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	572034	50.0000	
$	48 Toluene-d8	98	6.397	6.397	(0.834)	12221	1.00000	0.85
	50 Toluene	91	6.453	6.453	(0.841)	16783	1.00000	0.98
	51 trans-1,3-Dichloropropene	75	6.693	6.693	(1.347)	4770	1.00000	0.90
	52 2-Hexanone	43	7.109	7.109	(0.927)	4026	2.00000	2.13(M)
	53 1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	3519	1.00000	1.11
	54 1,3-Dichloropropane	76	6.989	6.989	(0.911)	6899	1.00000	1.08
	55 Dibromochloromethane	129	7.176	7.176	(0.936)	5151	1.00000	1.71
	56 Tetrachloroethene	164	6.929	6.929	(0.903)	3980	1.00000	1.00
	57 1,2-Dibromoethane	107	7.270	7.270	(0.948)	3881	1.00000	0.98
	58 1-Chlorohexane	55	7.671	7.671	(1.544)	3958	1.00000	1.08
	59 Chlorobenzene	112	7.697	7.697	(1.003)	12650	1.00000	1.06
	60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	4923	1.00000	1.13
	61 Ethylbenzene	106	7.806	7.806	(1.018)	6198	1.00000	1.01
	62 m,p-Xylenes	106	7.911	7.911	(1.031)	15437	2.00000	2.08
	63 o-Xylene	106	8.249	8.249	(1.075)	7774	1.00000	1.07

64 Styrene	104	8.278	8.278 (1.079)	11888	1.00000	1.02
66 Bromoform	173	8.417	8.417 (1.097)	3244	1.00000	2.25(T)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	67 Isopropylbenzene	105	8.567	8.567	(1.117)	17676	1.00000	1.00
	68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	4913	1.00000	0.99(M)
$	69 4-Bromofluorobenzene	95	8.706	8.706	(1.135)	5261	1.00000	0.68
*	70 1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	281322	50.0000	
	71 1,2,3-Trichloropropane	75	8.871	8.871	(0.918)	3342	1.00000	1.12(MH)
	73 n-Propylbenzene	91	8.920	8.920	(0.923)	19374	1.00000	0.77
	74 Bromobenzene	156	8.818	8.818	(0.912)	5909	1.00000	1.12
	75 1,3,5-Trimethylbenzene	105	9.073	9.073	(0.939)	14692	1.00000	1.03
	76 2-Chlorotoluene	91	8.979	8.979	(0.929)	14051	1.00000	1.10
	77 4-Chlorotoluene	91	9.084	9.084	(0.940)	15347	1.00000	1.09
	78 tert-Butylbenzene	119	9.343	9.343	(0.967)	12861	1.00000	1.03
	79 1,2,4-Trimethylbenzene	105	9.384	9.384	(0.971)	14933	1.00000	1.01
	81 sec-Butylbenzene	105	9.523	9.523	(0.985)	16994	1.00000	1.01
	82 p-Isopropyltoluene	119	9.650	9.650	(0.998)	14463	1.00000	0.97
	83 1,3-Dichlorobenzene	146	9.613	9.613	(0.995)	9499	1.00000	1.07
	84 1,4-Dichlorobenzene	146	9.688	9.688	(1.002)	11292	1.00000	1.22
	86 Benzyl Chloride	91	9.827	9.827	(1.281)	7112	1.00000	0.98
	87 n-Butylbenzene	91	10.010	10.010	(1.036)	11035	1.00000	0.94
	88 1,2-Dichlorobenzene	146	10.003	10.003	(1.035)	10311	1.00000	1.14
	89 1,2-Dibromo-3-Chloropropane	155	10.681	10.681	(1.105)	475	1.00000	2.92(M)
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	2554	1.00000	0.53
	92 Naphthalene	128	11.596	11.596	(1.200)	5559	1.00000	1.16(M)
	93 1,2,3-Trichlorobenzene	180	11.765	11.765	(1.217)	2577	1.00000	1.10(M)
M	94 1,2-Dichloroethylene (total)	96				7782	2.00000	
M	95 Xylenes (total)	106				23211	3.00000	
	141 Cyclohexane	56	4.129	4.129	(0.987)	4474	1.00000	0.91(H)
	138 Freon TF	101	1.925	1.925	(0.460)	2367	1.00000	0.90
	147 Methylcyclohexane	55	5.370	5.370	(1.081)	7819	1.00000	0.93(M)
	146 Methyl Acetate	43	2.258	2.258	(0.540)	1619	1.00000	0.87(M)
	148 Tert-Butyl alcohol	59	2.442	2.442	(0.584)	7925	20.0000	32.69(aM)
	149 Isopropyl Alcohol	45	2.108	2.108	(0.504)	4080	20.0000	37.79(M)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D
Date : 14-OCT-2022 12:29
Client ID: WSTD001
Sample Info: WSTD001;WSTD001;1;3;
Purge Volume: 5.0
Column phase: DB624

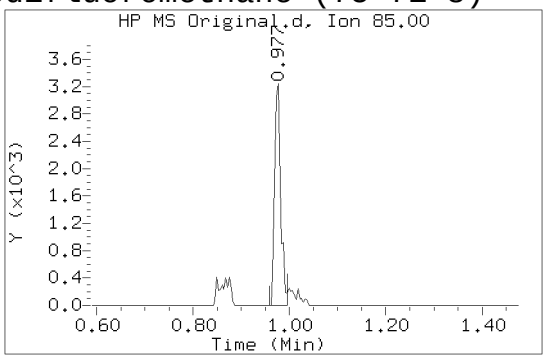
Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D
Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

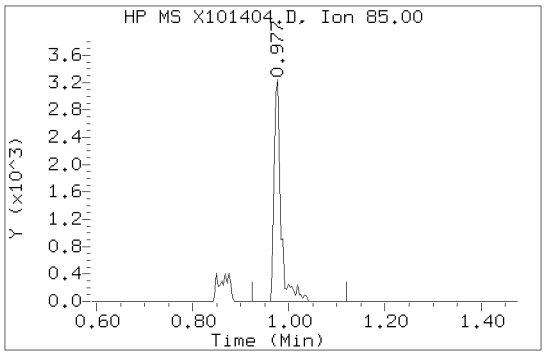
Dichlorodifluoromethane (75-71-8)

Reason Code:

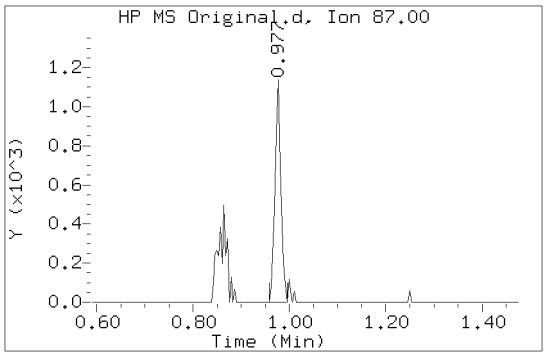
BEFORE
MASS
85
AREA
2812
HEIGHT
3241
19-Oct-2022
16:03
linh
pham



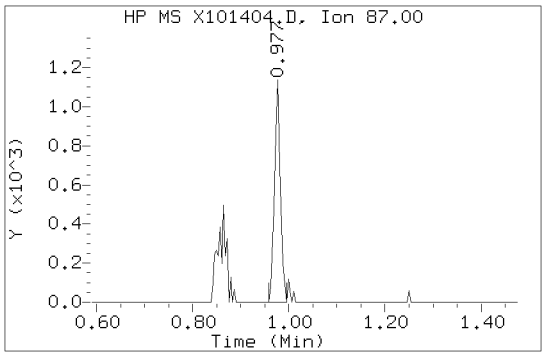
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3165
HEIGHT
3241
28-Oct-2022
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BEFORE
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HEIGHT
1137
19-Oct-2022
16:03
linh
pham



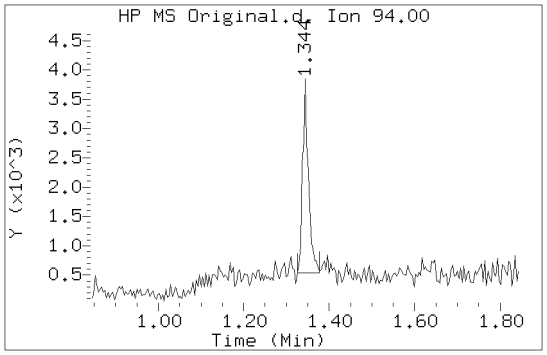
AFTER
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HEIGHT
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28-Oct-2022
16:41



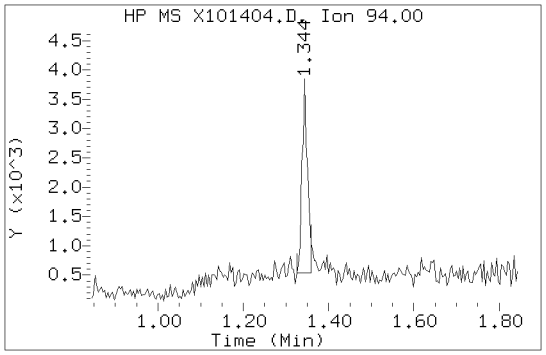
Bromomethane (74-83-9)

Reason Code:

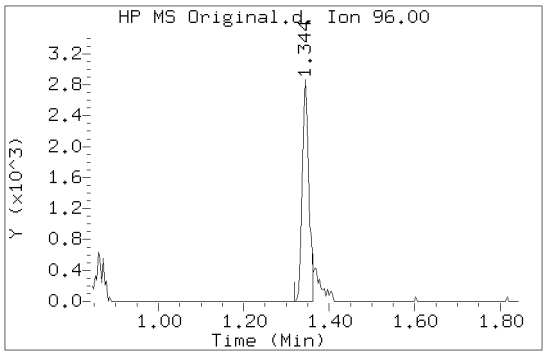
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94
AREA
3270
HEIGHT
3309
19-Oct-2022
16:03
linh
pham



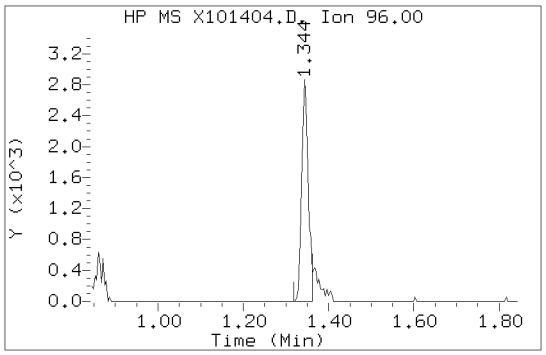
AFTER
MASS
94
AREA
3052
HEIGHT
3309
28-Oct-2022
16:41



BEFORE
MASS
96
AREA
3203
HEIGHT
2865
19-Oct-2022
16:03
linh
pham



AFTER
MASS
96
AREA
3203
HEIGHT
2865
28-Oct-2022
16:41

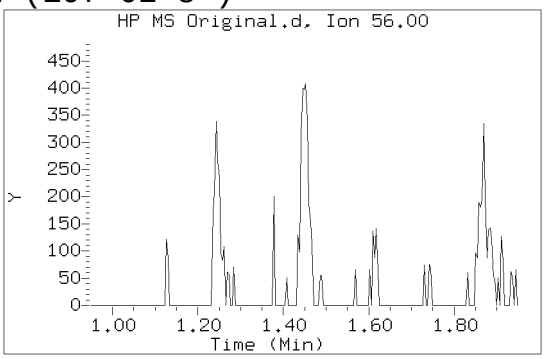


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InstruID : voa6.i
LabSampID : VSTD001

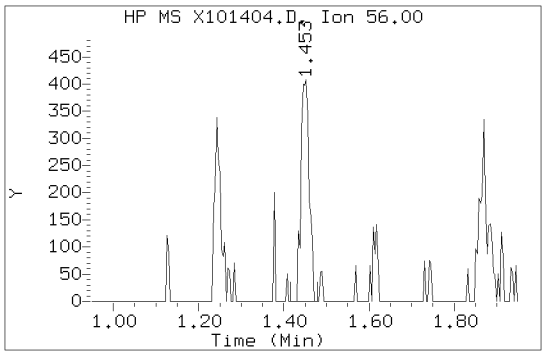
Acrolein (107-02-8)

Reason Code:

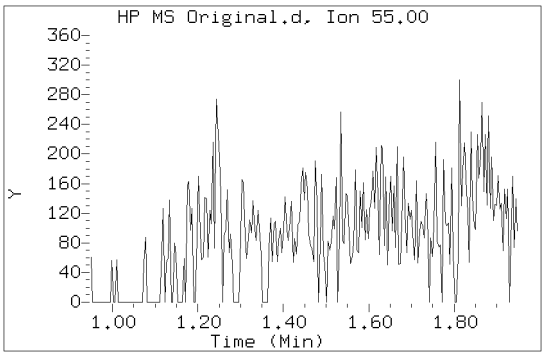
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MASS
56
AREA
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



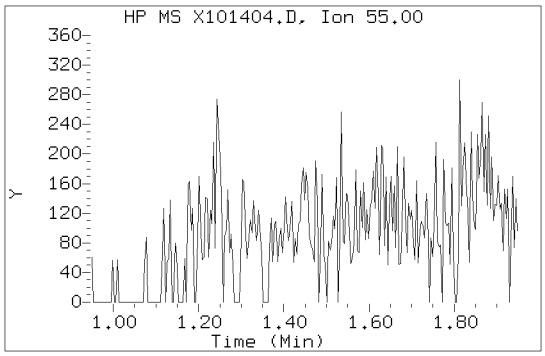
AFTER
MASS
56
AREA
571
HEIGHT
408
28-Oct-2022
16:41



BEFORE
MASS
55
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



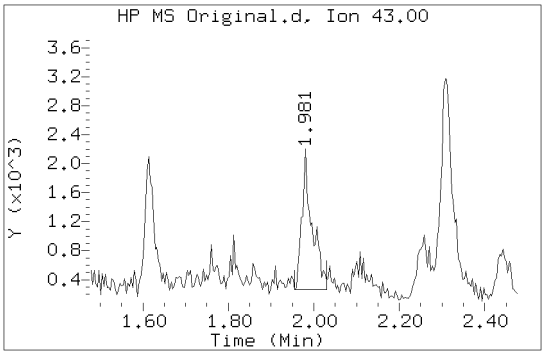
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HEIGHT
0
28-Oct-2022
16:41



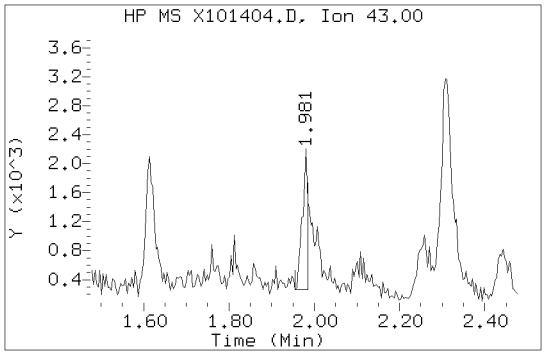
Acetone (67-64-1)

Reason Code:

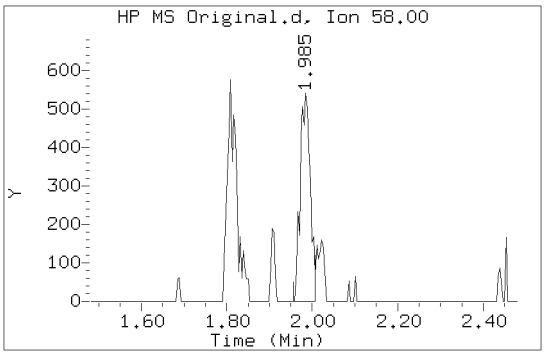
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MASS
43
AREA
3293
HEIGHT
1945
19-Oct-2022
16:03
linh
pham



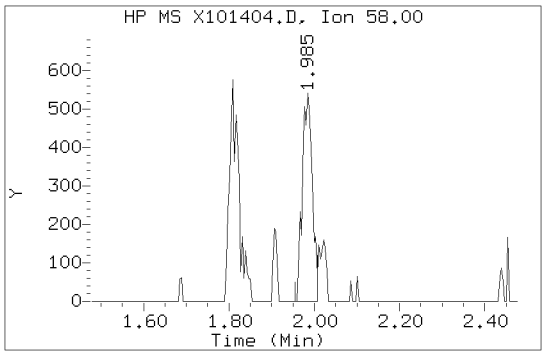
AFTER
MASS
43
AREA
1718
HEIGHT
1945
28-Oct-2022
16:41



BEFORE
MASS
58
AREA
905
HEIGHT
543
19-Oct-2022
16:03
linh
pham



AFTER
MASS
58
AREA
905
HEIGHT
543
28-Oct-2022
16:41

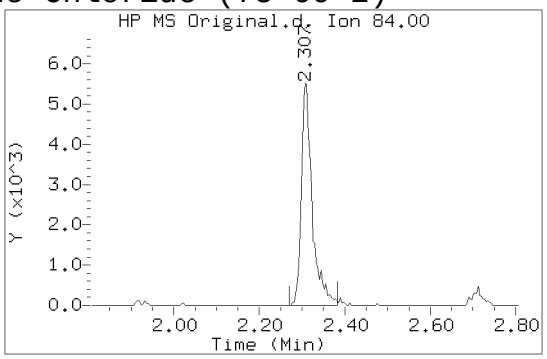


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D
Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

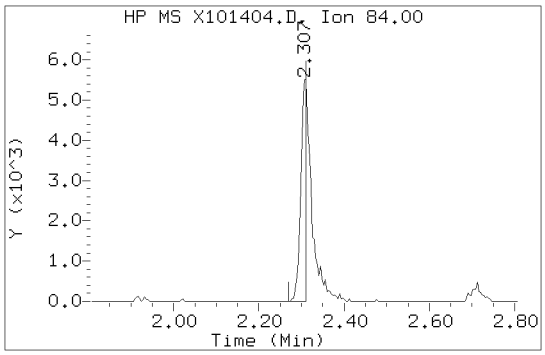
Methylene Chloride (75-09-2)

Reason Code:

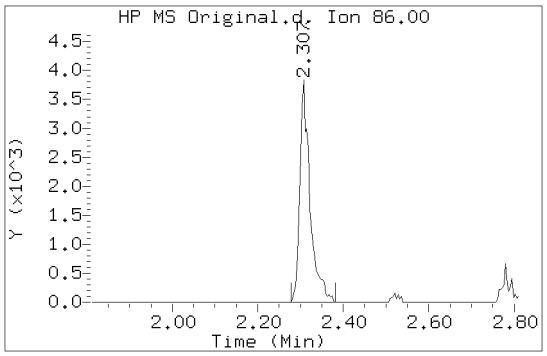
BEFORE
MASS
84
AREA
9976
HEIGHT
5505
19-Oct-2022
16:03
linh
pham



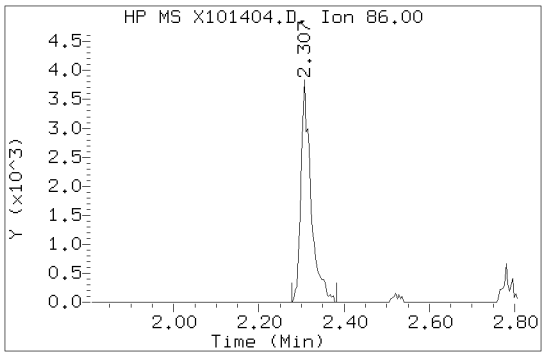
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AREA
5391
HEIGHT
5505
28-Oct-2022
16:41



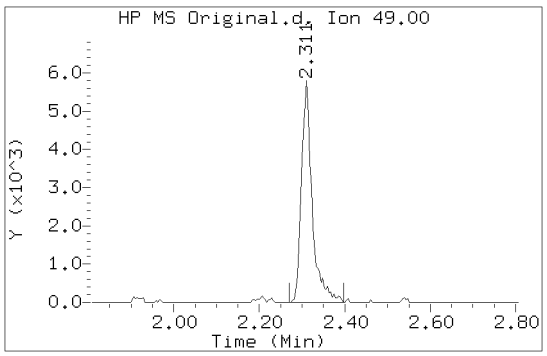
BEFORE
MASS
86
AREA
6509
HEIGHT
3836
19-Oct-2022
16:03
linh
pham



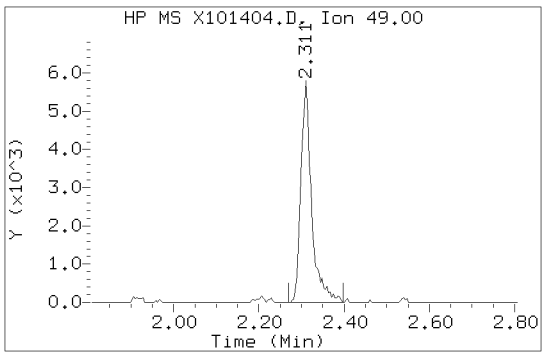
AFTER
MASS
86
AREA
6509
HEIGHT
3836
28-Oct-2022
16:41



BEFORE
MASS
49
AREA
10373
HEIGHT
5799
19-Oct-2022
16:03
linh
pham



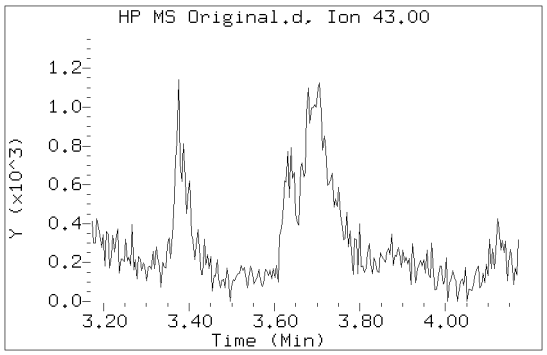
AFTER
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49
AREA
10373
HEIGHT
5799
28-Oct-2022
16:41



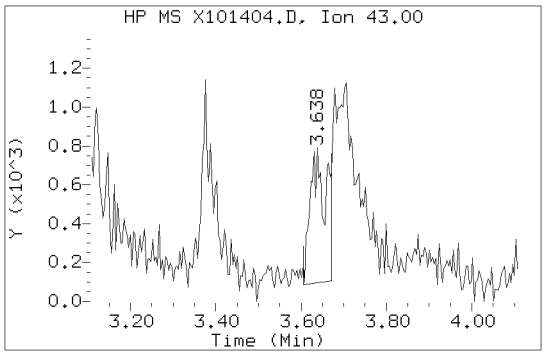
2-Butanone (78-93-3)

Reason Code:

BEFORE
MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
43
AREA
1847
HEIGHT
697
28-Oct-2022
16:41



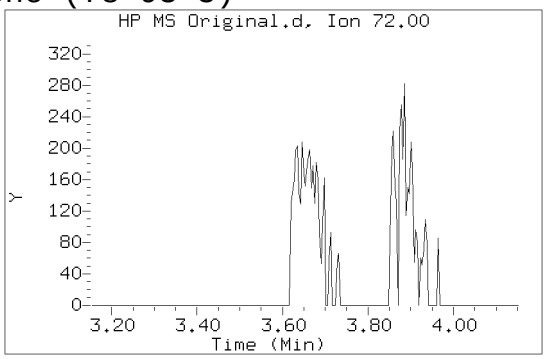
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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

2-Butanone (78-93-3)

Reason Code:

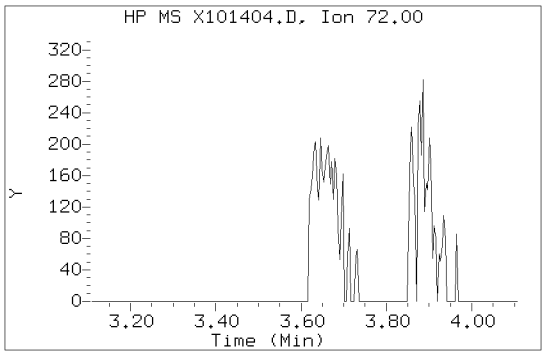
BEFORE

MASS
72
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
72
AREA
0
HEIGHT
0
28-Oct-2022
16:41

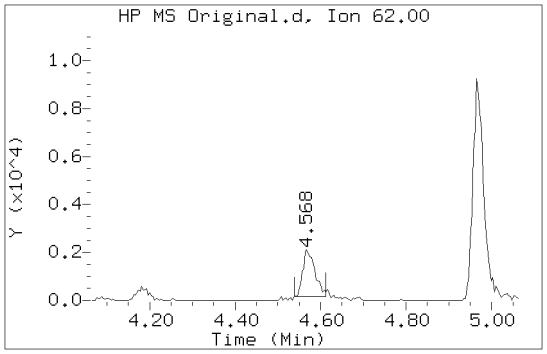


1,2-Dichloroethane (107-06-2)

Reason Code:

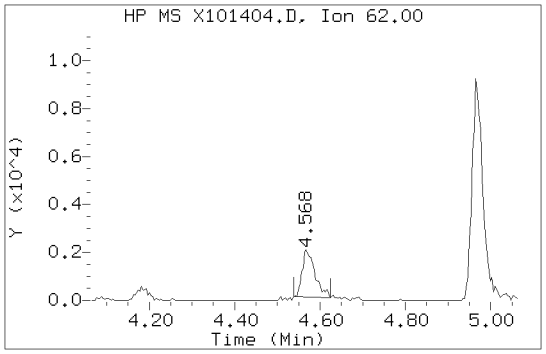
BEFORE

MASS
62
AREA
3920
HEIGHT
1945
19-Oct-2022
16:03
linh
pham



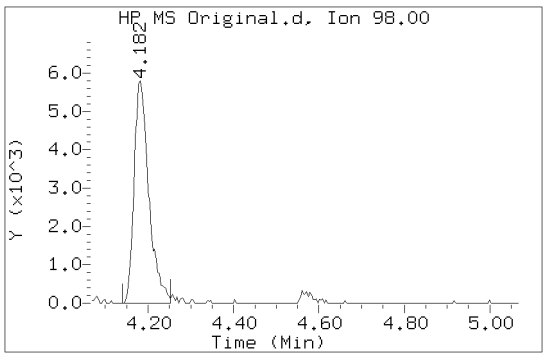
AFTER

MASS
62
AREA
4175
HEIGHT
1966
28-Oct-2022
16:41



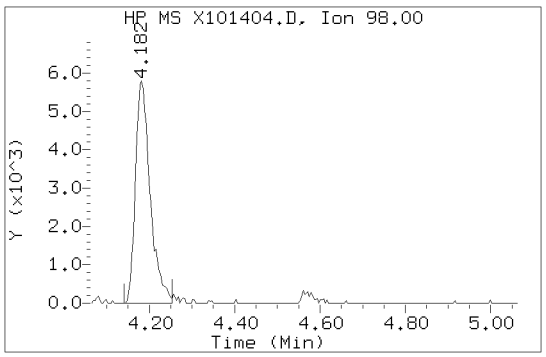
BEFORE

MASS
98
AREA
13920
HEIGHT
5797
19-Oct-2022
16:03
linh
pham



AFTER

MASS
98
AREA
13920
HEIGHT
5797
28-Oct-2022
16:41

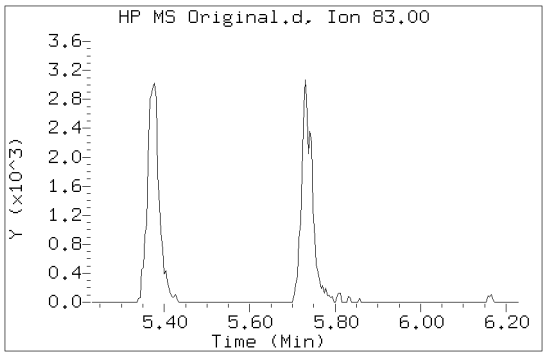


Bromodichloromethane (75-27-4)

Reason Code:

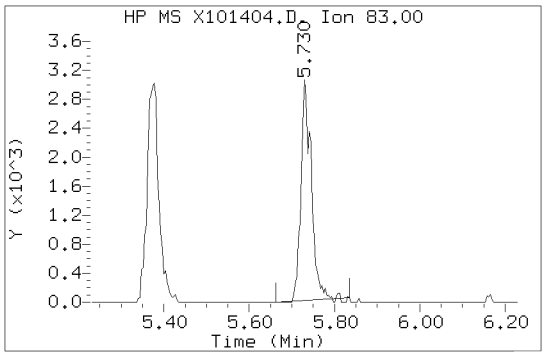
BEFORE

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83
AREA
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HEIGHT
0
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linh
pham



AFTER

MASS
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AREA
5217
HEIGHT
3043
28-Oct-2022
16:41

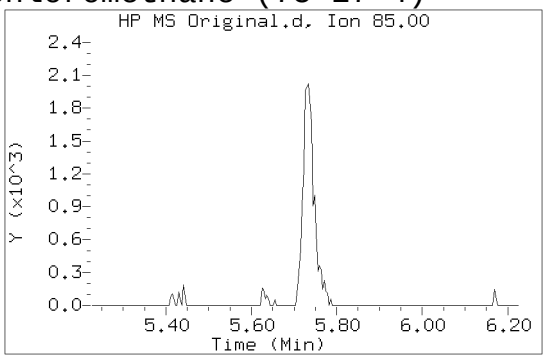


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D
Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

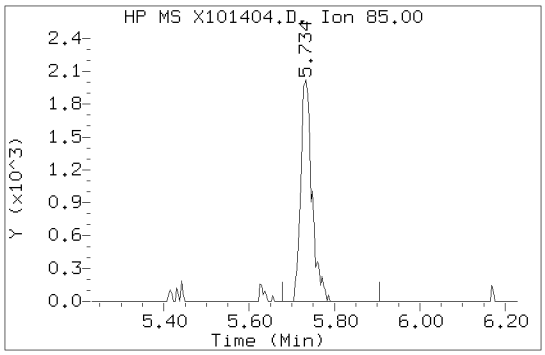
Bromodichloromethane (75-27-4)

Reason Code:

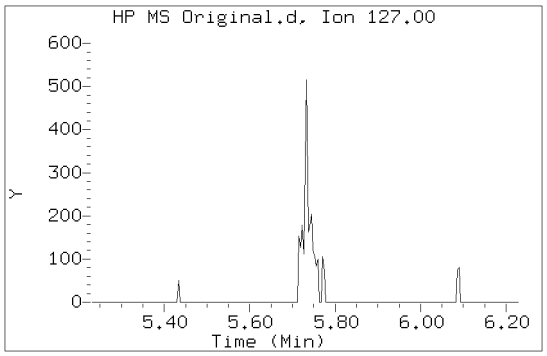
BEFORE
MASS
85
AREA
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



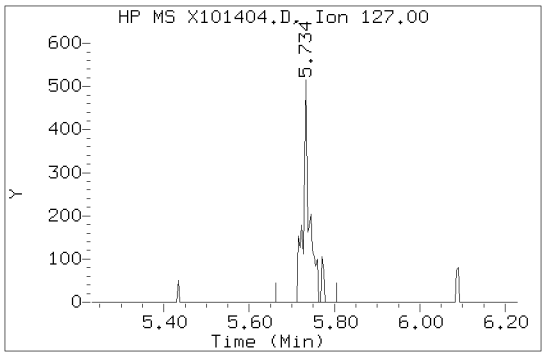
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MASS
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3799
HEIGHT
2023
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16:41



BEFORE
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AREA
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0
19-Oct-2022
16:03
linh
pham



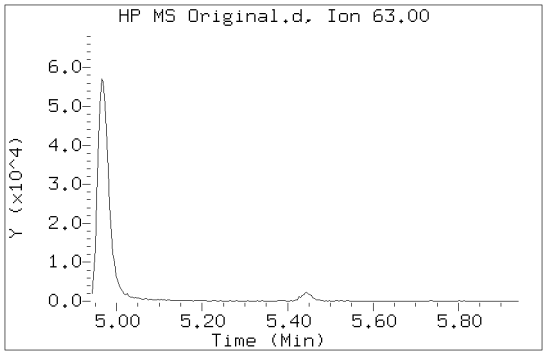
AFTER
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AREA
571
HEIGHT
515
28-Oct-2022
16:41



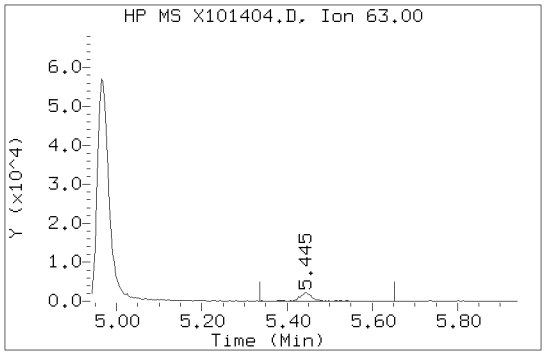
1,2-Dichloropropane (78-87-5)

Reason Code:

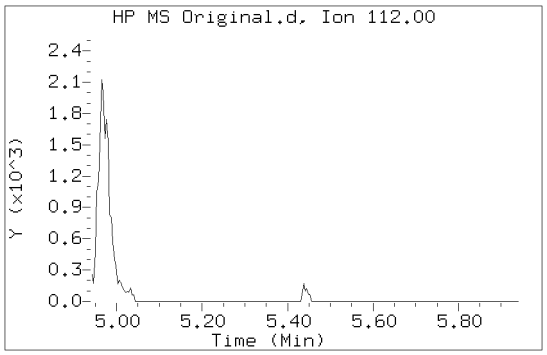
BEFORE
MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



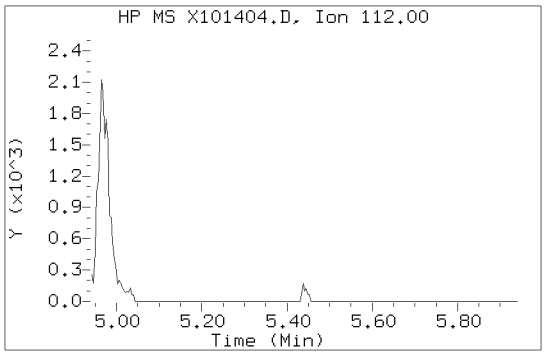
AFTER
MASS
63
AREA
4201
HEIGHT
2220
28-Oct-2022
16:41



BEFORE
MASS
112
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
112
AREA
0
HEIGHT
0
28-Oct-2022
16:41

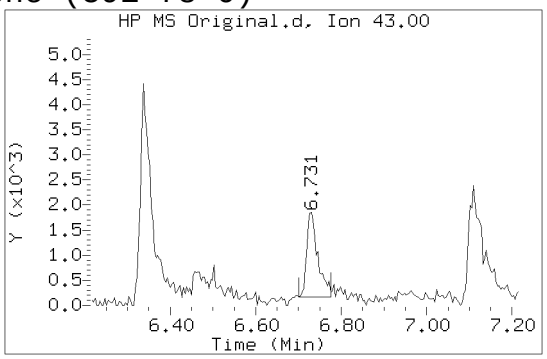


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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

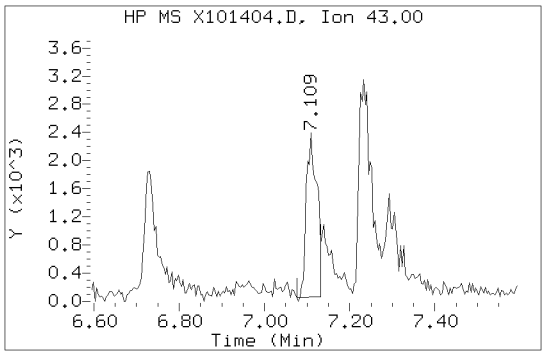
2-Hexanone (591-78-6)

Reason Code:

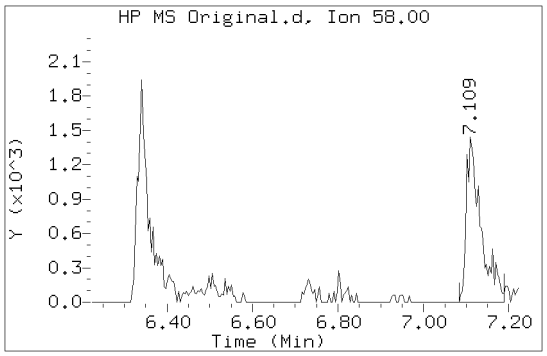
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MASS
43
AREA
3060
HEIGHT
1677
19-Oct-2022
16:03
linh
pham



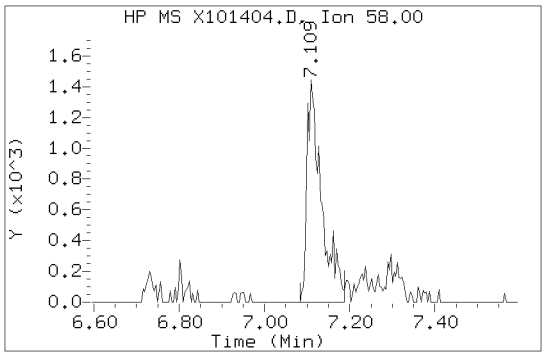
AFTER
MASS
43
AREA
4026
HEIGHT
2333
28-Oct-2022
16:41



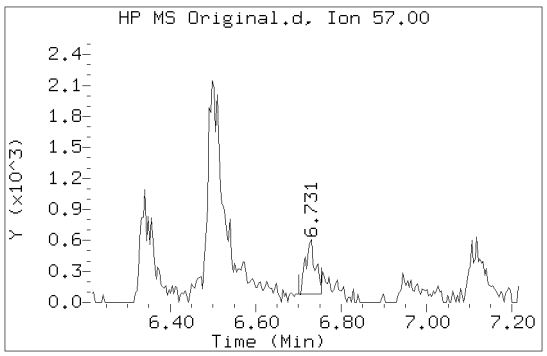
BEFORE
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58
AREA
3406
HEIGHT
1444
19-Oct-2022
16:03
linh
pham



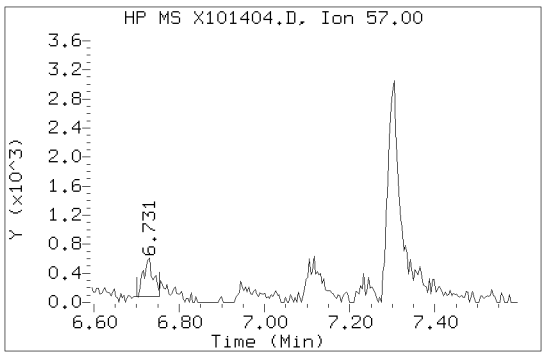
AFTER
MASS
58
AREA
3406
HEIGHT
1444
28-Oct-2022
16:41



BEFORE
MASS
57
AREA
844
HEIGHT
526
19-Oct-2022
16:03
linh
pham



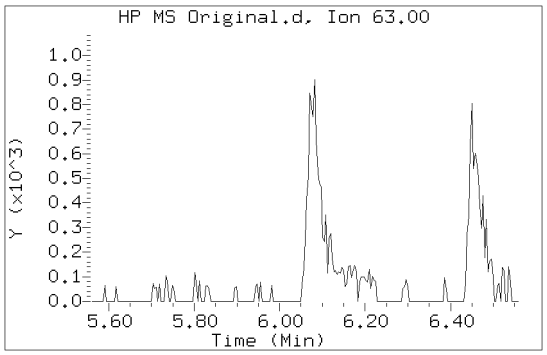
AFTER
MASS
57
AREA
844
HEIGHT
526
28-Oct-2022
16:41



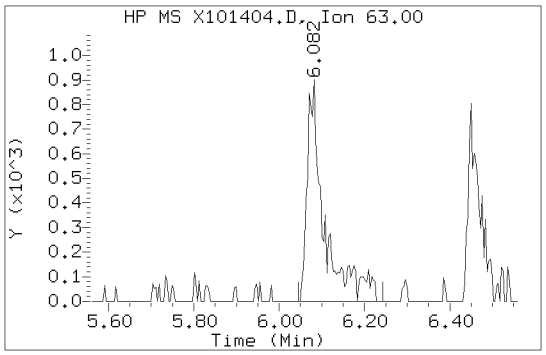
2-Chloroethylvinyl ether (110-75-8)

Reason Code:

BEFORE
MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
63
AREA
2521
HEIGHT
901
28-Oct-2022
16:41

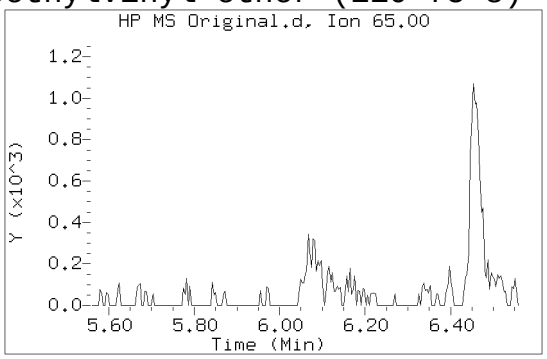


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InstruID : voa6.i
LabSampID : VSTD001

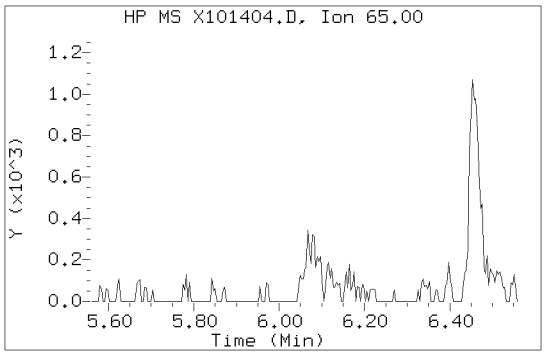
2-Chloroethylvinyl ether (110-75-8)

Reason Code:

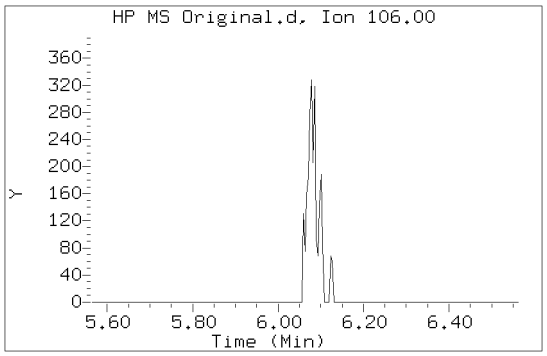
BEFORE
MASS
65
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



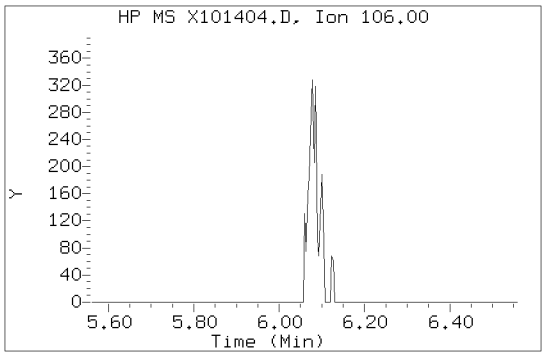
AFTER
MASS
65
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
106
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



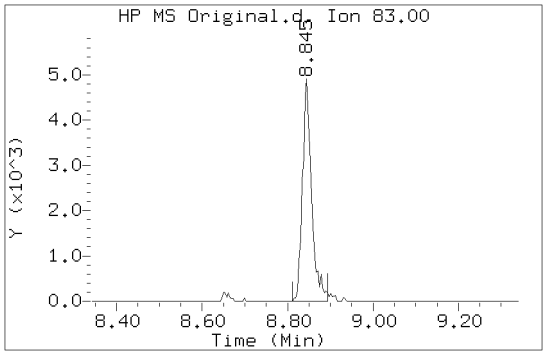
AFTER
MASS
106
AREA
0
HEIGHT
0
28-Oct-2022
16:41



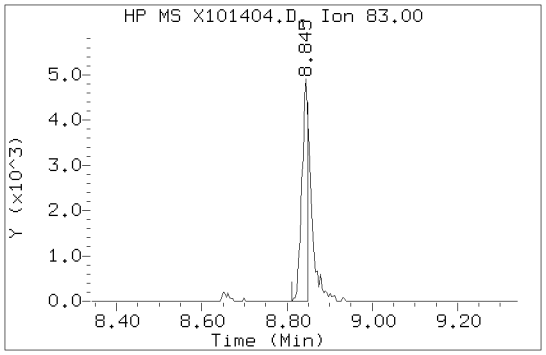
1,1,2,2-Tetrachloroethane (79-34-5)

Reason Code:

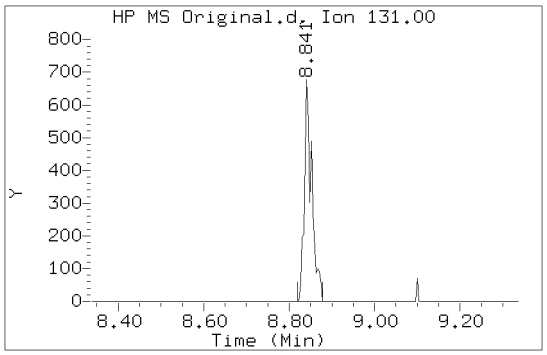
BEFORE
MASS
83
AREA
7488
HEIGHT
4910
19-Oct-2022
16:03
linh
pham



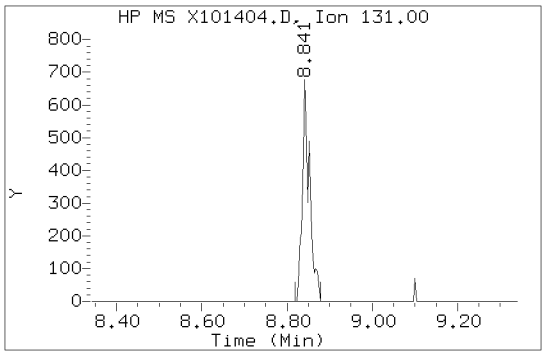
AFTER
MASS
83
AREA
4913
HEIGHT
4910
28-Oct-2022
16:41



BEFORE
MASS
131
AREA
827
HEIGHT
677
19-Oct-2022
16:03
linh
pham



AFTER
MASS
131
AREA
827
HEIGHT
677
28-Oct-2022
16:41

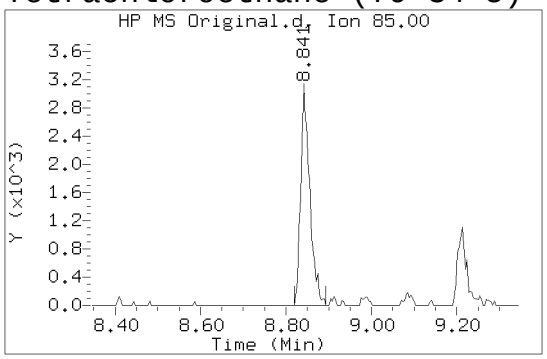


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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

1,1,2,2-Tetrachloroethane (79-34-5)

BEFORE

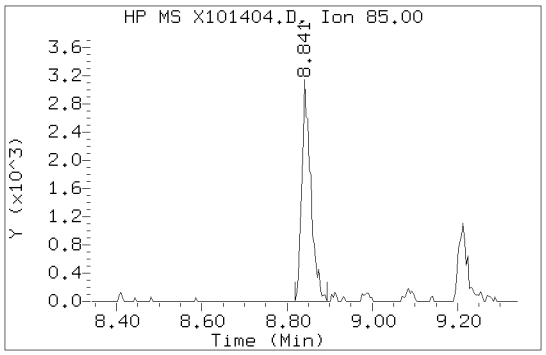
MASS
85
AREA
4723
HEIGHT
3147
19-Oct-2022
16:03
linh
pham



AFTER

MASS
85
AREA
4723
HEIGHT
3147
28-Oct-2022
16:41

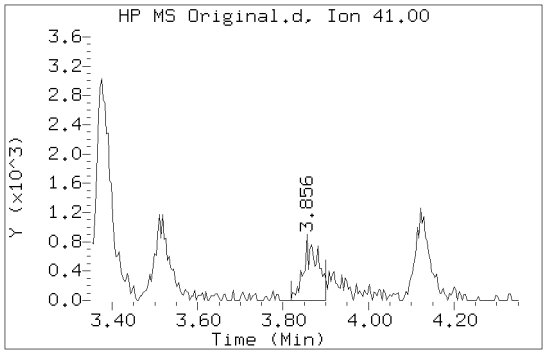
Reason Code:



Methacrylonitrile (126-98-7)

BEFORE

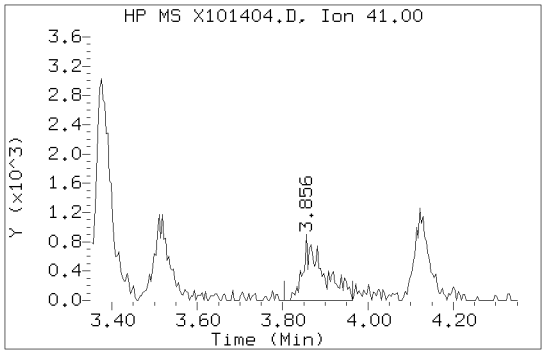
MASS
41
AREA
2040
HEIGHT
906
19-Oct-2022
16:03
linh
pham



AFTER

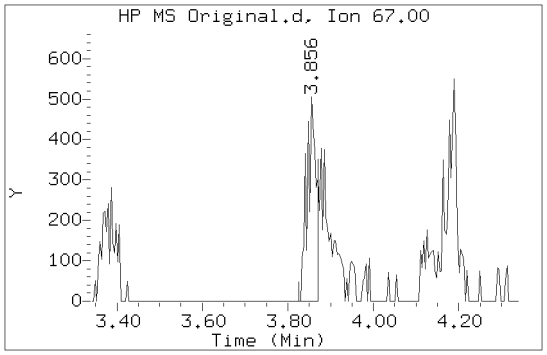
MASS
41
AREA
2902
HEIGHT
906
28-Oct-2022
16:41

Reason Code:



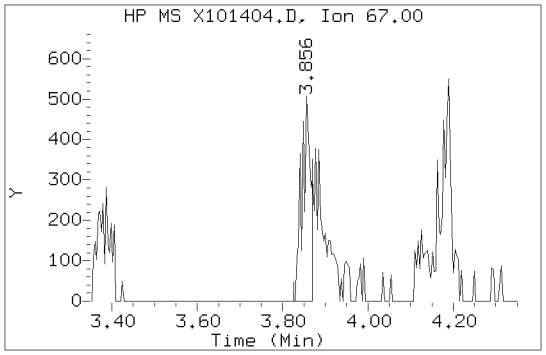
BEFORE

MASS
67
AREA
741
HEIGHT
505
19-Oct-2022
16:03
linh
pham



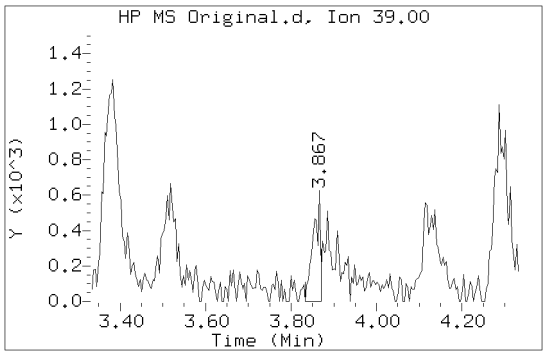
AFTER

MASS
67
AREA
741
HEIGHT
505
28-Oct-2022
16:41



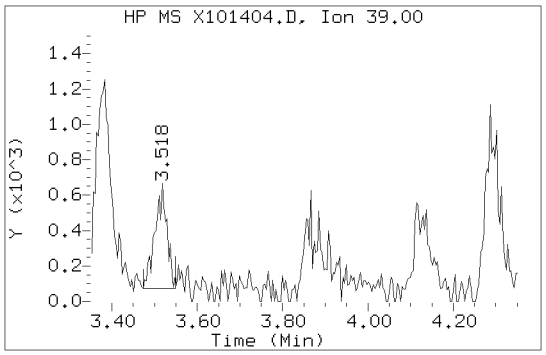
BEFORE

MASS
39
AREA
697
HEIGHT
626
19-Oct-2022
16:03
linh
pham



AFTER

MASS
39
AREA
1160
HEIGHT
595
28-Oct-2022
16:41



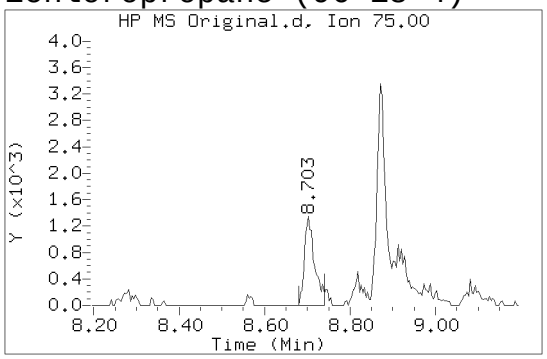
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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

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

Reason Code:

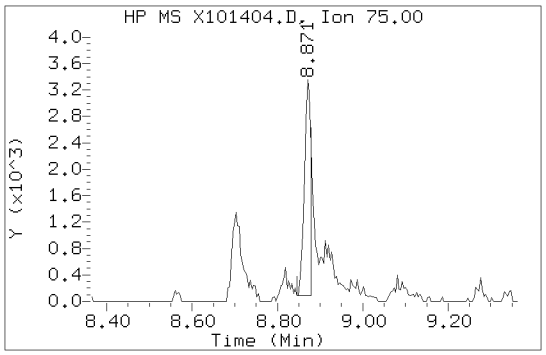
BEFORE

MASS
75
AREA
2267
HEIGHT
1348
19-Oct-2022
16:03
linh
pham



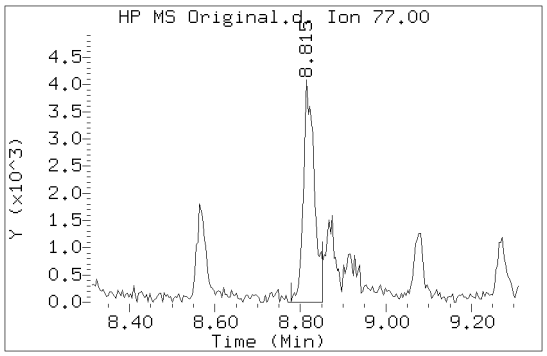
AFTER

MASS
75
AREA
3342
HEIGHT
3263
28-Oct-2022
16:41



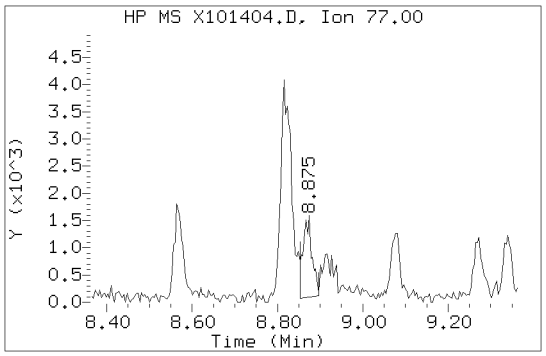
BEFORE

MASS
77
AREA
7413
HEIGHT
4084
19-Oct-2022
16:03
linh
pham



AFTER

MASS
77
AREA
2292
HEIGHT
1501
28-Oct-2022
16:41

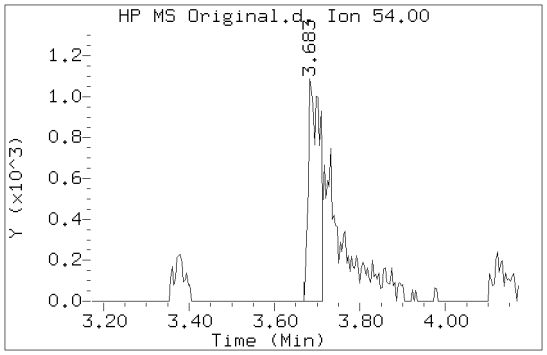


Propionitrile (107-12-0)

Reason Code:

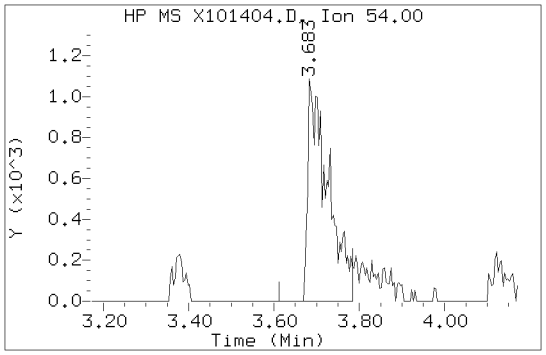
BEFORE

MASS
54
AREA
2013
HEIGHT
1087
19-Oct-2022
16:03
linh
pham



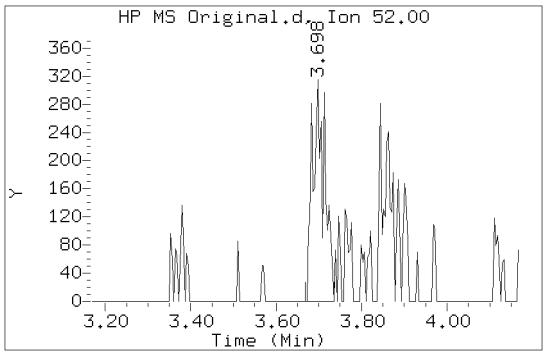
AFTER

MASS
54
AREA
3574
HEIGHT
1087
28-Oct-2022
16:41



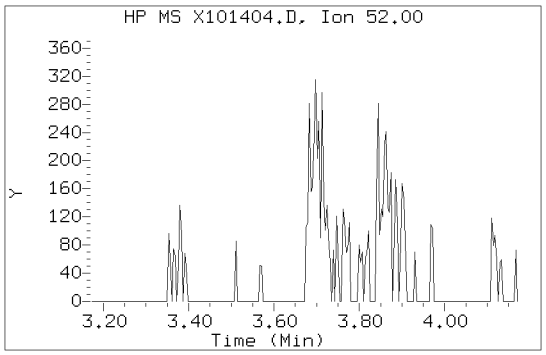
BEFORE

MASS
52
AREA
617
HEIGHT
315
19-Oct-2022
16:03
linh
pham



AFTER

MASS
52
AREA
0
HEIGHT
0
28-Oct-2022
16:41



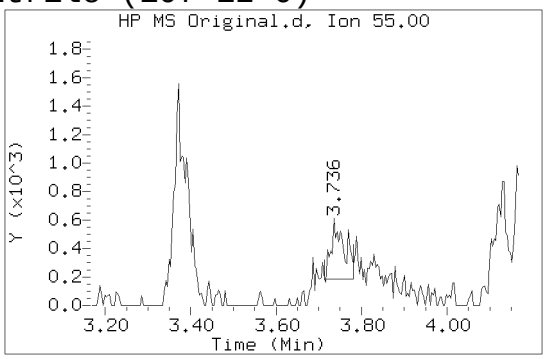
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Inj Date : 14-OCT-2022 12:29
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LabSampID : VSTD001

Propionitrile (107-12-0)

Reason Code:

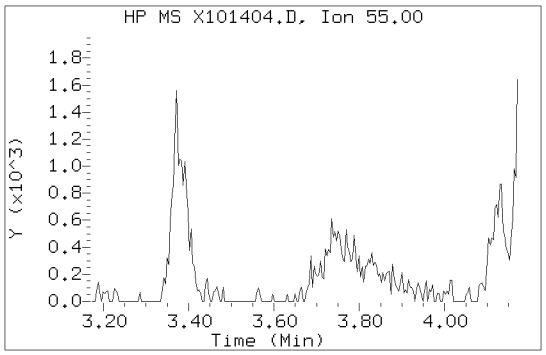
BEFORE

MASS
55
AREA
893
HEIGHT
430
19-Oct-2022
16:03
linh
pham



AFTER

MASS
55
AREA
0
HEIGHT
0
28-Oct-2022
16:41

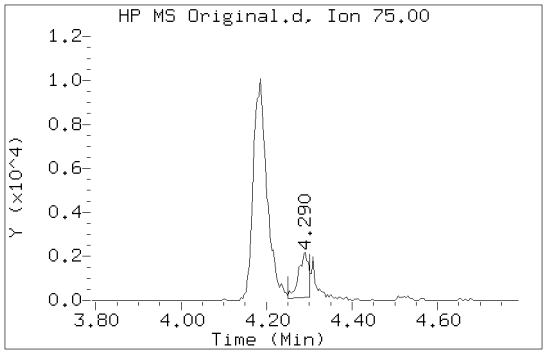


1,1-Dichloropropene (563-58-6)

Reason Code:

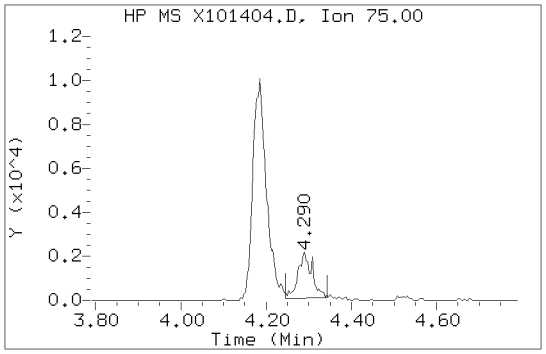
BEFORE

MASS
75
AREA
3405
HEIGHT
2032
19-Oct-2022
16:03
linh
pham



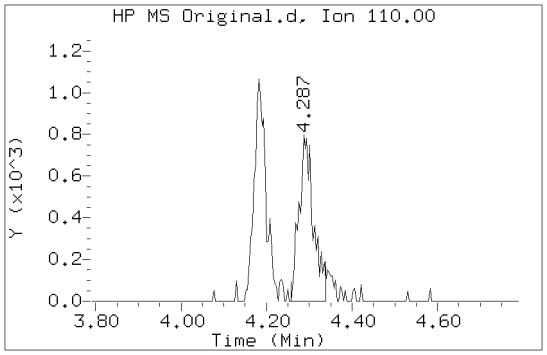
AFTER

MASS
75
AREA
4945
HEIGHT
2078
28-Oct-2022
16:41



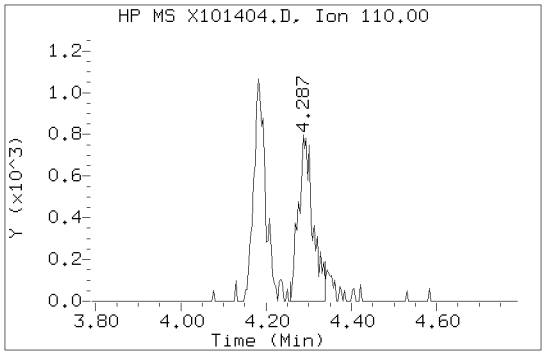
BEFORE

MASS
110
AREA
1889
HEIGHT
799
19-Oct-2022
16:03
linh
pham



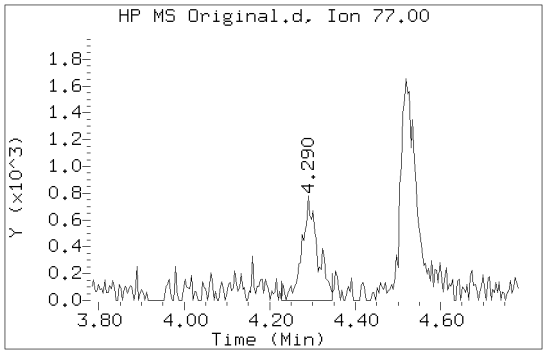
AFTER

MASS
110
AREA
1889
HEIGHT
799
28-Oct-2022
16:41



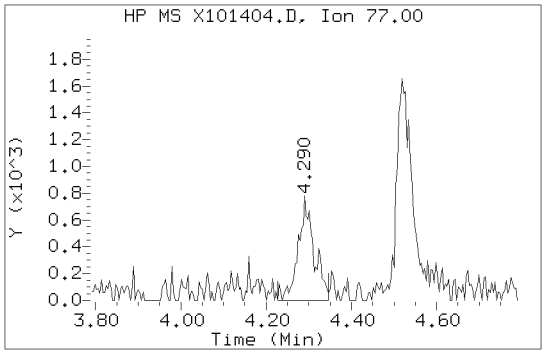
BEFORE

MASS
77
AREA
2039
HEIGHT
782
19-Oct-2022
16:03
linh
pham



AFTER

MASS
77
AREA
2039
HEIGHT
782
28-Oct-2022
16:41



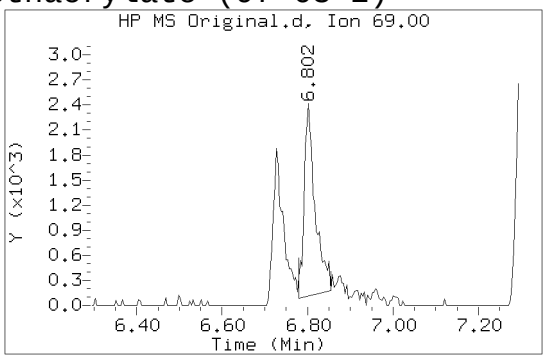
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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

Ethyl Methacrylate (97-63-2)

Reason Code:

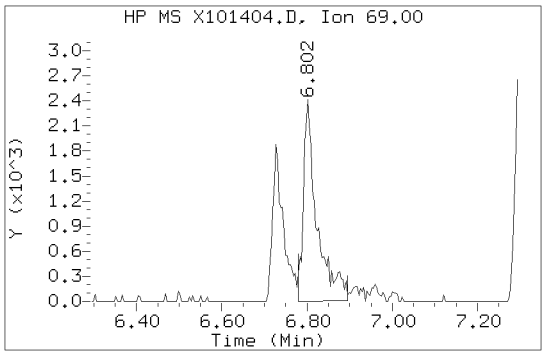
BEFORE

MASS
69
AREA
4175
HEIGHT
2305
19-Oct-2022
16:03
linh
pham



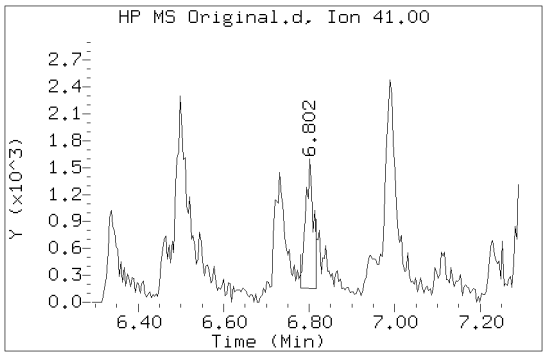
AFTER

MASS
69
AREA
5403
HEIGHT
2419
28-Oct-2022
16:41



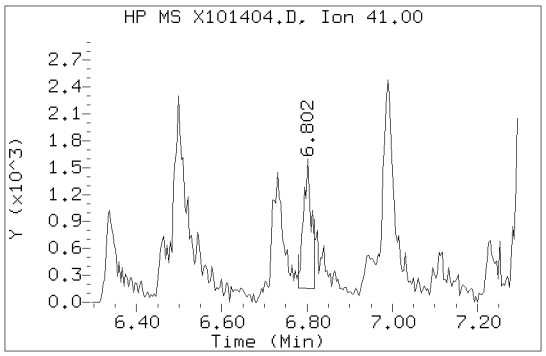
BEFORE

MASS
41
AREA
1887
HEIGHT
1445
19-Oct-2022
16:03
linh
pham



AFTER

MASS
41
AREA
1887
HEIGHT
1445
28-Oct-2022
16:41

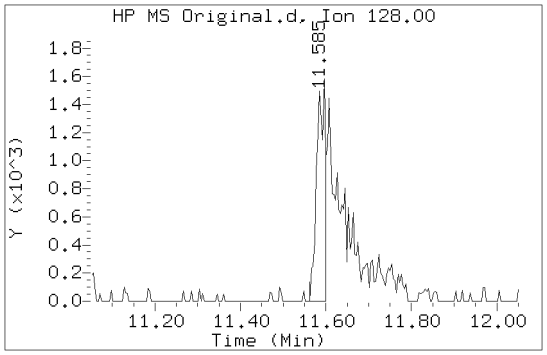


Naphthalene (91-20-3)

Reason Code:

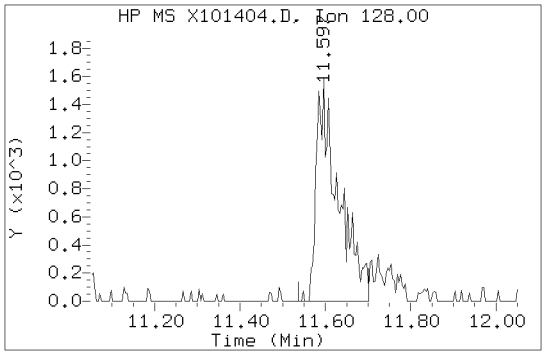
BEFORE

MASS
128
AREA
2150
HEIGHT
1497
19-Oct-2022
16:03
linh
pham



AFTER

MASS
128
AREA
5559
HEIGHT
1582
28-Oct-2022
16:41

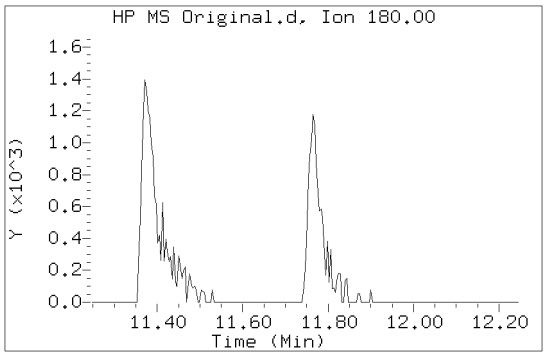


1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

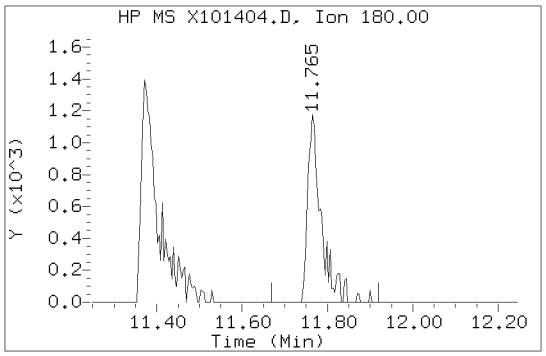
BEFORE

MASS
180
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
180
AREA
2577
HEIGHT
1176
28-Oct-2022
16:41

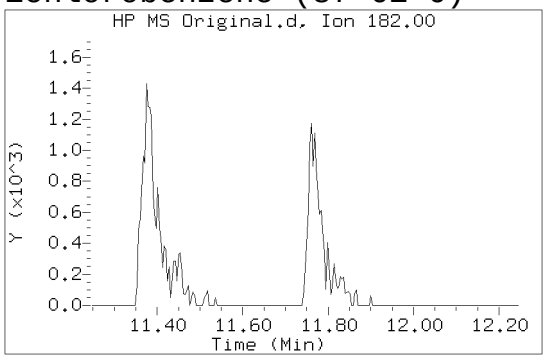


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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

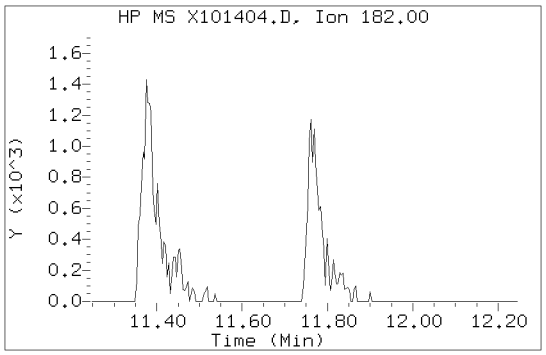
1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

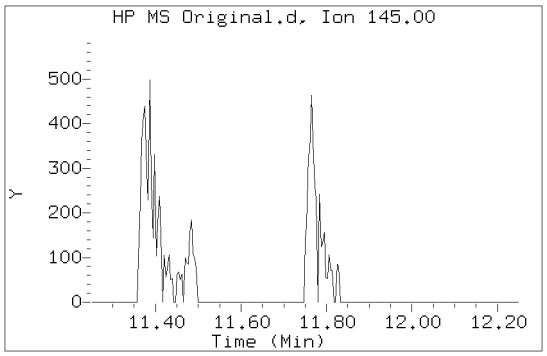
BEFORE
MASS
182
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



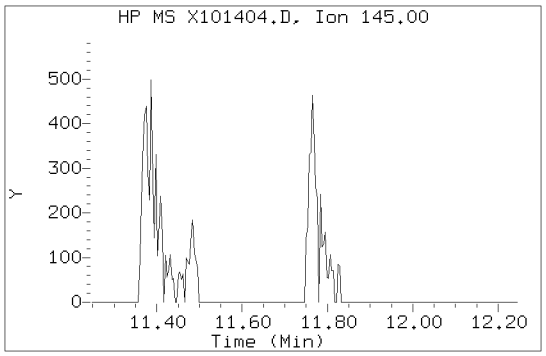
AFTER
MASS
182
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
145
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



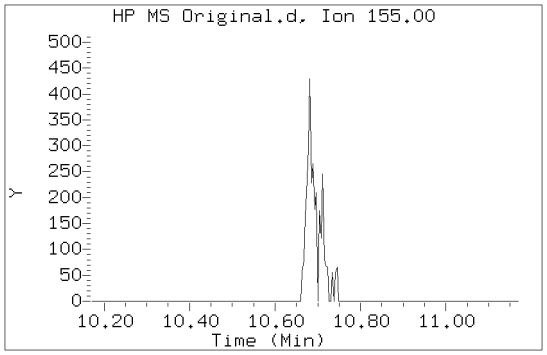
AFTER
MASS
145
AREA
0
HEIGHT
0
28-Oct-2022
16:41



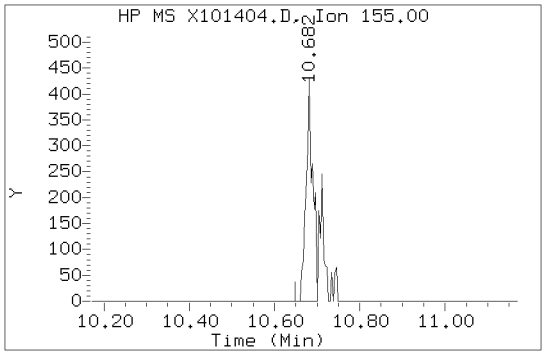
1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

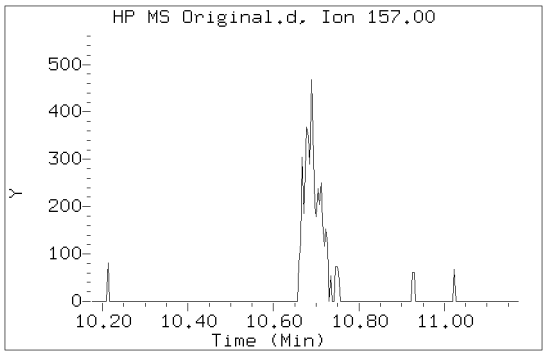
BEFORE
MASS
155
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



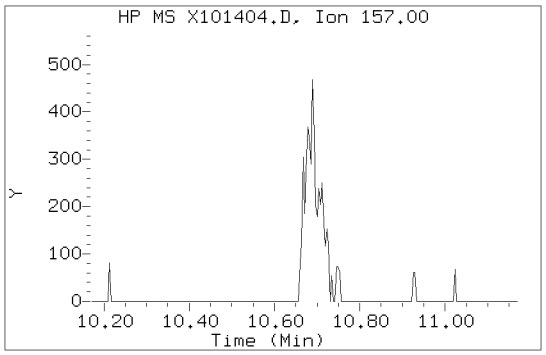
AFTER
MASS
155
AREA
475
HEIGHT
429
28-Oct-2022
16:41



BEFORE
MASS
157
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
157
AREA
0
HEIGHT
0
28-Oct-2022
16:41

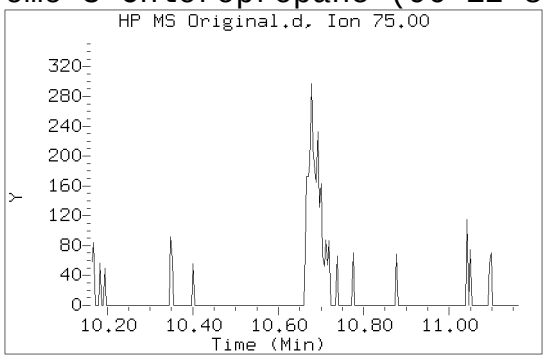


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D
Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

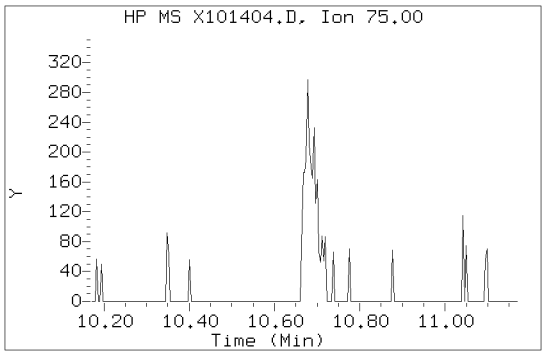
1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

BEFORE
MASS
75
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



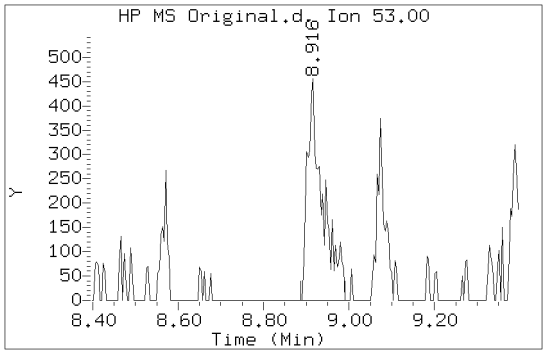
AFTER
MASS
75
AREA
0
HEIGHT
0
28-Oct-2022
16:41



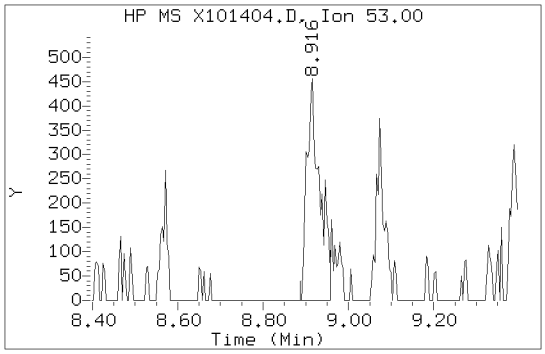
trans-1,4-Dichloro-2-butene (110-57-6)

Reason Code:

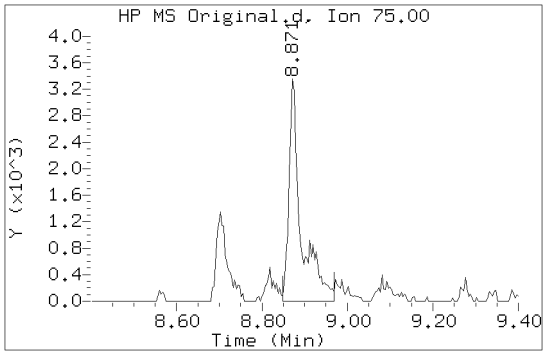
BEFORE
MASS
53
AREA
1136
HEIGHT
456
19-Oct-2022
16:03
linh
pham



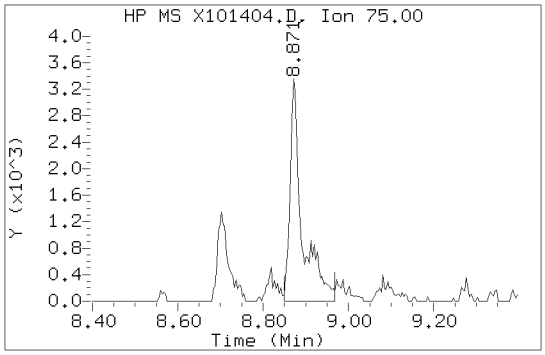
AFTER
MASS
53
AREA
967
HEIGHT
456
28-Oct-2022
16:41



BEFORE
MASS
75
AREA
6618
HEIGHT
3355
19-Oct-2022
16:03
linh
pham



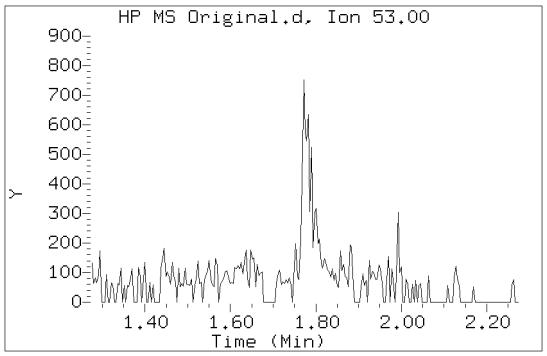
AFTER
MASS
75
AREA
6618
HEIGHT
3355
28-Oct-2022
16:41



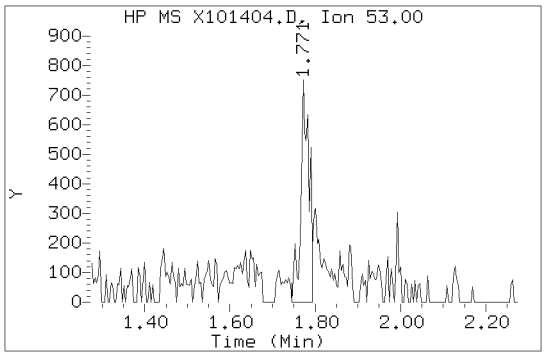
Chloroprene (126-99-8)

Reason Code:

BEFORE
MASS
53
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
53
AREA
1039
HEIGHT
751
28-Oct-2022
16:41



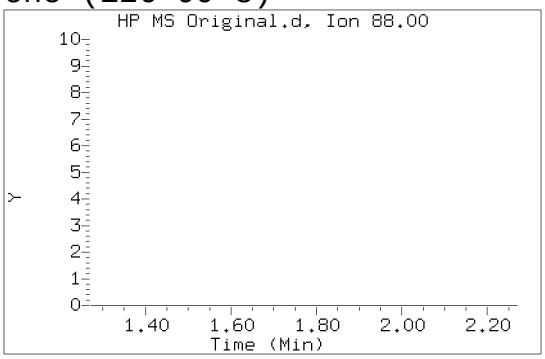
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101404.D
Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

Chloroprene (126-99-8)

Reason Code:

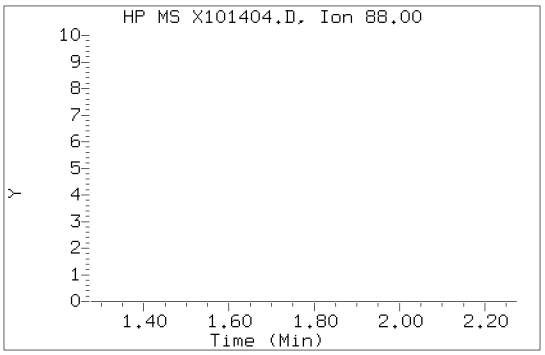
BEFORE

MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
88
AREA
0
HEIGHT
0
28-Oct-2022
16:41

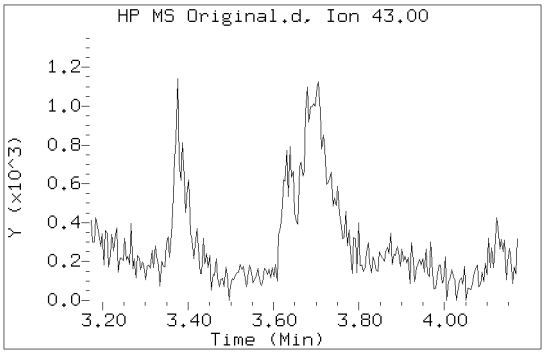


Ethyl Acetate (141-78-6)

Reason Code:

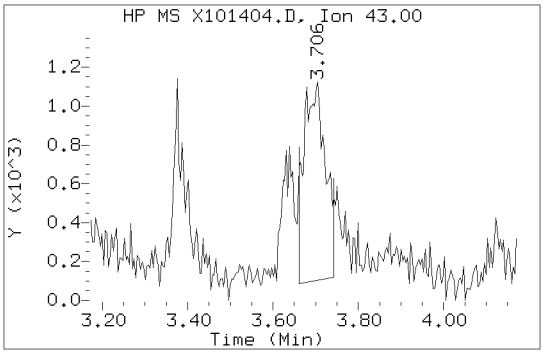
BEFORE

MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



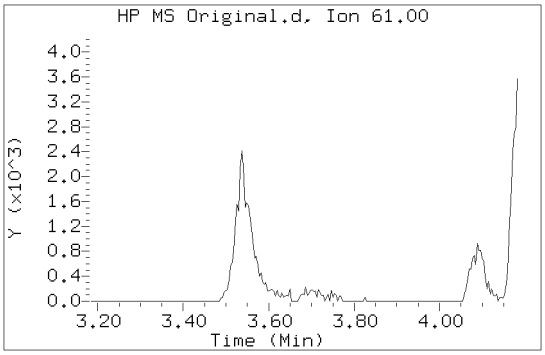
AFTER

MASS
43
AREA
3696
HEIGHT
1021
28-Oct-2022
16:41



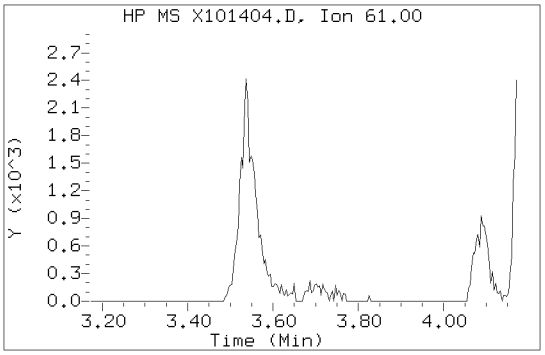
BEFORE

MASS
61
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



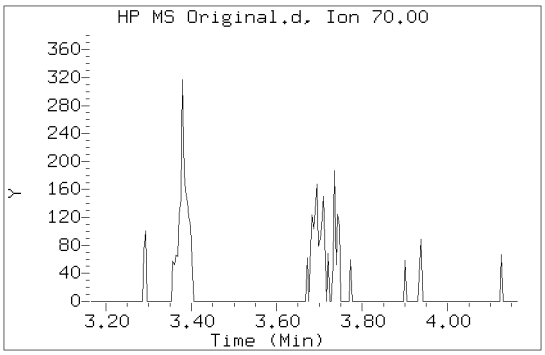
AFTER

MASS
61
AREA
0
HEIGHT
0
28-Oct-2022
16:41



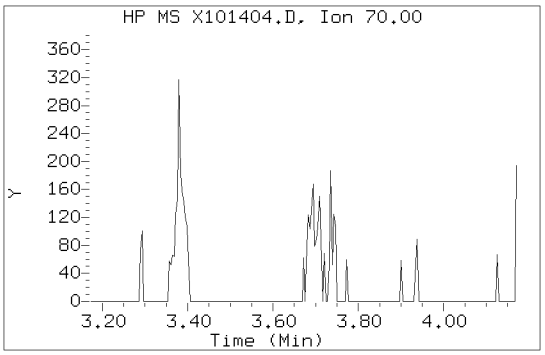
BEFORE

MASS
70
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
70
AREA
0
HEIGHT
0
28-Oct-2022
16:41

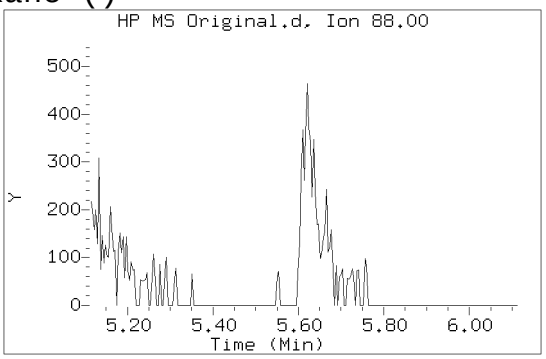


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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

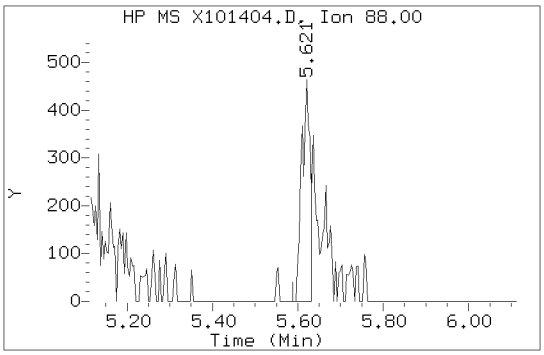
1,4-Dioxane ()

Reason Code:

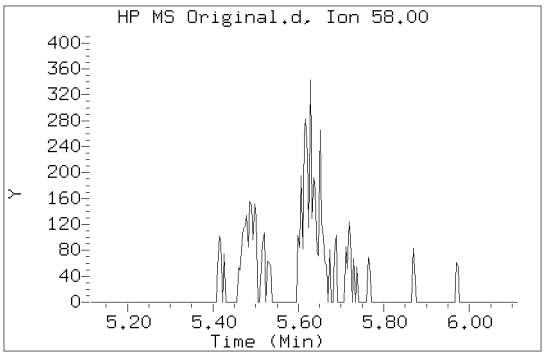
BEFORE
MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



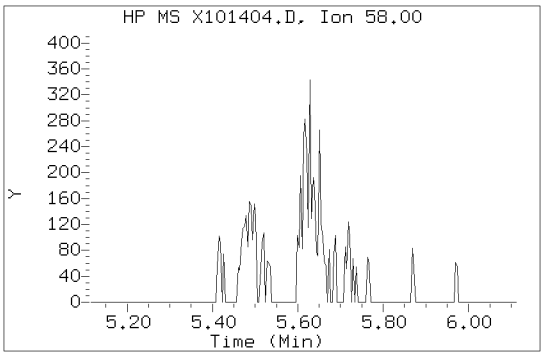
AFTER
MASS
88
AREA
643
HEIGHT
464
28-Oct-2022
16:41



BEFORE
MASS
58
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



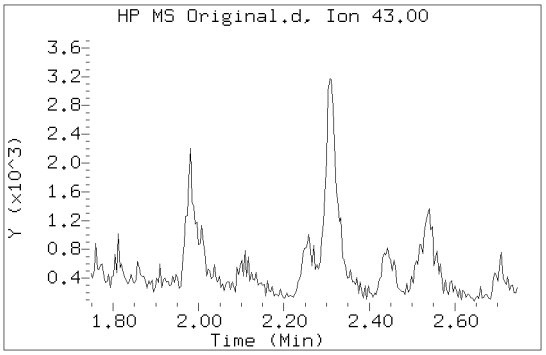
AFTER
MASS
58
AREA
0
HEIGHT
0
28-Oct-2022
16:41



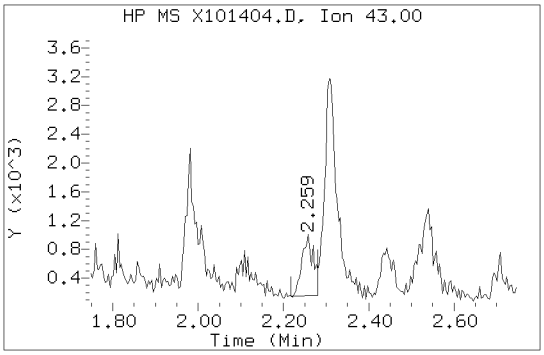
Methyl Acetate (79-20-9)

Reason Code:

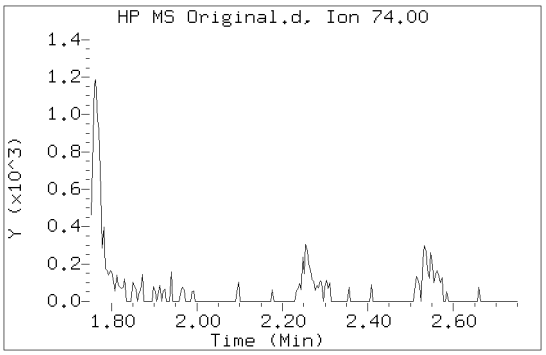
BEFORE
MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



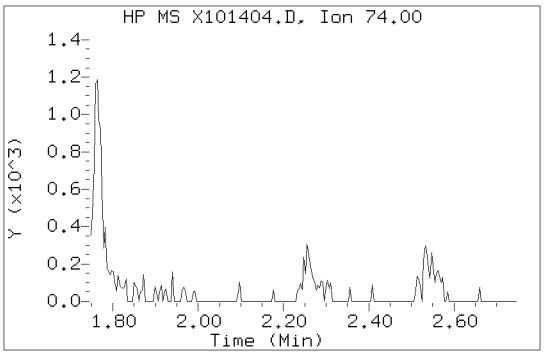
AFTER
MASS
43
AREA
1619
HEIGHT
856
28-Oct-2022
16:41



BEFORE
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74
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
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74
AREA
0
HEIGHT
0
28-Oct-2022
16:41

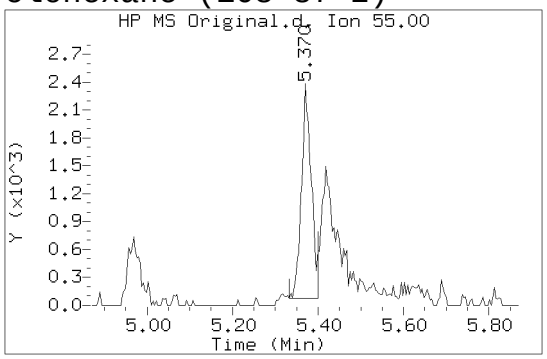


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InstruID : voa6.i
LabSampID : VSTD001

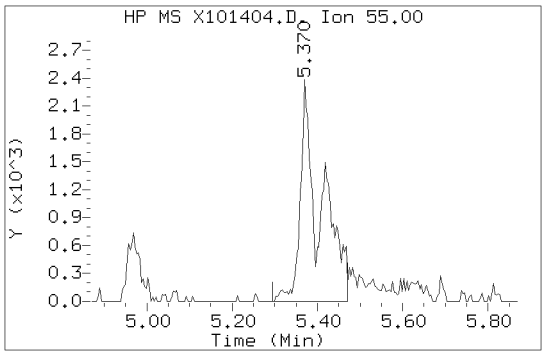
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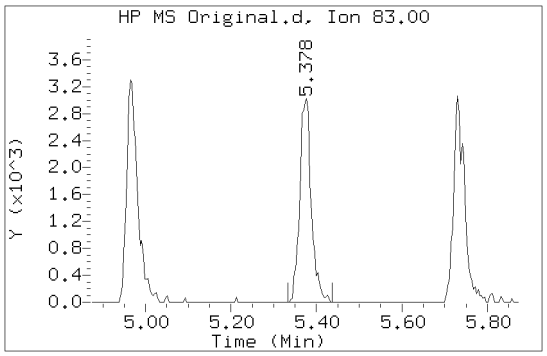
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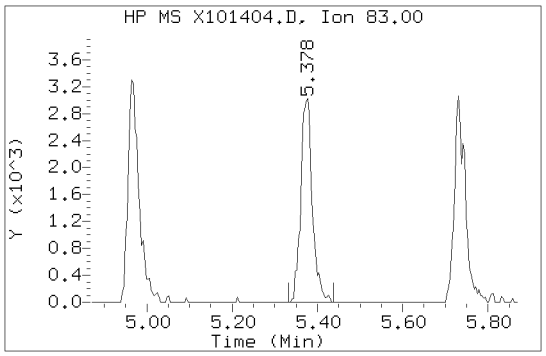
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19-Oct-2022
16:03
linh
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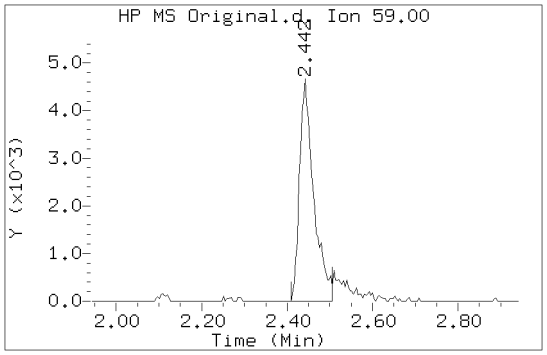
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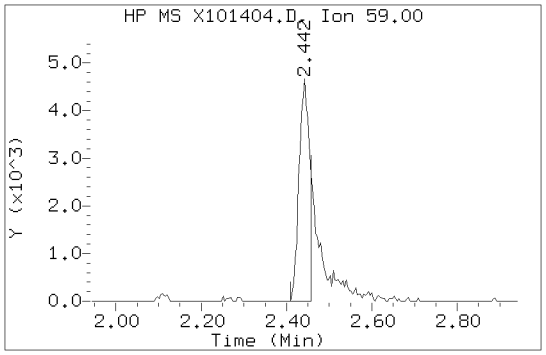
Tert-Butyl alcohol (75-65-0)

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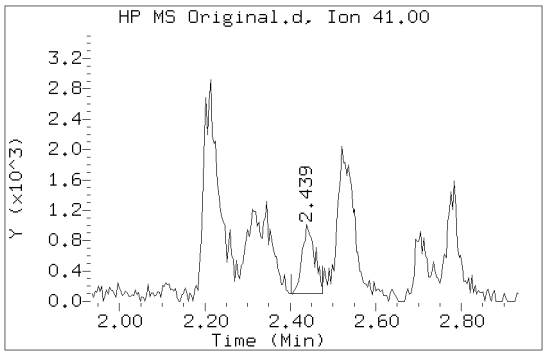
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16:03
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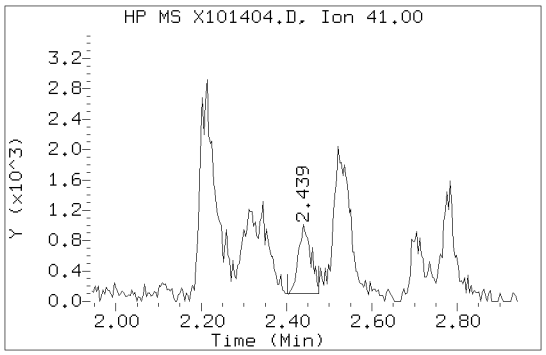
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16:41



BEFORE
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AFTER
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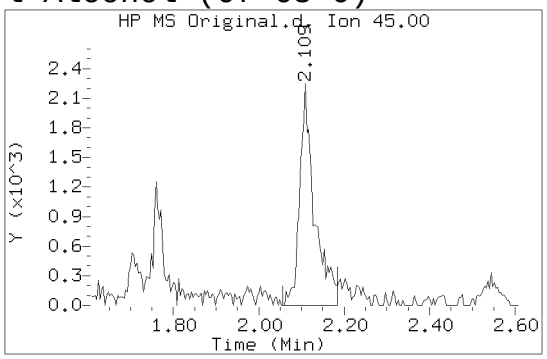
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Inj Date : 14-OCT-2022 12:29
InstruID : voa6.i
LabSampID : VSTD001

Isopropyl Alcohol (67-63-0)

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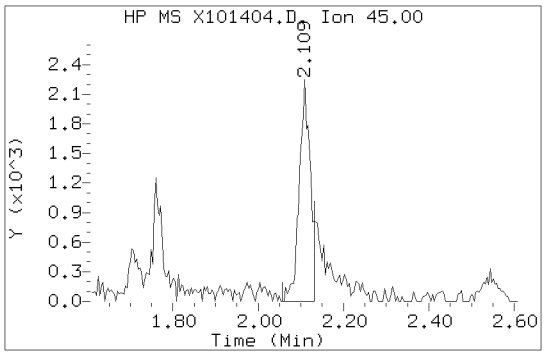
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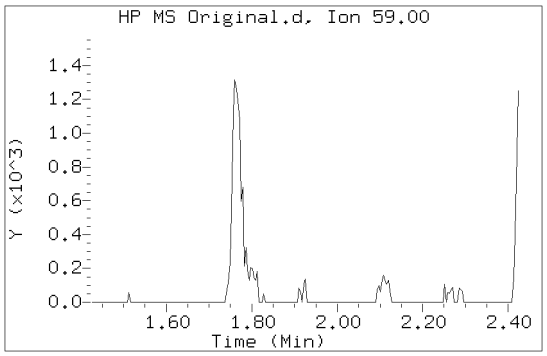
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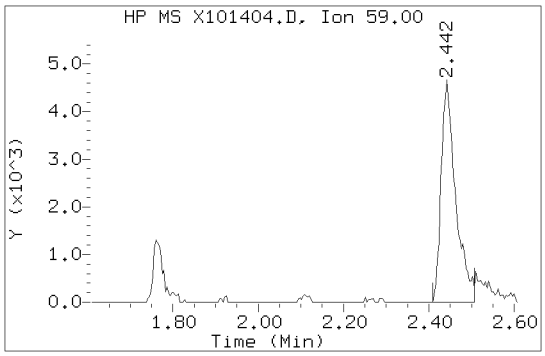
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pham



AFTER

MASS
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AREA
10958
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28-Oct-2022
16:41



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D Page 1
Report Date: 28-Oct-2022 16:41

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D
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Inj Date : 14-OCT-2022 12:50
Operator : PC Inst ID: voa6.i
Smp Info : VSTD002;VSTD002;1;4;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
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Meth Date : 28-Oct-2022 16:41 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 12:29 Cal File: X101404.D
Als bottle: 6 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.181	4.181	(1.000)	424182	50.0000	
135 1,4-Dioxane	88	5.621	5.621	(1.344)	1309	40.0000	40.55(M)
140 1,3-Butadiene	54	1.167	1.167	(0.279)	4348	2.00000	1.88
25 Methacrylonitrile	41	3.863	3.863	(0.924)	6328	2.00000	2.38(M)
12 Isobutyl Alcohol	43	4.687	4.687	(1.121)	17194	40.0000	29.81(M)
13 Acetonitrile	39	2.206	2.206	(0.528)	5922	20.0000	17.91
14 Allyl Chloride	41	2.210	2.210	(0.528)	15225	2.00000	2.08
4 Propionitrile	54	3.675	3.675	(0.879)	8300	20.0000	22.28
136 n-Hexane	57	2.776	2.776	(0.664)	6740	2.00000	1.79
72 trans-1,4-Dichloro-2-butene	53	8.901	8.901	(1.160)	1568	2.00000	3.01
194 Acetaldehyde	44	1.216	1.216	(0.291)	4205	8.00000	2.15(M)
23 Chloroprene	53	1.778	1.778	(0.425)	2461	2.00000	2.26(M)
145 alpha-Methylstyrene	118	9.268	9.268	(0.959)	11366	2.00000	1.85
200 Dimethyl Disulfide	94	6.202	6.202	(0.808)	14277	2.00000	1.74
139 Diethyl ether	59	1.760	1.760	(0.421)	4504	2.00000	2.20
130 Ethyl Acetate	43	3.679	3.679	(0.880)	5696	2.00000	0.79(M)
40 Methyl Methacrylate	41	5.621	5.621	(1.344)	4882	2.00000	1.85
49 Ethyl Methacrylate	69	6.794	6.794	(1.367)	9246	2.00000	1.83
132 n-Butanol	56	5.306	5.306	(1.269)	1152	40.0000	22.94
142 Tetrahydrofuran	42	3.870	3.870	(0.926)	1927	4.00000	4.42

150	Allyl alcohol	57	2.776	2.776 (0.664)	6740	40.0000	35.84
166	1,2,3-Trimethylbenzene	105	9.733	9.733 (1.007)	27583	2.00000	2.07

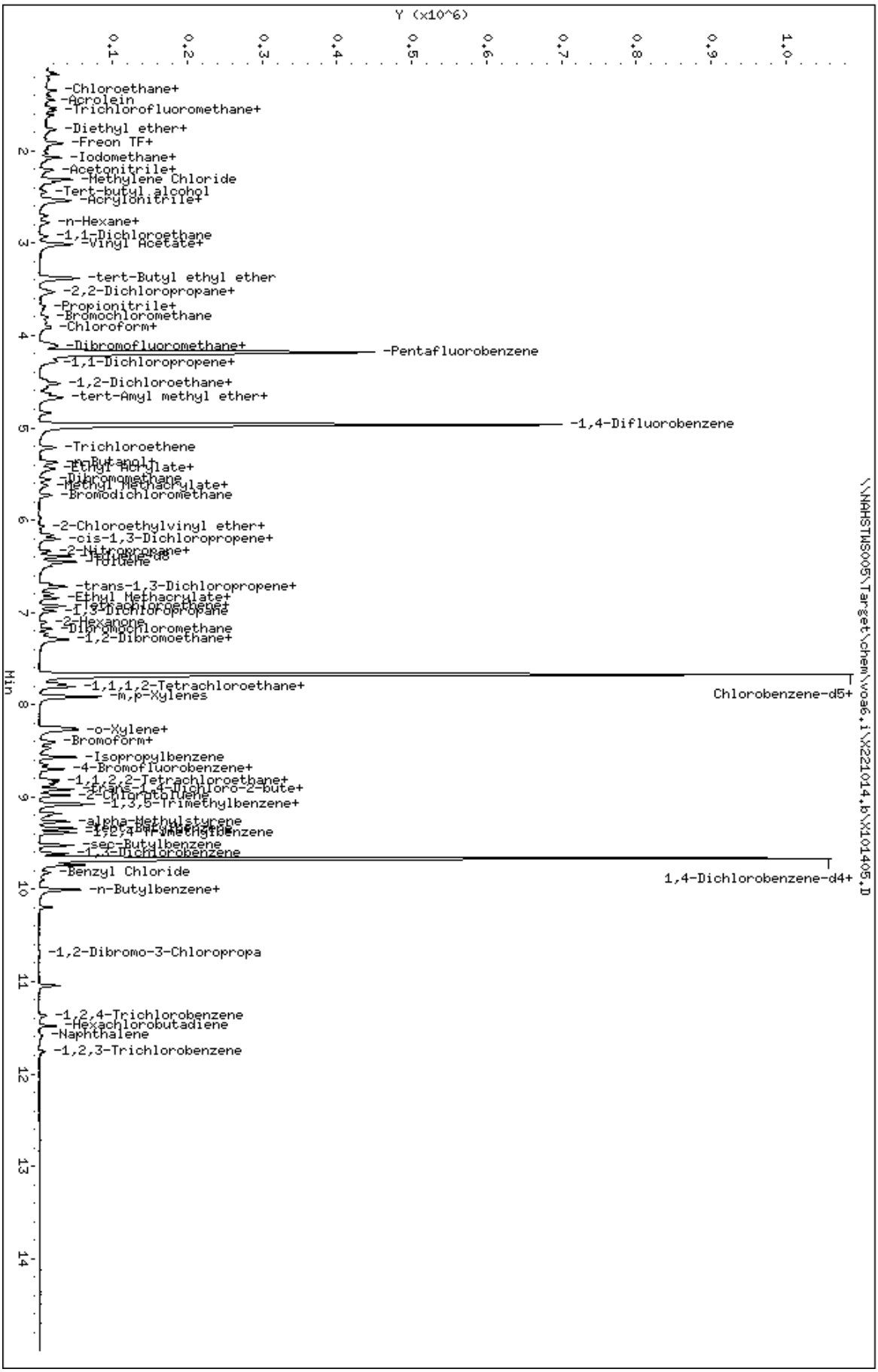
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
131	Methyl Acrylate	55	3.694	3.694	(0.883)	889	2.00000	2.22
162	Butyl acrylate	55	8.267	8.267	(1.078)	11415	2.00000	1.95
2	Dichlorodifluoromethane	85	0.973	0.973	(0.233)	5960	2.00000	0.79(M)
3	Chloromethane	50	1.081	1.081	(0.259)	8169	2.00000	1.94
5	Vinyl Chloride	62	1.145	1.145	(0.274)	5939	2.00000	1.83
6	Bromomethane	94	1.344	1.344	(0.321)	5824	2.00000	2.04(M)
7	Chloroethane	64	1.407	1.407	(0.337)	3693	2.00000	1.88
8	Trichlorofluoromethane	101	1.565	1.565	(0.374)	7094	2.00000	1.65
9	Acrolein	56	1.452	1.452	(0.347)	867	4.00000	3.66
10	Acetone	43	1.981	1.981	(0.474)	3884	4.00000	4.36(M)
11	1,1-Dichloroethene	96	1.925	1.925	(0.460)	5362	2.00000	1.95(M)
15	Iodomethane	142	2.030	2.030	(0.485)	6956	4.00000	4.81
16	Acrylonitrile	53	2.566	2.566	(0.614)	2845	4.00000	3.86
17	Methylene Chloride	84	2.311	2.311	(0.553)	9699	2.00000	1.11(M)
18	Methyl tert-butyl ether	73	2.539	2.539	(0.607)	23237	2.00000	2.29
19	Carbon Disulfide	76	2.075	2.075	(0.496)	35370	4.00000	3.68
20	trans-1,2-Dichloroethene	96	2.539	2.539	(0.607)	7022	2.00000	1.87
21	Vinyl Acetate	43	3.019	3.019	(0.722)	34095	4.00000	4.04
22	1,1-Dichloroethane	63	2.926	2.926	(0.700)	12049	2.00000	1.88
24	2-Butanone	43	3.627	3.627	(0.867)	3823	4.00000	3.73(M)
26	2,2-Dichloropropane	77	3.518	3.518	(0.841)	8756	2.00000	1.70
27	cis-1,2-Dichloroethene	96	3.537	3.537	(0.846)	8164	2.00000	1.84
28	Chloroform	83	3.915	3.915	(0.936)	13107	2.00000	1.89
29	Bromochloromethane	128	3.806	3.806	(0.910)	4509	2.00000	1.84
$ 30	Dibromofluoromethane	113	4.106	4.106	(0.982)	8012	2.00000	1.47
31	1,1,1-Trichloroethane	97	4.084	4.084	(0.977)	10054	2.00000	1.83
32	1,1-Dichloropropene	75	4.290	4.290	(0.863)	9103	2.00000	1.80
33	1,2-Dichloroethane	62	4.567	4.567	(0.919)	8800	2.00000	1.88
34	Carbon Tetrachloride	117	4.264	4.264	(0.858)	9382	2.00000	1.86
$ 35	1,2-Dichloroethane-d4	65	4.477	4.477	(1.071)	7583	2.00000	1.25
* 36	1,4-Difluorobenzene	114	4.969	4.969	(1.000)	632871	50.0000	
37	Benzene	78	4.519	4.519	(0.909)	30218	2.00000	1.88
38	Trichloroethene	130	5.212	5.212	(1.049)	8623	2.00000	1.81
39	Bromodichloromethane	83	5.733	5.733	(1.154)	9711	2.00000	1.85
41	2-Chloroethylvinyl ether	63	6.071	6.071	(1.222)	3536	4.00000	5.72
42	1,2-Dichloropropane	63	5.445	5.445	(1.096)	7383	2.00000	1.78(M)
44	Dibromomethane	93	5.561	5.561	(1.119)	5028	2.00000	2.03
45	4-Methyl-2-Pentanone	43	6.333	6.333	(0.826)	12989	4.00000	4.84(M)
46	cis-1,3-Dichloropropene	75	6.164	6.164	(1.241)	12411	2.00000	1.85
* 47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	582490	50.0000	
$ 48	Toluene-d8	98	6.397	6.397	(0.834)	30635	2.00000	2.09
50	Toluene	91	6.449	6.449	(0.841)	31885	2.00000	1.84
51	trans-1,3-Dichloropropene	75	6.693	6.693	(1.347)	9592	2.00000	1.81
52	2-Hexanone	43	7.102	7.102	(0.926)	7717	4.00000	4.02(M)
53	1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	6132	2.00000	1.91
54	1,3-Dichloropropane	76	6.989	6.989	(0.911)	12305	2.00000	1.89
55	Dibromochloromethane	129	7.177	7.177	(0.936)	8098	2.00000	2.33
56	Tetrachloroethene	164	6.933	6.933	(0.904)	7430	2.00000	1.84
57	1,2-Dibromoethane	107	7.270	7.270	(0.948)	7395	2.00000	1.84
58	1-Chlorohexane	55	7.671	7.671	(1.544)	4099	2.00000	1.11
59	Chlorobenzene	112	7.694	7.694	(1.003)	22542	2.00000	1.85
60	1,1,1,2-Tetrachloroethane	131	7.780	7.780	(1.014)	8028	2.00000	1.81

61 Ethylbenzene	106	7.806	7.806 (1.018)	11012	2.00000	1.76
62 m,p-Xylenes	106	7.907	7.907 (1.031)	26293	4.00000	3.48

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	63 o-Xylene	106	8.252	8.252	(1.076)	13469	2.00000	1.83
	64 Styrene	104	8.271	8.271	(1.078)	18202	2.00000	1.54
	66 Bromoform	173	8.417	8.417	(1.097)	4836	2.00000	2.77(T)
	67 Isopropylbenzene	105	8.567	8.567	(1.117)	31253	2.00000	1.74
	68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	8718	2.00000	1.94
$	69 4-Bromofluorobenzene	95	8.698	8.698	(1.134)	10456	2.00000	1.67
*	70 1,4-Dichlorobenzene-d4	152	9.666	9.666	(1.000)	287431	50.0000	
	71 1,2,3-Trichloropropane	75	8.867	8.867	(0.917)	6086	2.00000	2.01(M)
	73 n-Propylbenzene	91	8.920	8.920	(0.923)	32397	2.00000	1.42
	74 Bromobenzene	156	8.815	8.815	(0.912)	9659	2.00000	1.80
	75 1,3,5-Trimethylbenzene	105	9.073	9.073	(0.939)	26012	2.00000	1.78
	76 2-Chlorotoluene	91	8.980	8.980	(0.929)	24479	2.00000	1.88
	77 4-Chlorotoluene	91	9.081	9.081	(0.940)	24845	2.00000	1.73
	78 tert-Butylbenzene	119	9.336	9.336	(0.966)	22314	2.00000	1.76
	79 1,2,4-Trimethylbenzene	105	9.384	9.384	(0.971)	25776	2.00000	1.71
	81 sec-Butylbenzene	105	9.523	9.523	(0.985)	28749	2.00000	1.67
	82 p-Isopropyltoluene	119	9.651	9.651	(0.998)	24904	2.00000	1.64
	83 1,3-Dichlorobenzene	146	9.613	9.613	(0.995)	15837	2.00000	1.75
	84 1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	16062	2.00000	1.70
	86 Benzyl Chloride	91	9.823	9.823	(1.280)	9413	2.00000	1.27
	87 n-Butylbenzene	91	10.007	10.007	(1.035)	18216	2.00000	1.53
	88 1,2-Dichlorobenzene	146	10.003	10.003	(1.035)	15019	2.00000	1.72
	89 1,2-Dibromo-3-Chloropropane	155	10.685	10.685	(1.105)	903	2.00000	3.85(M)
	90 1,2,4-Trichlorobenzene	180	11.367	11.367	(1.176)	3514	2.00000	2.76
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	4115	2.00000	1.11
	92 Naphthalene	128	11.585	11.585	(1.199)	8605	2.00000	1.75(M)
	93 1,2,3-Trichlorobenzene	180	11.757	11.757	(1.216)	4070	2.00000	1.70(M)
M	94 1,2-Dichloroethylene (total)	96				15186	4.00000	
M	95 Xylenes (total)	106				39762	6.00000	
	141 Cyclohexane	56	4.121	4.121	(0.986)	8723	2.00000	1.79(H)
	138 Freon TF	101	1.921	1.921	(0.459)	4918	2.00000	1.88
	147 Methylcyclohexane	55	5.373	5.373	(1.081)	16071	2.00000	1.90(M)
	146 Methyl Acetate	43	2.251	2.251	(0.538)	3315	2.00000	1.79
	148 Tert-Butyl alcohol	59	2.442	2.442	(0.584)	12326	40.0000	49.75(a)
	149 Isopropyl Alcohol	45	2.108	2.108	(0.504)	5094	40.0000	45.33

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D
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Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;4;
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Column phase: DB624

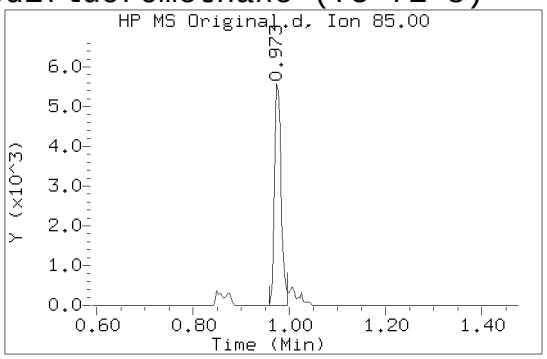
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Operator: PC
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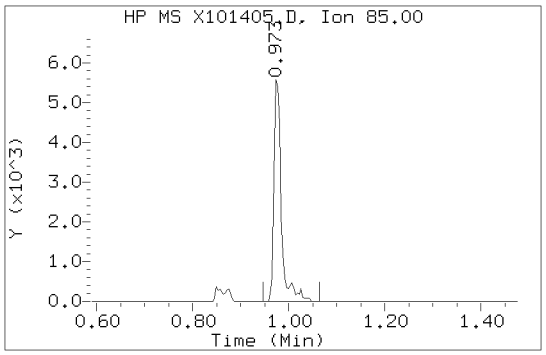
Dichlorodifluoromethane (75-71-8)

Reason Code:

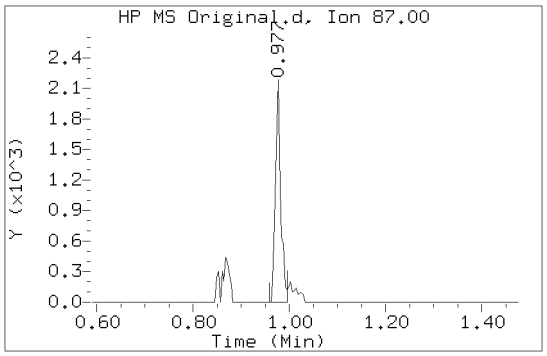
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19-Oct-2022
16:03
linh
pham



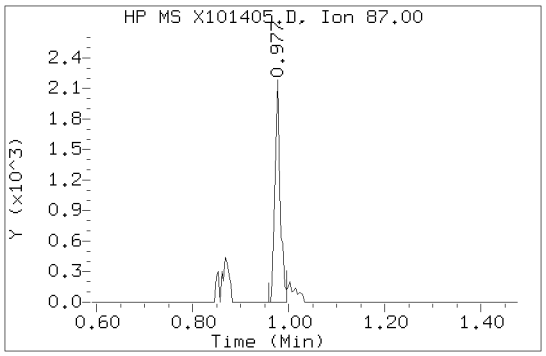
AFTER
MASS
85
AREA
5960
HEIGHT
5577
28-Oct-2022
16:41



BEFORE
MASS
87
AREA
1639
HEIGHT
2184
19-Oct-2022
16:03
linh
pham



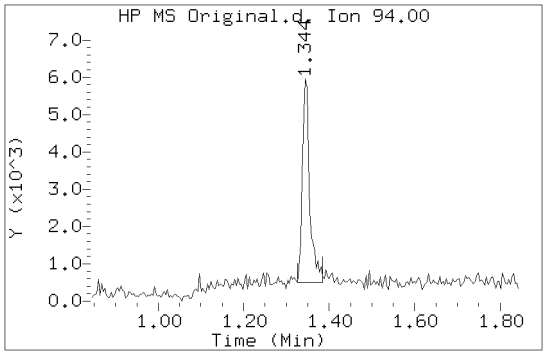
AFTER
MASS
87
AREA
1639
HEIGHT
2184
28-Oct-2022
16:41



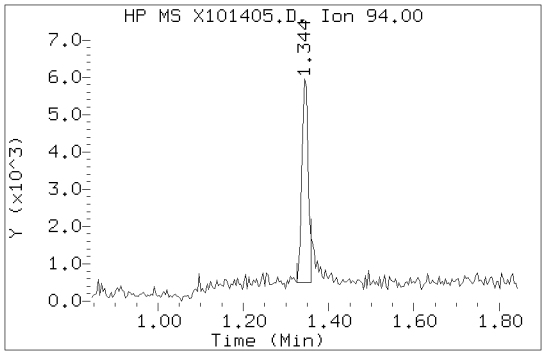
Bromomethane (74-83-9)

Reason Code:

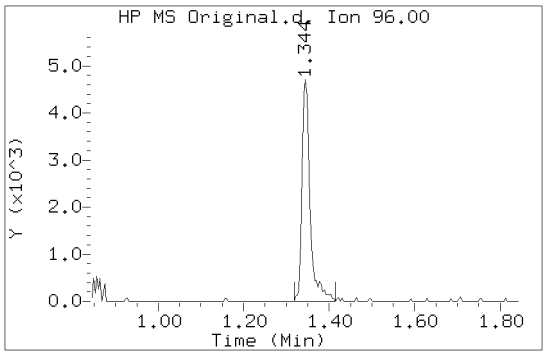
BEFORE
MASS
94
AREA
6656
HEIGHT
5448
19-Oct-2022
16:03
linh
pham



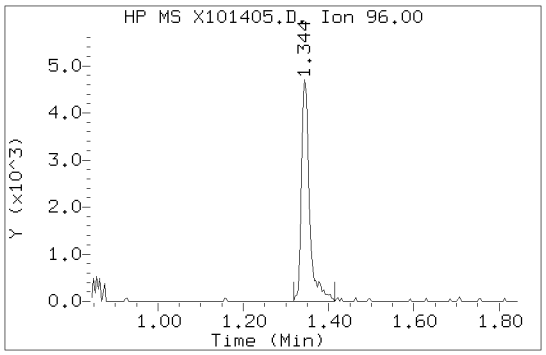
AFTER
MASS
94
AREA
5824
HEIGHT
5448
28-Oct-2022
16:41



BEFORE
MASS
96
AREA
6409
HEIGHT
4706
19-Oct-2022
16:03
linh
pham



AFTER
MASS
96
AREA
6409
HEIGHT
4706
28-Oct-2022
16:41



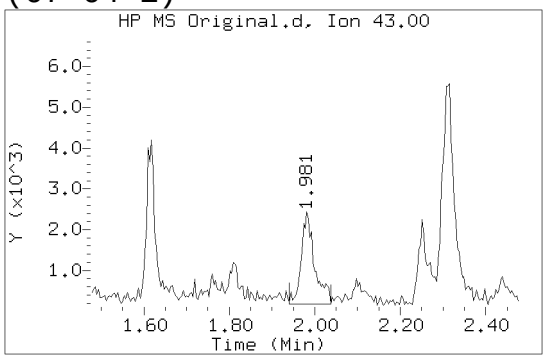
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D
Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

Acetone (67-64-1)

Reason Code:

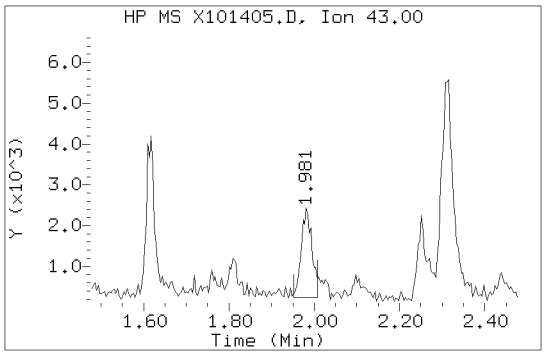
BEFORE

MASS
43
AREA
4961
HEIGHT
2264
19-Oct-2022
16:03
linh
pham



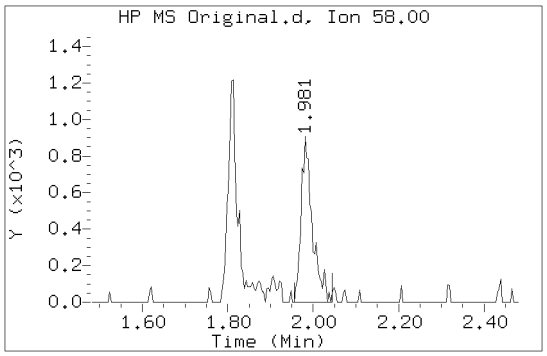
AFTER

MASS
43
AREA
3884
HEIGHT
2195
28-Oct-2022
16:41



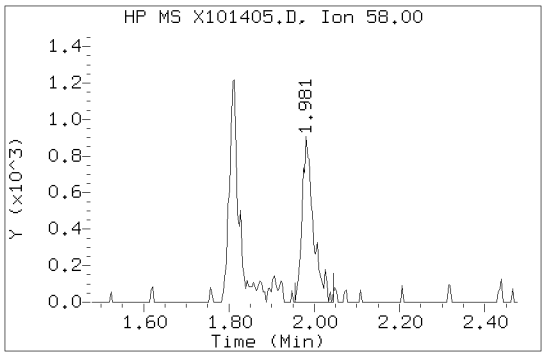
BEFORE

MASS
58
AREA
1700
HEIGHT
907
19-Oct-2022
16:03
linh
pham



AFTER

MASS
58
AREA
1700
HEIGHT
907
28-Oct-2022
16:41

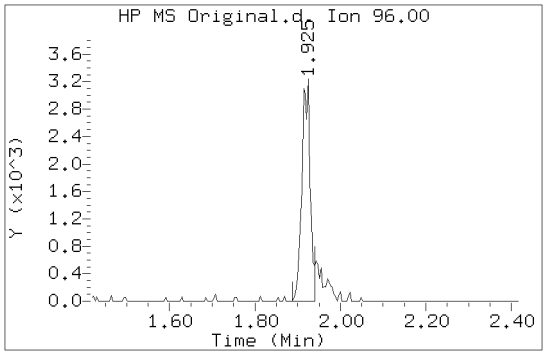


1,1-Dichloroethene (75-35-4)

Reason Code:

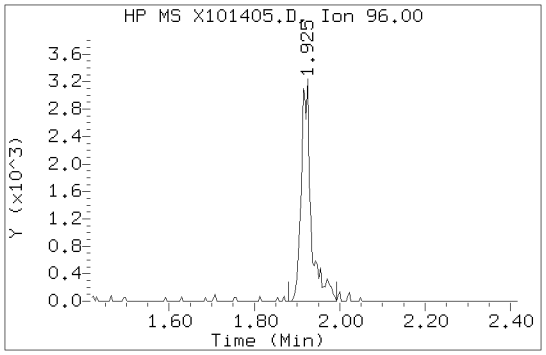
BEFORE

MASS
96
AREA
4517
HEIGHT
3240
19-Oct-2022
16:03
linh
pham



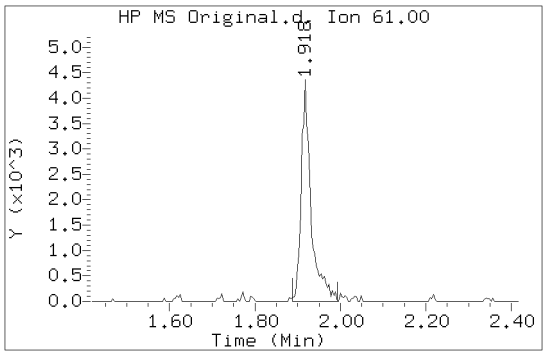
AFTER

MASS
96
AREA
5362
HEIGHT
3240
28-Oct-2022
16:41



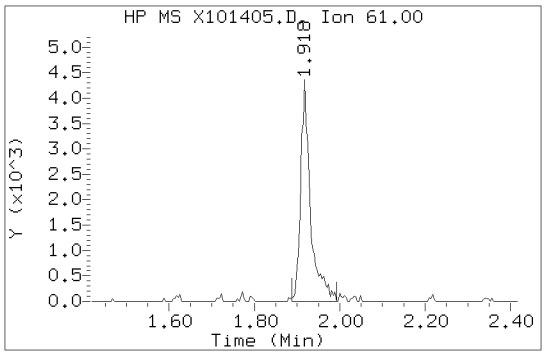
BEFORE

MASS
61
AREA
7183
HEIGHT
4362
19-Oct-2022
16:03
linh
pham



AFTER

MASS
61
AREA
7183
HEIGHT
4362
28-Oct-2022
16:41



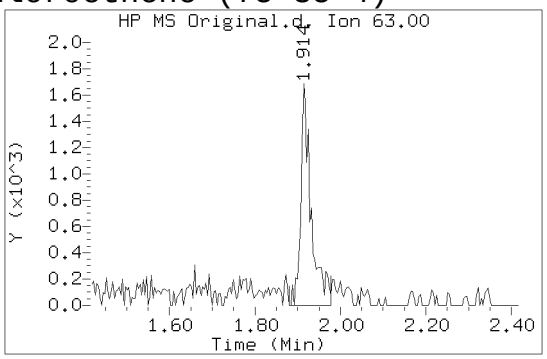
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D
Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

1,1-Dichloroethene (75-35-4)

Reason Code:

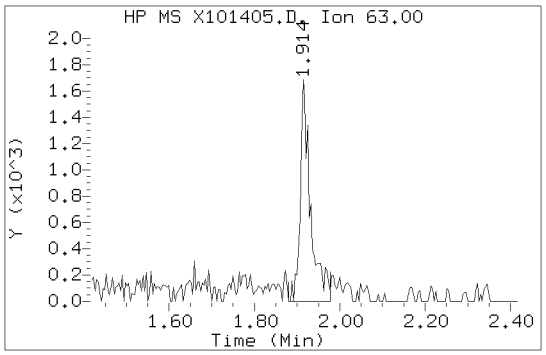
BEFORE

MASS
63
AREA
2864
HEIGHT
1686
19-Oct-2022
16:03
linh
pham



AFTER

MASS
63
AREA
2864
HEIGHT
1686
28-Oct-2022
16:41

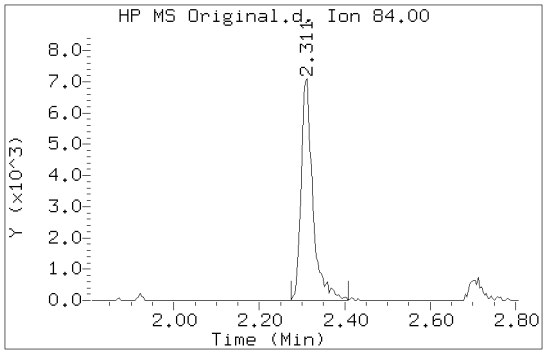


Methylene Chloride (75-09-2)

Reason Code:

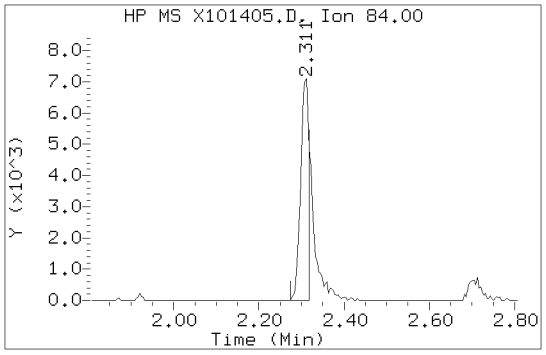
BEFORE

MASS
84
AREA
13791
HEIGHT
7100
19-Oct-2022
16:03
linh
pham



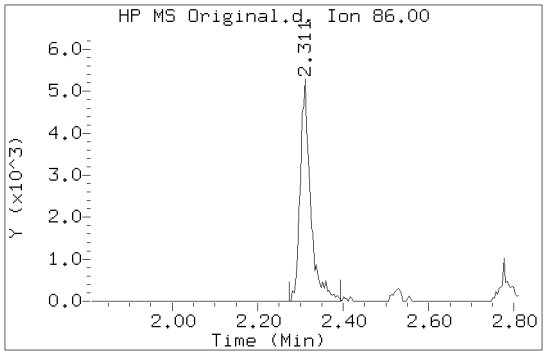
AFTER

MASS
84
AREA
9699
HEIGHT
7100
28-Oct-2022
16:41



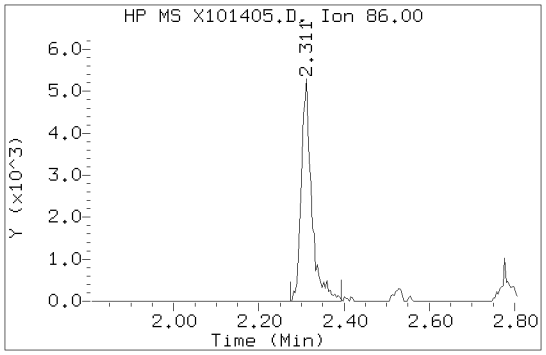
BEFORE

MASS
86
AREA
9120
HEIGHT
5295
19-Oct-2022
16:03
linh
pham



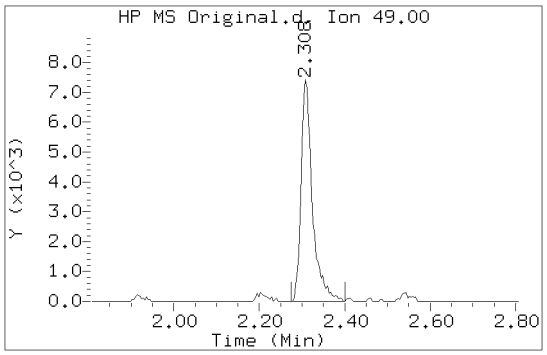
AFTER

MASS
86
AREA
9120
HEIGHT
5295
28-Oct-2022
16:41



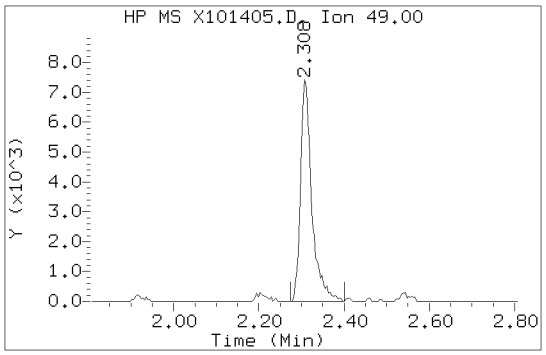
BEFORE

MASS
49
AREA
13933
HEIGHT
7423
19-Oct-2022
16:03
linh
pham



AFTER

MASS
49
AREA
13933
HEIGHT
7423
28-Oct-2022
16:41



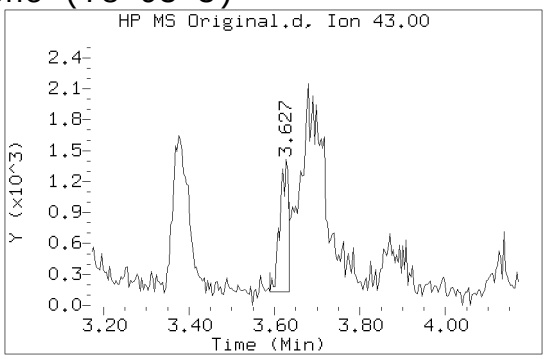
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D
Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

2-Butanone (78-93-3)

Reason Code:

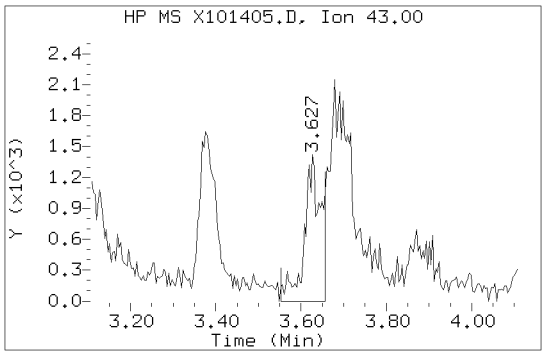
BEFORE

MASS
43
AREA
1790
HEIGHT
1286
19-Oct-2022
16:03
linh
pham



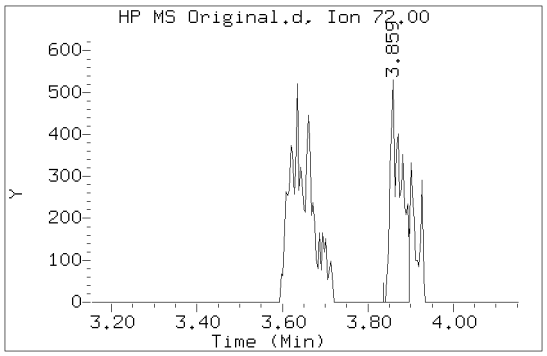
AFTER

MASS
43
AREA
3823
HEIGHT
1422
28-Oct-2022
16:41



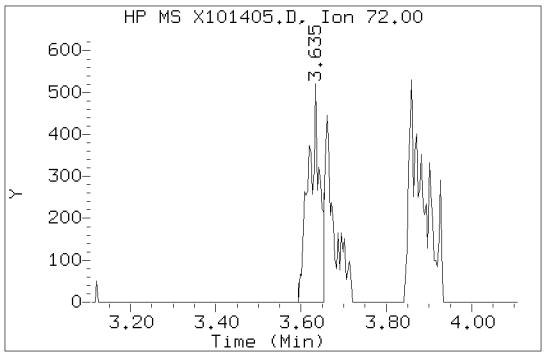
BEFORE

MASS
72
AREA
933
HEIGHT
530
19-Oct-2022
16:03
linh
pham



AFTER

MASS
72
AREA
950
HEIGHT
521
28-Oct-2022
16:41

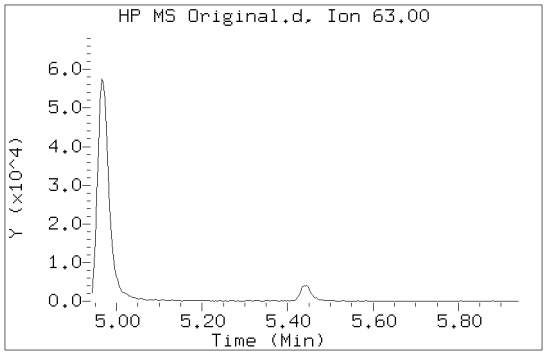


1,2-Dichloropropane (78-87-5)

Reason Code:

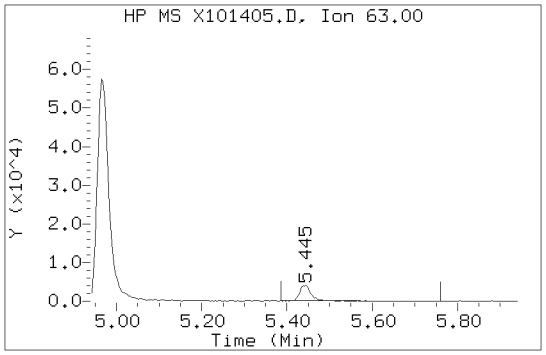
BEFORE

MASS
63
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



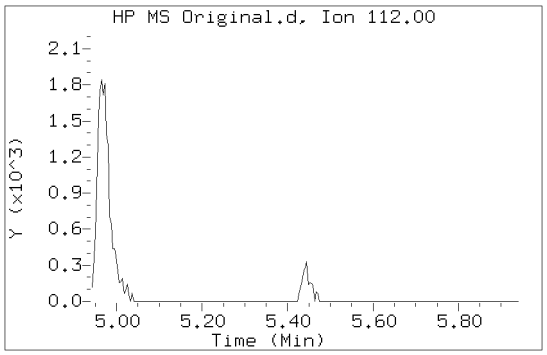
AFTER

MASS
63
AREA
7383
HEIGHT
4067
28-Oct-2022
16:41



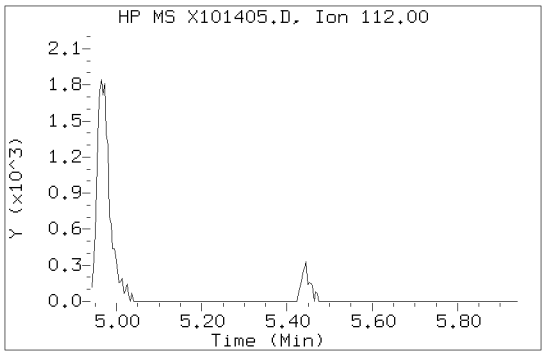
BEFORE

MASS
112
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
112
AREA
0
HEIGHT
0
28-Oct-2022
16:41



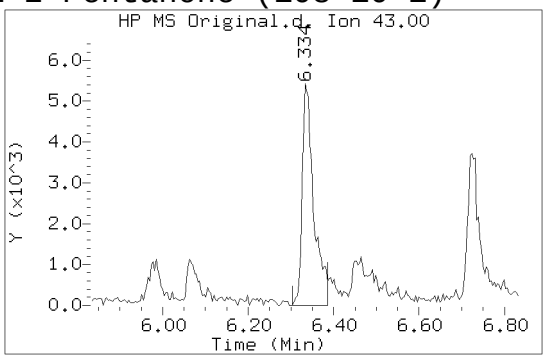
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D
Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

4-Methyl-2-Pentanone (108-10-1)

Reason Code:

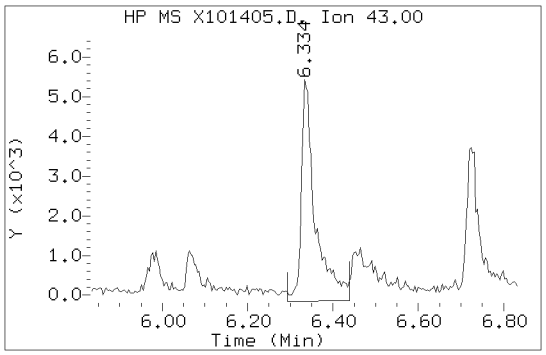
BEFORE

MASS
43
AREA
10406
HEIGHT
5428
19-Oct-2022
16:03
linh
pham



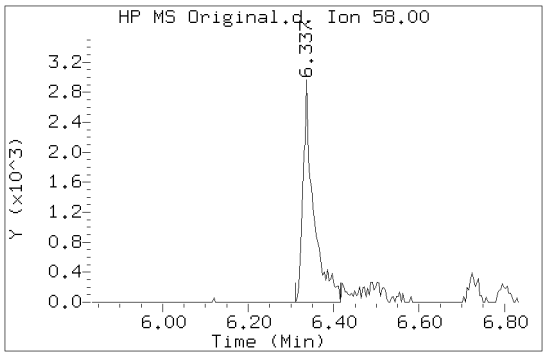
AFTER

MASS
43
AREA
12989
HEIGHT
5575
28-Oct-2022
16:41



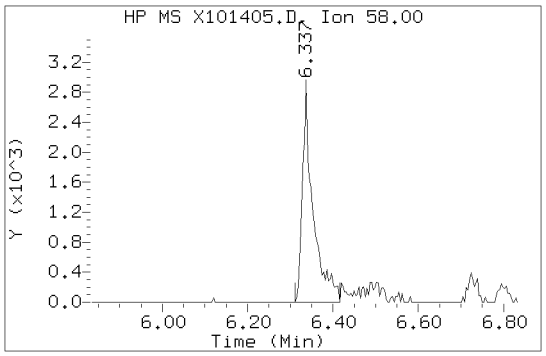
BEFORE

MASS
58
AREA
5171
HEIGHT
2965
19-Oct-2022
16:03
linh
pham



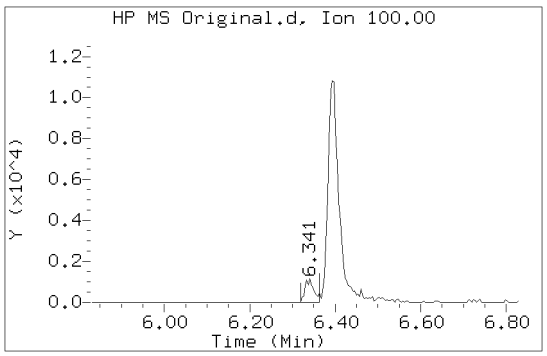
AFTER

MASS
58
AREA
5171
HEIGHT
2965
28-Oct-2022
16:41



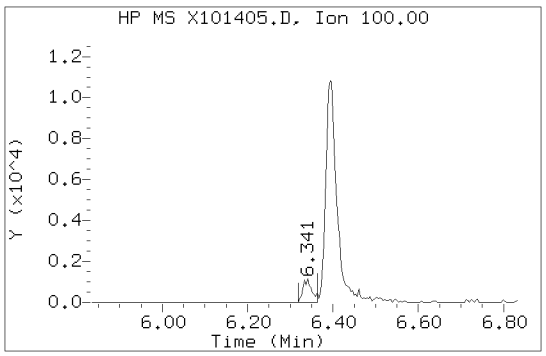
BEFORE

MASS
100
AREA
1712
HEIGHT
1169
19-Oct-2022
16:03
linh
pham



AFTER

MASS
100
AREA
1712
HEIGHT
1169
28-Oct-2022
16:41

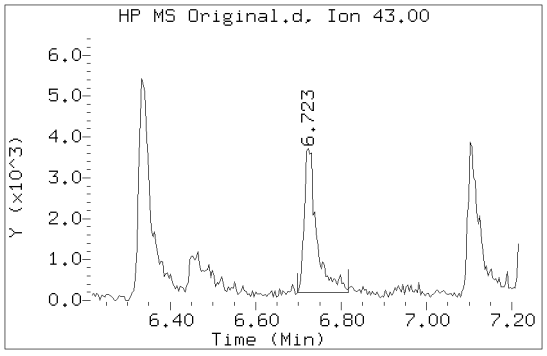


2-Hexanone (591-78-6)

Reason Code:

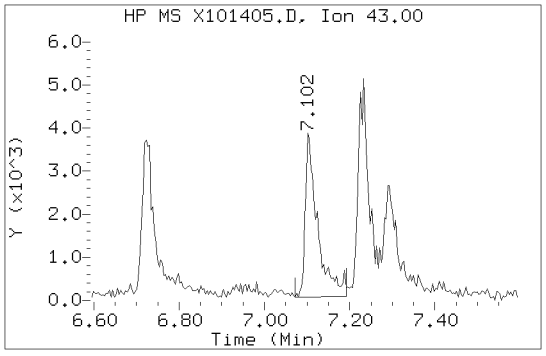
BEFORE

MASS
43
AREA
7294
HEIGHT
3529
19-Oct-2022
16:03
linh
pham



AFTER

MASS
43
AREA
7717
HEIGHT
3808
28-Oct-2022
16:41



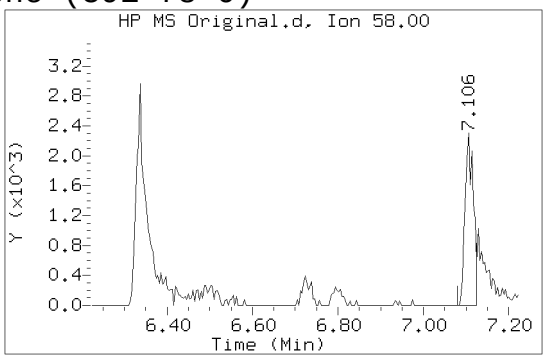
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D
Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

2-Hexanone (591-78-6)

Reason Code:

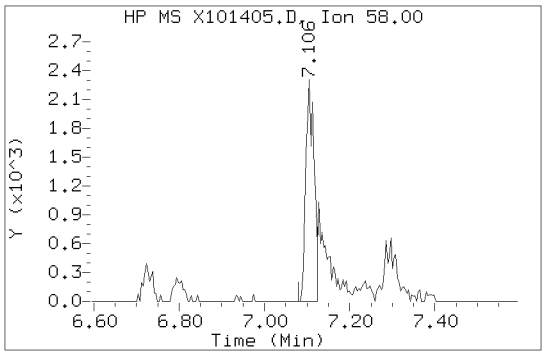
BEFORE

MASS
58
AREA
3131
HEIGHT
2303
19-Oct-2022
16:03
linh
pham



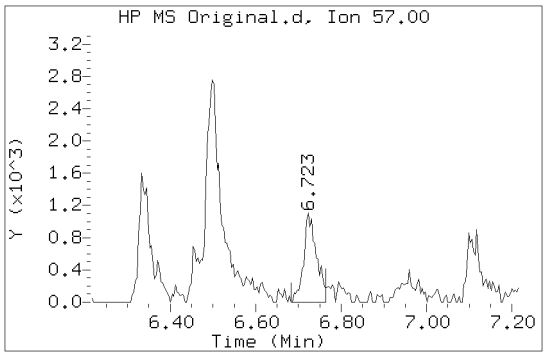
AFTER

MASS
58
AREA
3131
HEIGHT
2303
28-Oct-2022
16:41



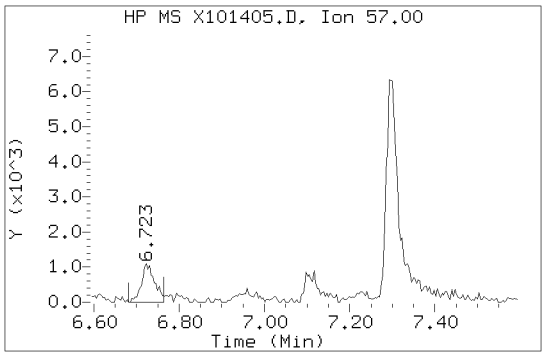
BEFORE

MASS
57
AREA
2363
HEIGHT
1107
19-Oct-2022
16:03
linh
pham



AFTER

MASS
57
AREA
2363
HEIGHT
1107
28-Oct-2022
16:41

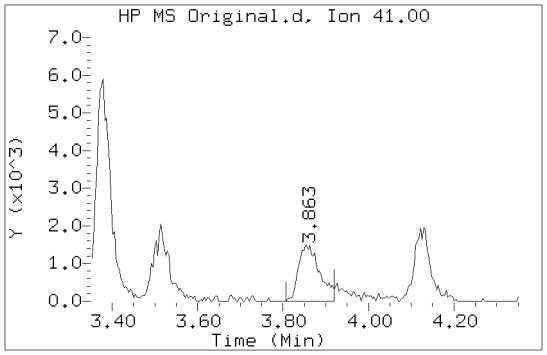


Methacrylonitrile (126-98-7)

Reason Code:

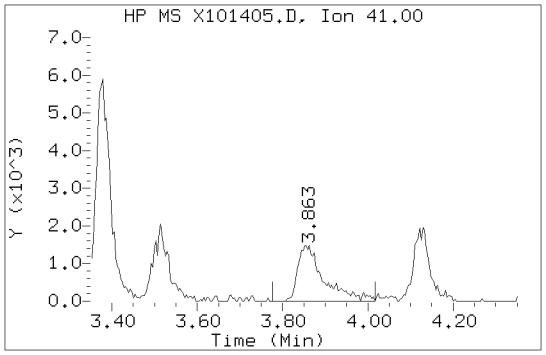
BEFORE

MASS
41
AREA
5182
HEIGHT
1492
19-Oct-2022
16:03
linh
pham



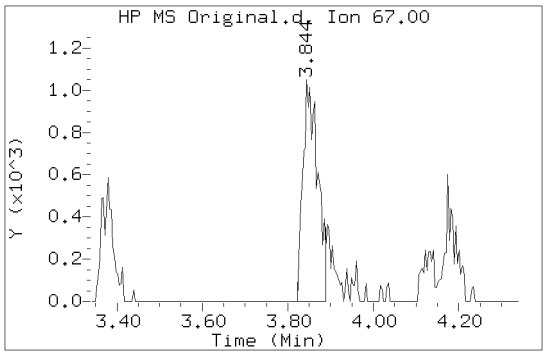
AFTER

MASS
41
AREA
6328
HEIGHT
1492
28-Oct-2022
16:41



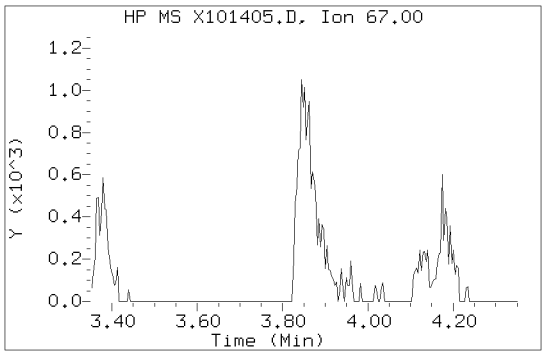
BEFORE

MASS
67
AREA
2556
HEIGHT
1050
19-Oct-2022
16:03
linh
pham



AFTER

MASS
67
AREA
1045
HEIGHT
586
28-Oct-2022
16:41

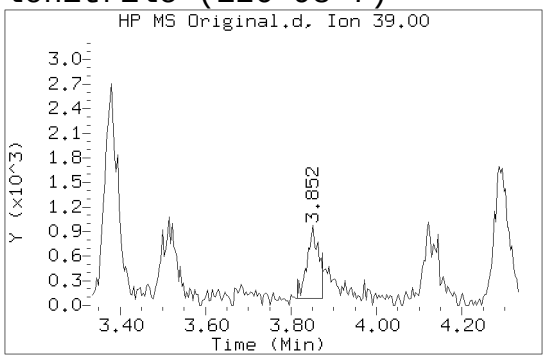


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Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

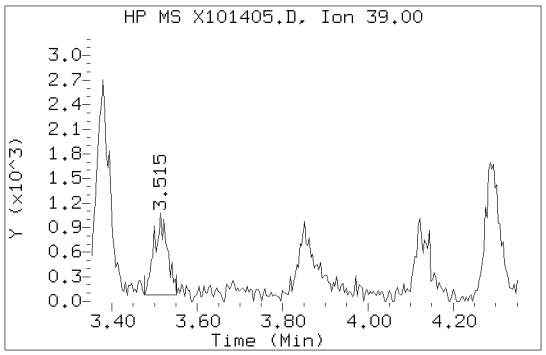
Methacrylonitrile (126-98-7)

Reason Code:

BEFORE
MASS
39
AREA
1641
HEIGHT
890
19-Oct-2022
16:03
linh
pham



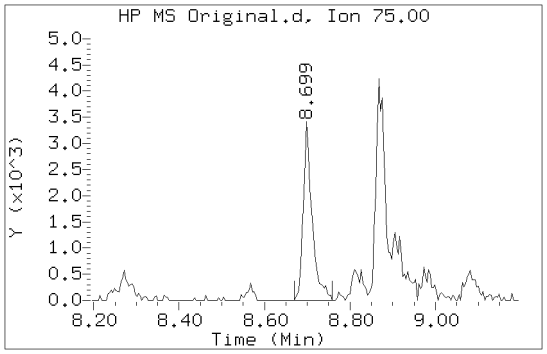
AFTER
MASS
39
AREA
2104
HEIGHT
1004
28-Oct-2022
16:41



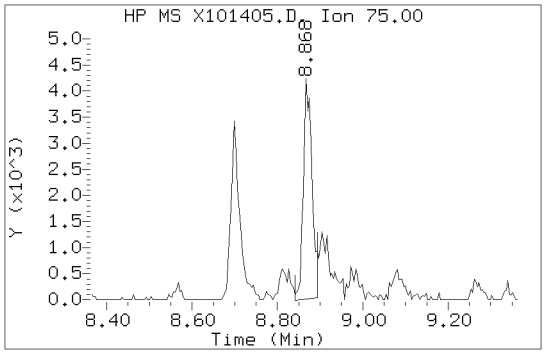
1,2,3-Trichloropropane (96-18-4)

Reason Code:

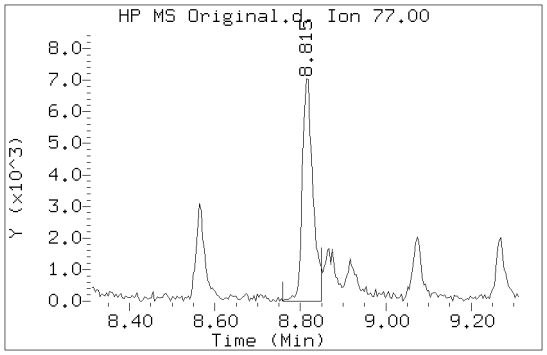
BEFORE
MASS
75
AREA
4974
HEIGHT
3423
19-Oct-2022
16:03
linh
pham



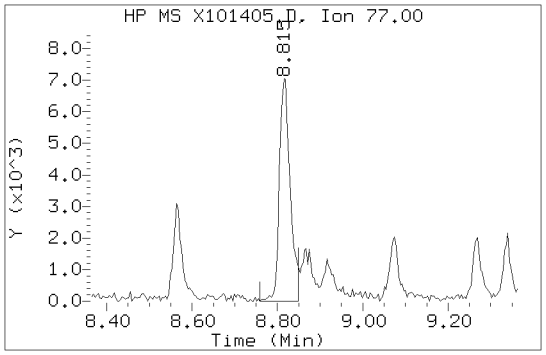
AFTER
MASS
75
AREA
6086
HEIGHT
4222
28-Oct-2022
16:41



BEFORE
MASS
77
AREA
12462
HEIGHT
7040
19-Oct-2022
16:03
linh
pham



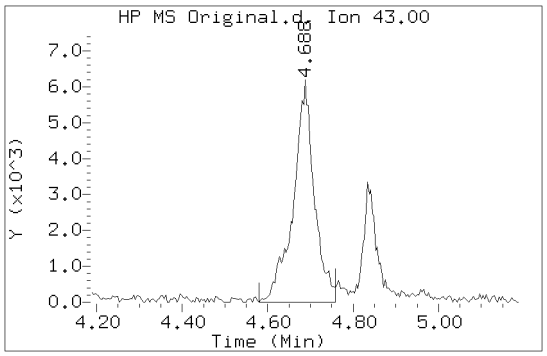
AFTER
MASS
77
AREA
12462
HEIGHT
7040
28-Oct-2022
16:41



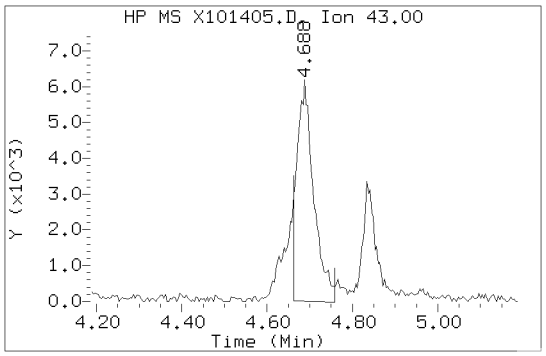
Isobutyl Alcohol (78-83-1)

Reason Code:

BEFORE
MASS
43
AREA
21369
HEIGHT
6191
19-Oct-2022
16:03
linh
pham



AFTER
MASS
43
AREA
17194
HEIGHT
6180
28-Oct-2022
16:41

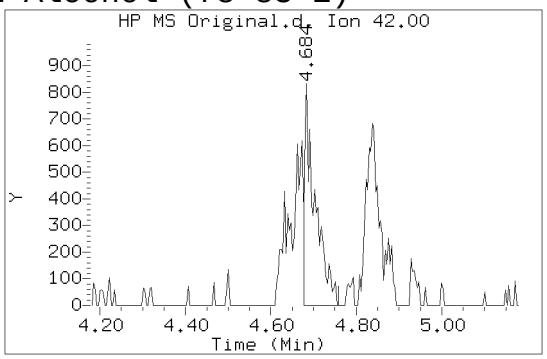


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101405.D
Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

Isobutyl Alcohol (78-83-1)

BEFORE

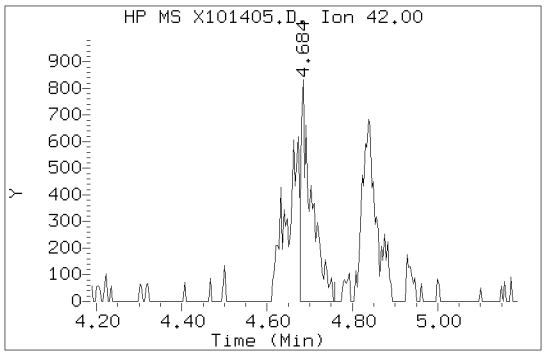
MASS
42
AREA
1451
HEIGHT
833
19-Oct-2022
16:03
linh
pham



AFTER

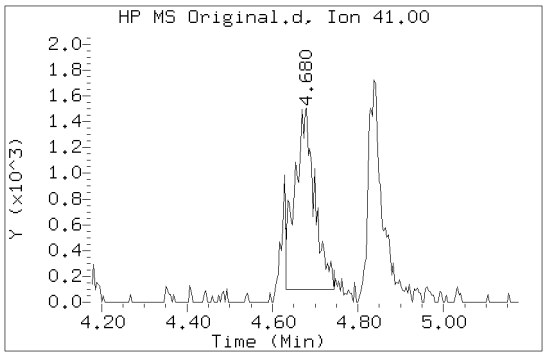
MASS
42
AREA
1451
HEIGHT
833
28-Oct-2022
16:41

Reason Code:



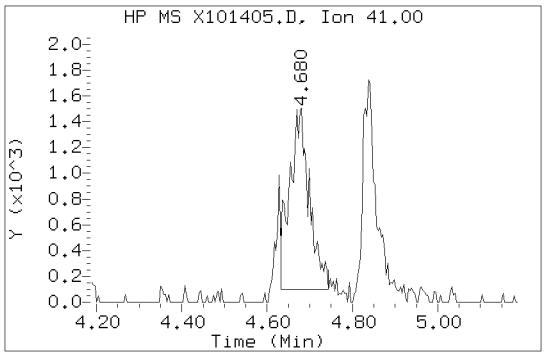
BEFORE

MASS
41
AREA
4583
HEIGHT
1405
19-Oct-2022
16:03
linh
pham



AFTER

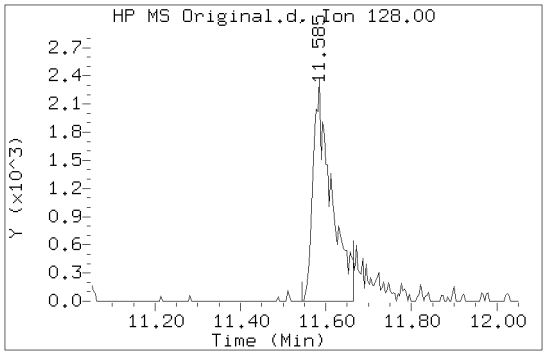
MASS
41
AREA
4583
HEIGHT
1405
28-Oct-2022
16:41



Naphthalene (91-20-3)

BEFORE

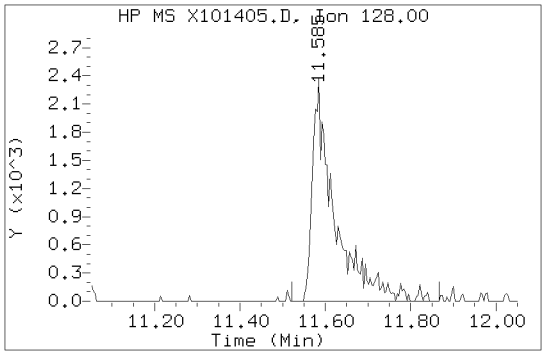
MASS
128
AREA
6990
HEIGHT
2367
19-Oct-2022
16:03
linh
pham



AFTER

MASS
128
AREA
8605
HEIGHT
2367
28-Oct-2022
16:41

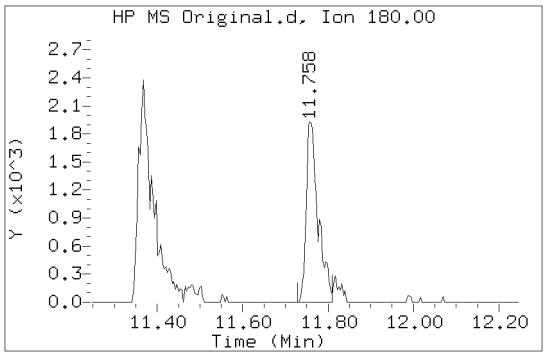
Reason Code:



1,2,3-Trichlorobenzene (87-61-6)

BEFORE

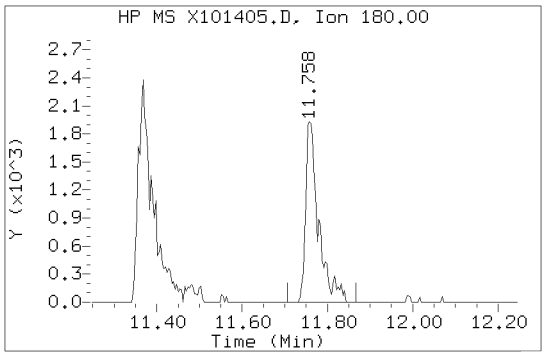
MASS
180
AREA
3769
HEIGHT
1932
19-Oct-2022
16:03
linh
pham



AFTER

MASS
180
AREA
4070
HEIGHT
1932
28-Oct-2022
16:41

Reason Code:



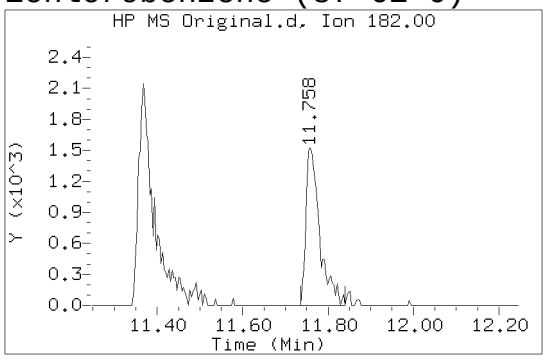
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Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

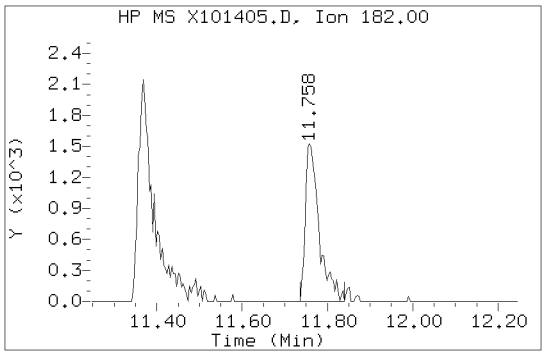
BEFORE

MASS
182
AREA
3459
HEIGHT
1528
19-Oct-2022
16:03
linh
pham



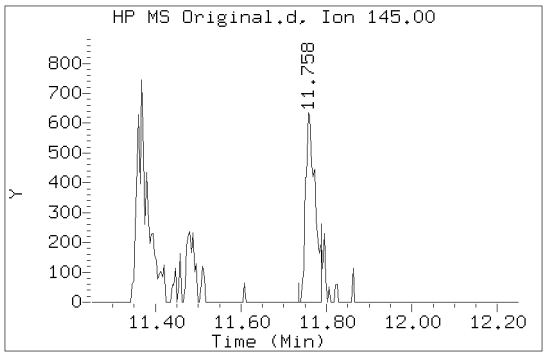
AFTER

MASS
182
AREA
3459
HEIGHT
1528
28-Oct-2022
16:41



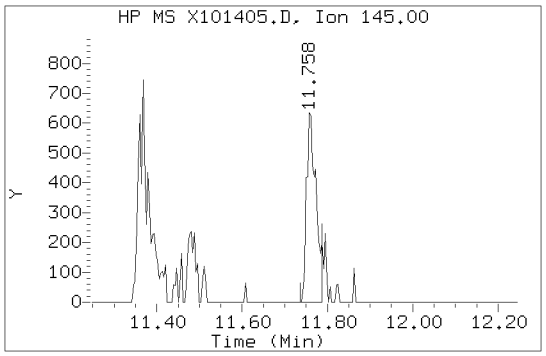
BEFORE

MASS
145
AREA
997
HEIGHT
636
19-Oct-2022
16:03
linh
pham



AFTER

MASS
145
AREA
997
HEIGHT
636
28-Oct-2022
16:41

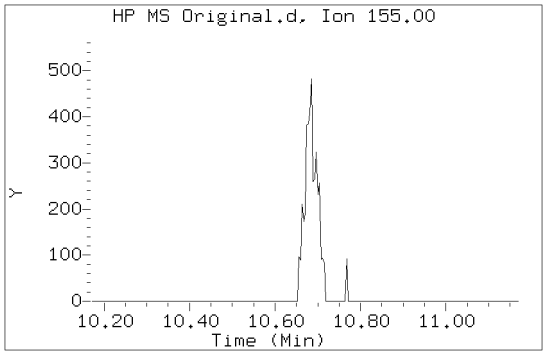


1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

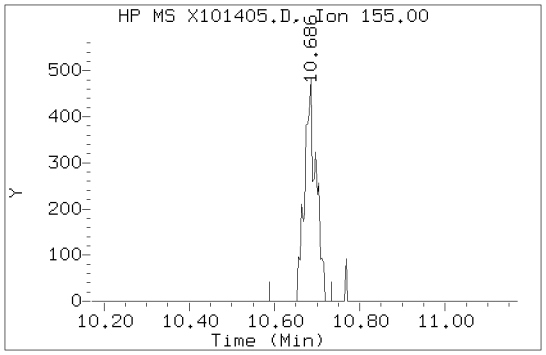
BEFORE

MASS
155
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



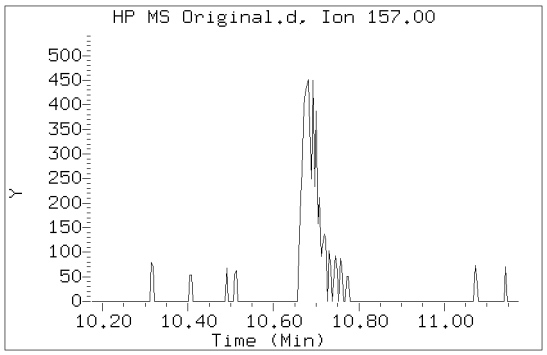
AFTER

MASS
155
AREA
903
HEIGHT
482
28-Oct-2022
16:41



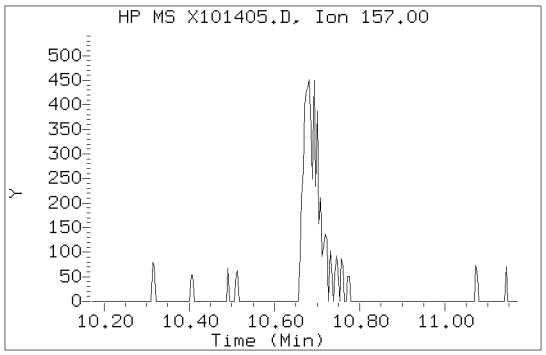
BEFORE

MASS
157
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
157
AREA
0
HEIGHT
0
28-Oct-2022
16:41



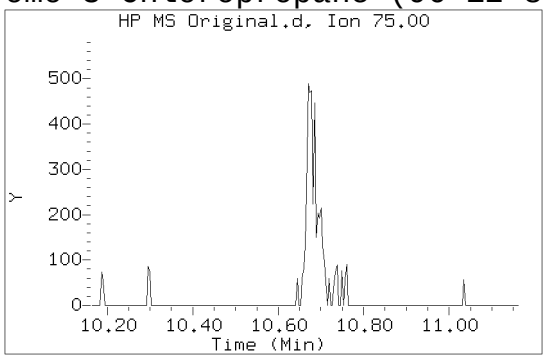
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Inj Date : 14-OCT-2022 12:50
InstruID : voa6.i
LabSampID : VSTD002

1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

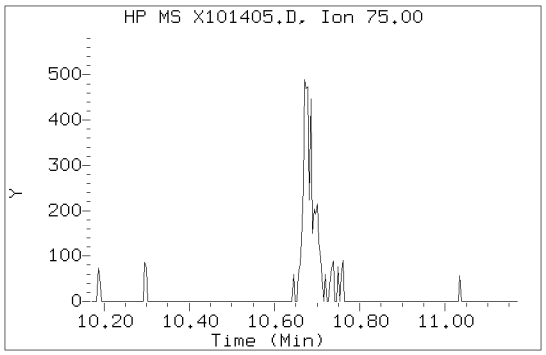
BEFORE

MASS
75
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
75
AREA
0
HEIGHT
0
28-Oct-2022
16:41

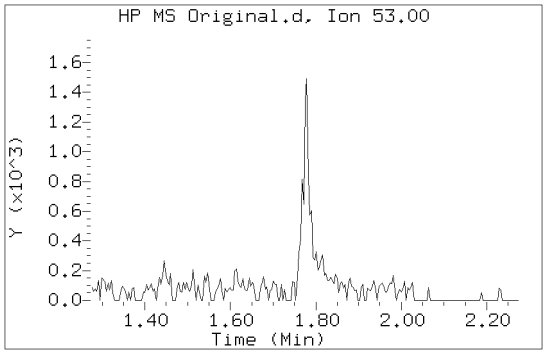


Chloroprene (126-99-8)

Reason Code:

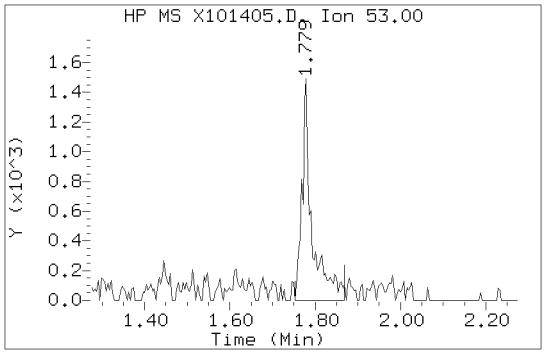
BEFORE

MASS
53
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



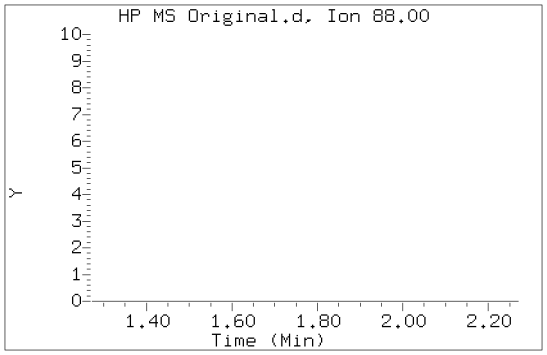
AFTER

MASS
53
AREA
2461
HEIGHT
1492
28-Oct-2022
16:41



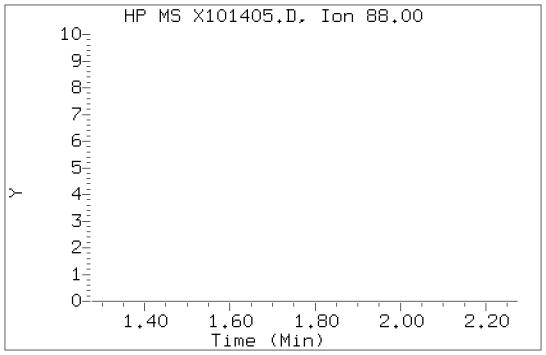
BEFORE

MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
88
AREA
0
HEIGHT
0
28-Oct-2022
16:41

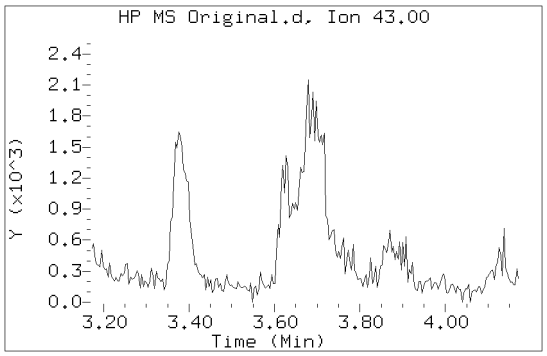


Ethyl Acetate (141-78-6)

Reason Code:

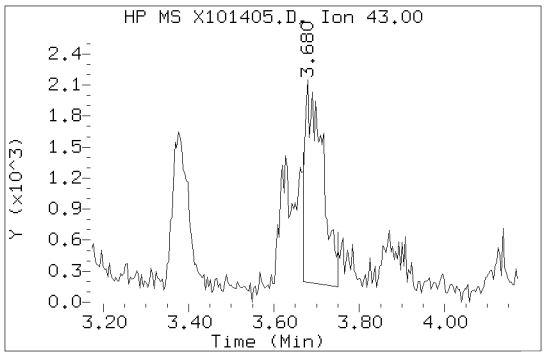
BEFORE

MASS
43
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
43
AREA
5696
HEIGHT
1956
28-Oct-2022
16:41

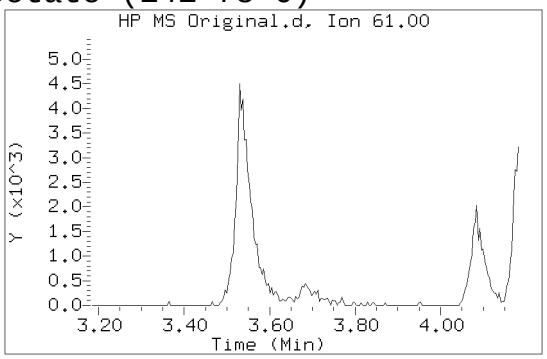


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Inj Date : 14-OCT-2022 12:50
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LabSampID : VSTD002

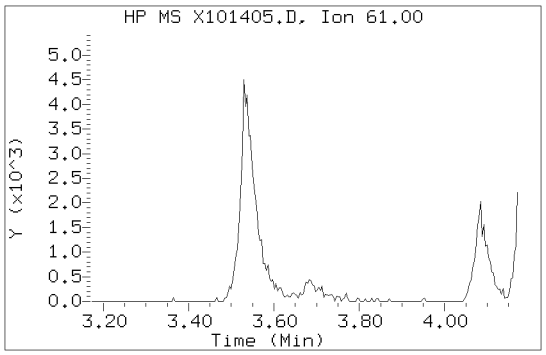
Ethyl Acetate (141-78-6)

Reason Code:

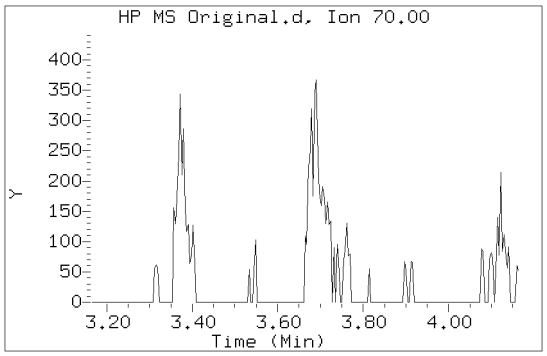
BEFORE
MASS
61
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



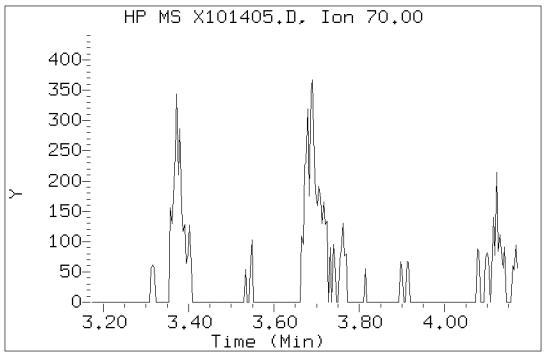
AFTER
MASS
61
AREA
0
HEIGHT
0
28-Oct-2022
16:41



BEFORE
MASS
70
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



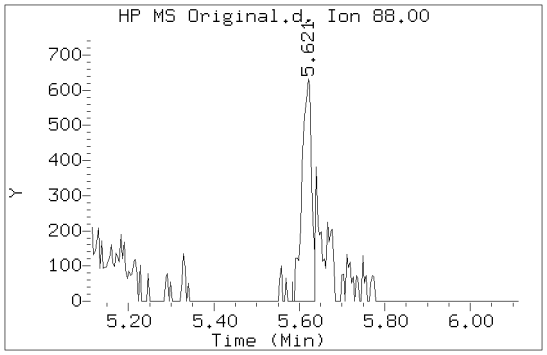
AFTER
MASS
70
AREA
0
HEIGHT
0
28-Oct-2022
16:41



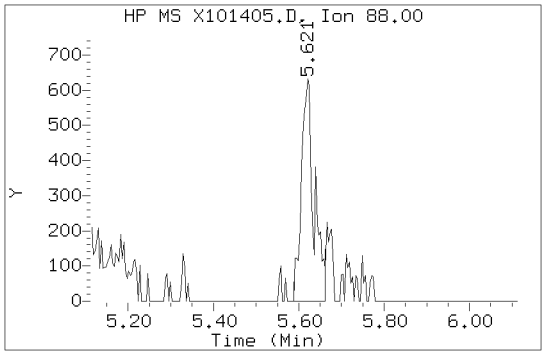
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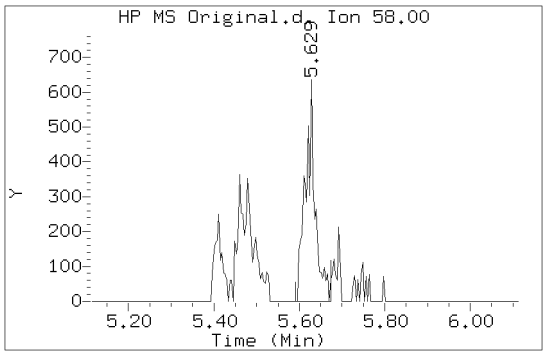
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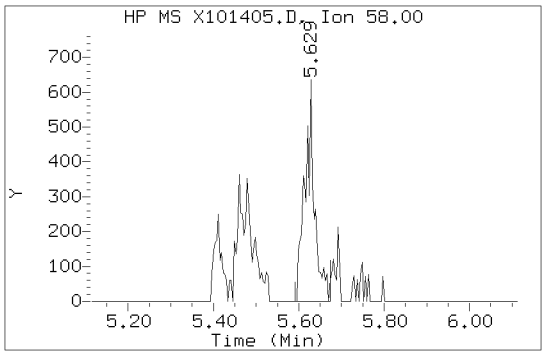
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AFTER
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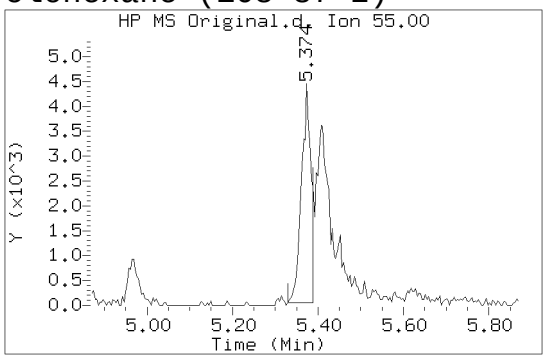


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LabSampID : VSTD002

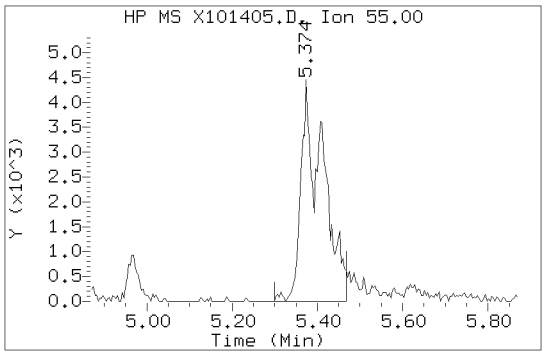
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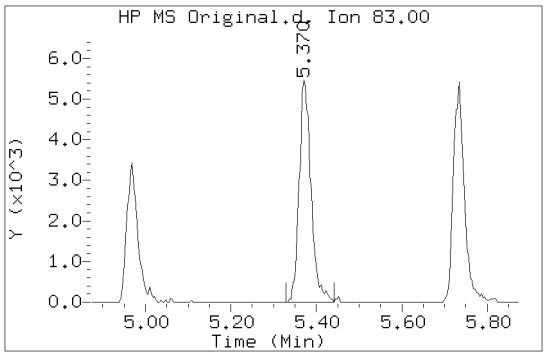
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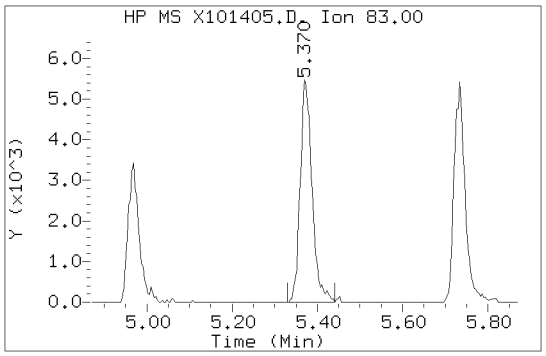
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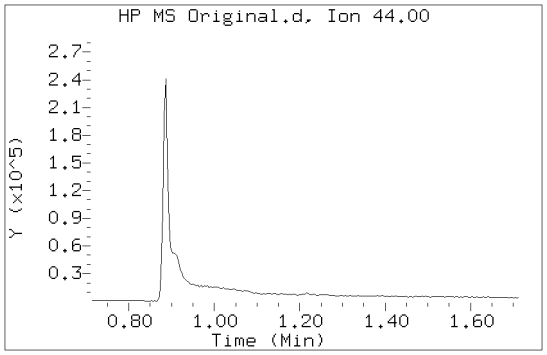
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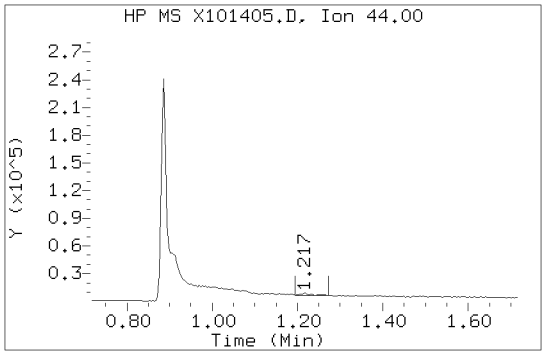
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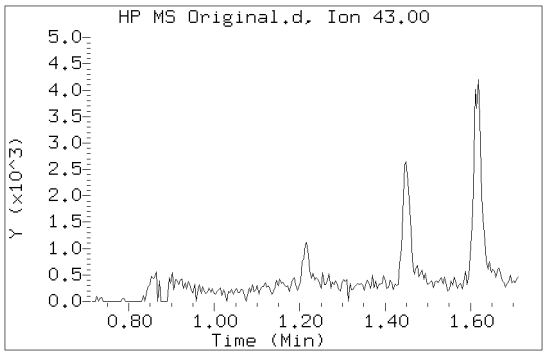
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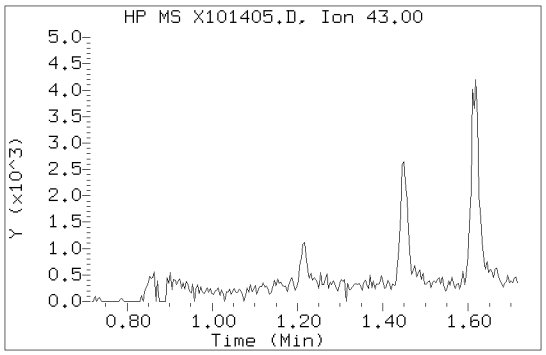
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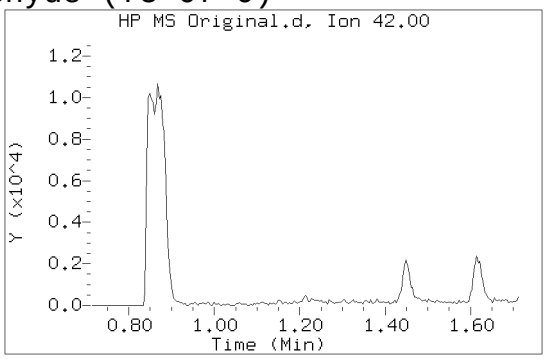
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Acetaldehyde (75-07-0)

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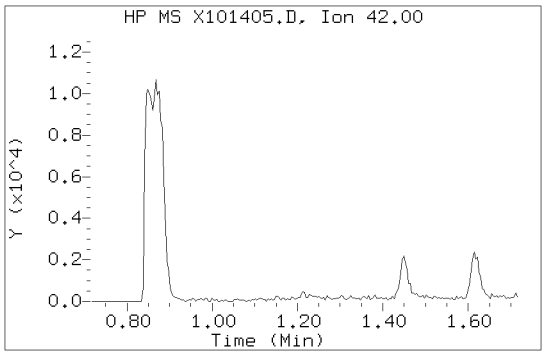
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AFTER

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28-Oct-2022
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Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101407.D Page 1
Report Date: 28-Oct-2022 16:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101407.D
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Inj Date : 14-OCT-2022 13:32
Operator : PC Inst ID: voa6.i
Smp Info : VSTD020;VSTD020;1;6;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
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Meth Date : 28-Oct-2022 16:42 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 15:59 Cal File: X101414.D
Als bottle: 8 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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

		QUANT SIG					AMOUNTS CAL-AMT	ON-COL
	Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
*	1 Pentafluorobenzene	168	4.181	4.181	(1.000)	411669	50.0000	
	135 1,4-Dioxane	88	5.598	5.598	(1.339)	13119	400.000	24.86(M)
	140 1,3-Butadiene	54	1.167	1.167	(0.279)	46305	20.0000	1.03
	25 Methacrylonitrile	41	3.829	3.829	(0.916)	50399	20.0000	0.99(M)
	12 Isobutyl Alcohol	43	4.680	4.680	(1.119)	177006	400.000	
	13 Acetonitrile	39	2.202	2.202	(0.527)	70236	200.000	8.88
	14 Allyl Chloride	41	2.202	2.202	(0.527)	145377	20.0000	0.91
	4 Propionitrile	54	3.656	3.656	(0.875)	76808	200.000	9.17
	136 n-Hexane	57	2.772	2.772	(0.663)	75577	20.0000	0.89
	72 trans-1,4-Dichloro-2-butene	53	8.890	8.890	(1.159)	16478	20.0000	42.21
	194 Acetaldehyde	44	1.212	1.212	(0.290)	17646	80.0000	85.48(M)
	23 Chloroprene	53	1.775	1.775	(0.424)	19609	20.0000	18.49(M)
	145 alpha-Methylstyrene	118	9.261	9.261	(0.958)	134711	20.0000	13.98
	200 Dimethyl Disulfide	94	6.198	6.198	(0.808)	164849	20.0000	2.07
	139 Diethyl ether	59	1.760	1.760	(0.421)	40827	20.0000	0.84
	130 Ethyl Acetate	43	3.660	3.660	(0.875)	66369	20.0000	
	40 Methyl Methacrylate	41	5.609	5.609	(1.342)	51446	20.0000	0.94
	49 Ethyl Methacrylate	69	6.787	6.787	(1.367)	98146	20.0000	0.98
	132 n-Butanol	56	5.265	5.265	(1.259)	20683	400.000	23.69
	142 Tetrahydrofuran	42	3.848	3.848	(0.920)	17620	40.0000	1.44

150	Allyl alcohol	57	2.772	2.772 (0.663)	75577	400.000	17.92
166	1,2,3-Trimethylbenzene	105	9.729	9.729 (1.007)	268638	20.0000	5.36

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101407.D Page 2
Report Date: 28-Oct-2022 16:42

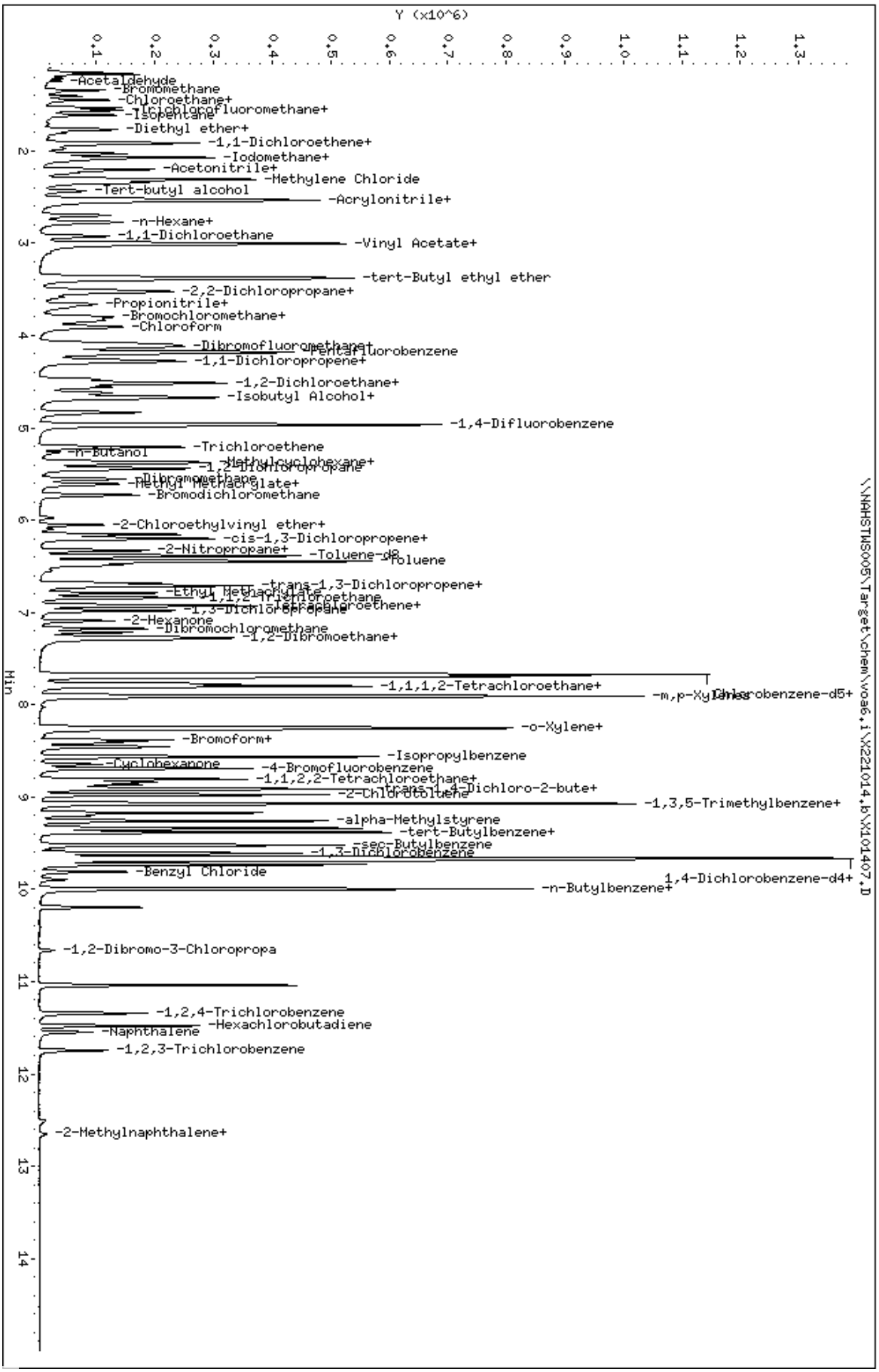
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
131	Methyl Acrylate	55	3.698	3.698	(0.884)	66109	20.0000	
162	Butyl acrylate	55	8.252	8.252	(1.076)	115158	20.0000	1.76
2	Dichlorodifluoromethane	85	0.976	0.976	(0.234)	64041	20.0000	
3	Chloromethane	50	1.081	1.081	(0.259)	75278	20.0000	
5	Vinyl Chloride	62	1.145	1.145	(0.274)	62546	20.0000	0.84
6	Bromomethane	94	1.343	1.343	(0.321)	48128	20.0000	
7	Chloroethane	64	1.407	1.407	(0.337)	39987	20.0000	0.89
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	87931	20.0000	0.91
9	Acrolein	56	1.445	1.445	(0.346)	9200	40.0000	1.57
10	Acetone	43	1.977	1.977	(0.473)	34498	40.0000	(M)
11	1,1-Dichloroethene	96	1.917	1.917	(0.459)	54431	20.0000	0.91
15	Iodomethane	142	2.029	2.029	(0.485)	155126	40.0000	38.34
16	Acrylonitrile	53	2.543	2.543	(0.608)	36550	40.0000	117.10
17	Methylene Chloride	84	2.307	2.307	(0.552)	87632	20.0000	
18	Methyl tert-butyl ether	73	2.536	2.536	(0.606)	200787	20.0000	0.90
19	Carbon Disulfide	76	2.071	2.071	(0.495)	376330	40.0000	1.77
20	trans-1,2-Dichloroethene	96	2.532	2.532	(0.606)	75261	20.0000	0.89
21	Vinyl Acetate	43	3.004	3.004	(0.719)	350834	40.0000	1.83
22	1,1-Dichloroethane	63	2.925	2.925	(0.700)	127349	20.0000	0.86
24	2-Butanone	43	3.585	3.585	(0.857)	37133	40.0000	1.97(H)
26	2,2-Dichloropropane	77	3.510	3.510	(0.840)	105263	20.0000	0.93
27	cis-1,2-Dichloroethene	96	3.529	3.529	(0.844)	88117	20.0000	0.90
28	Chloroform	83	3.908	3.908	(0.935)	135891	20.0000	0.87
29	Bromochloromethane	128	3.799	3.799	(0.909)	46927	20.0000	0.83
$ 30	Dibromofluoromethane	113	4.102	4.102	(0.981)	77480	20.0000	
31	1,1,1-Trichloroethane	97	4.087	4.087	(0.978)	107858	20.0000	0.89
32	1,1-Dichloropropene	75	4.282	4.282	(0.863)	99117	20.0000	1.01
33	1,2-Dichloroethane	62	4.556	4.556	(0.918)	96085	20.0000	0.99
34	Carbon Tetrachloride	117	4.264	4.264	(0.859)	93662	20.0000	1.00
$ 35	1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	76679	20.0000	
* 36	1,4-Difluorobenzene	114	4.965	4.965	(1.000)	621533	50.0000	
37	Benzene	78	4.511	4.511	(0.909)	312679	20.0000	0.99
38	Trichloroethene	130	5.208	5.208	(1.049)	92088	20.0000	0.97
39	Bromodichloromethane	83	5.729	5.729	(1.154)	99941	20.0000	0.98
41	2-Chloroethylvinyl ether	63	6.052	6.052	(1.219)	46277	40.0000	111.65
42	1,2-Dichloropropane	63	5.437	5.437	(1.095)	79357	20.0000	0.96
44	Dibromomethane	93	5.553	5.553	(1.119)	48664	20.0000	0.96
45	4-Methyl-2-Pentanone	43	6.325	6.325	(0.825)	107201	40.0000	96.52
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.240)	130360	20.0000	1.00
* 47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	568135	50.0000	
$ 48	Toluene-d8	98	6.389	6.389	(0.833)	284885	20.0000	1.90
50	Toluene	91	6.449	6.449	(0.841)	333191	20.0000	1.87
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.346)	104273	20.0000	0.98
52	2-Hexanone	43	7.090	7.090	(0.924)	64668	40.0000	3.92(M)
53	1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	59369	20.0000	1.80
54	1,3-Dichloropropane	76	6.981	6.981	(0.910)	120300	20.0000	1.82
55	Dibromochloromethane	129	7.176	7.176	(0.936)	85257	20.0000	45.48
56	Tetrachloroethene	164	6.929	6.929	(0.903)	79277	20.0000	1.89
57	1,2-Dibromoethane	107	7.263	7.263	(0.947)	75245	20.0000	1.91
58	1-Chlorohexane	55	7.697	7.697	(1.550)	59036	20.0000	1.04
59	Chlorobenzene	112	7.694	7.694	(1.003)	229285	20.0000	1.92
60	1,1,1,2-Tetrachloroethane	131	7.772	7.772	(1.013)	83530	20.0000	1.89

61 Ethylbenzene	106	7.802	7.802 (1.017)	116661	20.0000	1.87
62 m,p-Xylenes	106	7.904	7.904 (1.030)	295735	40.0000	3.80

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	63 o-Xylene	106	8.241	8.241	(1.074)	142000	20.0000	1.85
	64 Styrene	104	8.260	8.260	(1.077)	236802	20.0000	1.96
	66 Bromoform	173	8.410	8.410	(1.096)	51773	20.0000	44.37
	67 Isopropylbenzene	105	8.563	8.563	(1.116)	344589	20.0000	1.85
	68 1,1,2,2-Tetrachloroethane	83	8.837	8.837	(0.915)	79481	20.0000	15.97
$	69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	101212	20.0000	47.62
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	281137	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	55563	20.0000	6.03(MH)
	73 n-Propylbenzene	91	8.912	8.912	(0.922)	386450	20.0000	14.91
	74 Bromobenzene	156	8.807	8.807	(0.912)	103734	20.0000	5.26
	75 1,3,5-Trimethylbenzene	105	9.066	9.066	(0.938)	287417	20.0000	5.23
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	243826	20.0000	5.02
	77 4-Chlorotoluene	91	9.073	9.073	(0.939)	274070	20.0000	5.28
	78 tert-Butylbenzene	119	9.336	9.336	(0.966)	241557	20.0000	5.21
	79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	288923	20.0000	5.27
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	322430	20.0000	5.19
	82 p-Isopropyltoluene	119	9.650	9.650	(0.999)	291427	20.0000	5.23
	83 1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	168287	20.0000	5.19
	84 1,4-Dichlorobenzene	146	9.680	9.680	(1.002)	176612	20.0000	5.39
	86 Benzyl Chloride	91	9.812	9.812	(1.279)	95688	20.0000	1.83
	87 n-Butylbenzene	91	9.995	9.995	(1.035)	230738	20.0000	5.41
	88 1,2-Dichlorobenzene	146	9.995	9.995	(1.035)	154590	20.0000	15.06
	89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	7513	20.0000	12.24
	90 1,2,4-Trichlorobenzene	180	11.341	11.341	(1.174)	63618	20.0000	11.82
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	51139	20.0000	13.29
	92 Naphthalene	128	11.547	11.547	(1.195)	78009	20.0000	5.18
	93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.216)	40683	20.0000	5.13
M	94 1,2-Dichloroethylene (total)	96				163378	40.0000	
M	95 Xylenes (total)	106				437735	60.0000	
	141 Cyclohexane	56	4.125	4.125	(0.987)	105454	20.0000	0.92
	138 Freon TF	101	1.917	1.917	(0.459)	53969	20.0000	0.88
	147 Methylcyclohexane	55	5.385	5.385	(1.085)	168439	20.0000	1.03
	146 Methyl Acetate	43	2.239	2.239	(0.536)	36504	20.0000	1.05

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



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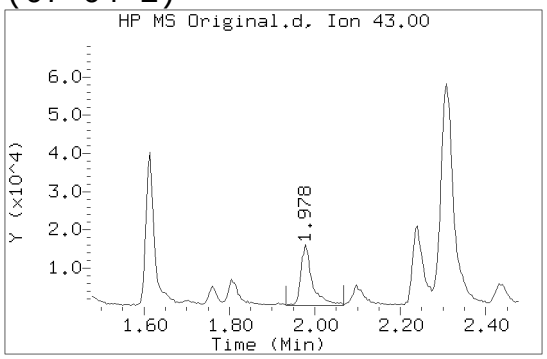
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Operator: PC
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LabSampID : VSTD020

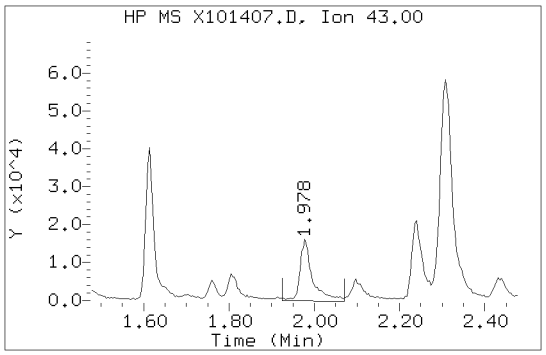
Acetone (67-64-1)

Reason Code:

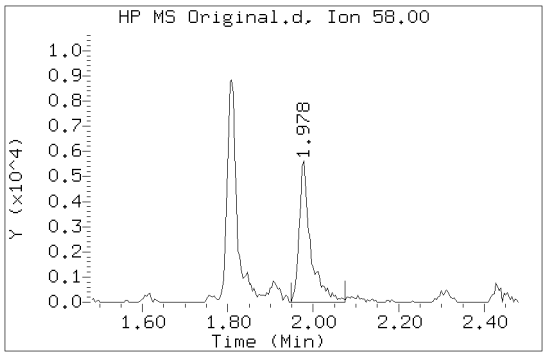
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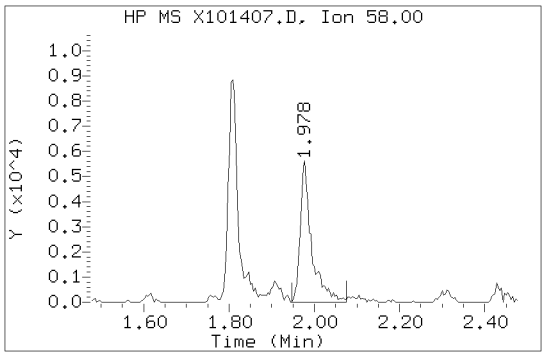
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MASS
43
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HEIGHT
16297
28-Oct-2022
16:41



BEFORE
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19-Oct-2022
16:03
linh
pham



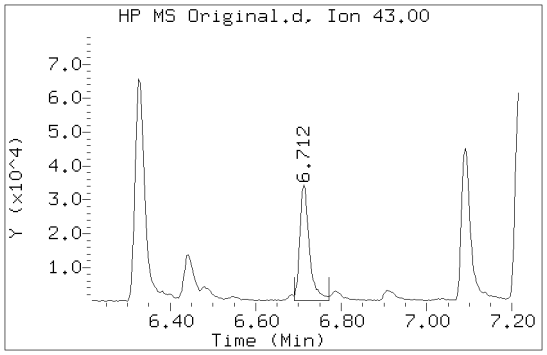
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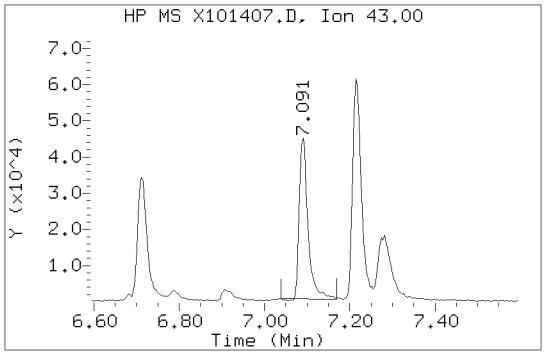
2-Hexanone (591-78-6)

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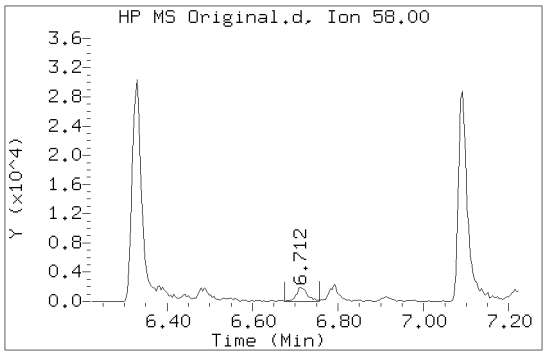
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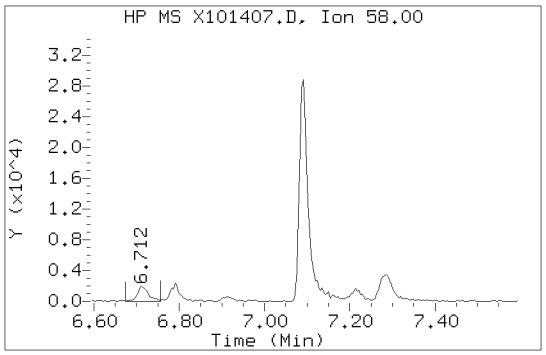
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BEFORE
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HEIGHT
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pham



AFTER
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28-Oct-2022
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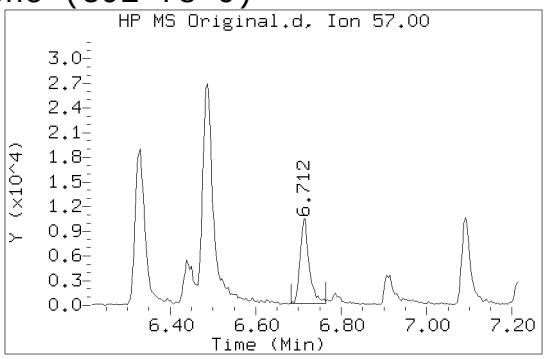


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InstruID : voa6.i
LabSampID : VSTD020

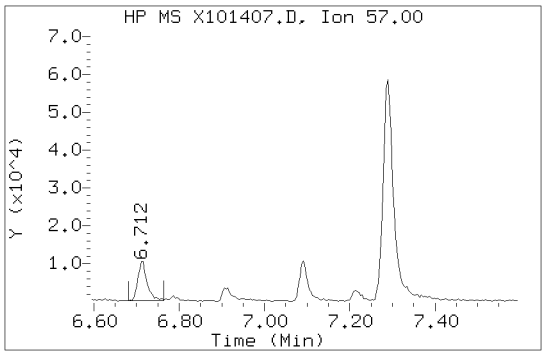
2-Hexanone (591-78-6)

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linh
pham



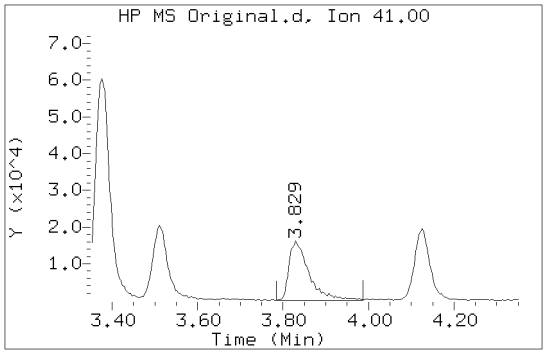
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28-Oct-2022
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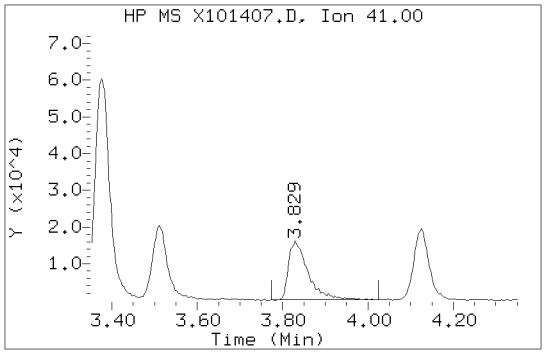
Methacrylonitrile (126-98-7)

Reason Code:

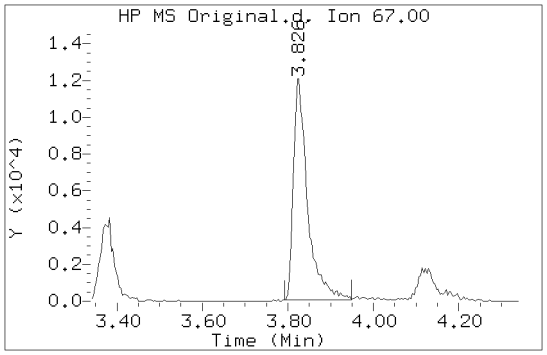
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HEIGHT
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16:03
linh
pham



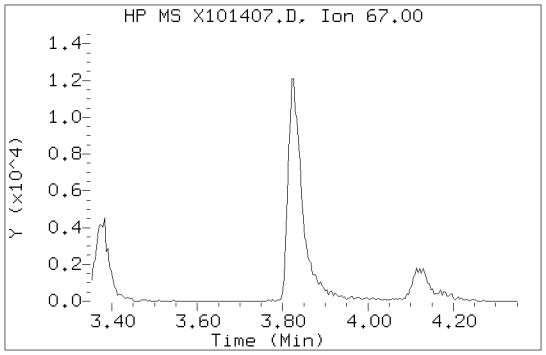
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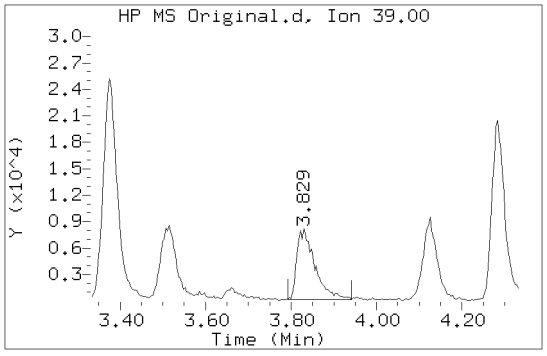
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12013
19-Oct-2022
16:03
linh
pham



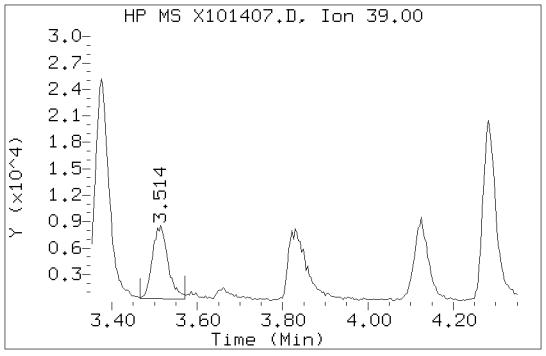
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4558
28-Oct-2022
16:41



BEFORE
MASS
39
AREA
23589
HEIGHT
8017
19-Oct-2022
16:03
linh
pham



AFTER
MASS
39
AREA
20975
HEIGHT
8293
28-Oct-2022
16:41

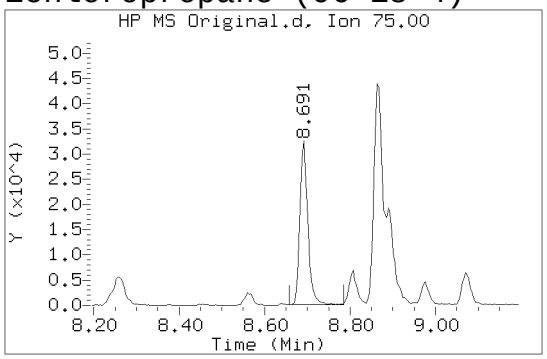


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InstruID : voa6.i
LabSampID : VSTD020

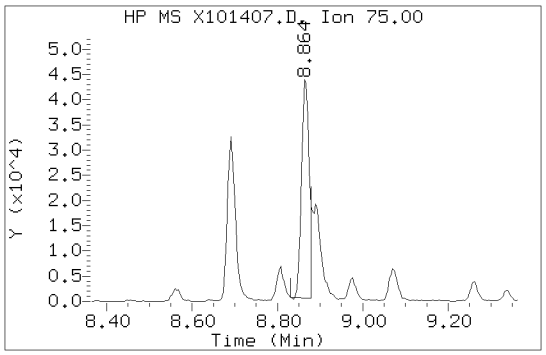
1,2,3-Trichloropropane (96-18-4)

Reason Code:

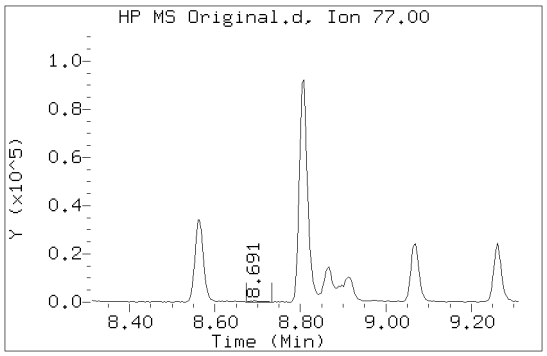
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HEIGHT
32485
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16:03
linh
pham



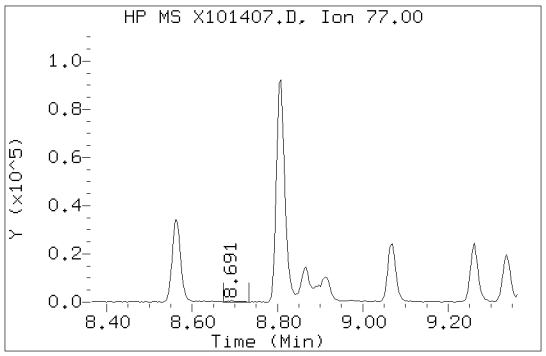
AFTER
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AREA
55563
HEIGHT
43224
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16:41



BEFORE
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AREA
743
HEIGHT
622
19-Oct-2022
16:03
linh
pham



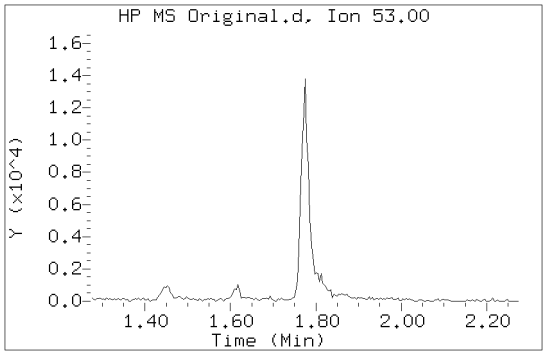
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622
28-Oct-2022
16:41



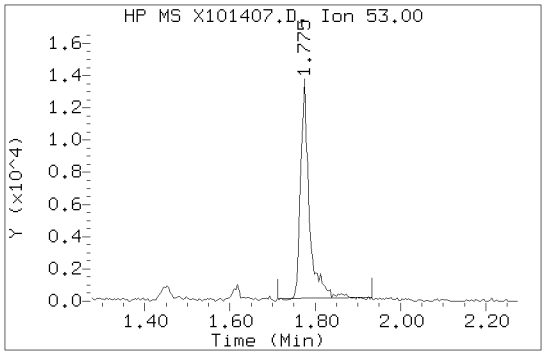
Chloroprene (126-99-8)

Reason Code:

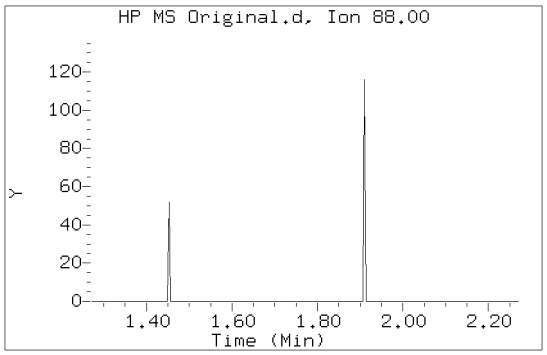
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19-Oct-2022
16:03
linh
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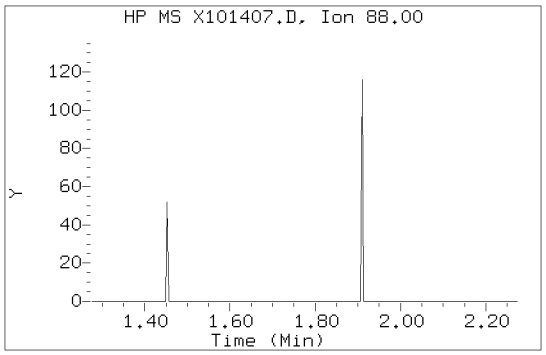
AFTER
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53
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13623
28-Oct-2022
16:41



BEFORE
MASS
88
AREA
0
HEIGHT
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19-Oct-2022
16:03
linh
pham



AFTER
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88
AREA
0
HEIGHT
0
28-Oct-2022
16:41

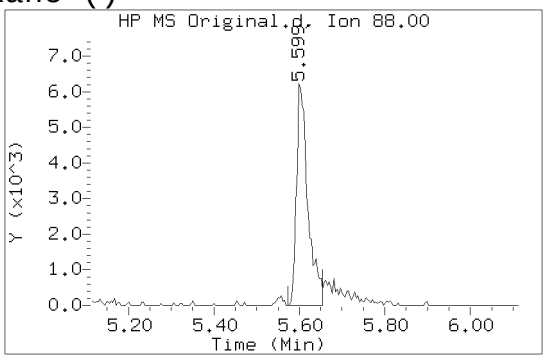


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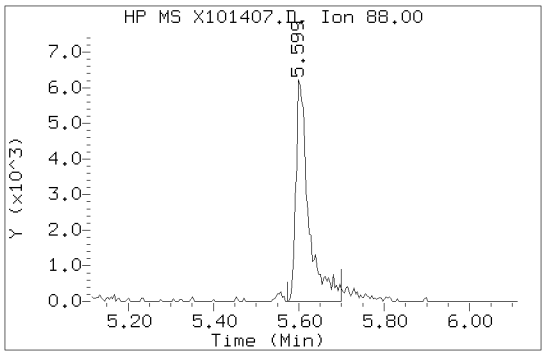
1,4-Dioxane ()

Reason Code:

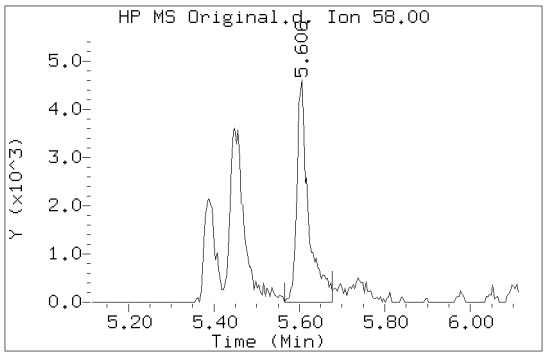
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11744
HEIGHT
6224
19-Oct-2022
16:03
linh
pham



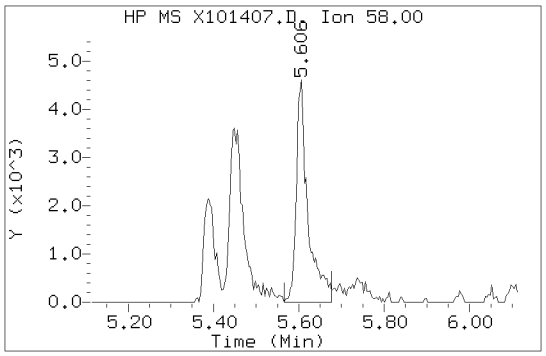
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BEFORE
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AREA
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4607
19-Oct-2022
16:03
linh
pham



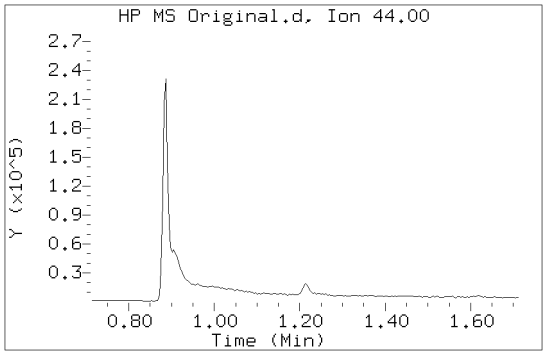
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HEIGHT
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28-Oct-2022
16:41



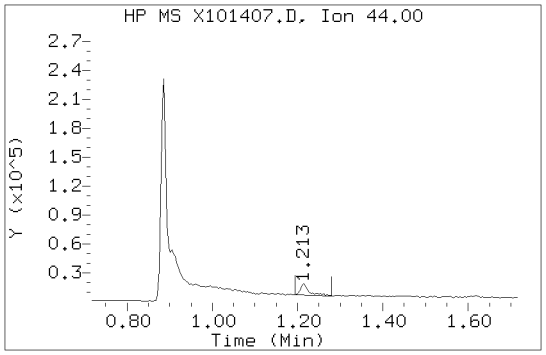
Acetaldehyde (75-07-0)

Reason Code:

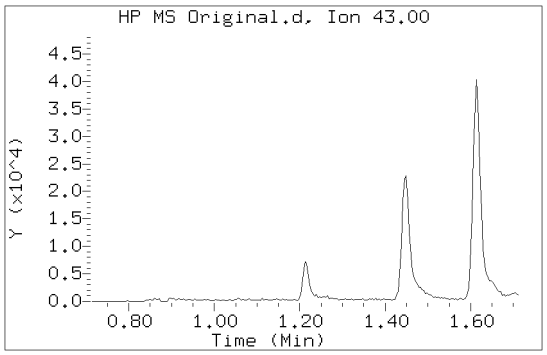
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19-Oct-2022
16:03
linh
pham



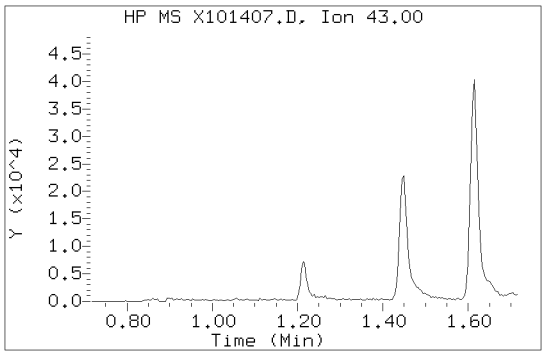
AFTER
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28-Oct-2022
16:41



BEFORE
MASS
43
AREA
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HEIGHT
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linh
pham



AFTER
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AREA
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HEIGHT
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16:41



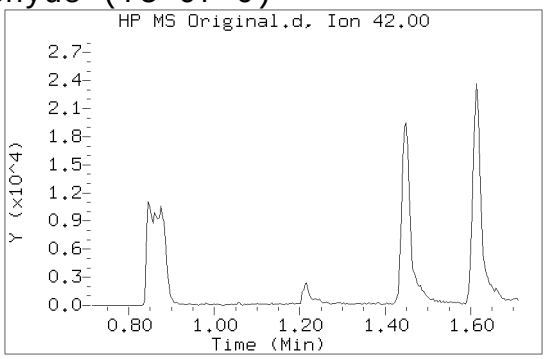
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Inj Date : 14-OCT-2022 13:32
InstruID : voa6.i
LabSampID : VSTD020

Acetaldehyde (75-07-0)

Reason Code:

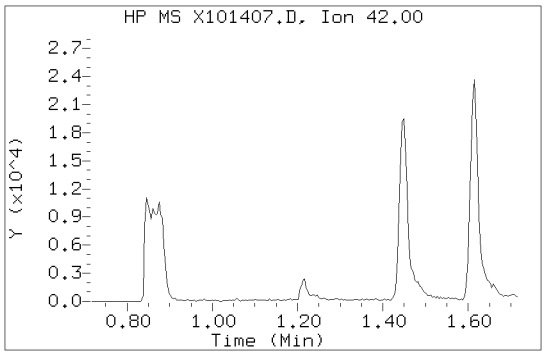
BEFORE

MASS
42
AREA
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HEIGHT
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19-Oct-2022
16:03
linh
pham



AFTER

MASS
42
AREA
0
HEIGHT
0
28-Oct-2022
16:41



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101408.D Page 1
Report Date: 28-Oct-2022 16:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101408.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 14-OCT-2022 13:53
Operator : PC Inst ID: voa6.i
Smp Info : VSTD050;VSTD050;1;7;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\8260W.m
Meth Date : 28-Oct-2022 16:42 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:32 Cal File: X101407.D
Als bottle: 9 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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

		QUANT SIG					AMOUNTS	
	Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.185	4.185	(1.000)	416644	50.0000	
	135 1,4-Dioxane	88	5.598	5.598	(1.338)	32986	1000.00	61.77(M)
	140 1,3-Butadiene	54	1.167	1.167	(0.279)	113271	50.0000	2.50
	25 Methacrylonitrile	41	3.829	3.829	(0.915)	124603	50.0000	2.43(M)
	12 Isobutyl Alcohol	43	4.680	4.680	(1.118)	425892	1000.00	
	13 Acetonitrile	39	2.202	2.202	(0.526)	172921	500.000	21.61
	14 Allyl Chloride	41	2.202	2.202	(0.526)	357174	50.0000	2.22
	4 Propionitrile	54	3.653	3.653	(0.873)	186736	500.000	22.04
	136 n-Hexane	57	2.776	2.776	(0.663)	194851	50.0000	2.28
	72 trans-1,4-Dichloro-2-butene	53	8.890	8.890	(1.159)	43736	50.0000	48.06
	194 Acetaldehyde	44	1.212	1.212	(0.290)	36228	200.000	203.55(M)
	23 Chloroprene	53	1.775	1.775	(0.424)	52673	50.0000	49.08(M)
	145 alpha-Methylstyrene	118	9.257	9.257	(0.958)	340672	50.0000	38.61
	200 Dimethyl Disulfide	94	6.198	6.198	(0.808)	422781	50.0000	5.34
	139 Diethyl ether	59	1.760	1.760	(0.421)	96795	50.0000	1.98
	130 Ethyl Acetate	43	3.657	3.657	(0.874)	147790	50.0000	
	40 Methyl Methacrylate	41	5.606	5.606	(1.339)	124950	50.0000	2.26
	49 Ethyl Methacrylate	69	6.787	6.787	(1.366)	238999	50.0000	2.41
	132 n-Butanol	56	5.257	5.257	(1.256)	55638	1000.00	62.98
	142 Tetrahydrofuran	42	3.848	3.848	(0.919)	41907	100.000	3.39

150	Allyl alcohol	57	2.776	2.776 (0.663)	194851	1000.00	45.65
166	1,2,3-Trimethylbenzene	105	9.729	9.729 (1.007)	646544	50.0000	12.67

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101408.D Page 2
Report Date: 28-Oct-2022 16:42

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	131 Methyl Acrylate	55	3.687	3.687	(0.881)	145777	50.0000	
	162 Butyl acrylate	55	8.252	8.252	(1.076)	278458	50.0000	4.26
	2 Dichlorodifluoromethane	85	0.976	0.976	(0.233)	162160	50.0000	
	3 Chloromethane	50	1.081	1.081	(0.258)	179926	50.0000	
	5 Vinyl Chloride	62	1.145	1.145	(0.274)	159397	50.0000	2.14
	6 Bromomethane	94	1.344	1.344	(0.321)	107545	50.0000	
	7 Chloroethane	64	1.407	1.407	(0.336)	98720	50.0000	2.18
	8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	221735	50.0000	2.27
	9 Acrolein	56	1.445	1.445	(0.345)	23489	100.000	3.97
	10 Acetone	43	1.977	1.977	(0.472)	78599	100.000	(M)
	11 1,1-Dichloroethene	96	1.917	1.917	(0.458)	133668	50.0000	2.21
	15 Iodomethane	142	2.030	2.030	(0.485)	473427	100.000	111.89
	16 Acrylonitrile	53	2.536	2.536	(0.606)	107044	100.000	117.19
	17 Methylene Chloride	84	2.307	2.307	(0.551)	202027	50.0000	
	18 Methyl tert-butyl ether	73	2.539	2.539	(0.607)	481616	50.0000	2.14
	19 Carbon Disulfide	76	2.071	2.071	(0.495)	947886	100.000	4.42
	20 trans-1,2-Dichloroethene	96	2.532	2.532	(0.605)	187026	50.0000	2.20
	21 Vinyl Acetate	43	3.001	3.001	(0.717)	858304	100.000	4.44
	22 1,1-Dichloroethane	63	2.922	2.922	(0.698)	316032	50.0000	2.13
	24 2-Butanone	43	3.582	3.582	(0.856)	101872	100.000	5.35(H)
	26 2,2-Dichloropropane	77	3.510	3.510	(0.839)	257879	50.0000	2.26
	27 cis-1,2-Dichloroethene	96	3.529	3.529	(0.843)	218682	50.0000	2.21
	28 Chloroform	83	3.904	3.904	(0.933)	331178	50.0000	2.11
	29 Bromochloromethane	128	3.795	3.795	(0.907)	114606	50.0000	2.01
$	30 Dibromofluoromethane	113	4.099	4.099	(0.979)	182656	50.0000	
	31 1,1,1-Trichloroethane	97	4.084	4.084	(0.976)	272922	50.0000	2.24
	32 1,1-Dichloropropene	75	4.279	4.279	(0.861)	247898	50.0000	2.57
	33 1,2-Dichloroethane	62	4.560	4.560	(0.918)	236726	50.0000	2.47
	34 Carbon Tetrachloride	117	4.268	4.268	(0.859)	234850	50.0000	2.53
$	35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	180049	50.0000	
*	36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	614929	50.0000	
	37 Benzene	78	4.515	4.515	(0.909)	759136	50.0000	2.43
	38 Trichloroethene	130	5.209	5.209	(1.048)	223485	50.0000	2.39
	39 Bromodichloromethane	83	5.726	5.726	(1.152)	246525	50.0000	2.46
	41 2-Chloroethylvinyl ether	63	6.048	6.048	(1.217)	117091	100.000	113.05
	42 1,2-Dichloropropane	63	5.437	5.437	(1.094)	189255	50.0000	2.33
	44 Dibromomethane	93	5.553	5.553	(1.118)	120717	50.0000	2.42
	45 4-Methyl-2-Pentanone	43	6.326	6.326	(0.825)	260737	100.000	103.17
	46 cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	321464	50.0000	2.50
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	567103	50.0000	
$	48 Toluene-d8	98	6.386	6.386	(0.832)	676997	50.0000	4.52
	50 Toluene	91	6.446	6.446	(0.840)	822269	50.0000	4.63
	51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.345)	262268	50.0000	2.51
	52 2-Hexanone	43	7.087	7.087	(0.924)	164065	100.000	9.98(M)
	53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	144287	50.0000	4.39
	54 1,3-Dichloropropane	76	6.982	6.982	(0.910)	290271	50.0000	4.41
	55 Dibromochloromethane	129	7.173	7.173	(0.935)	211264	50.0000	49.96
	56 Tetrachloroethene	164	6.929	6.929	(0.903)	191037	50.0000	4.58
	57 1,2-Dibromoethane	107	7.259	7.259	(0.946)	183920	50.0000	4.69
	58 1-Chlorohexane	55	7.698	7.698	(1.549)	148250	50.0000	2.65
	59 Chlorobenzene	112	7.694	7.694	(1.003)	559004	50.0000	4.69
	60 1,1,1,2-Tetrachloroethane	131	7.773	7.773	(1.013)	203906	50.0000	4.62

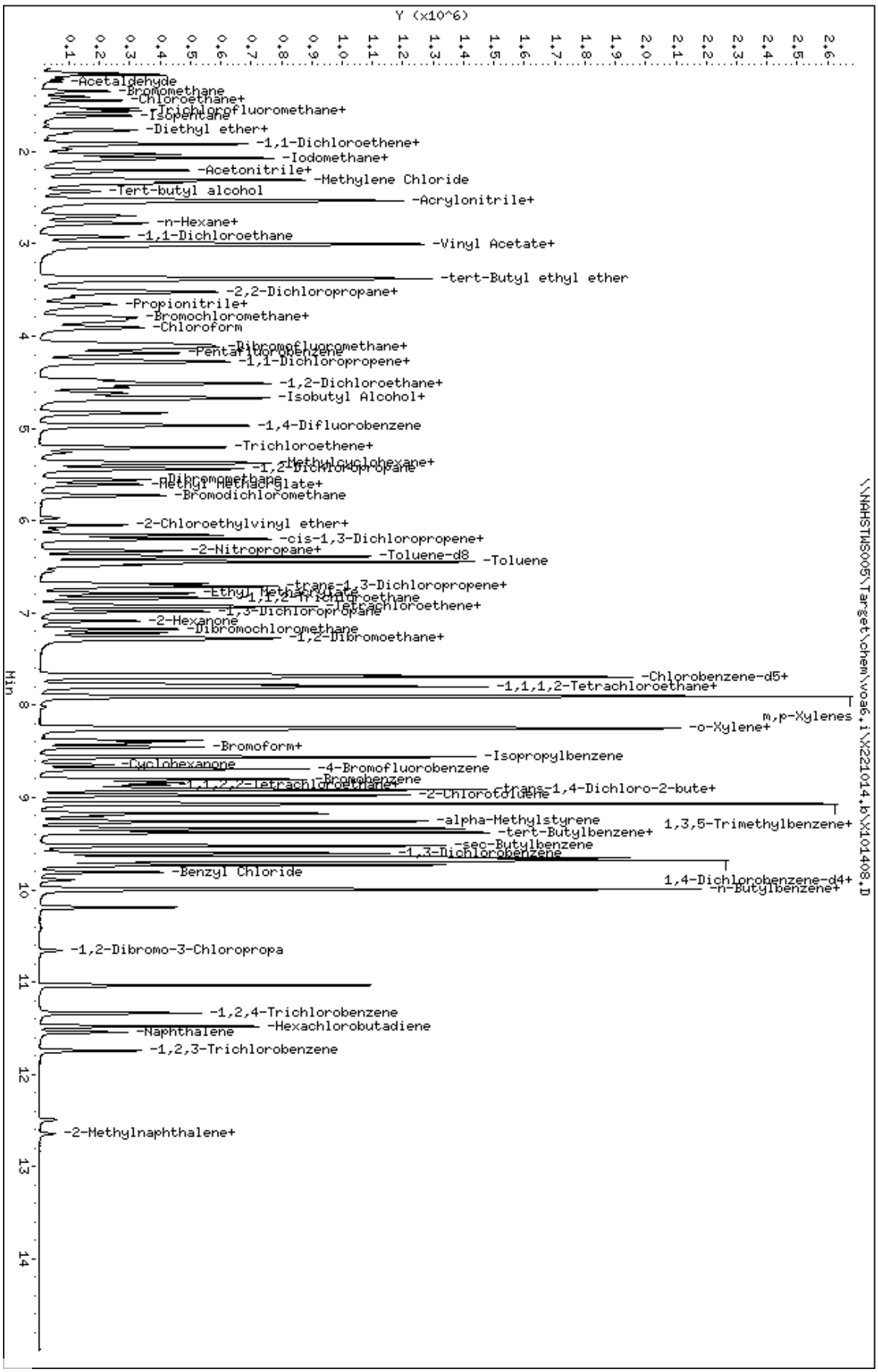
61 Ethylbenzene	106	7.799	7.799 (1.017)	287573	50.0000	4.63
62 m,p-Xylenes	106	7.904	7.904 (1.030)	722247	100.000	9.30

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101408.D Page 3
Report Date: 28-Oct-2022 16:42

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	63 o-Xylene	106	8.241	8.241	(1.074)	344528	50.0000	4.51
	64 Styrene	104	8.260	8.260	(1.077)	585343	50.0000	4.87
	66 Bromoform	173	8.410	8.410	(1.096)	131593	50.0000	49.26
	67 Isopropylbenzene	105	8.560	8.560	(1.116)	853148	50.0000	4.60
	68 1,1,2,2-Tetrachloroethane	83	8.837	8.837	(0.915)	191262	50.0000	38.81
$	69 4-Bromofluorobenzene	95	8.687	8.687	(1.132)	241297	50.0000	51.18
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	286452	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	139168	50.0000	14.83(MH)
	73 n-Propylbenzene	91	8.912	8.912	(0.922)	965817	50.0000	39.65
	74 Bromobenzene	156	8.803	8.803	(0.911)	254738	50.0000	12.68
	75 1,3,5-Trimethylbenzene	105	9.066	9.066	(0.938)	712198	50.0000	12.73
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	594417	50.0000	12.01
	77 4-Chlorotoluene	91	9.070	9.070	(0.939)	671511	50.0000	12.69
	78 tert-Butylbenzene	119	9.336	9.336	(0.966)	600993	50.0000	12.74
	79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	706596	50.0000	12.65
	81 sec-Butylbenzene	105	9.519	9.519	(0.985)	815549	50.0000	12.90
	82 p-Isopropyltoluene	119	9.651	9.651	(0.999)	730128	50.0000	12.86
	83 1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	422732	50.0000	12.81
	84 1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	430136	50.0000	12.89
	86 Benzyl Chloride	91	9.808	9.808	(1.279)	246798	50.0000	4.73
	87 n-Butylbenzene	91	9.992	9.992	(1.034)	594845	50.0000	13.70
	88 1,2-Dichlorobenzene	146	9.992	9.992	(1.034)	376934	50.0000	38.74
	89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	19399	50.0000	36.70
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	166885	50.0000	36.14
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	128928	50.0000	25.88
	92 Naphthalene	128	11.544	11.544	(1.195)	212429	50.0000	13.84
	93 1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	105379	50.0000	13.06
M	94 1,2-Dichloroethylene (total)	96				405708	100.000	
M	95 Xylenes (total)	106				1066775	150.000	
	141 Cyclohexane	56	4.121	4.121	(0.985)	259971	50.0000	2.26
	138 Freon TF	101	1.917	1.917	(0.458)	138908	50.0000	2.26
	147 Methylcyclohexane	55	5.381	5.381	(1.083)	408984	50.0000	2.53
	146 Methyl Acetate	43	2.236	2.236	(0.534)	92342	50.0000	2.64

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101408.D
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Sample Info: VSTD050;VSTD050;1;7;
Purge Volume: 5.0
Column phase: DB624

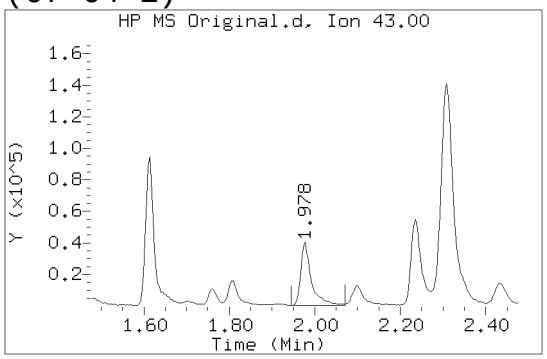
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Operator: PC
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Inj Date : 14-OCT-2022 13:53
InstruID : voa6.i
LabSampID : VSTD050

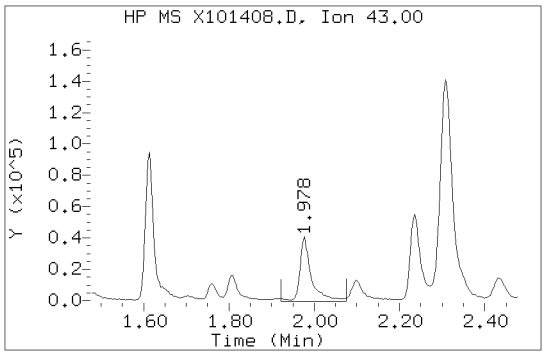
Acetone (67-64-1)

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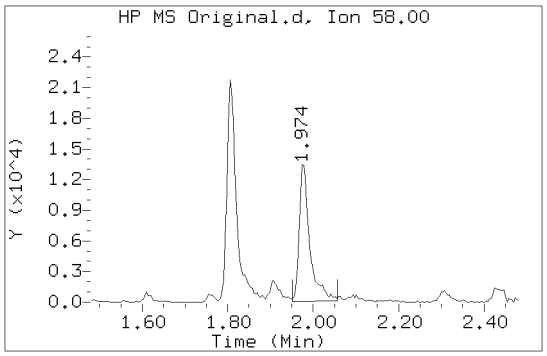
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19-Oct-2022
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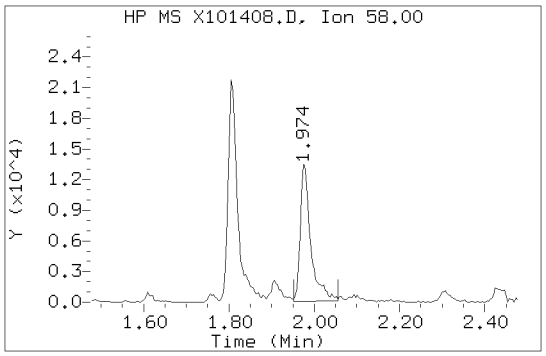
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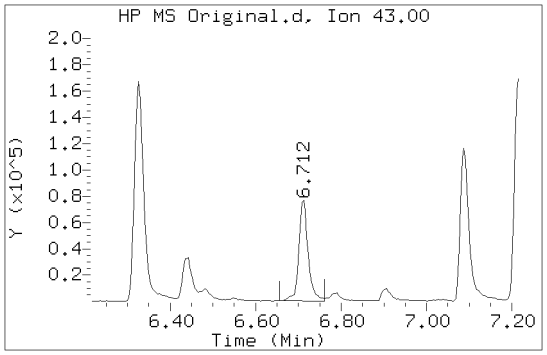
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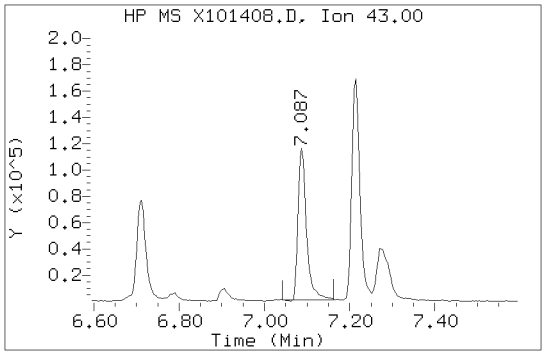
2-Hexanone (591-78-6)

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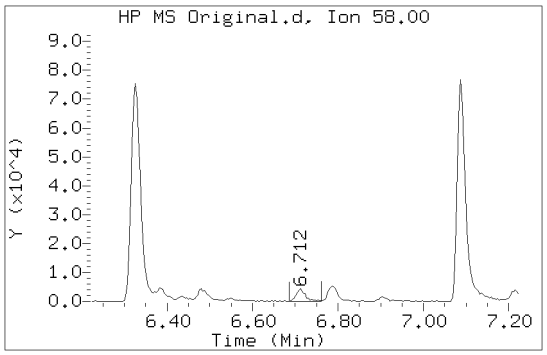
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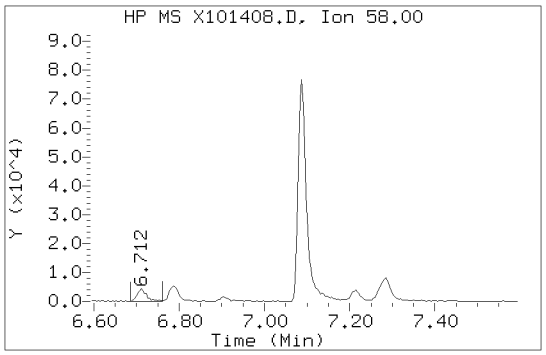
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BEFORE
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HEIGHT
4448
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pham



AFTER
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28-Oct-2022
16:41



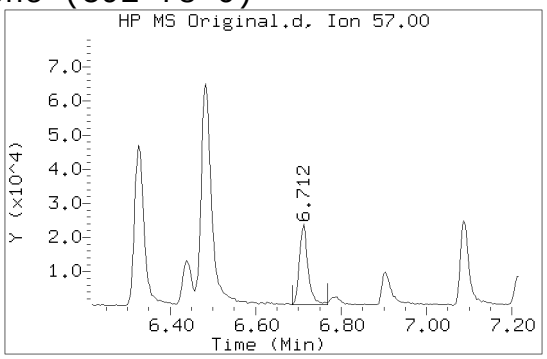
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InstruID : voa6.i
LabSampID : VSTD050

2-Hexanone (591-78-6)

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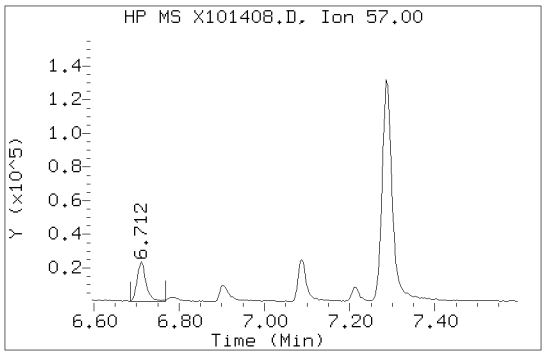
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AFTER

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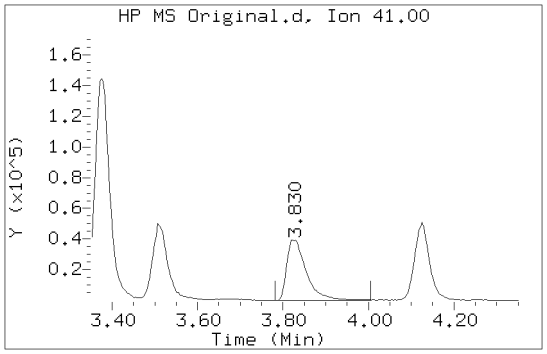


Methacrylonitrile (126-98-7)

Reason Code:

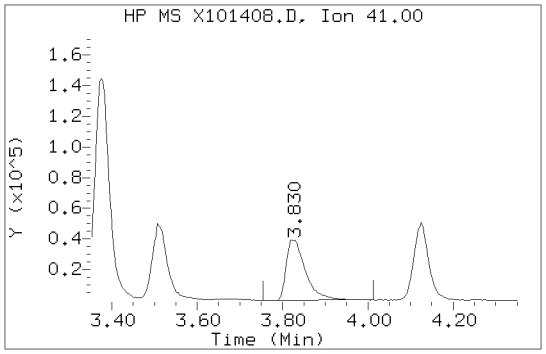
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16:03
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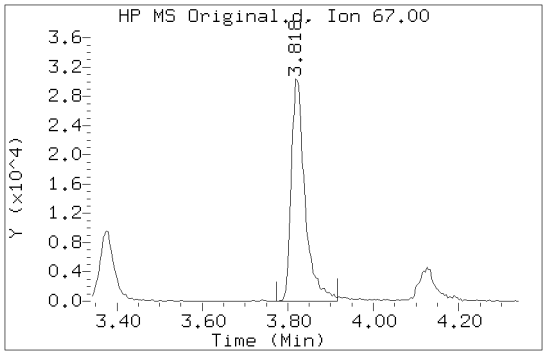
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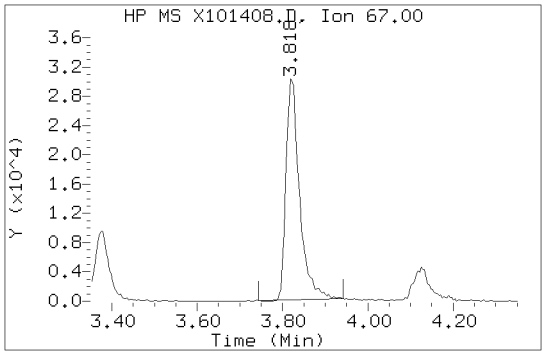
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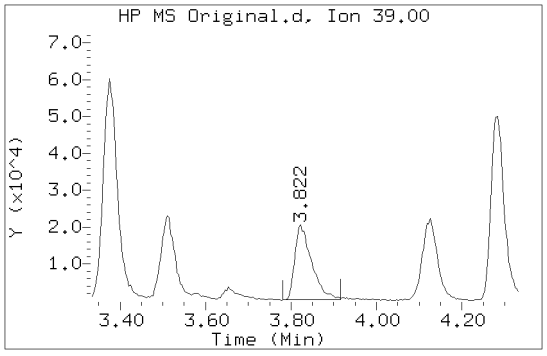
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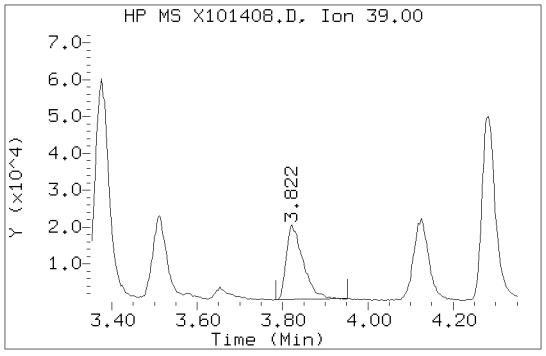
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AFTER

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28-Oct-2022
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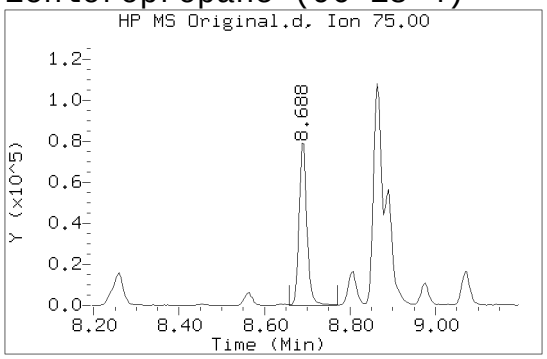
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Inj Date : 14-OCT-2022 13:53
InstruID : voa6.i
LabSampID : VSTD050

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

Reason Code:

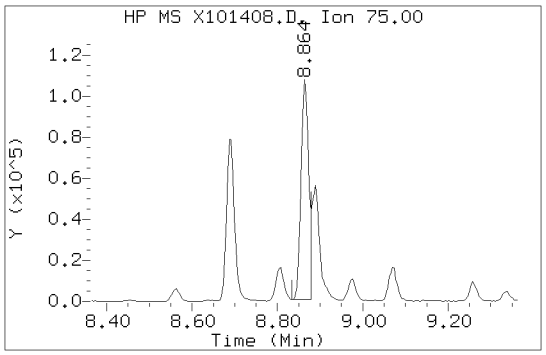
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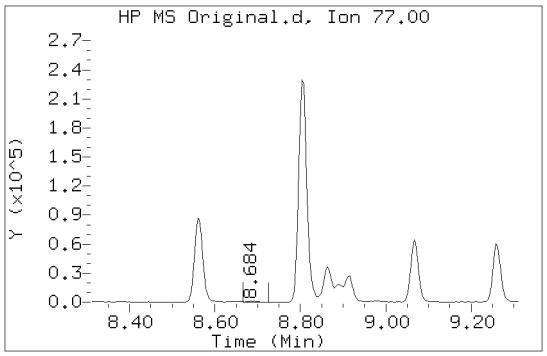
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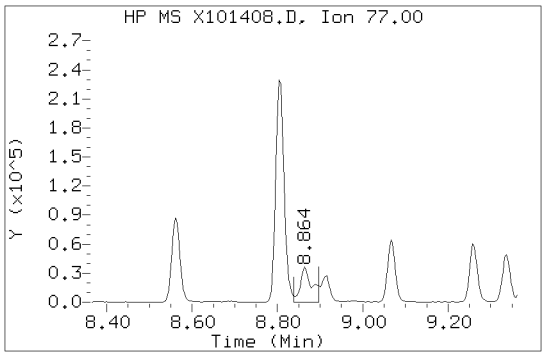
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AFTER

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28-Oct-2022
16:41

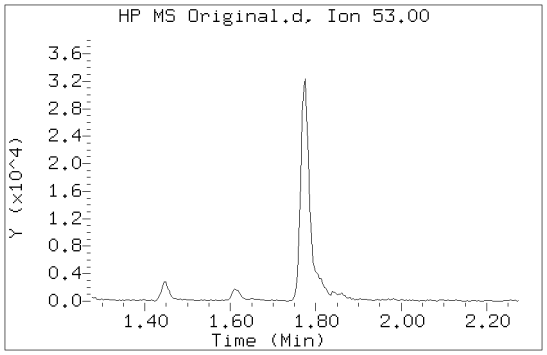


Chloroprene (126-99-8)

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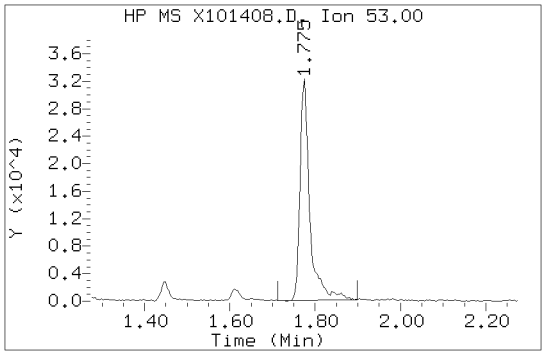
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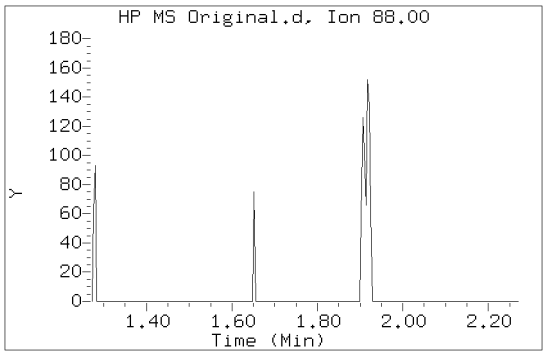
AFTER

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28-Oct-2022
16:41



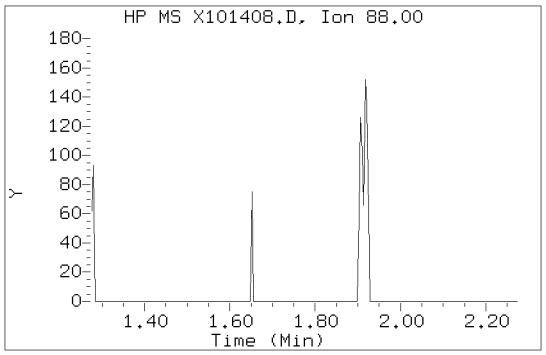
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AFTER

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28-Oct-2022
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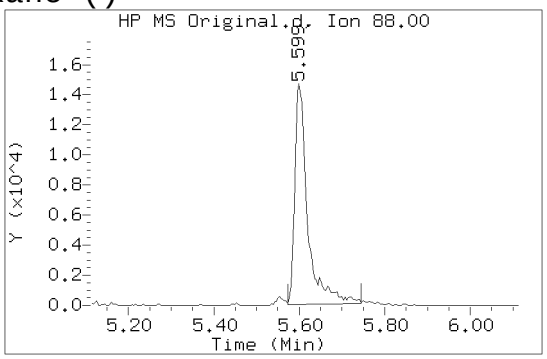
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Inj Date : 14-OCT-2022 13:53
InstruID : voa6.i
LabSampID : VSTD050

1,4-Dioxane ()

Reason Code:

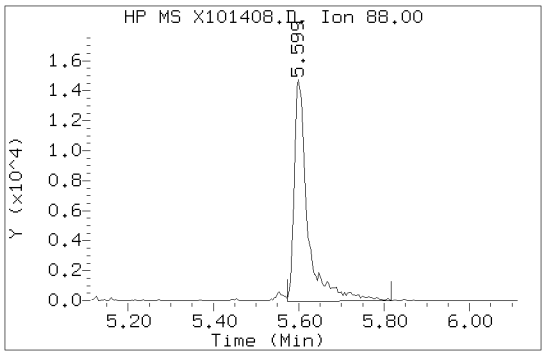
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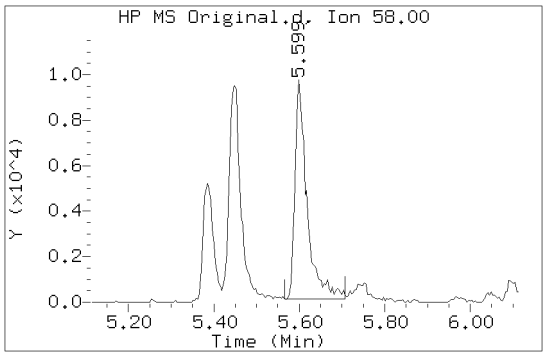
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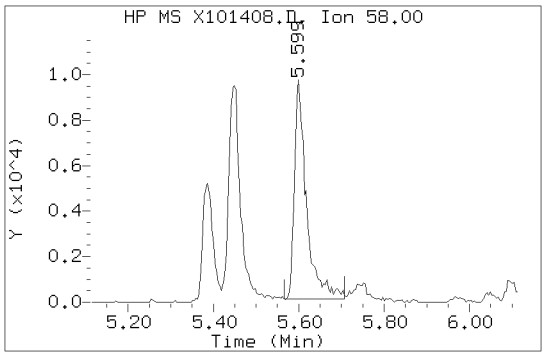
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AFTER

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16:41

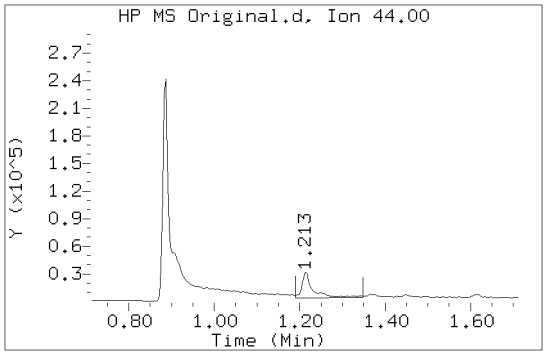


Acetaldehyde (75-07-0)

Reason Code:

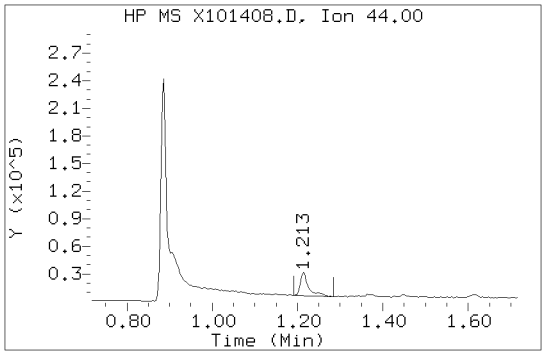
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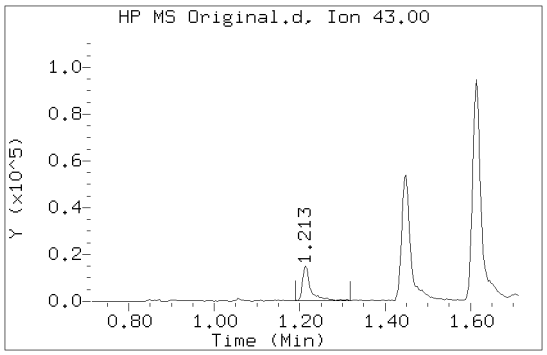
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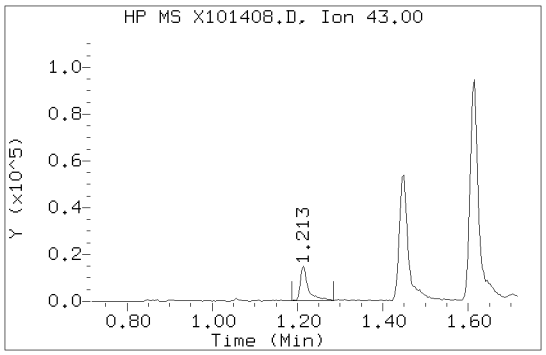
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AFTER

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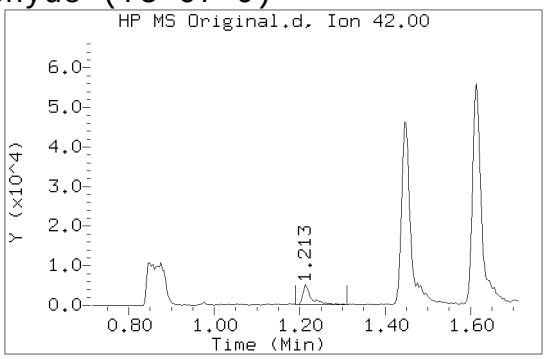
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Inj Date : 14-OCT-2022 13:53
InstruID : voa6.i
LabSampID : VSTD050

Acetaldehyde (75-07-0)

Reason Code:

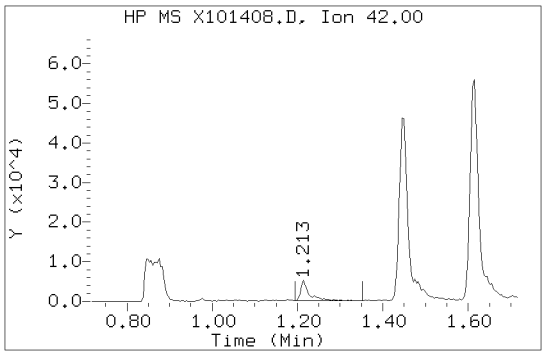
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linh
pham



AFTER

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HEIGHT
5123
28-Oct-2022
16:41



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101409.D Page 1
Report Date: 28-Oct-2022 16:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101409.D
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Inj Date : 14-OCT-2022 14:14
Operator : PC Inst ID: voa6.i
Smp Info : VSTD100;VSTD100;1;8;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
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Meth Date : 28-Oct-2022 16:42 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 10 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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)	420244	50.0000	
135 1,4-Dioxane	88	5.598	5.598	(1.338)	65787	2000.00	122.15
140 1,3-Butadiene	54	1.167	1.167	(0.279)	219323	100.000	4.80
25 Methacrylonitrile	41	3.825	3.825	(0.914)	242793	100.000	4.69(M)
12 Isobutyl Alcohol	43	4.676	4.676	(1.117)	870462	2000.00	
13 Acetonitrile	39	2.198	2.198	(0.525)	337012	1000.00	41.77
14 Allyl Chloride	41	2.198	2.198	(0.525)	705196	100.000	4.35
4 Propionitrile	54	3.653	3.653	(0.873)	376171	1000.00	44.02
136 n-Hexane	57	2.772	2.772	(0.662)	376638	100.000	4.37
72 trans-1,4-Dichloro-2-butene	53	8.889	8.889	(1.159)	91591	100.000	58.43
194 Acetaldehyde	44	1.212	1.212	(0.290)	69355	400.000	412.66(M)
23 Chloroprene	53	1.771	1.771	(0.423)	104192	100.000	96.26(M)
145 alpha-Methylstyrene	118	9.261	9.261	(0.958)	703458	100.000	82.60
200 Dimethyl Disulfide	94	6.198	6.198	(0.808)	848254	100.000	10.78
139 Diethyl ether	59	1.760	1.760	(0.421)	187603	100.000	3.82
130 Ethyl Acetate	43	3.656	3.656	(0.874)	309571	100.000	
40 Methyl Methacrylate	41	5.606	5.606	(1.339)	259349	100.000	4.66
49 Ethyl Methacrylate	69	6.786	6.786	(1.366)	497866	100.000	5.06
132 n-Butanol	56	5.253	5.253	(1.255)	122944	2000.00	137.98
142 Tetrahydrofuran	42	3.848	3.848	(0.919)	85215	200.000	6.84

150	Allyl alcohol	57	2.772	2.772 (0.662)	376638	2000.00	87.49
166	1,2,3-Trimethylbenzene	105	9.729	9.729 (1.007)	1264839	100.000	24.81

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101409.D Page 2
Report Date: 28-Oct-2022 16:42

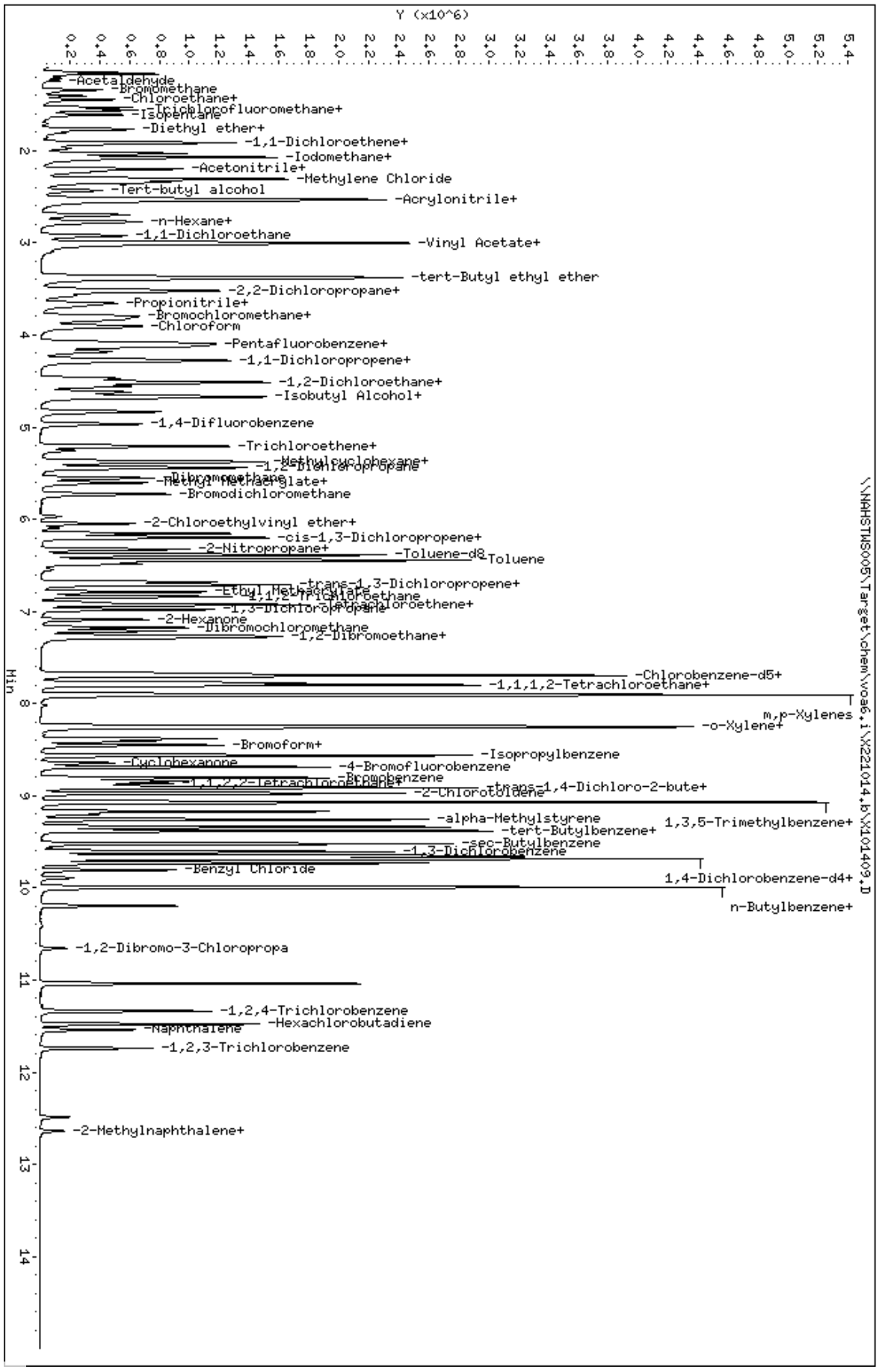
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	131 Methyl Acrylate	55	3.686	3.686	(0.881)	329295	100.000	
	162 Butyl acrylate	55	8.252	8.252	(1.076)	612991	100.000	9.45
	2 Dichlorodifluoromethane	85	0.976	0.976	(0.233)	313626	100.000	
	3 Chloromethane	50	1.081	1.081	(0.258)	345134	100.000	
	5 Vinyl Chloride	62	1.145	1.145	(0.274)	312693	100.000	4.16
	6 Bromomethane	94	1.343	1.343	(0.321)	211517	100.000	
	7 Chloroethane	64	1.403	1.403	(0.335)	191909	100.000	4.22
	8 Trichlorofluoromethane	101	1.561	1.561	(0.373)	434016	100.000	4.42
	9 Acrolein	56	1.445	1.445	(0.345)	42271	200.000	7.09
	10 Acetone	43	1.973	1.973	(0.472)	175831	200.000	(M)
	11 1,1-Dichloroethene	96	1.917	1.917	(0.458)	266300	100.000	4.38
	15 Iodomethane	142	2.029	2.029	(0.485)	1041949	200.000	215.78
	16 Acrylonitrile	53	2.536	2.536	(0.606)	215625	200.000	117.31
	17 Methylene Chloride	84	2.307	2.307	(0.551)	399989	100.000	
	18 Methyl tert-butyl ether	73	2.539	2.539	(0.607)	955407	100.000	4.22
	19 Carbon Disulfide	76	2.071	2.071	(0.495)	1908597	200.000	8.83
	20 trans-1,2-Dichloroethene	96	2.532	2.532	(0.605)	370319	100.000	4.33
	21 Vinyl Acetate	43	3.000	3.000	(0.717)	1667777	200.000	8.56
	22 1,1-Dichloroethane	63	2.922	2.922	(0.698)	629715	100.000	4.21
	24 2-Butanone	43	3.578	3.578	(0.855)	216176	200.000	11.26(H)
	26 2,2-Dichloropropane	77	3.514	3.514	(0.840)	520684	100.000	4.53
	27 cis-1,2-Dichloroethene	96	3.525	3.525	(0.842)	434823	100.000	4.37
	28 Chloroform	83	3.908	3.908	(0.934)	667874	100.000	4.22
	29 Bromochloromethane	128	3.795	3.795	(0.907)	235557	100.000	4.09
$	30 Dibromofluoromethane	113	4.099	4.099	(0.979)	391368	100.000	
	31 1,1,1-Trichloroethane	97	4.084	4.084	(0.976)	548951	100.000	4.48
	32 1,1-Dichloropropene	75	4.282	4.282	(0.862)	483879	100.000	5.05
	33 1,2-Dichloroethane	62	4.556	4.556	(0.917)	459609	100.000	4.83
	34 Carbon Tetrachloride	117	4.267	4.267	(0.859)	469606	100.000	5.10
$	35 1,2-Dichloroethane-d4	65	4.470	4.470	(1.068)	390623	100.000	
*	36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	611103	50.0000	
	37 Benzene	78	4.511	4.511	(0.908)	1514452	100.000	4.88
	38 Trichloroethene	130	5.208	5.208	(1.048)	455345	100.000	4.90
	39 Bromodichloromethane	83	5.726	5.726	(1.152)	509495	100.000	5.12
	41 2-Chloroethylvinyl ether	63	6.048	6.048	(1.217)	250016	200.000	115.69
	42 1,2-Dichloropropane	63	5.437	5.437	(1.094)	381514	100.000	4.73
	44 Dibromomethane	93	5.553	5.553	(1.118)	244895	100.000	4.94
	45 4-Methyl-2-Pentanone	43	6.325	6.325	(0.825)	544315	200.000	115.58
	46 cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	664839	100.000	5.20
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	563592	50.0000	
$	48 Toluene-d8	98	6.385	6.385	(0.832)	1440641	100.000	9.69
	50 Toluene	91	6.445	6.445	(0.840)	1643611	100.000	9.31
	51 trans-1,3-Dichloropropene	75	6.682	6.682	(1.345)	541171	100.000	5.21
	52 2-Hexanone	43	7.086	7.086	(0.924)	358477	200.000	21.94(H)
	53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	289913	100.000	8.87
	54 1,3-Dichloropropane	76	6.981	6.981	(0.910)	590798	100.000	9.04
	55 Dibromochloromethane	129	7.176	7.176	(0.936)	440505	100.000	58.21
	56 Tetrachloroethene	164	6.929	6.929	(0.903)	378887	100.000	9.15
	57 1,2-Dibromoethane	107	7.259	7.259	(0.946)	376418	100.000	9.66
	58 1-Chlorohexane	55	7.697	7.697	(1.549)	298474	100.000	5.38
	59 Chlorobenzene	112	7.694	7.694	(1.003)	1118626	100.000	9.44
	60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	420272	100.000	9.58

61 Ethylbenzene	106	7.799	7.799 (1.017)	574656	100.000	9.31
62 m,p-Xylenes	106	7.904	7.904 (1.030)	1427253	200.000	18.50

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	63 o-Xylene	106	8.241	8.241	(1.074)	688296	100.000	9.07
	64 Styrene	104	8.260	8.260	(1.077)	1189042	100.000	9.96
	66 Bromoform	173	8.410	8.410	(1.096)	275605	100.000	58.16
	67 Isopropylbenzene	105	8.560	8.560	(1.116)	1697982	100.000	9.22
	68 1,1,2,2-Tetrachloroethane	83	8.837	8.837	(0.915)	392179	100.000	80.49
$	69 4-Bromofluorobenzene	95	8.687	8.687	(1.132)	515729	100.000	58.22
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	286259	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	299689	100.000	31.97(MH)
	73 n-Propylbenzene	91	8.912	8.912	(0.922)	1931706	100.000	81.46
	74 Bromobenzene	156	8.803	8.803	(0.911)	519722	100.000	25.88
	75 1,3,5-Trimethylbenzene	105	9.066	9.066	(0.938)	1419088	100.000	25.38
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	1189575	100.000	24.06
	77 4-Chlorotoluene	91	9.069	9.069	(0.939)	1345640	100.000	25.46
	78 tert-Butylbenzene	119	9.336	9.336	(0.966)	1201935	100.000	25.49
	79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	1414597	100.000	25.35
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	1639120	100.000	25.94
	82 p-Isopropyltoluene	119	9.650	9.650	(0.999)	1468831	100.000	25.89
	83 1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	862334	100.000	26.16
	84 1,4-Dichlorobenzene	146	9.680	9.680	(1.002)	866266	100.000	25.98
	86 Benzyl Chloride	91	9.808	9.808	(1.279)	539870	100.000	10.41
	87 n-Butylbenzene	91	9.992	9.992	(1.034)	1190321	100.000	27.45
	88 1,2-Dichlorobenzene	146	9.992	9.992	(1.034)	770867	100.000	81.32
	89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	41420	100.000	82.62
	90 1,2,4-Trichlorobenzene	180	11.337	11.337	(1.173)	357352	100.000	81.57
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	270788	100.000	63.18
	92 Naphthalene	128	11.544	11.544	(1.195)	461798	100.000	30.11
	93 1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	230130	100.000	28.54
M	94 1,2-Dichloroethylene (total)	96				805142	200.000	
M	95 Xylenes (total)	106				2115549	300.000	
	141 Cyclohexane	56	4.125	4.125	(0.986)	483557	100.000	4.17
	138 Freon TF	101	1.917	1.917	(0.458)	268182	100.000	4.33
	147 Methylcyclohexane	55	5.381	5.381	(1.083)	801270	100.000	5.00
	146 Methyl Acetate	43	2.232	2.232	(0.533)	190729	100.000	5.42

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



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Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1;8;
Purge Volume: 5.0
Column phase: DB624

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

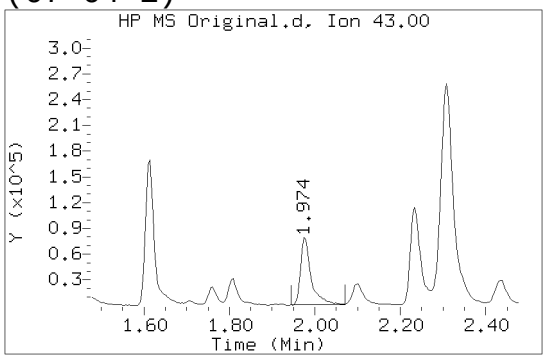
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InstruID : voa6.i
LabSampID : VSTD100

Acetone (67-64-1)

Reason Code:

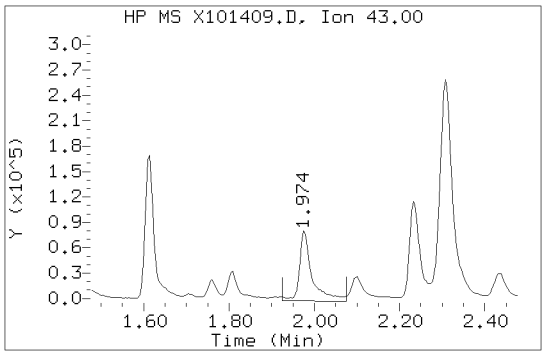
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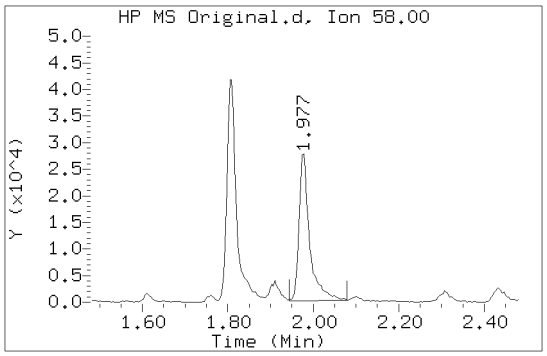
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16:41



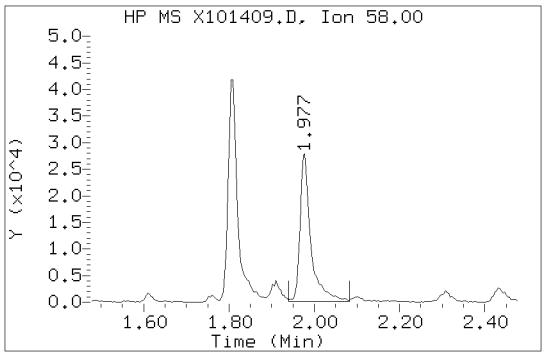
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AFTER

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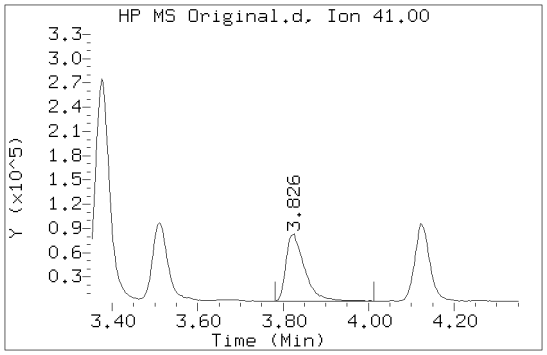


Methacrylonitrile (126-98-7)

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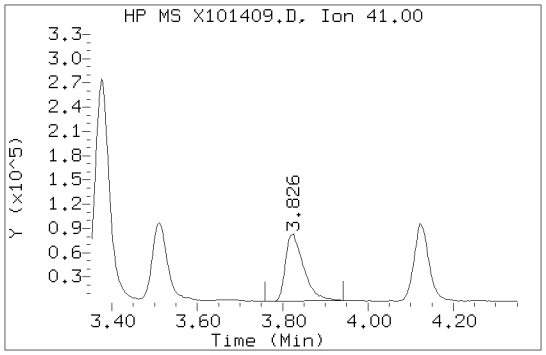
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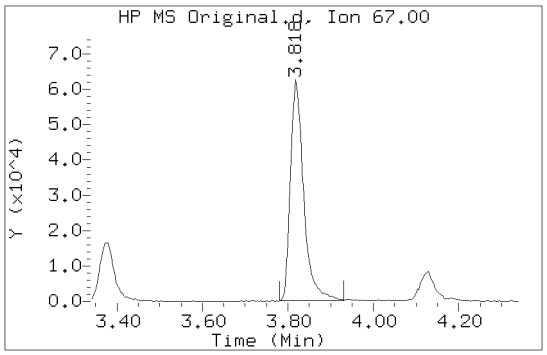
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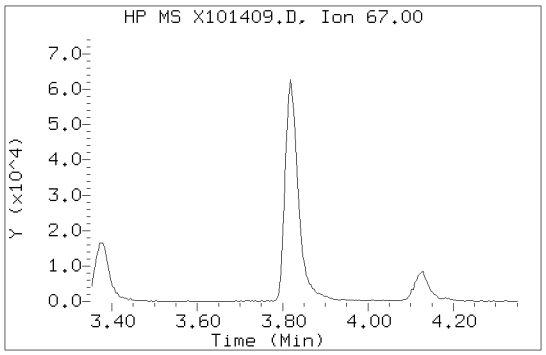
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AFTER

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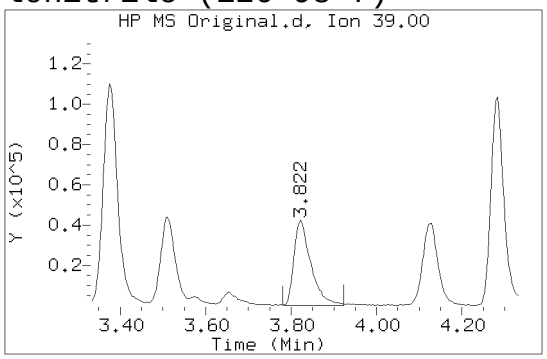
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LabSampID : VSTD100

Methacrylonitrile (126-98-7)

Reason Code:

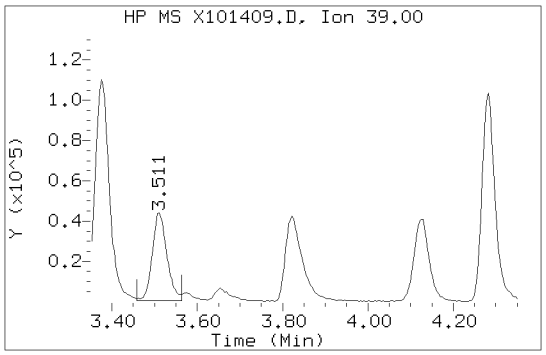
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AFTER

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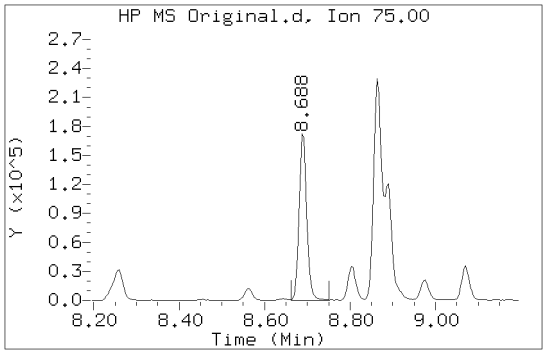


1,2,3-Trichloropropane (96-18-4)

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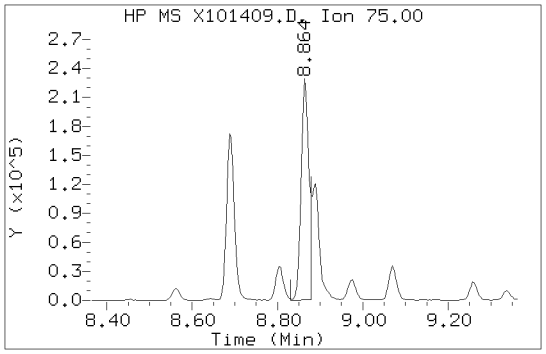
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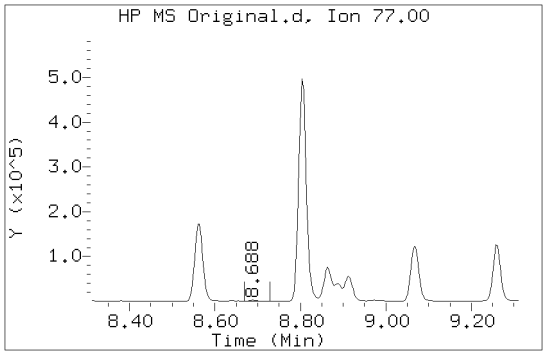
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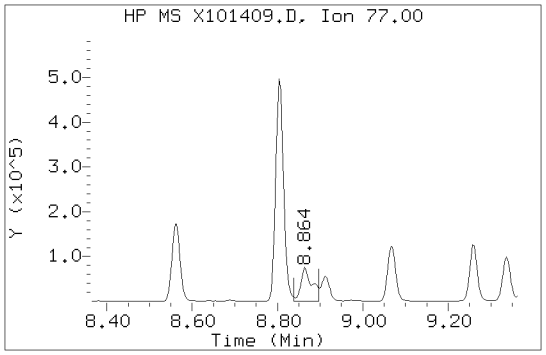
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AFTER

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28-Oct-2022
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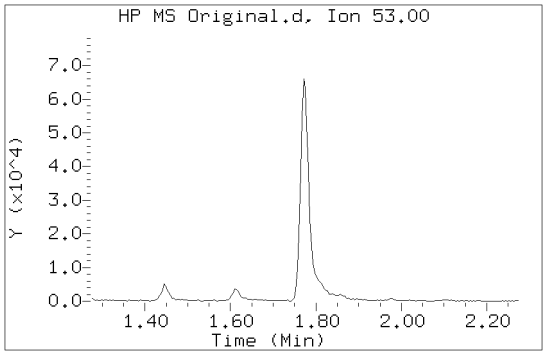


Chloroprene (126-99-8)

Reason Code:

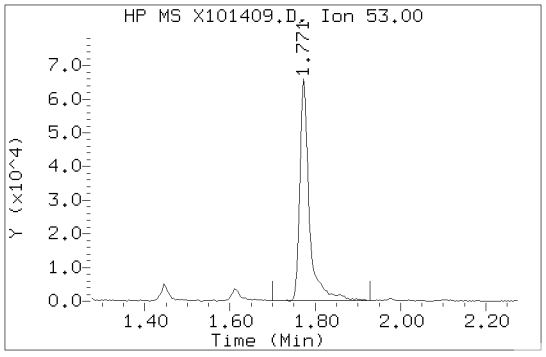
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AFTER

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28-Oct-2022
16:41



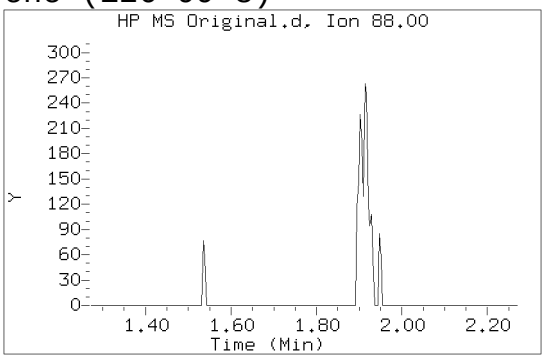
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LabSampID : VSTD100

Chloroprene (126-99-8)

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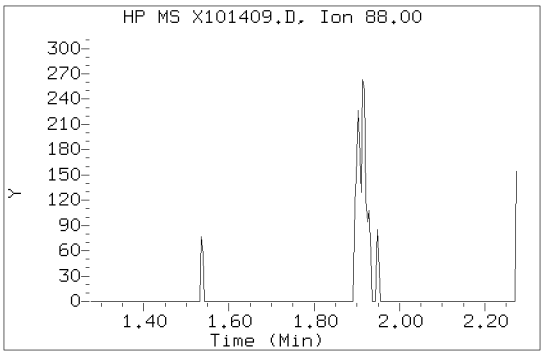
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AFTER

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28-Oct-2022
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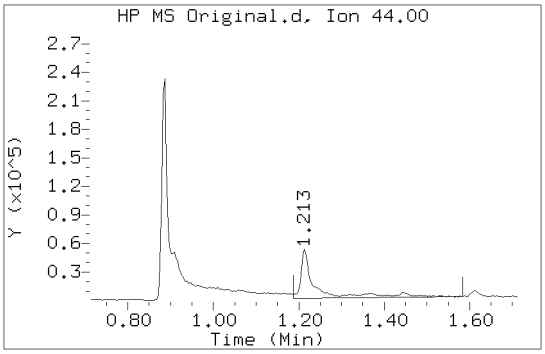


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Reason Code:

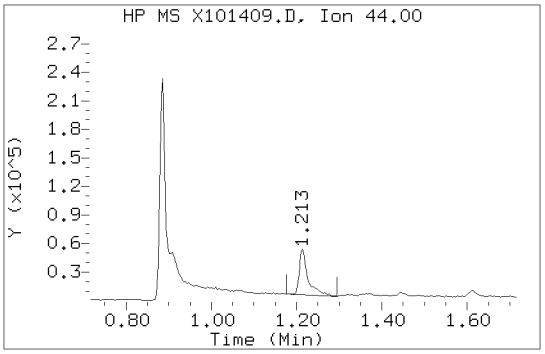
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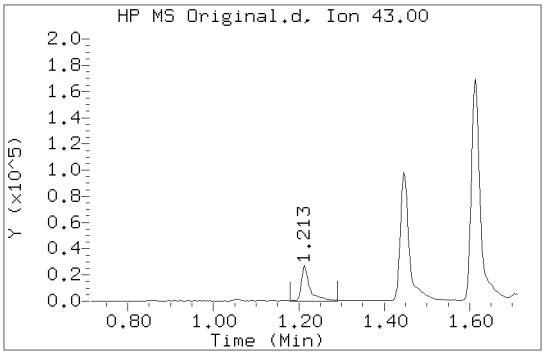
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16:41



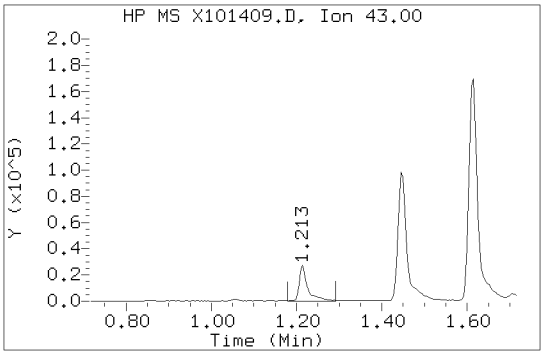
BEFORE

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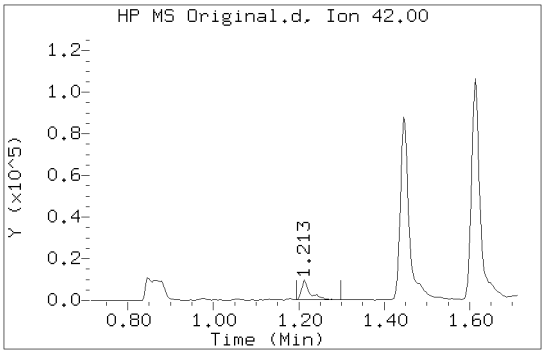
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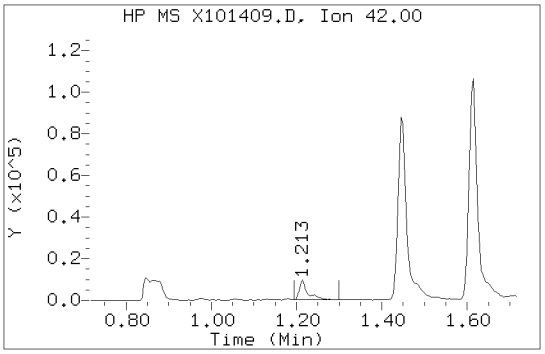
BEFORE

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19-Oct-2022
16:03
linh
pham



AFTER

MASS
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13677
HEIGHT
9507
28-Oct-2022
16:41



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101410.D Page 1
Report Date: 28-Oct-2022 16:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101410.D
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Inj Date : 14-OCT-2022 14:35
Operator : PC Inst ID: voa6.i
Smp Info : VSTD150;VSTD150;1;9;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
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Meth Date : 28-Oct-2022 16:42 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 14:14 Cal File: X101409.D
Als bottle: 11 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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

		QUANT SIG					AMOUNTS	
	Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.185	4.185	(1.000)	413791	50.0000	
	135 1,4-Dioxane	88	5.598	5.598	(1.338)	102298	3000.00	192.90
	140 1,3-Butadiene	54	1.167	1.167	(0.279)	333956	150.000	7.43
	25 Methacrylonitrile	41	3.818	3.818	(0.912)	372951	150.000	7.32(M)
	12 Isobutyl Alcohol	43	4.676	4.676	(1.117)	1270958	3000.00	
	13 Acetonitrile	39	2.198	2.198	(0.525)	504870	1500.00	63.55
	14 Allyl Chloride	41	2.198	2.198	(0.525)	1070230	150.000	6.71
	4 Propionitrile	54	3.653	3.653	(0.873)	567730	1500.00	67.47
	136 n-Hexane	57	2.772	2.772	(0.662)	562398	150.000	6.63
	72 trans-1,4-Dichloro-2-butene	53	8.889	8.889	(1.159)	141358	150.000	69.33
	194 Acetaldehyde	44	1.212	1.212	(0.290)	95544	600.000	589.05(M)
	23 Chloroprene	53	1.771	1.771	(0.423)	159901	150.000	150.03(M)
	145 alpha-Methylstyrene	118	9.257	9.257	(0.958)	1066358	150.000	126.37
	200 Dimethyl Disulfide	94	6.198	6.198	(0.808)	1294734	150.000	16.54
	139 Diethyl ether	59	1.760	1.760	(0.421)	281059	150.000	5.81
	130 Ethyl Acetate	43	3.656	3.656	(0.874)	446269	150.000	
	40 Methyl Methacrylate	41	5.606	5.606	(1.339)	389277	150.000	7.10
	49 Ethyl Methacrylate	69	6.786	6.786	(1.366)	764295	150.000	7.82
	132 n-Butanol	56	5.253	5.253	(1.255)	198825	3000.00	226.62
	142 Tetrahydrofuran	42	3.844	3.844	(0.918)	127721	300.000	10.41

150	Allyl alcohol	57	2.772	2.772 (0.662)	562398	3000.00	132.67
166	1,2,3-Trimethylbenzene	105	9.733	9.733 (1.007)	1924414	150.000	37.70

			QUANT SIG					AMOUNTS	
								CAL-AMT	ON-COL
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
	131	Methyl Acrylate	55	3.686	3.686	(0.881)	493482	150.000	
	162	Butyl acrylate	55	8.252	8.252	(1.076)	972301	150.000	15.08
	2	Dichlorodifluoromethane	85	0.976	0.976	(0.233)	468527	150.000	
	3	Chloromethane	50	1.081	1.081	(0.258)	522756	150.000	
	5	Vinyl Chloride	62	1.145	1.145	(0.274)	476182	150.000	6.43
	6	Bromomethane	94	1.340	1.340	(0.320)	329295	150.000	
	7	Chloroethane	64	1.403	1.403	(0.335)	287280	150.000	6.41
	8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	656475	150.000	6.79
	9	Acrolein	56	1.445	1.445	(0.345)	65372	300.000	11.14
	10	Acetone	43	1.977	1.977	(0.472)	248410	300.000	(M)
	11	1,1-Dichloroethene	96	1.913	1.913	(0.457)	396293	150.000	6.62
	15	Iodomethane	142	2.029	2.029	(0.485)	1553365	300.000	283.43
	16	Acrylonitrile	53	2.535	2.535	(0.606)	322717	300.000	117.45
	17	Methylene Chloride	84	2.303	2.303	(0.550)	591753	150.000	
	18	Methyl tert-butyl ether	73	2.539	2.539	(0.607)	1434152	150.000	6.44
	19	Carbon Disulfide	76	2.071	2.071	(0.495)	2886781	300.000	13.57
	20	trans-1,2-Dichloroethene	96	2.528	2.528	(0.604)	552673	150.000	6.56
	21	Vinyl Acetate	43	3.000	3.000	(0.717)	2432799	300.000	12.68
	22	1,1-Dichloroethane	63	2.922	2.922	(0.698)	933106	150.000	6.34
	24	2-Butanone	43	3.578	3.578	(0.855)	330811	300.000	17.51(H)
	26	2,2-Dichloropropane	77	3.510	3.510	(0.839)	779494	150.000	6.89
	27	cis-1,2-Dichloroethene	96	3.529	3.529	(0.843)	641800	150.000	6.55
	28	Chloroform	83	3.904	3.904	(0.933)	978201	150.000	6.27
	29	Bromochloromethane	128	3.795	3.795	(0.907)	339317	150.000	5.99
$	30	Dibromofluoromethane	113	4.099	4.099	(0.979)	563177	150.000	
	31	1,1,1-Trichloroethane	97	4.084	4.084	(0.976)	830444	150.000	6.89
	32	1,1-Dichloropropene	75	4.282	4.282	(0.862)	736465	150.000	7.74
	33	1,2-Dichloroethane	62	4.556	4.556	(0.917)	677353	150.000	7.17
	34	Carbon Tetrachloride	117	4.267	4.267	(0.859)	719737	150.000	7.88
$	35	1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	556716	150.000	
*	36	1,4-Difluorobenzene	114	4.968	4.968	(1.000)	606896	50.0000	
	37	Benzene	78	4.515	4.515	(0.909)	2241701	150.000	7.27
	38	Trichloroethene	130	5.205	5.205	(1.048)	688011	150.000	7.46
	39	Bromodichloromethane	83	5.726	5.726	(1.152)	755014	150.000	7.64
	41	2-Chloroethylvinyl ether	63	6.048	6.048	(1.217)	389632	300.000	118.50
	42	1,2-Dichloropropane	63	5.437	5.437	(1.094)	556786	150.000	6.95
	44	Dibromomethane	93	5.553	5.553	(1.118)	356189	150.000	7.24
	45	4-Methyl-2-Pentanone	43	6.325	6.325	(0.825)	810393	300.000	127.35
	46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	989784	150.000	7.80
*	47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	560448	50.0000	
$	48	Toluene-d8	98	6.385	6.385	(0.832)	2084763	150.000	14.10
	50	Toluene	91	6.449	6.449	(0.841)	2437506	150.000	13.89
	51	trans-1,3-Dichloropropene	75	6.681	6.681	(1.345)	807999	150.000	7.84
	52	2-Hexanone	43	7.086	7.086	(0.924)	544334	300.000	33.51(M)
	53	1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	425508	150.000	13.10
	54	1,3-Dichloropropane	76	6.981	6.981	(0.910)	869589	150.000	13.39
	55	Dibromochloromethane	129	7.176	7.176	(0.936)	650961	150.000	65.87
	56	Tetrachloroethene	164	6.929	6.929	(0.903)	577019	150.000	14.01
	57	1,2-Dibromoethane	107	7.259	7.259	(0.946)	552015	150.000	14.25
	58	1-Chlorohexane	55	7.697	7.697	(1.549)	454721	150.000	8.26
	59	Chlorobenzene	112	7.694	7.694	(1.003)	1660792	150.000	14.10
	60	1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	622475	150.000	14.27

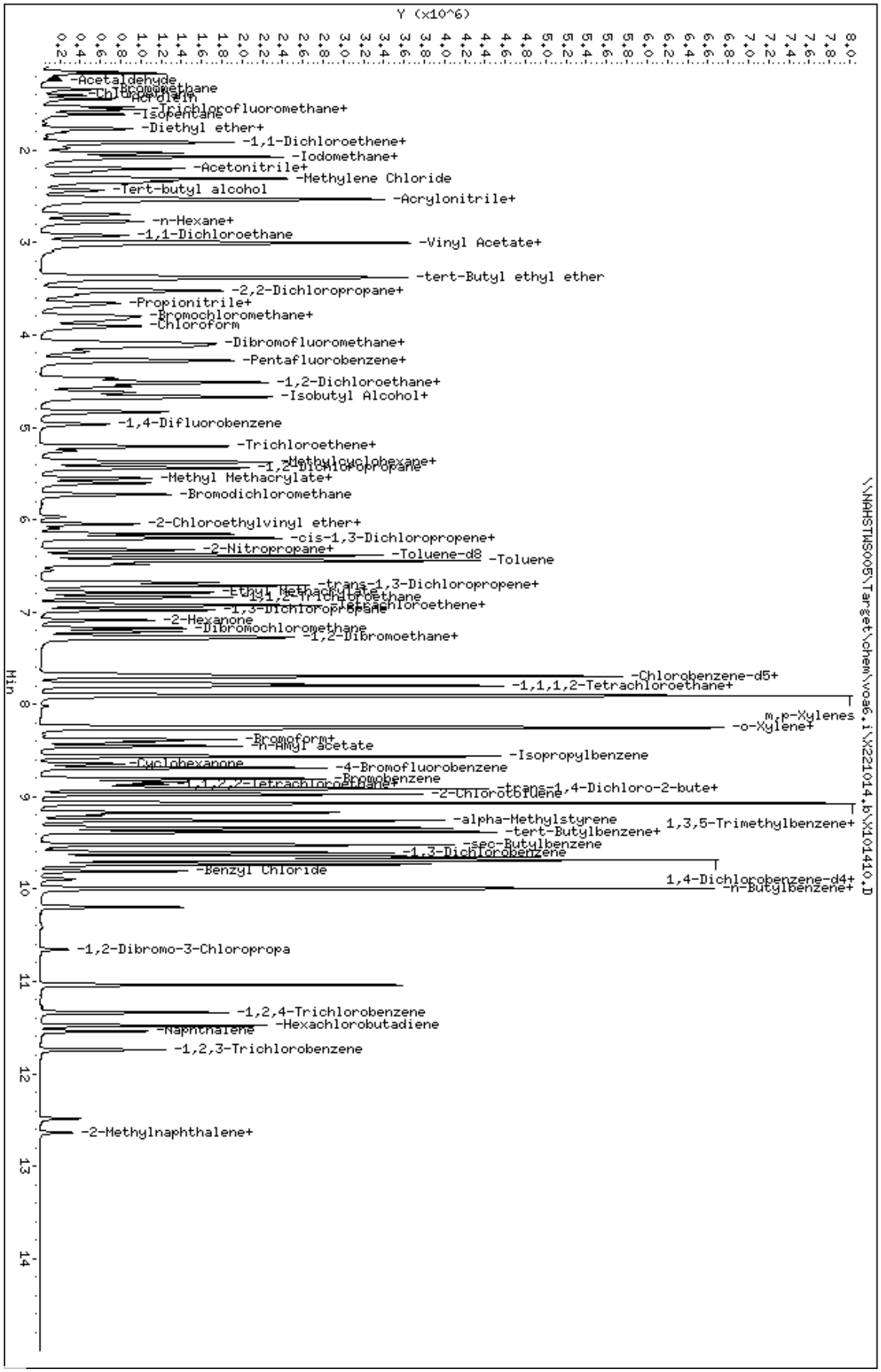
61 Ethylbenzene	106	7.799	7.799 (1.017)	863918	150.000	14.07
62 m,p-Xylenes	106	7.904	7.904 (1.030)	2153443	300.000	28.07

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101410.D Page 3
Report Date: 28-Oct-2022 16:42

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	63 o-Xylene	106	8.241	8.241	(1.074)	1028951	150.000	13.64
	64 Styrene	104	8.260	8.260	(1.077)	1759007	150.000	14.82
	66 Bromoform	173	8.410	8.410	(1.096)	416750	150.000	66.99
	67 Isopropylbenzene	105	8.563	8.563	(1.116)	2586639	150.000	14.12
	68 1,1,2,2-Tetrachloroethane	83	8.837	8.837	(0.915)	578090	150.000	118.83
$	69 4-Bromofluorobenzene	95	8.687	8.687	(1.132)	754914	150.000	64.43
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	286717	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	433198	150.000	46.14(M)
	73 n-Propylbenzene	91	8.912	8.912	(0.922)	2927124	150.000	124.33
	74 Bromobenzene	156	8.807	8.807	(0.912)	776685	150.000	38.62
	75 1,3,5-Trimethylbenzene	105	9.069	9.069	(0.939)	2127404	150.000	37.99
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	1771765	150.000	35.78
	77 4-Chlorotoluene	91	9.069	9.069	(0.939)	2001171	150.000	37.80
	78 tert-Butylbenzene	119	9.339	9.339	(0.967)	1817093	150.000	38.48
	79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	2138819	150.000	38.27
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	2485336	150.000	39.28
	82 p-Isopropyltoluene	119	9.650	9.650	(0.999)	2229955	150.000	39.24
	83 1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	1300241	150.000	39.38
	84 1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	1311054	150.000	39.25
	86 Benzyl Chloride	91	9.808	9.808	(1.279)	845527	150.000	16.40
	87 n-Butylbenzene	91	9.995	9.995	(1.035)	1799690	150.000	41.43
	88 1,2-Dichlorobenzene	146	9.992	9.992	(1.034)	1158123	150.000	122.94
	89 1,2-Dibromo-3-Chloropropane	155	10.655	10.655	(1.103)	65930	150.000	133.48
	90 1,2,4-Trichlorobenzene	180	11.337	11.337	(1.173)	563938	150.000	130.60
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	408156	150.000	116.29
	92 Naphthalene	128	11.540	11.540	(1.194)	761809	150.000	49.60
	93 1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	370569	150.000	45.88
M	94 1,2-Dichloroethylene (total)	96				1194473	300.000	
M	95 Xylenes (total)	106				3182394	450.000	
	141 Cyclohexane	56	4.125	4.125	(0.986)	736596	150.000	6.46
	138 Freon TF	101	1.917	1.917	(0.458)	402648	150.000	6.60
	147 Methylcyclohexane	55	5.381	5.381	(1.083)	1213431	150.000	7.63
	146 Methyl Acetate	43	2.232	2.232	(0.533)	274821	150.000	7.93

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS005\Target\chem\voa6,i\X221014,b\X101410,D
Date : 14-OCT-2022 14:35
Client ID: VSTD150
Sample Info: VSTD150;VSTD150;1;9;
Purge Volume: 5.0
Column phase: DB624

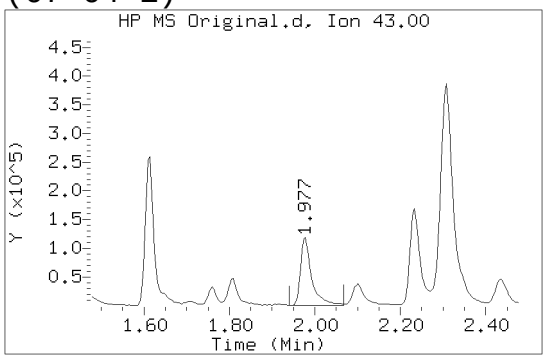
Instrument: voa6,i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101410.D
Inj Date : 14-OCT-2022 14:35
InstruID : voa6.i
LabSampID : VSTD150

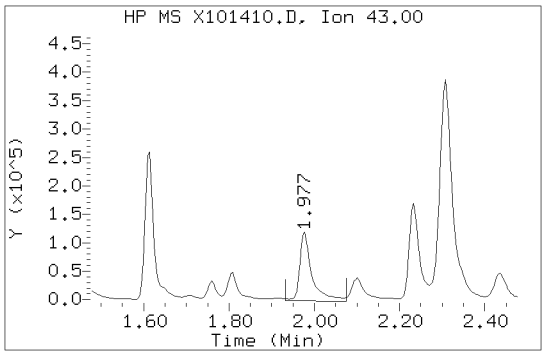
Acetone (67-64-1)

Reason Code:

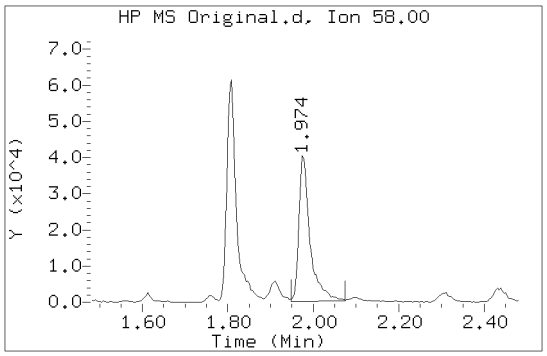
BEFORE
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43
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HEIGHT
117891
19-Oct-2022
16:03
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pham



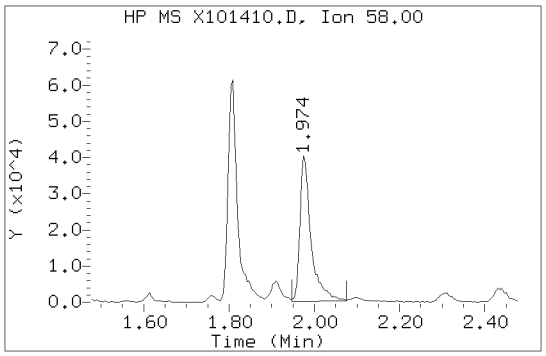
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HEIGHT
121143
28-Oct-2022
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BEFORE
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AREA
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HEIGHT
40273
19-Oct-2022
16:03
linh
pham



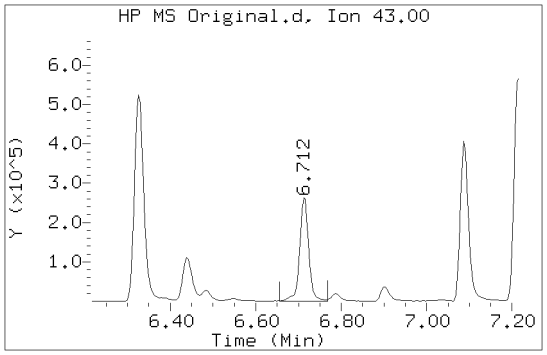
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28-Oct-2022
16:41



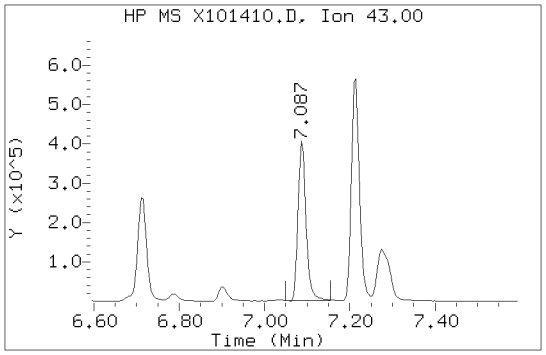
2-Hexanone (591-78-6)

Reason Code:

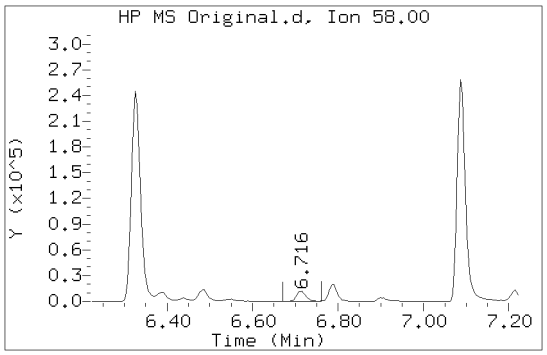
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HEIGHT
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19-Oct-2022
16:03
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pham



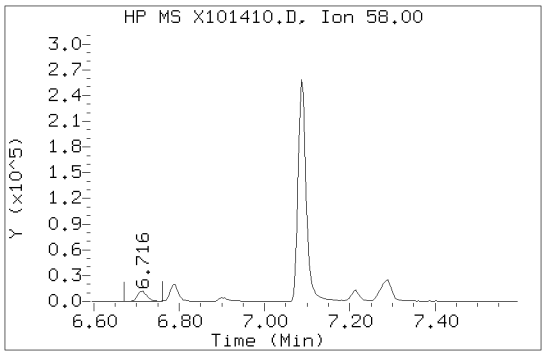
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28-Oct-2022
16:41



BEFORE
MASS
58
AREA
18341
HEIGHT
11622
19-Oct-2022
16:03
linh
pham



AFTER
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18341
HEIGHT
11622
28-Oct-2022
16:41



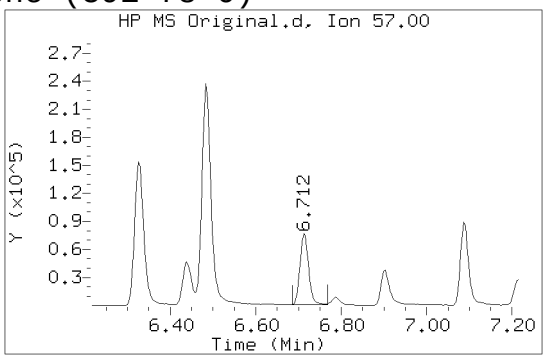
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Inj Date : 14-OCT-2022 14:35
InstruID : voa6.i
LabSampID : VSTD150

2-Hexanone (591-78-6)

Reason Code:

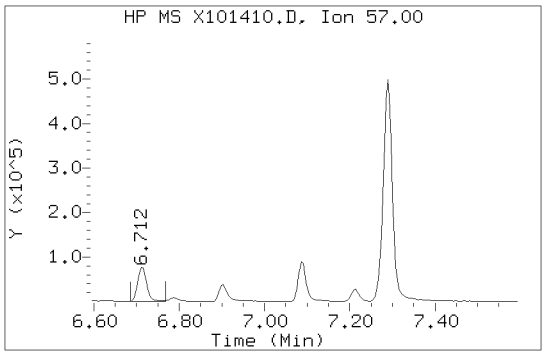
BEFORE

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AREA
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HEIGHT
75864
19-Oct-2022
16:03
linh
pham



AFTER

MASS
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109840
HEIGHT
75864
28-Oct-2022
16:41

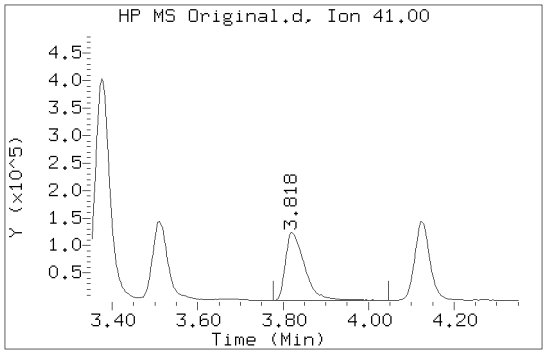


Methacrylonitrile (126-98-7)

Reason Code:

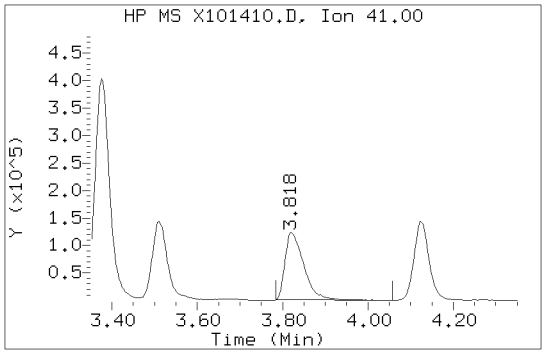
BEFORE

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AREA
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HEIGHT
123258
19-Oct-2022
16:03
linh
pham



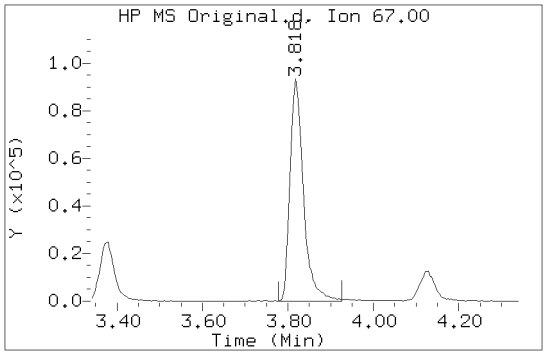
AFTER

MASS
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AREA
372951
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122569
28-Oct-2022
16:41



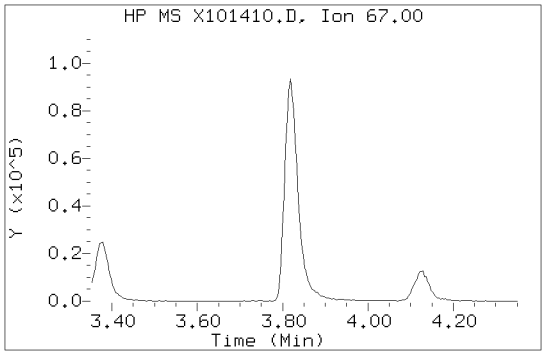
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16:03
linh
pham



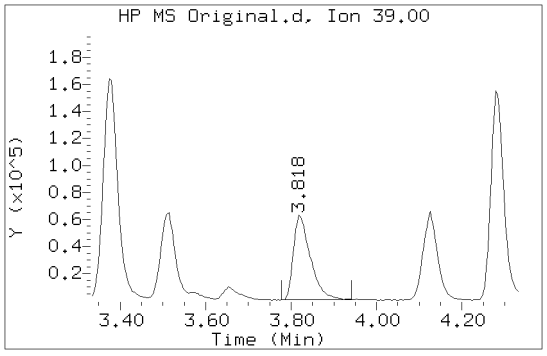
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28-Oct-2022
16:41



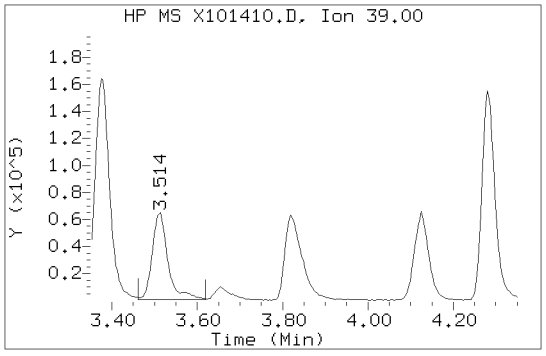
BEFORE

MASS
39
AREA
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HEIGHT
62546
19-Oct-2022
16:03
linh
pham



AFTER

MASS
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AREA
166039
HEIGHT
64463
28-Oct-2022
16:41

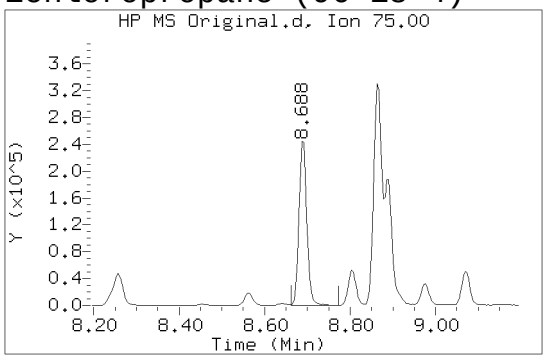


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101410.D
Inj Date : 14-OCT-2022 14:35
InstruID : voa6.i
LabSampID : VSTD150

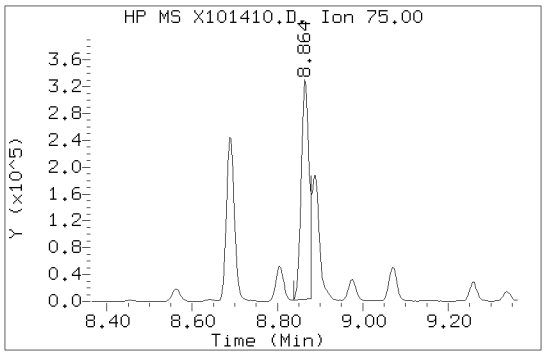
1,2,3-Trichloropropane (96-18-4)

Reason Code:

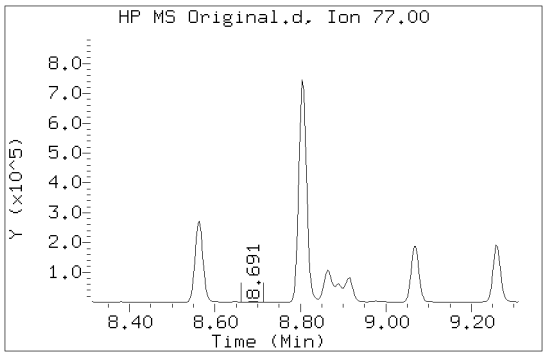
BEFORE
MASS
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AREA
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HEIGHT
244564
19-Oct-2022
16:03
linh
pham



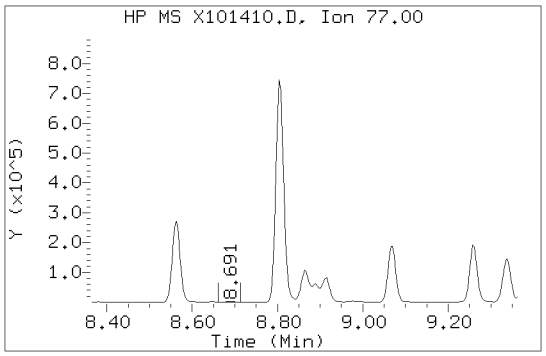
AFTER
MASS
75
AREA
433198
HEIGHT
327444
28-Oct-2022
16:41



BEFORE
MASS
77
AREA
4214
HEIGHT
3125
19-Oct-2022
16:03
linh
pham



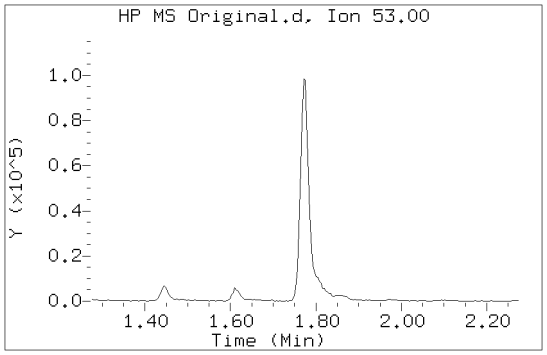
AFTER
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77
AREA
4214
HEIGHT
3125
28-Oct-2022
16:41



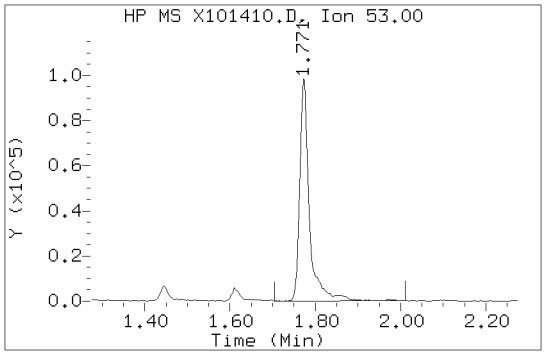
Chloroprene (126-99-8)

Reason Code:

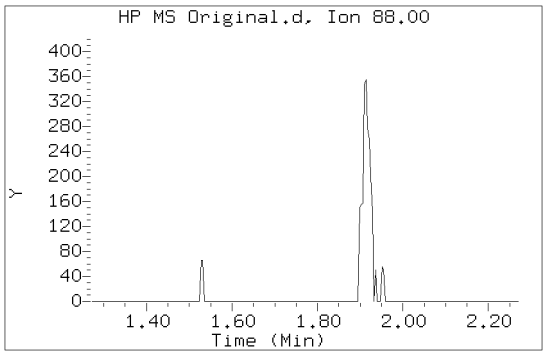
BEFORE
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53
AREA
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



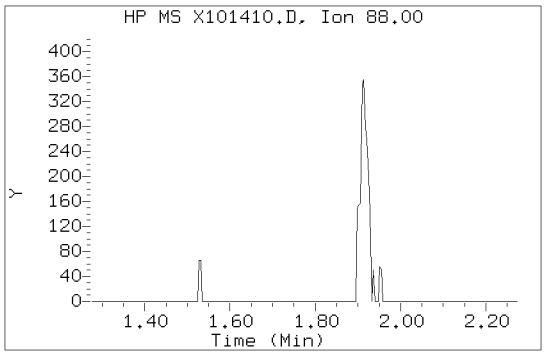
AFTER
MASS
53
AREA
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HEIGHT
98343
28-Oct-2022
16:41



BEFORE
MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
88
AREA
0
HEIGHT
0
28-Oct-2022
16:41



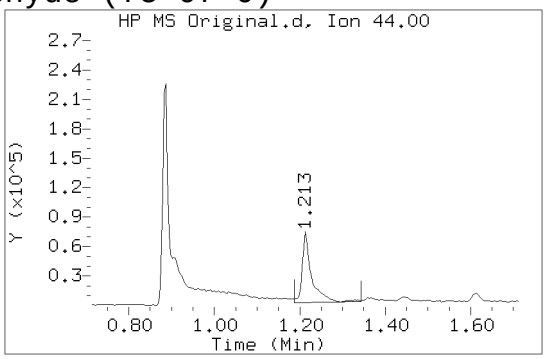
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Inj Date : 14-OCT-2022 14:35
InstruID : voa6.i
LabSampID : VSTD150

Acetaldehyde (75-07-0)

Reason Code:

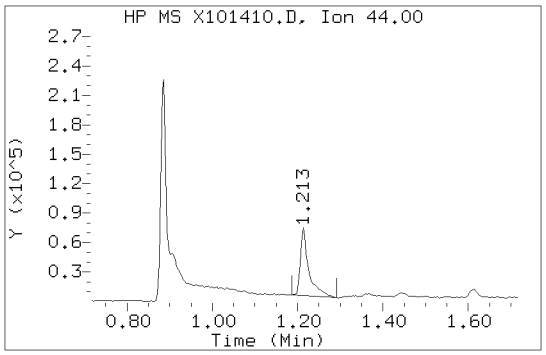
BEFORE

MASS
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AREA
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HEIGHT
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19-Oct-2022
16:03
linh
pham



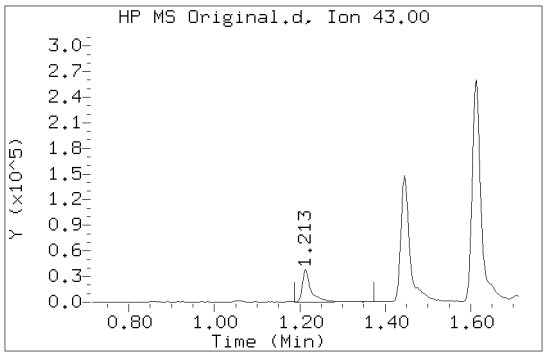
AFTER

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AREA
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HEIGHT
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16:41



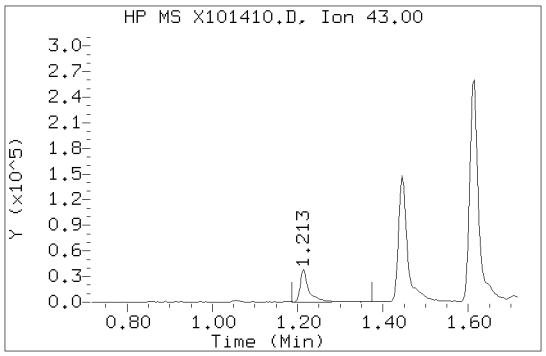
BEFORE

MASS
43
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HEIGHT
38125
19-Oct-2022
16:03
linh
pham



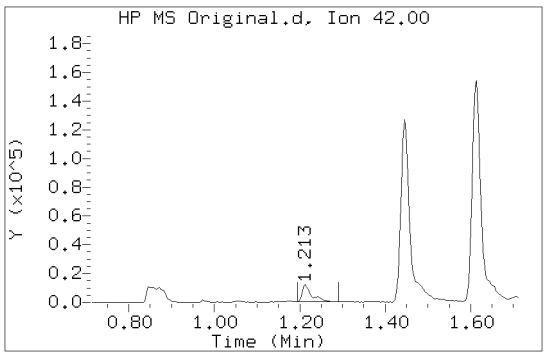
AFTER

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28-Oct-2022
16:41



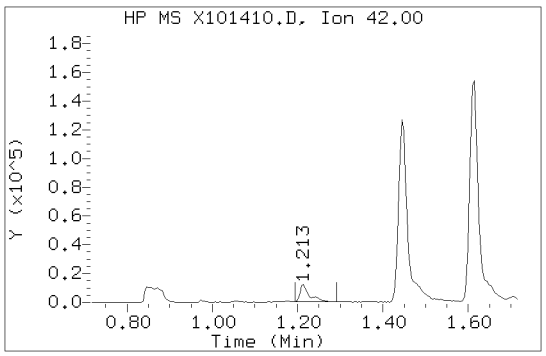
BEFORE

MASS
42
AREA
19410
HEIGHT
12406
19-Oct-2022
16:03
linh
pham



AFTER

MASS
42
AREA
19410
HEIGHT
12406
28-Oct-2022
16:41



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101411.D Page 1
Report Date: 28-Oct-2022 16:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101411.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 14-OCT-2022 14:56
Operator : PC Inst ID: voa6.i
Smp Info : VSTD200;VSTD200;1;10;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\8260W.m
Meth Date : 28-Oct-2022 16:42 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 14:35 Cal File: X101410.D
Als bottle: 12 Calibration Sample, Level: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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)	416563	50.0000	
135 1,4-Dioxane	88	5.598	5.598	(1.338)	129222	4000.00	242.05
140 1,3-Butadiene	54	1.167	1.167	(0.279)	424162	200.000	9.38
25 Methacrylonitrile	41	3.818	3.818	(0.912)	493131	200.000	9.62(M)
12 Isobutyl Alcohol	43	4.676	4.676	(1.117)	1690451	4000.00	
13 Acetonitrile	39	2.198	2.198	(0.525)	702172	2000.00	87.79
14 Allyl Chloride	41	2.198	2.198	(0.525)	1432006	200.000	8.92
4 Propionitrile	54	3.653	3.653	(0.873)	748902	2000.00	88.41
136 n-Hexane	57	2.772	2.772	(0.662)	695156	200.000	8.14
72 trans-1,4-Dichloro-2-butene	53	8.890	8.890	(1.159)	187111	200.000	79.96
194 Acetaldehyde	44	1.212	1.212	(0.290)	139189	800.000	865.52(A)
23 Chloroprene	53	1.771	1.771	(0.423)	194824	200.000	181.58(M)
145 alpha-Methylstyrene	118	9.261	9.261	(0.958)	1360092	200.000	167.66
200 Dimethyl Disulfide	94	6.198	6.198	(0.808)	1742722	200.000	22.66
139 Diethyl ether	59	1.760	1.760	(0.421)	375315	200.000	7.71
130 Ethyl Acetate	43	3.657	3.657	(0.874)	579438	200.000	
40 Methyl Methacrylate	41	5.606	5.606	(1.339)	519882	200.000	9.43
49 Ethyl Methacrylate	69	6.790	6.790	(1.367)	1011988	200.000	10.49
132 n-Butanol	56	5.253	5.253	(1.255)	265551	4000.00	300.66
142 Tetrahydrofuran	42	3.844	3.844	(0.919)	167939	400.000	13.60

150	Allyl alcohol	57	2.772	2.772 (0.662)	695156	4000.00	162.90
166	1,2,3-Trimethylbenzene	105	9.733	9.733 (1.007)	2555769	200.000	51.81

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101411.D Page 2
Report Date: 28-Oct-2022 16:42

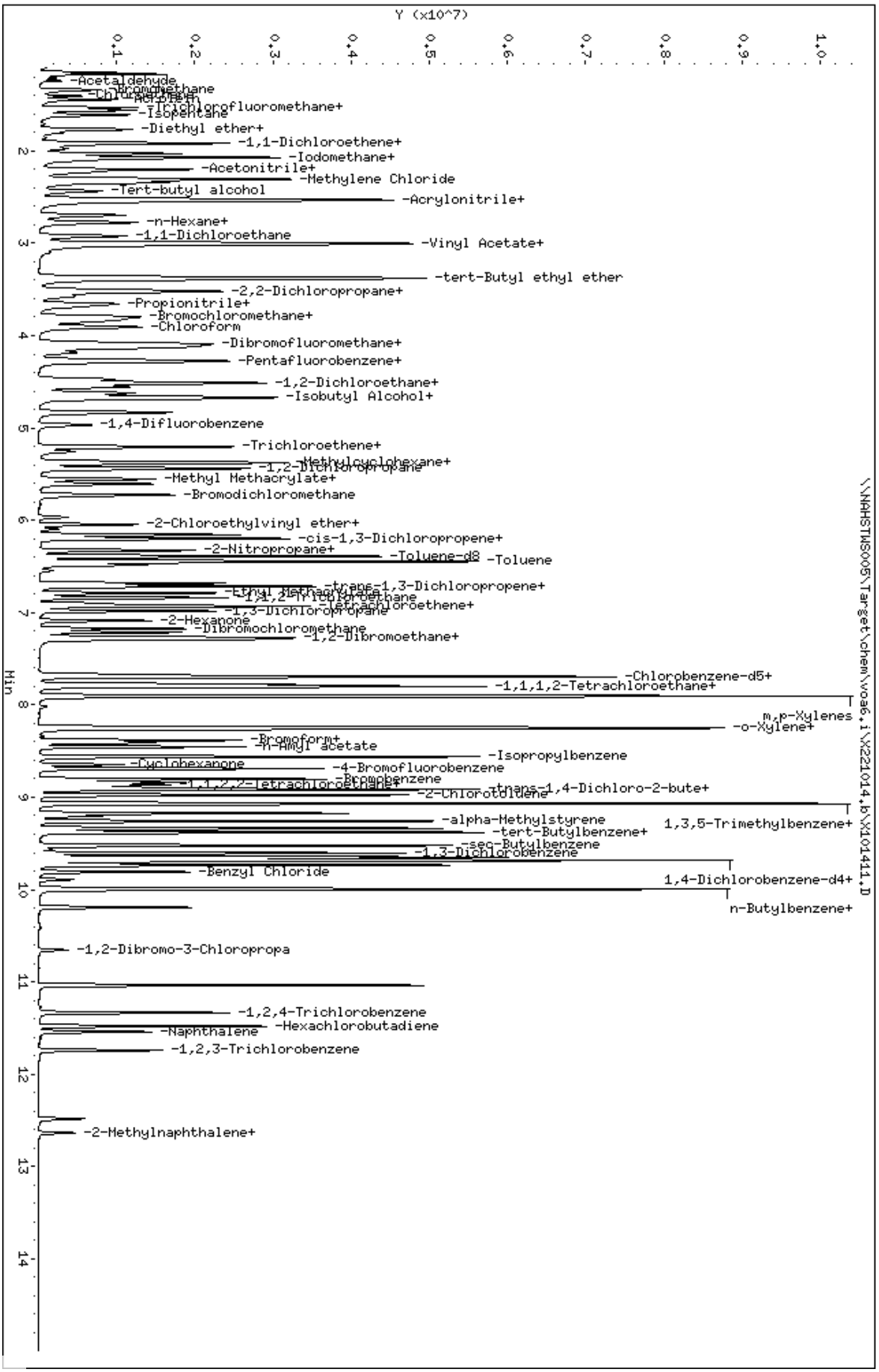
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
131	Methyl Acrylate	55	3.687	3.687	(0.881)	650975	200.000	
162	Butyl acrylate	55	8.252	8.252	(1.076)	1306929	200.000	20.62
2	Dichlorodifluoromethane	85	0.973	0.973	(0.232)	585094	200.000	
3	Chloromethane	50	1.081	1.081	(0.258)	708783	200.000	
5	Vinyl Chloride	62	1.145	1.145	(0.274)	610114	200.000	8.19
6	Bromomethane	94	1.336	1.336	(0.319)	434479	200.000	
7	Chloroethane	64	1.404	1.404	(0.335)	362899	200.000	8.05
8	Trichlorofluoromethane	101	1.561	1.561	(0.373)	827440	200.000	8.50
9	Acrolein	56	1.445	1.445	(0.345)	91241	400.000	15.44
10	Acetone	43	1.977	1.977	(0.472)	311608	400.000	(M)
11	1,1-Dichloroethene	96	1.913	1.913	(0.457)	506917	200.000	8.41
15	Iodomethane	142	2.030	2.030	(0.485)	2054869	400.000	319.18
16	Acrylonitrile	53	2.536	2.536	(0.606)	422900	400.000	117.57
17	Methylene Chloride	84	2.303	2.303	(0.550)	773591	200.000	
18	Methyl tert-butyl ether	73	2.539	2.539	(0.607)	1906067	200.000	8.50
19	Carbon Disulfide	76	2.071	2.071	(0.495)	3703597	400.000	17.29
20	trans-1,2-Dichloroethene	96	2.528	2.528	(0.604)	714828	200.000	8.43
21	Vinyl Acetate	43	3.001	3.001	(0.717)	3194039	400.000	16.54
22	1,1-Dichloroethane	63	2.922	2.922	(0.698)	1205792	200.000	8.13
24	2-Butanone	43	3.578	3.578	(0.855)	430323	400.000	22.63(H)
26	2,2-Dichloropropane	77	3.510	3.510	(0.839)	985724	200.000	8.66
27	cis-1,2-Dichloroethene	96	3.525	3.525	(0.842)	839765	200.000	8.52
28	Chloroform	83	3.908	3.908	(0.934)	1284804	200.000	8.19
29	Bromochloromethane	128	3.795	3.795	(0.907)	435052	200.000	7.63
$ 30	Dibromofluoromethane	113	4.099	4.099	(0.979)	729143	200.000	
31	1,1,1-Trichloroethane	97	4.084	4.084	(0.976)	1064483	200.000	8.77
32	1,1-Dichloropropene	75	4.283	4.283	(0.862)	926090	200.000	9.86
33	1,2-Dichloroethane	62	4.556	4.556	(0.917)	918224	200.000	9.84
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	909171	200.000	10.08
$ 35	1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	714756	200.000	
* 36	1,4-Difluorobenzene	114	4.969	4.969	(1.000)	599307	50.0000	
37	Benzene	78	4.515	4.515	(0.909)	2899553	200.000	9.53
38	Trichloroethene	130	5.209	5.209	(1.048)	879281	200.000	9.66
39	Bromodichloromethane	83	5.726	5.726	(1.152)	997609	200.000	10.22
41	2-Chloroethylvinyl ether	63	6.048	6.048	(1.217)	508948	400.000	121.00
42	1,2-Dichloropropane	63	5.437	5.437	(1.094)	729819	200.000	9.23
44	Dibromomethane	93	5.553	5.553	(1.118)	469741	200.000	9.68
45	4-Methyl-2-Pentanone	43	6.326	6.326	(0.825)	1062135	400.000	139.17
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	1300315	200.000	10.37
* 47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	550835	50.0000	
$ 48	Toluene-d8	98	6.389	6.389	(0.833)	2683811	200.000	18.47
50	Toluene	91	6.449	6.449	(0.841)	3124151	200.000	18.12
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.345)	1068751	200.000	10.50
52	2-Hexanone	43	7.087	7.087	(0.924)	715821	400.000	44.83(M)
53	1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	554575	200.000	17.37
54	1,3-Dichloropropane	76	6.982	6.982	(0.910)	1135839	200.000	17.80
55	Dibromochloromethane	129	7.177	7.177	(0.936)	870695	200.000	74.32
56	Tetrachloroethene	164	6.929	6.929	(0.903)	720514	200.000	17.80
57	1,2-Dibromoethane	107	7.259	7.259	(0.946)	727581	200.000	19.11
58	1-Chlorohexane	55	7.698	7.698	(1.549)	563932	200.000	10.37
59	Chlorobenzene	112	7.694	7.694	(1.003)	2155085	200.000	18.62
60	1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	821754	200.000	19.17

61 Ethylbenzene	106	7.799	7.799 (1.017)	1101709	200.000	18.26
62 m,p-Xylenes	106	7.904	7.904 (1.030)	2723687	400.000	36.12

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	63 o-Xylene	106	8.241	8.241	(1.074)	1318908	200.000	17.79
	64 Styrene	104	8.260	8.260	(1.077)	2263274	200.000	19.41
	66 Bromoform	173	8.410	8.410	(1.096)	556325	200.000	76.22
	67 Isopropylbenzene	105	8.564	8.564	(1.116)	3270148	200.000	18.17
	68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	755347	200.000	160.98
$	69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	966365	200.000	70.28
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	277035	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	567768	200.000	62.58(H)
	73 n-Propylbenzene	91	8.912	8.912	(0.922)	3699223	200.000	163.26
	74 Bromobenzene	156	8.807	8.807	(0.912)	1012690	200.000	52.12
	75 1,3,5-Trimethylbenzene	105	9.070	9.070	(0.939)	2694602	200.000	49.80
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	2259566	200.000	47.23
	77 4-Chlorotoluene	91	9.070	9.070	(0.939)	2564651	200.000	50.14
	78 tert-Butylbenzene	119	9.340	9.340	(0.967)	2315734	200.000	50.76
	79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	2719090	200.000	50.35
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	3145713	200.000	51.45
	82 p-Isopropyltoluene	119	9.651	9.651	(0.999)	2822110	200.000	51.40
	83 1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	1669777	200.000	52.34
	84 1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	1668675	200.000	51.71
	86 Benzyl Chloride	91	9.808	9.808	(1.279)	1130937	200.000	22.32
	87 n-Butylbenzene	91	9.996	9.996	(1.035)	2282434	200.000	54.38
	88 1,2-Dichlorobenzene	146	9.992	9.992	(1.034)	1492210	200.000	164.59
	89 1,2-Dibromo-3-Chloropropane	155	10.655	10.655	(1.103)	87502	200.000	184.72
	90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	749105	200.000	180.90
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	534882	200.000	191.16
	92 Naphthalene	128	11.540	11.540	(1.194)	1012149	200.000	68.21
	93 1,2,3-Trichlorobenzene	180	11.739	11.739	(1.215)	495745	200.000	63.53
M	94 1,2-Dichloroethylene (total)	96				1554593	400.000	
M	95 Xylenes (total)	106				4042595	600.000	
	141 Cyclohexane	56	4.125	4.125	(0.986)	911053	200.000	7.93
	138 Freon TF	101	1.913	1.913	(0.457)	496674	200.000	8.09
	147 Methylcyclohexane	55	5.381	5.381	(1.083)	1642114	200.000	10.45
	146 Methyl Acetate	43	2.232	2.232	(0.533)	368782	200.000	10.57

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS005\Target\chem\voa6,i\X221014,b\X101411.D
Date : 14-OCT-2022 14:56
Client ID: VSTD200
Sample Info: VSTD200;VSTD200;1;10;
Purge Volume: 5.0
Column phase: DB624

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

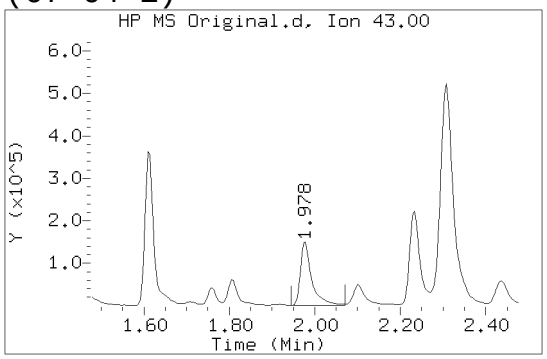
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InstruID : voa6.i
LabSampID : VSTD200

Acetone (67-64-1)

Reason Code:

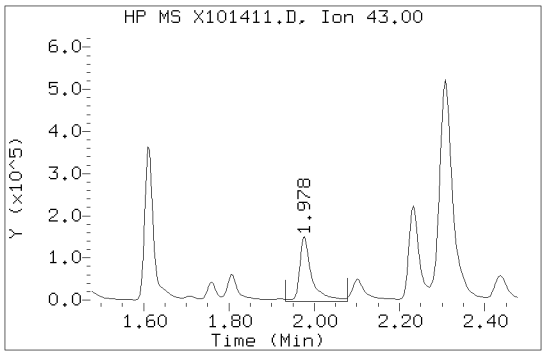
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HEIGHT
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19-Oct-2022
16:03
linh
pham



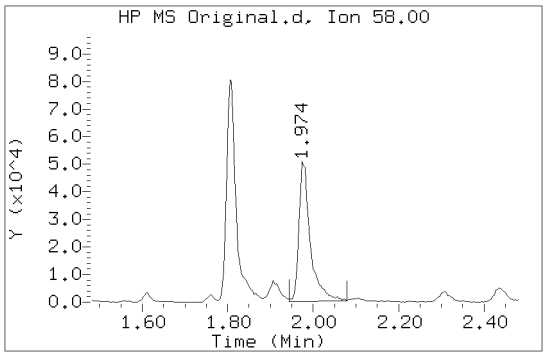
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28-Oct-2022
16:41



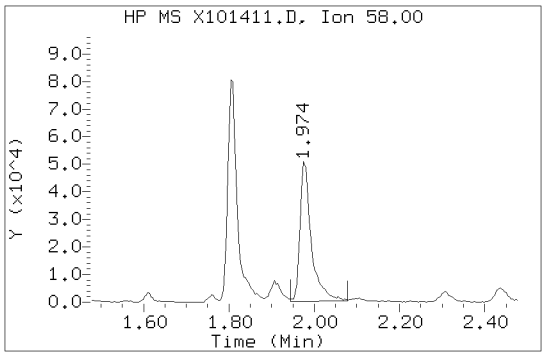
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pham



AFTER

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28-Oct-2022
16:41

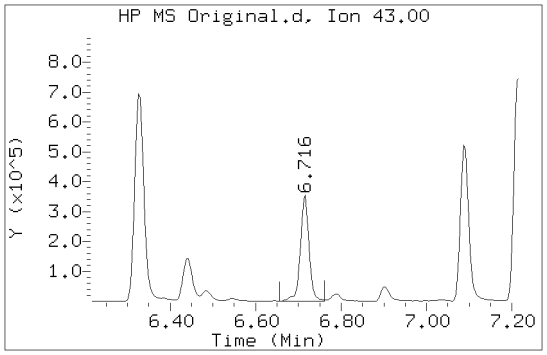


2-Hexanone (591-78-6)

Reason Code:

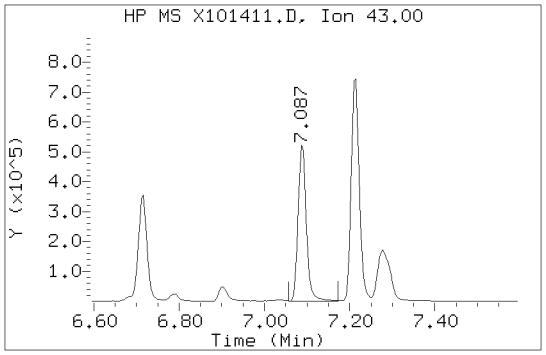
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19-Oct-2022
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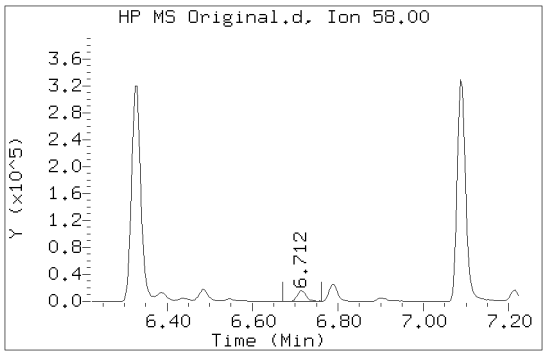
AFTER

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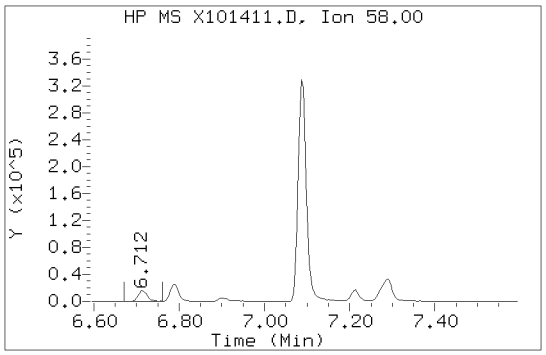
BEFORE

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HEIGHT
15674
19-Oct-2022
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linh
pham



AFTER

MASS
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23112
HEIGHT
15674
28-Oct-2022
16:41



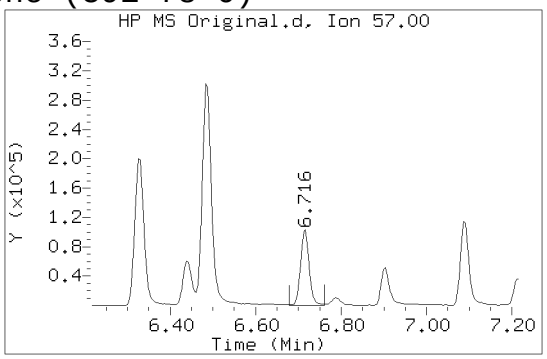
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Inj Date : 14-OCT-2022 14:56
InstruID : voa6.i
LabSampID : VSTD200

2-Hexanone (591-78-6)

Reason Code:

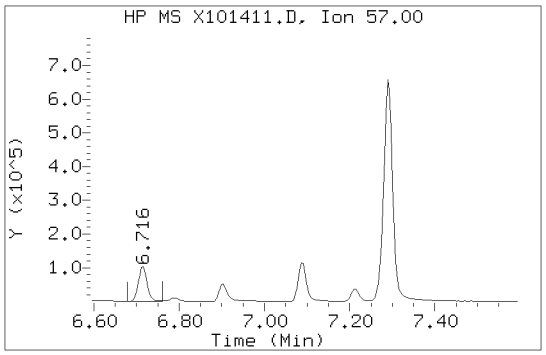
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AREA
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HEIGHT
103251
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linh
pham



AFTER

MASS
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AREA
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HEIGHT
103251
28-Oct-2022
16:41

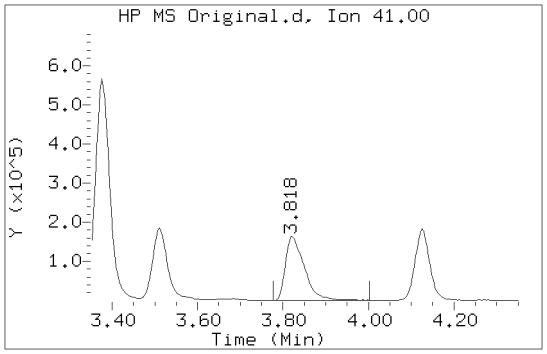


Methacrylonitrile (126-98-7)

Reason Code:

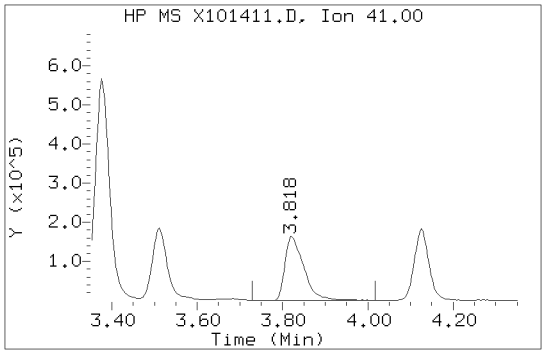
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19-Oct-2022
16:03
linh
pham



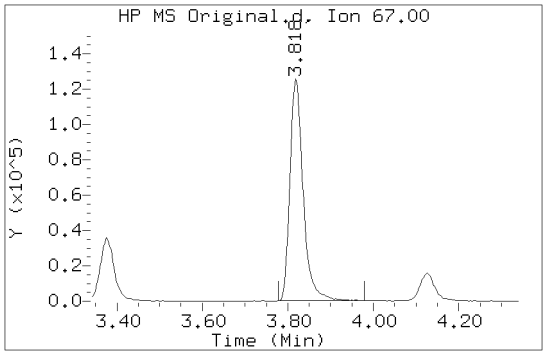
AFTER

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16:41



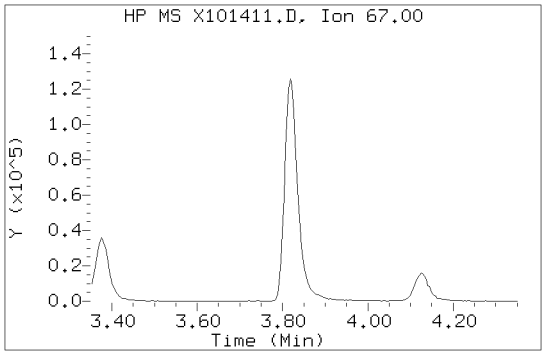
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AREA
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19-Oct-2022
16:03
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pham



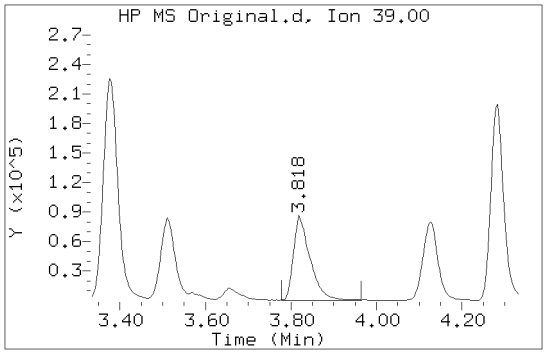
AFTER

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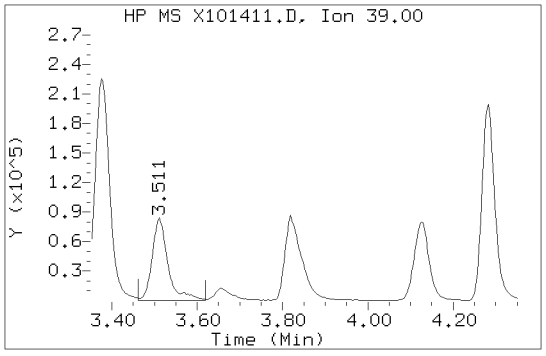
BEFORE

MASS
39
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HEIGHT
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19-Oct-2022
16:03
linh
pham



AFTER

MASS
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AREA
212254
HEIGHT
83610
28-Oct-2022
16:41



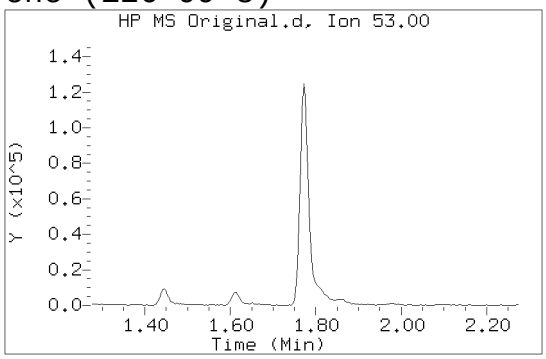
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Inj Date : 14-OCT-2022 14:56
InstruID : voa6.i
LabSampID : VSTD200

Chloroprene (126-99-8)

Reason Code:

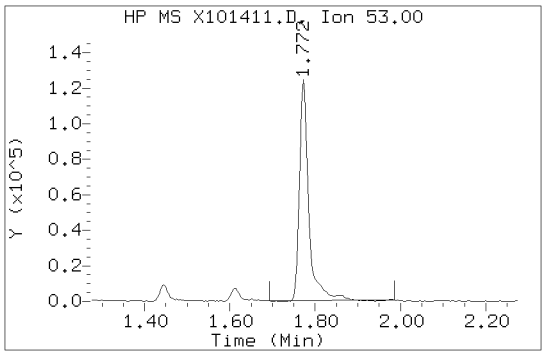
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16:03
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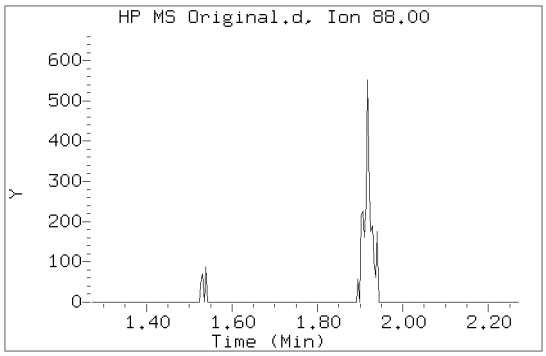
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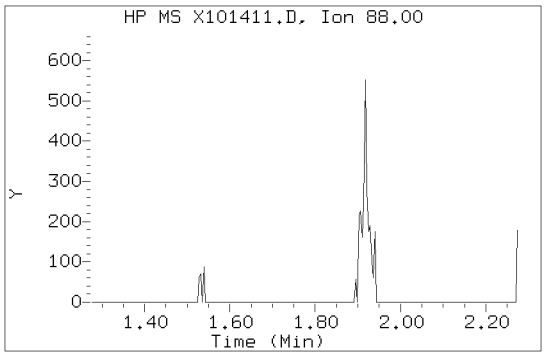
BEFORE

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19-Oct-2022
16:03
linh
pham



AFTER

MASS
88
AREA
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HEIGHT
0
28-Oct-2022
16:41



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101414.D Page 1
Report Date: 28-Oct-2022 16:42

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101414.D
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Inj Date : 14-OCT-2022 15:59
Operator : PC Inst ID: voa6.i
Smp Info : VSTD005;VSTD005;1;5;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\8260W.m
Meth Date : 28-Oct-2022 16:42 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 14:56 Cal File: X101411.D
Als bottle: 15 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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)	435773	50.0000	
135 1,4-Dioxane	88	5.613	5.613	(1.341)	3391	100.000	6.07(M)
140 1,3-Butadiene	54	1.167	1.167	(0.279)	11421	5.00000	0.24(M)
25 Methacrylonitrile	41	3.851	3.851	(0.920)	12898	5.00000	0.24(H)
12 Isobutyl Alcohol	43	4.687	4.687	(1.120)	47767	100.000	
13 Acetonitrile	39	2.202	2.202	(0.526)	17853	50.0000	2.13
14 Allyl Chloride	41	2.209	2.209	(0.528)	36693	5.00000	0.21
4 Propionitrile	54	3.671	3.671	(0.877)	17792	50.0000	2.00
136 n-Hexane	57	2.775	2.775	(0.663)	19554	5.00000	0.21
72 trans-1,4-Dichloro-2-butene	53	8.897	8.897	(1.160)	4568	5.00000	39.64
194 Acetaldehyde	44	1.216	1.216	(0.291)	5574	20.0000	4.94(M)
23 Chloroprene	53	1.775	1.775	(0.424)	5275	5.00000	4.69(M)
145 alpha-Methylstyrene	118	9.264	9.264	(0.959)	38182	5.00000	1.86
200 Dimethyl Disulfide	94	6.202	6.202	(0.808)	39867	5.00000	0.49
139 Diethyl ether	59	1.763	1.763	(0.421)	10699	5.00000	0.21
130 Ethyl Acetate	43	3.671	3.671	(0.877)	17751	5.00000	
40 Methyl Methacrylate	41	5.617	5.617	(1.342)	13701	5.00000	0.23
49 Ethyl Methacrylate	69	6.794	6.794	(1.367)	24330	5.00000	0.23
132 n-Butanol	56	5.294	5.294	(1.265)	3186	100.000	3.44
142 Tetrahydrofuran	42	3.855	3.855	(0.921)	4017	10.0000	0.31

150	Allyl alcohol	57	2.775	2.775 (0.663)	19554	100.000	4.38
166	1,2,3-Trimethylbenzene	105	9.729	9.729 (1.007)	79559	5.00000	1.51

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101414.D Page 2
Report Date: 28-Oct-2022 16:42

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	131 Methyl Acrylate	55	3.724	3.724	(0.890)	10862	5.00000	
	162 Butyl acrylate	55	8.260	8.260	(1.077)	31866	5.00000	0.47
	2 Dichlorodifluoromethane	85	0.976	0.976	(0.233)	15457	5.00000	
	3 Chloromethane	50	1.081	1.081	(0.258)	20317	5.00000	
	5 Vinyl Chloride	62	1.145	1.145	(0.274)	16054	5.00000	0.20
	6 Bromomethane	94	1.343	1.343	(0.321)	15054	5.00000	(M)
	7 Chloroethane	64	1.407	1.407	(0.336)	10184	5.00000	0.21
	8 Trichlorofluoromethane	101	1.565	1.565	(0.374)	20981	5.00000	0.20
	9 Acrolein	56	1.448	1.448	(0.346)	2817	10.0000	0.45
	10 Acetone	43	1.977	1.977	(0.472)	10022	10.0000	(M)
	11 1,1-Dichloroethene	96	1.917	1.917	(0.458)	13316	5.00000	0.21
	15 Iodomethane	142	2.029	2.029	(0.485)	27348	10.0000	4.79
	16 Acrylonitrile	53	2.554	2.554	(0.610)	10352	10.0000	117.07(H)
	17 Methylene Chloride	84	2.307	2.307	(0.551)	26716	5.00000	
	18 Methyl tert-butyl ether	73	2.539	2.539	(0.607)	52551	5.00000	0.22
	19 Carbon Disulfide	76	2.074	2.074	(0.496)	102410	10.0000	0.45
	20 trans-1,2-Dichloroethene	96	2.536	2.536	(0.606)	19440	5.00000	0.21
	21 Vinyl Acetate	43	3.008	3.008	(0.719)	87665	10.0000	0.43
	22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	32780	5.00000	0.21
	24 2-Butanone	43	3.608	3.608	(0.862)	8096	10.0000	0.40(H)
	26 2,2-Dichloropropane	77	3.514	3.514	(0.840)	28521	5.00000	0.23
	27 cis-1,2-Dichloroethene	96	3.529	3.529	(0.843)	23468	5.00000	0.22
	28 Chloroform	83	3.911	3.911	(0.935)	34399	5.00000	0.20
	29 Bromochloromethane	128	3.803	3.803	(0.909)	12619	5.00000	0.21
$	30 Dibromofluoromethane	113	4.102	4.102	(0.980)	21880	5.00000	
	31 1,1,1-Trichloroethane	97	4.084	4.084	(0.976)	28109	5.00000	0.22
	32 1,1-Dichloropropene	75	4.290	4.290	(0.863)	23650	5.00000	0.23
	33 1,2-Dichloroethane	62	4.564	4.564	(0.919)	23376	5.00000	0.23
	34 Carbon Tetrachloride	117	4.264	4.264	(0.858)	23688	5.00000	0.24
$	35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	20670	5.00000	
*	36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	633970	50.0000	
	37 Benzene	78	4.515	4.515	(0.909)	78901	5.00000	0.24
	38 Trichloroethene	130	5.212	5.212	(1.049)	23694	5.00000	0.24
	39 Bromodichloromethane	83	5.729	5.729	(1.153)	25802	5.00000	0.24
	41 2-Chloroethylvinyl ether	63	6.059	6.059	(1.220)	10768	10.0000	110.95
	42 1,2-Dichloropropane	63	5.441	5.441	(1.095)	21068	5.00000	0.25
	44 Dibromomethane	93	5.561	5.561	(1.119)	12881	5.00000	0.25
	45 4-Methyl-2-Pentanone	43	6.333	6.333	(0.826)	28218	10.0000	93.09
	46 cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	34257	5.00000	0.25
*	47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	581917	50.0000	
$	48 Toluene-d8	98	6.389	6.389	(0.833)	80565	5.00000	0.52
	50 Toluene	91	6.449	6.449	(0.841)	89663	5.00000	0.49
	51 trans-1,3-Dichloropropene	75	6.689	6.689	(1.346)	26703	5.00000	0.24
	52 2-Hexanone	43	7.094	7.094	(0.925)	18219	10.0000	1.08(M)
	53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	16001	5.00000	0.47
	54 1,3-Dichloropropane	76	6.985	6.985	(0.911)	32166	5.00000	0.47
	55 Dibromochloromethane	129	7.176	7.176	(0.935)	21891	5.00000	43.21
	56 Tetrachloroethene	164	6.925	6.925	(0.903)	20292	5.00000	0.47
	57 1,2-Dibromoethane	107	7.263	7.263	(0.947)	19666	5.00000	0.48
	58 1-Chlorohexane	55	7.697	7.697	(1.549)	15425	5.00000	0.26
	59 Chlorobenzene	112	7.694	7.694	(1.003)	63096	5.00000	0.51
	60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	22086	5.00000	0.48

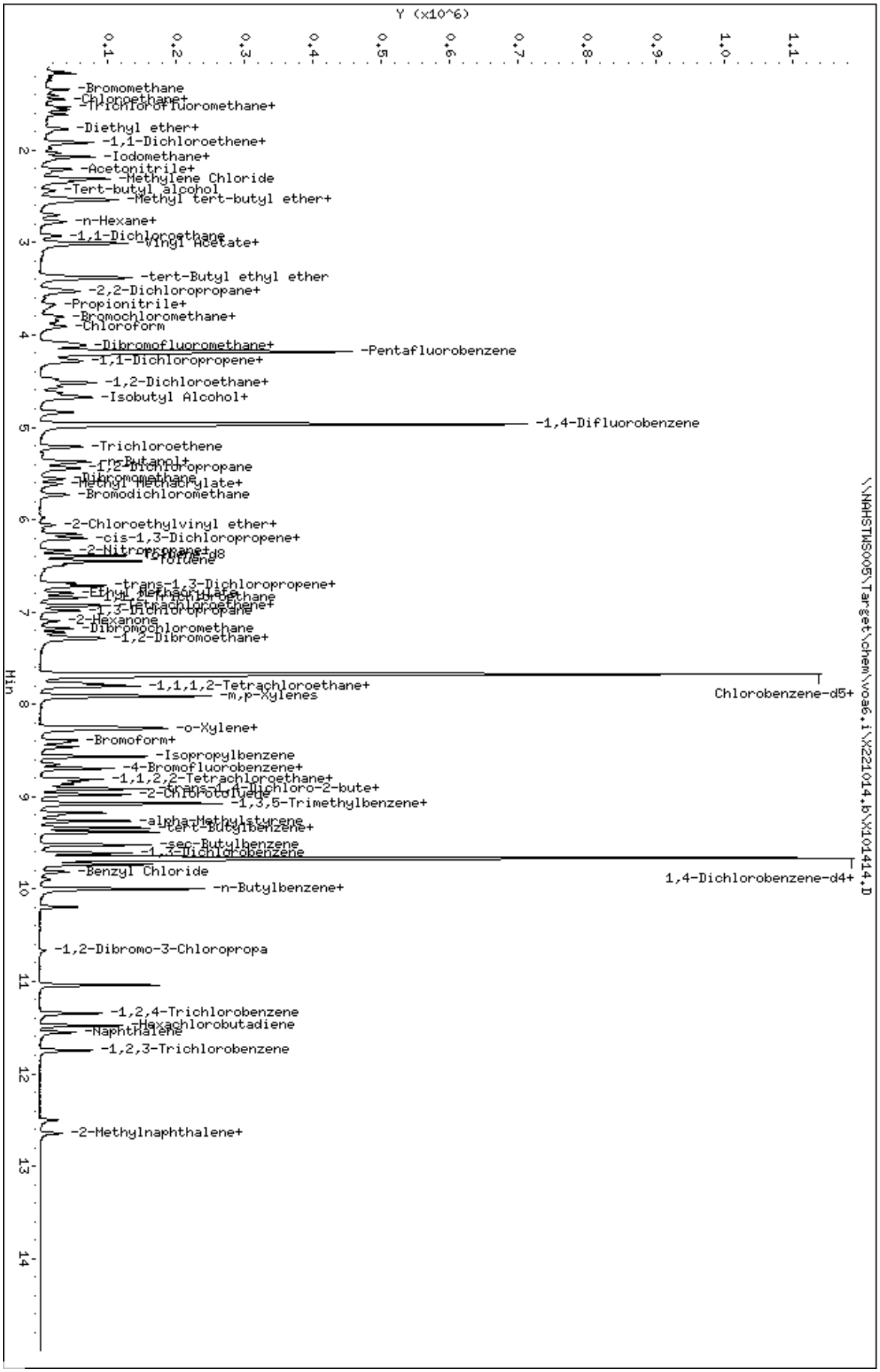
61 Ethylbenzene	106	7.802	7.802 (1.017)	31013	5.00000	0.48
62 m,p-Xylenes	106	7.907	7.907 (1.031)	77013	10.0000	0.96

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101414.D Page 3
Report Date: 28-Oct-2022 16:42

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	63 o-Xylene	106	8.245	8.245	(1.075)	38163	5.00000	0.48
	64 Styrene	104	8.267	8.267	(1.078)	63018	5.00000	0.51
	66 Bromoform	173	8.413	8.413	(1.097)	12900	5.00000	41.98
	67 Isopropylbenzene	105	8.563	8.563	(1.116)	94437	5.00000	0.49
	68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	22472	5.00000	3.72
$	69 4-Bromofluorobenzene	95	8.695	8.695	(1.133)	33148	5.00000	45.88
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	294324	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	16755	5.00000	1.73(M)
	73 n-Propylbenzene	91	8.916	8.916	(0.923)	105117	5.00000	2.31
	74 Bromobenzene	156	8.807	8.807	(0.912)	28225	5.00000	1.36
	75 1,3,5-Trimethylbenzene	105	9.069	9.069	(0.939)	81965	5.00000	1.42
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	69339	5.00000	1.36
	77 4-Chlorotoluene	91	9.073	9.073	(0.939)	75615	5.00000	1.39
	78 tert-Butylbenzene	119	9.336	9.336	(0.966)	70785	5.00000	1.46
	79 1,2,4-Trimethylbenzene	105	9.384	9.384	(0.971)	81267	5.00000	1.41
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	96907	5.00000	1.49
	82 p-Isopropyltoluene	119	9.650	9.650	(0.999)	87791	5.00000	1.50
	83 1,3-Dichlorobenzene	146	9.609	9.609	(0.995)	51349	5.00000	1.51
	84 1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	52768	5.00000	1.53
	86 Benzyl Chloride	91	9.815	9.815	(1.279)	28171	5.00000	0.52
	87 n-Butylbenzene	91	9.999	9.999	(1.035)	74011	5.00000	1.66
	88 1,2-Dichlorobenzene	146	9.995	9.995	(1.035)	48078	5.00000	3.11
	89 1,2-Dibromo-3-Chloropropane	155	10.670	10.670	(1.104)	2467	5.00000	1.30(M)
	90 1,2,4-Trichlorobenzene	180	11.345	11.345	(1.174)	33011	5.00000	4.03
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	22062	5.00000	9.75
	92 Naphthalene	128	11.551	11.551	(1.196)	24797	5.00000	1.57(M)
	93 1,2,3-Trichlorobenzene	180	11.746	11.746	(1.216)	12036	5.00000	1.45(M)
M	94 1,2-Dichloroethylene (total)	96				42908	10.0000	
M	95 Xylenes (total)	106				115176	15.0000	
	141 Cyclohexane	56	4.125	4.125	(0.986)	23914	5.00000	0.19
	138 Freon TF	101	1.921	1.921	(0.459)	12987	5.00000	0.20
	147 Methylcyclohexane	55	5.369	5.369	(1.081)	42838	5.00000	0.25(M)
	146 Methyl Acetate	43	2.247	2.247	(0.537)	9025	5.00000	0.24

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



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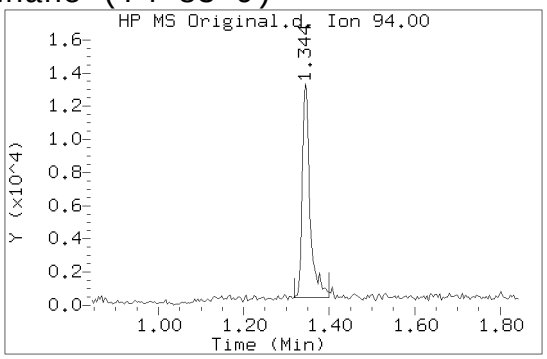
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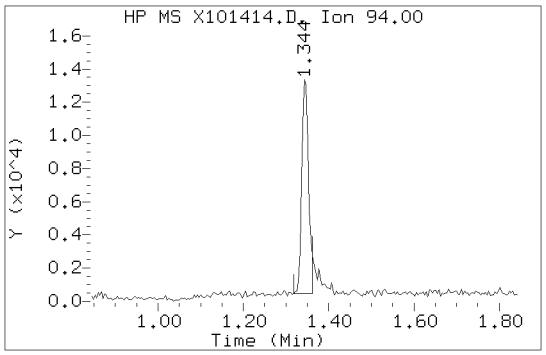
Bromomethane (74-83-9)

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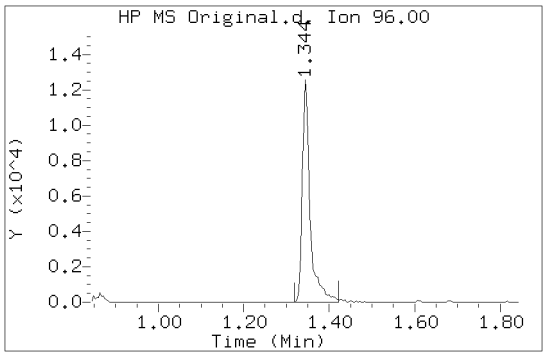
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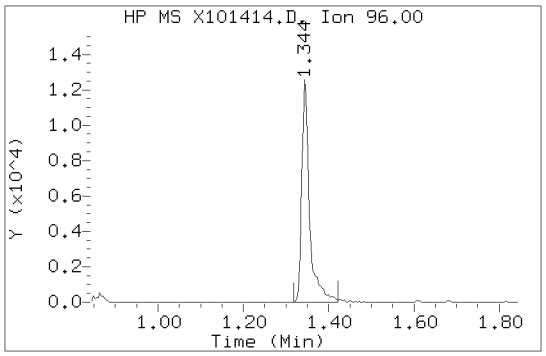
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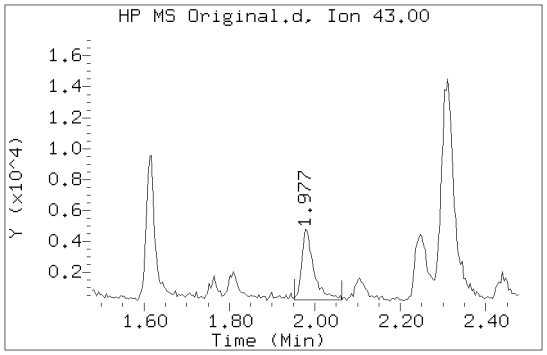
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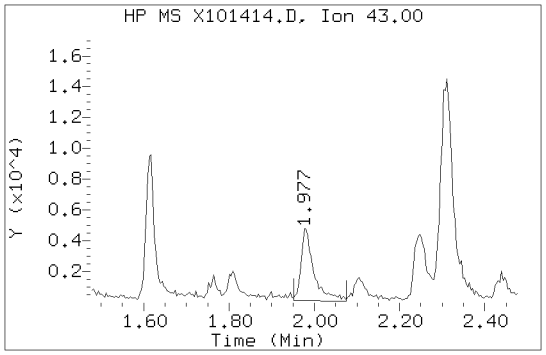
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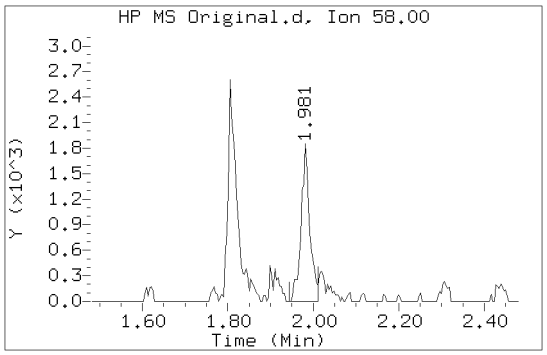
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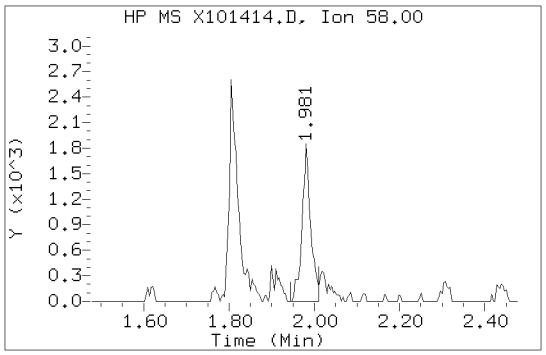
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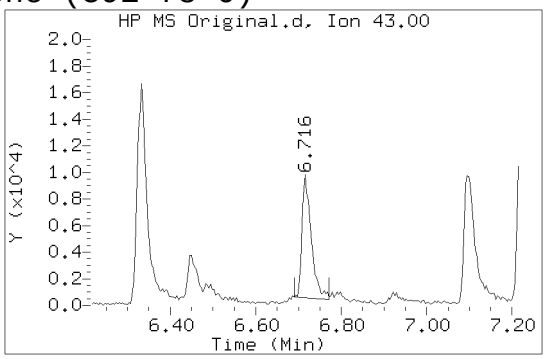


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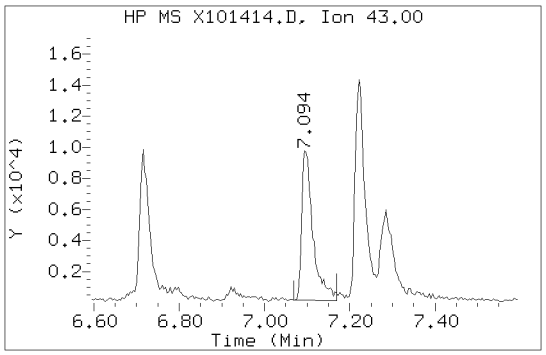
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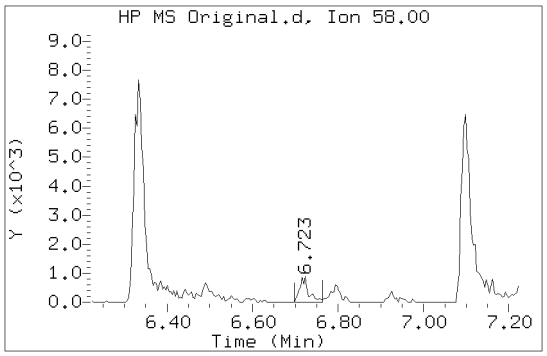
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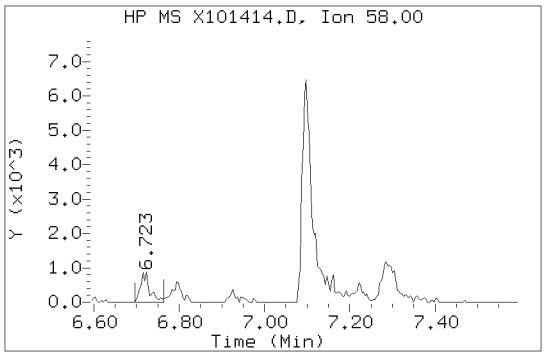
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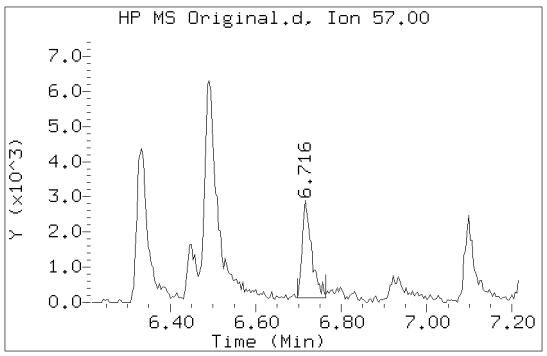
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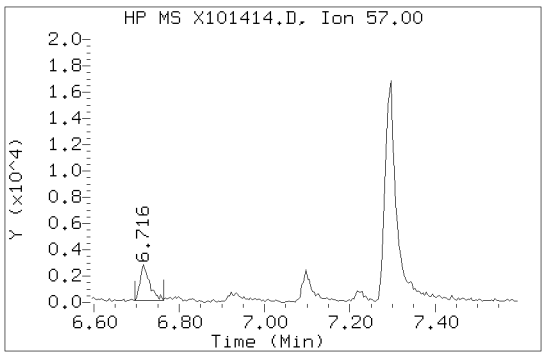
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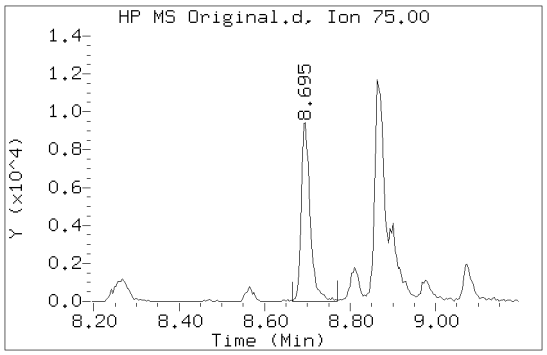
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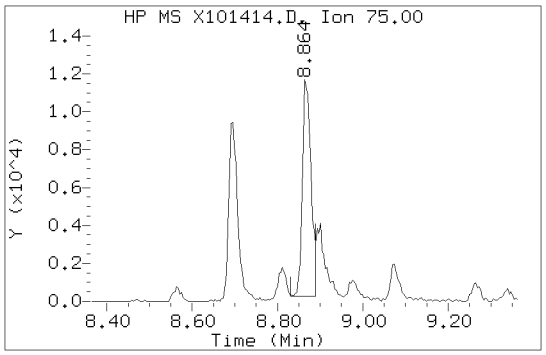
1,2,3-Trichloropropane (96-18-4)

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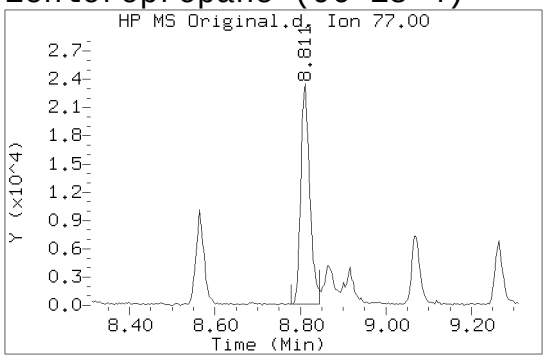
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LabSampID : ICV

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

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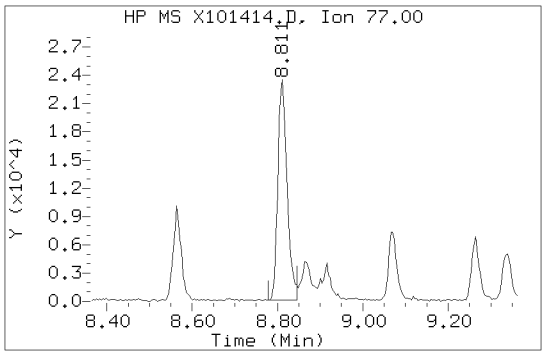
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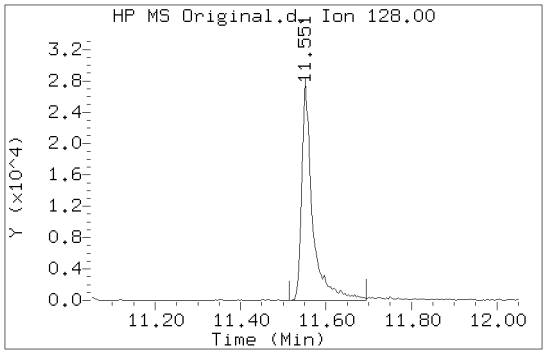


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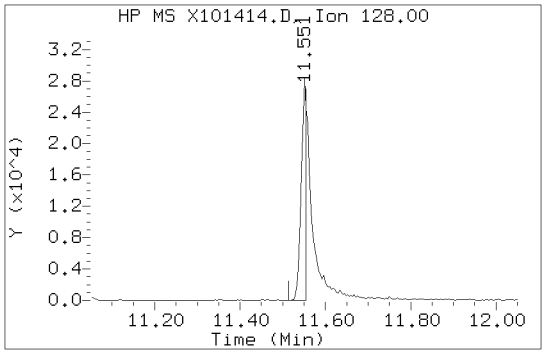
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AFTER

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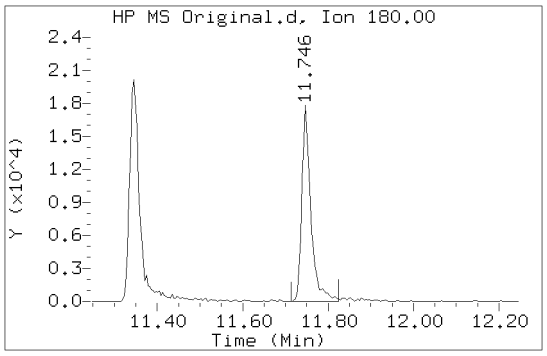


1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

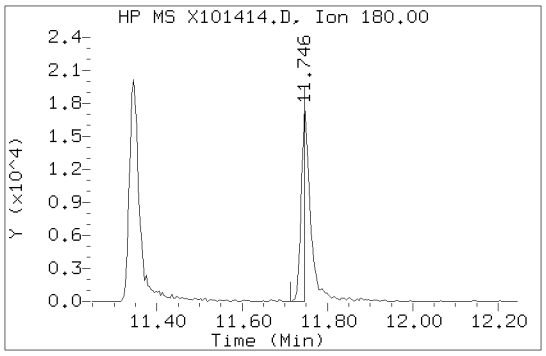
BEFORE

MASS
180
AREA
26957
HEIGHT
17840
19-Oct-2022
16:03
linh
pham



AFTER

MASS
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12036
HEIGHT
17840
28-Oct-2022
16:41

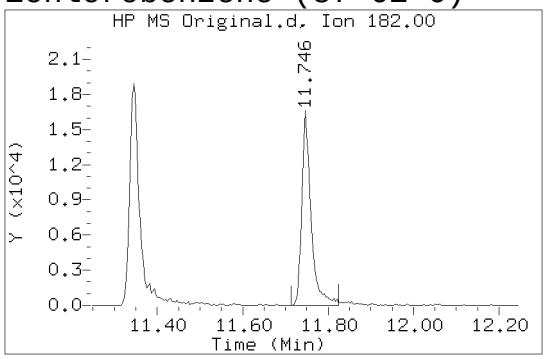


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Inj Date : 14-OCT-2022 15:59
InstruID : voa6.i
LabSampID : ICV

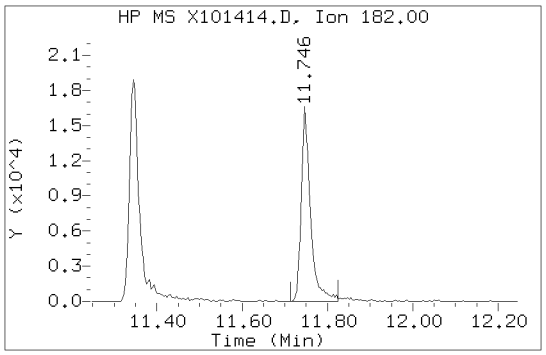
1,2,3-Trichlorobenzene (87-61-6)

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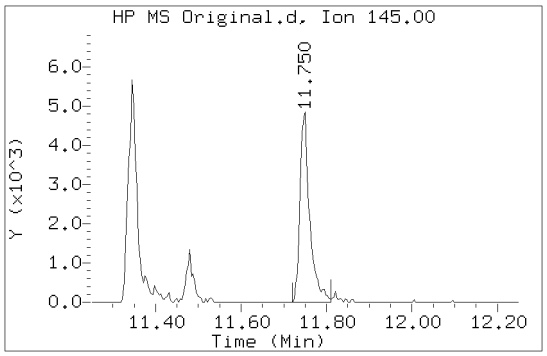
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16608
19-Oct-2022
16:03
linh
pham



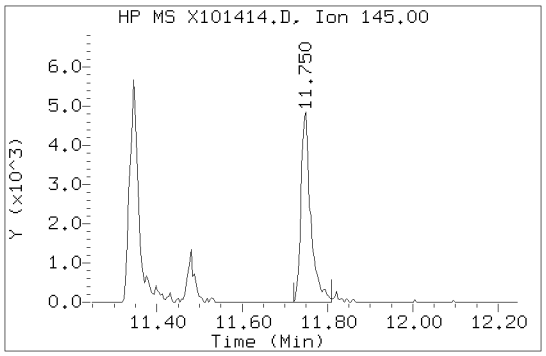
AFTER
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BEFORE
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AREA
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HEIGHT
4859
19-Oct-2022
16:03
linh
pham



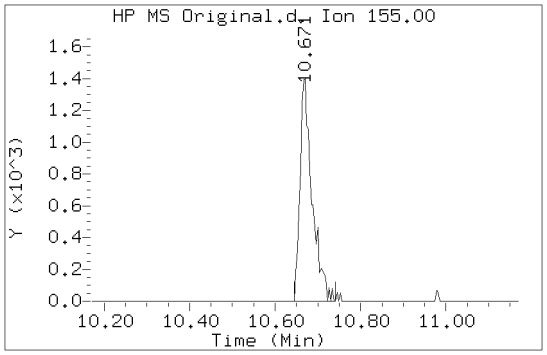
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28-Oct-2022
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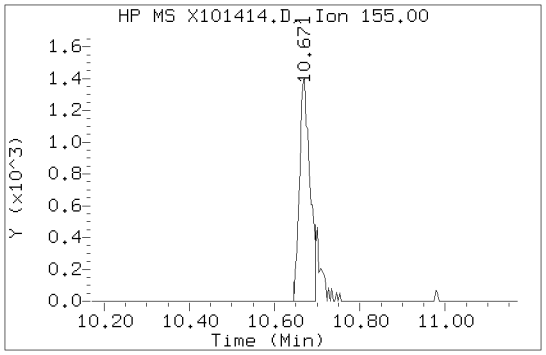
1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

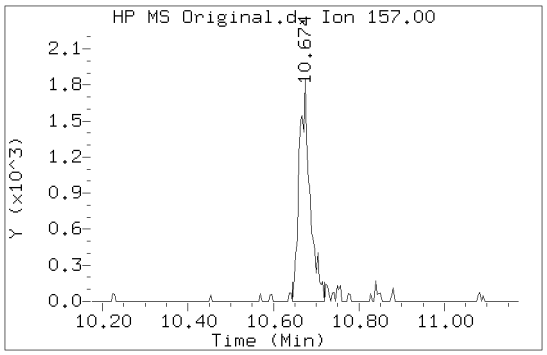
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155
AREA
2810
HEIGHT
1398
19-Oct-2022
16:03
linh
pham



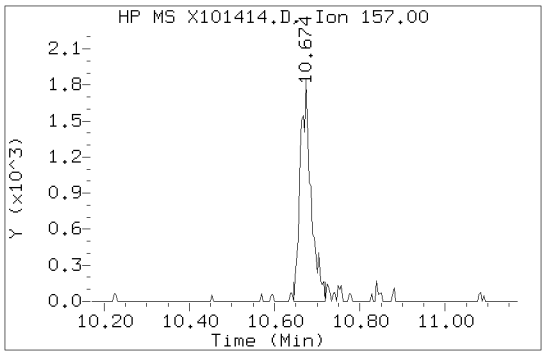
AFTER
MASS
155
AREA
2467
HEIGHT
1398
28-Oct-2022
16:41



BEFORE
MASS
157
AREA
3278
HEIGHT
1844
19-Oct-2022
16:03
linh
pham



AFTER
MASS
157
AREA
3278
HEIGHT
1844
28-Oct-2022
16:41



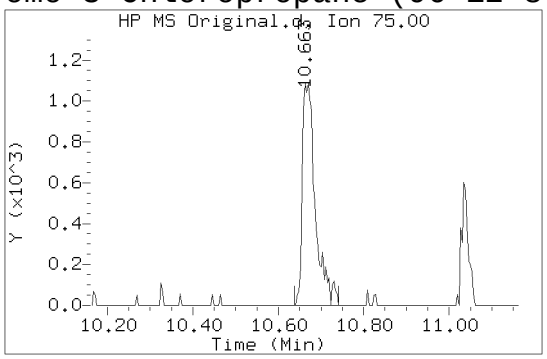
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Inj Date : 14-OCT-2022 15:59
InstruID : voa6.i
LabSampID : ICV

1,2-Dibromo-3-Chloropropane (96-12-8)

Reason Code:

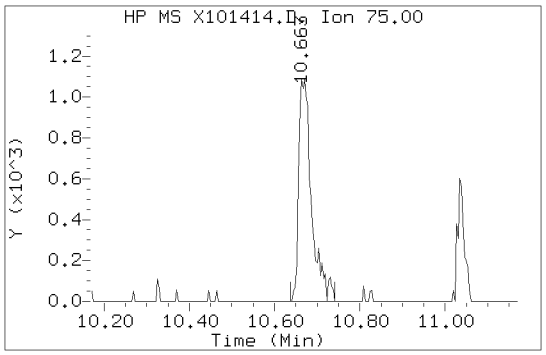
BEFORE

MASS
75
AREA
2331
HEIGHT
1085
19-Oct-2022
16:03
linh
pham



AFTER

MASS
75
AREA
2331
HEIGHT
1085
28-Oct-2022
16:41

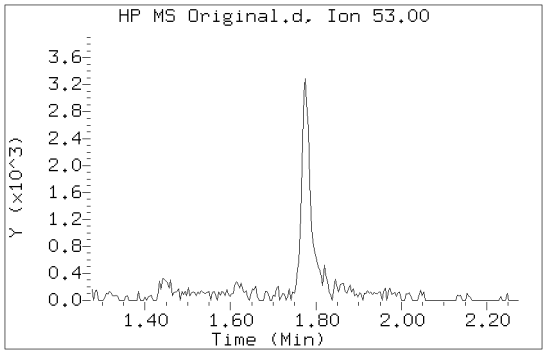


Chloroprene (126-99-8)

Reason Code:

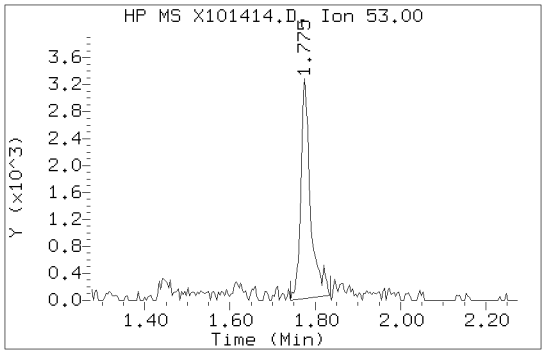
BEFORE

MASS
53
AREA
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



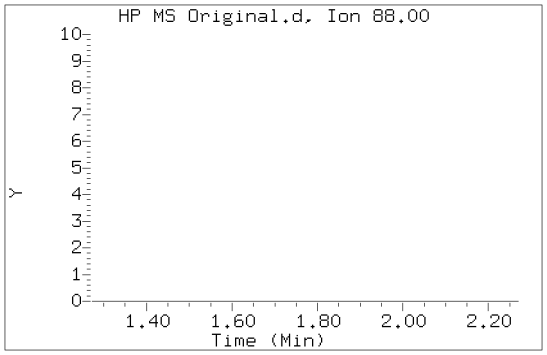
AFTER

MASS
53
AREA
5275
HEIGHT
3259
28-Oct-2022
16:41



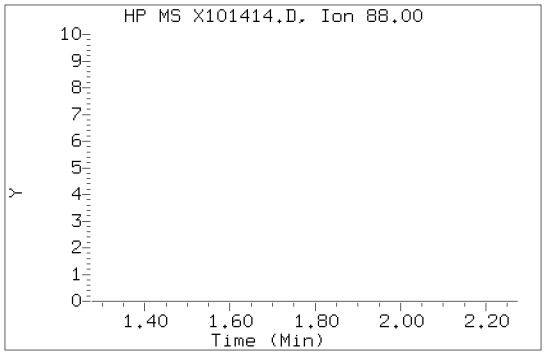
BEFORE

MASS
88
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER

MASS
88
AREA
0
HEIGHT
0
28-Oct-2022
16:41

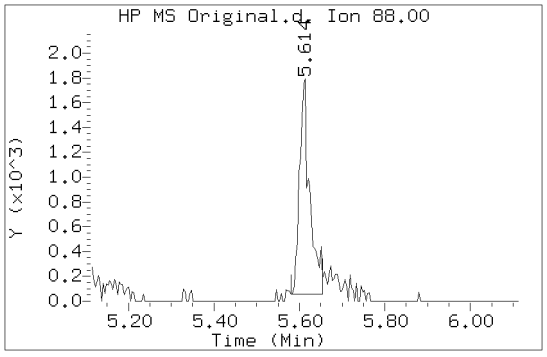


1,4-Dioxane ()

Reason Code:

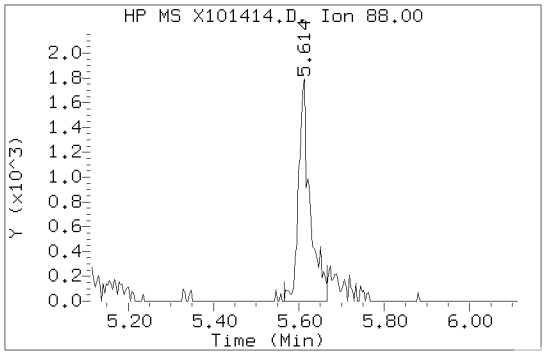
BEFORE

MASS
88
AREA
2926
HEIGHT
1733
19-Oct-2022
16:03
linh
pham



AFTER

MASS
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AREA
3391
HEIGHT
1792
28-Oct-2022
16:41



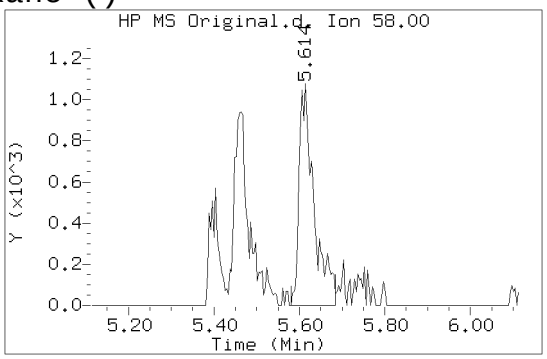
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Inj Date : 14-OCT-2022 15:59
InstruID : voa6.i
LabSampID : ICV

1,4-Dioxane ()

Reason Code:

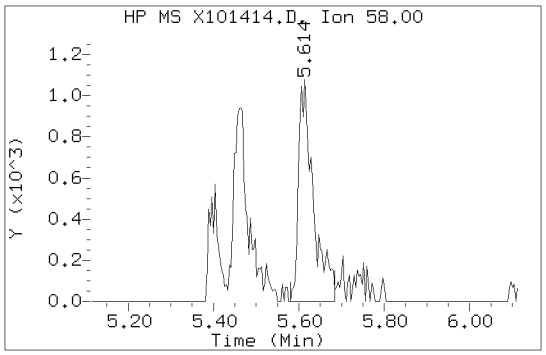
BEFORE

MASS
58
AREA
2640
HEIGHT
1078
19-Oct-2022
16:03
linh
pham



AFTER

MASS
58
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2640
HEIGHT
1078
28-Oct-2022
16:41

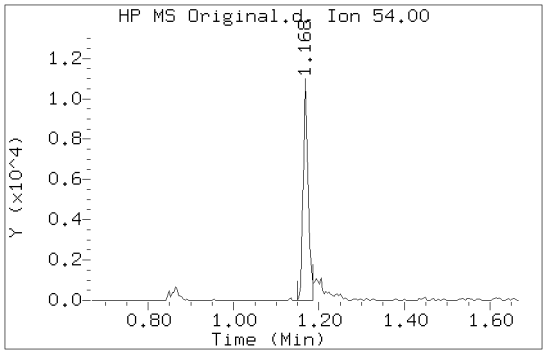


1,3-Butadiene (106-99-0)

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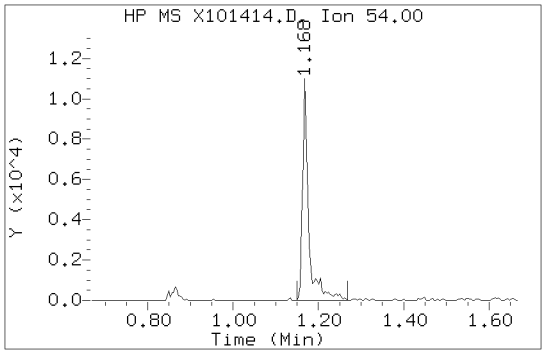
BEFORE

MASS
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AREA
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HEIGHT
10997
19-Oct-2022
16:03
linh
pham



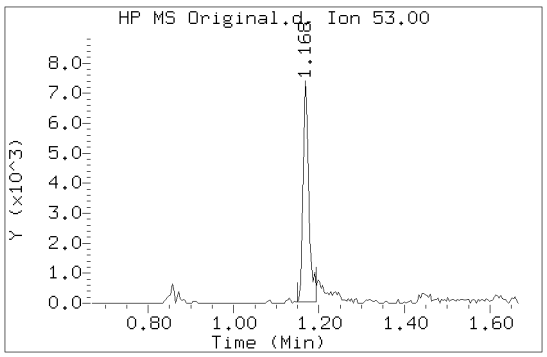
AFTER

MASS
54
AREA
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HEIGHT
10997
28-Oct-2022
16:41



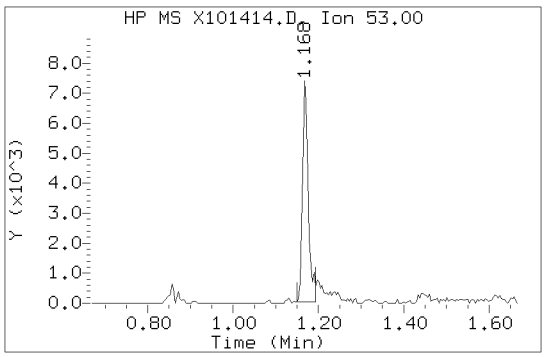
BEFORE

MASS
53
AREA
7225
HEIGHT
7359
19-Oct-2022
16:03
linh
pham



AFTER

MASS
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7225
HEIGHT
7359
28-Oct-2022
16:41

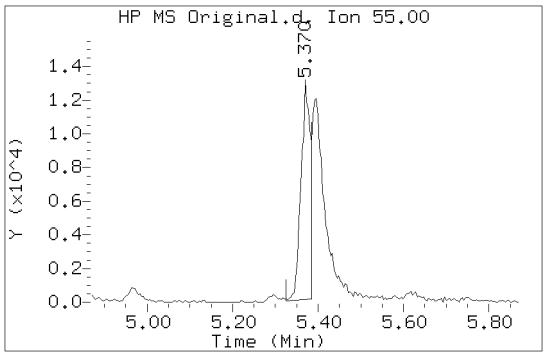


Methylcyclohexane (108-87-2)

Reason Code:

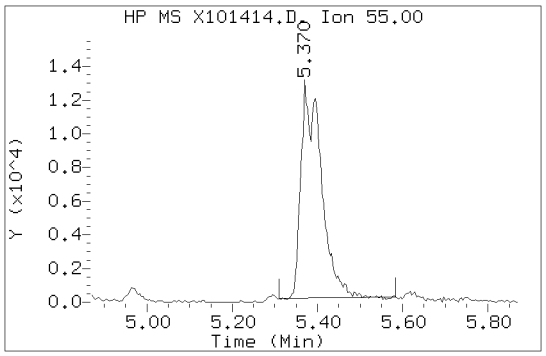
BEFORE

MASS
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AREA
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HEIGHT
13044
19-Oct-2022
16:03
linh
pham



AFTER

MASS
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42838
HEIGHT
12943
28-Oct-2022
16:41

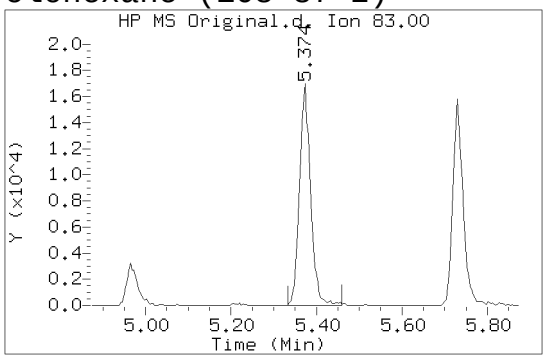


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Inj Date : 14-OCT-2022 15:59
InstruID : voa6.i
LabSampID : ICV

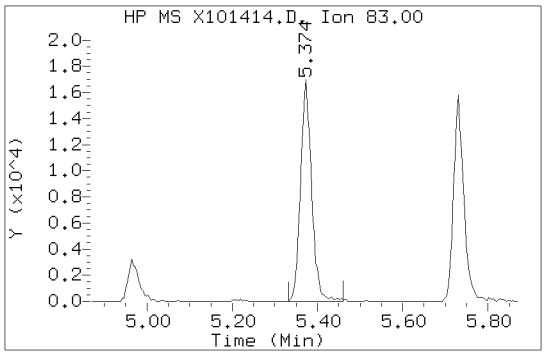
Methylcyclohexane (108-87-2)

Reason Code:

BEFORE
MASS
83
AREA
31273
HEIGHT
16976
19-Oct-2022
16:03
linh
pham



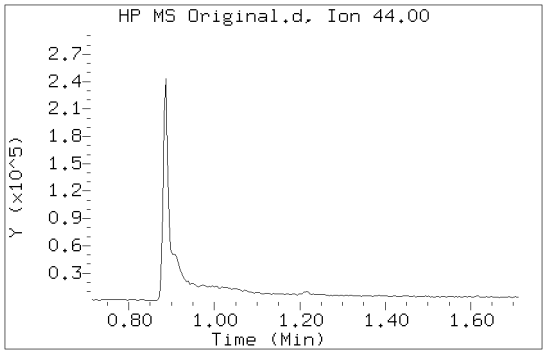
AFTER
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31273
HEIGHT
16976
28-Oct-2022
16:41



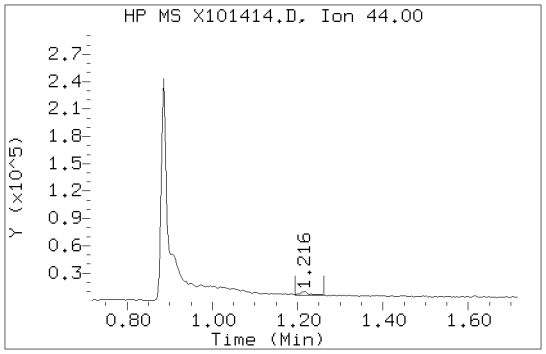
Acetaldehyde (75-07-0)

Reason Code:

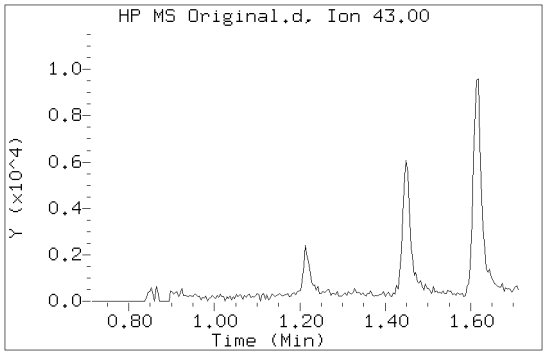
BEFORE
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AREA
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HEIGHT
0
19-Oct-2022
16:03
linh
pham



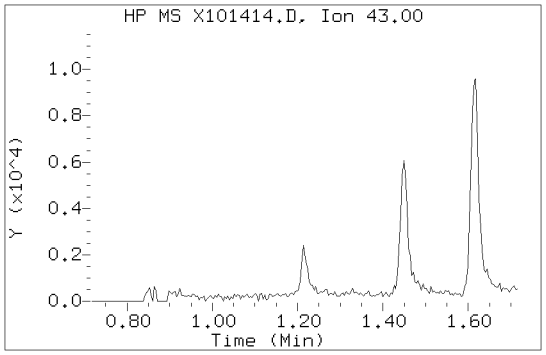
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4214
28-Oct-2022
16:41



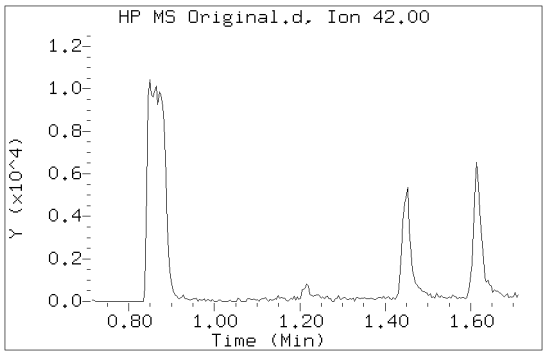
BEFORE
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19-Oct-2022
16:03
linh
pham



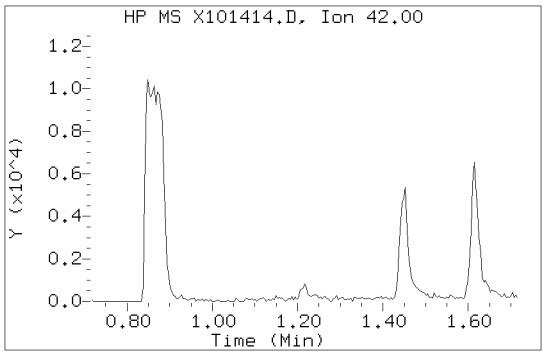
AFTER
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AREA
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28-Oct-2022
16:41



BEFORE
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42
AREA
0
HEIGHT
0
19-Oct-2022
16:03
linh
pham



AFTER
MASS
42
AREA
0
HEIGHT
0
28-Oct-2022
16:41



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101416.D Page 1
Report Date: 19-Oct-2022 16:05

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101416.D
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Inj Date : 14-OCT-2022 16:41
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;ICV
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221014.b\8260W.m
Meth Date : 19-Oct-2022 16:05 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 15:59 Cal File: X101414.D
Als bottle: 17 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 08260V6.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	4.181	4.185	(1.000)	435867	50.0000	
135 1,4-Dioxane	88	5.602	5.613	(1.340)	31293	943.530	943.52
140 1,3-Butadiene	54	1.167	1.167	(0.279)	107141	45.2340	45.23
25 Methacrylonitrile	41	3.821	3.851	(0.914)	123431	45.2307	45.23
12 Isobutyl Alcohol	43	4.680	4.687	(1.119)	430749	961.528	961.52
13 Acetonitrile	39	2.202	2.202	(0.527)	174343	513.288	513.28
14 Allyl Chloride	41	2.202	2.209	(0.527)	352305	46.8587	46.85
4 Propionitrile	54	3.653	3.671	(0.874)	189060	494.094	494.09
136 n-Hexane	57	2.772	2.775	(0.663)	191992	49.6839	49.68
72 trans-1,4-Dichloro-2-butene	53	8.889	8.897	(1.159)	44858	47.3695	47.36
194 Acetaldehyde	44	1.212	1.216	(0.290)	31684	168.427	168.42(M)
23 Chloroprene	53	1.771	1.775	(0.424)	51795	46.4477	46.44(M)
145 alpha-Methylstyrene	118	9.257	9.264	(0.958)	348498	48.4584	48.45
200 Dimethyl Disulfide	94	6.198	6.202	(0.808)	423713	52.3737	52.37
139 Diethyl ether	59	1.760	1.763	(0.421)	91935	43.8807	43.88
130 Ethyl Acetate	43	3.656	3.671	(0.874)	152798	48.6915	48.69
40 Methyl Methacrylate	41	5.606	5.617	(1.341)	128520	47.5998	47.59
49 Ethyl Methacrylate	69	6.786	6.794	(1.367)	245670	49.4551	49.45
132 n-Butanol	56	5.257	5.294	(1.257)	53784	1042.65	1042.64
142 Tetrahydrofuran	42	3.851	3.855	(0.921)	43717	97.7299	97.72

150	Allyl alcohol	57	2.772	2.775 (0.663)	191992	993.677	993.67
166	1,2,3-Trimethylbenzene	105	9.729	9.729 (1.007)	672740	49.5729	49.57

			QUANT SIG					CONCENTRATIONS	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ug/l)	FINAL (ug/l)
	131	Methyl Acrylate	55	3.686	3.724	(0.882)	161590	48.6409	48.64
	162	Butyl acrylate	55	8.252	8.260	(1.076)	294501	50.8976	50.89
	2	Dichlorodifluoromethane	85	0.976	0.976	(0.234)	155815	48.3747	48.37
	3	Chloromethane	50	1.081	1.081	(0.259)	173191	46.7813	46.78
	5	Vinyl Chloride	62	1.145	1.145	(0.274)	151368	45.5910	45.59
	6	Bromomethane	94	1.343	1.343	(0.321)	111078	48.4132	48.41
	7	Chloroethane	64	1.407	1.407	(0.337)	94071	46.8528	46.85
	8	Trichlorofluoromethane	101	1.561	1.565	(0.373)	213514	48.4485	48.44
	9	Acrolein	56	1.445	1.448	(0.346)	23273	95.7032	95.70
	10	Acetone	43	1.973	1.977	(0.472)	90055	102.120	102.11(M)
	11	1,1-Dichloroethene	96	1.913	1.917	(0.458)	129159	45.8154	45.81
	15	Iodomethane	142	2.029	2.029	(0.485)	461319	91.6208	91.62
	16	Acrylonitrile	53	2.536	2.554	(0.606)	106182	96.0073	96.00
	17	Methylene Chloride	84	2.303	2.307	(0.551)	203039	48.6079	48.60
	18	Methyl tert-butyl ether	73	2.536	2.539	(0.606)	486961	46.7685	46.76
	19	Carbon Disulfide	76	2.071	2.074	(0.495)	921984	93.3933	93.39
	20	trans-1,2-Dichloroethene	96	2.528	2.536	(0.605)	184320	47.9781	47.97
	21	Vinyl Acetate	43	3.000	3.008	(0.718)	837136	96.6385	96.63
	22	1,1-Dichloroethane	63	2.922	2.929	(0.699)	307516	46.8680	46.86
	24	2-Butanone	43	3.581	3.608	(0.857)	103208	98.2112	98.21(H)
	26	2,2-Dichloropropane	77	3.510	3.514	(0.840)	263682	49.8918	49.89
	27	cis-1,2-Dichloroethene	96	3.529	3.529	(0.844)	215000	47.2252	47.22
	28	Chloroform	83	3.908	3.911	(0.935)	328556	46.1475	46.14
	29	Bromochloromethane	128	3.795	3.803	(0.908)	116203	46.3566	46.35
$	30	Dibromofluoromethane	113	4.099	4.102	(0.980)	194700	49.5897	49.58
	31	1,1,1-Trichloroethane	97	4.087	4.084	(0.978)	268703	47.7620	47.76
	32	1,1-Dichloropropene	75	4.282	4.290	(0.863)	239232	48.1163	48.11
	33	1,2-Dichloroethane	62	4.556	4.564	(0.918)	232289	50.4884	50.48
	34	Carbon Tetrachloride	117	4.264	4.264	(0.859)	230780	46.6340	46.63
$	35	1,2-Dichloroethane-d4	65	4.474	4.477	(1.070)	188555	48.6210	48.62
*	36	1,4-Difluorobenzene	114	4.965	4.968	(1.000)	623520	50.0000	
	37	Benzene	78	4.515	4.515	(0.909)	747678	47.4536	47.45
	38	Trichloroethene	130	5.205	5.212	(1.048)	221800	47.2926	47.29
	39	Bromodichloromethane	83	5.726	5.729	(1.153)	247028	48.0163	48.01
	41	2-Chloroethylvinyl ether	63	6.048	6.059	(1.218)	120622	93.7928	93.79
	42	1,2-Dichloropropane	63	5.437	5.441	(1.095)	190372	46.8449	46.84
	44	Dibromomethane	93	5.553	5.561	(1.119)	117852	48.4527	48.45
	45	4-Methyl-2-Pentanone	43	6.325	6.333	(0.825)	260438	94.0475	94.04
	46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.240)	328363	49.9160	49.91
*	47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	576128	50.0000	
$	48	Toluene-d8	98	6.385	6.389	(0.832)	715271	49.5397	49.53
	50	Toluene	91	6.449	6.449	(0.841)	821439	48.0352	48.03
	51	trans-1,3-Dichloropropene	75	6.682	6.689	(1.346)	263831	50.6055	50.60
	52	2-Hexanone	43	7.086	7.094	(0.924)	166672	87.7961	87.79(M)
	53	1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	142280	44.8810	44.88
	54	1,3-Dichloropropane	76	6.981	6.985	(0.910)	290388	45.2123	45.21
	55	Dibromochloromethane	129	7.176	7.176	(0.936)	211548	47.2892	47.28
	56	Tetrachloroethene	164	6.929	6.925	(0.903)	193255	48.4995	48.49
	57	1,2-Dibromoethane	107	7.263	7.263	(0.947)	183591	46.3599	46.35
	58	1-Chlorohexane	55	7.694	7.697	(1.550)	151114	41.8508	41.85
	59	Chlorobenzene	112	7.694	7.694	(1.003)	561654	46.7409	46.74
	60	1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	206345	47.1157	47.11

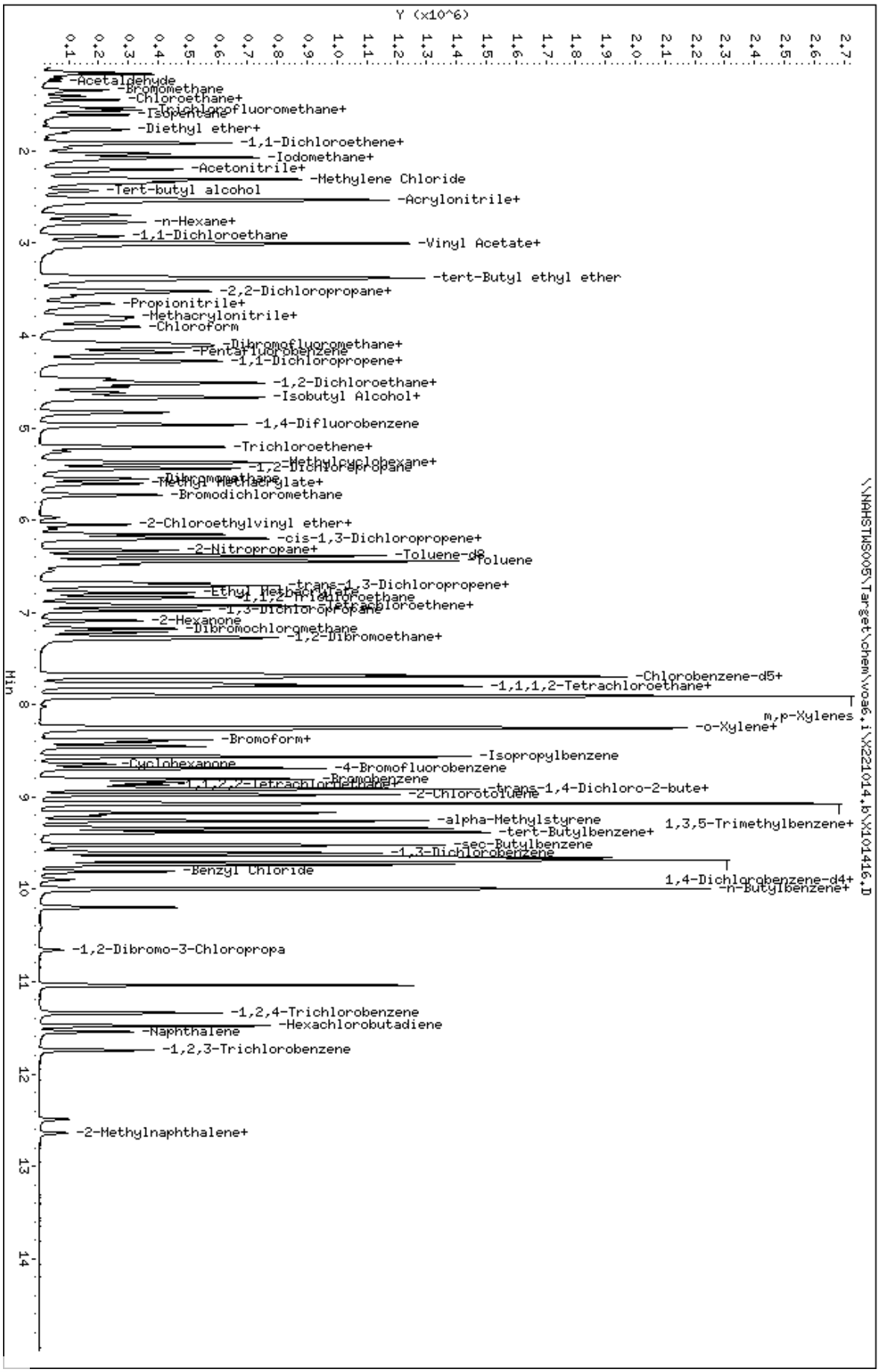
61 Ethylbenzene	106	7.799	7.802 (1.017)	291517	47.2035	47.20
62 m,p-Xylenes	106	7.904	7.907 (1.030)	729219	97.7220	97.72

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221014.b\X101416.D Page 3
Report Date: 19-Oct-2022 16:05

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	63 o-Xylene	106	8.241	8.245	(1.074)	347415	47.7464	47.74
	64 Styrene	104	8.260	8.267	(1.077)	591942	50.8961	50.89
	66 Bromoform	173	8.410	8.413	(1.096)	132054	46.7327	46.73
	67 Isopropylbenzene	105	8.563	8.563	(1.116)	859626	48.4681	48.46
	68 1,1,2,2-Tetrachloroethane	83	8.837	8.841	(0.915)	193256	48.3114	48.31
$	69 4-Bromofluorobenzene	95	8.691	8.695	(1.133)	259977	50.5885	50.58
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	293379	50.0000	
	71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	143418	46.4803	46.48(M)
	73 n-Propylbenzene	91	8.912	8.916	(0.922)	974498	49.2003	49.20
	74 Bromobenzene	156	8.807	8.807	(0.912)	260647	47.6858	47.68
	75 1,3,5-Trimethylbenzene	105	9.066	9.069	(0.938)	723053	48.6377	48.63
	76 2-Chlorotoluene	91	8.976	8.976	(0.929)	596573	45.1110	45.11
	77 4-Chlorotoluene	91	9.069	9.073	(0.939)	679033	46.4792	46.47
	78 tert-Butylbenzene	119	9.336	9.336	(0.966)	604989	46.9067	46.90
	79 1,2,4-Trimethylbenzene	105	9.381	9.384	(0.971)	718064	46.7856	46.78
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	825064	47.1933	47.19
	82 p-Isopropyltoluene	119	9.650	9.650	(0.999)	748690	48.3300	48.33
	83 1,3-Dichlorobenzene	146	9.605	9.609	(0.994)	432880	47.1109	47.11
	84 1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	439203	45.8008	45.80
	86 Benzyl Chloride	91	9.808	9.815	(1.279)	268458	36.8372	36.83
	87 n-Butylbenzene	91	9.995	9.999	(1.035)	605877	49.9170	49.91
	88 1,2-Dichlorobenzene	146	9.992	9.995	(1.034)	385204	48.6365	48.63
	89 1,2-Dibromo-3-Chloropropane	155	10.659	10.670	(1.103)	20317	46.1991	46.19
	90 1,2,4-Trichlorobenzene	180	11.337	11.345	(1.173)	181340	48.0454	48.04
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	138734	51.0124	51.01
	92 Naphthalene	128	11.544	11.551	(1.195)	241205	48.2984	48.29
	93 1,2,3-Trichlorobenzene	180	11.742	11.746	(1.215)	122129	49.9989	49.99
M	94 1,2-Dichloroethylene (total)	96				399320	95.2033	95.20
M	95 Xylenes (total)	106				1076634	145.468	145.46
	141 Cyclohexane	56	4.125	4.125	(0.987)	249254	49.8132	49.81
	138 Freon TF	101	1.917	1.921	(0.459)	133157	49.6473	49.64
	147 Methylcyclohexane	55	5.381	5.369	(1.084)	419936	50.5767	50.57
	146 Methyl Acetate	43	2.236	2.247	(0.535)	86875	45.9004	45.90
	148 Tert-Butyl alcohol	59	2.431	2.442	(0.581)	238738	899.803	899.80
	149 Isopropyl Alcohol	45	2.097	2.108	(0.502)	121616	880.734	880.73

QC Flag Legend

M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



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

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

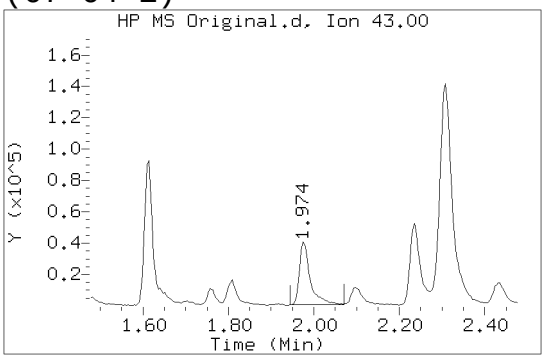
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InstruID : voa6.i
LabSampID : ICV

Acetone (67-64-1)

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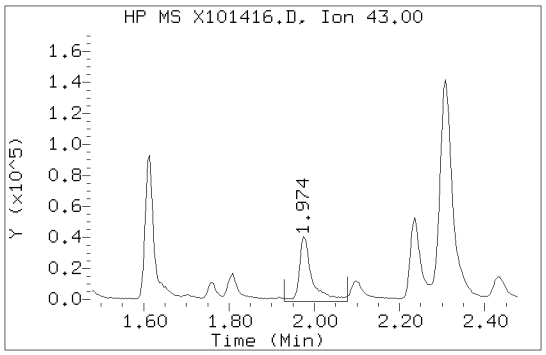
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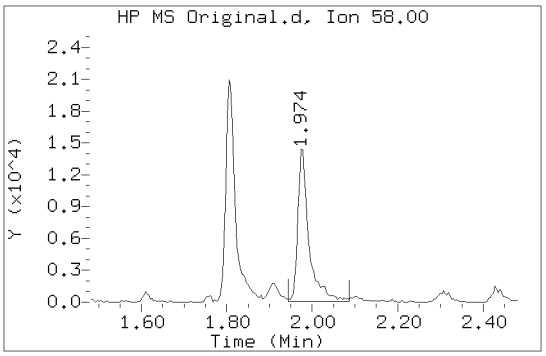
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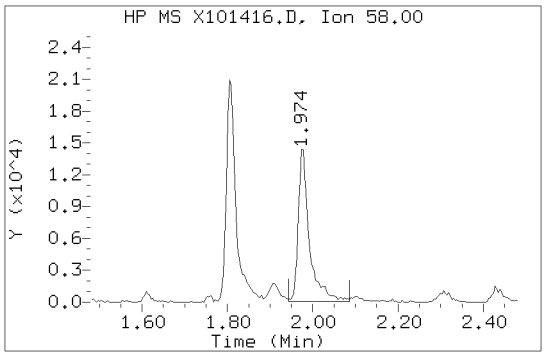
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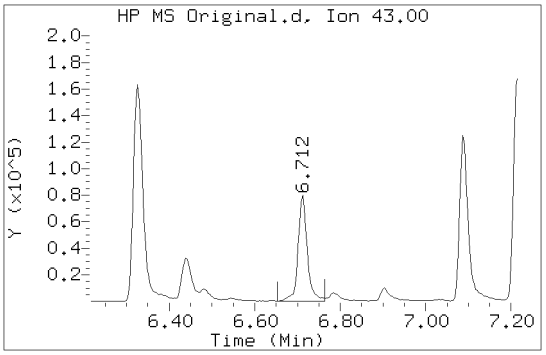


2-Hexanone (591-78-6)

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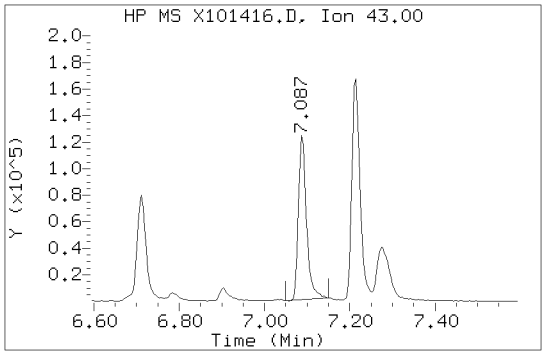
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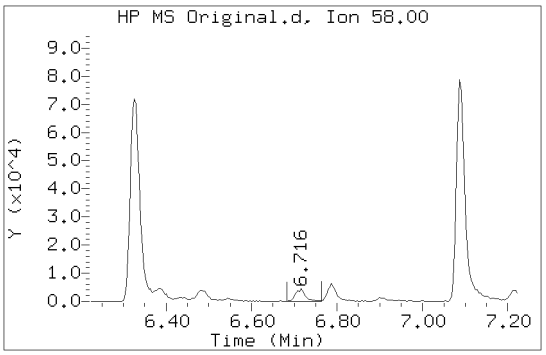
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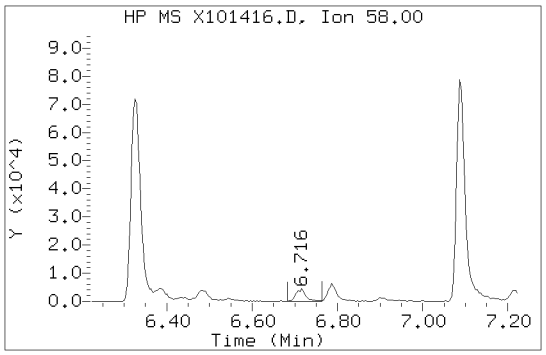
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AFTER

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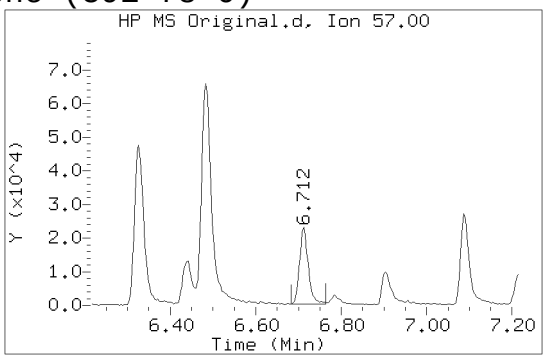
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InstruID : voa6.i
LabSampID : ICV

2-Hexanone (591-78-6)

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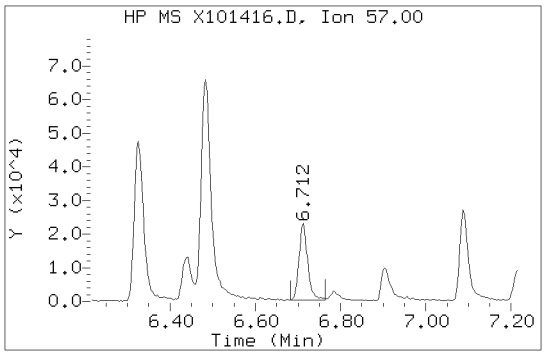
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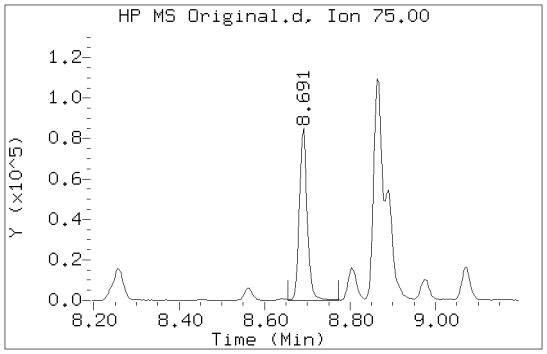


1,2,3-Trichloropropane (96-18-4)

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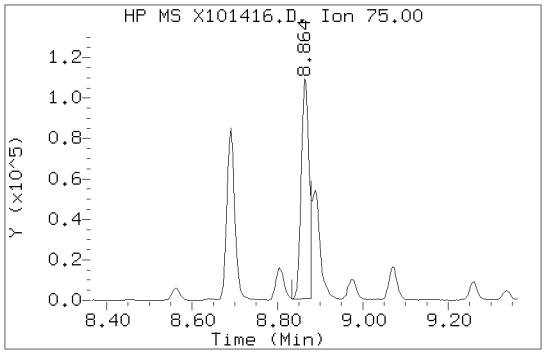
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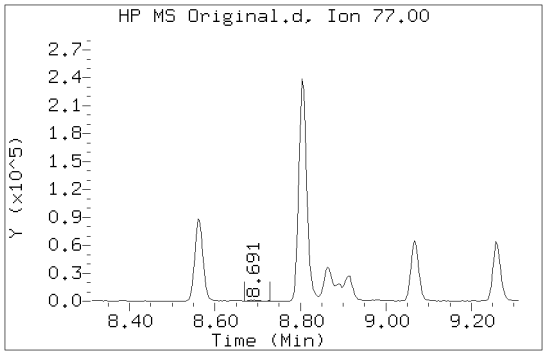
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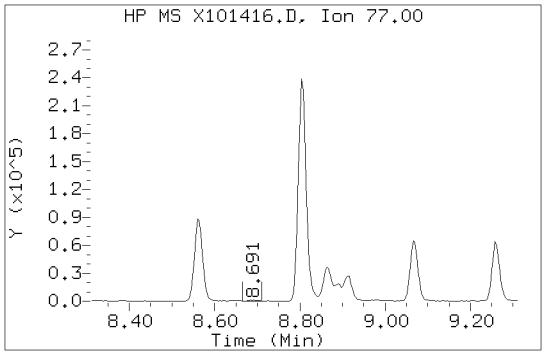
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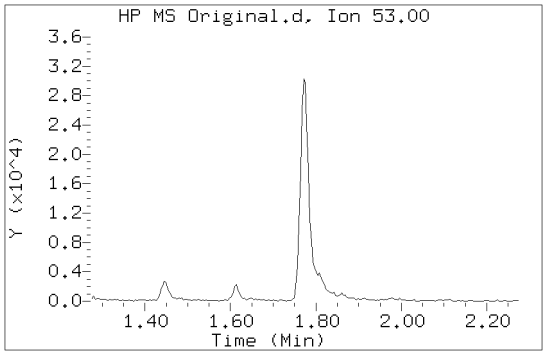


Chloroprene (126-99-8)

Reason Code:

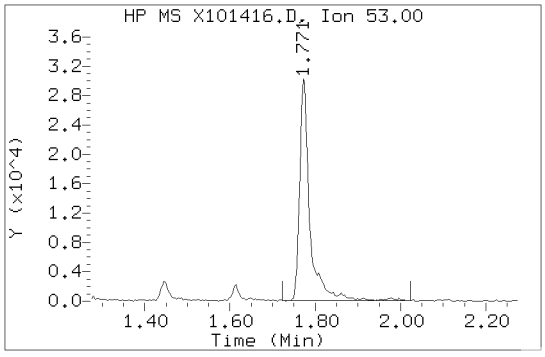
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AFTER

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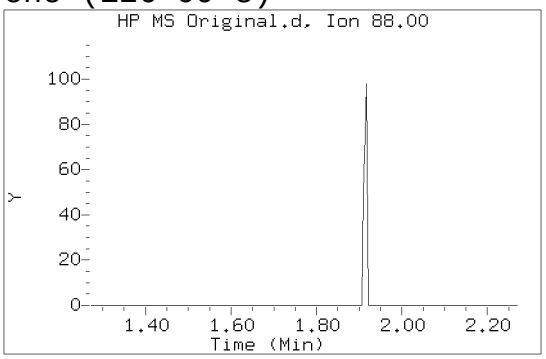
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LabSampID : ICV

Chloroprene (126-99-8)

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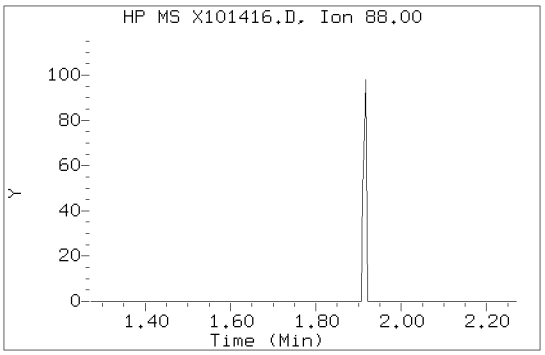
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AFTER

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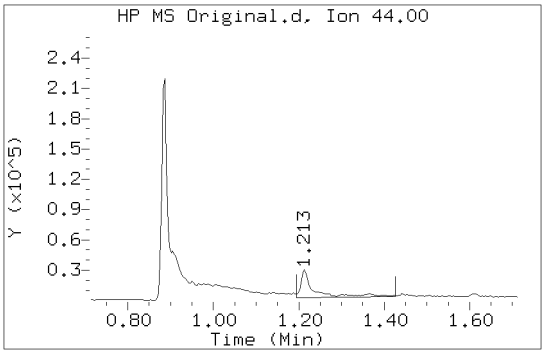


Acetaldehyde (75-07-0)

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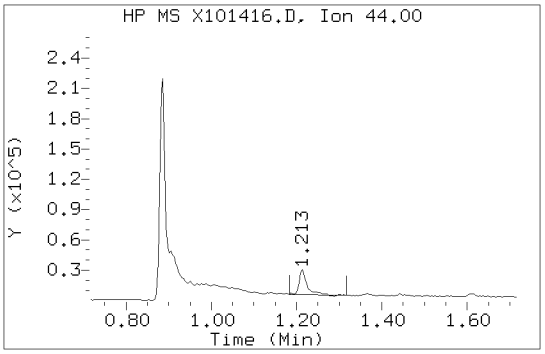
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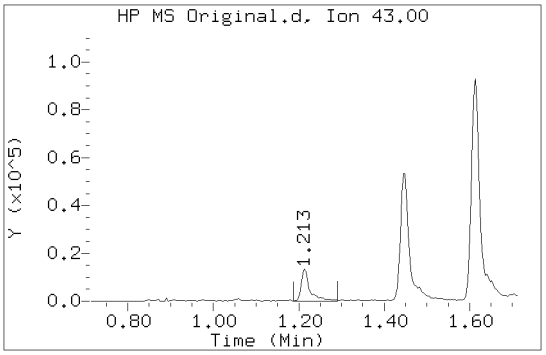
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linh
pham



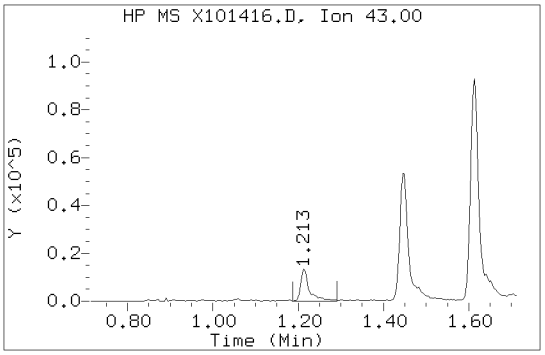
BEFORE

MASS
43
AREA
19073
HEIGHT
13311
19-Oct-2022
16:03
linh
pham



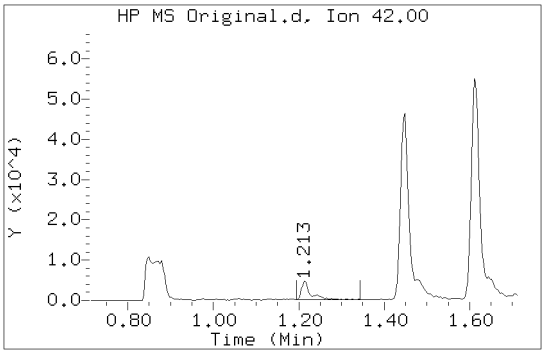
AFTER

MASS
43
AREA
19073
HEIGHT
13311
19-Oct-2022
16:05
linh
pham



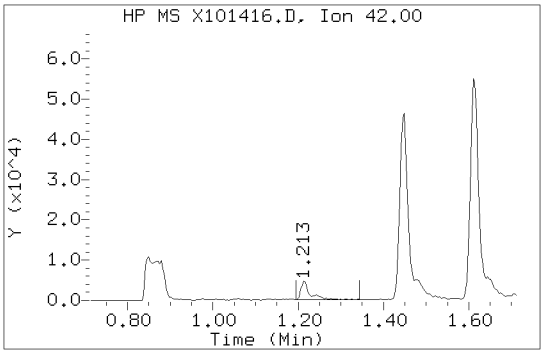
BEFORE

MASS
42
AREA
7535
HEIGHT
4687
19-Oct-2022
16:03
linh
pham



AFTER

MASS
42
AREA
7535
HEIGHT
4687
19-Oct-2022
16:05
linh
pham



right solutions.
right partner.

Raw Data VOA6 419507

Volatiles by by EPA 8260

Workorder

HS22100577

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP50 October 2022

10/28/2022

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101501.D Page 1
Report Date: 15-Oct-2022 13:15

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101501.D
Lab Smp Id: BFB Client Smp ID: BFB
Inj Date : 15-OCT-2022 11:04
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\X221015.b\bfb.m
Meth Date : 27-Sep-2022 15:10 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	21887			0.00- 100.00	97.38
8.691	8.889	(0.000)	50	3360			15.00- 40.00	15.35
8.691	8.889	(0.000)	75	9592			30.00- 60.00	43.83
8.691	8.889	(0.000)	96	1579			5.00- 9.00	7.21
8.691	8.889	(0.000)	173	138			0.00- 2.00	0.61
8.691	8.889	(0.000)	174	22475			50.00- 0.00	102.69
8.691	8.889	(0.000)	175	1623			5.00- 9.00	7.22
8.691	8.889	(0.000)	176	21866			95.00- 101.00	97.29
8.691	8.889	(0.000)	177	1430			5.00- 9.00	6.54

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	15.35
75	30.00 - 60.00% of mass 95	43.83
96	5.00 - 9.00% of mass 95	7.21
173	Less than 2.00% of mass 174	0.63 (0.61)
174	Greater than 50.00% of mass 95	102.69
175	5.00 - 9.00% of mass 174	7.42 (7.22)
176	95.00 - 101.00% of mass 174	99.90 (97.29)
177	5.00 - 9.00% of mass 176	6.53 (6.54)

Data File: X101501.D
Spectrum: Average Spectrum: 8.639 to 8.785 min.
Location of Maximum: 174.00
Number of points: 135

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	204	70.00	1951	105.00	206	149.00	17
37.00	842	71.00	218	106.00	110	150.00	11
38.00	911	72.00	91	107.00	25	152.00	8
39.00	1965	73.00	853	109.00	3	153.00	8
40.00	652	74.00	3037	110.00	2	154.00	8
41.00	2168	75.00	9592	111.00	7	155.00	62
42.00	4418	76.00	904	112.00	4	156.00	180
43.00	1051	77.00	592	113.00	12	157.00	57
44.00	494	78.00	219	114.00	5	158.00	171
45.00	237	79.00	543	115.00	68	159.00	43
46.00	8	80.00	545	116.00	65	160.00	1
47.00	227	81.00	472	117.00	108	161.00	18
48.00	113	82.00	109	118.00	70	167.00	1
49.00	719	83.00	827	119.00	97	168.00	6
50.00	3360	84.00	52	120.00	20	170.00	47
51.00	1336	85.00	42	124.00	8	171.00	2
52.00	112	86.00	21	125.00	1	172.00	10
53.00	356	87.00	928	127.00	13	173.00	138
54.00	574	88.00	997	128.00	116	174.00	22472
55.00	7252	89.00	47	129.00	69	175.00	1623
56.00	1139	90.00	31	130.00	61	176.00	21864
57.00	671	91.00	143	131.00	32	177.00	1430
58.00	155	92.00	524	135.00	34	178.00	42
59.00	90	93.00	783	137.00	43	184.00	1
60.00	179	94.00	2352	138.00	1	185.00	1
61.00	874	95.00	21880	139.00	18	186.00	168
62.00	830	96.00	1579	140.00	18	187.00	5
63.00	664	97.00	307	141.00	211	207.00	3
64.00	84	98.00	4024	142.00	31	209.00	1
65.00	128	99.00	255	143.00	167	260.00	1
66.00	48	100.00	17	145.00	7	262.00	21
67.00	160	102.00	4	146.00	30	278.00	24
68.00	1836	103.00	60	147.00	13	281.00	5
69.00	4289	104.00	140	148.00	60		

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101501.D Page 1

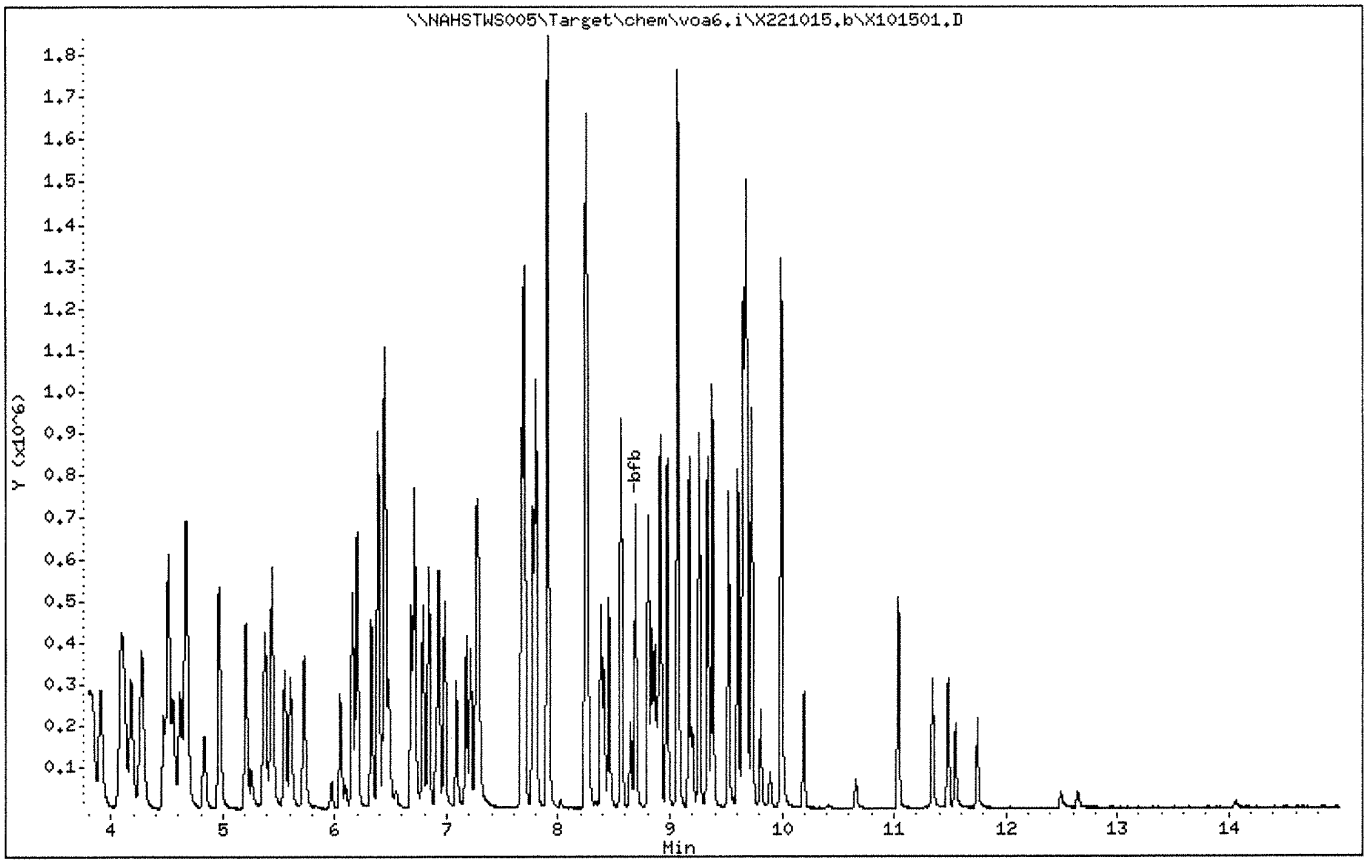
Date : 15-OCT-2022 11:04

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\X221015.b\X101501.D

Date : 15-OCT-2022 11:04

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

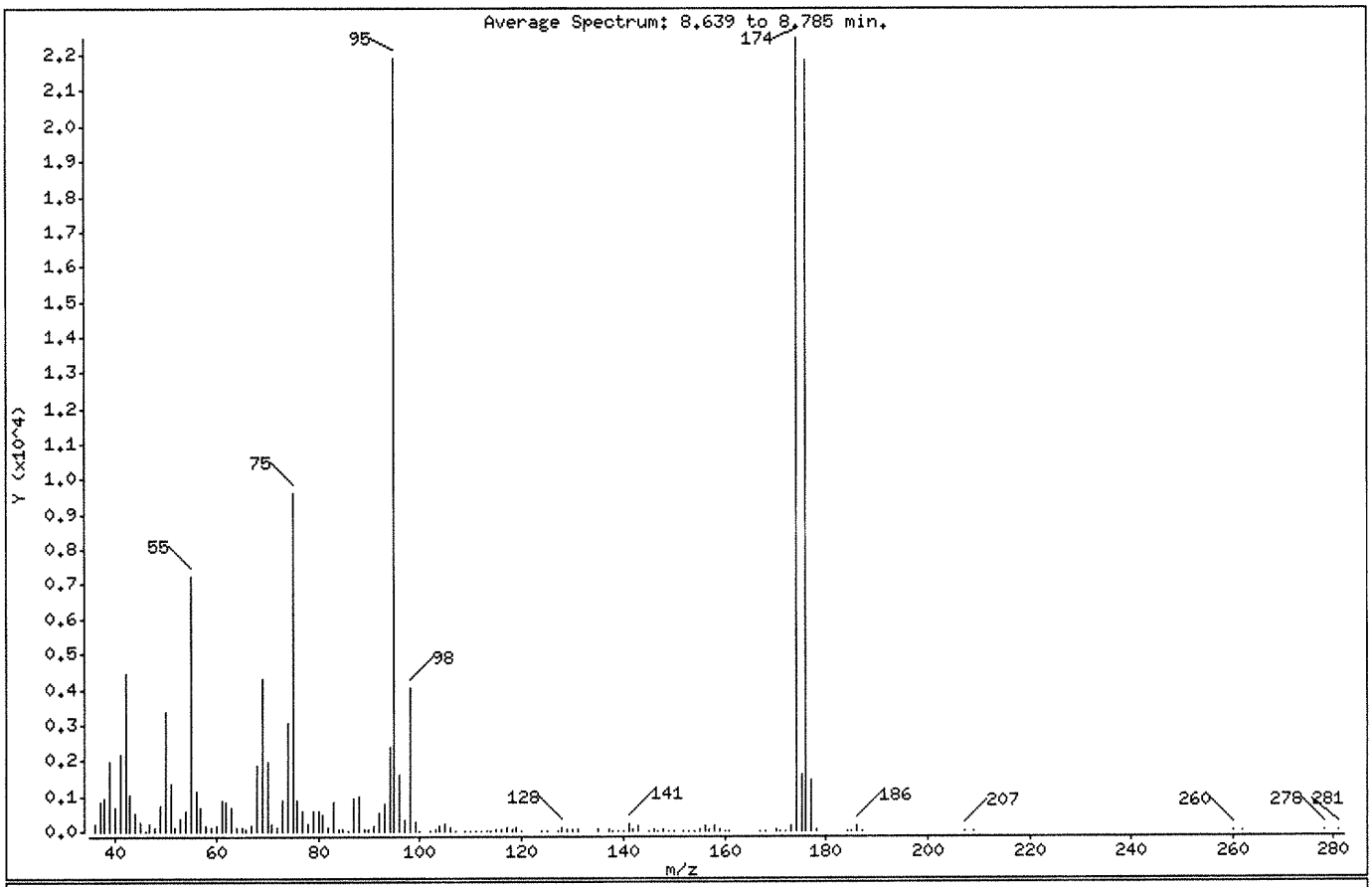
Volume Injected (uL): 2.0

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	15.35
75	30.00 - 60.00% of mass 95	43.83
96	5.00 - 9.00% of mass 95	7.21
173	Less than 2.00% of mass 174	0.63 (0.61)
174	Greater than 50.00% of mass 95	102.69
175	5.00 - 9.00% of mass 174	7.42 (7.22)
176	95.00 - 101.00% of mass 174	99.90 (97.29)
177	5.00 - 9.00% of mass 176	6.53 (6.54)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101501.D

Date : 15-OCT-2022 11:04

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: X101501.D
Spectrum: Average Spectrum: 8.639 to 8.785 min.
Location of Maximum: 174.00
Number of points: 135

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	204	70.00	1951	105.00	206	149.00	17
37.00	842	71.00	218	106.00	110	150.00	11
38.00	911	72.00	91	107.00	25	152.00	8
39.00	1965	73.00	853	109.00	3	153.00	8
40.00	652	74.00	3037	110.00	2	154.00	8
41.00	2168	75.00	9592	111.00	7	155.00	62
42.00	4418	76.00	904	112.00	4	156.00	180
43.00	1051	77.00	592	113.00	12	157.00	57
44.00	494	78.00	219	114.00	5	158.00	171
45.00	237	79.00	543	115.00	68	159.00	43
46.00	8	80.00	545	116.00	65	160.00	1
47.00	227	81.00	472	117.00	108	161.00	18
48.00	113	82.00	109	118.00	70	167.00	1
49.00	719	83.00	827	119.00	97	168.00	6
50.00	3360	84.00	52	120.00	20	170.00	47
51.00	1336	85.00	42	124.00	8	171.00	2
52.00	112	86.00	21	125.00	1	172.00	10
53.00	356	87.00	928	127.00	13	173.00	138
54.00	574	88.00	997	128.00	116	174.00	22472
55.00	7252	89.00	47	129.00	69	175.00	1623
56.00	1139	90.00	31	130.00	61	176.00	21864
57.00	671	91.00	143	131.00	32	177.00	1430
58.00	155	92.00	524	135.00	34	178.00	42
59.00	90	93.00	783	137.00	43	184.00	1
60.00	179	94.00	2352	138.00	1	185.00	1
61.00	874	95.00	21880	139.00	18	186.00	168
62.00	830	96.00	1579	140.00	18	187.00	5
63.00	664	97.00	307	141.00	211	207.00	3
64.00	84	98.00	4024	142.00	31	209.00	1
65.00	128	99.00	255	143.00	167	260.00	1
66.00	48	100.00	17	145.00	7	262.00	21
67.00	160	102.00	4	146.00	30	278.00	24
68.00	1836	103.00	60	147.00	13	281.00	5
69.00	4289	104.00	140	148.00	60		

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101501.D
Inj Date : 15-OCT-2022 11:04
InstruID : voa6.i
LabSampID : BFB

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101503.D Page 1
Report Date: 28-Oct-2022 16:22

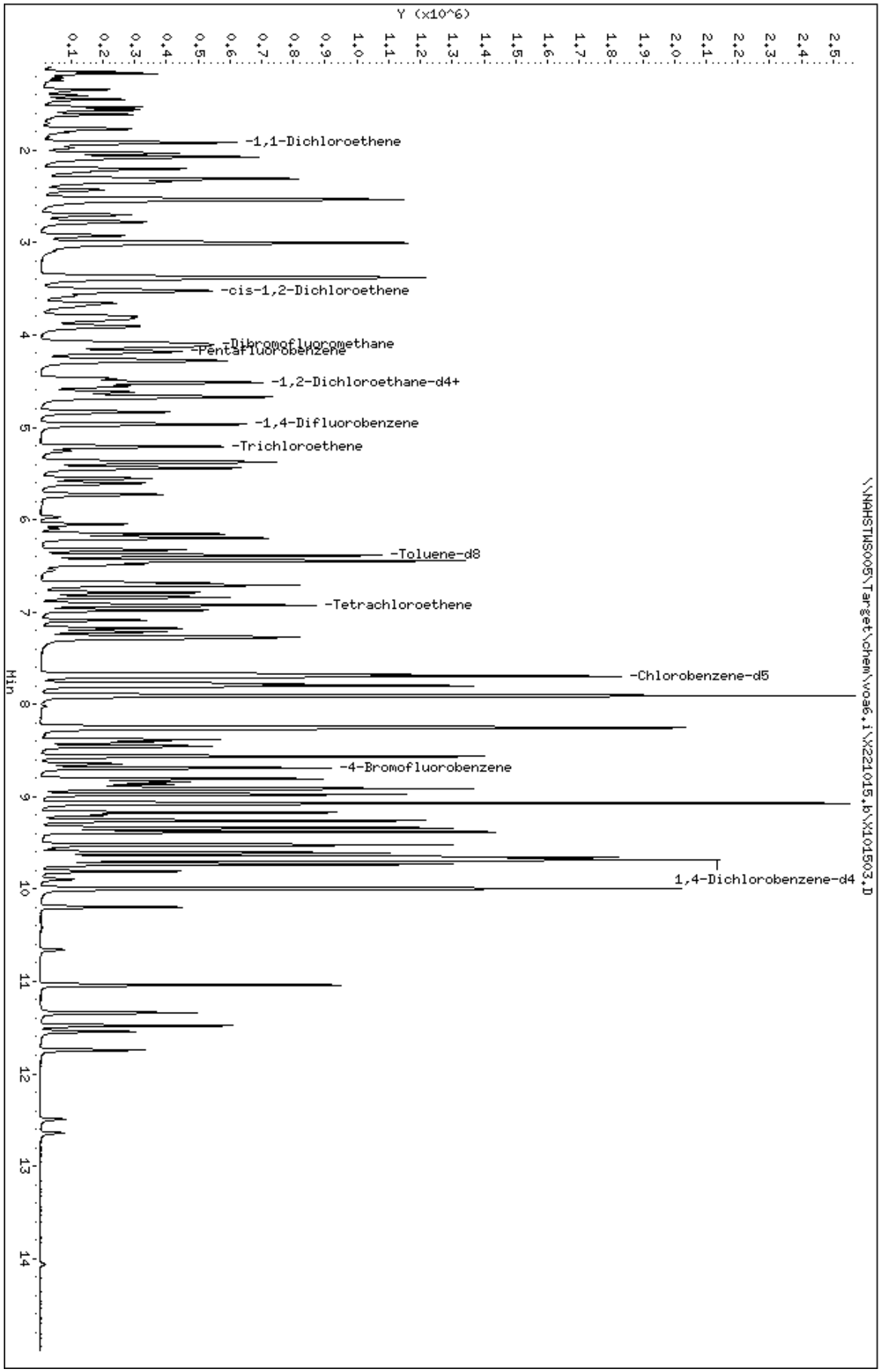
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101503.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 15-OCT-2022 11:46
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:22 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.181	4.181	(1.000)	401535	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	180078	50.0000	49.78
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	175953	50.0000	49.26
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	586680	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	550362	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	664904	50.0000	48.20
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	243332	50.0000	49.55
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	277678	50.0000	
5 Vinyl Chloride	62	1.149	1.149	(0.275)	145434	50.0000	47.54
11 1,1-Dichloroethene	96	1.917	1.917	(0.459)	122141	50.0000	47.03
27 cis-1,2-Dichloroethene	96	3.529	3.529	(0.844)	200418	50.0000	47.78
33 1,2-Dichloroethane	62	4.556	4.556	(0.917)	214487	50.0000	49.54
38 Trichloroethene	130	5.208	5.208	(1.048)	210133	50.0000	47.61
56 Tetrachloroethene	164	6.929	6.929	(0.903)	182766	50.0000	48.01



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101503.D
Date : 15-OCT-2022 11:46
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\X221015.b\X101503.D
Inj Date : 15-OCT-2022 11:46
InstruID : voa6.i
LabSampID : CCV

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101504.D Page 1
Report Date: 28-Oct-2022 16:48

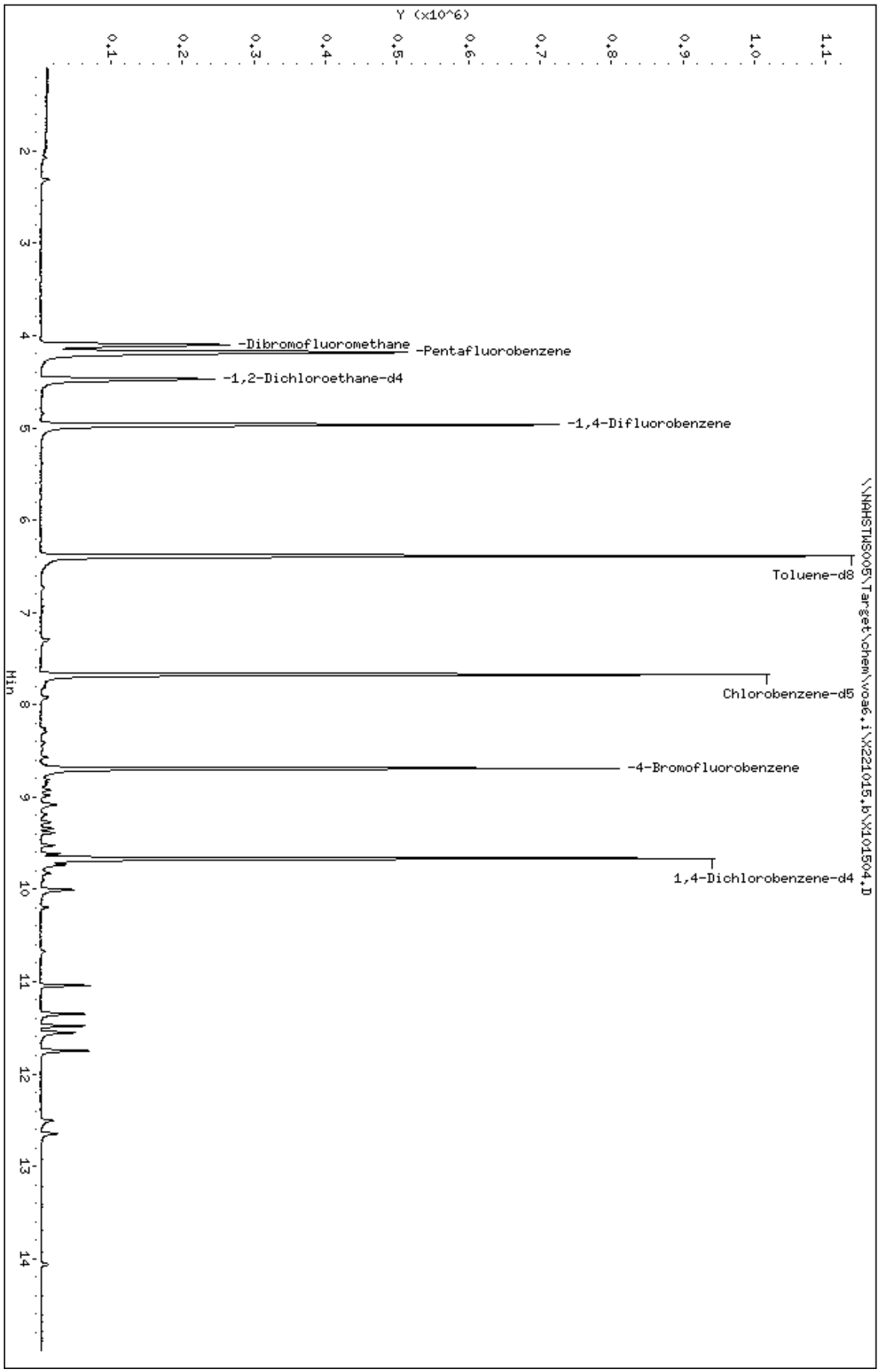
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101504.D
Lab Smp Id: CCB Client Smp ID: CCB
Inj Date : 15-OCT-2022 12:07
Operator : PC Inst ID: voa6.i
Smp Info : CCB;CCB;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:47 kori.bagsb Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.181	(1.000)	484661	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.099	(0.980)	191998	43.9044	43.90
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	182376	42.1911	42.19
* 36 1,4-Difluorobenzene	114	4.968	4.965	(1.000)	652593	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.668	(1.000)	563355	50.0000	
$ 48 Toluene-d8	98	6.389	6.386	(0.833)	741366	52.5112	52.51
$ 69 4-Bromofluorobenzene	95	8.691	8.687	(1.133)	238998	47.5394	47.53
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	258430	50.0000	



Data File: \\NAHSTMS005\Target\chem\voa6.i\X221015.b\X101504.D
Date : 15-OCT-2022 12:07
Client ID: CCB
Sample Info: CCB;CCB;;;
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101505.D Page 1
Report Date: 28-Oct-2022 16:22

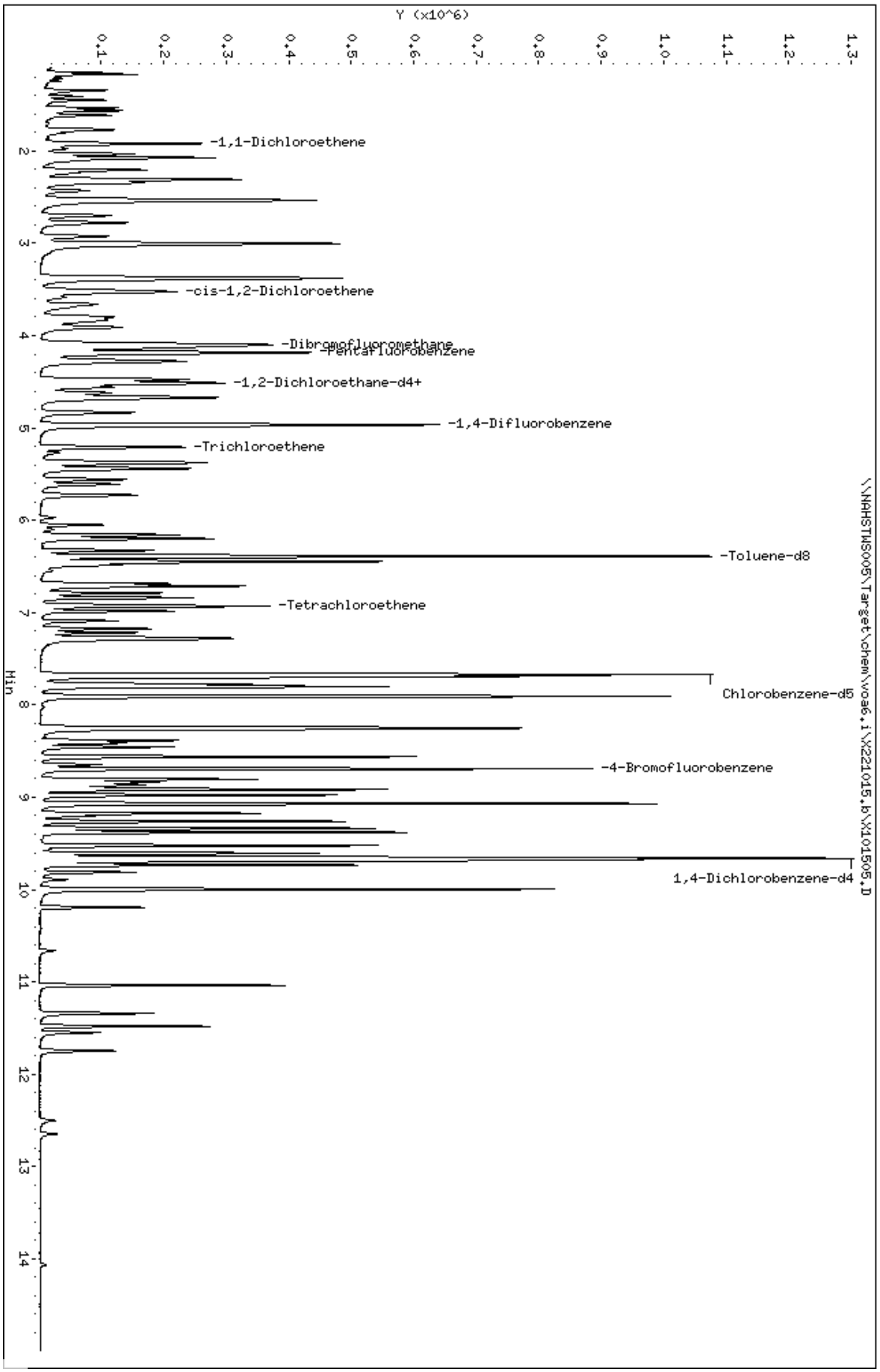
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101505.D
Lab Smp Id: VLCSW-221015 Client Smp ID: VLCSW-221015
Inj Date : 15-OCT-2022 12:28
Operator : PC Inst ID: voa6.i
Smp Info : VLCSW-221015;VLCSW-221015;3;;LCS
Misc Info : HS22052000V6;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:22 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.181	(1.000)	397881	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	183032	51.0881	51.08
$ 35 1,2-Dichloroethane-d4	65	4.477	4.474	(1.070)	185159	52.3629	52.36
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	583073	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	546961	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	683567	49.8685	49.86
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	247134	50.6542	50.65
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	270277	50.0000	
5 Vinyl Chloride	62	1.149	1.149	(0.275)	60299	19.8956	19.89
11 1,1-Dichloroethene	96	1.917	1.917	(0.458)	51242	19.9119	19.91
27 cis-1,2-Dichloroethene	96	3.533	3.529	(0.844)	84232	20.2681	20.26
33 1,2-Dichloroethane	62	4.560	4.556	(0.918)	88957	20.6762	20.67
38 Trichloroethene	130	5.208	5.208	(1.048)	85849	19.5747	19.57
56 Tetrachloroethene	164	6.929	6.929	(0.903)	74180	19.6090	19.60



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101505.D
Date : 15-OCT-2022 12:28
Client ID: VLCSW-221015
Sample Info: VLCSW-221015;VLCSW-221015;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\X221015.b\X101505.D
Inj Date : 15-OCT-2022 12:28
InstruID : voa6.i
LabSampID : VLCSW-221015

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101507.D Page 1
Report Date: 28-Oct-2022 16:22

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101507.D
Lab Smp Id: VBLKW-221015 Client Smp ID: VBLKW-221015
Inj Date : 15-OCT-2022 13:10
Operator : PC Inst ID: voa6.i
Smp Info : VBLKW-221015;VBLKW-221015;3;;BLANK
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:22 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

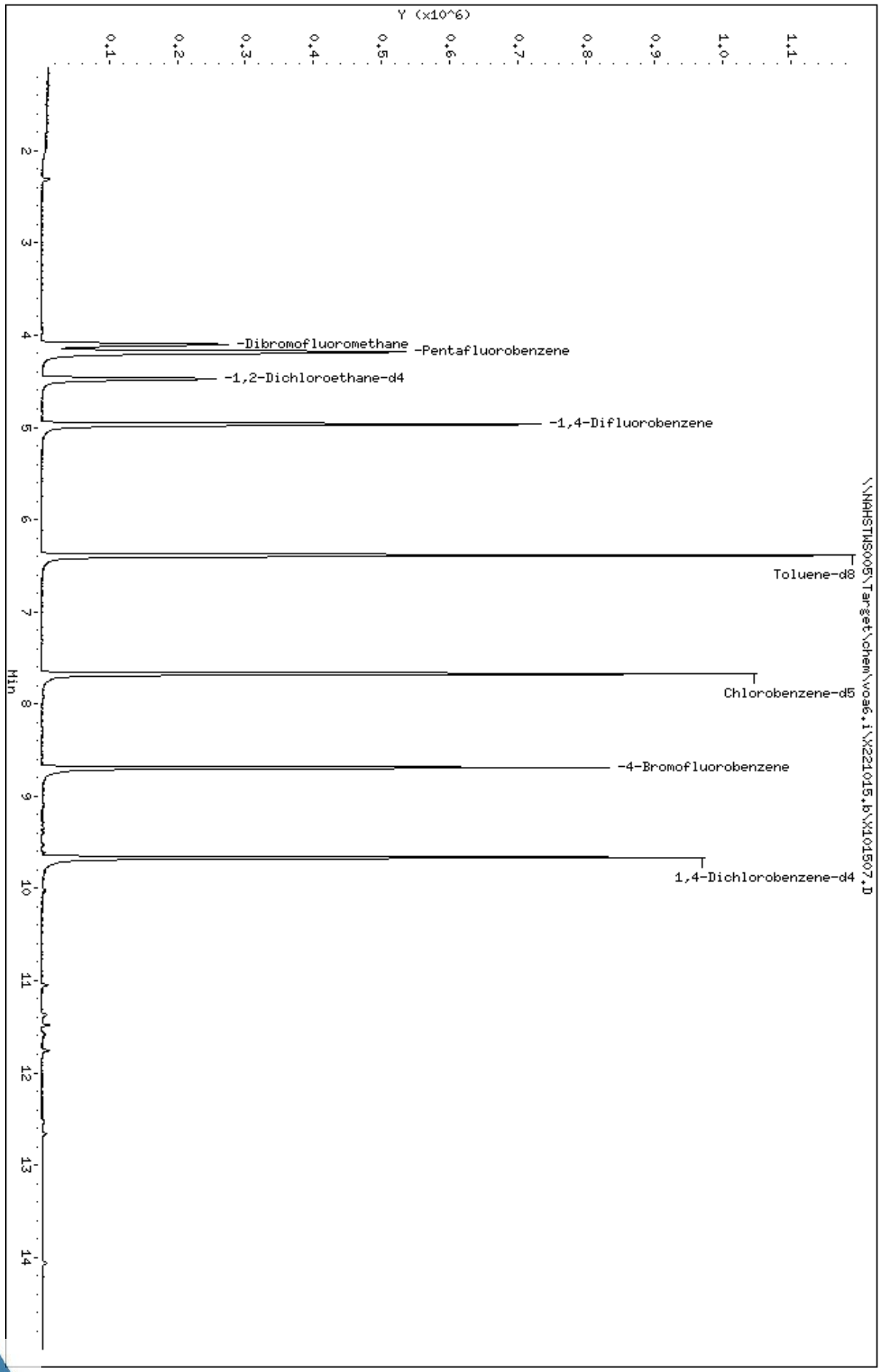
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.181	(1.000)	497692	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	198706	44.2537	44.25
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	187210	42.1751	42.17
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	664702	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	581083	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	770419	52.9042	52.90
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	252300	48.6626	48.66
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	272159	50.0000	

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101507.D
Date : 15-OCT-2022 13:10
Client ID: VBLKW-221015
Sample Info: VBLKW-221015;VBLKW-221015;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

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



Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101507.D
Inj Date : 15-OCT-2022 13:10
InstruID : voa6.i
LabSampID : VBLKW-221015

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101508.D Page 1
Report Date: 28-Oct-2022 16:22

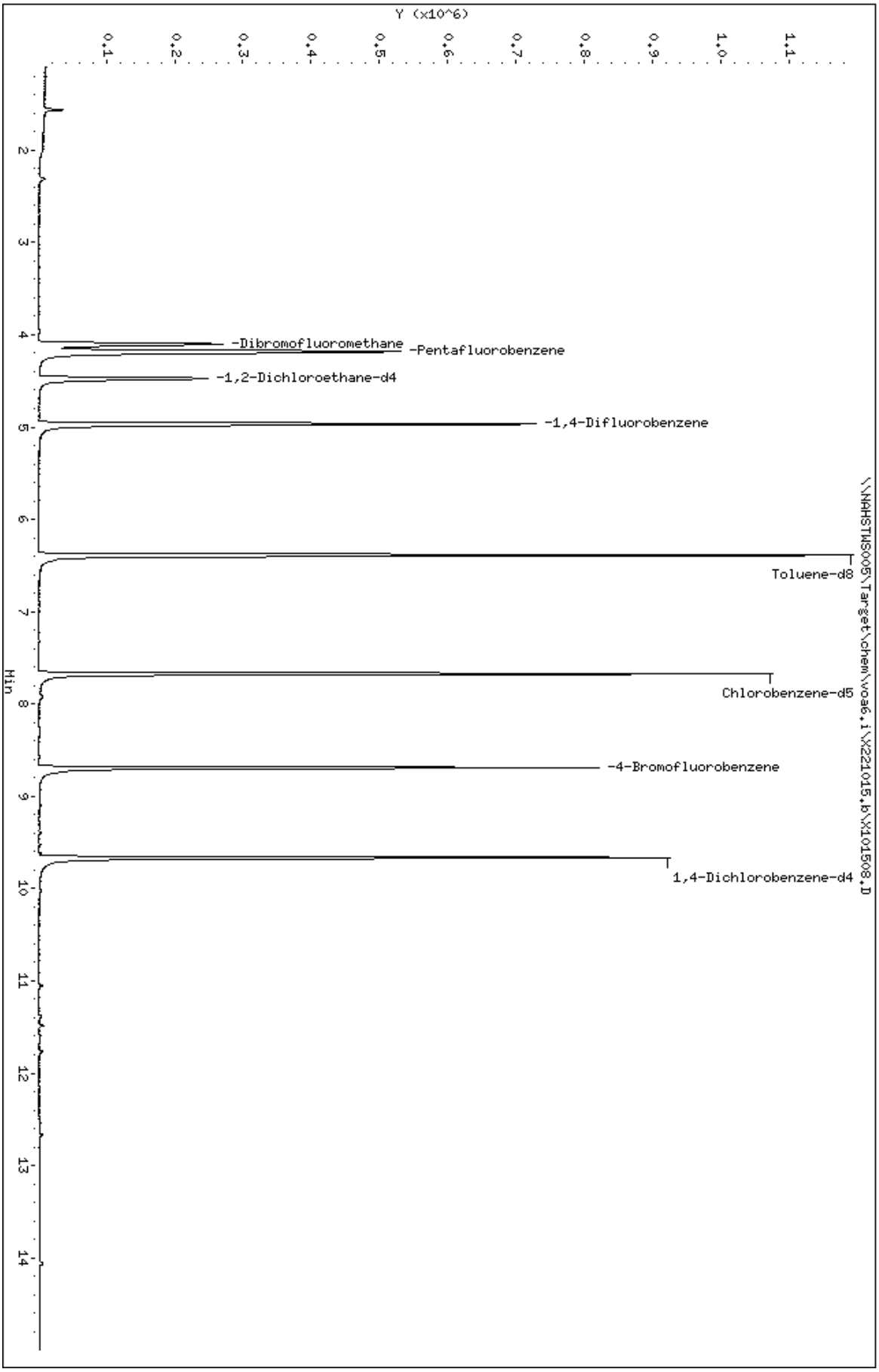
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101508.D
Lab Smp Id: HS22100577-08 Client Smp ID: HS22100577-08
Inj Date : 15-OCT-2022 13:31
Operator : PC Inst ID: voa6.i
Smp Info : HS22100577-08;HS22100577-08;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:22 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.181	4.181	(1.000)	498655	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	198492	44.1187	44.11
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	189942	42.7179	42.71
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	667660	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	583611	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	771747	52.7659	52.76
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	250130	48.0305	48.03
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	269800	50.0000	



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101508.D
Date : 15-OCT-2022 13:31
Client ID: HS22100577-08
Sample Info: HS22100577-08;HS22100577-08;;;
Purge Volume: 5.0
Column phase: DB624

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

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101508.D
Inj Date : 15-OCT-2022 13:31
InstruID : voa6.i
LabSampID : HS22100577-08

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101510.D Page 1
Report Date: 28-Oct-2022 16:22

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101510.D
Lab Smp Id: HS22100577-01 Client Smp ID: HS22100577-01
Inj Date : 15-OCT-2022 14:13
Operator : PC Inst ID: voa6.i
Smp Info : HS22100577-01;HS22100577-01;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:22 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

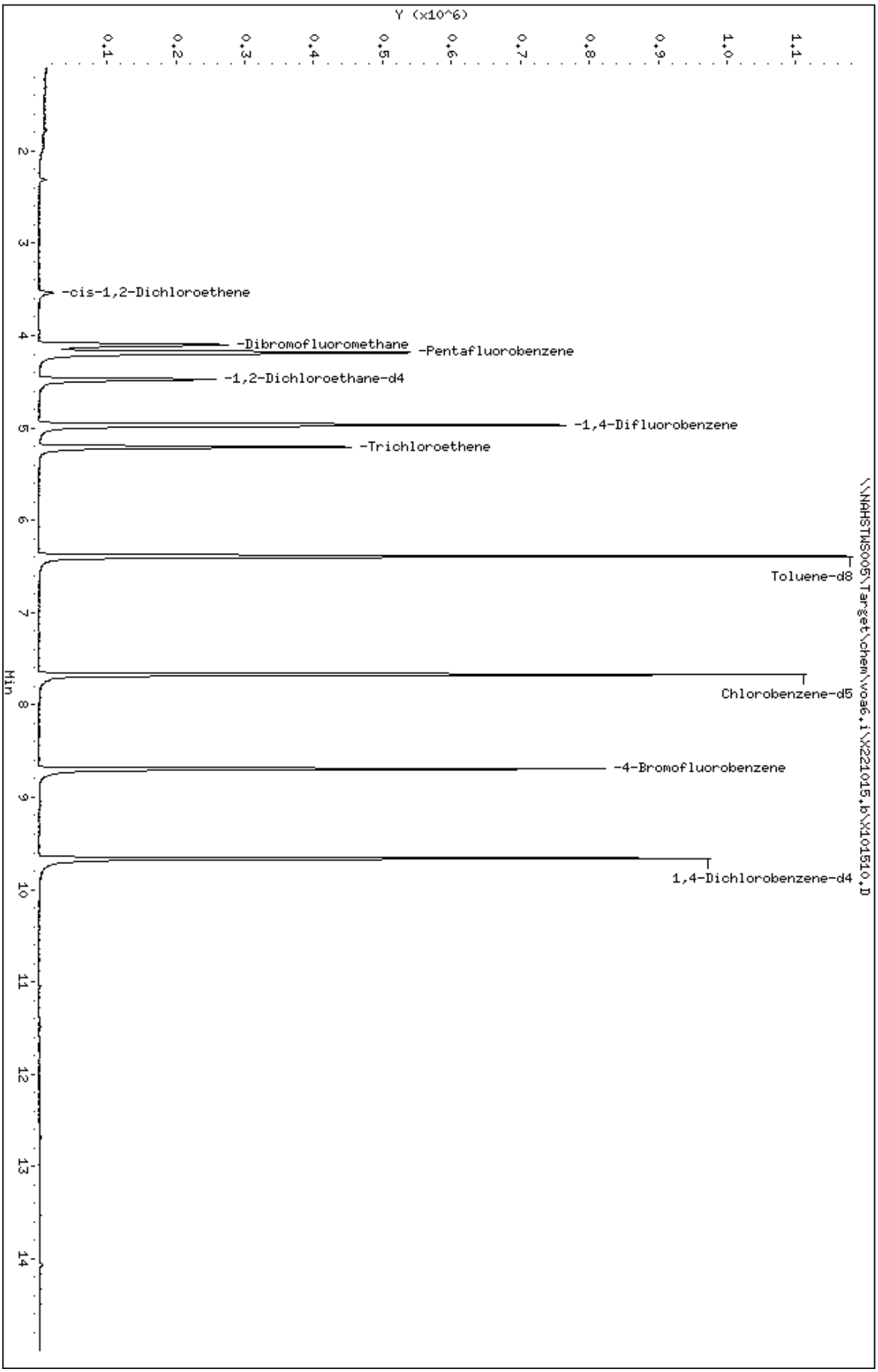
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.181	4.181	(1.000)	505073	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.103	(0.980)	199054	43.6750	43.67
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	193797	43.0368	43.03
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	676479	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	597542	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	778151	51.9633	51.96
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	257503	48.2954	48.29
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	278461	50.0000	
27 cis-1,2-Dichloroethene	96	3.540	3.529	(0.847)	12749	2.41664	2.41(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	169593	33.3300	33.33

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa6,i\X221015,b\X101510,D
Date : 15-OCT-2022 14:13
Client ID: HS2210O577-01
Sample Info: HS2210O577-01;HS2210O577-01;;;
Purge Volume: 5.0
Column phase: DB624

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

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101510.D Page 2

Date : 15-OCT-2022 14:13

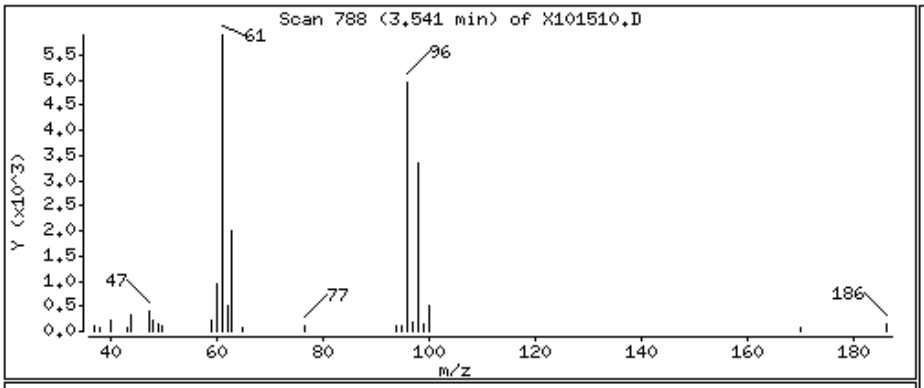
Client ID: HS22100577-01 Instrument: voa6.i

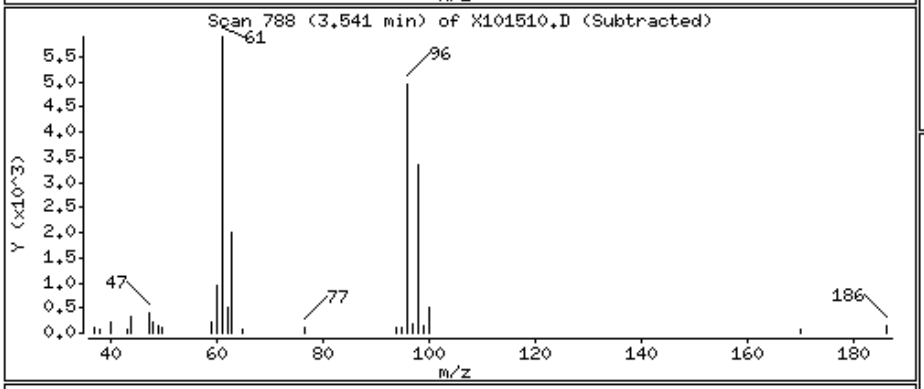
Sample Info: HS22100577-01;HS22100577-01;;;

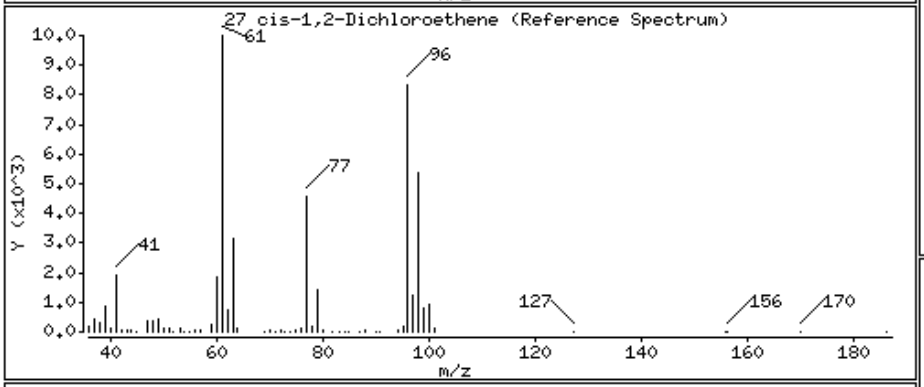
Purge Volume: 5.0 Operator: PC

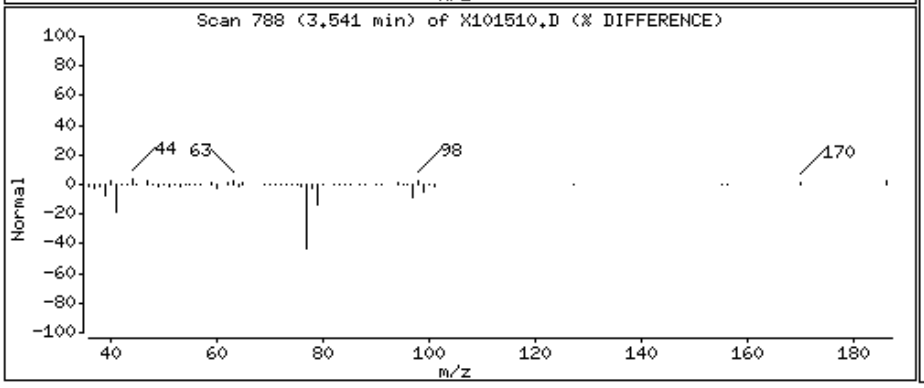
Column phase: DB624 Column diameter: 0.18

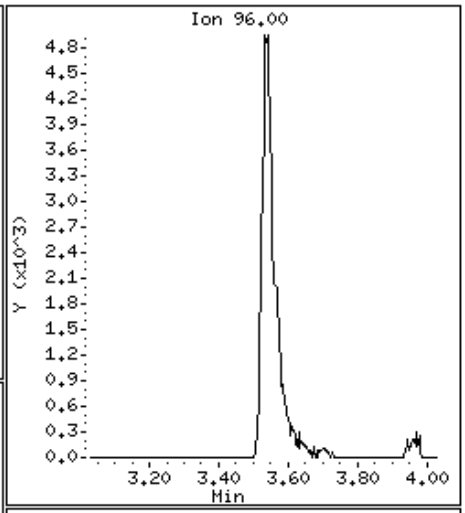
27 cis-1,2-Dichloroethene Concentration: 2.41 ug/l

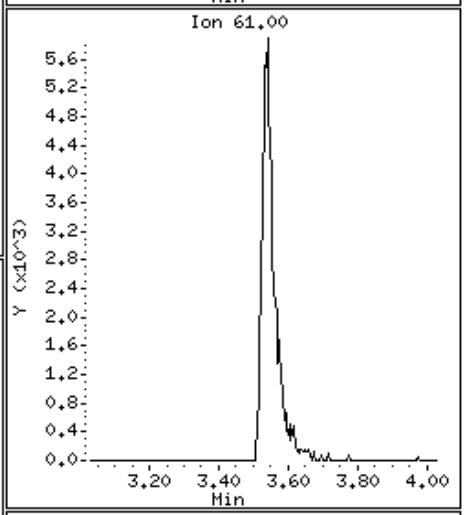


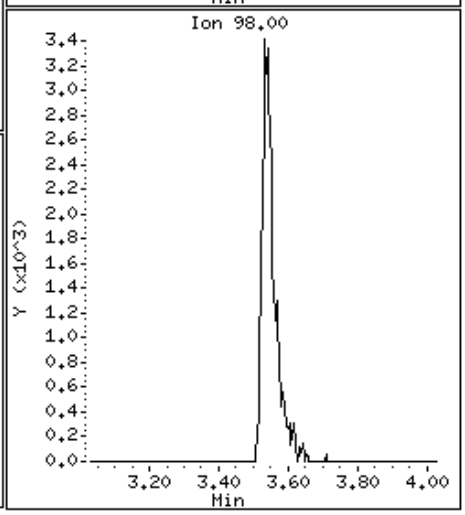












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101510.D Page 3

Date : 15-OCT-2022 14:13

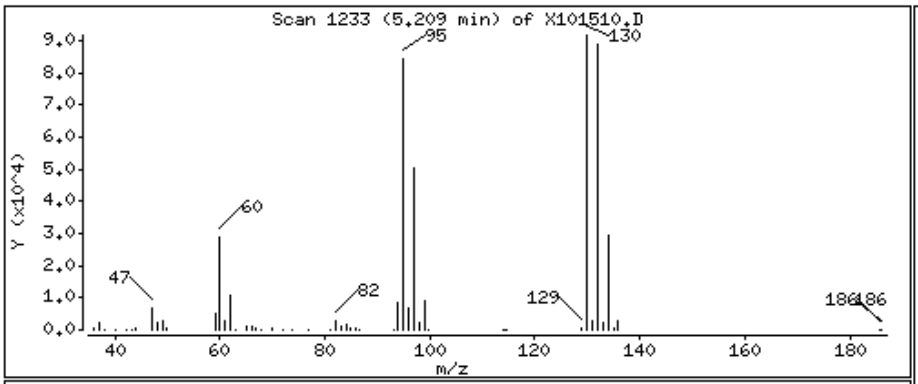
Client ID: HS22100577-01 Instrument: voa6.i

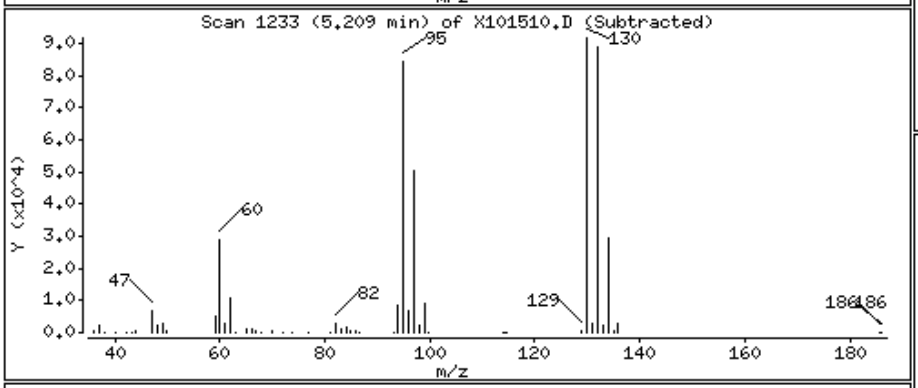
Sample Info: HS22100577-01;HS22100577-01;;;

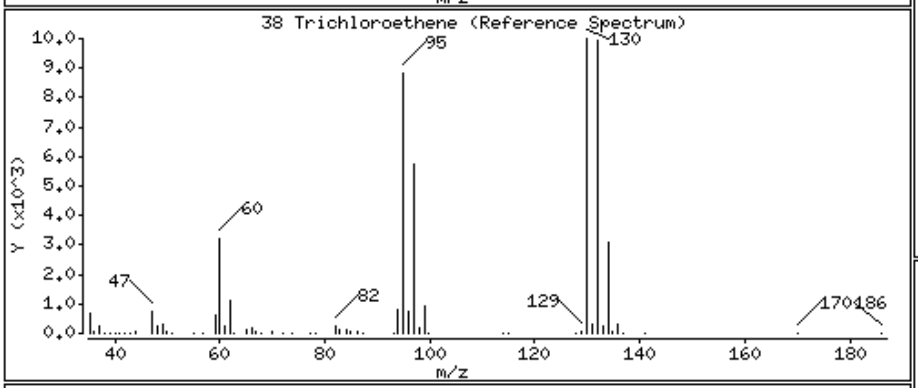
Purge Volume: 5.0 Operator: PC

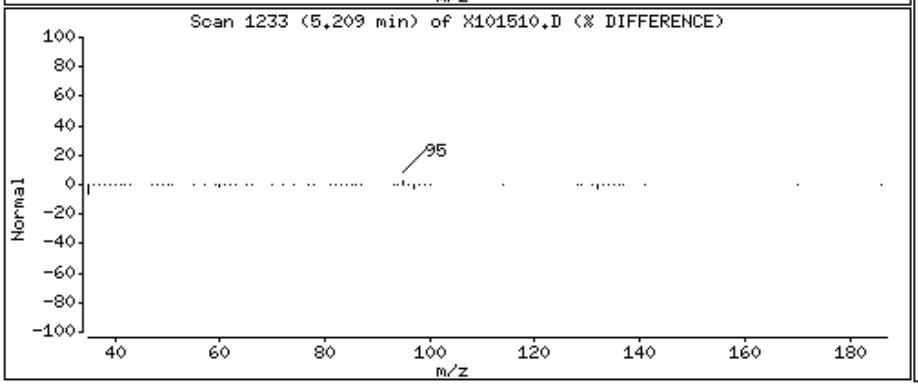
Column phase: DB624 Column diameter: 0.18

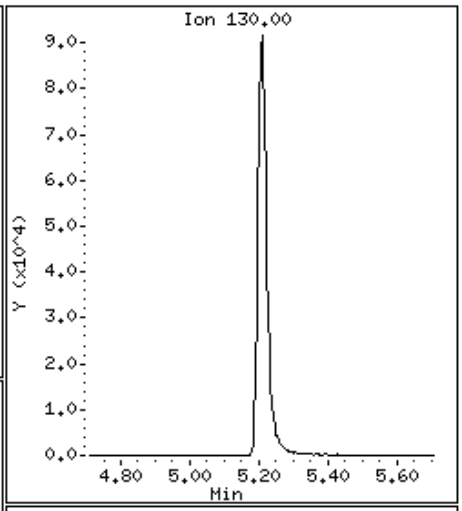
38 Trichloroethene Concentration: 33.33 ug/l

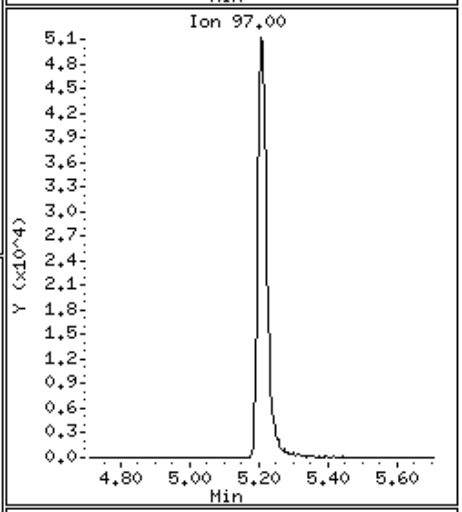


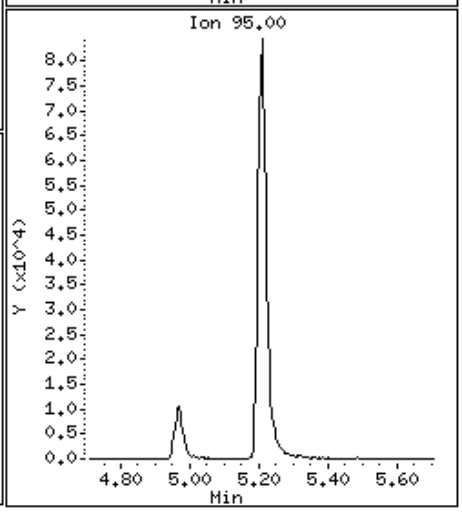












Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101510.D
Inj Date : 15-OCT-2022 14:13
InstruID : voa6.i
LabSampID : HS22100577-01

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101511.D Page 1
Report Date: 28-Oct-2022 16:22

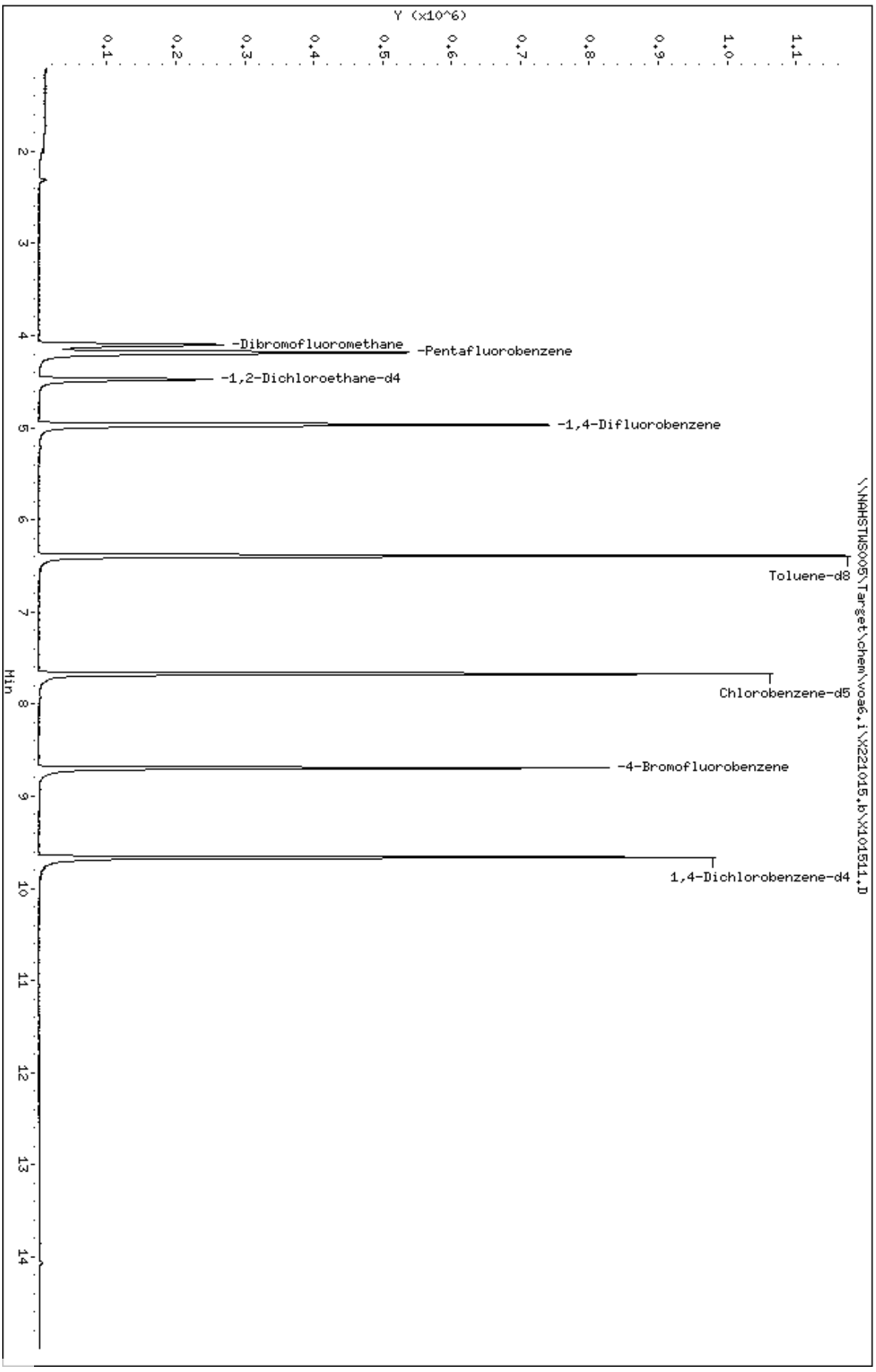
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101511.D
Lab Smp Id: HS22100577-07 Client Smp ID: HS22100577-07
Inj Date : 15-OCT-2022 14:34
Operator : PC Inst ID: voa6.i
Smp Info : HS22100577-07;HS22100577-07;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:22 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 11
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.181	4.181	(1.000)	503505	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.103	(0.980)	200788	44.2004	44.20
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	192005	42.7668	42.76
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	678921	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	591183	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	778169	52.5235	52.52
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	253076	47.9733	47.97
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	275859	50.0000	



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101511.D
Date : 15-OCT-2022 14:34
Client ID: HS22100577-07
Sample Info: HS22100577-07;HS22100577-07;;;
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101512.D Page 1
Report Date: 28-Oct-2022 16:48

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101512.D
Lab Smp Id: HS22100577-04 Client Smp ID: HS22100577-04
Inj Date : 15-OCT-2022 14:55
Operator : PC Inst ID: voa6.i
Smp Info : HS22100577-04;HS22100577-04;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:47 kori.bagsb Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 12
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

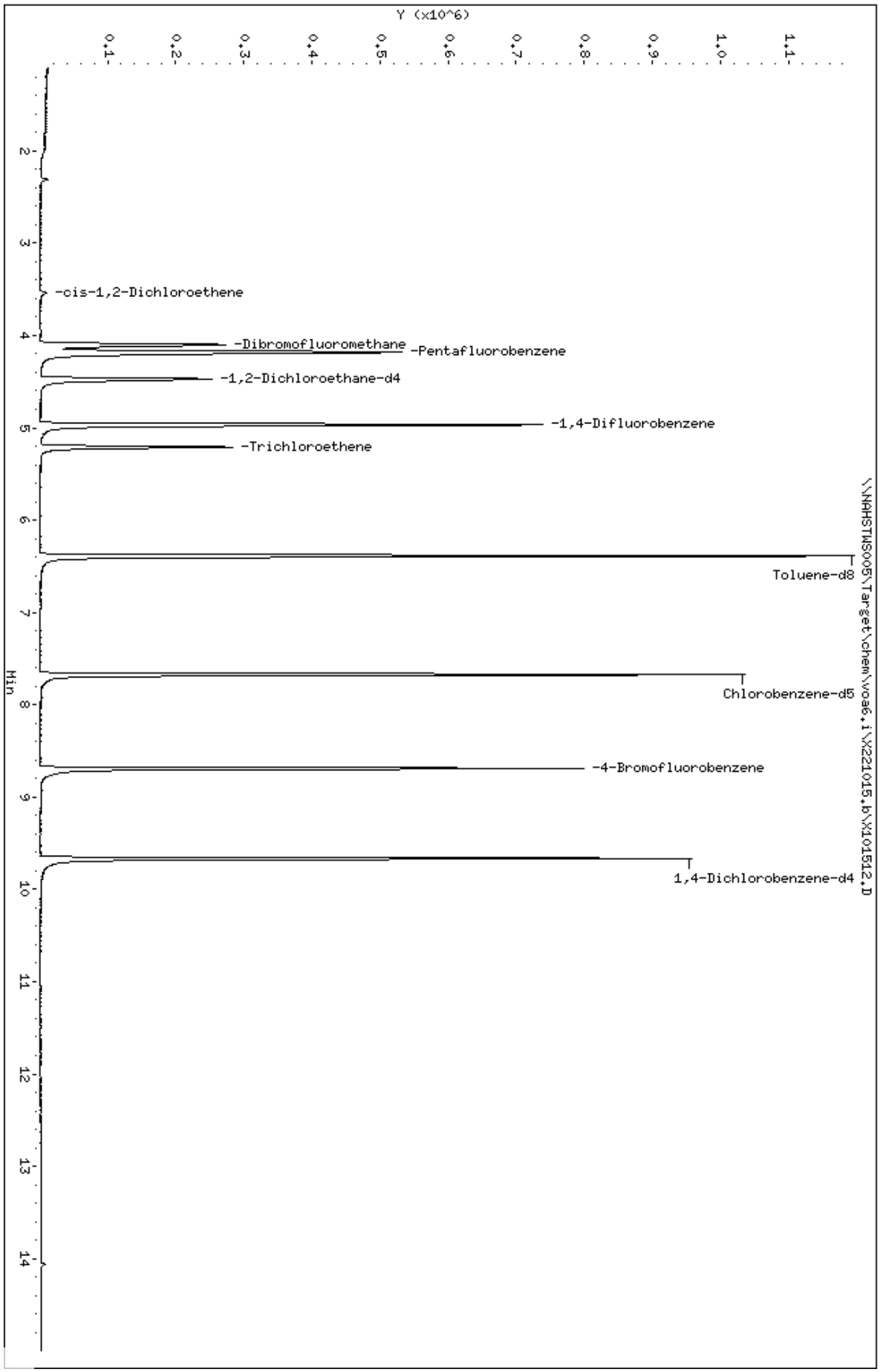
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.181	(1.000)	499452	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.099	(0.979)	197910	43.9162	43.91
$ 35 1,2-Dichloroethane-d4	65	4.470	4.474	(1.068)	193008	43.3495	43.34
* 36 1,4-Difluorobenzene	114	4.968	4.965	(1.000)	661488	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.668	(1.000)	587640	50.0000	
$ 48 Toluene-d8	98	6.389	6.386	(0.833)	770402	52.3128	52.31
$ 69 4-Bromofluorobenzene	95	8.691	8.687	(1.133)	250481	47.7662	47.76
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	281301	50.0000	
27 cis-1,2-Dichloroethene	96	3.544	3.529	(0.847)	5418	1.03857	1.03(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	101348	20.3693	20.36

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101512.D
Date : 15-OCT-2022 14:55
Client ID: HS22100577-04
Sample Info: HS22100577-04;HS22100577-04;;;
Purge Volume: 5.0
Column phase: DB624

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

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101512.D Page 2

Date : 15-OCT-2022 14:55

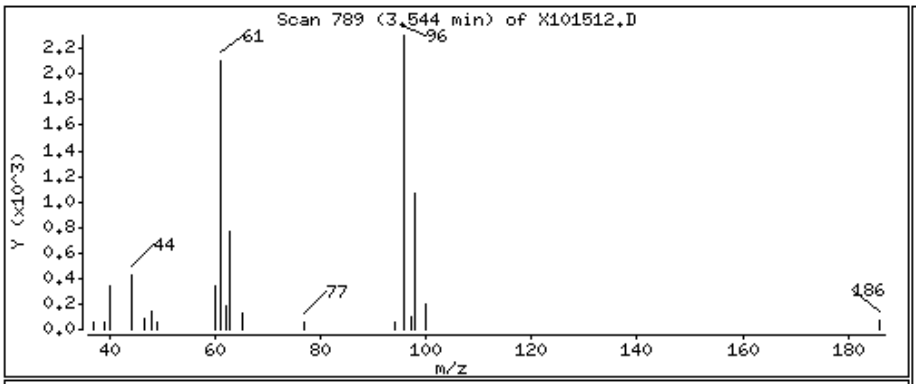
Client ID: HS22100577-04 Instrument: voa6.i

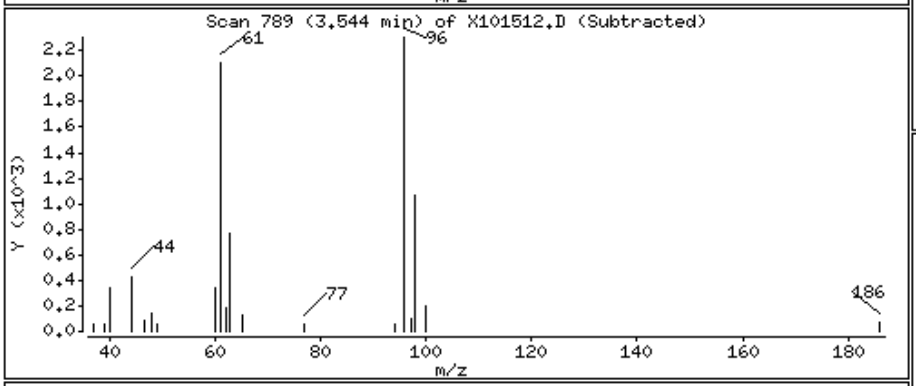
Sample Info: HS22100577-04;HS22100577-04;;;

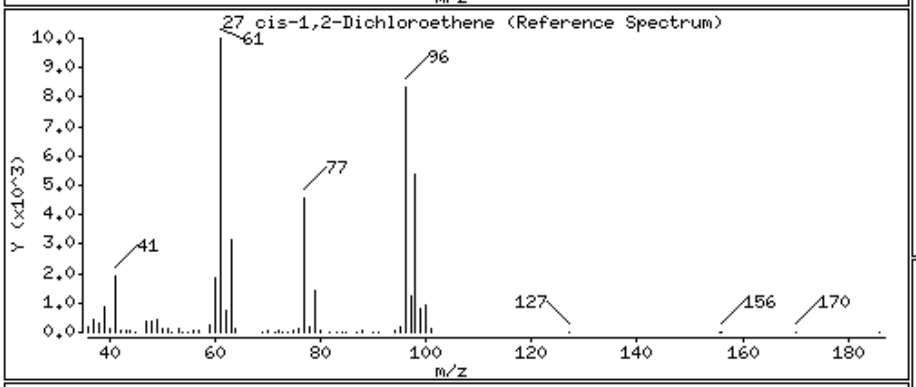
Purge Volume: 5.0 Operator: PC

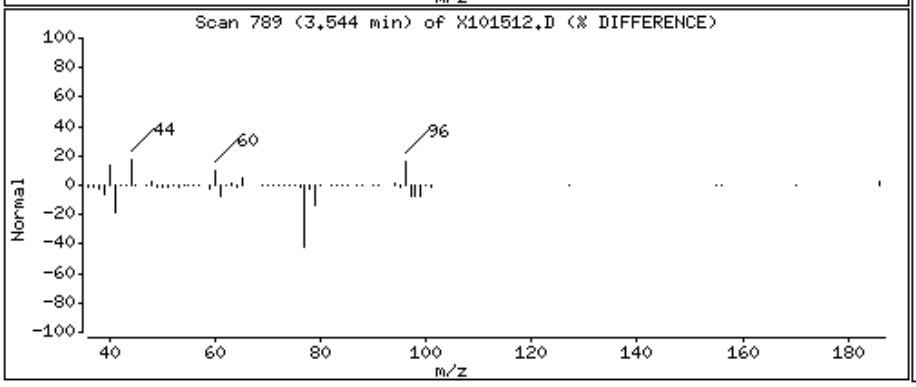
Column phase: DB624 Column diameter: 0.18

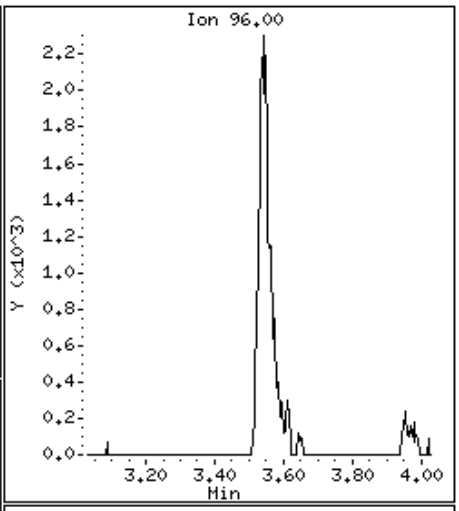
27 cis-1,2-Dichloroethene Concentration: 1.03 ug/l

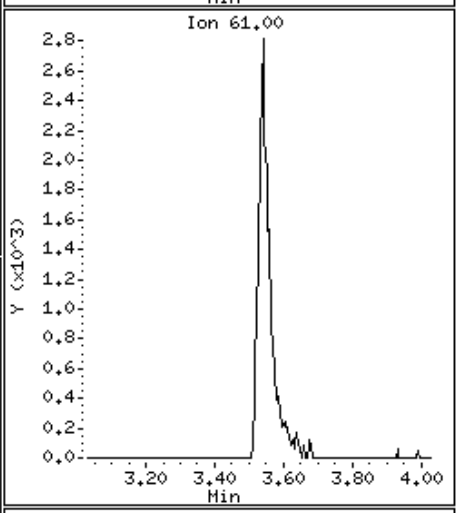


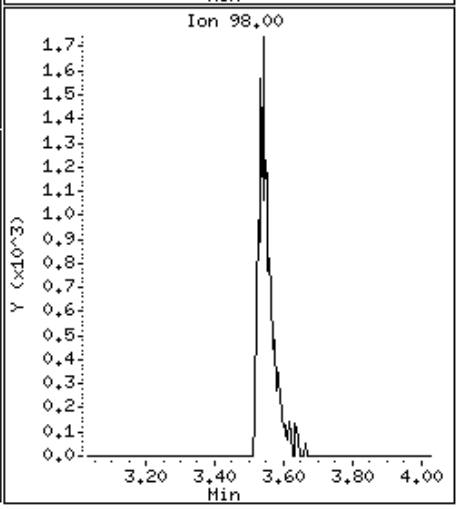












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101512.D Page 3

Date : 15-OCT-2022 14:55

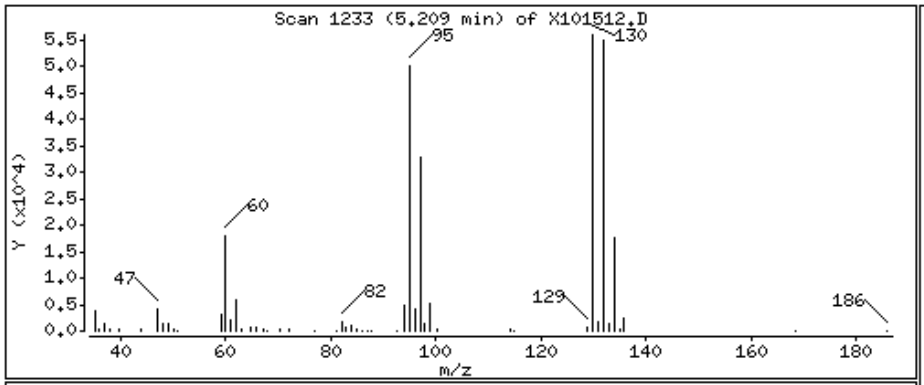
Client ID: HS22100577-04 Instrument: voa6.i

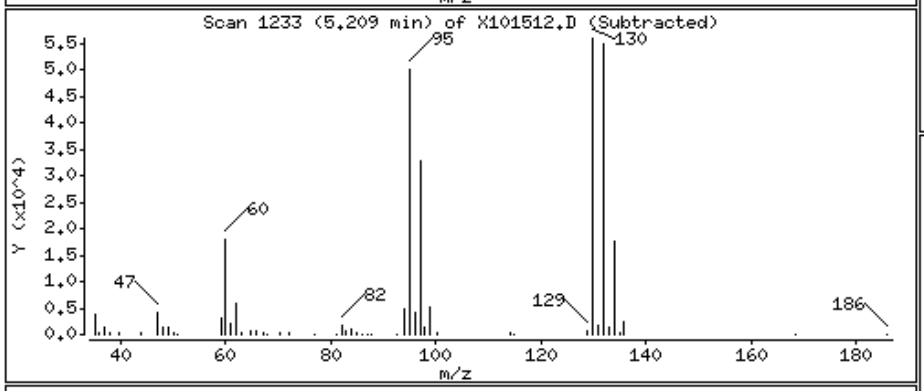
Sample Info: HS22100577-04;HS22100577-04;;;

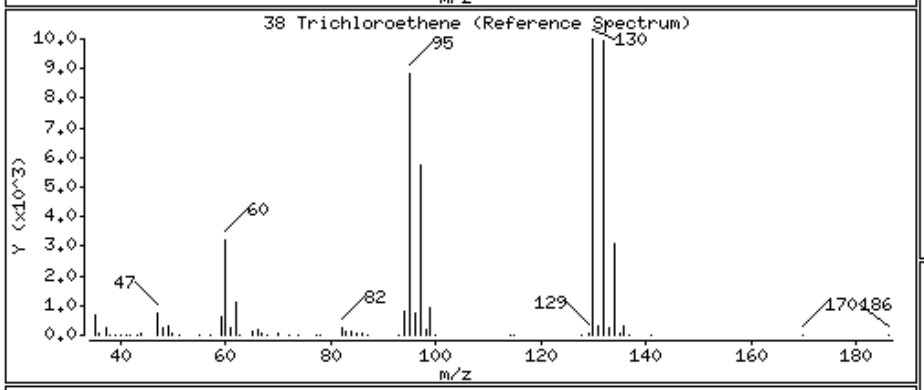
Purge Volume: 5.0 Operator: PC

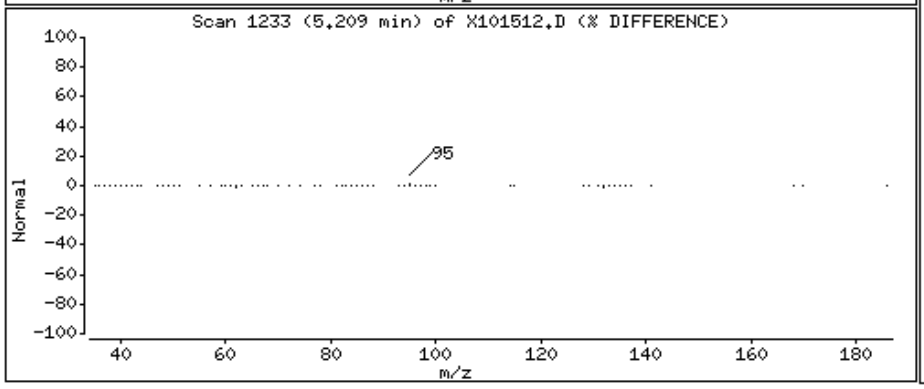
Column phase: DB624 Column diameter: 0.18

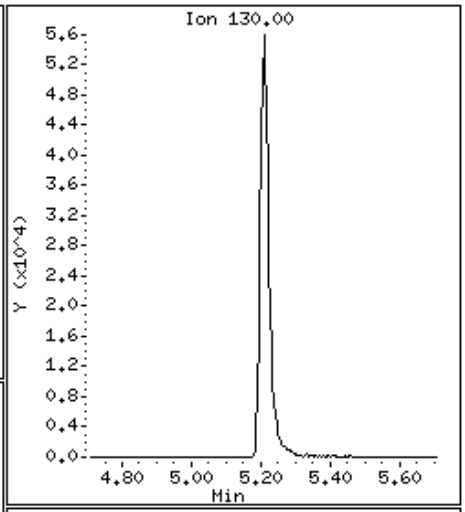
38 Trichloroethene Concentration: 20.36 ug/l

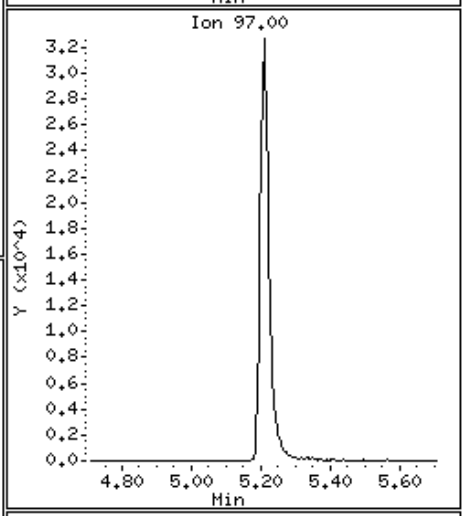


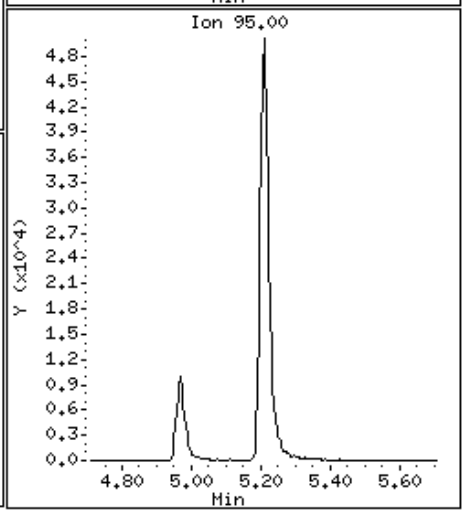












Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101512.D
Inj Date : 15-OCT-2022 14:55
InstruID : voa6.i
LabSampID : HS22100577-04

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101520.D Page 1
Report Date: 28-Oct-2022 16:22

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101520.D
Lab Smp Id: HS22100577-05 Client Smp ID: HS22100577-05
Inj Date : 15-OCT-2022 17:44
Operator : PC Inst ID: voa6.i
Smp Info : HS22100577-05;HS22100577-05;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:22 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 20
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

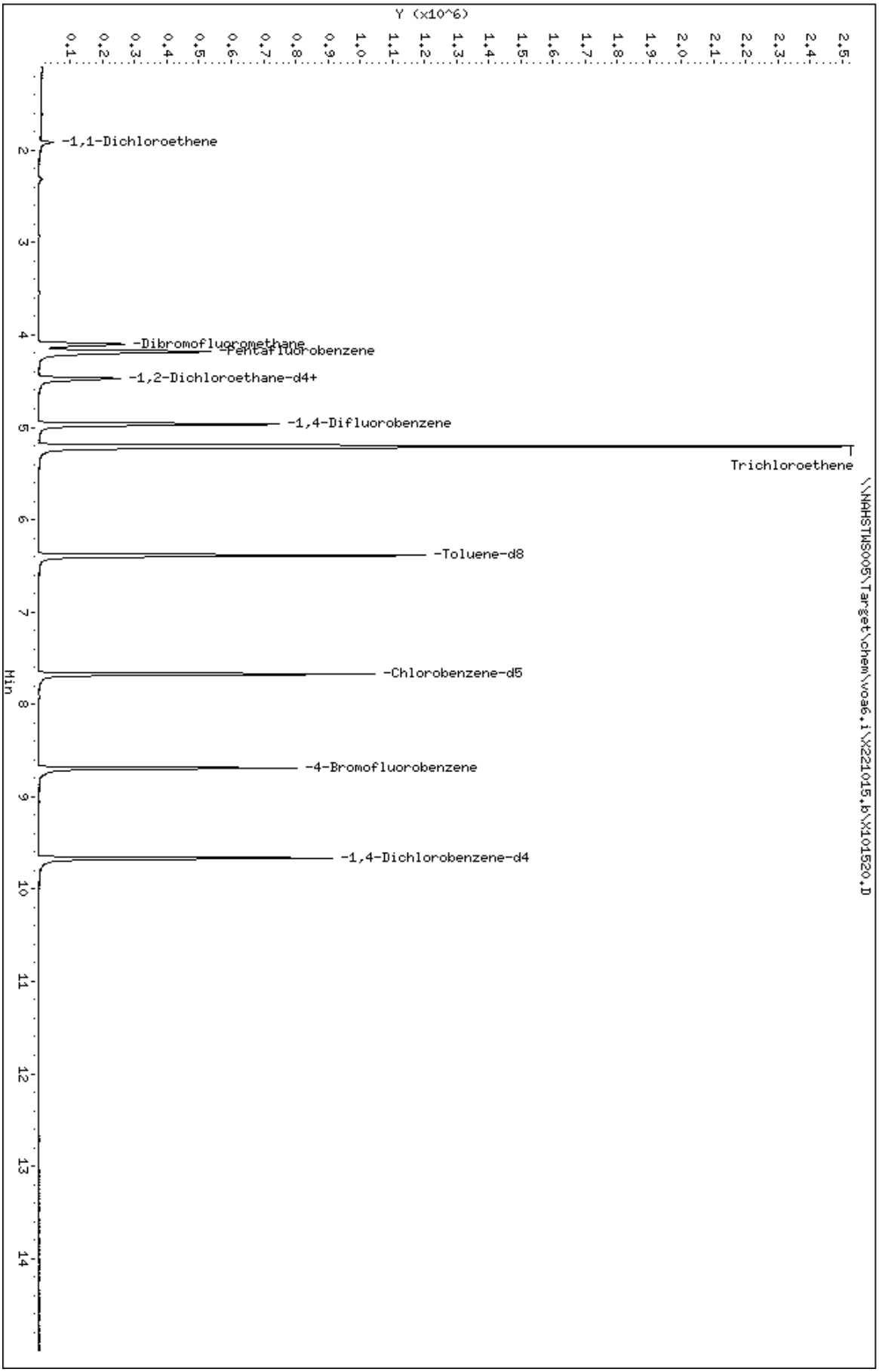
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.181	4.181	(1.000)	503586	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.103	(0.981)	199864	43.9868	43.98
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	194913	43.4193	43.41
* 36 1,4-Difluorobenzene	114	4.965	4.968	(1.000)	668739	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	586804	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	779252	52.9891	52.98
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	248735	47.4988	47.49
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	259479	50.0000	
11 1,1-Dichloroethene	96	1.917	1.917	(0.459)	14591	4.47973	4.47(a)
33 1,2-Dichloroethane	62	4.564	4.556	(0.919)	3916	0.79360	0.79(a)
38 Trichloroethene	130	5.205	5.208	(1.048)	905496	180.016	180.01

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101520.D
Date : 15-OCT-2022 17:44
Client ID: HS2100577-05
Sample Info: HS2100577-05;HS2100577-05;;;
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101520.D Page 2

Date : 15-OCT-2022 17:44

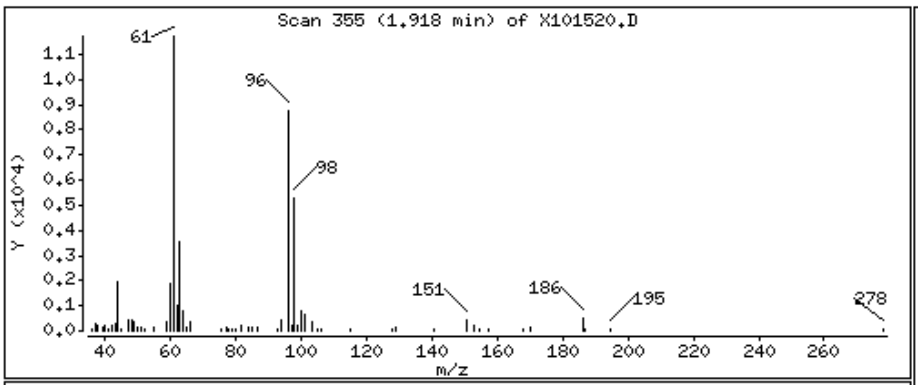
Client ID: HS22100577-05 Instrument: voa6.i

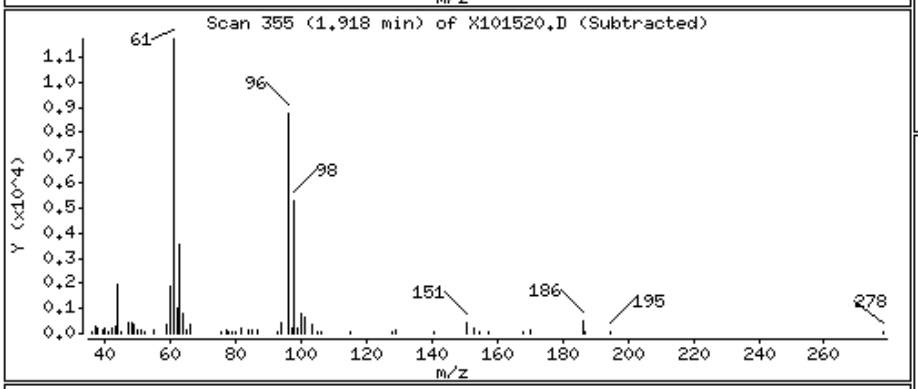
Sample Info: HS22100577-05;HS22100577-05;;;

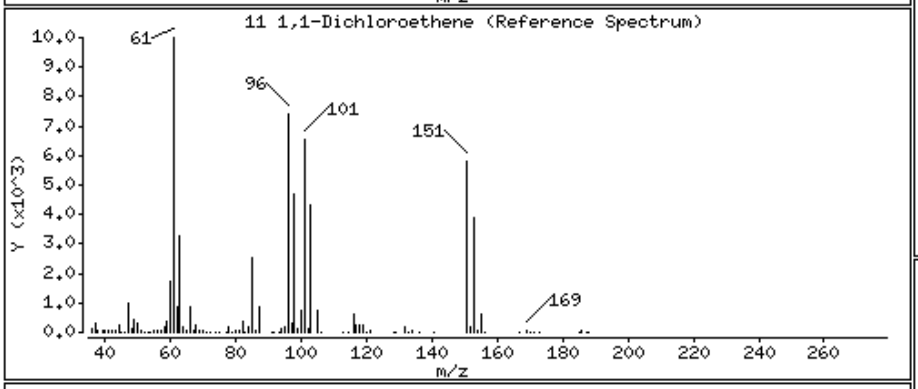
Purge Volume: 5.0 Operator: PC

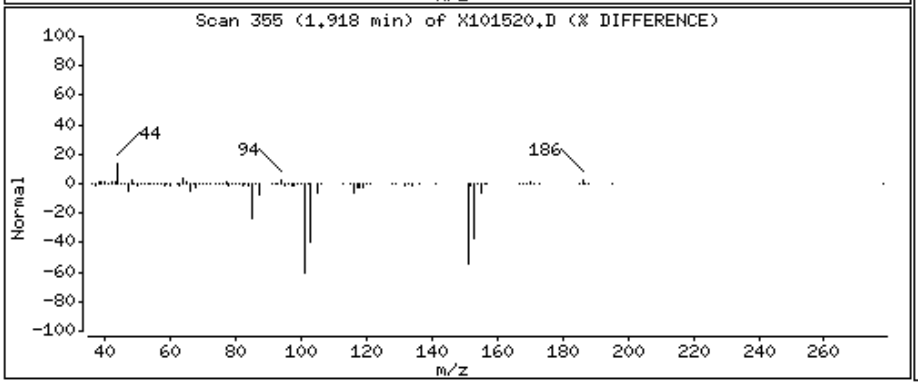
Column phase: DB624 Column diameter: 0.18

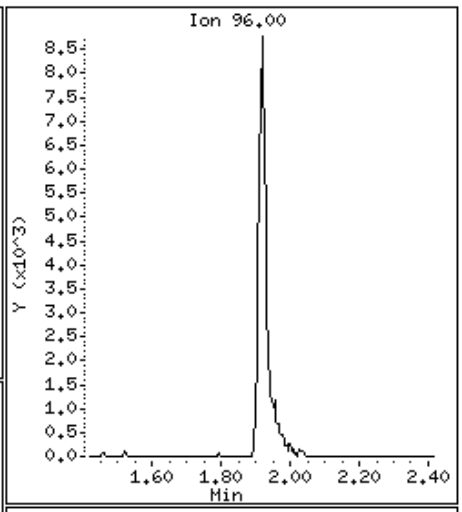
11 1,1-Dichloroethene Concentration: 4.47 ug/l

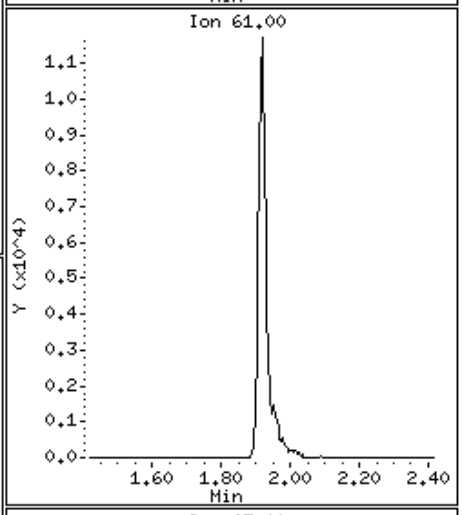


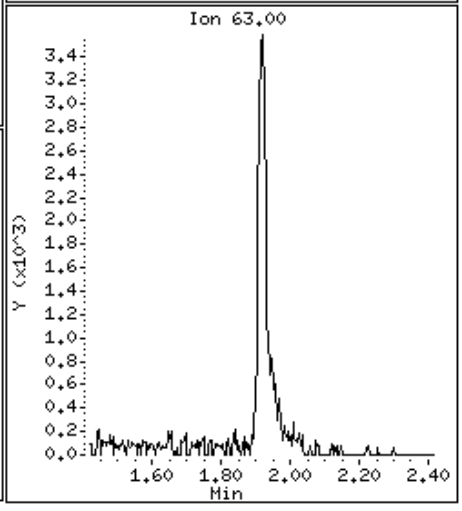












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101520.D Page 3

Date : 15-OCT-2022 17:44

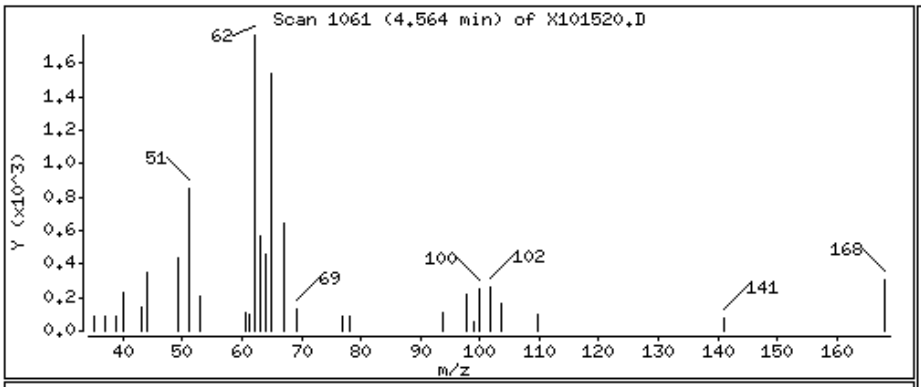
Client ID: HS22100577-05 Instrument: voa6.i

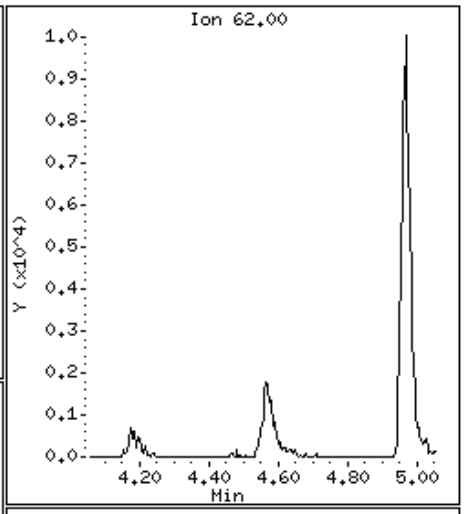
Sample Info: HS22100577-05;HS22100577-05;;;

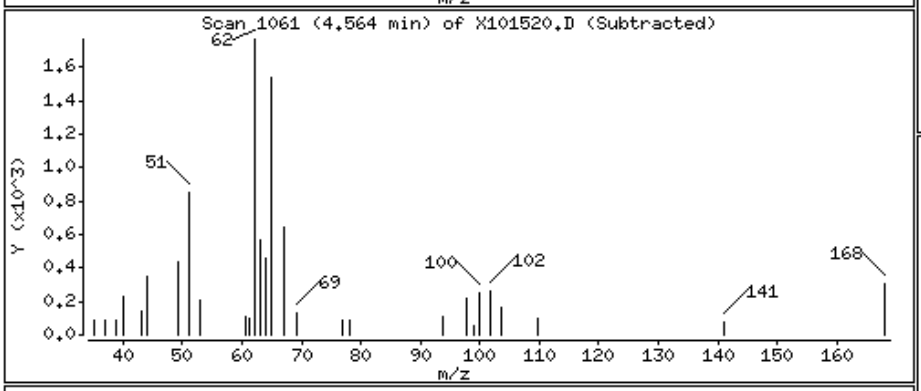
Purge Volume: 5.0 Operator: PC

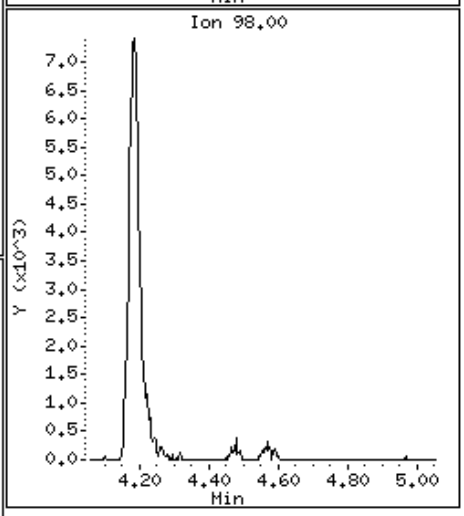
Column phase: DB624 Column diameter: 0.18

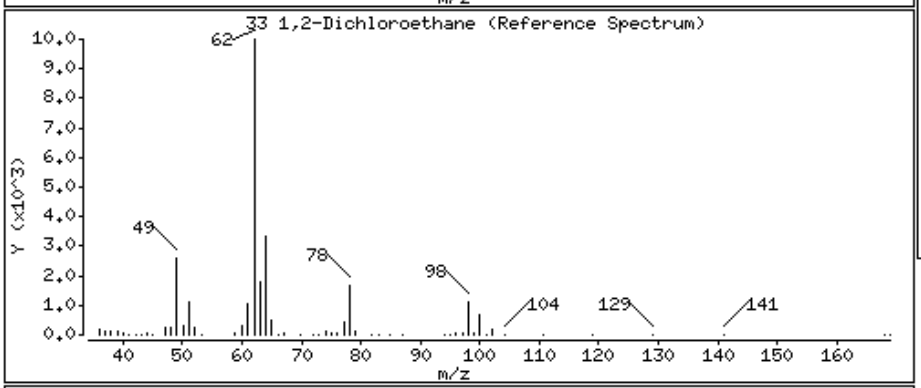
33 1,2-Dichloroethane Concentration: 0.79 ug/l

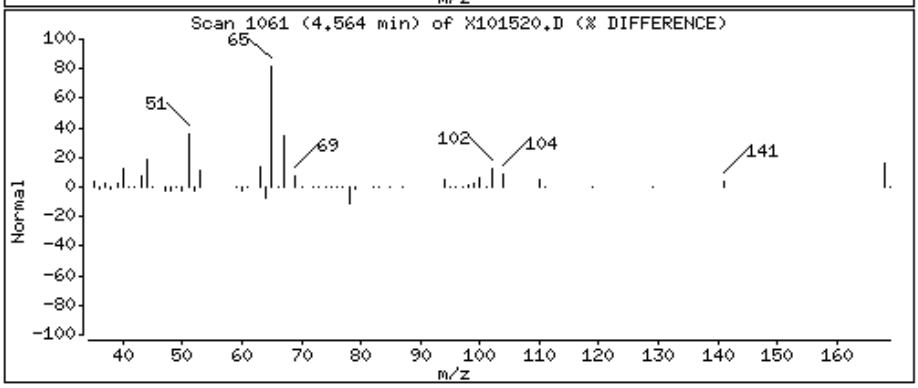












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101520.D Page 4

Date : 15-OCT-2022 17:44

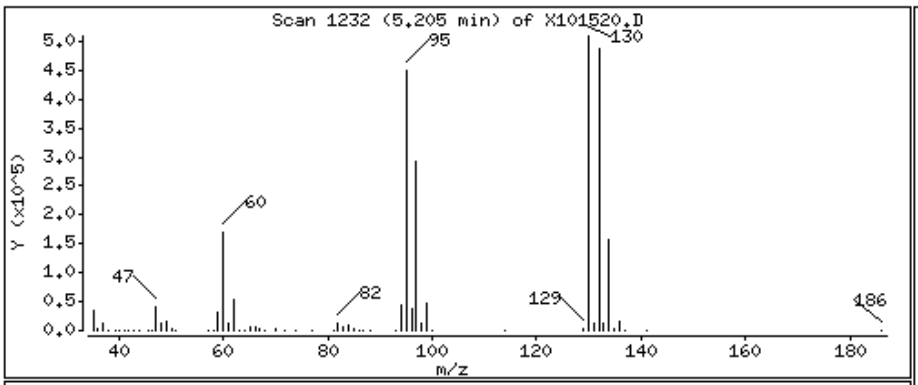
Client ID: HS22100577-05 Instrument: voa6.i

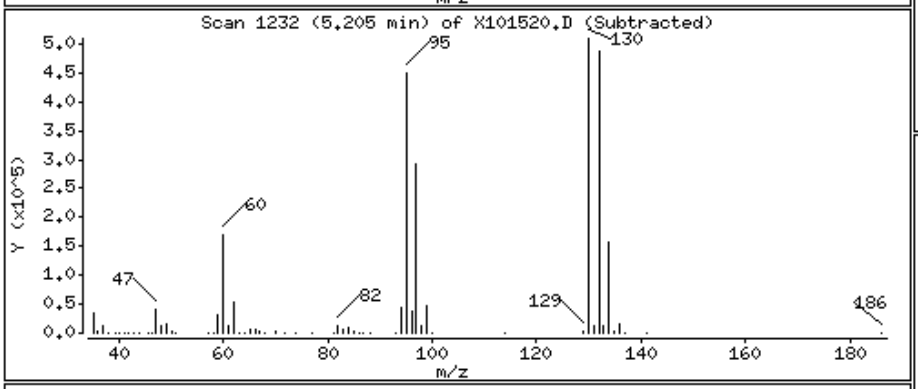
Sample Info: HS22100577-05;HS22100577-05;;;

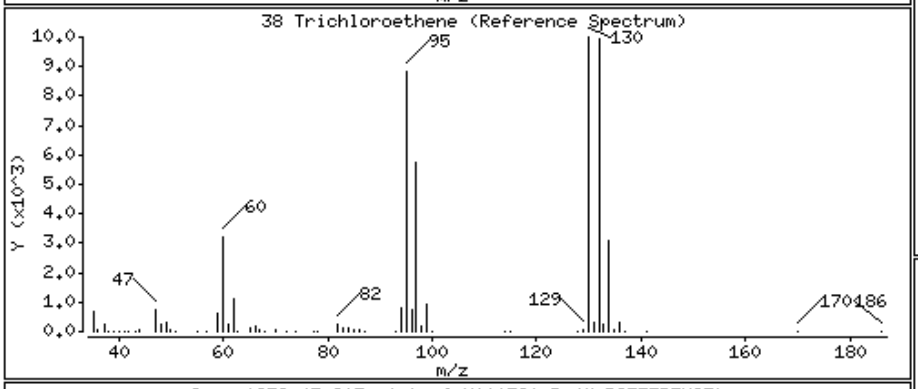
Purge Volume: 5.0 Operator: PC

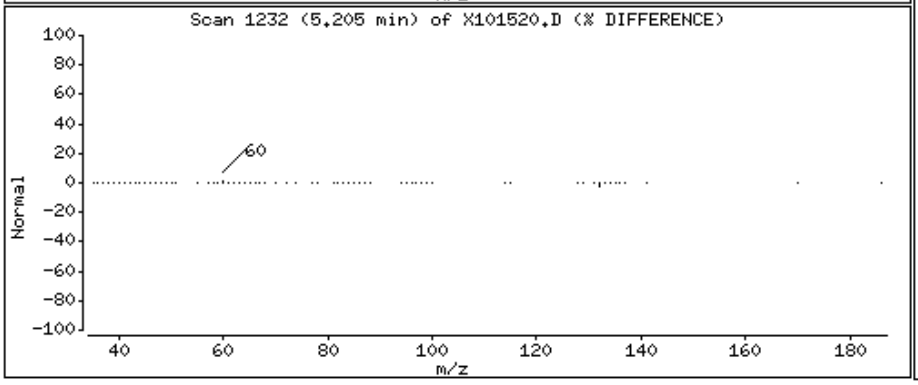
Column phase: DB624 Column diameter: 0.18

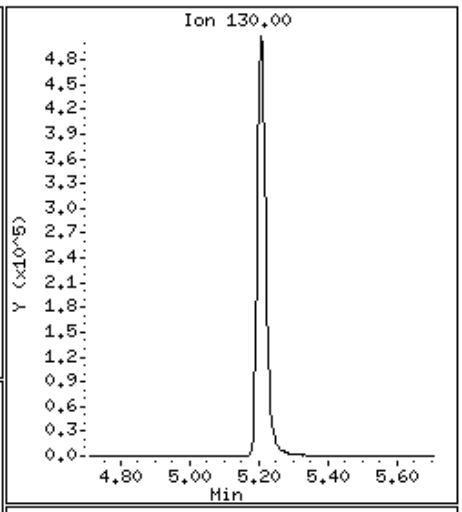
38 Trichloroethene Concentration: 180.01 ug/l

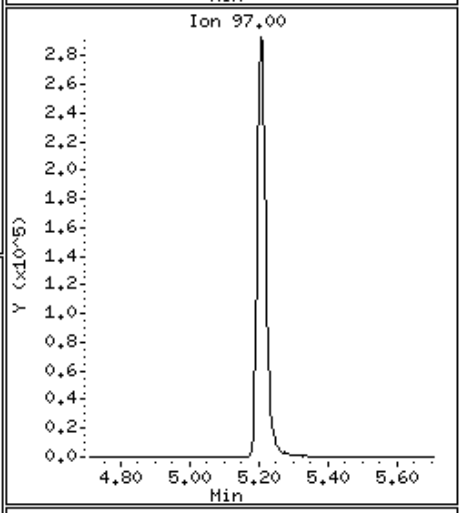


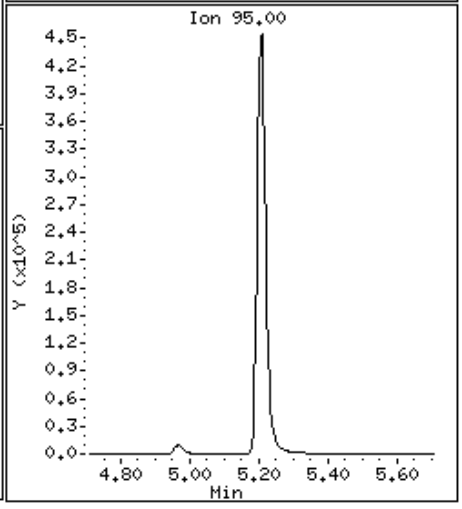












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101521.D Page 1
Report Date: 28-Oct-2022 16:48

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101521.D
Lab Smp Id: HS22100577-06 Client Smp ID: HS22100577-06
Inj Date : 15-OCT-2022 18:05
Operator : PC Inst ID: voa6.i
Smp Info : HS22100577-06;HS22100577-06;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:47 kori.bagsb Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 21
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

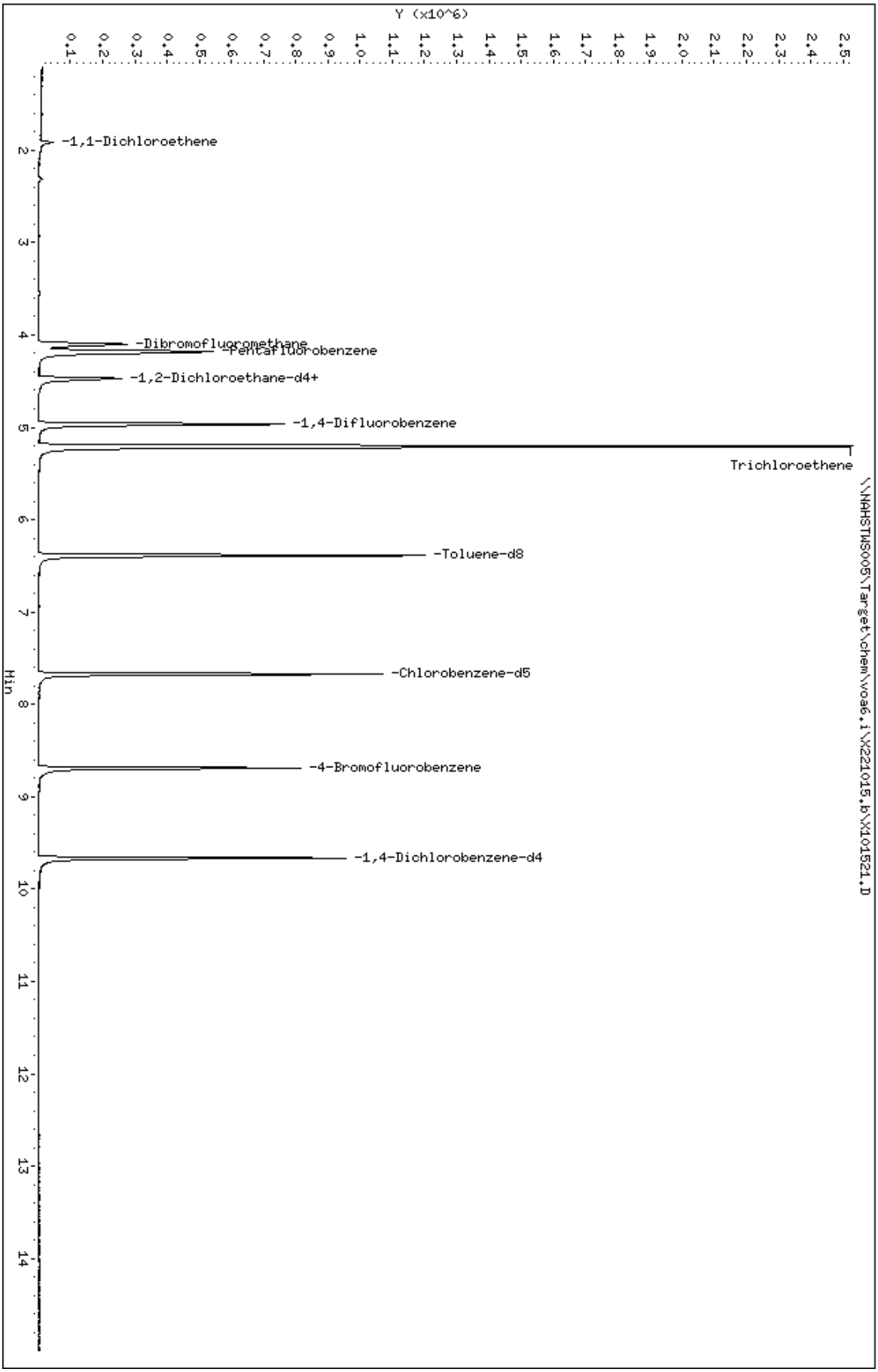
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.181	(1.000)	511383	50.0000	
$ 30 Dibromofluoromethane	113	4.099	4.099	(0.979)	201709	43.7120	43.71
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	195367	42.8467	42.84
* 36 1,4-Difluorobenzene	114	4.968	4.965	(1.000)	684908	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.668	(1.000)	595577	50.0000	
$ 48 Toluene-d8	98	6.389	6.386	(0.833)	790458	52.9593	52.95
$ 69 4-Bromofluorobenzene	95	8.691	8.687	(1.133)	258279	48.6030	48.60
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	274842	50.0000	
11 1,1-Dichloroethene	96	1.917	1.917	(0.458)	14720	4.45043	4.45(a)
33 1,2-Dichloroethane	62	4.571	4.556	(0.920)	4135	0.81819	0.81(a)
38 Trichloroethene	130	5.205	5.208	(1.048)	927824	180.101	180.10

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101521.D

Date : 15-OCT-2022 18:05

Client ID: HS22100577-06

Sample Info: HS22100577-06;HS22100577-06;;;

Purge Volume: 5.0

Column phase: DB624

Instrument: voa6.i

Operator: PC

Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101521.D Page 2

Date : 15-OCT-2022 18:05

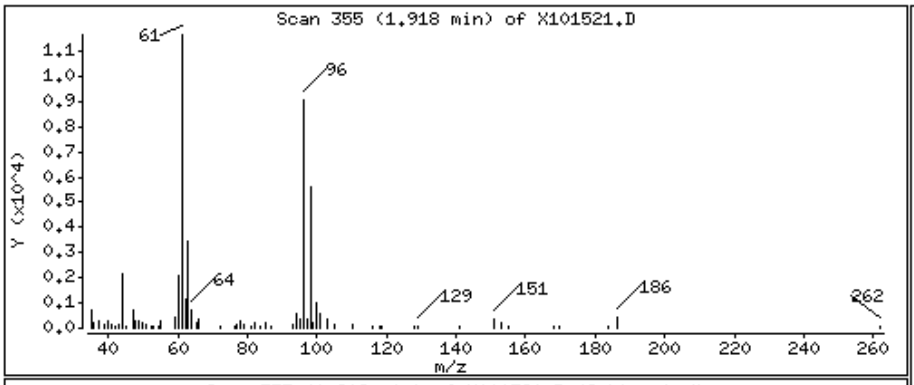
Client ID: HS22100577-06 Instrument: voa6.i

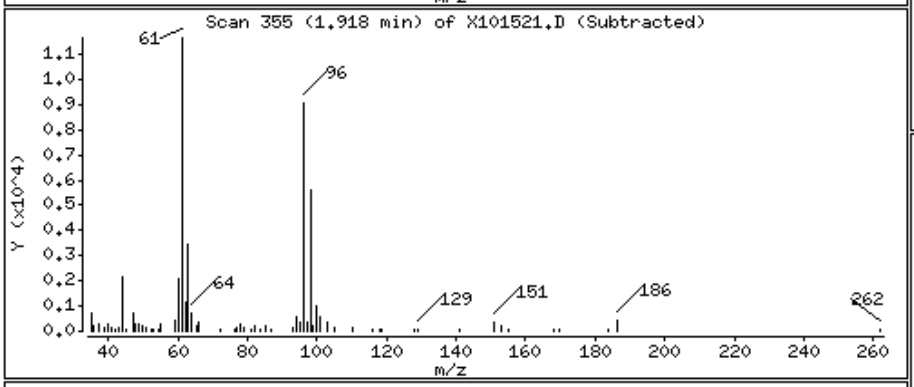
Sample Info: HS22100577-06;HS22100577-06;;;

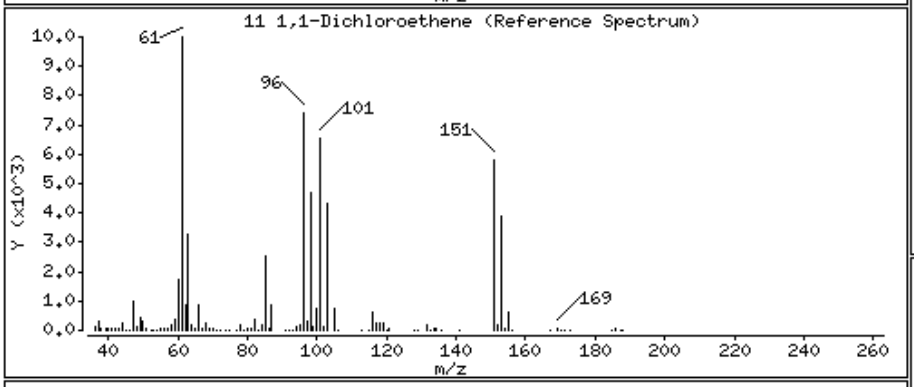
Purge Volume: 5.0 Operator: PC

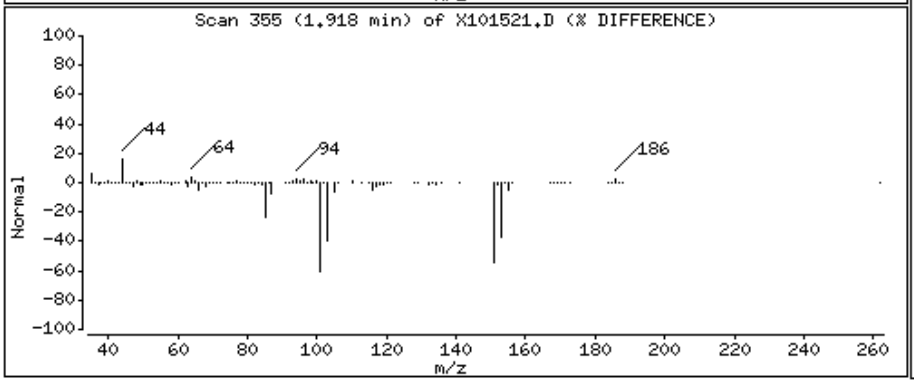
Column phase: DB624 Column diameter: 0.18

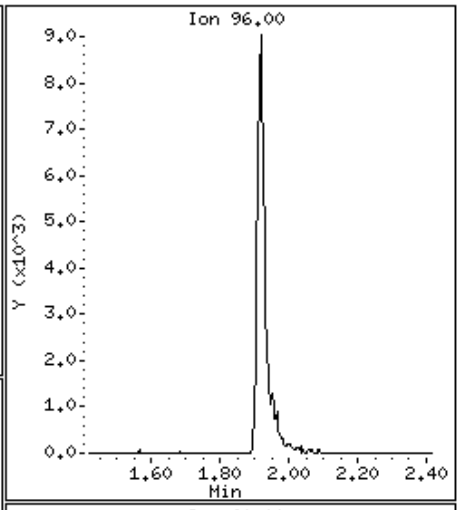
11 1,1-Dichloroethene Concentration: 4.45 ug/l

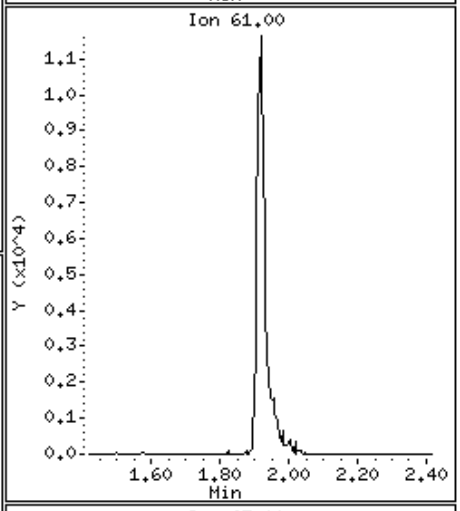


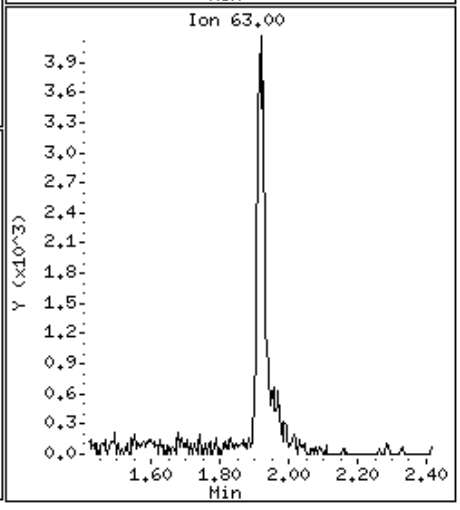












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101521.D Page 3

Date : 15-OCT-2022 18:05

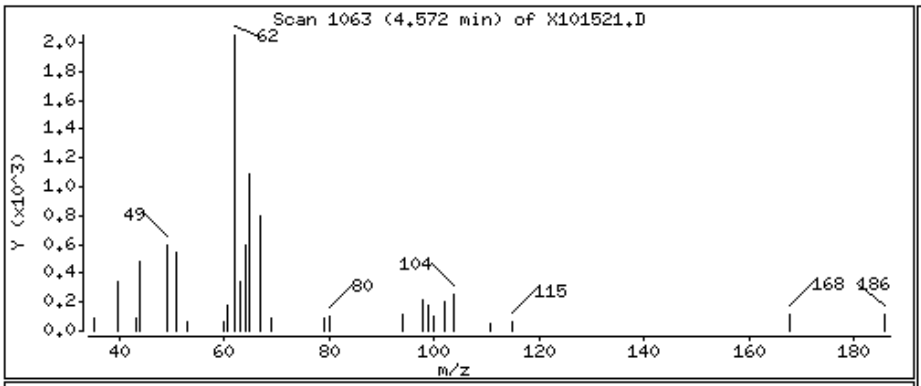
Client ID: HS22100577-06 Instrument: voa6.i

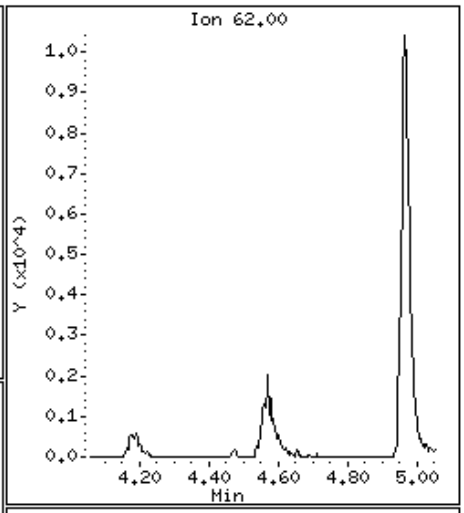
Sample Info: HS22100577-06;HS22100577-06;;;

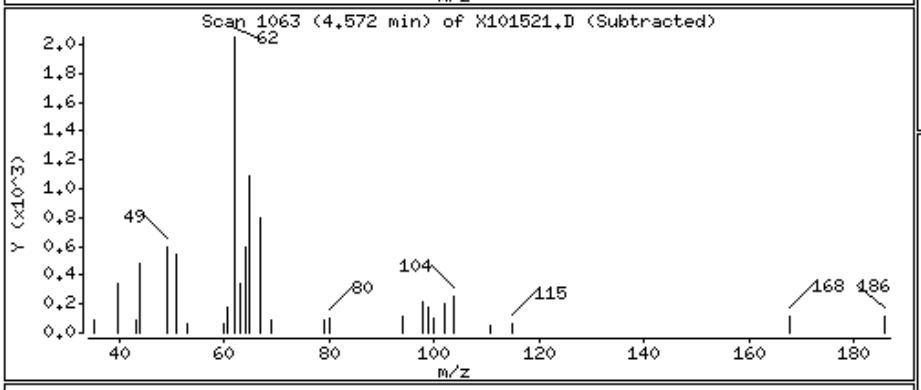
Purge Volume: 5.0 Operator: PC

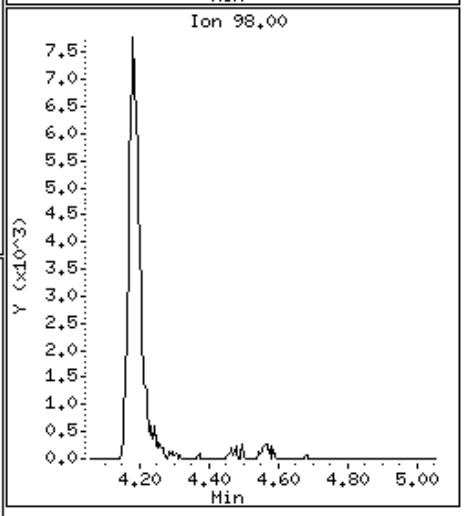
Column phase: DB624 Column diameter: 0.18

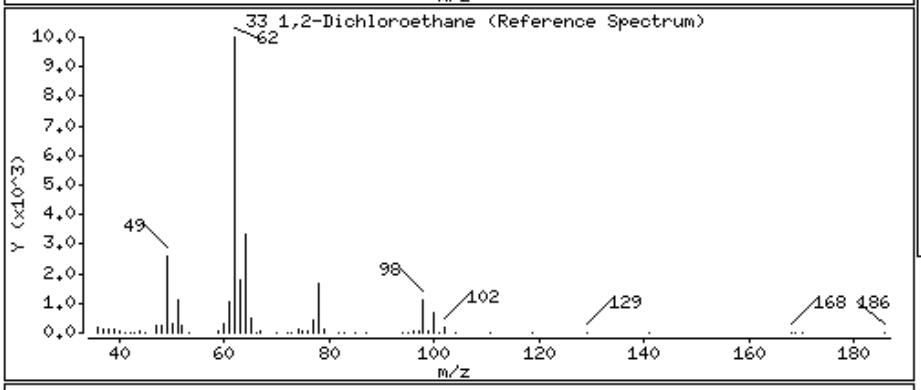
33 1,2-Dichloroethane Concentration: 0.81 ug/l

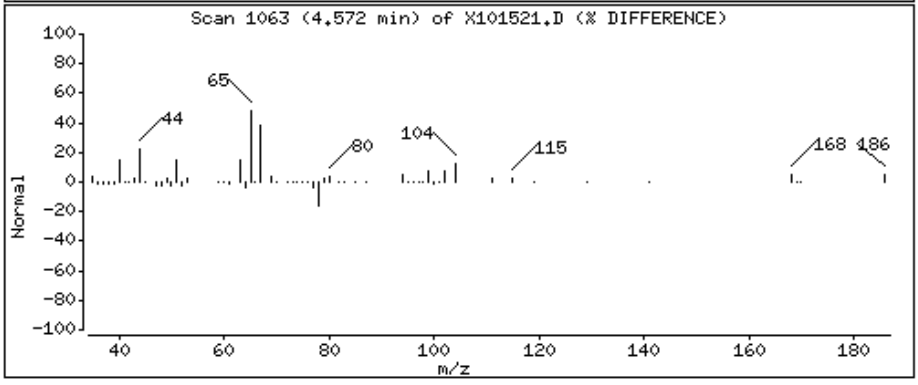












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101521.D Page 4

Date : 15-OCT-2022 18:05

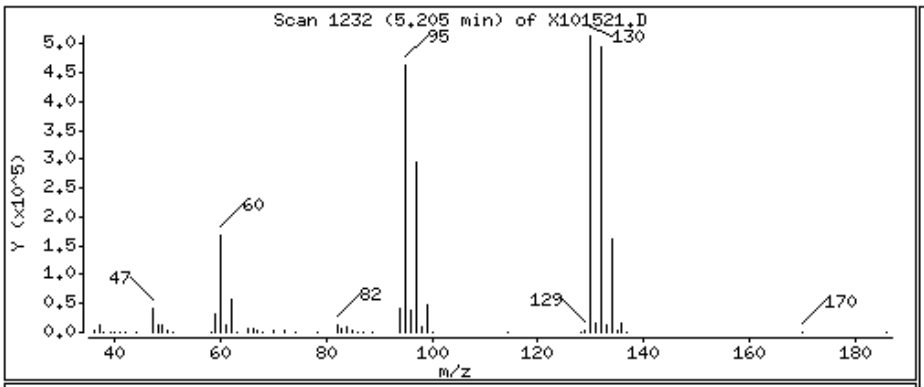
Client ID: HS22100577-06 Instrument: voa6.i

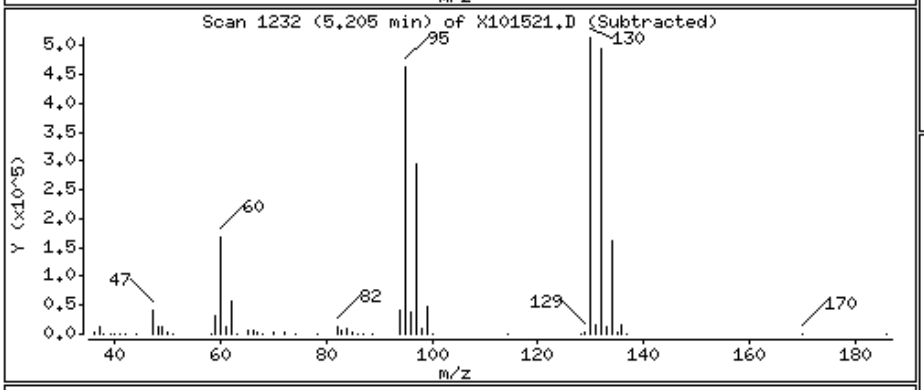
Sample Info: HS22100577-06;HS22100577-06;;;

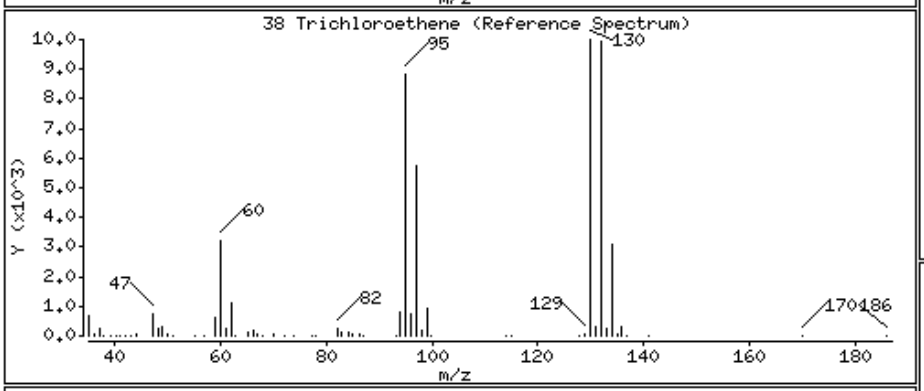
Purge Volume: 5.0 Operator: PC

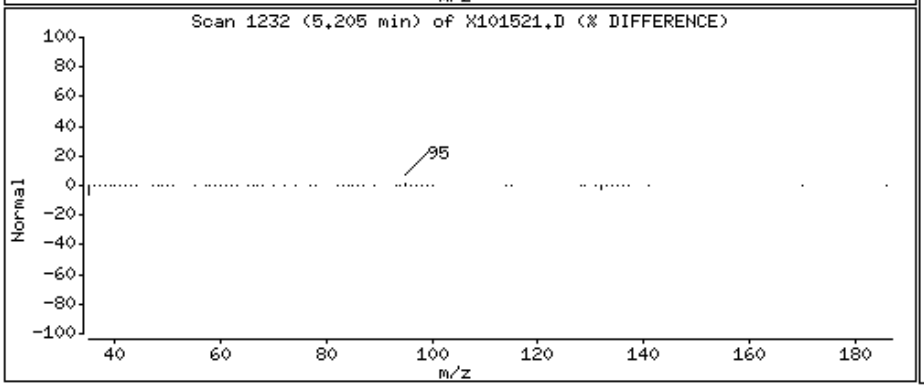
Column phase: DB624 Column diameter: 0.18

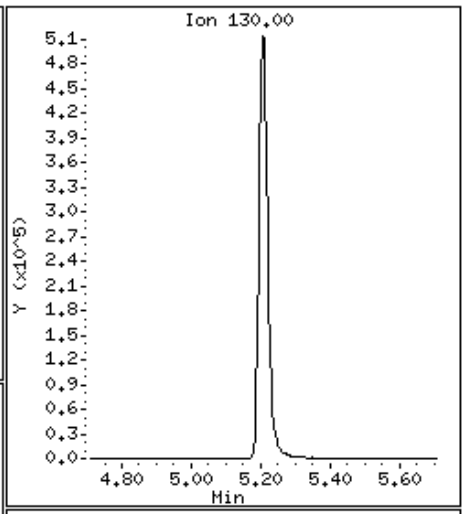
38 Trichloroethene Concentration: 180.10 ug/l

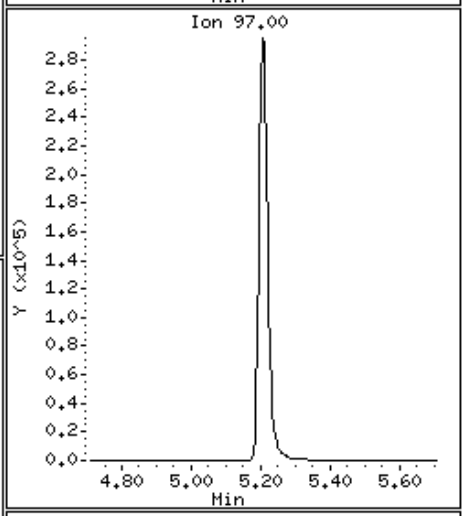


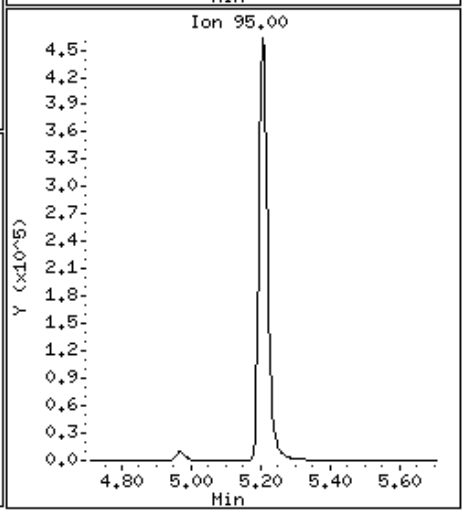












Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101521.D
Inj Date : 15-OCT-2022 18:05
InstruID : voa6.i
LabSampID : HS22100577-06

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101524.D Page 1
Report Date: 28-Oct-2022 16:22

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101524.D
Lab Smp Id: HS22100577-03 Client Smp ID: HS22100577-03
Inj Date : 15-OCT-2022 19:08
Operator : PC Inst ID: voa6.i
Smp Info : HS22100577-03;HS22100577-03;;;
Misc Info : HS22052000V6;WATER;0;10;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:22 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 24
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

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

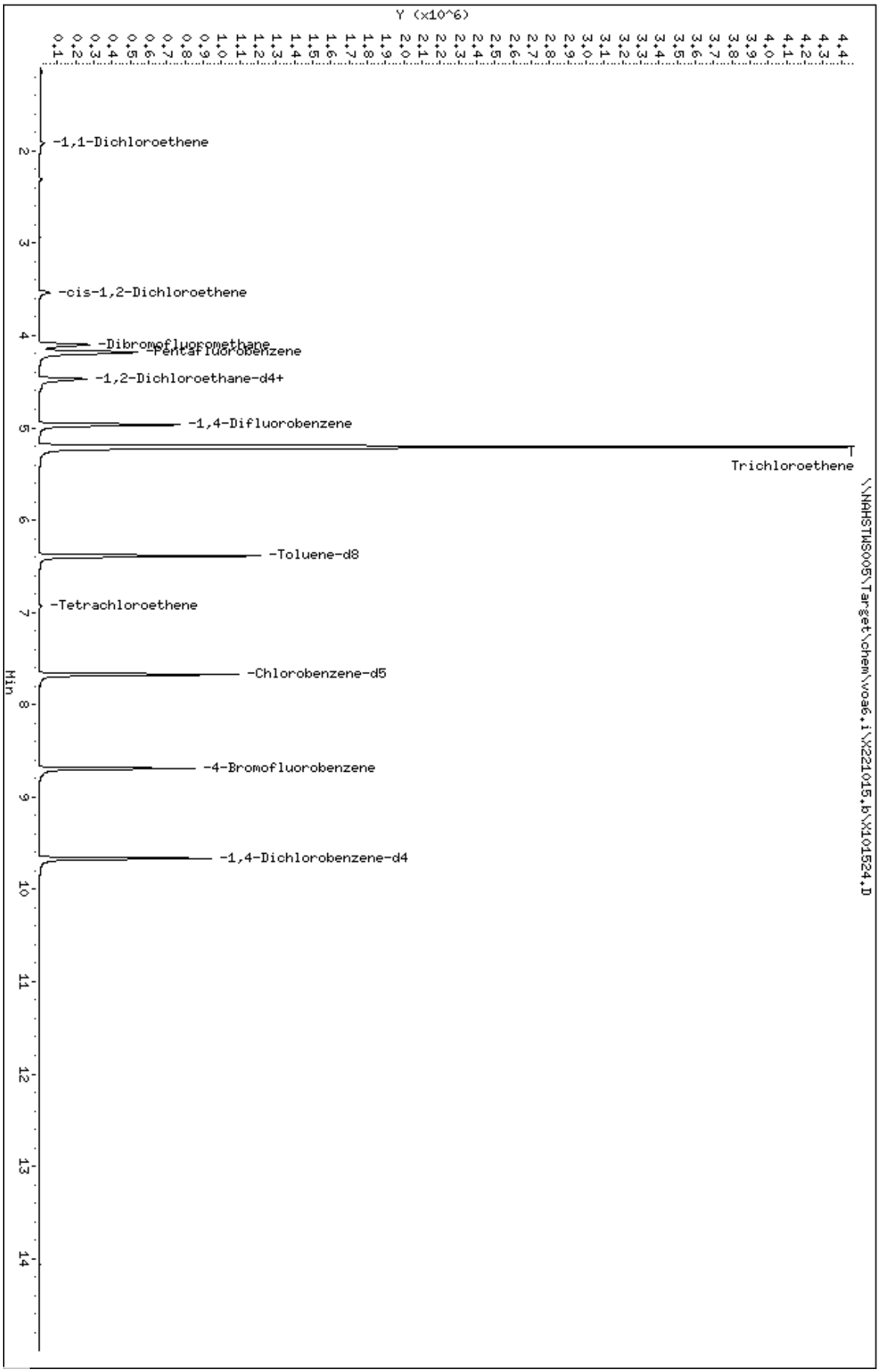
Name	Value	Description
DF	10.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.181	4.181	(1.000)	507512	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.981)	202233	44.1665	44.16
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	197738	43.7130	43.71
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	687680	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	594976	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	782135	52.4546	52.45
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	254821	47.9963	47.99
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	273528	50.0000	
11 1,1-Dichloroethene	96	1.917	1.917	(0.459)	7264	2.21294	22.12(a)
27 cis-1,2-Dichloroethene	96	3.536	3.529	(0.846)	34534	6.51463	65.14
33 1,2-Dichloroethane	62	4.564	4.556	(0.919)	12870	2.53633	25.36(a)
38 Trichloroethene	130	5.205	5.208	(1.048)	1623499	313.869	3138.68(A)
56 Tetrachloroethene	164	6.940	6.929	(0.905)	2658	0.64592	6.45(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.



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101524.D
Date : 15-OCT-2022 19:08
Client ID: HS22100577-03
Sample Info: HS22100577-03;HS22100577-03;;;
Purge Volume: 5.0
Column phase: DB624

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

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101524.D Page 2

Date : 15-OCT-2022 19:08

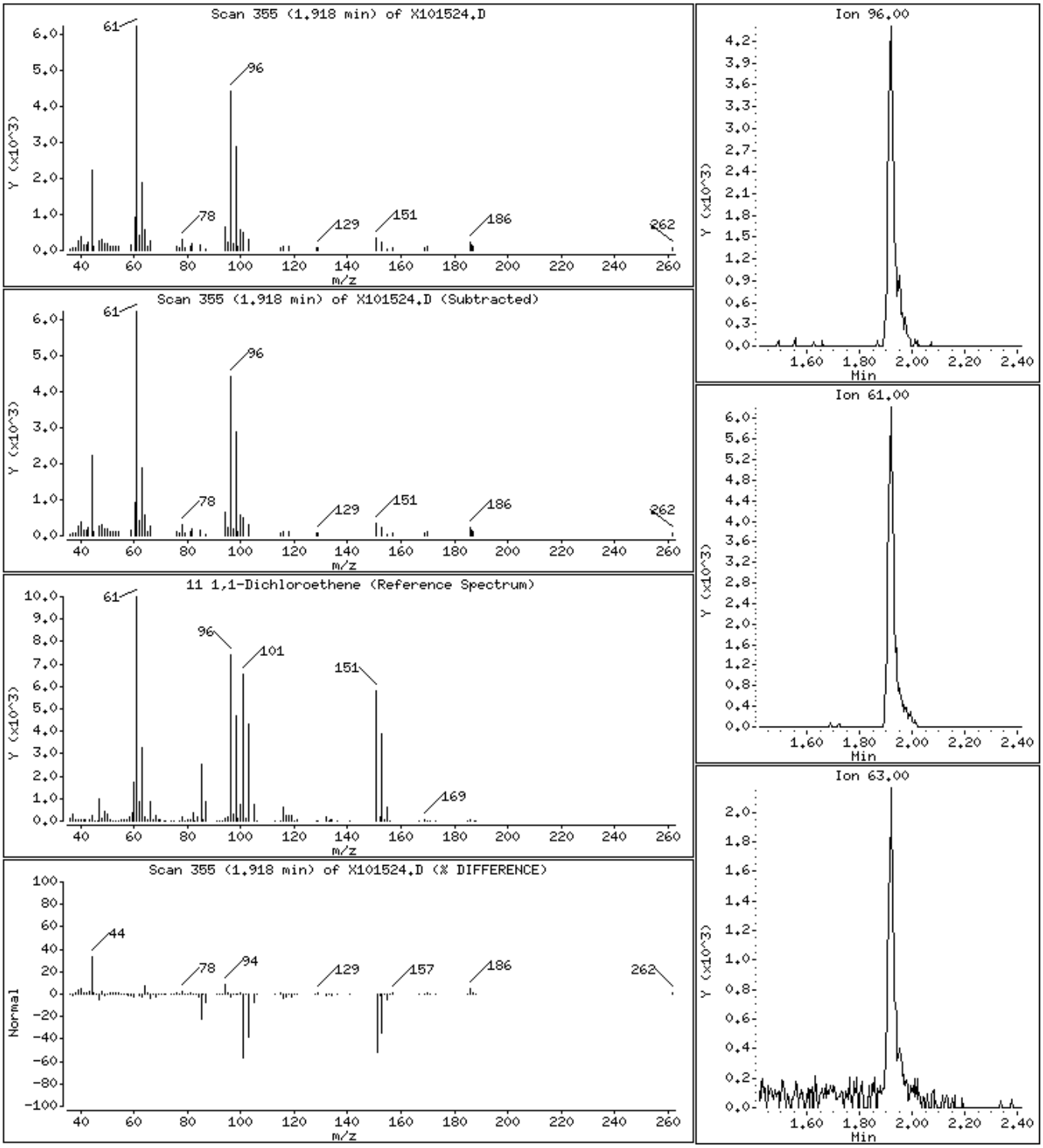
Client ID: HS22100577-03 Instrument: voa6.i

Sample Info: HS22100577-03;HS22100577-03;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

11 1,1-Dichloroethene Concentration: 22.12 ug/l



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101524.D Page 3

Date : 15-OCT-2022 19:08

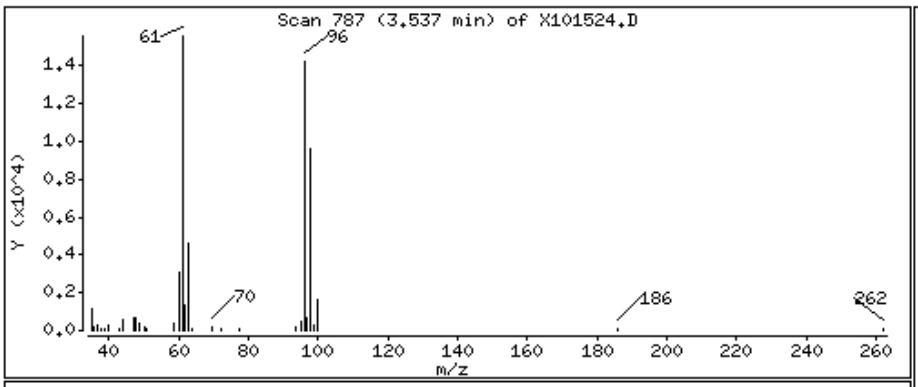
Client ID: HS22100577-03 Instrument: voa6.i

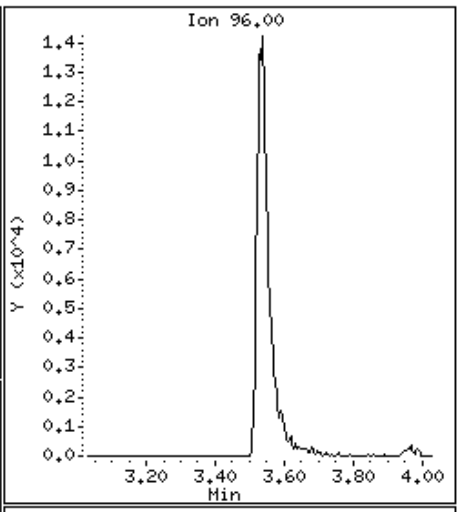
Sample Info: HS22100577-03;HS22100577-03;;;

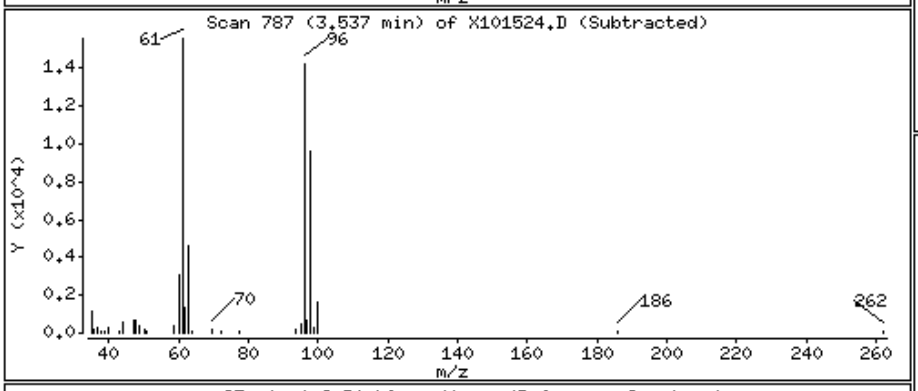
Purge Volume: 5.0 Operator: PC

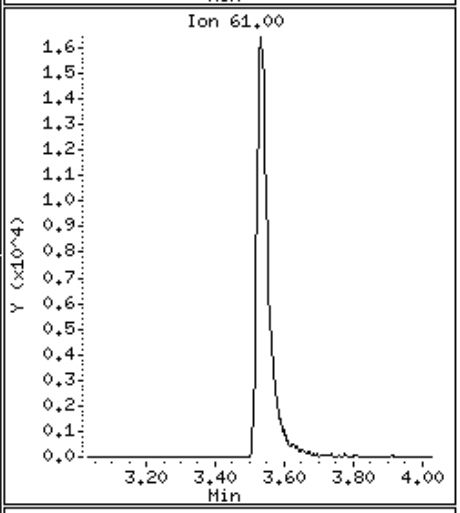
Column phase: DB624 Column diameter: 0.18

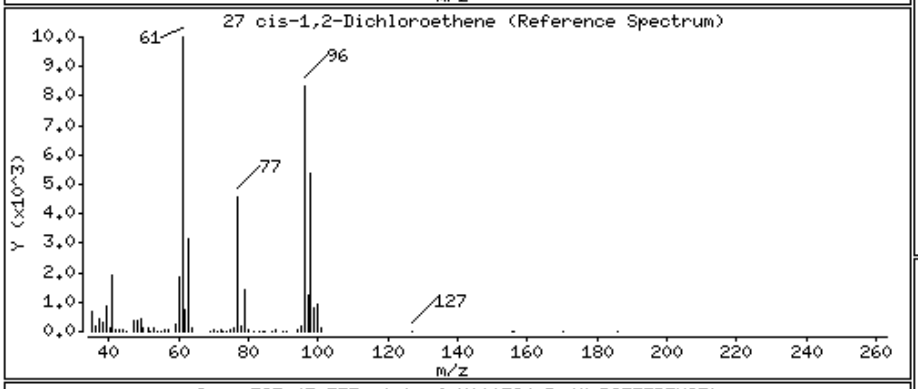
27 cis-1,2-Dichloroethene Concentration: 65.14 ug/l

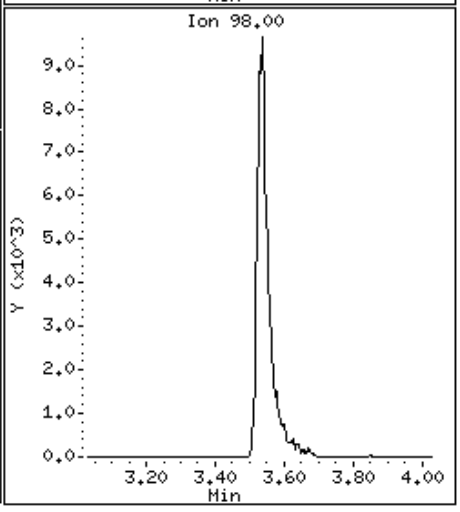


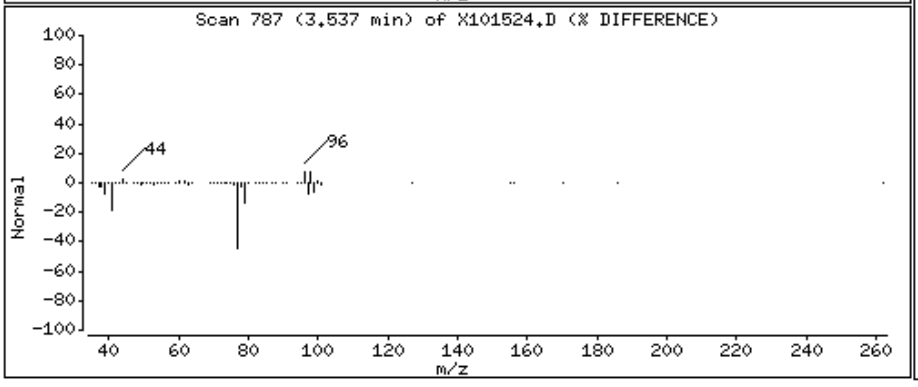












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101524.D Page 4

Date : 15-OCT-2022 19:08

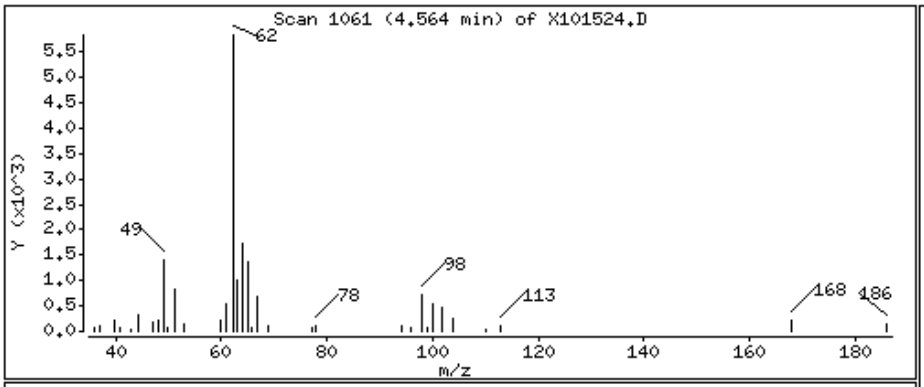
Client ID: HS22100577-03 Instrument: voa6.i

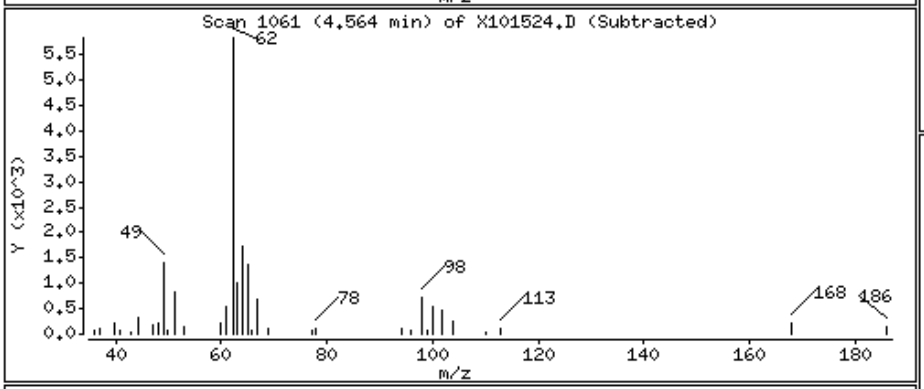
Sample Info: HS22100577-03;HS22100577-03;;;

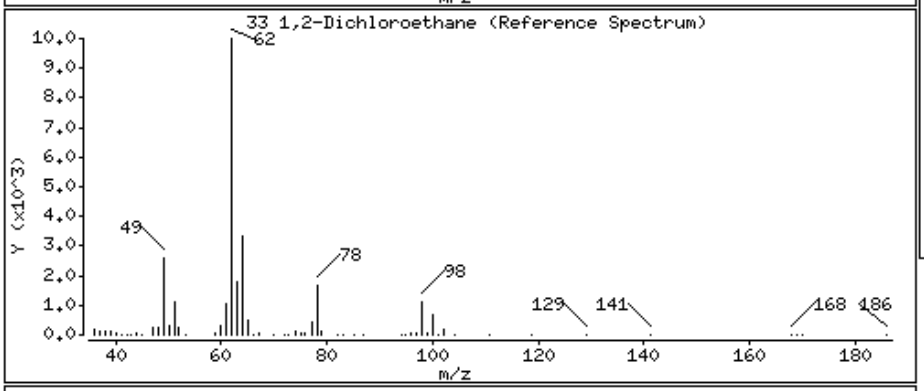
Purge Volume: 5.0 Operator: PC

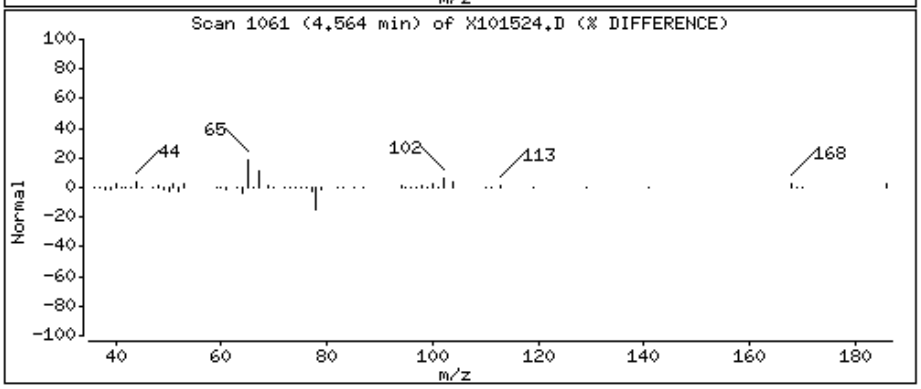
Column phase: DB624 Column diameter: 0.18

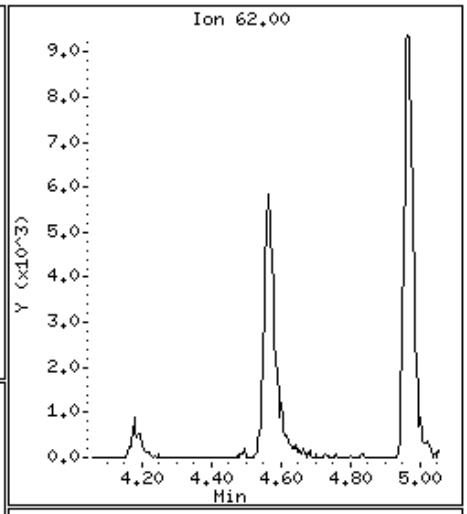
33 1,2-Dichloroethane Concentration: 25.36 ug/l

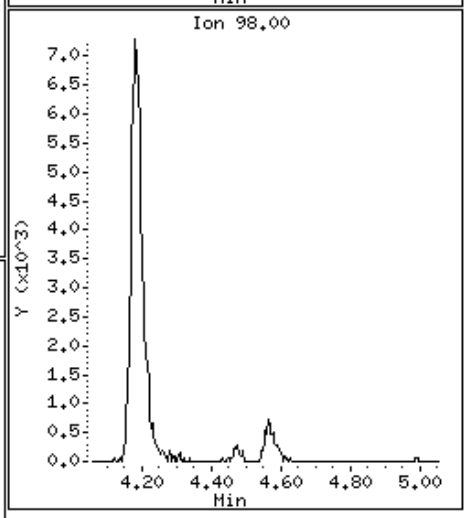












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101524.D Page 5

Date : 15-OCT-2022 19:08

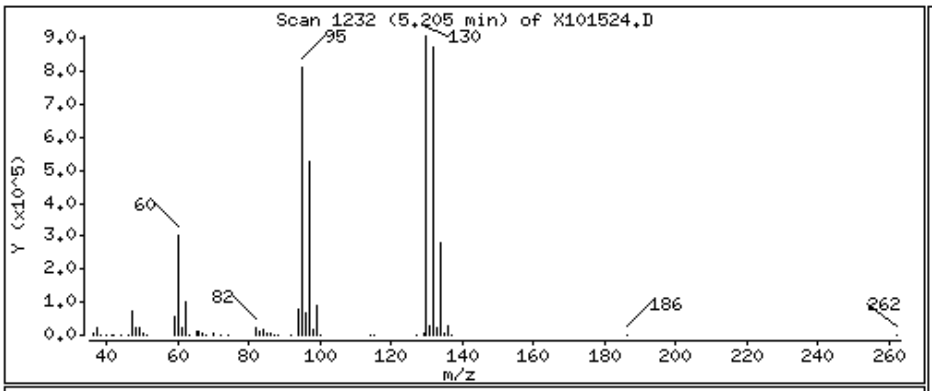
Client ID: HS22100577-03 Instrument: voa6.i

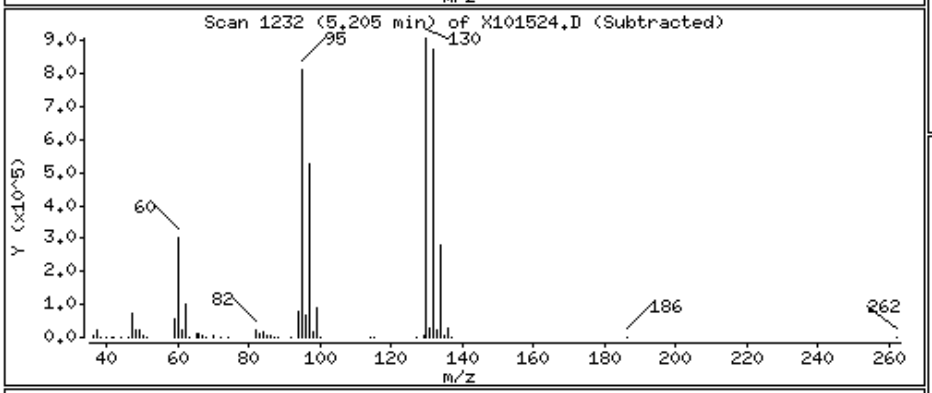
Sample Info: HS22100577-03;HS22100577-03;;;

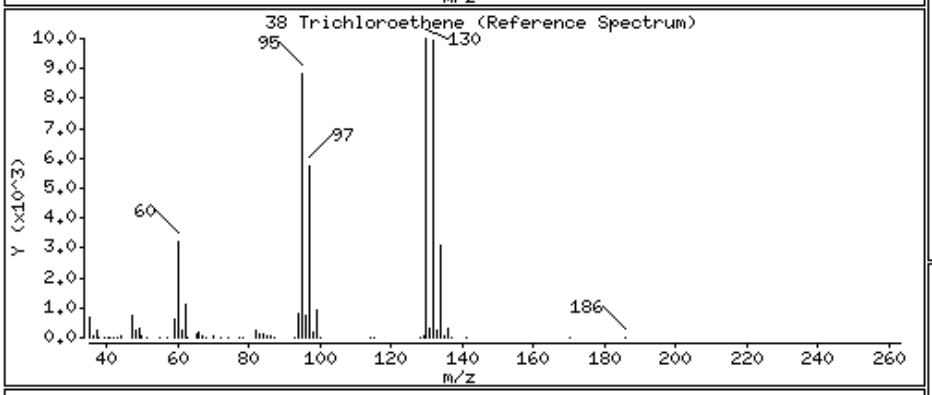
Purge Volume: 5.0 Operator: PC

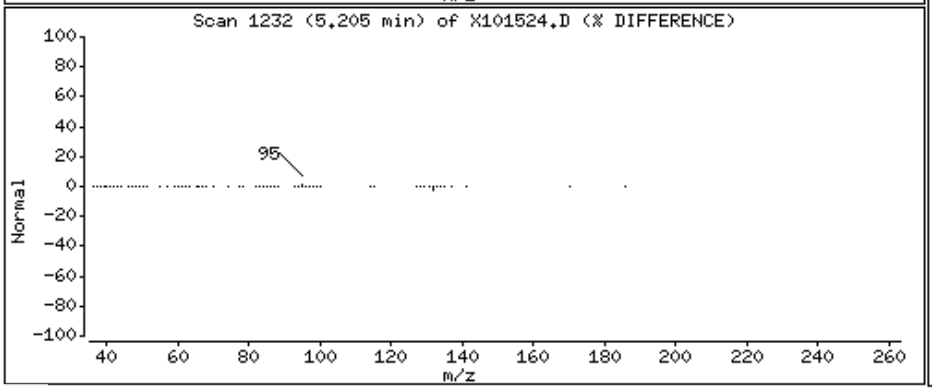
Column phase: DB624 Column diameter: 0.18

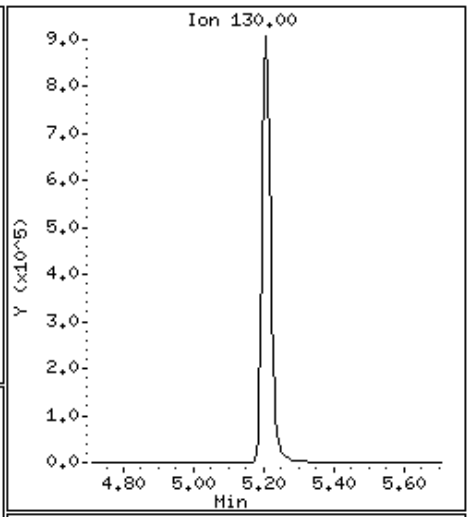
38 Trichloroethene Concentration: 3138.68 ug/l

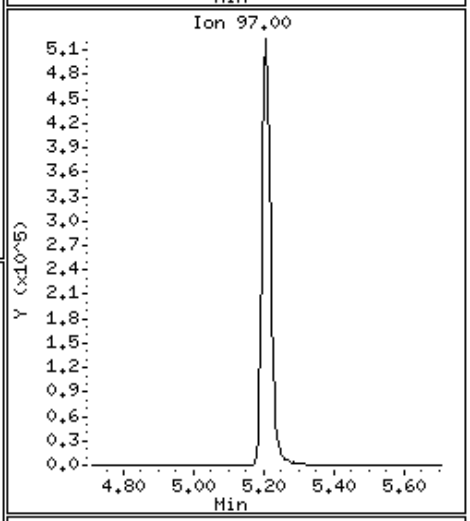


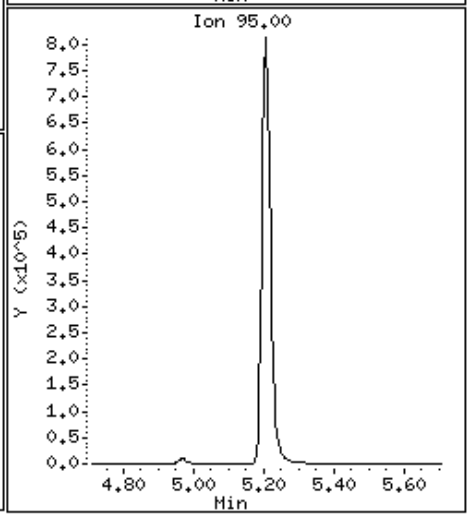












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101524.D Page 6

Date : 15-OCT-2022 19:08

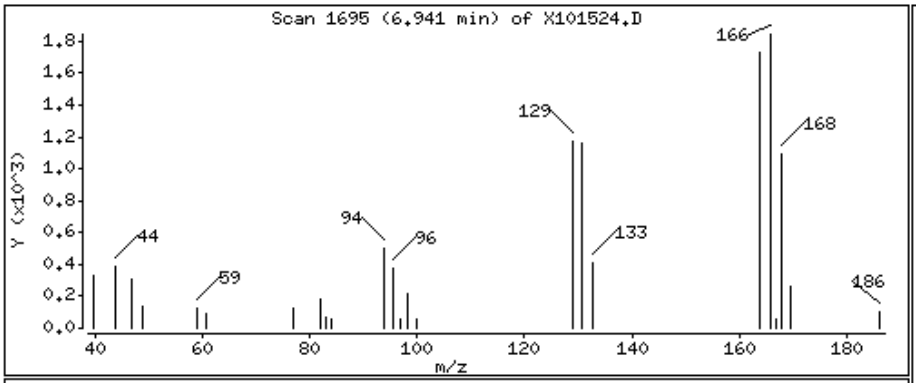
Client ID: HS22100577-03 Instrument: voa6.i

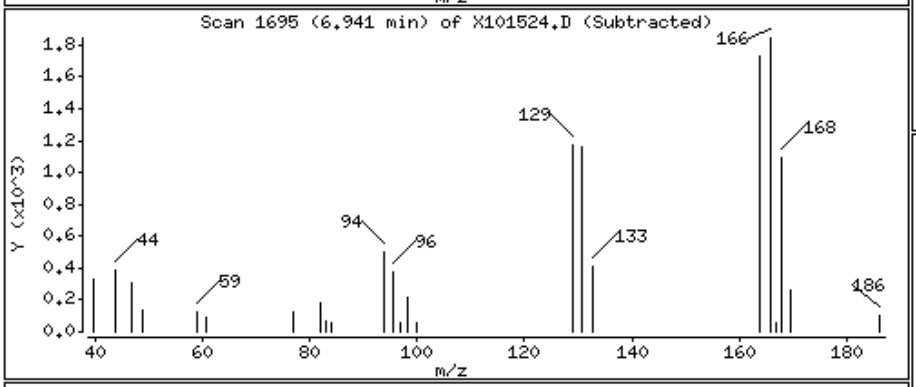
Sample Info: HS22100577-03;HS22100577-03;;;

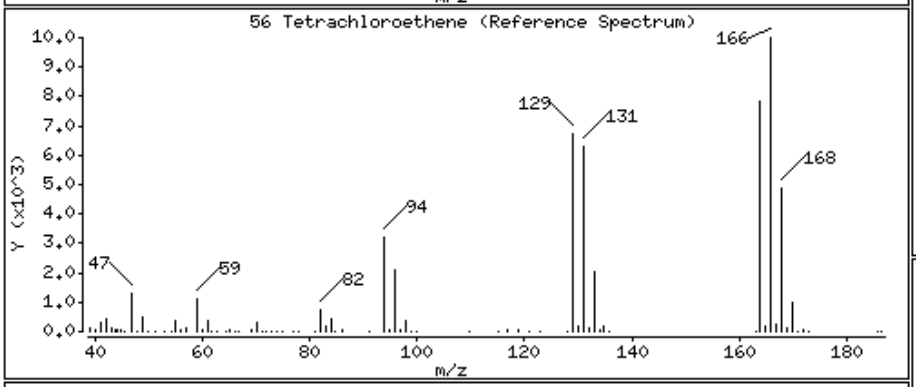
Purge Volume: 5.0 Operator: PC

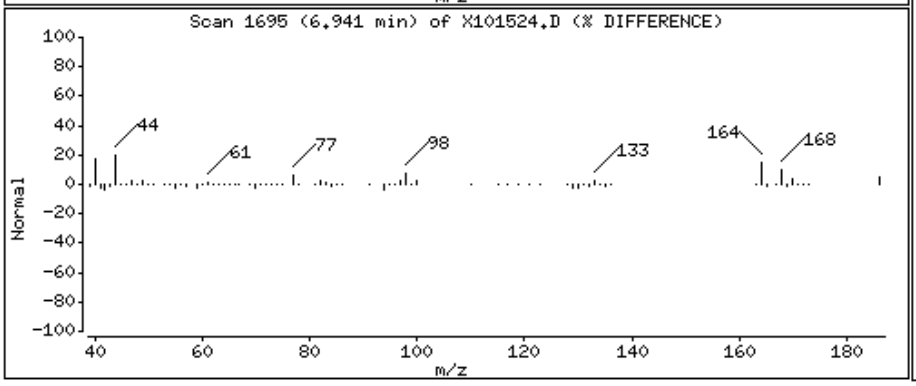
Column phase: DB624 Column diameter: 0.18

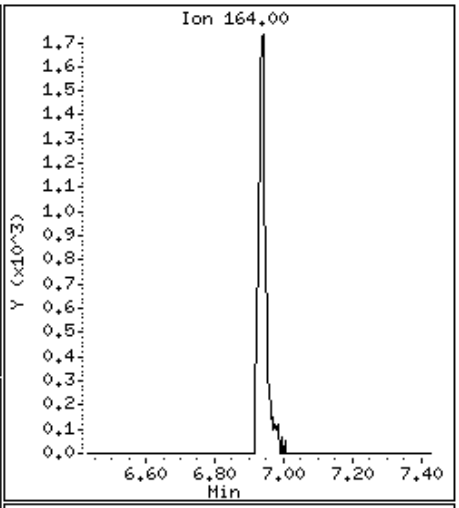
56 Tetrachloroethene Concentration: 6.45 ug/l

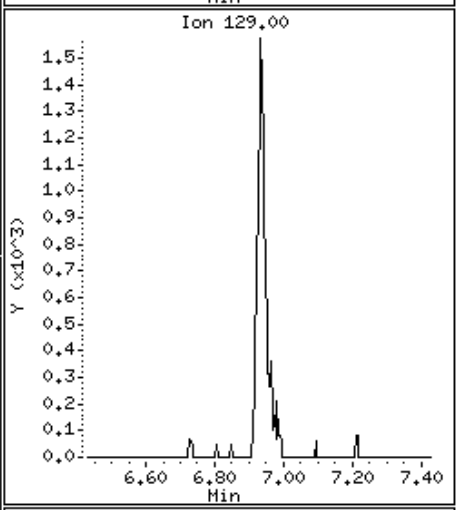


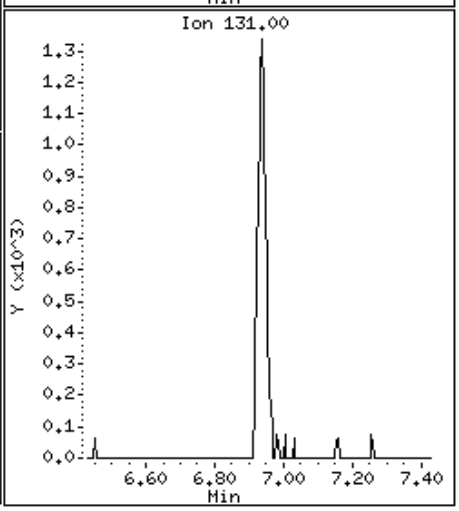












Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101524.D
Inj Date : 15-OCT-2022 19:08
InstruID : voa6.i
LabSampID : HS22100577-03

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101525.D Page 1
Report Date: 28-Oct-2022 16:22

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101525.D
Lab Smp Id: HS22100577-03 Client Smp ID: HS22100577-03
Inj Date : 15-OCT-2022 19:29
Operator : PC Inst ID: voa6.i
Smp Info : HS22100577-03;HS22100577-03;;;
Misc Info : HS22052000V6;WATER;0;100;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:22 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 25
Dil Factor: 100.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

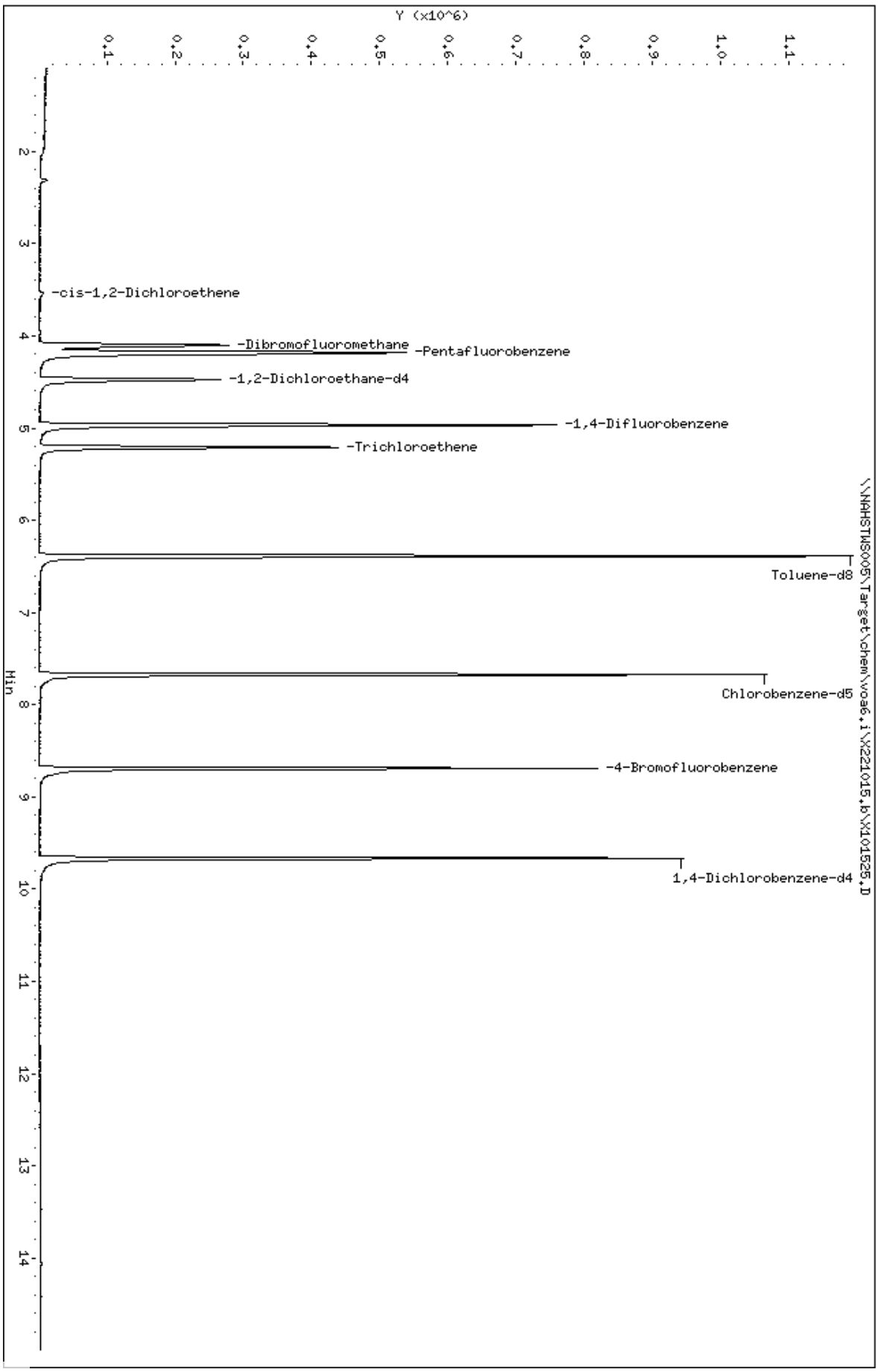
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.181	(1.000)	505981	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	200703	43.9620	43.96
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	193185	42.8200	42.82
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	676338	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	587920	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	781562	53.0453	53.04
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	249287	47.5140	47.51
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	273899	50.0000	
27 cis-1,2-Dichloroethene	96	3.540	3.529	(0.846)	3193	0.60416	60.41(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	159381	31.3296	3132.96

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101525.D
Date : 15-OCT-2022 19:29
Client ID: HS22100577-03
Sample Info: HS22100577-03;HS22100577-03;;;
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101525.D Page 2

Date : 15-OCT-2022 19:29

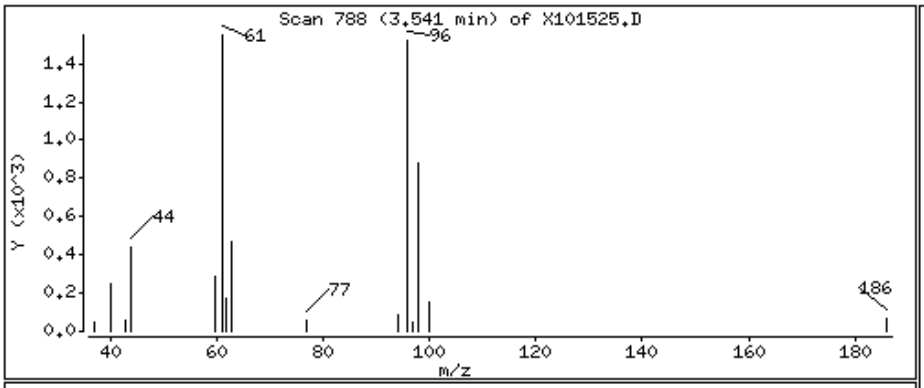
Client ID: HS22100577-03 Instrument: voa6.i

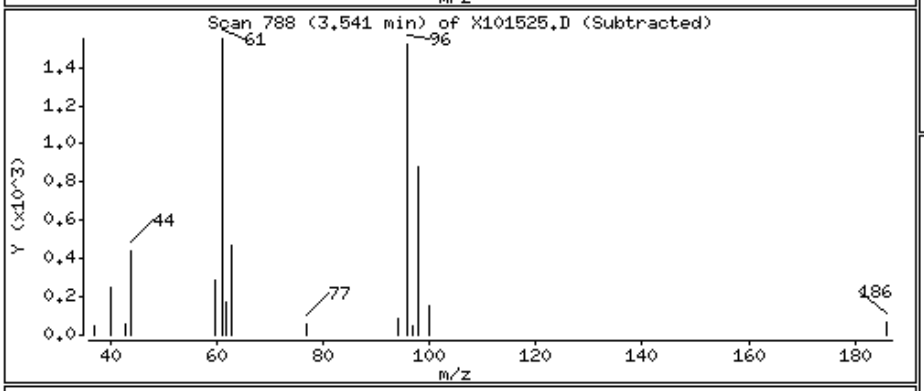
Sample Info: HS22100577-03;HS22100577-03;;;

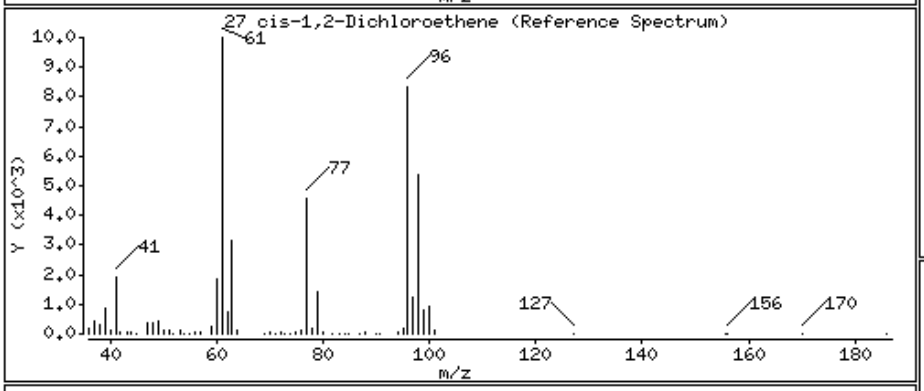
Purge Volume: 5.0 Operator: PC

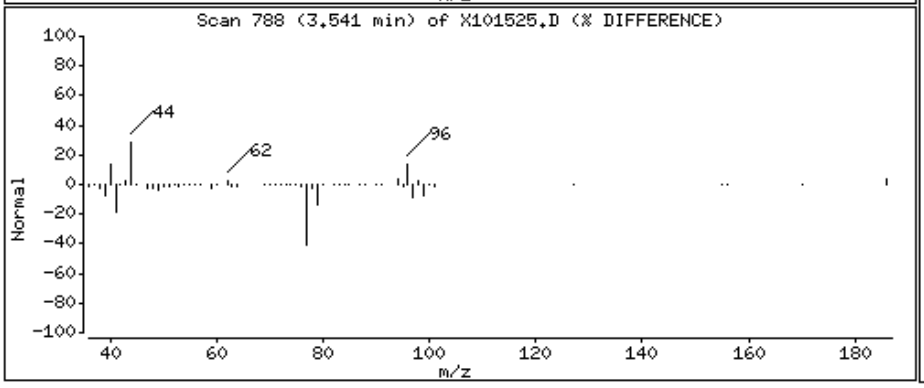
Column phase: DB624 Column diameter: 0.18

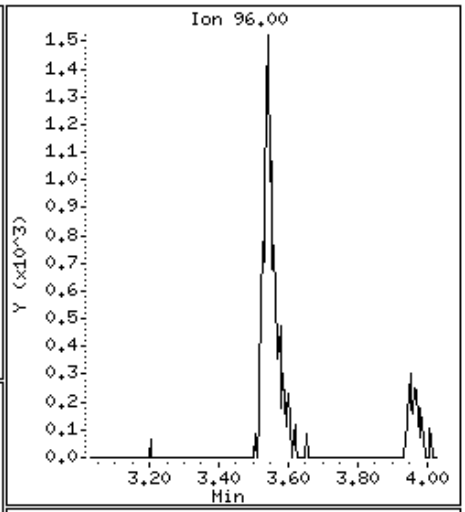
27 cis-1,2-Dichloroethene Concentration: 60.41 ug/l

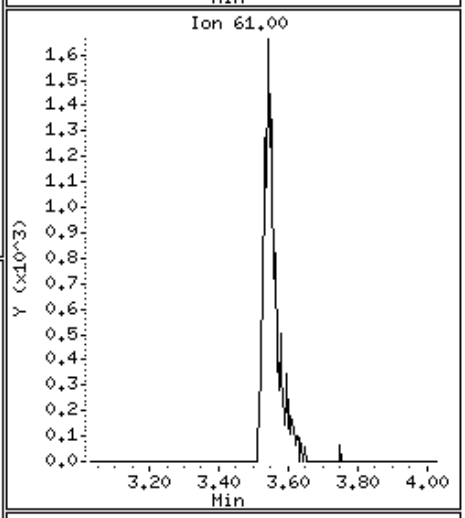


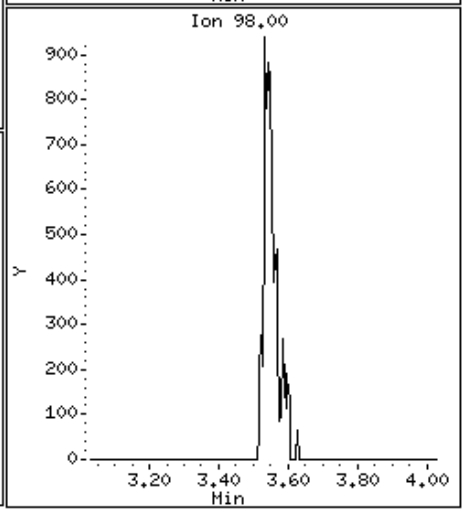












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101525.D Page 3

Date : 15-OCT-2022 19:29

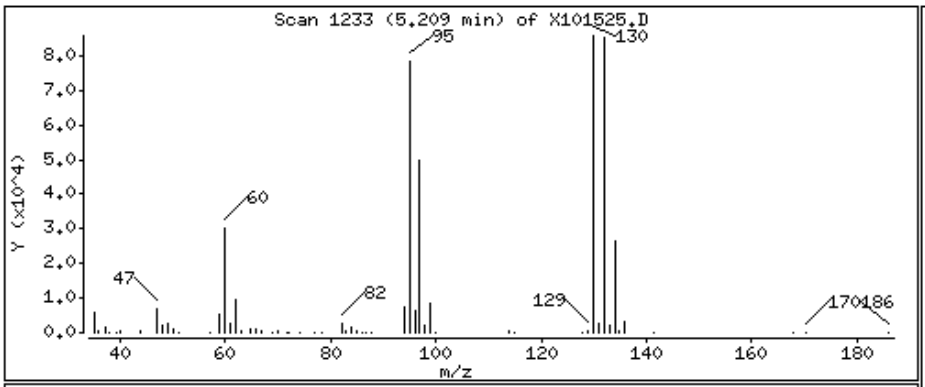
Client ID: HS22100577-03 Instrument: voa6.i

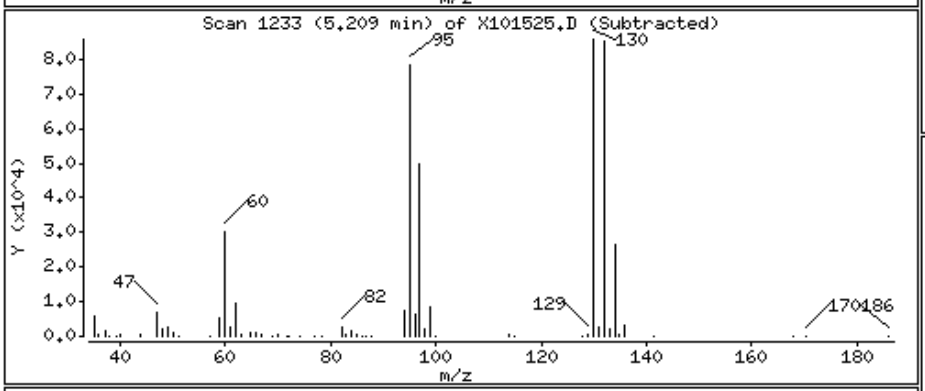
Sample Info: HS22100577-03;HS22100577-03;;;

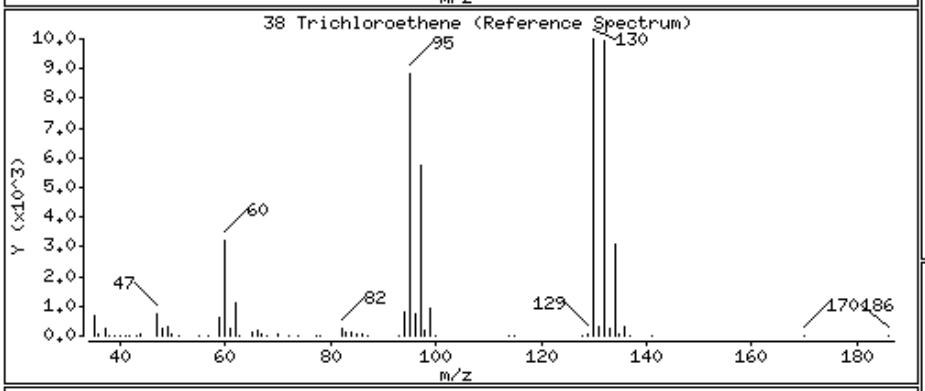
Purge Volume: 5.0 Operator: PC

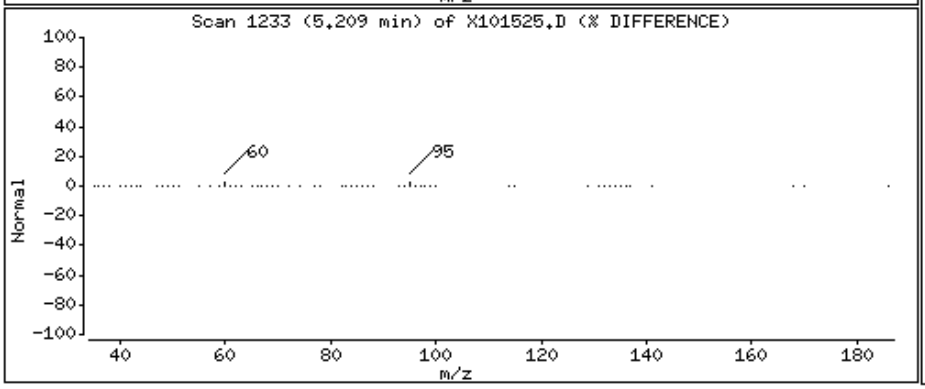
Column phase: DB624 Column diameter: 0.18

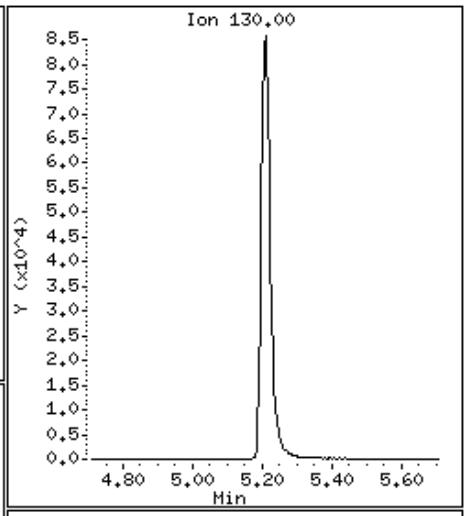
38 Trichloroethene Concentration: 3132.96 ug/l

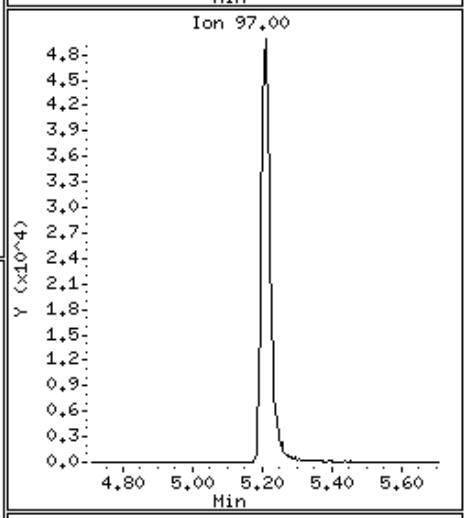


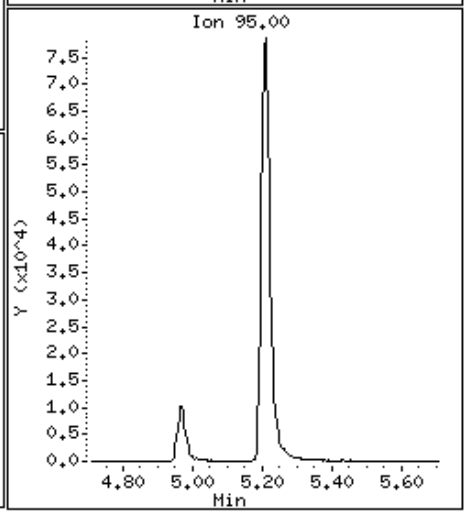












Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101525.D
Inj Date : 15-OCT-2022 19:29
InstruID : voa6.i
LabSampID : HS22100577-03

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101526.D Page 1
Report Date: 28-Oct-2022 16:22

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101526.D
Lab Smp Id: HS22100577-02 Client Smp ID: HS22100577-02
Inj Date : 15-OCT-2022 19:50
Operator : PC Inst ID: voa6.i
Smp Info : HS22100577-02;HS22100577-02;;;
Misc Info : HS22052000V6;WATER;0;25;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:22 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 26
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

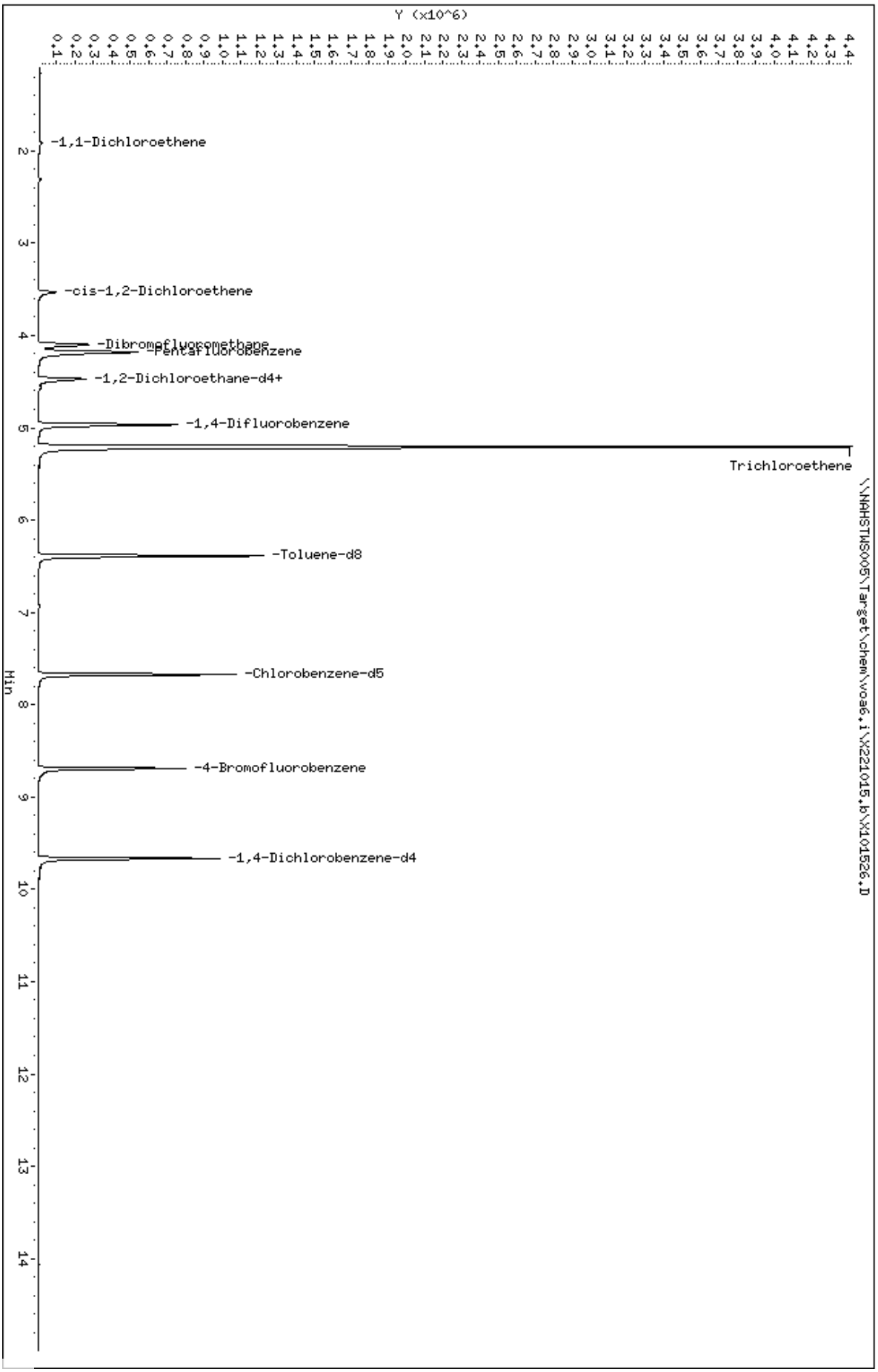
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.181	4.181	(1.000)	505032	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.103	(0.981)	201750	44.2790	44.27
$ 35 1,2-Dichloroethane-d4	65	4.470	4.474	(1.069)	197910	43.9704	43.97
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	675474	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	597525	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	789716	52.7371	52.73
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	257039	48.2091	48.20
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	279572	50.0000	
11 1,1-Dichloroethene	96	1.917	1.917	(0.459)	1877	0.57463	14.36(a)
27 cis-1,2-Dichloroethene	96	3.533	3.529	(0.845)	58872	11.1604	279.00
33 1,2-Dichloroethane	62	4.564	4.556	(0.919)	9177	1.84122	46.03(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	1587566	312.468	7811.69(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.



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101526.D
Date : 15-OCT-2022 19:50
Client ID: HS22100577-02
Sample Info: HS22100577-02;HS22100577-02;;;
Purge Volume: 5.0
Column phase: DB624

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

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101526.D Page 2

Date : 15-OCT-2022 19:50

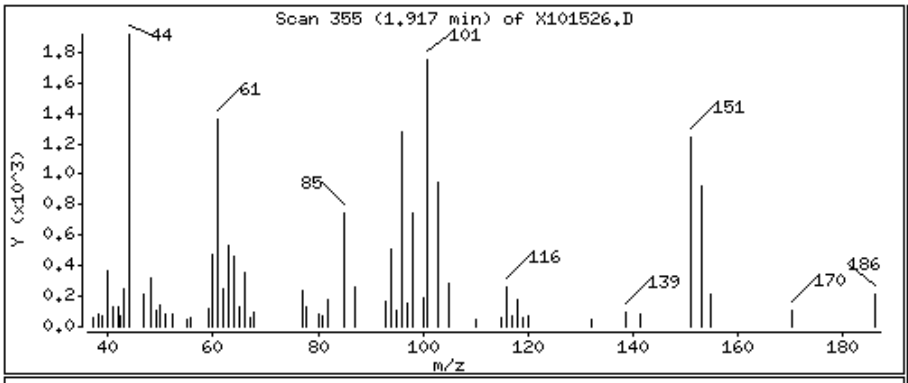
Client ID: HS22100577-02 Instrument: voa6.i

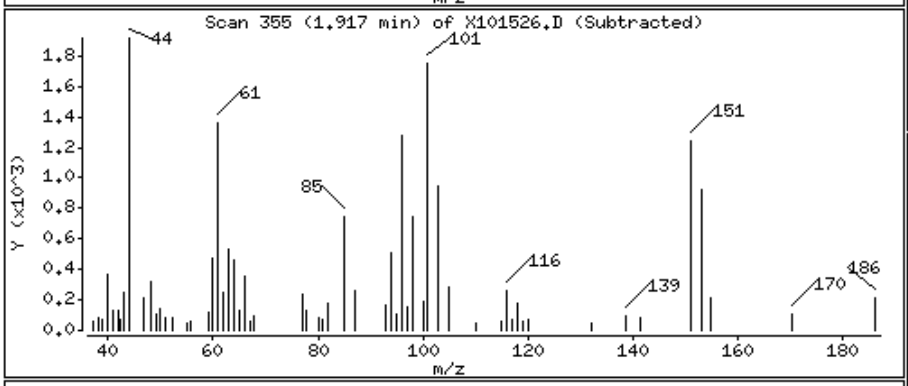
Sample Info: HS22100577-02;HS22100577-02;;;

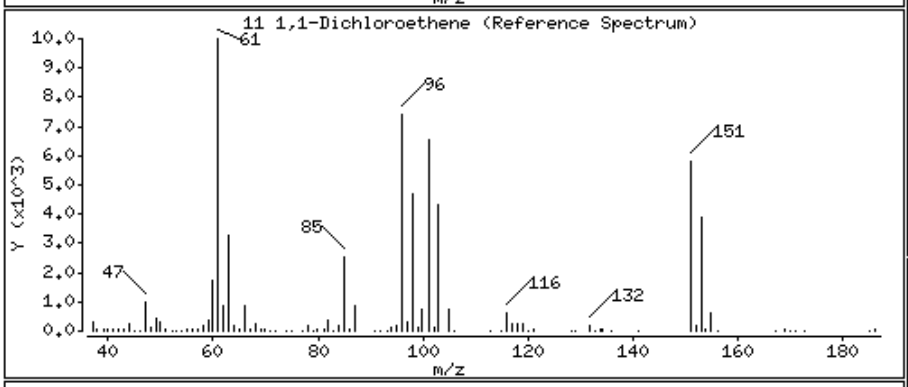
Purge Volume: 5.0 Operator: PC

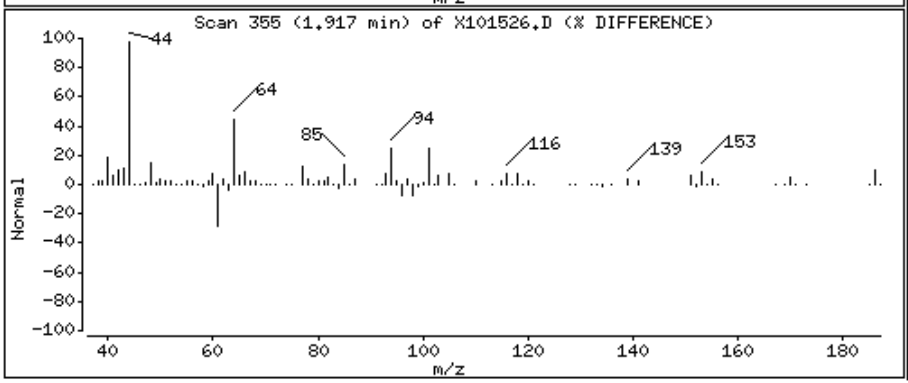
Column phase: DB624 Column diameter: 0.18

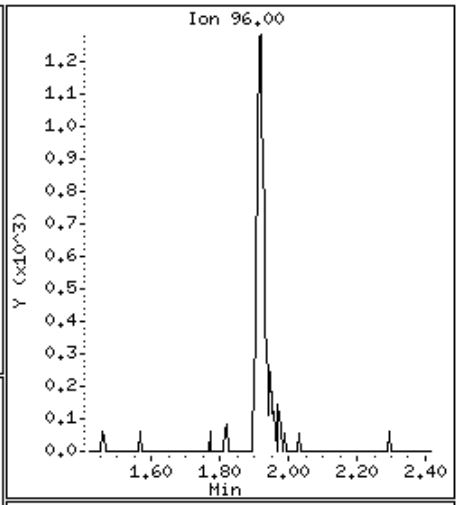
11 1,1-Dichloroethene Concentration: 14.36 ug/l

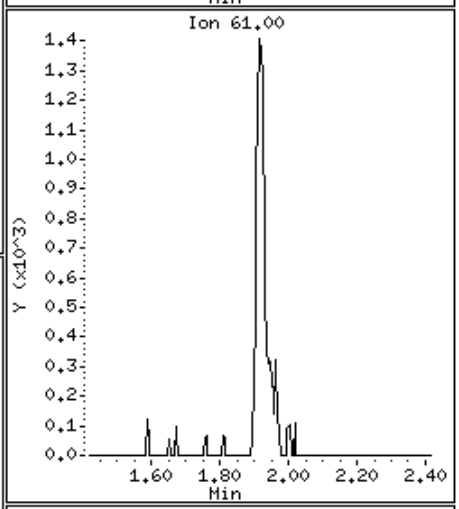


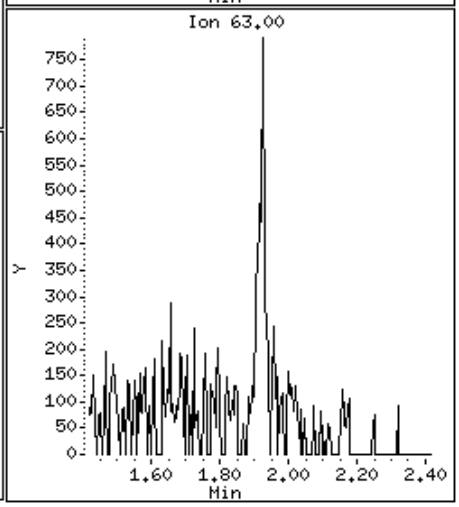












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101526.D Page 3

Date : 15-OCT-2022 19:50

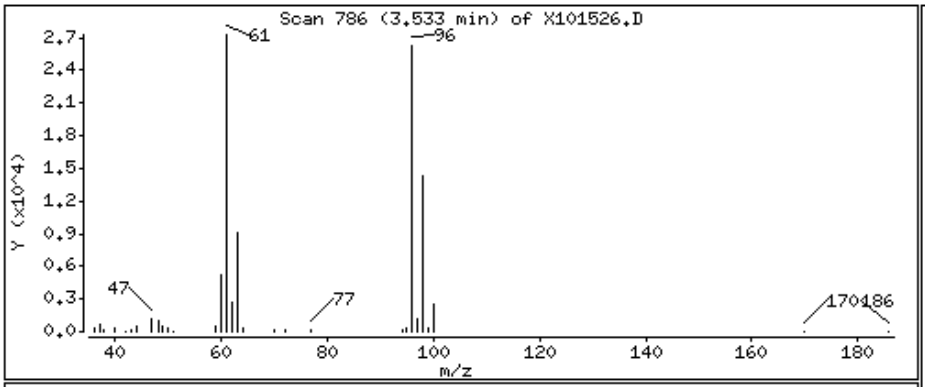
Client ID: HS22100577-02 Instrument: voa6.i

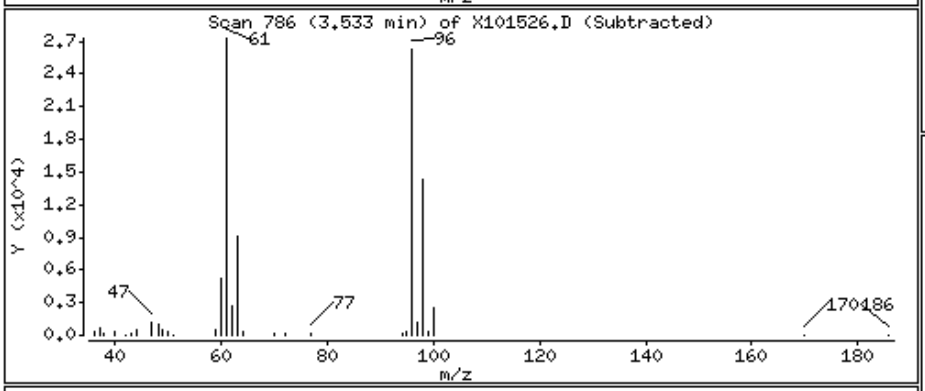
Sample Info: HS22100577-02;HS22100577-02;;;

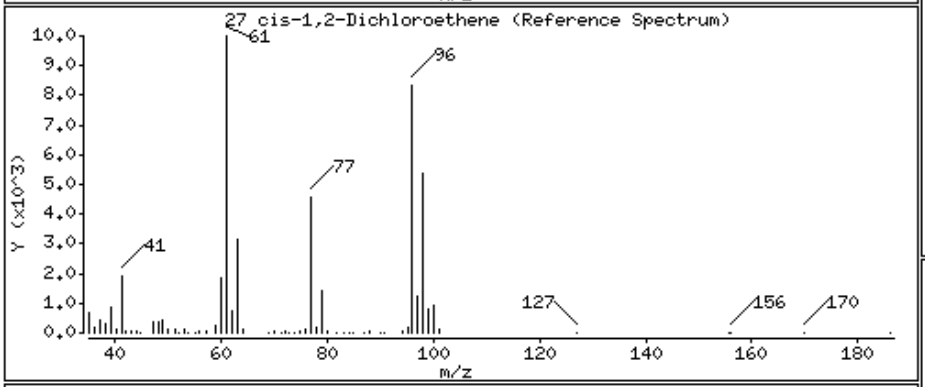
Purge Volume: 5.0 Operator: PC

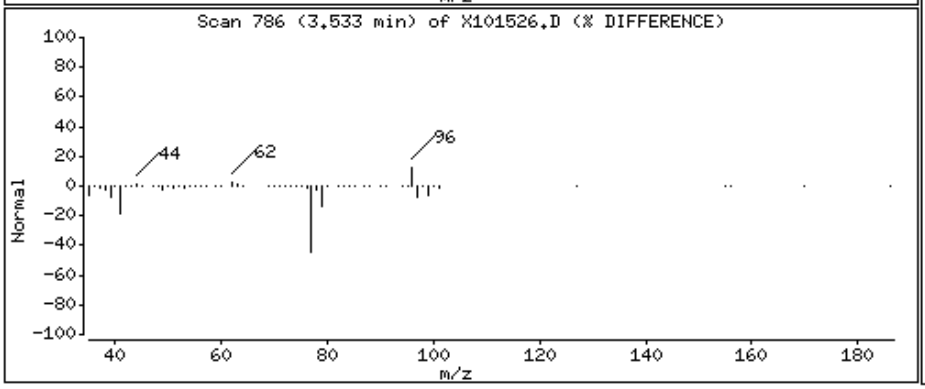
Column phase: DB624 Column diameter: 0.18

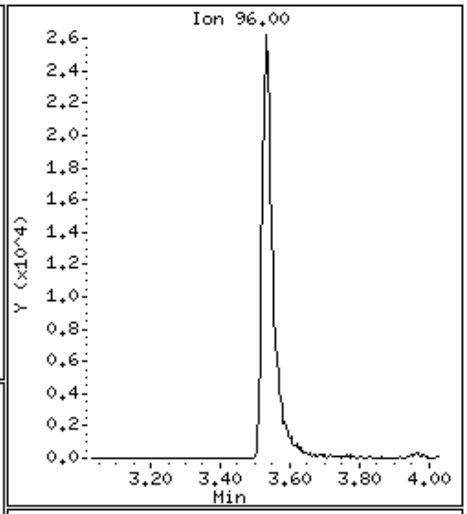
27 cis-1,2-Dichloroethene Concentration: 279.00 ug/l

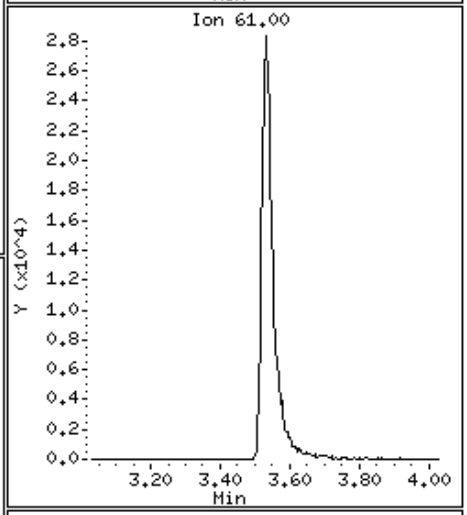


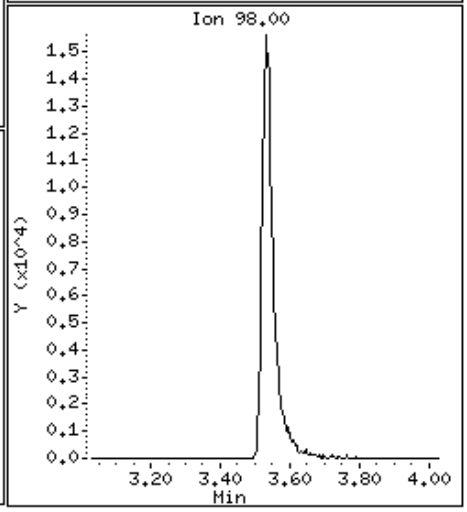












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101526.D Page 4

Date : 15-OCT-2022 19:50

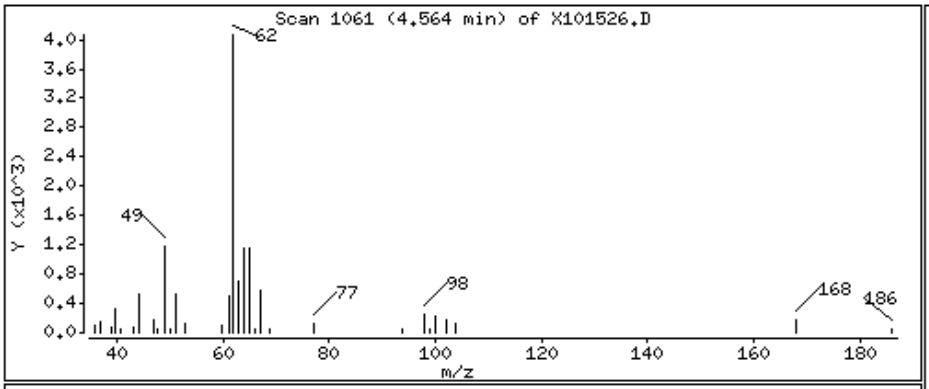
Client ID: HS22100577-02 Instrument: voa6.i

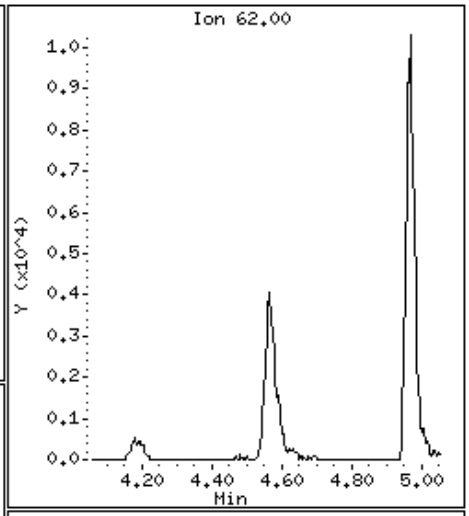
Sample Info: HS22100577-02;HS22100577-02;;;

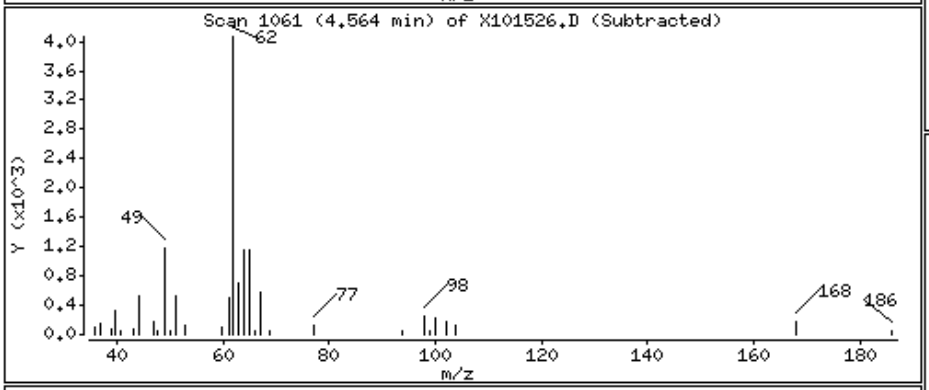
Purge Volume: 5.0 Operator: PC

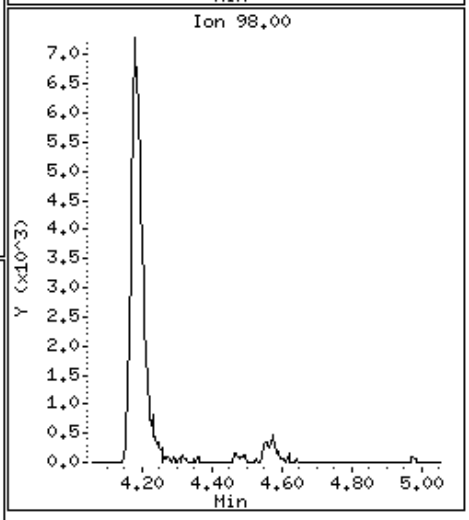
Column phase: DB624 Column diameter: 0.18

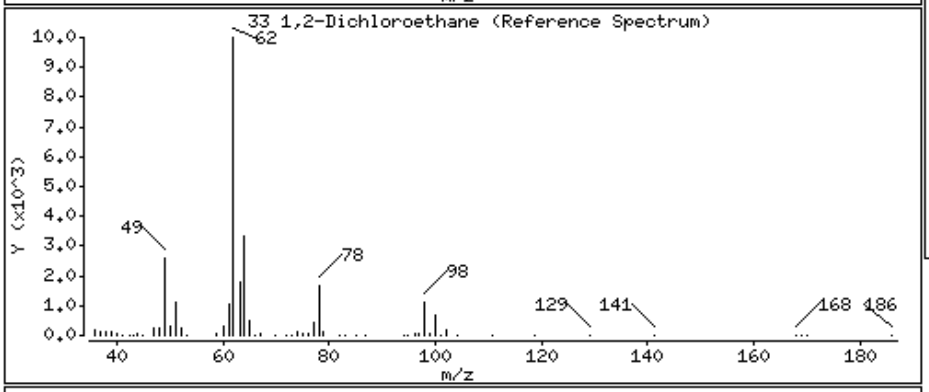
33 1,2-Dichloroethane Concentration: 46.03 ug/l

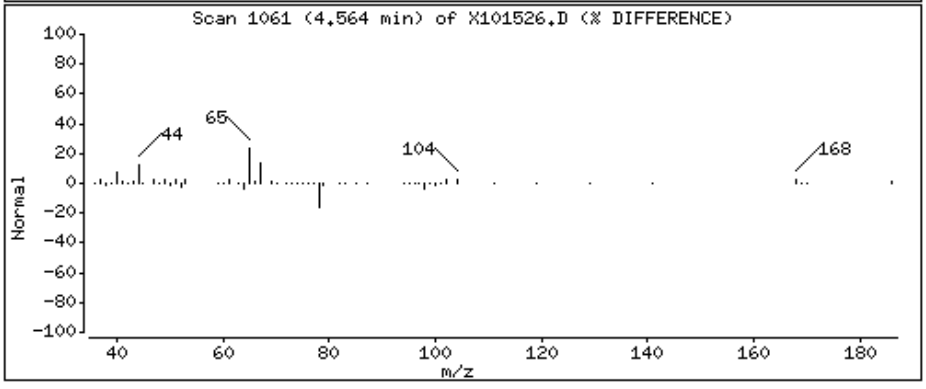












Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101526.D Page 5

Date : 15-OCT-2022 19:50

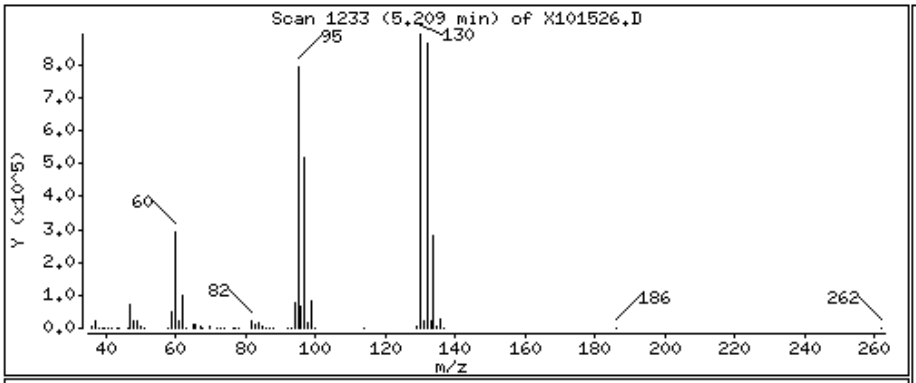
Client ID: HS22100577-02 Instrument: voa6.i

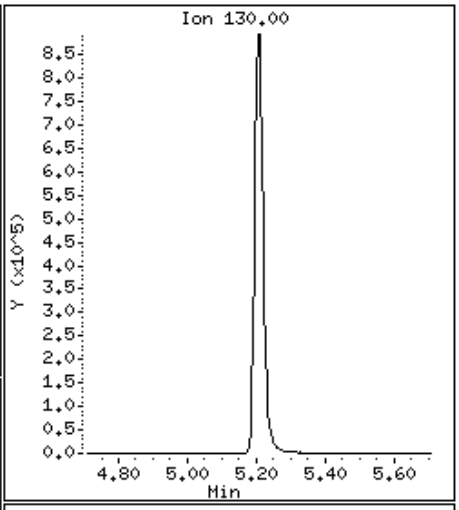
Sample Info: HS22100577-02;HS22100577-02;;;

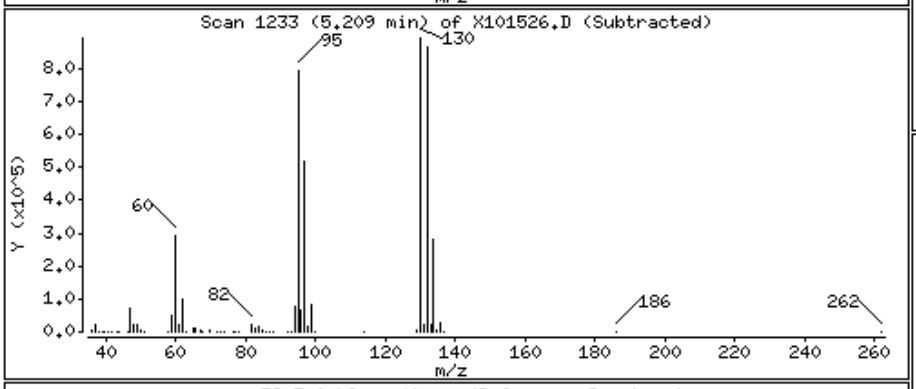
Purge Volume: 5.0 Operator: PC

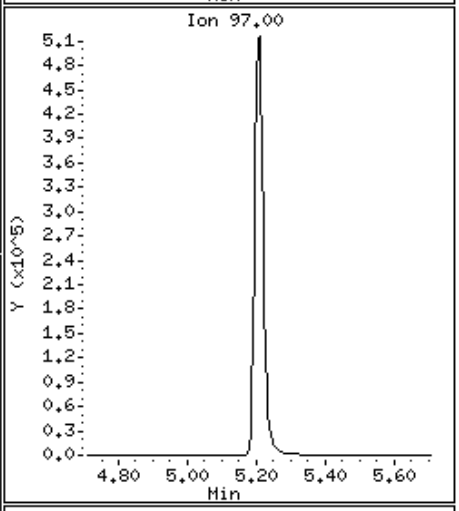
Column phase: DB624 Column diameter: 0.18

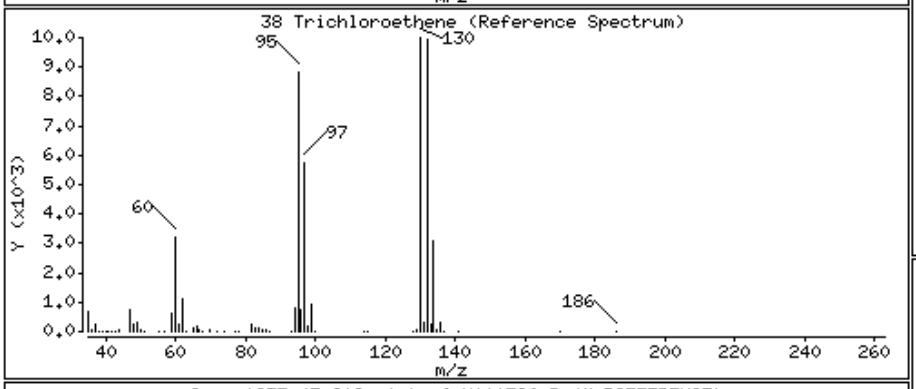
38 Trichloroethene Concentration: 7811.69 ug/l

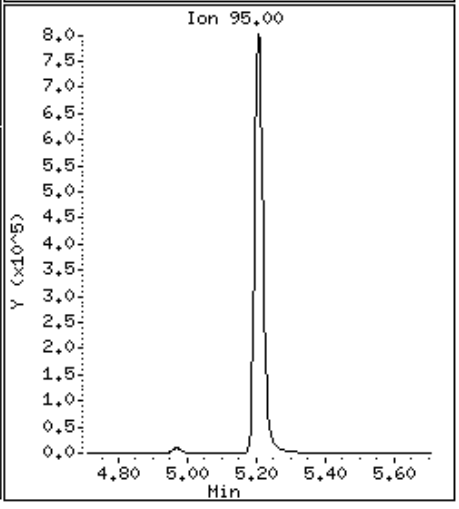


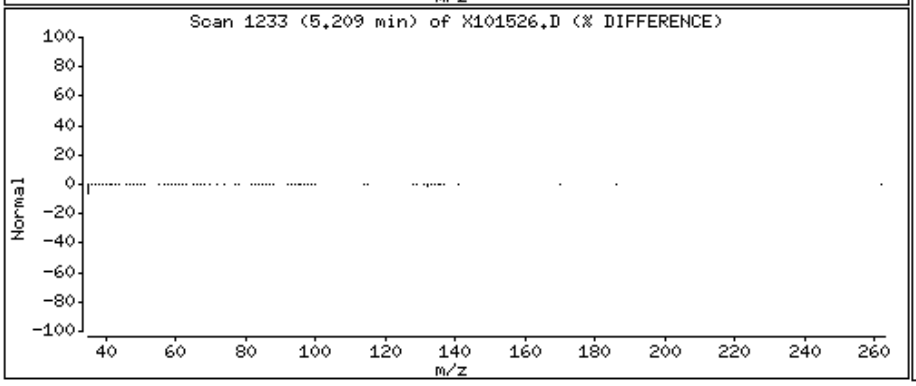












Data File : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101526.D
Inj Date : 15-OCT-2022 19:50
InstruID : voa6.i
LabSampID : HS22100577-02

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101527.D Page 1
Report Date: 28-Oct-2022 16:22

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101527.D
Lab Smp Id: HS22100577-02 Client Smp ID: HS22100577-02
Inj Date : 15-OCT-2022 20:11
Operator : PC Inst ID: voa6.i
Smp Info : HS22100577-02;HS22100577-02;;;
Misc Info : HS22052000V6;WATER;0;250;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X221015.b\8260W.m
Meth Date : 28-Oct-2022 16:22 voa6.i Quant Type: ISTD
Cal Date : 14-OCT-2022 13:53 Cal File: X101408.D
Als bottle: 27
Dil Factor: 250.00000
Integrator: HP RTE Compound Sublist: 0575-dod.sub
Target Version: 4.14
Processing Host: NAHSTW7017

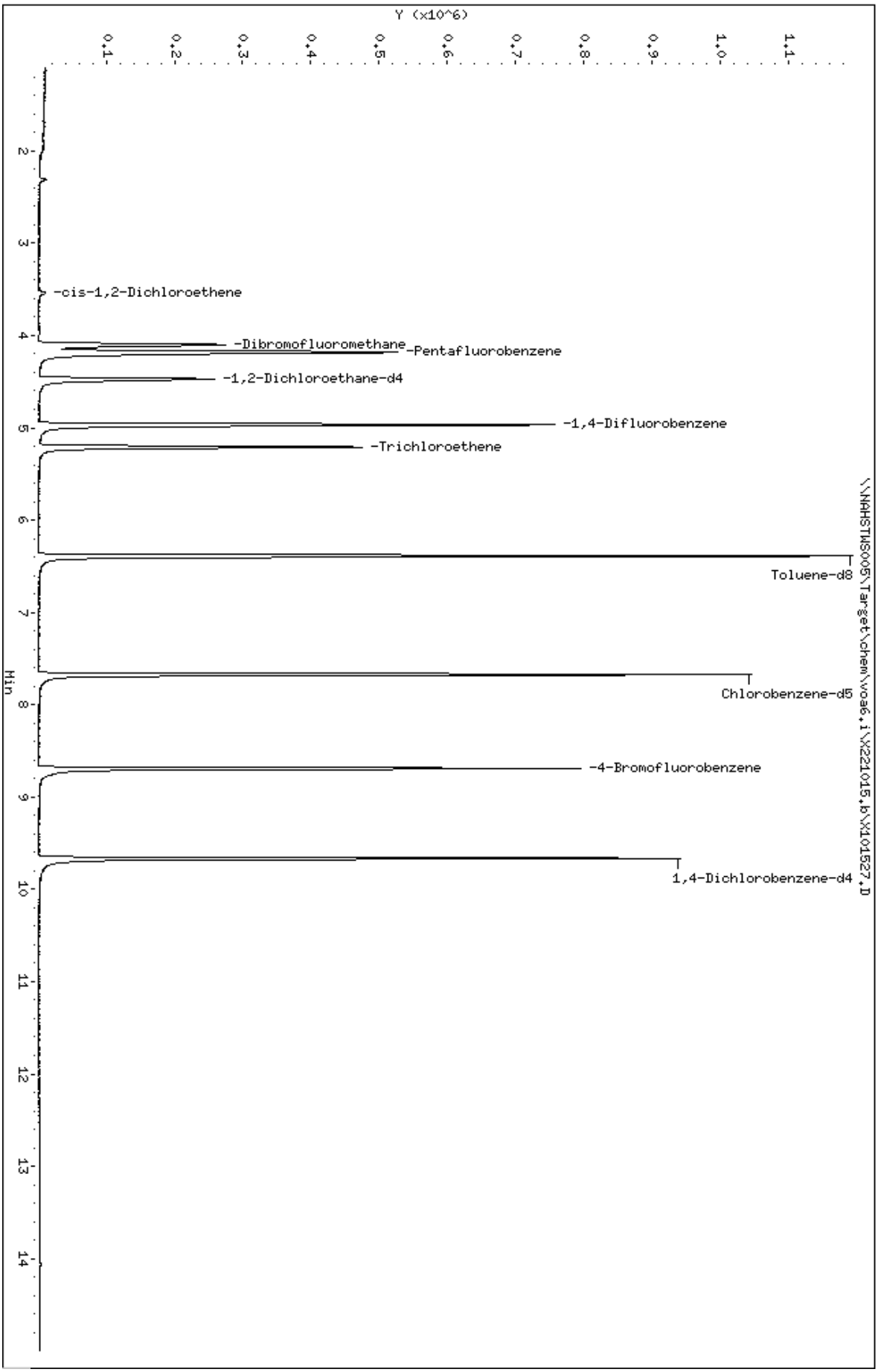
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.181	4.181	(1.000)	503311	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.103	(0.981)	200421	44.1356	44.13
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.070)	194870	43.4337	43.43
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	675366	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	587809	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	777302	52.7661	52.76
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	253877	48.4046	48.40
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	265184	50.0000	
27 cis-1,2-Dichloroethene	96	3.540	3.529	(0.847)	5995	1.14036	285.08(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	175551	34.5578	8639.45

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101527.D
Date : 15-OCT-2022 20:11
Client ID: HS22100577-02
Sample Info: HS22100577-02;HS22100577-02;;;
Purge Volume: 5.0
Column phase: DB624

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

Page 1

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221015.b\X101527.D Page 2

Date : 15-OCT-2022 20:11

Client ID: HS22100577-02 Instrument: voa6.i

Sample Info: HS22100577-02;HS22100577-02;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

27 cis-1,2-Dichloroethene Concentration: 285.08 ug/l

