LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 22

2023

Bate Stamp Numbers
01174150 – 01176151

Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976–2023

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

VOLUME 22

2023

A. Title: (Cont'd) Report—**cont'd** Appendix D, **File 4**—Level IV DoD, Draft Final Second Annual Remedial Action Operation Report, LHAAP-16 Landfill, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, March 2023
Author(s): Department of the Army
Recipient: Environmental Protection Agency and Texas Commission on Environmental Quality
Date: March 17, 2023
Bate Stamp: 01174150 – 01175265

The above Level IV DoD labs were omitted in the previous Admin Record, so that is why they are out of date sequence and added to this April thru June 2023 Admin Record.

B. Title: Work Plan—Draft Final Pre-Design Investigation Work Plan, LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): Department of the Army
Recipient: Environmental Protection Agency and Texas Commission on Environmental Quality
Date: April 4, 2023
Bate Stamp: 01175266 – 01175313

C. Title: Plan—Final Community Involvement Plan, Longhorn Army Ammunition Plant, Harrison County, Texas
Author(s): HGS Government Solutions, LLC
Recipient: U.S. Army Environmental Command (USAEC) and Longhorn Army Ammunition Plant
Date: May 11, 2023
Bate Stamp: 01175314 – 01175387

D. Title: Report—LHAAP-04 Draft Final Third Annual Remediation Action Operation Report, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): Department of the Army
Recipient: Environmental Protection Agency and Texas Commission on Environmental Quality
Date: May 22, 2023
Bate Stamp: 01175388 – 01175877

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

VOLUME 22 (Cont.)

2023

E.	Title:	Report—LHAAP-12 Draft Final 2022 Remediation Action Operation Report, Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	Department of the Army
	Recipient:	Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	June 6, 2023
	Bate Stamp:	01175878 – 01175997

F.	Title:	(Cont'd) Report—cont'd Appendix D, Level IV DoD, LHAAP-12 Draft Final 2022 Remediation Action Operation Report, Longhorn Army Ammunition Plant, Karnack, Texas
	Author(s):	Department of the Army
	Recipient:	Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	June 6, 2023
	Bate Stamp:	01175998 – 01176151

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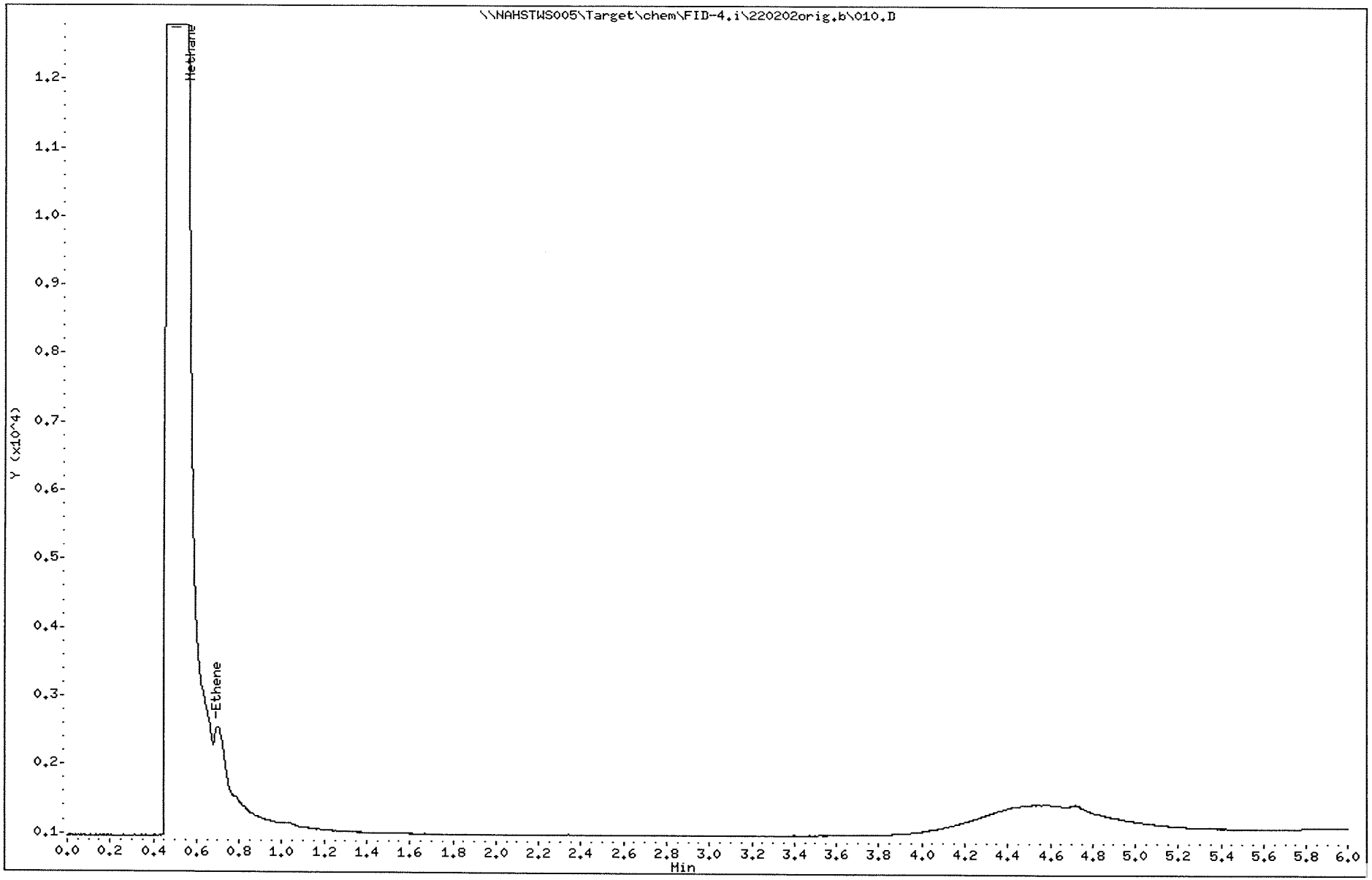
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Operator: PL

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Report Date: 08-Feb-2022 11:29

ALS Laboratory Group

Dissolved Gases Analysis

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Als bottle: 10
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.473	0.473	0.000	1562140	1602.21	1602.207(A)

QC Flag Legend

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

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Date : 02-FEB-2022 11:14

Client ID: HS22011151-15

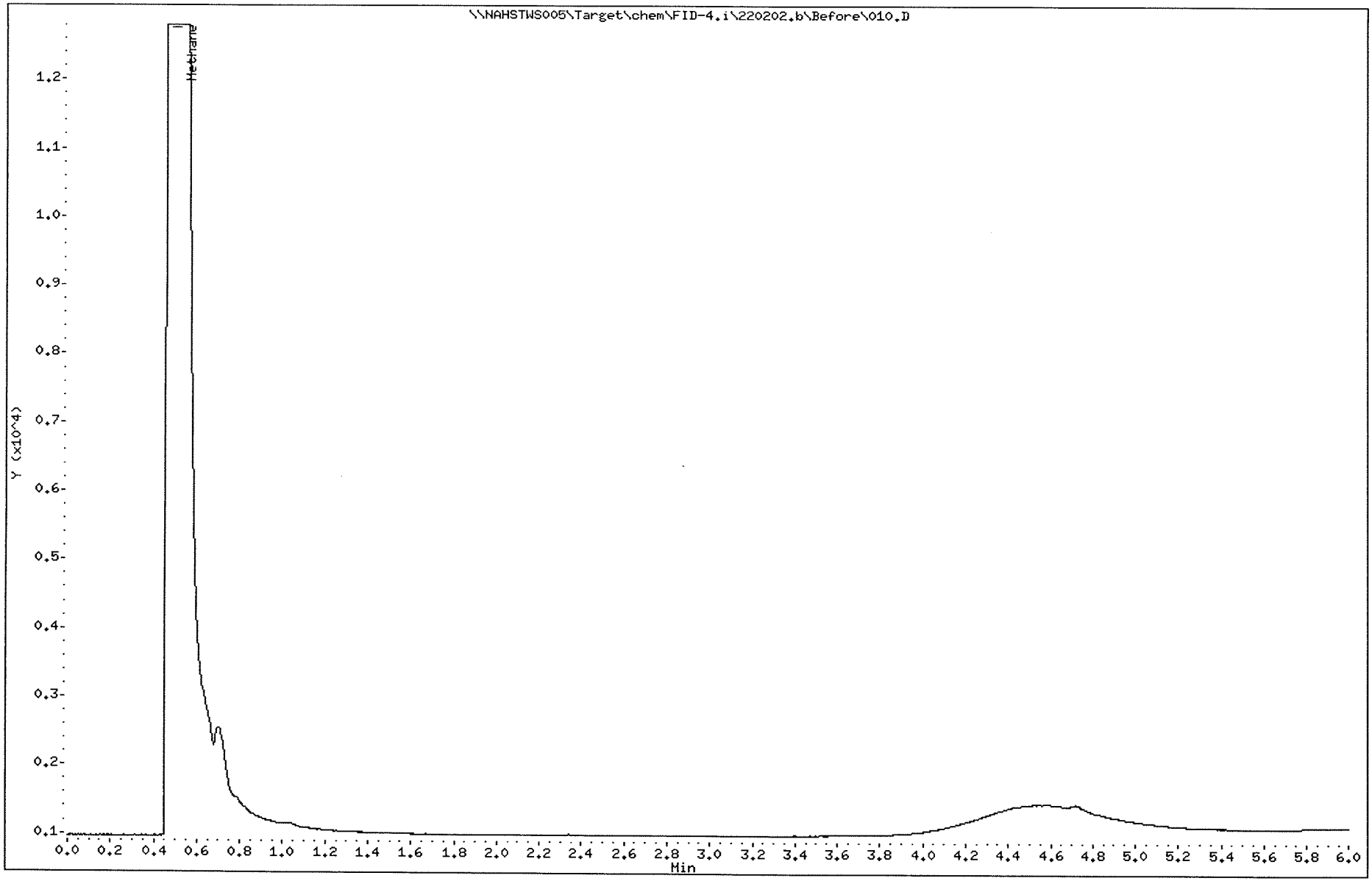
Instrument: FID-4.i

Sample Info: HS22011151-15;HS22011151-15

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

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Smp Info : RSK-CCV;RSK-CCV;2;4
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Comment :
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Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 11 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					AMOUNTS	
					CAL-AMT	ON-COL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.453	0.453	0.000	10389	9.64700	10.655
2 Ethene	0.696	0.696	0.000	9342	16.8500	15.948
3 Ethane	0.776	0.776	0.000	13994	18.0430	19.449(M)

QC Flag Legend

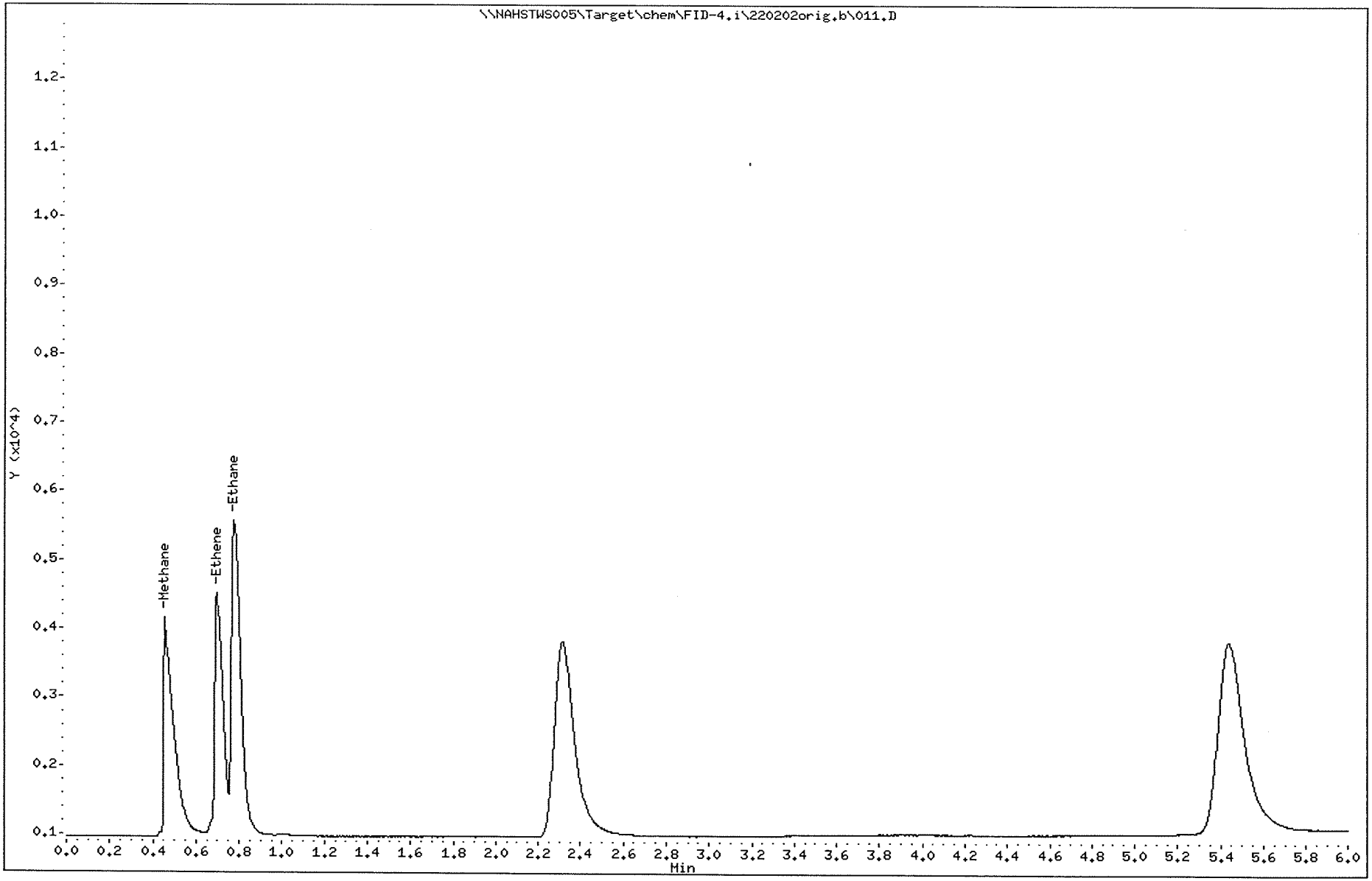
M - Compound response manually integrated.

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Date : 02-FEB-2022 11:30
Client ID: RSK-CCV
Sample Info: RSK-CCV;RSK-CCV;2;4

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

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Smp Info : RSK-CCV;RSK-CCV;2;4
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Comment :
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Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 11 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

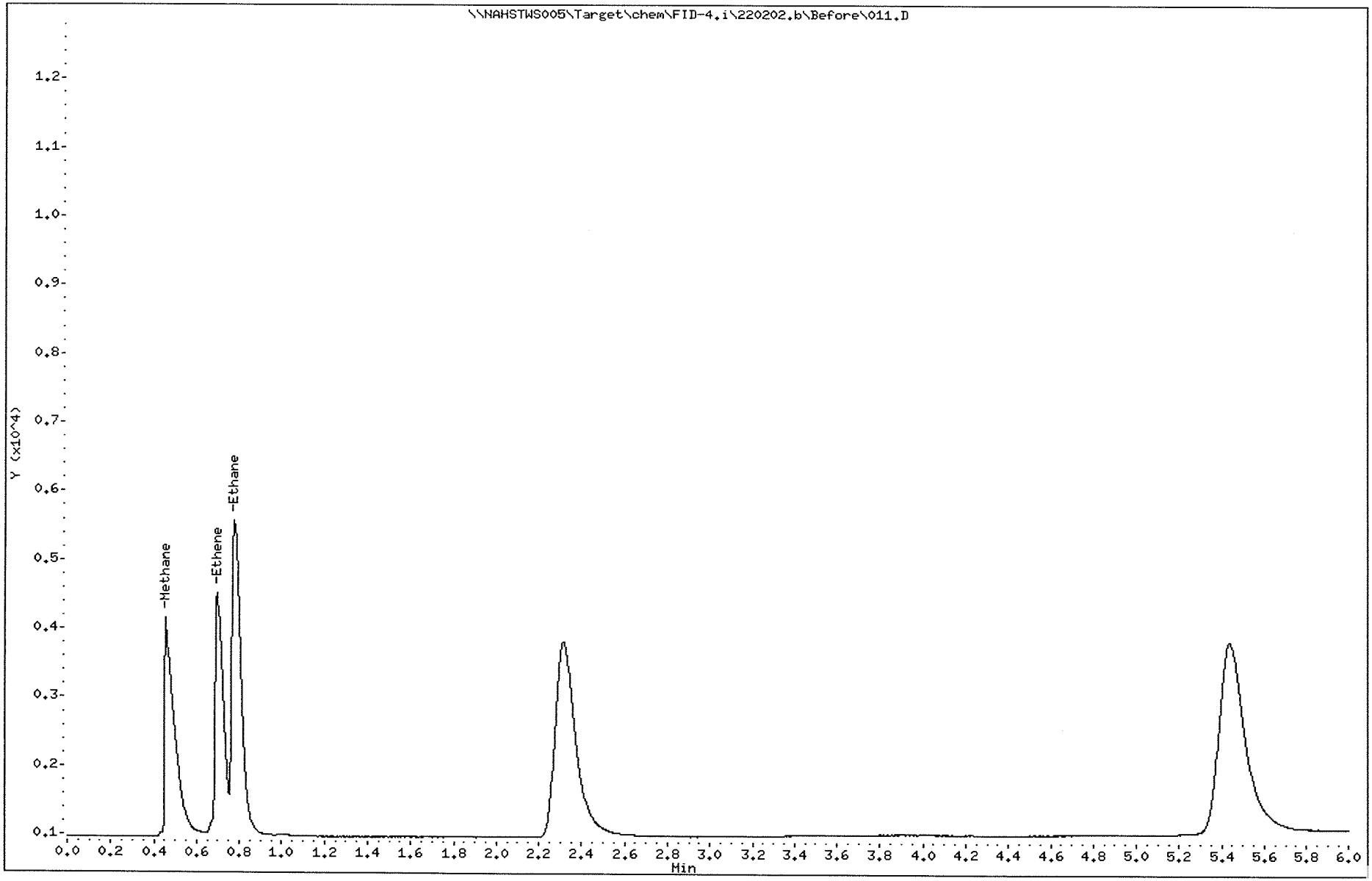
Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Methane	0.453	0.473	-0.020	10331	9.64700	10.595
2 Ethene	0.696	0.713	-0.017	9246	16.8500	15.784
3 Ethane	0.776	0.793	-0.017	14036	18.0430	19.508

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\011.D
Date : 02-FEB-2022 11:30
Client ID: RSK-CCV
Sample Info: RSK-CCV;RSK-CCV;2;4

Instrument: FID-4.i
Operator: PL
Column diameter: 0.53

Column phase: Rtx-PLOT



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\012.D Page 1
Report Date: 08-Feb-2022 11:21

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\012.D
Lab Smp Id: HS22011151-12 Client Smp ID: HS22011151-12
Inj Date : 02-FEB-2022 11:40
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011151-12;HS22011151-12
Misc Info : ;1;0;1
Comment :
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Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 12
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.470	0.453	0.017	317000	325.131	325.130(A)
2 Ethene	0.713	0.696	0.017	1922	3.28120	3.281(M)

QC Flag Legend

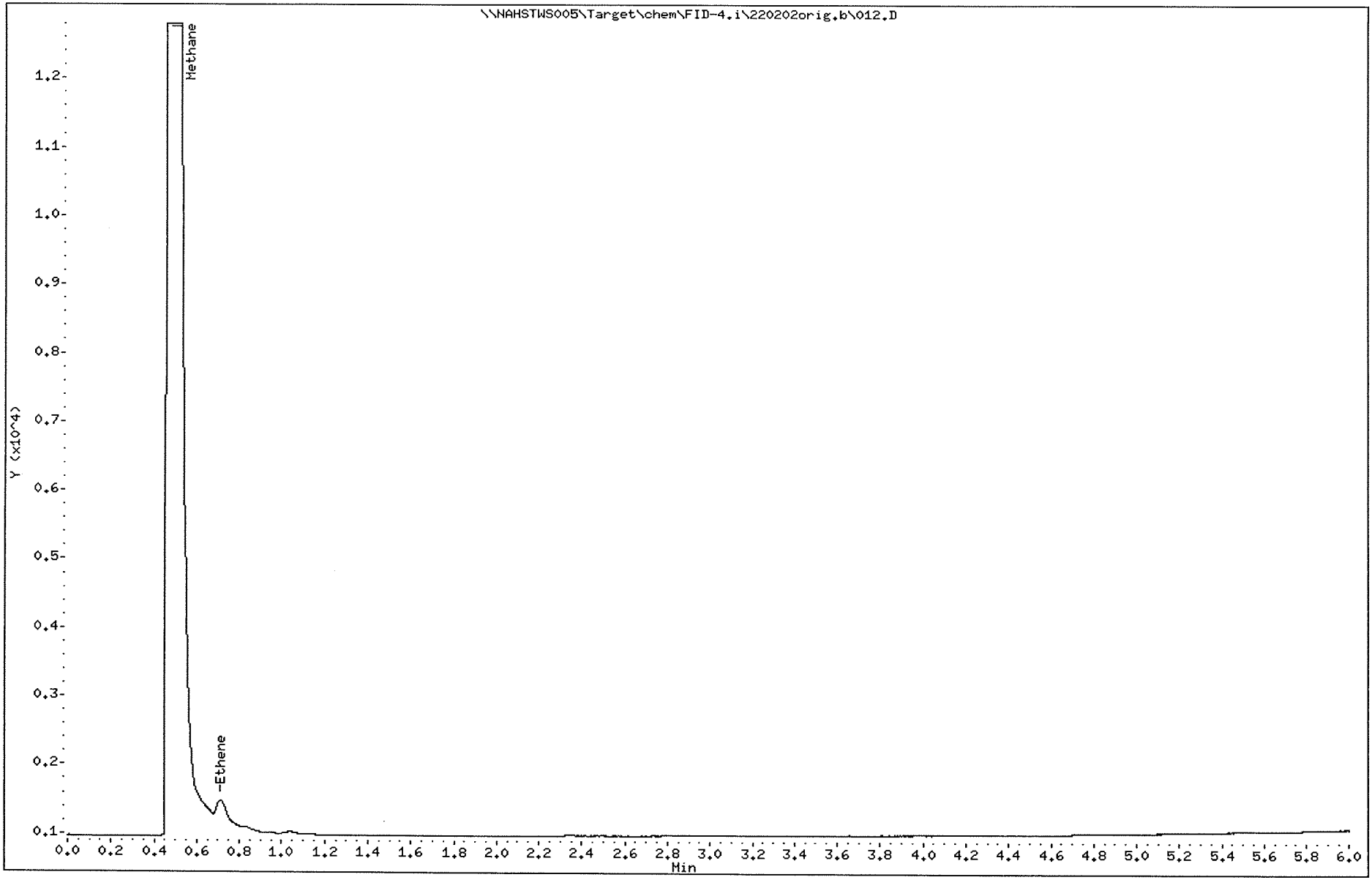
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M - Compound response manually integrated.

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Sample Info: HS22011151-12;HS22011151-12

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

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Operator : PL Inst ID: FID-4.i
Smp Info : HS22011151-12;HS22011151-12
Misc Info : ;1;0;1
Comment :
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Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 12
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.470	0.473	-0.003	317000	325.131	325.130(A)
2 Ethene	0.713	0.713	0.000	3044	5.19666	5.196

QC Flag Legend

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

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\012.D

Date : 02-FEB-2022 11:40

Client ID: HS22011151-12

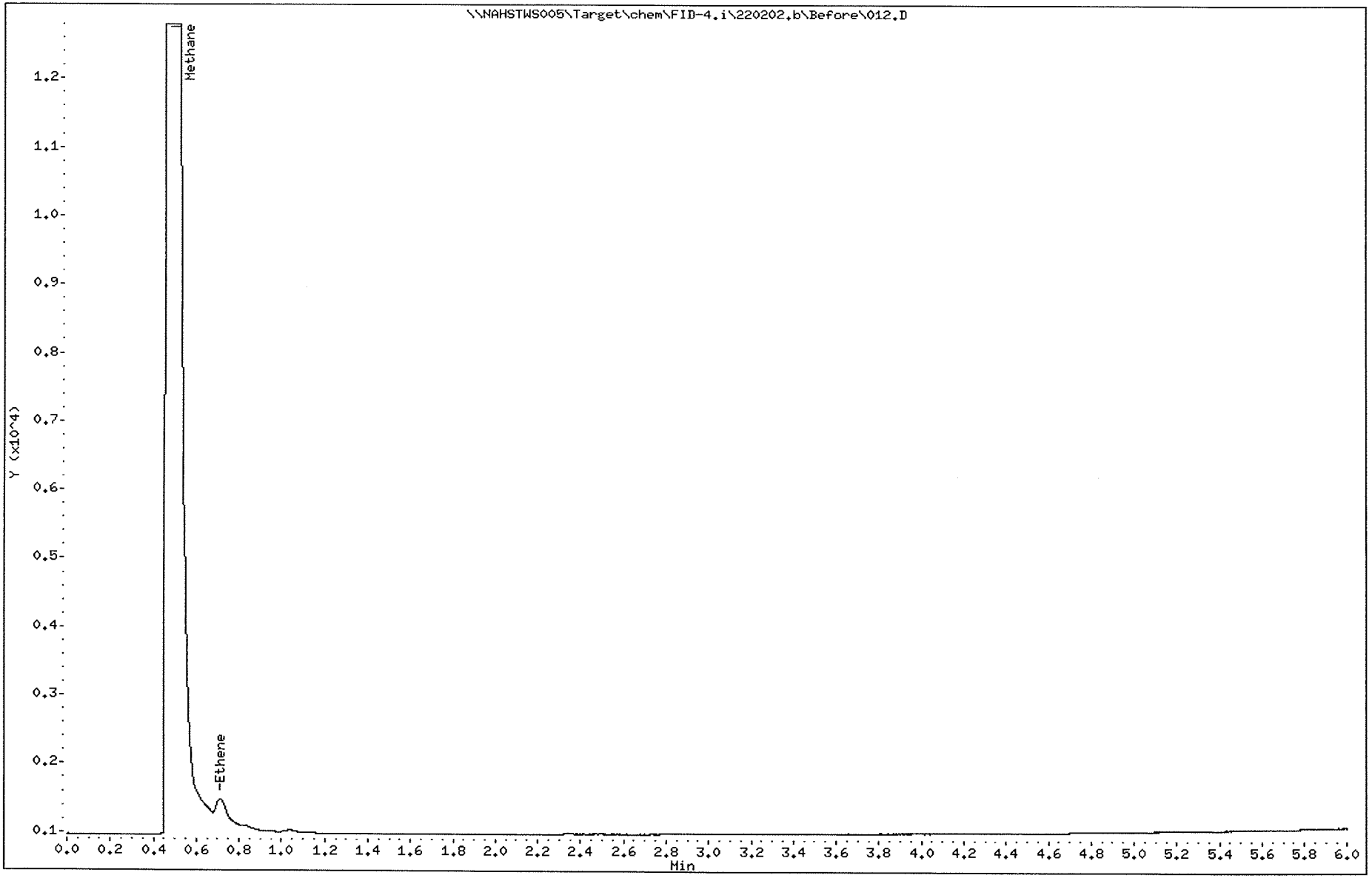
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Sample Info: HS22011151-12;HS22011151-12

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\013.D
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Inj Date : 02-FEB-2022 11:59
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011151-12MS;HS22011151-12MS
Misc Info : ;1;0;1
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Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 13 QC Sample: MS
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.476	0.453	0.023	260099	266.770	266.770(AR)
2 Ethene	0.703	0.696	0.007	5931	10.1253	10.125(R)
3 Ethane	0.786	0.776	0.010	7413	10.3031	10.303(R)

QC Flag Legend

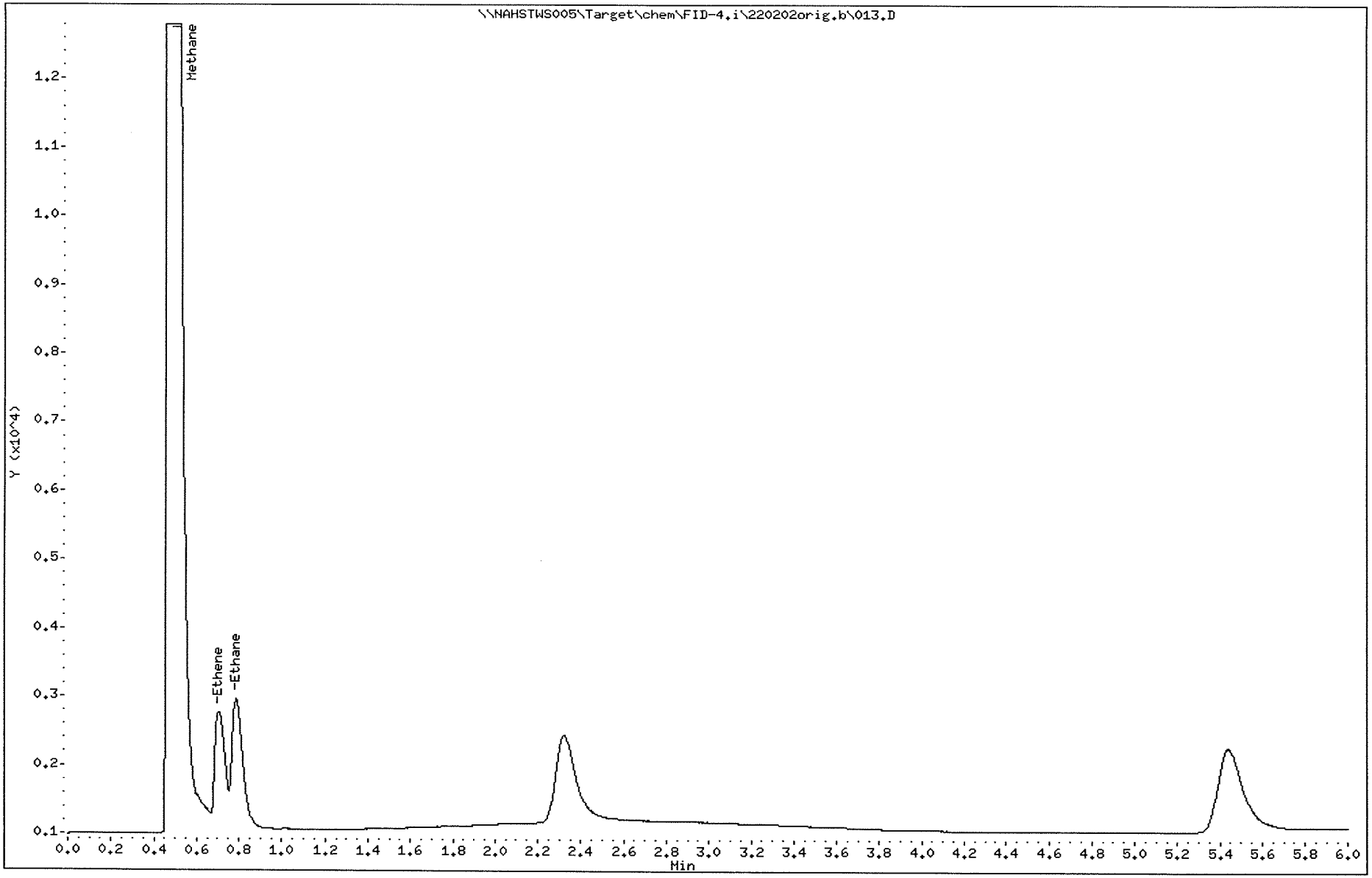
A - Target compound detected but, quantitated amount exceeded maximum amount.
R - Spike/Surrogate failed recovery limits.

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Sample Info: HS22011151-12MS;HS22011151-12MS

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\014.D
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Inj Date : 02-FEB-2022 12:13
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011151-12MSD;HS22011151-12MSD
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 14 QC Sample: MSD
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.476	0.453	0.023	261708	268.421	268.420(AR)
2 Ethene	0.703	0.696	0.007	6100	10.4138	10.413(R)
3 Ethane	0.786	0.776	0.010	7449	10.3532	10.353(RM)

QC Flag Legend

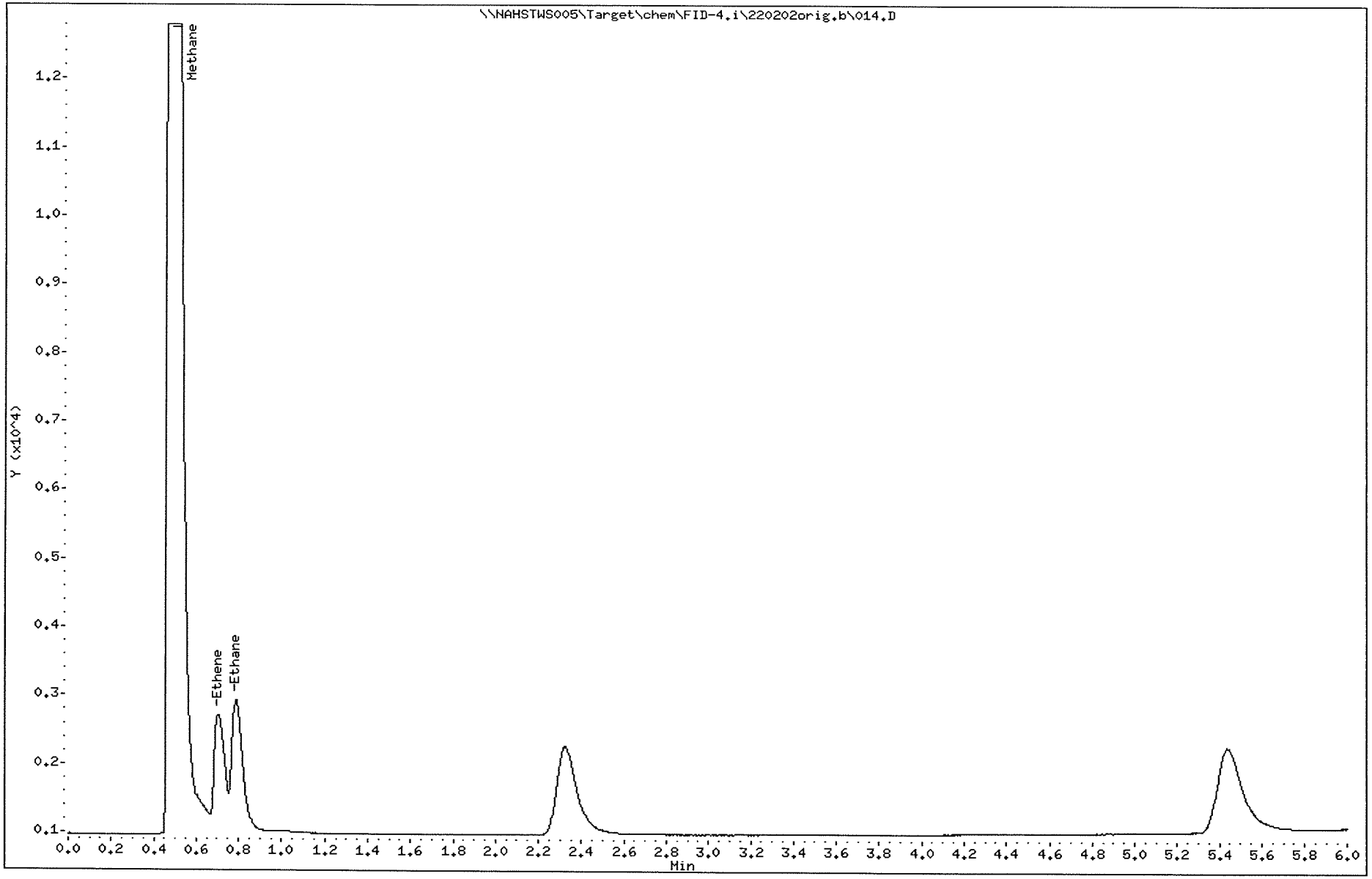
A - Target compound detected but, quantitated amount exceeded maximum amount.
R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

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Sample Info: HS22011151-12MSD;HS22011151-12MSD

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

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Smp Info : HS22011151-12MSD;HS22011151-12MSD
Misc Info : ;1;0;1
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Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 14 QC Sample: MSD
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.476	0.473	0.003	261592	268.302	268.301(AR)
2 Ethene	0.703	0.713	-0.010	5960	10.1748	10.174(R)
3 Ethane	0.786	0.793	-0.007	7465	10.3754	10.375(R)

QC Flag Legend

A - Target compound detected but, quantitated amount
    exceeded maximum amount.
R - Spike/Surrogate failed recovery limits.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\014.D

Date : 02-FEB-2022 12:13

Client ID: HS22011151-12MSD

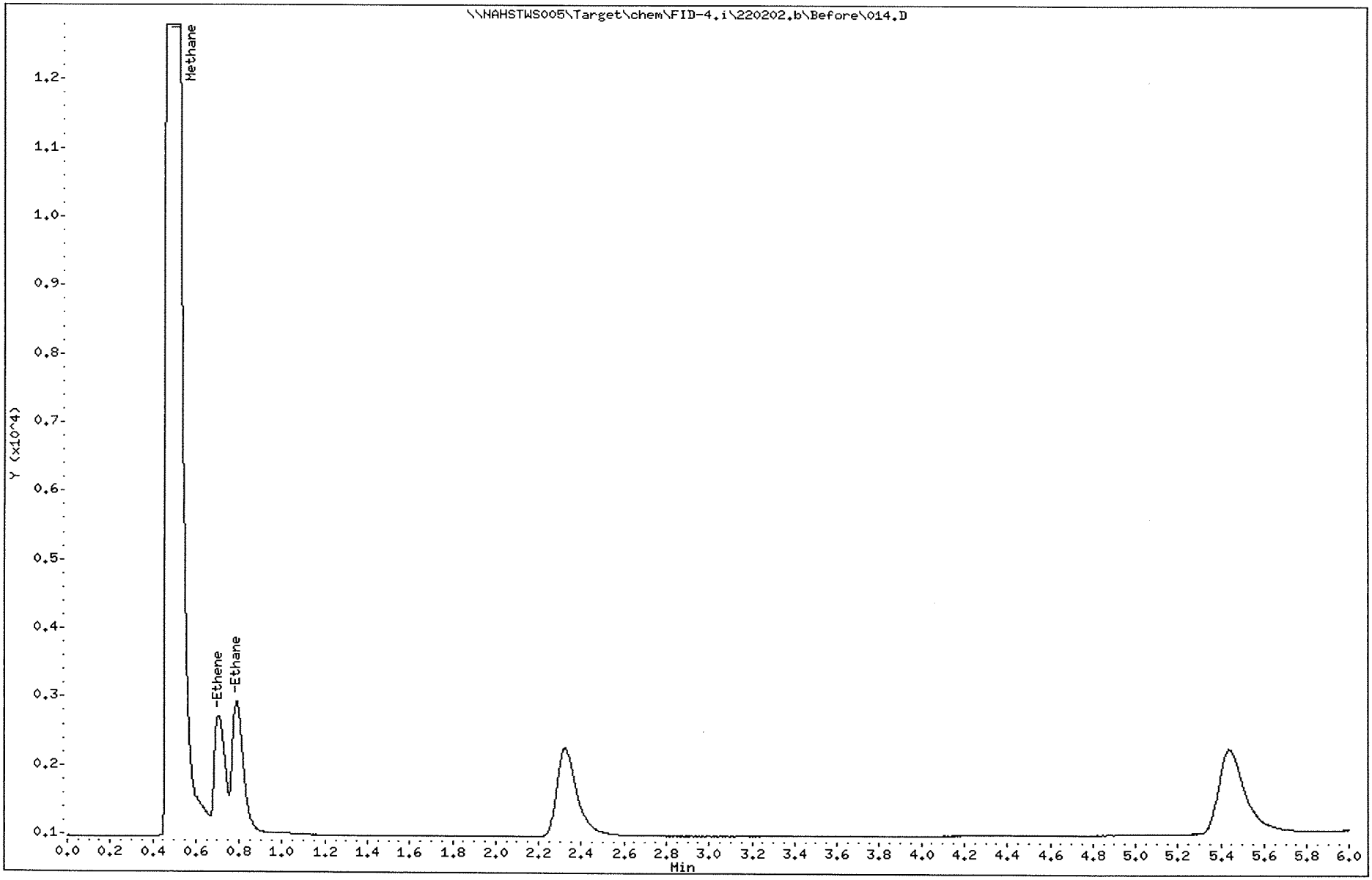
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Sample Info: HS22011151-12MSD;HS22011151-12MSD

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\015.D Page 1
Report Date: 08-Feb-2022 11:21

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\015.D
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Misc Info : ;1;0;50
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Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 15
Dil Factor: 50.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.486	0.453	0.033	18258	18.7263	936.315(M)
3 Ethane	0.816	0.776	0.040	750	1.04241	52.120(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\015.D

Date : 02-FEB-2022 12:30

Client ID: HS22011151-11

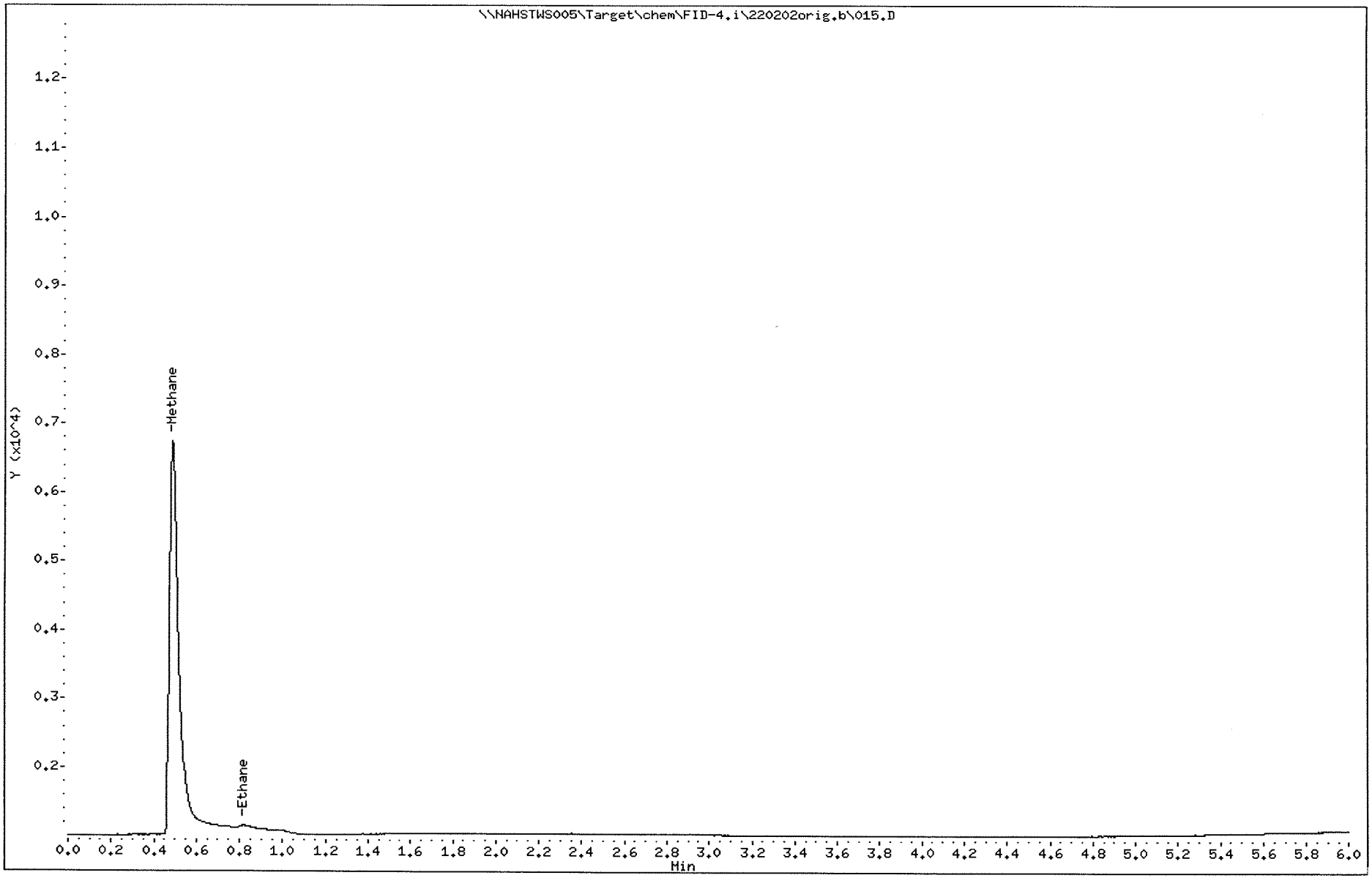
Instrument: FID-4.i

Sample Info: HS22011151-11;HS22011151-11

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

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Smp Info : HS22011151-11;HS22011151-11
Misc Info : ;1;0;50
Comment :
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Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 15
Dil Factor: 50.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
1 Methane	0.486	0.473	0.013	19654	20.1581	1007.905

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Date : 02-FEB-2022 12:30

Client ID: HS22011151-11

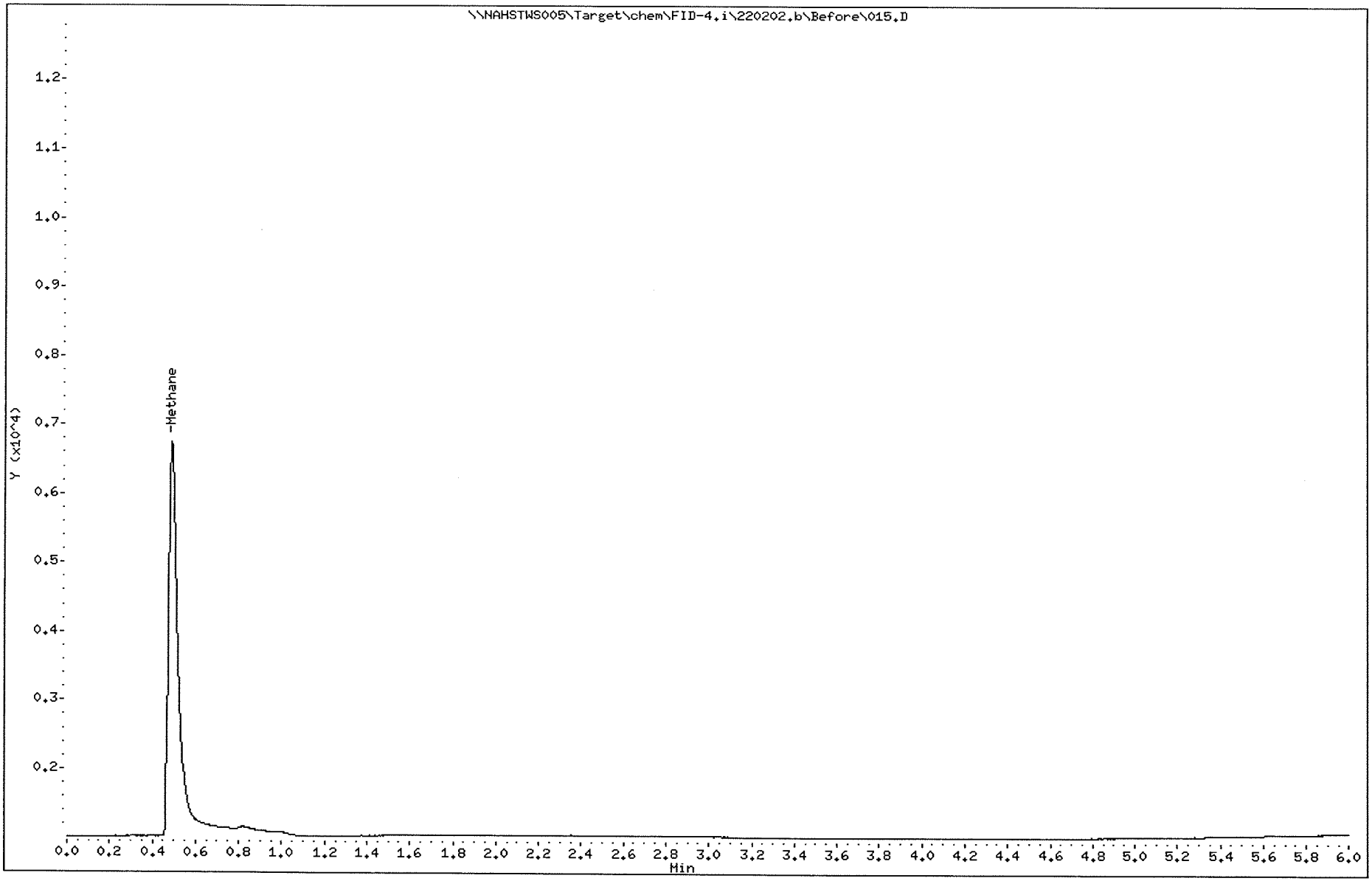
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Sample Info: HS22011151-11;HS22011151-11

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\016.D Page 1
Report Date: 08-Feb-2022 11:21

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\016.D
Lab Smp Id: HS22011151-12 Client Smp ID: HS22011151-12
Inj Date : 02-FEB-2022 12:38
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011151-12;HS22011151-12
Misc Info : ;1;0;25
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 16
Dil Factor: 25.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.486	0.453	0.033	13358	13.7006	342.515(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\016.D

Date : 02-FEB-2022 12:38

Client ID: HS22011151-12

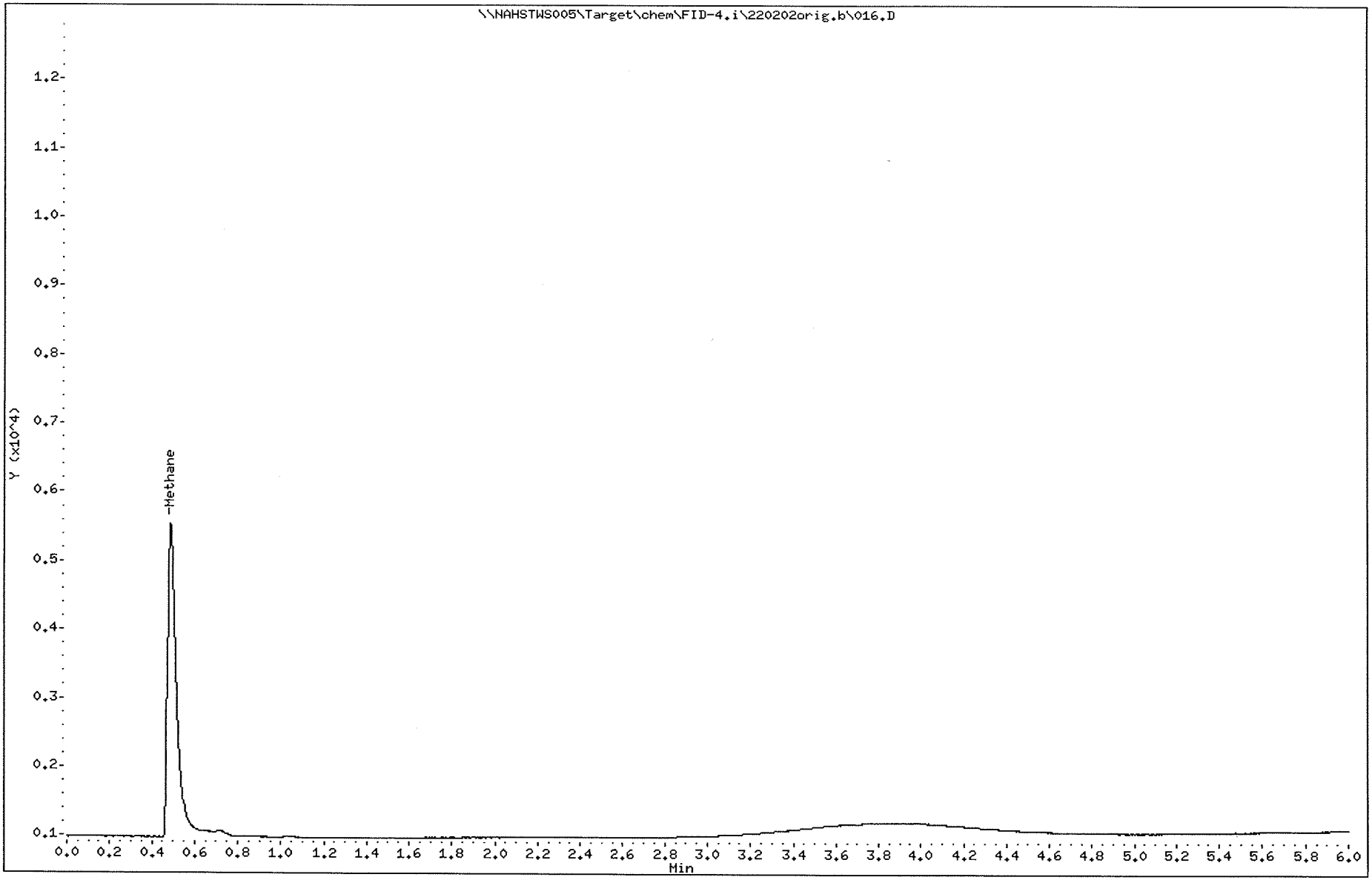
Instrument: FID-4.i

Sample Info: HS22011151-12;HS22011151-12

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\016.D
Lab Smp Id: HS22011151-12 Client Smp ID: HS22011151-12
Inj Date : 02-FEB-2022 12:38
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011151-12;HS22011151-12
Misc Info : ;1;0;25
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 16
Dil Factor: 25.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.486	0.473	0.013	13906	14.2627	356.566

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\016.D

Date : 02-FEB-2022 12:38

Client ID: HS22011151-12

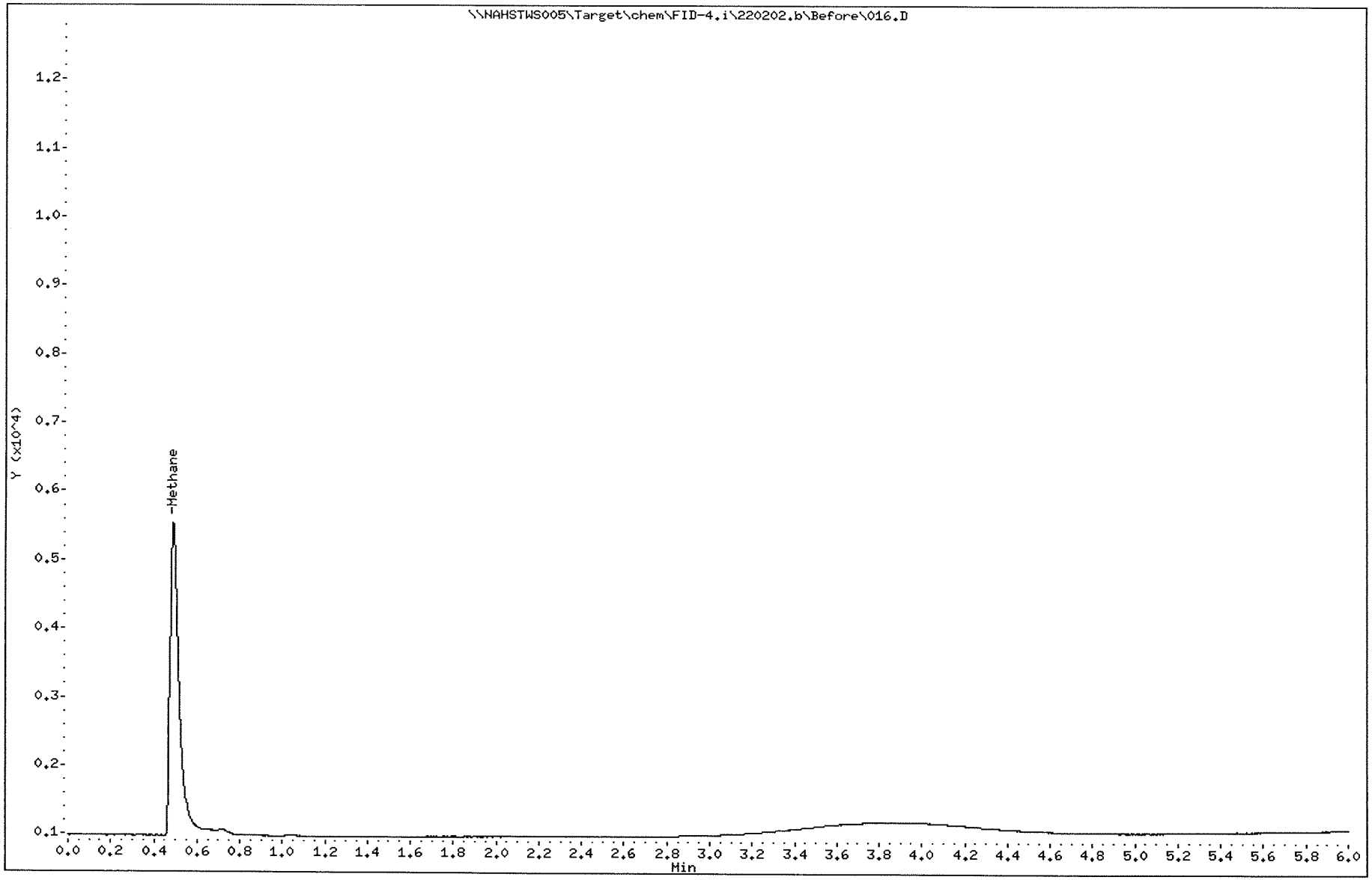
Instrument: FID-4.i

Sample Info: HS22011151-12;HS22011151-12

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\017.D
Lab Smp Id: HS22011151-15 Client Smp ID: HS22011151-15
Inj Date : 02-FEB-2022 12:47
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011151-15;HS22011151-15
Misc Info : ;1;0;100
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 17
Dil Factor: 100.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
1 Methane	0.486	0.453	0.033	20263	20.7827	2078.272(M)
2 Ethene	0.616	0.696	-0.080	883	1.50744	150.744(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\017.D

Date : 02-FEB-2022 12:47

Client ID: HS22011151-15

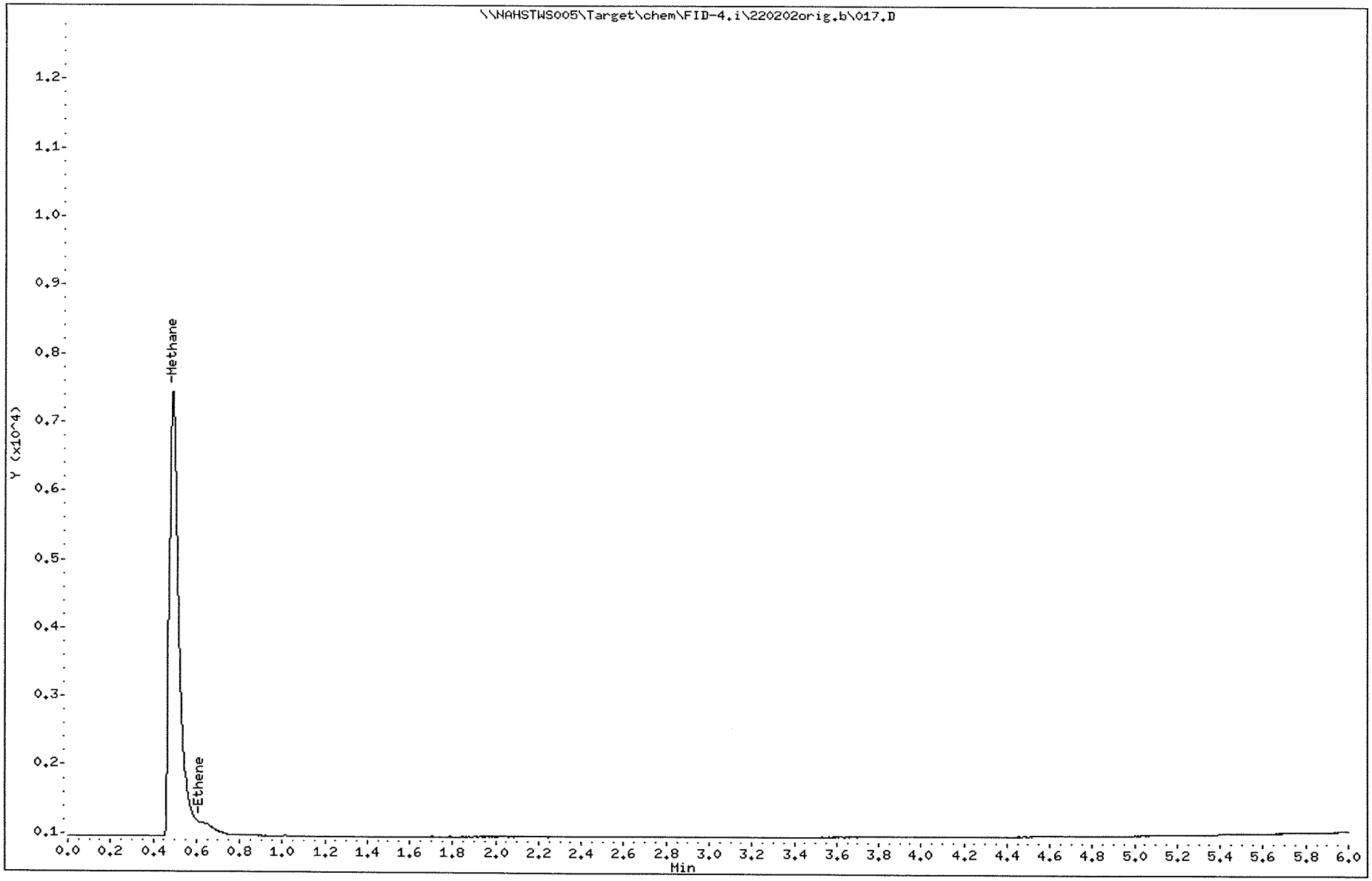
Sample Info: HS22011151-15;HS22011151-15

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\017.D
Lab Smp Id: HS22011151-15 Client Smp ID: HS22011151-15
Inj Date : 02-FEB-2022 12:47
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011151-15;HS22011151-15
Misc Info : ;1;0;100
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 17
Dil Factor: 100.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.486	0.473	0.013	21202	21.7458	2174.581

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\017.D

Date : 02-FEB-2022 12:47

Client ID: HS22011151-15

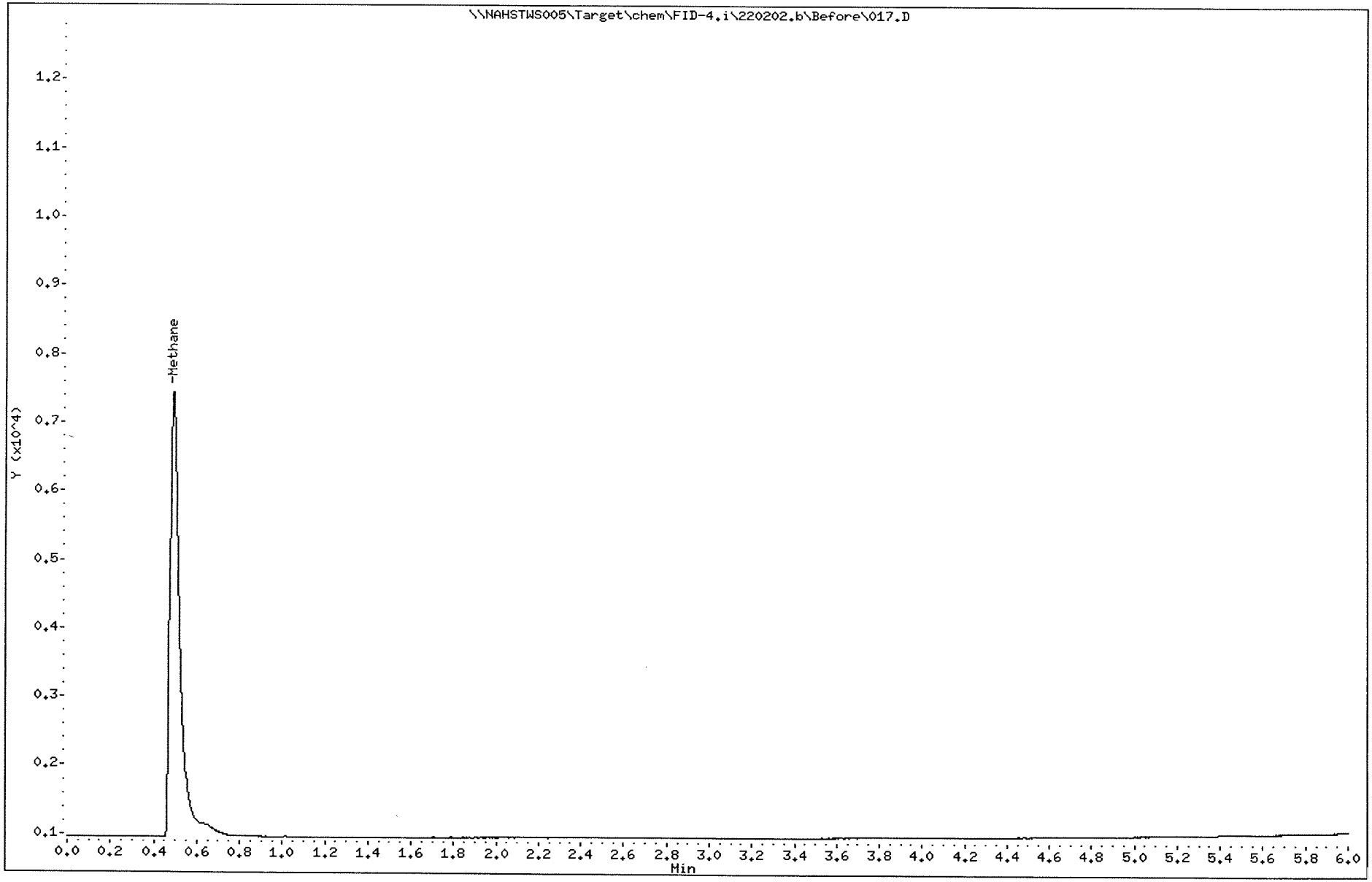
Sample Info: HS22011151-15;HS22011151-15

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\022.D
Lab Smp Id: RSK-CCV Client Smp ID: RSK-CCV
Inj Date : 02-FEB-2022 14:02
Operator : PL Inst ID: FID-4.i
Smp Info : RSK-CCV;RSK-CCV;2;4
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 22 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					AMOUNTS	
					CAL-AMT	ON-COL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.470	0.470	0.000	8392	9.64700	8.607
2 Ethene	0.710	0.710	0.000	8014	16.8500	13.681
3 Ethane	0.786	0.786	0.000	13646	18.0430	18.966

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\022.D

Date : 02-FEB-2022 14:02

Client ID: RSK-CCV

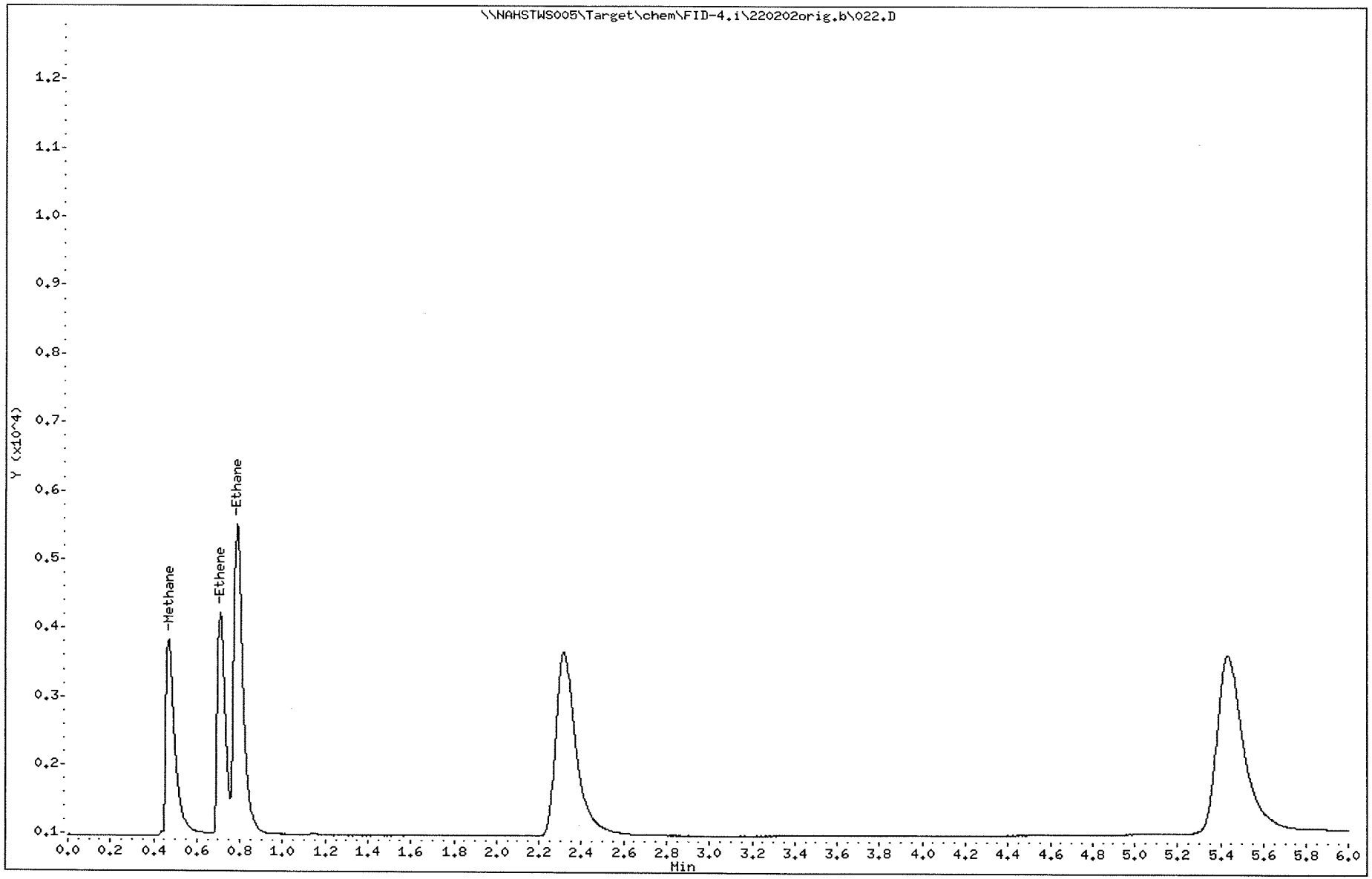
Sample Info: RSK-CCV;RSK-CCV;2;4

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\027.D Page 1
Report Date: 08-Feb-2022 11:21

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\027.D
Lab Smp Id: RSK-CCV Client Smp ID: RSK-CCV
Inj Date : 02-FEB-2022 15:29
Operator : PL Inst ID: FID-4.i
Smp Info : RSK-CCV;RSK-CCV;2;4
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 27 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

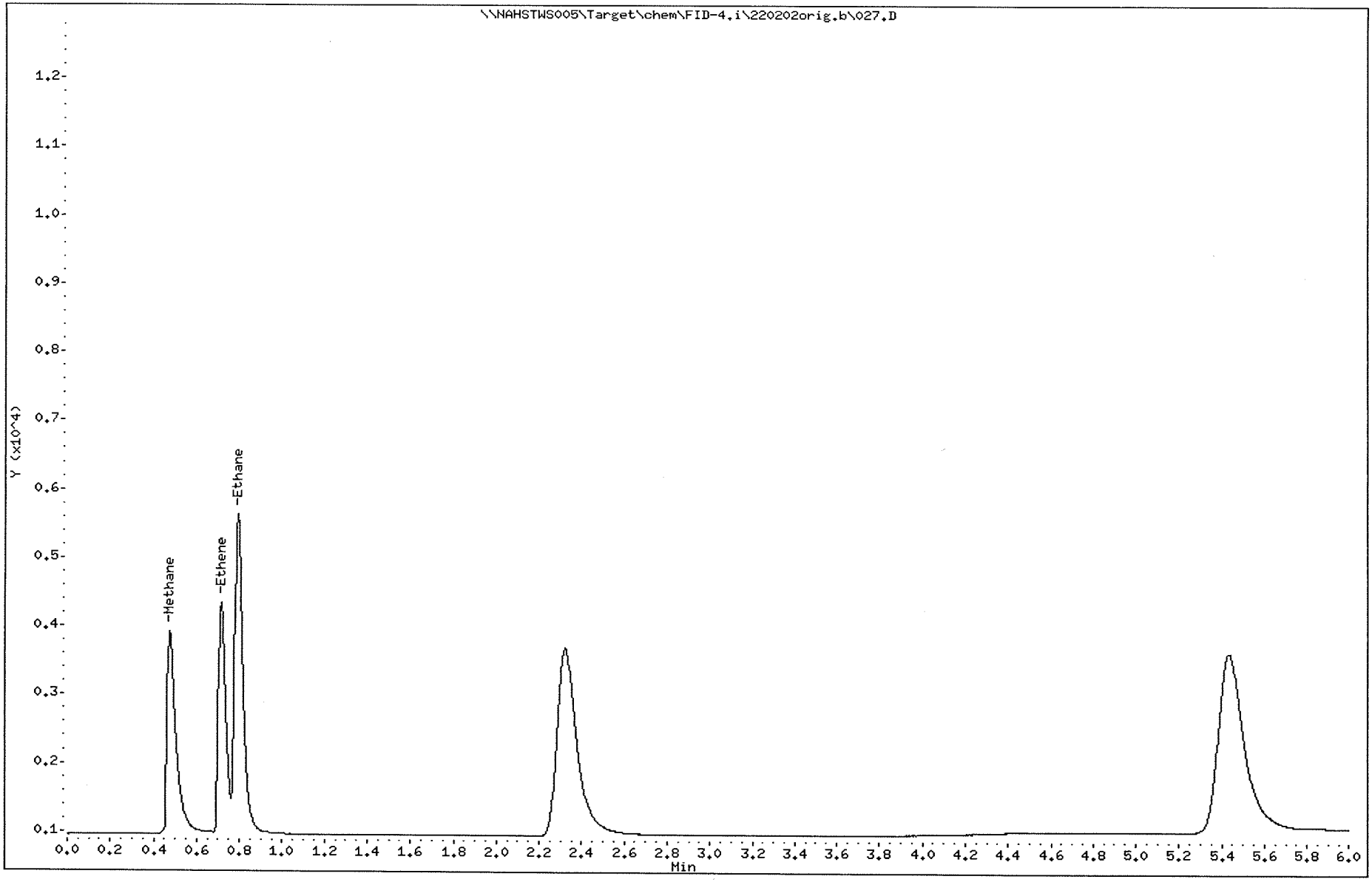
					AMOUNTS	
					CAL-AMT	ON-COL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.473	0.473	0.000	8900	9.64700	9.128
2 Ethene	0.713	0.713	0.000	8220	16.8500	14.033
3 Ethane	0.793	0.793	0.000	13009	18.0430	18.080

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\027.D
Date : 02-FEB-2022 15:29
Client ID: RSK-CCV
Sample Info: RSK-CCV;RSK-CCV;2;4

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



HS22011151 Wet Chemistry

ALS WO# HS22011151

HS2201151

Report Date: 02/02/2022 : 5:16

PC-TitratION PLUS
Calibration Report

Calibration Record # 2448

Calibration Settings

Calibration ID	PH CAL 4-7-10	Date	02/02/2022
Channel	1	Time	5:16 PM
Probe Type	pH	Temperature	298.07 K 24.92 C
Probe ID	PH ELECTRODE	Analysis Type	Single Line Fit

Calibration Results

Slope	-58.267	CorrCoeff	0.9998
Intercept	1.097	Equation:	Y = (-58.267) X + (1.097)

Calibration Validity True Operator

	Result	Minimum	Maximum
Slope	-58.267	-65.00	-53.00
Intercept	1.097	-100.00	100.00
Correlation Coefficient	0.9998	0.99	1.00

Note: "True" means the calibration was within the specified ranges
"False" means the calibration was NOT within the specified ranges

Calibration Data	Standard	Reading
	4.00	177.97
	7.00	-3.05
	10.00	-171.63

#401499 (A)

#401501 (B)

RPN
2/3/2022

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Report Date: 2/3/2022 : 1:20 AM

PC-TitratION PLUS
Water Analysis Report

Run Number 4274 **Order Number** 20220202-2

SampleID	RunDate	RunTime	Temp	cond (uS)	pH	palk-ppm	talk-ppm	bcarb-ppm	carb-ppm	hydr-ppm	mLs @ 8.3	mLs @ 4.5	mLs @ 4.2
ICV-PH	2/2/2022	5:52 PM	25.23	-1.00	6.07	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
TAP WATER	2/2/2022	5:58 PM	25.11	-1.00	7.72	.00	256.86	256.86	.00	.00	.00	2.45	2.45
WBLKW1-220202	2/2/2022	6:03 PM	25.14	-1.00	5.73	.00	.75	.75	.00	.00	.00	.02	.02
LCS1-220202	2/2/2022	6:11 PM	25.30	-1.00	10.84	520.20	1,025.63	.00	1,010.85	14.78	4.95	9.77	9.77
LCSD1-220202	2/2/2022	6:20 PM	25.32	-1.00	10.84	516.22	1,018.16	.00	1,003.88	14.28	4.92	9.70	9.70
HS22011151-12	2/2/2022	6:30 PM	25.02	-1.00	6.34	.00	1,128.97	1,128.97	.00	.00	.00	10.75	10.75
HS22011151-12DUP	2/2/2022	6:38 PM	24.97	-1.00	6.33	.00	1,104.85	1,104.85	.00	.00	.00	10.52	10.52
HS22011151-11	2/2/2022	6:47 PM	25.00	-1.00	6.43	.00	781.71	781.71	.00	.00	.00	7.44	7.44
HS22011151-13	2/2/2022	6:53 PM	25.02	-1.00	6.28	.00	360.71	360.71	.00	.00	.00	3.44	3.44
HS22011140-03	2/2/2022	6:59 PM	25.00	-1.00	7.51	.00	348.62	348.62	.00	.00	.00	3.32	3.32
HS22011187-01	2/2/2022	7:06 PM	24.92	-1.00	8.48	10.85	311.91	290.21	21.71	.00	.10	2.97	2.97
CCV-PH	2/2/2022	7:09 PM	25.37	-1.00	7.08	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/2/2022	7:17 PM	25.11	-1.00	10.80	513.07	1,020.36	.00	1,014.59	5.77	4.89	9.72	9.72
DI RINSE	2/2/2022	7:22 PM	25.16	-1.00	5.86	.00	.58	.58	.00	.00	.00	.02	.02
HS22020006-01	2/2/2022	7:26 PM	25.00	-1.00	5.52	.00	.30	.30	.00	.00	.00	.02	.02
HS22020086-01	2/2/2022	7:41 PM	24.92	-1.00	7.81	.00	.00	.00	.00	.00	.00	.00	.00
HS22020086-01DF5	2/2/2022	7:51 PM	25.13	-1.00	7.98	.00	1,031.90	1,031.90	.00	.00	.00	9.83	9.83
HS22020086-02	2/2/2022	8:06 PM	25.02	-1.00	7.77	.00	.00	.00	.00	.00	.00	.00	.00
HS22020086-02DF5	2/2/2022	8:14 PM	25.09	-1.00	7.84	.00	997.11	997.11	.00	.00	.00	9.50	9.50
HS22011049-01DF10	2/2/2022	8:22 PM	24.80	-1.00	6.87	.00	14.38	14.38	.00	.00	.00	.16	.16
HS22011050-01DF10	2/2/2022	8:28 PM	24.57	-1.00	7.13	.00	28.88	28.88	.00	.00	.00	.28	.28
HS22011050-02DF10	2/2/2022	8:35 PM	24.34	-1.00	7.06	.00	17.87	17.87	.00	.00	.00	.19	.19
HS22011241-01	2/2/2022	8:42 PM	24.09	-1.00	7.76	.00	276.50	276.50	.00	.00	.00	2.63	2.63
CCV-PH	2/2/2022	8:45 PM	23.92	-1.00	7.09	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/2/2022	8:54 PM	23.72	-1.00	10.84	533.97	1,038.46	.00	1,008.98	29.47	5.09	9.89	9.89
DI RINSE	2/2/2022	8:59 PM	23.73	-1.00	5.93	.00	.62	.62	.00	.00	.00	.02	.02
HS22011275-01	2/2/2022	9:06 PM	23.62	-1.00	8.03	.00	198.75	198.75	.00	.00	.00	1.89	1.89

PC-TitratION PLUS by Man-Tech Associates, Inc.

GENERAL RESULTS REPORT SRW

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Run Number 4274 **Order Number** 20220202-2

SampleID	RunDate	RunTime	Temp	cond (uS)	pH	palk-ppm	talk-ppm	bcarb-ppm	carb-ppm	hydr-ppm	mLs @ 8.3	mLs @ 4.5	mLs @ 4.2
HS22011279-05	2/2/2022	9:15 PM	23.68	-1.00	6.50	.00	1,161.74	1,161.74	.00	.00	.00	11.06	11.06
HS22011279-07	2/2/2022	9:20 PM	25.50	-1.00	4.98	.00	345.79	345.79	.00	.00	.00	3.29	3.29
HS22011279-08	2/2/2022	9:27 PM	23.67	-1.00	5.23	.00	500.81	500.81	.00	.00	.00	4.77	4.77
HS22011279-09	2/2/2022	9:37 PM	23.39	-1.00	5.24	.00	1,319.76	1,319.76	.00	.00	.00	12.57	12.57
HS22011287-02	2/2/2022	9:44 PM	23.20	-1.00	7.26	.00	190.22	190.22	.00	.00	.00	1.81	1.81
LCS2-220202	2/2/2022	9:53 PM	23.15	-1.00	10.82	515.08	1,013.85	.00	997.55	16.30	4.91	9.66	9.66
LCSD2-220202	2/2/2022	10:01 PM	23.06	-1.00	10.82	518.88	1,014.44	.00	991.14	23.31	4.94	9.66	9.66
HS22011074-04	2/2/2022	10:08 PM	23.12	-1.00	7.99	.00	321.36	321.36	.00	.00	.00	3.06	3.06
CCV-PH	2/2/2022	10:11 PM	23.09	-1.00	7.08	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/2/2022	10:20 PM	22.98	-1.00	10.79	529.20	1,038.25	.00	1,018.10	20.15	5.04	9.89	9.89
DI RINSE	2/2/2022	10:25 PM	23.33	-1.00	5.76	.00	.84	.84	.00	.00	.00	.02	.02
WBLKW2-220202	2/2/2022	10:31 PM	23.33	-1.00	5.50	.00	.65	.65	.00	.00	.00	.02	.02
HS22011074-04DUP	2/2/2022	10:37 PM	23.30	-1.00	7.98	.00	326.11	326.11	.00	.00	.00	3.11	3.11
HS22011074-01	2/2/2022	10:44 PM	23.23	-1.00	6.94	.00	591.96	591.96	.00	.00	.00	5.64	5.64
HS22011074-02	2/2/2022	10:51 PM	23.14	-1.00	7.01	.00	588.78	588.78	.00	.00	.00	5.61	5.61
HS22011196-01	2/2/2022	10:59 PM	23.01	-1.00	7.24	.00	565.62	565.62	.00	.00	.00	5.39	5.39
HS22011196-02	2/2/2022	11:05 PM	22.86	-1.00	6.87	.00	492.68	492.68	.00	.00	.00	4.69	4.69
HS22011196-03	2/2/2022	11:11 PM	22.70	-1.00	6.95	.00	367.47	367.47	.00	.00	.00	3.50	3.50
HS22011200-01	2/2/2022	11:18 PM	22.74	-1.00	6.79	.00	370.76	370.76	.00	.00	.00	3.53	3.53
HS22011281-01	2/2/2022	11:23 PM	22.58	-1.00	6.67	.00	199.40	199.40	.00	.00	.00	1.90	1.90
HS22011281-02	2/2/2022	11:30 PM	22.43	-1.00	7.10	.00	345.54	345.54	.00	.00	.00	3.29	3.29
CCV-PH	2/2/2022	11:33 PM	22.31	-1.00	7.08	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/2/2022	11:42 PM	22.22	-1.00	10.77	527.57	1,043.49	.00	1,031.84	11.65	5.02	9.94	9.94
DI RINSE	2/2/2022	11:47 PM	22.22	-1.00	5.80	.00	.93	.93	.00	.00	.00	.02	.02
HS22011281-03	2/2/2022	11:53 PM	22.20	-1.00	7.27	.00	347.67	347.67	.00	.00	.00	3.31	3.31
HS22011281-04	2/2/2022	11:59 PM	22.20	-1.00	6.98	.00	482.06	482.06	.00	.00	.00	4.59	4.59
HS22011326-01	2/3/2022	12:06 AM	22.14	-1.00	7.30	.00	539.40	539.40	.00	.00	.00	5.14	5.14
HS22011326-02	2/3/2022	12:13 AM	22.31	-1.00	7.12	.00	494.75	494.75	.00	.00	.00	4.71	4.71
HS22011326-03	2/3/2022	12:20 AM	22.25	-1.00	6.89	.00	232.13	232.13	.00	.00	.00	2.21	2.21
HS22011326-04	2/3/2022	12:26 AM	22.20	-1.00	7.19	.00	456.15	456.15	.00	.00	.00	4.34	4.34

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Run Number 4274 **Order Number** 20220202-2

SampleID	RunDate	RunTime	Temp	cond (uS)	pH	palk-ppm	talk-ppm	bcarb-ppm	carb-ppm	hydr-ppm	mLs @ 8.3	mLs @ 4.5	mLs @ 4.2
HS22011202-07	2/3/2022	12:34 AM	22.17	-1.00	8.62	1.49	26.26	23.28	2.97	.00	.01	.25	.25
HS22011202-08	2/3/2022	12:41 AM	22.19	-1.00	7.76	.00	445.26	445.26	.00	.00	.00	4.24	4.24
HS22011202-09	2/3/2022	12:47 AM	22.14	-1.00	7.49	.00	464.08	464.08	.00	.00	.00	4.42	4.42
HS22011202-10	2/3/2022	12:54 AM	22.13	-1.00	7.63	.00	366.45	366.45	.00	.00	.00	3.49	3.49
HS22011202-11	2/3/2022	1:01 AM	22.10	-1.00	7.78	.00	522.18	522.18	.00	.00	.00	4.97	4.97
CCV-PH	2/3/2022	1:04 AM	22.20	-1.00	7.08	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/3/2022	1:13 AM	22.14	-1.00	10.76	523.75	1,038.48	.00	1,029.46	9.02	4.99	9.89	9.89
DI RINSE	2/3/2022	1:18 AM	22.11	-1.00	5.67	.00	.72	.72	.00	.00	.00	.02	.02

PC-TitratION PLUS by Man-Tech Associates, Inc.

GENERAL RESULTS REPORT.SRW

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C:\TOC-L\Data\2022_01_07_004_CAL.tlx

HS 220111151

	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result	Notes
1	Standard	NPOC	CAL	3100605108	01_07_2022	1.000		
2	Unknown	NPOC	ICV	3100605001	01_07_2022	1.000	NPOC:10.48mg/L	
3	Unknown	NPOC	ICB		01_07_2022	1.000	NPOC:0.2145mg/L	

C:\TOC-L\Data\2022_01_07_004_CAL.tlx

	Status	Date / Time	Vial
1	Completed	1/7/2022 3:14:17 P	1, 2, 3, 4, 5,
2	Completed	1/7/2022 3:49:44 P	8
3	Completed	1/7/2022 4:05:17 P	1

TOC-Control L Report

2022_01_07_004_CAL.tlx

Instr.Information

Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Cal. Curve

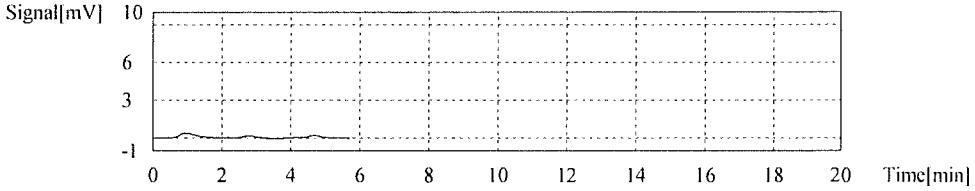
Sample Name:	CAL
Sample ID:	3100605108
Cal. Curve:	01_07_2022_CAL.2022_01_07_13_39_18.cal
Status	Completed

Type	Anal.
Standard	NPOC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1.141	50uL	1.000	*******		1/7/2022 1:47:14 PM
2	0.3472	50uL	1.000	*******		1/7/2022 1:49:21 PM
3	0.3203	50uL	1.000	*******		1/7/2022 1:51:31 PM

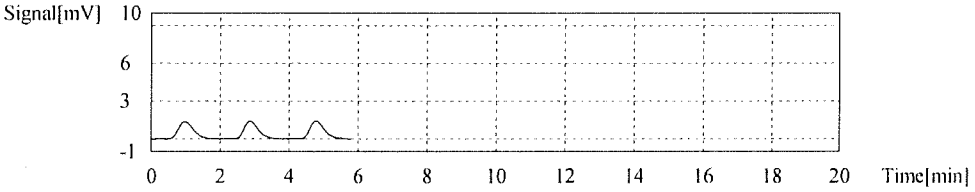
Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	0.6028



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	4.210	50uL	1.000	*******		1/7/2022 1:59:36 PM
2	4.020	50uL	1.000	*******		1/7/2022 2:01:43 PM
3	4.103	50uL	1.000	*******		1/7/2022 2:03:53 PM

Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	4.111



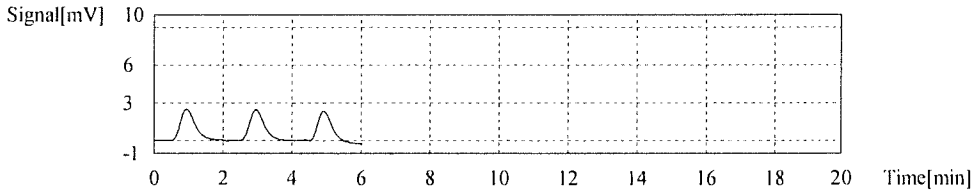
Conc: 2.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	7.265	50uL	1.000	*******		1/7/2022 2:12:01 PM
2	7.202	50uL	1.000	*******		1/7/2022 2:14:17 PM
3	6.721	50uL	1.000	*******		1/7/2022 2:16:35 PM

TOC-Control L Report

2022_01_07_004_CAL.tlx

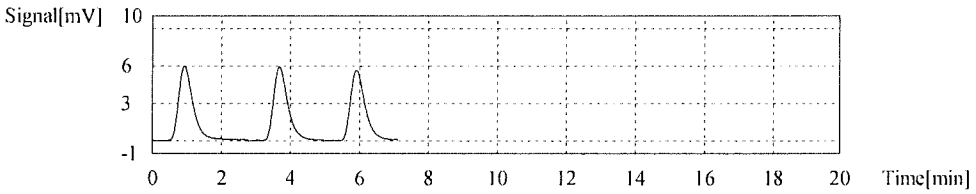
Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	7.063



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	17.57	50uL	1.000	*******		1/7/2022 2:25:30 PM
2	17.17	50uL	1.000	*******		1/7/2022 2:27:59 PM
3	16.55	50uL	1.000	*******		1/7/2022 2:30:23 PM

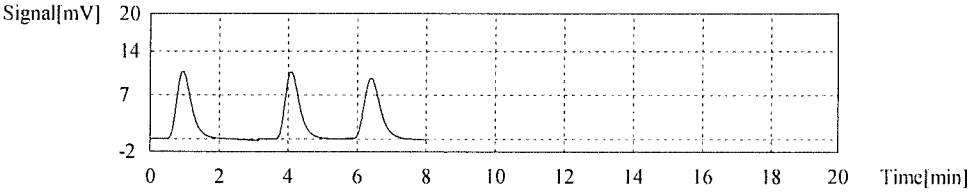
Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	17.10



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	33.96	50uL	1.000	*******		1/7/2022 2:39:42 PM
2	31.65	50uL	1.000	*******		1/7/2022 2:42:13 PM
3	32.92	50uL	1.000	*******		1/7/2022 2:45:02 PM

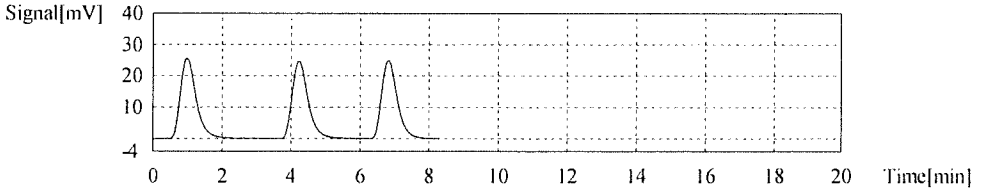
Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	32.84



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	82.21	50uL	1.000	*******		1/7/2022 2:54:26 PM
2	79.52	50uL	1.000	*******		1/7/2022 2:57:17 PM
3	79.28	50uL	1.000	*******		1/7/2022 3:00:00 PM

Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	80.34



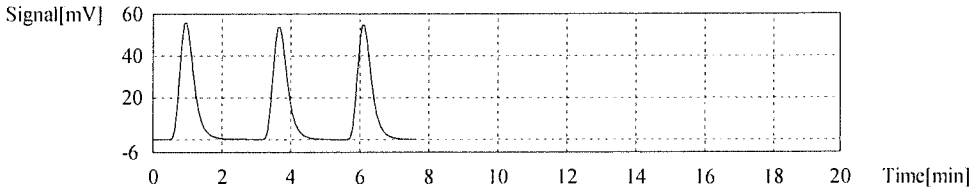
Conc: 50.00mg/L

TOC-Control L Report

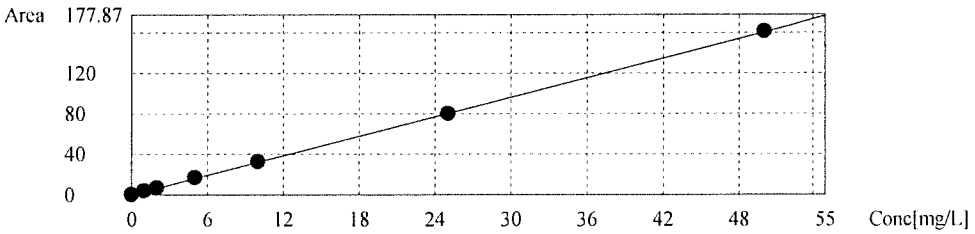
2022_01_07_004_CAL.tlx

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	164.7	50uL	1.000	*******		1/7/2022 3:08:52 PM
2	160.4	50uL	1.000	*******		1/7/2022 3:11:34 PM
3	160.0	50uL	1.000	*******		1/7/2022 3:14:17 PM

Acid Add. 1.500%
Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 161.7



Slope: 3.214
Intercept 0.000
r^2 1.0000
r 1.0000
RSE(%) N/A
Zero Shift Yes



Sample

Sample Name: ICV
Sample ID: 3100605001
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

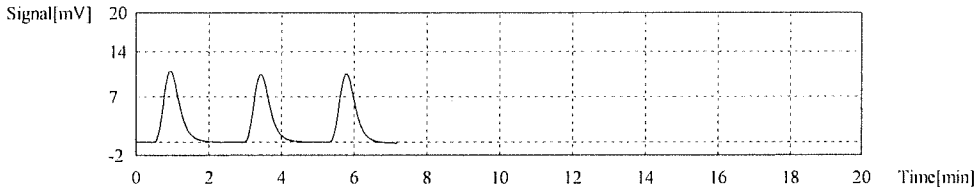
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.48mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	34.59	10.76mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 3:44:32 PM
2	33.20	10.33mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 3:47:08 PM
3	33.24	10.34mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 3:49:44 PM

Mean Area 33.68
Mean Conc. 10.48mg/L



Sample

TOC-Control L Report

2022_01_07_004_CAL.tlx

Sample Name: ICB
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

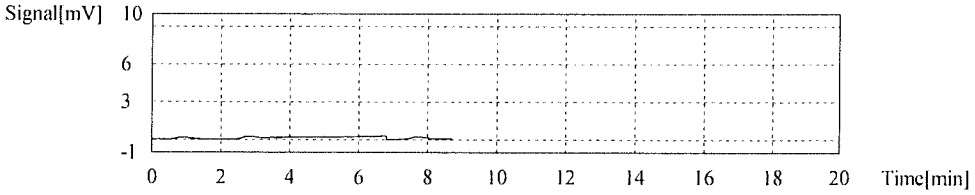
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 0.2145mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.4378	0.1362mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 3:58:00 PM
2	1.183	0.3681mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 4:03:08 PM
3	0.4476	0.1393mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 4:05:17 PM

Mean Area 0.6895
Mean Conc. 0.2145mg/L



C:\TOC-L\Data\2022_02_08_001.tlx

	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result	Notes
1	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:24.69mg/L	
2	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.07700mg/L	
3	Unknown	NPOC	MBLK-02082022		01_07_2022	1.000	NPOC:0.1045mg/L	
4	Unknown	NPOC	LCS-02082022	3100605001	01_07_2022	1.000	NPOC:10.05mg/L	
5	Unknown	NPOC	LCSD-02082022	3100605001	01_07_2022	1.000	NPOC:10.21mg/L	
6	Unknown	NPOC	HS2201138-03		01_07_2022	1.000	NPOC:435.0mg/L	
7	Unknown	NPOC	HS22011151-11		01_07_2022	1.000	NPOC:104.4mg/L	
8	Unknown	NPOC	HS22011151-12		01_07_2022	1.000	NPOC:222.7mg/L	
9	Unknown	NPOC	HS22011151-12MS		01_07_2022	1.000	NPOC:223.5mg/L	
10	Unknown	NPOC	HS22011151-15		01_07_2022	1.000	NPOC:9.726mg/L	
11	Unknown	NPOC	HS22020081-01		01_07_2022	1.000	NPOC:16.82mg/L	
12	Unknown	NPOC	HS22020083-01		01_07_2022	1.000	NPOC:10.79mg/L	
13	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:24.79mg/L	
14	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.3592mg/L	
15	Unknown	NPOC	HS22020136-07		01_07_2022	1.000	NPOC:0.6461mg/L	
16	Unknown	NPOC	HS22020136-08		01_07_2022	1.000	NPOC:0.8033mg/L	
17	Unknown	NPOC	HS22020136-13		01_07_2022	1.000	NPOC:2.614mg/L	
18	Unknown	NPOC	HS22020136-15		01_07_2022	1.000	NPOC:1.391mg/L	
19	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:24.83mg/L	
20	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.4010mg/L	
21	Unknown	NPOC	MBLK-02082022		01_07_2022	1.000	NPOC:0.1746mg/L	
22	Unknown	NPOC	LCS-02082022	3100605001	01_07_2022	1.000	NPOC:10.00mg/L	
23	Unknown	NPOC	LCSD-02082022	3100605001	01_07_2022	1.000	NPOC:10.12mg/L	
24	Unknown	NPOC	HS22020136-16		01_07_2022	1.000	NPOC:2.673mg/L	
25	Unknown	NPOC	HS22020136-16MS		01_07_2022	1.000	NPOC:13.45mg/L	
26	Unknown	NPOC	HS22011233-01		01_07_2022	1.000	NPOC:5.352mg/L	
27	Unknown	NPOC	HS22011233-02		01_07_2022	1.000	NPOC:6.293mg/L	
28	Unknown	NPOC	HS22011233-05		01_07_2022	1.000	NPOC:10.16mg/L	
29	Unknown	NPOC	HS22020176-02		01_07_2022	1.000	NPOC:15.07mg/L	
30	Unknown	NPOC	HS22020167-01		01_07_2022	1.000	NPOC:11.17mg/L	
31	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:24.07mg/L	
32	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.4237mg/L	
33	Unknown	NPOC	HS22020268-01		01_07_2022	1.000	NPOC:0.4067mg/L	
34	Unknown	NPOC	HS22020271-01		01_07_2022	1.000	NPOC:0.2968mg/L	
35	Unknown	NPOC	HS22011279-02		01_07_2022	1.000	NPOC:6.582mg/L	
36	Unknown	NPOC	HS22011279-05		01_07_2022	1.000	NPOC:20.98mg/L	
37	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:27.25mg/L	
38	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.9170mg/L	
39	Unknown	NPOC	MBLK-02082022		01_07_2022	1.000	NPOC:0.4277mg/L	
40	Unknown	NPOC	LCS-02082022	3100605001	01_07_2022	1.000	NPOC:10.08mg/L	
41	Unknown	NPOC	LCSD-02082022	3100605001	01_07_2022	1.000	NPOC:10.10mg/L	
42	Unknown	NPOC	HS22011279-07		01_07_2022	1.000	NPOC:3111mg/L	
43	Unknown	NPOC	HS22011279-07MS		01_07_2022	1.000	NPOC:3111mg/L	
44	Unknown	NPOC	HS2201179-08		01_07_2022	1.000	NPOC:3097mg/L	
45	Unknown	NPOC	HS22011279-09		01_07_2022	1.000	NPOC:1862mg/L	
46	Unknown	NPOC	HS22020224-01		01_07_2022	1.000	NPOC:51.32mg/L	
47	Unknown	NPOC	HS22020346-01		01_07_2022	1.000	NPOC:9.310mg/L	
48	Unknown	NPOC	HS22020349-01		01_07_2022	1.000	NPOC:7.187mg/L	
49	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:33.72mg/L	
50	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:4.573mg/L	
51	Unknown	NPOC	HS22020262-01		01_07_2022	1.000	NPOC:13.56mg/L	

C:\TOC-L\Data\2022_02_08_001.tlx

	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result	Notes
52	Unknown	NPOC	HS22020270-01		01_07_2022	1.000	NPOC:14.13mg/L	
53	Unknown	NPOC	HS22020080-01		01_07_2022	1.000	NPOC:6.019mg/L	
54	Unknown	NPOC	HS22020112-01		01_07_2022	1.000	NPOC:6.708mg/L	
55	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:26.28mg/L	
56	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:1.454mg/L	

	Status	Date / Time	Vial
1	Completed	2/8/2022 4:41:47 P	1
2	Completed	2/8/2022 4:54:07 P	2
3	Completed	2/8/2022 5:06:27 P	3
4	Completed	2/8/2022 5:19:51 P	4
5	Completed	2/8/2022 5:33:11 P	5
6	Completed	2/8/2022 5:48:30 P	6
7	Completed	2/8/2022 6:02:46 P	7
8	Completed	2/8/2022 6:17:47 P	8
9	Completed	2/8/2022 6:32:47 P	9
10	Completed	2/8/2022 6:46:15 P	10
11	Completed	2/8/2022 6:59:52 P	11
12	Completed	2/8/2022 7:13:25 P	12
13	Completed	2/8/2022 7:27:33 P	1
14	Completed	2/8/2022 7:39:53 P	2
15	Completed	2/8/2022 7:52:19 P	13
16	Completed	2/8/2022 8:04:39 P	14
17	Completed	2/8/2022 8:17:13 P	15
18	Completed	2/8/2022 8:29:33 P	16
19	Completed	2/8/2022 8:43:35 P	1
20	Completed	2/8/2022 8:55:57 P	2
21	Completed	2/8/2022 9:08:17 P	3
22	Completed	2/8/2022 9:21:21 P	4
23	Completed	2/8/2022 9:34:47 P	5
24	Completed	2/8/2022 9:47:35 P	17
25	Completed	2/8/2022 10:01:09 P	18
26	Completed	2/8/2022 10:14:15 P	19
27	Completed	2/8/2022 10:27:07 P	20
28	Completed	2/8/2022 10:40:39 P	21
29	Completed	2/8/2022 10:54:28 P	22
30	Completed	2/8/2022 11:07:50 P	23
31	Completed	2/8/2022 11:21:44 P	24
32	Completed	2/8/2022 11:34:01 P	25
33	Completed	2/8/2022 11:46:18 P	26
34	Completed	2/8/2022 11:58:50 P	27
35	Completed	2/9/2022 12:12:01 A	28
36	Completed	2/9/2022 12:26:23 A	29
37	Completed	2/9/2022 12:40:29 A	24
38	Completed	2/9/2022 12:52:46 A	25
39	Completed	2/9/2022 1:05:05 A	3
40	Completed	2/9/2022 1:18:36 A	4
41	Completed	2/9/2022 1:32:13 A	5
42	Completed	2/9/2022 2:08:07 A	30
43	Completed	2/9/2022 2:38:37 A	31
44	Completed	2/9/2022 3:06:45 A	32
45	Completed	2/9/2022 3:27:03 A	33
46	Completed	2/9/2022 3:42:39 A	34
47	Completed	2/9/2022 3:56:46 A	35
48	Completed	2/9/2022 4:10:19 A	36
49	Completed	2/9/2022 4:25:05 A	24
50	Completed	2/9/2022 4:38:07 A	25
51	Completed	2/9/2022 4:52:06 A	37

	Status	Date / Time	Vial
52	Completed	2/9/2022 5:05:29 A	38
53	Completed	2/9/2022 5:18:29 A	39
54	Completed	2/9/2022 5:31:39 A	40
55	Completed	2/9/2022 5:45:41 A	24
56	Completed	2/9/2022 5:58:05 A	25

TOC-Control L Report

2022_02_08_001.tlx

Instr.Information

Instrument Options: TOC/ASI/IC Unit/
Catalyst: Regular Sensitivity

Sample

Sample Name: CCV
Sample ID: 318173804
Origin: 01_07_2022_CAL.cal
Status: Completed
Chk. Result

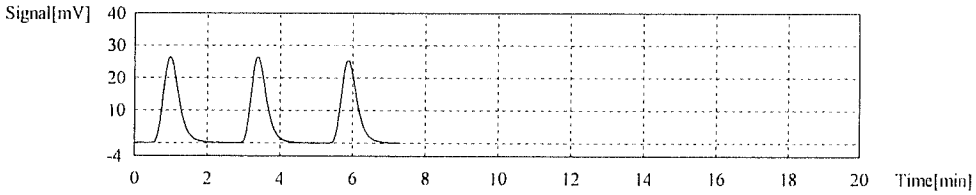
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:24.69mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	80.81	25.14mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 4:36:23 PM
2	78.97	24.57mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 4:39:08 PM
3	78.23	24.34mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 4:41:47 PM

Mean Area: 79.34
Mean Conc.: 24.69mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 01_07_2022_CAL.cal
Status: Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.07700mg/L

1. Det

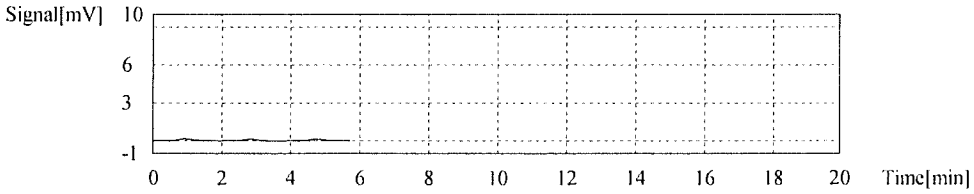
Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.3502	0.1090mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 4:49:51 PM
2	0.1441	0.04484mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 4:51:59 PM
3	0.2481	0.07720mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 4:54:07 PM

TOC-Control L Report

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Mean Area 0.2475
Mean Conc. 0.07700mg/L



Sample

Sample Name: MBLK-02082022
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

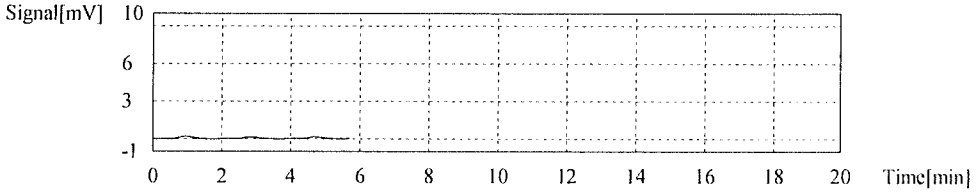
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1045mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.4991	0.1553mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 5:02:11 PM
2	0.2780	0.08650mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 5:04:19 PM
3	0.2308	0.07182mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 5:06:27 PM

Mean Area 0.3360
Mean Conc. 0.1045mg/L



Sample

Sample Name: LCS-02082022
Sample ID: 3100605001
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.05mg/L

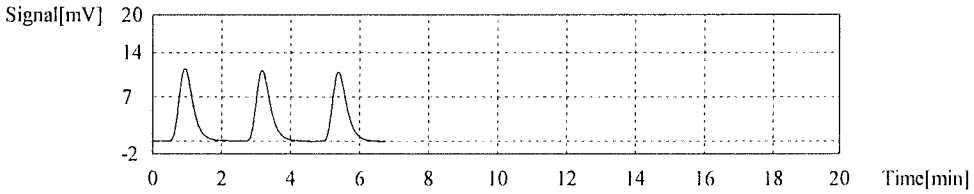
1. Det

Anal.: NPOC

TOC-Control L Report

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.01	10.27mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 5:14:51 PM
2	32.12	9.994mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 5:17:20 PM
3	31.79	9.892mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 5:19:51 PM

Mean Area 32.31
Mean Conc. 10.05mg/L



Sample

Sample Name: LCSD-02082022
Sample ID: 3100605001
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

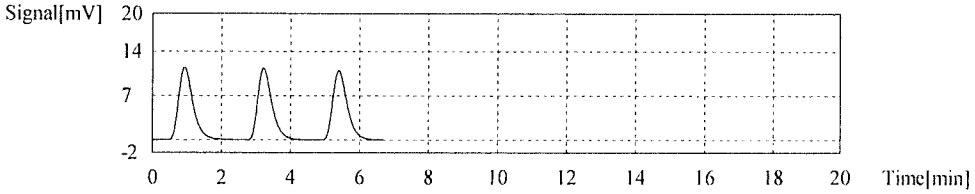
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.21mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.60	10.45mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 5:28:19 PM
2	32.73	10.18mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 5:30:44 PM
3	32.15	10.00mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 5:33:11 PM

Mean Area 32.83
Mean Conc. 10.21mg/L



Sample

Sample Name: HS22011151-12
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:222.7mg/L

1. Det

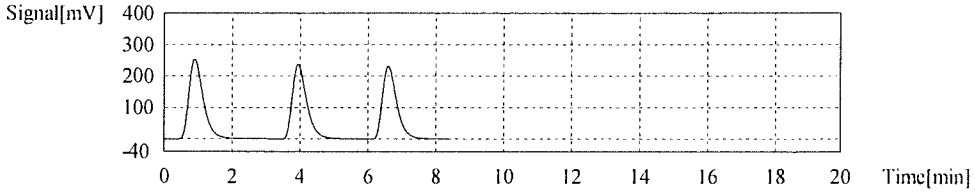
TOC-Control L Report

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Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	754.7	234.8mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 6:11:59 PM
2	708.4	220.4mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 6:14:53 PM
3	683.8	212.8mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 6:17:47 PM

Mean Area 715.6
Mean Conc. 222.7mg/L



Sample

Sample Name: HS22011151-12MS
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

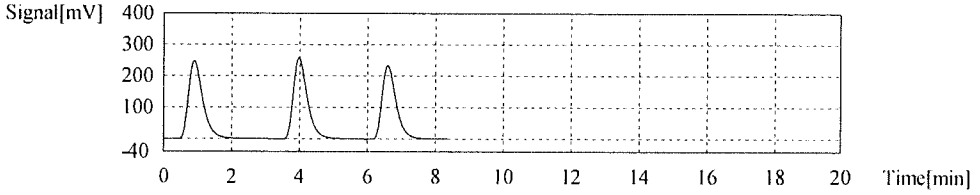
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 223.5mg/L

1. Det

Anal.: NPOC

No.	Area	Conc	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	733.4	228.2mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 6:27:02 PM
2	745.8	232.1mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 6:29:53 PM
3	675.2	210.1mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 6:32:47 PM

Mean Area 718.1
Mean Conc. 223.5mg/L



Sample

Sample Name: HS22011151-15
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 9.726mg/L

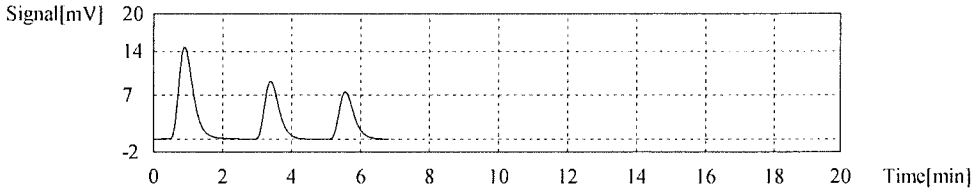
TOC-Control L Report

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	43.27	13.46mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 6:41:25 PM
2	27.47	8.548mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 6:43:50 PM
3	23.03	7.166mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 6:46:15 PM

Mean Area 31.26
Mean Conc. 9.726mg/L



Sample

Sample Name: CCV
Sample ID: 318173804
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

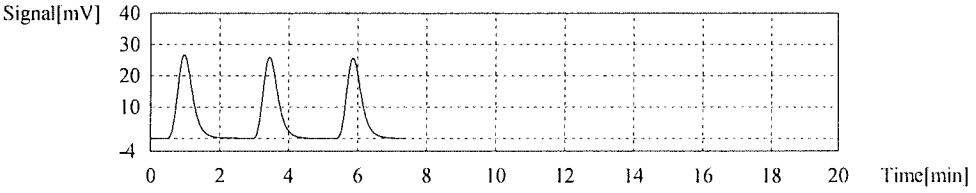
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 24.79mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	81.46	25.35mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 7:22:13 PM
2	79.64	24.78mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 7:24:54 PM
3	77.94	24.25mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/8/2022 7:27:33 PM

Mean Area 79.68
Mean Conc. 24.79mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

TOC-Control L Report

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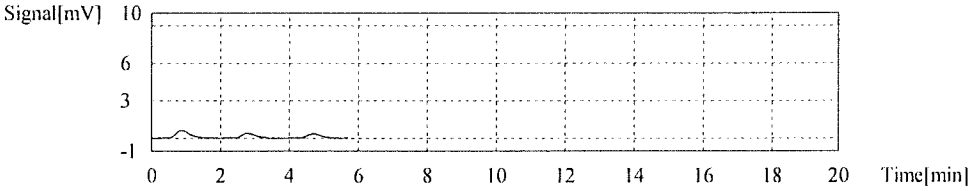
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.3592mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1.564	0.4867mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/8/2022 7:35:37 PM
2	1.003	0.3121mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/8/2022 7:37:45 PM
3	0.8962	0.2789mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/8/2022 7:39:53 PM

Mean Area 1.154
Mean Conc. 0.3592mg/L



C:\TOC-L\Data\2022_02_09_001.tlx

	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result	Notes
1	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:25.47mg/L	
2	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.4924mg/L	
3	Unknown	NPOC	MBLK-02092022		01_07_2022	1.000	NPOC:0.6089mg/L	
4	Unknown	NPOC	LCS-02092022	3100605001	01_07_2022	1.000	NPOC:10.86mg/L	
5	Unknown	NPOC	LCSD-02092022	3100605001	01_07_2022	1.000	NPOC:10.99mg/L	
6	Unknown	NPOC	HS2201138-03DF50		01_07_2022	1.000	NPOC:9.742mg/L	
7	Unknown	NPOC	HS22011151-11DF10		01_07_2022	1.000	NPOC:10.17mg/L	
8	Unknown	NPOC	HS22011151-12DF20		01_07_2022	1.000	NPOC:10.57mg/L	
9	Unknown	NPOC	HS22011151-12MSDF20		01_07_2022	1.000	NPOC:20.94mg/L	
10	Unknown	NPOC	HS22020268-01		01_07_2022	1.000	NPOC:0.7508mg/L	
11	Unknown	NPOC	HS22020271-01		01_07_2022	1.000	NPOC:0.8723mg/L	
12	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:24.61mg/L	
13	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.1595mg/L	
14	Unknown	NPOC	MBLK-02092022		01_07_2022	1.000	NPOC:0.1369mg/L	
15	Unknown	NPOC	HS22020081-01		01_07_2022	1.000	NPOC:13.30mg/L	
16	Unknown	NPOC	HS22020083-01		01_07_2022	1.000	NPOC:10.19mg/L	
17	Unknown	NPOC	HS22020136-07		01_07_2022	1.000	NPOC:0.9797mg/L	
18	Unknown	NPOC	HS22020136-08		01_07_2022	1.000	NPOC:0.9652mg/L	
19	Unknown	NPOC	HS22020136-13		01_07_2022	1.000	NPOC:2.771mg/L	
20	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:25.06mg/L	
21	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.3108mg/L	

C:\TOC-L\Data\2022_02_09_001.tlx

	Status	Date / Time	Vial
1	Completed	2/9/2022 10:16:01 A	1
2	Completed	2/9/2022 10:28:21 A	2
3	Completed	2/9/2022 10:40:41 A	3
4	Completed	2/9/2022 10:54:01 A	4
5	Completed	2/9/2022 11:07:32 A	5
6	Completed	2/9/2022 11:20:36 A	6
7	Completed	2/9/2022 11:34:07 A	7
8	Completed	2/9/2022 11:47:25 A	8
9	Completed	2/9/2022 12:01:31 P	9
10	Completed	2/9/2022 12:13:51 P	10
11	Completed	2/9/2022 12:26:18 P	11
12	Completed	2/9/2022 12:57:27 P	1
13	Completed	2/9/2022 2:04:30 P	2
14	Completed	2/9/2022 2:16:47 P	3
15	Completed	2/9/2022 2:30:47 P	12
16	Completed	2/9/2022 2:44:34 P	13
17	Completed	2/9/2022 2:56:51 P	14
18	Completed	2/9/2022 3:09:35 P	15
19	Completed	2/9/2022 3:22:22 P	16
20	Completed	2/9/2022 3:41:19 P	1
21	Completed	2/9/2022 3:53:38 P	3

TOC-Control L Report

2022_02_09_001.tlx

Instr.Information

Instrument Options: TOC/ASI/IC Unit/
Catalyst: Regular Sensitivity

Sample

Sample Name: CCV
Sample ID: 318173804
Origin: 01_07_2022_CAL.cal
Status: Completed
Chk. Result:

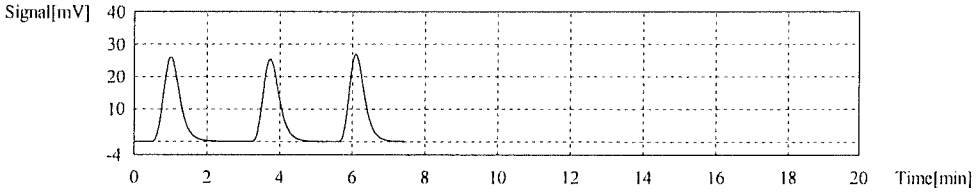
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:25.47mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	83.58	26.01mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 10:10:47 AM
2	81.18	25.26mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 10:13:24 AM
3	80.76	25.13mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 10:16:01 AM

Mean Area: 81.84
Mean Conc.: 25.47mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 01_07_2022_CAL.cal
Status: Completed
Chk. Result:

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.4924mg/L

1. Det

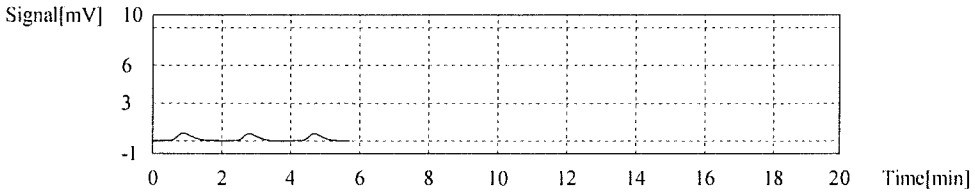
Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1.664	0.5178mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 10:24:05 AM
2	1.573	0.4895mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 10:26:13 AM
3	1.510	0.4699mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 10:28:21 AM

TOC-Control L Report

2022_02_09_001.tlx

Mean Area 1.582
Mean Conc. 0.4924mg/L



Sample

Sample Name: MBLK-02092022
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

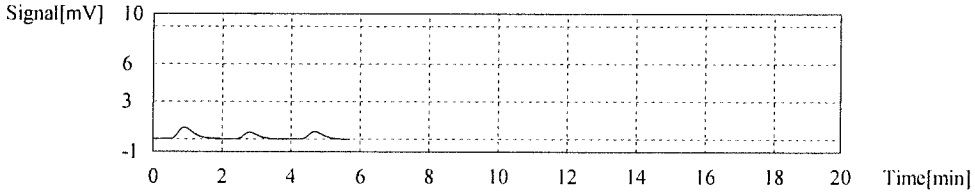
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.6089mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2.575	0.8012mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 10:36:25 AM
2	1.551	0.4826mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 10:38:33 AM
3	1.745	0.5430mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 10:40:41 AM

Mean Area 1.957
Mean Conc. 0.6089mg/L



Sample

Sample Name: LCS-02092022
Sample ID: 3100605001
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.86mg/L

1. Det

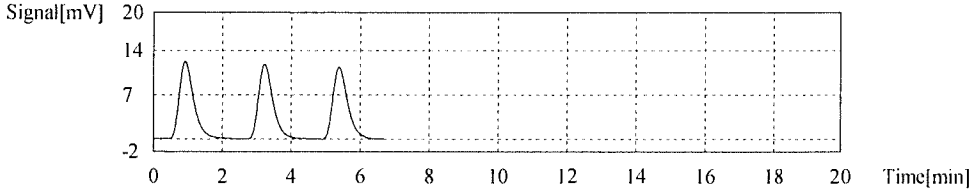
Anal.: NPOC

TOC-Control L Report

2022_02_09_001.tlx

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	35.66	11.10mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 10:49:07 AM
2	34.65	10.78mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 10:51:32 AM
3	34.42	10.71mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 10:54:01 AM

Mean Area 34.91
Mean Conc. 10.86mg/L



Sample

Sample Name: LCSD-02092022
Sample ID: 3100605001
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

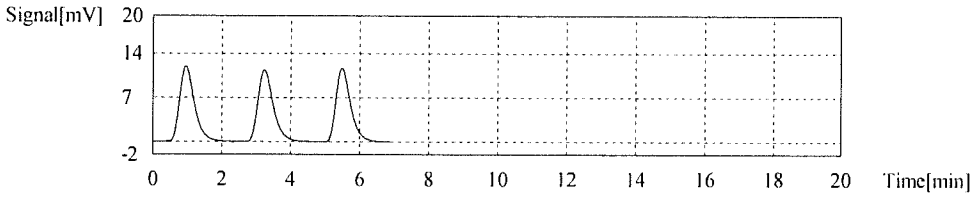
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.99mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	35.81	11.14mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 11:02:27 AM
2	35.25	10.97mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 11:04:59 AM
3	34.94	10.87mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 11:07:32 AM

Mean Area 35.33
Mean Conc. 10.99mg/L



Sample

Sample Name: HS22011151-11DF10
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.17mg/L

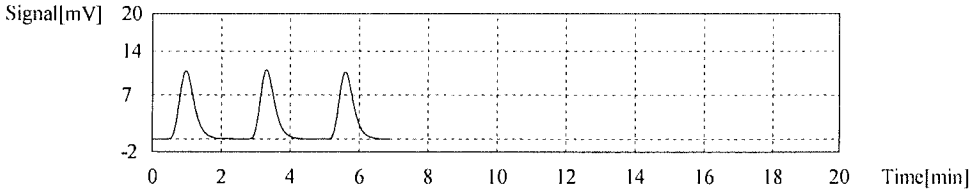
1. Det

TOC-Control L Report

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.25	10.35mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 11:29:06 AM
2	32.74	10.19mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 11:31:39 AM
3	32.10	9.988mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 11:34:07 AM

Mean Area 32.70
Mean Conc. 10.17mg/L



Sample

Sample Name: HS22011151-12DF20
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

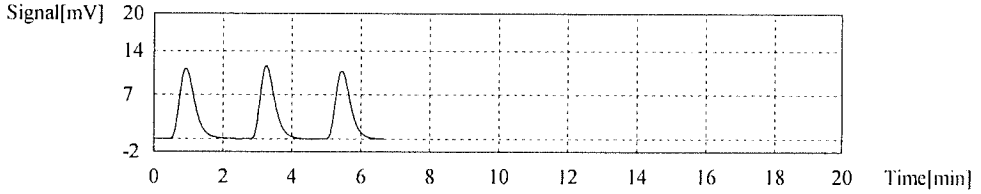
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 10.57mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	34.53	10.74mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 11:42:37 AM
2	34.60	10.77mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 11:45:03 AM
3	32.76	10.19mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 11:47:25 AM

Mean Area 33.96
Mean Conc. 10.57mg/L



Sample

Sample Name: HS22011151-12MSDF20
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 20.94mg/L

TOC-Control L Report

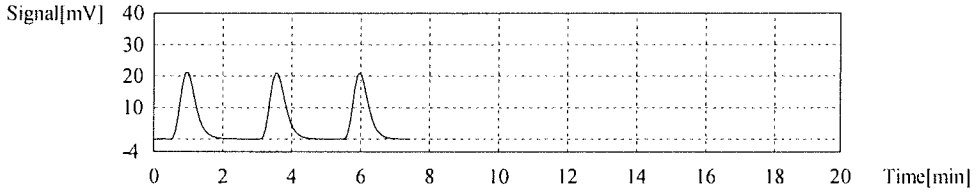
2022_02_09_001.tlx

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	68.40	21.28mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 11:56:11 AM
2	67.85	21.11mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 11:58:51 AM
3	65.63	20.42mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 12:01:31 PM

Mean Area 67.29
Mean Conc. 20.94mg/L



Sample

Sample Name: CCV
Sample ID: 318173804
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

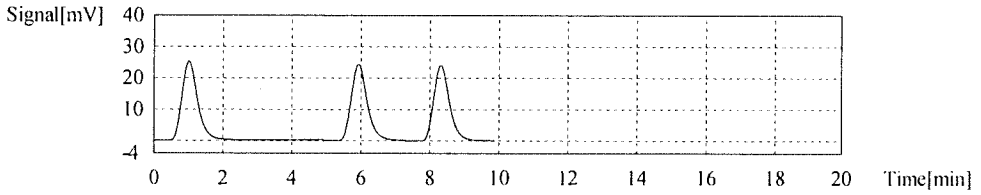
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:24.61mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	81.84	25.47mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 12:51:53 PM
2	78.52	24.43mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 12:54:32 PM
3	76.96	23.95mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/9/2022 12:57:27 PM

Mean Area 79.11
Mean Conc. 24.61mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

TOC-Control L Report

2022_02_09_001.tlx

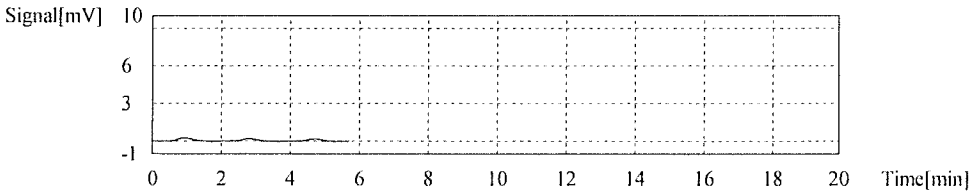
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1595mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.6637	0.2065mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/9/2022 2:00:15 PM
2	0.4967	0.1546mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/9/2022 2:02:23 PM
3	0.3775	0.1175mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/9/2022 2:04:30 PM

Mean Area 0.5126
Mean Conc. 0.1595mg/L



HS22011151 9056_W IC

ALS WO# HS22011151

Sequence: 012622
Last Update Operator: alshs.nouser

CD	Name	Comment	Type	Position	Dilution	Level	Instrument Method	Processing Method	Volume	Status	Inject Time
	STD1		Calibratio	RA1	1.00	1	Anions Program	Anions Proce	5.0	Finished	12/23/2021 12:12:48 PM -06:00
	STD2		Calibratio	RA2	1.00	2	Anions Program	Anions Proce	5.0	Finished	12/23/2021 12:20:22 PM -06:00
	STD3		Calibratio	RA3	1.00	3	Anions Program	Anions Proce	5.0	Finished	12/23/2021 12:27:55 PM -06:00
	STD4		Calibratio	RA4	1.00	4	Anions Program	Anions Proce	5.0	Finished	12/23/2021 12:35:28 PM -06:00
	STD5		Calibratio	RA5	1.00	5	Anions Program	Anions Proce	5.0	Finished	12/23/2021 12:43:02 PM -06:00
	STD6		Calibratio	RA6	1.00	6	Anions Program	Anions Proce	5.0	Finished	12/23/2021 12:50:35 PM -06:00
	ICV		Unknown	RA7	1.00		Anions Program	Anions Proce	5.0	Finished	12/23/2021 12:58:08 PM -06:00
	ICB		Unknown	RA8	1.00		Anions Program	Anions Proce	5.0	Finished	12/23/2021 1:05:41 PM -06:00
	CCV		Unknown	G1	1.00		Anions Program	Anions Proce	5.0	Finished	1/26/2022 2:00:06 PM -06:00
	CCB		Unknown	R4	1.00		Anions Program	Anions Proce	5.0	Finished	1/26/2022 2:07:40 PM -06:00
	MBLK		Unknown	R5	1.00		Anions Program	Anions Proce	5.0	Finished	1/26/2022 3:06:20 PM -06:00
	LCS		Unknown	R2	1.00		Anions Program	Anions Proce	5.0	Finished	1/26/2022 5:24:12 PM -06:00
	CCV1		Unknown	G3	1.00		Anions Program	Anions Proce	5.0	Finished	1/26/2022 8:50:13 PM -06:00
	CCB		Unknown	R7	1.00		Anions Program	Anions Proce	5.0	Finished	1/26/2022 9:05:21 PM -06:00
	HS22011151-11		Unknown	GD2	1.00		Anions Program	Anions Proce	5.0	Finished	1/26/2022 9:20:18 PM -06:00
	HS22011151-12		Unknown	GD3	2.00		Anions Program	Anions Proce	5.0	Finished	1/26/2022 9:27:40 PM -06:00
	HS22011151-12MS		Unknown	GD4	2.00		Anions Program	Anions Proce	5.0	Finished	1/26/2022 9:35:14 PM -06:00
	HS22011151-12MSD		Unknown	GD5	2.00		Anions Program	Anions Proce	5.0	Finished	1/26/2022 9:42:36 PM -06:00
	HS22011151-15		Unknown	GD6	2.00		Anions Program	Anions Proce	5.0	Finished	1/26/2022 9:50:10 PM -06:00
	CCV		Unknown	G1	1.00		Anions Program	Anions Proce	5.0	Finished	1/26/2022 10:27:13 PM -06:00
	CCB		Unknown	R4	1.00		Anions Program	Anions Proce	5.0	Finished	1/26/2022 11:12:36 PM -06:00

Sequence: 012622
Injection #6: STD6

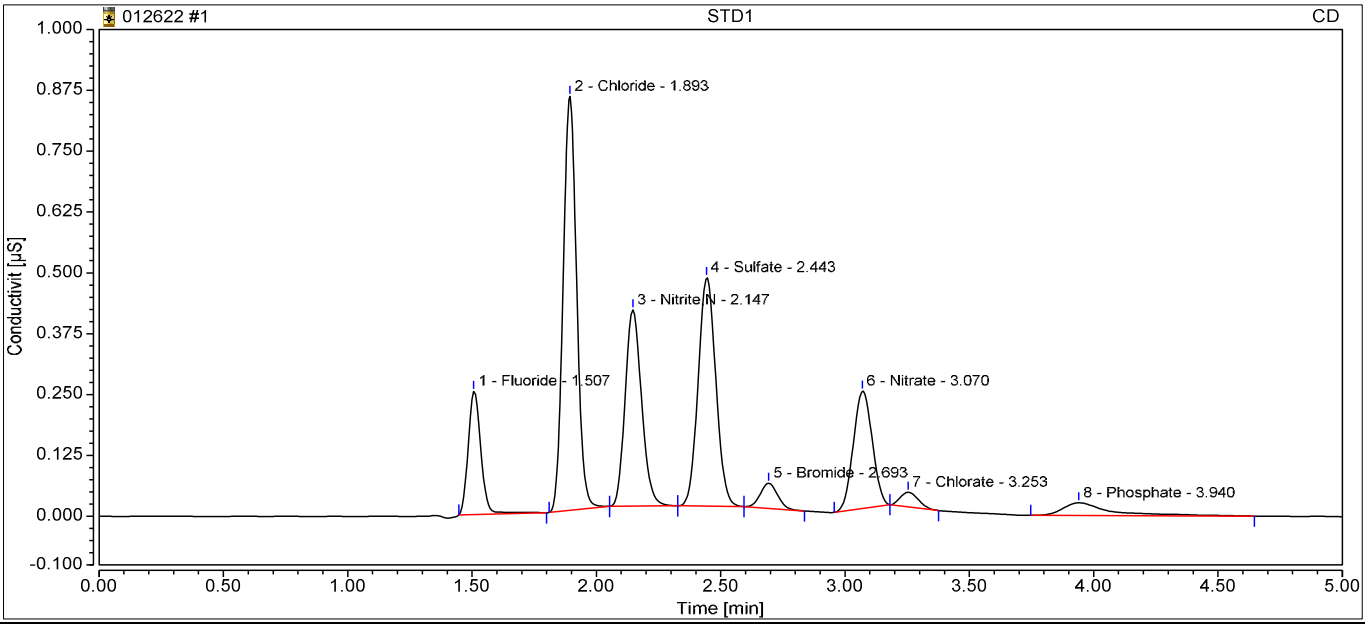
Calibration

Peak No.	Peak Name	Cal.Type	Eval.Type	Number of Points	Rel.Std.Dev. %	Coeff.of Determination	C0 (Offset)	C1 (Slope)	C2 (Curve)
1	*Fluoride*	*Lin, WithOffset, 1/*	*Area*	*6*	*20.1821*	*0.99793*	*-0.0017*	*0.1964*	*0.0000*
2	Chloride	Lin, WithOffset, 1/	Area	6	1.1341	0.99999	-0.0085	0.1250	0.0000
3	Nitrite,N	Quad, WithOffset,	Area	6	3.7763	0.99993	0.0032	0.2852	-0.0029
4	Sulfate	Lin, WithOffset, 1/	Area	6	2.1807	0.99998	-0.0063	0.0920	0.0000
5	Bromide	Lin, WithOffset, 1/	Area	6	14.4831	0.99909	-0.0023	0.0537	0.0000
6	Nitrate	Lin, WithOffset, 1/	Area	6	3.5515	0.99994	-0.0081	0.2897	0.0000
7	Chlorate	Lin, WithOffset, 1/	Area	6	19.7778	0.99797	-0.0001	0.0276	0.0000
8	Phosphate	Quad, WithOffset,	Area	6	14.6626	0.99940	-0.0063	0.1047	0.0004
Maximum					**20.1821**	0.99999			
Minimum					1.1341	**0.99793**			

1 STD1

Sample Name:	**STD1**	*Injection Volume:*	**5.00**
Vial Number:	**RA1**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**12/23/2021 12:12**	*Sample Weight:*	**1.0000**

Run Time:



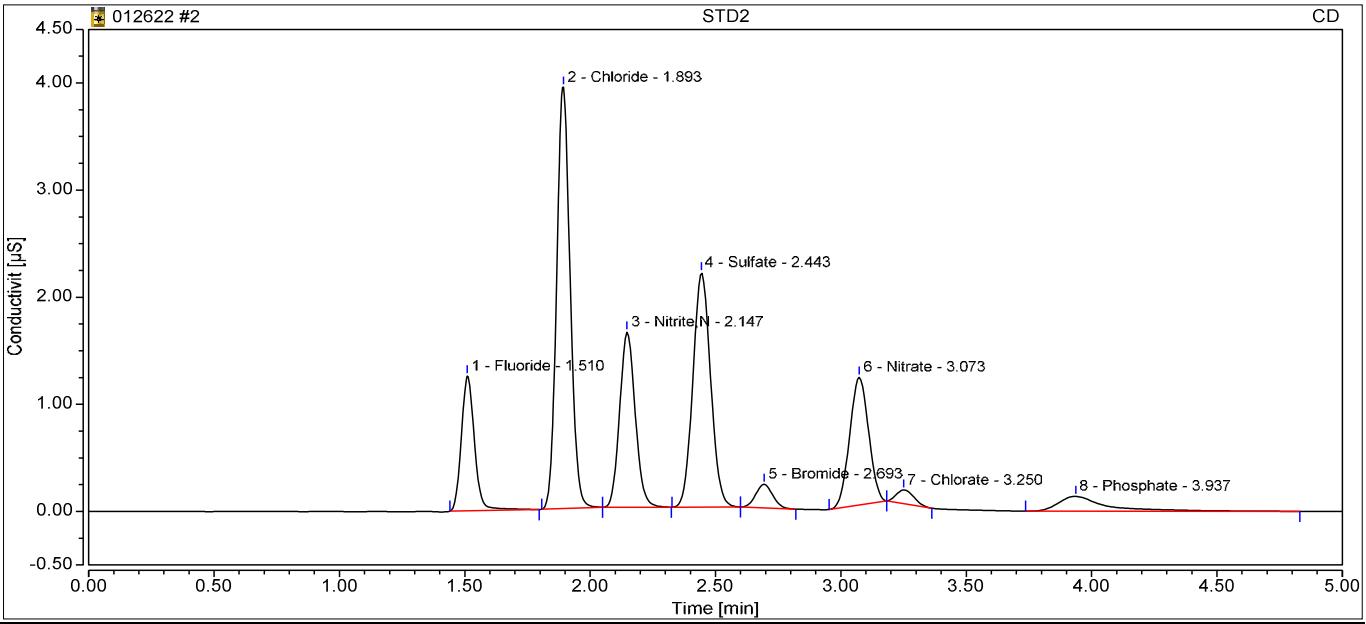
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.015	0.0858	0.0858	1.0000
2	1.89	Chloride	BMB	0.053	0.4960	0.4960	1.0000
3	2.15	Nitrite,N	BMB	0.031	0.0975	0.0975	1.0000
4	2.44	Sulfate	BMB	0.039	0.4899	0.4899	1.0000
5	2.69	Bromide	BMB	0.004	0.1194	0.1194	1.0000
6	3.07	Nitrate	BMB	0.021	0.1016	0.1016	1.0000
7	3.25	Chlorate	BMB	0.003	0.0963	0.0963	1.0000
8	3.94	Phosphate	BMB	0.006	0.1156	0.1156	1.0000
Total:			**0.000**	**0.172**		**1.60**	

2 STD2

Sample Name:	**STD2**	*Injection Volume:*	**5.00**
Vial Number:	**RA2**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**12/23/2021 12:20**	*Sample Weight:*	**1.0000**

Run Time:



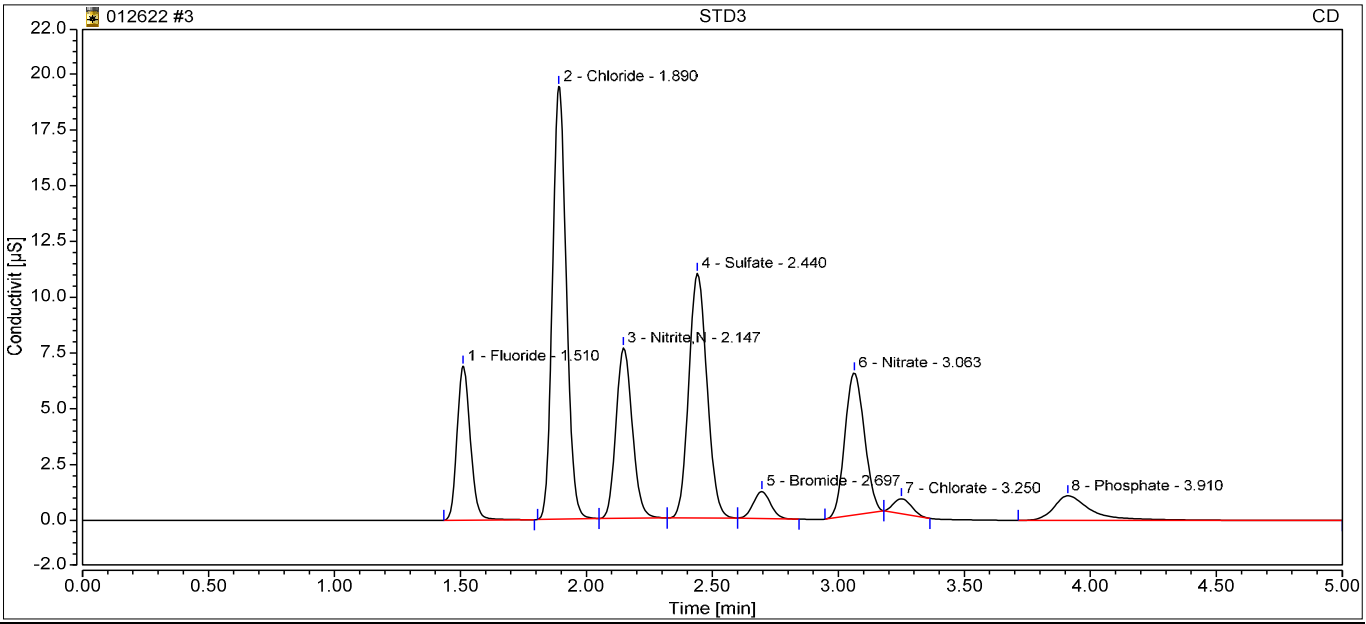
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.077	0.3994	0.3994	1.0000
2	1.89	Chloride	BMB	0.245	2.0304	2.0304	1.0000
3	2.15	Nitrite,N	BMB	0.118	0.4043	0.4043	1.0000
4	2.44	Sulfate	BMB	0.179	2.0171	2.0171	1.0000
5	2.69	Bromide	BMB	0.017	0.3630	0.3630	1.0000
6	3.07	Nitrate	BMB	0.104	0.3888	0.3888	1.0000
7	3.25	Chlorate	BMB	0.010	0.3830	0.3830	1.0000
8	3.94	Phosphate	BMB	0.031	0.3526	0.3526	1.0000
Total:			**0.000**	**0.782**		**6.34**	

3 STD3

Sample Name:	**STD3**	*Injection Volume:*	**5.00**
Vial Number:	**RA3**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**12/23/2021 12:27**	*Sample Weight:*	**1.0000**

Run Time:



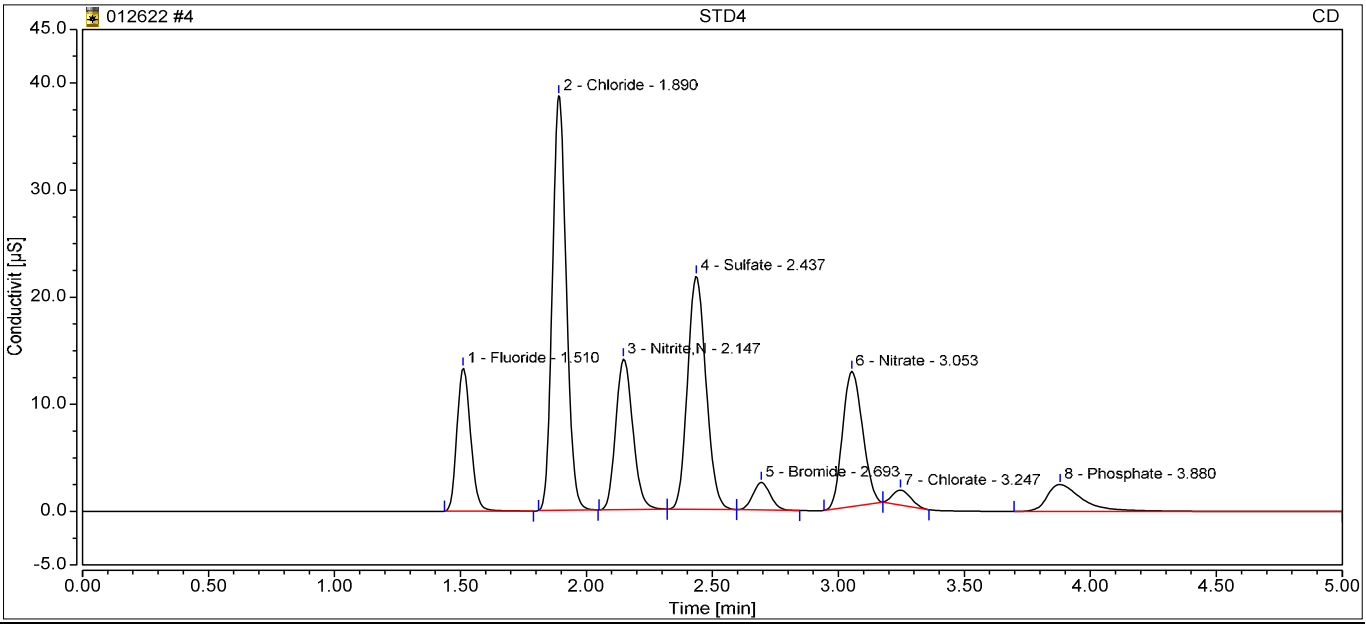
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.422	2.1567	2.1567	1.0000
2	1.89	Chloride	BMB	1.236	9.9602	9.9602	1.0000
3	2.15	Nitrite,N	BMB	0.572	2.0359	2.0359	1.0000
4	2.44	Sulfate	BMB	0.918	10.0437	10.0437	1.0000
5	2.70	Bromide	BMB	0.096	1.8339	1.8339	1.0000
6	3.06	Nitrate	BMB	0.572	2.0014	2.0014	1.0000
7	3.25	Chlorate	BMB	0.056	2.0209	2.0209	1.0000
8	3.91	Phosphate	BMB	0.192	1.8813	1.8813	1.0000
Total:			**0.000**	**4.064**		**31.93**	

4 STD4

Sample Name:	**STD4**	*Injection Volume:*	**5.00**
Vial Number:	**RA4**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**12/23/2021 12:35**	*Sample Weight:*	**1.0000**

Run Time:



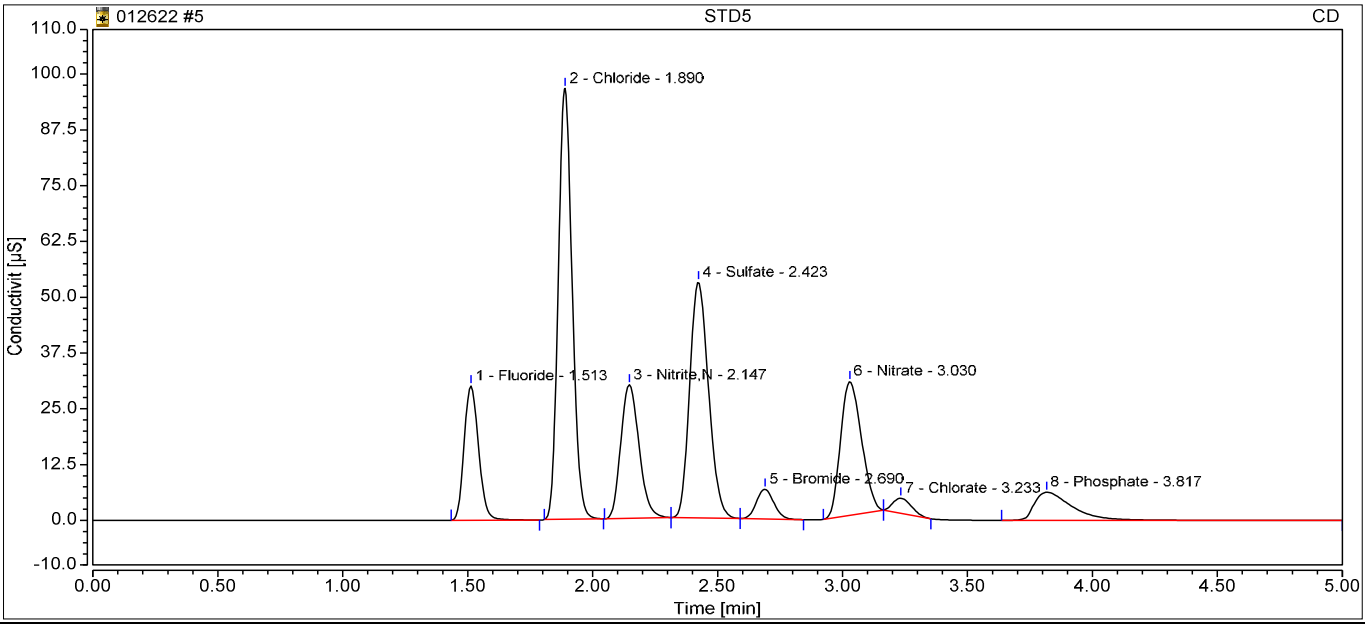
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.841	4.2897	4.2897	1.0000
2	1.89	Chloride	BMB	2.481	19.9179	19.9179	1.0000
3	2.15	Nitrite,N	BMB	1.103	4.0205	4.0205	1.0000
4	2.44	Sulfate	BMB	1.847	20.1401	20.1401	1.0000
5	2.69	Bromide	BMB	0.205	3.8552	3.8552	1.0000
6	3.05	Nitrate	BMB	1.160	4.0318	4.0318	1.0000
7	3.25	Chlorate	BMB	0.116	4.2151	4.2151	1.0000
8	3.88	Phosphate	BMB	0.421	4.0111	4.0111	1.0000
Total:			**0.000**	**8.174**		**64.48**	

5 STD5

Sample Name:	**STD5**	*Injection Volume:*	**5.00**
Vial Number:	**RA5**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**12/23/2021 12:43**	*Sample Weight:*	**1.0000**

Run Time:



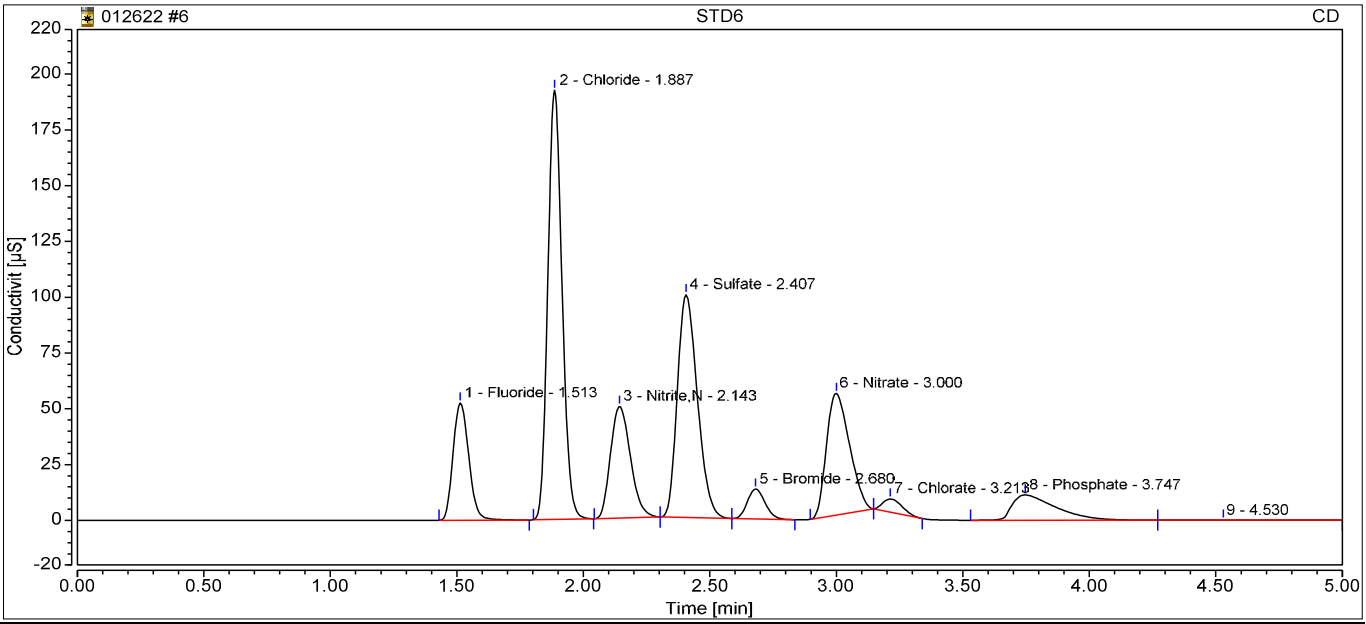
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	2.020	10.2927	10.2927	1.0000
2	1.89	Chloride	BMB	6.241	50.0002	50.0002	1.0000
3	2.15	Nitrite,N	BMB	2.540	9.8807	9.8807	1.0000
4	2.42	Sulfate	BMB	4.615	50.2094	50.2094	1.0000
5	2.69	Bromide	BMB	0.537	10.0271	10.0271	1.0000
6	3.03	Nitrate	BMB	2.915	10.0877	10.0877	1.0000
7	3.23	Chlorate	BMB	0.290	10.5315	10.5315	1.0000
8	3.82	Phosphate	BMB	1.111	10.2407	10.2407	1.0000
Total:			**0.000**	**20.268**		**161.27**	

6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**5.00**
Vial Number:	**RA6**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**12/23/2021 12:50**	*Sample Weight:*	**1.0000**

Run Time:



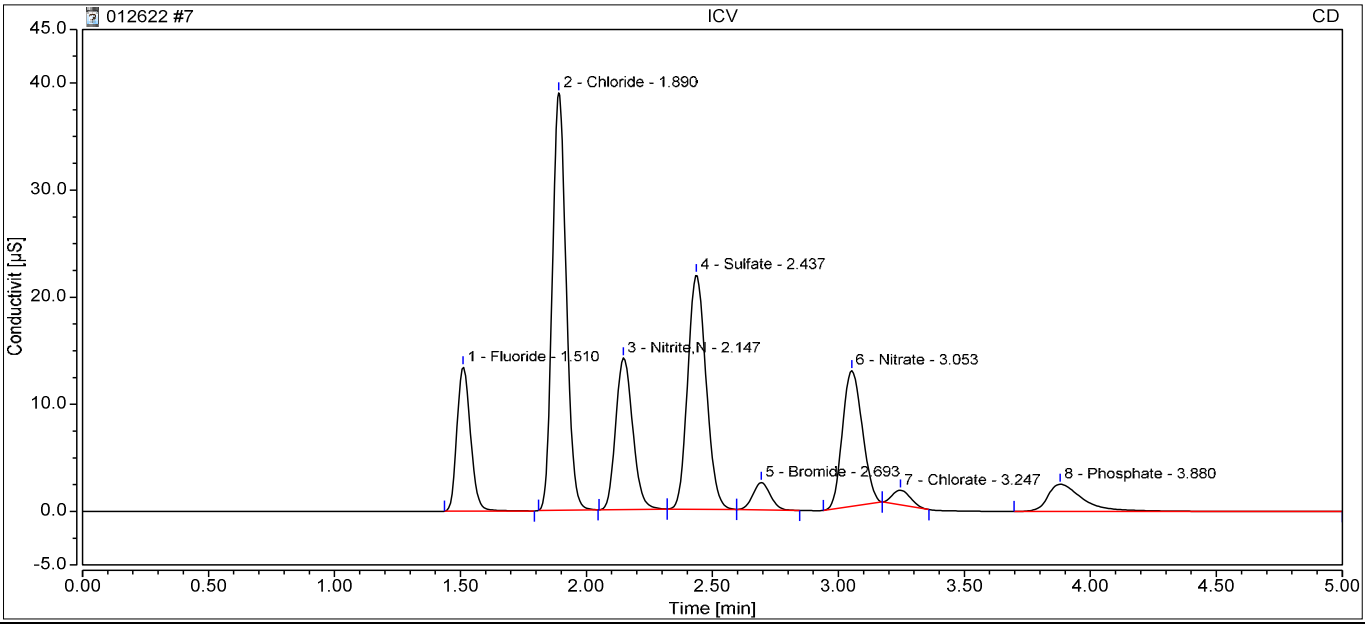
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	3.784	19.2757	19.2757	1.0000
2	1.89	Chloride	BMB	12.501	100.0953	100.0953	1.0000
3	2.14	Nitrite,N	BMB	4.568	20.0678	20.0678	1.0000
4	2.41	Sulfate	BMB	9.161	99.5997	99.5997	1.0000
5	2.68	Bromide	BMB	1.089	20.3014	20.3014	1.0000
6	3.00	Nitrate	BMB	5.754	19.8887	19.8887	1.0000
7	3.21	Chlorate	BMB	0.531	19.2533	19.2533	1.0000
8	3.75	Phosphate	BMB	2.249	19.8972	19.8972	1.0000
Total:			**0.000**	**39.636**		**318.38**	

7 *ICV*

Sample Name:	**ICV**	*Injection Volume:*	**5.00**
Vial Number:	**RA7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**12/23/2021 12:58**	*Sample Weight:*	**1.0000**

Run Time:



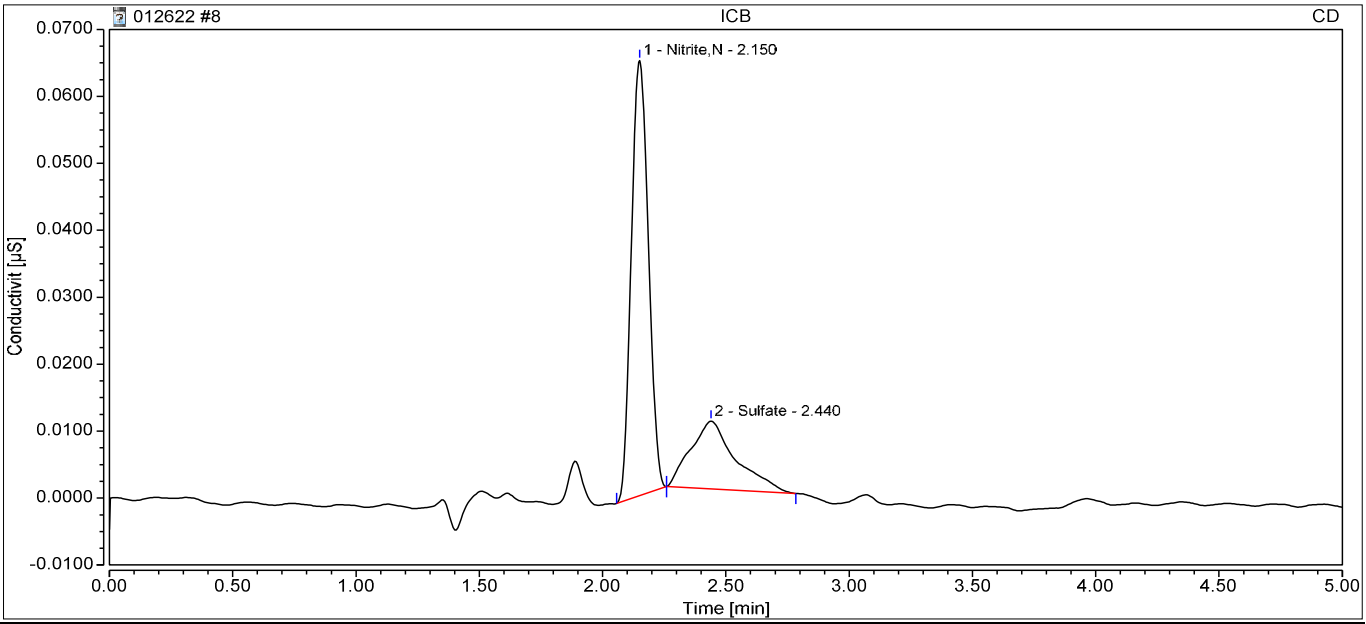
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.844	4.3055	4.3055	1.0000
2	1.89	Chloride	BMB	2.492	20.0070	20.0070	1.0000
3	2.15	Nitrite,N	BMB	1.108	4.0365	4.0365	1.0000
4	2.44	Sulfate	BMB	1.854	20.2139	20.2139	1.0000
5	2.69	Bromide	BMB	0.203	3.8158	3.8158	1.0000
6	3.05	Nitrate	BMB	1.161	4.0366	4.0366	1.0000
7	3.25	Chlorate	BMB	0.116	4.1963	4.1963	1.0000
8	3.88	Phosphate	BMB	0.420	4.0063	4.0063	1.0000
Total:			**0.000**	**8.197**		**64.62**	

8 ICB

Sample Name:	**ICB**	*Injection Volume:*	**5.00**
Vial Number:	**RA8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**12/23/2021 13:05**	*Sample Weight:*	**1.0000**

Run Time:



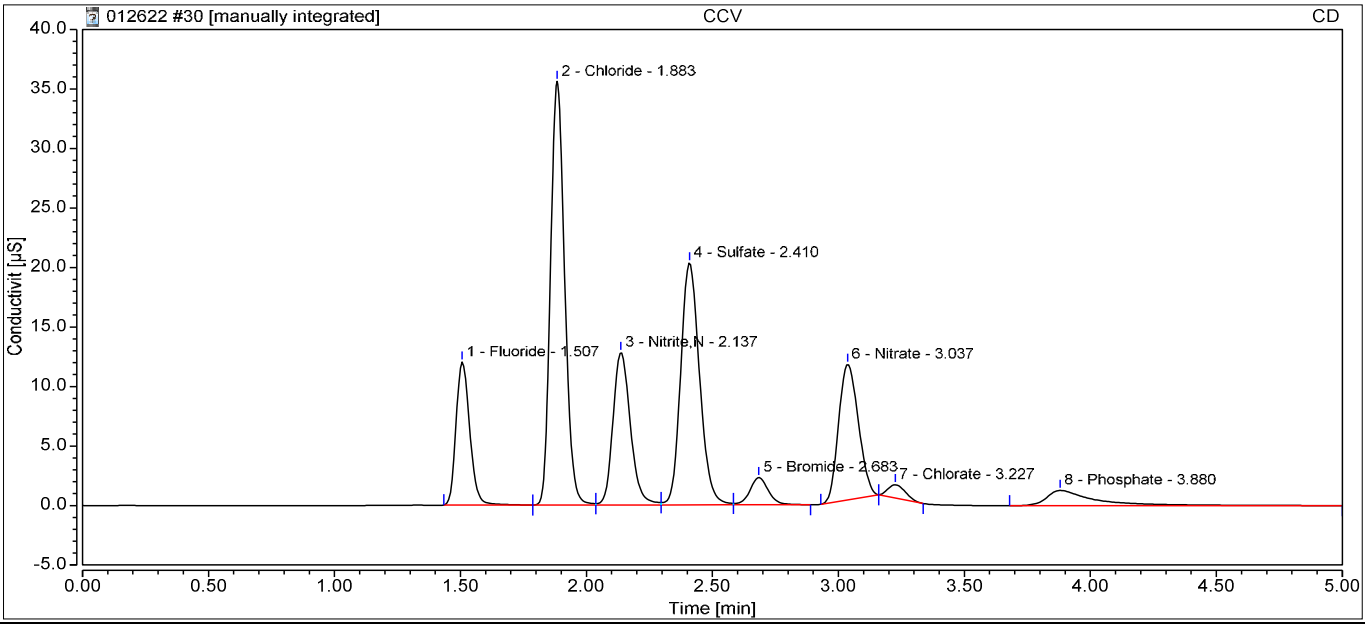
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.15	Nitrite,N	BMB	0.005	0.0071	0.0071	1.0000
2	2.44	Sulfate	BMB	0.002	0.0923	0.0923	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.007**		**0.10**	

30 CCV

Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**G1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**01/26/2022 14:00**	*Sample Weight:*	**1.0000**

Run Time:



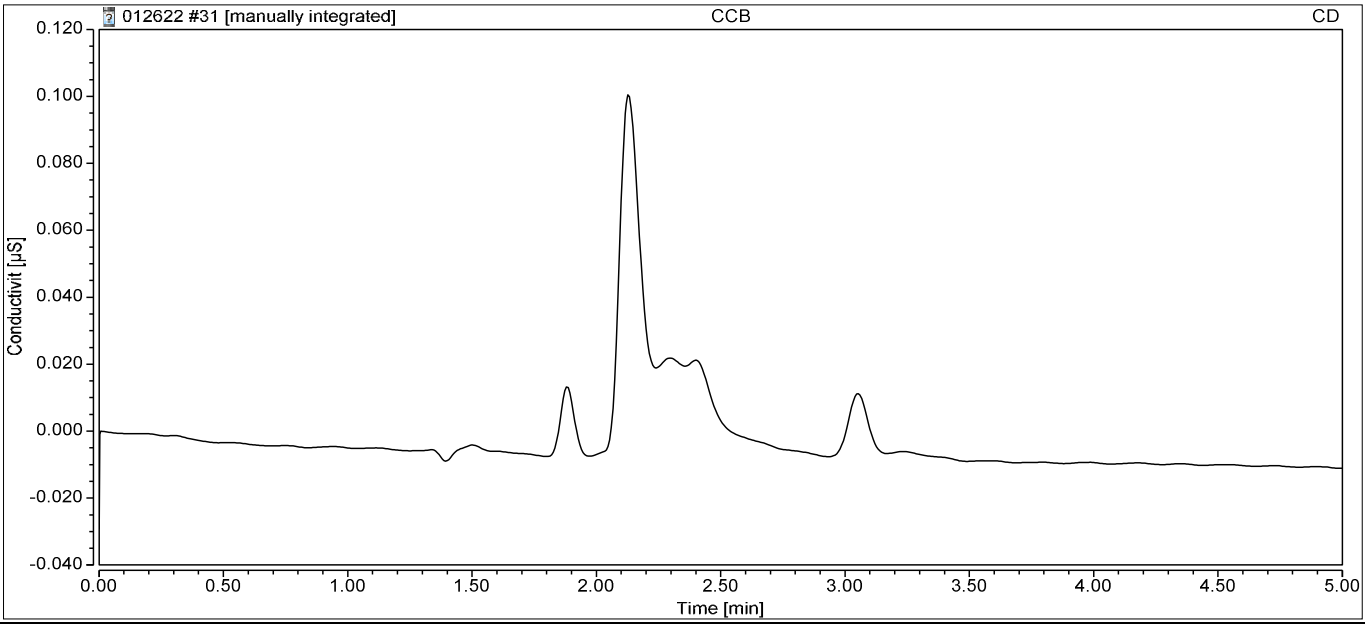
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMb*	0.759	3.8755	3.8755	1.0000
2	1.88	Chloride	bM *	2.315	18.5904	18.5904	1.0000
3	2.14	Nitrite,N	M *	1.029	3.7395	3.7395	1.0000
4	2.41	Sulfate	M *	1.767	19.2629	19.2629	1.0000
5	2.68	Bromide	MB*	0.196	3.6816	3.6816	1.0000
6	3.04	Nitrate	BMB	1.039	3.6132	3.6132	1.0000
7	3.23	Chlorate	BMB	0.091	3.3075	3.3075	1.0000
8	3.88	Phosphate	BMB	0.291	2.8037	2.8037	1.0000
Total:			**0.000**	**7.486**		**58.87**	

31 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**01/26/2022 14:07**	*Sample Weight:*	**1.0000**

Run Time:



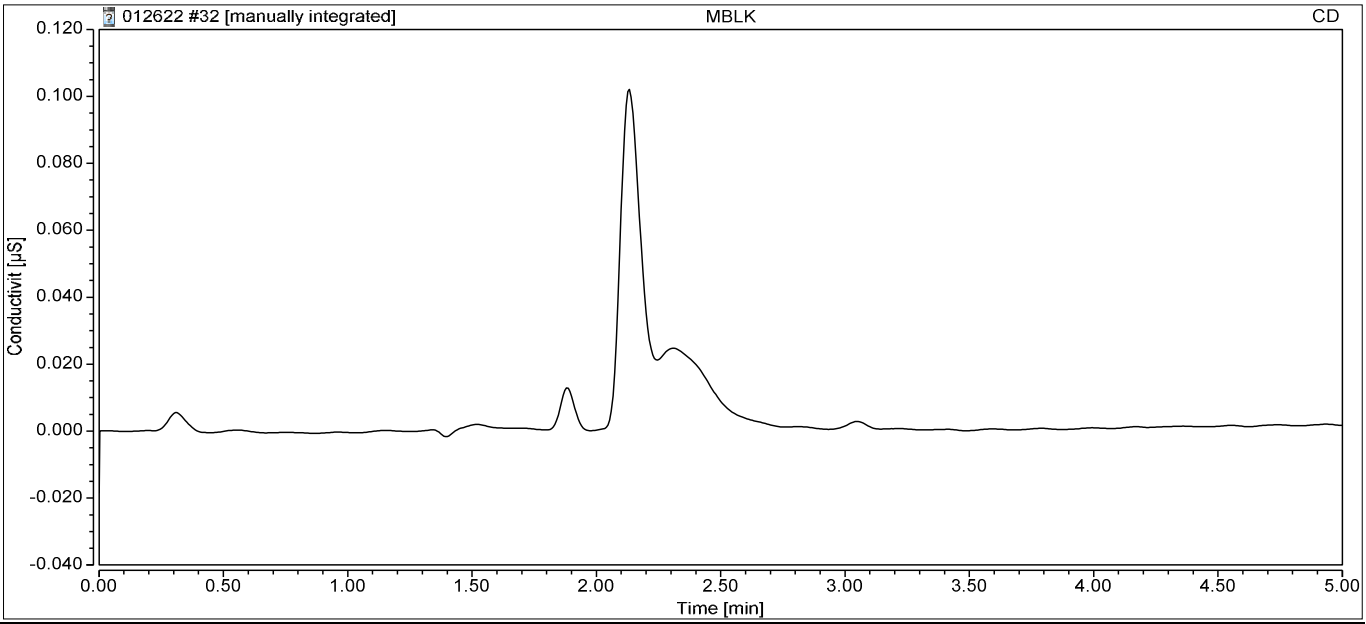
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.000**		**0.00**	

32 MBLK

Sample Name:	**MBLK**	*Injection Volume:*	**5.00**
Vial Number:	**R5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**01/26/2022 15:06**	*Sample Weight:*	**1.0000**

Run Time:



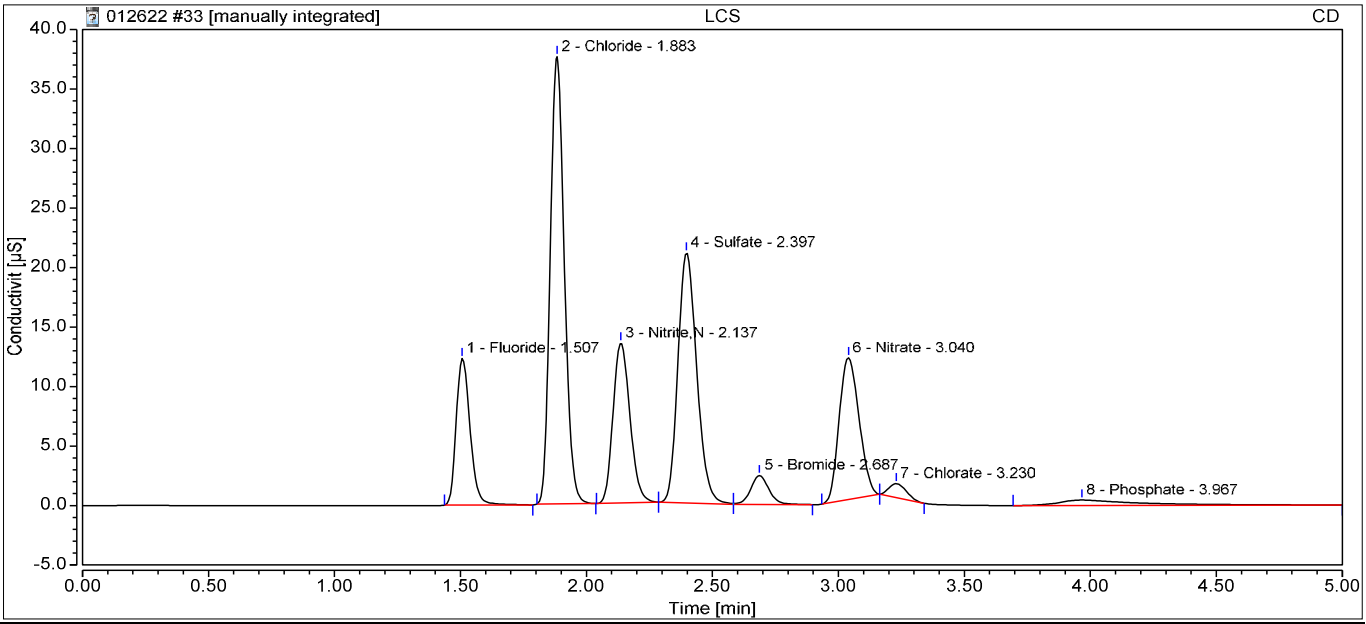
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.000**		**0.00**	

33 LCS

Sample Name:	**LCS**	*Injection Volume:*	**5.00**
Vial Number:	**R2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**01/26/2022 17:24**	*Sample Weight:*	**1.0000**

Run Time:



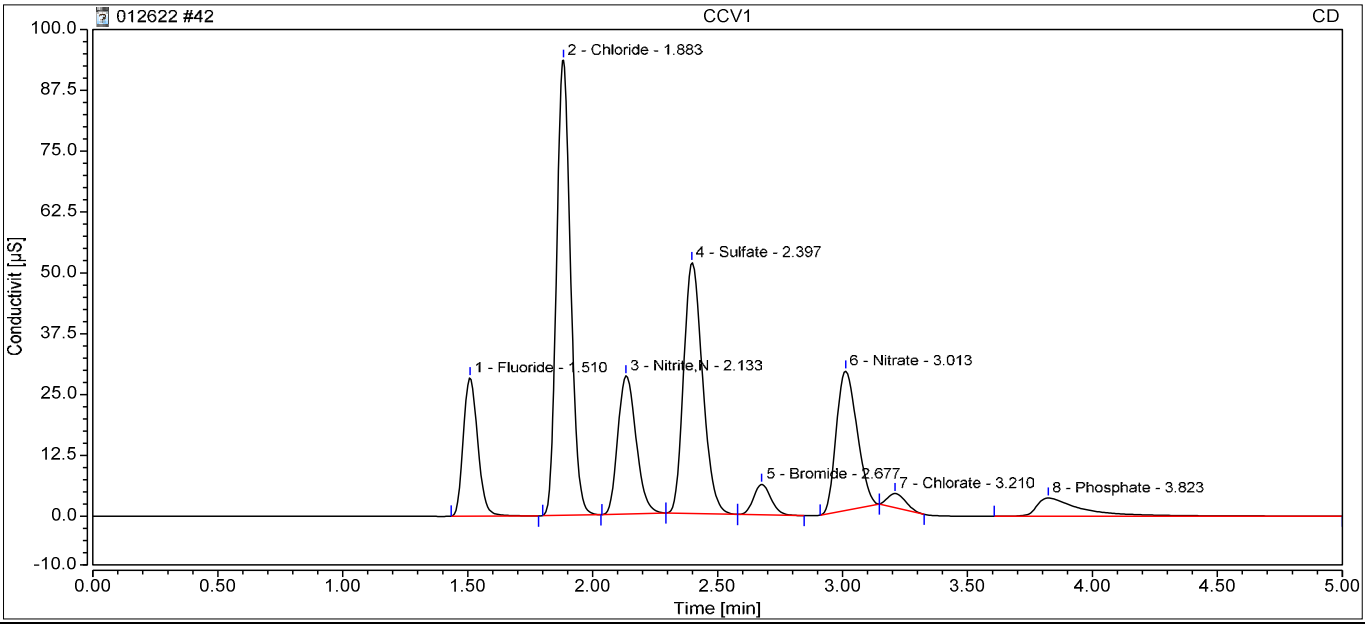
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.789	4.0259	4.0259	1.0000
2	1.88	Chloride	BMB	2.426	19.4832	19.4832	1.0000
3	2.14	Nitrite,N	BMB	1.046	3.8017	3.8017	1.0000
4	2.40	Sulfate	BM *	1.816	19.7995	19.7995	1.0000
5	2.69	Bromide	MB*	0.205	3.8512	3.8512	1.0000
6	3.04	Nitrate	BMB	1.092	3.7954	3.7954	1.0000
7	3.23	Chlorate	BMB	0.096	3.4694	3.4694	1.0000
8	3.97	Phosphate	BMB	0.173	1.6976	1.6976	1.0000
Total:			**0.000**	**7.642**		**59.92**	

42 CCV1

Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**G3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**01/26/2022 20:50**	*Sample Weight:*	**1.0000**

Run Time:



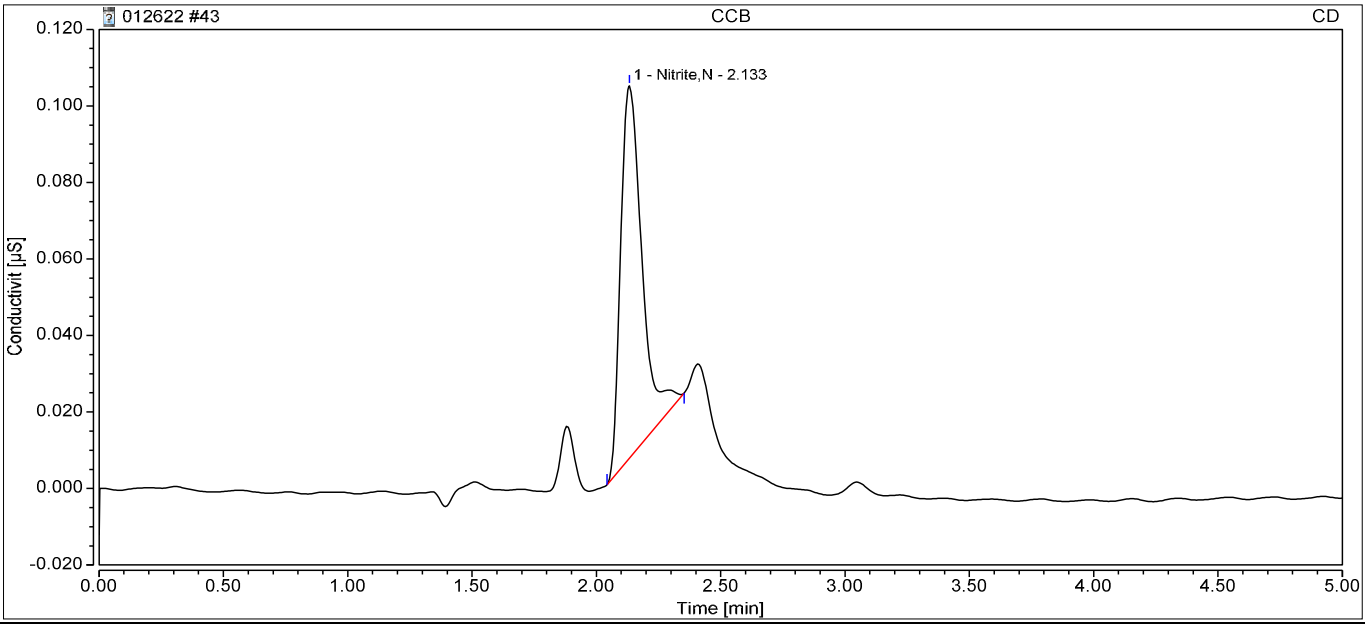
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	1.910	9.7331	9.7331	1.0000
2	1.88	Chloride	BMB	6.101	48.8845	48.8845	1.0000
3	2.13	Nitrite,N	BMB	2.414	9.3323	9.3323	1.0000
4	2.40	Sulfate	BMB	4.538	49.3713	49.3713	1.0000
5	2.68	Bromide	BMB	0.505	9.4476	9.4476	1.0000
6	3.01	Nitrate	BMB	2.769	9.5853	9.5853	1.0000
7	3.21	Chlorate	BMB	0.244	8.8441	8.8441	1.0000
8	3.82	Phosphate	BMB	0.798	7.4497	7.4497	1.0000
Total:			**0.000**	**19.279**		**152.65**	

43 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**01/26/2022 21:05**	*Sample Weight:*	**1.0000**

Run Time:



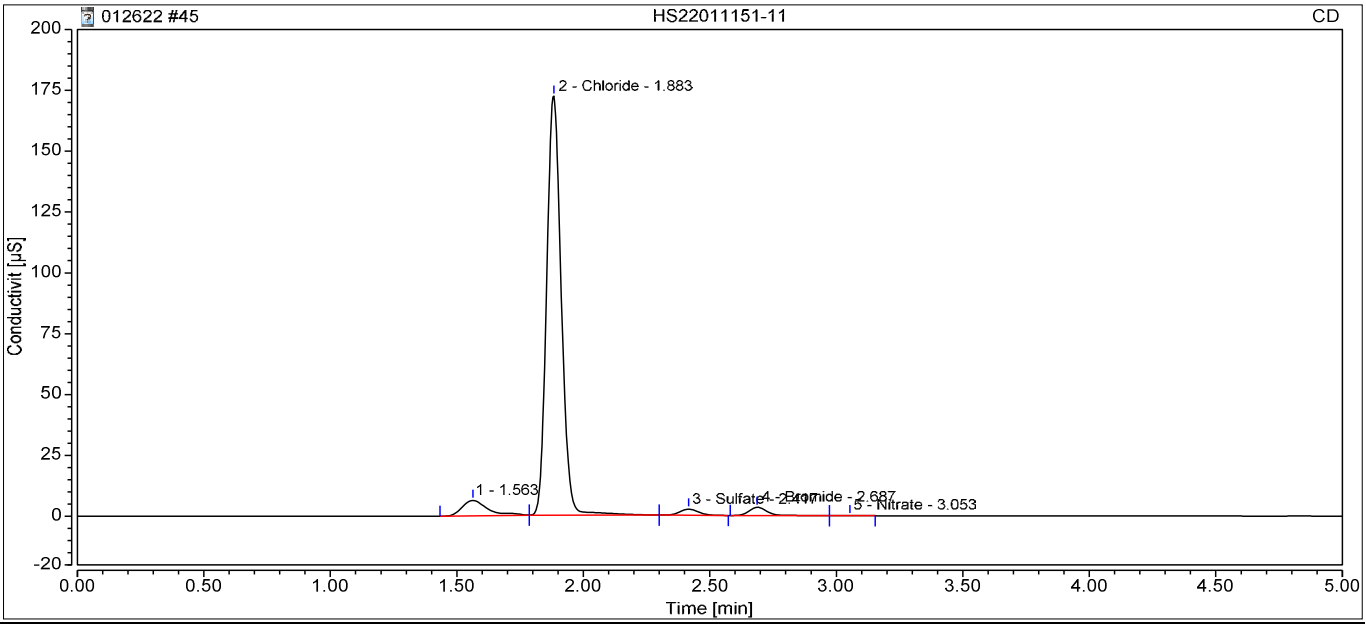
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.13	Nitrite,N	BMB	0.010	0.0227	0.0227	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.010**		**0.02**	

45 HS22011151-11

Sample Name:	**HS22011151-11**	*Injection Volume:*	**5.00**
Vial Number:	**GD2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**01/26/2022 21:20**	*Sample Weight:*	**1.0000**

Run Time:



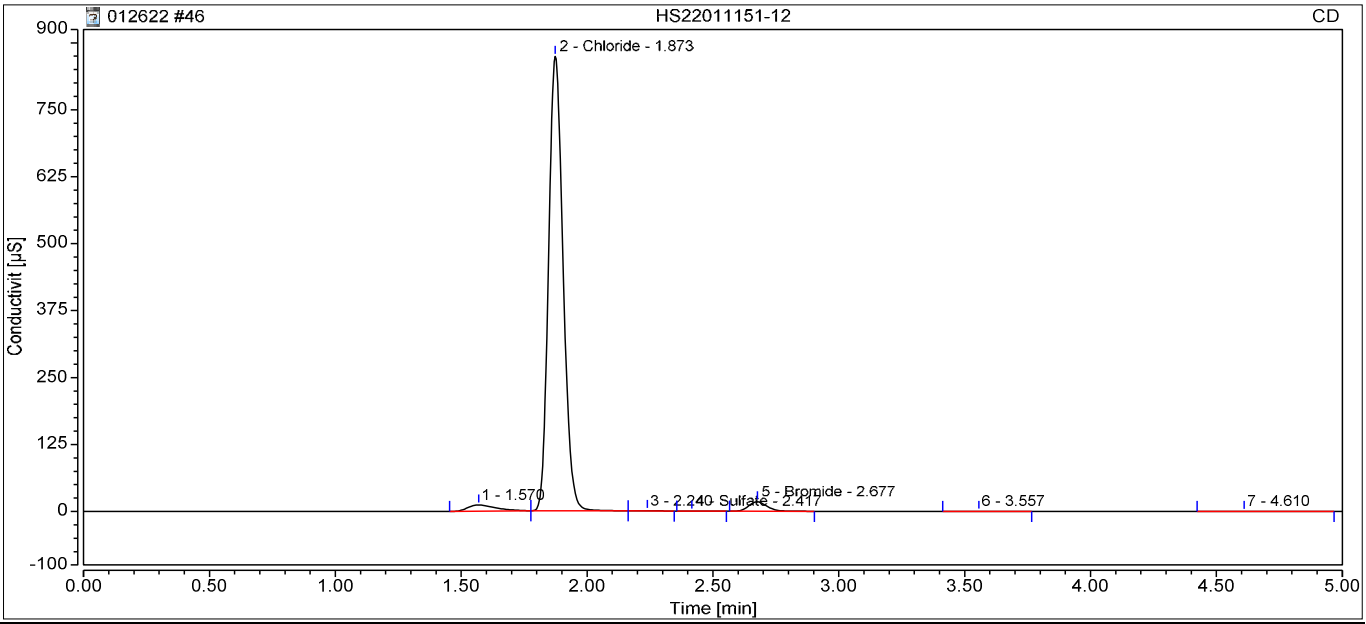
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
2	1.88	Chloride	BMB	11.486	91.9724	91.9724	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
3	2.42	Sulfate	BMB	0.213	2.3779	2.3779	1.0000
4	2.69	Bromide	BMB	0.279	5.2303	5.2303	1.0000
5	3.05	Nitrate	BMB	0.004	0.0407	0.0407	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**11.981**		**99.62**	

46 HS22011151-12

Sample Name:	**HS22011151-12**	*Injection Volume:*	**5.00**
Vial Number:	**GD3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**2.0000**
Recording Time:	**01/26/2022 21:27**	*Sample Weight:*	**1.0000**

Run Time:



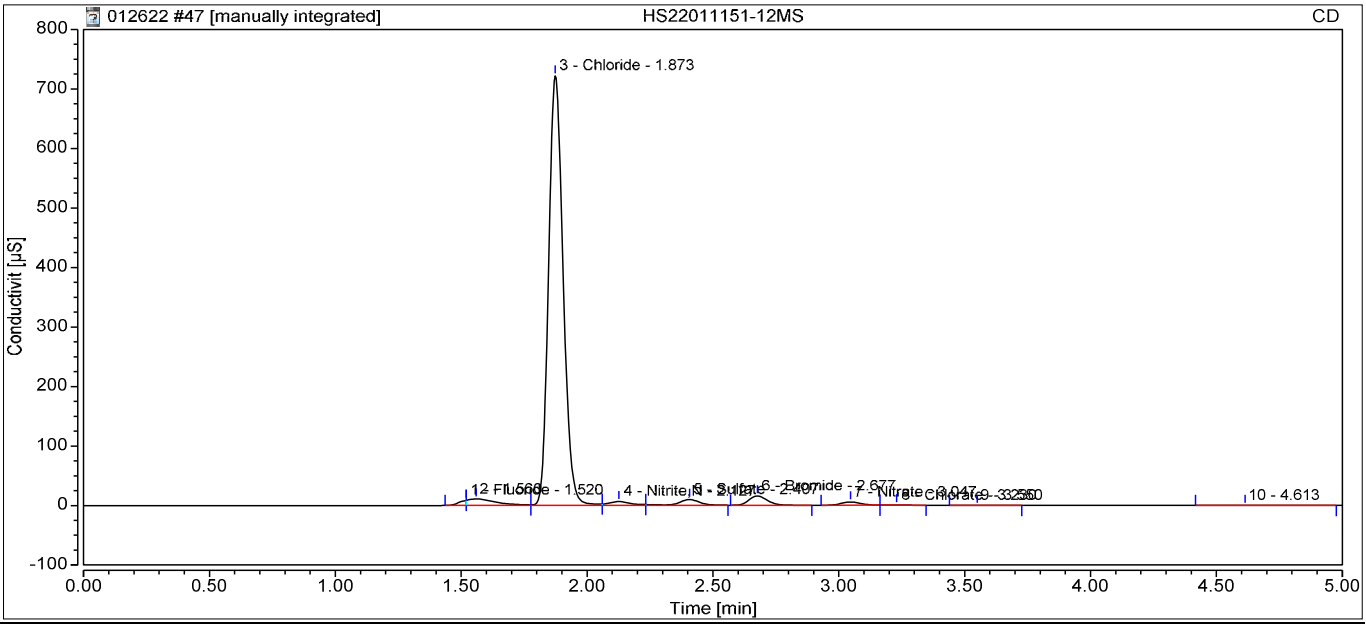
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	2.0000
2	1.87	Chloride	BMB	56.564	452.6523	905.3047	2.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	2.0000
4	2.42	Sulfate	BMB	0.007	0.1437	0.2874	2.0000
5	2.68	Bromide	BMB	1.480	27.5737	55.1474	2.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	2.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	2.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	2.0000
Total:			**0.000**	**58.051**		**960.74**	

47 HS22011151-12MS

Sample Name:	**HS22011151-12MS**	*Injection Volume:*	**5.00**
Vial Number:	**GD4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**2.0000**
Recording Time:	**01/26/2022 21:35**	*Sample Weight:*	**1.0000**

Run Time:



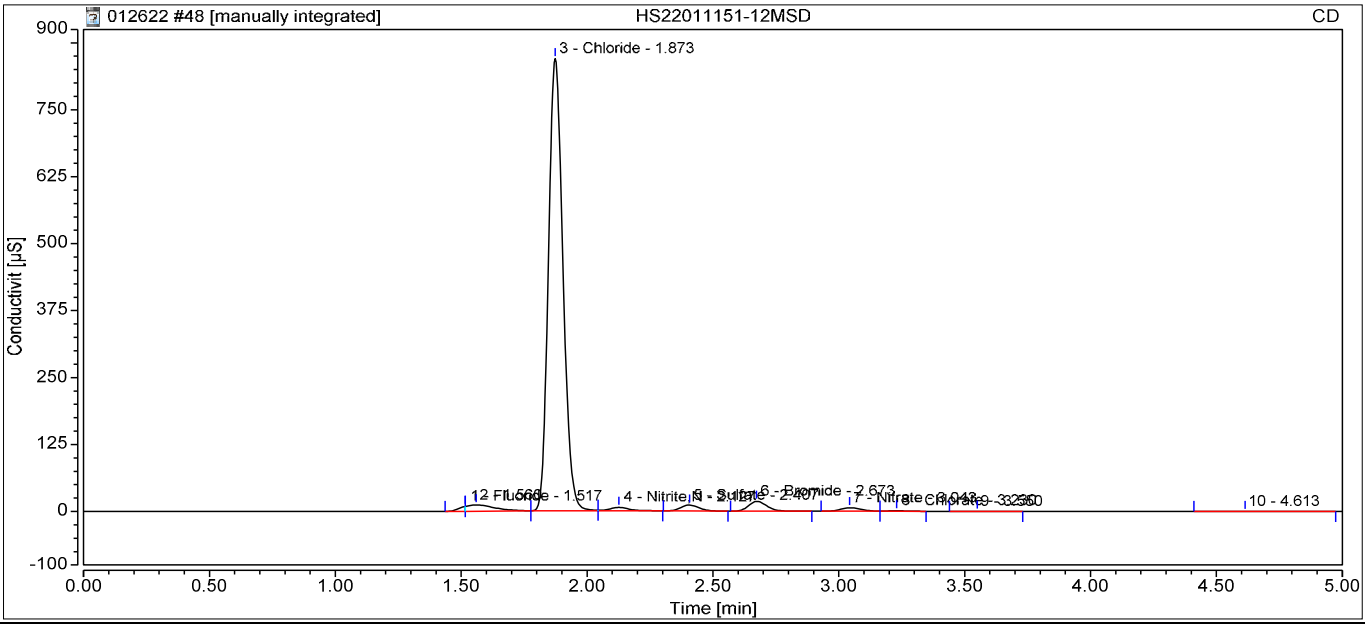
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.52	Fluoride	BM *	0.285	1.4611	2.9223	2.0000
3	1.87	Chloride	M *	48.162	385.4192	770.8385	2.0000
4	2.13	Nitrite,N	M *	0.627	2.2386	4.4773	2.0000
5	2.41	Sulfate	MB*	0.926	10.1336	20.2672	2.0000
6	2.68	Bromide	BMB	1.310	24.4240	48.8479	2.0000
7	3.05	Nitrate	BMB	0.479	1.6821	3.3642	2.0000
8	3.23	Chlorate	BMB	0.041	1.4983	2.9967	2.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	2.0000
Total:			**0.000**	**51.831**		**853.71**	

48 HS22011151-12MSD

Sample Name:	**HS22011151-12MSD**	*Injection Volume:*	**5.00**
Vial Number:	**GD5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**2.0000**
Recording Time:	**01/26/2022 21:42**	*Sample Weight:*	**1.0000**

Run Time:



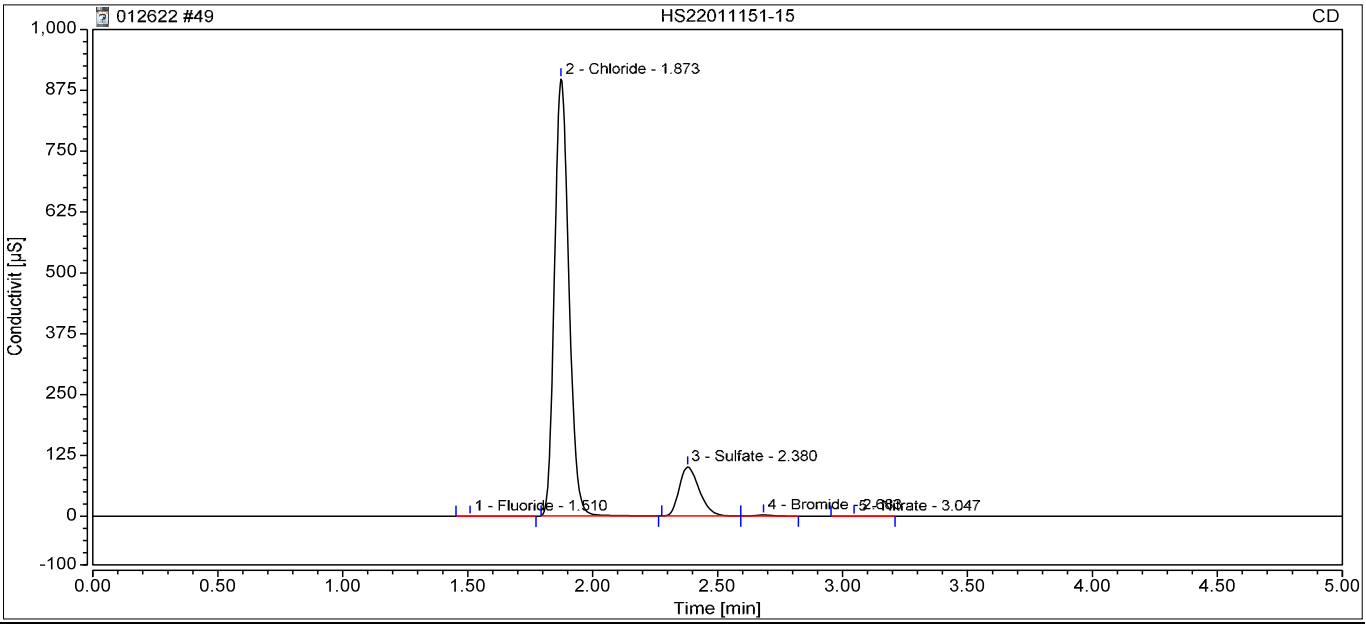
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.52	Fluoride	BM *	0.282	1.4431	2.8862	2.0000
3	1.87	Chloride	bM *	56.170	449.4994	898.9988	2.0000
4	2.13	Nitrite,N	MB*	0.600	2.1390	4.2780	2.0000
5	2.41	Sulfate	BMB	0.921	10.0784	20.1568	2.0000
6	2.67	Bromide	BMB	1.545	28.7906	57.5812	2.0000
7	3.04	Nitrate	BMB	0.569	1.9927	3.9854	2.0000
8	3.23	Chlorate	BMB	0.050	1.8282	3.6564	2.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	2.0000
Total:			**0.000**	**60.138**		**991.54**	

49 HS22011151-15

Sample Name:	**HS22011151-15**	*Injection Volume:*	**5.00**
Vial Number:	**GD6**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**2.0000**
Recording Time:	**01/26/2022 21:50**	*Sample Weight:*	**1.0000**

Run Time:



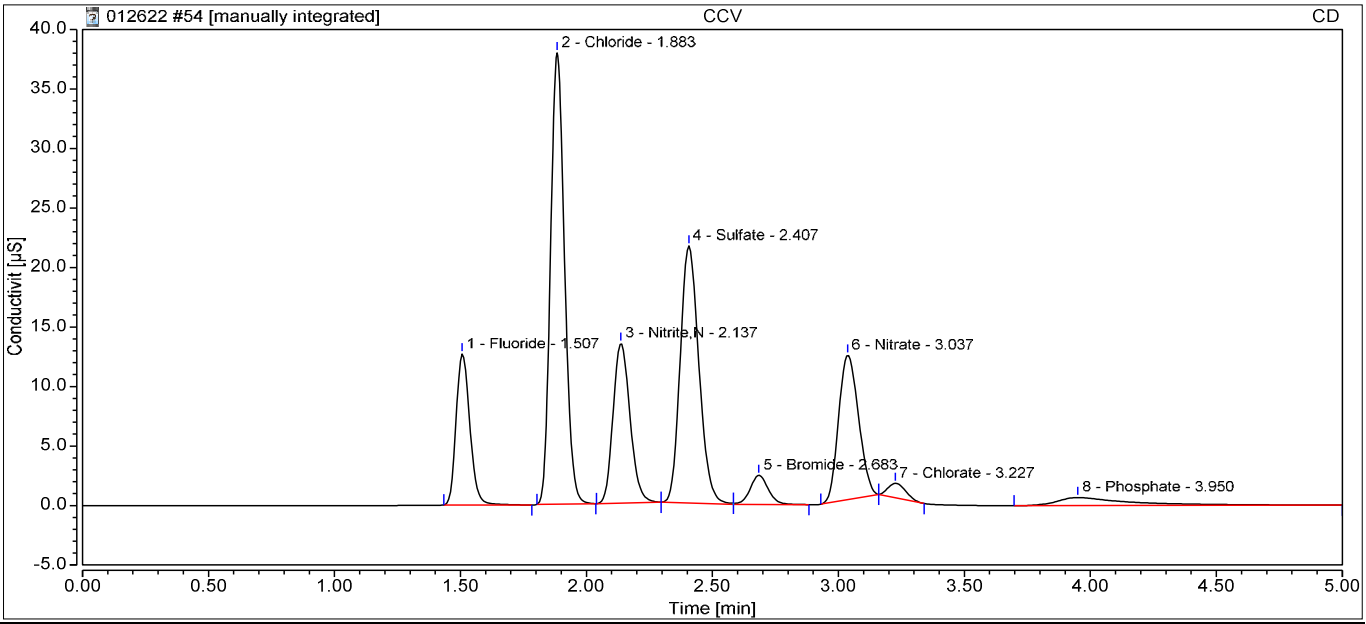
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.024	0.1310	0.2619	2.0000
2	1.87	Chloride	BMB	59.855	478.9776	957.9553	2.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	2.0000
3	2.38	Sulfate	BMB	9.358	101.7495	203.4991	2.0000
4	2.68	Bromide	BMB	0.166	3.1360	6.2721	2.0000
5	3.05	Nitrate	BMB	0.005	0.0450	0.0900	2.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	2.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	2.0000
Total:			**0.000**	**69.408**		**1168.08**	

54 CCV

Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**G1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**01/26/2022 22:27**	*Sample Weight:*	**1.0000**

Run Time:



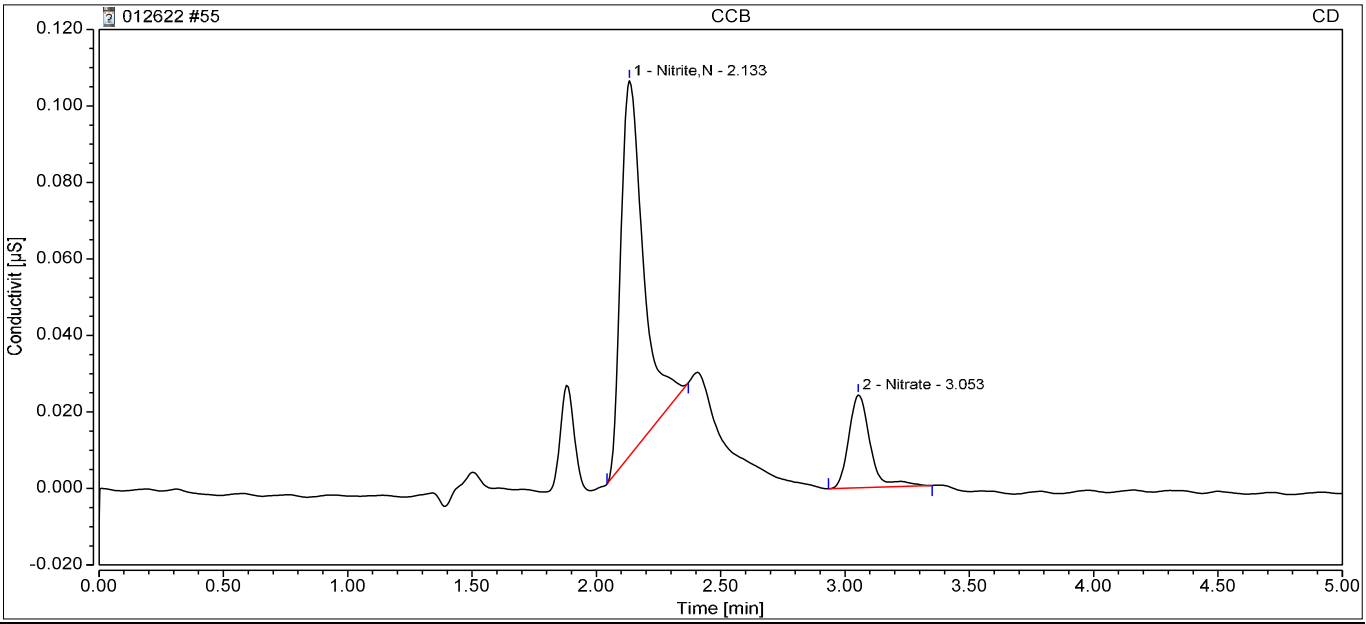
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.805	4.1075	4.1075	1.0000
2	1.88	Chloride	BMB	2.440	19.5908	19.5908	1.0000
3	2.14	Nitrite,N	BMB	1.048	3.8098	3.8098	1.0000
4	2.41	Sulfate	BM *	1.860	20.2741	20.2741	1.0000
5	2.68	Bromide	MB*	0.204	3.8290	3.8290	1.0000
6	3.04	Nitrate	BMB	1.113	3.8684	3.8684	1.0000
7	3.23	Chlorate	BMB	0.100	3.6355	3.6355	1.0000
8	3.95	Phosphate	BMB	0.234	2.2761	2.2761	1.0000
Total:			**0.000**	**7.803**		**61.39**	

55 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**01/26/2022 23:12**	*Sample Weight:*	**1.0000**

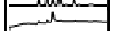
Run Time:



Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.13	Nitrite,N	BMB	0.010	0.0249	0.0249	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
2	3.05	Nitrate	BMB	0.002	0.0364	0.0364	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.013**		**0.06**	

Sequence: 020822
Last Update Operator: alshs.nouser

CD	Name	Comment	Type	Position	Dilution	Level	Instrument Method	Processing Method	Volume	Status	Inject Time
	STD1		Calibratio	GA1	1.00	1	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 4:54:48 PM -06:00
	STD2		Calibratio	GA2	1.00	2	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:00:07 PM -06:00
	STD3		Calibratio	GA3	1.00	3	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:05:25 PM -06:00
	STD4		Calibratio	GA4	1.00	4	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:10:43 PM -06:00
	STD5		Calibratio	GA5	1.00	5	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:16:02 PM -06:00
	STD6		Calibratio	GA6	1.00	6	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:21:20 PM -06:00
	ICV		Unknown	GA7	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:26:39 PM -06:00
	ICB		Unknown	GA8	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:31:57 PM -06:00
	CCV		Unknown	R1	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 10:14:41 AM -06:00
	CCB		Unknown	R4	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 10:19:59 AM -06:00
	MBLK		Unknown	R5	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 10:36:27 AM -06:00
	LCS		Unknown	R2	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 10:41:45 AM -06:00
	CCV1		Unknown	R3	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 12:16:12 PM -06:00
	CCB		Unknown	R6	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 12:21:30 PM -06:00
	HS22020344-02		Unknown	RB5	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 2:28:49 PM -06:00
	HS22020344-02MS		Unknown	RB6	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 2:34:30 PM -06:00
	HS22020344-02MSD		Unknown	RB7	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 2:39:48 PM -06:00
	CCV		Unknown	R1	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 3:01:02 PM -06:00
	CCB		Unknown	R4	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 3:06:20 PM -06:00
	CCV1		Unknown	R3	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 6:33:52 PM -06:00
	CCB		Unknown	R6	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 6:39:10 PM -06:00
	HS22011151-12		Unknown	GA6	10.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 7:11:02 PM -06:00
	HS22011151-15		Unknown	GA7	10.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 7:16:21 PM -06:00
	CCV		Unknown	R1	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 7:37:47 PM -06:00
	CCB		Unknown	R4	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 7:43:06 PM -06:00
	CCV1		Unknown	R3	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 8:30:54 PM -06:00
	CCB		Unknown	R6	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/8/2022 8:36:47 PM -06:00

Sequence: 020822
Injection #6: STD6

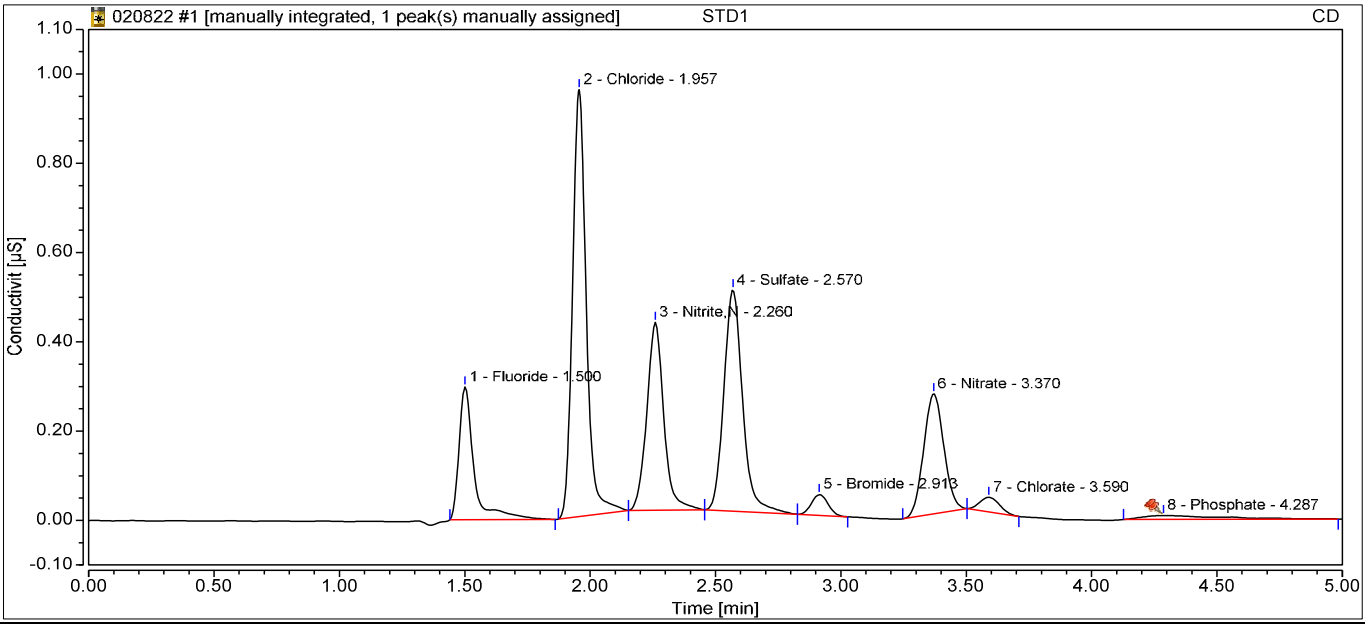
Calibration

Peak No.	Peak Name	Cal.Type	Eval.Type	Number of Points	Rel.Std.Dev. %	Coeff.of Determination	C0 (Offset)	C1 (Slope)	C2 (Curve)
1	*Fluoride*	*Lin, WithOffset, 1/*	*Area*	*6*	*21.3828*	*0.99737*	*0.0042*	*0.2155*	*0.0000*
2	Chloride	Lin, WithOffset, 1/	Area	6	3.6944	0.99993	-0.0077	0.1388	0.0000
3	Nitrite,N	Quad, WithOffset,	Area	6	7.6810	0.99970	0.0036	0.3122	-0.0032
4	Sulfate	Lin, WithOffset, 1/	Area	6	3.1476	0.99995	-0.0062	0.1028	0.0000
5	Bromide	Lin, WithOffset, 1/	Area	6	10.2940	0.99957	-0.0035	0.0615	0.0000
6	Nitrate	Lin, WithOffset, 1/	Area	6	2.5692	0.99997	-0.0098	0.3417	0.0000
7	Chlorate	Lin, WithOffset, 1/	Area	6	10.6539	0.99953	-0.0025	0.0468	0.0000
8	Phosphate	Quad, WithOffset,	Area	6	26.8509	0.99849	-0.0116	0.1136	0.0011
Maximum					**26.8509**	0.99997			
Minimum					2.5692	**0.99737**			

1 STD1

Sample Name:	**STD1**	*Injection Volume:*	**5.00**
Vial Number:	**GA1**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 16:54**	*Sample Weight:*	**1.0000**

Run Time:



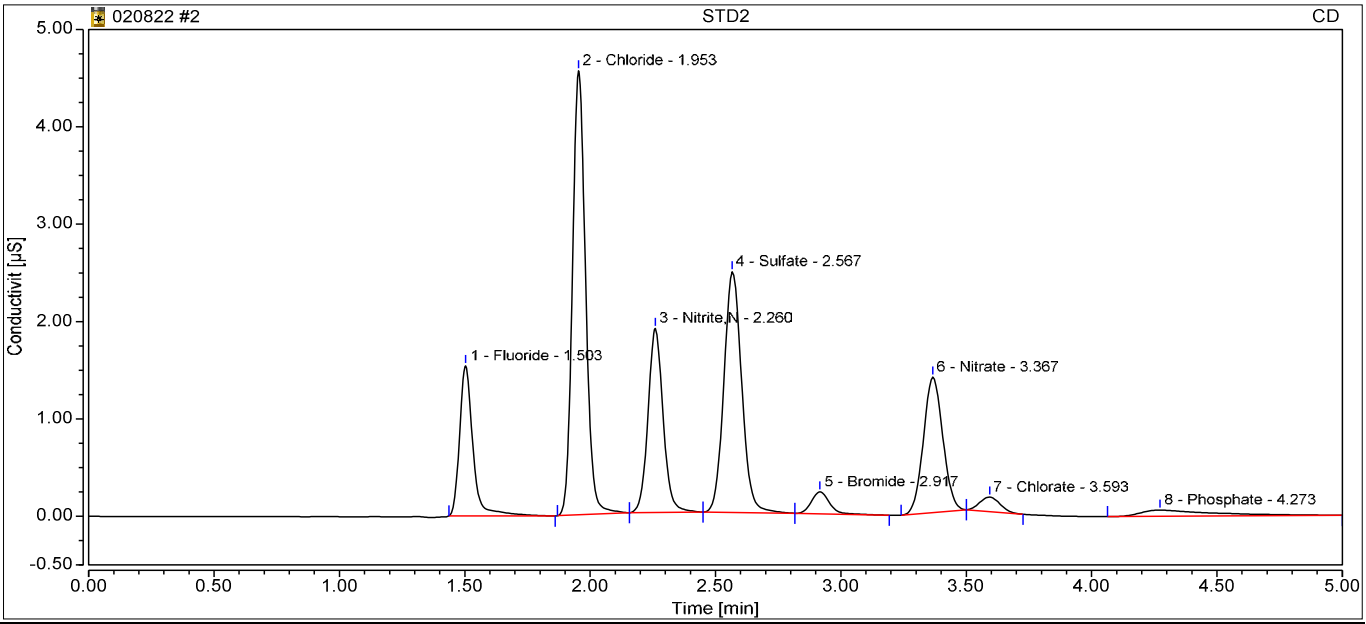
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.021	0.0765	0.0765	1.0000
2	1.96	Chloride	BMB	0.060	0.4903	0.4903	1.0000
3	2.26	Nitrite,N	BMB	0.033	0.0941	0.0941	1.0000
4	2.57	Sulfate	BMB	0.043	0.4779	0.4779	1.0000
5	2.91	Bromide	BMB	0.004	0.1143	0.1143	1.0000
6	3.37	Nitrate	BMB	0.025	0.1021	0.1021	1.0000
7	3.59	Chlorate	BMB	0.003	0.1167	0.1167	1.0000
8	4.29	Phosphate	BMB*^	0.003	0.1302	0.1302	1.0000
Total:			**0.000**	**0.192**		**1.60**	

2 STD2

Sample Name:	**STD2**	*Injection Volume:*	**5.00**
Vial Number:	**GA2**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:00**	*Sample Weight:*	**1.0000**

Run Time:



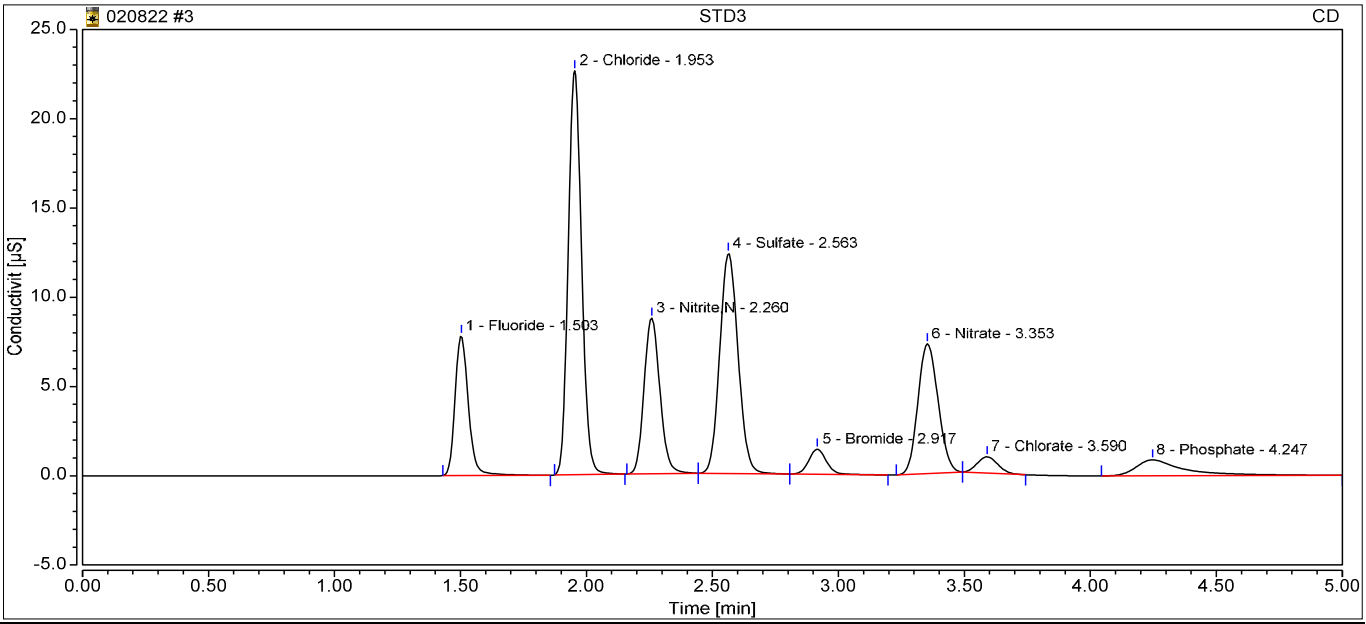
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.096	0.4244	0.4244	1.0000
2	1.95	Chloride	BMB	0.277	2.0467	2.0467	1.0000
3	2.26	Nitrite,N	BMB	0.132	0.4123	0.4123	1.0000
4	2.57	Sulfate	BMB	0.204	2.0474	2.0474	1.0000
5	2.92	Bromide	BMB	0.019	0.3656	0.3656	1.0000
6	3.37	Nitrate	BMB	0.125	0.3941	0.3941	1.0000
7	3.59	Chlorate	BMB	0.014	0.3528	0.3528	1.0000
8	4.27	Phosphate	BMB	0.022	0.2979	0.2979	1.0000
Total:			**0.000**	**0.888**		**6.34**	

3 STD3

Sample Name:	**STD3**	*Injection Volume:*	**5.00**
Vial Number:	**GA3**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:05**	*Sample Weight:*	**1.0000**

Run Time:



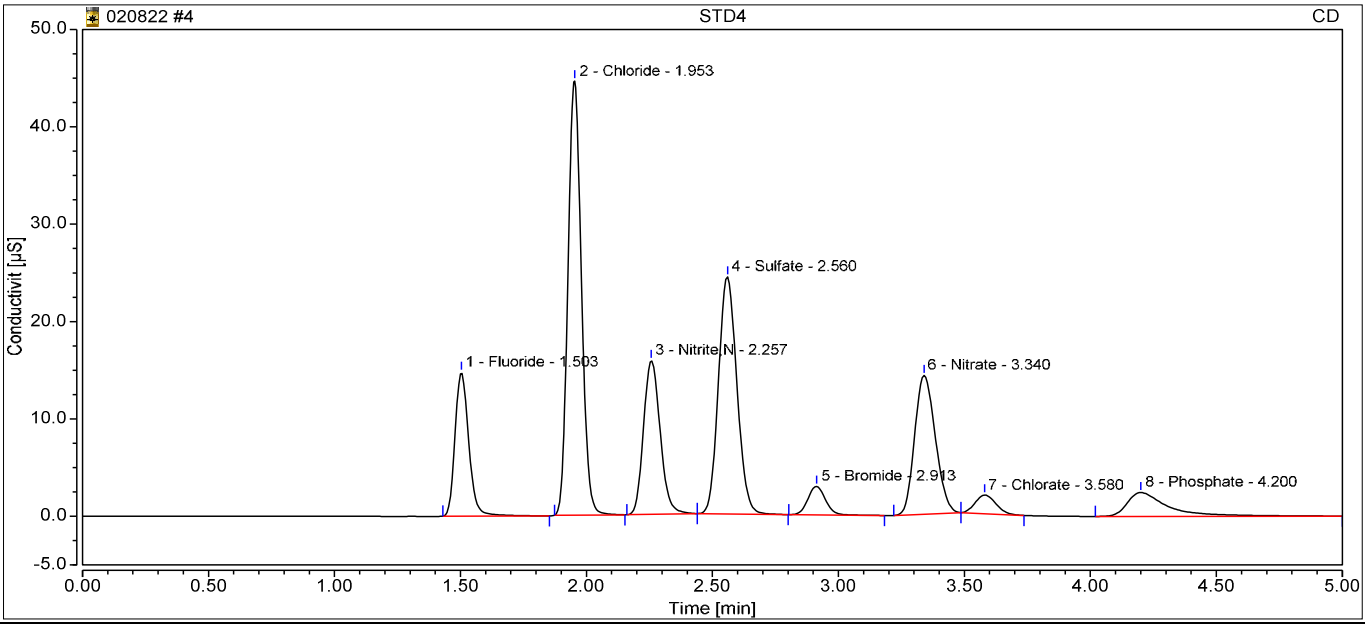
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.483	2.2207	2.2207	1.0000
2	1.95	Chloride	BMB	1.390	10.0653	10.0653	1.0000
3	2.26	Nitrite,N	BMB	0.637	2.0733	2.0733	1.0000
4	2.56	Sulfate	BMB	1.041	10.1897	10.1897	1.0000
5	2.92	Bromide	BMB	0.114	1.9189	1.9189	1.0000
6	3.35	Nitrate	BMB	0.673	1.9996	1.9996	1.0000
7	3.59	Chlorate	BMB	0.086	1.8976	1.8976	1.0000
8	4.25	Phosphate	BMB	0.201	1.8374	1.8374	1.0000
Total:			**0.000**	**4.625**		**32.20**	

4 STD4

Sample Name:	**STD4**	*Injection Volume:*	**5.00**
Vial Number:	**GA4**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:10**	*Sample Weight:*	**1.0000**

Run Time:



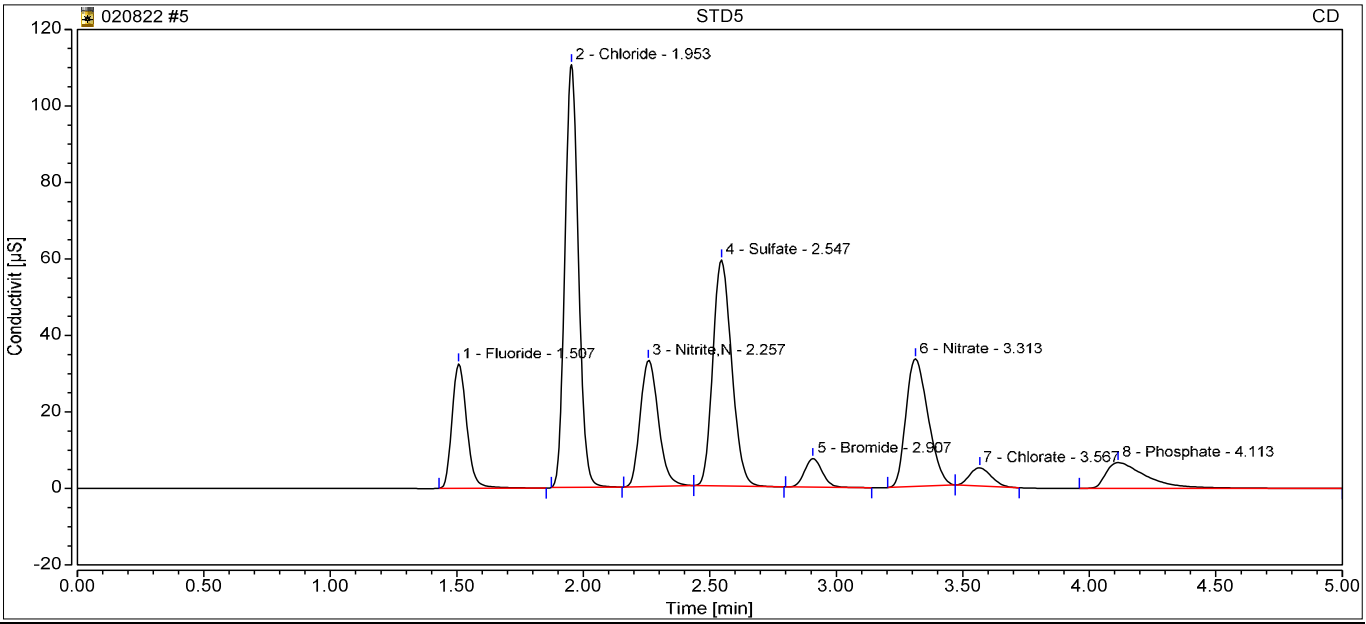
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.936	4.3225	4.3225	1.0000
2	1.95	Chloride	BMB	2.756	19.9028	19.9028	1.0000
3	2.26	Nitrite,N	BMB	1.211	4.0347	4.0347	1.0000
4	2.56	Sulfate	BMB	2.065	20.1557	20.1557	1.0000
5	2.91	Bromide	BMB	0.237	3.9133	3.9133	1.0000
6	3.34	Nitrate	BMB	1.353	3.9875	3.9875	1.0000
7	3.58	Chlorate	BMB	0.182	3.9485	3.9485	1.0000
8	4.20	Phosphate	BMB	0.464	4.0338	4.0338	1.0000
Total:			**0.000**	**9.203**		**64.30**	

5 STD5

Sample Name:	**STD5**	*Injection Volume:*	**5.00**
Vial Number:	**GA5**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:16**	*Sample Weight:*	**1.0000**

Run Time:



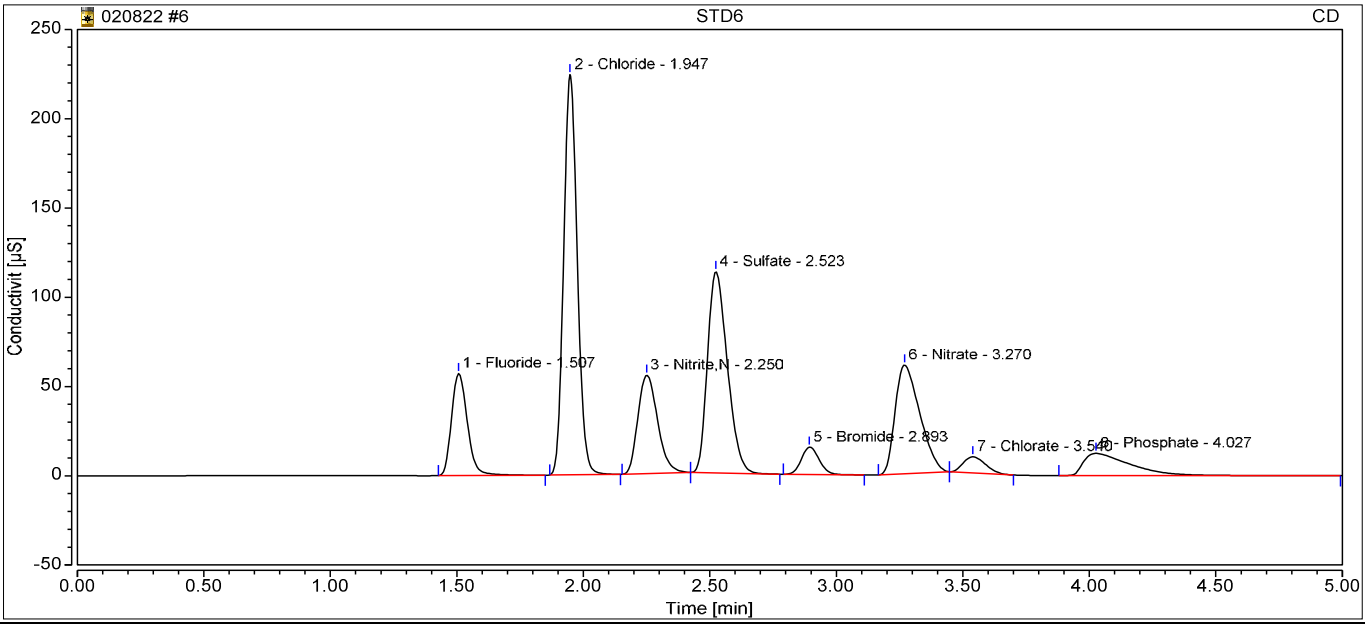
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	2.202	10.2004	10.2004	1.0000
2	1.95	Chloride	BMB	6.857	49.4370	49.4370	1.0000
3	2.26	Nitrite,N	BMB	2.744	9.7621	9.7621	1.0000
4	2.55	Sulfate	BMB	5.105	49.7378	49.7378	1.0000
5	2.91	Bromide	BMB	0.606	9.9171	9.9171	1.0000
6	3.31	Nitrate	BMB	3.383	9.9299	9.9299	1.0000
7	3.57	Chlorate	BMB	0.470	10.1129	10.1129	1.0000
8	4.11	Phosphate	BMB	1.275	10.3243	10.3243	1.0000
Total:			**0.000**	**22.642**		**159.42**	

6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**5.00**
Vial Number:	**GA6**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:21**	*Sample Weight:*	**1.0000**

Run Time:



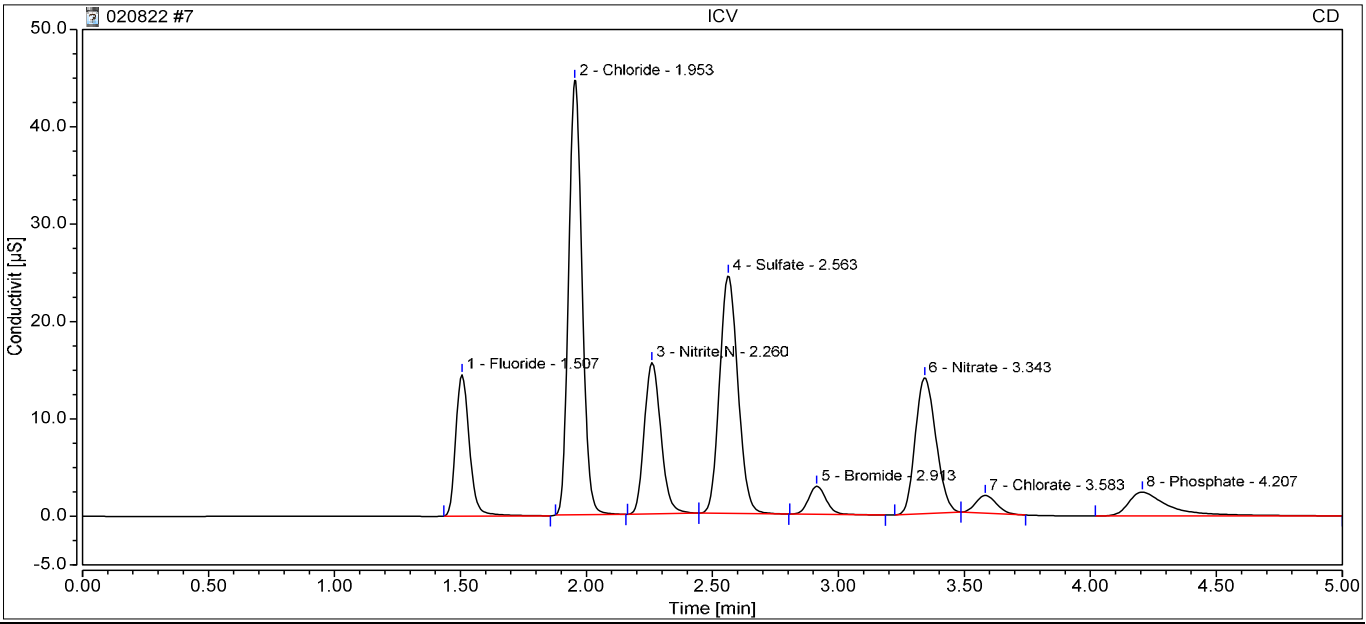
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	4.154	19.2555	19.2555	1.0000
2	1.95	Chloride	BMB	13.955	100.5578	100.5578	1.0000
3	2.25	Nitrite,N	BMB	4.985	20.1384	20.1384	1.0000
4	2.52	Sulfate	BMB	10.258	99.8915	99.8915	1.0000
5	2.89	Bromide	BMB	1.242	20.2707	20.2707	1.0000
6	3.27	Nitrate	BMB	6.854	20.0867	20.0867	1.0000
7	3.54	Chlorate	BMB	0.936	20.0714	20.0714	1.0000
8	4.03	Phosphate	BMB	2.666	19.8678	19.8678	1.0000
Total:			**0.000**	**45.050**		**320.14**	

7 ICV

Sample Name:	**ICV**	*Injection Volume:*	**5.00**
Vial Number:	**GA7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:26**	*Sample Weight:*	**1.0000**

Run Time:



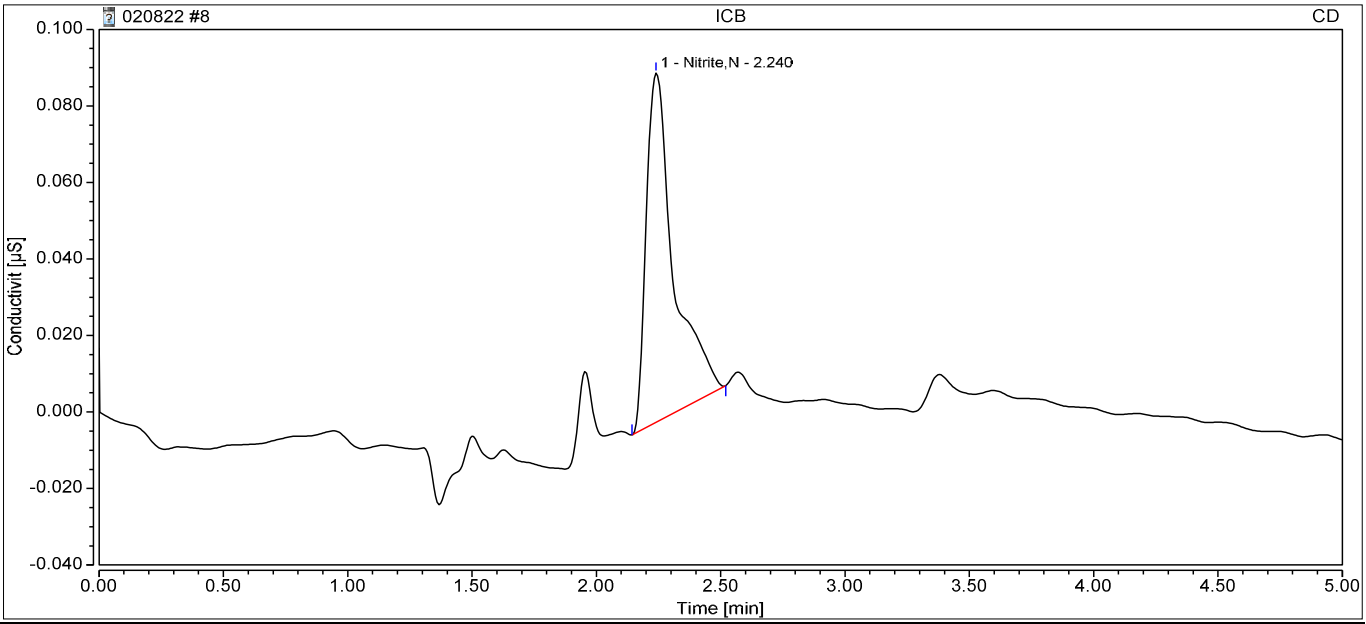
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.918	4.2393	4.2393	1.0000
2	1.95	Chloride	BMB	2.757	19.9118	19.9118	1.0000
3	2.26	Nitrite,N	BMB	1.187	3.9514	3.9514	1.0000
4	2.56	Sulfate	BMB	2.061	20.1215	20.1215	1.0000
5	2.91	Bromide	BMB	0.234	3.8709	3.8709	1.0000
6	3.34	Nitrate	BMB	1.322	3.8966	3.8966	1.0000
7	3.58	Chlorate	BMB	0.173	3.7489	3.7489	1.0000
8	4.21	Phosphate	BMB	0.463	4.0300	4.0300	1.0000
Total:			**0.000**	**9.115**		**63.77**	

8 ICB

Sample Name:	**ICB**	*Injection Volume:*	**5.00**
Vial Number:	**GA8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:31**	*Sample Weight:*	**1.0000**

Run Time:

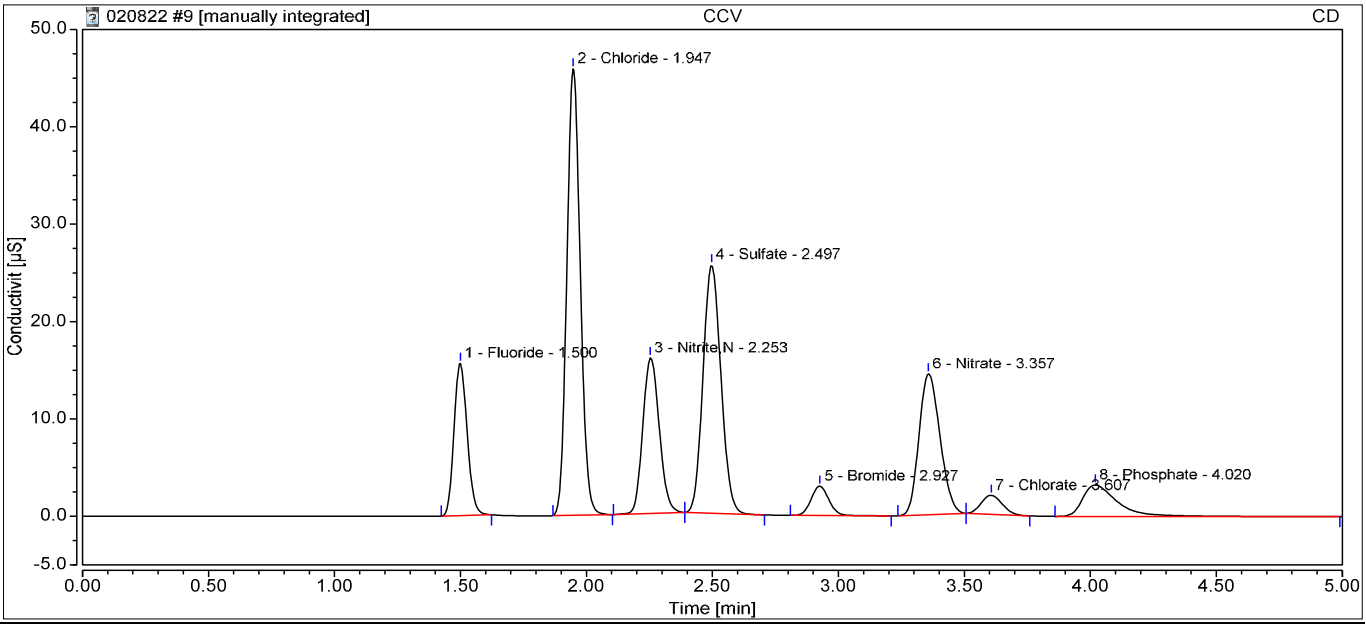


Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.24	Nitrite,N	BMB	0.012	0.0259	0.0259	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.012**		**0.03**	

9 CCV			
Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 10:14**	*Sample Weight:*	**1.0000**

Run Time:



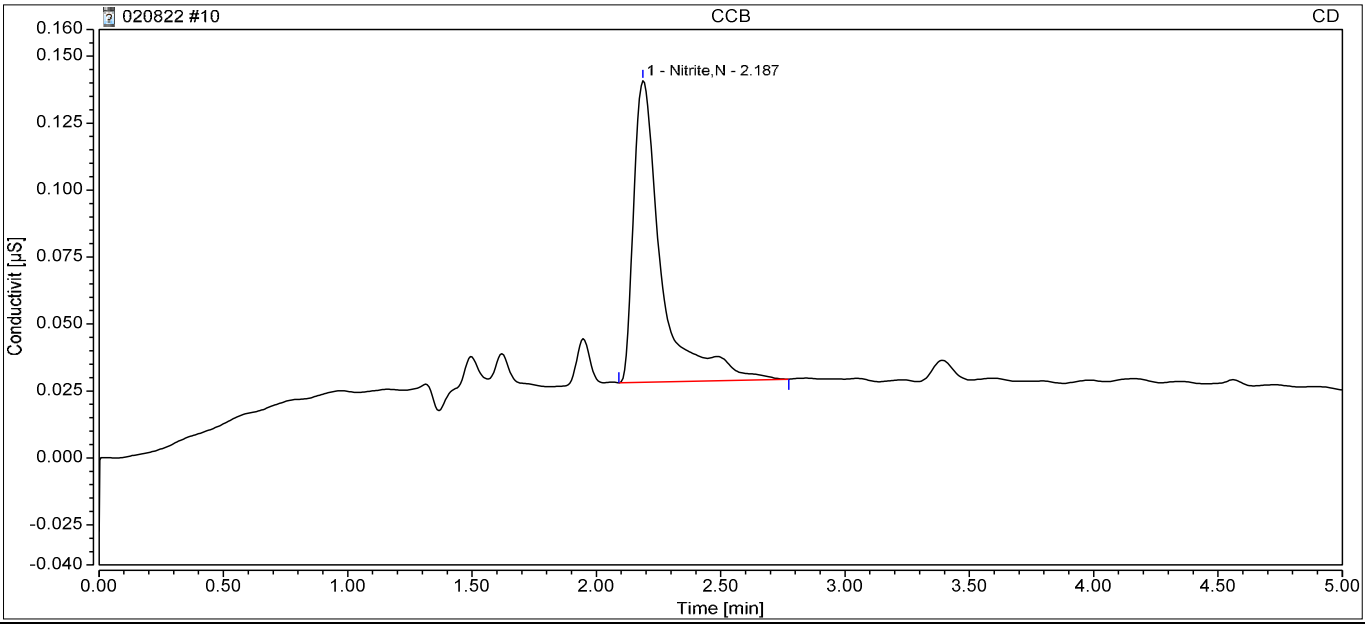
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB*	0.950	4.3887	4.3887	1.0000
2	1.95	Chloride	BMB	2.829	20.4330	20.4330	1.0000
3	2.25	Nitrite,N	BMB	1.214	4.0470	4.0470	1.0000
4	2.50	Sulfate	BMB	2.099	20.4870	20.4870	1.0000
5	2.93	Bromide	BMB	0.247	4.0682	4.0682	1.0000
6	3.36	Nitrate	BMB	1.394	4.1096	4.1096	1.0000
7	3.61	Chlorate	BMB	0.189	4.1017	4.1017	1.0000
8	4.02	Phosphate	BMB	0.517	4.4643	4.4643	1.0000
Total:			**0.000**	**9.440**		**66.10**	

10 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 10:19**	*Sample Weight:*	**1.0000**

Run Time:



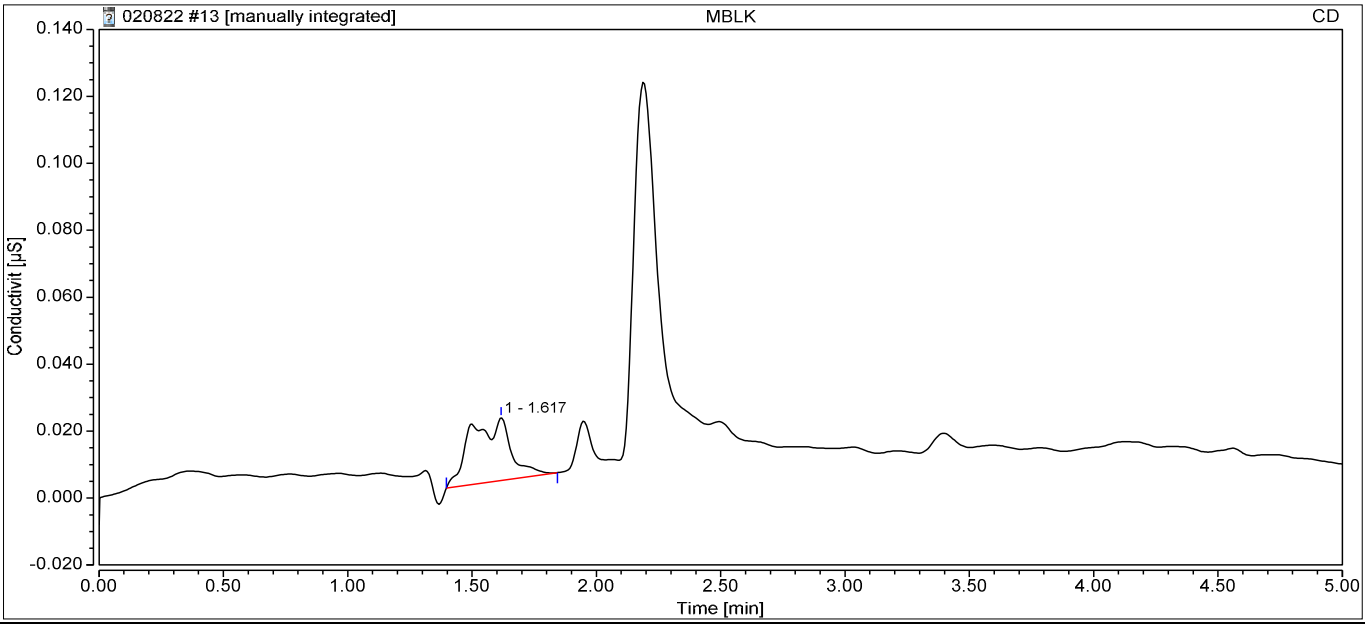
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.19	Nitrite,N	BMB	0.015	0.0352	0.0352	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.015**		**0.04**	

13 MBLK

Sample Name:	**MBLK**	*Injection Volume:*	**5.00**
Vial Number:	**R5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 10:36**	*Sample Weight:*	**1.0000**

Run Time:



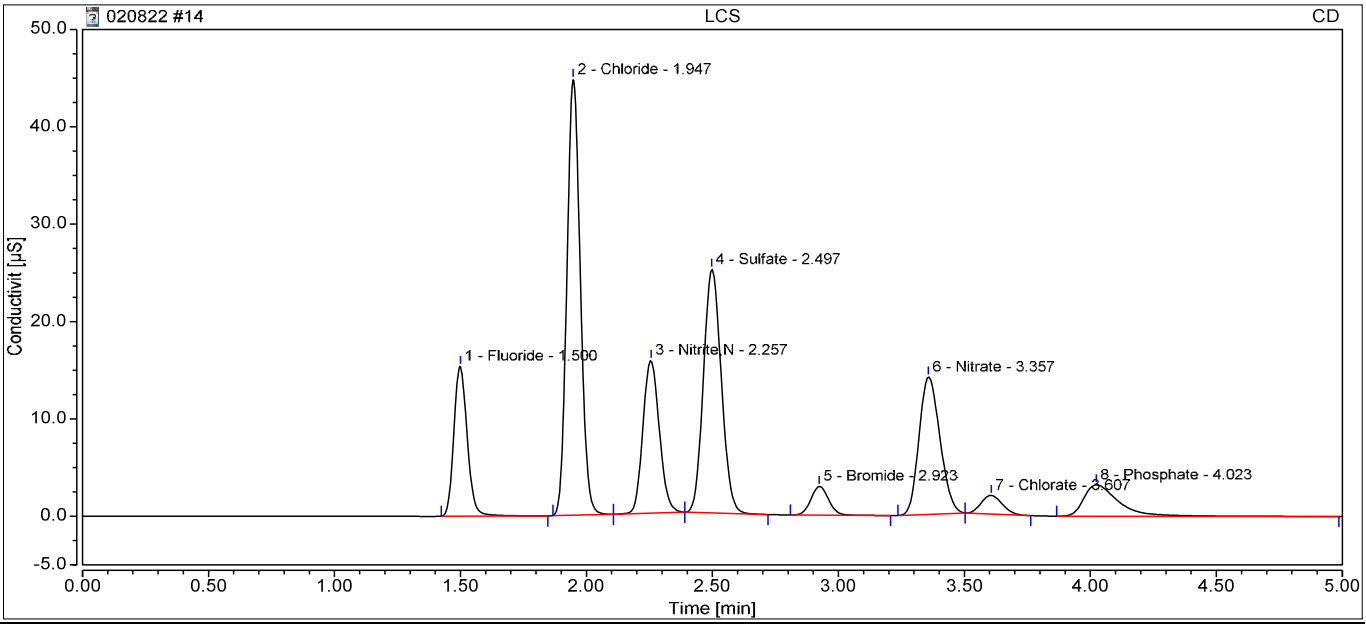
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.000**		**0.00**	

14 LCS

Sample Name:	**LCS**	*Injection Volume:*	**5.00**
Vial Number:	**R2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 10:41**	*Sample Weight:*	**1.0000**

Run Time:



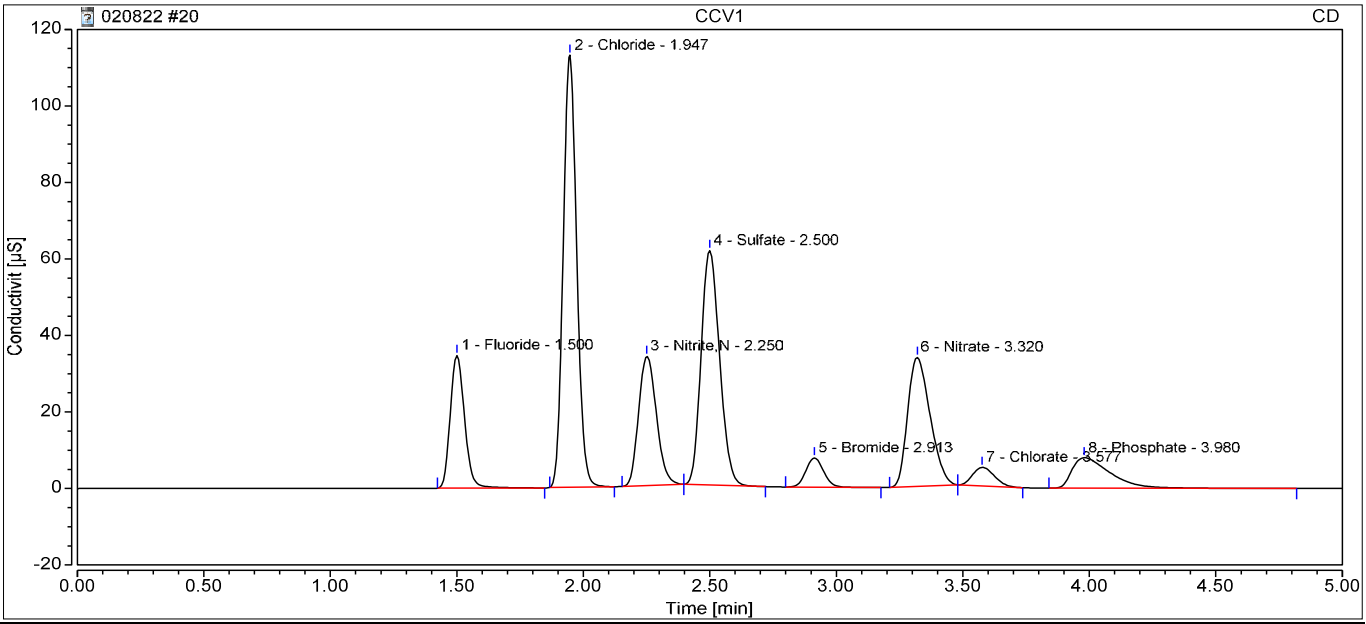
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.951	4.3941	4.3941	1.0000
2	1.95	Chloride	BMB	2.761	19.9392	19.9392	1.0000
3	2.26	Nitrite,N	BMB	1.188	3.9560	3.9560	1.0000
4	2.50	Sulfate	BMB	2.054	20.0477	20.0477	1.0000
5	2.92	Bromide	BMB	0.240	3.9677	3.9677	1.0000
6	3.36	Nitrate	BMB	1.357	4.0012	4.0012	1.0000
7	3.61	Chlorate	BMB	0.186	4.0308	4.0308	1.0000
8	4.02	Phosphate	BMB	0.517	4.4679	4.4679	1.0000
Total:			**0.000**	**9.255**		**64.80**	

20 CCV1

Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**R3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 12:16**	*Sample Weight:*	**1.0000**

Run Time:



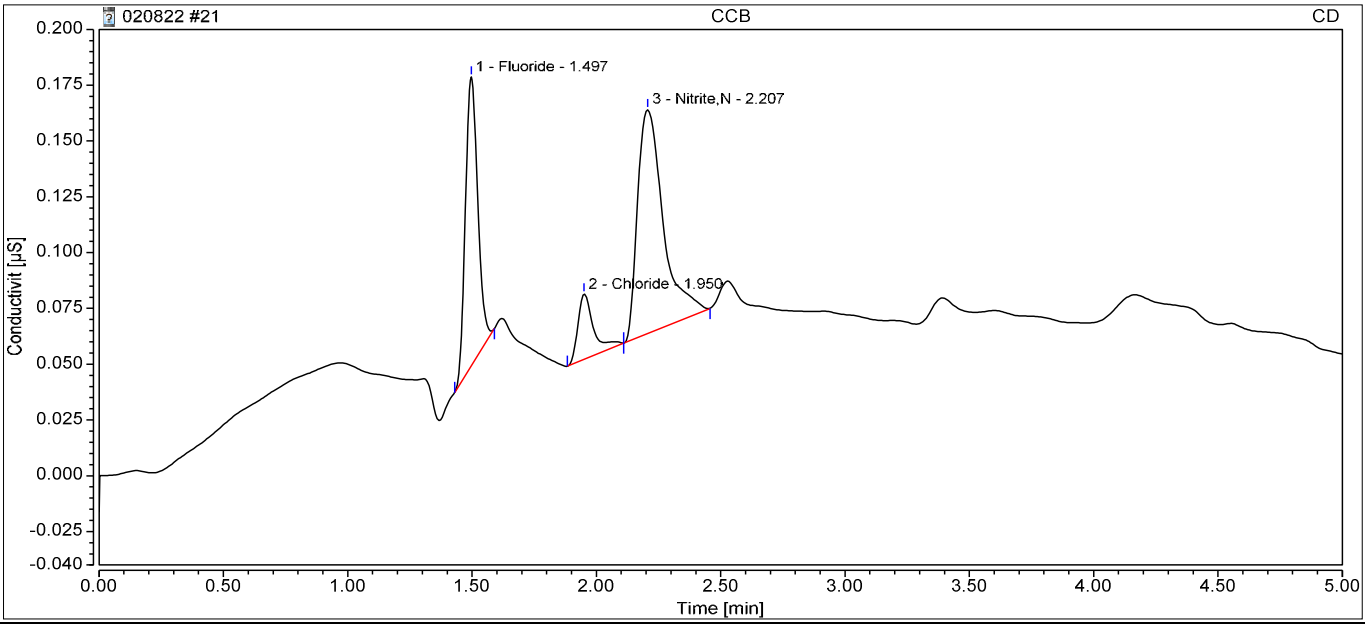
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	2.279	10.5585	10.5585	1.0000
2	1.95	Chloride	BMB	6.988	50.3839	50.3839	1.0000
3	2.25	Nitrite,N	BMB	2.763	9.8346	9.8346	1.0000
4	2.50	Sulfate	BMB	5.179	50.4592	50.4592	1.0000
5	2.91	Bromide	BMB	0.623	10.1953	10.1953	1.0000
6	3.32	Nitrate	BMB	3.457	10.1466	10.1466	1.0000
7	3.58	Chlorate	BMB	0.483	10.3738	10.3738	1.0000
8	3.98	Phosphate	BMB	1.400	11.2390	11.2390	1.0000
Total:			**0.000**	**23.172**		**163.19**	

21 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R6**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 12:21**	*Sample Weight:*	**1.0000**

Run Time:

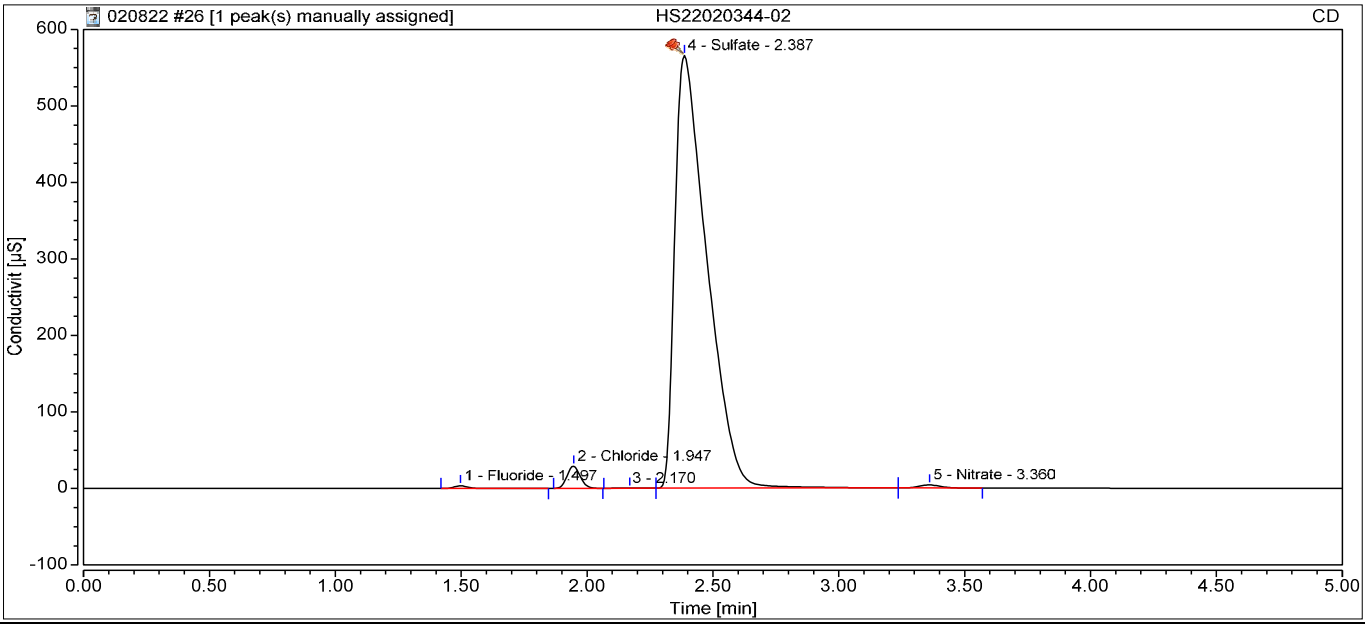


Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.007	0.0152	0.0152	1.0000
2	1.95	Chloride	BMB	0.002	0.0704	0.0704	1.0000
3	2.21	Nitrite,N	BMB	0.012	0.0269	0.0269	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.022**		**0.11**	

26 HS22020344-02			
Sample Name:	**HS22020344-02**	*Injection Volume:*	**5.00**
Vial Number:	**RB5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 14:28**	*Sample Weight:*	**1.0000**

Run Time:



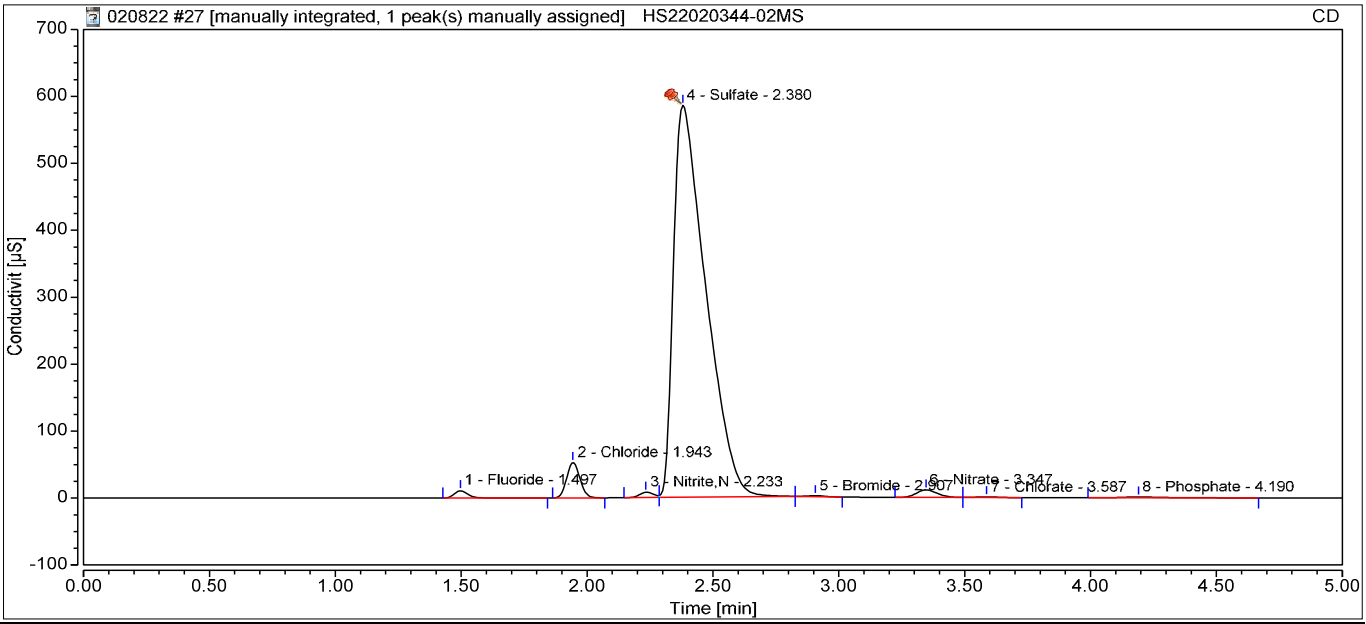
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.224	1.0208	1.0208	1.0000
2	1.95	Chloride	BMB	1.764	12.7565	12.7565	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
4	2.39	Sulfate	BMB^	83.307	810.7843	810.7843	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
5	3.36	Nitrate	BMB	0.372	1.1166	1.1166	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**85.666**		**825.68**	

27 HS22020344-02MS

Sample Name:	**HS22020344-02MS**	*Injection Volume:*	**5.00**
Vial Number:	**RB6**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 14:34**	*Sample Weight:*	**1.0000**

Run Time:



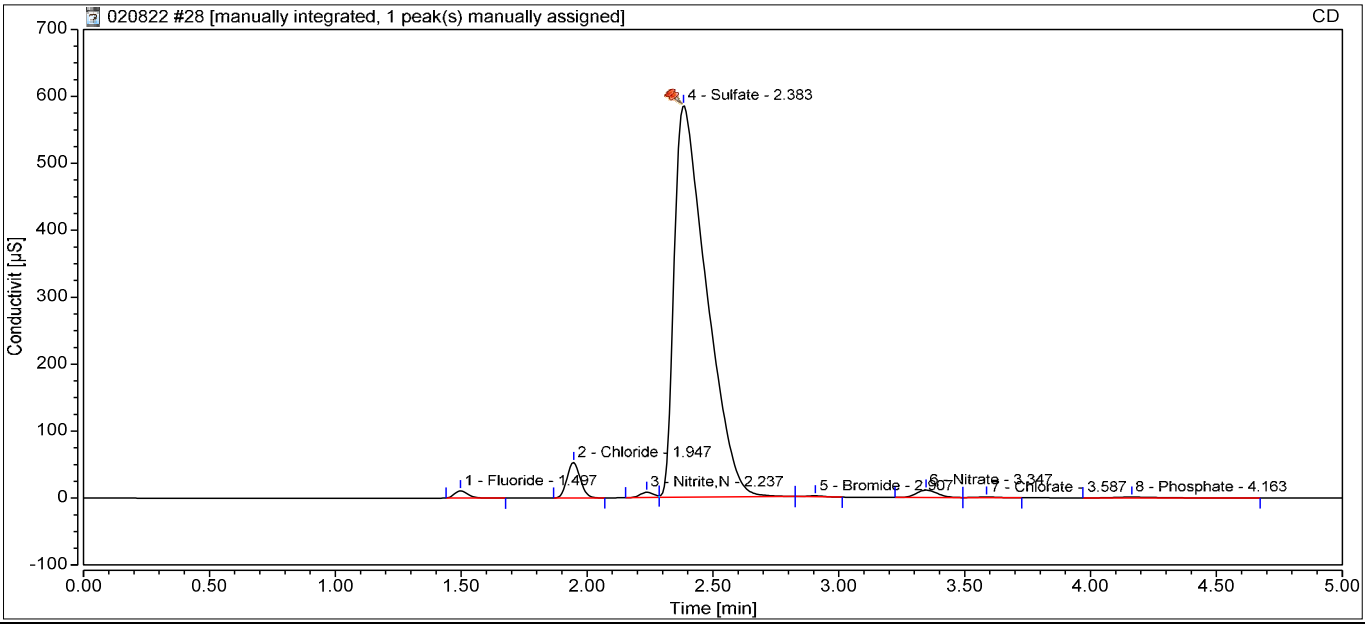
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.690	3.1844	3.1844	1.0000
2	1.94	Chloride	BMB	3.229	23.3142	23.3142	1.0000
3	2.23	Nitrite,N	BM *	0.505	1.6341	1.6341	1.0000
4	2.38	Sulfate	MB*^	86.814	844.9162	844.9162	1.0000
5	2.91	Bromide	BMB	0.111	1.8609	1.8609	1.0000
6	3.35	Nitrate	BMB	1.065	3.1440	3.1440	1.0000
7	3.59	Chlorate	BMB	0.087	1.9126	1.9126	1.0000
8	4.19	Phosphate	BMB	0.225	2.0429	2.0429	1.0000
Total:			**0.000**	**92.726**		**882.01**	

28 HS22020344-02MSD

Sample Name:	**HS22020344-02MSD**	*Injection Volume:*	**5.00**
Vial Number:	**RB7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 14:39**	*Sample Weight:*	**1.0000**

Run Time:



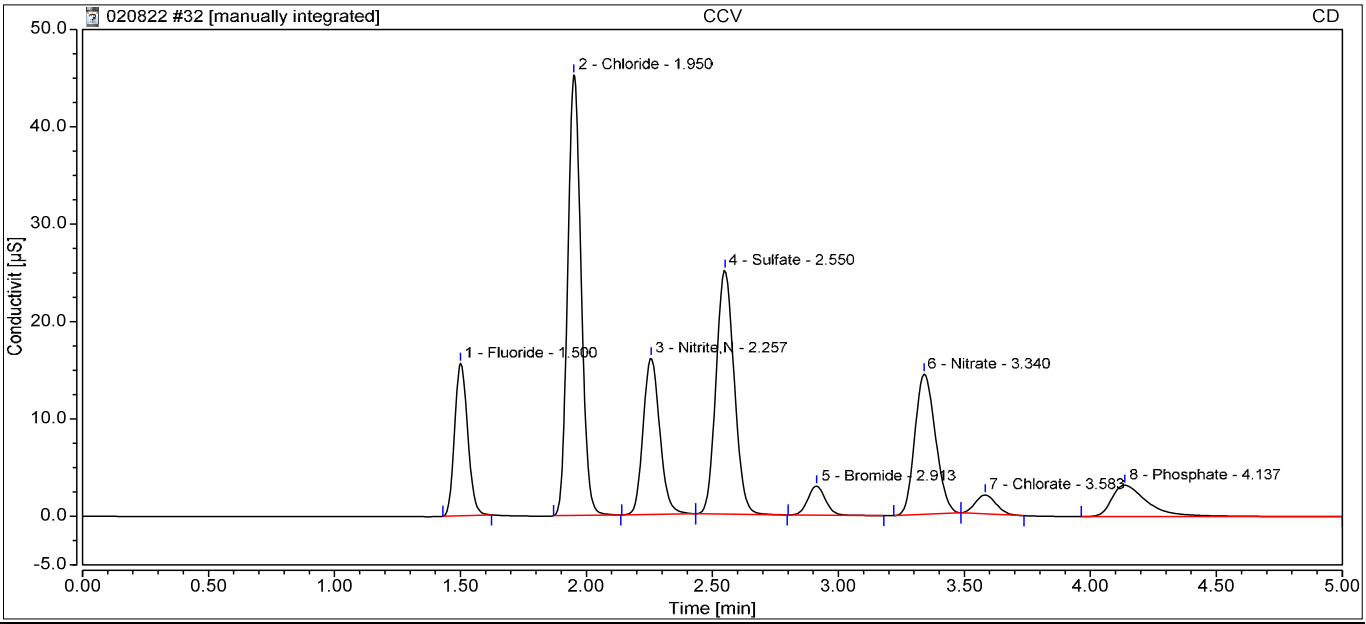
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.649	2.9945	2.9945	1.0000
2	1.95	Chloride	BMB	3.233	23.3415	23.3415	1.0000
3	2.24	Nitrite,N	BM *	0.501	1.6202	1.6202	1.0000
4	2.38	Sulfate	MB*^	86.859	845.3567	845.3567	1.0000
5	2.91	Bromide	BMB	0.111	1.8561	1.8561	1.0000
6	3.35	Nitrate	BMB	1.066	3.1485	3.1485	1.0000
7	3.59	Chlorate	BMB	0.087	1.9137	1.9137	1.0000
8	4.16	Phosphate	BMB	0.228	2.0728	2.0728	1.0000
Total:			**0.000**	**92.735**		**882.30**	

32 CCV

Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 15:01**	*Sample Weight:*	**1.0000**

Run Time:



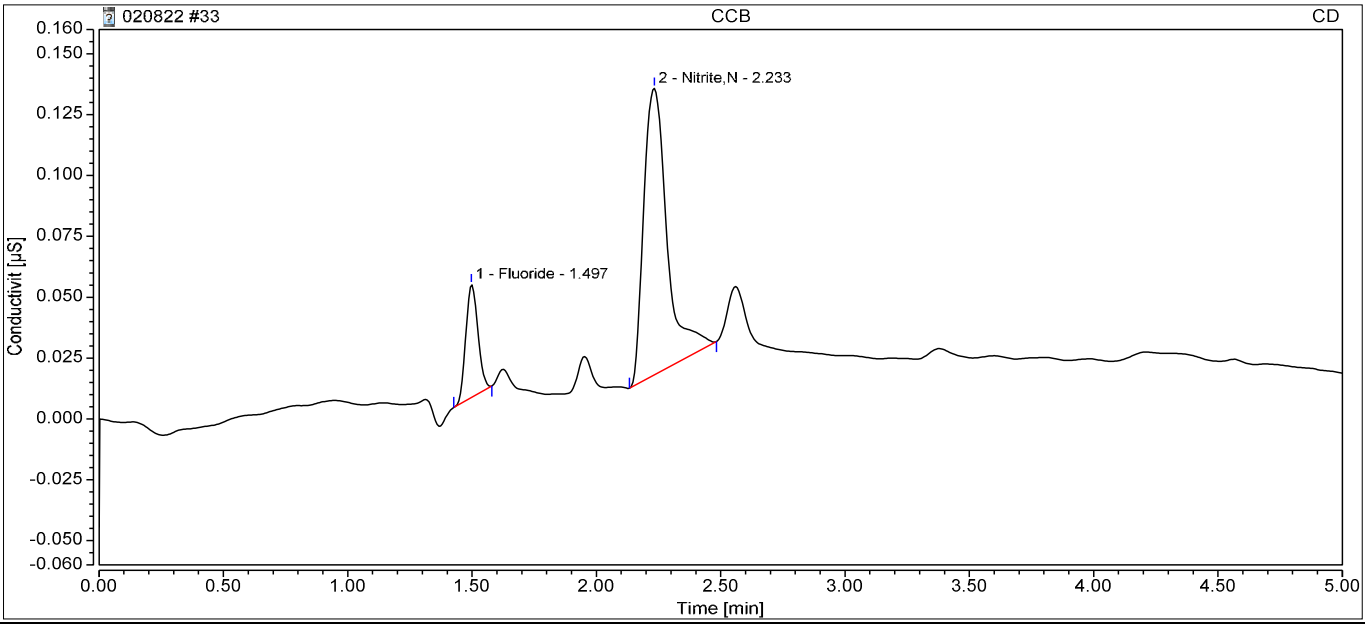
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB*	0.946	4.3688	4.3688	1.0000
2	1.95	Chloride	BMB	2.787	20.1261	20.1261	1.0000
3	2.26	Nitrite,N	BMB	1.231	4.1066	4.1066	1.0000
4	2.55	Sulfate	BMB	2.091	20.4138	20.4138	1.0000
5	2.91	Bromide	BMB	0.241	3.9725	3.9725	1.0000
6	3.34	Nitrate	BMB	1.369	4.0351	4.0351	1.0000
7	3.58	Chlorate	BMB	0.186	4.0327	4.0327	1.0000
8	4.14	Phosphate	BMB	0.535	4.6116	4.6116	1.0000
Total:			**0.000**	**9.386**		**65.67**	

33 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 15:06**	*Sample Weight:*	**1.0000**

Run Time:



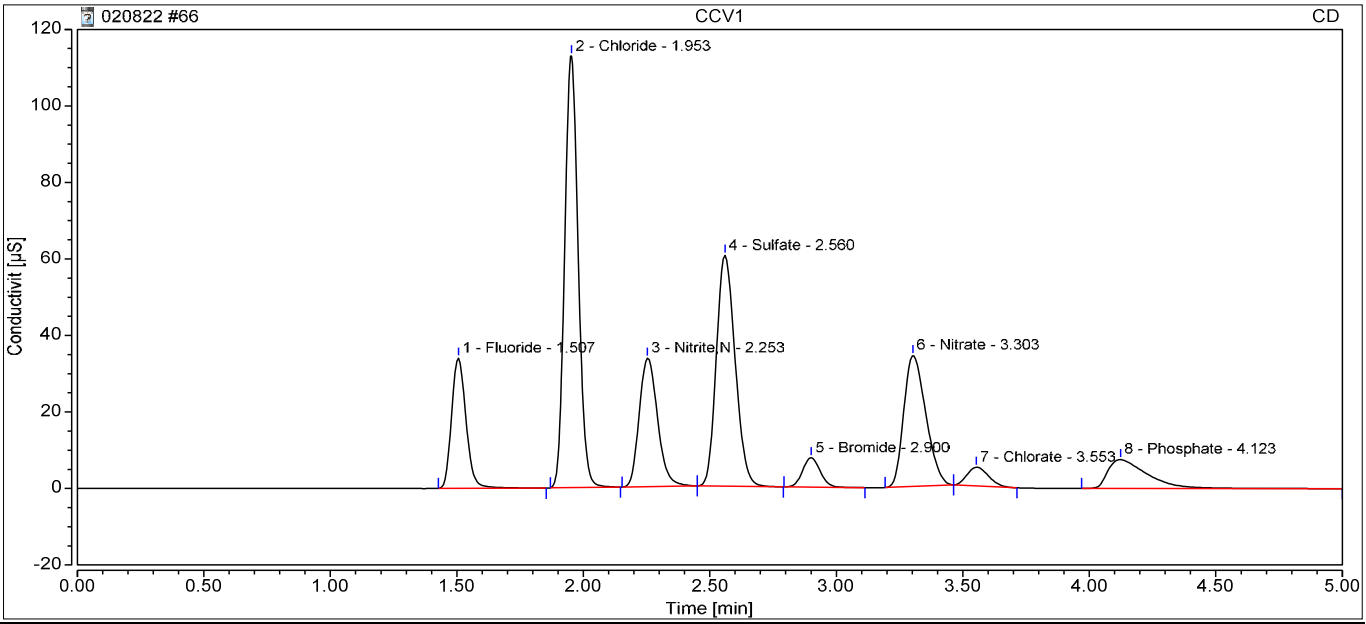
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.003	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
2	2.23	Nitrite,N	BMB	0.013	0.0296	0.0296	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.015**		**0.03**	

66 CCV1

Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**R3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 18:33**	*Sample Weight:*	**1.0000**

Run Time:



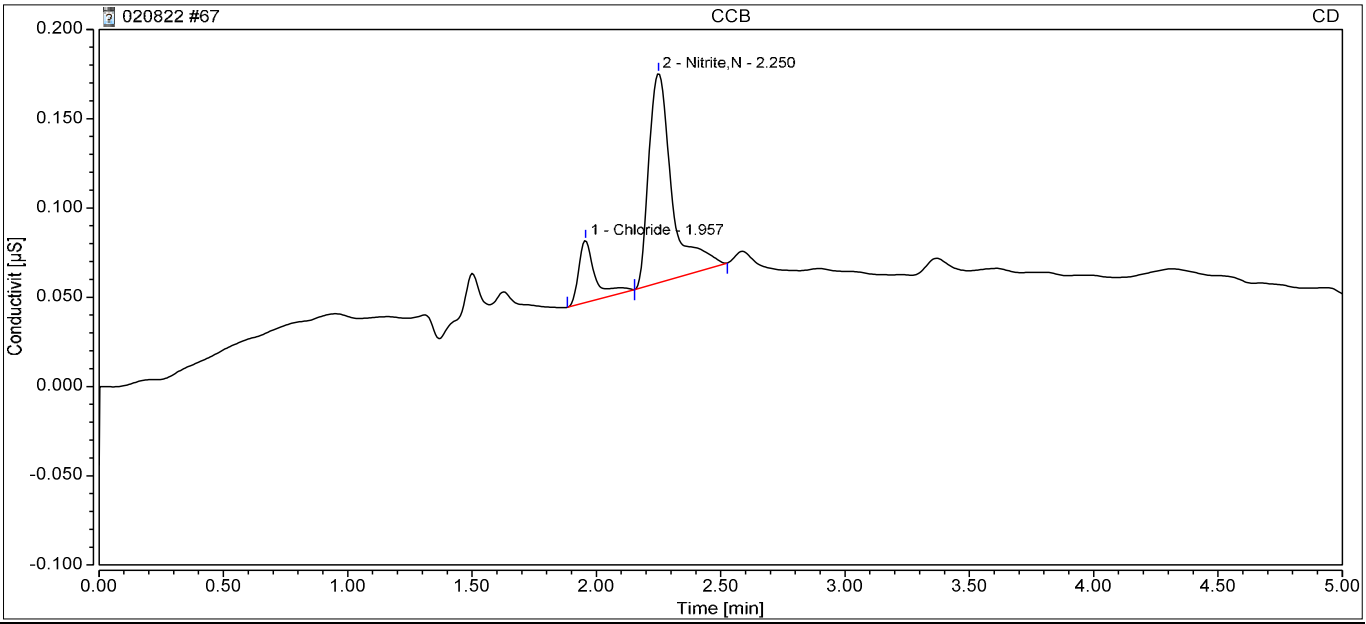
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	2.258	10.4601	10.4601	1.0000
2	1.95	Chloride	BMB	6.992	50.4118	50.4118	1.0000
3	2.25	Nitrite,N	BMB	2.823	10.0775	10.0775	1.0000
4	2.56	Sulfate	BMB	5.207	50.7341	50.7341	1.0000
5	2.90	Bromide	BMB	0.616	10.0827	10.0827	1.0000
6	3.30	Nitrate	BMB	3.456	10.1433	10.1433	1.0000
7	3.55	Chlorate	BMB	0.477	10.2574	10.2574	1.0000
8	4.12	Phosphate	BMB	1.372	11.0384	11.0384	1.0000
Total:			**0.000**	**23.202**		**163.21**	

67 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R6**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 18:39**	*Sample Weight:*	**1.0000**

Run Time:



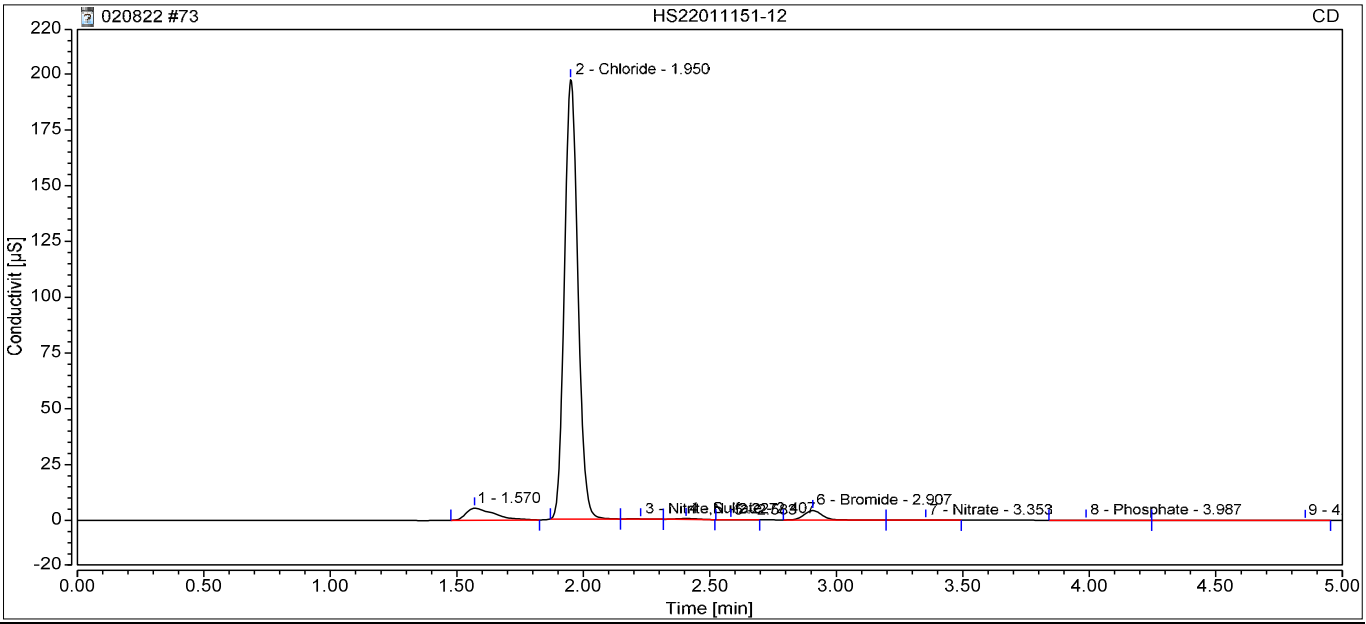
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
1	1.96	Chloride	BMB	0.003	0.0744	0.0744	1.0000
2	2.25	Nitrite,N	BMB	0.013	0.0294	0.0294	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.015**		**0.10**	

73 HS22011151-12

Sample Name:	**HS22011151-12**	*Injection Volume:*	**5.00**
Vial Number:	**GA6**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**10.0000**
Recording Time:	**02/08/2022 19:11**	*Sample Weight:*	**1.0000**

Run Time:



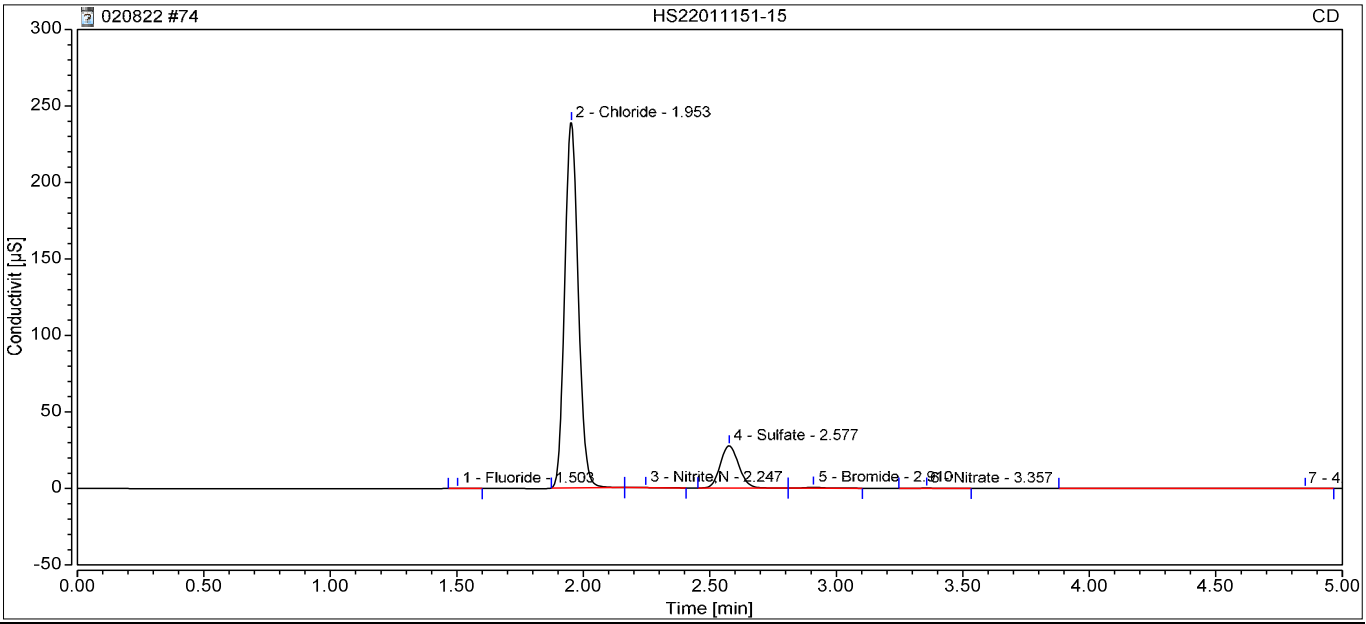
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	10.0000
2	1.95	Chloride	BMB	12.190	87.8482	878.4819	10.0000
3	2.23	Nitrite,N	BMB	0.007	0.0110	0.1099	10.0000
4	2.41	Sulfate	BMB	0.037	0.4165	4.1649	10.0000
6	2.91	Bromide	BMB	0.344	5.6463	56.4629	10.0000
7	3.35	Nitrate	BMB	0.005	0.0448	0.4484	10.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	10.0000
8	3.99	Phosphate	BMB	0.002	0.1211	1.2108	10.0000
Total:			**0.000**	**12.585**		**940.88**	

74 HS22011151-15

Sample Name:	**HS22011151-15**	*Injection Volume:*	**5.00**
Vial Number:	**GA7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**10.0000**
Recording Time:	**02/08/2022 19:16**	*Sample Weight:*	**1.0000**

Run Time:



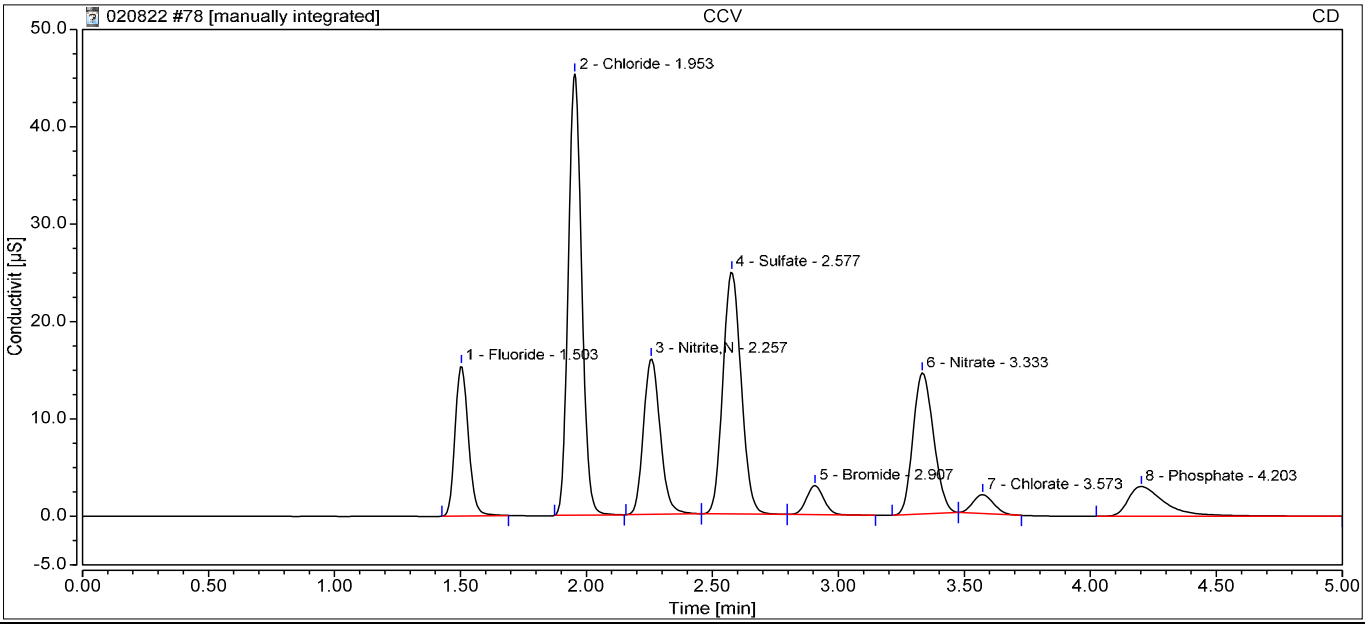
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.004	0.0015	0.0155	10.0000
2	1.95	Chloride	BMB	14.853	107.0273	1070.2732	10.0000
3	2.25	Nitrite,N	BMB	0.012	0.0256	0.2562	10.0000
4	2.58	Sulfate	BMB	2.331	22.7492	227.4925	10.0000
5	2.91	Bromide	BMB	0.042	0.7347	7.3472	10.0000
6	3.36	Nitrate	BMB	0.005	0.0443	0.4428	10.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	10.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	10.0000
Total:			**0.000**	**17.247**		**1305.83**	

78 CCV

Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 19:37**	*Sample Weight:*	**1.0000**

Run Time:



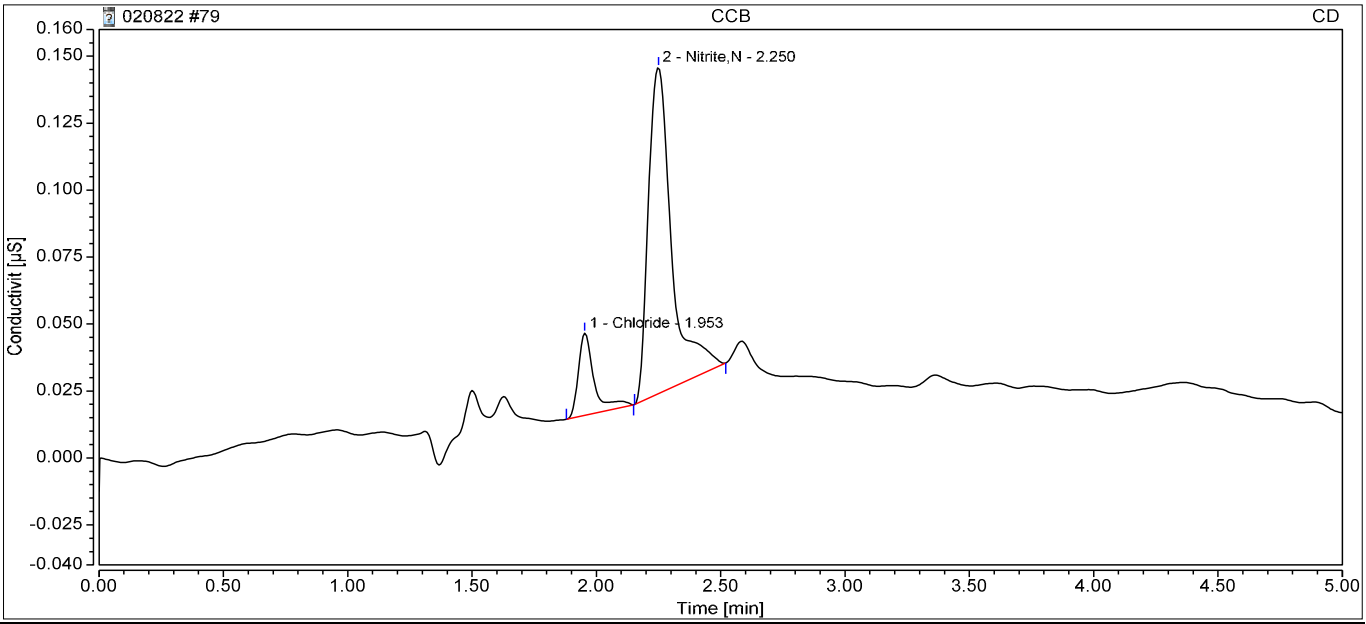
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB*	0.947	4.3746	4.3746	1.0000
2	1.95	Chloride	BMB	2.790	20.1506	20.1506	1.0000
3	2.26	Nitrite,N	BMB	1.233	4.1122	4.1122	1.0000
4	2.58	Sulfate	BMB	2.089	20.3892	20.3892	1.0000
5	2.91	Bromide	BMB	0.239	3.9432	3.9432	1.0000
6	3.33	Nitrate	BMB	1.367	4.0296	4.0296	1.0000
7	3.57	Chlorate	BMB	0.184	3.9984	3.9984	1.0000
8	4.20	Phosphate	BMB	0.527	4.5444	4.5444	1.0000
Total:			**0.000**	**9.376**		**65.54**	

79 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 19:43**	*Sample Weight:*	**1.0000**

Run Time:



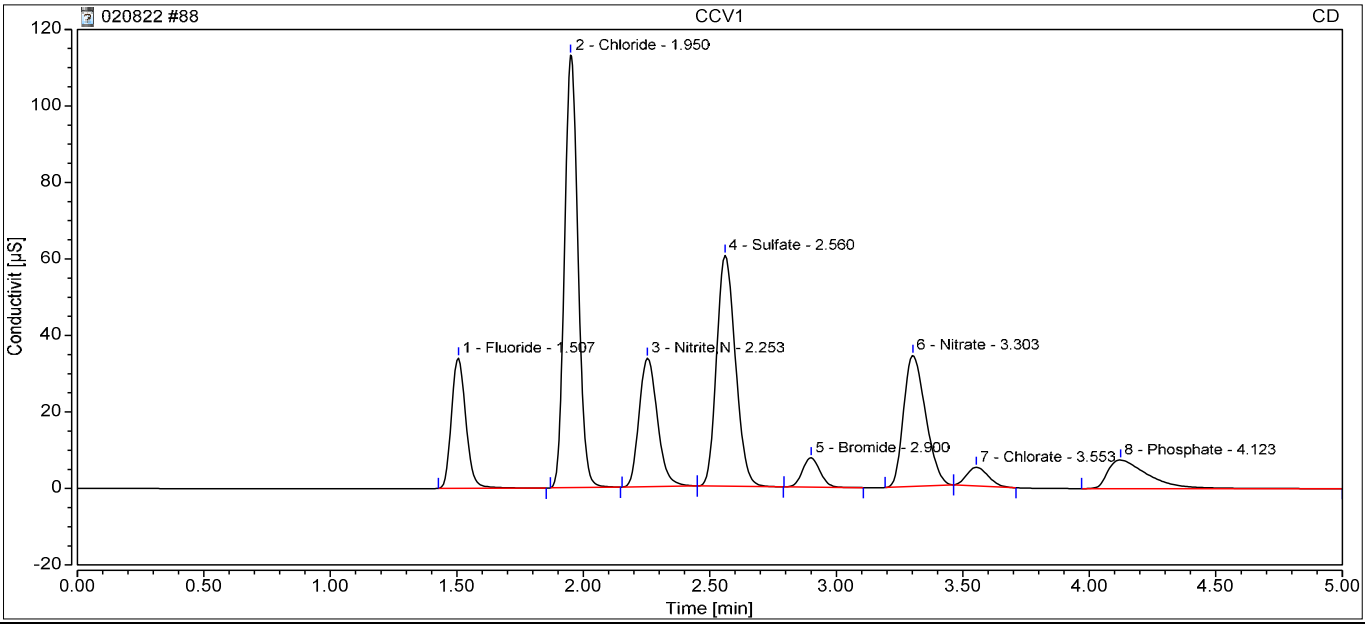
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
1	1.95	Chloride	BMB	0.002	0.0714	0.0714	1.0000
2	2.25	Nitrite,N	BMB	0.013	0.0309	0.0309	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.016**		**0.10**	

88 CCV1

Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**R3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 20:30**	*Sample Weight:*	**1.0000**

Run Time:



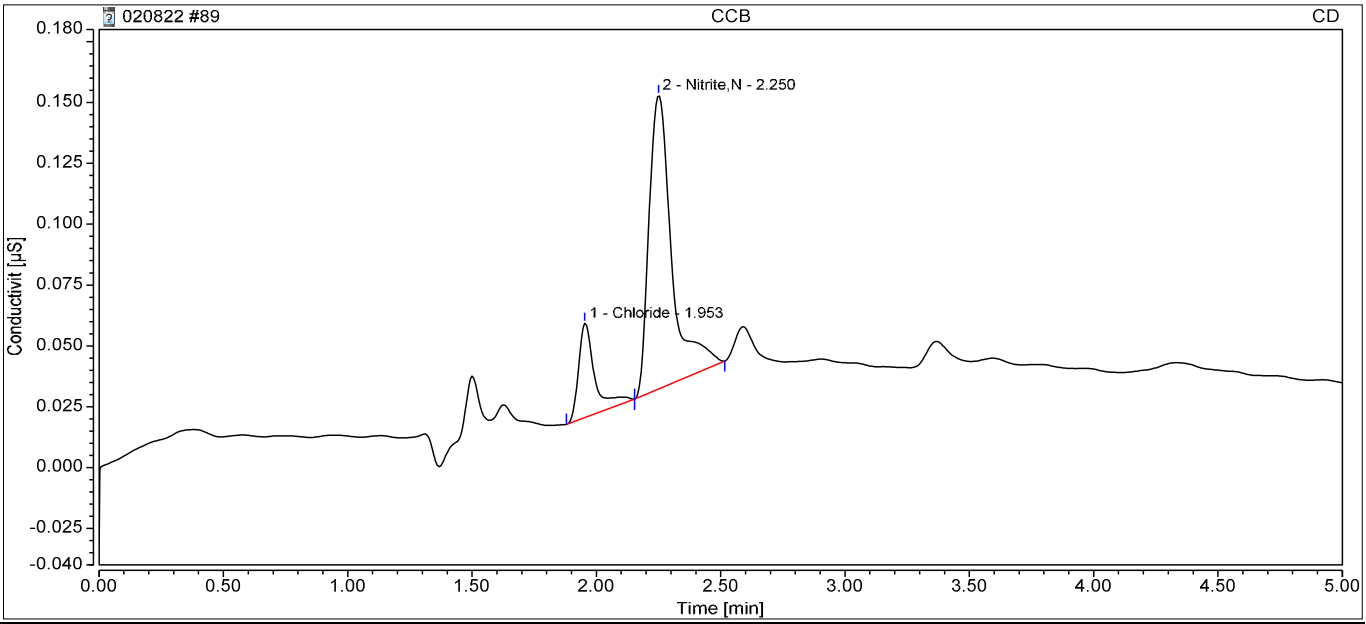
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	2.259	10.4620	10.4620	1.0000
2	1.95	Chloride	BMB	6.997	50.4462	50.4462	1.0000
3	2.25	Nitrite,N	BMB	2.824	10.0823	10.0823	1.0000
4	2.56	Sulfate	BMB	5.215	50.8086	50.8086	1.0000
5	2.90	Bromide	BMB	0.616	10.0863	10.0863	1.0000
6	3.30	Nitrate	BMB	3.455	10.1393	10.1393	1.0000
7	3.55	Chlorate	BMB	0.476	10.2306	10.2306	1.0000
8	4.12	Phosphate	BMB	1.365	10.9898	10.9898	1.0000
Total:			**0.000**	**23.207**		**163.25**	

89 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R6**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/08/2022 20:36**	*Sample Weight:*	**1.0000**

Run Time:



Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
1	1.95	Chloride	BMB	0.003	0.0762	0.0762	1.0000
2	2.25	Nitrite,N	BMB	0.013	0.0296	0.0296	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.016**		**0.11**	

HS22011233 LHAAP 16 January 2022 Cover Page

ALS WO# HS22011233

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HS22011233 Wet Chemistry

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WorkOrder: HS22011233

LHAAP 16 January 2022

Aptim Environmental & Infrastucture, Inc.

Vicki Graves
10333 Richmond Ave Ste 1030
Houston TX 77042

15-Feb-2022

HS22011233 LHAAP 16 January 2022 Final

ALS WO# HS22011233

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February 10, 2022

Vicki Graves
Aptim Environmental & Infrastucture, Inc.
10333 Richmond Ave
Ste 1030
Houston, TX 77042

Work Order: **HS22011233**

Laboratory Results for: **LHAAP 16 January 2022**

Dear Vicki Graves ,

ALS Environmental received 11 sample(s) on Jan 27, 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
Ragen Giga
Project Manager

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Work Order: HS22011233

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22011233-01	16RW10-220126	Water		26-Jan-2022 07:35	27-Jan-2022 09:45	☐
HS22011233-02	16RW09-220126	Water		26-Jan-2022 08:25	27-Jan-2022 09:45	☐
HS22011233-03	16RW11-220126	Water		26-Jan-2022 09:15	27-Jan-2022 09:45	☐
HS22011233-04	16RW11-220126-FD	Water		26-Jan-2022 09:15	27-Jan-2022 09:45	☐
HS22011233-05	16WW40-220126	Water		26-Jan-2022 10:05	27-Jan-2022 09:45	☐
HS22011233-06	16WW12-220126	Water		26-Jan-2022 10:50	27-Jan-2022 09:45	☐
HS22011233-07	16SW01-220126	Water		26-Jan-2022 11:05	27-Jan-2022 09:45	☐
HS22011233-08	16SW01-220126-FD	Water		26-Jan-2022 11:05	27-Jan-2022 09:45	☐
HS22011233-09	16SW02-220126	Water		26-Jan-2022 11:20	27-Jan-2022 09:45	☐
HS22011233-10	16SW03-220126	Water		26-Jan-2022 11:35	27-Jan-2022 09:45	☐
HS22011233-11	Trip Blank-220126	Water	CG-111221-81	26-Jan-2022 00:00	27-Jan-2022 09:45	☐

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP 16 January 2022
Work Order: HS22011233

GC Semivolatiles by Method RSK-175

Batch ID: R401690

Sample ID: HS22011074-04MS

• MS and MSD are for an unrelated sample

Sample ID: HS22011151-12MS

• MS and MSD are for an unrelated sample

GCMS Volatiles by Method SW8260

Batch ID: R401663

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

Metals by Method SW6020A

Batch ID: 175201

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

WetChemistry by Method SM5310B

Batch ID: R401868

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

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16RW10-220126
Collection Date: 26-Jan-2022 07:35

ANALYTICAL REPORT
WorkOrder:HS22011233
Lab ID:HS22011233-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	ug/L	5	04-Feb-2022 21:02
1,1-Dichloroethene	**6.7**		**1.0**	**2.5**	**5.0**	**ug/L**	5	04-Feb-2022 21:02
1,2-Dichloroethane	**18**		**1.0**	**2.5**	**5.0**	**ug/L**	5	04-Feb-2022 21:02
cis-1,2-Dichloroethene	**620**		**1.0**	**2.5**	**5.0**	**ug/L**	5	04-Feb-2022 21:02
Methylene chloride	**16**		**2.0**	**10**	**10**	**ug/L**	5	04-Feb-2022 21:02
Trichloroethene	**1,300**		**5.0**	**12**	**25**	**ug/L**	25	04-Feb-2022 21:25
Vinyl chloride	**49**		**1.0**	**2.5**	**5.0**	**ug/L**	5	04-Feb-2022 21:02
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*5*	*04-Feb-2022 21:02*
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*25*	*04-Feb-2022 21:25*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*5*	*04-Feb-2022 21:02*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*25*	*04-Feb-2022 21:25*
Surr: Dibromofluoromethane	*97.8*			**0**	*80-119*	*%REC*	*5*	*04-Feb-2022 21:02*
Surr: Dibromofluoromethane	*98.8*			**0**	*80-119*	*%REC*	*25*	*04-Feb-2022 21:25*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*5*	*04-Feb-2022 21:02*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*25*	*04-Feb-2022 21:25*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	**0.00283**		**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	02-Feb-2022 13:18
Ethene	**0.00576**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	02-Feb-2022 13:18
Methane	**0.413**		**0.00268**	**0.0125**	**0.0125**	**mg/L**	25	02-Feb-2022 15:00
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**5.35**		**0.500**	**1.00**	**1.00**	**mg/L**	1	08-Feb-2022 22:14

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

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16RW09-220126
Collection Date: 26-Jan-2022 08:25

ANALYTICAL REPORT
WorkOrder:HS22011233
Lab ID:HS22011233-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	04-Feb-2022 19:34
1,1-Dichloroethene	**4.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Feb-2022 19:34
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 19:34
cis-1,2-Dichloroethene	**160**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Feb-2022 19:34
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	04-Feb-2022 19:34
Trichloroethene	**730**		**2.0**	**5.0**	**10**	**ug/L**	10	04-Feb-2022 19:56
Vinyl chloride	**25**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Feb-2022 19:34
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*81-118*	*%REC*	*1*	*04-Feb-2022 19:34*
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*10*	*04-Feb-2022 19:56*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*04-Feb-2022 19:34*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*10*	*04-Feb-2022 19:56*
Surr: Dibromofluoromethane	*96.1*			**0**	*80-119*	*%REC*	*1*	*04-Feb-2022 19:34*
Surr: Dibromofluoromethane	*98.0*			**0**	*80-119*	*%REC*	*10*	*04-Feb-2022 19:56*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*04-Feb-2022 19:34*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*10*	*04-Feb-2022 19:56*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	0.000500	U	0.000144	0.000500	0.00100	mg/L	1	02-Feb-2022 13:26
Ethene	**0.00254**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	02-Feb-2022 13:26
Methane	**0.0958**		**0.000535**	**0.00250**	**0.00250**	**mg/L**	5	02-Feb-2022 15:09
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**6.29**		**0.500**	**1.00**	**1.00**	**mg/L**	1	08-Feb-2022 22:27

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

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 16 January 2022 WorkOrder:HS22011233
Sample ID: 16RW11-220126 Lab ID:HS22011233-03
Collection Date: 26-Jan-2022 09:15 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	04-Feb-2022 17:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 17:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 17:44
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 17:44
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	04-Feb-2022 17:44
Trichloroethene	**1.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Feb-2022 17:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 17:44
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*81-118*	*%REC*	*1*	*04-Feb-2022 17:44*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*04-Feb-2022 17:44*
Surr: Dibromofluoromethane	*97.7*			**0**	*80-119*	*%REC*	*1*	*04-Feb-2022 17:44*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*04-Feb-2022 17:44*

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

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16RW11-220126-FD
Collection Date: 26-Jan-2022 09:15

ANALYTICAL REPORT
WorkOrder:HS22011233
Lab ID:HS22011233-04
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	04-Feb-2022 18:06
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:06
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:06
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:06
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	04-Feb-2022 18:06
Trichloroethene	**0.83**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Feb-2022 18:06
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:06
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*1*	*04-Feb-2022 18:06*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*04-Feb-2022 18:06*
Surr: Dibromofluoromethane	*98.2*			**0**	*80-119*	*%REC*	*1*	*04-Feb-2022 18:06*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*04-Feb-2022 18:06*

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

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 16 January 2022 WorkOrder:HS22011233
Sample ID: 16WW40-220126 Lab ID:HS22011233-05
Collection Date: 26-Jan-2022 10:05 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	04-Feb-2022 20:18
1,1-Dichloroethene	**1.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Feb-2022 20:18
1,2-Dichloroethane	**3.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Feb-2022 20:18
cis-1,2-Dichloroethene	**120**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Feb-2022 20:18
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	04-Feb-2022 20:18
Trichloroethene	**540**		**2.0**	**5.0**	**10**	**ug/L**	10	04-Feb-2022 20:40
Vinyl chloride	**2.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	04-Feb-2022 20:18
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*1*	*04-Feb-2022 20:18*
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*81-118*	*%REC*	*10*	*04-Feb-2022 20:40*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*04-Feb-2022 20:18*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*10*	*04-Feb-2022 20:40*
Surr: Dibromofluoromethane	*98.5*			**0**	*80-119*	*%REC*	*1*	*04-Feb-2022 20:18*
Surr: Dibromofluoromethane	*98.4*			**0**	*80-119*	*%REC*	*10*	*04-Feb-2022 20:40*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*04-Feb-2022 20:18*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*10*	*04-Feb-2022 20:40*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	0.000500	U	0.000144	0.000500	0.00100	mg/L	1	02-Feb-2022 13:36
Ethene	0.000500	U	0.000234	0.000500	0.00100	mg/L	1	02-Feb-2022 13:36
Methane	**0.214**		**0.00107**	**0.00500**	**0.00500**	**mg/L**	10	02-Feb-2022 15:20
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: MZD
Organic Carbon, Total	**10.2**		**0.500**	**1.00**	**1.00**	**mg/L**	1	08-Feb-2022 22:40

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

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16WW12-220126
Collection Date: 26-Jan-2022 10:50

ANALYTICAL REPORT
WorkOrder:HS22011233
Lab ID:HS22011233-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	ug/L	5	04-Feb-2022 21:47
1,1-Dichloroethene	2.5	U	1.0	2.5	5.0	ug/L	5	04-Feb-2022 21:47
1,2-Dichloroethane	**4.8**	J	**1.0**	**2.5**	**5.0**	**ug/L**	5	04-Feb-2022 21:47
cis-1,2-Dichloroethene	**77**		**1.0**	**2.5**	**5.0**	**ug/L**	5	04-Feb-2022 21:47
Methylene chloride	**5.1**	J	**2.0**	**10**	**10**	**ug/L**	5	04-Feb-2022 21:47
Trichloroethene	**1,100**		**5.0**	**12**	**25**	**ug/L**	25	04-Feb-2022 22:09
Vinyl chloride	**5.0**	J	**1.0**	**2.5**	**5.0**	**ug/L**	5	04-Feb-2022 21:47
Surr: 1,2-Dichloroethane-d4	*104*			**0**	*81-118*	*%REC*	*5*	*04-Feb-2022 21:47*
Surr: 1,2-Dichloroethane-d4	*104*			**0**	*81-118*	*%REC*	*25*	*04-Feb-2022 22:09*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*25*	*04-Feb-2022 22:09*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*5*	*04-Feb-2022 21:47*
Surr: Dibromofluoromethane	*97.4*			**0**	*80-119*	*%REC*	*5*	*04-Feb-2022 21:47*
Surr: Dibromofluoromethane	*98.9*			**0**	*80-119*	*%REC*	*25*	*04-Feb-2022 22:09*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*25*	*04-Feb-2022 22:09*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*5*	*04-Feb-2022 21:47*

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

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16SW01-220126
Collection Date: 26-Jan-2022 11:05

ANALYTICAL REPORT
WorkOrder:HS22011233
Lab ID:HS22011233-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	04-Feb-2022 18:28
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:28
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:28
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:28
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	04-Feb-2022 18:28
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:28
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:28
Surr: 1,2-Dichloroethane-d4	*104*			**0**	*81-118*	*%REC*	*1*	*04-Feb-2022 18:28*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*04-Feb-2022 18:28*
Surr: Dibromofluoromethane	*100*			**0**	*80-119*	*%REC*	*1*	*04-Feb-2022 18:28*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*04-Feb-2022 18:28*
METALS BY ICPMS BY SW6020A		**Method:SW6020A**				Prep:SW3010A / 09-Feb-2022		Analyst: JHD
Arsenic	**0.000423**	J	**0.000400**	**0.00100**	**0.00500**	**mg/L**	1	09-Feb-2022 21:12
Chromium	0.00100	U	0.000400	0.00100	0.00500	mg/L	1	09-Feb-2022 21:12
Manganese	**0.0468**		**0.000700**	**0.00250**	**0.00500**	**mg/L**	1	09-Feb-2022 21:12
Nickel	**0.000987**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	09-Feb-2022 21:12
Thallium	0.000500	U	0.000200	0.000500	0.00200	mg/L	1	09-Feb-2022 21:12

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

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 16 January 2022 WorkOrder:HS22011233
Sample ID: 16SW01-220126-FD Lab ID:HS22011233-08
Collection Date: 26-Jan-2022 11:05 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	04-Feb-2022 18:50
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:50
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:50
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:50
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	04-Feb-2022 18:50
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:50
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 18:50
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*1*	*04-Feb-2022 18:50*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*04-Feb-2022 18:50*
Surr: Dibromofluoromethane	*99.2*			**0**	*80-119*	*%REC*	*1*	*04-Feb-2022 18:50*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*04-Feb-2022 18:50*
METALS BY ICPMS BY SW6020A	**Method:SW6020A**					Prep:SW3010A / 09-Feb-2022		Analyst: JHD
Arsenic	**0.000488**	J	**0.000400**	**0.00100**	**0.00500**	**mg/L**	1	09-Feb-2022 21:14
Chromium	**0.000500**	J	**0.000400**	**0.00100**	**0.00500**	**mg/L**	1	09-Feb-2022 21:14
Manganese	**0.0322**		**0.000700**	**0.00250**	**0.00500**	**mg/L**	1	09-Feb-2022 21:14
Nickel	**0.00139**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	09-Feb-2022 21:14
Thallium	0.000500	U	0.000200	0.000500	0.00200	mg/L	1	09-Feb-2022 21:14

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

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 16 January 2022 WorkOrder:HS22011233
Sample ID: 16SW02-220126 Lab ID:HS22011233-09
Collection Date: 26-Jan-2022 11:20 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	04-Feb-2022 14:47
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 14:47
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 14:47
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 14:47
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	04-Feb-2022 14:47
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 14:47
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 14:47
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*81-118*	*%REC*	*1*	*04-Feb-2022 14:47*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*04-Feb-2022 14:47*
Surr: Dibromofluoromethane	*95.8*			**0**	*80-119*	*%REC*	*1*	*04-Feb-2022 14:47*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*04-Feb-2022 14:47*
METALS BY ICPMS BY SW6020A	**Method:SW6020A**					Prep:SW3010A / 09-Feb-2022		Analyst: JHD
Arsenic	**0.000497**	J	**0.000400**	**0.00100**	**0.00500**	**mg/L**	1	09-Feb-2022 20:59
Chromium	0.00100	U	0.000400	0.00100	0.00500	mg/L	1	09-Feb-2022 20:59
Manganese	**0.0316**		**0.000700**	**0.00250**	**0.00500**	**mg/L**	1	09-Feb-2022 20:59
Nickel	**0.00113**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	09-Feb-2022 20:59
Thallium	0.000500	U	0.000200	0.000500	0.00200	mg/L	1	09-Feb-2022 20:59

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

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 16 January 2022 WorkOrder:HS22011233
Sample ID: 16SW03-220126 Lab ID:HS22011233-10
Collection Date: 26-Jan-2022 11:35 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	04-Feb-2022 19:12
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 19:12
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 19:12
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 19:12
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	04-Feb-2022 19:12
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 19:12
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 19:12
Surr: 1,2-Dichloroethane-d4	*104*			**0**	*81-118*	*%REC*	*1*	*04-Feb-2022 19:12*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*1*	*04-Feb-2022 19:12*
Surr: Dibromofluoromethane	*98.6*			**0**	*80-119*	*%REC*	*1*	*04-Feb-2022 19:12*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*04-Feb-2022 19:12*
METALS BY ICPMS BY SW6020A		**Method:SW6020A**				Prep:SW3010A / 09-Feb-2022		Analyst: JHD
Arsenic	**0.000567**	J	**0.000400**	**0.00100**	**0.00500**	**mg/L**	1	09-Feb-2022 21:16
Chromium	0.00100	U	0.000400	0.00100	0.00500	mg/L	1	09-Feb-2022 21:16
Manganese	**0.0296**		**0.000700**	**0.00250**	**0.00500**	**mg/L**	1	09-Feb-2022 21:16
Nickel	**0.000992**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	09-Feb-2022 21:16
Thallium	0.000500	U	0.000200	0.000500	0.00200	mg/L	1	09-Feb-2022 21:16

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

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: Trip Blank-220126
Collection Date: 26-Jan-2022 00:00

ANALYTICAL REPORT
WorkOrder:HS22011233
Lab ID:HS22011233-11
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	04-Feb-2022 14:25
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 14:25
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 14:25
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 14:25
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	04-Feb-2022 14:25
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 14:25
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	04-Feb-2022 14:25
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*81-118*	*%REC*	*1*	*04-Feb-2022 14:25*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*04-Feb-2022 14:25*
Surr: Dibromofluoromethane	*97.0*			**0**	*80-119*	*%REC*	*1*	*04-Feb-2022 14:25*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*04-Feb-2022 14:25*

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

Weight / Prep Log

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

Batch ID: 175201 **Start Date:** 09 Feb 2022 10:00 **End Date:** 09 Feb 2022 14:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22011233-07		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22011233-08		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22011233-09		10 (mL)	10 (mL)	1	120 plastic HNO3
HS22011233-10		10 (mL)	10 (mL)	1	120 plastic HNO3

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 175201 (0)	**Test Name :** METALS BY ICPMS BY SW6020A				**Matrix:** Water	
HS22011233-07	16SW01-220126	26 Jan 2022 11:05		09 Feb 2022 14:00	09 Feb 2022 21:12	1
HS22011233-08	16SW01-220126-FD	26 Jan 2022 11:05		09 Feb 2022 14:00	09 Feb 2022 21:14	1
HS22011233-09	16SW02-220126	26 Jan 2022 11:20		09 Feb 2022 14:00	09 Feb 2022 20:59	1
HS22011233-10	16SW03-220126	26 Jan 2022 11:35		09 Feb 2022 14:00	09 Feb 2022 21:16	1
Batch ID: R401663 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS22011233-01	16RW10-220126	26 Jan 2022 07:35			04 Feb 2022 21:25	25
HS22011233-01	16RW10-220126	26 Jan 2022 07:35			04 Feb 2022 21:02	5
HS22011233-02	16RW09-220126	26 Jan 2022 08:25			04 Feb 2022 19:56	10
HS22011233-02	16RW09-220126	26 Jan 2022 08:25			04 Feb 2022 19:34	1
HS22011233-03	16RW11-220126	26 Jan 2022 09:15			04 Feb 2022 17:44	1
HS22011233-04	16RW11-220126-FD	26 Jan 2022 09:15			04 Feb 2022 18:06	1
HS22011233-05	16WW40-220126	26 Jan 2022 10:05			04 Feb 2022 20:40	10
HS22011233-05	16WW40-220126	26 Jan 2022 10:05			04 Feb 2022 20:18	1
HS22011233-06	16WW12-220126	26 Jan 2022 10:50			04 Feb 2022 22:09	25
HS22011233-06	16WW12-220126	26 Jan 2022 10:50			04 Feb 2022 21:47	5
HS22011233-07	16SW01-220126	26 Jan 2022 11:05			04 Feb 2022 18:28	1
HS22011233-08	16SW01-220126-FD	26 Jan 2022 11:05			04 Feb 2022 18:50	1
HS22011233-09	16SW02-220126	26 Jan 2022 11:20			04 Feb 2022 14:47	1
HS22011233-10	16SW03-220126	26 Jan 2022 11:35			04 Feb 2022 19:12	1
HS22011233-11	Trip Blank-220126	26 Jan 2022 00:00			04 Feb 2022 14:25	1
Batch ID: R401690 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Water	
HS22011233-01	16RW10-220126	26 Jan 2022 07:35			02 Feb 2022 15:00	25
HS22011233-01	16RW10-220126	26 Jan 2022 07:35			02 Feb 2022 13:18	1
HS22011233-02	16RW09-220126	26 Jan 2022 08:25			02 Feb 2022 15:09	5
HS22011233-02	16RW09-220126	26 Jan 2022 08:25			02 Feb 2022 13:26	1
HS22011233-05	16WW40-220126	26 Jan 2022 10:05			02 Feb 2022 15:20	10
HS22011233-05	16WW40-220126	26 Jan 2022 10:05			02 Feb 2022 13:36	1
Batch ID: R401868 (0)	**Test Name :** TOTAL ORGANIC CARBON - SM5310B-2011				**Matrix:** Water	
HS22011233-01	16RW10-220126	26 Jan 2022 07:35			08 Feb 2022 22:14	1
HS22011233-02	16RW09-220126	26 Jan 2022 08:25			08 Feb 2022 22:27	1
HS22011233-05	16WW40-220126	26 Jan 2022 10:05			08 Feb 2022 22:40	1

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

QC BATCH REPORT

Batch ID: R401690 (0) **Instrument: FID-4** **Method: DISSOLVED GASES BY RSK-175**

MBLK Sample ID: **MBLK-220202** Units: **mg/L** Analysis Date: **02-Feb-2022 09:42**
Client ID: Run ID: **FID-4_401690** SeqNo: **6492218** 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-220202** Units: **mg/L** Analysis Date: **02-Feb-2022 09:53**
Client ID: Run ID: **FID-4_401690** SeqNo: **6492219** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0182	0.00100	0.01804	0	101	75 - 125				
Ethene	0.0147	0.00100	0.0168	0	87.6	75 - 125				
Methane	0.00902	0.000500	0.009647	0	93.5	75 - 125				

MS Sample ID: **HS22011151-12MS** Units: **mg/L** Analysis Date: **02-Feb-2022 11:59**
Client ID: Run ID: **FID-4_401690** SeqNo: **6492229** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0103	0.00100	0.01804	0	57.1	75 - 125				S
Ethene	0.0101	0.00100	0.0168	0.003281	40.7	75 - 125				S
Methane	0.267	0.000500	0.009647	0.3251	-605	75 - 125				SEO

MS Sample ID: **HS22011074-04MS** Units: **mg/L** Analysis Date: **02-Feb-2022 10:41**
Client ID: Run ID: **FID-4_401690** SeqNo: **6492223** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0154	0.00100	0.01804	0	85.5	75 - 125				
Ethene	0.0147	0.00100	0.0168	0.001231	80.3	75 - 125				
Methane	0.0137	0.000500	0.009647	0.008074	58.6	75 - 125				S

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

QC BATCH REPORT

Batch ID: R401690 (0) **Instrument:** FID-4 **Method:** DISSOLVED GASES BY RSK-175

MSD Sample ID: **HS22011151-12MSD** Units: **mg/L** Analysis Date: **02-Feb-2022 12:13**
Client ID: Run ID: **FID-4_401690** SeqNo: **6492230** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0104	0.00100	0.01804	0	57.4	75 - 125	0.01030	0.484	30	S
Ethene	0.0104	0.00100	0.0168	0.003281	42.5	75 - 125	0.01013	2.81	30	S
Methane	0.268	0.000500	0.009647	0.3251	-588	75 - 125	0.2668	0.617	30	SEO

MSD Sample ID: **HS22011074-04MSD** Units: **mg/L** Analysis Date: **02-Feb-2022 10:54**
Client ID: Run ID: **FID-4_401690** SeqNo: **6492224** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0158	0.00100	0.01804	0	87.3	75 - 125	0.01543	2.01	30	
Ethene	0.0148	0.00100	0.0168	0.001231	81.1	75 - 125	0.01472	0.9	30	
Methane	0.0133	0.000500	0.009647	0.008074	53.8	75 - 125	0.01373	3.48	30	S

The following samples were analyzed in this batch: HS22011233-01 HS22011233-02 HS22011233-05

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

QC BATCH REPORT

Batch ID: 175201 (0) **Instrument: ICPMS06** **Method: METALS BY ICPMS BY SW6020A**

MBLK Sample ID: **MBLK-175201** Units: **mg/L** Analysis Date: **09-Feb-2022 20:55**
Client ID: Run ID: **ICPMS06_401893** SeqNo: **6496784** PrepDate: **09-Feb-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.00100	0.00500								U
Chromium	0.00100	0.00500								U
Manganese	0.00250	0.00500								U
Nickel	0.00100	0.00500								U
Thallium	0.000500	0.00200								U

LCS Sample ID: **LCS-175201** Units: **mg/L** Analysis Date: **09-Feb-2022 20:57**
Client ID: Run ID: **ICPMS06_401893** SeqNo: **6496785** PrepDate: **09-Feb-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05204	0.00500	0.05	0	104	84 - 116				
Chromium	0.05106	0.00500	0.05	0	102	85 - 116				
Manganese	0.0521	0.00500	0.05	0	104	87 - 115				
Nickel	0.0532	0.00500	0.05	0	106	85 - 117				
Thallium	0.04957	0.00200	0.05	0	99.1	82 - 116				

MS Sample ID: **HS22011233-09MS** Units: **mg/L** Analysis Date: **09-Feb-2022 21:02**
Client ID: **16SW02-220126** Run ID: **ICPMS06_401893** SeqNo: **6496788** PrepDate: **09-Feb-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05294	0.00500	0.05	0.000497	105	84 - 116				
Chromium	0.05034	0.00500	0.05	0.000359	100.0	85 - 116				
Manganese	0.08242	0.00500	0.05	0.03161	102	87 - 115				
Nickel	0.05346	0.00500	0.05	0.001126	105	85 - 117				
Thallium	0.0498	0.00200	0.05	0.000047	99.5	82 - 116				

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

QC BATCH REPORT

Batch ID: 175201 (0) **Instrument: ICPMS06** **Method: METALS BY ICPMS BY SW6020A**

MSD Sample ID: **HS22011233-09MSD** Units: **mg/L** Analysis Date: **09-Feb-2022 21:04**
Client ID: **16SW02-220126** Run ID: **ICPMS06_401893** SeqNo: **6496789** PrepDate: **09-Feb-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05093	0.00500	0.05	0.000497	101	84 - 116	0.05294	3.89	20	
Chromium	0.0484	0.00500	0.05	0.000359	96.1	85 - 116	0.05034	3.93	20	
Manganese	0.08012	0.00500	0.05	0.03161	97.0	87 - 115	0.08242	2.82	20	
Nickel	0.05131	0.00500	0.05	0.001126	100	85 - 117	0.05346	4.1	20	
Thallium	0.04842	0.00200	0.05	0.000047	96.7	82 - 116	0.0498	2.81	20	

PDS Sample ID: **HS22011233-09PDS** Units: **mg/L** Analysis Date: **09-Feb-2022 21:06**
Client ID: **16SW02-220126** Run ID: **ICPMS06_401893** SeqNo: **6496790** PrepDate: **09-Feb-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09536	0.00500	0.1	0.000497	94.9	80 - 120				
Chromium	0.09224	0.00500	0.1	0.000359	91.9	80 - 120				
Manganese	0.13	0.00500	0.1	0.03161	98.4	80 - 120				
Nickel	0.09575	0.00500	0.1	0.001126	94.6	80 - 120				
Thallium	0.0909	0.00200	0.1	0.000047	90.9	80 - 120				

SD Sample ID: **HS22011233-09SD** Units: **mg/L** Analysis Date: **09-Feb-2022 21:00**
Client ID: **16SW02-220126** Run ID: **ICPMS06_401893** SeqNo: **6496787** PrepDate: **09-Feb-2022** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.00500	0.0250					0.000497	0	10	U
Chromium	0.00500	0.0250					0.000359	0	10	U
Manganese	0.03144	0.0250					0.03161	0.563	10	
Nickel	0.00500	0.0250					0.001126	0	10	U
Thallium	0.00250	0.0100					0.000047	0	10	U

The following samples were analyzed in this batch: HS22011233-07 HS22011233-08 HS22011233-09 HS22011233-10

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

QC BATCH REPORT

Batch ID: R401663 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-220204** Units: **ug/L** Analysis Date: **04-Feb-2022 14:03**
Client ID: Run ID: **VOA9_401663** SeqNo: **6490652** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	2.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*50.62*	*1.0*	*50*	*0*	*101*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.92*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*48.9*	*1.0*	*50*	*0*	*97.8*	*80 - 119*				
Surr: Toluene-d8	*52.85*	*1.0*	*50*	*0*	*106*	*89 - 112*				

LCS Sample ID: **VLCSW-220204** Units: **ug/L** Analysis Date: **04-Feb-2022 13:19**
Client ID: Run ID: **VOA9_401663** SeqNo: **6490651** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.89	1.0	20	0	99.4	80 - 119				
1,1-Dichloroethene	21.69	1.0	20	0	108	71 - 131				
1,2-Dichloroethane	22.55	1.0	20	0	113	73 - 128				
cis-1,2-Dichloroethene	20.08	1.0	20	0	100	78 - 123				
Methylene chloride	22.46	2.0	20	0	112	74 - 124				
Trichloroethene	19.96	1.0	20	0	99.8	79 - 123				
Vinyl chloride	19.86	1.0	20	0	99.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.99*	*1.0*	*50*	*0*	*92.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*44.69*	*1.0*	*50*	*0*	*89.4*	*85 - 114*				
Surr: Dibromofluoromethane	*44.66*	*1.0*	*50*	*0*	*89.3*	*80 - 119*				
Surr: Toluene-d8	*44.55*	*1.0*	*50*	*0*	*89.1*	*89 - 112*				

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

QC BATCH REPORT

Batch ID: R401663 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS22011233-09MS** Units: **ug/L** Analysis Date: **04-Feb-2022 15:53**
Client ID: **16SW02-220126** Run ID: **VOA9_401663** SeqNo: **6490656** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	18.89	1.0	20	0	94.4	80 - 119				
1,1-Dichloroethene	21.69	1.0	20	0	108	71 - 131				
1,2-Dichloroethane	20.82	1.0	20	0	104	73 - 128				
cis-1,2-Dichloroethene	18.67	1.0	20	0	93.4	78 - 123				
Methylene chloride	20.31	2.0	20	0	102	74 - 124				
Trichloroethene	21.17	1.0	20	0	106	79 - 123				
Vinyl chloride	19.26	1.0	20	0	96.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.15*	*1.0*	*50*	*0*	*98.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.03*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*49.13*	*1.0*	*50*	*0*	*98.3*	*80 - 119*				
Surr: Toluene-d8	*52.73*	*1.0*	*50*	*0*	*105*	*89 - 112*				

MSD Sample ID: **HS22011233-09MSD** Units: **ug/L** Analysis Date: **04-Feb-2022 16:15**
Client ID: **16SW02-220126** Run ID: **VOA9_401663** SeqNo: **6490657** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	18.9	1.0	20	0	94.5	80 - 119	18.89	0.0737	20	
1,1-Dichloroethene	20.88	1.0	20	0	104	71 - 131	21.69	3.81	20	
1,2-Dichloroethane	21.23	1.0	20	0	106	73 - 128	20.82	1.99	20	
cis-1,2-Dichloroethene	18.23	1.0	20	0	91.1	78 - 123	18.67	2.41	20	
Methylene chloride	20.47	2.0	20	0	102	74 - 124	20.31	0.762	20	
Trichloroethene	20.1	1.0	20	0	101	79 - 123	21.17	5.18	20	
Vinyl chloride	19.24	1.0	20	0	96.2	58 - 137	19.26	0.105	20	
Surr: 1,2-Dichloroethane-d4	*49.91*	*1.0*	*50*	*0*	*99.8*	*81 - 118*	*49.15*	*1.54*	*20*	
Surr: 4-Bromofluorobenzene	*53.21*	*1.0*	*50*	*0*	*106*	*85 - 114*	*53.03*	*0.333*	*20*	
Surr: Dibromofluoromethane	*49.57*	*1.0*	*50*	*0*	*99.1*	*80 - 119*	*49.13*	*0.873*	*20*	
Surr: Toluene-d8	*52.89*	*1.0*	*50*	*0*	*106*	*89 - 112*	*52.73*	*0.297*	*20*	

The following samples were analyzed in this batch:

HS22011233-01	HS22011233-02	HS22011233-03	HS22011233-04
HS22011233-05	HS22011233-06	HS22011233-07	HS22011233-08
HS22011233-09	HS22011233-10	HS22011233-11	

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

QC BATCH REPORT

Batch ID: R401868 (0) **Instrument:** TOC_04 **Method:** TOTAL ORGANIC CARBON - SM5310B-2011

MBLK Sample ID: **MBLK-02082022** Units: **mg/L** Analysis Date: **08-Feb-2022 21:08**
Client ID: Run ID: **TOC_04_401868** SeqNo: **6495034** 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-02082022** Units: **mg/L** Analysis Date: **08-Feb-2022 21:21**
Client ID: Run ID: **TOC_04_401868** SeqNo: **6495035** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10	1.00	10	0	100	85 - 115				

LCSD Sample ID: **LCSD-02082022** Units: **mg/L** Analysis Date: **08-Feb-2022 21:34**
Client ID: Run ID: **TOC_04_401868** SeqNo: **6495036** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.12	1.00	10	0	101	85 - 115	10	1.19	20	

MS Sample ID: **HS22020136-16MS** Units: **mg/L** Analysis Date: **08-Feb-2022 22:01**
Client ID: Run ID: **TOC_04_401868** SeqNo: **6495038** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	13.45	1.00	10	2.673	108	80 - 120				

The following samples were analyzed in this batch: HS22011233-01 HS22011233-02 HS22011233-05

ALS Houston, US Date: 10-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: **HS22011233**

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	21-022-0	26-Mar-2022
Florida	E87611-33	30-Jun-2022
Illinois	2000322021-7	09-May-2022
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2021-2022	30-Jun-2022
Texas	T104704231-21-28	30-Apr-2022

ALS Houston, US Date: 10-Feb-22

Sample Receipt Checklist

Work Order ID: HS22011233 **Date/Time Received:** 27-Jan-2022 09:45

Client Name: CBI-Houston **Received by:** Paresh M. Giga

Completed By: /S/ Eric Widjaja (eSignature) 27-Jan-2022 17:18 (Date/Time) **Reviewed by:** /S/ Andy C. Neir (eSignature) 28-Jan-2022 14:03 (Date/Time)

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

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
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:N/A
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):	1.3°C/1.8°C UC/C	IR #31	
Cooler(s)/Kit(s):	48313		
Date/Time sample(s) sent to storage:	01/27/2022 17:25		
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: 1 vial, 3 of 3 I6RW11-220126 broken.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

HS22011233

Aptim Environmental & Infrastucture, Inc.

LHAAP 16 January 2022

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: Ragen Giga

Project: APTIM LONGHORN ARMY AMMN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS	Project No. 501032
Job: **LHAAP 16 January 2022**	
Prepared By: Scott Beesinger	P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Ana: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (bromide, sulfate, nitrate) by SW9056 and Alkalinity by SM2320	Bromide by SW9056	Metals (arsenic, chromium, manganese, nickel, thallium)					Remarks (Preservatives, etc.)	Lab I.D.#
16RW10-220126	WG	1/26/22 0735		8	X	X	X									
16RW09-220126	WG	1/26/22 0825		8	X	X	X									
16RW11-220126	WG	1/26/22 0915		3	X											
16RW11-220126-FD	WG	1/26/22 0915		3	X											
16WW40-220126	WG	1/26/22 1005		8	X	X	X									
16WW12-220126	WG	1/26/22 1050		3	X											
16SW01-220126	WG	1/26/22 1105		4	X					X						
16SW01-220126-FD	WG	1/26/22 1105		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	1/26/22	1430		1/27/2022	09:45						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

N.C.

48313 1.3° #31 C1105

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

HS22011233

Aptim Environmental & Infrastucture, Inc.

LHAAP 16 January 2022

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: Ragen Giga

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 16 January 2022**

Prepared By: Scott Beesinger

P.O. Number

Analys

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 (bromide, sulfate, nitrate) by SW9056 and Alkalinity by SM2320	Bromide by SW9056	Metals (arsenic, chromium, manganese, nickel, thallium,Lb					Remarks (Preservatives, etc.)	Lab I.D.#
16SW02-220126	WG	1/26/22 1120	MS	4	X					X						
16SW02-220126-MS	WG	1/26/22 1120		4	X					X						
16SW02-220126-MSD	WG	1/26/22 1120		4	X					X						
16SW03-220126	WG	1/26/22 1135		4	X					X						
TRIP BLANK-220126	W	1/26/22		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
Scott Beesinger	1/26/22	1430		1/27/2022	09:45						

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 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

48313

CUSTODY SEAL

Date: 1/26/22 Time: 1430
Name: Scott Beesinger
Company: BHI

Seal Broken By: SB
Date: 01/27/22

48313 JAN 27 2022

48313

ORIGIN ID:SGRA (903) 930-8193
SCOTT BEESINGER
APTIM ENVIRONMENTAL & INFASTRUCTURE
1203-B EAST GRAND AVE
PMB 202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 28JAN21
ACTWGT: 1.00 LB MAN
CAD: 0221247/CAFE3504
DIMS: 26x14x14 IN

TO SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-16-BO 79249-RG
RMA:

FedEx Express

FedEx
0221 9473 0845 1427

THU - 27 JAN AA
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

4238674 26Jan2022 CGGA 5600A/1289/1823

HS22011233 8260

ALS WO# HS22011233

MSVOA09 -Logbook

Batch: 48001
Date: 01-21-2022
Method: 8260
Comments:

Analyst: Presenta Cabascango
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	BFB	01-21-2022 11:00 am	1.00	0.00 mL	0.00 mL	U012101.D	Liquid	Y	NA
2	VSTD000.25	CALIB_1	01-21-2022 11:22 am	1.00	5.00 mL	0.00 mL	U012102.D	Liquid	Y	NA
3	VSTD000.5	CALIB_2	01-21-2022 11:44 am	1.00	5.00 mL	0.00 mL	U012103.D	Liquid	Y	NA
4	VSTD001	CALIB_3	01-21-2022 12:28 pm	1.00	5.00 mL	0.00 mL	U012104.D	Liquid	Y	NA
5	VSTD002	CALIB_4	01-21-2022 12:50 pm	1.00	5.00 mL	0.00 mL	U012105.D	Liquid	Y	NA
6	VSTD005	CALIB_5	01-21-2022 01:12 pm	1.00	5.00 mL	0.00 mL	U012106.D	Liquid	Y	NA
7	VSTD020	CALIB_6	01-21-2022 01:34 pm	1.00	5.00 mL	0.00 mL	U012107.D	Liquid	Y	NA
8	VSTD050	CALIB_7	01-21-2022 01:56 pm	1.00	5.00 mL	0.00 mL	U012108.D	Liquid	Y	NA
9	VSTD100	CALIB_8	01-21-2022 02:18 pm	1.00	5.00 mL	0.00 mL	U012109.D	Liquid	Y	NA
10	VSTD150	CALIB_9	01-21-2022 02:40 pm	1.00	5.00 mL	0.00 mL	U012110.D	Liquid	Y	NA
11	VSTD200	CALIB_10	01-21-2022 03:02 pm	1.00	5.00 mL	0.00 mL	U012111.D	Liquid	Y	NA
12	BLANK	SAMP	01-21-2022 03:24 pm	1.00	5.00 mL	0.00 mL	U012112.D	Liquid	Y	NA
13	VSTD050	CCV	01-21-2022 03:46 pm	1.00	5.00 mL	0.00 mL	U012113.D	Liquid	Y	NA
14	BLANK	SAMP	01-21-2022 04:08 pm	1.00	5.00 mL	0.00 mL	U012114.D	Liquid	Y	NA
15	BFB	BFB	01-21-2022 04:30 pm	1.00	0.00 mL	0.00 mL	V012101.D	Liquid	Y	NA
16	VSTD050	CCV	01-21-2022 04:53 pm	1.00	5.00 mL	0.00 mL	V012102a.D	Liquid	Y	NA
17	VSTD050	CCV	01-21-2022 05:15 pm	1.00	5.00 mL	0.00 mL	V012103.D	Liquid	Y	NA
18	CCB	SAMP	01-21-2022 05:37 pm	1.00	5.00 mL	0.00 mL	V012104.D	Liquid	Y	NA
19	VLCSW-220121	LCS	01-21-2022 05:59 pm	1.00	5.00 mL	0.00 mL	V012105.D	Liquid	Y	NA
20	BLANK	SAMP	01-21-2022 06:21 pm	1.00	5.00 mL	0.00 mL	V012106.D	Liquid	Y	NA
21	VBLKW-220121	MBLK	01-21-2022 06:43 pm	1.00	5.00 mL	0.00 mL	V012107.D	Liquid	Y	NA
22	HS22010829-06	SAMP	01-21-2022 07:06 pm	1.00	5.00 mL	0.00 mL	V012108.D	Liquid	Y	NA
23	HS22010829-02	SAMP	01-21-2022 07:28 pm	1.00	5.00 mL	0.00 mL	V012109.D	Liquid	Y	NA
24	HS22010829-01	SAMP	01-21-2022 07:50 pm	1.00	5.00 mL	0.00 mL	V012110.D	Liquid	Y	NA
25	HS22010753-05	SAMP	01-21-2022 08:12 pm	1.00	5.00 mL	0.00 mL	V012111.D	Liquid	Y	NA
26	HS22010753-06	SAMP	01-21-2022 08:35 pm	1.00	5.00 mL	0.00 mL	V012112.D	Liquid	Y	NA
27	HS22010614-01	SAMP	01-21-2022 08:57 pm	1.00	5.00 mL	0.00 mL	V012113.D	Liquid	Y	NA
28	HS22010614-03	SAMP	01-21-2022 09:19 pm	1.00	5.00 mL	0.00 mL	V012114.D	Liquid	Y	NA
29	HS22010614-05	SAMP	01-21-2022 09:41 pm	1.00	5.00 mL	0.00 mL	V012115.D	Liquid	Y	NA
30	HS22010753-03	SAMP	01-21-2022 10:04 pm	200.0(	5.00 mL	0.00 mL	V012116.D	Liquid	Y	NA
31	HS22010753-03	SAMP	01-21-2022 10:26 pm	20.00	5.00 mL	0.00 mL	V012117.D	Liquid	Y	NA
32	HS22010753-03MS	MS	01-21-2022 10:48 pm	200.0(	5.00 mL	0.00 mL	V012118.D	Liquid	Y	NA
33	HS22010753-03MSD	MSD	01-21-2022 11:10 pm	200.0(	5.00 mL	0.00 mL	V012119.D	Liquid	Y	NA
34	BLANK	SAMP	01-21-2022 11:32 pm	1.00	5.00 mL	0.00 mL	V012120.D	Liquid	Y	NA
35	HS22010614-06	SAMP	01-21-2022 11:55 pm	1.00	5.00 mL	0.00 mL	V012121.D	Liquid	Y	NA
36	HS22010614-07	SAMP	01-22-2022 12:17 am	1.00	5.00 mL	0.00 mL	V012122.D	Liquid	Y	NA
37	HS22010753-01	SAMP	01-22-2022 12:39 am	1.00	5.00 mL	0.00 mL	V012123.D	Liquid	Y	NA
38	HS22010753-02	SAMP	01-22-2022 01:01 am	1.00	5.00 mL	0.00 mL	V012124.D	Liquid	Y	NA
39	HS22010753-04	SAMP	01-22-2022 01:24 am	1.00	5.00 mL	0.00 mL	V012125.D	Liquid	Y	NA
40	HS22010753-04	SAMP	01-22-2022 01:46 am	25.00	5.00 mL	0.00 mL	V012126.D	Liquid	Y	NA
41	HS22010614-04	SAMP	01-22-2022 02:08 am	5.00	5.00 mL	0.00 mL	V012127.D	Liquid	Y	NA

MSVOA09 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
42	HS22010614-04n/r	SAMP	01-22-2022 02:30 am	25.00	5.00 mL	0.00 mL	V012128.D	Liquid	Y	NA
43	HS22010614-02	SAMP	01-22-2022 02:53 am	10.00	5.00 mL	0.00 mL	V012129.D	Liquid	Y	NA
44	HS22010614-02n/r	SAMP	01-22-2022 03:15 am	50.00	5.00 mL	0.00 mL	V012130.D	Liquid	Y	NA
45	VSTD050-END	CCV	01-22-2022 03:37 am	1.00	5.00 mL	0.00 mL	V012131.D	Liquid	Y	NA
46	BLANK	SAMP	01-22-2022 03:59 am	1.00	5.00 mL	0.00 mL	V012132.D	Liquid	Y	NA
47	BLANK	SAMP	01-22-2022 04:21 am	1.00	5.00 mL	0.00 mL	V012133.D	Liquid	Y	NA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Matrix Spike - Sample No.: ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
Trichloroethene	50.00	46.46	93	80-120
Methylene Chloride	50.00	48.09	96	80-120
cis-1,2-Dichloroethene	50.00	46.44	93	80-120
Vinyl Chloride	50.00	46.34	93	80-120
1,1,2-Trichloroethane	50.00	48.34	97	80-120
1,1-Dichloroethene	50.00	47.33	95	80-120
1,2-Dichloroethane	50.00	47.40	95	80-120

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

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Lab File ID: U012101 BFB Injection Date: 01/21/22

Instrument ID: VOA9 BFB Injection Time: 1100

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.3
75	30.0 - 60.0% of mass 95	49.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.3
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	83.2
175	5.0 - 9.0% of mass 174	7.3 (8.8)1
176	95.0 - 101.0% of mass 174	80.2 (96.4)1
177	5.0 - 9.0% of mass 176	5.2 (6.5)2

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

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD000.25	VSTD000.25	U012102	01/21/22	1122
02	VSTD000.5	VSTD000.5	U012103	01/21/22	1144
03	VSTD001	VSTD001	U012104	01/21/22	1228
04	VSTD002	VSTD002	U012105	01/21/22	1250
05	VSTD005	VSTD005	U012106	01/21/22	1312
06	VSTD020	VSTD020	U012107	01/21/22	1334
07	VSTD050	VSTD050	U012108	01/21/22	1356
08	VSTD100	VSTD100	U012109	01/21/22	1418
09	VSTD150	VSTD150	U012110	01/21/22	1440
10	VSTD200	VSTD200	U012111	01/21/22	1502
11	ICV	ICV	U012113	01/21/22	1546
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Instrument ID: VOA9 Calibration Date(s): 01/21/22 01/21/22

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1122 1502

LAB FILE ID: RF0.25: U012102 RF0.5: U012103 RF1: U012104
RF2: U012105 RF5: U012106 RF20: U012107

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF5	RF20
Trichloroethene		0.350	0.419	0.369	0.334	0.335
Methylene Chloride		6806	10698	17383	39937	146064
cis-1,2-Dichloroethene		0.711	0.647	0.665	0.650	0.631
Vinyl Chloride		0.713	0.892	0.780	0.717	0.734
1,1,2-Trichloroethane		0.327	0.318	0.325	0.320	0.322
1,1-Dichloroethene		0.528	0.434	0.478	0.474	0.463
1,2-Dichloroethane		0.431	0.518	0.521	0.540	0.524
Toluene-d8		1.478	1.322	1.395	1.243	1.290
Dibromofluoromethane		5745	6292	14192	32715	133630
1,2-Dichloroethane-d4		7908	9353	19107	42917	171723
4-Bromofluorobenzene		12738	12907	26873	48837	180431

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS2201123

Instrument ID: VOA9 Calibration Date(s): 01/21/22 01/21/22

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1122 1502

LAB FILE ID: RF50: U012108 RF100: U012109 RF150: U012110
RF200: U012111

COMPOUND	RF50	RF100	RF150	RF200
Trichloroethene	0.335	0.350	0.340	0.336
Methylene Chloride	362049	743158	1115598	1534403
cis-1,2-Dichloroethene	0.635	0.641	0.629	0.621
Vinyl Chloride	0.752	0.792	0.750	0.746
1,1,2-Trichloroethane	0.309	0.312	0.305	0.298
1,1-Dichloroethene	0.450	0.483	0.457	0.455
1,2-Dichloroethane	0.511	0.503	0.489	0.474
Toluene-d8	1.175	1.287	1.181	1.163
Dibromofluoromethane	315169	693277	1007785	1407841
1,2-Dichloroethane-d4	410662	875745	1283450	1765372
4-Bromofluorobenzene	445798	983774	1438840	1994348

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS2201123

Instrument ID: VOA9 Calibration Date(s): 01/21/22 01/21/22

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1122 1502

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
Trichloroethene	AVRG		0.35221959	7.840	20.000
Methylene Chloride	LINR	-2.81e-002	1.82461352	0.9996122	0.9900000
cis-1,2-Dichloroethene	AVRG		0.64785104	4.193	20.000
Vinyl Chloride	AVRG		0.76411694	7.131	20.000
1,1,2-Trichloroethane	AVRG		0.31513236	3.046	20.000
1,1-Dichloroethene	AVRG		0.46944793	5.714	20.000
1,2-Dichloroethane	AVRG		0.50139539	6.549	20.000
Toluene-d8	AVRG		1.28149917	8.283	20.000
Dibromofluoromethane	LINR	-1.72e-002	1.98882817	0.9991391	0.9900000
1,2-Dichloroethane-d4	LINR	-2.67e-002	1.58003383	0.9991022	0.9900000
4-Bromofluorobenzene	LINR	-2.47e-002	2.19842936	0.9992224	0.9900000

FORM VI VOA

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012101.D

Page 1

Date : 21-JAN-2022 11:00

Client ID: BFB

Instrument: VOA9.i

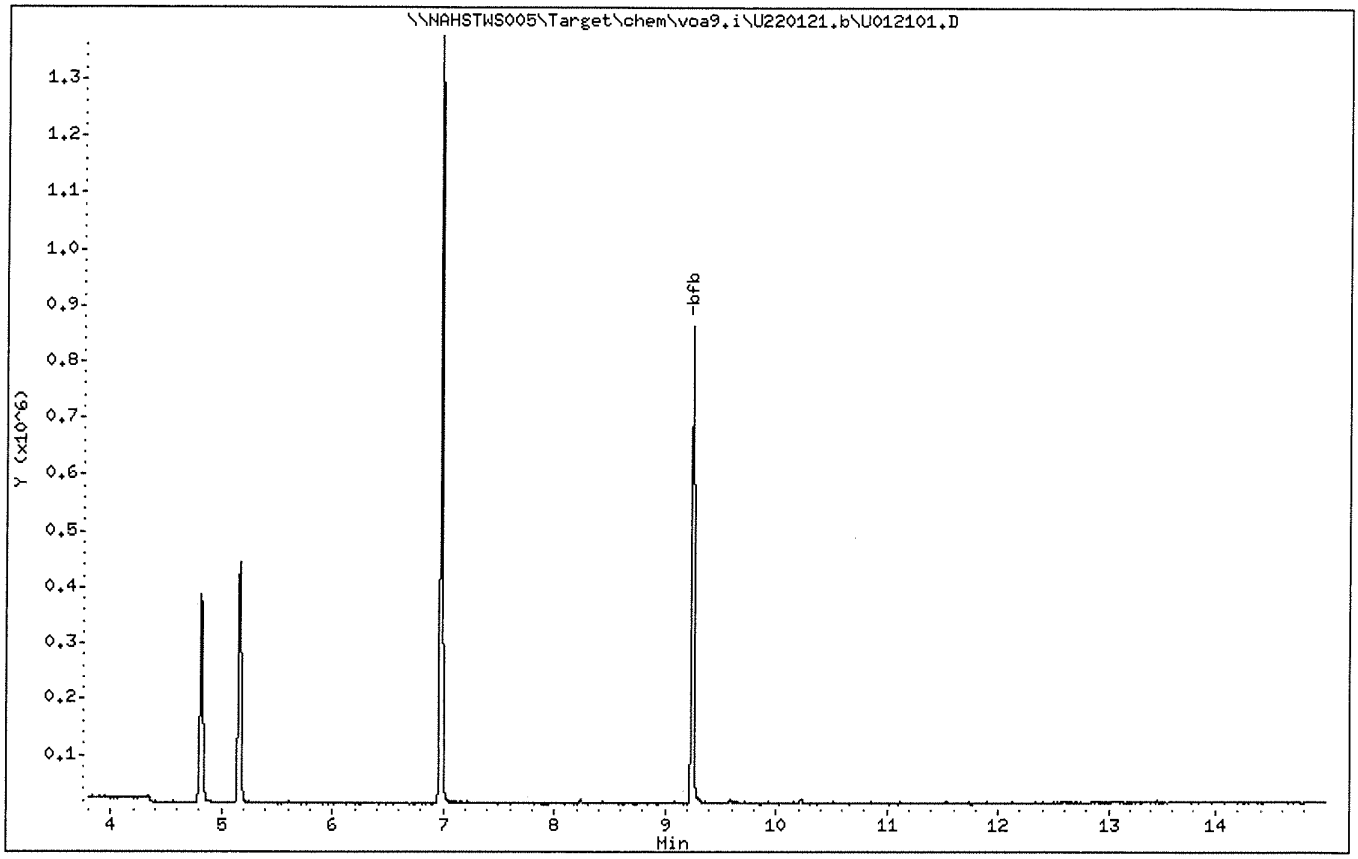
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012101.D Page 2

Date : 21-JAN-2022 11:00

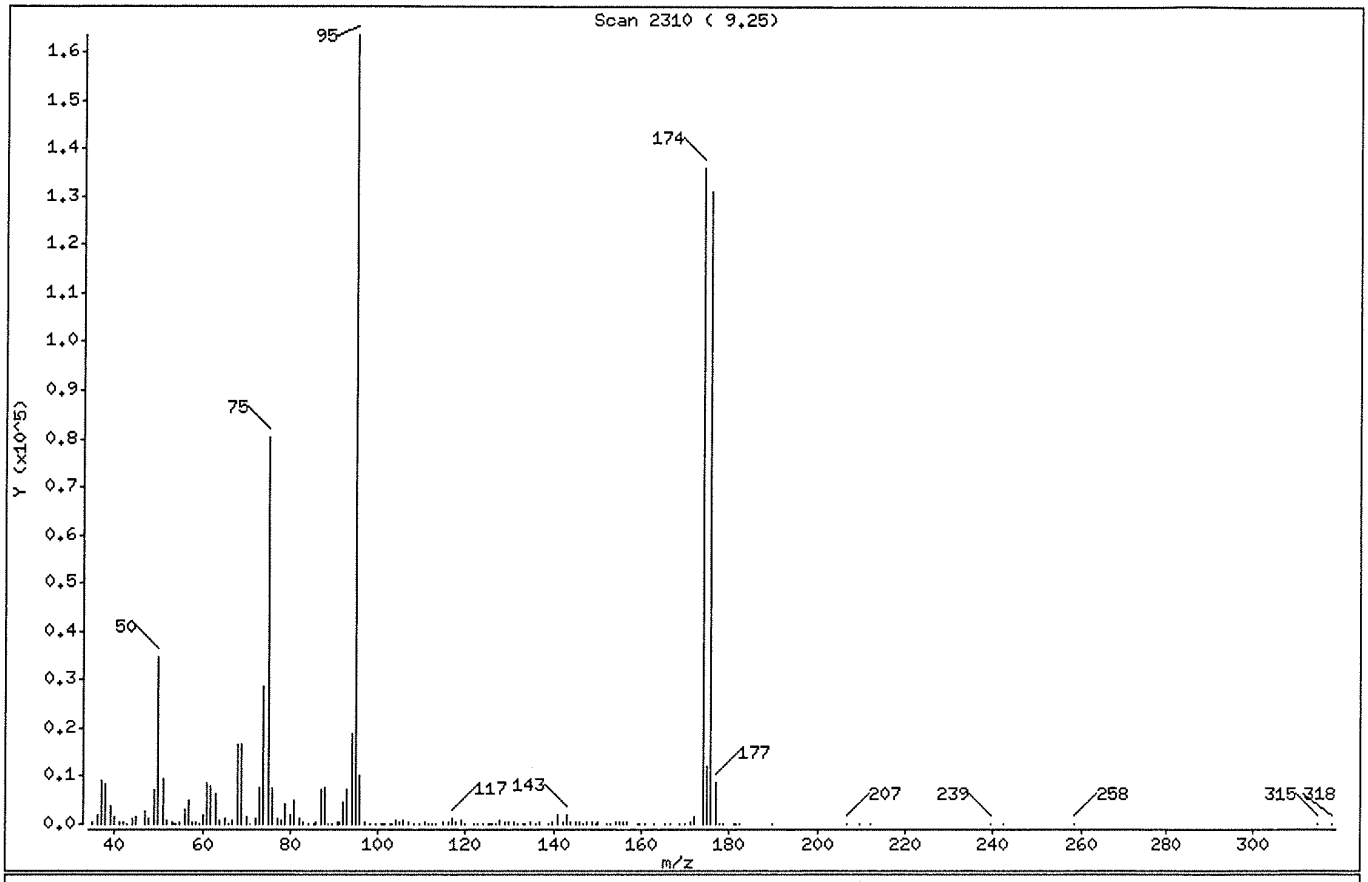
Client ID: BFB Instrument: VOA9.i

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	21.31
75	30.00 - 60.00% of mass 95	49.12
96	5.00 - 9.00% of mass 95	6.31
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	83.20
175	5.00 - 9.00% of mass 174	7.30 (8.78)
176	95.00 - 101.00% of mass 174	80.22 (96.42)
177	5.00 - 9.00% of mass 176	5.21 (6.49)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012101.D Page 3

Date : 21-JAN-2022 11:00

Client ID: BFB Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: U012101.D
Spectrum: Scan 2310 (9.25)
Location of Maximum: 95.05
Number of points: 152

m/z	Y	m/z	Y	m/z	Y	m/z	Y
35.10	248	73.00	7435	110.90	327	150.00	222
36.10	2040	74.00	28600	111.70	106	152.00	96
37.00	8929	75.00	80256	112.50	125	152.90	167
38.00	8329	76.00	7597	113.00	151	154.00	200
39.10	3654	77.10	1135	114.80	253	155.00	479
39.90	1371	78.00	886	116.00	474	156.00	283
41.10	328	78.90	4026	116.90	1229	156.80	317
41.80	283	80.00	1722	117.90	512	159.00	179
42.60	170	80.90	4898	118.80	927	159.70	71
44.00	1152	82.00	1212	119.70	110	160.90	122
45.00	1448	82.90	223	121.90	84	162.70	109
47.00	2623	84.30	82	122.70	83	165.40	53
47.90	1134	85.30	161	123.80	155	166.80	105
49.00	7332	85.70	204	125.00	57	168.80	94
50.00	34824	87.00	7341	125.60	132	169.90	122
51.10	9531	88.00	7354	126.00	117	171.00	340
52.10	643	88.80	165	126.70	150	172.00	1380
53.00	199	89.40	65	127.80	667	173.90	135936
53.50	173	90.90	436	128.90	332	175.00	11934
54.10	107	91.10	441	129.80	492	175.90	131072
54.90	431	92.00	4597	130.90	323	176.90	8507
56.00	3061	93.00	7087	131.80	93	177.80	187
57.00	4944	94.10	18872	133.10	59	178.70	100
57.90	279	95.00	163392	133.60	96	181.20	56
58.50	260	96.00	10317	134.90	282	181.70	79
59.20	182	97.10	540	135.80	124	182.50	77
60.00	1848	98.30	76	136.90	289	189.60	70
61.00	8563	99.70	92	138.80	142	206.80	81
62.00	7792	100.70	80	139.90	223	209.50	79
63.10	6535	101.30	101	140.90	1821	212.20	55
64.00	819	101.80	72	142.00	321	239.40	82
65.10	974	102.70	77	142.90	1952	242.50	69
66.10	168	103.20	117	143.90	203	258.50	86
67.00	799	104.00	585	145.00	314	314.70	84
68.00	16632	104.90	363	145.80	196	318.00	53

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012101.D

Date : 21-JAN-2022 11:00

Client ID: BFB Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: U012101.D
Spectrum: Scan 2310 (9.25)
Location of Maximum: 95.05
Number of points: 152

m/z	Y	m/z	Y	m/z	Y	m/z	Y
69.00	16672	105.90	901	146.90	91		
70.00	1410	106.80	288	147.70	408		
70.80	110	108.10	133	148.90	253		
72.00	947	109.60	70	149.50	139		

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012102.D Page 1
Report Date: 08-Feb-2022 10:51

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Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012102.D
Lab Smp Id: VSTD000.25 Client Smp ID: VSTD000.25
Inj Date : 21-JAN-2022 11:22
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD000.25;VSTD000.25;1;1;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:51 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 15:02 Cal File: U012111.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

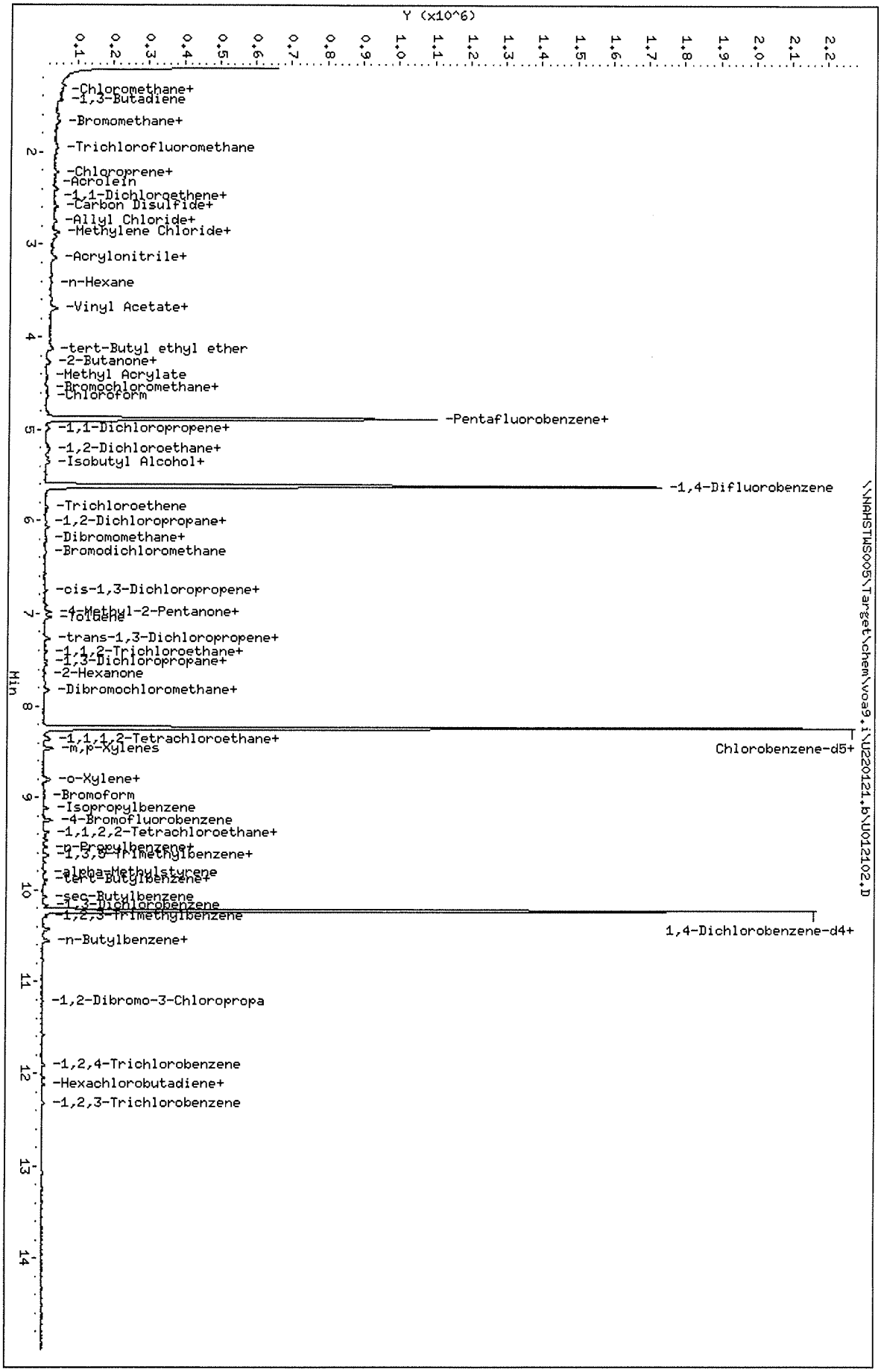
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.886	4.886	(1.000)	691359	50.0000	
* 36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	1186874	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	1048159	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	506306	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.168	5.168	(1.058)	4793	0.25000	(a)
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	7056	0.25000	(aM)
$ 30 Dibromofluoromethane	113	4.823	4.823	(0.987)	3086	0.25000	
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	7231	0.25000	0.26(aM)
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	2944	0.25000	0.44(a)
11 1,1-Dichloroethene	96	2.401	2.401	(0.491)	2518	0.25000	0.38(a)
33 1,2-Dichloroethane	62	5.250	5.250	(0.935)	5106	0.25000	0.42(a)
27 cis-1,2-Dichloroethene	96	4.279	4.279	(0.876)	3304	0.25000	0.36(a)
17 Methylene Chloride	84	2.862	2.862	(0.586)	5657	0.25000	(a)
38 Trichloroethene	130	5.850	5.850	(1.041)	3183	0.25000	0.38(aM)
5 Vinyl Chloride	62	1.419	1.419	(0.290)	4490	0.25000	0.42(a)

QC Flag Legend

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

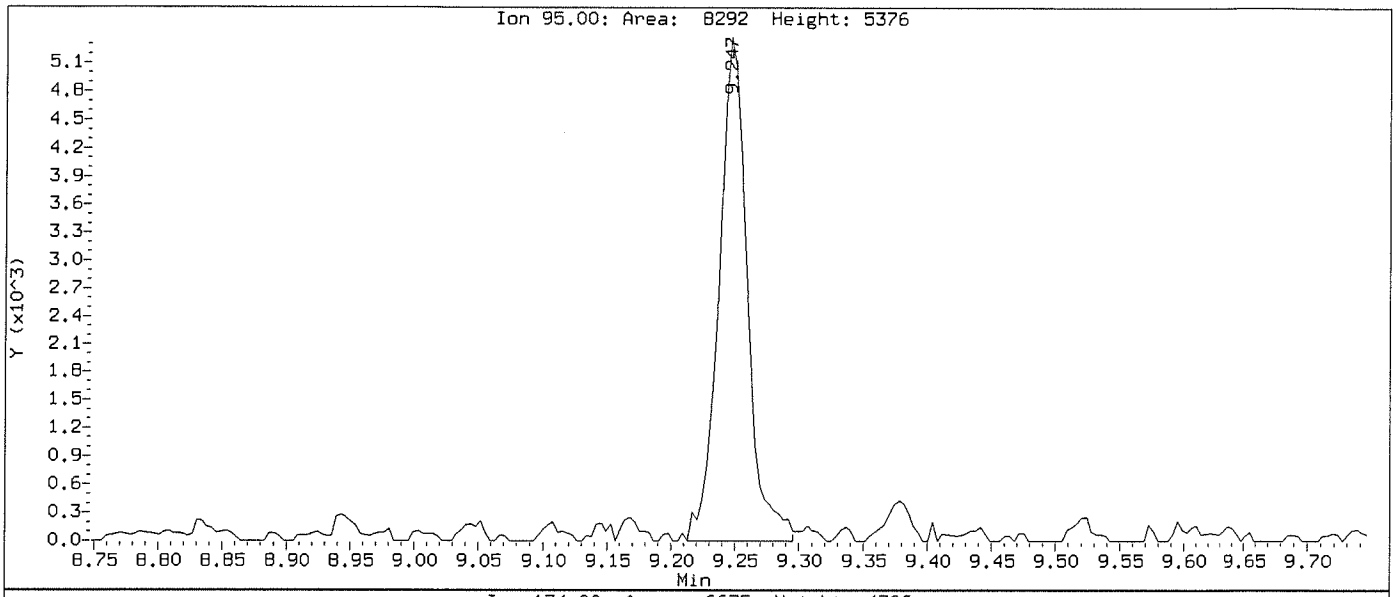


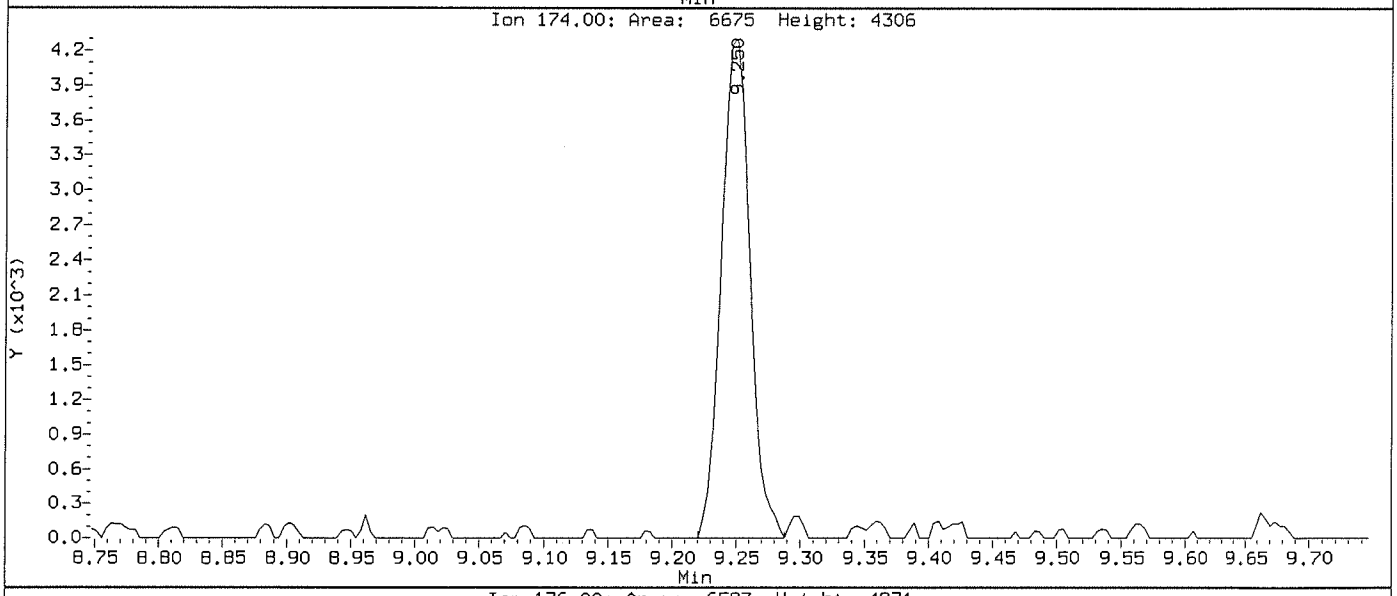
Data File: \\NAHSTWS005\Target\chem\voa9,i\U220121,b\U012102,D
Date : 21-JAN-2022 11:22
Client ID: VSTD000,25
Sample Info: VSTD000,25;VSTD000,25;1;1;;;
Purge Volume: 5.0
Column phase: DB624

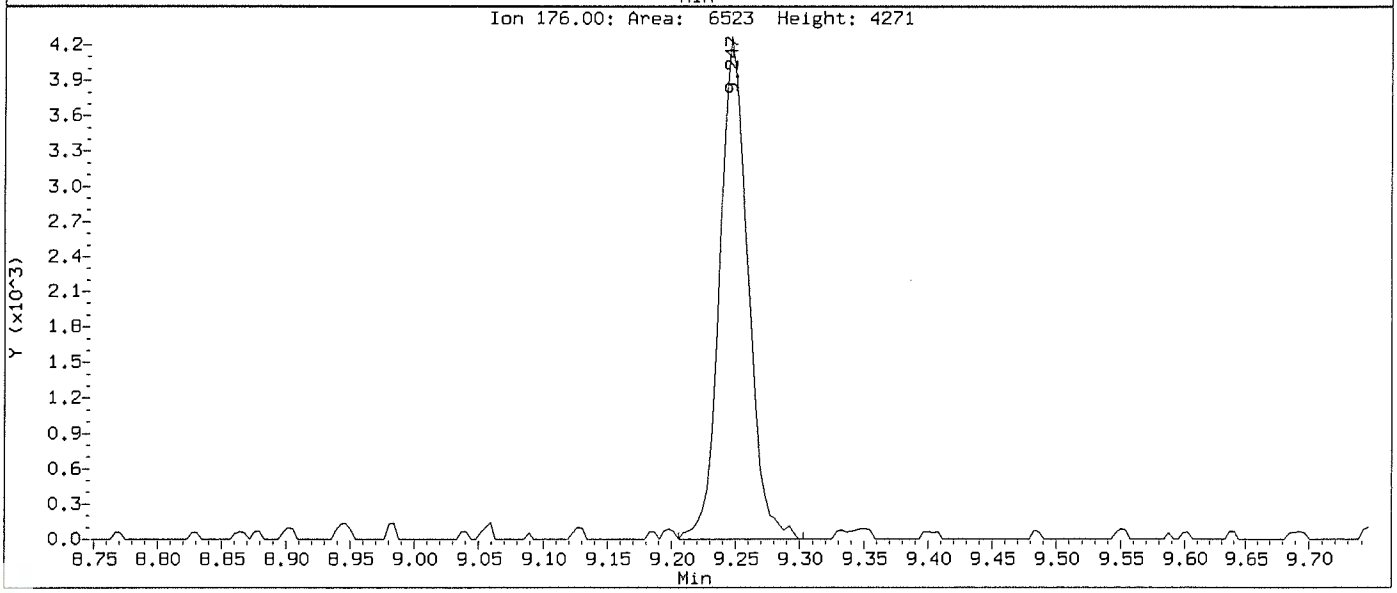
Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\Before\U012102.D
Injection Date: 21-JAN-2022 11:22
Instrument: VOA9.i
Client Sample ID: VSTD000.25

Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4

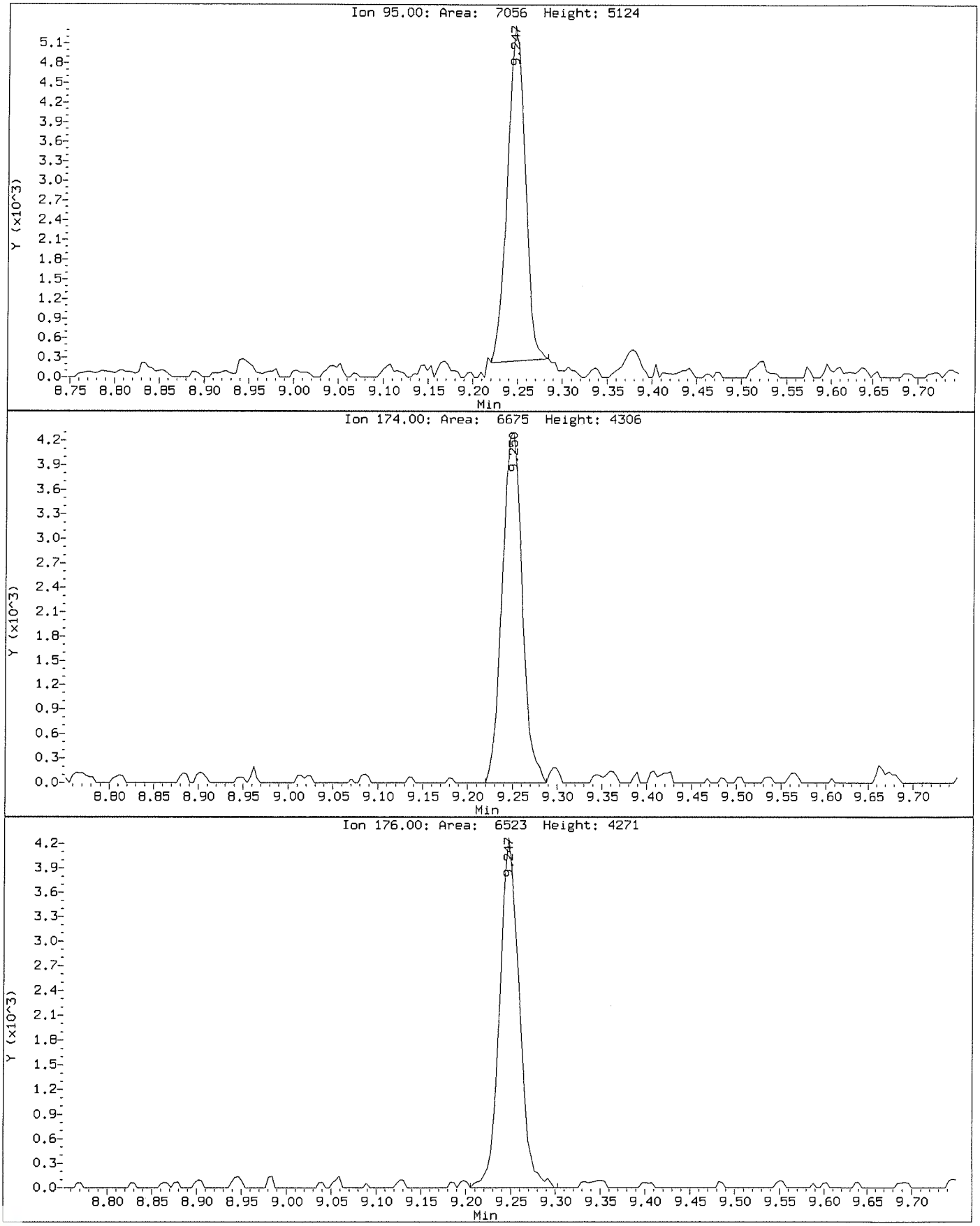






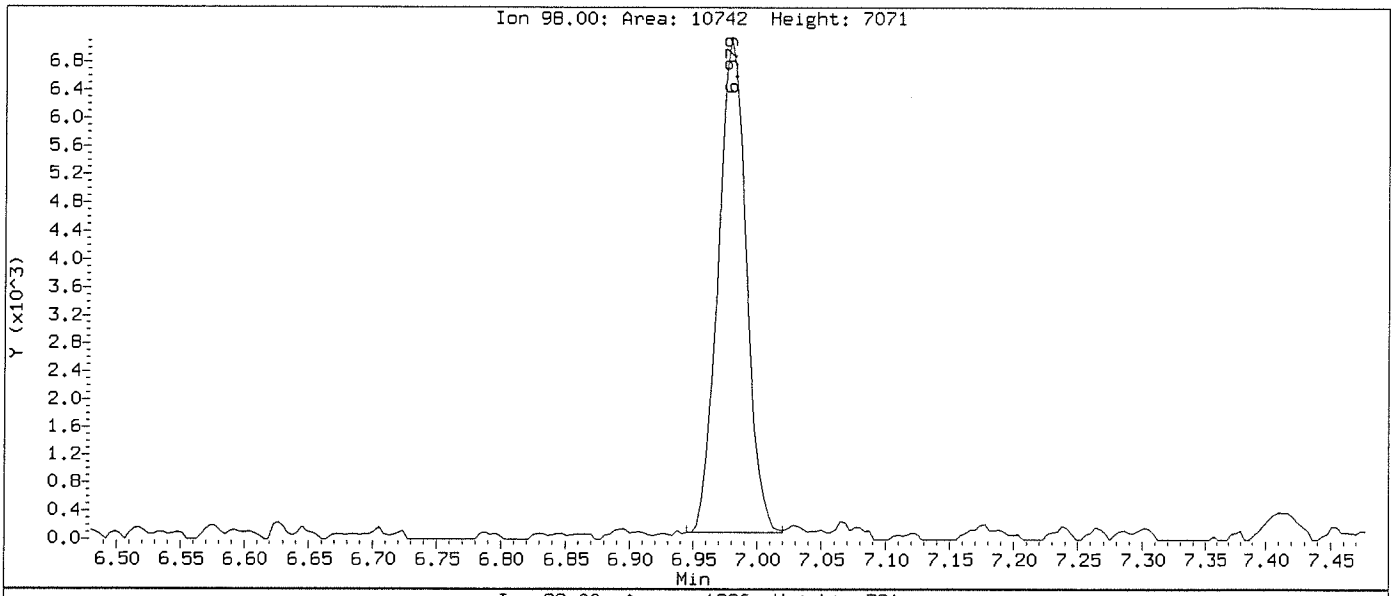
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Injection Date: 21-JAN-2022 11:22
Instrument: VOA9.i
Client Sample ID: VSTD000.25

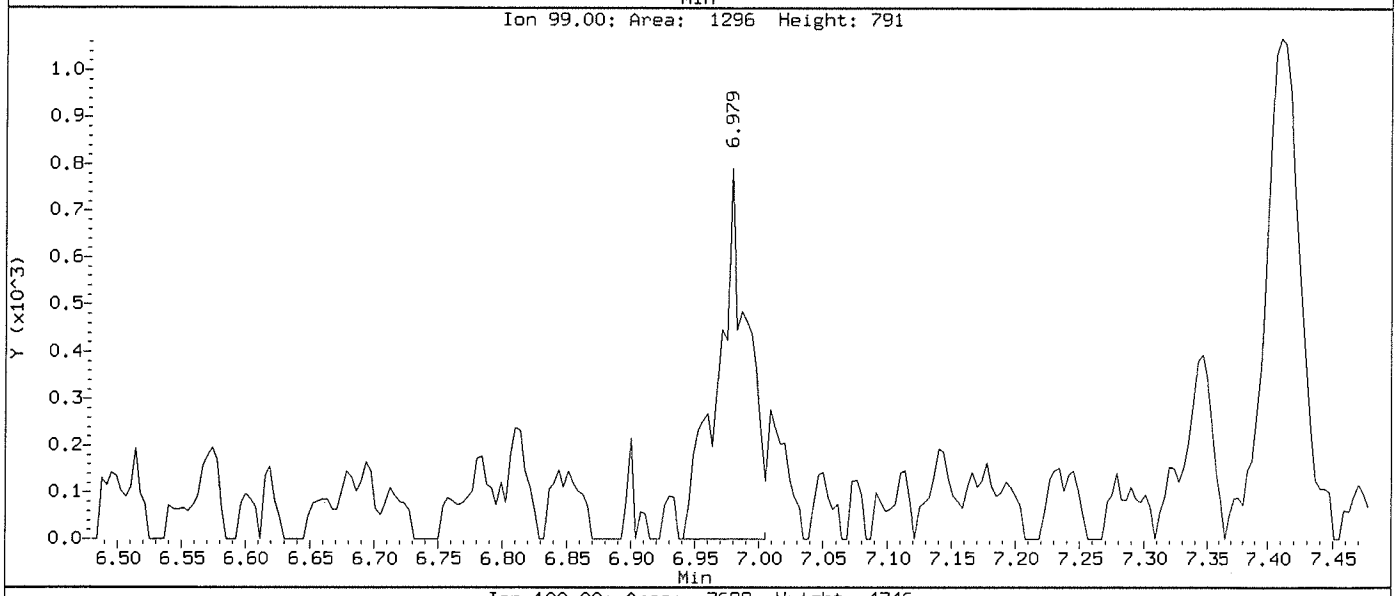
Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4

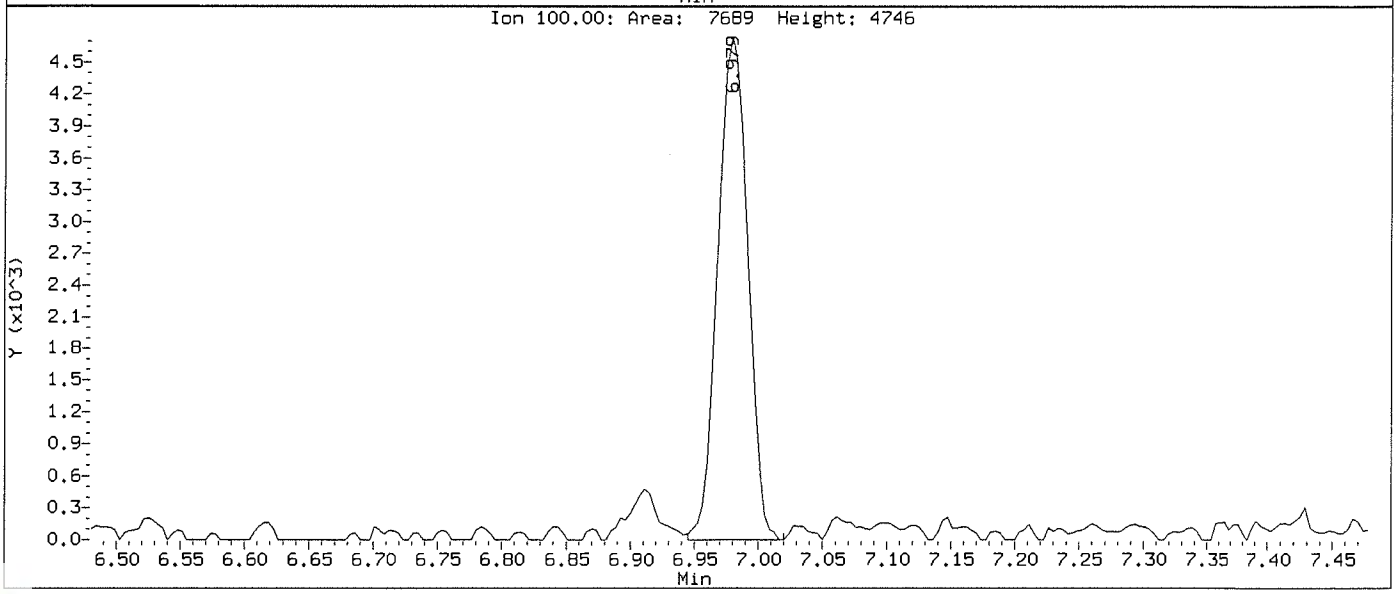


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Injection Date: 21-JAN-2022 11:22
Instrument: VOA9.i
Client Sample ID: VSTD000.25

Compound: Toluene-d8
CAS Number: 2037-26-5

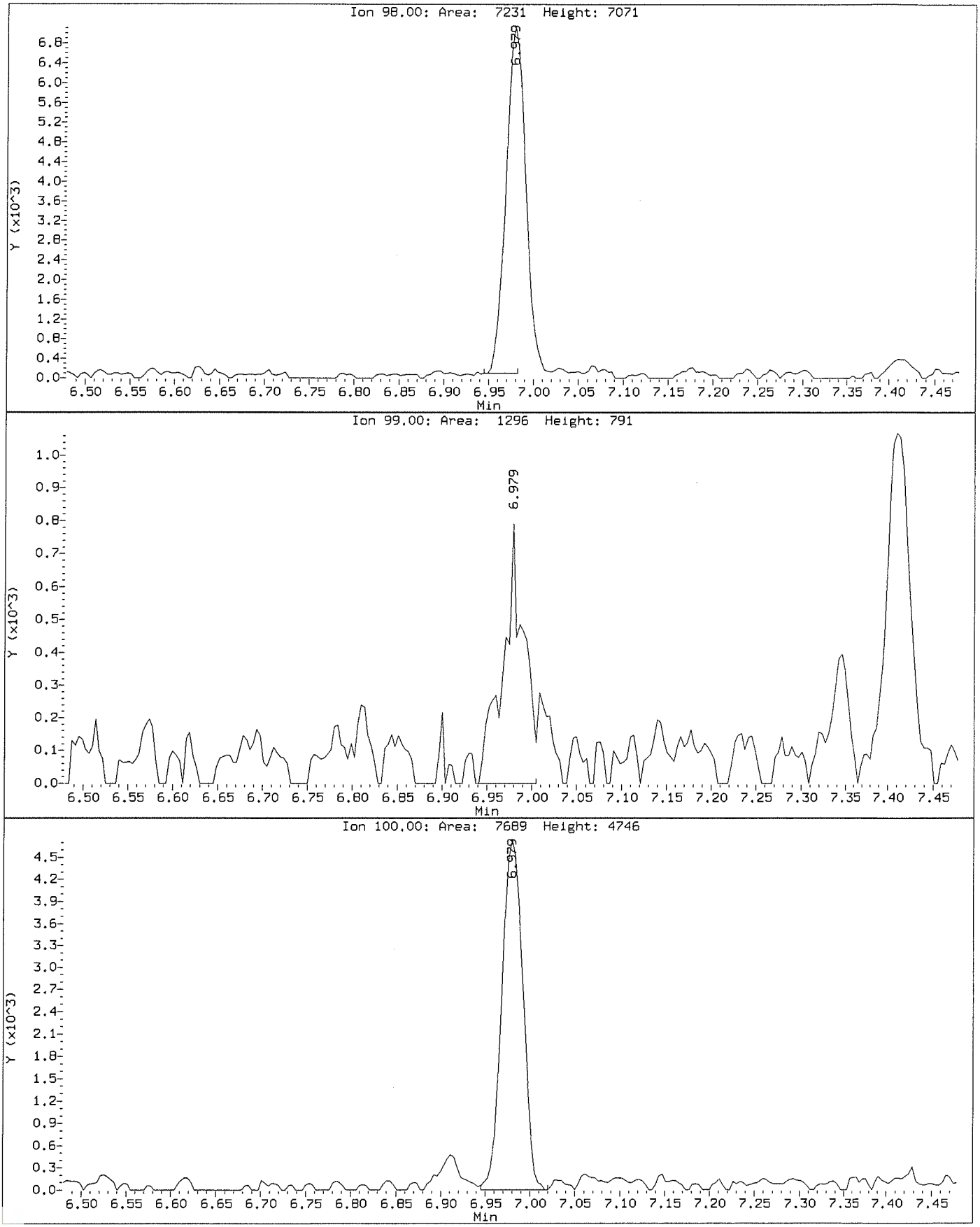






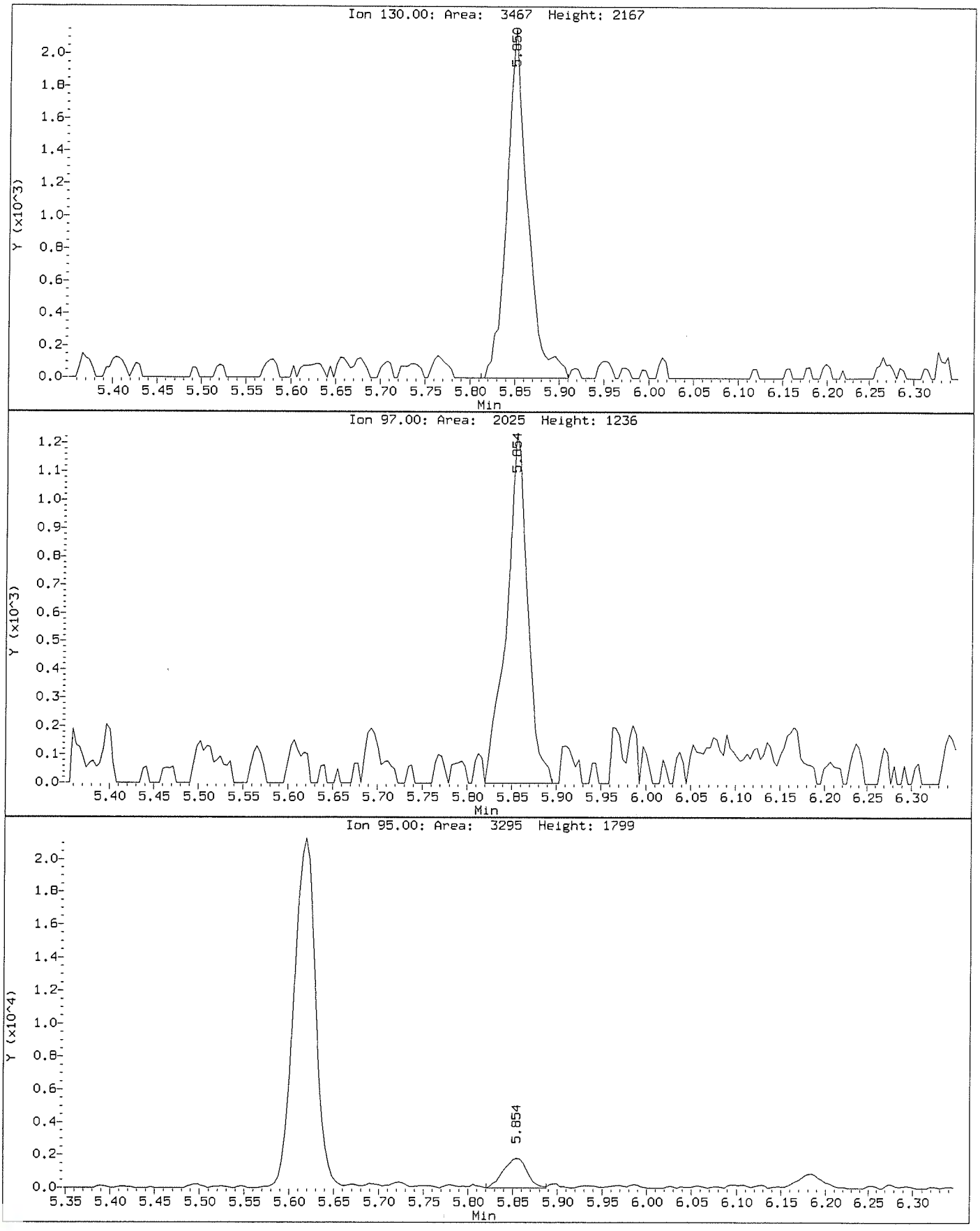
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Injection Date: 21-JAN-2022 11:22
Instrument: VOA9.i
Client Sample ID: VSTD000.25

Compound: Toluene-d8
CAS Number: 2037-26-5



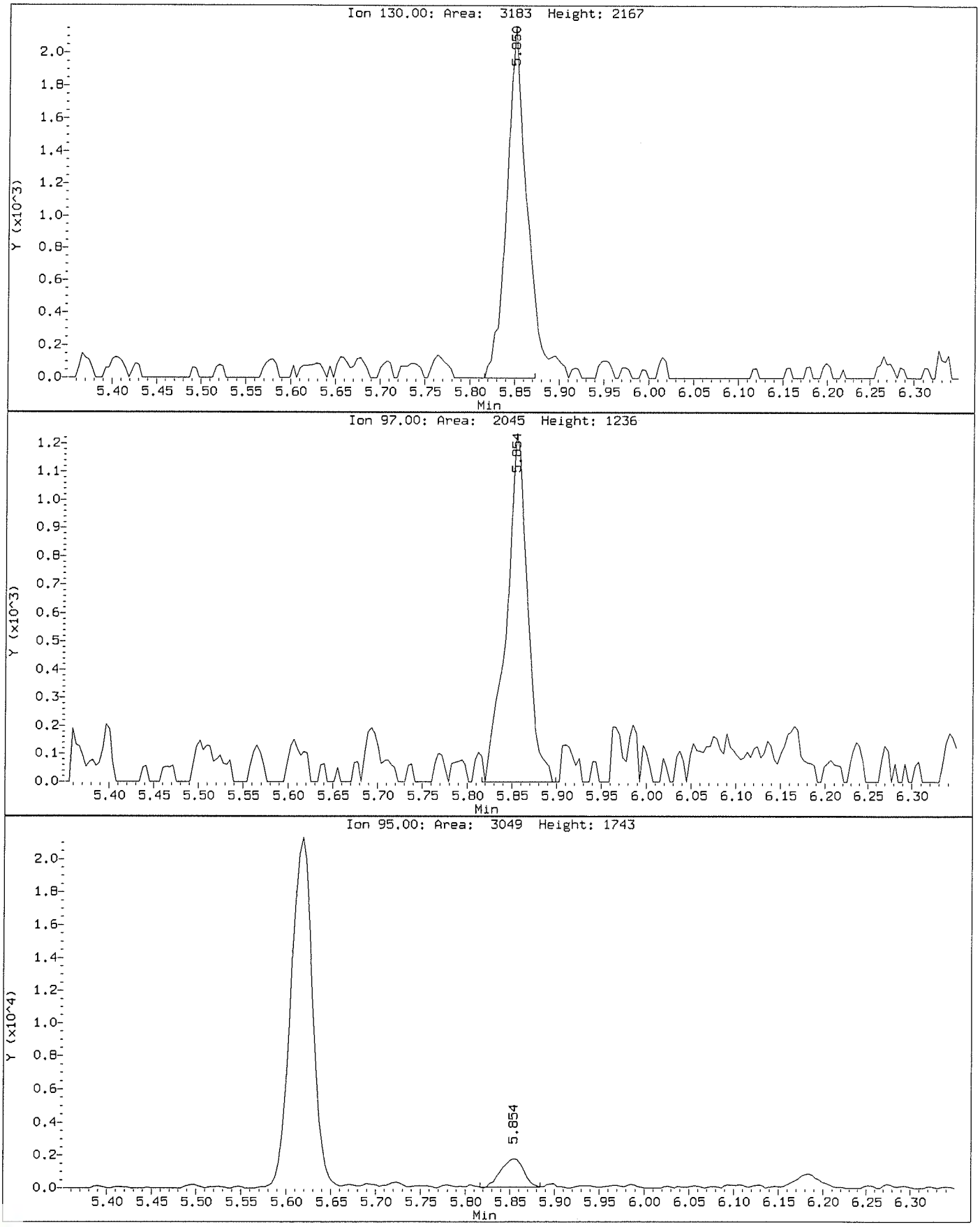
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Injection Date: 21-JAN-2022 11:22
Instrument: VOA9.i
Client Sample ID: VSTD000.25

Compound: Trichloroethene
CAS Number: 79-01-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012102.D
Injection Date: 21-JAN-2022 11:22
Instrument: VOA9.i
Client Sample ID: VSTD000.25

Compound: Trichloroethene
CAS Number: 79-01-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012103.D Page 1
Report Date: 08-Feb-2022 10:51

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Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012103.D
Lab Smp Id: VSTD000.5 Client Smp ID: VSTD000.5
Inj Date : 21-JAN-2022 11:44
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD000.5;VSTD000.5;1;2;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:51 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 11:22 Cal File: U012102.D
Als bottle: 3 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

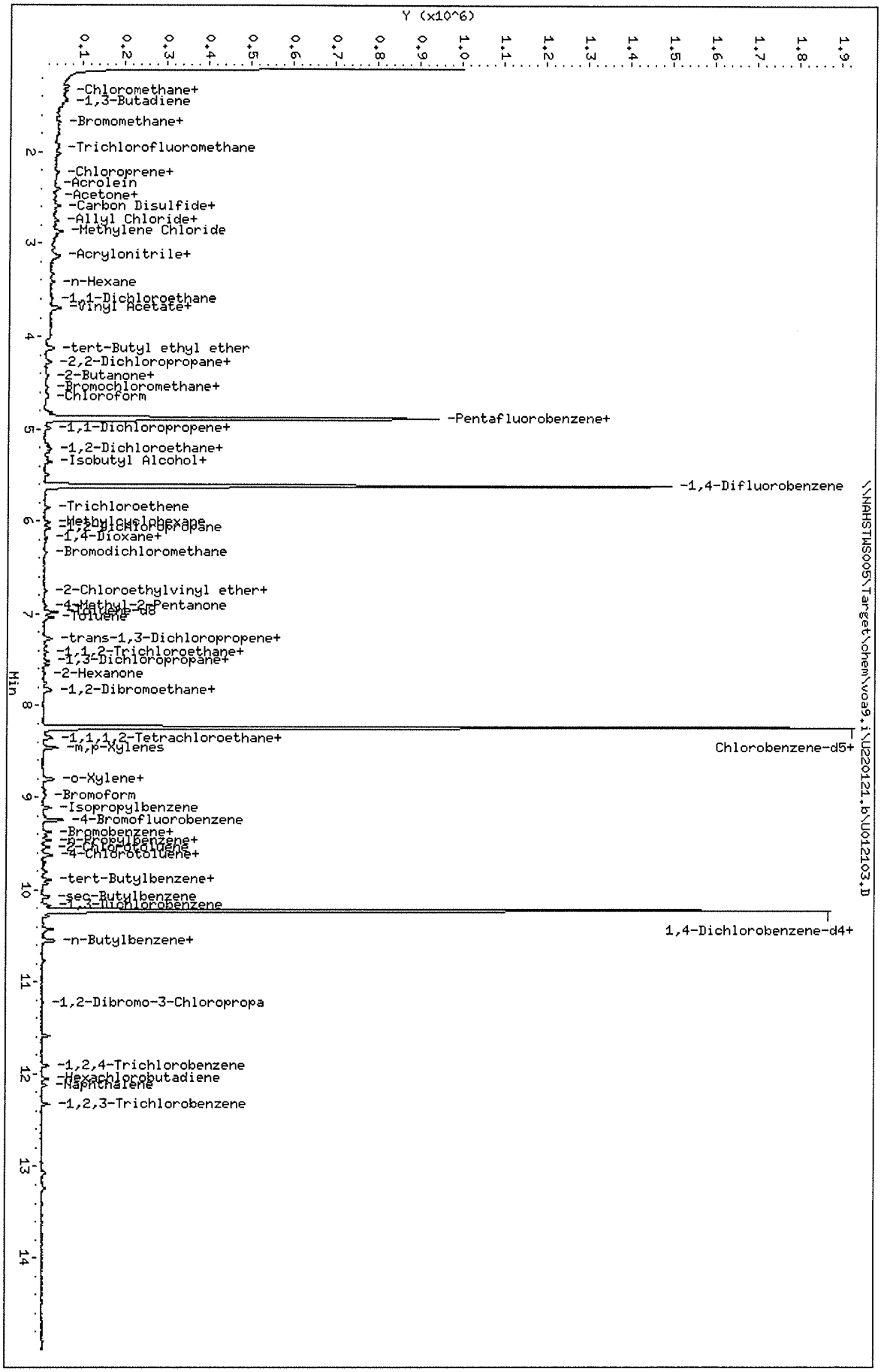
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.886	4.886	(1.000)	592566	50.0000	
*	36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	1014166	50.0000	
*	47 Chlorobenzene-d5	117	8.241	8.241	(1.000)	905077	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	428313	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.167	5.167	(1.058)	7908	0.50000	(a)
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	12738	0.50000	0.31(aM)
$	30 Dibromofluoromethane	113	4.823	4.823	(0.987)	5745	0.50000	0.10(M)
$	48 Toluene-d8	98	6.978	6.978	(0.847)	13376	0.50000	0.57(aM)
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	2956	0.50000	0.51(a)
	11 1,1-Dichloroethene	96	2.397	2.397	(0.491)	3132	0.50000	0.56(a)
	33 1,2-Dichloroethane	62	5.246	5.246	(0.934)	4373	0.50000	0.42(a)
	27 cis-1,2-Dichloroethene	96	4.283	4.283	(0.876)	4216	0.50000	0.54(a)
	17 Methylene Chloride	84	2.866	2.866	(0.587)	6806	0.50000	(a)
	38 Trichloroethene	130	5.853	5.853	(1.042)	3554	0.50000	0.49(a)
	5 Vinyl Chloride	62	1.423	1.423	(0.291)	4226	0.50000	0.46(a)

QC Flag Legend

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



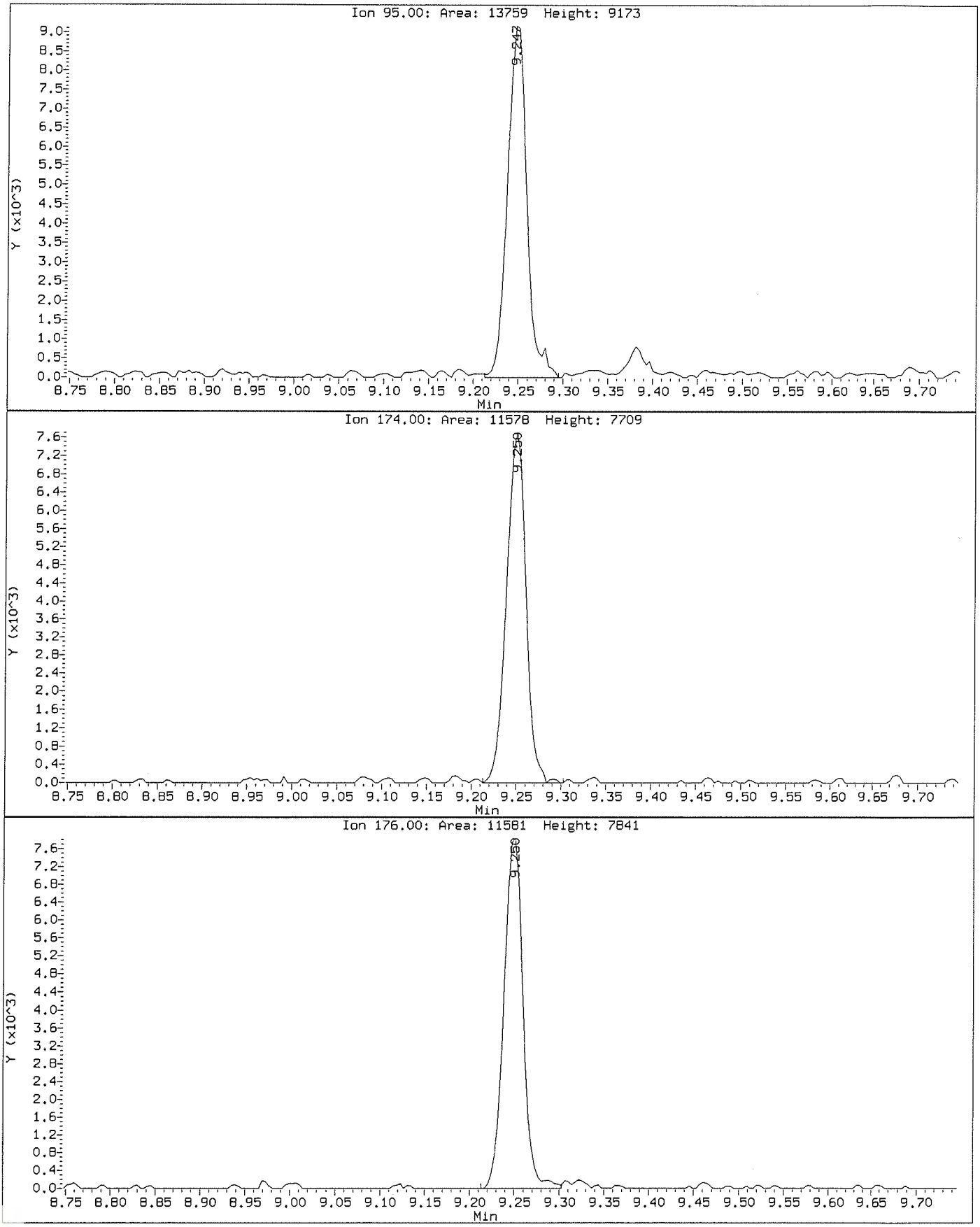
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Client ID: VSTD000,5
Sample Info: VSTD000,5;VSTD000,5;1;2;;;
Purge Volume: 5,0
Column phase: DB624

\\NAHSTWS005\Target\chem\voa9,i\U220121,b\U012103,D

Instrument: VOA9,i
Operator: PC
Column diameter: 0,18

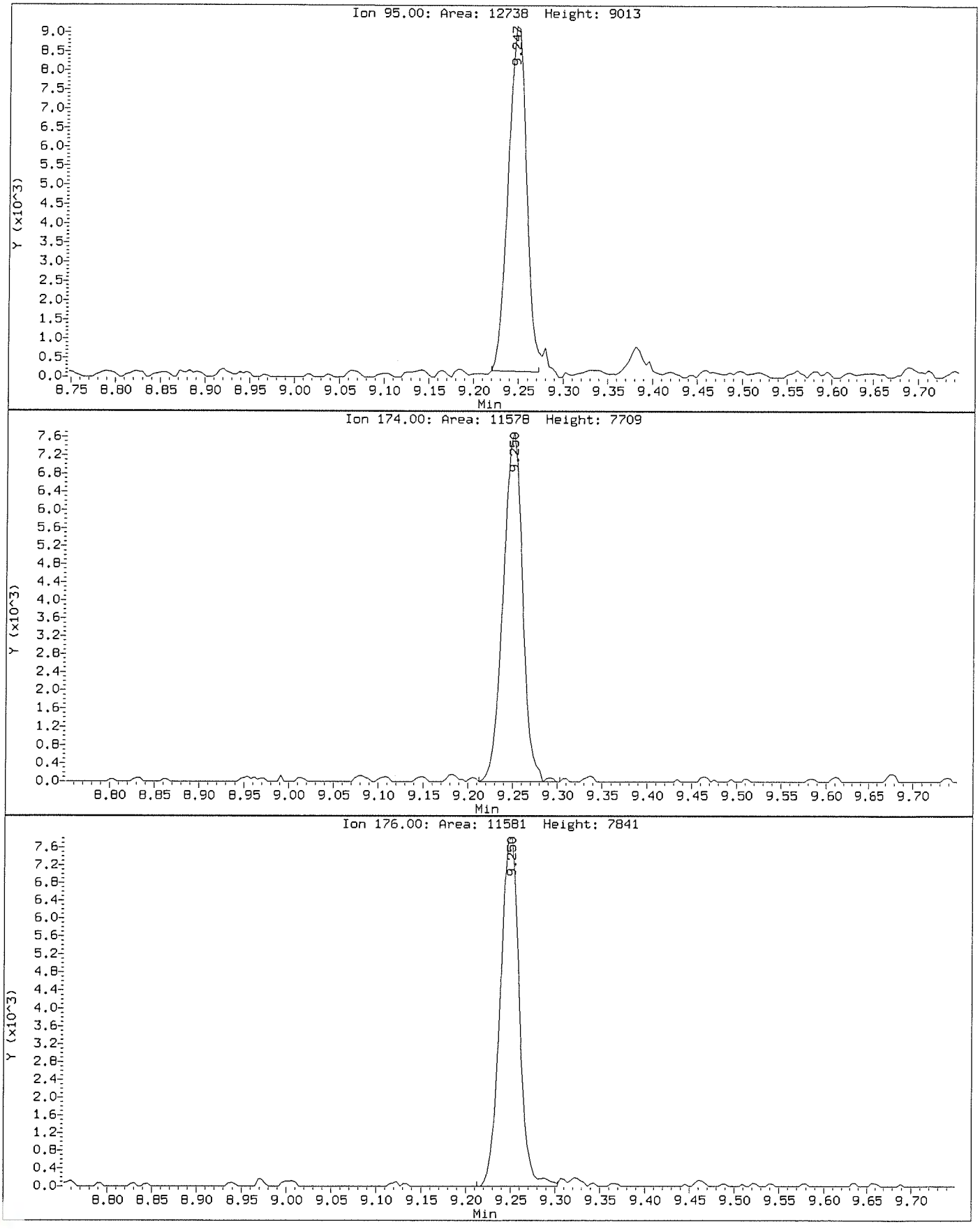
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Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4



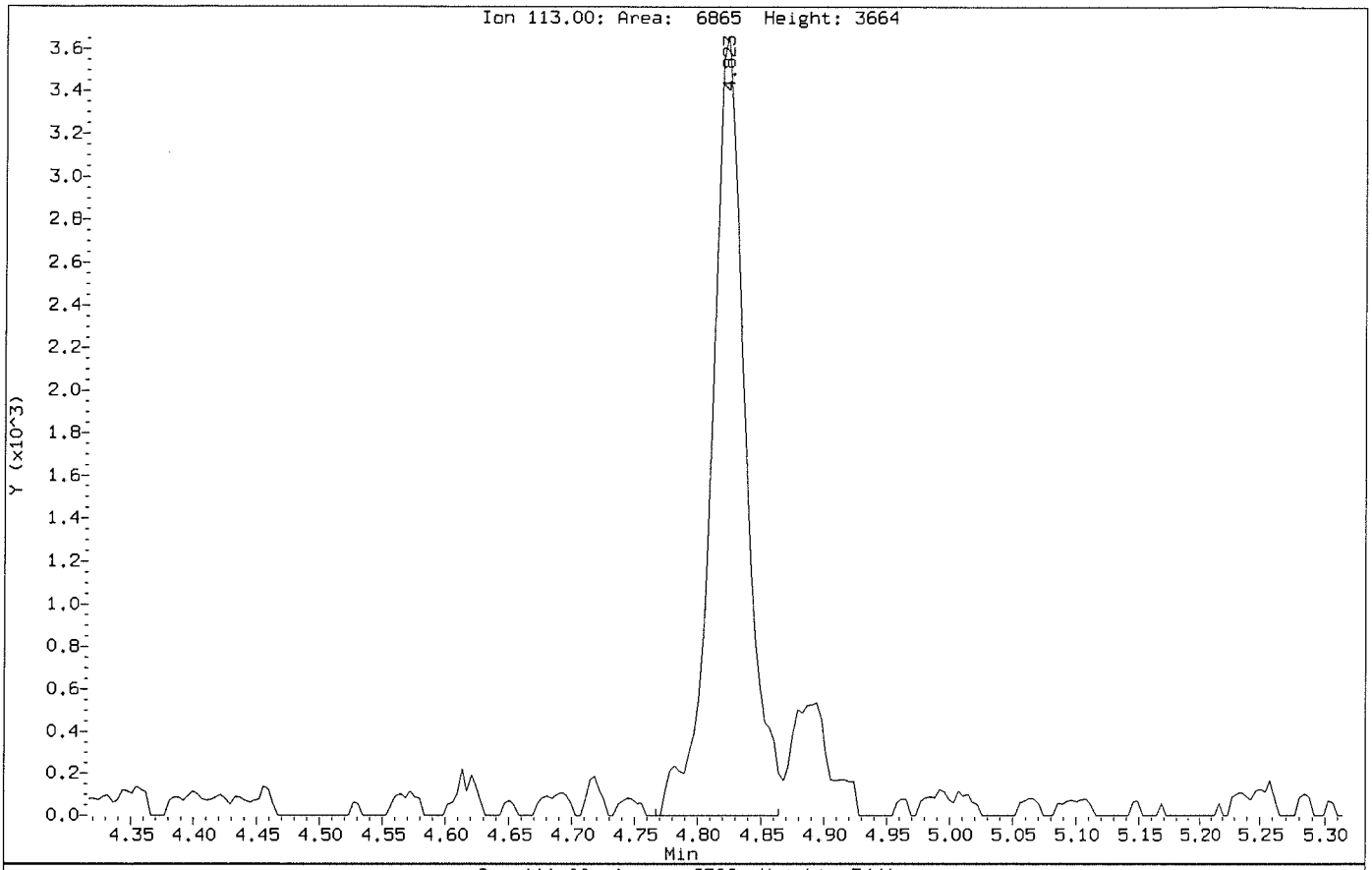
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Instrument: VOA9.i
Client Sample ID: VSTD000.5

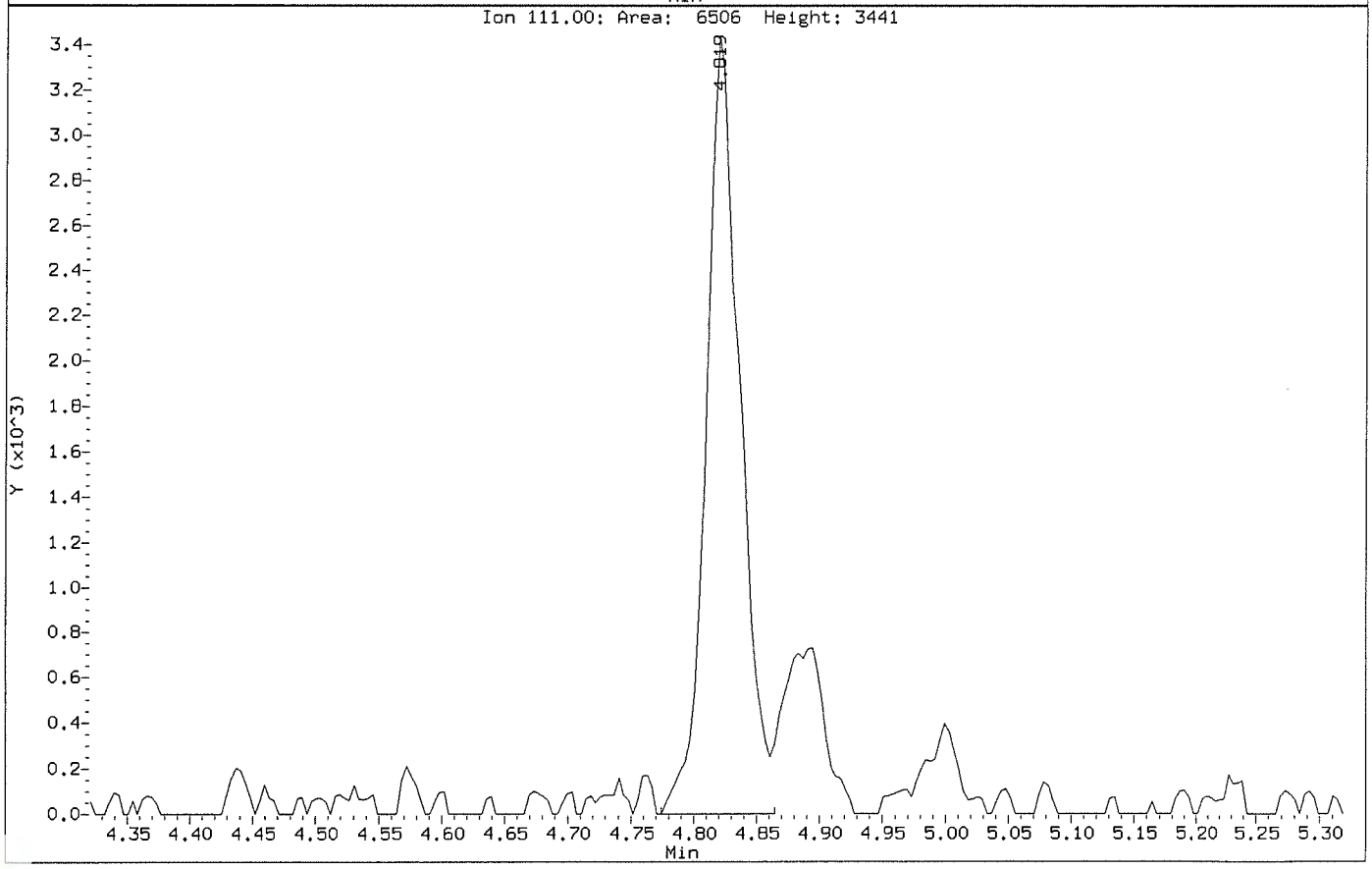
Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\Before\U012103.D
Injection Date: 21-JAN-2022 11:44
Instrument: VOA9.i
Client Sample ID: VSTD000.5

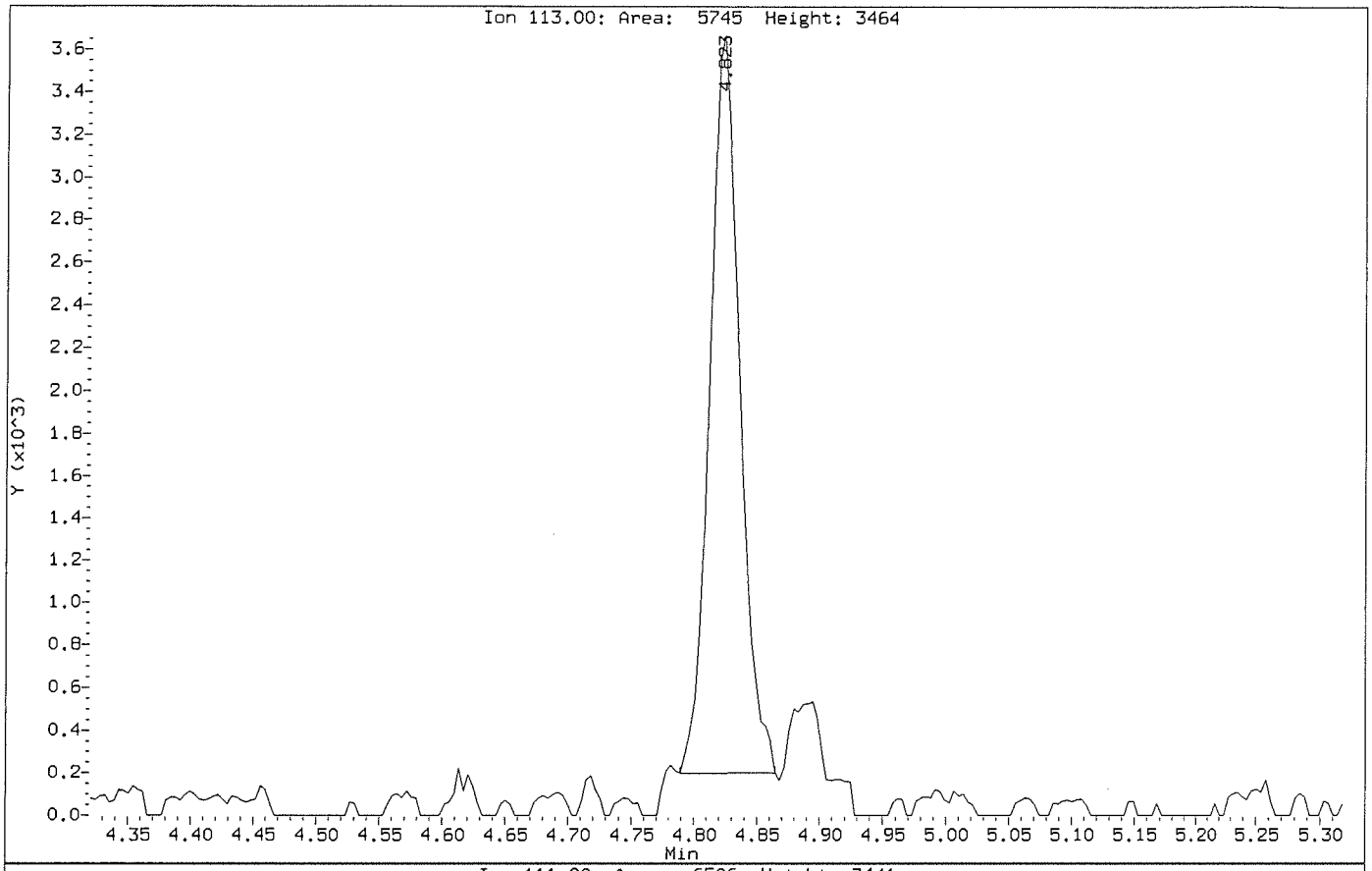
Compound: Dibromofluoromethane
CAS Number: 1868-53-7

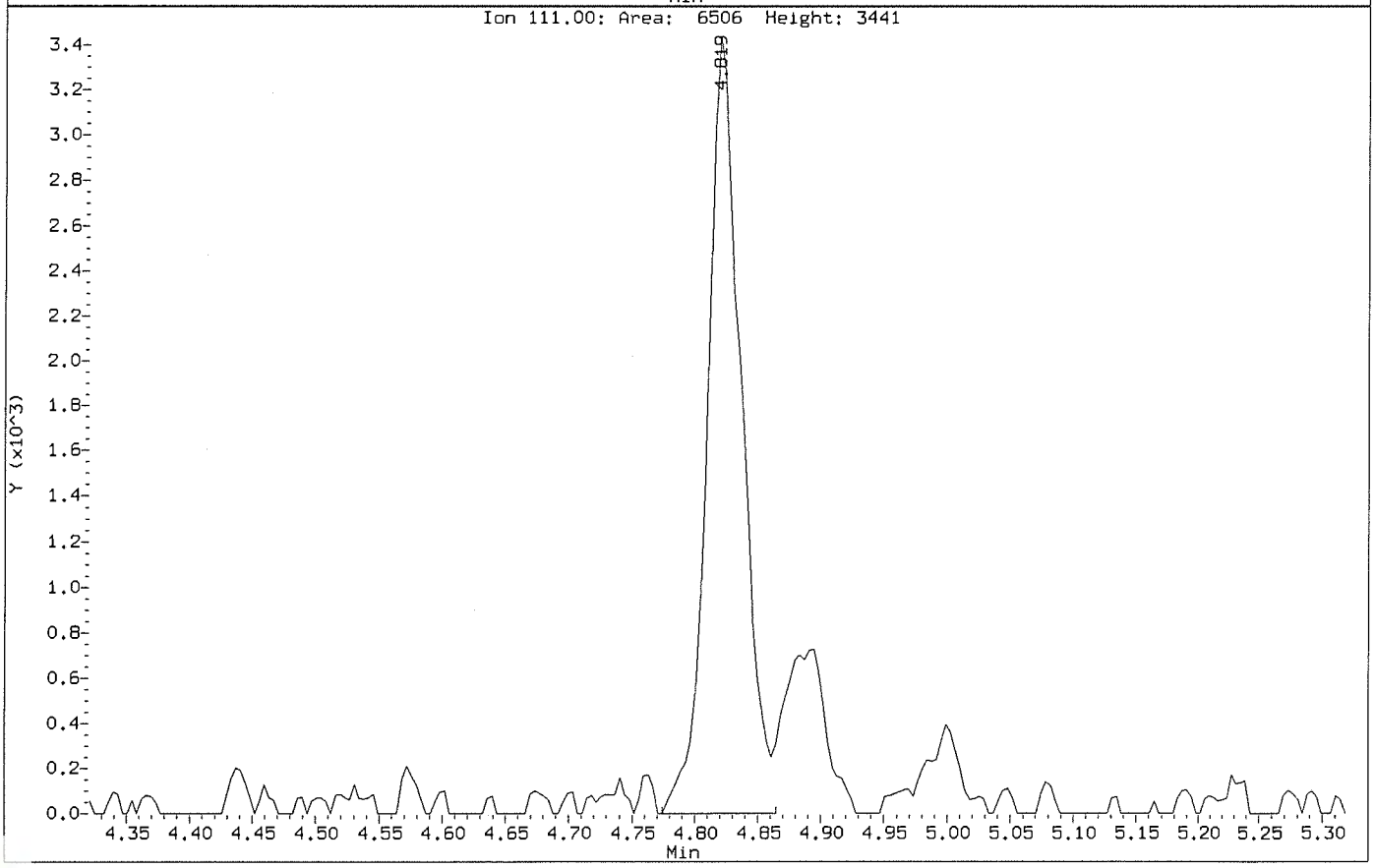




Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012103.D
Injection Date: 21-JAN-2022 11:44
Instrument: VOA9.i
Client Sample ID: VSTD000.5

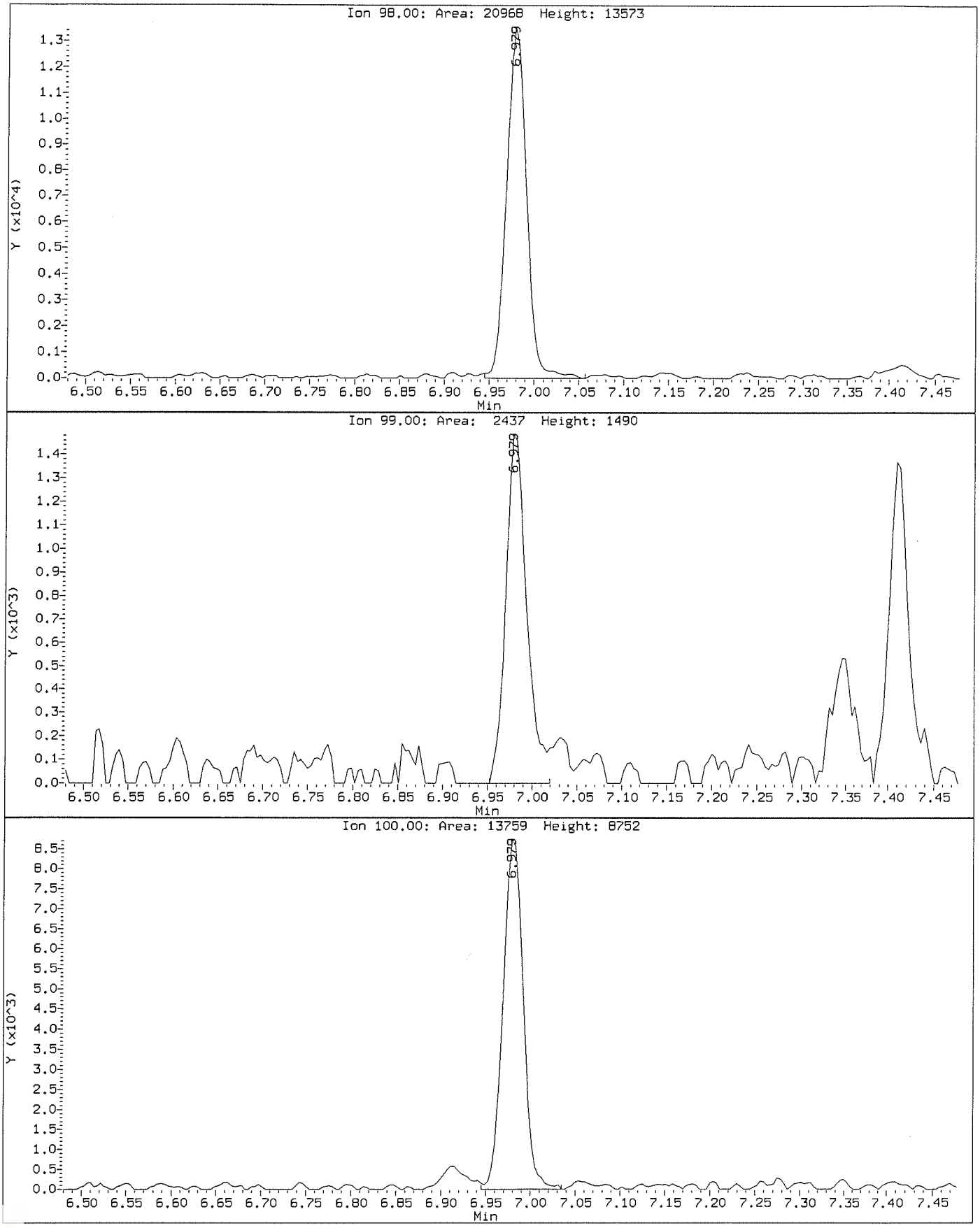
Compound: Dibromofluoromethane
CAS Number: 1868-53-7





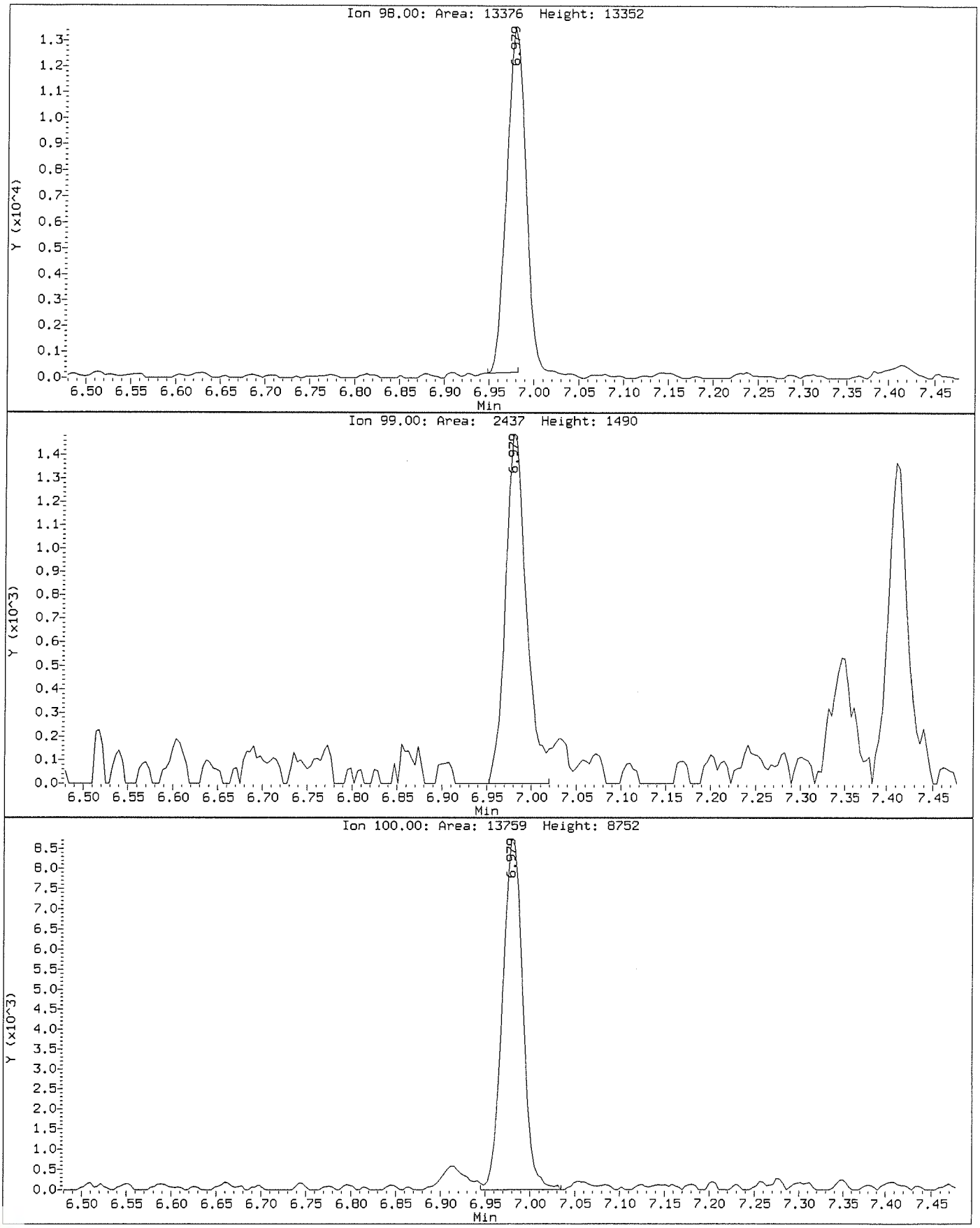
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Injection Date: 21-JAN-2022 11:44
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: Toluene-d8
CAS Number: 2037-26-5



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012103.D
Injection Date: 21-JAN-2022 11:44
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: Toluene-d8
CAS Number: 2037-26-5



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012104.D Page 1
Report Date: 08-Feb-2022 10:51

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Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012104.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 21-JAN-2022 12:28
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD001;VSTD001;1;3;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:51 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 11:44 Cal File: U012103.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

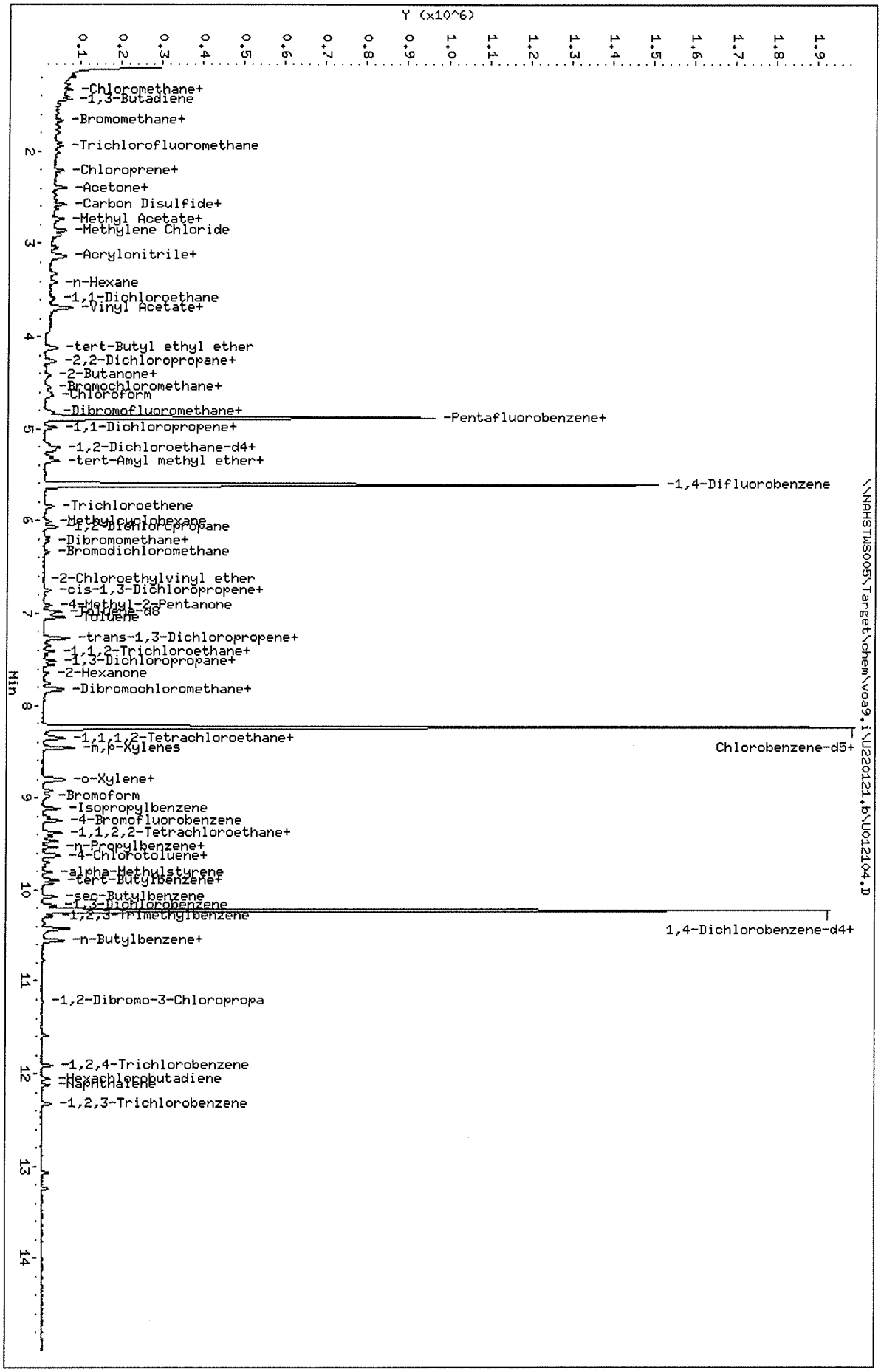
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.883	4.883	(1.000)	596951	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1028670	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	923640	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	432737	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	9353	1.00000	(a)
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	12907	1.00000	0.29(a)
$	30 Dibromofluoromethane	113	4.815	4.815	(0.986)	6292	1.00000	0.18
$	48 Toluene-d8	98	6.978	6.978	(0.847)	24428	1.00000	1.03(a)
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	5885	1.00000	1.01(a)
	11 1,1-Dichloroethene	96	2.390	2.390	(0.490)	5185	1.00000	0.92(a)
	33 1,2-Dichloroethane	62	5.243	5.243	(0.934)	10651	1.00000	1.03(aM)
	27 cis-1,2-Dichloroethene	96	4.268	4.268	(0.874)	7728	1.00000	0.99(a)
	17 Methylene Chloride	84	2.859	2.859	(0.585)	10698	1.00000	0.23(a)
	38 Trichloroethene	130	5.850	5.850	(1.042)	8624	1.00000	1.19(a)
	5 Vinyl Chloride	62	1.412	1.412	(0.289)	10649	1.00000	1.16(a)

QC Flag Legend

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

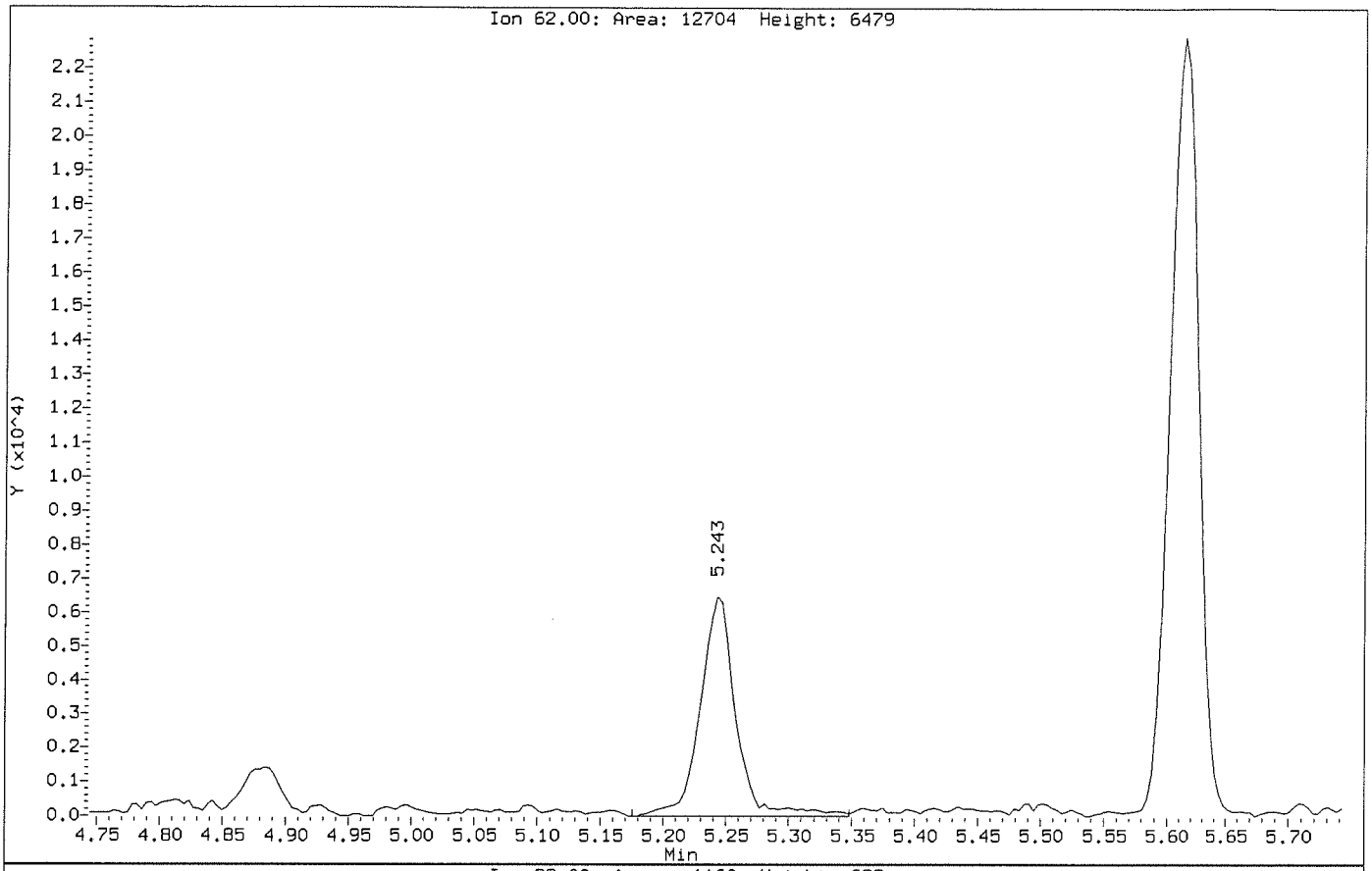


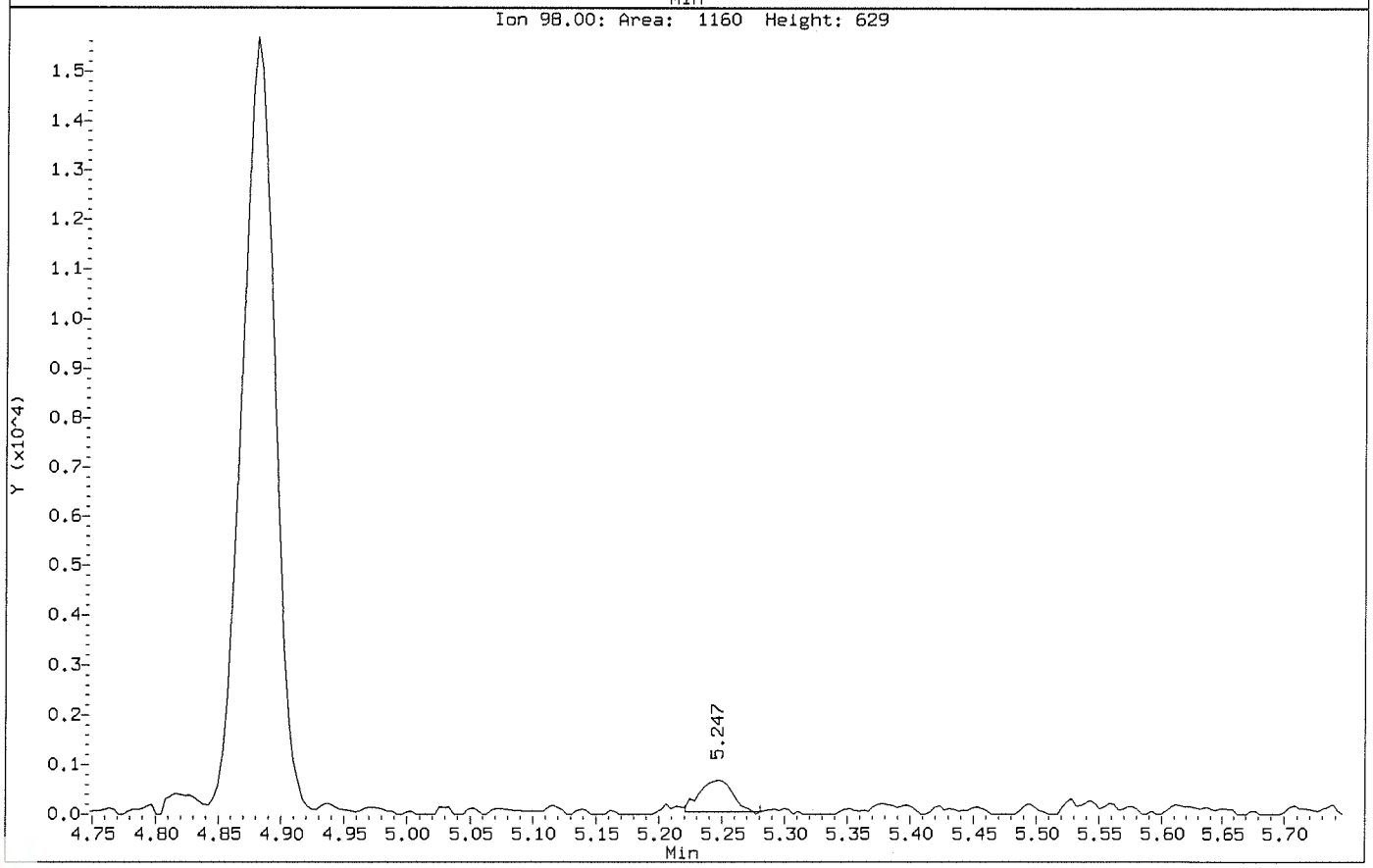
Data File: \\NAHSTWS005\Target\chem\voa9,i\U220121,b\U012104,D
Date : 21-JAN-2022 12:28
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;3;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\Before\U012104.D
Injection Date: 21-JAN-2022 12:28
Instrument: VOA9.i
Client Sample ID: VSTD001

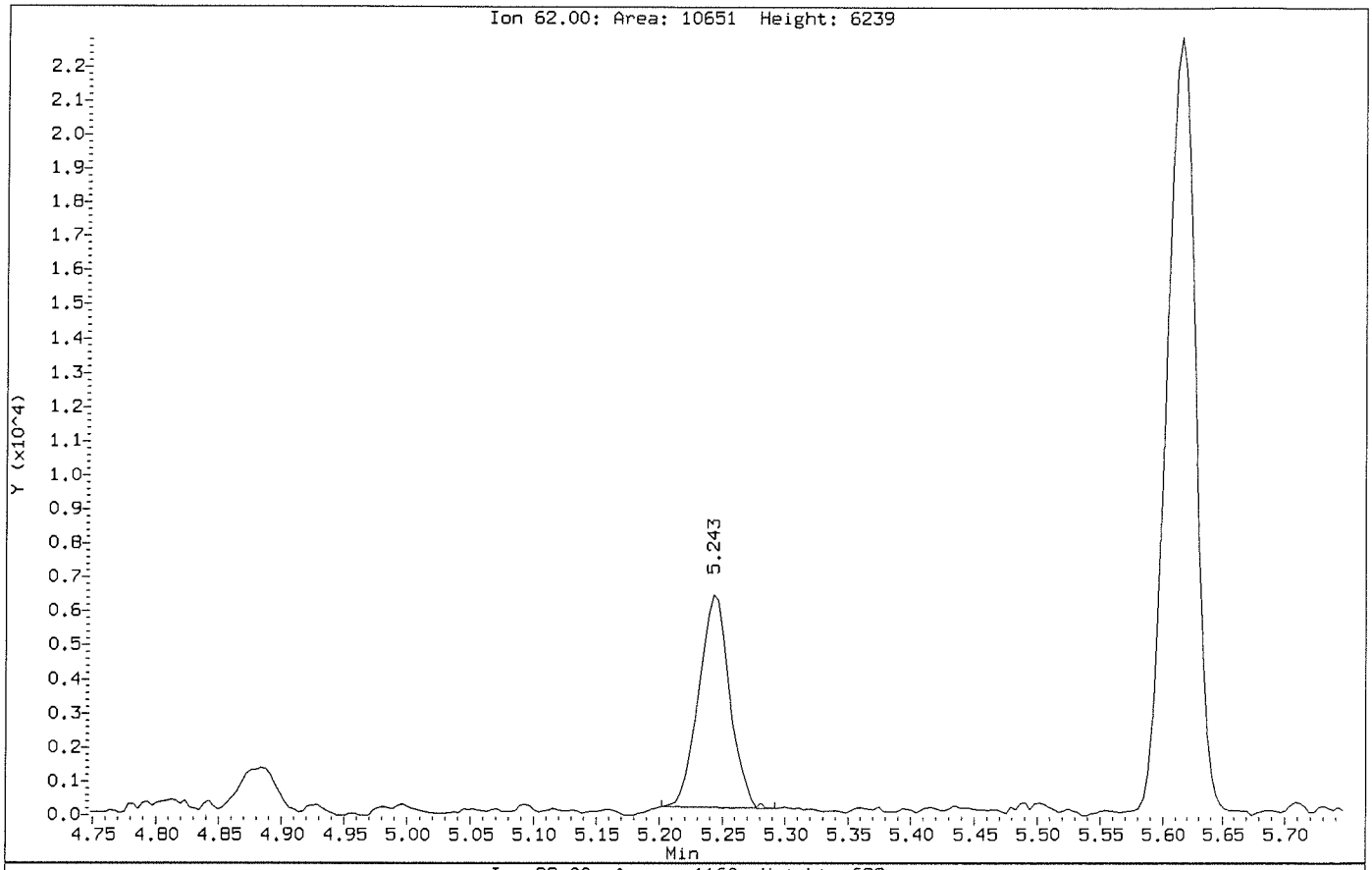
Compound: 1,2-Dichloroethane
CAS Number: 107-06-2

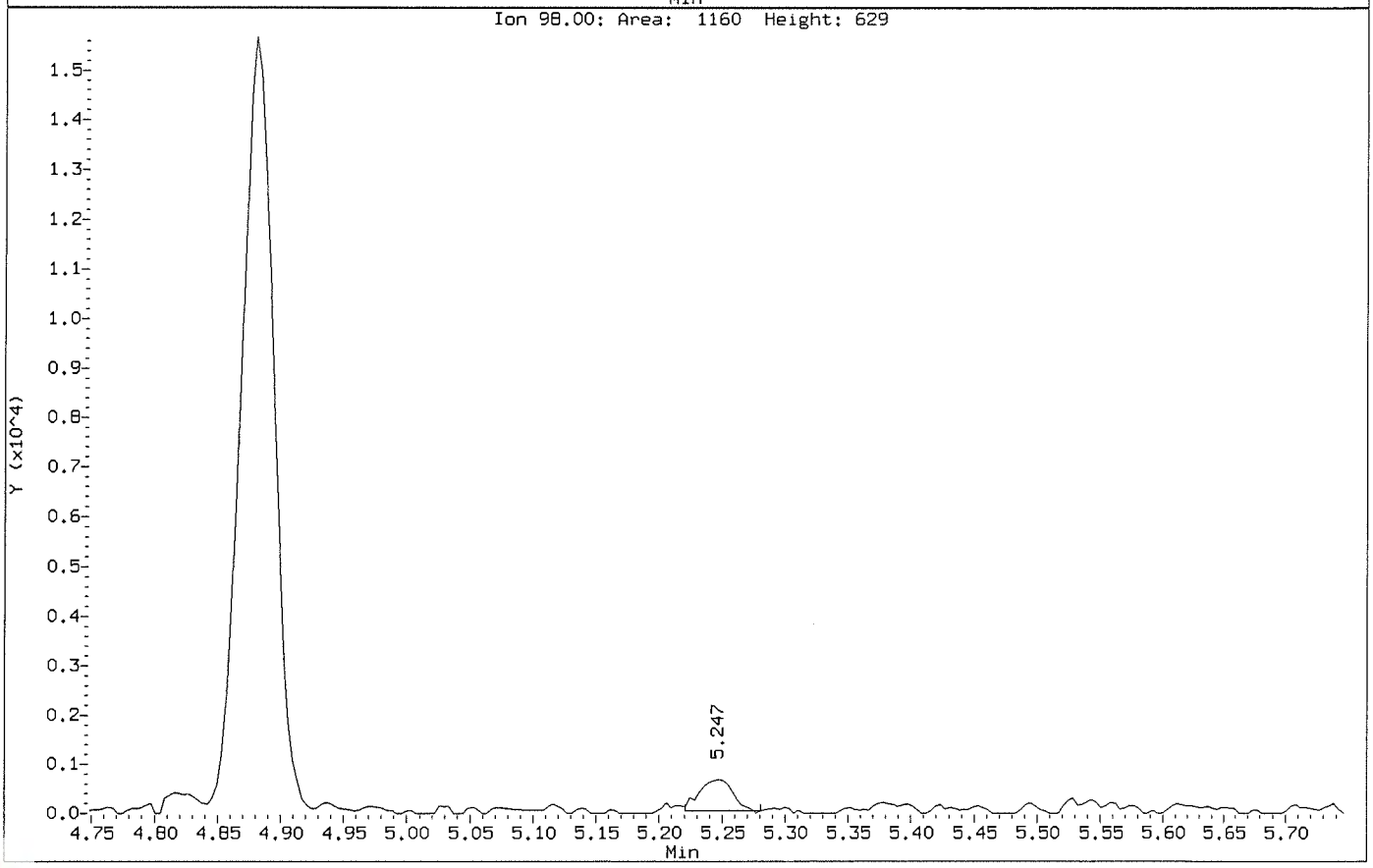




Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012104.D
Injection Date: 21-JAN-2022 12:28
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: 1,2-Dichloroethane
CAS Number: 107-06-2





Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012105.D Page 1
Report Date: 08-Feb-2022 10:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012105.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 21-JAN-2022 12:50
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD002;VSTD002;1;4;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:51 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 12:28 Cal File: U012104.D
Als bottle: 6 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

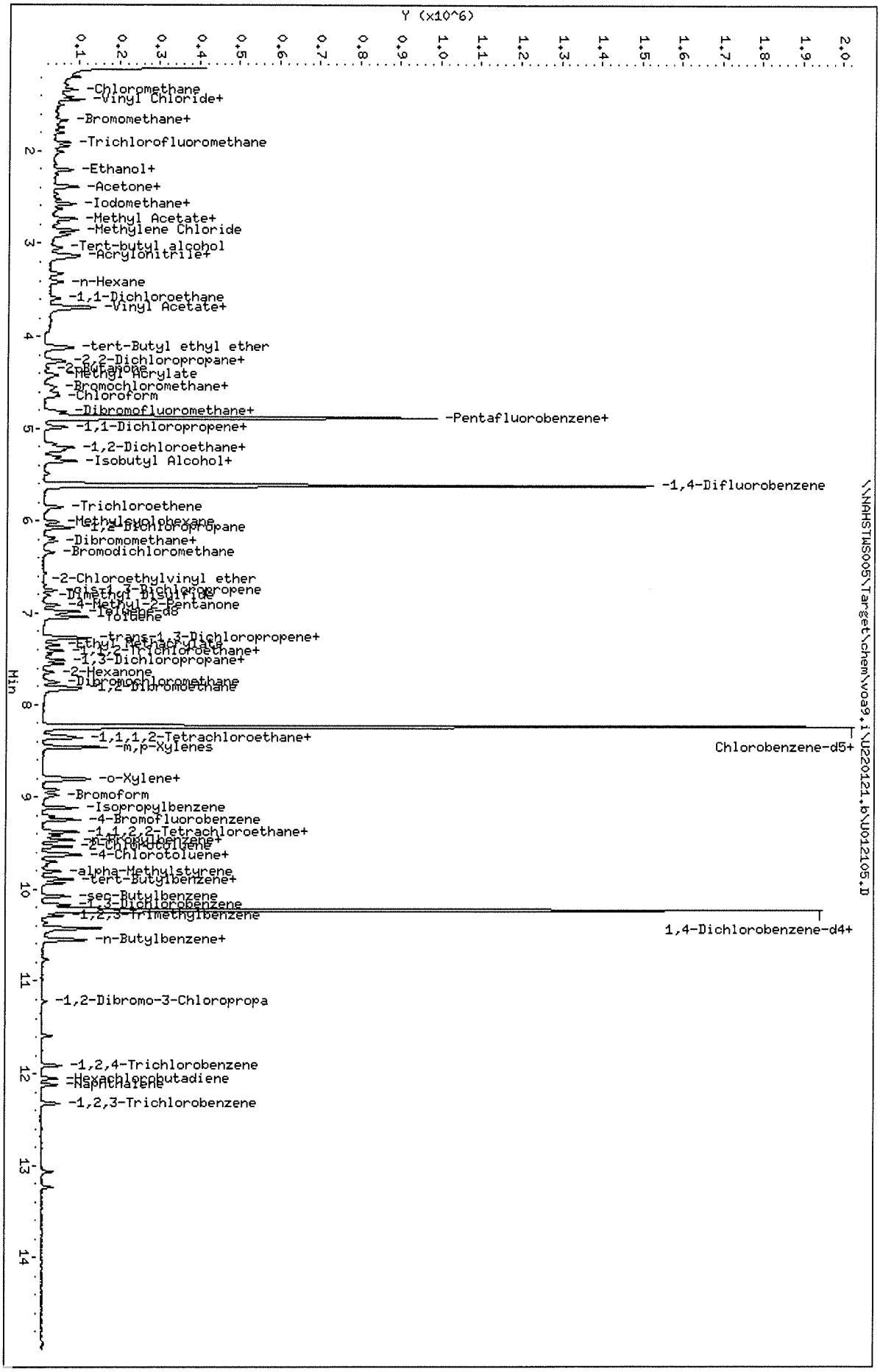
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.883	4.883	(1.000)	603041	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1047343	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	938565	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	445559	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.168	5.168	(1.058)	19107	2.00000	1.17(a)
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	26873	2.00000	1.91(a)
$ 30 Dibromofluoromethane	113	4.819	4.819	(0.987)	14192	2.00000	1.47
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	52357	2.00000	2.17(a)
53 1,1,2-Trichloroethane	83	7.413	7.413	(0.900)	12204	2.00000	2.06(a)
11 1,1-Dichloroethene	96	2.394	2.394	(0.490)	11542	2.00000	2.03(a)
33 1,2-Dichloroethane	62	5.246	5.246	(0.935)	21845	2.00000	2.07(a)
27 cis-1,2-Dichloroethene	96	4.275	4.275	(0.876)	16034	2.00000	2.05(a)
17 Methylene Chloride	84	2.862	2.862	(0.586)	17383	2.00000	1.22(a)
38 Trichloroethene	130	5.850	5.850	(1.042)	15476	2.00000	2.09(a)
5 Vinyl Chloride	62	1.415	1.415	(0.290)	18823	2.00000	2.04(a)

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220121,b\U012105.D
Date : 21-JAN-2022 12:50
Client ID: VSTD002
Instrument: VOA9,i
Sample Info: VSTD002;VSTD002;1;4;;;
Operator: PC
Purge Volume: 5.0
Column diameter: 0.18
Column phase: DB624

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012106.D Page 1
Report Date: 08-Feb-2022 10:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012106.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 21-JAN-2022 13:12
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD005;VSTD005;1;5;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:51 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 12:50 Cal File: U012105.D
Als bottle: 7 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

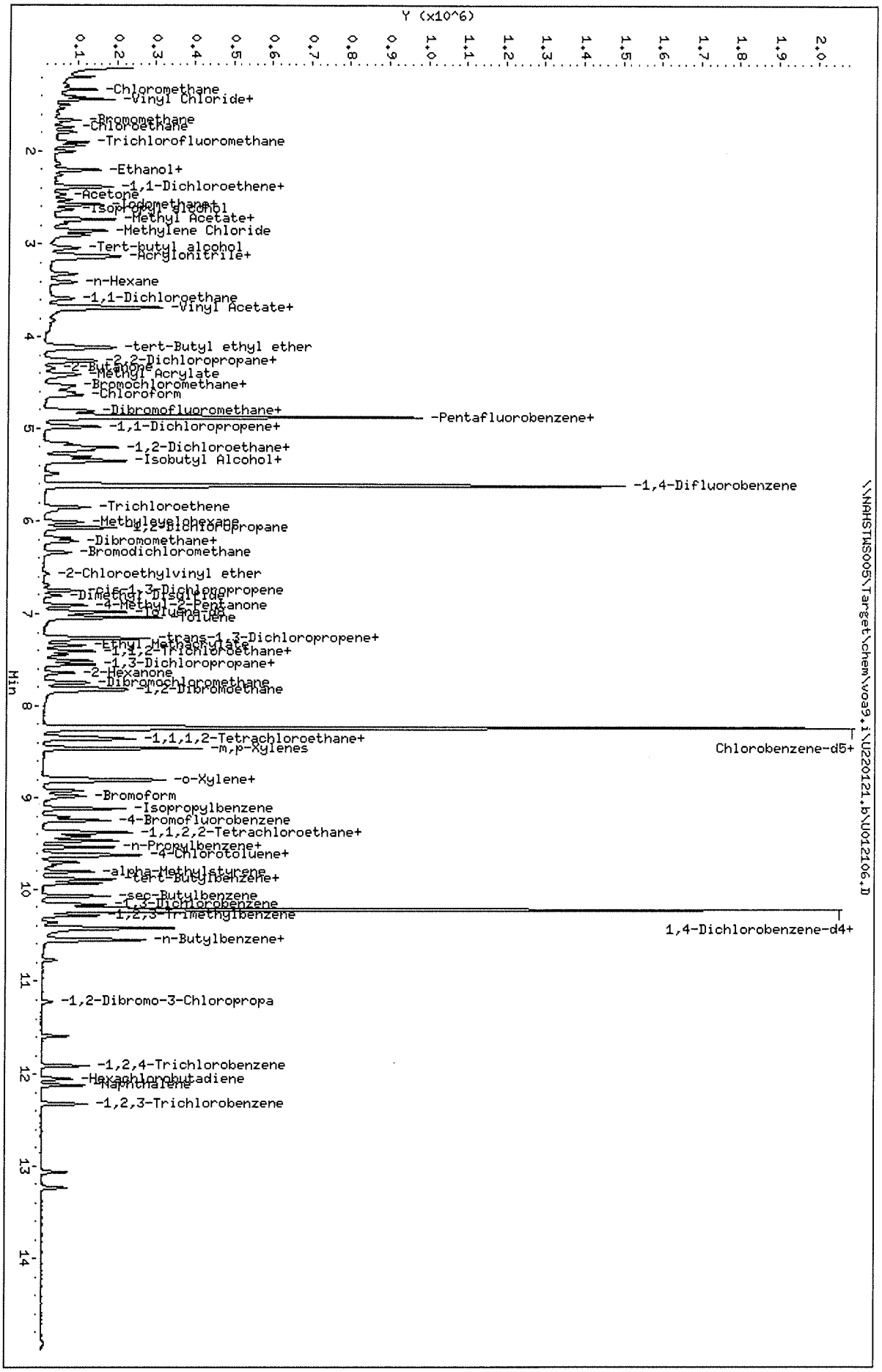
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.879	4.879	(1.000)	602262	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1033018	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	937234	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	456880	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	42917	5.00000	4.29(a)
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	48837	5.00000	4.49(a)
$	30 Dibromofluoromethane	113	4.819	4.819	(0.988)	32715	5.00000	4.54
$	48 Toluene-d8	98	6.978	6.978	(0.847)	116503	5.00000	4.84(a)
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	29958	5.00000	5.07
	11 1,1-Dichloroethene	96	2.386	2.386	(0.489)	28583	5.00000	5.05
	33 1,2-Dichloroethane	62	5.242	5.242	(0.934)	55838	5.00000	5.39
	27 cis-1,2-Dichloroethene	96	4.271	4.271	(0.876)	39136	5.00000	5.01
	17 Methylene Chloride	84	2.854	2.854	(0.585)	39937	5.00000	4.64(a)
	38 Trichloroethene	130	5.850	5.850	(1.042)	34563	5.00000	4.74(a)
	5 Vinyl Chloride	62	1.407	1.407	(0.289)	43211	5.00000	4.69(a)

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220121,b\U012106,D
Date : 21-JAN-2022 13:12
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;5;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012107.D Page 1
Report Date: 08-Feb-2022 10:51

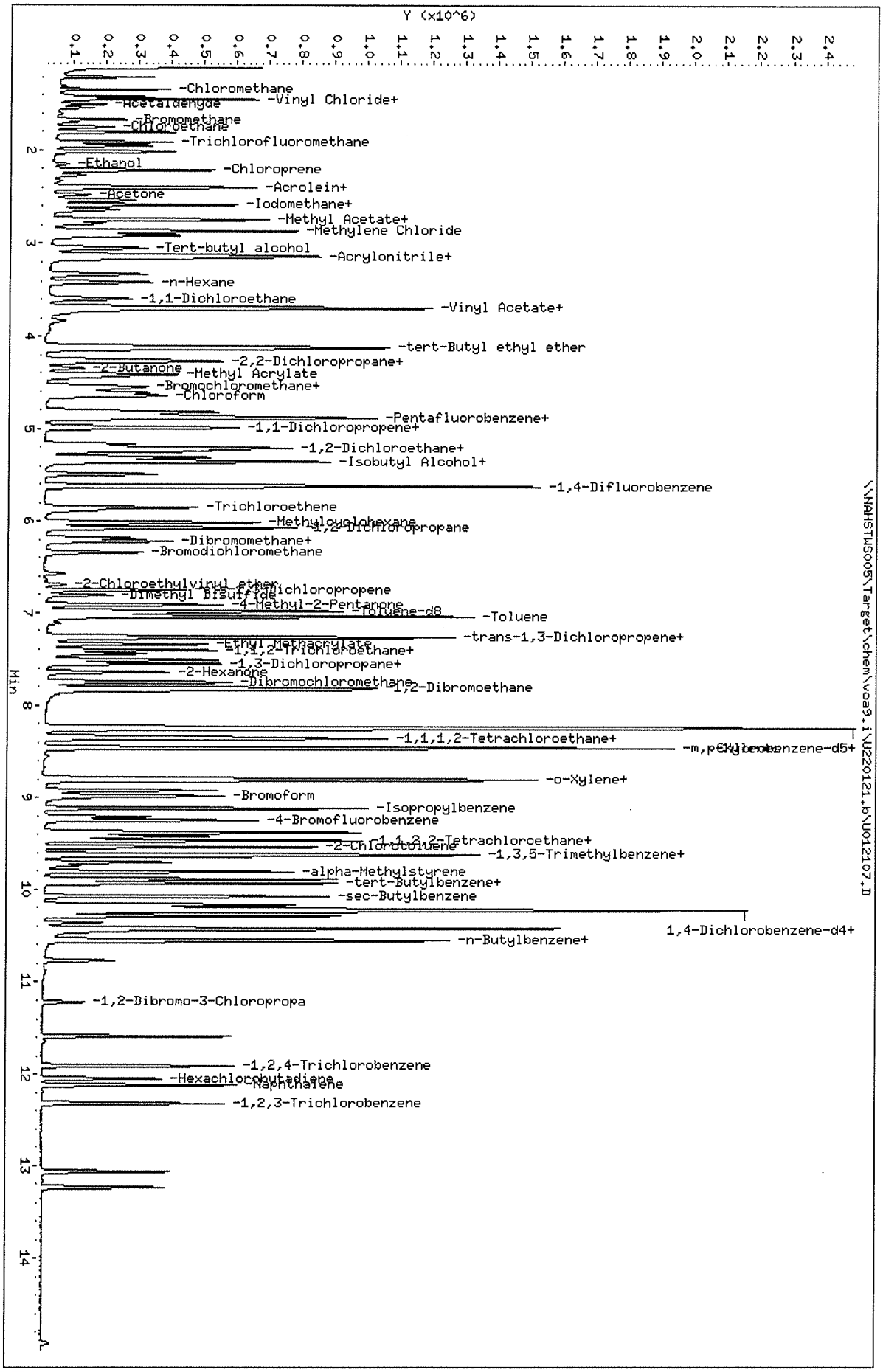
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012107.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 21-JAN-2022 13:34
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD020;VSTD020;1;6;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:51 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:12 Cal File: U012106.D
Als bottle: 8 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.886	4.886	(1.000)	608297	50.0000	
*	36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	1038948	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	952323	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	468678	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.168	5.168	(1.058)	171723	20.0000	20.96
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	180431	20.0000	19.58
$	30 Dibromofluoromethane	113	4.823	4.823	(0.987)	133630	20.0000	20.98
$	48 Toluene-d8	98	6.978	6.978	(0.847)	491308	20.0000	20.12
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	122557	20.0000	20.41
	11 1,1-Dichloroethene	96	2.397	2.397	(0.491)	112726	20.0000	19.73
	33 1,2-Dichloroethane	62	5.246	5.246	(0.934)	217619	20.0000	20.88
	27 cis-1,2-Dichloroethene	96	4.279	4.279	(0.876)	153590	20.0000	19.48
	17 Methylene Chloride	84	2.866	2.866	(0.587)	146064	20.0000	20.50
	38 Trichloroethene	130	5.854	5.854	(1.042)	139073	20.0000	19.00
	5 Vinyl Chloride	62	1.419	1.419	(0.290)	178660	20.0000	19.21



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220121,b\U012107,D
Date : 21-JAN-2022 13:34
Client ID: VSTD020
Sample Info: VSTD020;VSTD020;1;6;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012108.D Page 1
Report Date: 08-Feb-2022 10:51

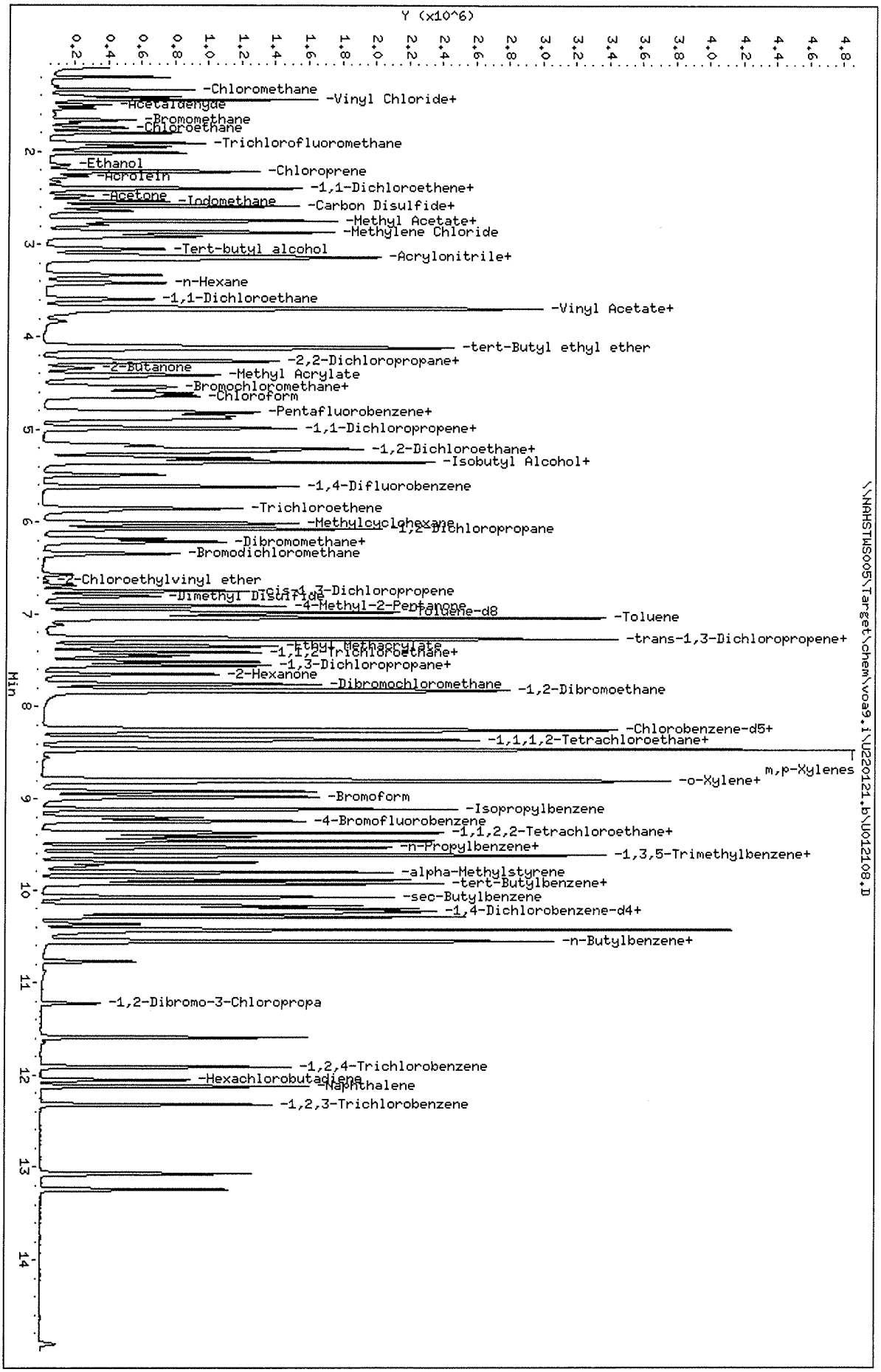
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012108.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 21-JAN-2022 13:56
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050;VSTD050;1;7;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:51 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:34 Cal File: U012107.D
Als bottle: 9 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.883	(1.000)	629767	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1058668	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	970798	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	487743	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.167	5.167	(1.058)	410662	50.0000	50.18
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	445798	50.0000	49.23
$	30 Dibromofluoromethane	113	4.819	4.819	(0.987)	315169	50.0000	48.90
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1140385	50.0000	45.83
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	300431	50.0000	49.10
	11 1,1-Dichloroethene	96	2.393	2.393	(0.490)	283761	50.0000	47.99
	33 1,2-Dichloroethane	62	5.242	5.242	(0.934)	541279	50.0000	50.98
	27 cis-1,2-Dichloroethene	96	4.275	4.275	(0.876)	399792	50.0000	48.99
	17 Methylene Chloride	84	2.862	2.862	(0.586)	362049	50.0000	51.04
	38 Trichloroethene	130	5.850	5.850	(1.042)	354722	50.0000	47.56
	5 Vinyl Chloride	62	1.415	1.415	(0.290)	473606	50.0000	49.20



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220121,b\U012108,D
Date : 21-JAN-2022 13:56
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: FC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012109.D Page 1
Report Date: 08-Feb-2022 10:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012109.D
Lab Smp Id: VSTD100 Client Smp ID: VSTD100
Inj Date : 21-JAN-2022 14:18
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD100;VSTD100;1;8;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:51 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 10 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

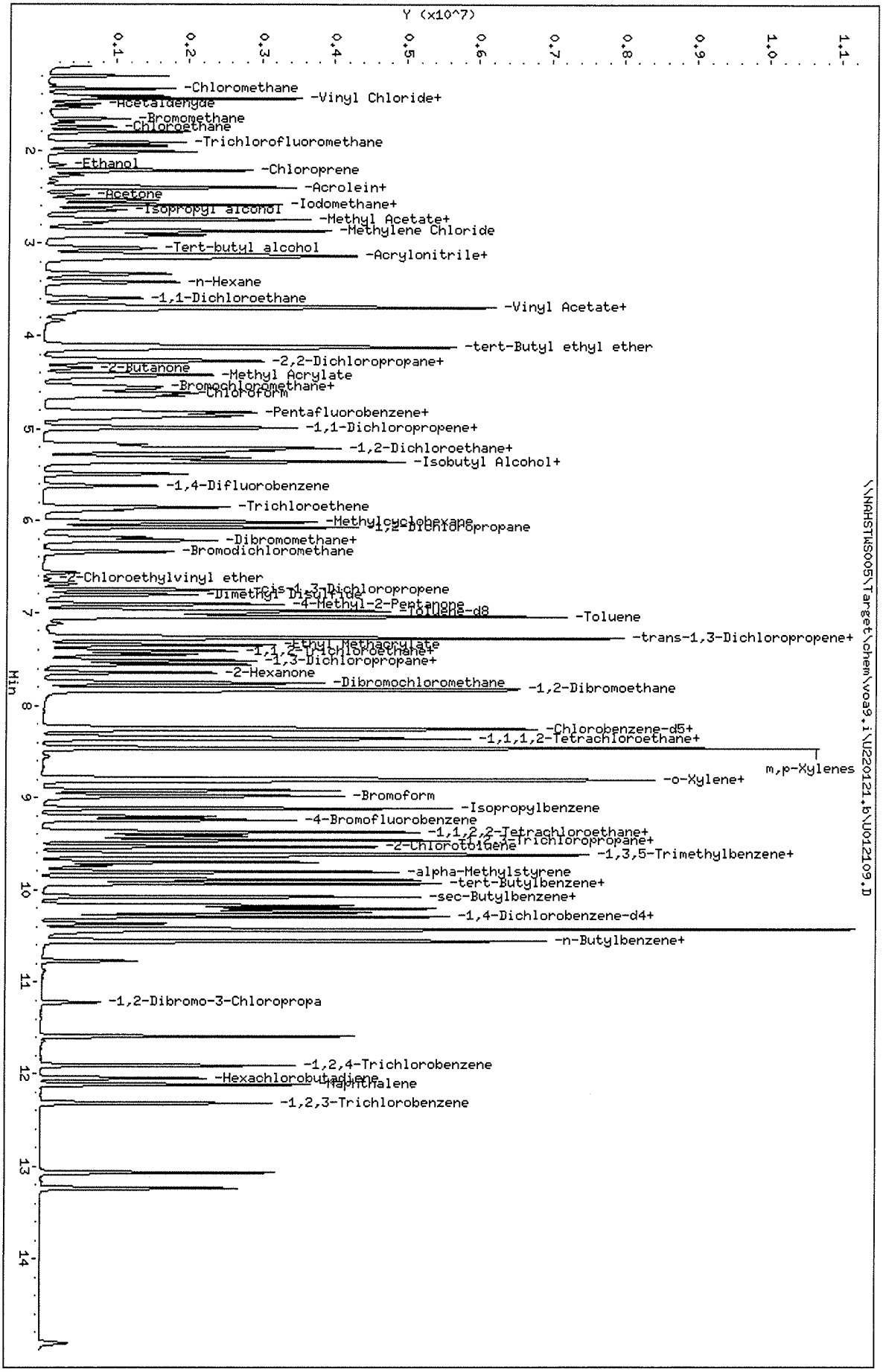
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.887	4.887	(1.000)	648471	50.0000	
* 36 1,4-Difluorobenzene	114	5.618	5.618	(1.000)	1104494	50.0000	
* 47 Chlorobenzene-d5	117	8.242	8.242	(1.000)	1016315	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	510482	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.168	5.168	(1.058)	875745	100.000	105.35
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	983774	100.000	105.16
$ 30 Dibromofluoromethane	113	4.823	4.823	(0.987)	693277	100.000	105.45
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	2616189	100.000	100.43(A)
53 1,1,2-Trichloroethane	83	7.413	7.413	(0.899)	634033	100.000	98.98
11 1,1-Dichloroethene	96	2.394	2.394	(0.490)	626059	100.000	102.82
33 1,2-Dichloroethane	62	5.246	5.246	(0.934)	1112211	100.000	100.41
27 cis-1,2-Dichloroethene	96	4.275	4.275	(0.875)	831737	100.000	98.98
17 Methylene Chloride	84	2.866	2.866	(0.587)	743158	100.000	103.14
38 Trichloroethene	130	5.850	5.850	(1.041)	773665	100.000	99.43
5 Vinyl Chloride	62	1.419	1.419	(0.290)	1027574	100.000	103.68

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012109.D
Date : 21-JAN-2022 14:18
Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1;8;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012110.D Page 1
Report Date: 08-Feb-2022 10:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012110.D
Lab Smp Id: VSTD150 Client Smp ID: VSTD150
Inj Date : 21-JAN-2022 14:40
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD150;VSTD150;1;9;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:51 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 14:18 Cal File: U012109.D
Als bottle: 11 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

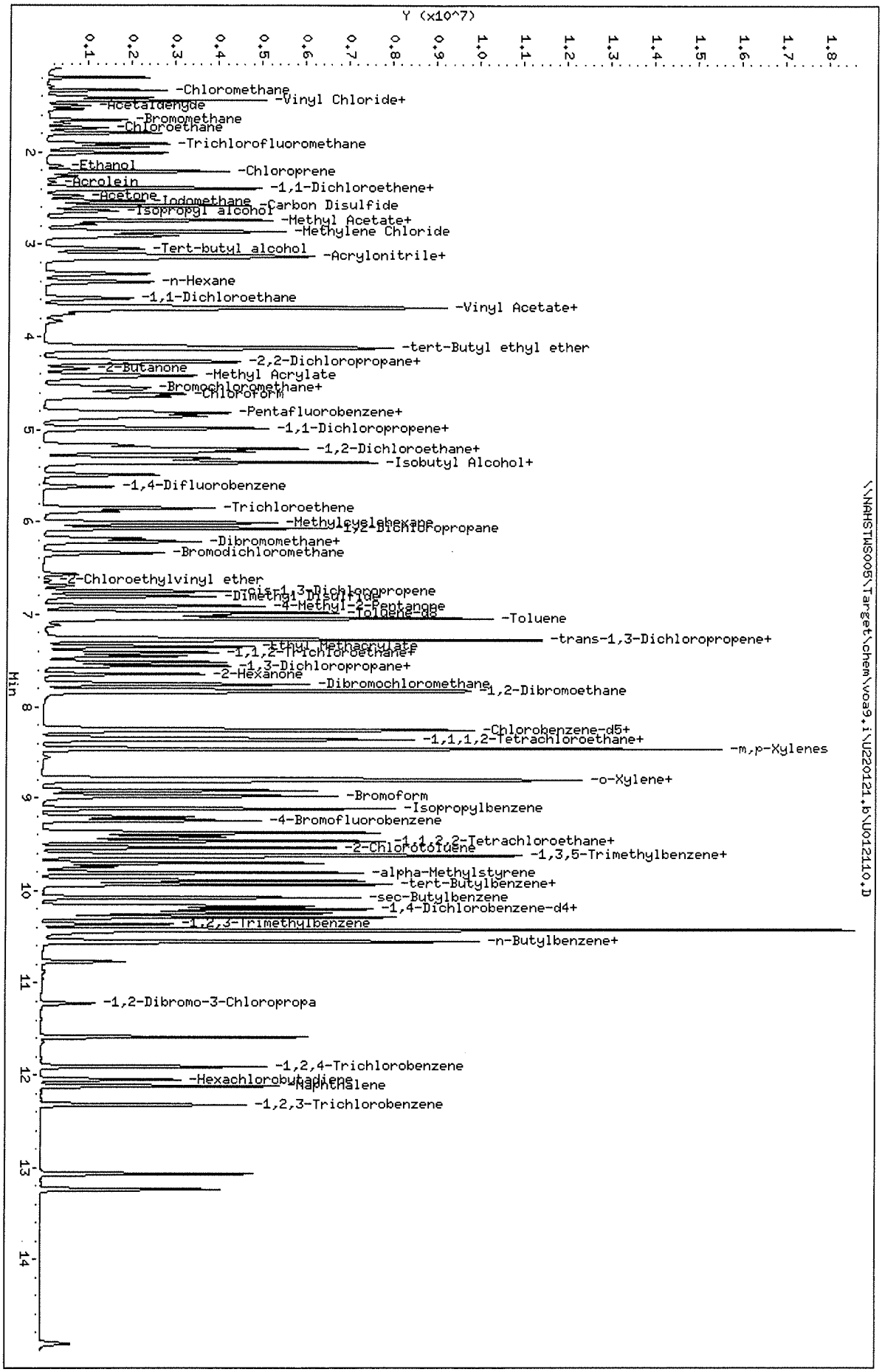
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.883	4.883	(1.000)	672041	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1139082	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	1045733	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	519744	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	1283450	150.000	149.54
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	1438840	150.000	150.00
$ 30 Dibromofluoromethane	113	4.819	4.819	(0.987)	1007785	150.000	148.26
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	3704114	150.000	138.20(A)
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	956491	150.000	145.12
11 1,1-Dichloroethene	96	2.390	2.390	(0.490)	921832	150.000	146.09
33 1,2-Dichloroethane	62	5.243	5.243	(0.934)	1672191	150.000	146.39
27 cis-1,2-Dichloroethene	96	4.272	4.272	(0.875)	1268111	150.000	145.63
17 Methylene Chloride	84	2.858	2.858	(0.585)	1115598	150.000	150.04
38 Trichloroethene	130	5.850	5.850	(1.042)	1162435	150.000	144.86
5 Vinyl Chloride	62	1.411	1.411	(0.289)	1512003	150.000	147.22

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220121,b\U012110,D
Date : 21-JAN-2022 14:40
Client ID: VSTD150
Sample Info: VSTD150;VSTD150;1;9;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012111.D Page 1
Report Date: 08-Feb-2022 10:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012111.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 21-JAN-2022 15:02
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD200;VSTD200;1;10;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:51 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 14:40 Cal File: U012110.D
Als bottle: 12 Calibration Sample, Level: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

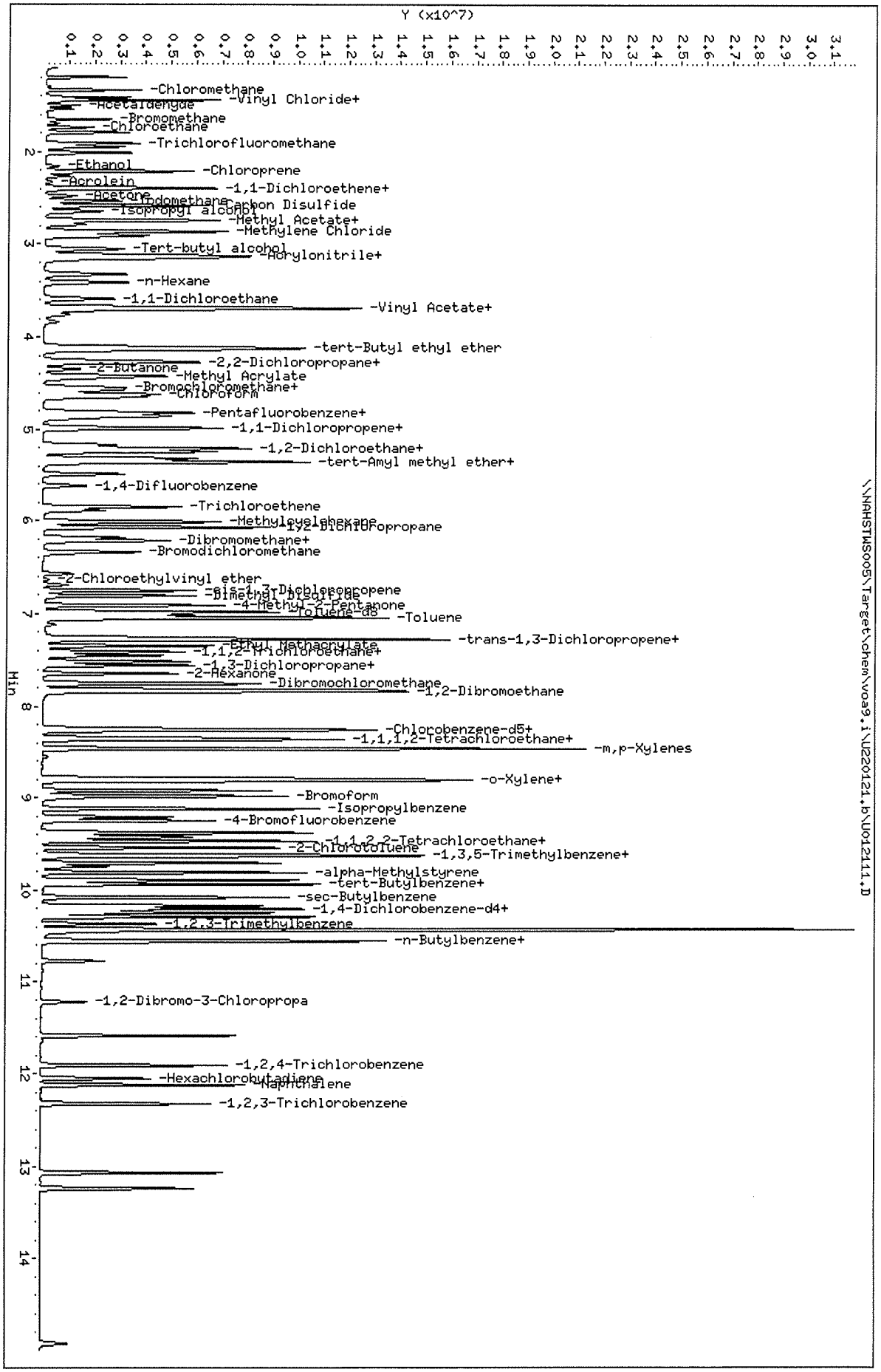
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.886	4.886	(1.000)	701938	50.0000	
* 36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	1196847	50.0000	
* 47 Chlorobenzene-d5	117	8.241	8.241	(1.000)	1103135	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	536921	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.168	5.168	(1.058)	1765372	200.000	197.35
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	1994348	200.000	197.48
$ 30 Dibromofluoromethane	113	4.819	4.819	(0.986)	1407841	200.000	198.58
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	5133212	200.000	181.55(A)
53 1,1,2-Trichloroethane	83	7.413	7.413	(0.899)	1316195	200.000	189.30
11 1,1-Dichloroethene	96	2.394	2.394	(0.490)	1278345	200.000	193.96
33 1,2-Dichloroethane	62	5.246	5.246	(0.934)	2268842	200.000	189.04
27 cis-1,2-Dichloroethene	96	4.275	4.275	(0.875)	1743645	200.000	191.71
17 Methylene Chloride	84	2.862	2.862	(0.586)	1534403	200.000	198.02
38 Trichloroethene	130	5.850	5.850	(1.041)	1609757	200.000	190.93
5 Vinyl Chloride	62	1.415	1.415	(0.290)	2093350	200.000	195.14

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012111.D
Date : 21-JAN-2022 15:02
Client ID: VSTD200
Instrument: VOA9.i
Sample Info: VSTD200;VSTD200;1;10;;;
Purge Volume: 5.0
Operator: PC
Column phase: DB624
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012113.D Page 1
Report Date: 08-Feb-2022 10:51

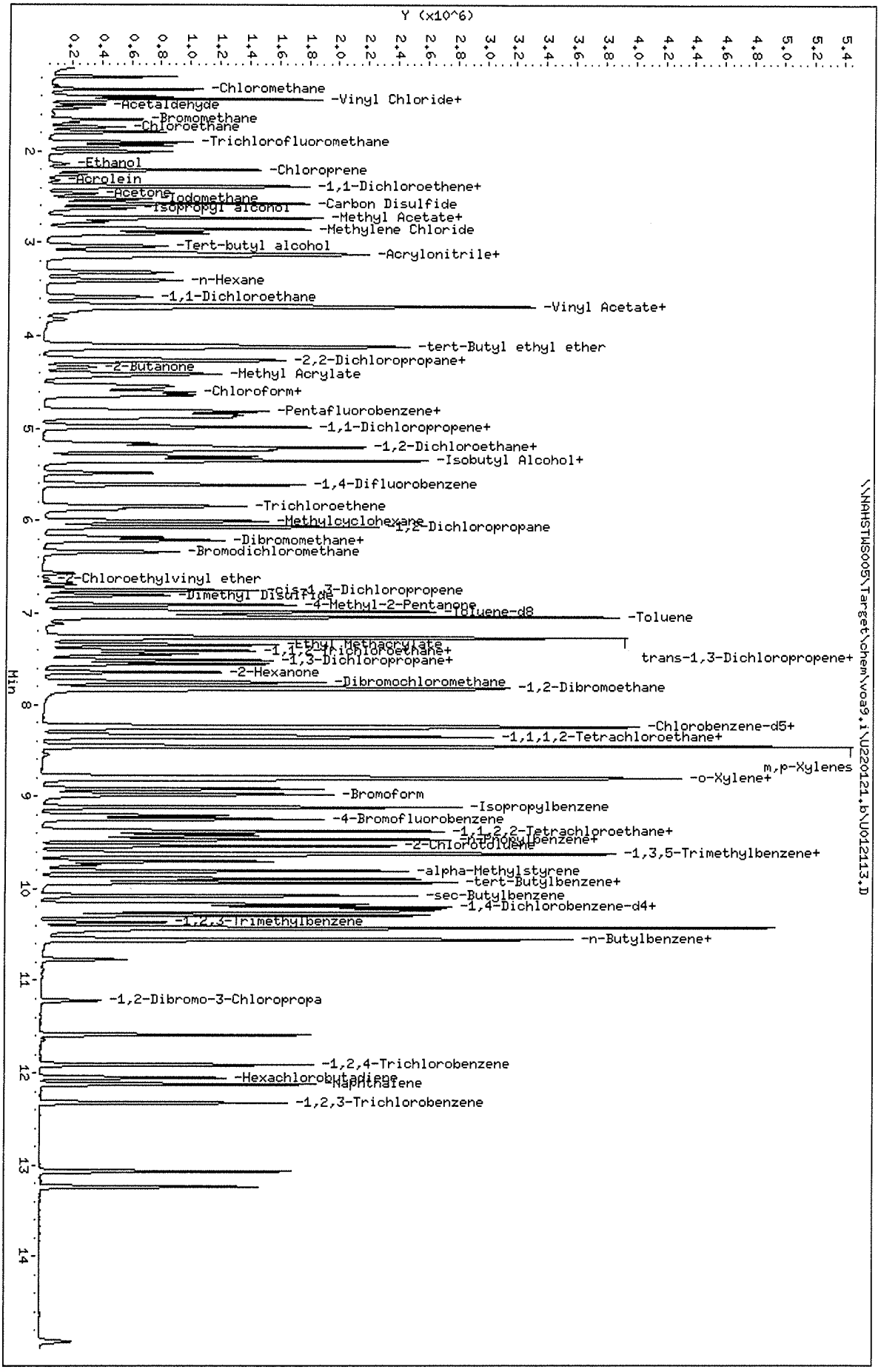
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012113.D
Lab Smp Id: ICV Client Smp ID: ICV
Inj Date : 21-JAN-2022 15:46
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050;VSTD050;2;;;ICV
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:51 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 15:02 Cal File: U012111.D
Als bottle: 14 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.879	4.886	(1.000)	747430	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.617	(1.000)	1251557	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.241	(1.000)	1117686	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	558522	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.168	(1.058)	475522	48.9285	48.92
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	541395	52.0079	52.00
$ 30 Dibromofluoromethane	113	4.815	4.819	(0.987)	379412	49.6183	49.61
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1450449	50.6331	50.63
53 1,1,2-Trichloroethane	83	7.409	7.413	(0.899)	340576	48.3472	48.34
11 1,1-Dichloroethene	96	2.382	2.394	(0.488)	332210	47.3396	47.33
33 1,2-Dichloroethane	62	5.239	5.246	(0.933)	594966	47.4058	47.40
27 cis-1,2-Dichloroethene	96	4.268	4.275	(0.875)	449794	46.4449	46.44
17 Methylene Chloride	84	2.851	2.862	(0.584)	405511	48.0921	48.09
38 Trichloroethene	130	5.846	5.850	(1.041)	409684	46.4681	46.46
5 Vinyl Chloride	62	1.408	1.415	(0.289)	529318	46.3400	46.34



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220121,b\U012113,D
Date : 21-JAN-2022 15:46
Client ID: ICV
Sample Info: VSTD050;VSTD050;2;;;ICV
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

MSVOA09 -Logbook

Batch: 48147
Date: 02-04-2022
Method: 8260
Comments:

Analyst: Presenta Cabascango
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	BFB	02-04-2022 11:51 am	1.00	0.00 mL	0.00 mL	U020401.D	Liquid	Y	NA
2	VSTD050	CCV	02-04-2022 12:13 pm	1.00	5.00 mL	0.00 mL	U020402a.D	Liquid	Y	NA
3	VSTD050	CCV	02-04-2022 12:35 pm	1.00	5.00 mL	0.00 mL	U020403.D	Liquid	Y	NA
4	CCB	SAMP	02-04-2022 12:57 pm	1.00	5.00 mL	0.00 mL	U020404.D	Liquid	Y	NA
5	VLCSW-220204	LCS	02-04-2022 01:19 pm	1.00	5.00 mL	0.00 mL	U020405.D	Liquid	Y	NA
6	VBLKM-220204	MBLK	02-04-2022 01:41 pm	50.00	5.00 mL	0.00 mL	U020406.D	Liquid	Y	NA
7	VBLKW-220204	MBLK	02-04-2022 02:03 pm	1.00	5.00 mL	0.00 mL	U020407.D	Liquid	Y	NA
8	HS22011233-11	SAMP	02-04-2022 02:25 pm	1.00	5.00 mL	0.00 mL	U020408.D	Liquid	Y	NA
9	HS22011233-09	SAMP	02-04-2022 02:47 pm	1.00	5.00 mL	0.00 mL	U020409.D	Liquid	Y	NA
10	HS22011279-06	SAMP	02-04-2022 03:09 pm	5000.0	5.00 mL	0.00 mL	U020410.D	Liquid	Y	NA
11	HS22011151-07	SAMP	02-04-2022 03:31 pm	1.00	5.00 mL	0.00 mL	U020411.D	Liquid	Y	NA
12	HS22011233-09MS	MS	02-04-2022 03:53 pm	1.00	5.00 mL	0.00 mL	U020412.D	Liquid	Y	NA
13	HS22011233-09MSD	MSD	02-04-2022 04:15 pm	1.00	5.00 mL	0.00 mL	U020413.D	Liquid	Y	NA
14	HS22011151-05	SAMP	02-04-2022 04:37 pm	25.00	5.00 mL	0.00 mL	U020414.D	Liquid	Y	NA
15	HS22011151-06	SAMP	02-04-2022 04:59 pm	25.00	5.00 mL	0.00 mL	U020415.D	Liquid	Y	NA
16	HS22011151-14	SAMP	02-04-2022 05:22 pm	10.00	5.00 mL	0.00 mL	U020416.D	Liquid	Y	NA
17	HS22011233-03	SAMP	02-04-2022 05:44 pm	1.00	5.00 mL	0.00 mL	U020417.D	Liquid	Y	NA
18	HS22011233-04	SAMP	02-04-2022 06:06 pm	1.00	5.00 mL	0.00 mL	U020418.D	Liquid	Y	NA
19	HS22011233-07	SAMP	02-04-2022 06:28 pm	1.00	5.00 mL	0.00 mL	U020419.D	Liquid	Y	NA
20	HS22011233-08	SAMP	02-04-2022 06:50 pm	1.00	5.00 mL	0.00 mL	U020420.D	Liquid	Y	NA
21	HS22011233-10	SAMP	02-04-2022 07:12 pm	1.00	5.00 mL	0.00 mL	U020421.D	Liquid	Y	NA
22	HS22011233-02	SAMP	02-04-2022 07:34 pm	1.00	5.00 mL	0.00 mL	U020422.D	Liquid	Y	NA
23	HS22011233-02	SAMP	02-04-2022 07:56 pm	10.00	5.00 mL	0.00 mL	U020423.D	Liquid	Y	NA
24	HS22011233-05	SAMP	02-04-2022 08:18 pm	1.00	5.00 mL	0.00 mL	U020424.D	Liquid	Y	NA
25	HS22011233-05	SAMP	02-04-2022 08:40 pm	10.00	5.00 mL	0.00 mL	U020425.D	Liquid	Y	NA
26	HS22011233-01	SAMP	02-04-2022 09:02 pm	5.00	5.00 mL	0.00 mL	U020426.D	Liquid	Y	NA
27	HS22011233-01	SAMP	02-04-2022 09:25 pm	25.00	5.00 mL	0.00 mL	U020427.D	Liquid	Y	NA
28	HS22011233-06	SAMP	02-04-2022 09:47 pm	5.00	5.00 mL	0.00 mL	U020428.D	Liquid	Y	NA
29	HS22011233-06	SAMP	02-04-2022 10:09 pm	25.00	5.00 mL	0.00 mL	U020429.D	Liquid	Y	NA
30	VSTD050-END	CCV	02-04-2022 10:31 pm	1.00	5.00 mL	0.00 mL	U020430.D	Liquid	Y	NA
31	BFB	BFB	02-04-2022 10:52 pm	1.00	0.00 mL	0.00 mL	V020401.D	Liquid	Y	NA
32	VSTD050	CCV	02-04-2022 11:14 pm	1.00	5.00 mL	0.00 mL	V020402a.D	Liquid	Y	NA
33	VSTD050	CCV	02-04-2022 11:36 pm	1.00	5.00 mL	0.00 mL	V020403.D	Liquid	Y	NA
34	CCB	SAMP	02-04-2022 11:58 pm	1.00	5.00 mL	0.00 mL	V020404.D	Liquid	Y	NA
35	VLCSW-220204	LCS	02-05-2022 12:20 am	1.00	5.00 mL	0.00 mL	V020405.D	Liquid	Y	NA
36	BLANK	SAMP	02-05-2022 12:42 am	1.00	5.00 mL	0.00 mL	V020406.D	Liquid	Y	NA
37	VBLKW-220204	MBLK	02-05-2022 01:05 am	1.00	5.00 mL	0.00 mL	V020407.D	Liquid	Y	NA
38	HS22020138-01	SAMP	02-05-2022 01:27 am	1.00	5.00 mL	0.00 mL	V020408.D	Liquid	Y	NA
39	HS22020138-01MS	MS	02-05-2022 01:49 am	1.00	5.00 mL	0.00 mL	V020409.D	Liquid	Y	NA
40	HS22020138-01MSD	MSD	02-05-2022 02:11 am	1.00	5.00 mL	0.00 mL	V020410.D	Liquid	Y	NA
41	HS22020138-02	SAMP	02-05-2022 02:33 am	1.00	5.00 mL	0.00 mL	V020411.D	Liquid	Y	NA

MSVOA09 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
42	HS22011312-26	SAMP	02-05-2022 02:55 am	1.00	5.00 mL	0.00 mL	V020412.D	Liquid	Y	NA
43	HS22011312-27	SAMP	02-05-2022 03:17 am	1.00	5.00 mL	0.00 mL	V020413.D	Liquid	Y	NA
44	HS22011312-15	SAMP	02-05-2022 03:39 am	10.00	5.00 mL	0.00 mL	V020414.D	Liquid	Y	NA
45	HS22011312-15n/r	SAMP	02-05-2022 04:01 am	100.0(	5.00 mL	0.00 mL	V020415.D	Liquid	Y	NA
46	HS22011312-14	SAMP	02-05-2022 04:23 am	10.00	5.00 mL	0.00 mL	V020416.D	Liquid	Y	NA
47	HS22011312-14n/r	SAMP	02-05-2022 04:45 am	100.0(	5.00 mL	0.00 mL	V020417.D	Liquid	Y	NA
48	HS22011312-10	SAMP	02-05-2022 05:07 am	100.0(	5.00 mL	0.00 mL	V020418.D	Liquid	Y	NA
49	HS22011312-10	SAMP	02-05-2022 05:29 am	2500.0	5.00 mL	0.00 mL	V020419.D	Liquid	Y	NA
50	HS22011312-13	SAMP	02-05-2022 05:51 am	100.0(	5.00 mL	0.00 mL	V020420.D	Liquid	Y	NA
51	HS22011312-13	SAMP	02-05-2022 06:13 am	2500.0	5.00 mL	0.00 mL	V020421.D	Liquid	Y	NA
52	HS22011312-12	SAMP	02-05-2022 06:35 am	25.00	5.00 mL	0.00 mL	V020422.D	Liquid	Y	NA
53	HS22011312-12	SAMP	02-05-2022 06:57 am	5.00	5.00 mL	0.00 mL	V020423.D	Liquid	Y	NA
54	HS22020138-03	SAMP	02-05-2022 07:19 am	1.00	5.00 mL	0.00 mL	V020424.D	Liquid	Y	NA
55	HS22020138-04	SAMP	02-05-2022 07:41 am	1.00	5.00 mL	0.00 mL	V020425.D	Liquid	Y	NA
56	HS22020138-05	SAMP	02-05-2022 08:04 am	1.00	5.00 mL	0.00 mL	V020426.D	Liquid	Y	NA
57	HS22020138-06	SAMP	02-05-2022 08:25 am	1.00	5.00 mL	0.00 mL	V020427.D	Liquid	Y	NA
58	HS22020138-07	SAMP	02-05-2022 08:48 am	1.00	5.00 mL	0.00 mL	V020428.D	Liquid	Y	NA
59	HS22020138-08	SAMP	02-05-2022 09:10 am	1.00	5.00 mL	0.00 mL	V020429.D	Liquid	Y	NA
60	HS22020138-09	SAMP	02-05-2022 09:32 am	1.00	5.00 mL	0.00 mL	V020430.D	Liquid	Y	NA
61	HS22020138-10	SAMP	02-05-2022 09:54 am	1.00	5.00 mL	0.00 mL	V020431.D	Liquid	Y	NA
62	HS22020138-11	SAMP	02-05-2022 10:16 am	1.00	5.00 mL	0.00 mL	V020432.D	Liquid	Y	NA

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

	CLIENT SAMPLE NO.	SMC1 (TOL)#	SMC2 #	SMC3 (DCE)#	OTHER #	TOT OUT
01	VLCSW-220204	89	89	92	89	0
02	VBLKM-220204	104	96	101	99	0
03	VBLKW-220204	106	98	101	102	0
04	HS22011233-11	105	97	102	101	0
05	HS22011233-09	104	96	102	101	0
06	HS22011233-09MS	105	98	98	106	0
07	HS22011233-09MSD	106	99	100	106	0
08	HS22011233-03	105	98	101	102	0
09	HS22011233-04	105	98	103	103	0
10	HS22011233-07	105	100	104	100	0
11	HS22011233-08	105	99	103	101	0
12	HS22011233-10	105	99	104	100	0
13	HS22011233-02	105	96	102	102	0
14	HS22011233-02	105	98	103	100	0
15	HS22011233-05	105	98	103	101	0
16	HS22011233-05	105	98	102	102	0
17	HS22011233-01	105	98	103	102	0
18	HS22011233-01	106	99	103	102	0
19	HS22011233-06	106	97	104	100	0
20	HS22011233-06	105	99	104	102	0
21						
22						
23						
24						
25						
26						
27						
28						

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(78-123)
SMC2	= Dibromofluoromethane	(74-125)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(0-130)
OTHER	= 4-Bromofluorobenzene	(0-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLKM-220204

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Lab File ID: U020406 Lab Sample ID: VBLKM-220204

Date Analyzed: 02/04/22 Time Analyzed: 1341

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

Instrument ID: VOA9

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VLCSW-220204	VLCSW-220204	U020405	1319
02	HS22011233-09	HS22011233-09	U020409	1447
03	HS22011233-09MS	HS22011233-09MS	U020412	1553
04	HS22011233-09MSD	HS22011233-09MSD	U020413	1615
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLKM-220204

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Lab File ID: U020406 Lab Sample ID: VBLKM-220204

Date Analyzed: 02/04/22 Time Analyzed: 1341

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

Instrument ID: VOA9

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VLCSW-220204	VLCSW-220204	U020405	1319
02	HS22011233-11	HS22011233-11	U020408	1425
03	HS22011233-09	HS22011233-09	U020409	1447
04	HS22011233-09MS	HS22011233-09MS	U020412	1553
05	HS22011233-09MSD	HS22011233-09MSD	U020413	1615
06	HS22011233-03	HS22011233-03	U020417	1744
07	HS22011233-04	HS22011233-04	U020418	1806
08	HS22011233-07	HS22011233-07	U020419	1828
09	HS22011233-08	HS22011233-08	U020420	1850
10	HS22011233-10	HS22011233-10	U020421	1912
11	HS22011233-02	HS22011233-02	U020422	1934
12	HS22011233-02	HS22011233-02	U020423	1956
13	HS22011233-05	HS22011233-05	U020424	2018
14	HS22011233-05	HS22011233-05	U020425	2040
15	HS22011233-01	HS22011233-01	U020426	2102
16	HS22011233-01	HS22011233-01	U020427	2125
17	HS22011233-06	HS22011233-06	U020428	2147
18	HS22011233-06	HS22011233-06	U020429	2209
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Lab File ID: U020401 BFB Injection Date: 02/04/22

Instrument ID: VOA9 BFB Injection Time: 1151

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.3
75	30.0 - 60.0% of mass 95	53.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	71.9
175	5.0 - 9.0% of mass 174	6.2 (8.7)1
176	95.0 - 101.0% of mass 174	72.2 (100.4)1
177	5.0 - 9.0% of mass 176	4.6 (6.4)2

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

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	U020403	02/04/22	1235
02	VLCSW-220204	VLCSW-220204	U020405	02/04/22	1319
03	VBLKM-220204	VBLKM-220204	U020406	02/04/22	1341
04	VBLKW-220204	VBLKW-220204	U020407	02/04/22	1403
05	HS22011233-11	HS22011233-11	U020408	02/04/22	1425
06	HS22011233-09	HS22011233-09	U020409	02/04/22	1447
07	HS22011233-09MS	HS22011233-09MS	U020412	02/04/22	1553
08	HS22011233-09MSD	HS22011233-09MSD	U020413	02/04/22	1615
09	HS22011233-03	HS22011233-03	U020417	02/04/22	1744
10	HS22011233-04	HS22011233-04	U020418	02/04/22	1806
11	HS22011233-07	HS22011233-07	U020419	02/04/22	1828
12	HS22011233-08	HS22011233-08	U020420	02/04/22	1850
13	HS22011233-10	HS22011233-10	U020421	02/04/22	1912
14	HS22011233-02	HS22011233-02	U020422	02/04/22	1934
15	HS22011233-02	HS22011233-02	U020423	02/04/22	1956
16	HS22011233-05	HS22011233-05	U020424	02/04/22	2018
17	HS22011233-05	HS22011233-05	U020425	02/04/22	2040
18	HS22011233-01	HS22011233-01	U020426	02/04/22	2102
19	HS22011233-01	HS22011233-01	U020427	02/04/22	2125
20	HS22011233-06	HS22011233-06	U020428	02/04/22	2147
21	HS22011233-06	HS22011233-06	U020429	02/04/22	2209
22	CCV-END	CCV-END	U020430	02/04/22	2231

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Instrument ID: VOA9 Calibration Date: 02/04/22 Time: 1235

Lab File ID: U020403 Init. Calib. Date(s): 01/21/22 01/21/22

Init. Calib. Times: 1122 1502

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Trichloroethene	0.3520000	0.3309768	0.3309768	0.2	5.97	20.00	AVRG
Methylene Chloride	51.961621	50.000000	0.5849555	0.1	-3.92	20.00	LINR
cis-1,2-Dichloroethene	0.6480000	0.6040459	0.6040459	0.1	6.78	20.00	AVRG
Vinyl Chloride	0.7640000	0.7026577	0.7026577	0.1	8.03	20.00	AVRG
1,1,2-Trichloroethane	0.3150000	0.2949858	0.2949858	0.1	6.35	20.00	AVRG
1,1-Dichloroethene	0.4690000	0.4626169	0.4626169	0.1	1.36	20.00	AVRG
1,2-Dichloroethane	0.5010000	0.5236504	0.5236504	0.1	-4.52	20.00	AVRG
Toluene-d8	1.2820000	1.1568607	1.1568607	0.1	9.76	20.00	AVRG
Dibromofluoromethane	45.626349	50.000000	0.4674783	0.1	8.75	20.00	LINR
1,2-Dichloroethane-d4	45.681768	50.000000	0.5951120	0.1	8.64	20.00	LINR
4-Bromofluorobenzene	46.464652	50.000000	0.4339598	0.1	7.07	20.00	LINR

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Instrument ID: VOA9 Calibration Date: 02/04/22 Time: 2231

Lab File ID: U020430 Init. Calib. Date(s): 01/21/22 01/21/22

Init. Calib. Times: 1122 1502

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Trichloroethene	0.3520000	0.3572617	0.3572617	0.2	-1.49	50.00	AVRG
Methylene Chloride	58.423048	50.000000	0.6557807	0.1	-16.85	50.00	LINR
cis-1,2-Dichloroethene	0.6480000	0.6612225	0.6612225	0.1	-2.04	50.00	AVRG
Vinyl Chloride	0.7640000	0.8285137	0.8285137	0.1	-8.44	50.00	AVRG
1,1,2-Trichloroethane	0.3150000	0.3090103	0.3090103	0.1	1.90	50.00	AVRG
1,1-Dichloroethene	0.4690000	0.5355231	0.5355231	0.1	-14.18	50.00	AVRG
1,2-Dichloroethane	0.5010000	0.5406438	0.5406438	0.1	-7.91	50.00	AVRG
Toluene-d8	1.2820000	1.2570479	1.2570479	0.1	1.95	50.00	AVRG
Dibromofluoromethane	53.636110	50.000000	0.5480258	0.1	-7.27	50.00	LINR
1,2-Dichloroethane-d4	54.337106	50.000000	0.7046709	0.1	-8.67	50.00	LINR
4-Bromofluorobenzene	50.488064	50.000000	0.4705625	0.1	-0.98	50.00	LINR

FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Lab File ID (Standard): U020403 Date Analyzed: 02/04/22

Instrument ID: VOA9 Time Analyzed: 1235

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

		IS1 AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	622461	4.88	1021821	5.61	936506	8.24
	UPPER LIMIT	1244922	5.38	2043642	6.11	1873012	8.74
	LOWER LIMIT	311231	4.38	510911	5.11	468253	7.74
	CLIENT SAMPLE NO.						
01	VLCSW-220204	580866	4.88	970952	5.61	883130	8.24
02	VBLKM-220204	689158	4.88	1120541	5.61	992142	8.24
03	VBLKW-220204	663057	4.89	1081613	5.62	944983	8.24
04	HS22011233-11	675820	4.88	1105899	5.61	976335	8.24
05	HS22011233-09	657823	4.89	1064343	5.62	951314	8.24
06	HS22011233-09MS	679388	4.88	1098041	5.61	985353	8.24
07	HS22011233-09MSD	682099	4.88	1107178	5.61	991980	8.24
08	HS22011233-03	650288	4.88	1047037	5.61	937134	8.24
09	HS22011233-04	648514	4.88	1057664	5.61	940852	8.24
10	HS22011233-07	660211	4.89	1077237	5.62	957973	8.24
11	HS22011233-08	645776	4.88	1057405	5.61	926503	8.24
12	HS22011233-10	637962	4.89	1041850	5.61	929421	8.24
13	HS22011233-02	646882	4.88	1040428	5.61	925967	8.24
14	HS22011233-02	662100	4.88	1072853	5.61	951810	8.24
15	HS22011233-05	663949	4.88	1076763	5.61	957532	8.24
16	HS22011233-05	650803	4.88	1046602	5.61	940032	8.24
17	HS22011233-01	637409	4.89	1034759	5.62	914483	8.24
18	HS22011233-01	642963	4.88	1047374	5.61	923264	8.24
19	HS22011233-06	653579	4.88	1062335	5.61	943989	8.24
20	HS22011233-06	655301	4.88	1074255	5.61	950938	8.24

IS1 = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Lab File ID (Standard): U020403 Date Analyzed: 02/04/22

Instrument ID: VOA9 Time Analyzed: 1235

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

		IS4 (DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	471359	10.23				
	UPPER LIMIT	942718	10.73				
	LOWER LIMIT	235680	9.73				
	CLIENT SAMPLE NO.						
01	VLCSW-220204	439207	10.22				
02	VBLKM-220204	475537	10.22				
03	VBLKW-220204	460678	10.22				
04	HS22011233-11	462952	10.23				
05	HS22011233-09	456673	10.23				
06	HS22011233-09MS	500990	10.23				
07	HS22011233-09MSD	492163	10.23				
08	HS22011233-03	460427	10.23				
09	HS22011233-04	461311	10.23				
10	HS22011233-07	459150	10.22				
11	HS22011233-08	437048	10.23				
12	HS22011233-10	440098	10.23				
13	HS22011233-02	448661	10.23				
14	HS22011233-02	457125	10.23				
15	HS22011233-05	458188	10.23				
16	HS22011233-05	451756	10.23				
17	HS22011233-01	441063	10.23				
18	HS22011233-01	445072	10.22				
19	HS22011233-06	446376	10.23				
20	HS22011233-06	457916	10.23				

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020401.D Page 1

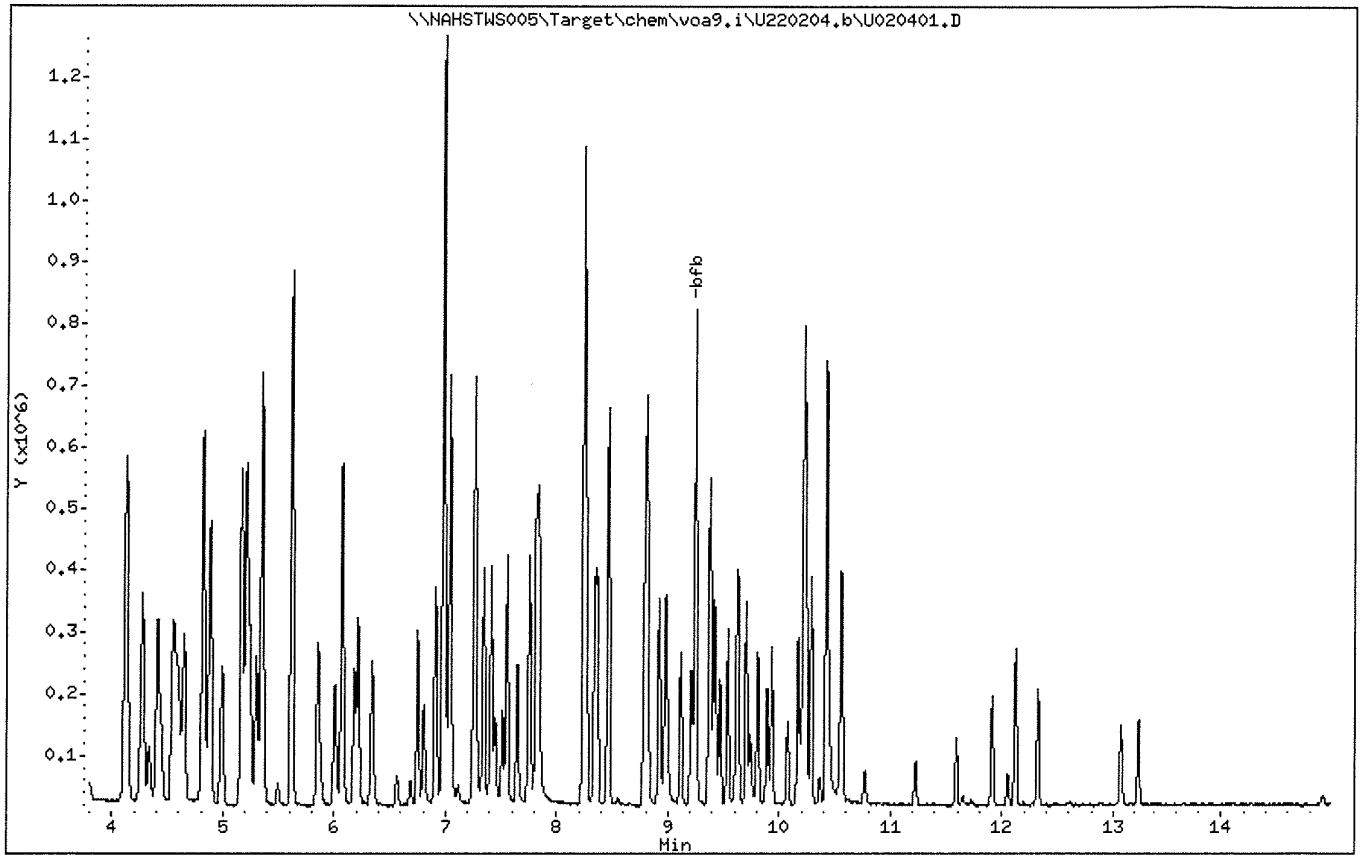
Date : 04-FEB-2022 11:51

Client ID: BFB Instrument: VOA9.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\voa9.i\U220204.b\U020401.D

Date : 04-FEB-2022 11:51

Client ID: BFB

Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

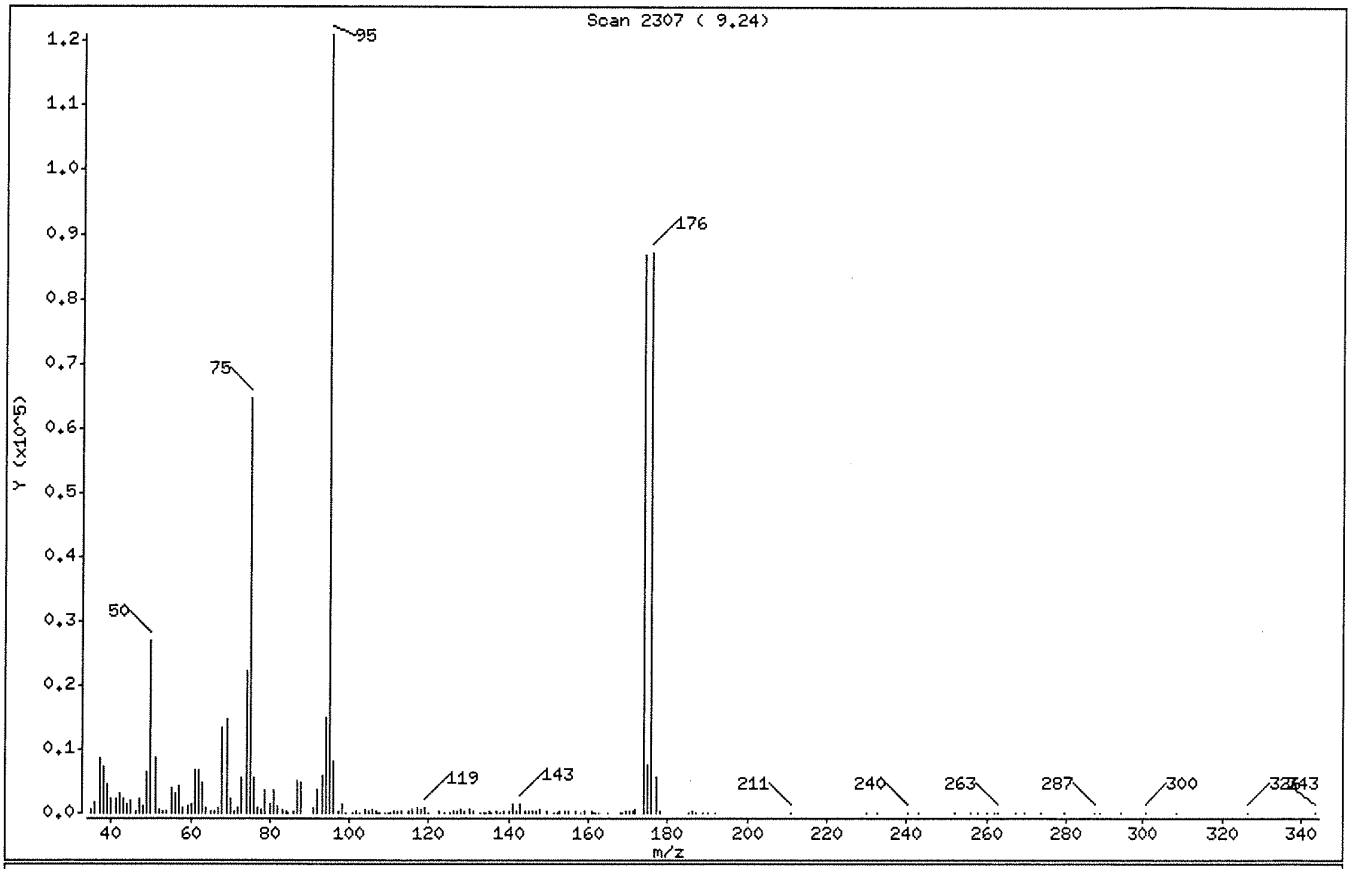
Volume Injected (uL): 2.0

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	22.33
75	30.00 - 60.00% of mass 95	53.52
96	5.00 - 9.00% of mass 95	6.79
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	71.87
175	5.00 - 9.00% of mass 174	6.24 (8.68)
176	95.00 - 101.00% of mass 174	72.17 (100.42)
177	5.00 - 9.00% of mass 176	4.61 (6.39)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020401.D

Date : 04-FEB-2022 11:51

Client ID: BFB

Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: U020401.D
Spectrum: Scan 2307 (9.24)
Location of Maximum: 95.00
Number of points: 163

m/z	Y	m/z	Y	m/z	Y	m/z	Y
35.00	473	76.00	5449	118.80	902	164.90	79
36.00	1764	77.00	906	120.00	61	168.10	70
37.00	8506	77.90	474	122.70	168	168.70	82
38.00	7194	78.90	3719	123.80	98	169.60	205
39.00	4353	79.90	1354	125.20	73	170.40	150
40.00	2315	80.90	3707	126.00	140	171.10	290
41.10	2289	81.90	1102	126.80	258	171.90	606
42.10	3137	83.10	583	127.80	546	173.90	86888
43.00	2285	84.10	162	128.80	314	175.00	7539
44.00	1477	84.70	122	130.00	585	175.90	87256
45.00	2037	86.00	233	130.90	282	176.90	5577
46.20	289	87.00	5151	132.80	66	177.90	254
46.90	2152	87.90	4861	133.60	75	185.20	105
48.00	1126	91.00	700	134.30	70	186.00	155
49.00	6304	92.00	3671	134.90	250	187.10	54
50.00	26992	93.00	5902	135.60	112	188.70	91
51.00	8606	94.00	14904	136.80	226	190.20	97
52.10	565	95.00	120896	137.70	75	191.80	95
52.90	387	96.00	8208	138.80	177	210.80	104
53.90	398	97.00	395	140.20	265	230.10	56
55.00	3832	98.10	1494	140.90	1304	232.60	59
56.00	3007	98.90	114	141.90	387	240.10	71
57.00	4185	100.80	79	142.90	1442	243.20	58
58.00	742	101.90	143	144.00	245	251.90	53
59.10	1184	102.40	96	144.90	250	256.30	61
60.00	1311	103.90	494	146.00	279	257.90	60
61.00	6619	104.90	293	146.90	162	260.30	58
62.00	6779	105.90	616	147.90	499	261.80	62
63.00	4663	106.80	182	149.70	199	263.10	75
64.00	819	107.30	94	151.50	94	267.40	56
65.00	313	107.80	110	152.10	59	269.60	67
66.00	156	108.80	59	152.90	191	273.50	60
66.90	731	109.70	139	154.00	144	279.60	72
68.00	13326	110.40	72	155.00	252	287.20	94
69.00	14775	111.10	167	156.80	227	288.40	61

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020401.D

Date : 04-FEB-2022 11:51

Client ID: BFB Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: U020401.D
Spectrum: Scan 2307 (9.24)
Location of Maximum: 95.00
Number of points: 163

m/z	Y	m/z	Y	m/z	Y	m/z	Y
70.00	2333	112.00	178	158.20	54	294.10	51
71.10	254	112.90	168	159.00	142	300.60	62
72.00	865	114.90	152	160.70	141	309.10	61
73.00	5515	115.90	485	161.10	124	326.50	55
74.00	22248	116.90	775	161.60	56	343.60	71
75.00	64704	117.80	450	162.70	63		

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020403.D Page 1
Report Date: 08-Feb-2022 11:09

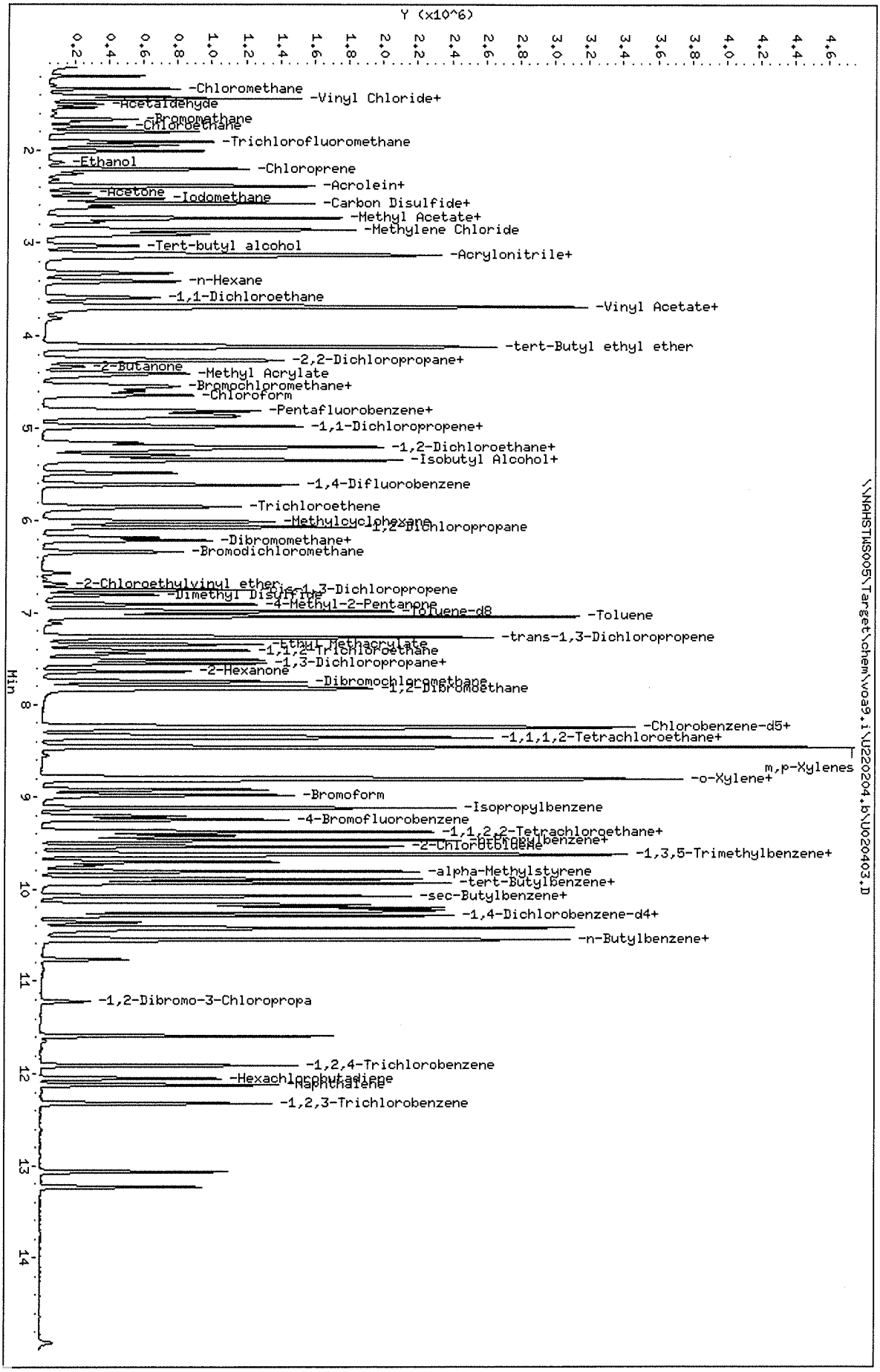
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020403.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 04-FEB-2022 12:35
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050;VSTD050;2;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 11:09 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.879	4.879	(1.000)	622461	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1021821	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	936506	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	471359	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.160	5.160	(1.058)	370434	50.0000	45.68
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	406406	50.0000	46.46
$	30 Dibromofluoromethane	113	4.815	4.815	(0.987)	290987	50.0000	45.62
$	48 Toluene-d8	98	6.974	6.974	(0.847)	1083407	50.0000	45.13
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	276256	50.0000	46.80
	11 1,1-Dichloroethene	96	2.390	2.390	(0.490)	287961	50.0000	49.27
	33 1,2-Dichloroethane	62	5.239	5.239	(0.933)	535077	50.0000	52.21
	27 cis-1,2-Dichloroethene	96	4.268	4.268	(0.875)	375995	50.0000	46.61
	17 Methylene Chloride	84	2.858	2.858	(0.586)	364112	50.0000	51.96
	38 Trichloroethene	130	5.846	5.846	(1.041)	338199	50.0000	46.98
	5 Vinyl Chloride	62	1.411	1.411	(0.289)	437377	50.0000	45.97



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020403.D
Date : 04-FEB-2022 12:35
Client ID: CCV
Sample Info: VSTD050;VSTD050;2;;;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020403.D

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020405.D Page 1
Report Date: 08-Feb-2022 11:09

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020405.D
Lab Smp Id: VLCSW-220204 Client Smp ID: VLCSW-220204
Inj Date : 04-FEB-2022 13:19
Operator : PC Inst ID: VOA9.i
Smp Info : VLCSW-220204;VLCSW-220204;3;;LCS
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 11:09 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

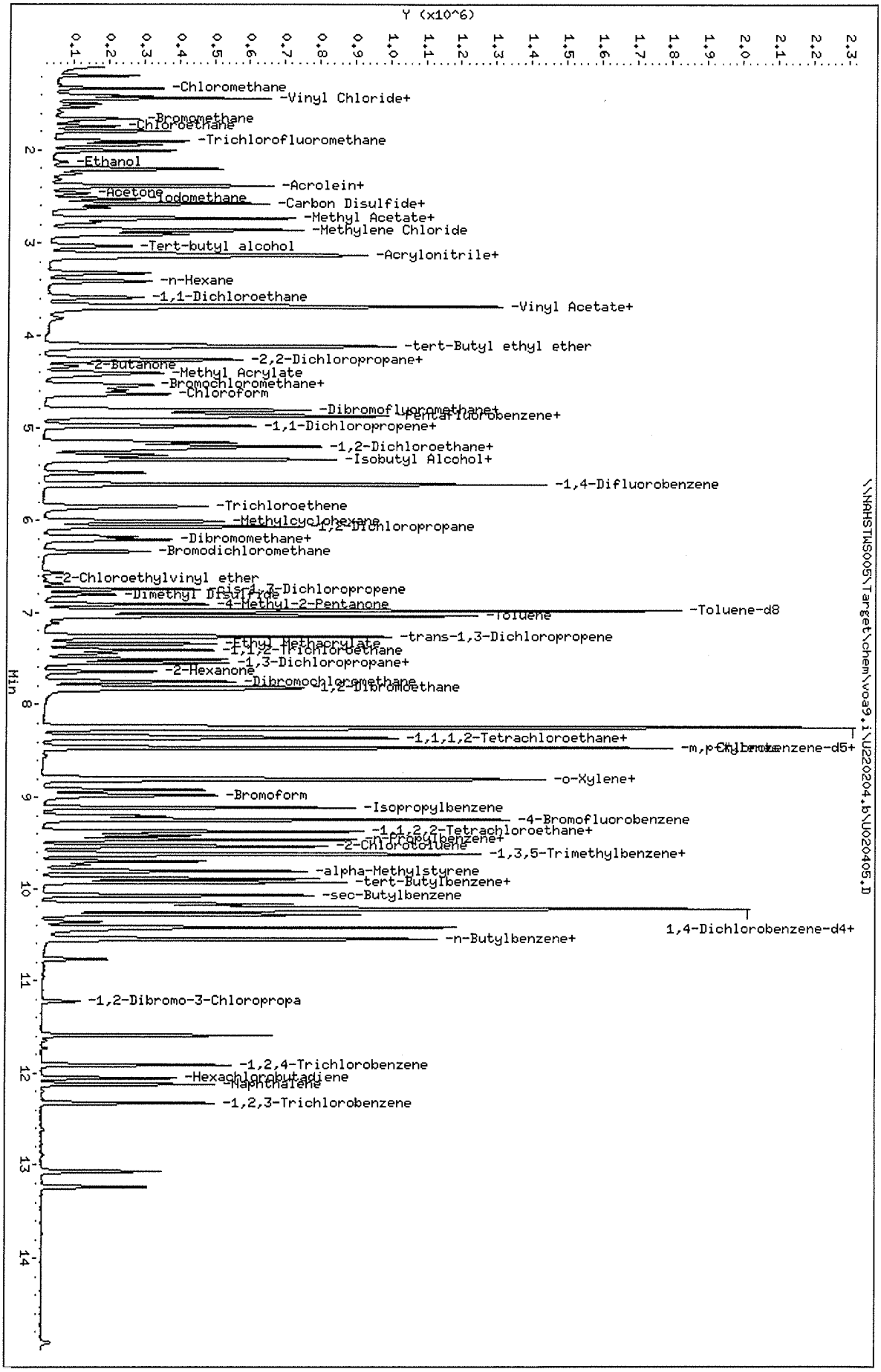
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.879	4.879	(1.000)	580866	50.0000	
* 36 1,4-Difluorobenzene	114	5.610	5.614	(1.000)	970952	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	883130	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.225	(1.000)	439207	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.160	5.160	(1.058)	347913	45.9854	45.98
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	369020	44.6943	44.69
$ 30 Dibromofluoromethane	113	4.815	4.815	(0.987)	265877	44.6565	44.65
$ 48 Toluene-d8	98	6.974	6.974	(0.847)	1008437	44.5529	44.55(M)
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	110694	19.8873	19.88
11 1,1-Dichloroethene	96	2.386	2.390	(0.489)	118318	21.6949	21.69
33 1,2-Dichloroethane	62	5.239	5.239	(0.934)	219596	22.5536	22.55
27 cis-1,2-Dichloroethene	96	4.268	4.268	(0.875)	151162	20.0845	20.08
17 Methylene Chloride	84	2.855	2.858	(0.585)	151937	22.4589	22.45
38 Trichloroethene	130	5.846	5.846	(1.042)	136529	19.9611	19.96
5 Vinyl Chloride	62	1.408	1.411	(0.289)	176309	19.8613	19.86

QC Flag Legend

M - Compound response manually integrated.

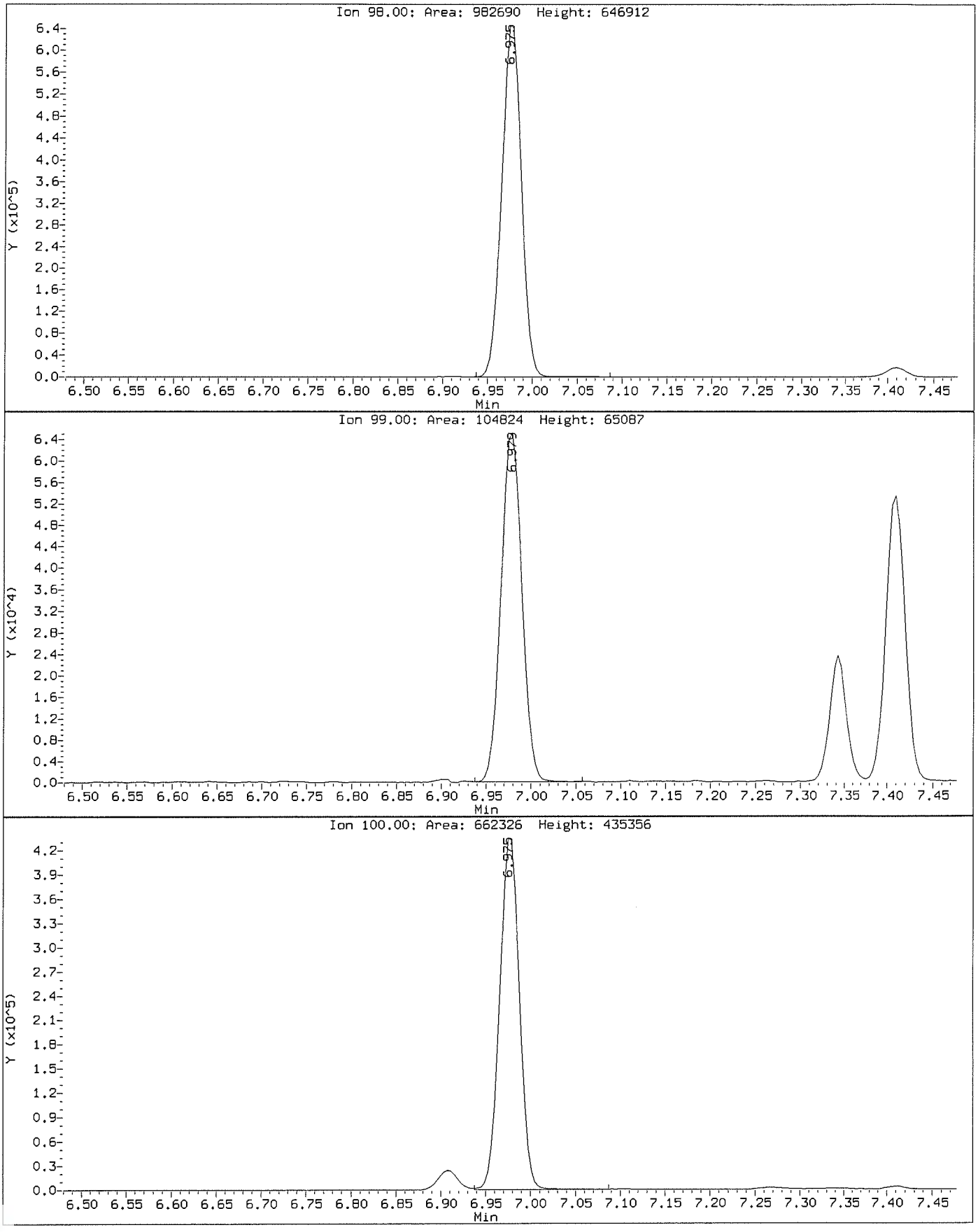


Data File: \\NAHSTWS005\Target\chem\voa9,i\U220204,b\U020405,D
Date : 04-FEB-2022 13:19
Client ID: VLCSW-220204
Sample Info: VLCSW-220204;VLCSW-220204;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

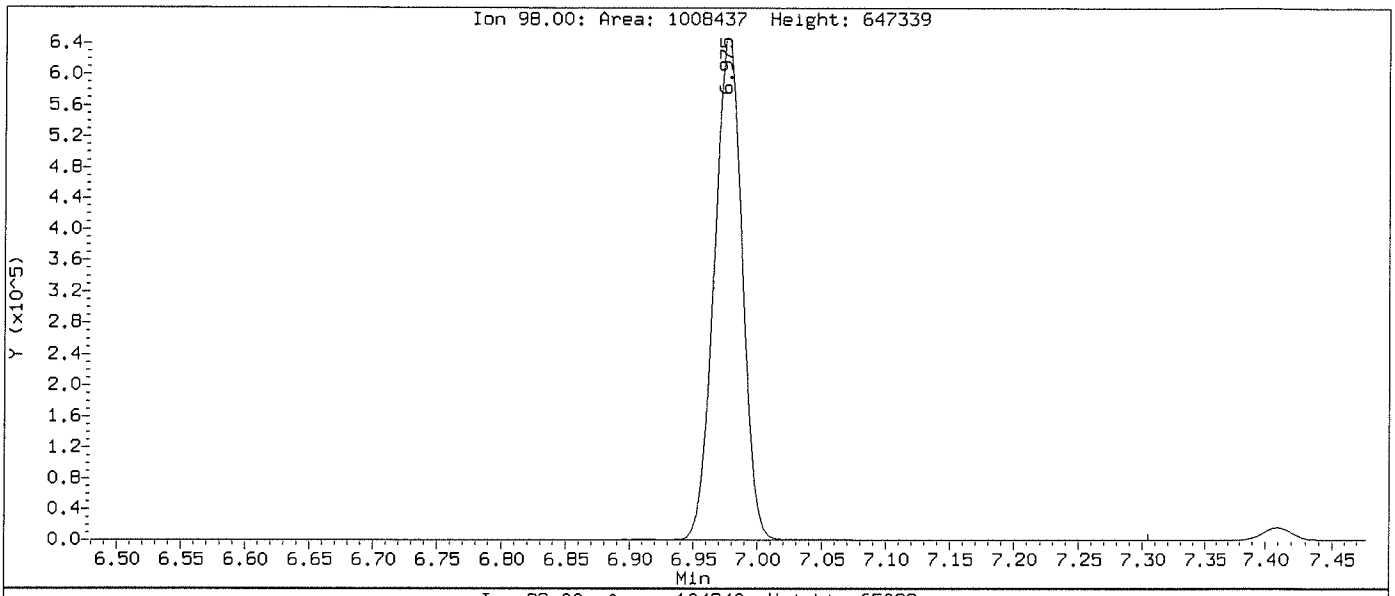
Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\before\U020405.D
Injection Date: 04-FEB-2022 13:19
Instrument: VOA9.i
Client Sample ID: VLCSW-220204

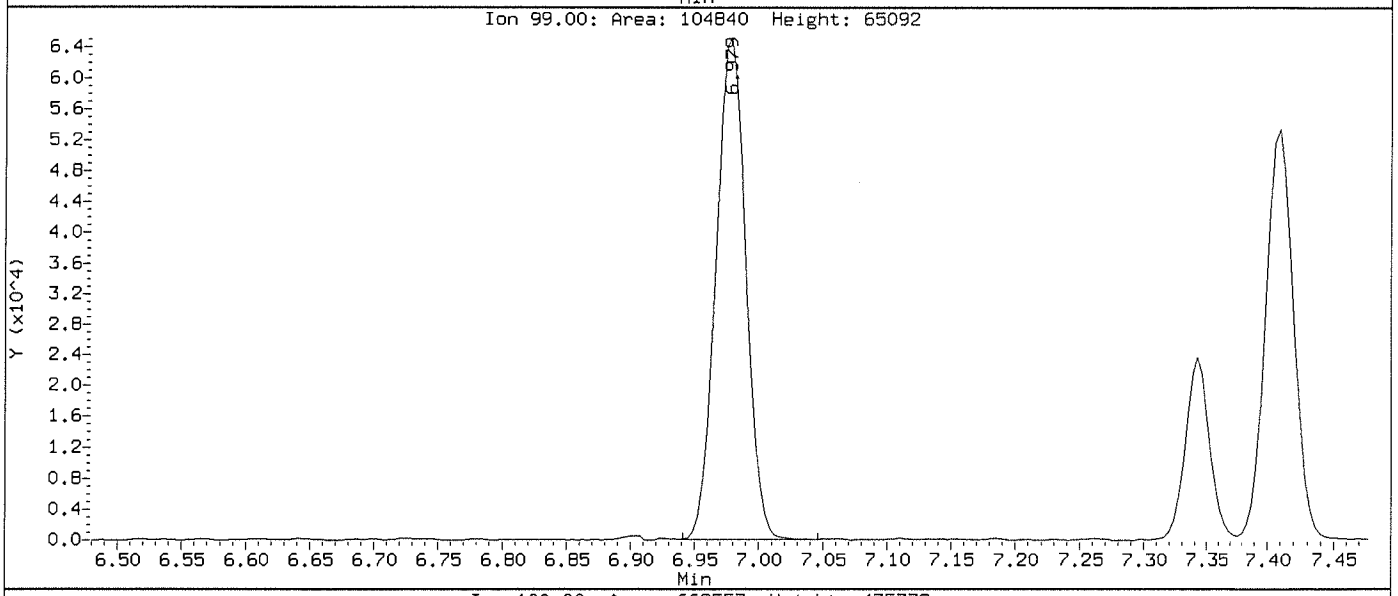
Compound: Toluene-d8
CAS Number: 2037-26-5

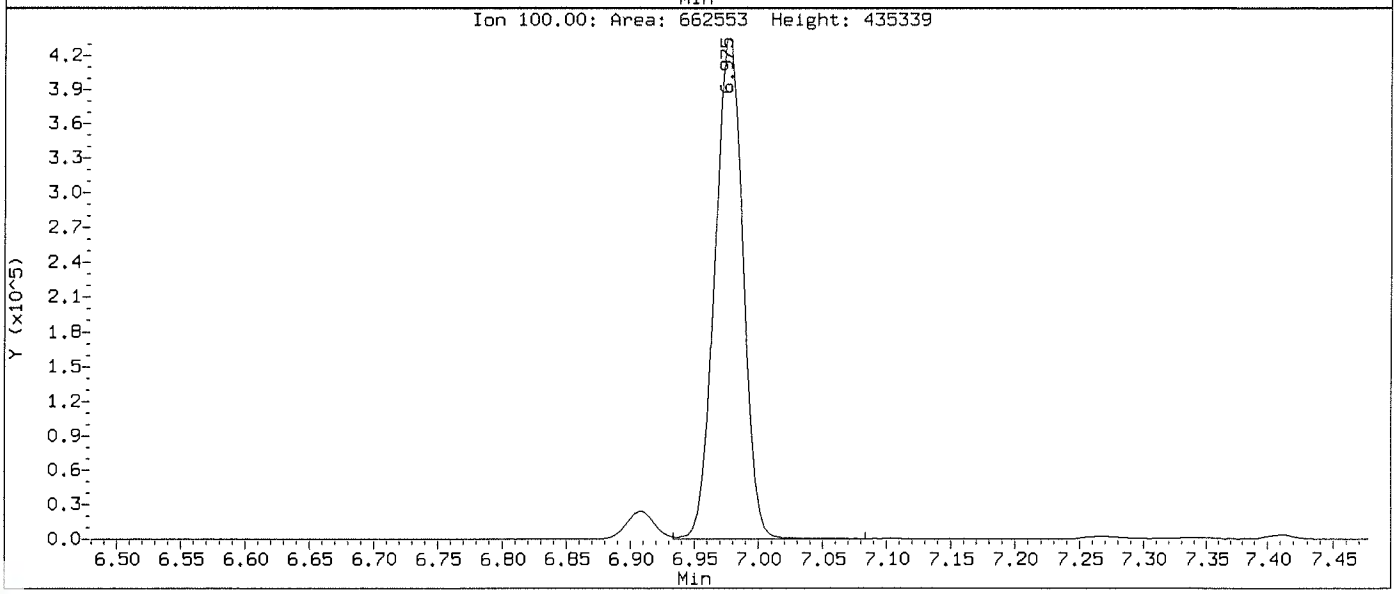


Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020405.D
Injection Date: 04-FEB-2022 13:19
Instrument: VOA9.i
Client Sample ID: VLCSW-220204

Compound: Toluene-d8
CAS Number: 2037-26-5







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Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020406.D
Lab Smp Id: VBLKM-220204 Client Smp ID: VBLKM-220204
Inj Date : 04-FEB-2022 13:41
Operator : PC Inst ID: VOA9.i
Smp Info : VBLKM-220204;VBLKM-220204;3;;BLANK
Misc Info : 180315V9;WATER;0;50;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 11:09 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 6 QC Sample: BLANK
Dil Factor: 50.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

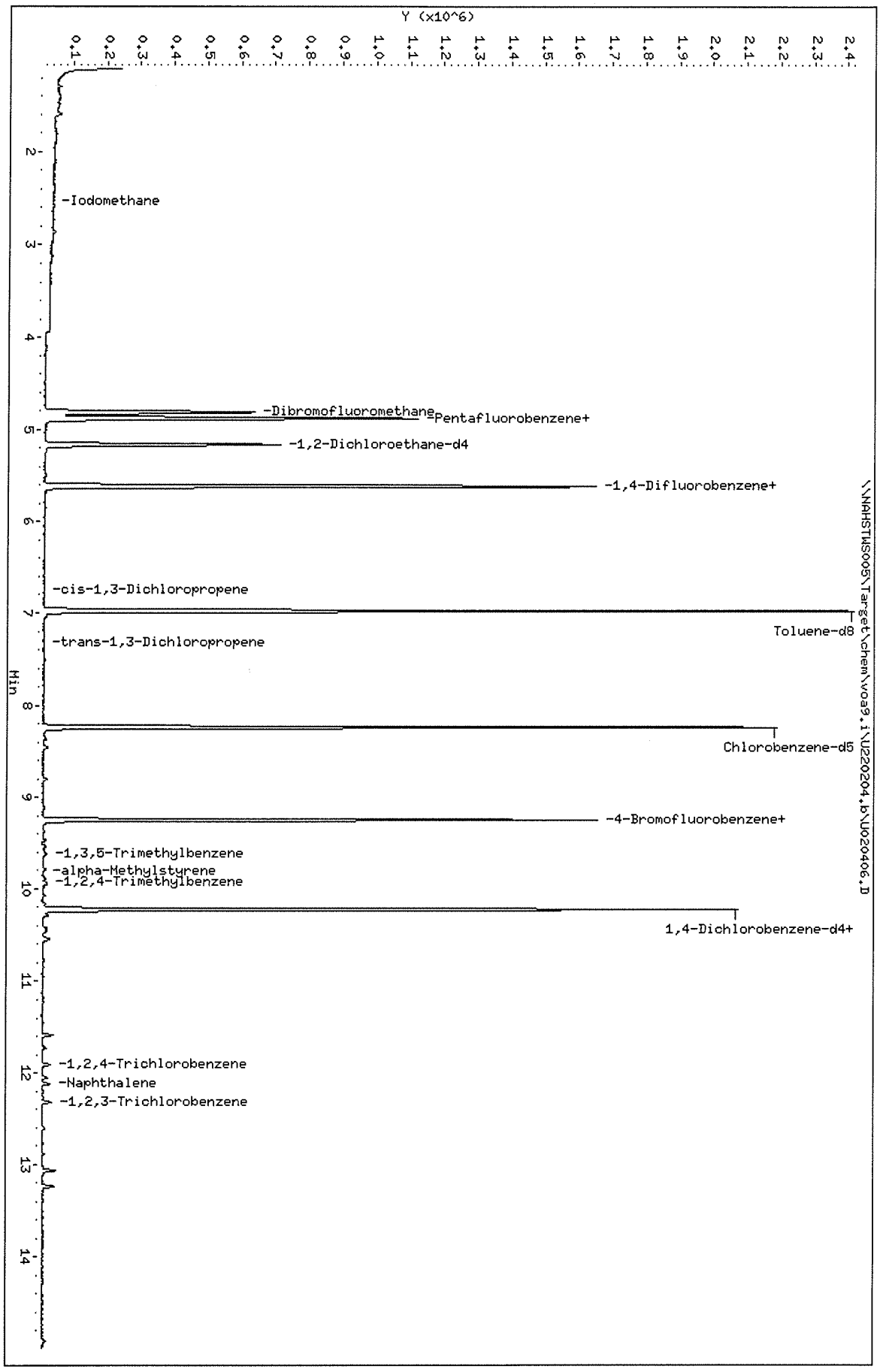
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	50.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.882	4.879	(1.000)	689158	50.0000	
* 36 1,4-Difluorobenzene	114	5.613	5.614	(1.000)	1120541	50.0000	
* 47 Chlorobenzene-d5	117	8.237	8.238	(1.000)	992142	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.225	(1.000)	475537	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.160	(1.058)	451104	50.3793	50.37
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	457334	49.4321	49.43
$ 30 Dibromofluoromethane	113	4.815	4.815	(0.986)	340379	48.2543	48.25
$ 48 Toluene-d8	98	6.978	6.974	(0.847)	1325256	52.1168	52.11

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020406.D
Date : 04-FEB-2022 13:41
Client ID: VBLKM-220204
Sample Info: VBLKM-220204;VBLKM-220204;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020407.D Page 1
Report Date: 08-Feb-2022 11:09

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020407.D
Lab Smp Id: VBLKW-220204 Client Smp ID: VBLKW-220204
Inj Date : 04-FEB-2022 14:03
Operator : PC Inst ID: VOA9.i
Smp Info : VBLKW-220204;VBLKW-220204;3;;BLANK
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 11:09 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

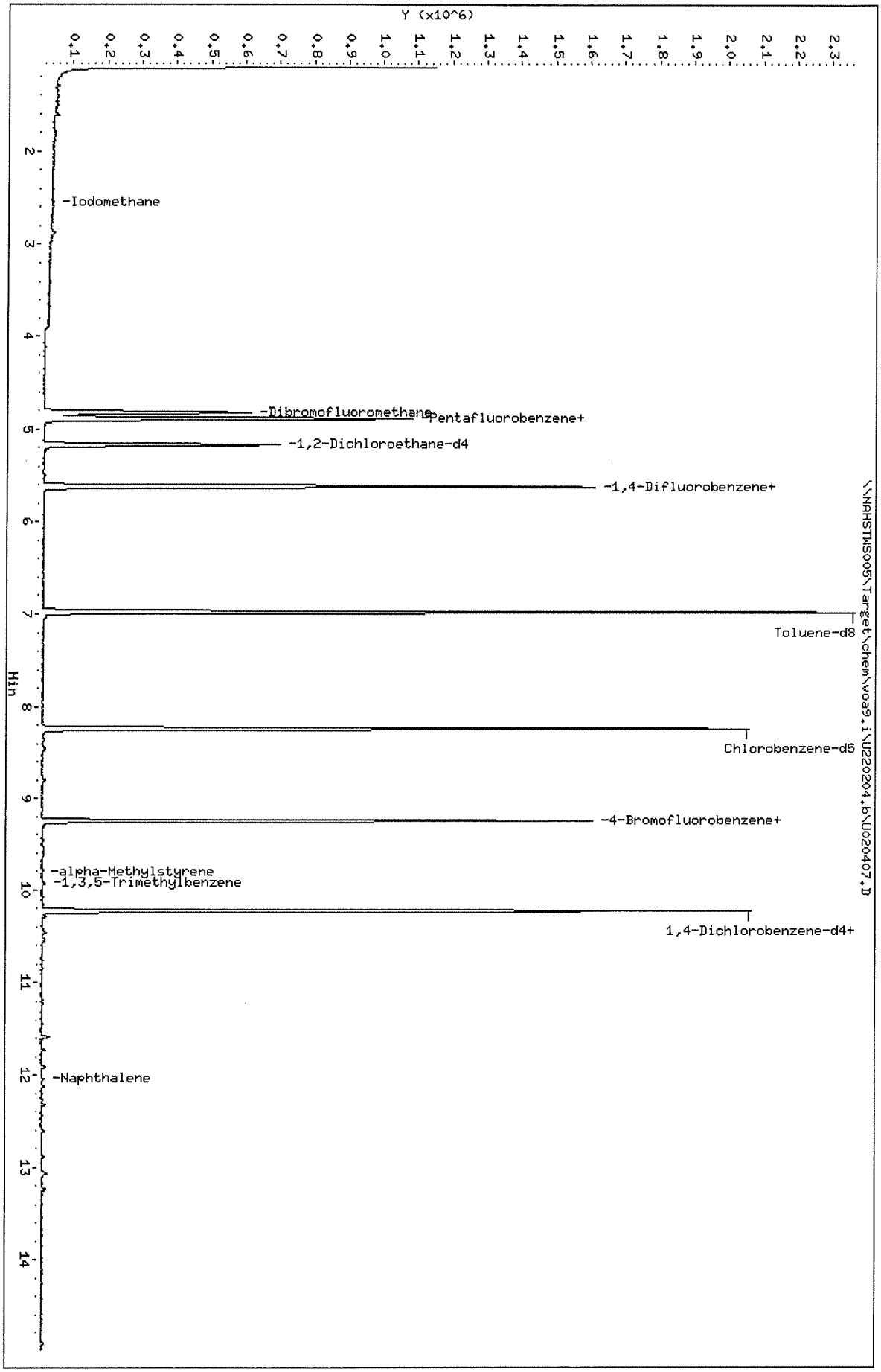
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.886	4.879	(1.000)	663057	50.0000	
* 36 1,4-Difluorobenzene	114	5.617	5.614	(1.000)	1081613	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	944983	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.225	(1.000)	460678	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.167	5.160	(1.058)	436022	50.6179	50.61
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	448387	50.9200	50.92
$ 30 Dibromofluoromethane	113	4.822	4.815	(0.987)	331806	48.9020	48.90
$ 48 Toluene-d8	98	6.978	6.974	(0.847)	1280095	52.8530	52.85

Data File: \\NAHSTWS005\Target\chem\voa9,i\U220204,b\U020407,D
Date : 04-FEB-2022 14:03
Client ID: VBLKW-220204
Sample Info: VBLKW-220204;VBLKW-220204;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020408.D Page 1
Report Date: 08-Feb-2022 11:04

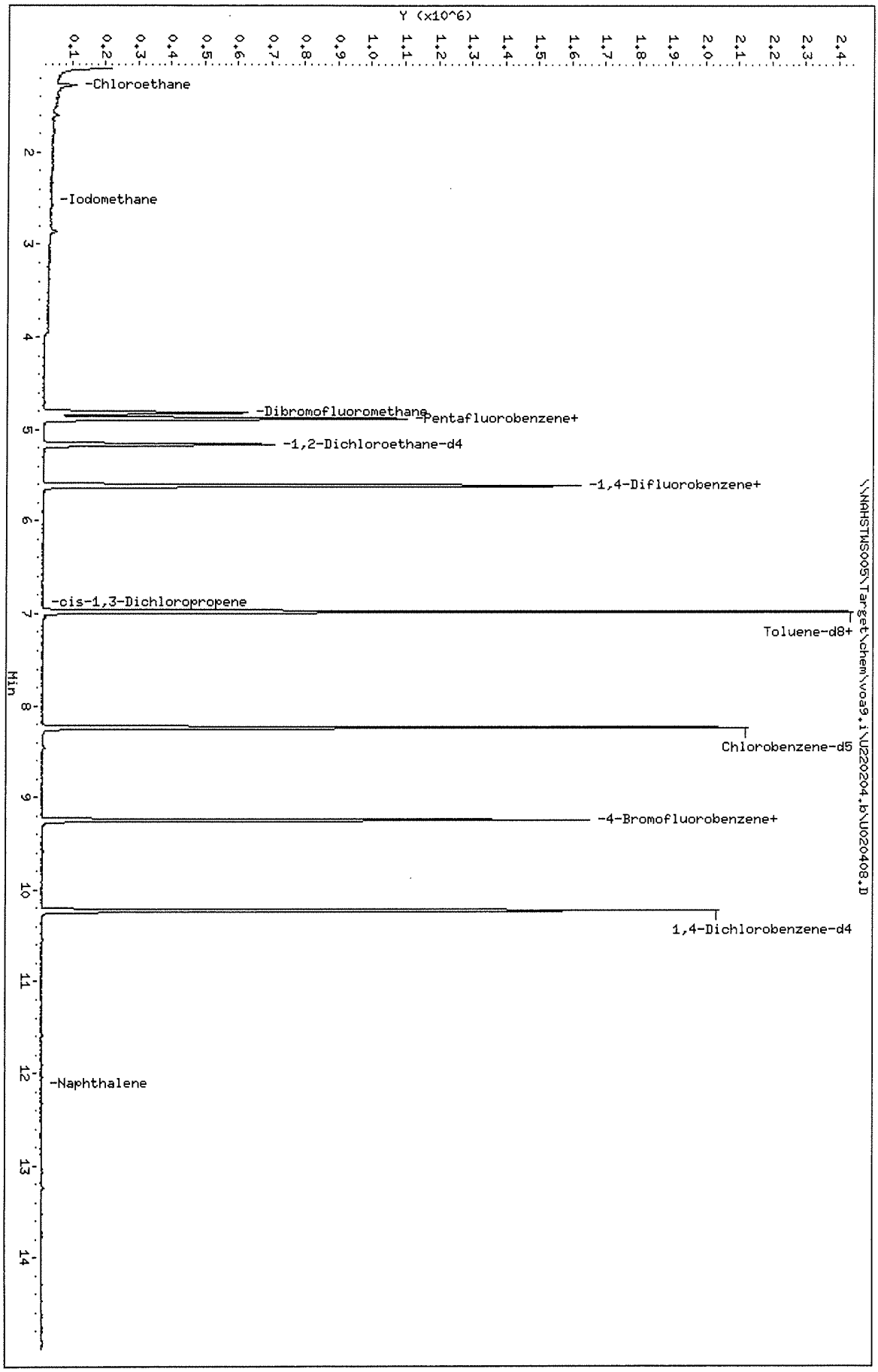
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Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020408.D
Lab Smp Id: HS22011233-11 Client Smp ID: HS22011233-11
Inj Date : 04-FEB-2022 14:25
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-11;HS22011233-11;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.879	4.886	(1.000)	675820	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.617	(1.000)	1105899	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	976335	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	462952	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.160	5.167	(1.058)	446215	50.8283	50.82
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	458995	50.4395	50.43
$ 30 Dibromofluoromethane	113	4.815	4.823	(0.987)	335399	48.4909	48.49
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1312054	52.4330	52.43



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220204,b\U020408.D
Date : 04-FEB-2022 14:25
Client ID: HS22011233-11
Sample Info: HS22011233-11;HS22011233-11;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020409.D Page 1
Report Date: 08-Feb-2022 11:04

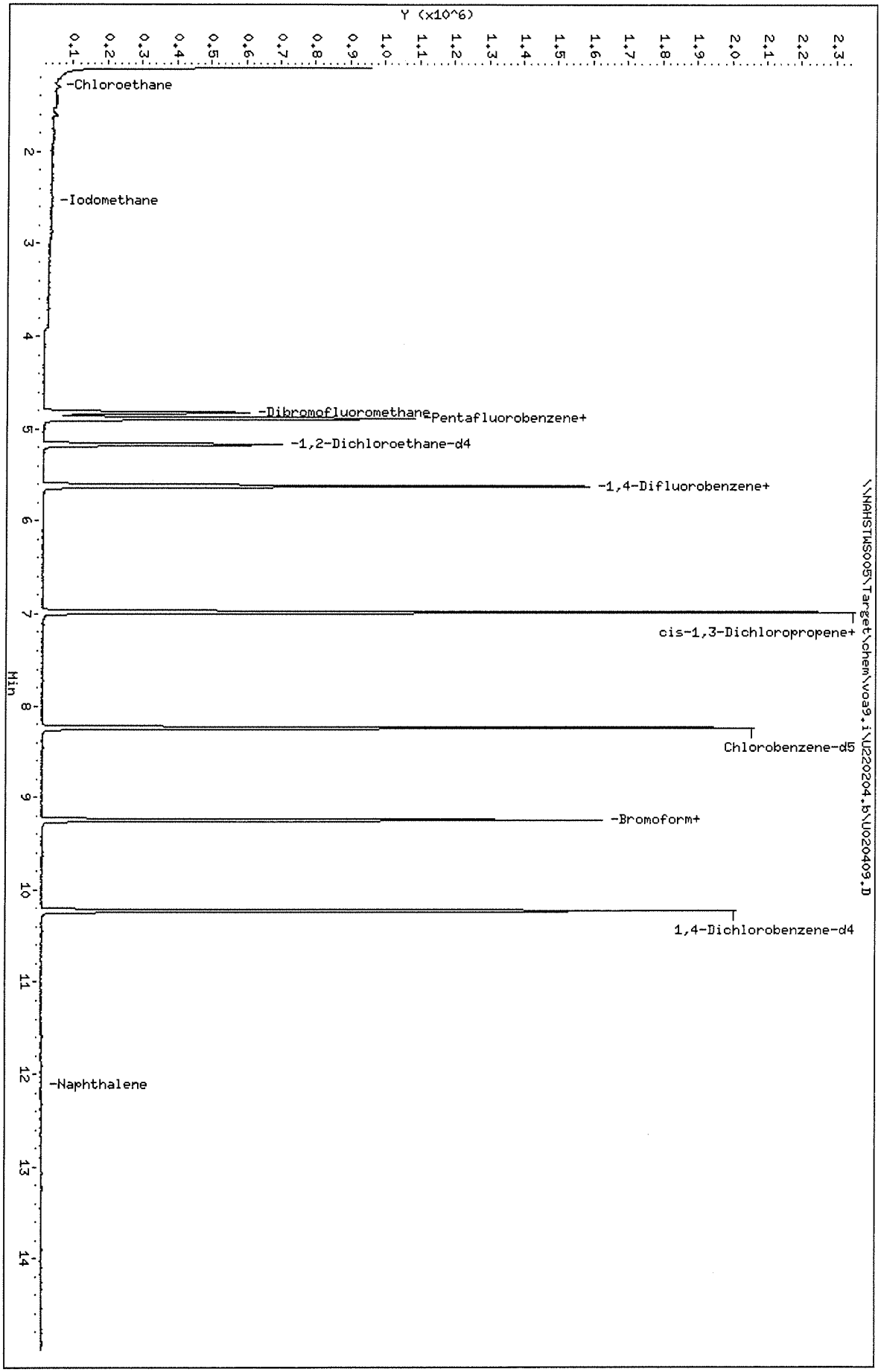
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Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020409.D
Lab Smp Id: HS22011233-09 Client Smp ID: HS22011233-09
Inj Date : 04-FEB-2022 14:47
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-09;HS22011233-09;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.886	4.886	(1.000)	657823	50.0000	
* 36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	1064343	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	951314	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	456673	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.168	5.167	(1.058)	433759	50.7595	50.75
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	447771	50.5017	50.50
$ 30 Dibromofluoromethane	113	4.823	4.823	(0.987)	322631	47.9109	47.91
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1272032	52.1706	52.17



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220204,b\U020409,D
Date : 04-FEB-2022 14:47
Client ID: HS22011233-09
Sample Info: HS22011233-09;HS22011233-09;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020412.D Page 1
Report Date: 08-Feb-2022 11:09

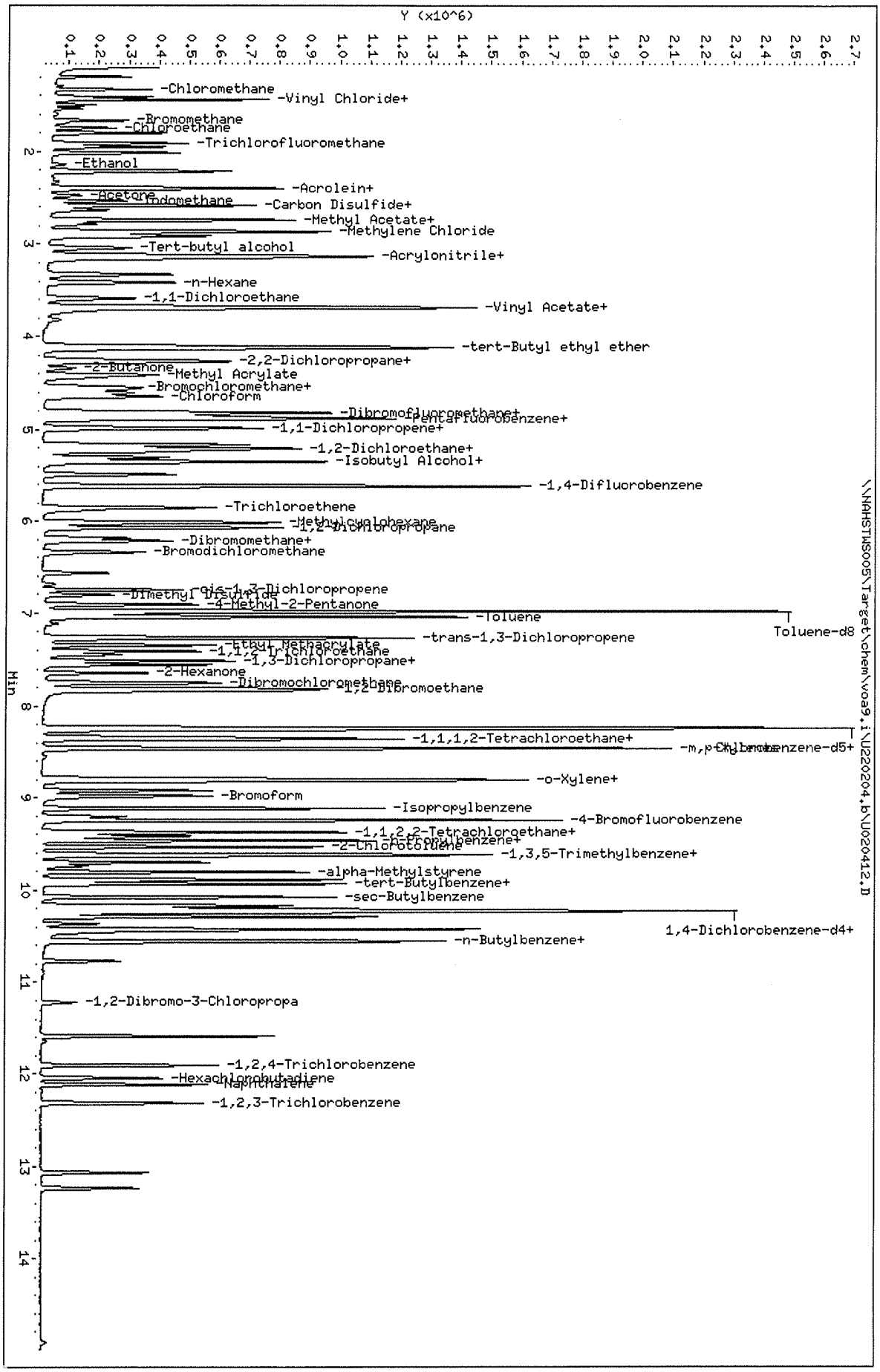
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Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020412.D
Lab Smp Id: HS22011233-09MS Client Smp ID: HS22011233-09MS
Inj Date : 04-FEB-2022 15:53
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-09MS;HS22011233-09MS;3;;MS
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 11:09 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 12 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.879	(1.000)	679388	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1098041	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	985353	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	500990	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.160	(1.058)	434147	49.1511	49.15
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	486497	53.0345	53.03
$ 30 Dibromofluoromethane	113	4.819	4.815	(0.987)	341569	49.1348	49.13
$ 48 Toluene-d8	98	6.978	6.974	(0.847)	1331768	52.7337	52.73
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	117308	18.8892	18.88
11 1,1-Dichloroethene	96	2.394	2.390	(0.490)	138338	21.6873	21.68
33 1,2-Dichloroethane	62	5.243	5.239	(0.934)	229205	20.8159	20.81
27 cis-1,2-Dichloroethene	96	4.275	4.268	(0.876)	164362	18.6715	18.67
17 Methylene Chloride	84	2.862	2.858	(0.586)	161722	20.3123	20.31
38 Trichloroethene	130	5.850	5.846	(1.042)	163754	21.1704	21.17
5 Vinyl Chloride	62	1.415	1.411	(0.290)	199955	19.2586	19.25



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220204,b\U020412,D
Date : 04-FEB-2022 15:53
Client ID: HS22011233-09MS
Sample Info: HS22011233-09MS;HS22011233-09MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020413.D Page 1
Report Date: 08-Feb-2022 11:09

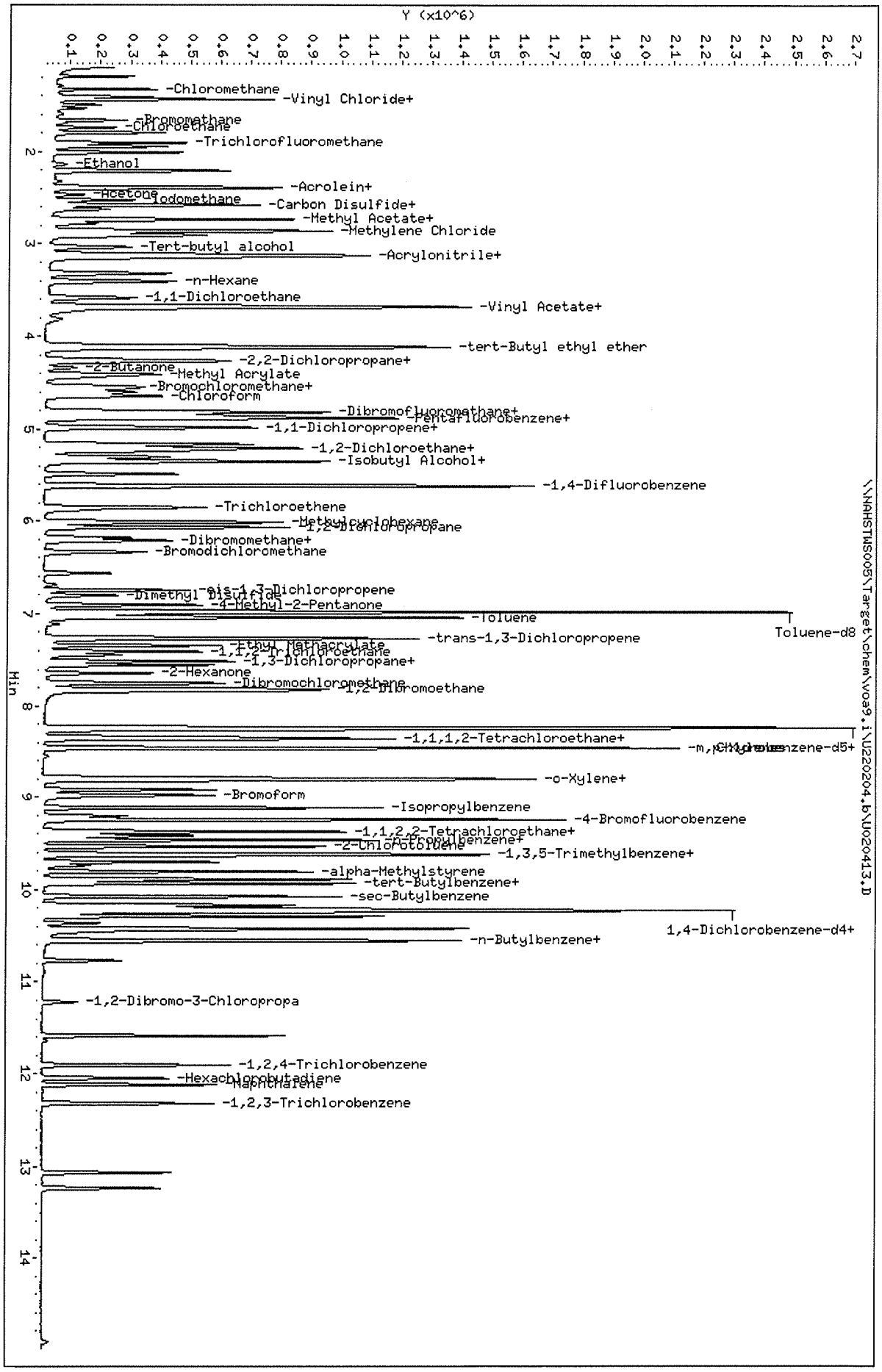
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Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020413.D
Lab Smp Id: HS22011233-09MSD Client Smp ID: HS22011233-09MSD
Inj Date : 04-FEB-2022 16:15
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-09MSD;HS22011233-09MSD;3;;MSD
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 11:09 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 12 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.879	4.879	(1.000)	682099	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1107178	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	991980	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	492163	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.160	(1.058)	442448	49.9119	49.91
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	491367	53.2116	53.21
$	30 Dibromofluoromethane	113	4.815	4.815	(0.987)	345886	49.5655	49.56
$	48 Toluene-d8	98	6.978	6.974	(0.847)	1344718	52.8908	52.89
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	118184	18.9031	18.90
	11 1,1-Dichloroethene	96	2.386	2.390	(0.489)	133700	20.8769	20.87
	33 1,2-Dichloroethane	62	5.243	5.239	(0.934)	235751	21.2337	21.23
	27 cis-1,2-Dichloroethene	96	4.272	4.268	(0.876)	161083	18.2262	18.22
	17 Methylene Chloride	84	2.855	2.858	(0.585)	163529	20.4677	20.46
	38 Trichloroethene	130	5.850	5.846	(1.042)	156774	20.1008	20.10
	5 Vinyl Chloride	62	1.411	1.411	(0.289)	200542	19.2384	19.23



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020413.D
Date : 04-FEB-2022 16:15
Client ID: HS22011233-09MSD
Sample Info: HS22011233-09MSD;HS22011233-09MSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020417.D Page 1
Report Date: 08-Feb-2022 11:04

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020417.D
Lab Smp Id: HS22011233-03 Client Smp ID: HS22011233-03
Inj Date : 04-FEB-2022 17:44
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-03;HS22011233-03;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 16
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

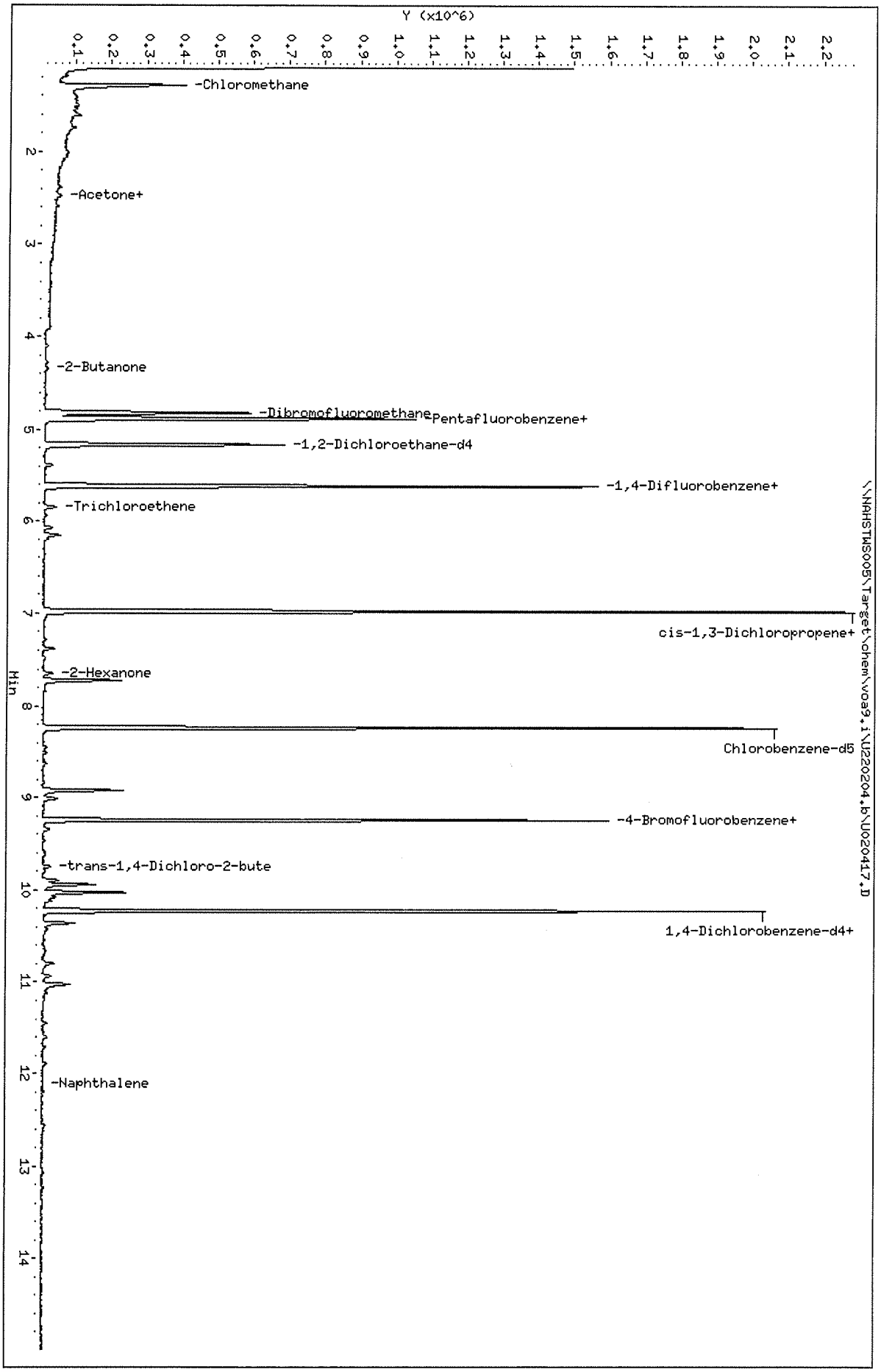
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.883	4.886	(1.000)	650288	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.617	(1.000)	1047037	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	937134	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	460427	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.167	(1.058)	427850	50.6452	50.64
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	446693	51.1582	51.15
$ 30 Dibromofluoromethane	113	4.819	4.823	(0.987)	325229	48.8734	48.87
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1262801	52.5757	52.57
38 Trichloroethene	130	5.850	5.853	(1.042)	8206	1.11257	1.11(a)

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020417.D
Date : 04-FEB-2022 17:44
Client ID: HS22011233-03
Sample Info: HS22011233-03;HS22011233-03;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020417.D

Date : 04-FEB-2022 17:44

Client ID: HS22011233-03

Instrument: VOA9.i

Sample Info: HS22011233-03;HS22011233-03;;;

Purge Volume: 5.0

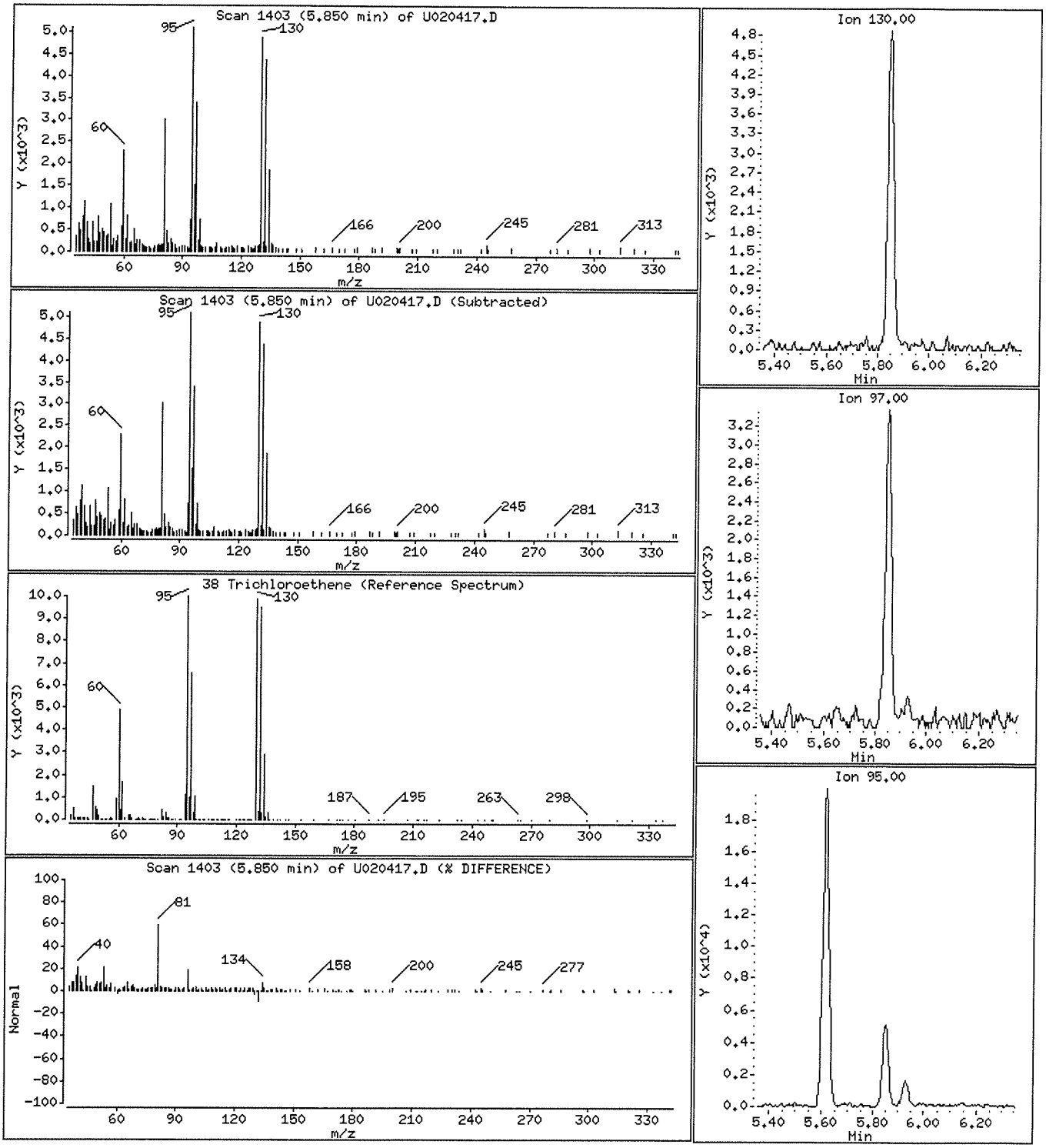
Operator: PC

Column phase: DB624

Column diameter: 0.18

38 Trichloroethene

Concentration: 1.11 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020418.D Page 1
Report Date: 08-Feb-2022 11:04

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020418.D
Lab Smp Id: HS22011233-04 Client Smp ID: HS22011233-04
Inj Date : 04-FEB-2022 18:06
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-04;HS22011233-04;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 17
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

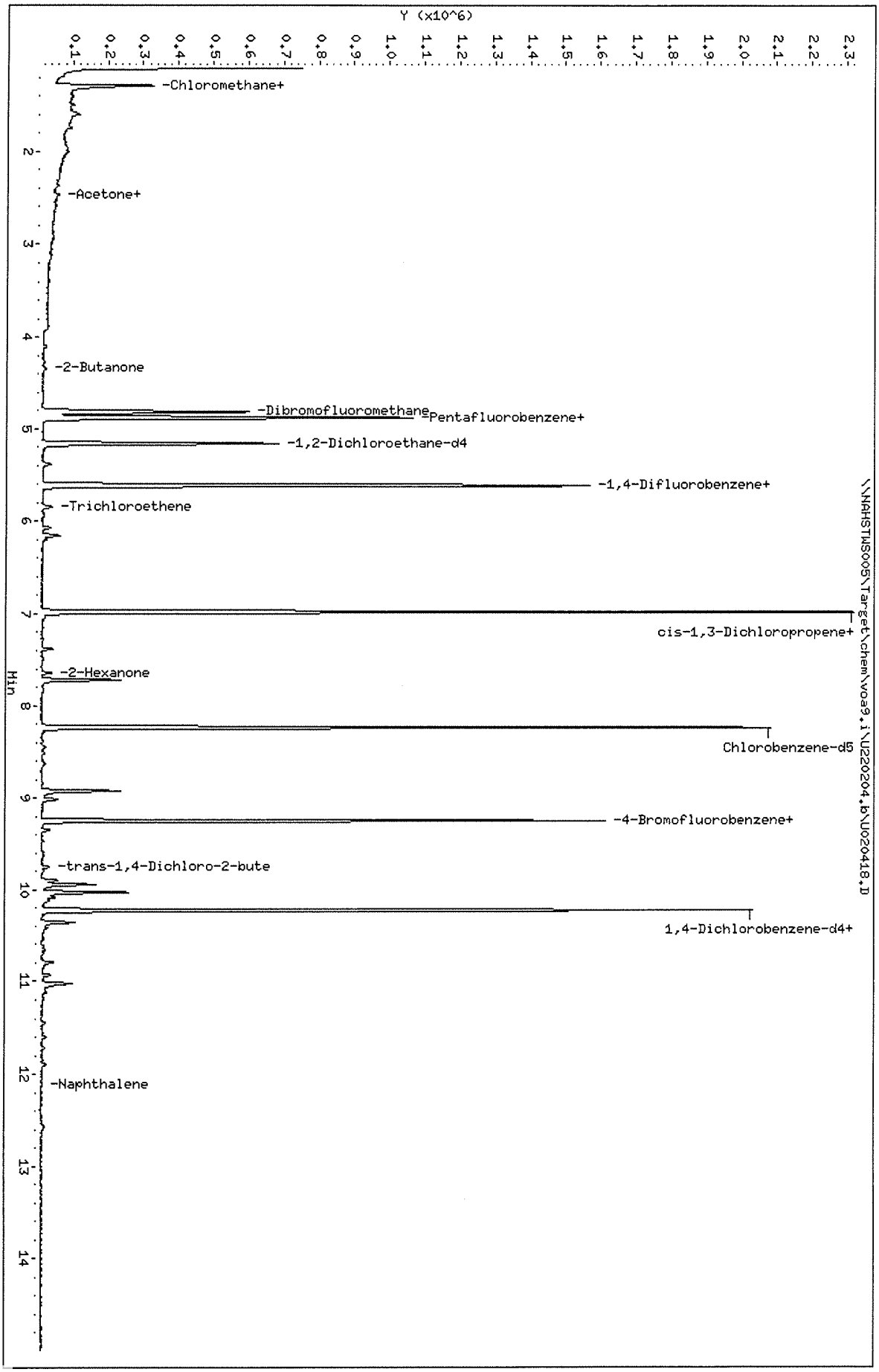
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.879	4.886	(1.000)	648514	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.617	(1.000)	1057664	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	940852	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	461311	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.167	(1.058)	432078	51.3025	51.30
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	451591	51.5234	51.52
$	30 Dibromofluoromethane	113	4.815	4.823	(0.987)	325805	49.0977	49.09
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1262763	52.3663	52.36
	38 Trichloroethene	130	5.850	5.853	(1.042)	6158	0.82651	0.82(a)

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020418.D
Date : 04-FEB-2022 18:06
Client ID: HS22011233-04
Sample Info: HS22011233-04;HS22011233-04;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020418.D Page 3

Date : 04-FEB-2022 18:06

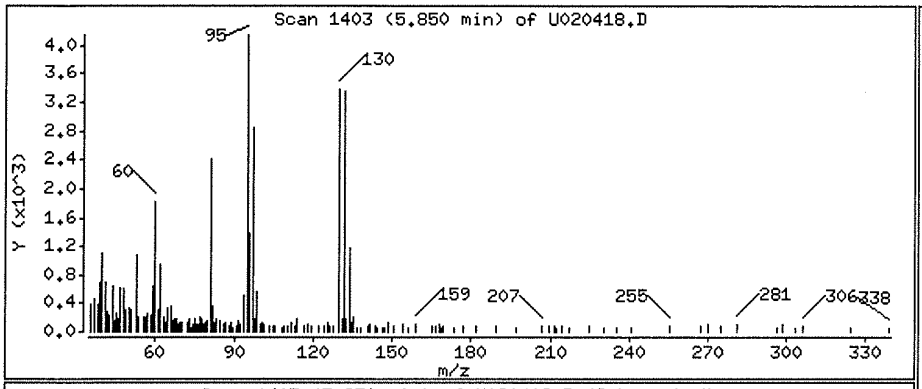
Client ID: HS22011233-04 Instrument: VOA9.i

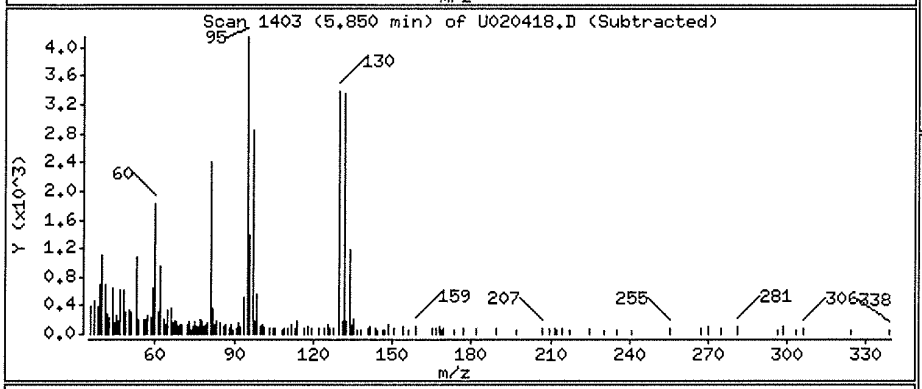
Sample Info: HS22011233-04;HS22011233-04;;;

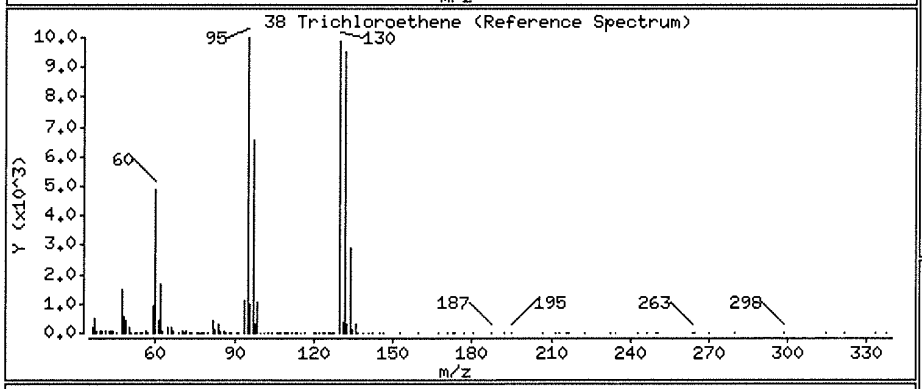
Purge Volume: 5.0 Operator: PC

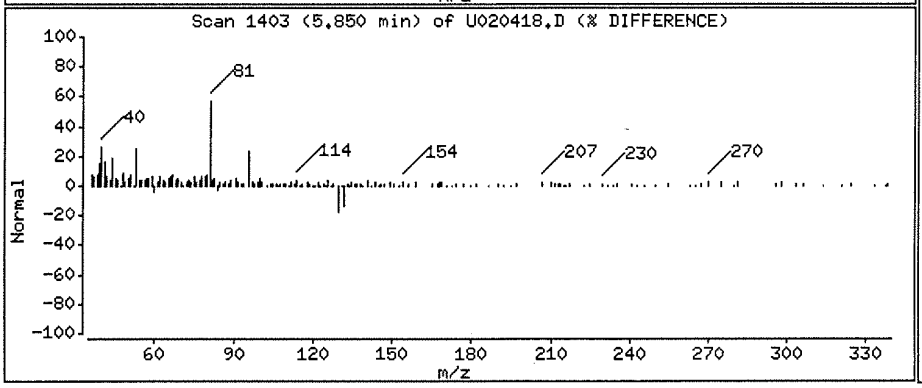
Column phase: DB624 Column diameter: 0.18

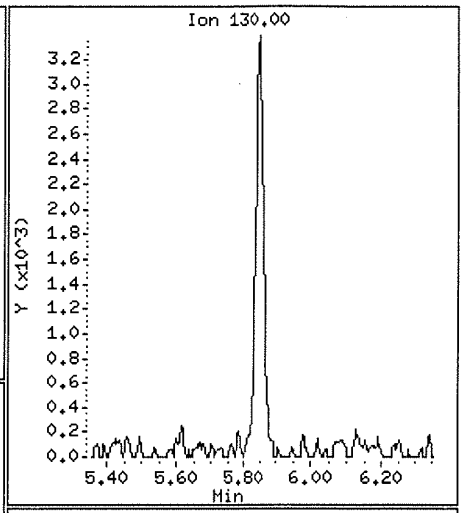
38 Trichloroethene Concentration: 0.82 ug/l

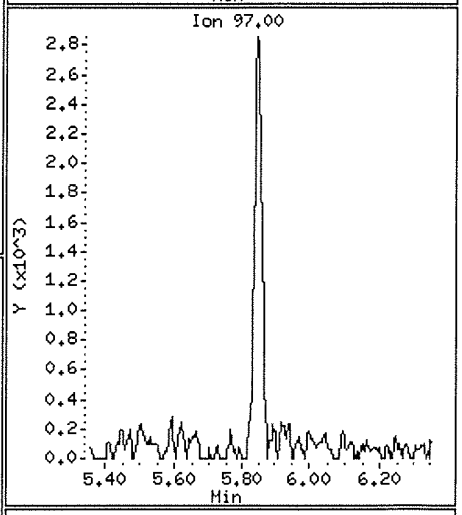


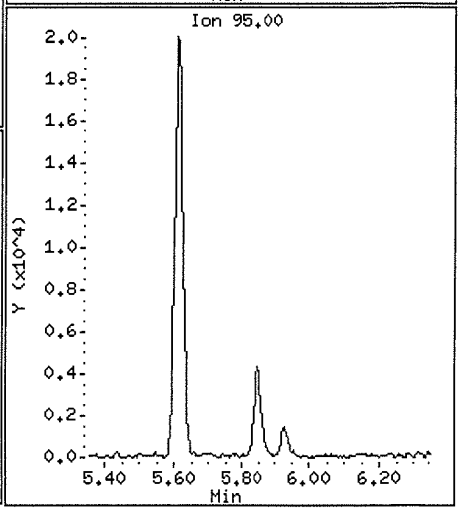












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020419.D Page 1
Report Date: 08-Feb-2022 11:04

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020419.D
Lab Smp Id: HS22011233-07 Client Smp ID: HS22011233-07
Inj Date : 04-FEB-2022 18:28
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-07;HS22011233-07;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 18
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

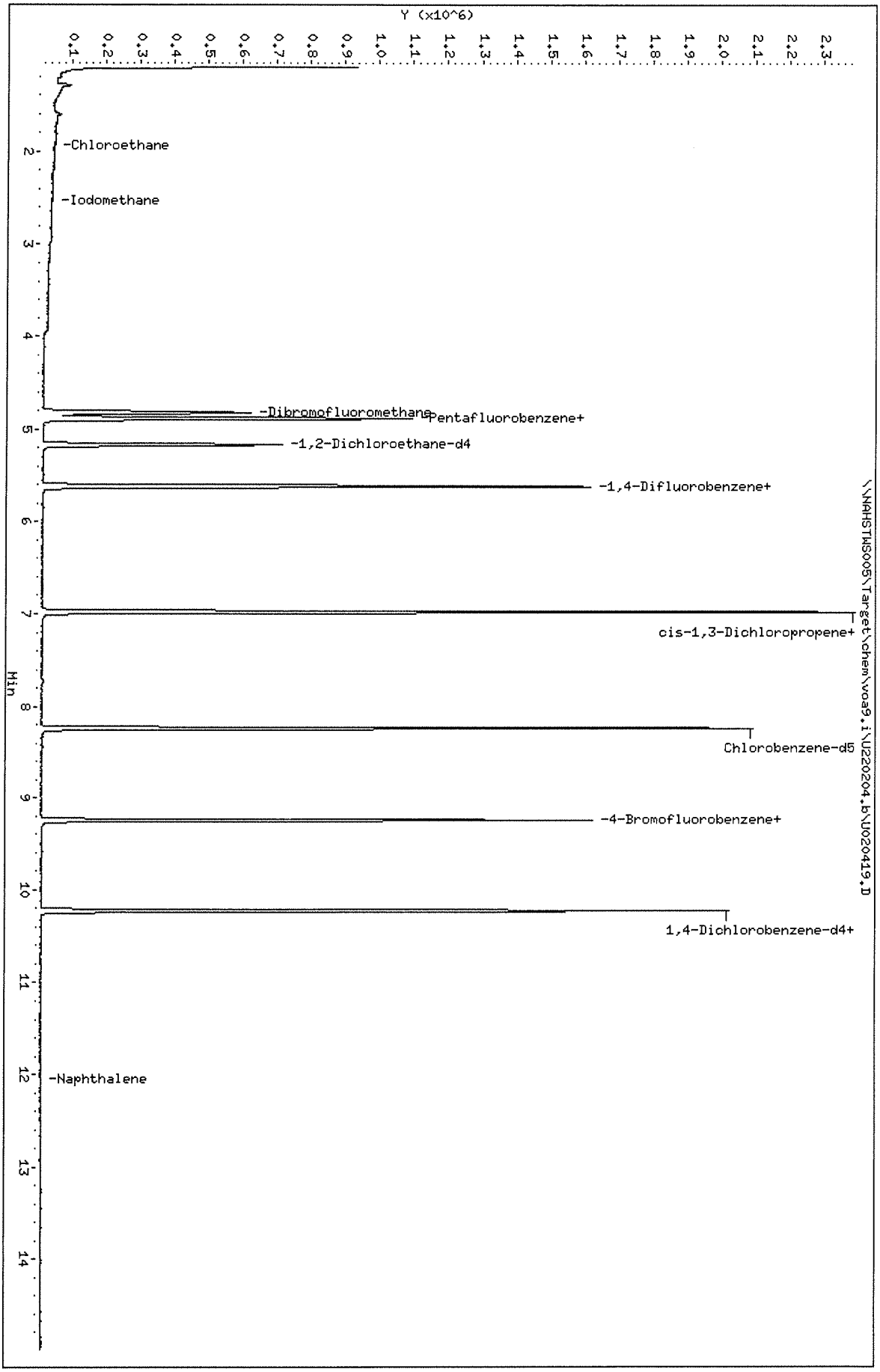
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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)	CONCENTRATIONS FINAL (ug/l)
*	1 Pentafluorobenzene	168	4.886	4.886	(1.000)	660211	50.0000	
*	36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	1077237	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	957973	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	459150	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.167	5.167	(1.058)	446015	52.0376	52.03
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	449053	50.2892	50.28
$	30 Dibromofluoromethane	113	4.823	4.823	(0.987)	338701	50.1550	50.15
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1285496	52.3563	52.35

Data File: \\NAHSTWS005\Target\chem\voa9,i\U220204,b\U020419.D
Date : 04-FEB-2022 18:28
Client ID: HS22011233-07
Sample Info: HS22011233-07;HS22011233-07;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020420.D Page 1
Report Date: 08-Feb-2022 11:04

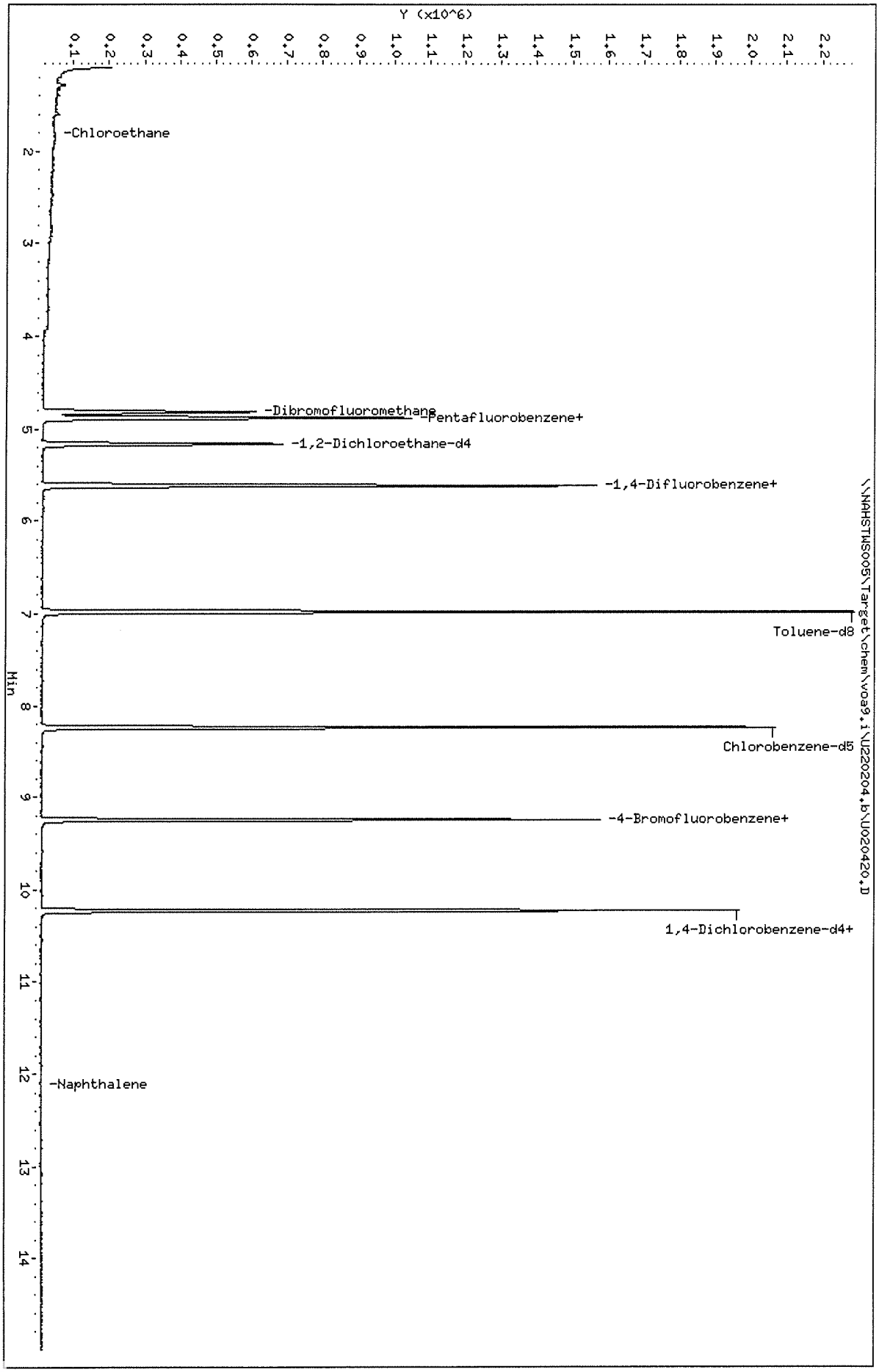
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020420.D
Lab Smp Id: HS22011233-08 Client Smp ID: HS22011233-08
Inj Date : 04-FEB-2022 18:50
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-08;HS22011233-08;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.879	4.886	(1.000)	645776	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.617	(1.000)	1057405	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	926503	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	437048	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.160	5.167	(1.058)	432270	51.5491	51.54
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	436664	50.5695	50.56
$	30 Dibromofluoromethane	113	4.815	4.823	(0.987)	327769	49.6120	49.61
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1250872	52.6766	52.67



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220204,b\U020420,D
Date : 04-FEB-2022 18:50
Client ID: HS22011233-08
Sample Info: HS22011233-08;HS22011233-08;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020421.D Page 1
Report Date: 08-Feb-2022 11:04

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020421.D
Lab Smp Id: HS22011233-10 Client Smp ID: HS22011233-10
Inj Date : 04-FEB-2022 19:12
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-10;HS22011233-10;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 20
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

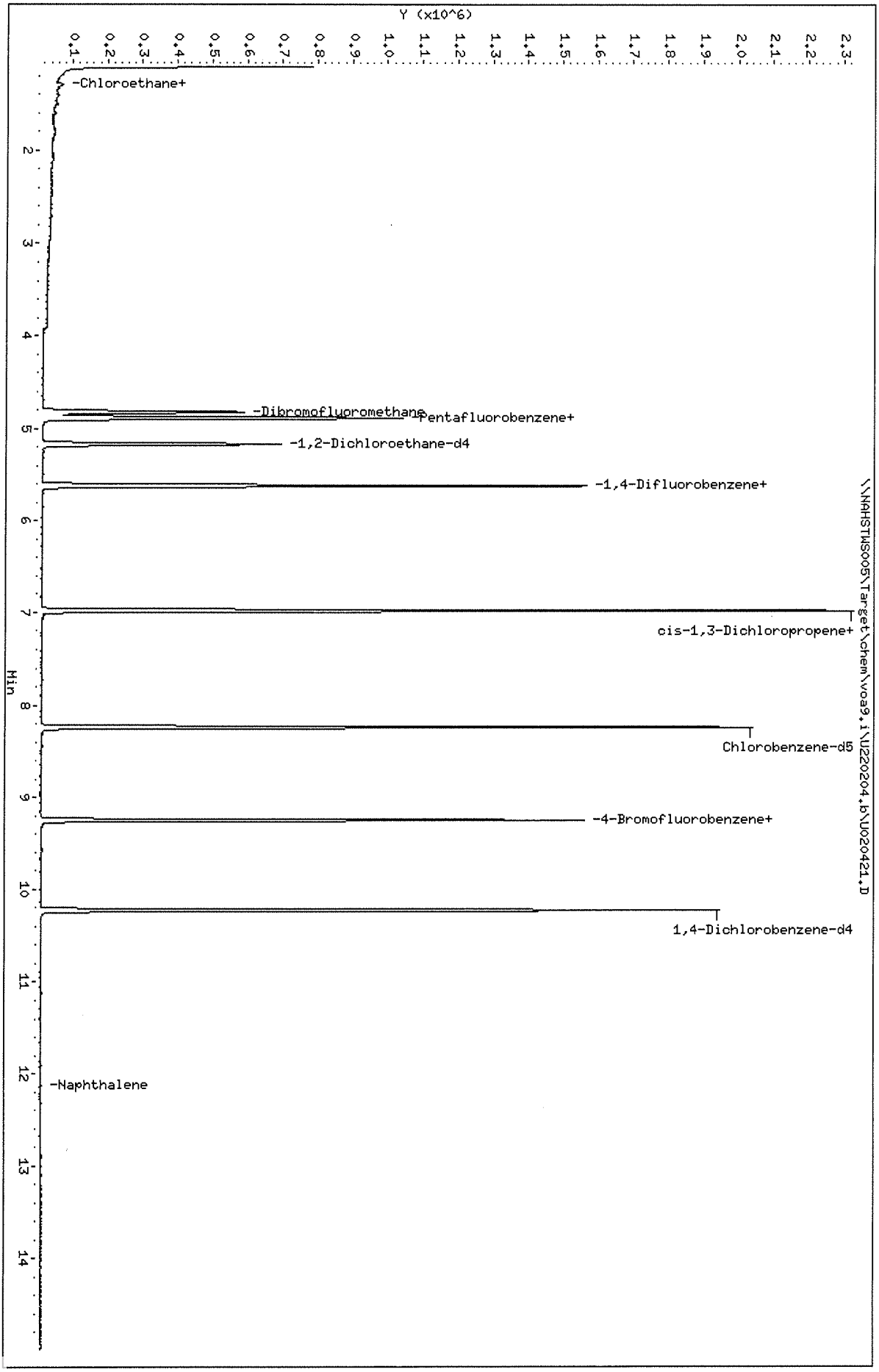
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.887	4.886	(1.000)	637962	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.617	(1.000)	1041850	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	929421	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	440098	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.168	5.167	(1.058)	431244	52.0698	52.06
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	432816	49.9518	49.95
$	30 Dibromofluoromethane	113	4.823	4.823	(0.987)	321932	49.3203	49.32
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1252083	52.5621	52.56

Data File: \\NAHSTWS005\Target\chem\voa9,i\U220204,b\U020421,D
Date : 04-FEB-2022 19:12
Client ID: HS22011233-10
Sample Info: HS22011233-10;HS22011233-10;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020422.D Page 1
Report Date: 08-Feb-2022 11:04

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020422.D
Lab Smp Id: HS22011233-02 Client Smp ID: HS22011233-02
Inj Date : 04-FEB-2022 19:34
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-02;HS22011233-02;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 21
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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

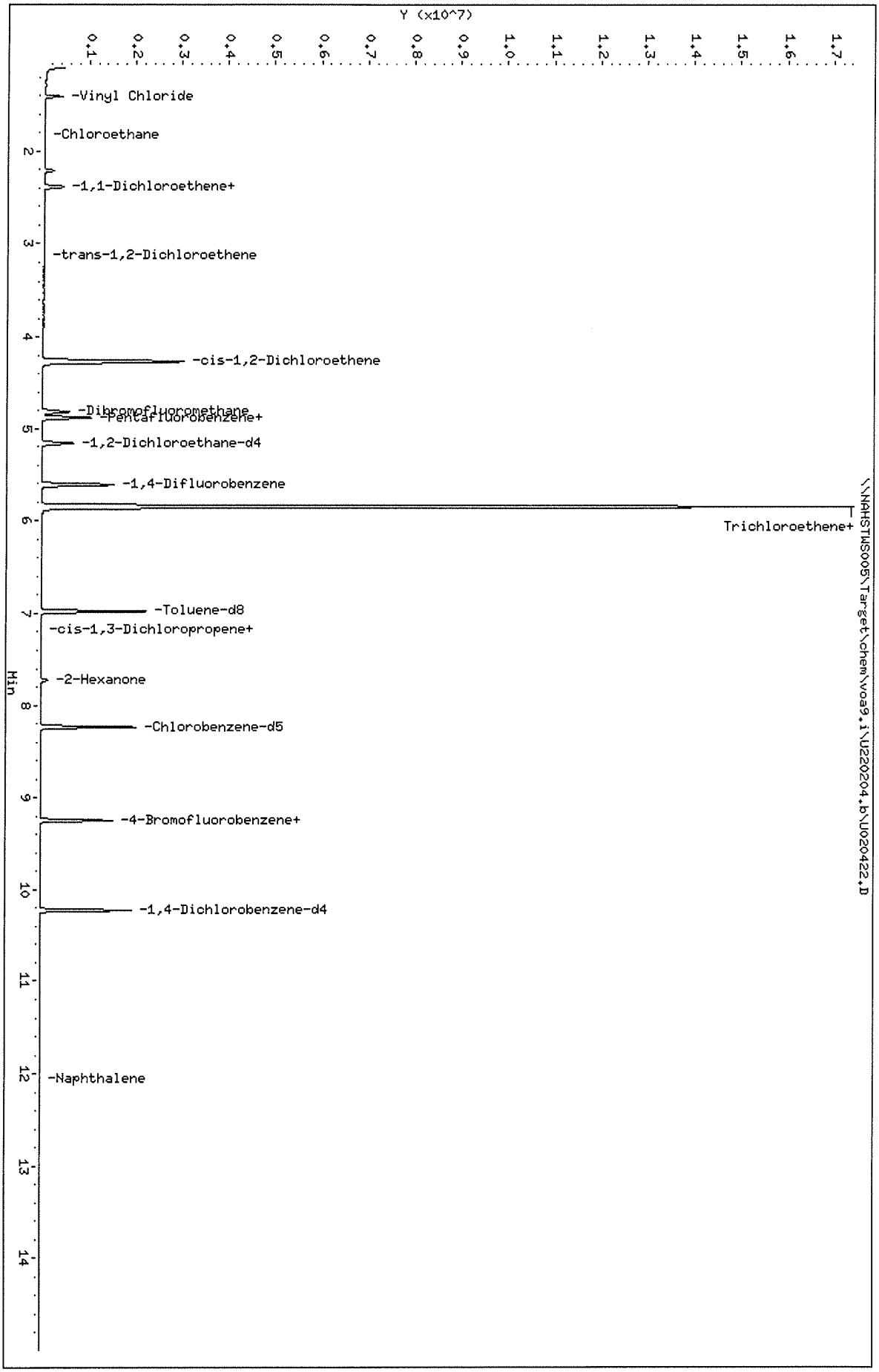
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.879	4.886	(1.000)	646882	50.0000	
* 36 1,4-Difluorobenzene	114	5.610	5.617	(1.000)	1040428	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	925967	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	448661	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.160	5.167	(1.058)	428295	50.9733	50.97
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	438998	50.8766	50.87
$ 30 Dibromofluoromethane	113	4.815	4.823	(0.987)	318180	48.0516	48.05
$ 48 Toluene-d8	98	6.974	6.978	(0.847)	1242001	52.3333	52.33
11 1,1-Dichloroethene	96	2.386	2.401	(0.489)	26430	4.35166	4.35(a)
27 cis-1,2-Dichloroethene	96	4.268	4.279	(0.875)	1303599	155.530	155.52
38 Trichloroethene	130	5.850	5.853	(1.043)	4964390	677.346	677.34(A)
5 Vinyl Chloride	62	1.408	1.423	(0.289)	242729	24.5531	24.55

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\voa9,i\U220204,b\U020422,D
Date : 04-FEB-2022 19:34
Client ID: HS22011233-02
Sample Info: HS22011233-02;HS22011233-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020422.D Page 3

Date : 04-FEB-2022 19:34

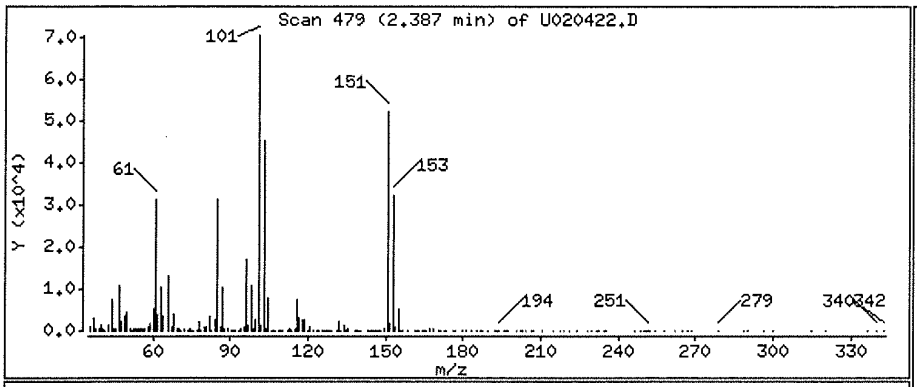
Client ID: HS22011233-02 Instrument: VOA9.i

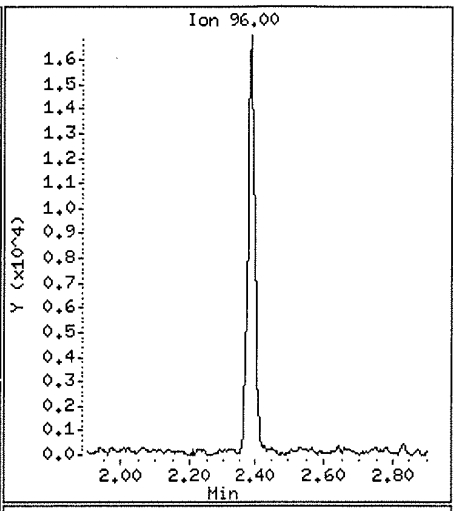
Sample Info: HS22011233-02;HS22011233-02;;;

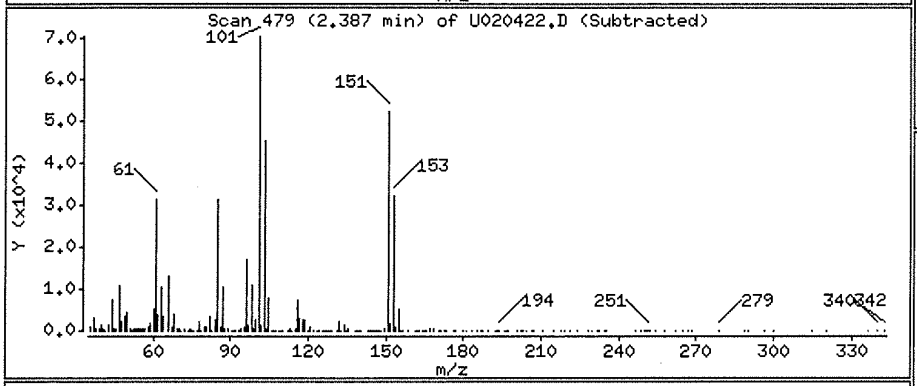
Purge Volume: 5.0 Operator: PC

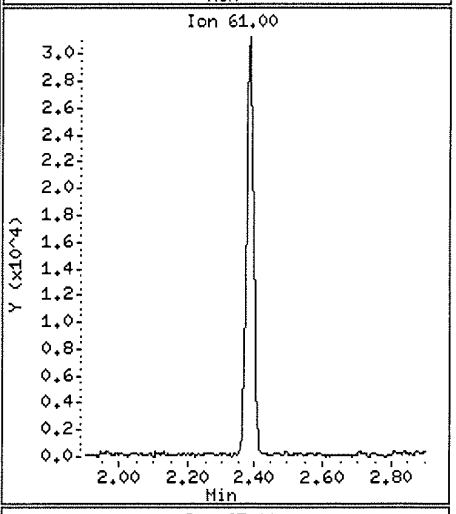
Column phase: DB624 Column diameter: 0.18

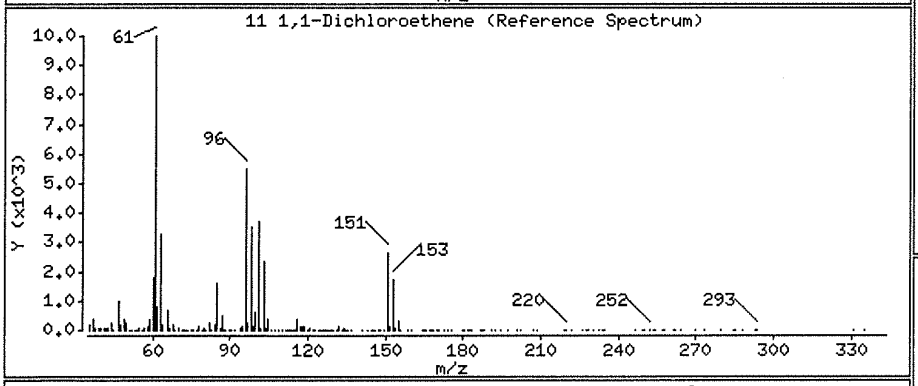
11 1,1-Dichloroethene Concentration: 4.35 ug/l

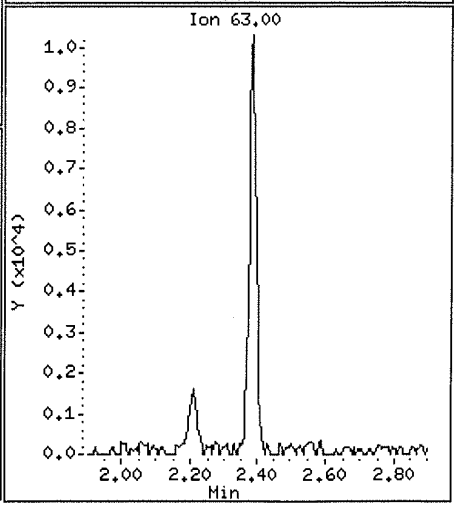


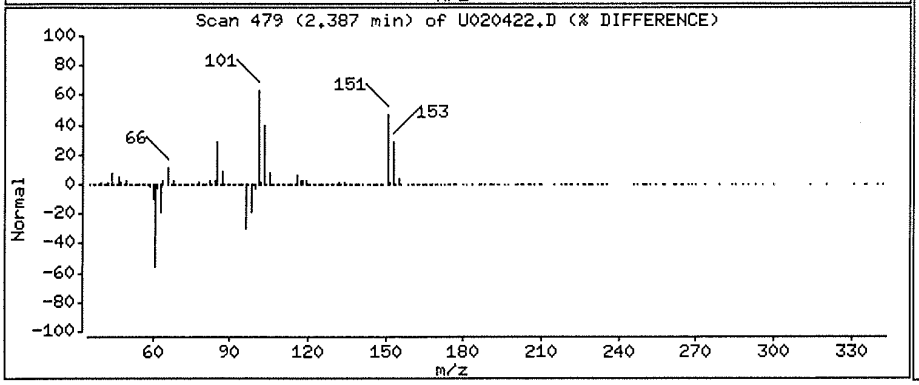












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020422.D

Date : 04-FEB-2022 19:34

Client ID: HS22011233-02

Instrument: VOA9.i

Sample Info: HS22011233-02;HS22011233-02;;;

Purge Volume: 5.0

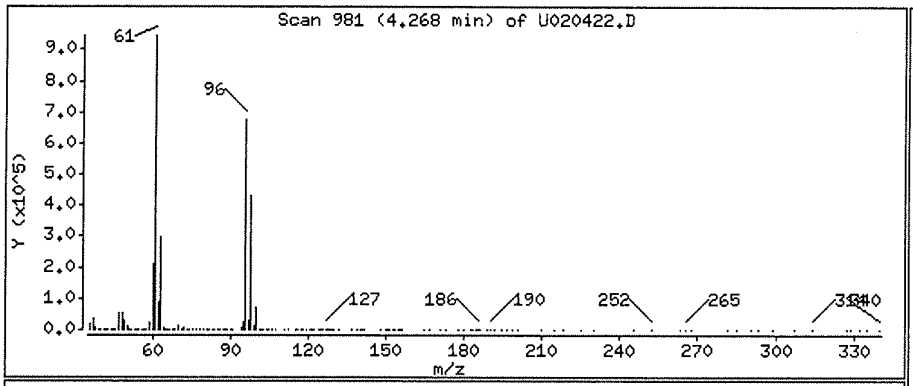
Operator: PC

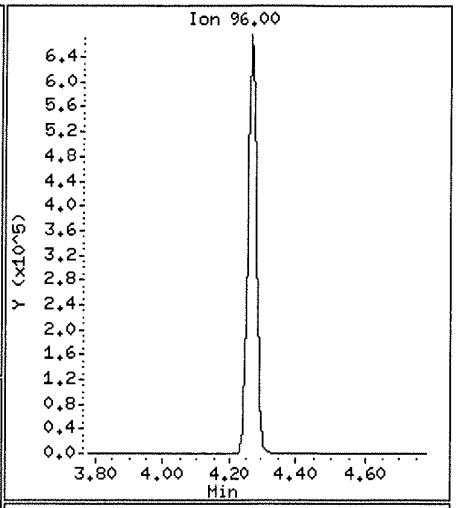
Column phase: DB624

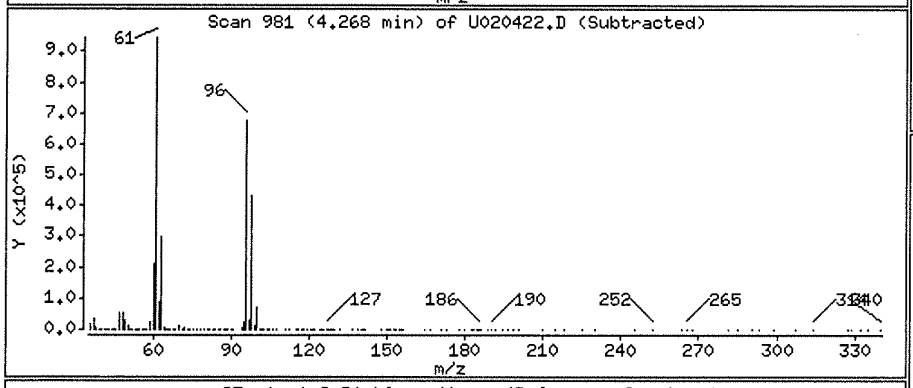
Column diameter: 0.18

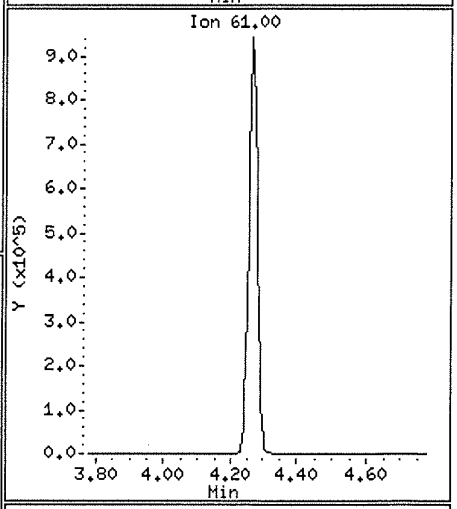
27 cis-1,2-Dichloroethene

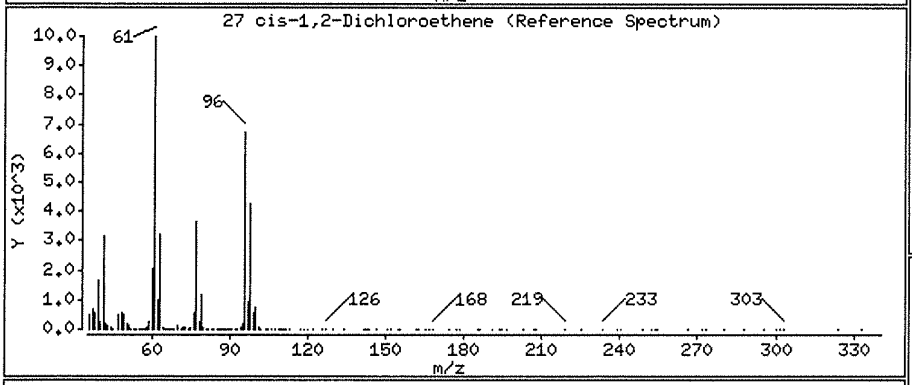
Concentration: 155.52 ug/l

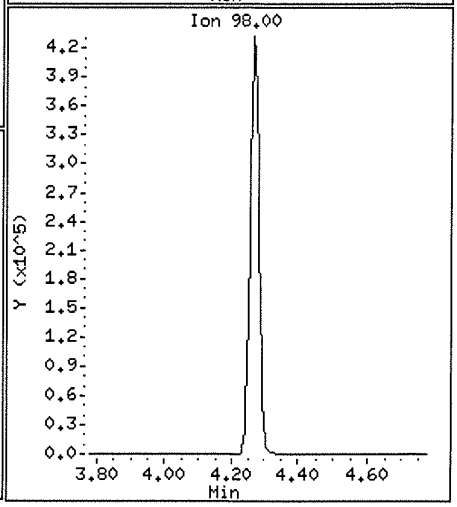


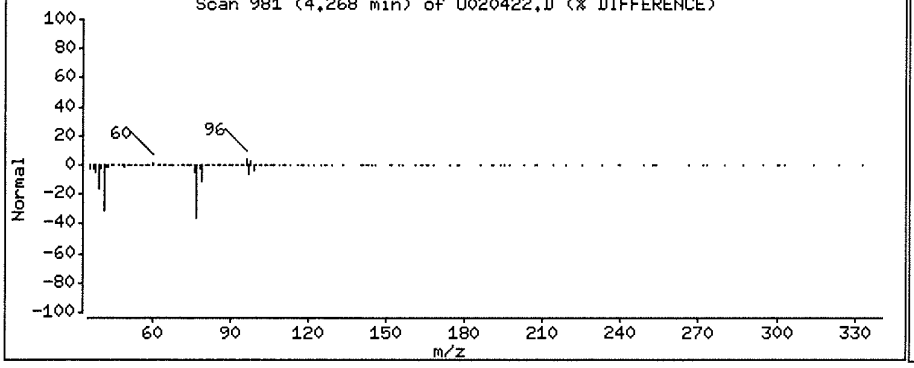












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020422.D

Date : 04-FEB-2022 19:34

Client ID: HS22011233-02

Instrument: VOA9.i

Sample Info: HS22011233-02;HS22011233-02;;;

Purge Volume: 5.0

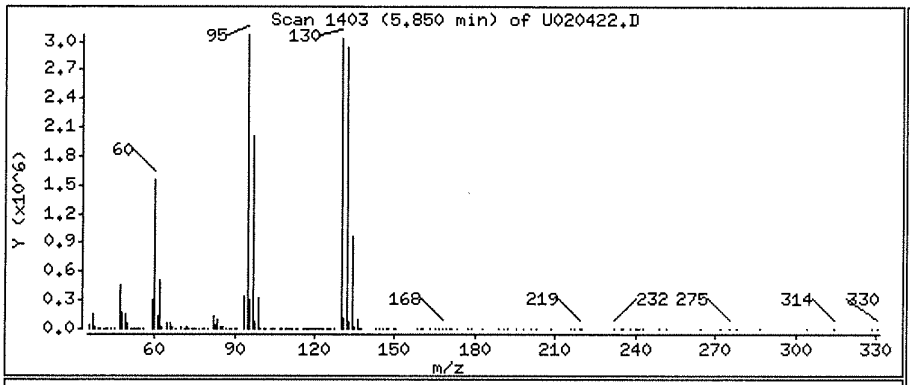
Operator: PC

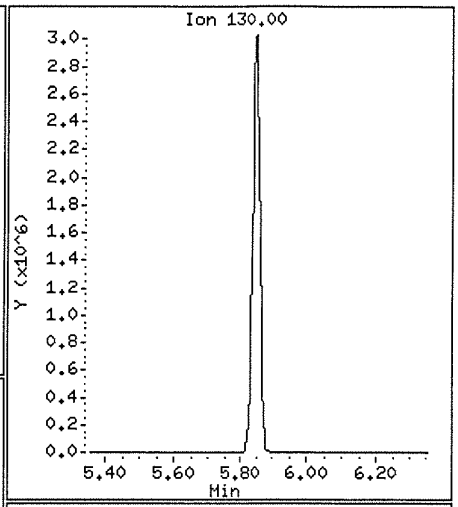
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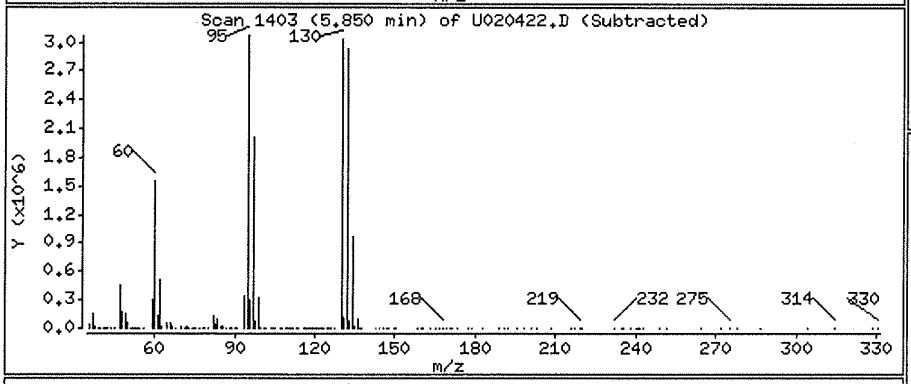
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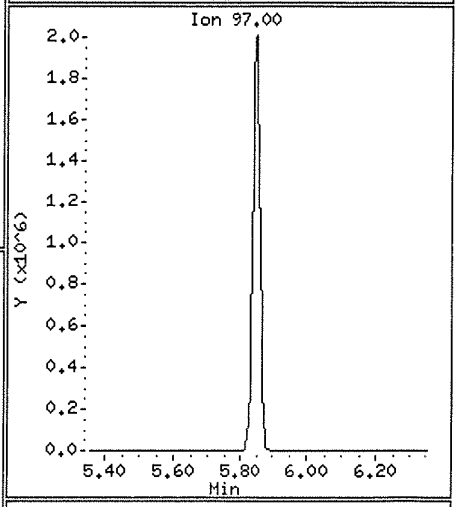
38 Trichloroethene

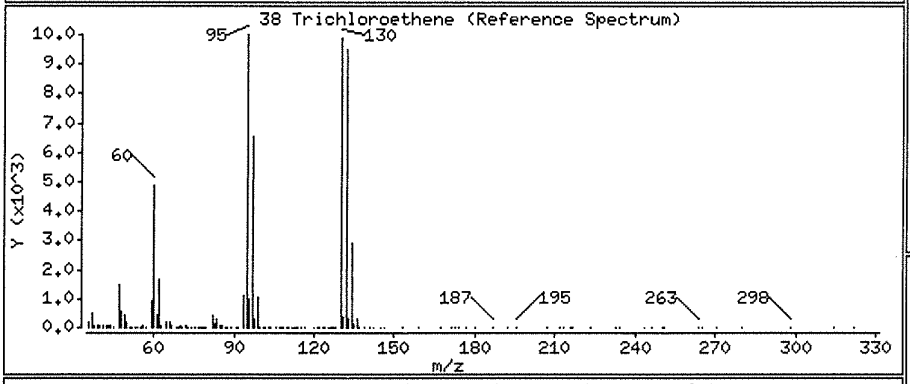
Concentration: 677.34 ug/l

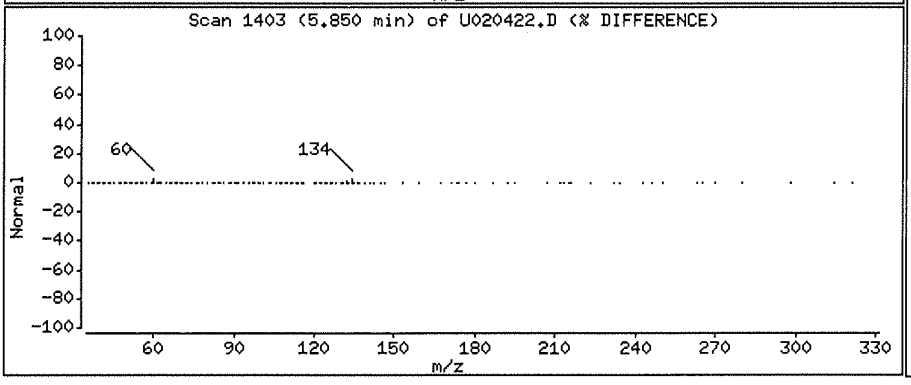


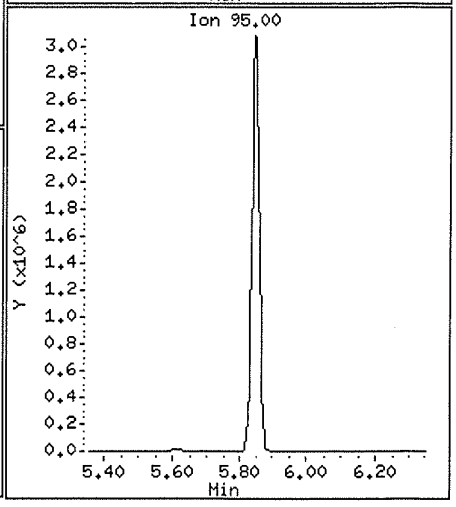












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020422.D

Date : 04-FEB-2022 19:34

Client ID: HS22011233-02

Instrument: VOA9.i

Sample Info: HS22011233-02;HS22011233-02;;;

Purge Volume: 5.0

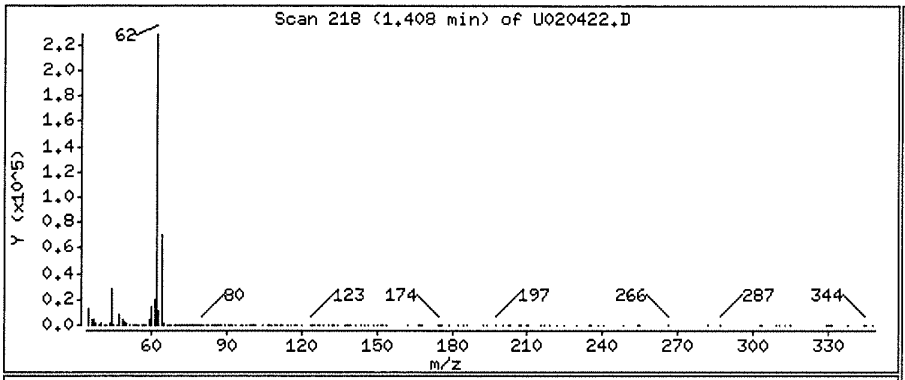
Operator: PC

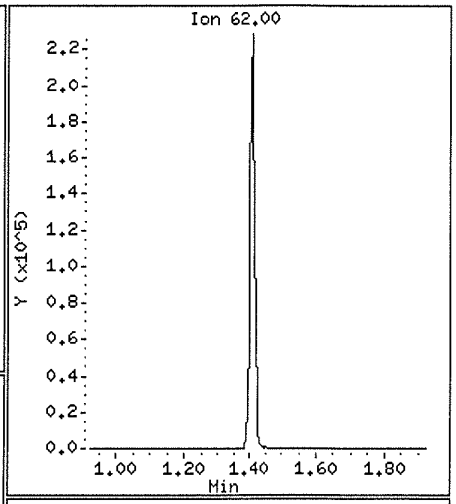
Column phase: DB624

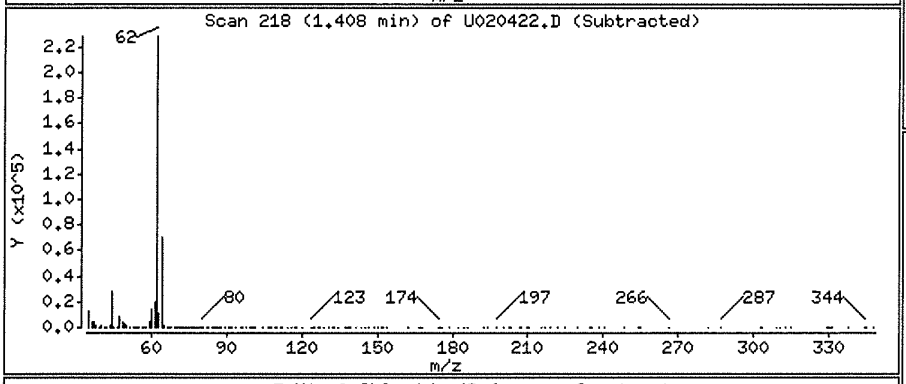
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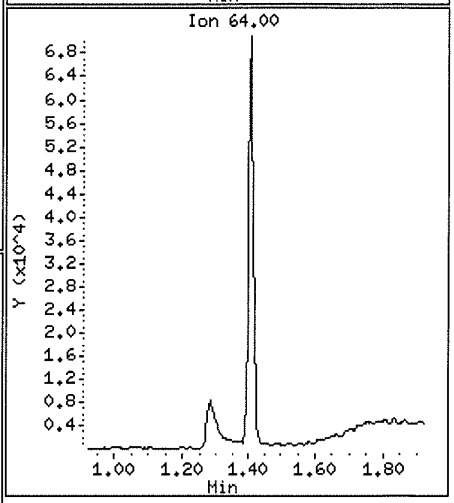
5 Vinyl Chloride

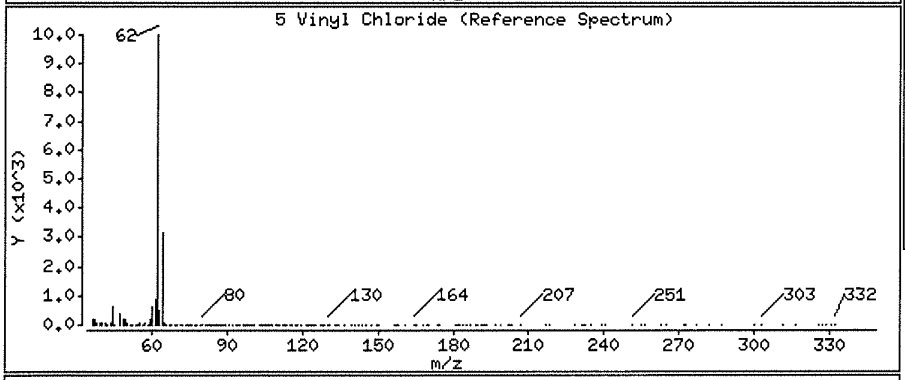
Concentration: 24.55 ug/l

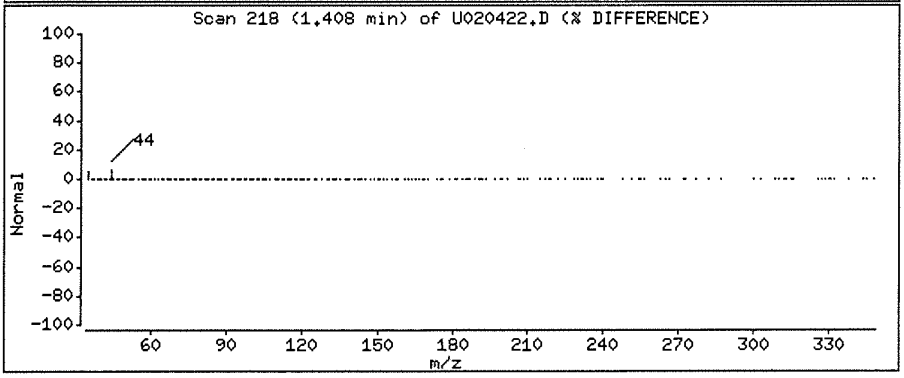












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020423.D Page 1
Report Date: 08-Feb-2022 11:05

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020423.D
Lab Smp Id: HS22011233-02 Client Smp ID: HS22011233-02
Inj Date : 04-FEB-2022 19:56
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-02;HS22011233-02;;;
Misc Info : 180315V9;WATER;0;10;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 22
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

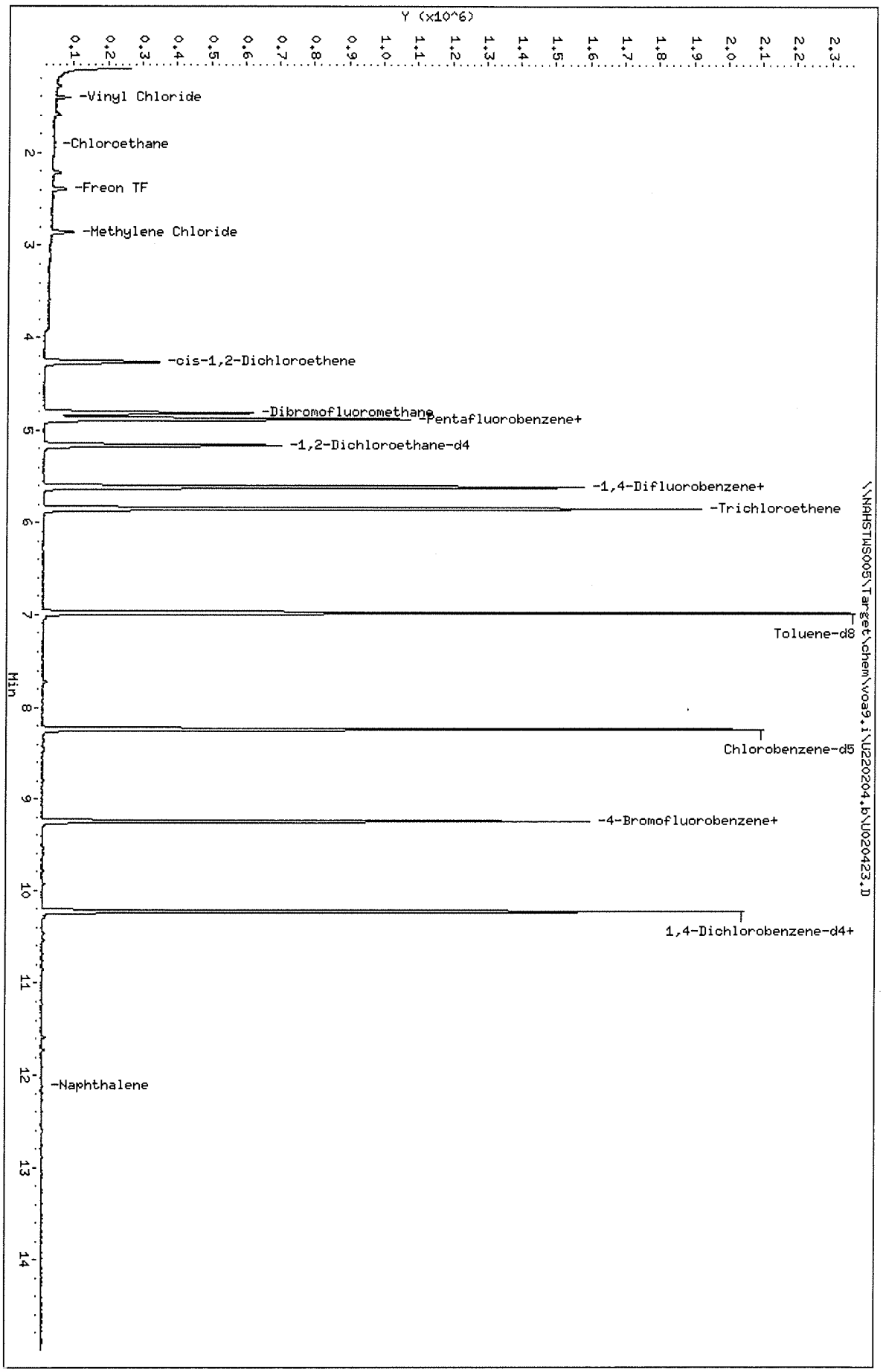
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.879	4.886	(1.000)	662100	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.617	(1.000)	1072853	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	951810	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	457125	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.160	5.167	(1.058)	443638	51.6017	51.60
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	446071	50.2784	50.27
$	30 Dibromofluoromethane	113	4.815	4.823	(0.987)	332118	49.0208	49.02
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1277789	52.3794	52.37
	27 cis-1,2-Dichloroethene	96	4.272	4.279	(0.876)	143587	16.7373	167.37
	17 Methylene Chloride	84	2.855	2.870	(0.585)	28400	2.50897	25.08(a)
	38 Trichloroethene	130	5.850	5.853	(1.042)	551740	73.0047	730.04
	5 Vinyl Chloride	62	1.411	1.423	(0.289)	27392	2.70714	27.07(a)

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220204,b\U020423.D
Date : 04-FEB-2022 19:56
Client ID: HS22011233-02
Sample Info: HS22011233-02;HS22011233-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020423.D Page 3

Date : 04-FEB-2022 19:56

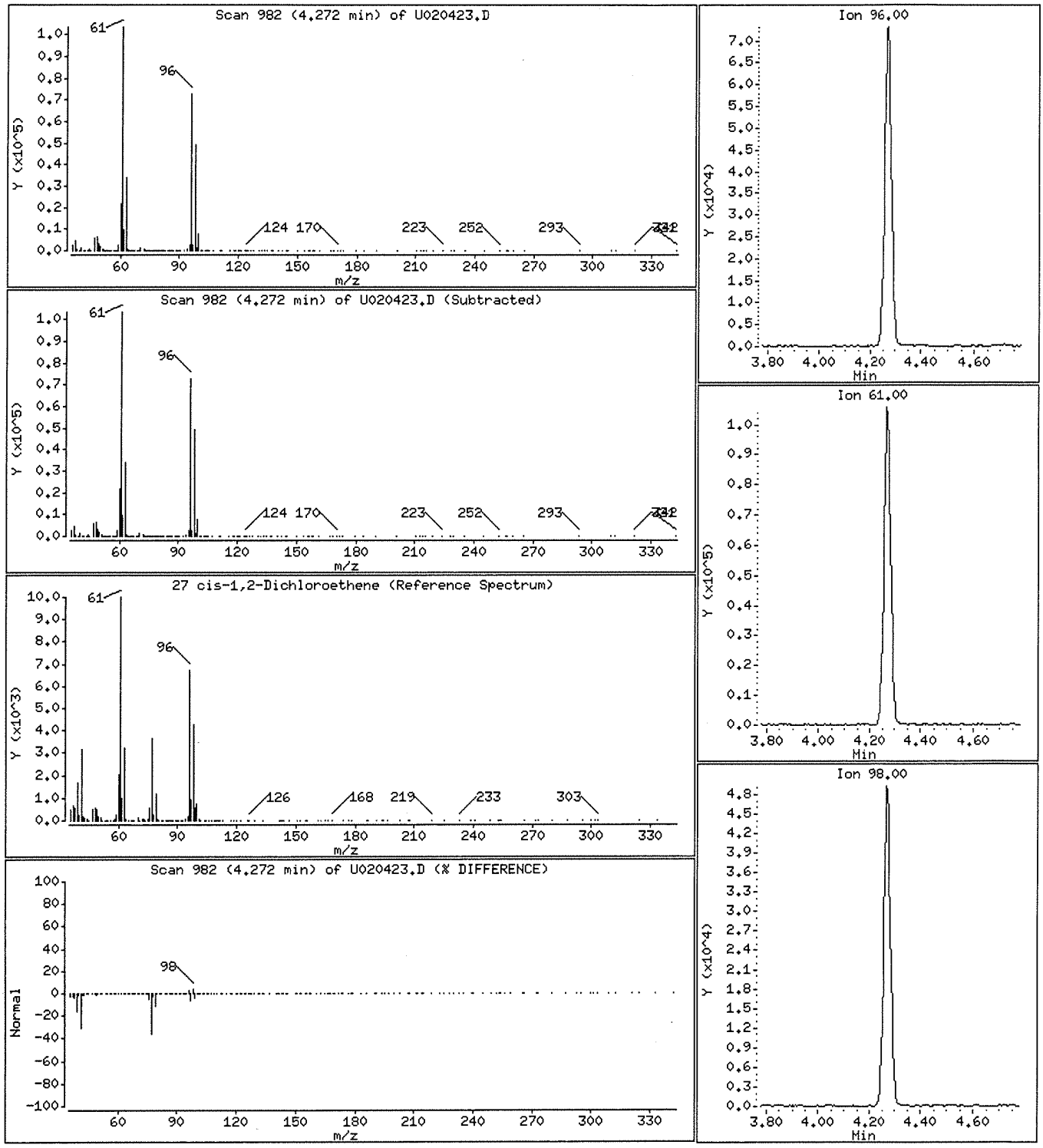
Client ID: HS22011233-02 Instrument: VOA9.i

Sample Info: HS22011233-02;HS22011233-02;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

27 cis-1,2-Dichloroethene Concentration: 167.37 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020423.D

Date : 04-FEB-2022 19:56

Client ID: HS22011233-02

Instrument: VOA9.i

Sample Info: HS22011233-02;HS22011233-02;;;

Purge Volume: 5.0

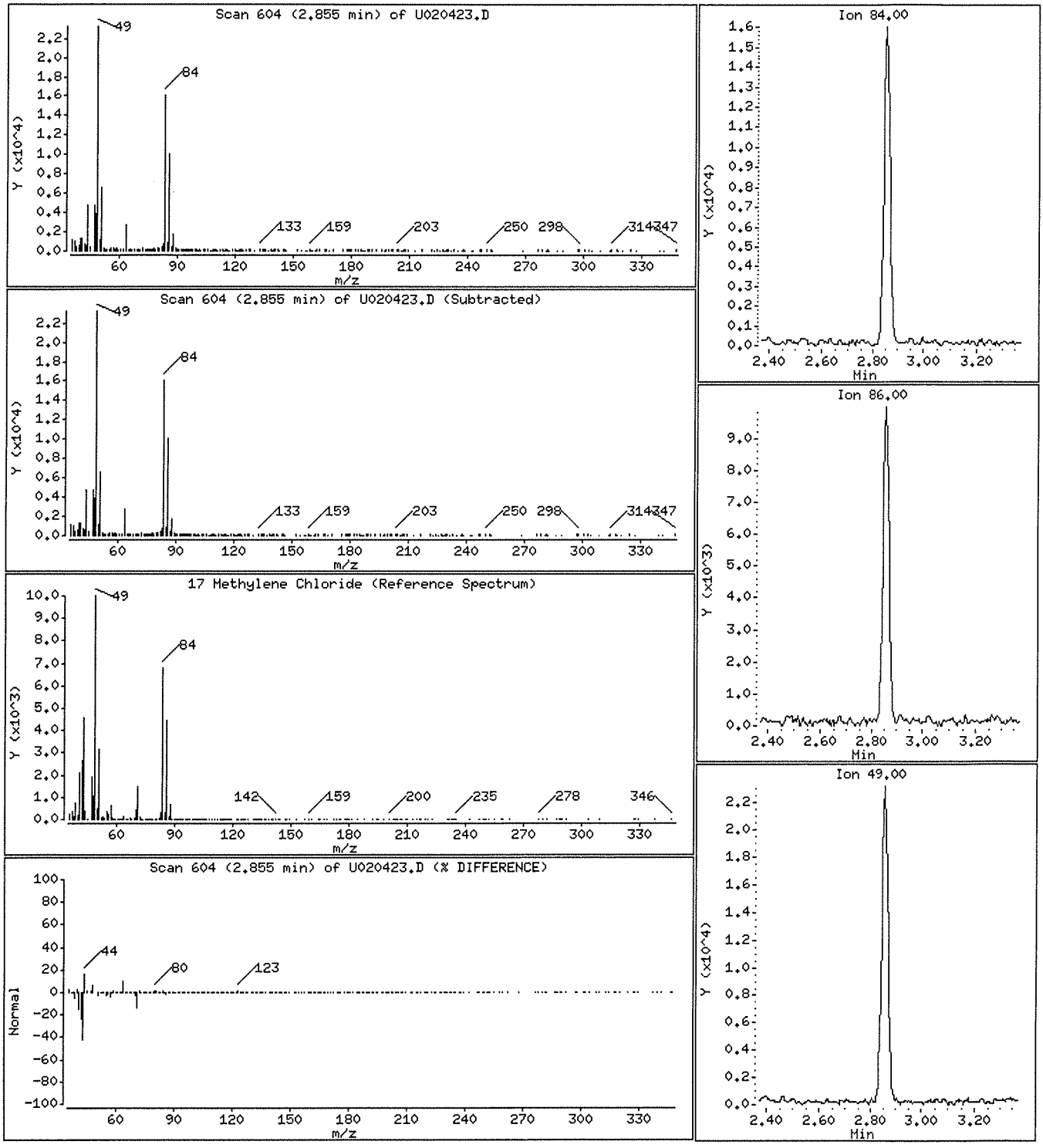
Operator: PC

Column phase: DB624

Column diameter: 0.18

17 Methylene Chloride

Concentration: 25.08 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020423.D

Page 5

Date : 04-FEB-2022 19:56

Client ID: HS22011233-02

Instrument: VOA9.i

Sample Info: HS22011233-02;HS22011233-02;;;

Purge Volume: 5.0

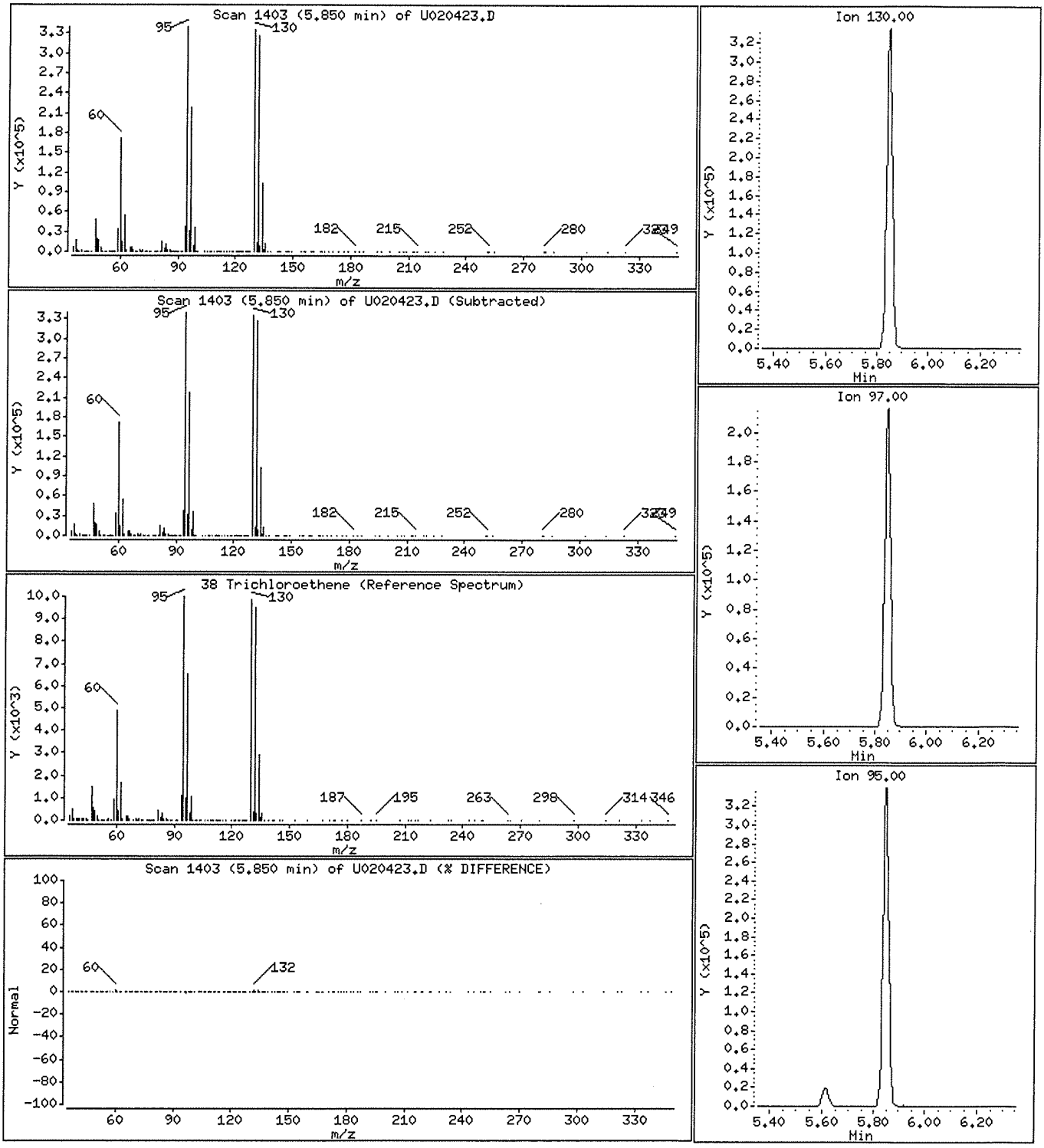
Operator: PC

Column phase: DB624

Column diameter: 0.18

38 Trichloroethene

Concentration: 730.04 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020423.D

Date : 04-FEB-2022 19:56

Client ID: HS22011233-02

Instrument: VOA9.i

Sample Info: HS22011233-02;HS22011233-02;;;

Purge Volume: 5.0

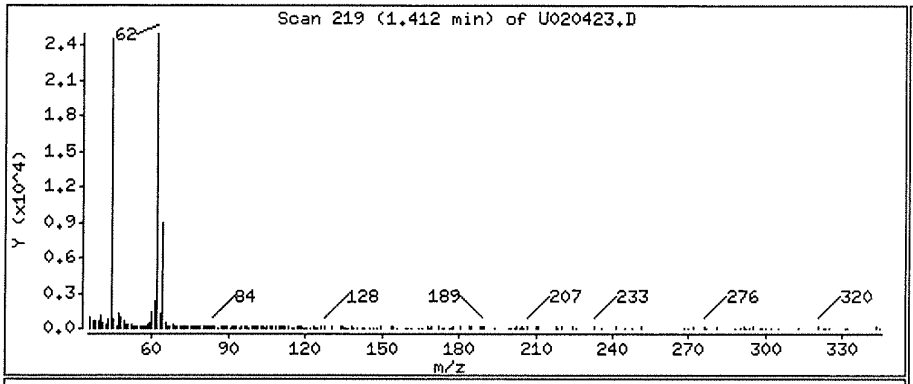
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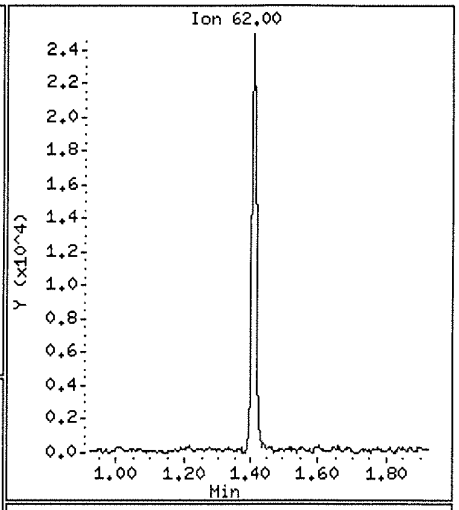
Column phase: DB624

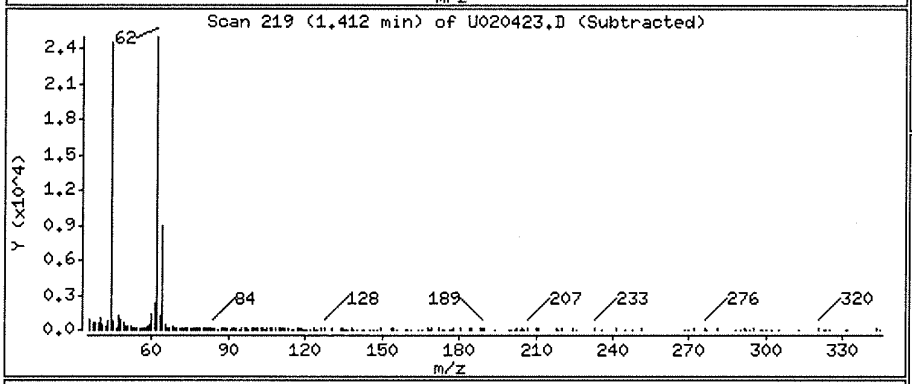
Column diameter: 0.18

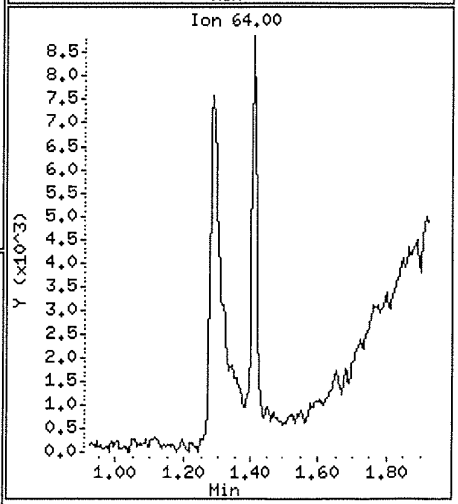
5 Vinyl Chloride

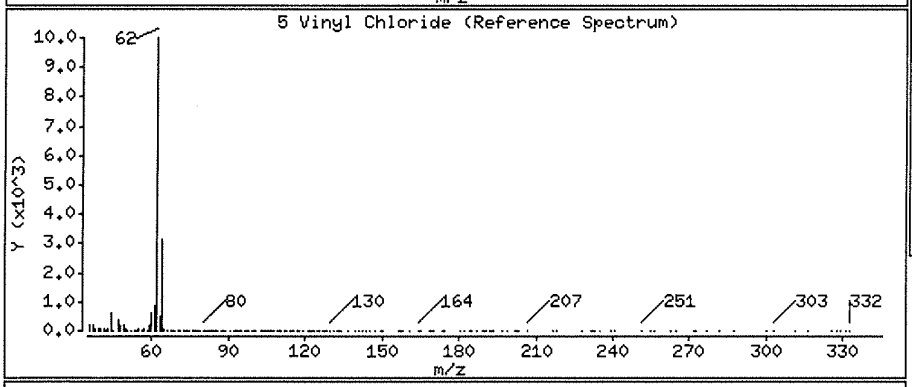
Concentration: 27.07 ug/l

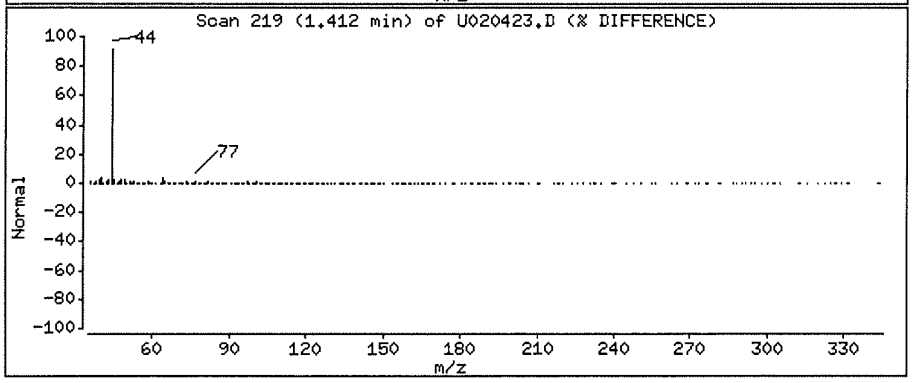












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020424.D Page 1
Report Date: 08-Feb-2022 11:05

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020424.D
Lab Smp Id: HS22011233-05 Client Smp ID: HS22011233-05
Inj Date : 04-FEB-2022 20:18
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-05;HS22011233-05;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 23
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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

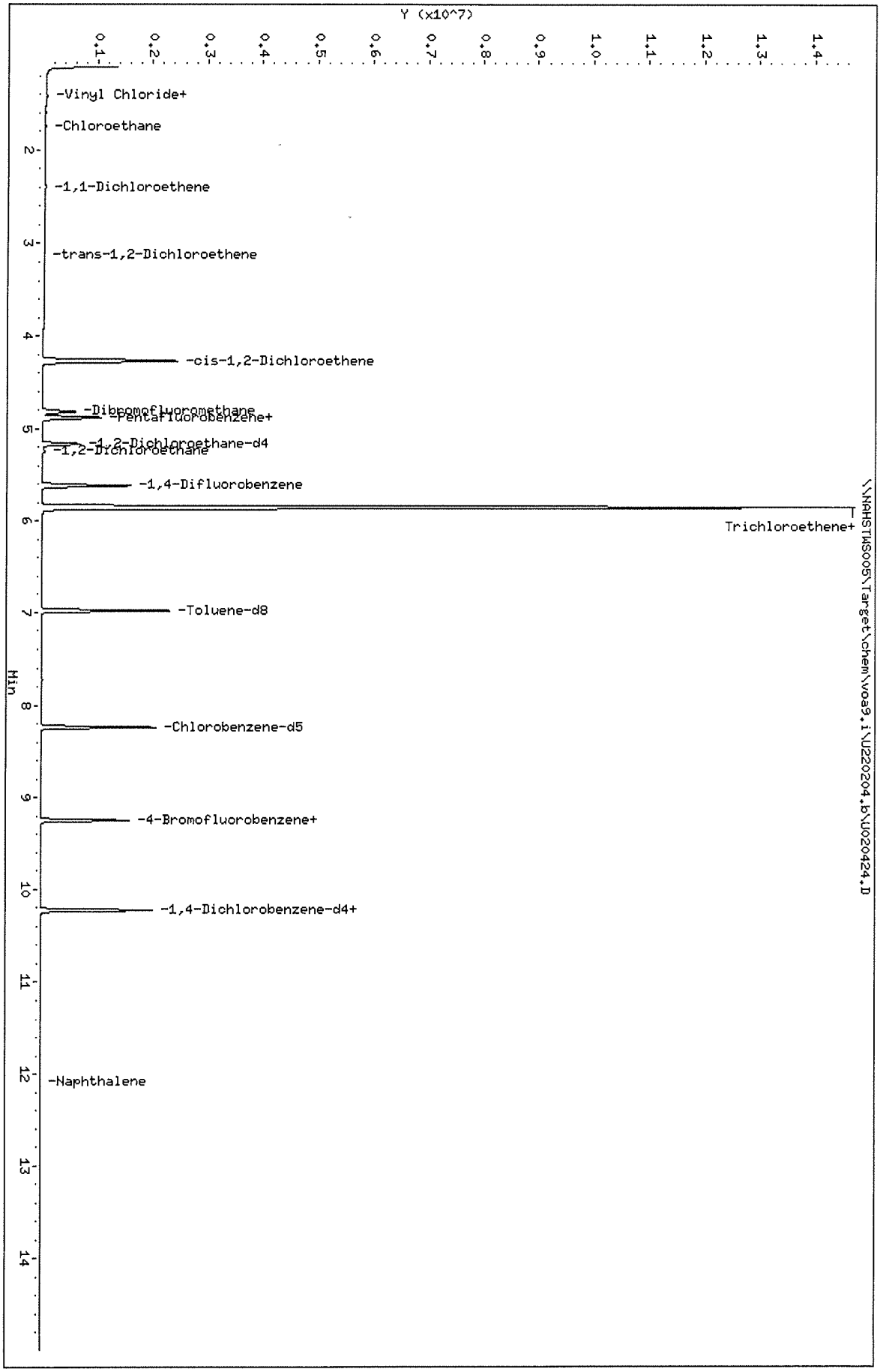
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.883	4.886	(1.000)	663949	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.617	(1.000)	1076763	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	957532	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	458188	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.167	(1.058)	444778	51.5900	51.58
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	452175	50.6713	50.67
$ 30 Dibromofluoromethane	113	4.819	4.823	(0.987)	334572	49.2494	49.24
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1284208	52.3280	52.32
11 1,1-Dichloroethene	96	2.390	2.401	(0.490)	9524	1.52780	1.52(a)
33 1,2-Dichloroethane	62	5.243	5.246	(0.934)	39616	3.66894	3.66(a)
27 cis-1,2-Dichloroethene	96	4.272	4.279	(0.875)	1060334	123.255	123.25
38 Trichloroethene	130	5.850	5.853	(1.042)	4149483	547.054	547.05(A)
5 Vinyl Chloride	62	1.411	1.423	(0.289)	29003	2.85837	2.85(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\voa9.i\U220204.b\U020424.D
Date : 04-FEB-2022 20:18
Client ID: HS220411233-05
Sample Info: HS220411233-05;HS220411233-05;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020424.D

Date : 04-FEB-2022 20:18

Client ID: HS22011233-05

Instrument: VOA9.i

Sample Info: HS22011233-05;HS22011233-05;;;

Purge Volume: 5.0

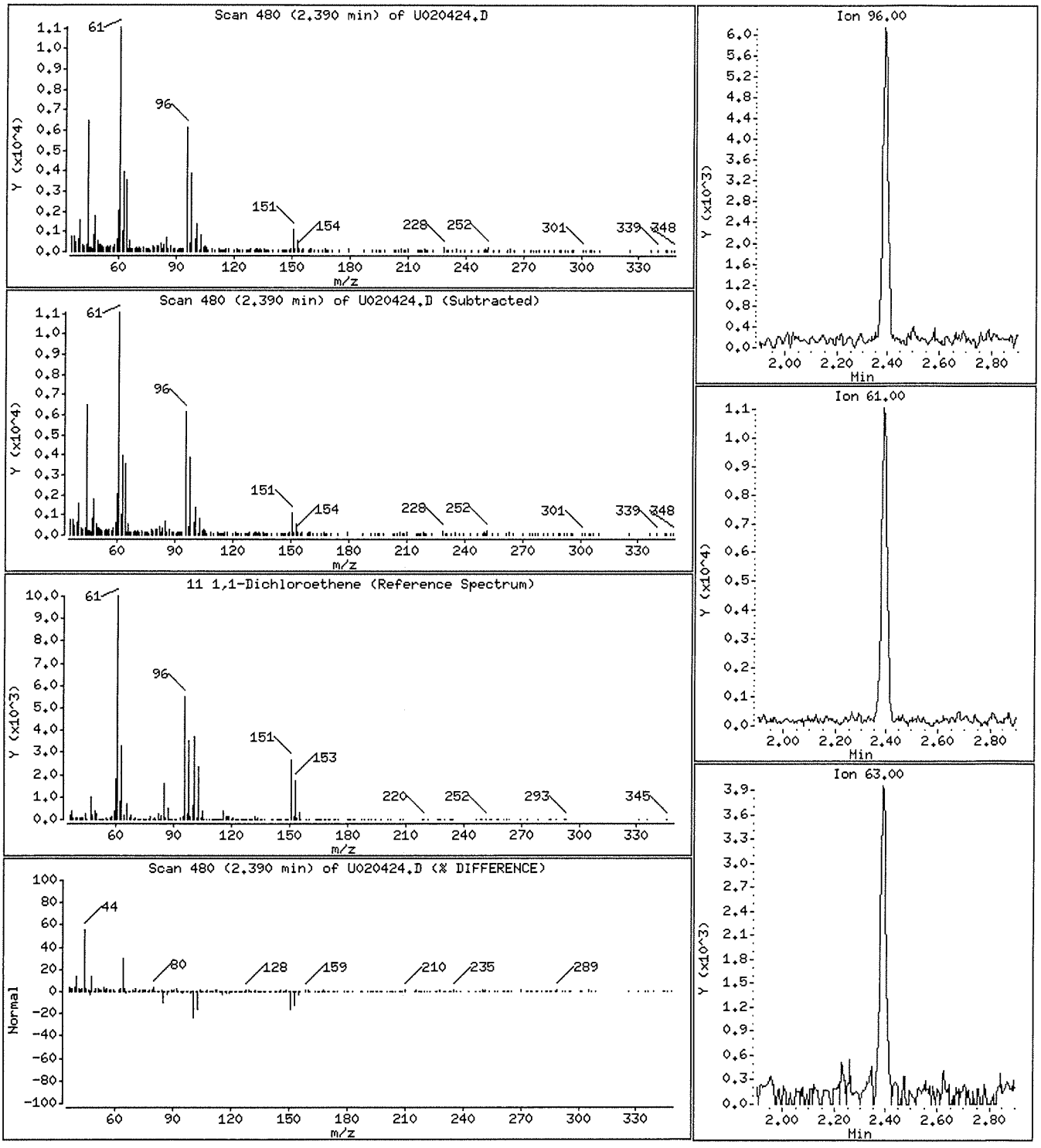
Operator: PC

Column phase: DB624

Column diameter: 0.18

11 1,1-Dichloroethene

Concentration: 1.52 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020424.D Page 4

Date : 04-FEB-2022 20:18

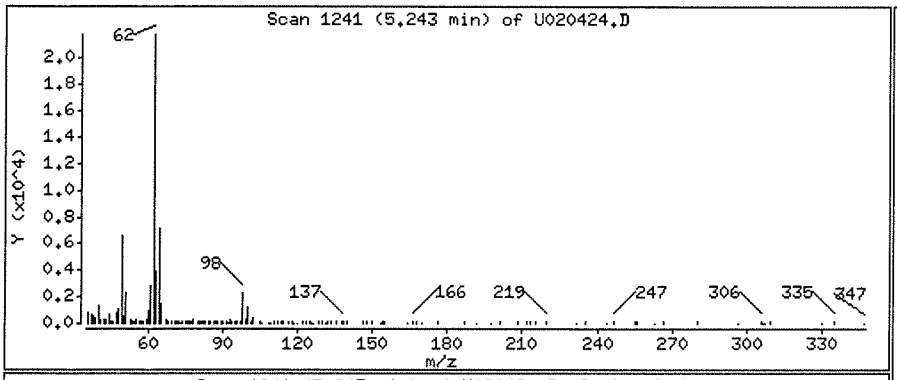
Client ID: HS22011233-05 Instrument: VOA9.i

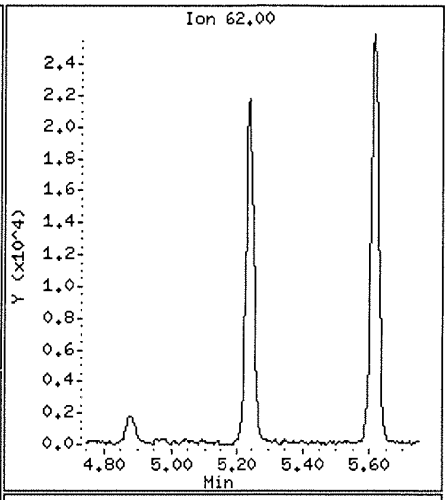
Sample Info: HS22011233-05;HS22011233-05;;;

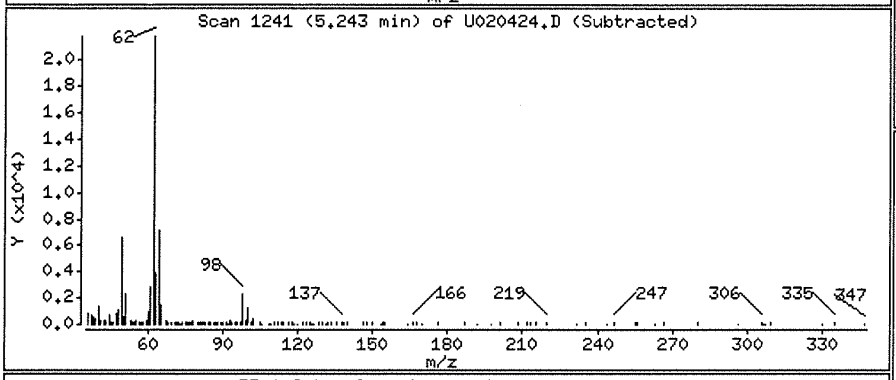
Purge Volume: 5.0 Operator: PC

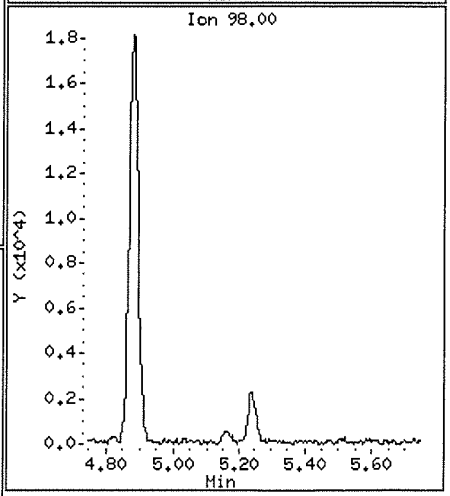
Column phase: DB624 Column diameter: 0.18

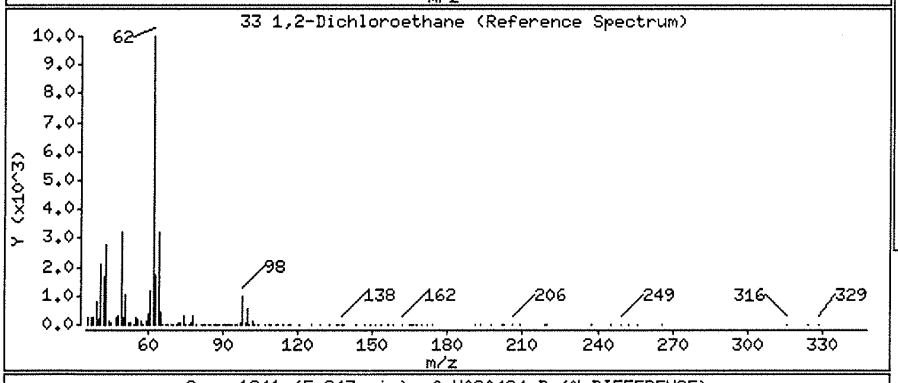
33 1,2-Dichloroethane Concentration: 3.66 ug/l

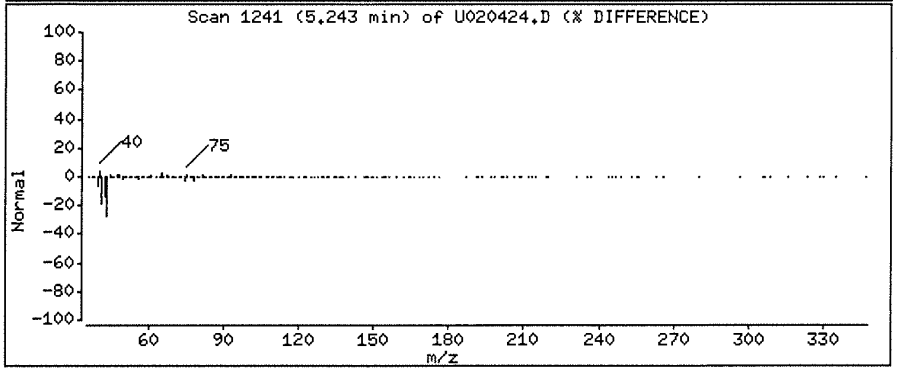












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020424.D Page 5

Date : 04-FEB-2022 20:18

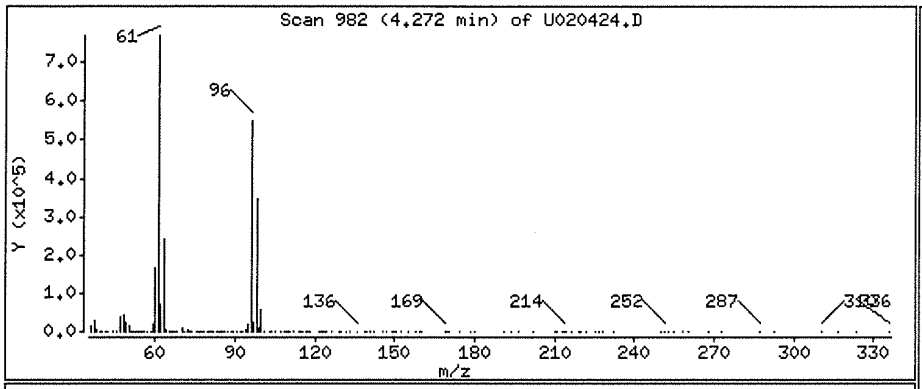
Client ID: HS22011233-05 Instrument: VOA9.i

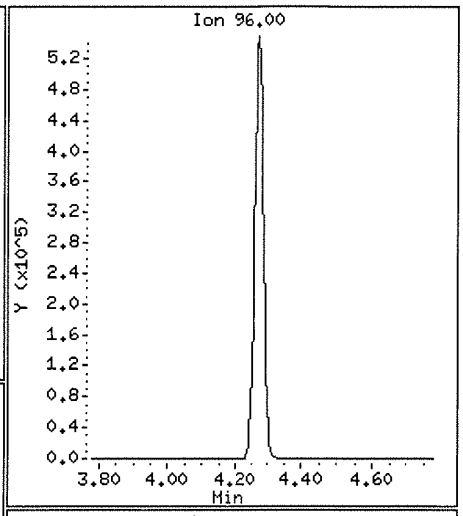
Sample Info: HS22011233-05;HS22011233-05;;;

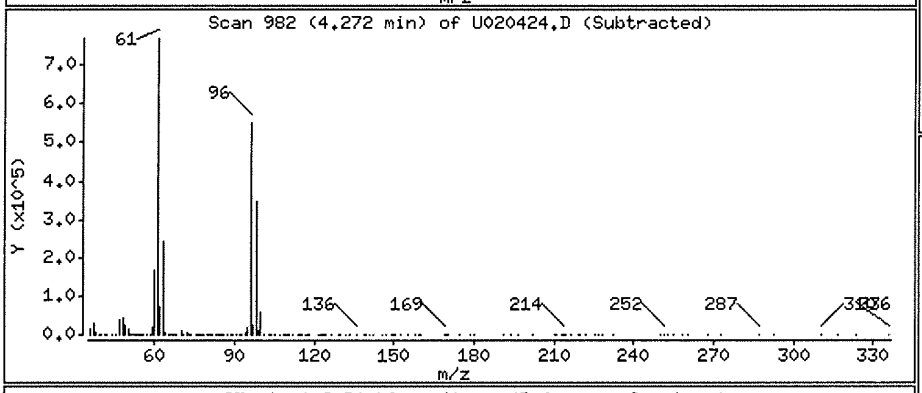
Purge Volume: 5.0 Operator: PC

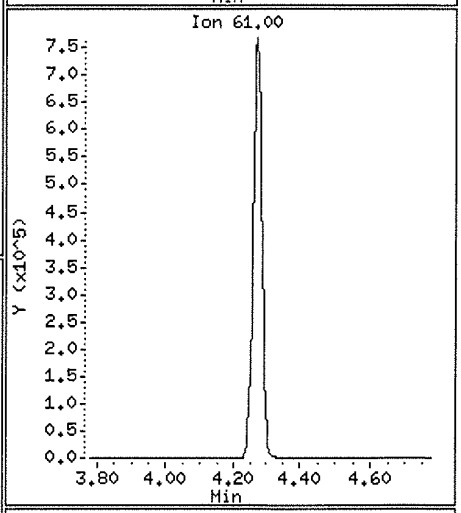
Column phase: DB624 Column diameter: 0.18

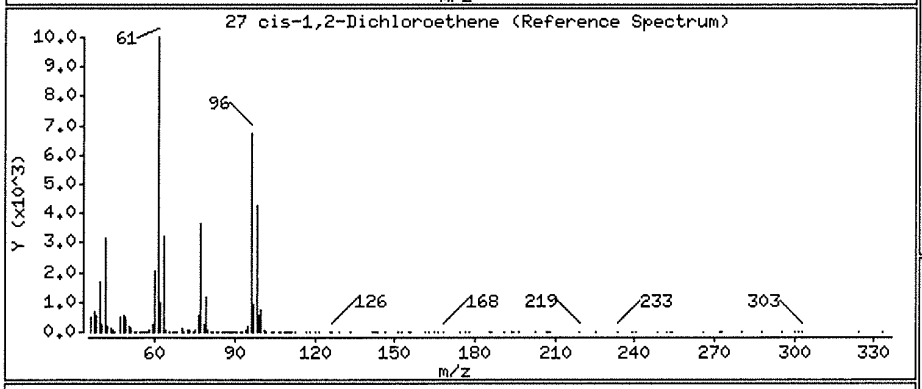
27 cis-1,2-Dichloroethene Concentration: 123.25 ug/l

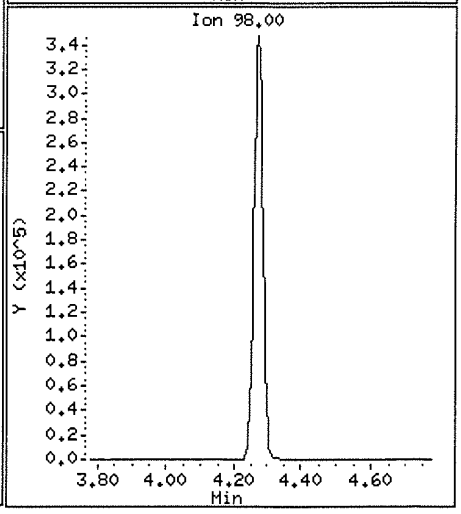


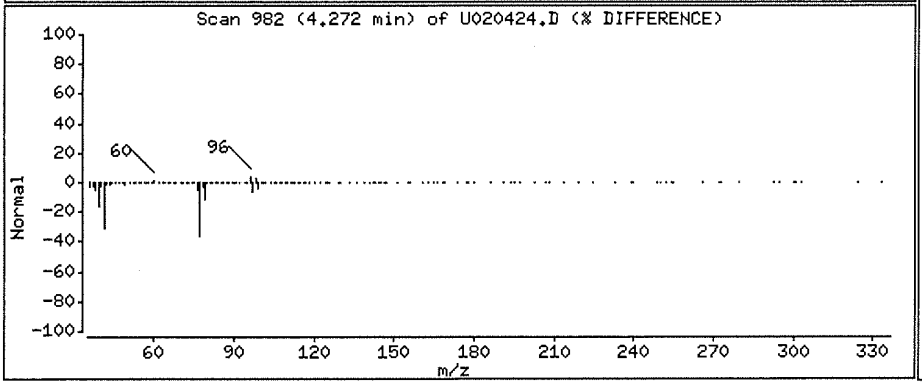












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020424.D Page 6

Date : 04-FEB-2022 20:18

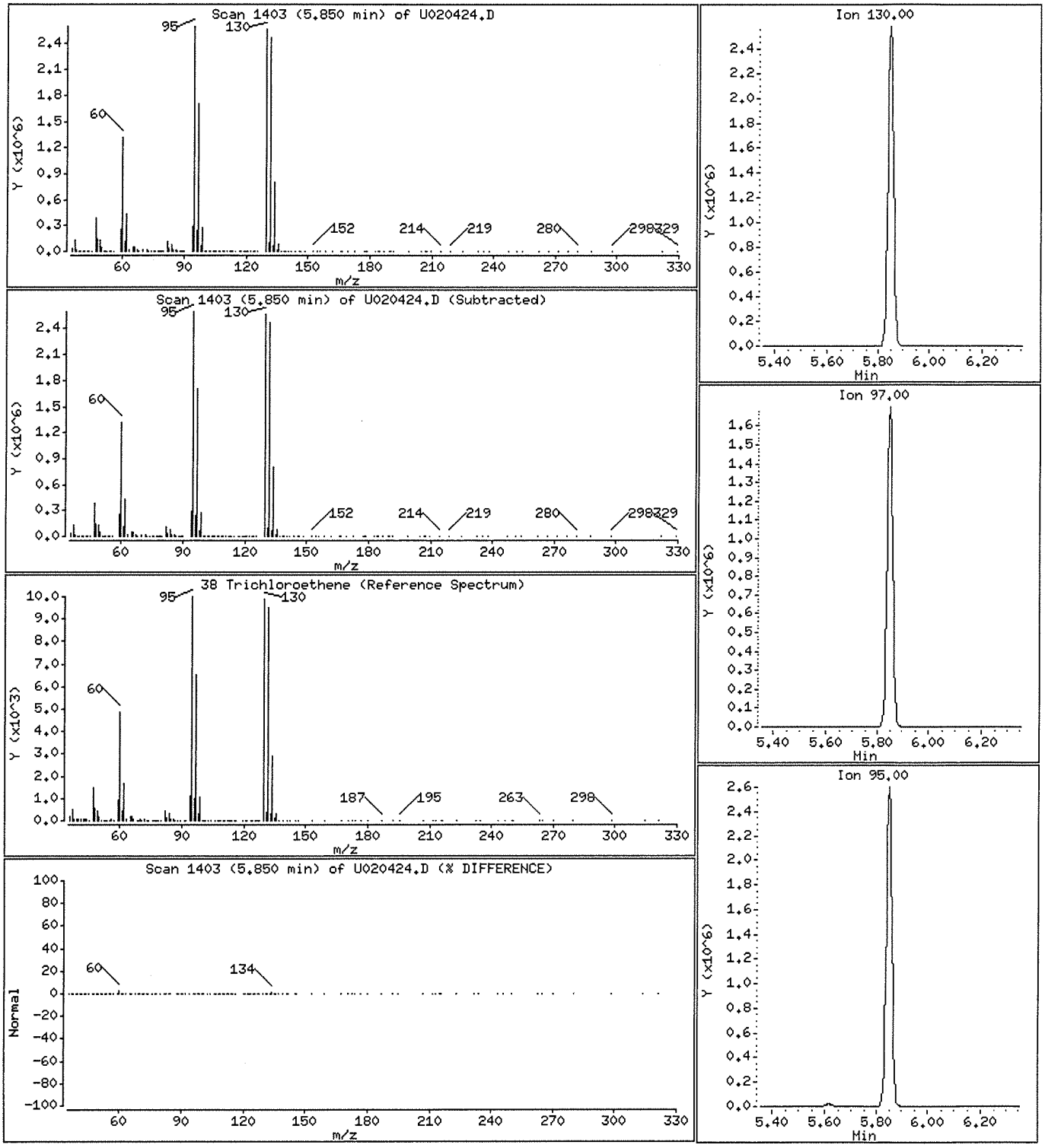
Client ID: HS22011233-05 Instrument: VOA9.i

Sample Info: HS22011233-05;HS22011233-05;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

38 Trichloroethene Concentration: 547.05 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020424.D

Date : 04-FEB-2022 20:18

Client ID: HS22011233-05

Instrument: VOA9.i

Sample Info: HS22011233-05;HS22011233-05;;;

Purge Volume: 5.0

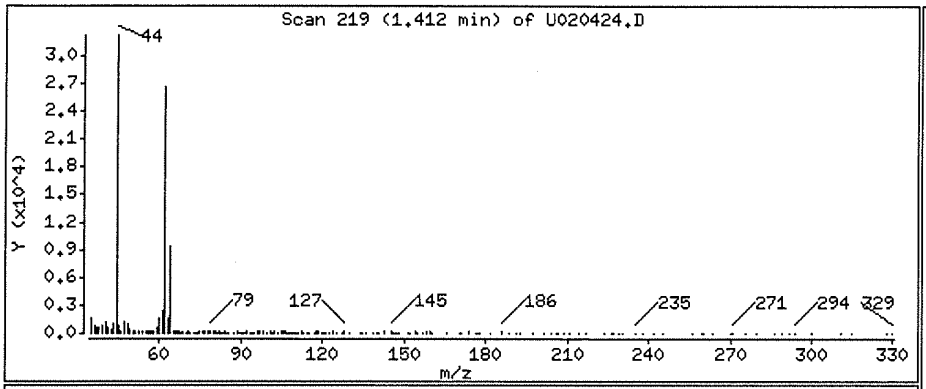
Operator: PC

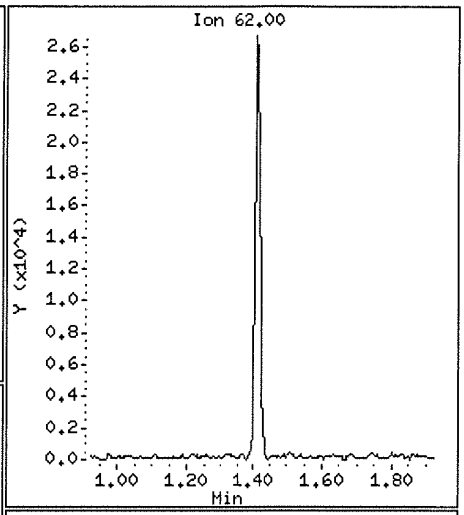
Column phase: DB624

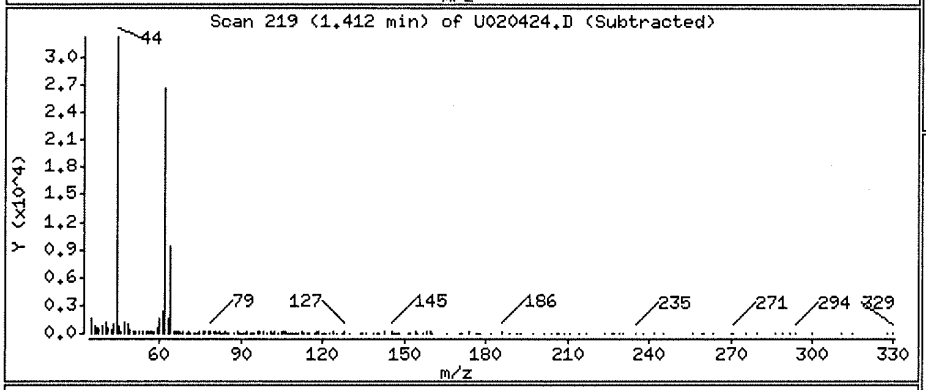
Column diameter: 0.18

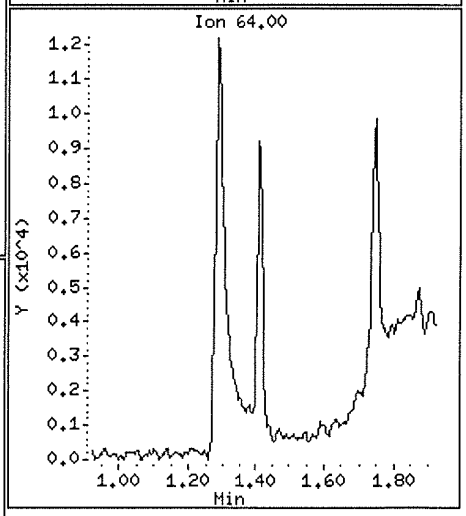
5 Vinyl Chloride

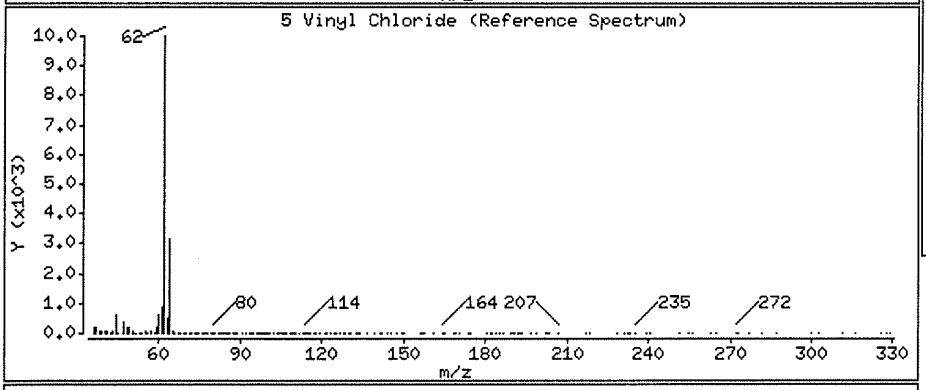
Concentration: 2.85 ug/l

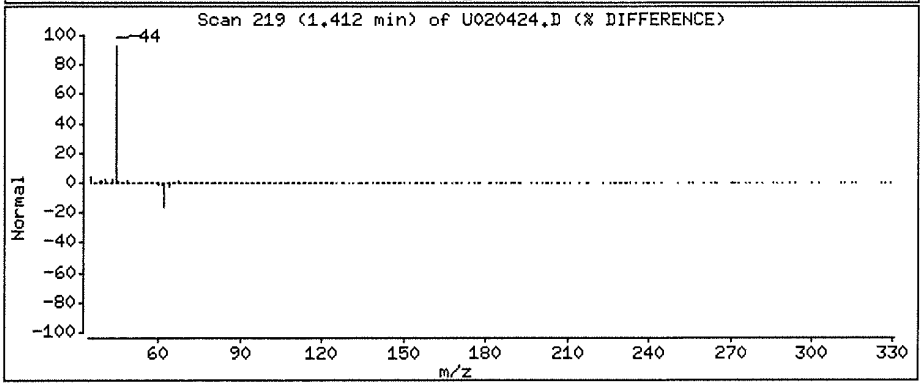












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020425.D Page 1
Report Date: 08-Feb-2022 11:05

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020425.D
Lab Smp Id: HS22011233-05 Client Smp ID: HS22011233-05
Inj Date : 04-FEB-2022 20:40
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-05;HS22011233-05;;;
Misc Info : 180315V9;WATER;0;10;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 24
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

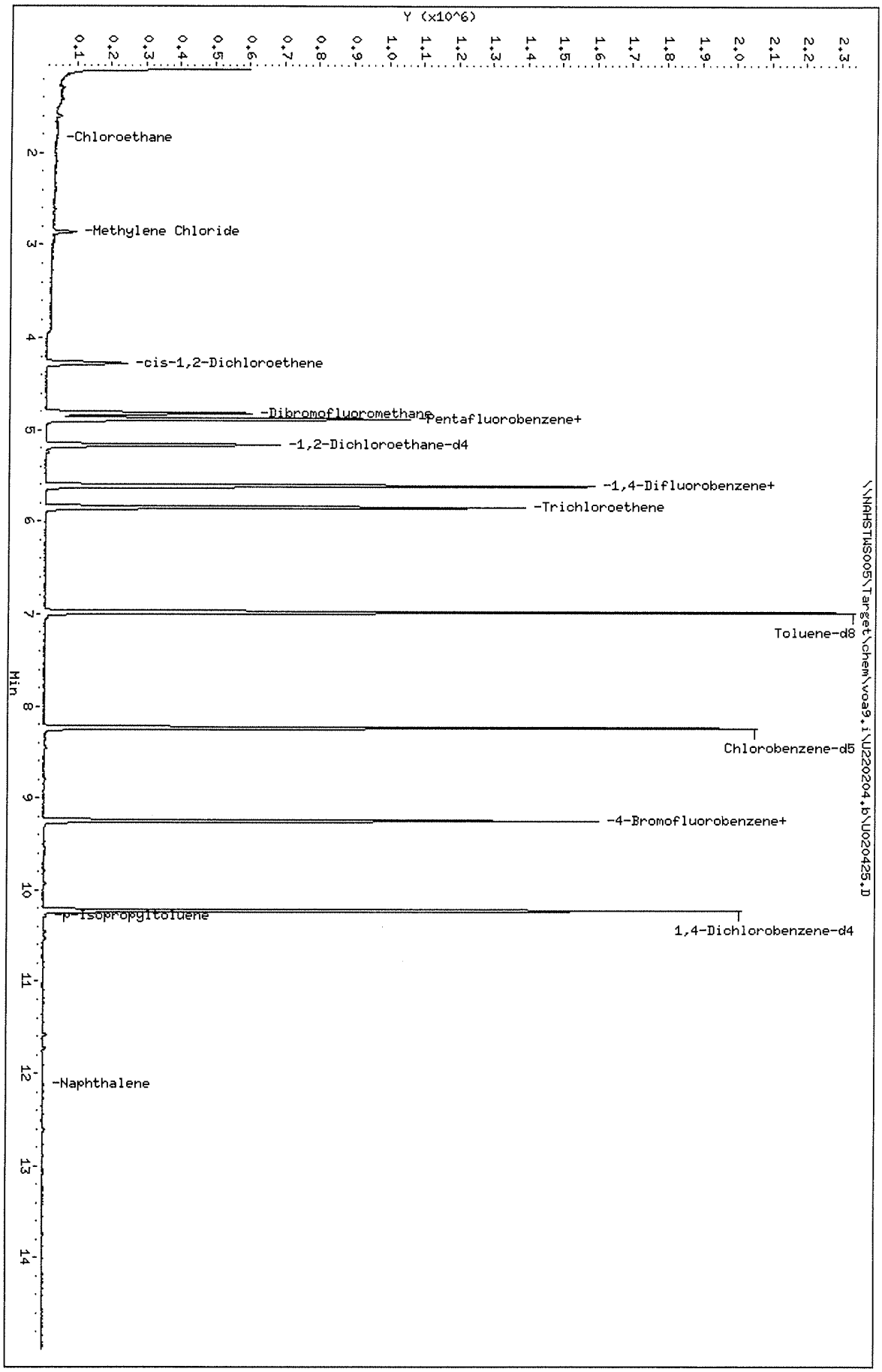
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.883	4.886	(1.000)	650803	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.617	(1.000)	1046602	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	940032	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	451756	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.167	(1.058)	430755	50.9567	50.95
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	444870	50.7835	50.78
$ 30 Dibromofluoromethane	113	4.819	4.823	(0.987)	327602	49.1966	49.19
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1266212	52.5552	52.55
27 cis-1,2-Dichloroethene	96	4.275	4.279	(0.876)	102190	12.1186	121.18
17 Methylene Chloride	84	2.862	2.870	(0.586)	26798	2.35232	23.52(a)
38 Trichloroethene	130	5.850	5.853	(1.042)	395202	53.6036	536.03

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020425.D
Date : 04-FEB-2022 20:40
Client ID: HS22011233-05
Sample Info: HS22011233-05;HS22011233-05;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020425.D Page 3

Date : 04-FEB-2022 20:40

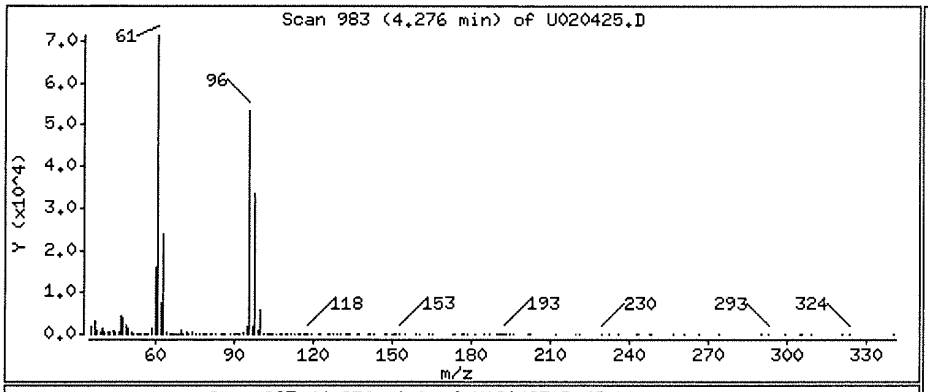
Client ID: HS22011233-05 Instrument: VOA9.i

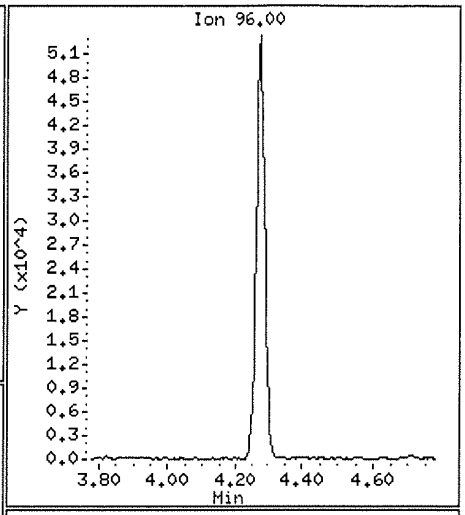
Sample Info: HS22011233-05;HS22011233-05;;;

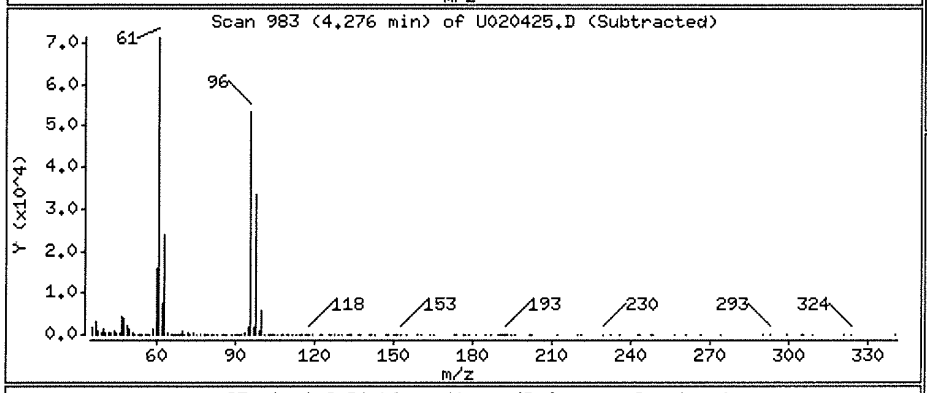
Purge Volume: 5.0 Operator: PC

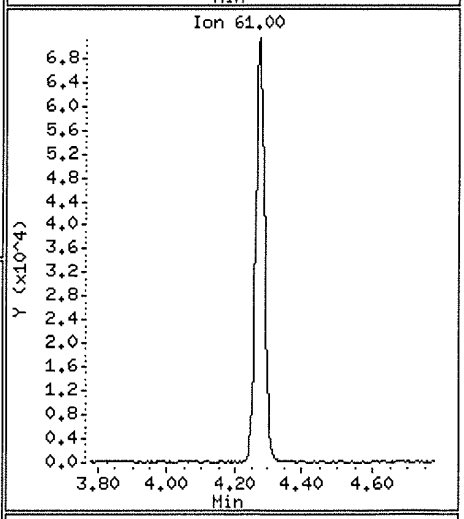
Column phase: DB624 Column diameter: 0.18

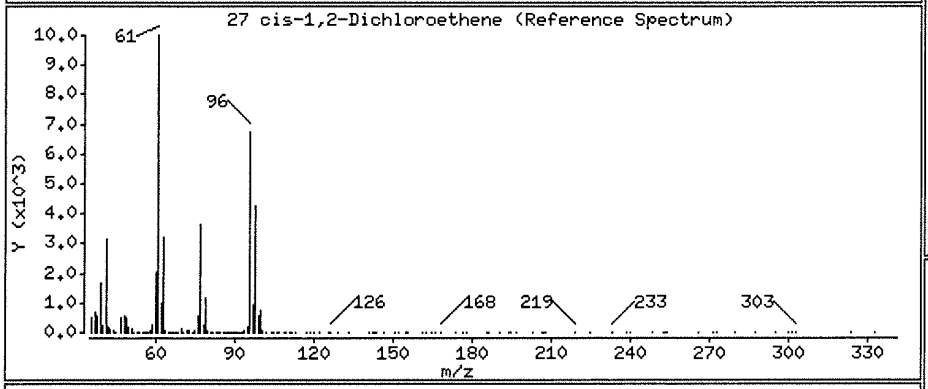
27 cis-1,2-Dichloroethene Concentration: 121.18 ug/l

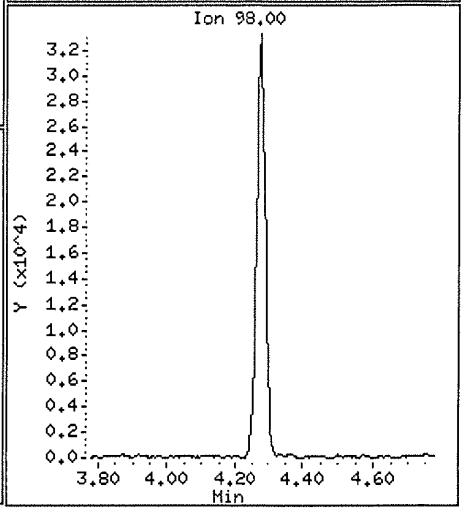


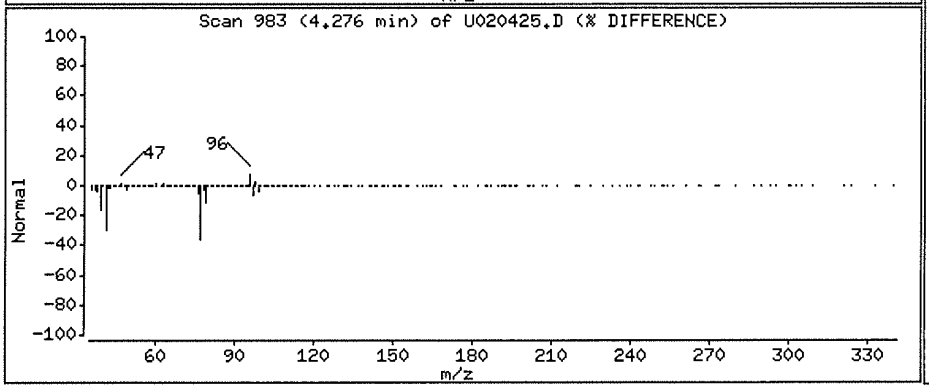












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020425.D

Date : 04-FEB-2022 20:40

Client ID: HS22011233-05

Instrument: VOA9.i

Sample Info: HS22011233-05;HS22011233-05;;;

Purge Volume: 5.0

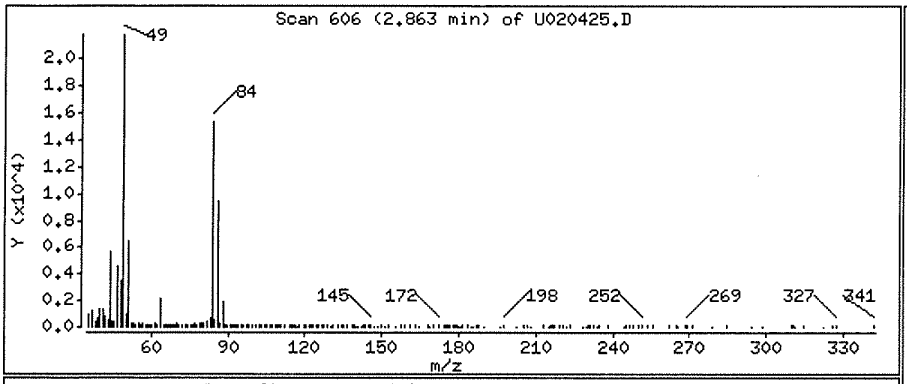
Operator: PC

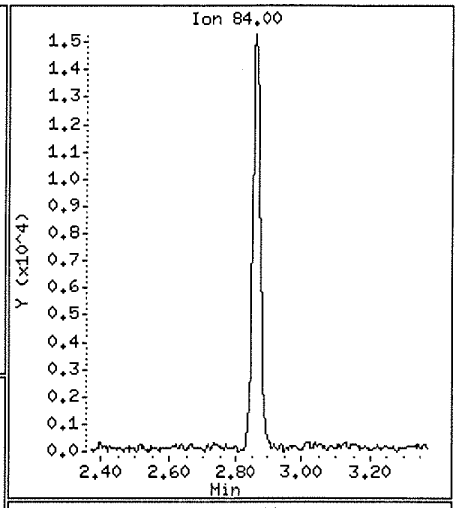
Column phase: DB624

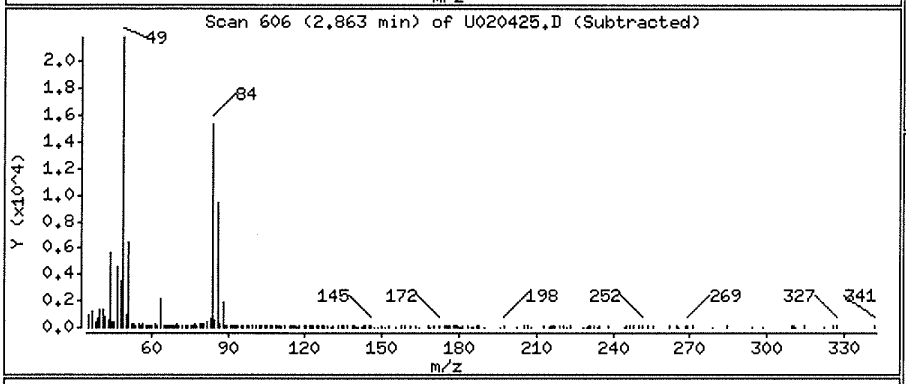
Column diameter: 0.18

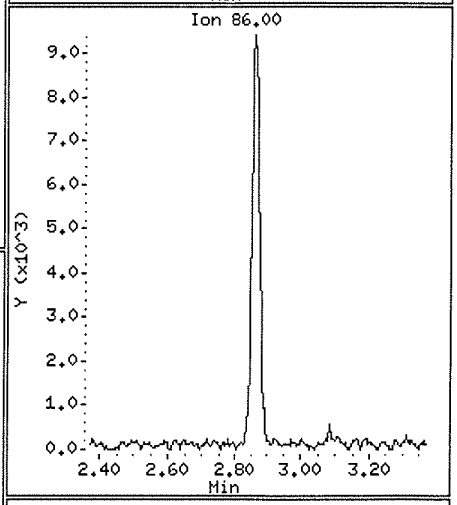
17 Methylene Chloride

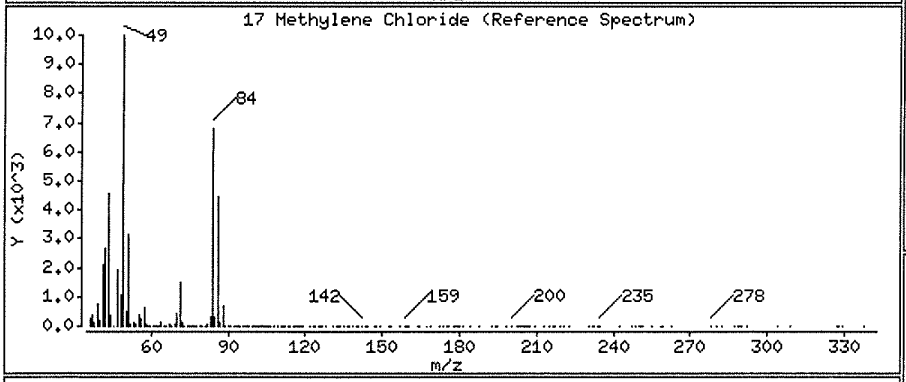
Concentration: 23.52 ug/l

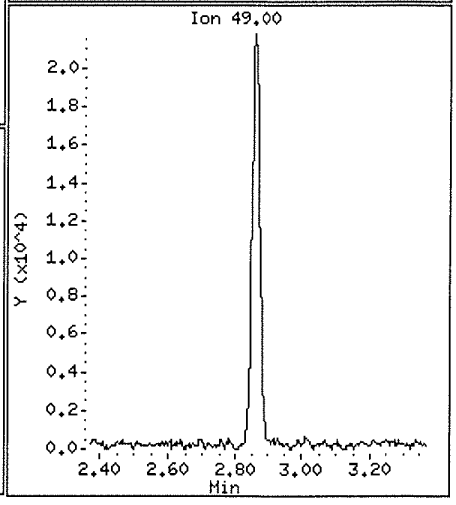


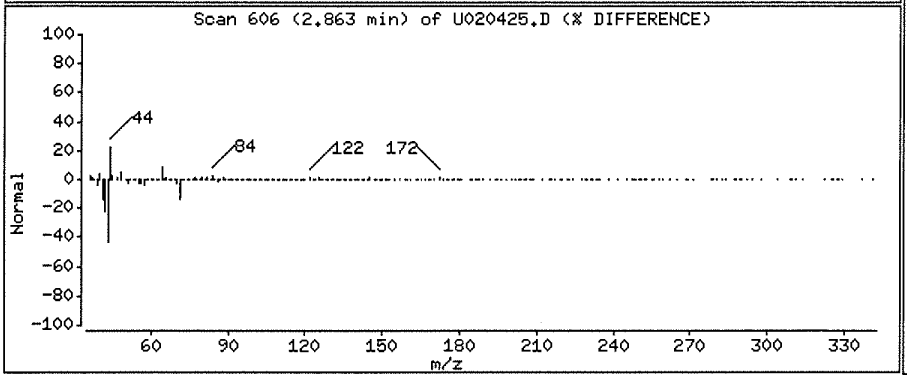












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020425.D

Date : 04-FEB-2022 20:40

Client ID: HS22011233-05

Instrument: VOA9.i

Sample Info: HS22011233-05;HS22011233-05;;;

Purge Volume: 5.0

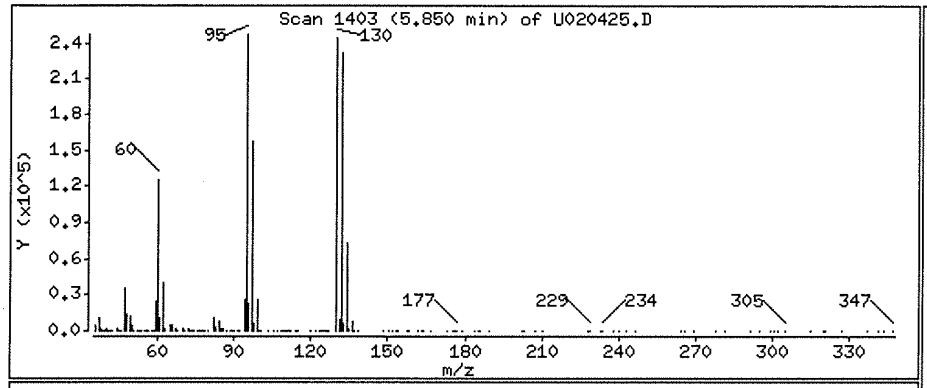
Operator: PC

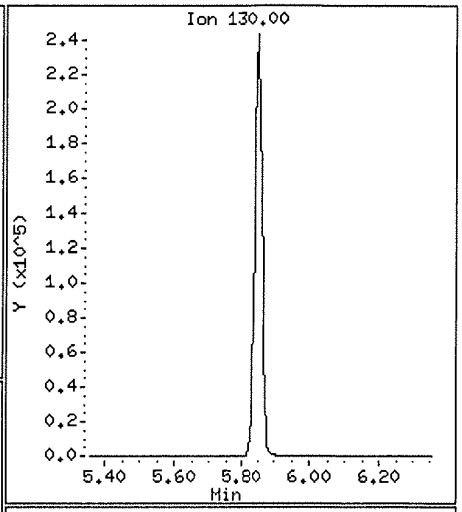
Column phase: DB624

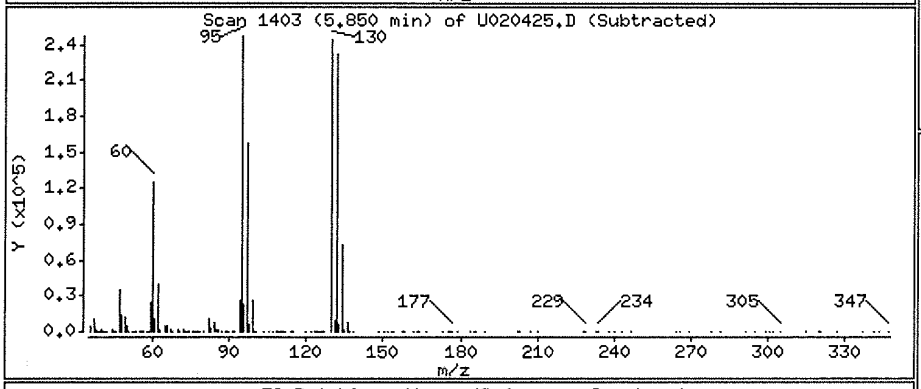
Column diameter: 0.18

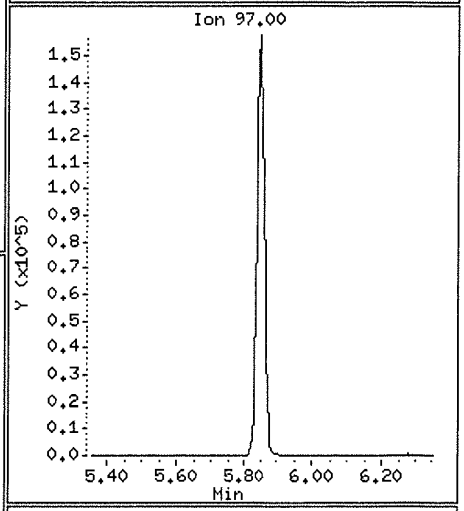
38 Trichloroethene

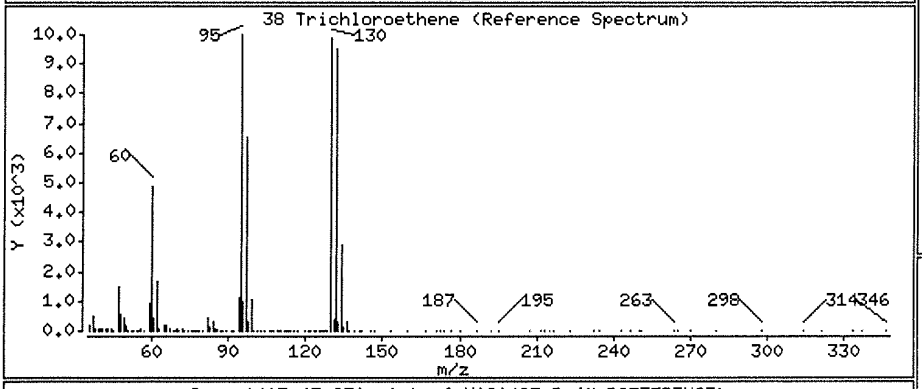
Concentration: 536.03 ug/l

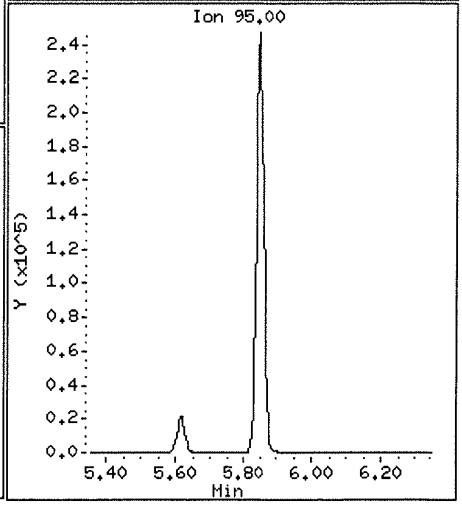


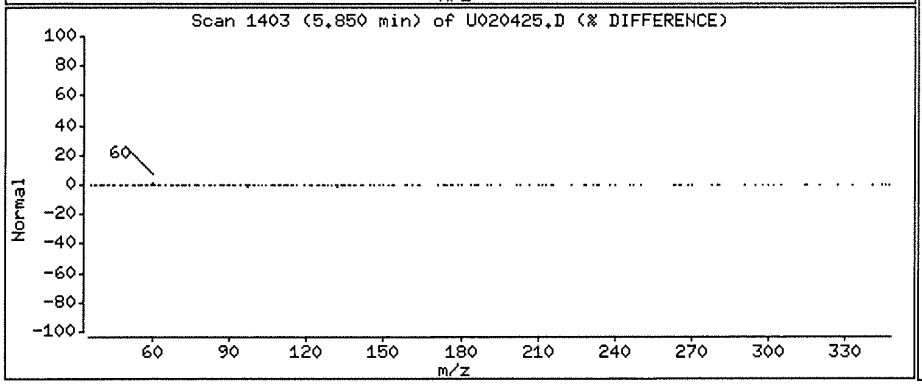












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020426.D Page 1
Report Date: 08-Feb-2022 11:05

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020426.D
Lab Smp Id: HS22011233-01 Client Smp ID: HS22011233-01
Inj Date : 04-FEB-2022 21:02
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-01;HS22011233-01;;;
Misc Info : 180315V9;WATER;0;5;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 25
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

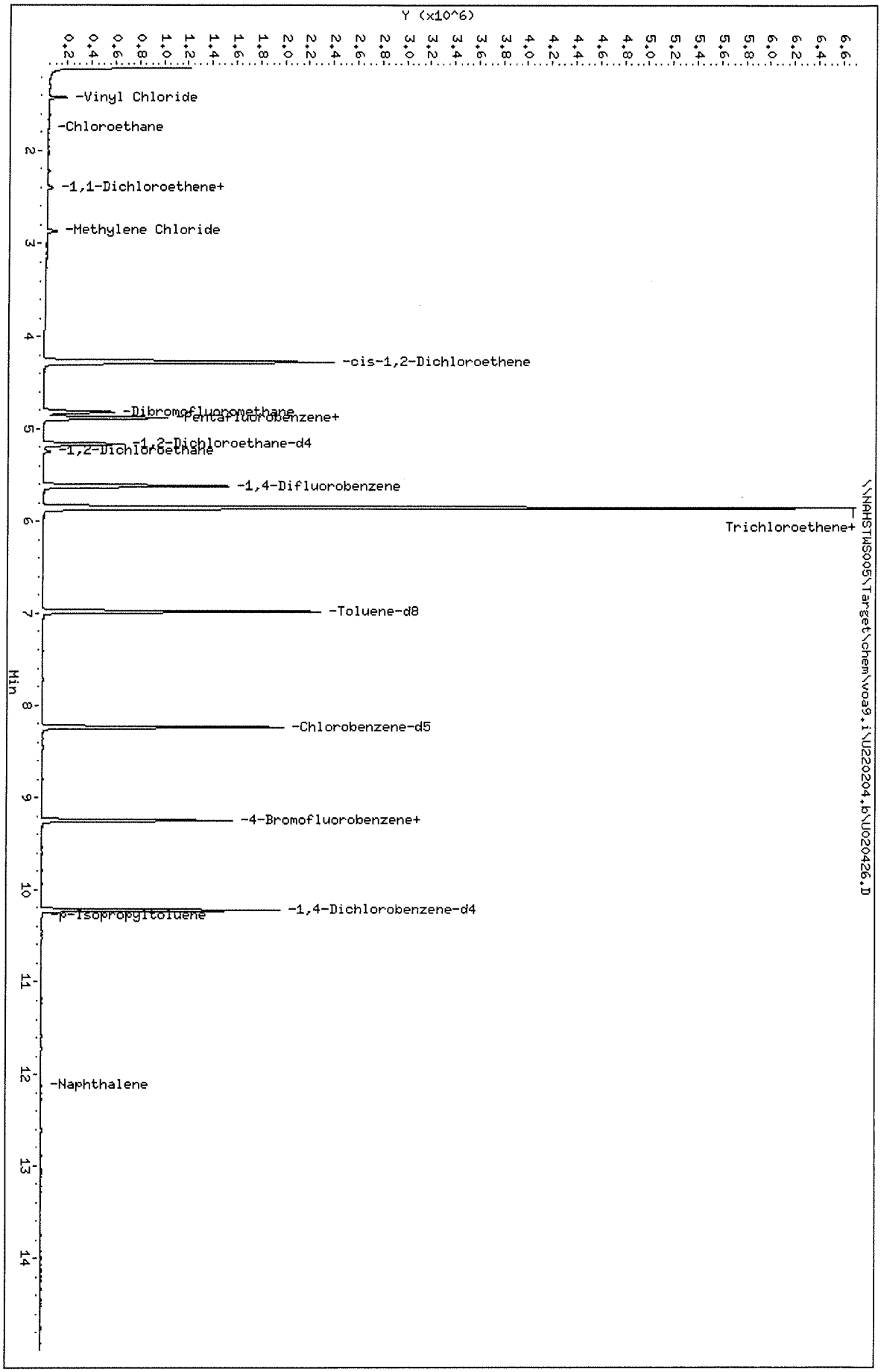
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.886	4.886	(1.000)	637409	50.0000	
*	36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	1034759	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	914483	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	441063	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.168	5.167	(1.058)	426131	51.4824	51.48
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	435576	51.1197	51.11
$	30 Dibromofluoromethane	113	4.823	4.823	(0.987)	318990	48.9049	48.90
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1235000	52.6918	52.69
	11 1,1-Dichloroethene	96	2.397	2.401	(0.491)	8029	1.34161	6.70(a)
	33 1,2-Dichloroethane	62	5.246	5.246	(0.934)	38329	3.69384	18.46(a)
	27 cis-1,2-Dichloroethene	96	4.275	4.279	(0.875)	1028599	124.544	622.71
	17 Methylene Chloride	84	2.866	2.870	(0.587)	32119	3.19284	15.96(a)
	38 Trichloroethene	130	5.850	5.853	(1.041)	1914054	262.586	1312.92(A)
	5 Vinyl Chloride	62	1.419	1.423	(0.290)	95813	9.83595	49.17

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\voa9,i\U220204,b\U020426.D
Date : 04-FEB-2022 21:02
Client ID: HS22011233-01
Sample Info: HS22011233-01;HS22011233-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020426.D

Date : 04-FEB-2022 21:02

Client ID: HS22011233-01

Instrument: VOA9.i

Sample Info: HS22011233-01;HS22011233-01;;;

Purge Volume: 5.0

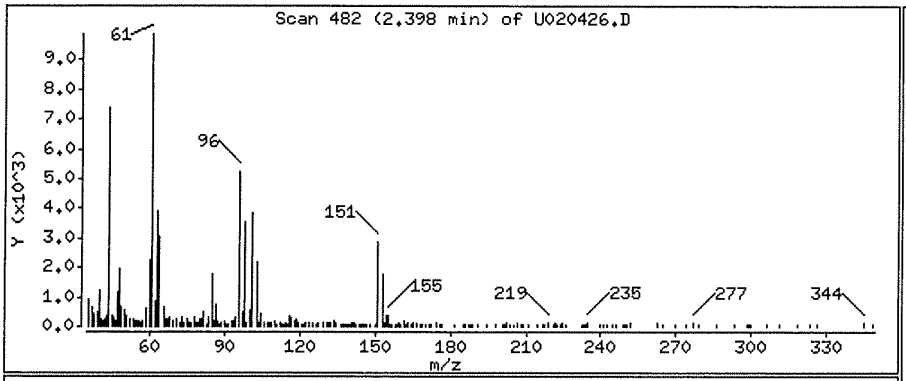
Operator: PC

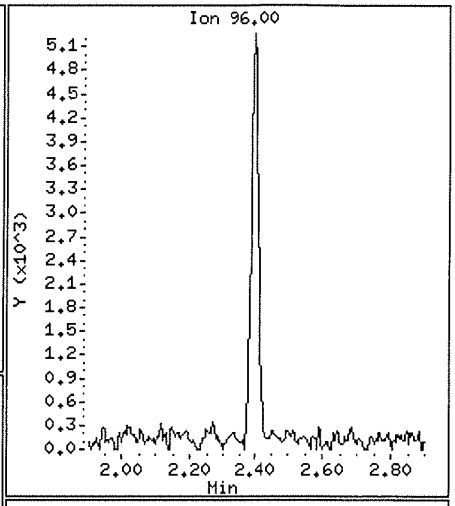
Column phase: DB624

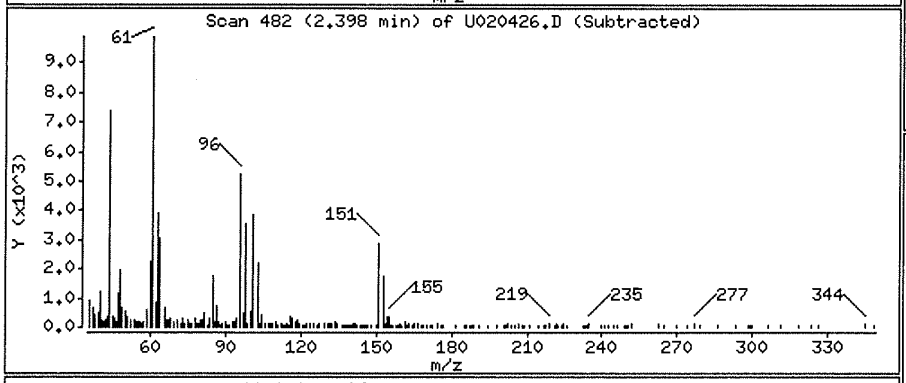
Column diameter: 0.18

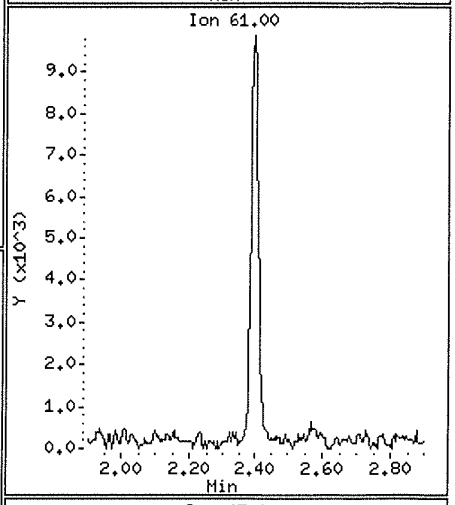
11 1,1-Dichloroethene

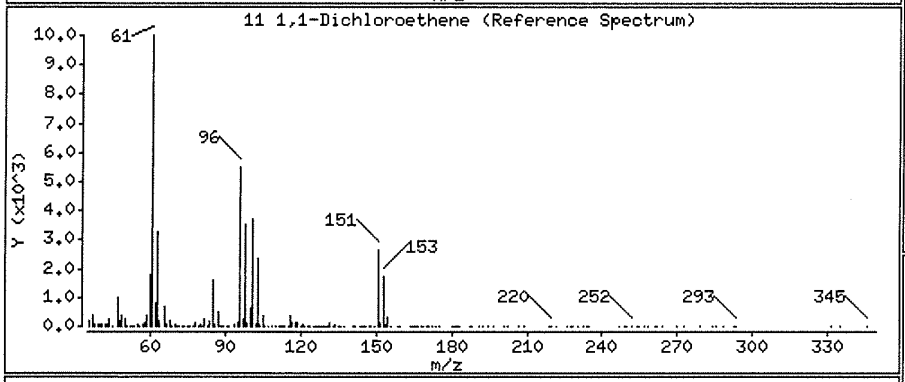
Concentration: 6.70 ug/l

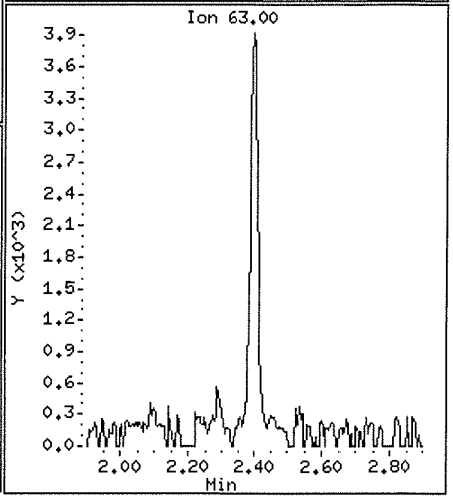


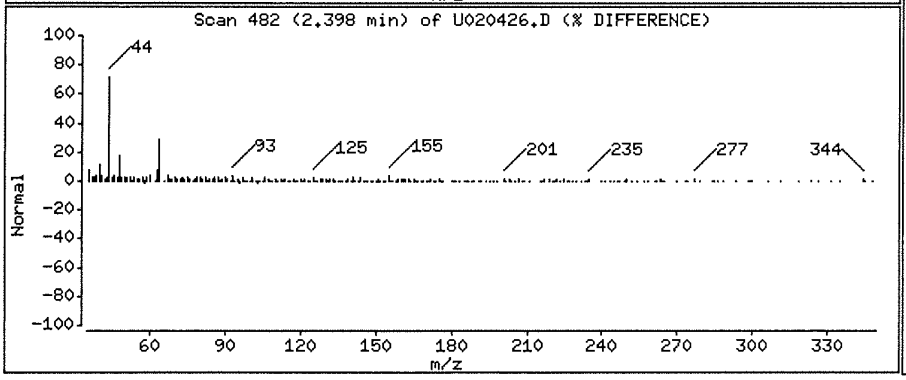












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020426.D Page 4

Date : 04-FEB-2022 21:02

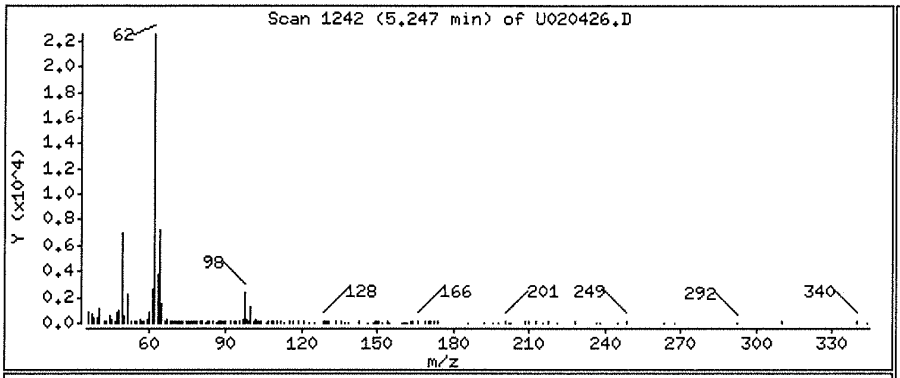
Client ID: HS22011233-01 Instrument: VOA9.i

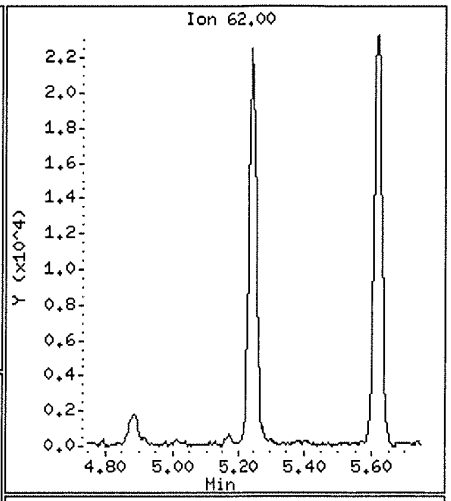
Sample Info: HS22011233-01;HS22011233-01;;;

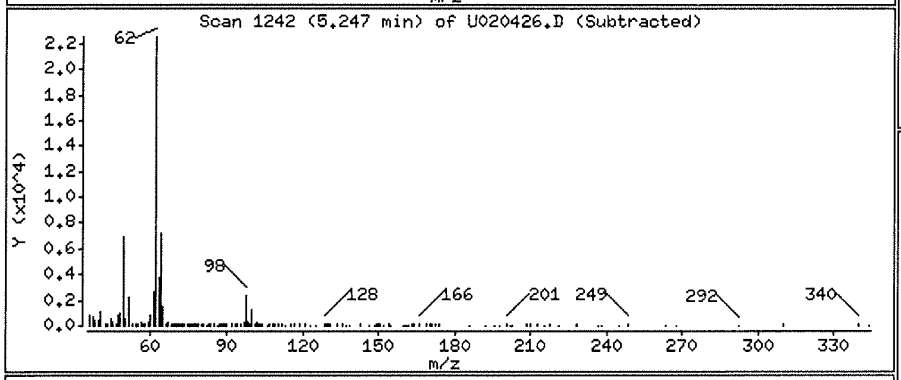
Purge Volume: 5.0 Operator: PC

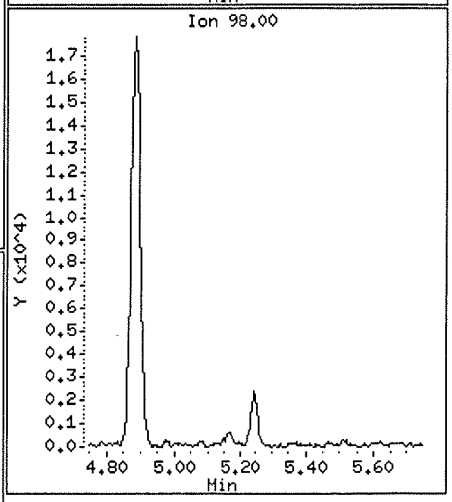
Column phase: DB624 Column diameter: 0.18

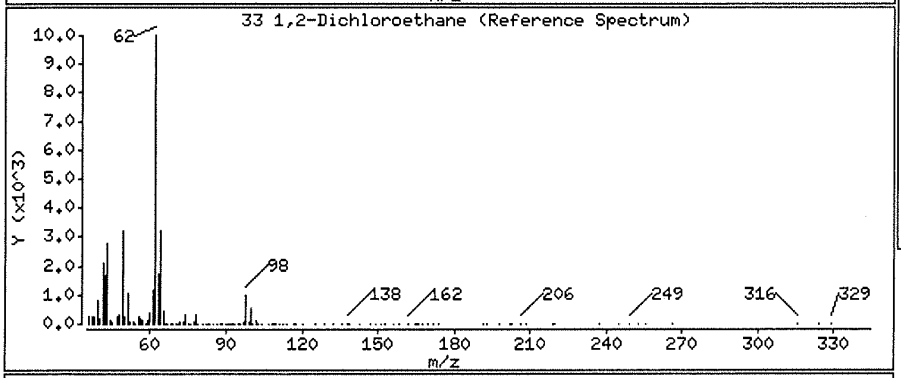
33 1,2-Dichloroethane Concentration: 18.46 ug/l

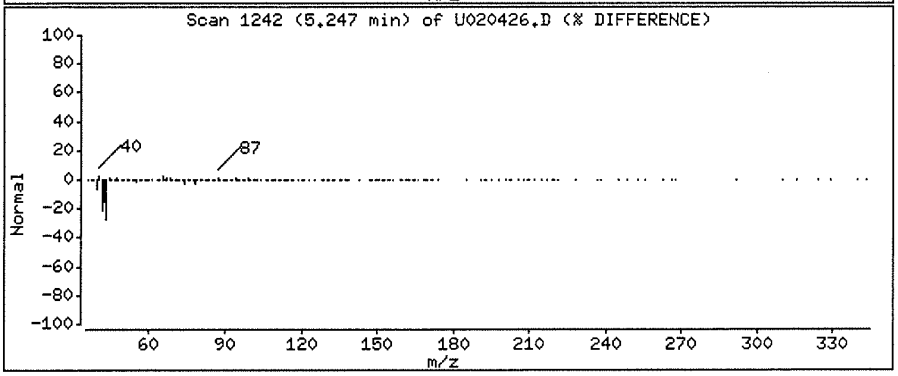












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020426.D Page 5

Date : 04-FEB-2022 21:02

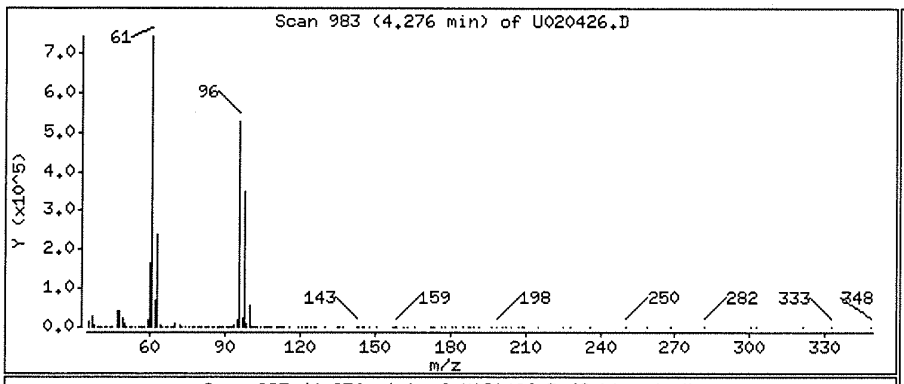
Client ID: HS22011233-01 Instrument: VOA9.i

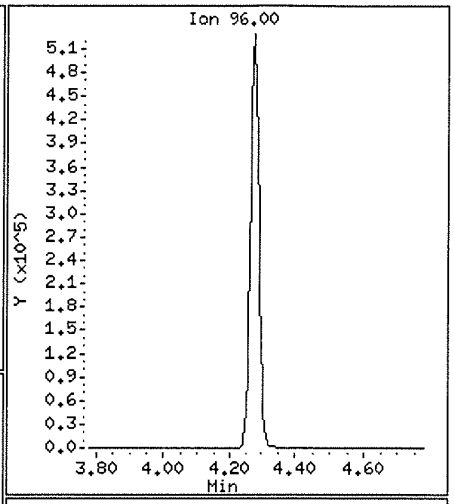
Sample Info: HS22011233-01;HS22011233-01;;;

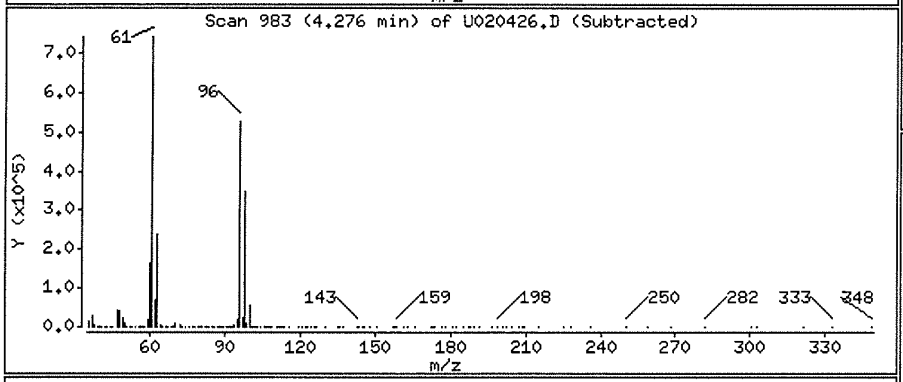
Purge Volume: 5.0 Operator: PC

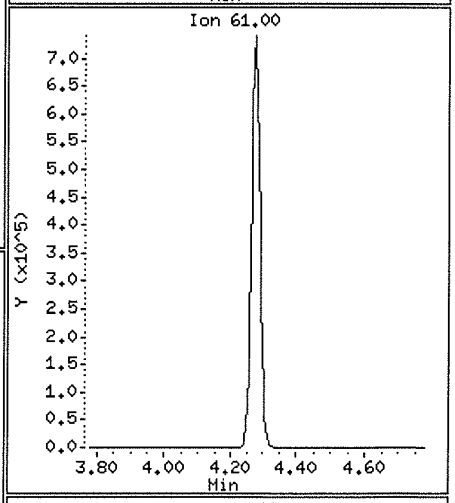
Column phase: DB624 Column diameter: 0.18

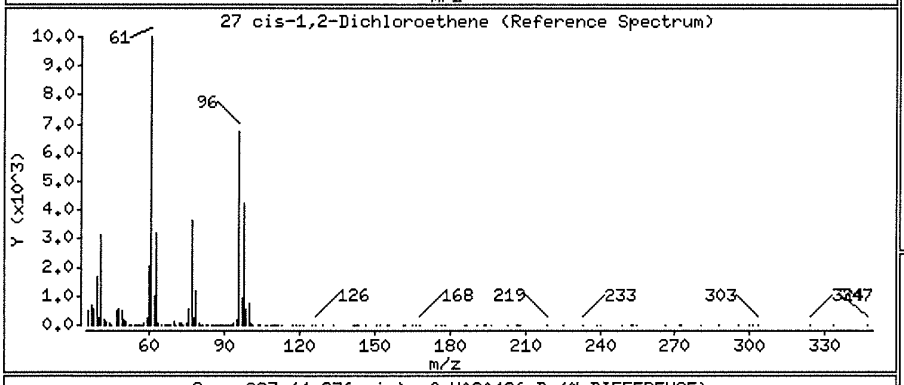
27 cis-1,2-Dichloroethene Concentration: 622.71 ug/l

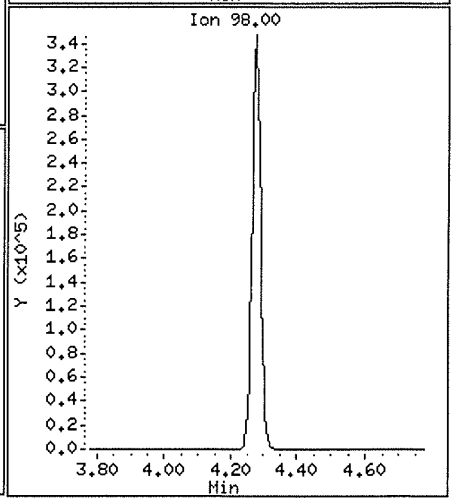


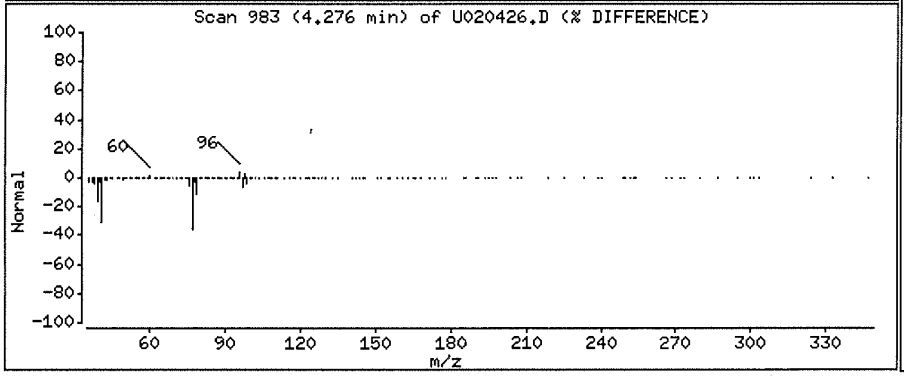












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020426.D

Date : 04-FEB-2022 21:02

Client ID: HS22011233-01

Instrument: VOA9.i

Sample Info: HS22011233-01;HS22011233-01;;;

Purge Volume: 5.0

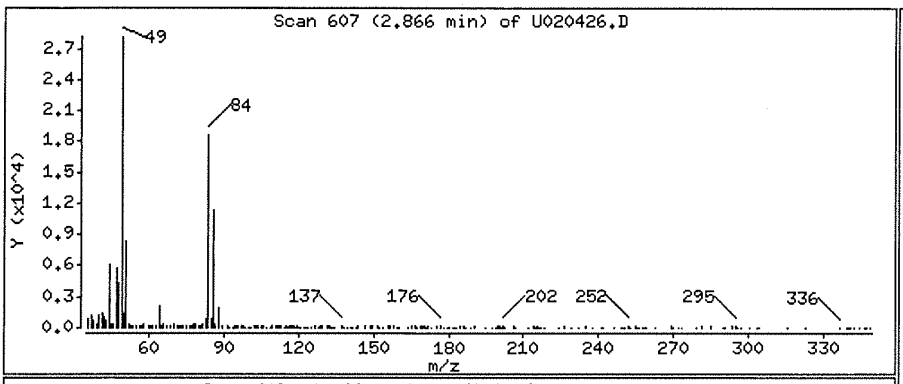
Operator: PC

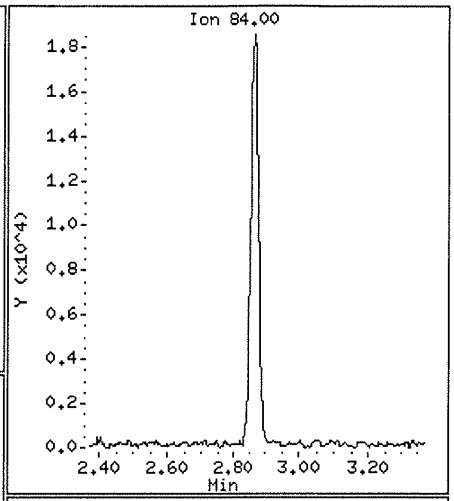
Column phase: DB624

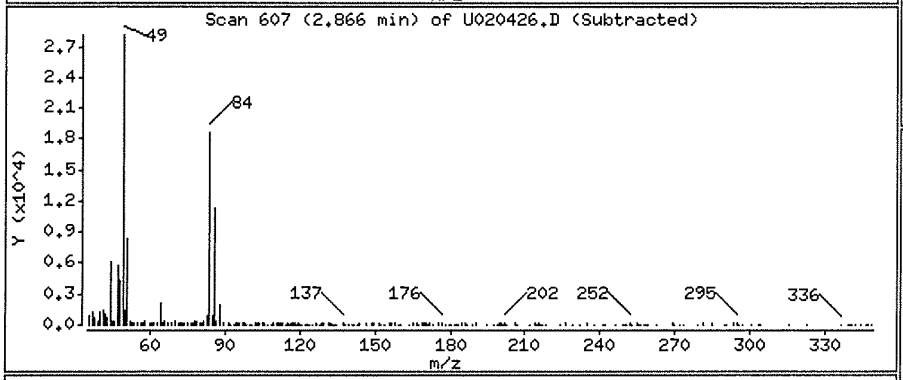
Column diameter: 0.18

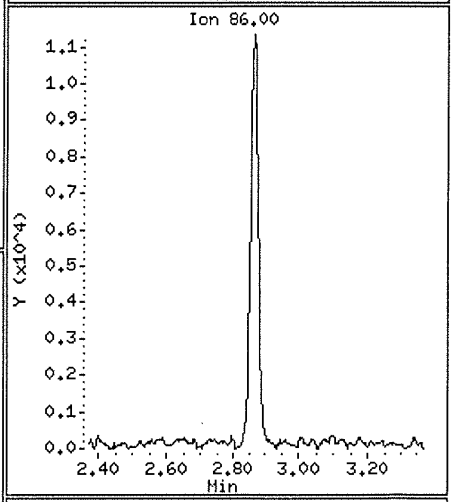
17 Methylene Chloride

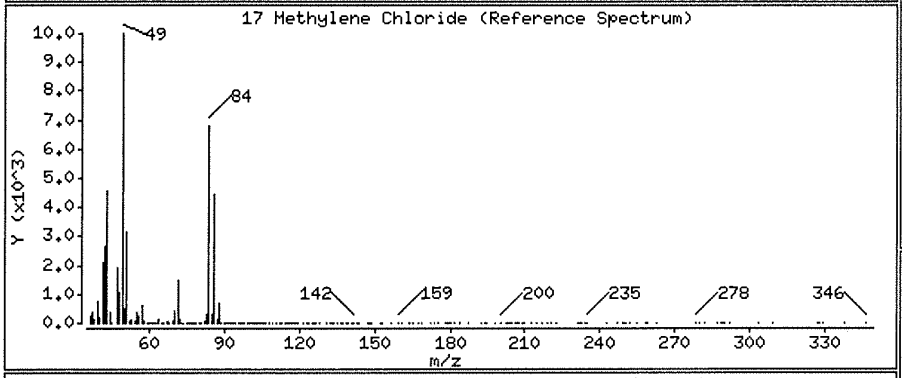
Concentration: 15.96 ug/l

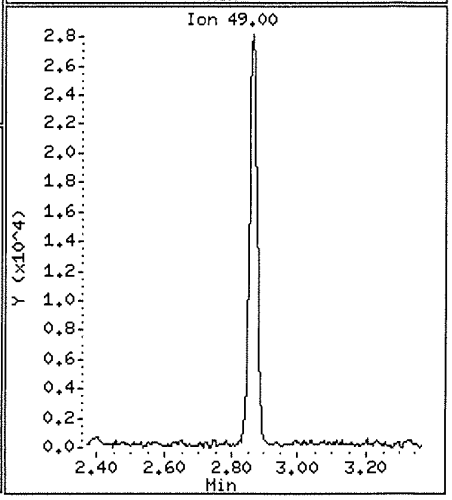


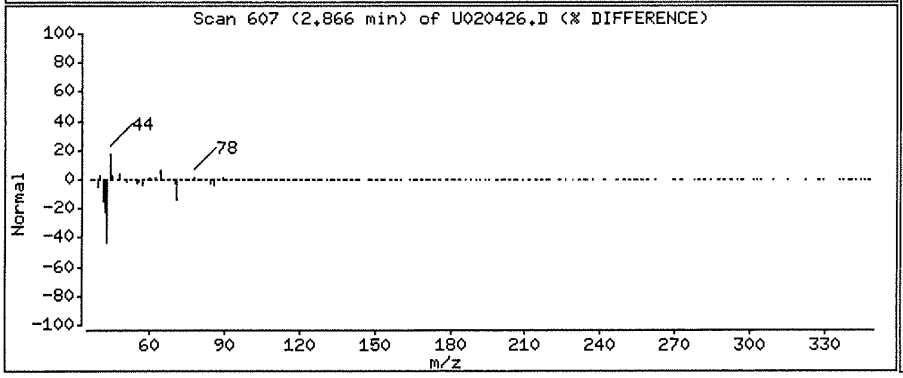












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020426.D Page 7

Date : 04-FEB-2022 21:02

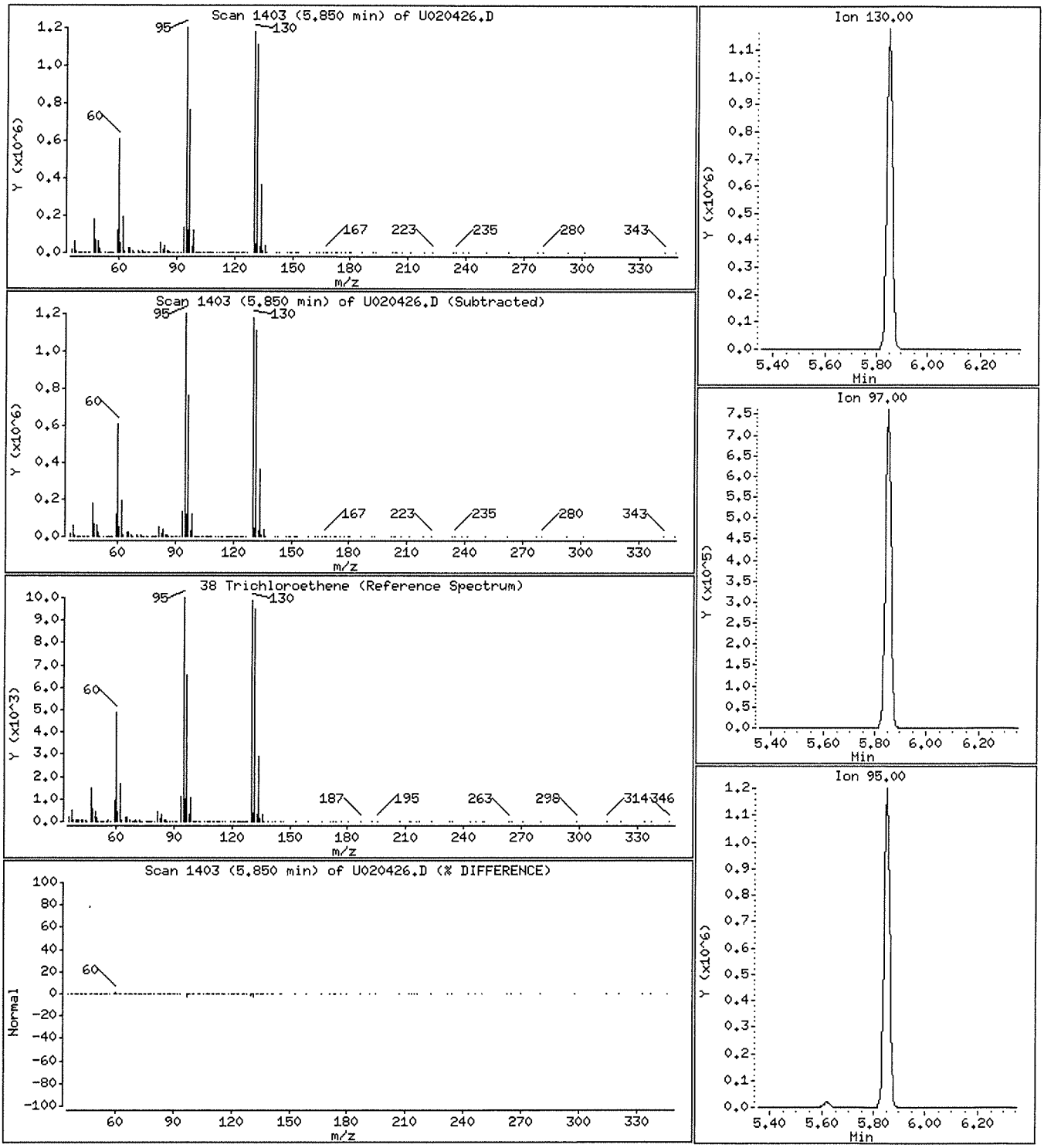
Client ID: HS22011233-01 Instrument: VOA9.i

Sample Info: HS22011233-01;HS22011233-01;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

38 Trichloroethene Concentration: 1312.92 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020426.D

Date : 04-FEB-2022 21:02

Client ID: HS22011233-01

Instrument: VOA9.i

Sample Info: HS22011233-01;HS22011233-01;;;

Purge Volume: 5.0

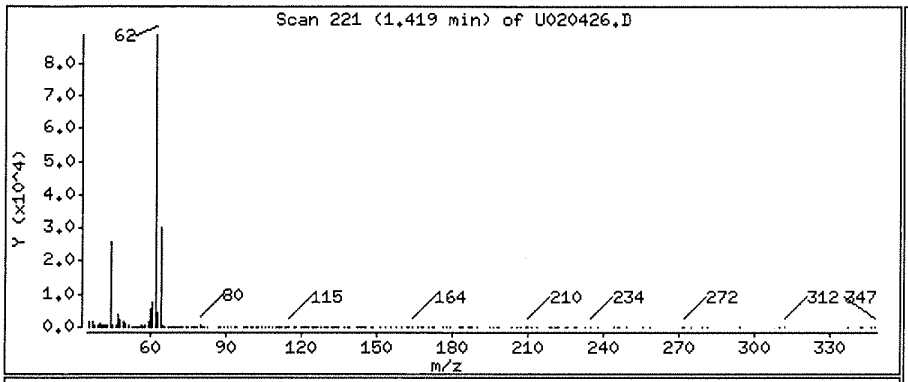
Operator: PC

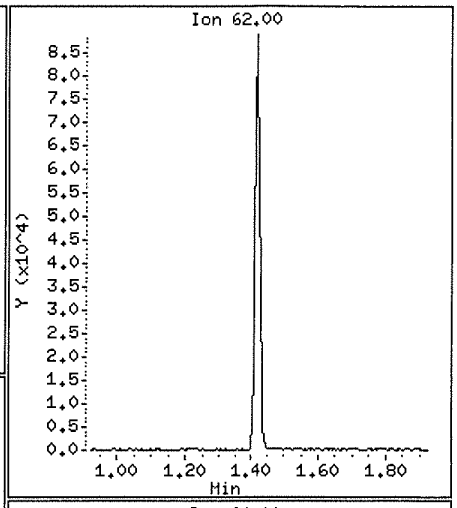
Column phase: DB624

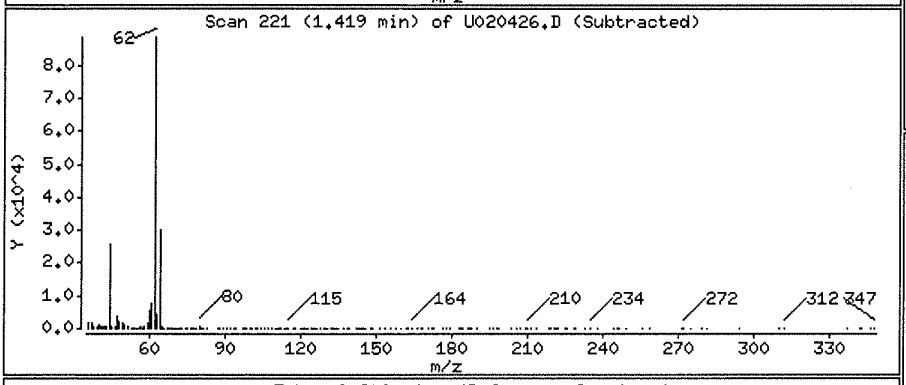
Column diameter: 0.18

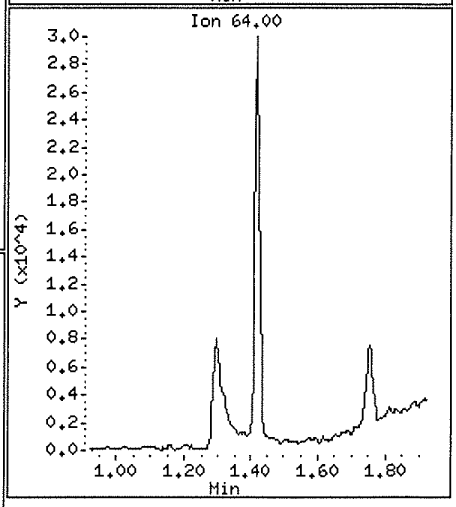
5 Vinyl Chloride

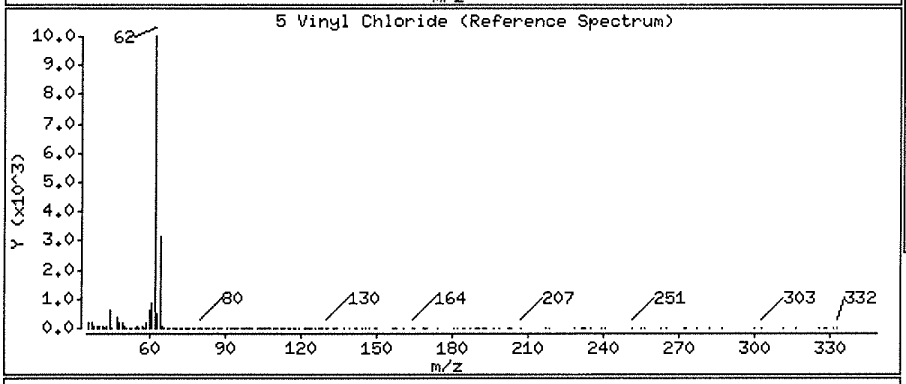
Concentration: 49.17 ug/l

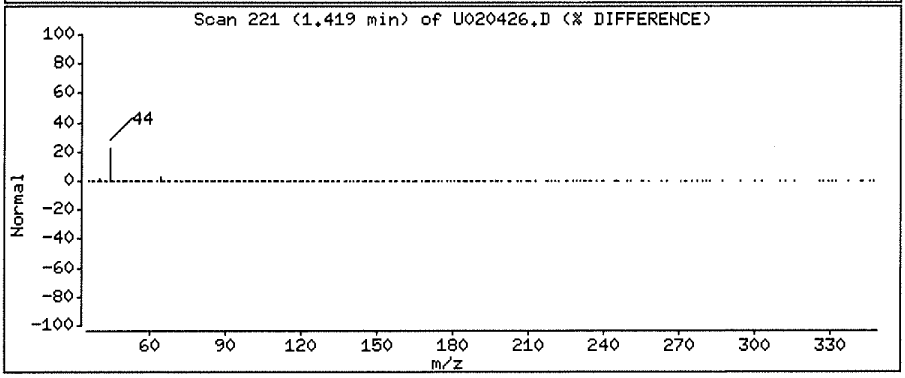












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020427.D Page 1
Report Date: 08-Feb-2022 11:05

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020427.D
Lab Smp Id: HS22011233-01 Client Smp ID: HS22011233-01
Inj Date : 04-FEB-2022 21:25
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-01;HS22011233-01;;;
Misc Info : 180315V9;WATER;0;25;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 26
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

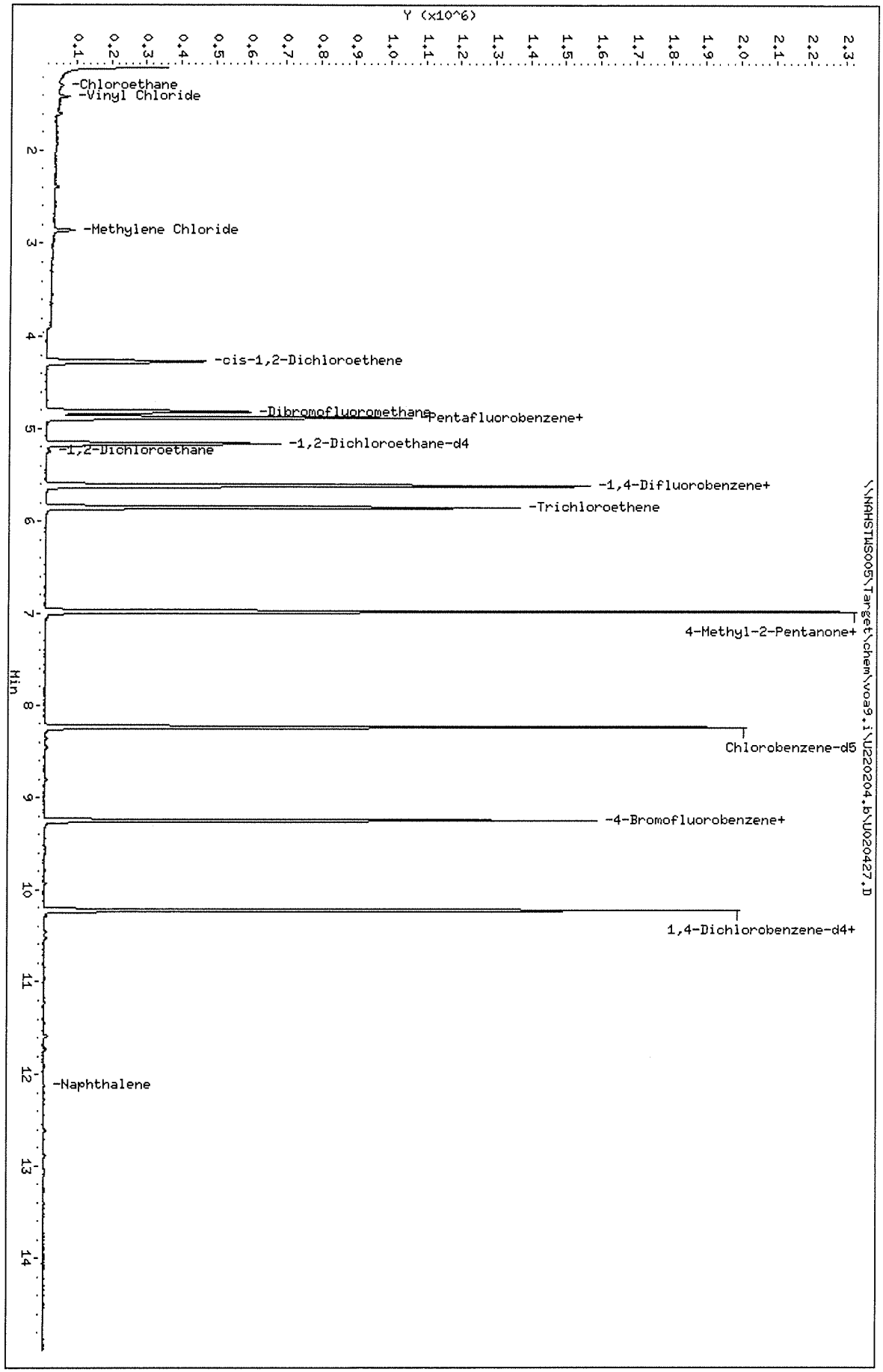
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.882	4.886	(1.000)	642963	50.0000	
* 36 1,4-Difluorobenzene	114	5.613	5.617	(1.000)	1047374	50.0000	
* 47 Chlorobenzene-d5	117	8.237	8.238	(1.000)	923264	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	445072	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.167	(1.058)	431724	51.7134	51.71
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	438860	51.0127	51.01
$ 30 Dibromofluoromethane	113	4.819	4.823	(0.987)	324852	49.3816	49.38
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1254135	52.9993	52.99
33 1,2-Dichloroethane	62	5.242	5.246	(0.934)	9994	0.95154	23.78(a)
27 cis-1,2-Dichloroethene	96	4.271	4.279	(0.875)	201966	24.2430	606.07
17 Methylene Chloride	84	2.858	2.870	(0.585)	21865	1.69818	42.45(a)
38 Trichloroethene	130	5.850	5.853	(1.042)	382338	51.8206	1295.51
5 Vinyl Chloride	62	1.415	1.423	(0.290)	18841	1.91747	47.93(a)

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020427.D
Date : 04-FEB-2022 21:25
Client ID: HS22011233-01
Sample Info: HS22011233-01;HS22011233-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020427.D

Date : 04-FEB-2022 21:25

Client ID: HS22011233-01

Instrument: VOA9.i

Sample Info: HS22011233-01;HS22011233-01;;;

Purge Volume: 5.0

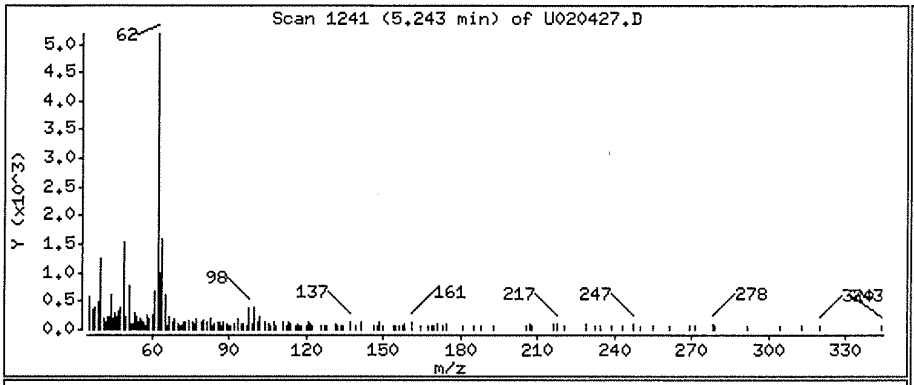
Operator: PC

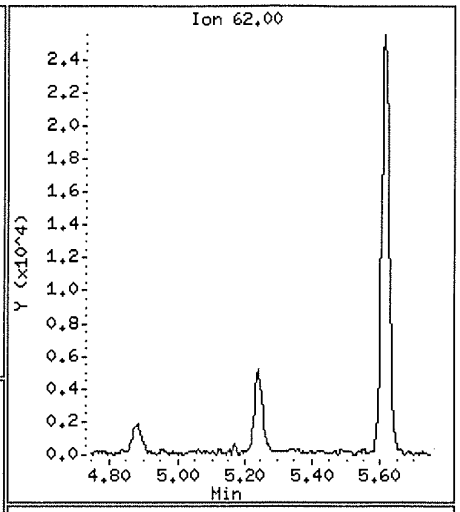
Column phase: DB624

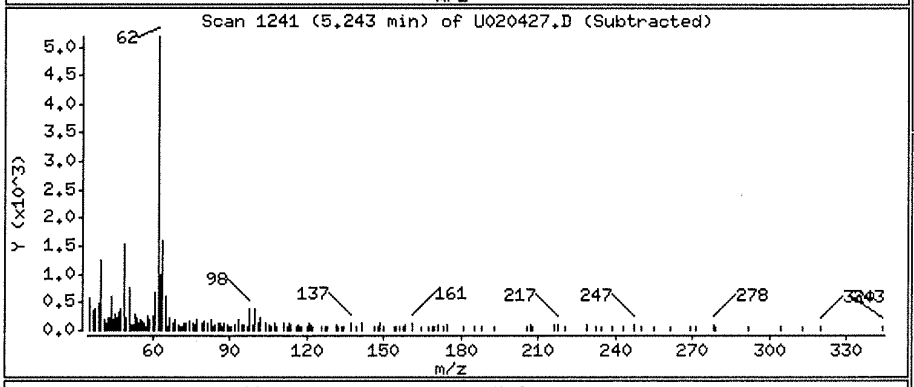
Column diameter: 0.18

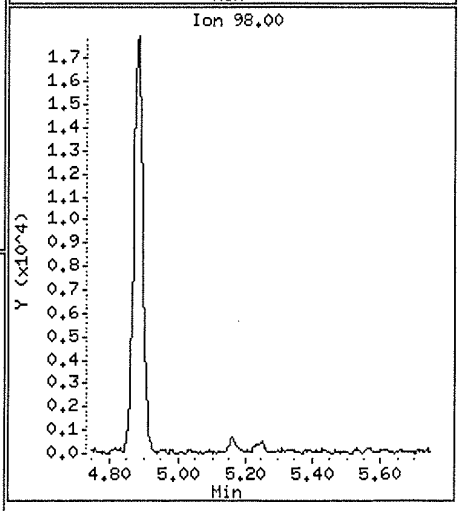
33 1,2-Dichloroethane

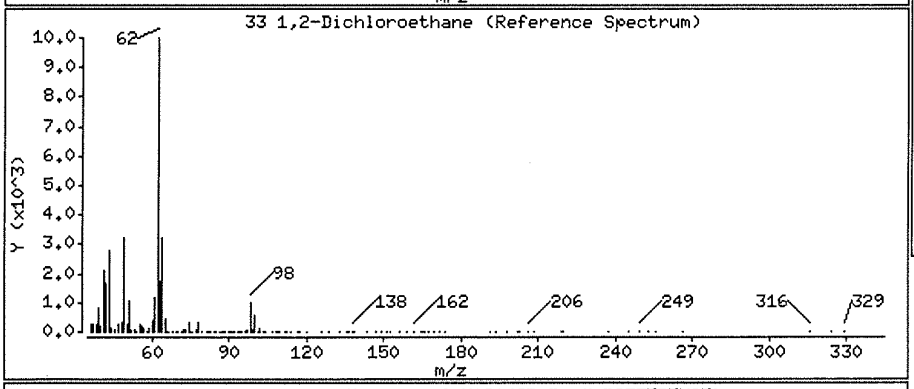
Concentration: 23.78 ug/l

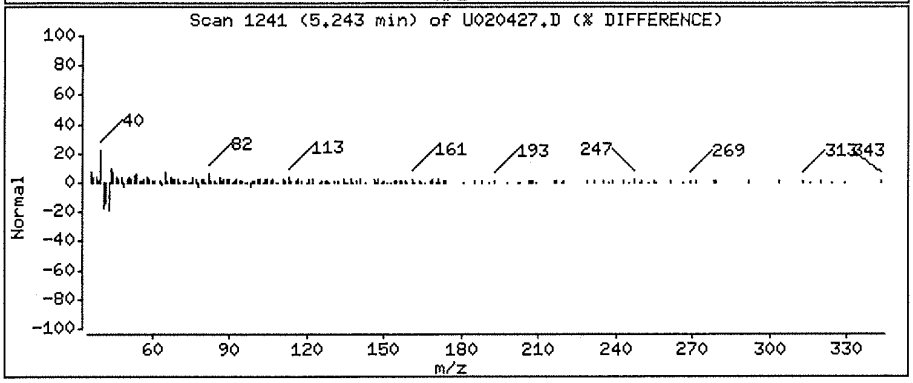












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020427.D

Date : 04-FEB-2022 21:25

Client ID: HS22011233-01

Instrument: VOA9.i

Sample Info: HS22011233-01;HS22011233-01;;;

Purge Volume: 5.0

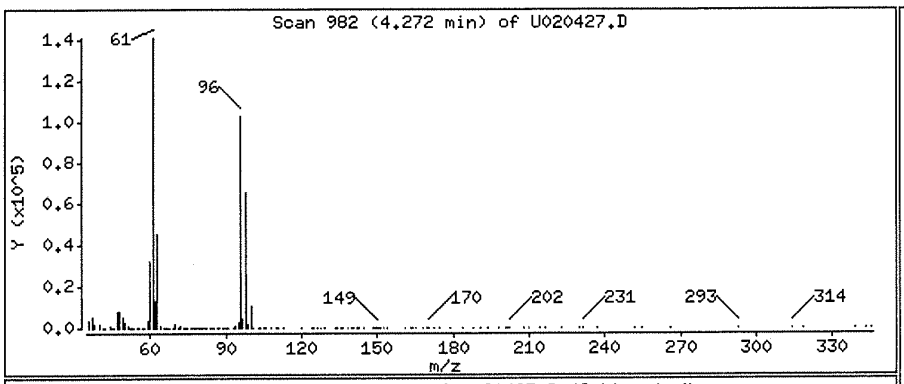
Operator: PC

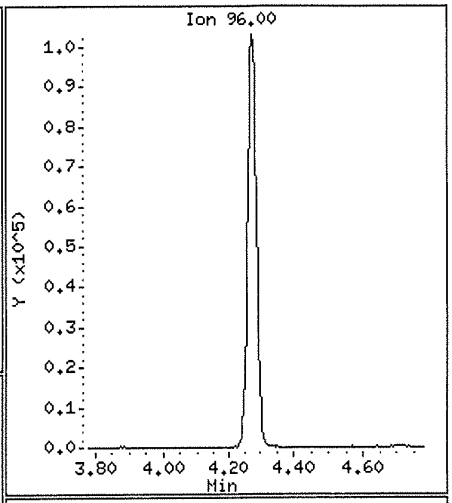
Column phase: DB624

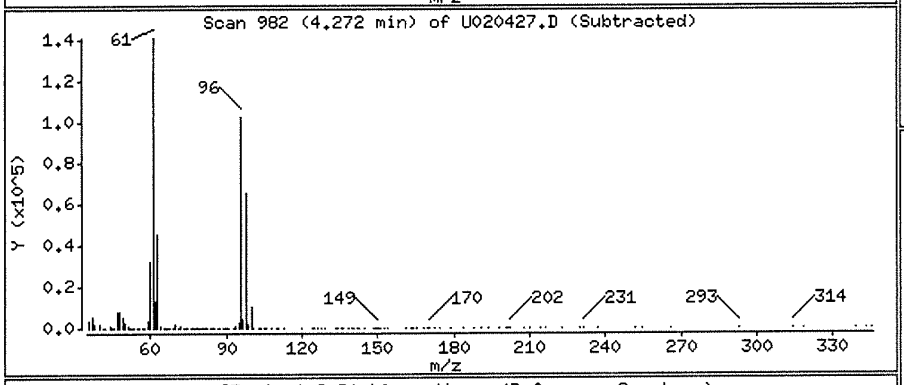
Column diameter: 0.18

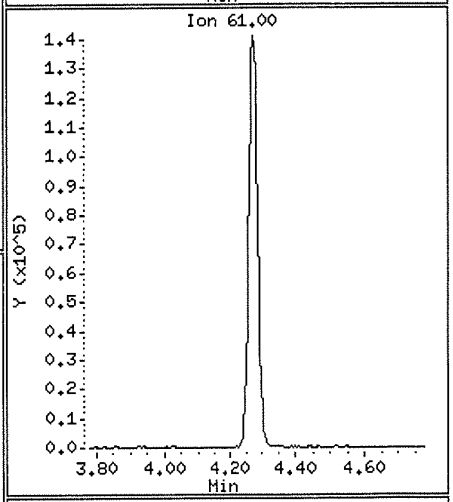
27 cis-1,2-Dichloroethene

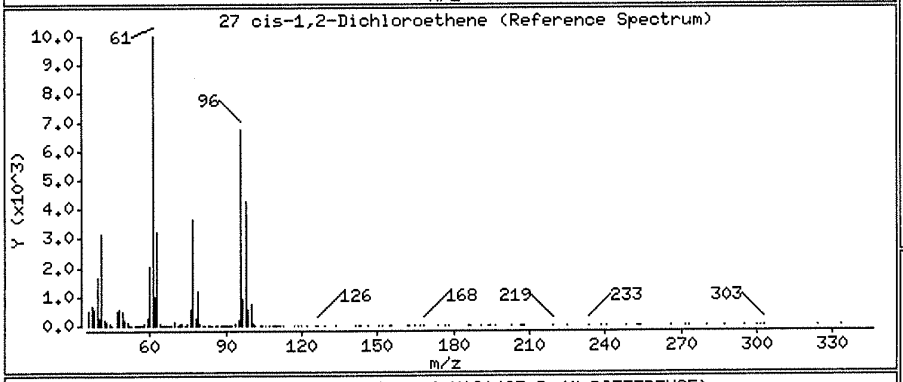
Concentration: 606.07 ug/l

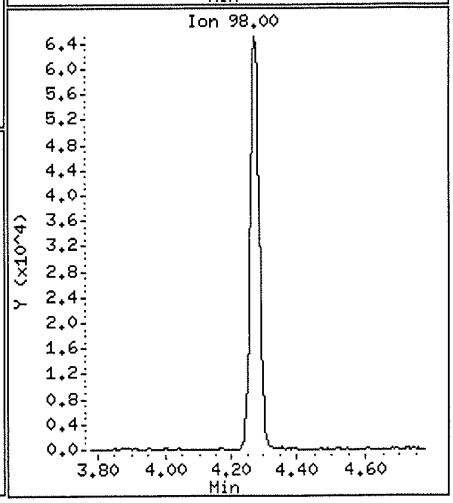


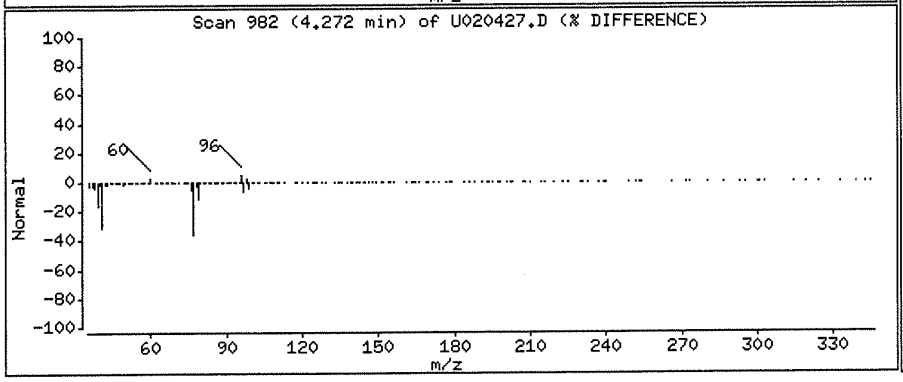












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020427.D

Date : 04-FEB-2022 21:25

Client ID: HS22011233-01

Instrument: VOA9.i

Sample Info: HS22011233-01;HS22011233-01;;;

Purge Volume: 5.0

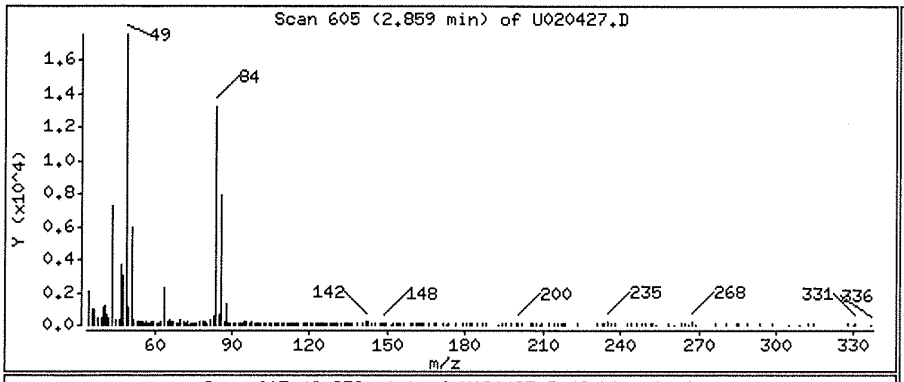
Operator: PC

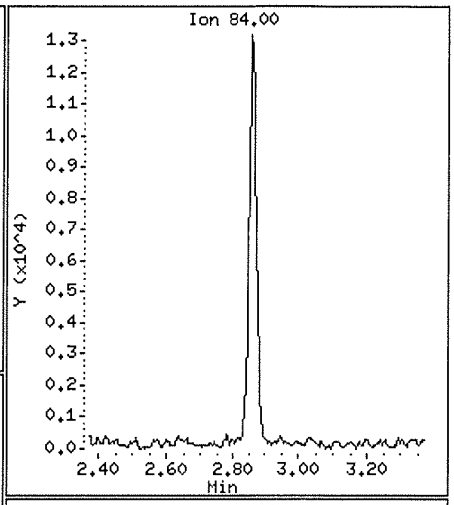
Column phase: DB624

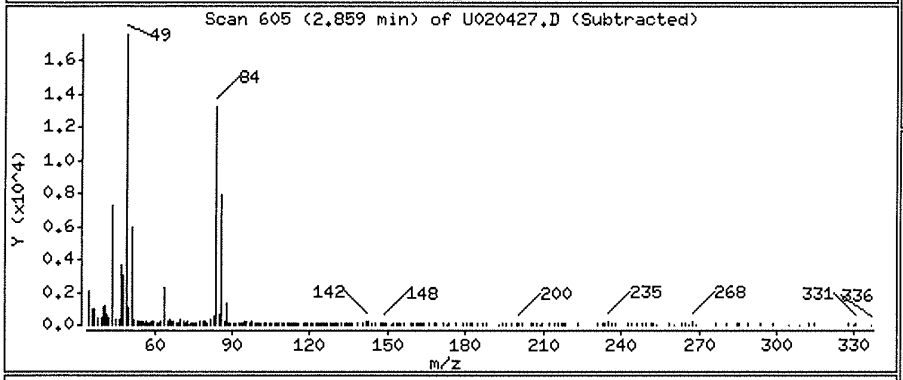
Column diameter: 0.18

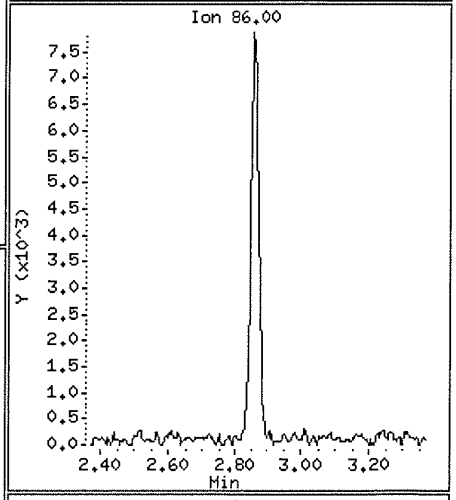
17 Methylene Chloride

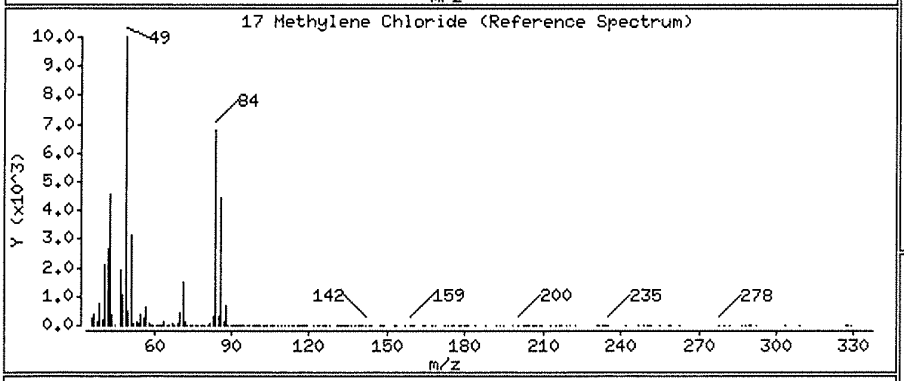
Concentration: 42.45 ug/l

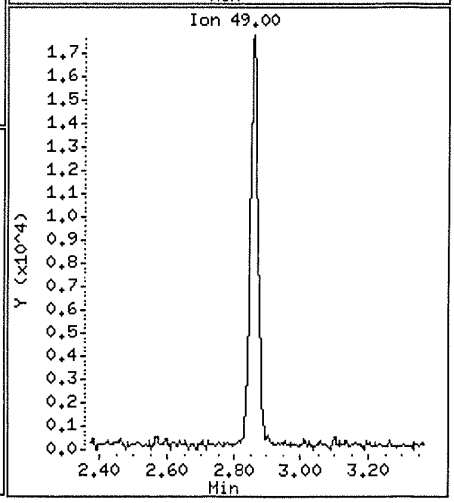


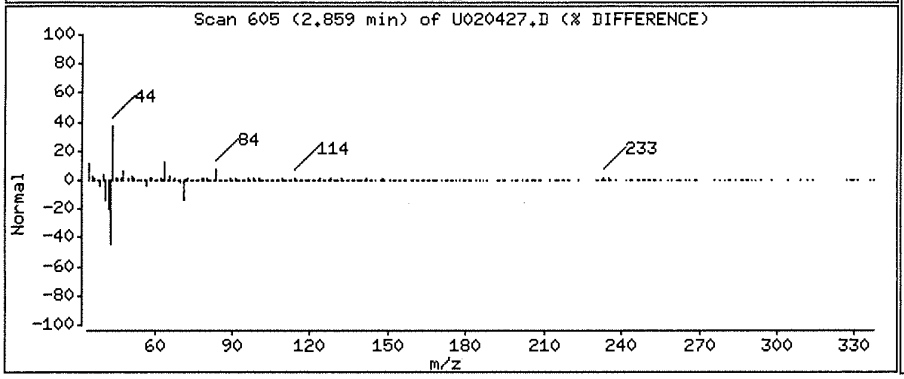












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020427.D Page 6

Date : 04-FEB-2022 21:25

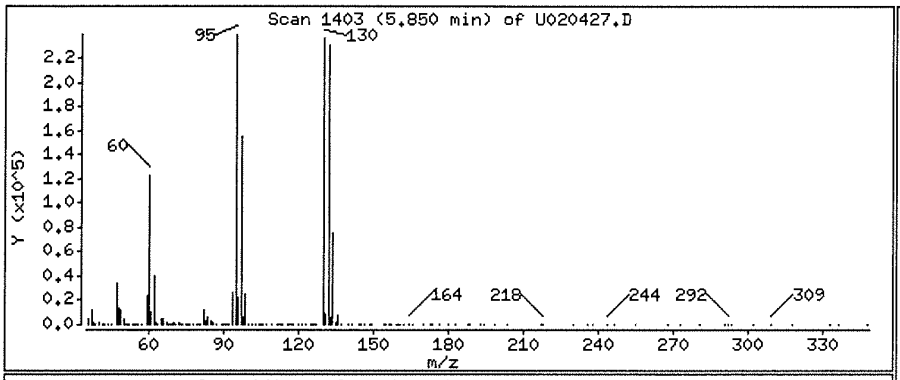
Client ID: HS22011233-01 Instrument: VOA9.i

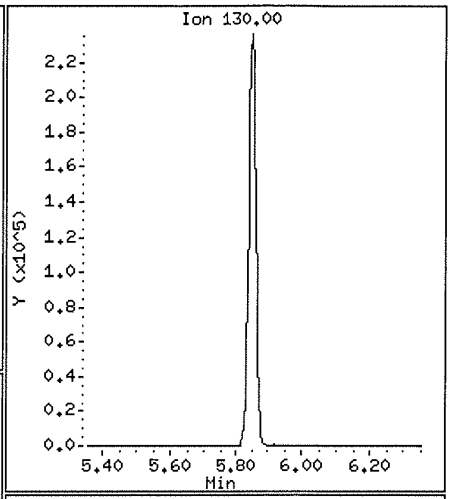
Sample Info: HS22011233-01;HS22011233-01;;;

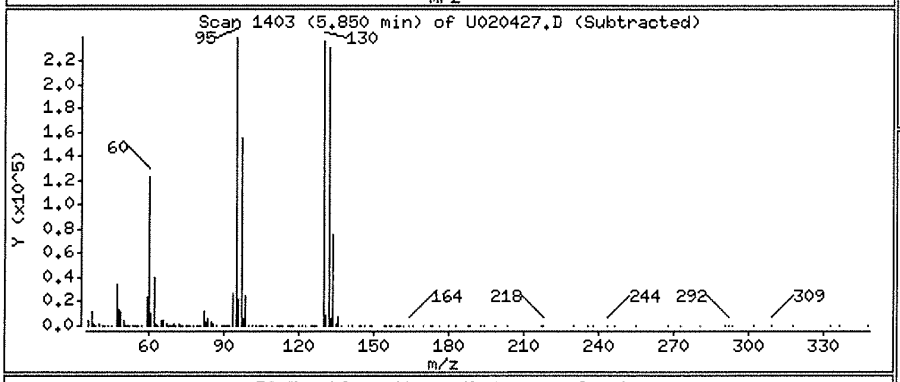
Purge Volume: 5.0 Operator: PC

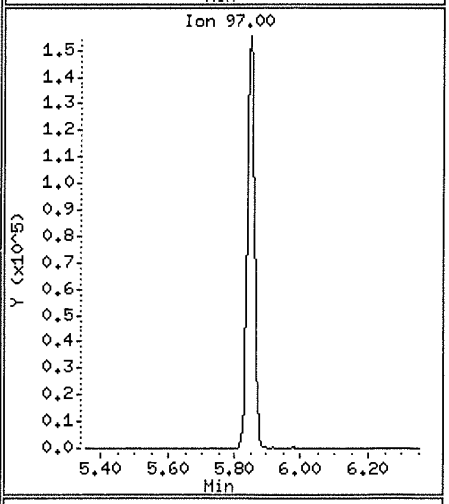
Column phase: DB624 Column diameter: 0.18

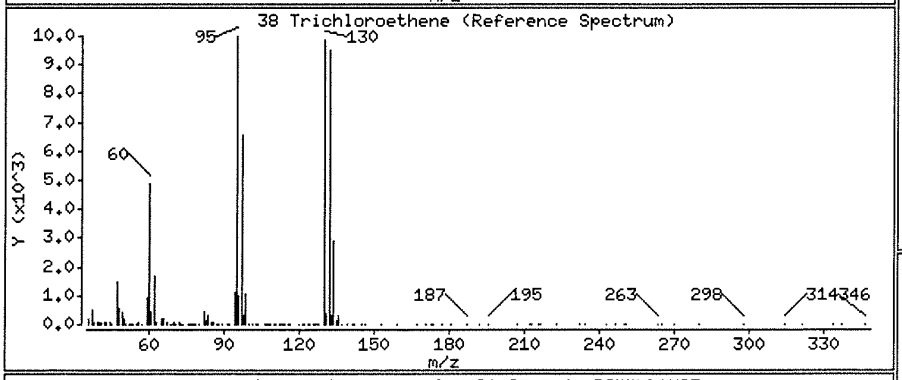
38 Trichloroethene Concentration: 1295.51 ug/l

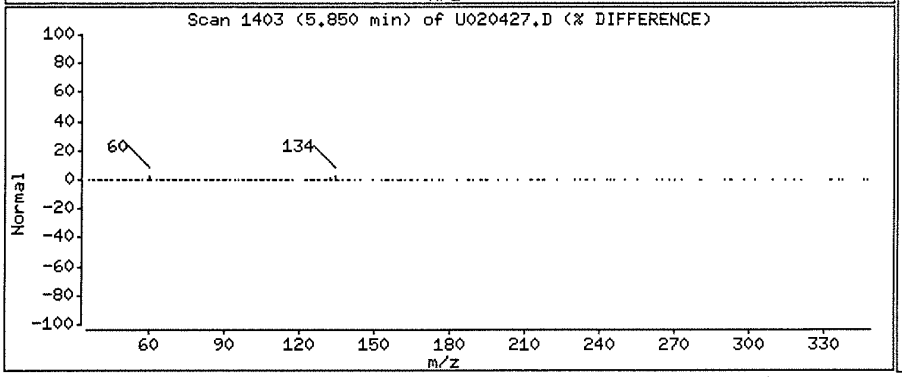


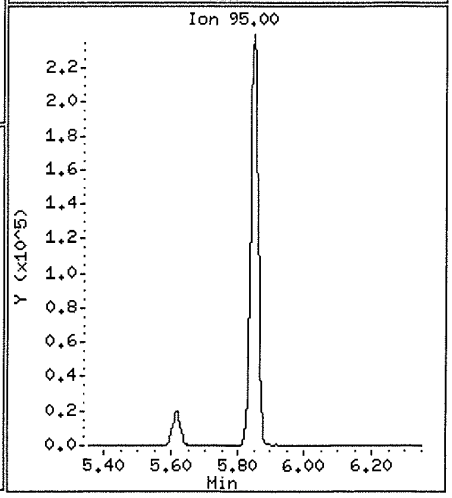












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020427.D

Date : 04-FEB-2022 21:25

Client ID: HS22011233-01

Instrument: VOA9.i

Sample Info: HS22011233-01;HS22011233-01;;;

Purge Volume: 5.0

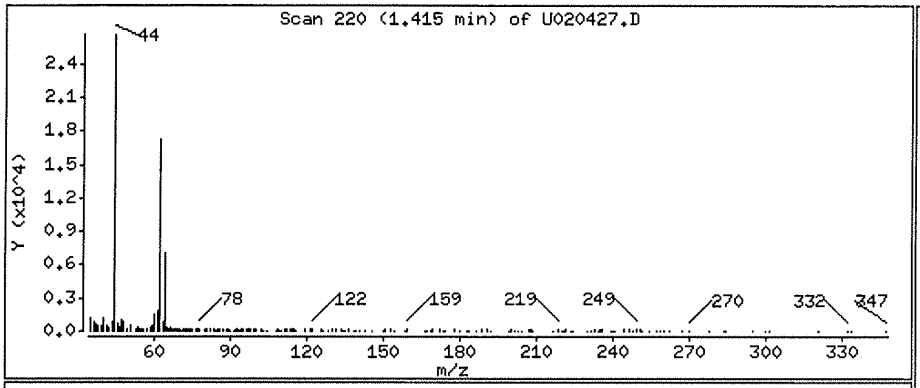
Operator: PC

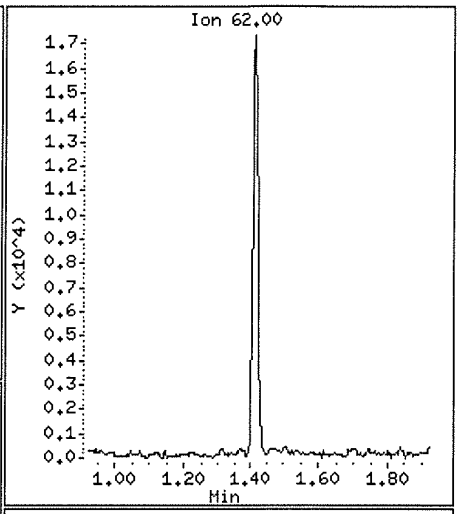
Column phase: DB624

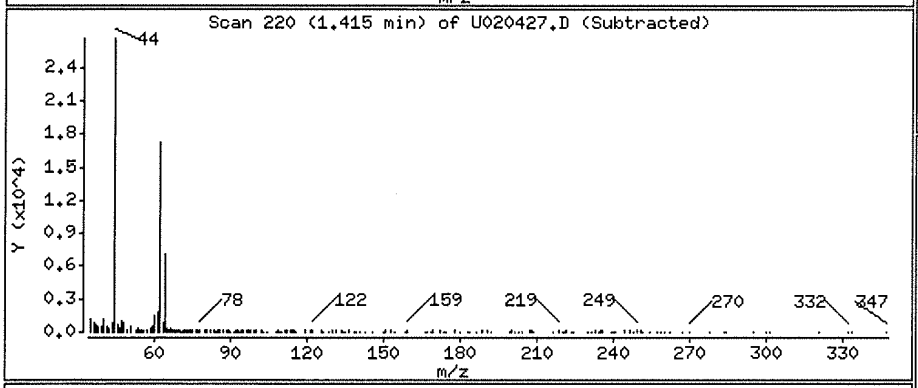
Column diameter: 0.18

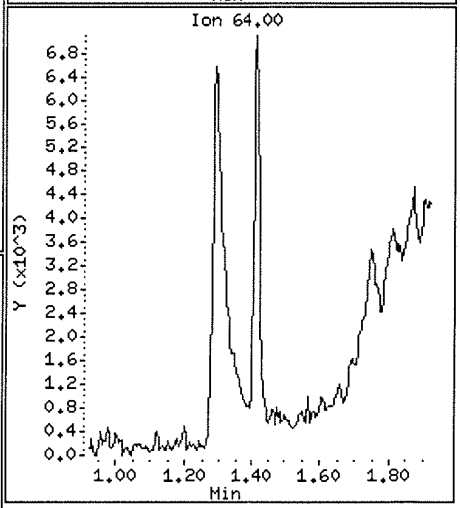
5 Vinyl Chloride

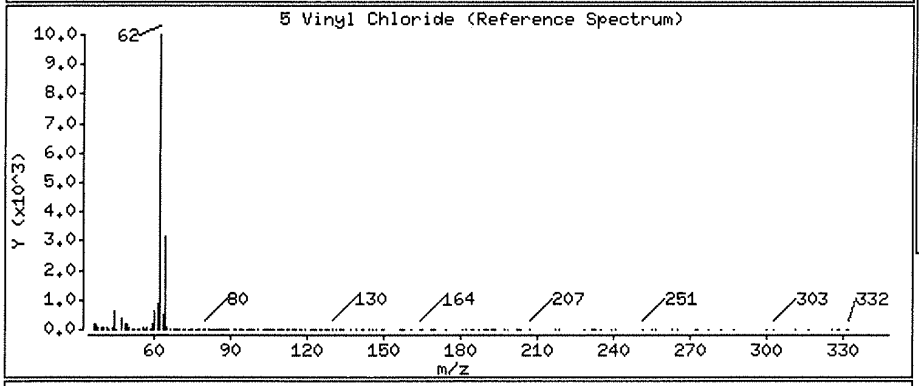
Concentration: 47.93 ug/l

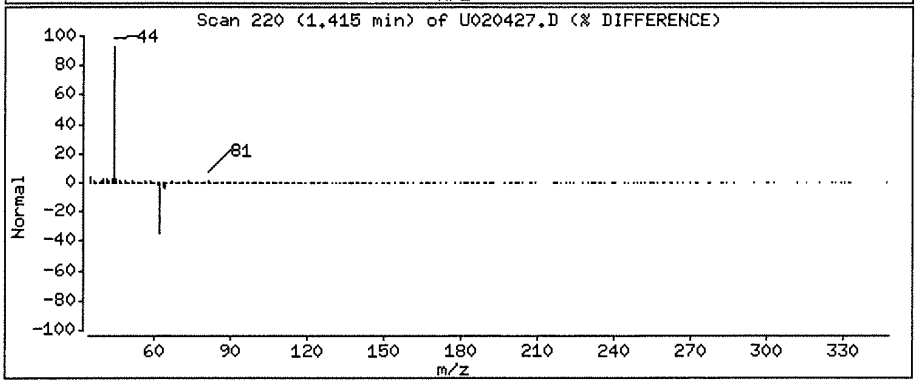












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020428.D Page 1
Report Date: 08-Feb-2022 11:05

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020428.D
Lab Smp Id: HS22011233-06 Client Smp ID: HS22011233-06
Inj Date : 04-FEB-2022 21:47
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-06;HS22011233-06;;;
Misc Info : 180315V9;WATER;0;5;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 27
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

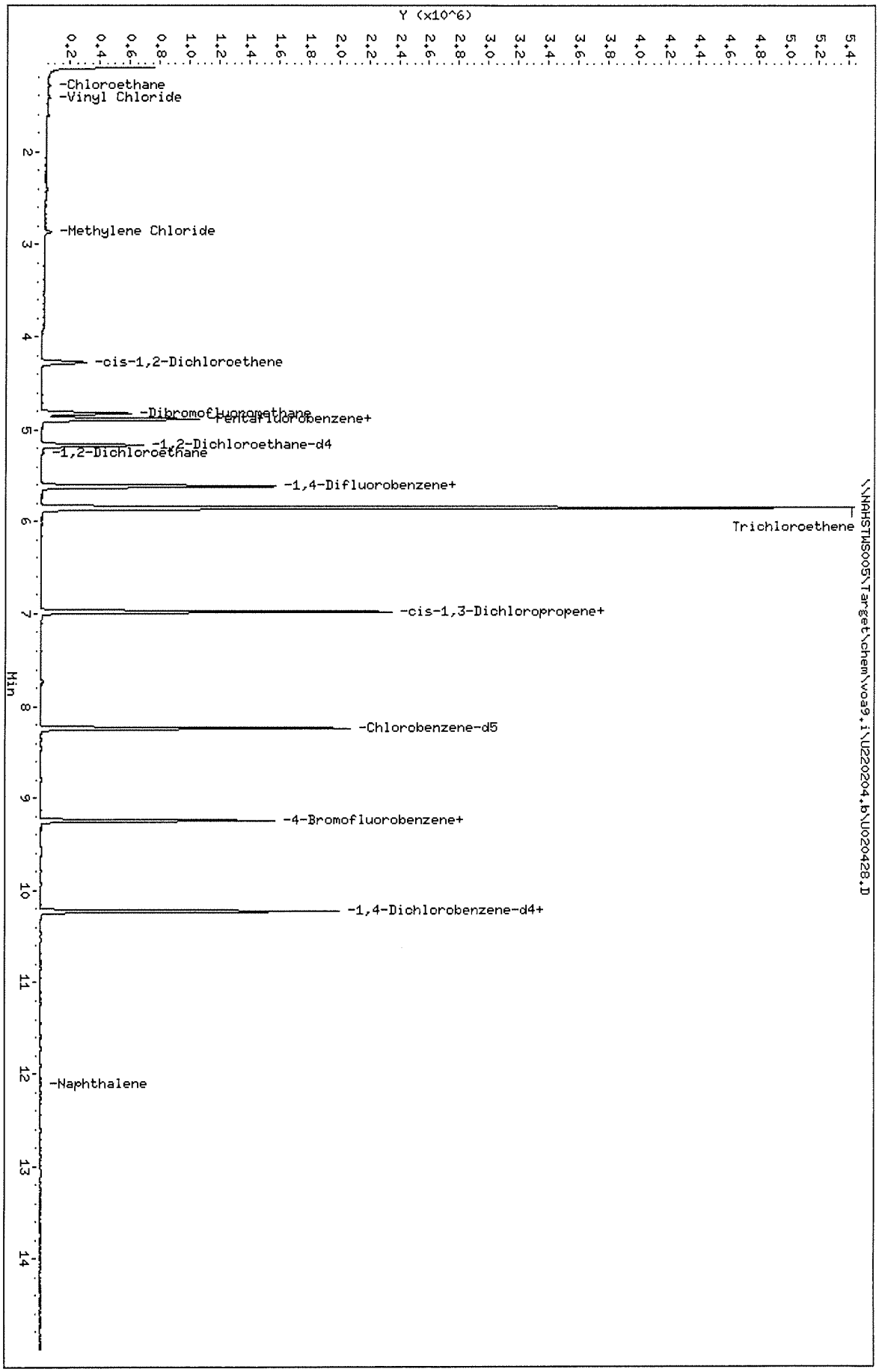
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.883	4.886	(1.000)	653579	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.617	(1.000)	1062335	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	943989	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	446376	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.168	5.167	(1.058)	442510	52.1555	52.15
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	442293	50.2653	50.26
$ 30 Dibromofluoromethane	113	4.819	4.823	(0.987)	325731	48.6993	48.69
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1277618	52.8063	52.80
33 1,2-Dichloroethane	62	5.246	5.246	(0.935)	10199	0.95738	4.78(a)
27 cis-1,2-Dichloroethene	96	4.275	4.279	(0.876)	131210	15.4940	77.47
17 Methylene Chloride	84	2.862	2.870	(0.586)	17433	1.02914	5.14(a)
38 Trichloroethene	130	5.850	5.853	(1.042)	1540942	205.912	1029.55(A)
5 Vinyl Chloride	62	1.419	1.423	(0.291)	9975	0.99868	4.99(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\voa9.i\U220204.b\U020428.D
Date : 04-FEB-2022 21:47
Client ID: HS22011233-06
Sample Info: HS22011233-06;HS22011233-06;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020428.D

Date : 04-FEB-2022 21:47

Client ID: HS22011233-06

Instrument: VOA9.i

Sample Info: HS22011233-06;HS22011233-06;;;

Purge Volume: 5.0

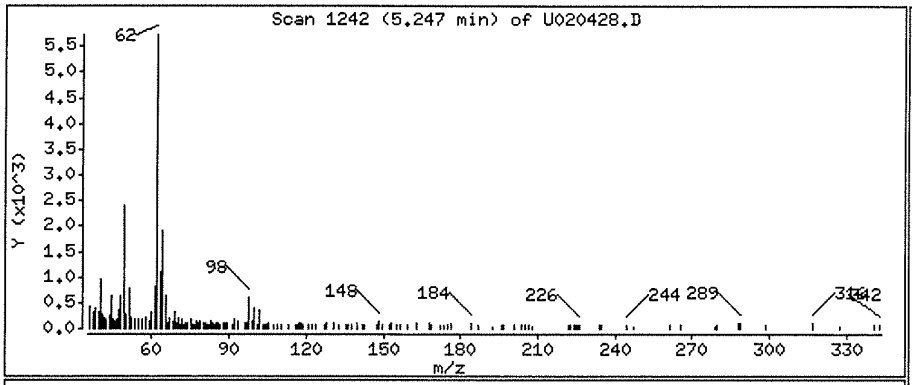
Operator: PC

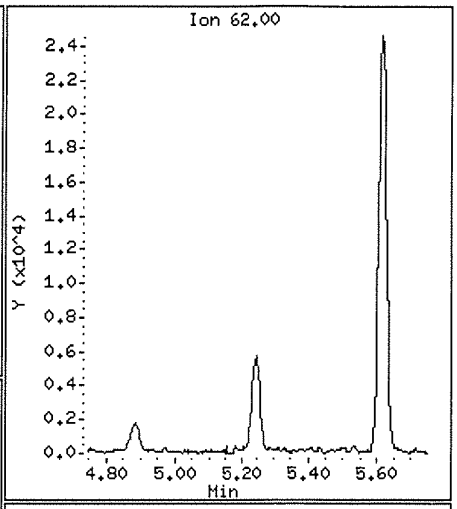
Column phase: DB624

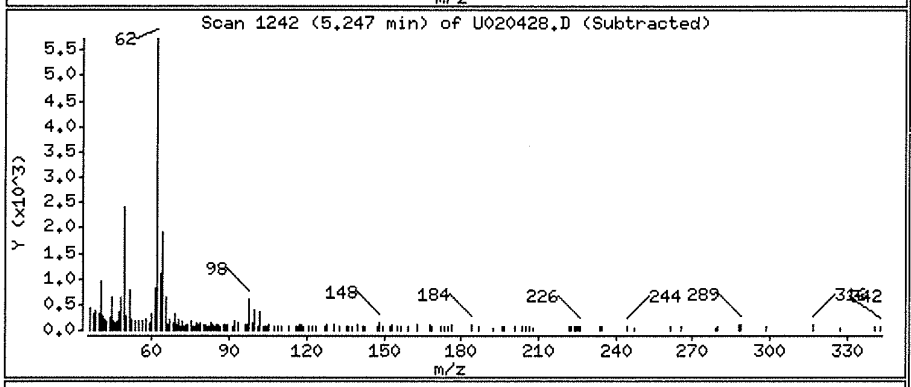
Column diameter: 0.18

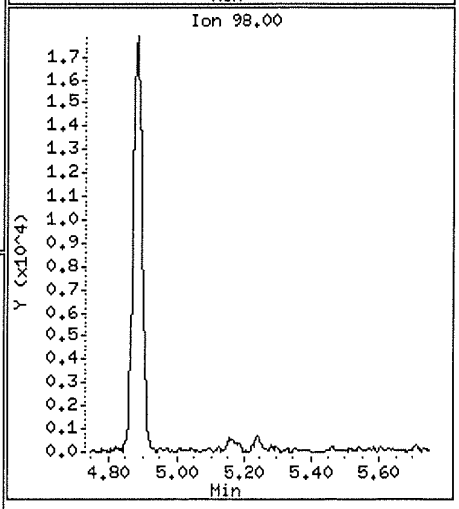
33 1,2-Dichloroethane

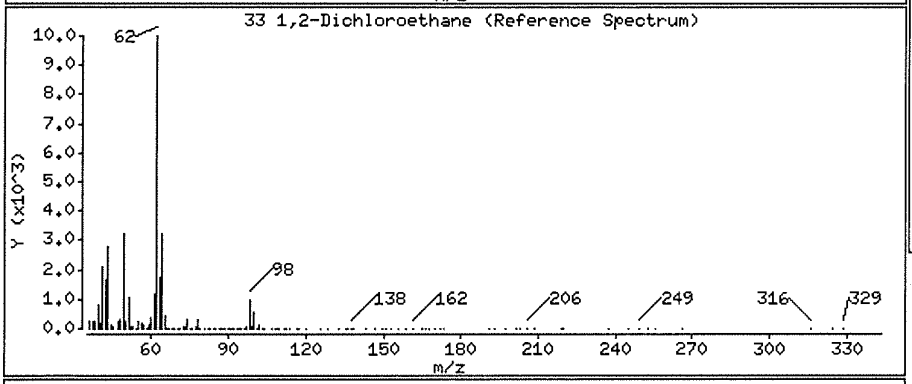
Concentration: 4.78 ug/l

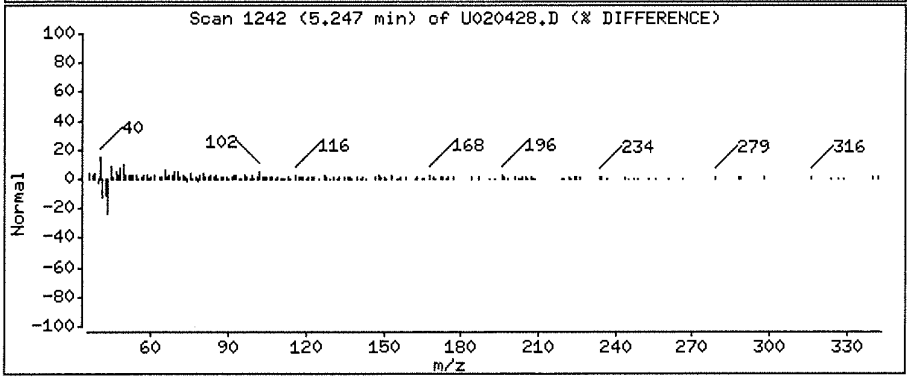












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020428.D Page 4

Date : 04-FEB-2022 21:47

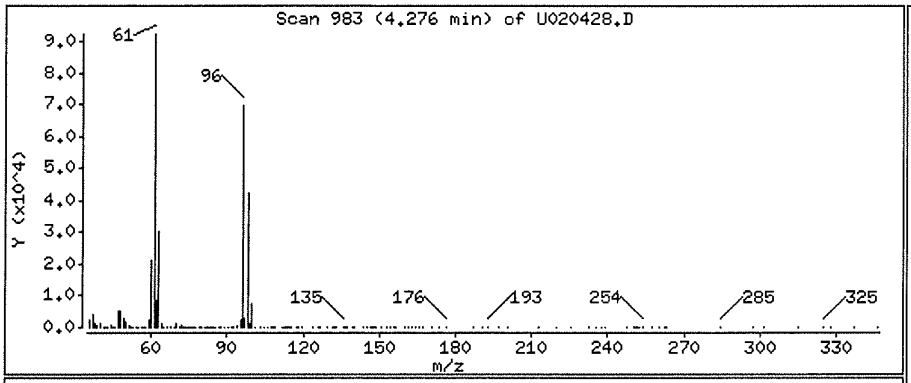
Client ID: HS22011233-06 Instrument: VOA9.i

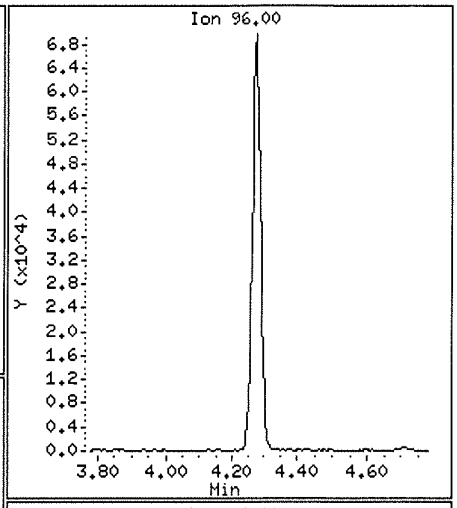
Sample Info: HS22011233-06;HS22011233-06;;;

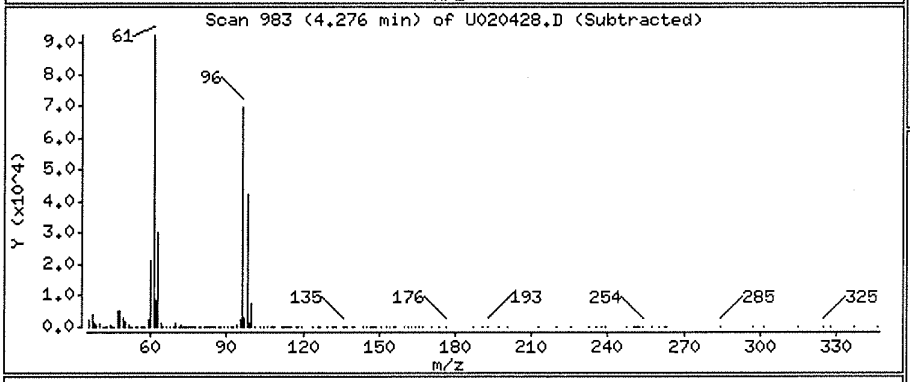
Purge Volume: 5.0 Operator: PC

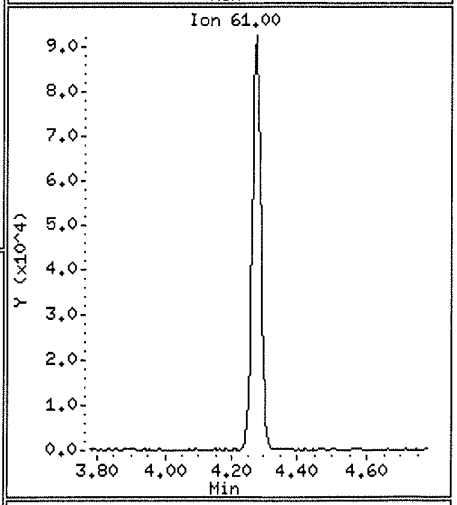
Column phase: DB624 Column diameter: 0.18

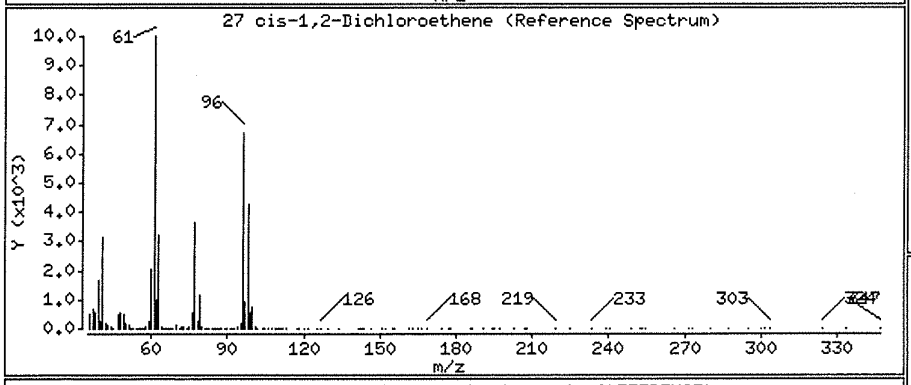
27 cis-1,2-Dichloroethene Concentration: 77.47 ug/l

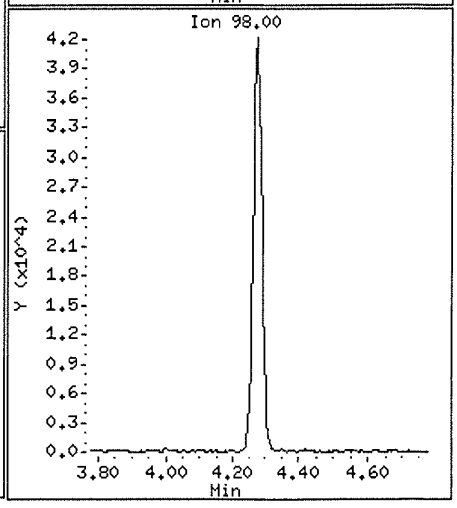


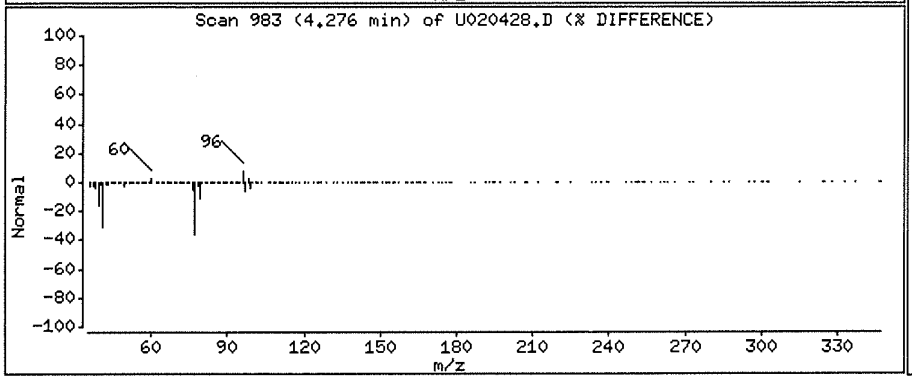












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020428.D Page 5

Date : 04-FEB-2022 21:47

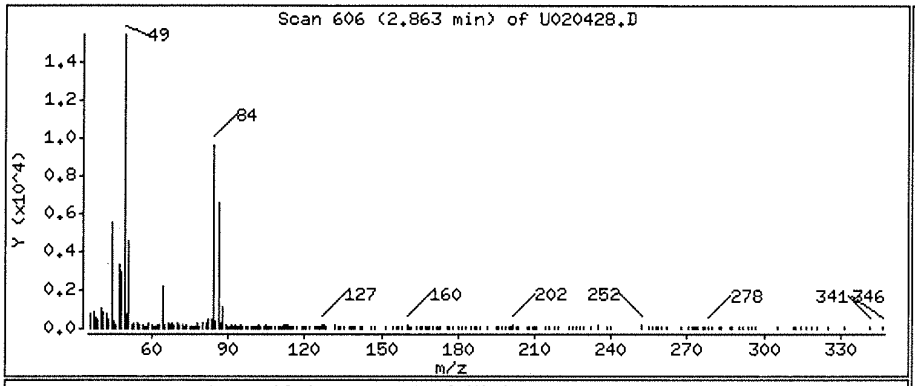
Client ID: HS22011233-06 Instrument: VOA9.i

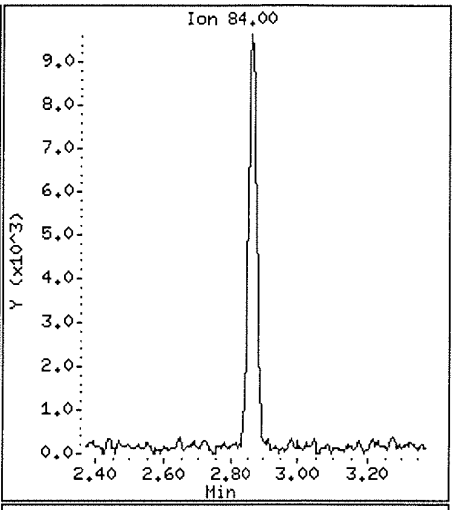
Sample Info: HS22011233-06;HS22011233-06;;;

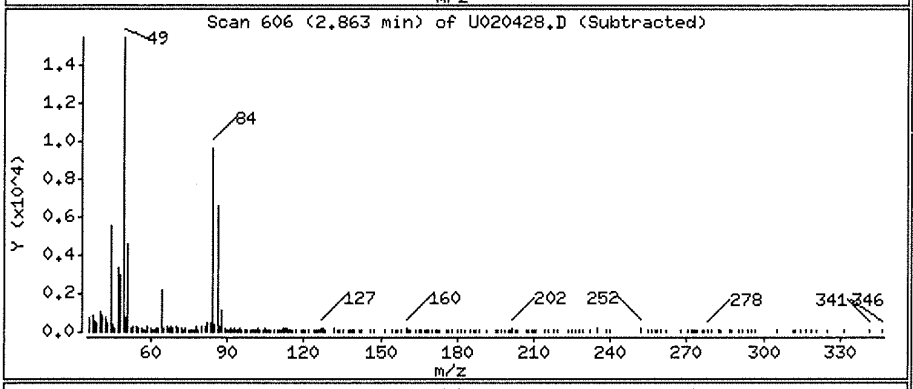
Purge Volume: 5.0 Operator: PC

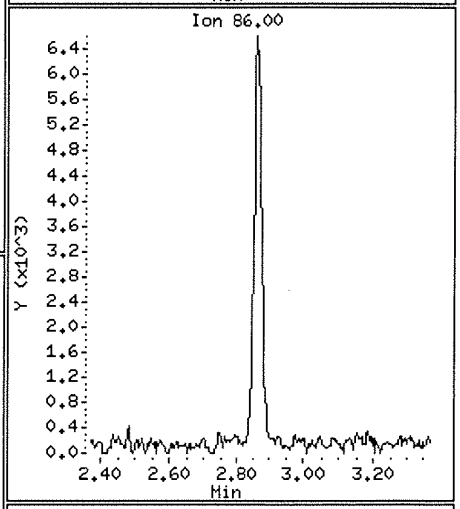
Column phase: DB624 Column diameter: 0.18

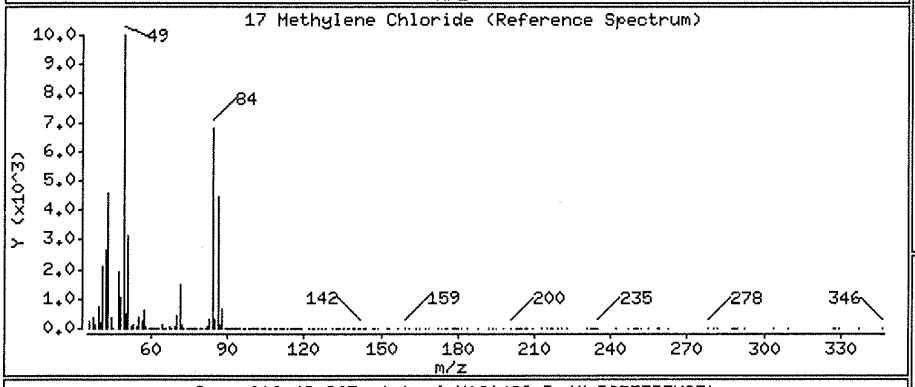
17 Methylene Chloride Concentration: 5.14 ug/l

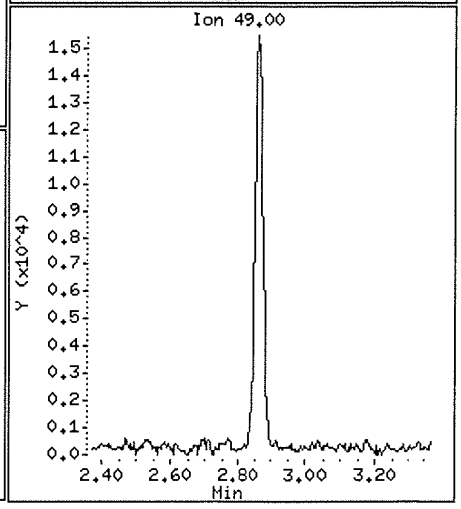


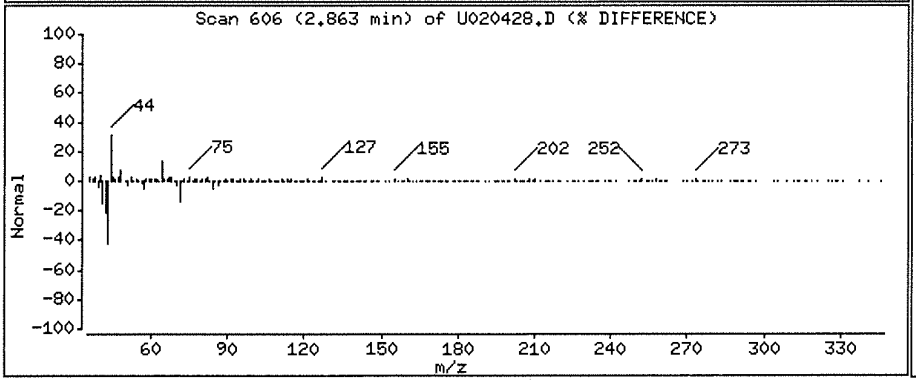












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020428.D Page 6

Date : 04-FEB-2022 21:47

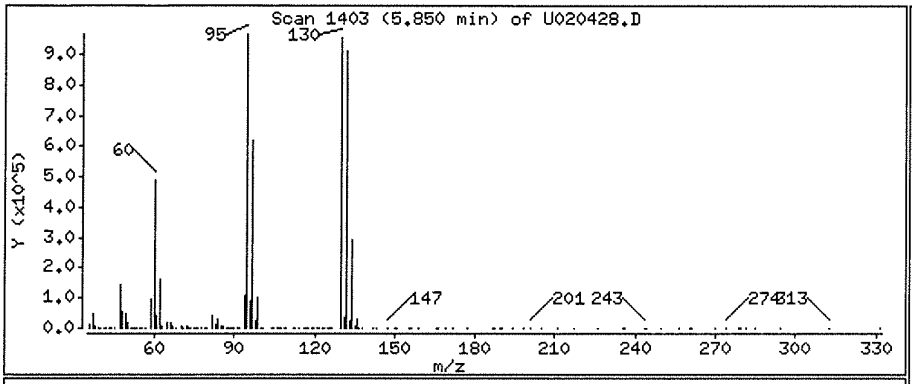
Client ID: HS22011233-06 Instrument: VOA9.i

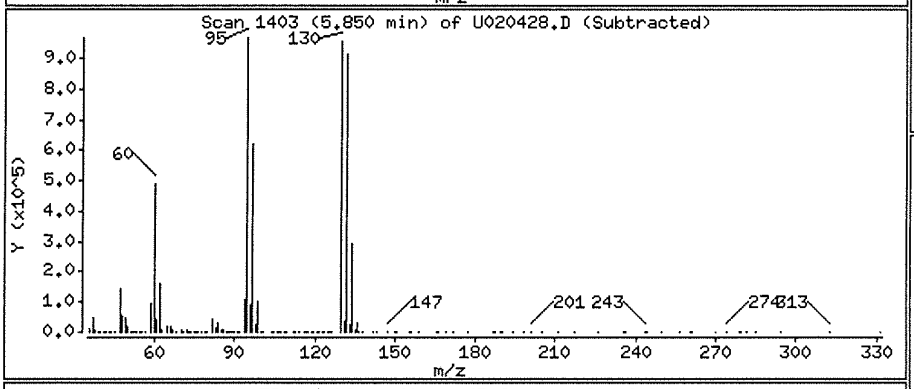
Sample Info: HS22011233-06;HS22011233-06;;;

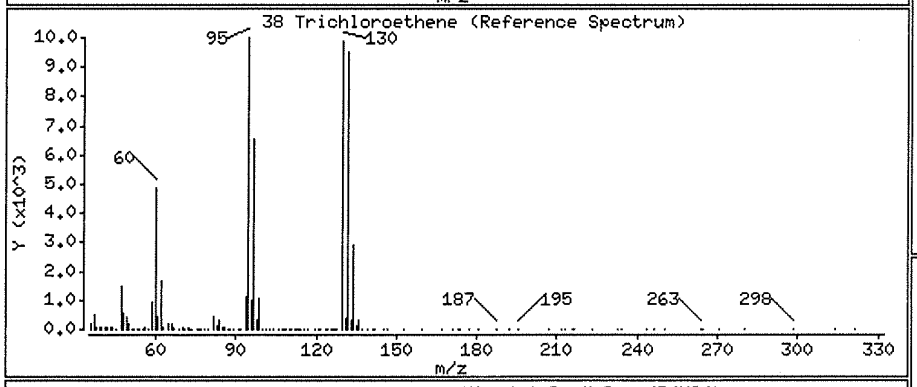
Purge Volume: 5.0 Operator: PC

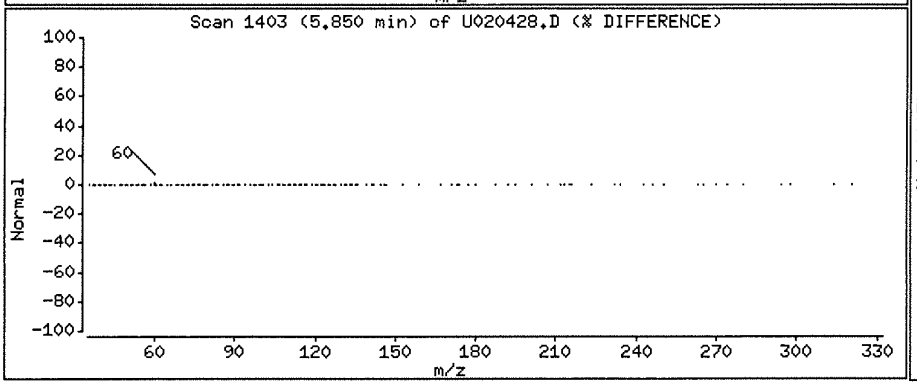
Column phase: DB624 Column diameter: 0.18

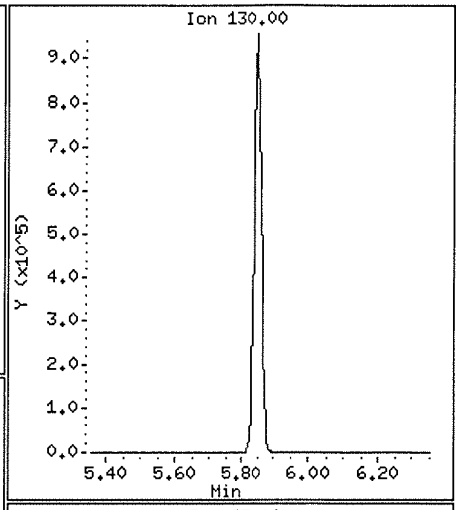
38 Trichloroethene Concentration: 1029.55 ug/l

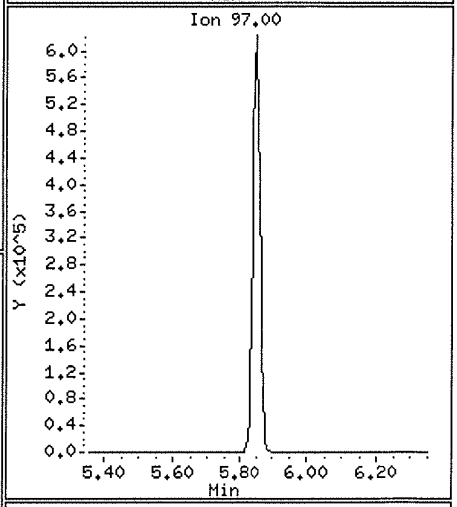


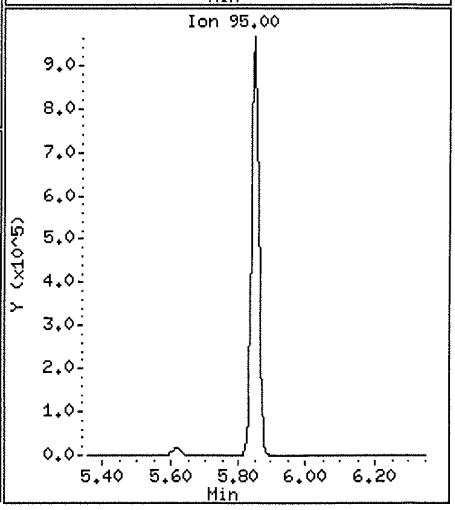












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020428.D

Date : 04-FEB-2022 21:47

Client ID: HS22011233-06

Instrument: VOA9.i

Sample Info: HS22011233-06;HS22011233-06;;;

Purge Volume: 5.0

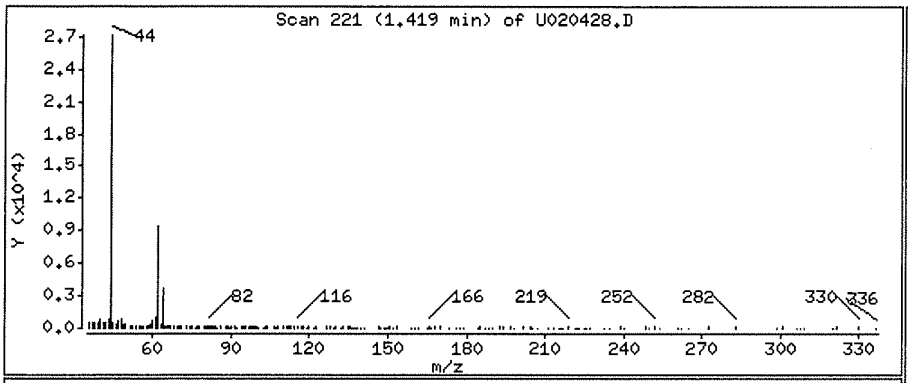
Operator: PC

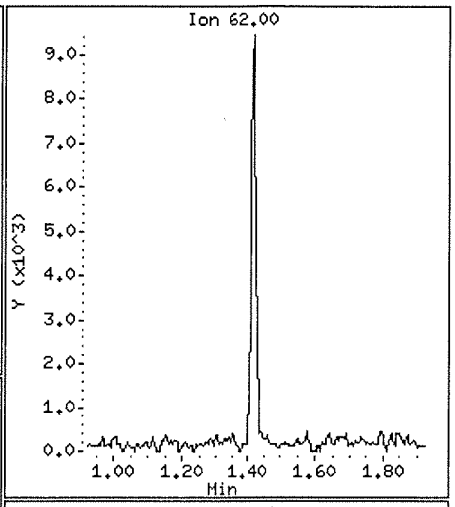
Column phase: DB624

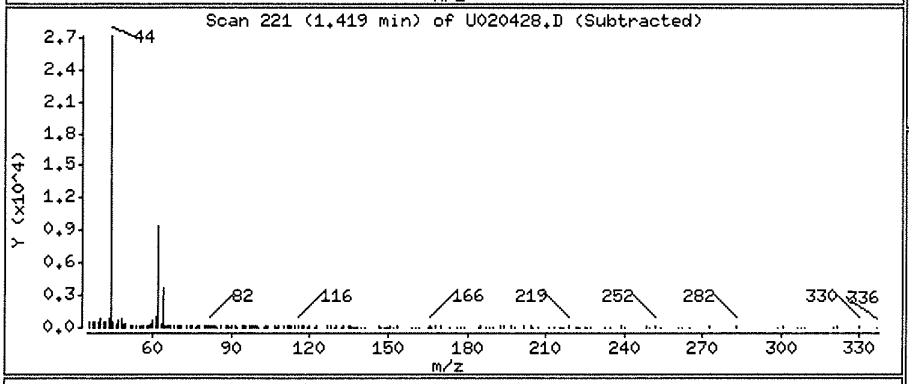
Column diameter: 0.18

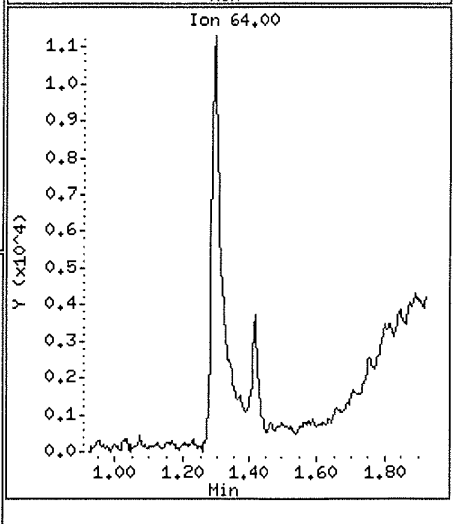
5 Vinyl Chloride

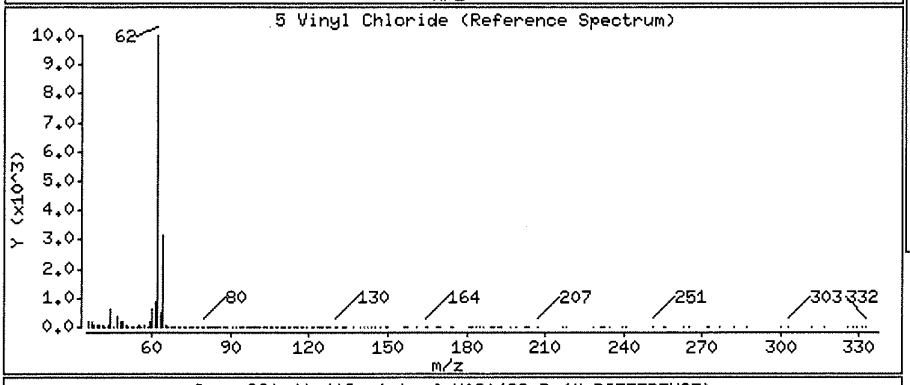
Concentration: 4.99 ug/l

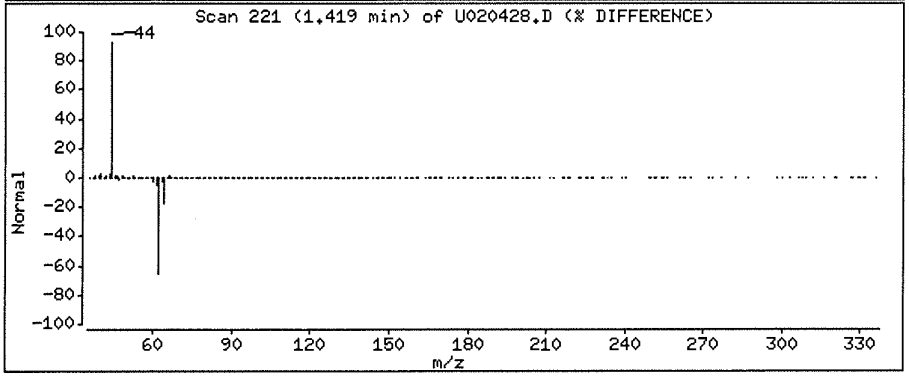












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020429.D Page 1
Report Date: 08-Feb-2022 11:05

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020429.D
Lab Smp Id: HS22011233-06 Client Smp ID: HS22011233-06
Inj Date : 04-FEB-2022 22:09
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-06;HS22011233-06;;;
Misc Info : 180315V9;WATER;0;25;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 10:59 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 28
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

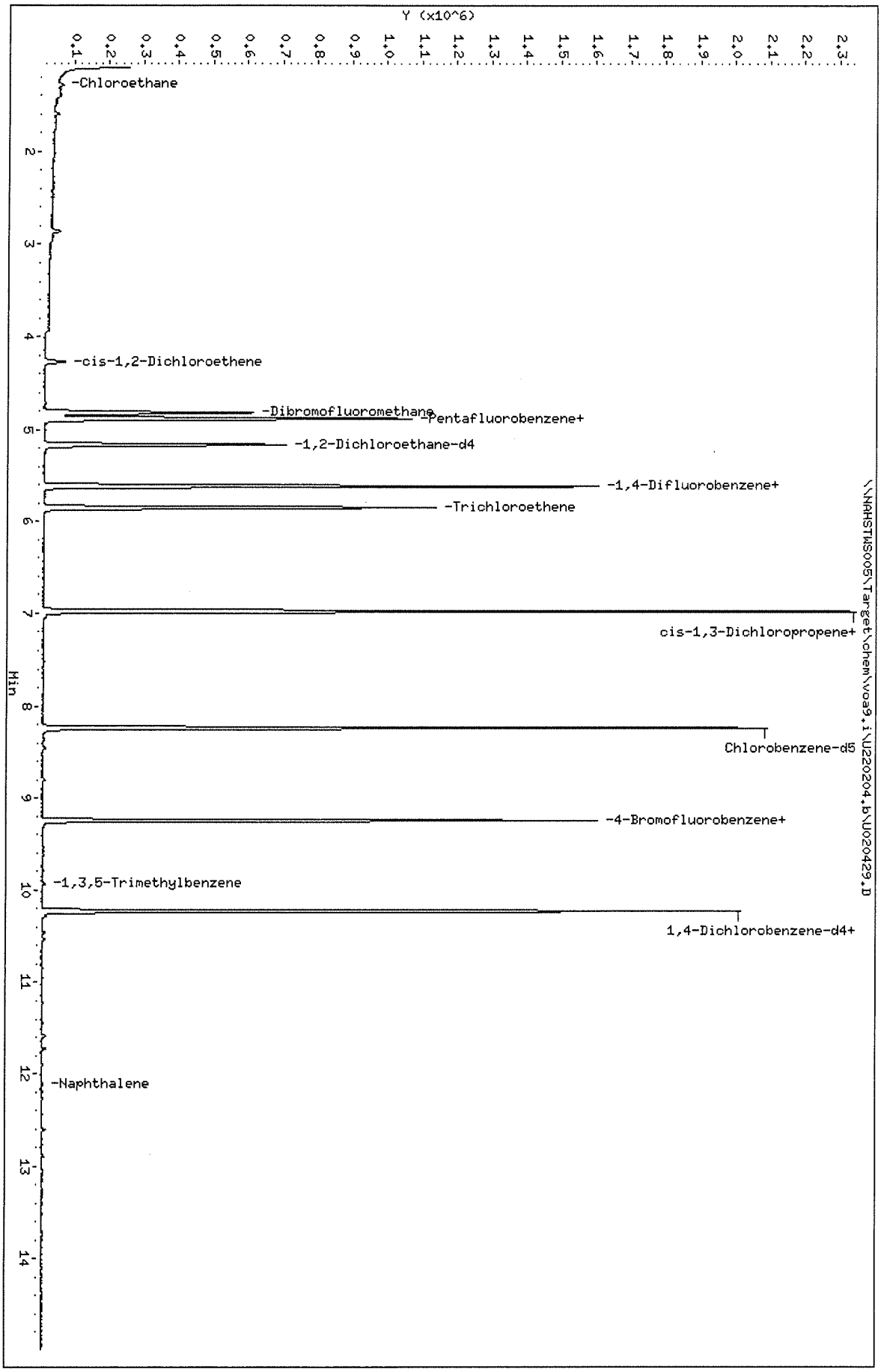
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.883	4.886	(1.000)	655301	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.617	(1.000)	1074255	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	950938	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	457916	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.167	(1.058)	441201	51.8572	51.85
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	450450	50.8319	50.83
$	30 Dibromofluoromethane	113	4.815	4.823	(0.986)	331452	49.4372	49.43
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1280248	52.5283	52.52
	27 cis-1,2-Dichloroethene	96	4.272	4.279	(0.875)	28156	3.31608	82.90(a)
	38 Trichloroethene	130	5.850	5.853	(1.042)	320501	42.3524	1058.81

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220204,b\U020429,D
Date : 04-FEB-2022 22:09
Client ID: HS22011233-06
Sample Info: HS22011233-06;HS22011233-06;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020429.D

Date : 04-FEB-2022 22:09

Client ID: HS22011233-06

Instrument: VOA9.i

Sample Info: HS22011233-06;HS22011233-06;;;

Purge Volume: 5.0

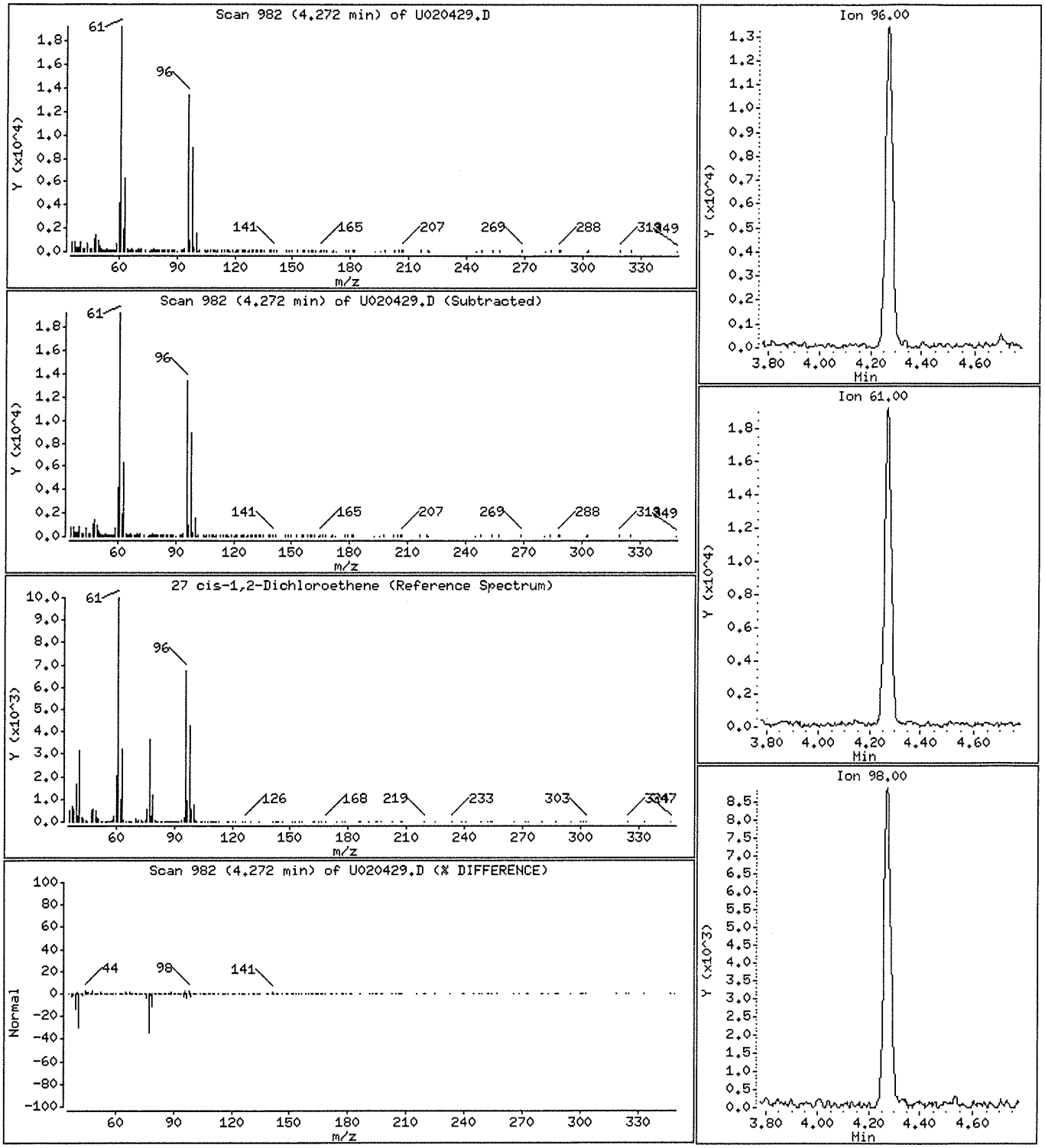
Operator: PC

Column phase: DB624

Column diameter: 0.18

27 cis-1,2-Dichloroethene

Concentration: 82.90 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020429.D Page 4

Date : 04-FEB-2022 22:09

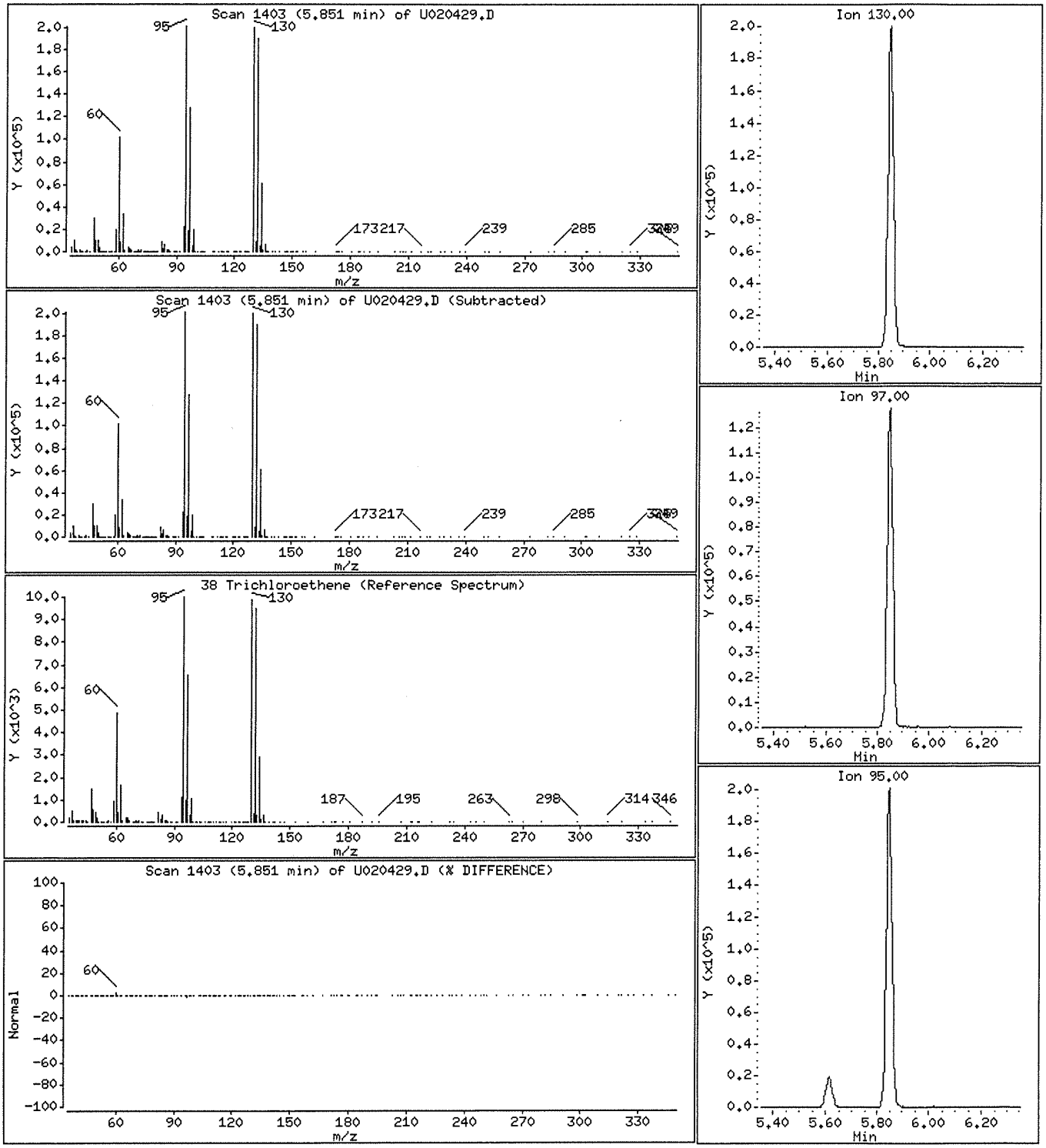
Client ID: HS22011233-06 Instrument: VOA9.i

Sample Info: HS22011233-06;HS22011233-06;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

38 Trichloroethene Concentration: 1058.81 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020430.D Page 1
Report Date: 08-Feb-2022 11:09

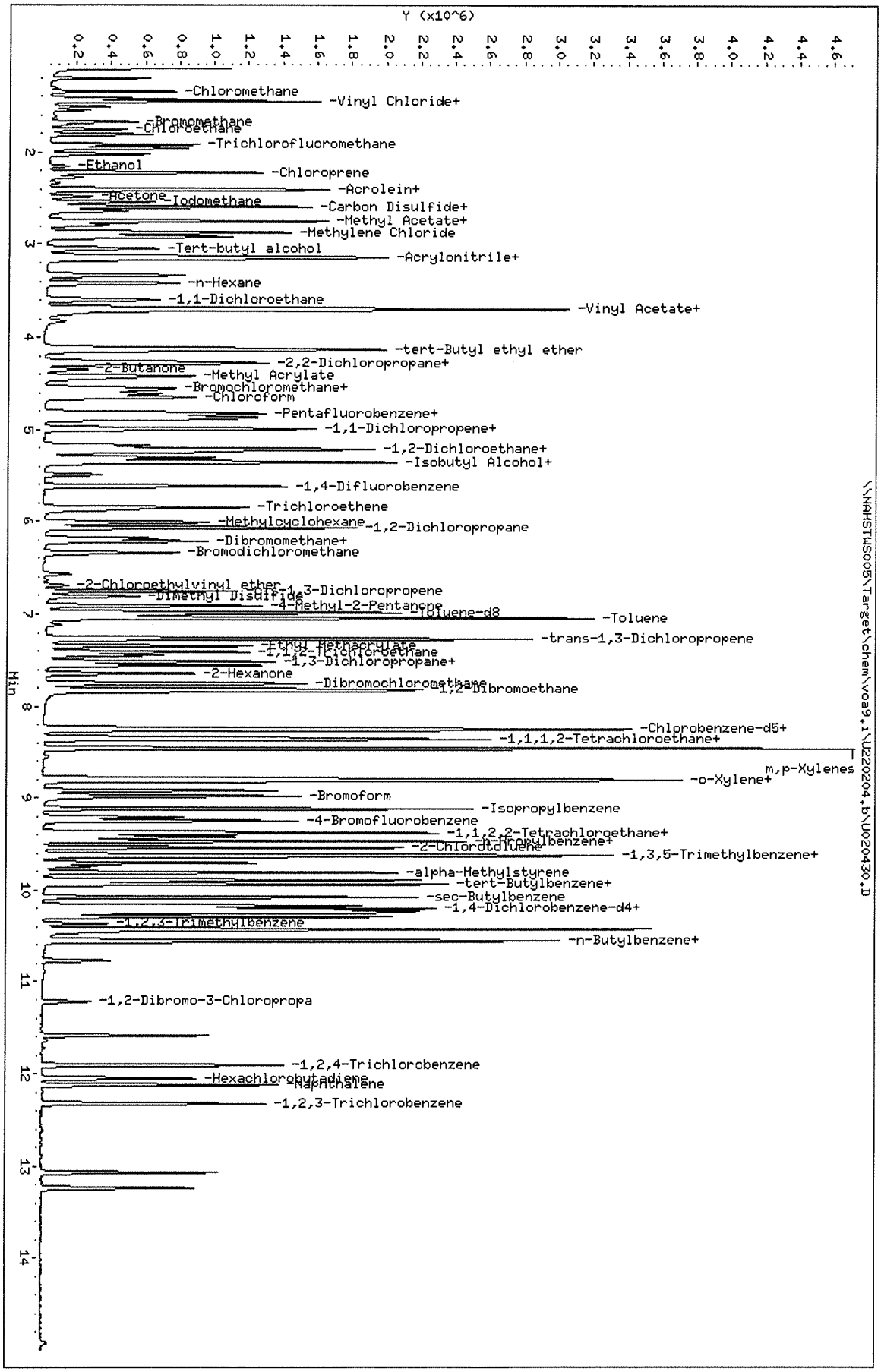
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020430.D
Lab Smp Id: CCV-END Client Smp ID: CCV-END
Inj Date : 04-FEB-2022 22:31
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050-END;VSTD050-END;2;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 08-Feb-2022 11:09 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 29 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.886	4.886	(1.000)	547799	50.0000	
* 36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	953332	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	878385	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	440167	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.167	5.167	(1.058)	386018	50.0000	54.33
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	413335	50.0000	50.48
$ 30 Dibromofluoromethane	113	4.823	4.823	(0.987)	300208	50.0000	53.63
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1104172	50.0000	49.04
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	271430	50.0000	49.02
11 1,1-Dichloroethene	96	2.401	2.401	(0.491)	293359	50.0000	57.03
33 1,2-Dichloroethane	62	5.246	5.246	(0.934)	515413	50.0000	53.91
27 cis-1,2-Dichloroethene	96	4.279	4.279	(0.876)	362217	50.0000	51.03
17 Methylene Chloride	84	2.870	2.870	(0.587)	359236	50.0000	58.42
38 Trichloroethene	130	5.853	5.853	(1.042)	340589	50.0000	50.71
5 Vinyl Chloride	62	1.423	1.423	(0.291)	453859	50.0000	54.21



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220204,b\U020430,D
Date : 04-FEB-2022 22:31
Client ID: CCV-END
Sample Info: VSTD050-END;VSTD050-END;2;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

HS22011233 RSK175

ALS WO# HS22011233

FID04 -Logbook

Batch: 26730
Date: 01-24-2017
Method: RSK 175 ICAL
Comments: Target Sequence 170124

Analyst: Nosa Izekor
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	p
1	ICAL1	CALIB_1	01-24-2017 09:06 am	1.00	0.00 mL	0.00 mL	001.D	Liquid	Y	N
2	ICAL2	CALIB_2	01-24-2017 09:30 am	1.00	0.00 mL	0.00 mL	002.D	Liquid	Y	N
3	ICAL3	CALIB_3	01-24-2017 09:59 am	1.00	0.00 mL	0.00 mL	003.D	Liquid	Y	N
4	ICAL4	CALIB_4	01-24-2017 10:15 am	1.00	0.00 mL	0.00 mL	004.D	Liquid	Y	N
5	ICAL5	CALIB_5	01-24-2017 10:39 am	1.00	0.00 mL	0.00 mL	005.D	Liquid	Y	N
6	ICAL6	CALIB_6	01-24-2017 10:57 am	1.00	0.00 mL	0.00 mL	006.D	Liquid	Y	N
7	ICAL7	CALIB_7	01-24-2017 11:13 am	1.00	0.00 mL	0.00 mL	007.D	Liquid	Y	N
8	ICV	METHSPIKI	01-24-2017 12:05 pm	1.00	0.00 mL	0.00 mL	008.D	Liquid	Y	N
9	LCS-170124	LCS	01-24-2017 12:24 pm	1.00	0.00 mL	0.00 mL	009.D	Liquid	Y	N
10	LCSD-170124	LCSD	01-24-2017 12:40 pm	1.00	0.00 mL	0.00 mL	010.D	Liquid	Y	N
11	MBLK-170124	MBLK	01-24-2017 12:57 pm	1.00	0.00 mL	0.00 mL	011.D	Liquid	Y	N
12	HS17010778-01	SAMP	01-24-2017 01:14 pm	1.00	0.00 mL	0.00 mL	012.D	Liquid	Y	N
13	HS17010779-01	SAMP	01-24-2017 01:31 pm	1.00	0.00 mL	0.00 mL	013.D	Liquid	Y	N
14	HS17010779-01DUP	SAMP	01-24-2017 01:47 pm	1.00	0.00 mL	0.00 mL	014.D	Liquid	Y	N
15	CCV	CCV	01-24-2017 02:01 pm	1.00	0.00 mL	0.00 mL	015.D	Liquid	Y	N

Chemical	Value
ICAL STD ID	30010700217
ICV STD ID	30010700610

FORM 3
WATER GASES METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Matrix Spike - ENG SC Sample No.: ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
Ethene	16.800	19.090	114	75-125
Methane	9.647	9.597	99	75-125
Ethane	18.043	19.657	109	75-125
Propane	26.463	27.238	103	75-125
N-Butane	34.955	36.010	103	75-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

_____

FORM III GASES

FORM 6
GASES INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Instrument ID: FID-4 Calibration Date(s): 01/24/17 01/24/17

Column: RTX-PLOT ID: 0.53 (mm) Calibration Time(s): 0906 1113

LAB FILE ID: RF10: 001 RF25: 002 RF50: 003
RF100: 004 RF250: 005 RF500: 006

COMPOUND	RF10	RF25	RF50	RF100	RF250	RF500
Ethene	535.608	567.359	564.985	516.024	665.282	425.678
Methane	968.912	978.238	1019.699	880.798	960.713	930.704
Ethane	602.493	670.177	658.908	597.201	808.513	817.630
Propane	500	1279	2602	4785	18294	38286
N-Butane	438	936	2034	3864	18446	42817

FORM VI GASES

FORM 6
GASES INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS2201123

Instrument ID: FID-4 Calibration Date(s): 01/24/17 01/24/17

Column: RTX-PLOT ID: 0.53 (mm) Calibration Time(s): 0906 1113

RF1000: 007

COMPOUND	RF1000	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MA
Ethene	828.858	AVRG		586.256273		21.932	
Methane	1081.580	AVRG		974.377787		6.550	
Ethane	999.335	AVRG		736.322546		19.885	
Propane	96509	2ORDR	0.97987006	1.529e-003	-4.58e-009	0.9991365	0
N-Butane	114164	2ORDR	2.46870151	1.834e-003	-5.54e-009	0.9980766	0

FORM VI GASES

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\001.D Page 1
Report Date: 27-Dec-2021 13:16

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\001.D
Lab Smp Id: ICAL1 Client Smp ID: ICAL1
Inj Date : 24-JAN-2017 09:06
Operator : JA Inst ID: FID-4.i
Smp Info : ICAL1;ICAL1;;;
Misc Info :
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 09:06 Cal File: 001.D
Als bottle: 1 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	ON-COL (ug/L)
1 Methane	1.043	1.030	0.013	374	0.38600	0.383(a)
2 Ethene	1.553	1.556	-0.003	361	0.67400	0.615(a)
3 Ethane	1.716	1.723	-0.007	435	0.72200	0.590(a)
4 Propane	4.073	4.113	-0.040	500	1.05900	1.743
5 N-Butane	7.640	7.690	-0.050	438	1.39800	3.271

QC Flag Legend

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

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\001.D

Date : 24-JAN-2017 09:06

Client ID: ICAL1

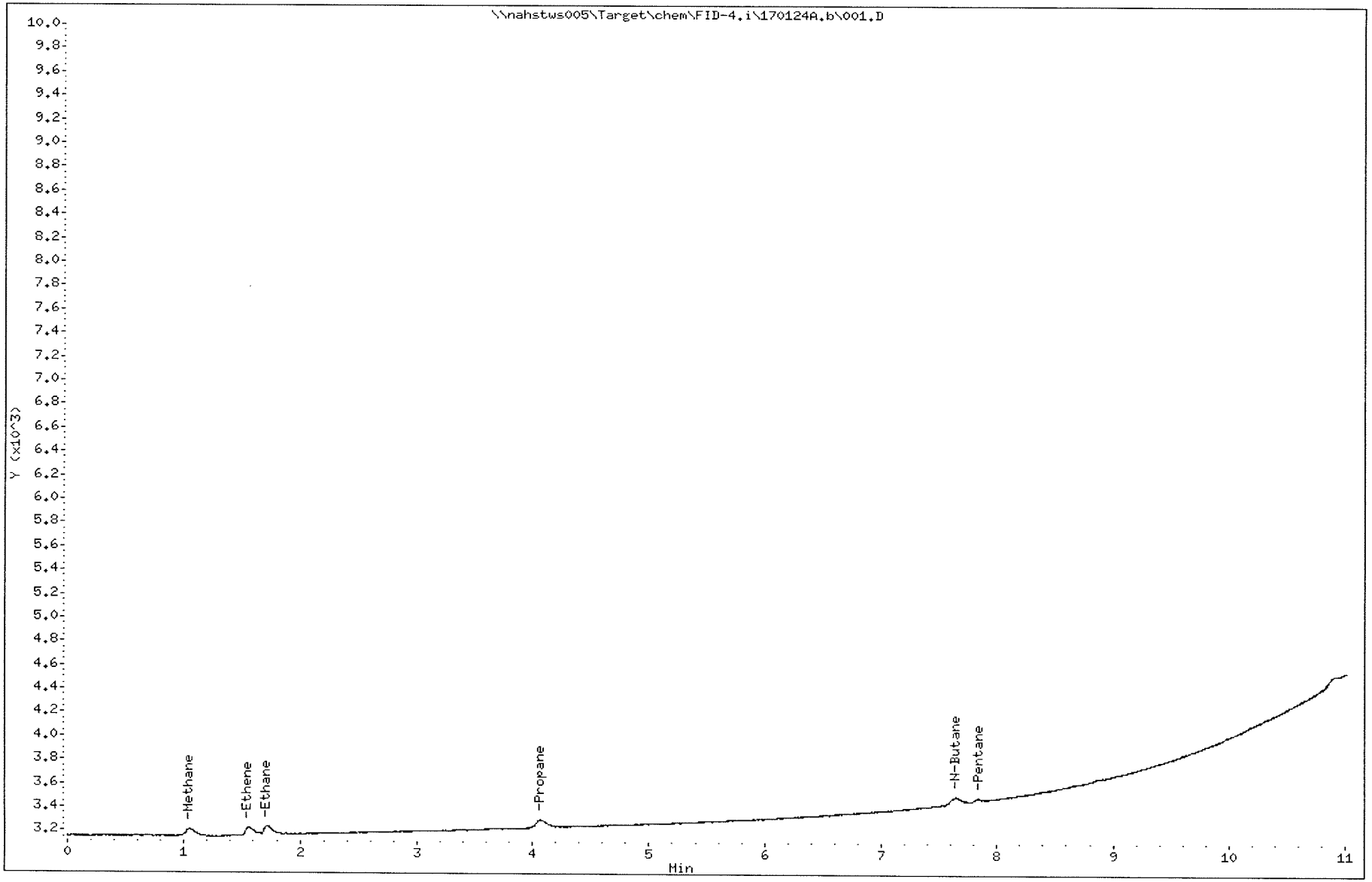
Sample Info: ICAL1;ICAL1;;;

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: JA

Column diameter: 0.53



Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\002.D Page 1
Report Date: 27-Dec-2021 13:16

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\002.D
Lab Smp Id: ICAL2 Client Smp ID: ICAL2
Inj Date : 24-JAN-2017 09:30
Operator : MA Inst ID: FID-4.i
Smp Info : ICAL2;ICAL2;;;
Misc Info : ;1;0;1
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 09:59 Cal File: 003.D
Als bottle: 2 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Methane	1.023	1.030	-0.007	944	0.96500	0.968
2 Ethene	1.560	1.556	0.004	956	1.68500	1.630
3 Ethane	1.723	1.723	0.000	1209	1.80400	1.641
4 Propane	4.123	4.113	0.010	1279	2.64600	2.927
5 N-Butane	7.716	7.690	0.026	936	3.49600	4.180

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\002.D

Date : 24-JAN-2017 09:30

Client ID: ICAL2

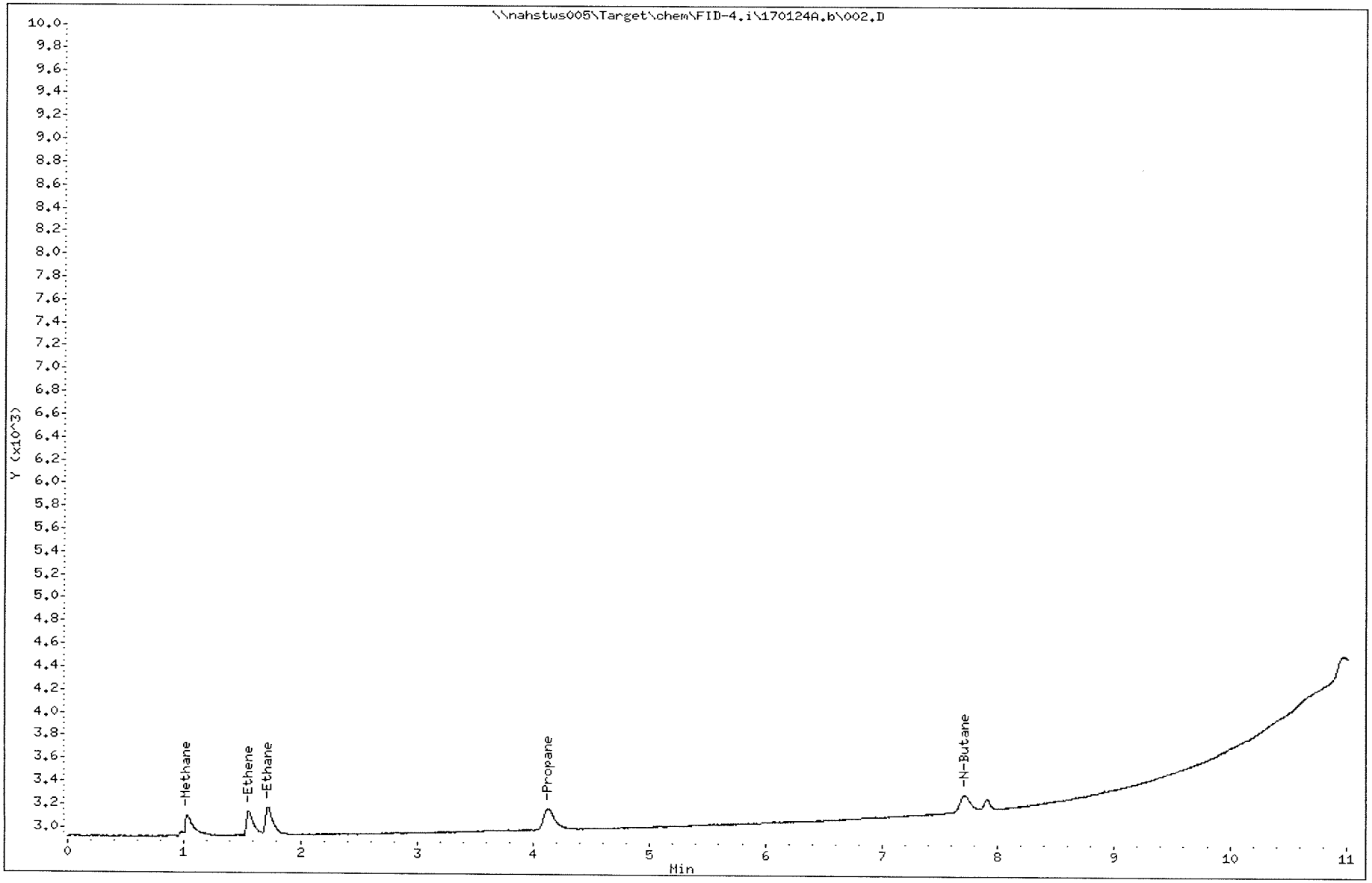
Sample Info: ICAL2;ICAL2;;;

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: MA

Column diameter: 0.53



Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\003.D Page 1
Report Date: 27-Dec-2021 13:16

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\003.D
Lab Smp Id: ICAL3 Client Smp ID: ICAL3
Inj Date : 24-JAN-2017 09:59
Operator : MA Inst ID: FID-4.i
Smp Info : ICAL3;ICAL3;;;
Misc Info : ;1;0;1
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 11:13 Cal File: 007.D
Als bottle: 3 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					AMOUNTS	
					CAL-AMT	ON-COL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	1.043	1.030	0.013	1967	1.92900	2.018
2 Ethene	1.570	1.556	0.014	1904	3.37000	3.247
3 Ethane	1.736	1.723	0.013	2378	3.60900	3.229
4 Propane	4.123	4.113	0.010	2602	5.29300	4.926
5 N-Butane	7.703	7.690	0.013	2034	6.99100	6.176

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\003.D

Date : 24-JAN-2017 09:59

Client ID: ICAL3

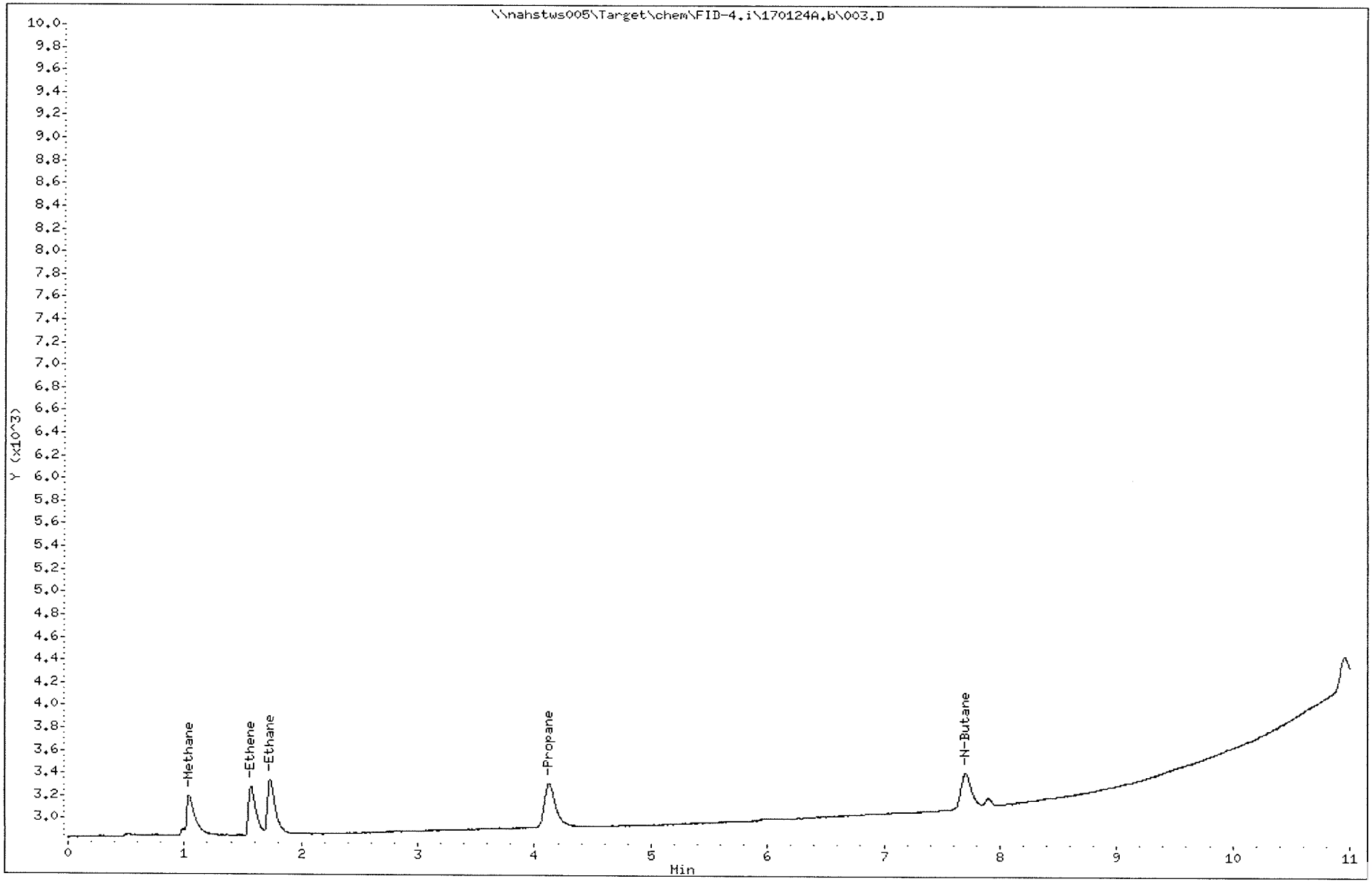
Sample Info: ICAL3;ICAL3;;;

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: MA

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\004.D
Lab Smp Id: ICAL4 Client Smp ID: ICAL4
Inj Date : 24-JAN-2017 10:15
Operator : MA Inst ID: FID-4.i
Smp Info : ICAL4;ICAL4;;;
Misc Info : ;1;0;1
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 09:30 Cal File: 002.D
Als bottle: 4 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					AMOUNTS	
					CAL-AMT	ON-COL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	1.033	1.030	0.003	3399	3.85900	3.488
2 Ethene	1.563	1.556	0.007	3478	6.74000	5.932
3 Ethane	1.726	1.723	0.003	4310	7.21700	5.853
4 Propane	4.120	4.113	0.007	4785	10.5850	8.190
5 N-Butane	7.703	7.690	0.013	3864	13.9820	9.473(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\004.D

Date : 24-JAN-2017 10:15

Client ID: ICAL4

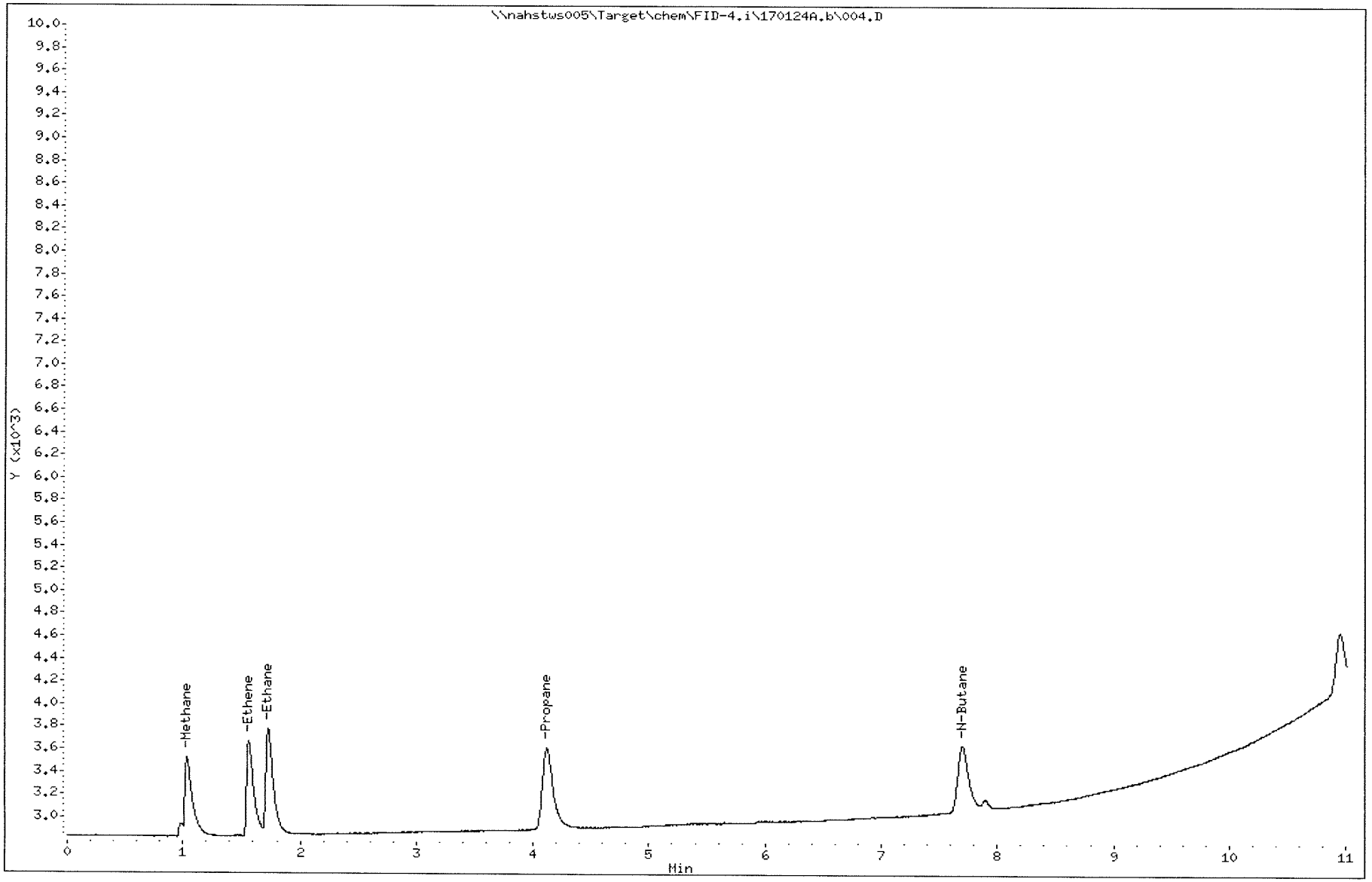
Sample Info: ICAL4;ICAL4;;;

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: MA

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\005.D
Lab Smp Id: ICAL5 Client Smp ID: ICAL5
Inj Date : 24-JAN-2017 10:39
Operator : MA Inst ID: FID-4.i
Smp Info : ICAL5;ICAL5;;;
Misc Info : ;1;0;1
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:39 Cal File: 005.D
Als bottle: 5 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					AMOUNTS	
					CAL-AMT	ON-COL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	1.043	1.030	0.013	9268	9.64700	9.511
2 Ethene	1.570	1.556	0.014	11210	16.8500	19.121
3 Ethane	1.733	1.723	0.010	14588	18.0430	19.811
4 Propane	4.120	4.113	0.007	18294	26.4630	27.415
5 N-Butane	7.700	7.690	0.010	18446	34.9550	34.419(M)

QC Flag Legend

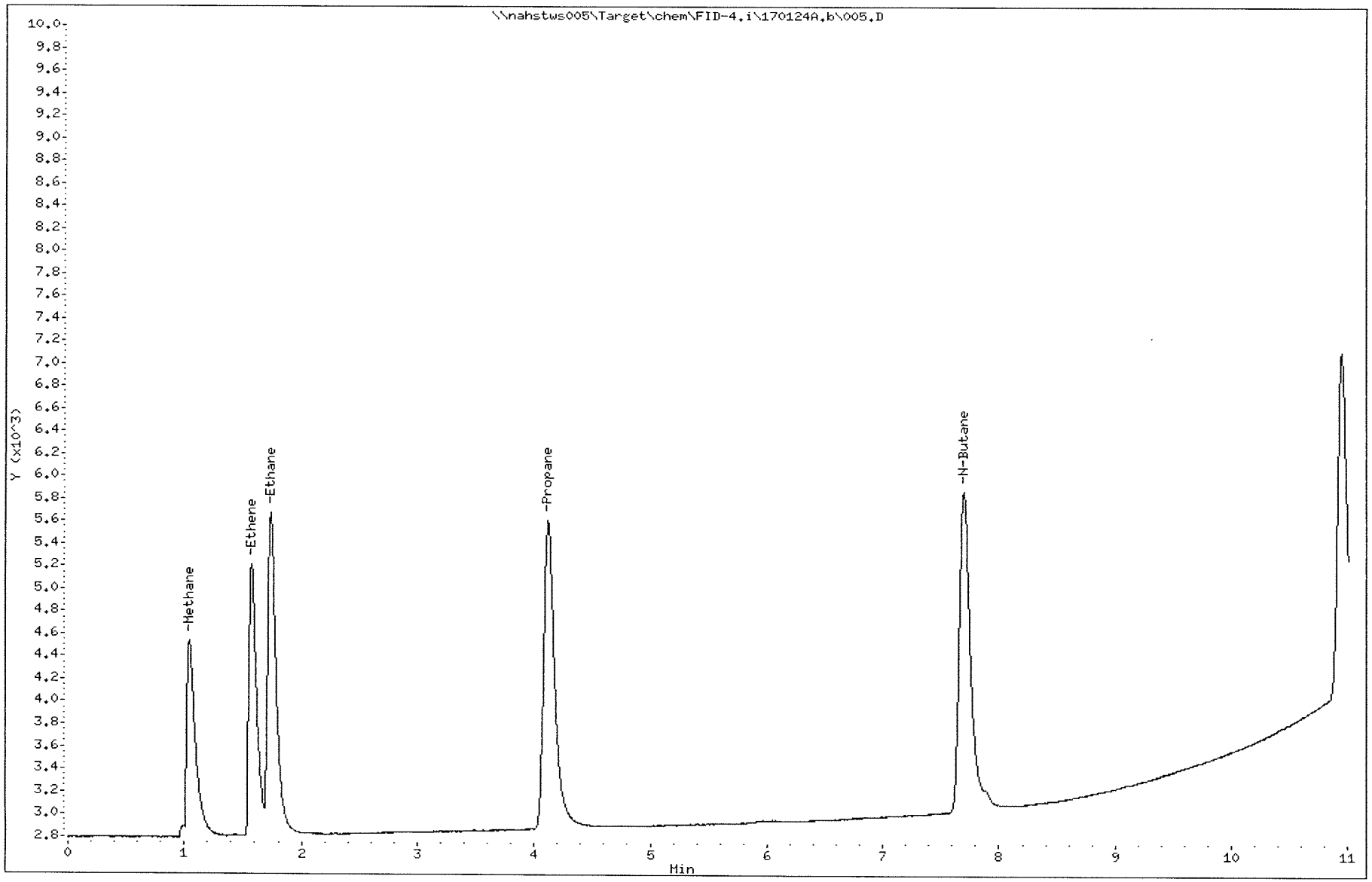
M - Compound response manually integrated.

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\005.D
Date : 24-JAN-2017 10:39
Client ID: ICAL5
Sample Info: ICAL5;ICAL5;;;

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: MA
Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

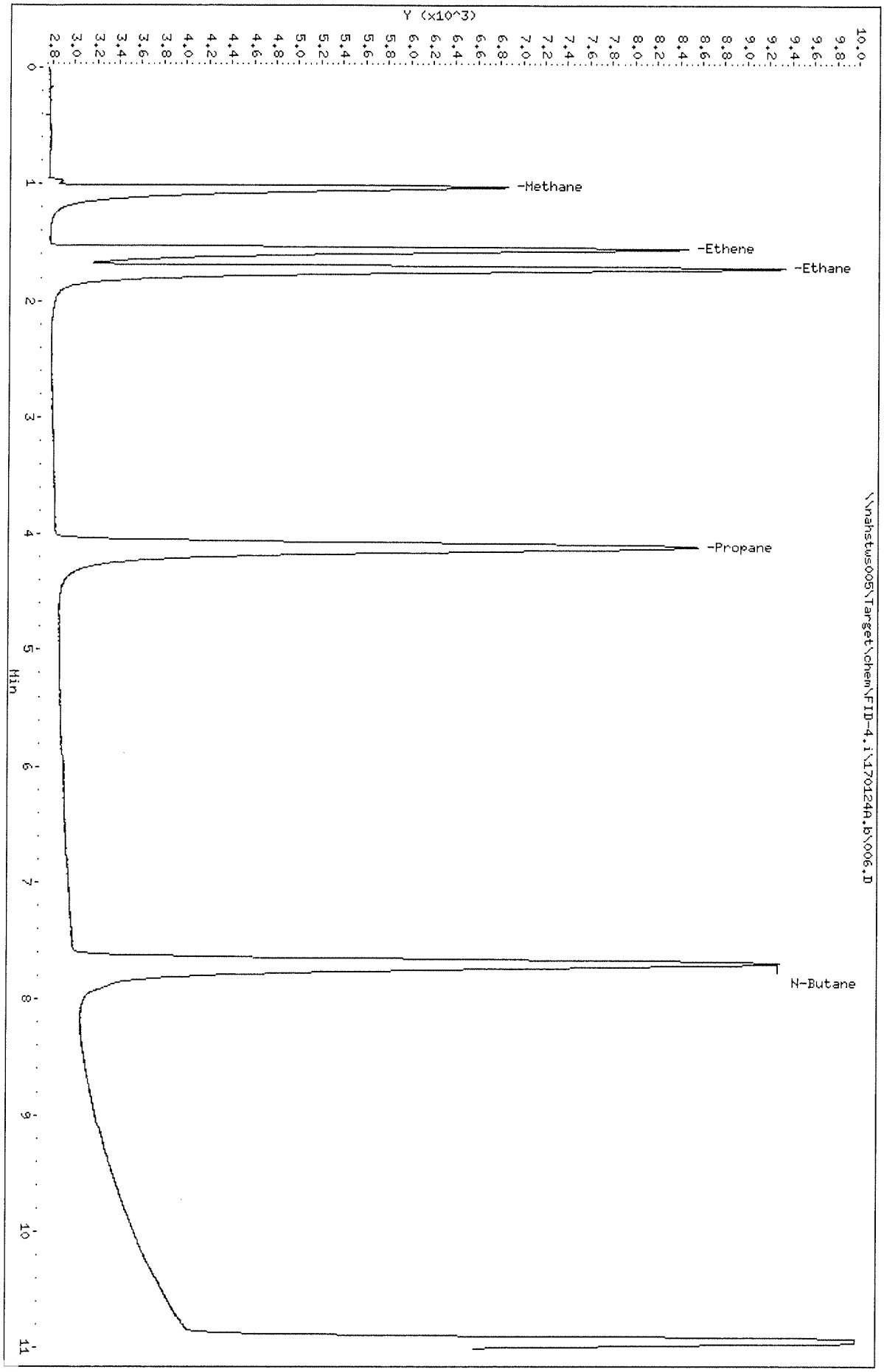
Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\006.D
Lab Smp Id: ICAL6 Client Smp ID: ICAL6
Inj Date : 24-JAN-2017 10:57
Operator : MA Inst ID: FID-4.i
Smp Info : ICAL6;ICAL6;;;
Misc Info : ;1;0;1
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:39 Cal File: 005.D
Als bottle: 6 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					AMOUNTS	
					CAL-AMT	ON-COL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	1.023	1.030	-0.007	17957	19.2940	18.429
2 Ethene	1.550	1.556	-0.006	22910	53.8200	39.078
3 Ethane	1.716	1.723	-0.007	29505	36.0860	40.070
4 Propane	4.110	4.113	-0.003	38286	52.9260	52.796
5 N-Butane	7.696	7.690	0.006	42817	69.9110	70.855

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\006.D
Date : 24-JAN-2017 10:57
Client ID: ICAL6
Sample Info: ICAL6;ICAL6;;;
Column phase: Rtx-PLOT

Instrument: FID-4.i
Operator: MA
Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\007.D
Lab Smp Id: ICAL7 Client Smp ID: ICAL7
Inj Date : 24-JAN-2017 11:13
Operator : MA Inst ID: FID-4.i
Smp Info : ICAL7;ICAL7;;;
Misc Info : ;1;0;1
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:57 Cal File: 006.D
Als bottle: 7 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

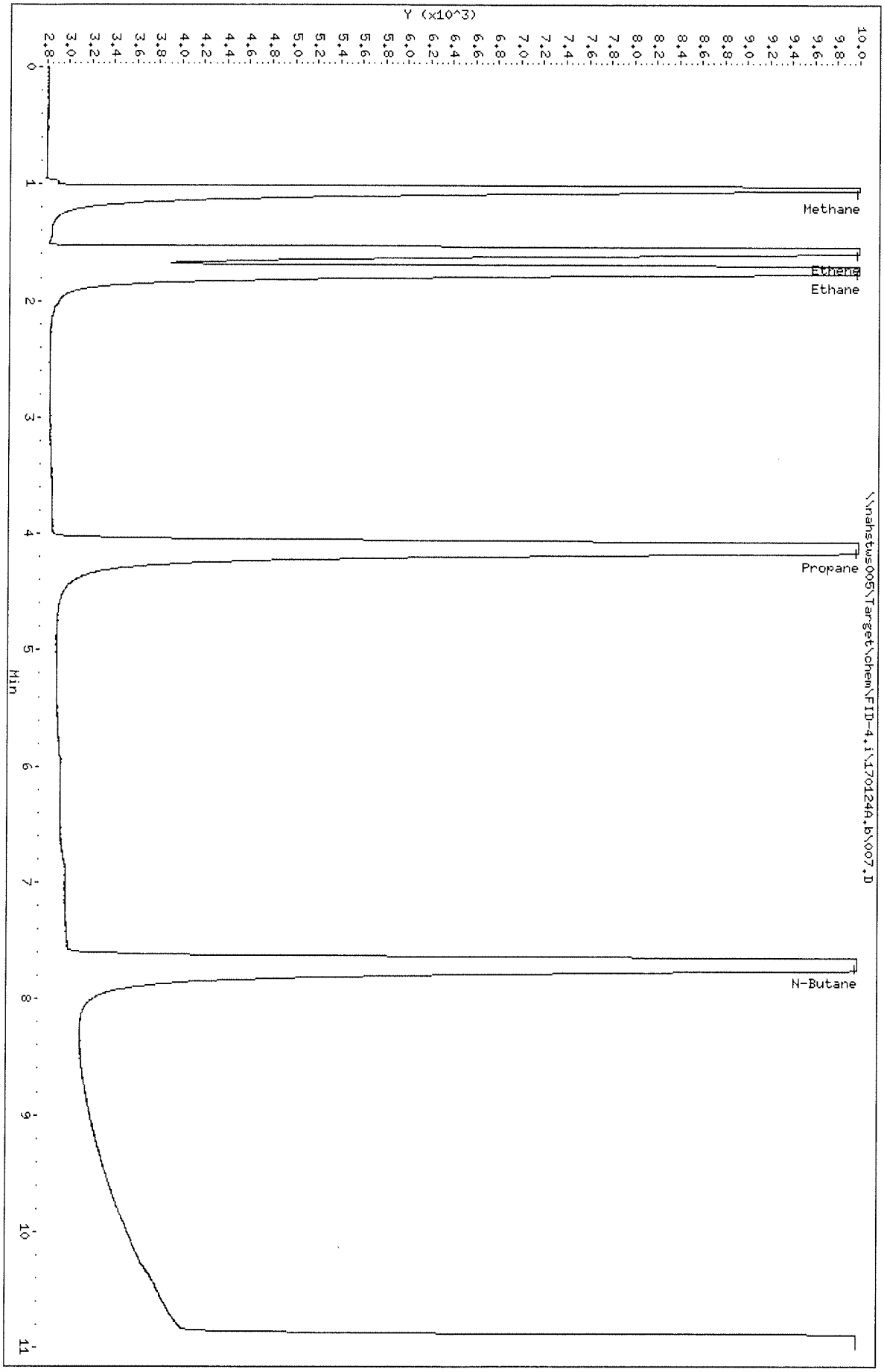
Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	ON-COL (ug/L)
1 Methane	1.030	1.030	0.000	41736	38.5880	42.833(A)
2 Ethene	1.556	1.556	0.000	55865	67.4000	95.291(A)
3 Ethane	1.723	1.723	0.000	72124	72.1720	97.951(A)
4 Propane	4.113	4.113	0.000	96509	105.852	105.844
5 N-Butane	7.690	7.690	0.000	114164	139.821	139.707

QC Flag Legend

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

Data File: \\nahstws005\Target\chem\FID-4.i\170124Q.b\007.D
Date : 24-JAN-2017 11:13
Client ID: ICAL7
Sample Info: ICAL7;ICAL7;;;
Column phase: Rtx-PLOT

Instrument: FID-4.i
Operator: MA
Column diameter: 0.53



Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\008.D Page 1
Report Date: 27-Dec-2021 13:16

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\008.D
Lab Smp Id: ICV Client Smp ID: ICV
Inj Date : 24-JAN-2017 12:05
Operator : MA Inst ID: FID-4.i
Smp Info : ICV;ICV;;;
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 11:13 Cal File: 007.D
Als bottle: 8 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

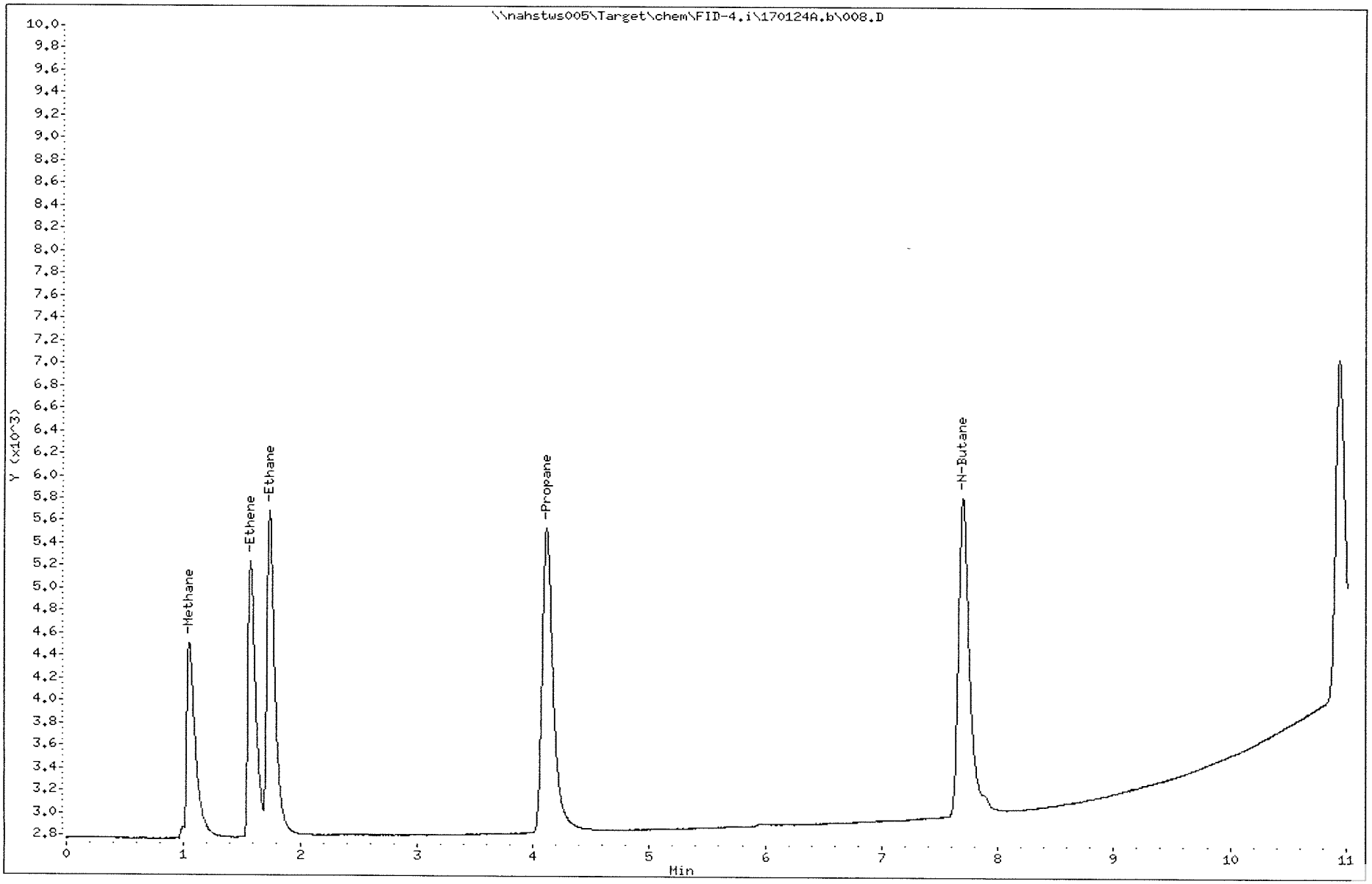
Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
1 Methane	1.046	1.030	0.016	9352	9.59792	9.597
2 Ethene	1.573	1.556	0.017	11192	19.0906	19.090
3 Ethane	1.736	1.723	0.013	14474	19.6571	19.657
4 Propane	4.116	4.113	0.003	18164	27.2381	27.238
5 N-Butane	7.696	7.690	0.006	19425	36.0103	36.010

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\008.D
Date : 24-JAN-2017 12:05
Client ID: ICV
Sample Info: ICV;ICV;;;

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: MA
Column diameter: 0.53



FID04 -Logbook

Batch: 48146
Date: 02-02-2022
Method: RSK175
Comments:

Analyst: Purvi Lad
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	p
1	RSK-CCV	CCV	02-02-2022 09:31 am	1.00	0.00 mL	0.00 mL	001.D	Liquid	Y	N
2	MBLK-220202	MBLK	02-02-2022 09:42 am	1.00	0.00 mL	0.00 mL	002.D	Liquid	Y	N
3	LCS-220202	LCS	02-02-2022 09:53 am	1.00	0.00 mL	0.00 mL	003.D	Liquid	Y	N
4	HS22011074-01	SAMP	02-02-2022 10:09 am	1.00	0.00 mL	0.00 mL	004.D	Liquid	Y	<
5	HS22011074-02	SAMP	02-02-2022 10:19 am	1.00	0.00 mL	0.00 mL	005.D	Liquid	Y	<
6	HS22011074-04	SAMP	02-02-2022 10:33 am	1.00	0.00 mL	0.00 mL	006.D	Liquid	Y	<
7	HS22011074-04MS	MS	02-02-2022 10:41 am	1.00	0.00 mL	0.00 mL	007.D	Liquid	Y	<
8	HS22011074-04MSD	MSD	02-02-2022 10:54 am	1.00	0.00 mL	0.00 mL	008.D	Liquid	Y	<
9	HS22011151-11	SAMP	02-02-2022 11:05 am	1.00	0.00 mL	0.00 mL	009.D	Liquid	Y	<
10	HS22011151-15	SAMP	02-02-2022 11:14 am	1.00	0.00 mL	0.00 mL	010.D	Liquid	Y	<
11	RSK-CCV	CCV	02-02-2022 11:30 am	1.00	0.00 mL	0.00 mL	011.D	Liquid	Y	N
12	HS22011151-12	SAMP	02-02-2022 11:40 am	1.00	0.00 mL	0.00 mL	012.D	Liquid	Y	<
13	HS22011151-12MS	MS	02-02-2022 11:59 am	1.00	0.00 mL	0.00 mL	013.D	Liquid	Y	<
14	HS22011151-12MSD	MSD	02-02-2022 12:13 pm	1.00	0.00 mL	0.00 mL	014.D	Liquid	Y	<
15	HS22011151-11	SAMP	02-02-2022 12:30 pm	50.00	0.00 mL	0.00 mL	015.D	Liquid	Y	<
16	HS22011151-12	SAMP	02-02-2022 12:38 pm	25.00	0.00 mL	0.00 mL	016.D	Liquid	Y	<
17	HS22011151-15	SAMP	02-02-2022 12:47 pm	100.0(	0.00 mL	0.00 mL	017.D	Liquid	Y	<
18	HS22011200-01	SAMP	02-02-2022 01:00 pm	1.00	0.00 mL	0.00 mL	018.D	Liquid	Y	<
19	HS22011233-01	SAMP	02-02-2022 01:18 pm	1.00	0.00 mL	0.00 mL	019.D	Liquid	Y	<
20	HS22011233-02	SAMP	02-02-2022 01:26 pm	1.00	0.00 mL	0.00 mL	020.D	Liquid	Y	<
21	HS22011233-05	SAMP	02-02-2022 01:36 pm	1.00	0.00 mL	0.00 mL	021.D	Liquid	Y	<
22	RSK-CCV	CCV	02-02-2022 02:02 pm	1.00	0.00 mL	0.00 mL	022.D	Liquid	Y	N
23	HS22011200-01	SAMP	02-02-2022 02:38 pm	1000.0	0.00 mL	0.00 mL	023.D	Liquid	Y	<
24	HS22011233-01	SAMP	02-02-2022 03:00 pm	25.00	0.00 mL	0.00 mL	024.D	Liquid	Y	<
25	HS22011233-02	SAMP	02-02-2022 03:09 pm	5.00	0.00 mL	0.00 mL	025.D	Liquid	Y	<
26	HS22011233-05	SAMP	02-02-2022 03:20 pm	10.00	0.00 mL	0.00 mL	026.D	Liquid	Y	<
27	RSK-CCV	CCV	02-02-2022 03:29 pm	1.00	0.00 mL	0.00 mL	027.D	Liquid	Y	N

Chemical	Value
pH Paper	300107065-15
CCV/LC/LSD/MS/MSD	300107064-16/63-06

FORM 7B
GASES CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Instrument ID: FID-4 Calibration Date: 02/02/22 Time: 0931

Lab File ID: 001 Init. Calib. Date(s): 01/24/17 01/24/17

Init. Calib. Times: 0906 1113

GC Column: RTX-PLOT ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF250.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
Ethane	719.48900	702.98731	0.01	2.29	20.00	AVRG
Methane	974.99200	851.14543	0.01	12.70	20.00	AVRG
Ethene	585.76000	487.35905	0.01	16.80	20.00	AVRG

FORM VII GASES

FORM 7B
GASES CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Instrument ID: FID-4 Calibration Date: 02/02/22 Time: 1130

Lab File ID: 011 Init. Calib. Date(s): 01/24/17 01/24/17

Init. Calib. Times: 0906 1113

GC Column: RTX-PLOT ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF250.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
Ethane	719.48900	775.59164	0.01	-7.80	20.00	AVRG
Methane	974.99200	1076.9151	0.01	-10.45	20.00	AVRG
Ethene	585.76000	554.42136	0.01	5.35	20.00	AVRG

FORM VII GASES

FORM 7B
GASES CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Instrument ID: FID-4 Calibration Date: 02/02/22 Time: 1402

Lab File ID: 022 Init. Calib. Date(s): 01/24/17 01/24/17

Init. Calib. Times: 0906 1113

GC Column: RTX-PLOT ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF250.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
Ethane	719.48900	756.30438	0.01	-5.12	20.00	AVRG
Methane	974.99200	869.90774	0.01	10.78	20.00	AVRG
Ethene	585.76000	475.60831	0.01	18.80	20.00	AVRG

FORM VII GASES

FORM 7B
GASES CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011233

Instrument ID: FID-4 Calibration Date: 02/02/22 Time: 1529

Lab File ID: 027 Init. Calib. Date(s): 01/24/17 01/24/17

Init. Calib. Times: 0906 1113

GC Column: RTX-PLOT ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF250.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
Ethane	719.48900	720.99983	0.01	-0.21	20.00	AVRG
Methane	974.99200	922.56660	0.01	5.38	20.00	AVRG
Ethene	585.76000	487.83383	0.01	16.72	20.00	AVRG

FORM VII GASES

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\001.D Page 1
Report Date: 08-Feb-2022 11:22

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\001.D
Lab Smp Id: RSK-CCV Client Smp ID: RSK-CCV
Inj Date : 02-FEB-2022 09:31
Operator : PL Inst ID: FID-4.i
Smp Info : RSK-CCV;RSK-CCV;2;4
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 1 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Methane	0.473	0.473	0.000	8211	9.64700	8.421
2 Ethene	0.710	0.713	-0.003	8212	16.8500	14.019
3 Ethane	0.790	0.793	-0.003	12684	18.0430	17.629

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\001.D

Date : 02-FEB-2022 09:31

Client ID: RSK-CCV

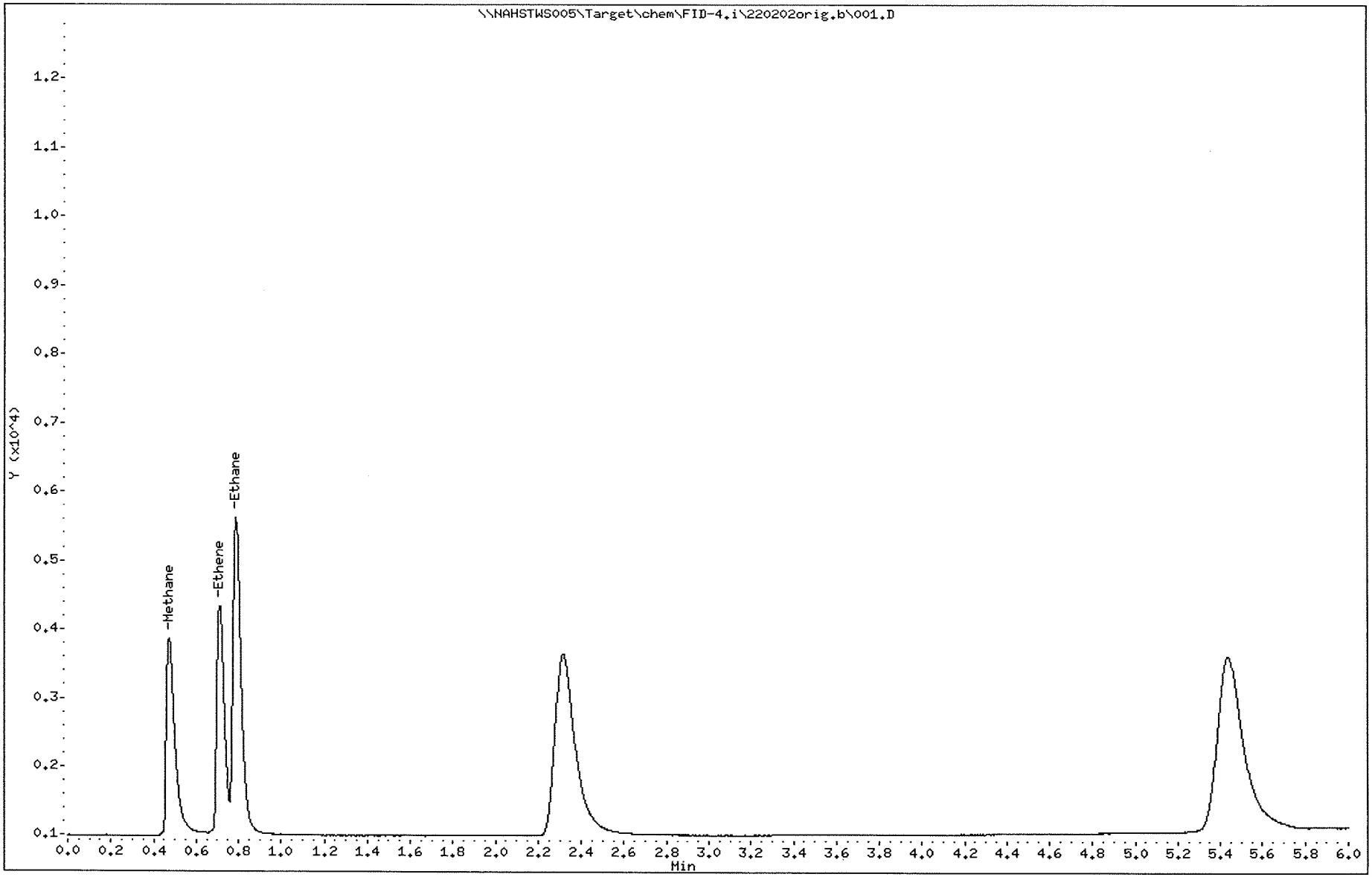
Instrument: FID-4.i

Sample Info: RSK-CCV;RSK-CCV;2;4

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\002.D
Lab Smp Id: MBLK-220202 Client Smp ID: MBLK-220202
Inj Date : 02-FEB-2022 09:42
Operator : PL Inst ID: FID-4.i
Smp Info : MBLK-220202;MBLK-220202;3;;BLANK
Misc Info : ;1;0;1
Comment   :
Method   : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 2 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\002.D

Date : 02-FEB-2022 09:42

Client ID: MBLK-220202

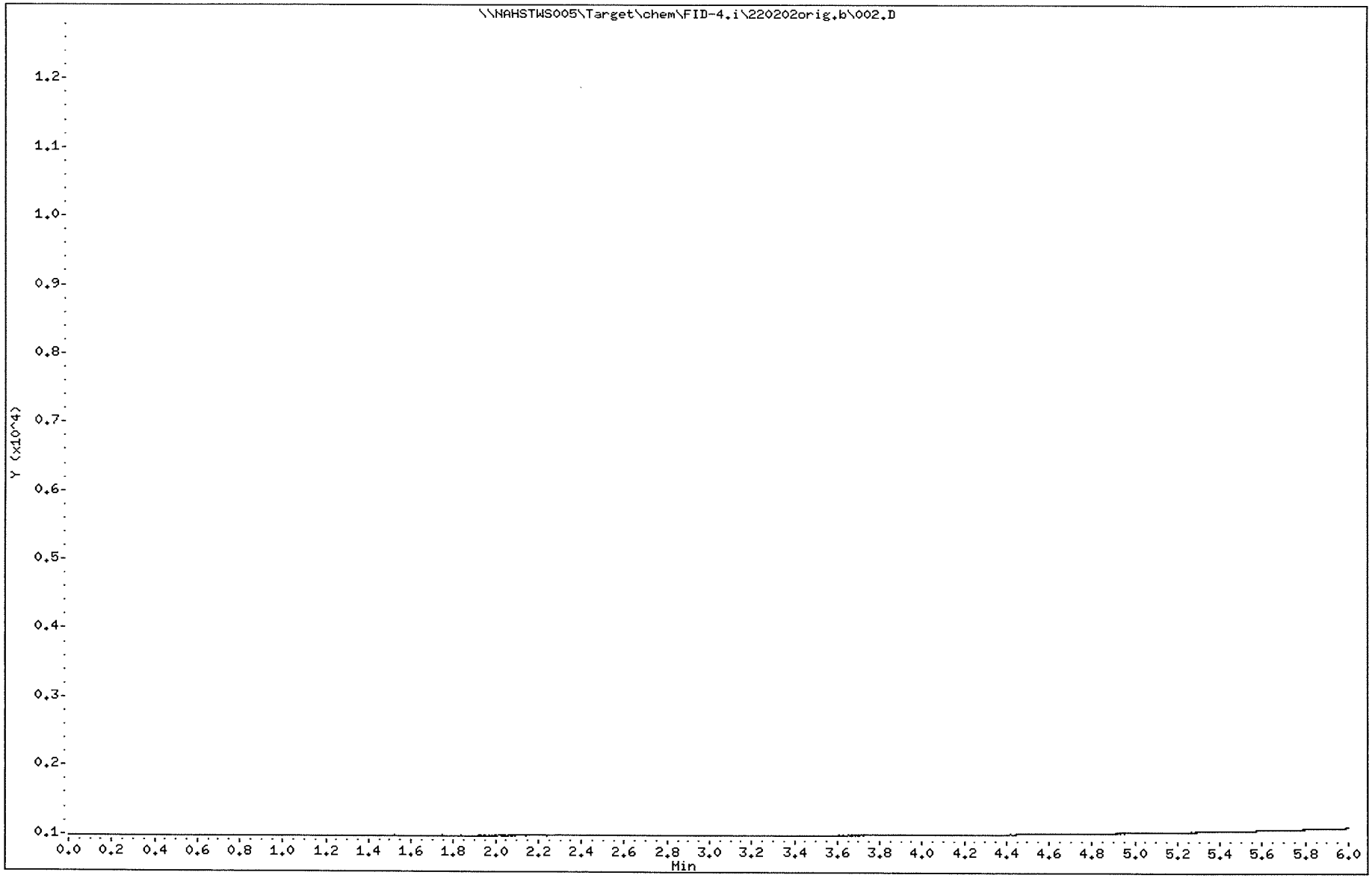
Instrument: FID-4.i

Sample Info: MBLK-220202;MBLK-220202;3;;BLANK

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\003.D Page 1
Report Date: 08-Feb-2022 11:22

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\003.D
Lab Smp Id: LCS-220202 Client Smp ID: LCS-220202
Inj Date : 02-FEB-2022 09:53
Operator : PL Inst ID: FID-4.i
Smp Info : LCS-220202;LCS-220202;3;;LCS
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 3 QC Sample: LCS
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.473	0.473	0.000	8797	9.02264	9.022(M)
2 Ethene	0.713	0.713	0.000	8621	14.7176	14.717(M)
3 Ethane	0.793	0.793	0.000	13110	18.2212	18.221(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\003.D

Date : 02-FEB-2022 09:53

Client ID: LCS-220202

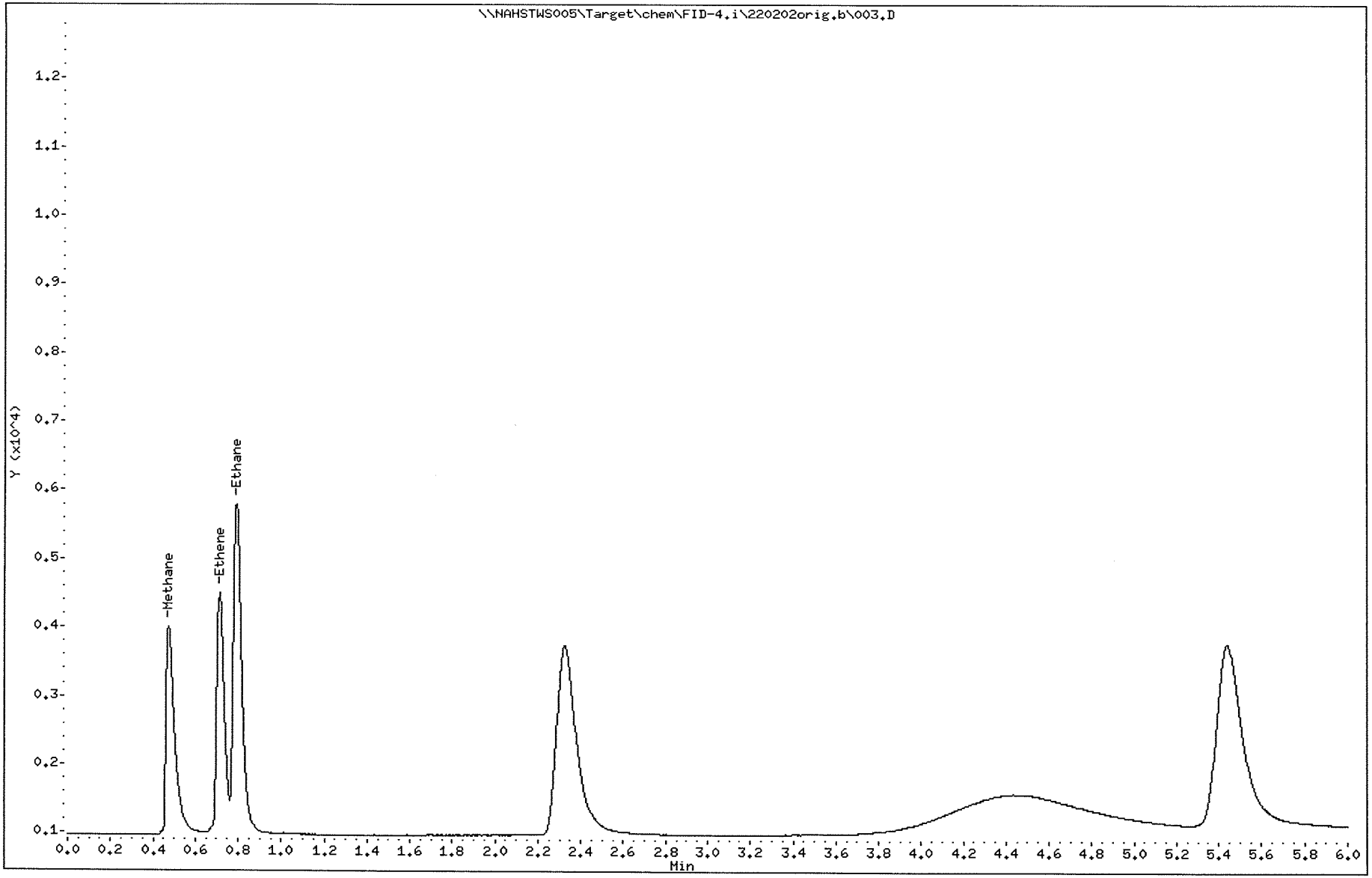
Instrument: FID-4.i

Sample Info: LCS-220202;LCS-220202;3;;LCS

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\003.D Page 1
Report Date: 08-Feb-2022 11:30

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\003.D
Lab Smp Id: LCS-220202 Client Smp ID: LCS-220202
Inj Date : 02-FEB-2022 09:53
Operator : PL Inst ID: FID-4.i
Smp Info : LCS-220202;LCS-220202;3;;LCS
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 3 QC Sample: LCS
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.473	0.473	0.000	8765	8.98981	8.989
2 Ethene	0.713	0.713	0.000	8552	14.5998	14.599
3 Ethane	0.793	0.793	0.000	13155	18.2838	18.283

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\003.D

Date : 02-FEB-2022 09:53

Client ID: LCS-220202

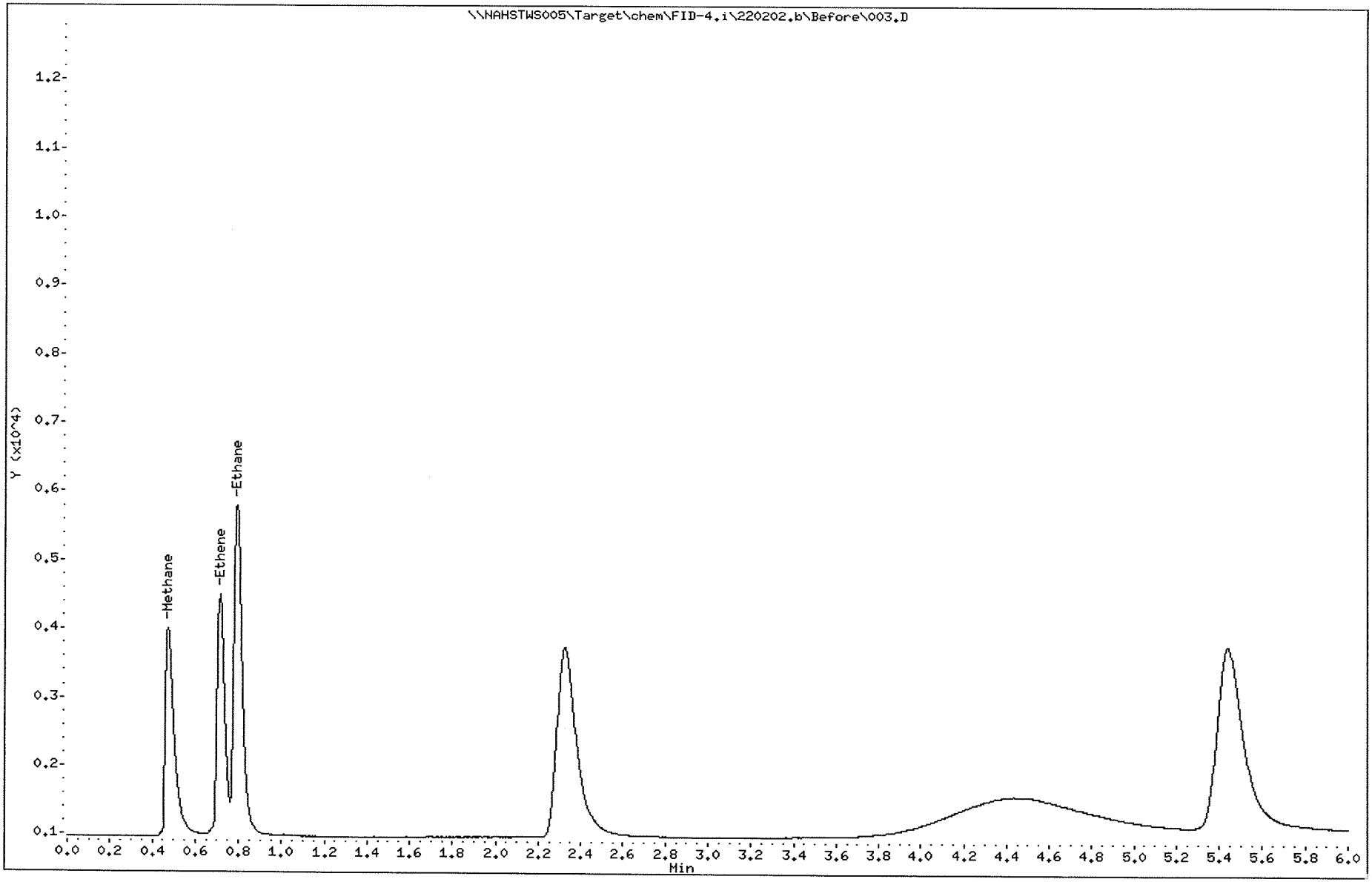
Sample Info: LCS-220202;LCS-220202;3;;LCS

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\007.D Page 1
Report Date: 08-Feb-2022 11:22

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\007.D
Lab Smp Id: HS22011074-04MS Client Smp ID: HS22011074-04MS
Inj Date : 02-FEB-2022 10:41
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011074-04MS;HS22011074-04MS
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 7 QC Sample: MS
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.473	0.473	0.000	13386	13.7293	13.729(RM)
2 Ethene	0.716	0.713	0.003	8623	14.7210	14.721
3 Ethane	0.796	0.793	0.003	11104	15.4332	15.433

QC Flag Legend

R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\007.D

Date : 02-FEB-2022 10:41

Client ID: HS22011074-04MS

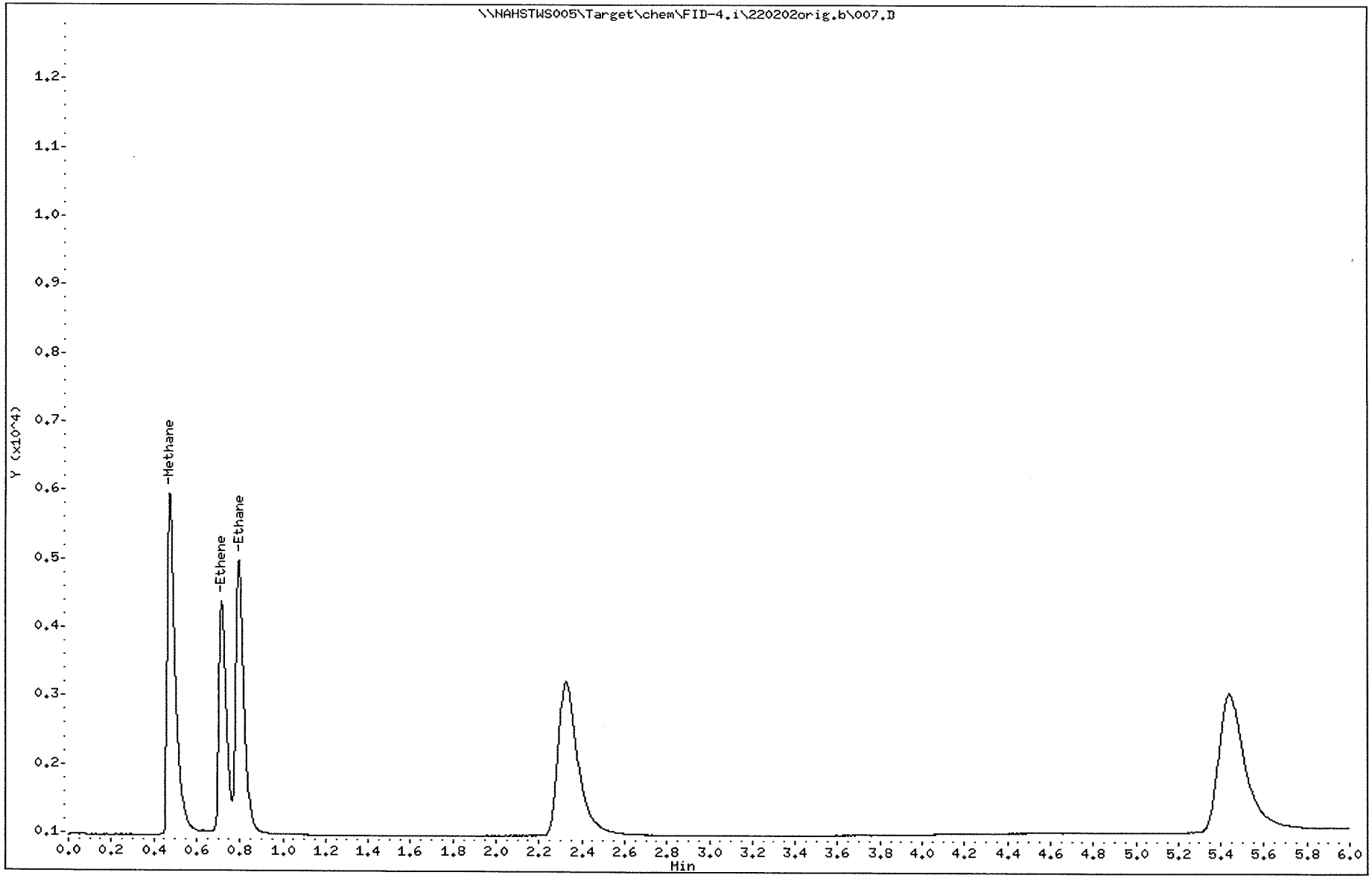
Instrument: FID-4.i

Sample Info: HS22011074-04MS;HS22011074-04MS

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\007.D Page 1
Report Date: 08-Feb-2022 11:30

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\007.D
Lab Smp Id: HS22011074-04MS Client Smp ID: HS22011074-04MS
Inj Date : 02-FEB-2022 10:41
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011074-04MS;HS22011074-04MS
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 7 QC Sample: MS
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.473	0.473	0.000	13496	13.8422	13.842(R)
2 Ethene	0.716	0.713	0.003	8520	14.5452	14.545
3 Ethane	0.796	0.793	0.003	10938	15.2024	15.202

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\007.D

Date : 02-FEB-2022 10:41

Client ID: HS22011074-04MS

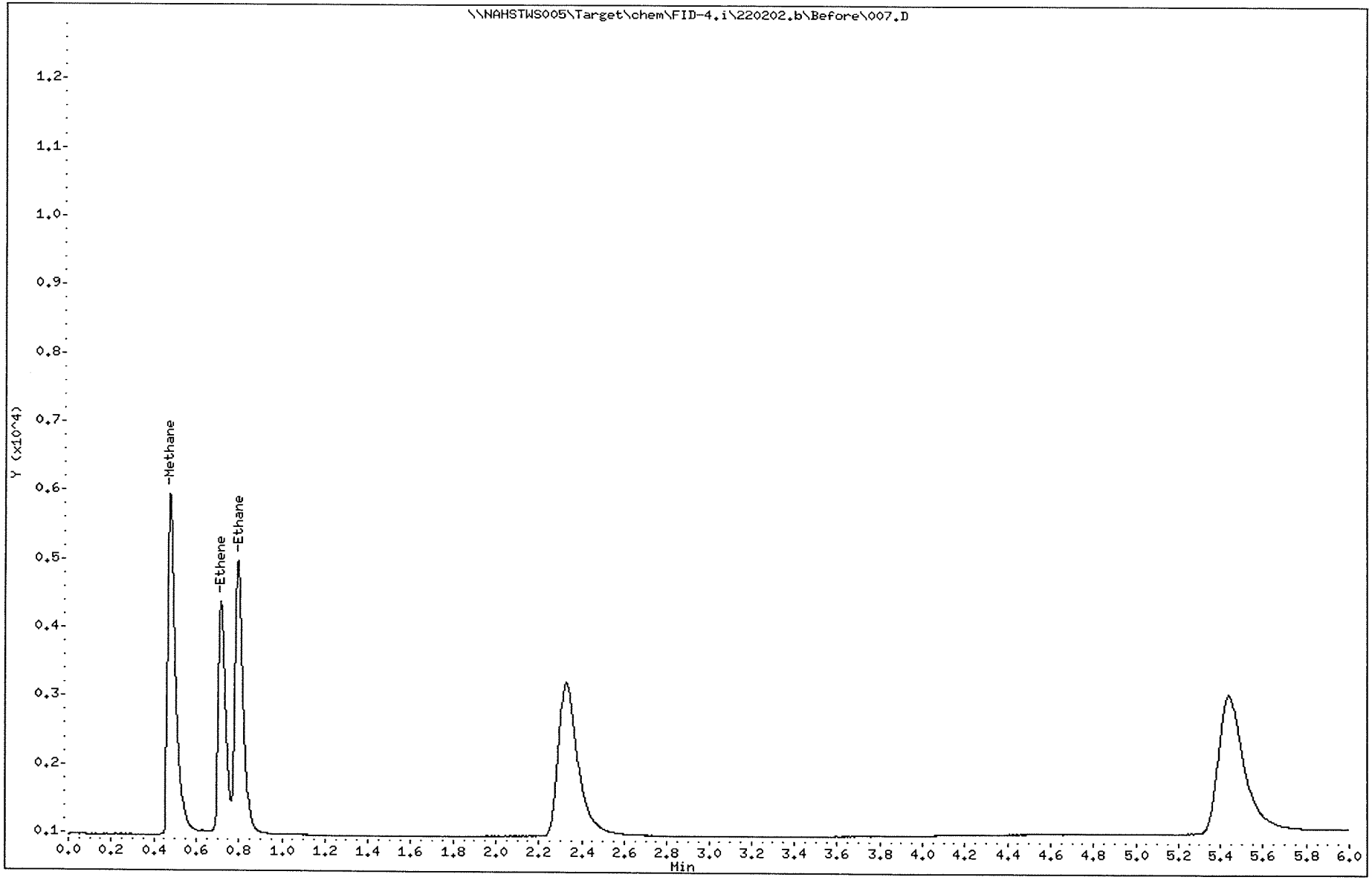
Sample Info: HS22011074-04MS;HS22011074-04MS

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\008.D
Lab Smp Id: HS22011074-04MSD Client Smp ID: HS22011074-04MSD
Inj Date : 02-FEB-2022 10:54
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011074-04MSD;HS22011074-04MSD
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 8 QC Sample: MSD
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.470	0.473	-0.003	12928	13.2596	13.259(RM)
2 Ethene	0.710	0.713	-0.003	8701	14.8542	14.854
3 Ethane	0.786	0.793	-0.007	11330	15.7473	15.747

QC Flag Legend

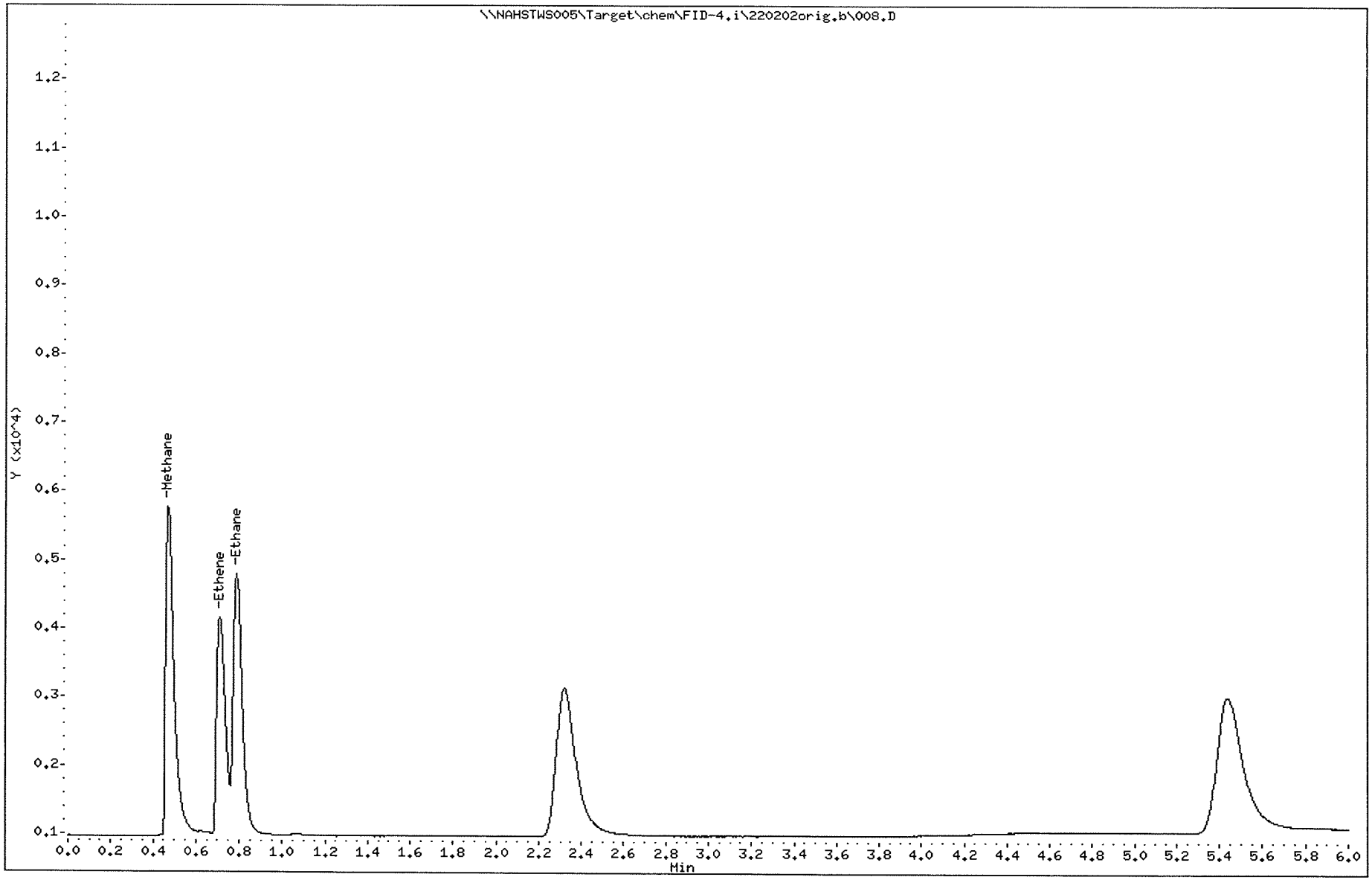
R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\008.D
Date : 02-FEB-2022 10:54
Client ID: HS22011074-04MSD
Sample Info: HS22011074-04MSD;HS22011074-04MSD

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\008.D
Lab Smp Id: HS22011074-04MSD Client Smp ID: HS22011074-04MSD
Inj Date : 02-FEB-2022 10:54
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011074-04MSD;HS22011074-04MSD
Misc Info : ;1;0;1
Comment   :
Method   : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 8 QC Sample: MSD
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
1 Methane	0.470	0.473	-0.003	13116	13.4524	13.452(R)
2 Ethene	0.710	0.713	-0.003	8615	14.7074	14.707
3 Ethane	0.786	0.793	-0.007	11225	15.6013	15.601

QC Flag Legend

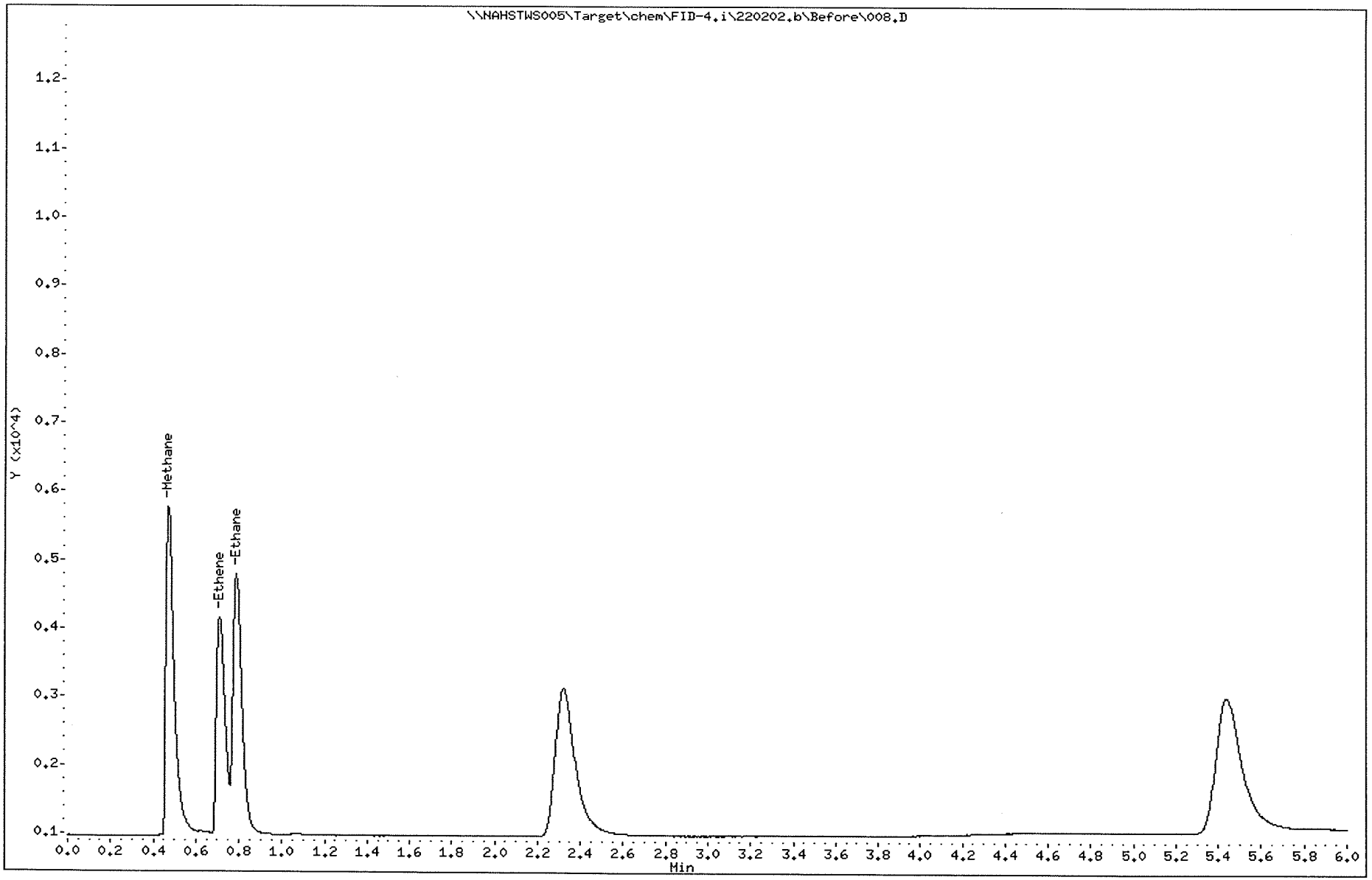
R - Spike/Surrogate failed recovery limits.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\008.D
Date : 02-FEB-2022 10:54
Client ID: HS22011074-04MSD
Sample Info: HS22011074-04MSD;HS22011074-04MSD

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\011.D Page 1
Report Date: 08-Feb-2022 11:22

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\011.D
Lab Smp Id: RSK-CCV Client Smp ID: RSK-CCV
Inj Date : 02-FEB-2022 11:30
Operator : PL Inst ID: FID-4.i
Smp Info : RSK-CCV;RSK-CCV;2;4
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 11 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Methane	0.453	0.473	-0.020	10389	9.64700	10.655
2 Ethene	0.696	0.713	-0.017	9342	16.8500	15.948
3 Ethane	0.776	0.793	-0.017	13994	18.0430	19.449(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\011.D

Date : 02-FEB-2022 11:30

Client ID: RSK-CCV

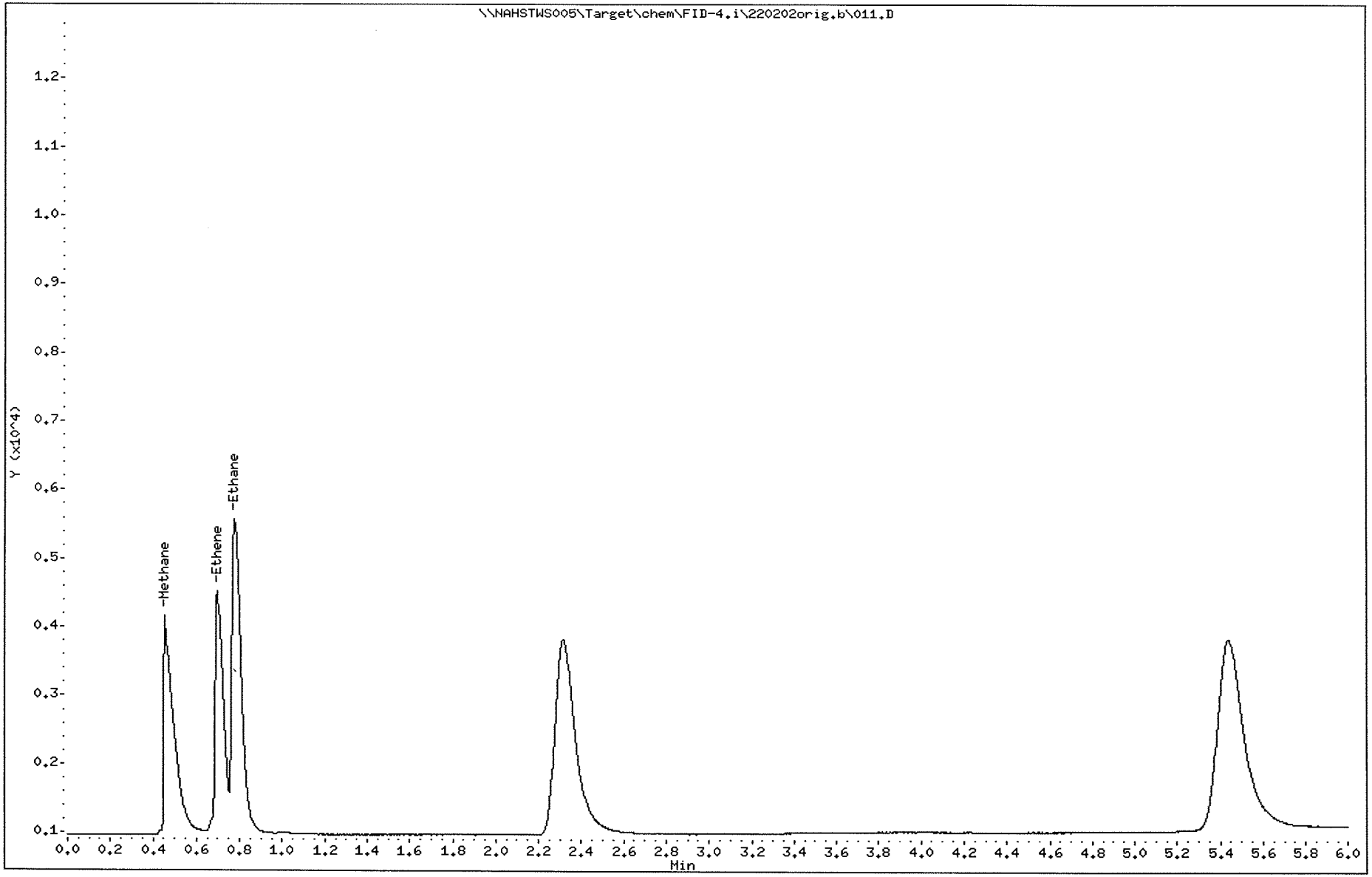
Instrument: FID-4.i

Sample Info: RSK-CCV;RSK-CCV;2;4

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\011.D
Lab Smp Id: RSK-CCV Client Smp ID: RSK-CCV
Inj Date : 02-FEB-2022 11:30
Operator : PL Inst ID: FID-4.i
Smp Info : RSK-CCV;RSK-CCV;2;4
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 11 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					AMOUNTS	
					CAL-AMT	ON-COL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.453	0.473	-0.020	10331	9.64700	10.595
2 Ethene	0.696	0.713	-0.017	9246	16.8500	15.784
3 Ethane	0.776	0.793	-0.017	14036	18.0430	19.508

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\011.D

Date : 02-FEB-2022 11:30

Client ID: RSK-CCV

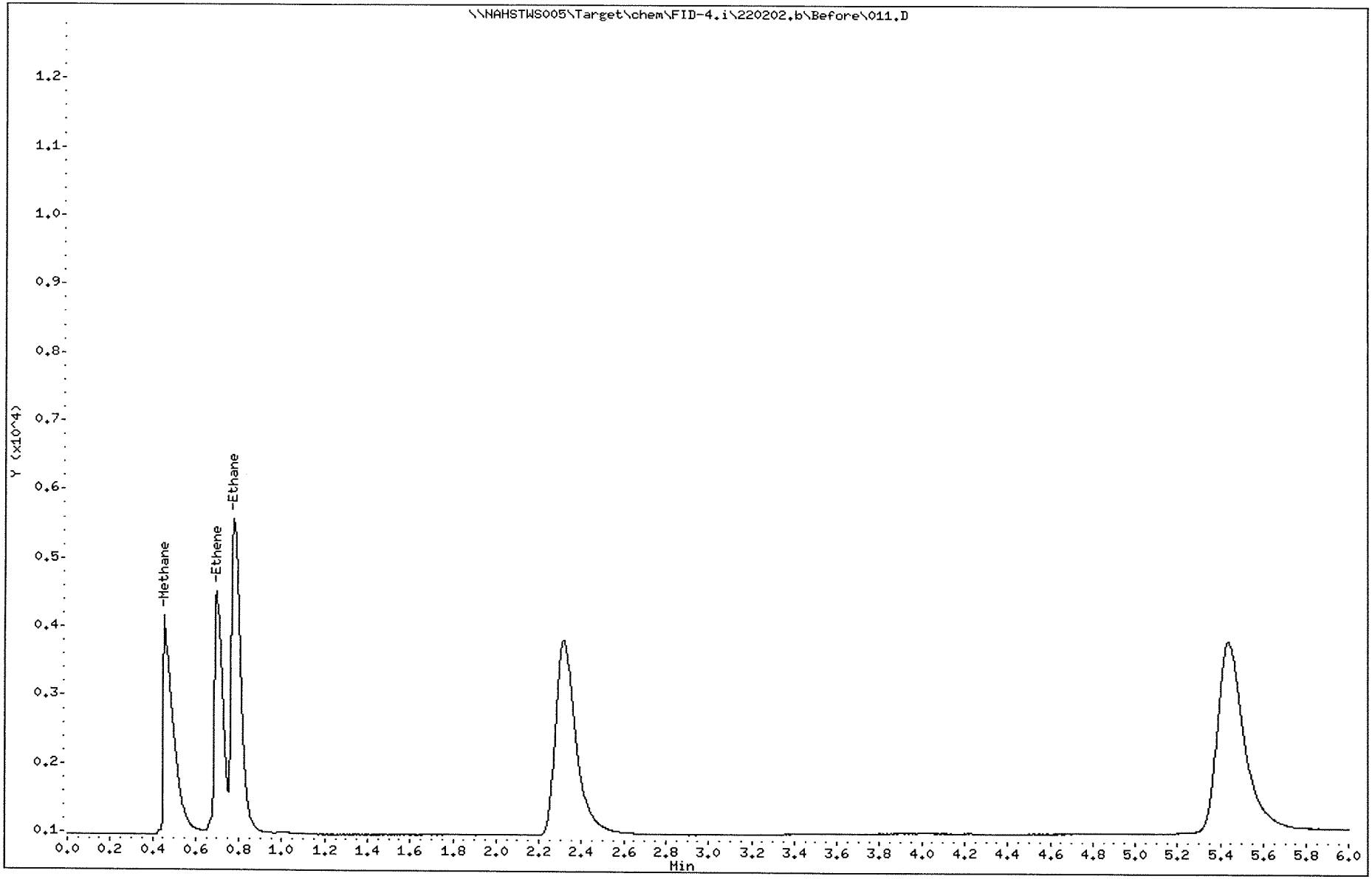
Sample Info: RSK-CCV;RSK-CCV;2;4

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\013.D Page 1
Report Date: 08-Feb-2022 11:22

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\013.D
Lab Smp Id: HS22011151-12MS Client Smp ID: HS22011151-12MS
Inj Date : 02-FEB-2022 11:59
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011151-12MS;HS22011151-12MS
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 13 QC Sample: MS
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.476	0.473	0.003	260099	266.770	266.770(AR)
2 Ethene	0.703	0.713	-0.010	5931	10.1253	10.125(R)
3 Ethane	0.786	0.793	-0.007	7413	10.3031	10.303(R)

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
R - Spike/Surrogate failed recovery limits.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\013.D

Date : 02-FEB-2022 11:59

Client ID: HS22011151-12MS

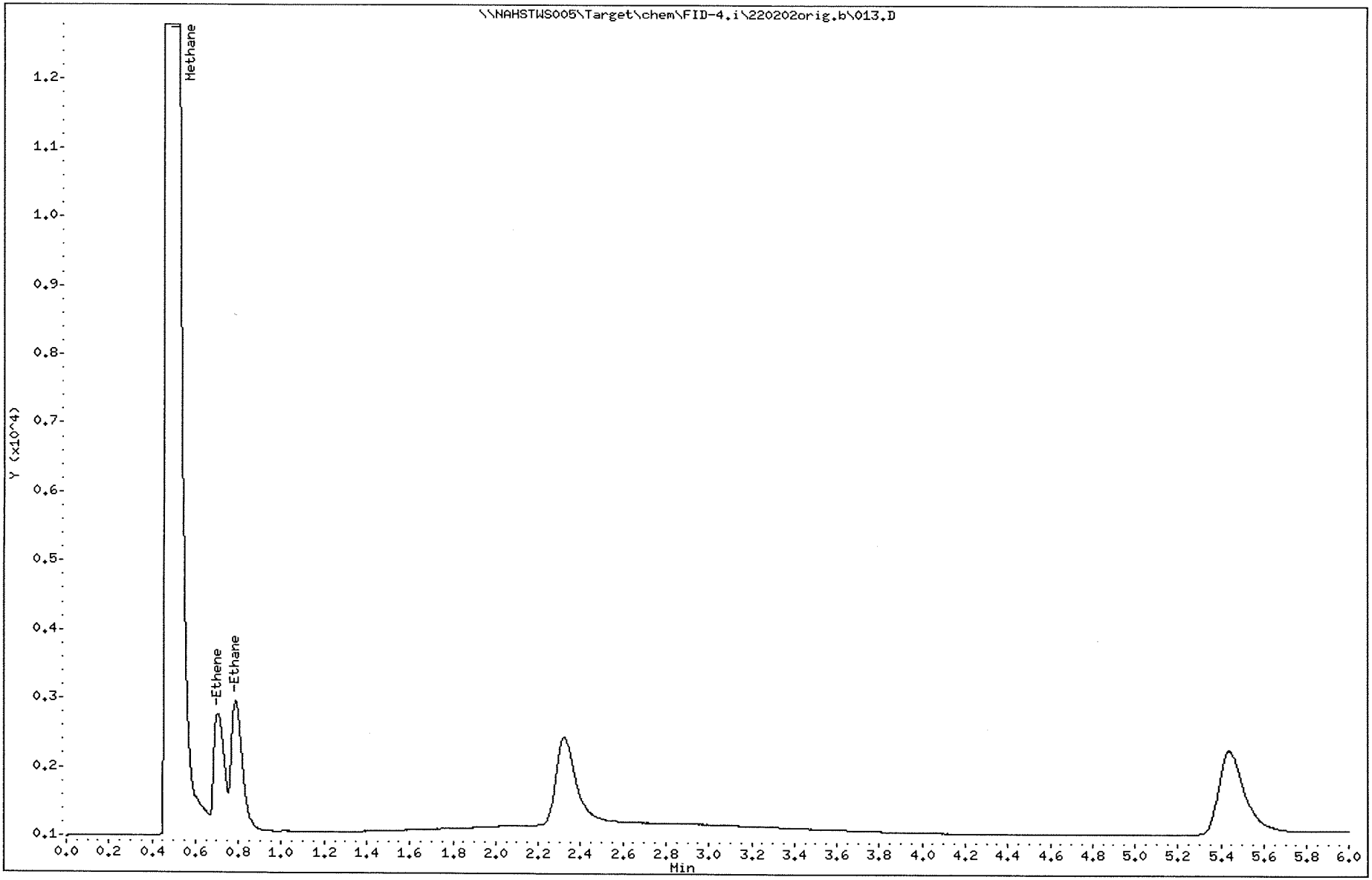
Instrument: FID-4.i

Sample Info: HS22011151-12MS;HS22011151-12MS

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\014.D
Lab Smp Id: HS22011151-12MSD Client Smp ID: HS22011151-12MSD
Inj Date : 02-FEB-2022 12:13
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011151-12MSD;HS22011151-12MSD
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 14 QC Sample: MSD
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
1 Methane	0.476	0.473	0.003	261708	268.421	268.420(AR)
2 Ethene	0.703	0.713	-0.010	6100	10.4138	10.413(R)
3 Ethane	0.786	0.793	-0.007	7449	10.3532	10.353(RM)

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\014.D

Date : 02-FEB-2022 12:13

Client ID: HS22011151-12MSD

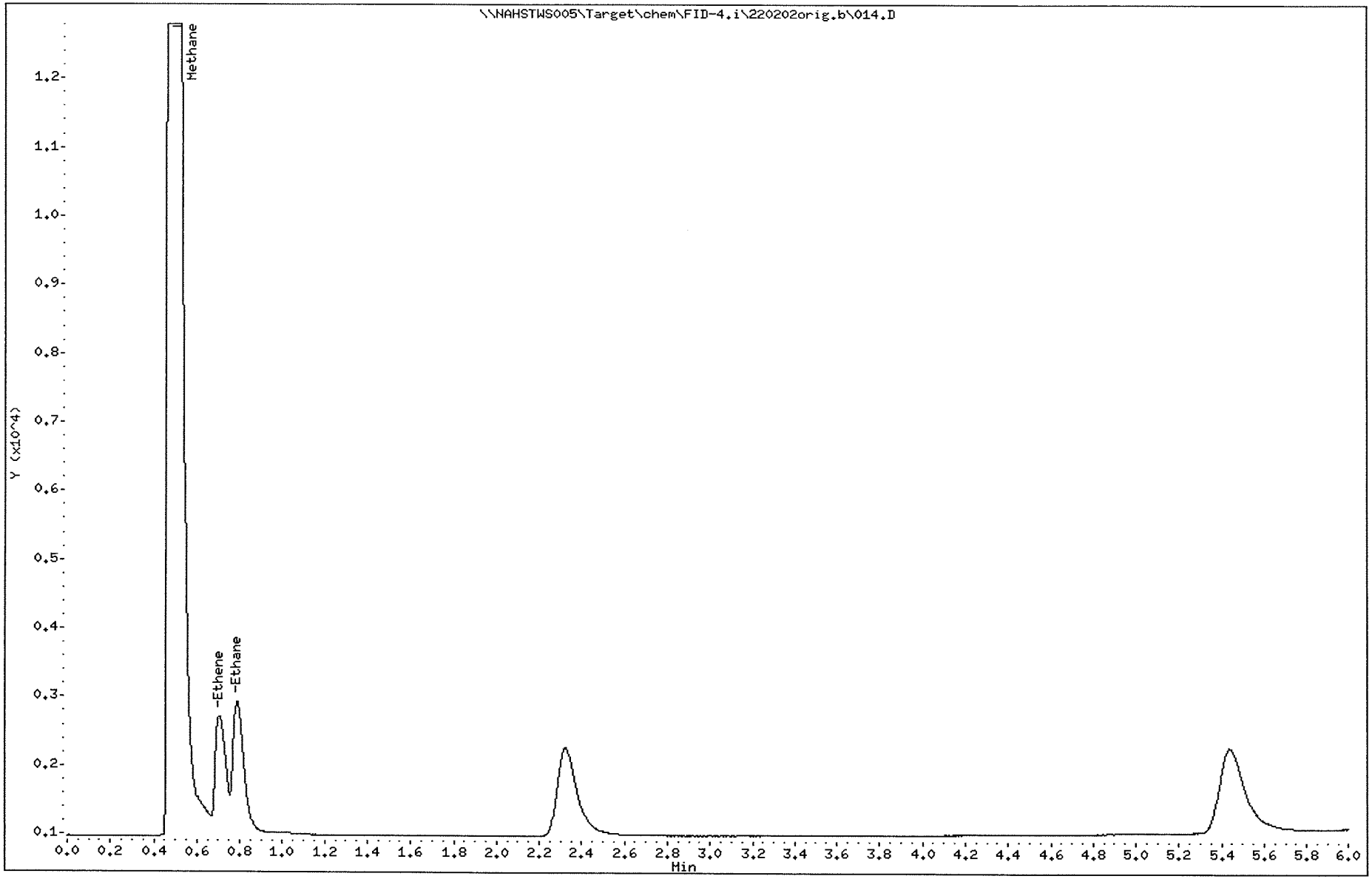
Sample Info: HS22011151-12MSD;HS22011151-12MSD

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\014.D
Lab Smp Id: HS22011151-12MSD Client Smp ID: HS22011151-12MSD
Inj Date : 02-FEB-2022 12:13
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011151-12MSD;HS22011151-12MSD
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 14 QC Sample: MSD
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.476	0.473	0.003	261592	268.302	268.301(AR)
2 Ethene	0.703	0.713	-0.010	5960	10.1748	10.174(R)
3 Ethane	0.786	0.793	-0.007	7465	10.3754	10.375(R)

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
R - Spike/Surrogate failed recovery limits.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\014.D

Date : 02-FEB-2022 12:13

Client ID: HS22011151-12MSD

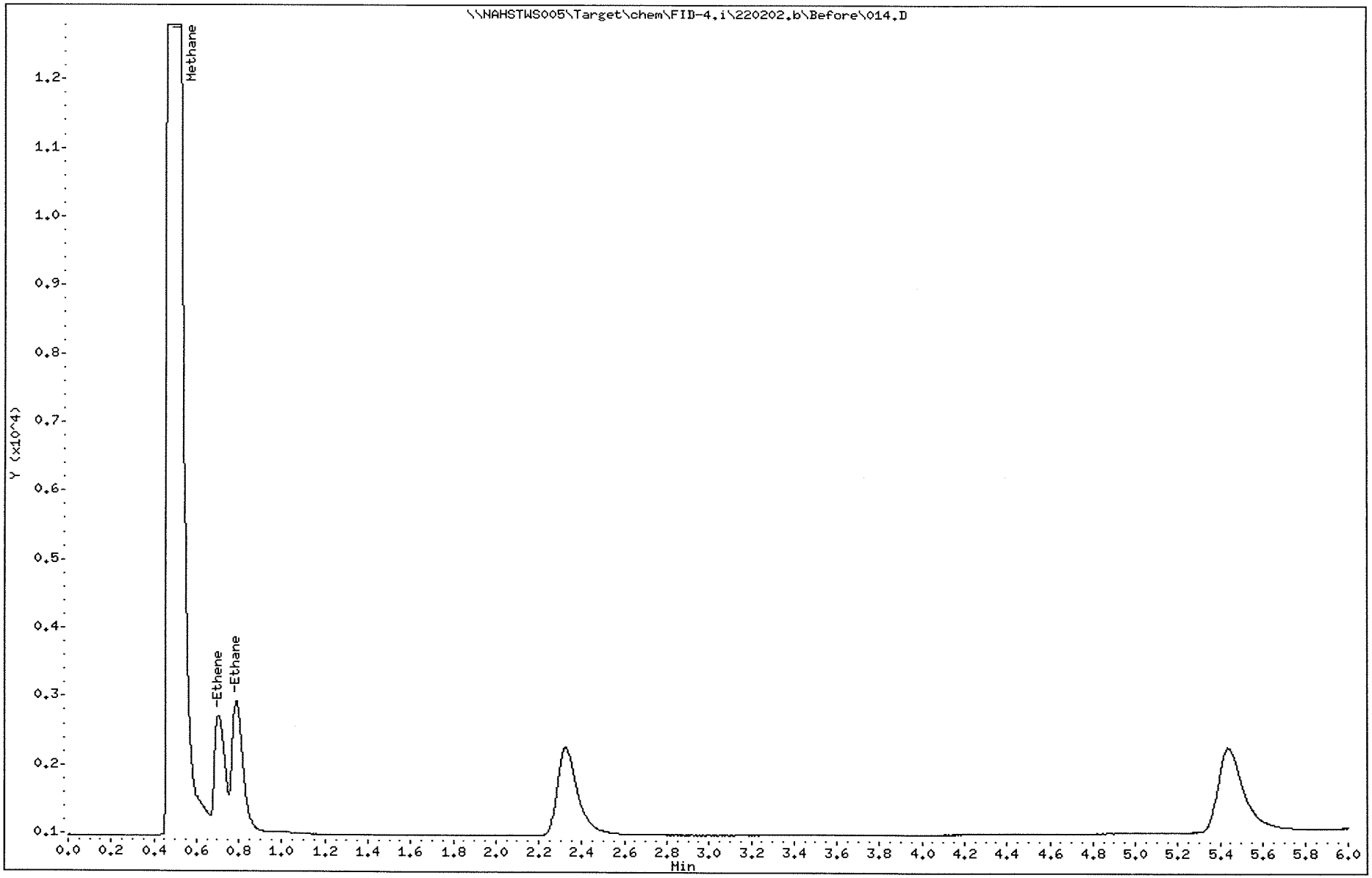
Instrument: FID-4.i

Sample Info: HS22011151-12MSD;HS22011151-12MSD

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\019.D Page 1
Report Date: 08-Feb-2022 11:22

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\019.D
Lab Smp Id: HS22011233-01 Client Smp ID: HS22011233-01
Inj Date : 02-FEB-2022 13:18
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011233-01;HS22011233-01
Misc Info : ;1;0;1
Comment   :
Method   : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.473	0.473	0.000	390173	400.181	400.180(A)
2 Ethene	0.703	0.713	-0.010	3372	5.75662	5.756(M)
3 Ethane	0.780	0.793	-0.013	2038	2.83256	2.832(M)

QC Flag Legend

A - Target compound detected but, quantitated amount
    exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\019.D

Date : 02-FEB-2022 13:18

Client ID: HS22011233-01

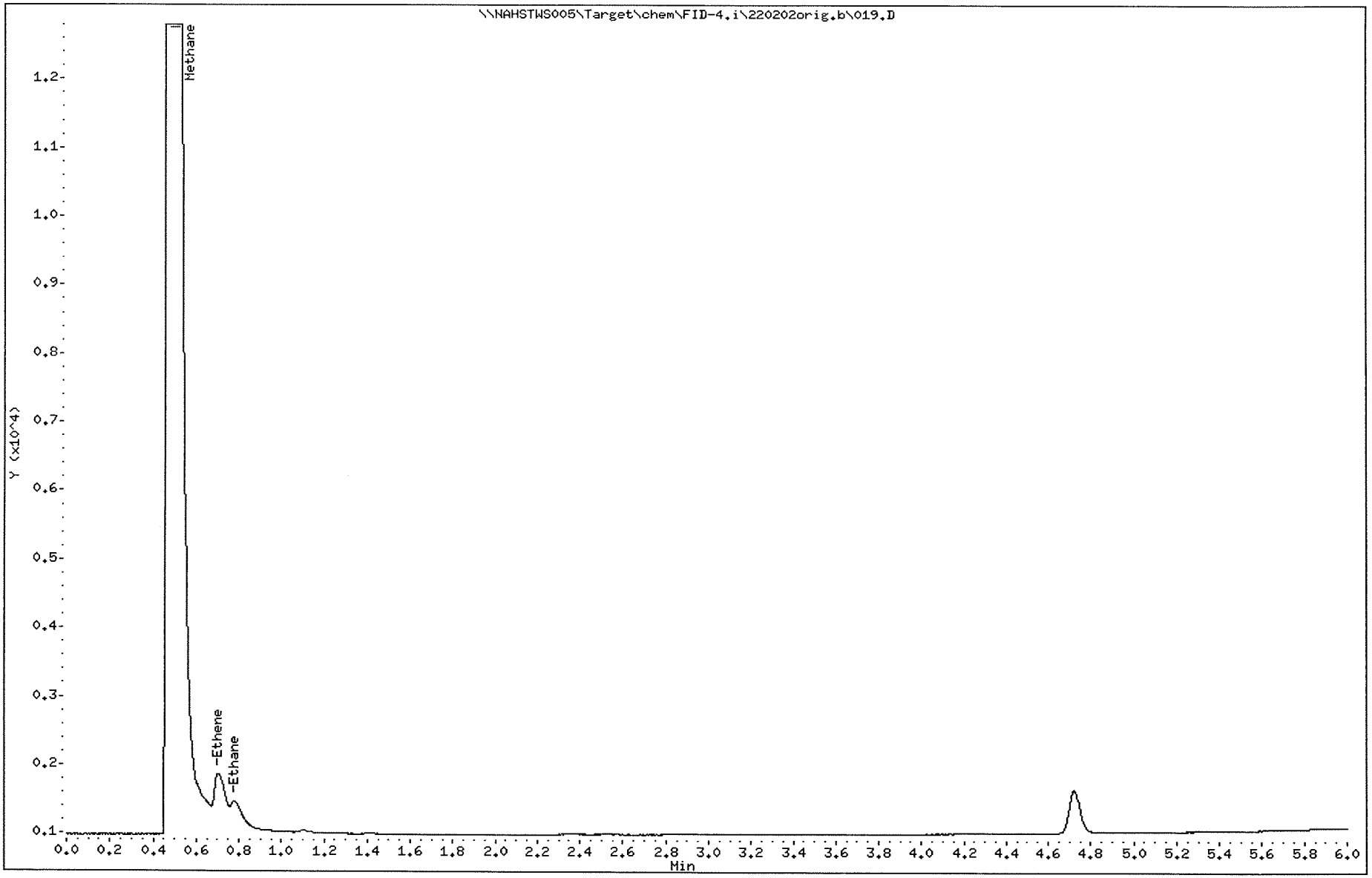
Instrument: FID-4.i

Sample Info: HS22011233-01;HS22011233-01

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\019.D
Lab Smp Id: HS22011233-01 Client Smp ID: HS22011233-01
Inj Date : 02-FEB-2022 13:18
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011233-01;HS22011233-01
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.473	0.473	0.000	389764	399.761	399.761(A)
2 Ethene	0.703	0.713	-0.010	4726	8.06814	8.068

QC Flag Legend

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

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\019.D

Date : 02-FEB-2022 13:18

Client ID: HS22011233-01

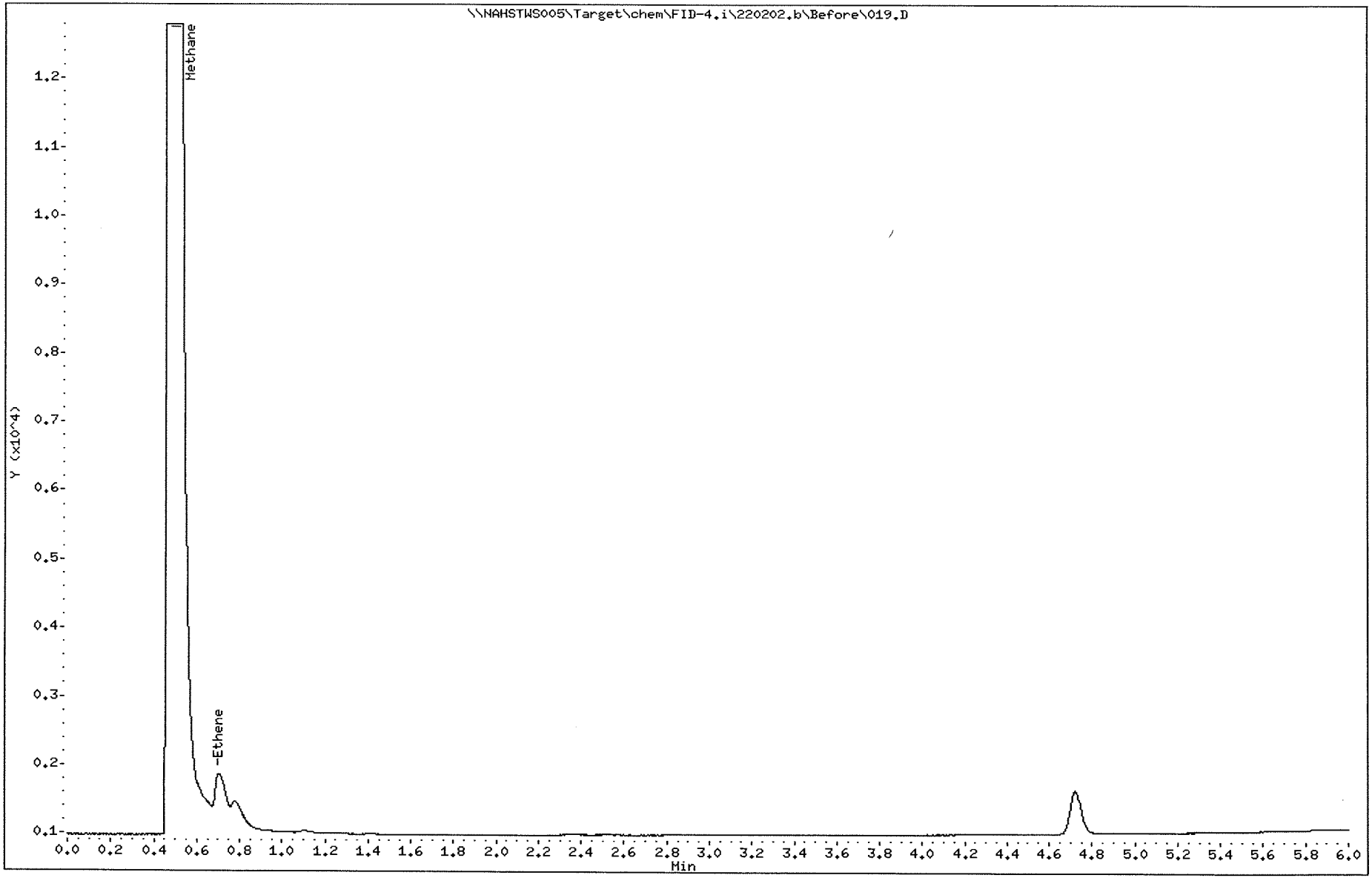
Instrument: FID-4.i

Sample Info: HS22011233-01;HS22011233-01

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\020.D Page 1
Report Date: 08-Feb-2022 11:22

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\020.D
Lab Smp Id: HS22011233-02 Client Smp ID: HS22011233-02
Inj Date : 02-FEB-2022 13:26
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011233-02;HS22011233-02
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 20
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.476	0.473	0.003	85788	87.9884	87.988(AM)
2 Ethene	0.686	0.713	-0.027	1487	2.53858	2.538(M)

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\020.D

Date : 02-FEB-2022 13:26

Client ID: HS22011233-02

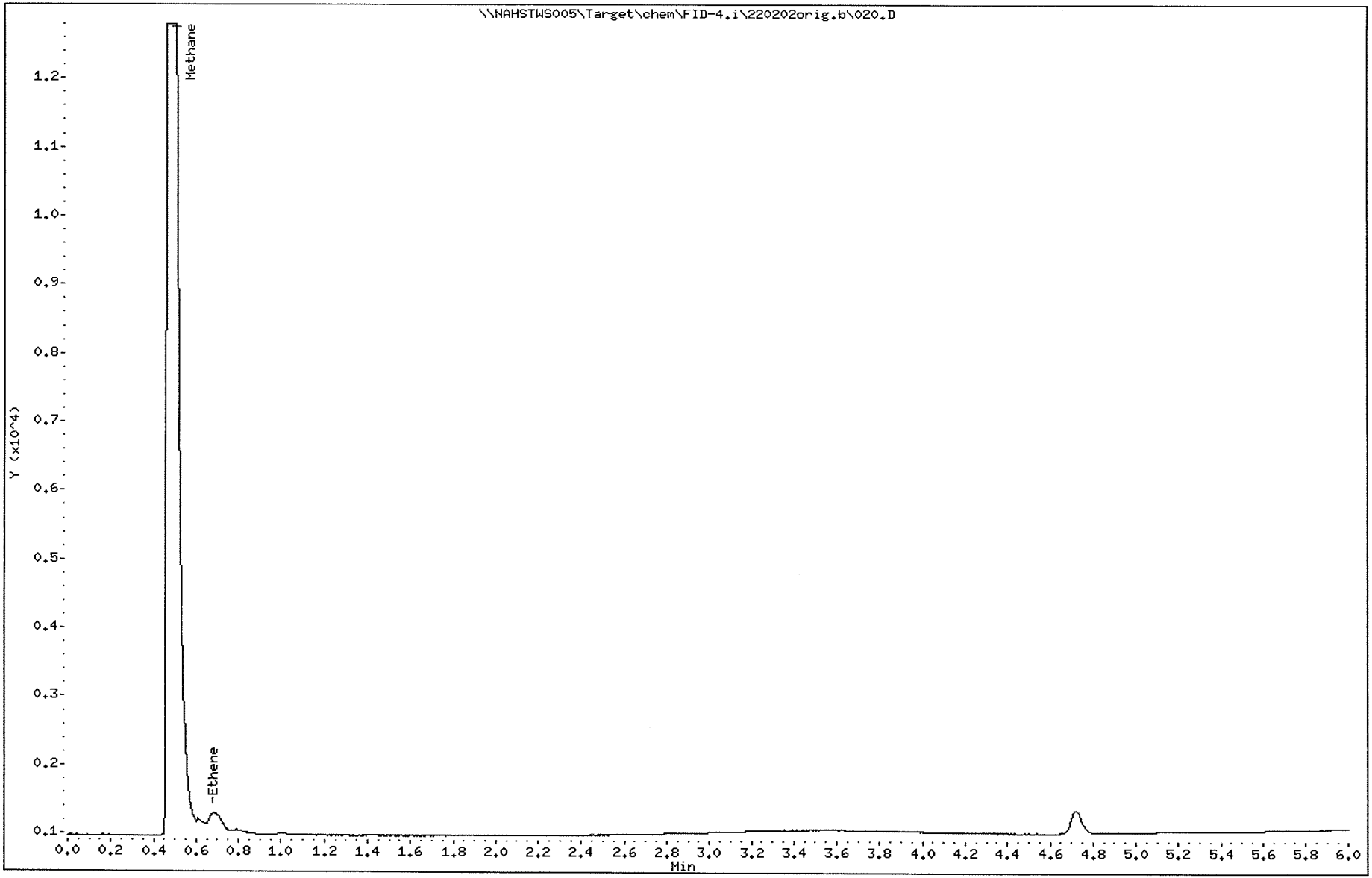
Instrument: FID-4.i

Sample Info: HS22011233-02;HS22011233-02

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\020.D Page 1
Report Date: 08-Feb-2022 11:30

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\020.D
Lab Smp Id: HS22011233-02 Client Smp ID: HS22011233-02
Inj Date : 02-FEB-2022 13:26
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011233-02;HS22011233-02
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 20
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.476	0.473	0.003	86250	88.4622	88.462(A)
2 Ethene	0.690	0.713	-0.023	1786	3.04903	3.049

QC Flag Legend

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

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\020.D

Date : 02-FEB-2022 13:26

Client ID: HS22011233-02

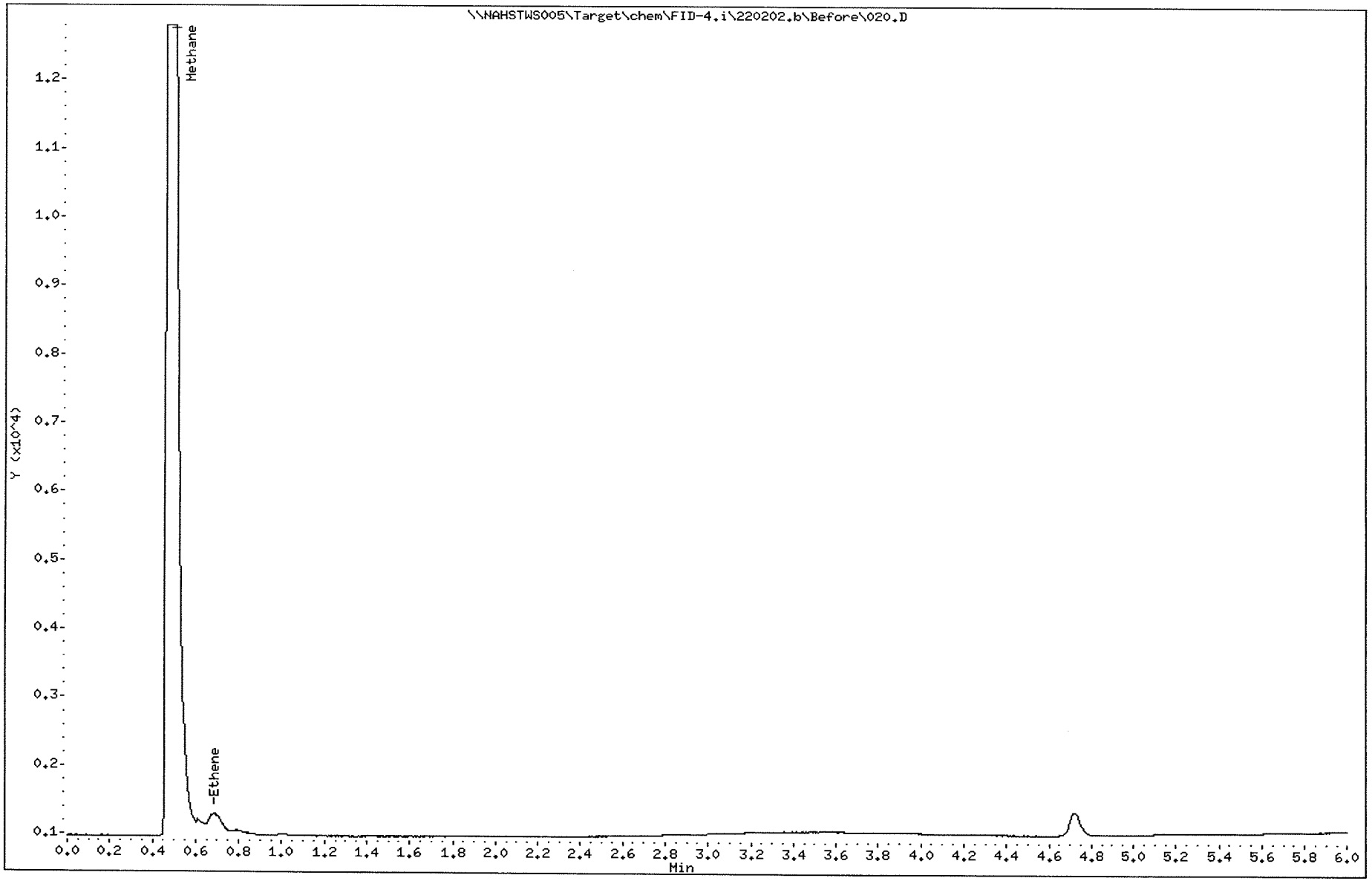
Instrument: FID-4.i

Sample Info: HS22011233-02;HS22011233-02

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\021.D Page 1
Report Date: 08-Feb-2022 11:22

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\021.D
Lab Smp Id: HS22011233-05 Client Smp ID: HS22011233-05
Inj Date : 02-FEB-2022 13:36
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011233-05;HS22011233-05
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 21
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.470	0.473	-0.003	200120	205.253	205.252(AM)

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\021.D

Date : 02-FEB-2022 13:36

Client ID: HS22011233-05

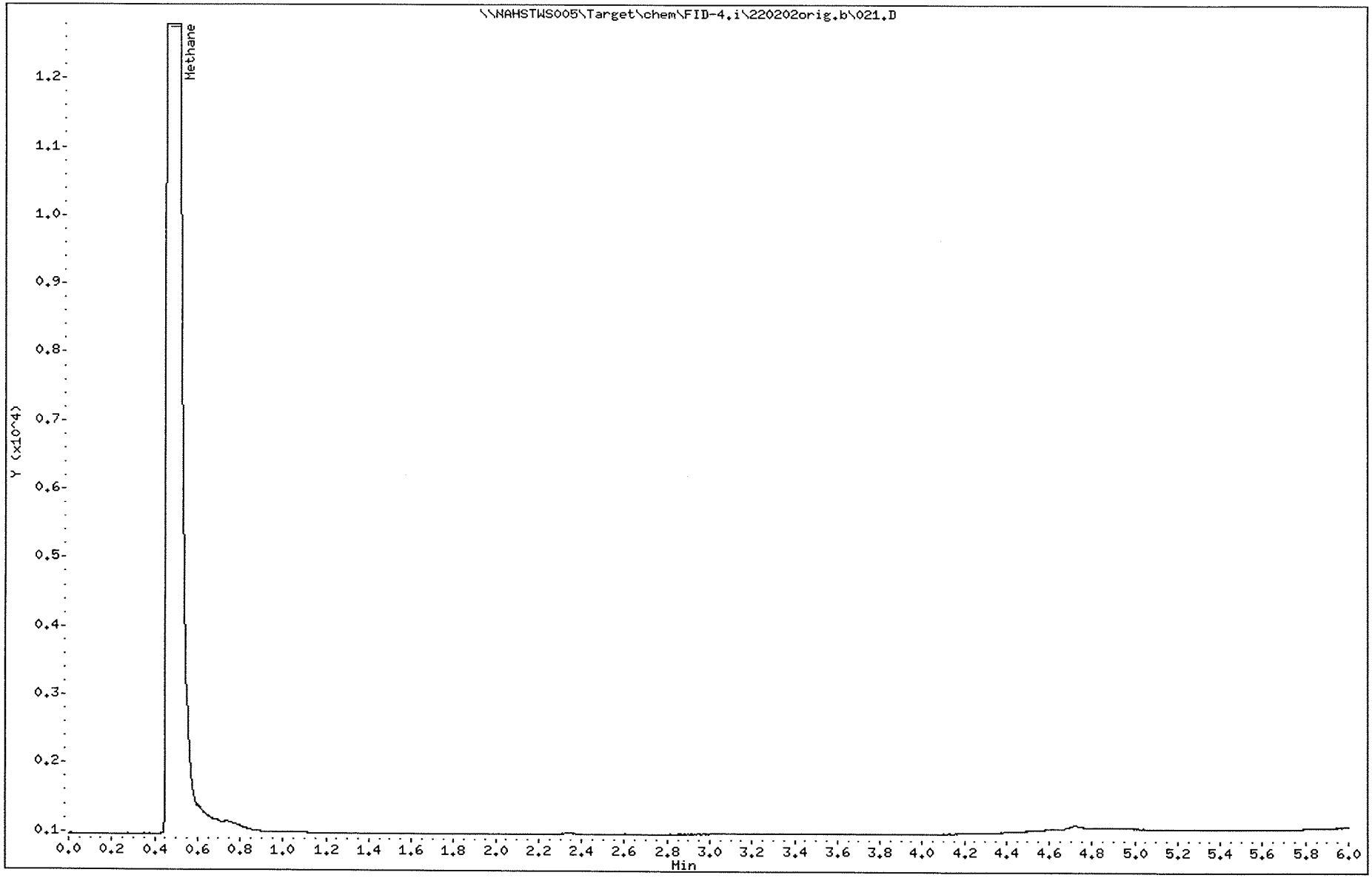
Instrument: FID-4.i

Sample Info: HS22011233-05;HS22011233-05

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\021.D Page 1
Report Date: 08-Feb-2022 11:30

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\021.D
Lab Smp Id: HS22011233-05 Client Smp ID: HS22011233-05
Inj Date : 02-FEB-2022 13:36
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011233-05;HS22011233-05
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 21
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.470	0.473	-0.003	203152	208.363	208.362(A)

QC Flag Legend

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

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\021.D

Date : 02-FEB-2022 13:36

Client ID: HS22011233-05

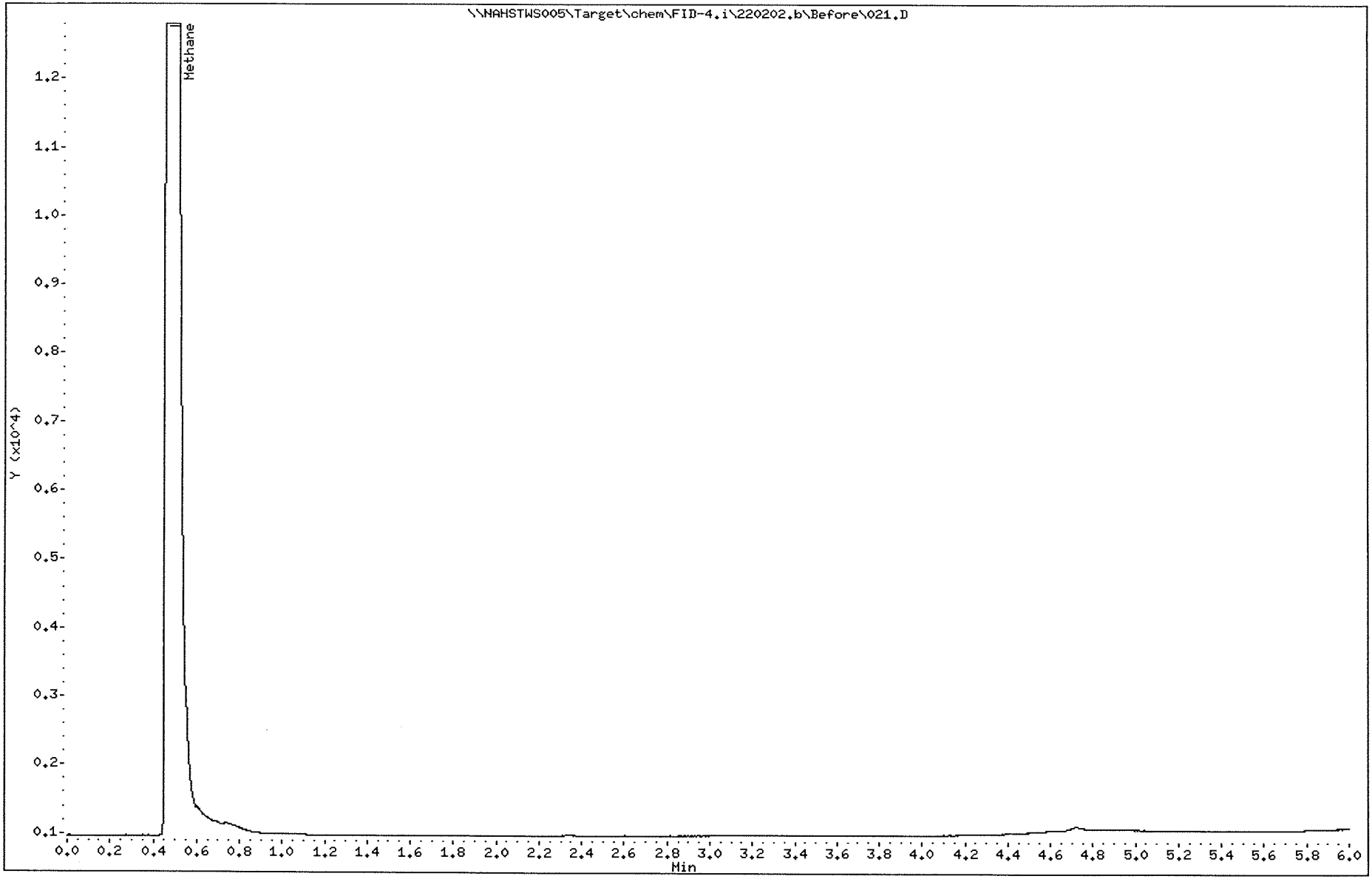
Instrument: FID-4.i

Sample Info: HS22011233-05;HS22011233-05

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\022.D Page 1
Report Date: 08-Feb-2022 11:22

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\022.D
Lab Smp Id: RSK-CCV Client Smp ID: RSK-CCV
Inj Date : 02-FEB-2022 14:02
Operator : PL Inst ID: FID-4.i
Smp Info : RSK-CCV;RSK-CCV;2;4
Misc Info : ;1;0;1
Comment   :
Method   : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 22 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Methane	0.470	0.473	-0.003	8392	9.64700	8.607
2 Ethene	0.710	0.713	-0.003	8014	16.8500	13.681
3 Ethane	0.786	0.793	-0.007	13646	18.0430	18.966

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\022.D

Date : 02-FEB-2022 14:02

Client ID: RSK-CCV

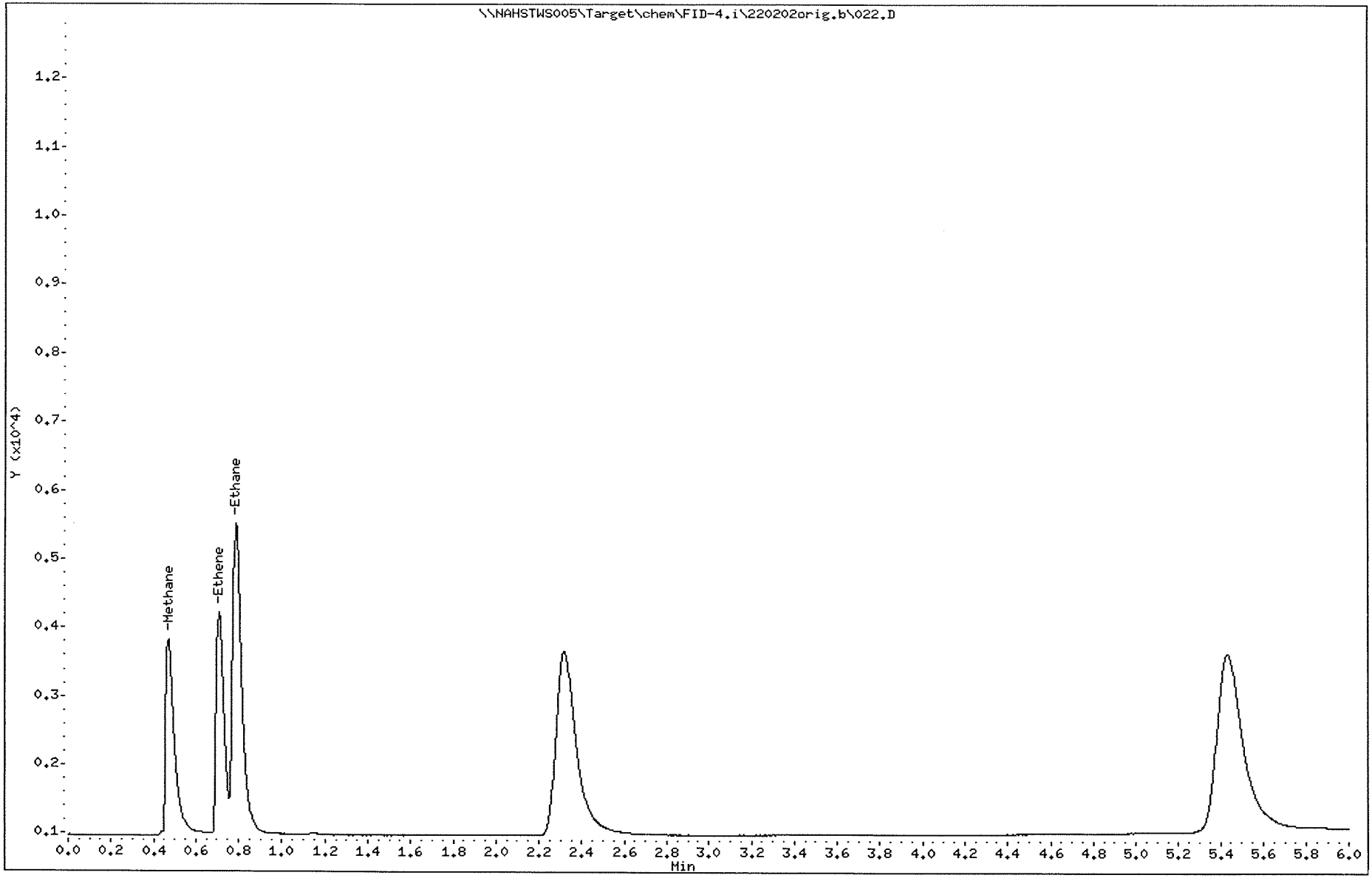
Instrument: FID-4.i

Sample Info: RSK-CCV;RSK-CCV;2;4

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\024.D Page 1
Report Date: 08-Feb-2022 11:22

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\024.D
Lab Smp Id: HS22011233-01 Client Smp ID: HS22011233-01
Inj Date : 02-FEB-2022 15:00
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011233-01;HS22011233-01
Misc Info : ;1;0;25
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 24
Dil Factor: 25.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.490	0.473	0.017	16104	16.5171	412.926(M)
2 Ethene	0.723	0.713	0.010	552	0.94236	23.559(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\024.D

Date : 02-FEB-2022 15:00

Client ID: HS22011233-01

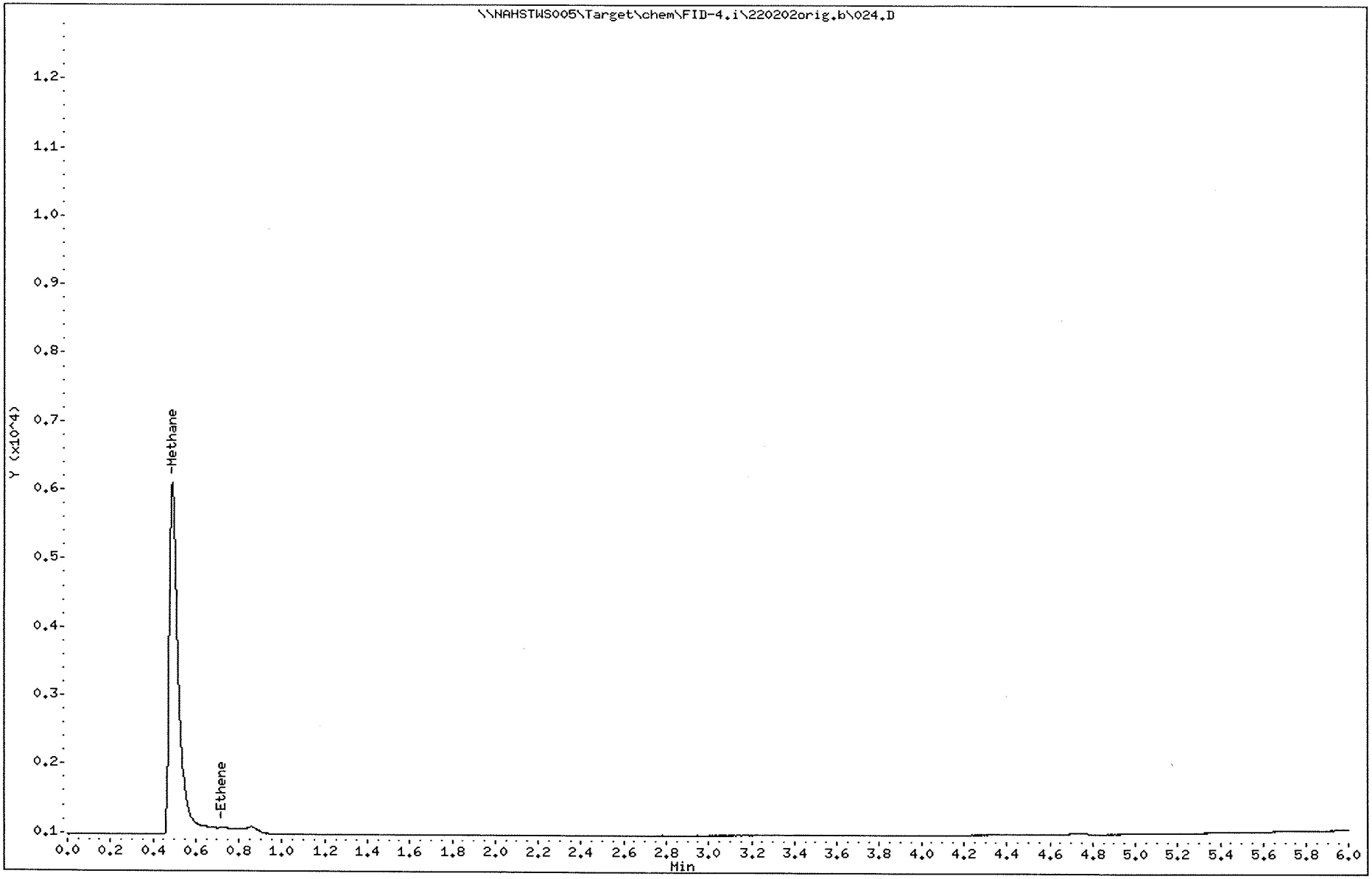
Instrument: FID-4.i

Sample Info: HS22011233-01;HS22011233-01

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\024.D
Lab Smp Id: HS22011233-01 Client Smp ID: HS22011233-01
Inj Date : 02-FEB-2022 15:00
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011233-01;HS22011233-01
Misc Info : ;1;0;25
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 24
Dil Factor: 25.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.490	0.473	0.017	16212	16.6278	415.695

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\024.D

Date : 02-FEB-2022 15:00

Client ID: HS22011233-01

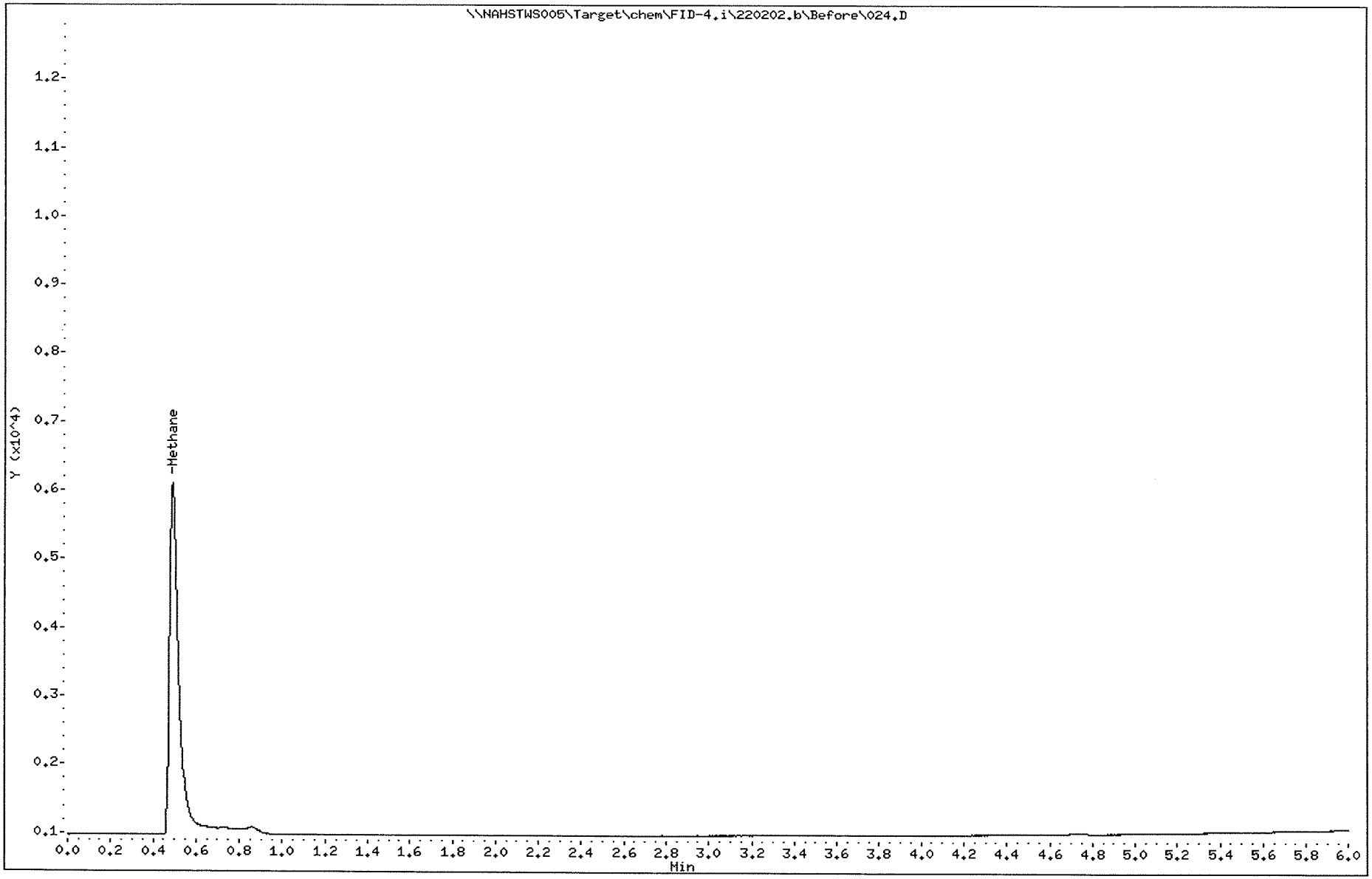
Instrument: FID-4.i

Sample Info: HS22011233-01;HS22011233-01

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\025.D Page 1
Report Date: 08-Feb-2022 11:22

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\025.D
Lab Smp Id: HS22011233-02 Client Smp ID: HS22011233-02
Inj Date : 02-FEB-2022 15:09
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011233-02;HS22011233-02
Misc Info : ;1;0;5
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 25
Dil Factor: 5.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.473	0.473	0.000	18682	19.1612	95.805(M)
2 Ethene	0.696	0.713	-0.017	616	1.05162	5.258(M)

QC Flag Legend

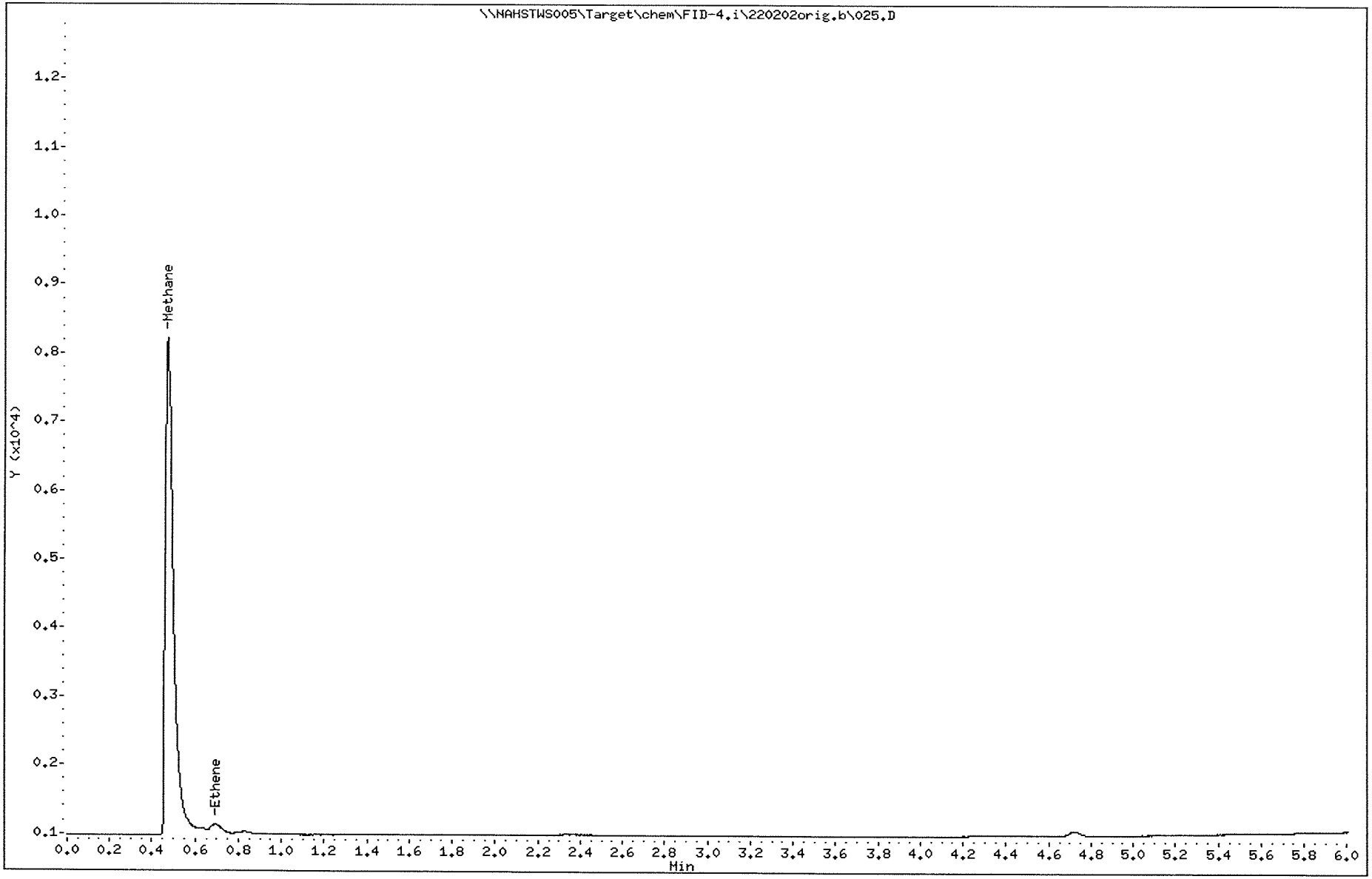
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\025.D
Date : 02-FEB-2022 15:09
Client ID: HS22011233-02
Sample Info: HS22011233-02;HS22011233-02

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\025.D Page 1
Report Date: 08-Feb-2022 11:31

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\025.D
Lab Smp Id: HS22011233-02 Client Smp ID: HS22011233-02
Inj Date : 02-FEB-2022 15:09
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011233-02;HS22011233-02
Misc Info : ;1;0;5
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 25
Dil Factor: 5.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
1 Methane	0.473	0.473	0.000	19386	19.8832	99.416

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\025.D

Date : 02-FEB-2022 15:09

Client ID: HS22011233-02

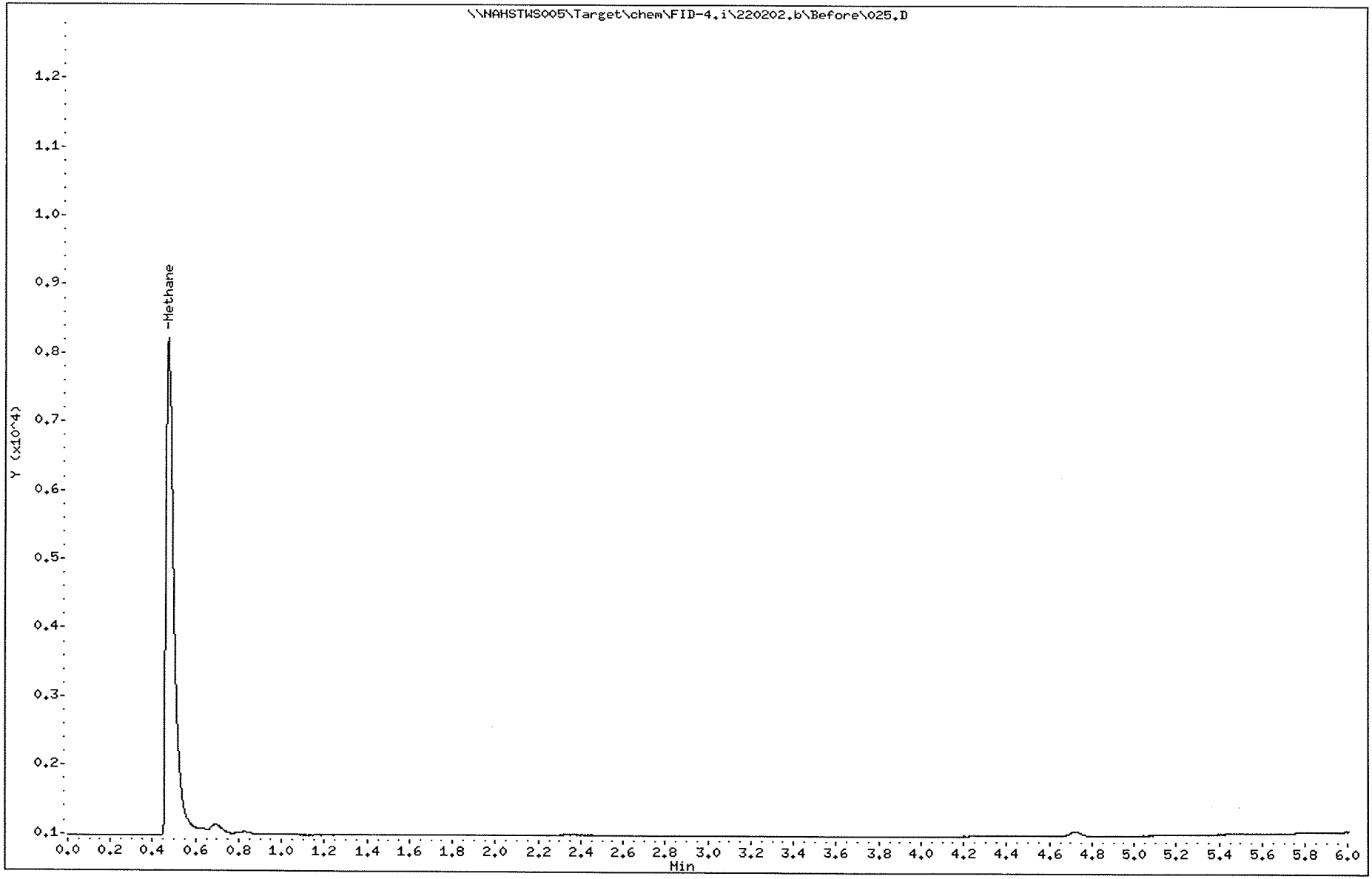
Sample Info: HS22011233-02;HS22011233-02

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\026.D
Lab Smp Id: HS22011233-05 Client Smp ID: HS22011233-05
Inj Date : 02-FEB-2022 15:20
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011233-05;HS22011233-05
Misc Info : ;1;0;10
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 26
Dil Factor: 10.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.483	0.473	0.010	20905	21.4412	214.411(M)

QC Flag Legend

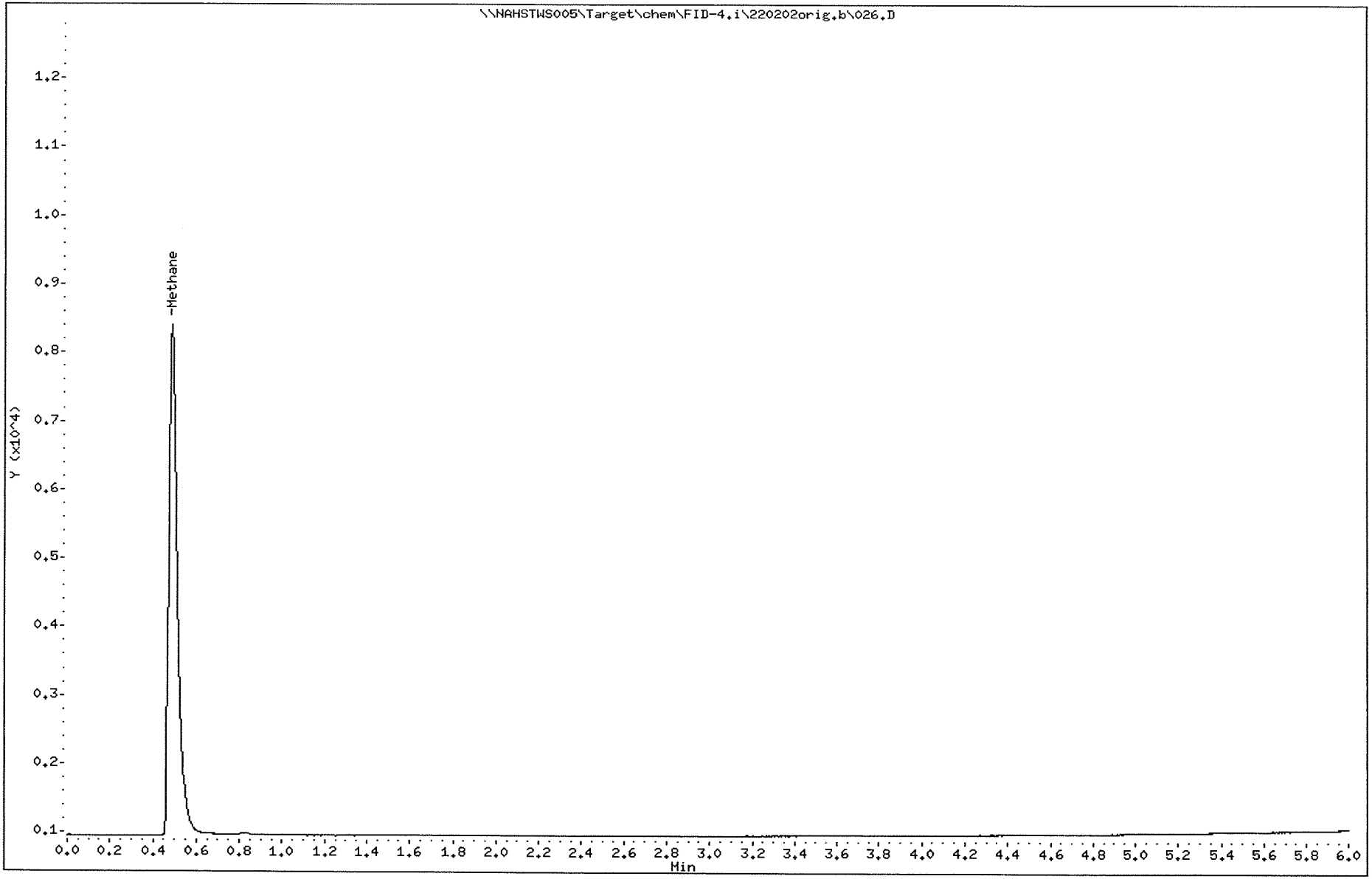
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\026.D
Date : 02-FEB-2022 15:20
Client ID: HS22011233-05
Sample Info: HS22011233-05;HS22011233-05

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\026.D Page 1
Report Date: 08-Feb-2022 11:31

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\026.D
Lab Smp Id: HS22011233-05 Client Smp ID: HS22011233-05
Inj Date : 02-FEB-2022 15:20
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011233-05;HS22011233-05
Misc Info : ;1;0;10
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 26
Dil Factor: 10.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
1 Methane	0.483	0.473	0.010	21066	21.6063	216.063

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202.b\Before\026.D

Date : 02-FEB-2022 15:20

Client ID: HS22011233-05

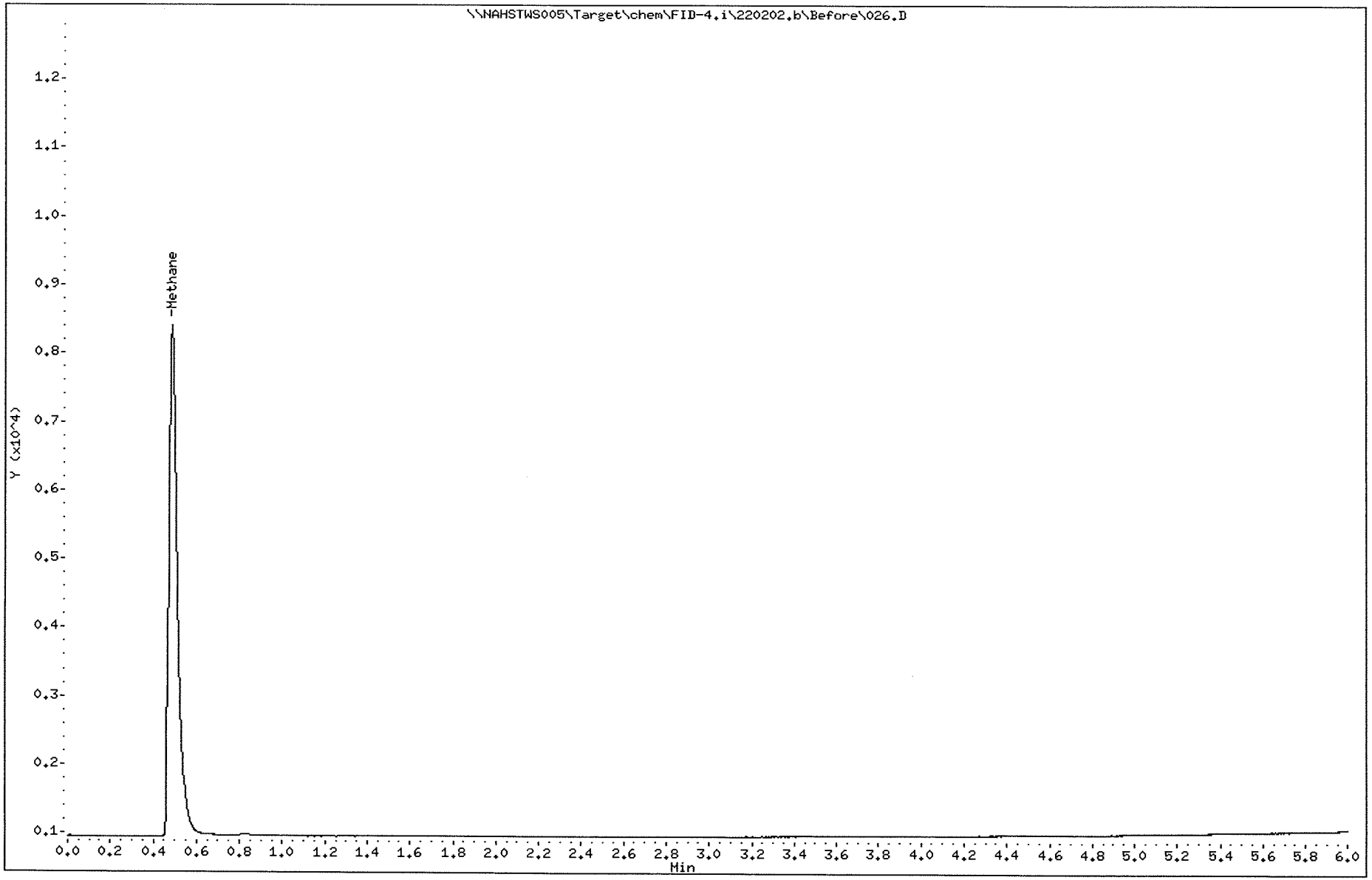
Instrument: FID-4.i

Sample Info: HS22011233-05;HS22011233-05

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\027.D Page 1
Report Date: 08-Feb-2022 11:22

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\027.D
Lab Smp Id: RSK-CCV Client Smp ID: RSK-CCV
Inj Date : 02-FEB-2022 15:29
Operator : PL Inst ID: FID-4.i
Smp Info : RSK-CCV;RSK-CCV;2;4
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\RSKNI3.m
Meth Date : 08-Feb-2022 11:21 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 27 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

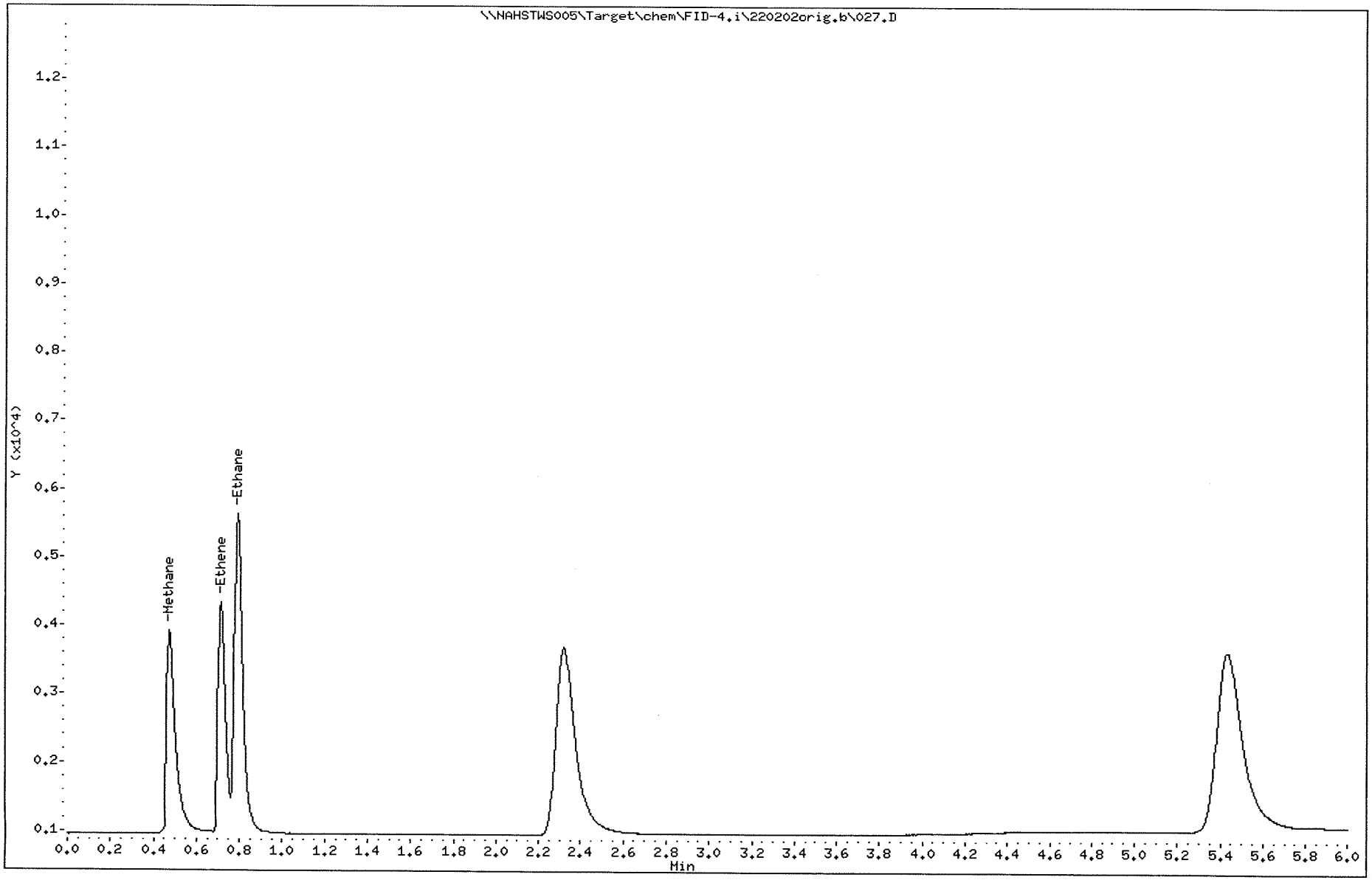
Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Methane	0.473	0.473	0.000	8900	9.64700	9.128
2 Ethene	0.713	0.713	0.000	8220	16.8500	14.033
3 Ethane	0.793	0.793	0.000	13009	18.0430	18.080

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220202orig.b\027.D
Date : 02-FEB-2022 15:29
Client ID: RSK-CCV
Sample Info: RSK-CCV;RSK-CCV;2;4

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



HS22011233 - ME - ICP_W_DOD

ALS WO# HS22011233

Form 11 - INTERNAL STANDARD ASSOCIATION

Client: Aptim Environmental & Infrastucture, Inc.

Project: LHAAP 16 January 2022

WorkOrder: HS22011233

Instrument:ICPMS06

Mass	Analyte	Assoc Int Standard 1	Assoc Int Standard 2	Mode
9	Beryllium	Lithium		Ar
11	Boron	Lithium		Ar
23	Sodium	Germanium		ArHe
24	Magnesium	Germanium		ArHe
27	Aluminum	Germanium		ArHe
39	Potassium	Germanium		ArHe
44	Calcium	Germanium		Ar
47	Titanium	Germanium		Ar
51	Vanadium	Germanium		ArHe
52	Chromium	Germanium		ArHe
55	Manganese	Germanium		ArHe
56	Iron	Germanium		ArHe
59	Cobalt	Germanium		ArHe
60	Nickel	Germanium		ArHe
63	Copper	Germanium		ArHe
66	Zinc	Germanium		ArHe
75	Arsenic	Germanium		ArHe
82	Selenium	Germanium		Ar
88	Strontium	Indium		Ar
95	Molybdenum	Indium		Ar
105	Palladium	Germanium		Ar
107	Silver	Indium		Ar
114	Cadmium	Indium		Ar
118	Tin	Indium		Ar
121	Antimony	Germanium		ArHe
137	Barium	Indium		Ar
205	Thallium	Bismuth		Ar
208	Lead	Bismuth		Ar

ALS Houston, US

Date: 18-Feb-22

FORM 12 - PREPARATION LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233
Start Date: 09-Feb-2022 10:00 End Date: 09-Feb-2022 14:00

Batch ID: 175201
Prep Code: 3010A
Method: SW3010A
Technician:

SampID	ClientID	Matrix	Init Wt	Init Vol	FinalVol (mL)	PrepFac
HS22011233-07	16SW01-220126	Water		10	10	1
HS22011233-08	16SW01-220126-FD	Water		10	10	1
HS22011233-09	16SW02-220126	Water		10	10	1
HS22011233-09MS				10	10	1
HS22011233-09MSD				10	10	1
HS22011233-09PDS				10	10	1
HS22011233-09SD				10	10	1
HS22011233-10	16SW03-220126	Water		10	10	1
LCS-175201				10	10	1
MBLK-175201				10	10	1

ALS Houston, US

Date: 18-Feb-22

FORM 13 - ANALYSIS RUN LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233
Start Date: 09-Feb-2022 End Date: 09-Feb-2022

Run ID:ICPMS06_401893
Instrument:ICPMS06
Method:

Sample No.	D/F	Time	FileID	Analytes
ICPMS06_401893_Tune	1	09-Feb-2022 00:00	ICPMS06_401893_Tune_1	
CAL BLK	1	09-Feb-2022 11:14	009CALB.d_6495470	AS CR MN NI TL
2/10/200	1	09-Feb-2022 11:16	010CALS.d_6495471	AS CR MN NI TL
5/25/500	1	09-Feb-2022 11:18	011CALS.d_6495472	AS CR MN NI TL
10/50/100	1	09-Feb-2022 11:20	012CALS.d_6495473	AS CR MN NI TL
100/500/10K	1	09-Feb-2022 11:22	013CALS.d_6495474	AS CR MN NI TL
200/1000/20K	1	09-Feb-2022 11:24	014CALS.d_6495475	AS CR MN NI TL
ICV	1	09-Feb-2022 11:27	016_ICV.d_6495477	AS CR MN NI TL
LLICV2	1	09-Feb-2022 11:29	017LCV2.d_6495478	AS CR MN NI TL
LLICV5	1	09-Feb-2022 11:31	018LCV5.d_6495479	AS CR MN NI TL
ICB	1	09-Feb-2022 11:33	019_ICB.d_6495480	AS CR MN NI TL
ICSA	1	09-Feb-2022 11:39	021ICSA.d_6495482	AS CR MN NI TL
ICSAB	1	09-Feb-2022 11:41	022ICSB.d_6495483	AS CR MN NI TL
CAL BLK	1	09-Feb-2022 20:27	136CALB.d_6496770	AS CR MN NI TL
2/10/200	1	09-Feb-2022 20:29	137CALS.d_6496771	AS CR MN NI TL
5/25/500	1	09-Feb-2022 20:31	138CALS.d_6496772	AS CR MN NI TL
10/50/100	1	09-Feb-2022 20:33	139CALS.d_6496773	AS CR MN NI TL
100/500/10K	1	09-Feb-2022 20:35	140CALS.d_6496774	AS CR MN NI TL
200/1000/20K	1	09-Feb-2022 20:37	141CALS.d_6496775	AS CR MN NI TL
ICV	1	09-Feb-2022 20:41	143_ICV.d_6496777	AS CR MN NI TL
LLICCV2	1	09-Feb-2022 20:43	144LCV2.d_6496778	AS CR MN NI TL
LLICCV5	1	09-Feb-2022 20:45	145LCV5.d_6496779	AS CR MN NI TL
ICCB 1	1	09-Feb-2022 20:47	146_ICB.d_6496780	AS CR MN NI TL
CCV 1	1	09-Feb-2022 20:51	148_CCV.d_6496782	AS CR MN NI TL
CCB 2	1	09-Feb-2022 20:53	149_CCB.d_6496783	AS CR MN NI TL
MBLK-175201	1	09-Feb-2022 20:55	150SMPL.d_6496784	AS CR MN NI TL
LCS-175201	1	09-Feb-2022 20:57	151SMPL.d_6496785	AS CR MN NI TL
16SW02-220126	1	09-Feb-2022 20:59	152SMPL.d_6496786	AS CR MN NI TL
16SW02-220126SD	5	09-Feb-2022 21:00	153SMPL.d_6496787	AS CR MN NI TL
16SW02-220126MS	1	09-Feb-2022 21:02	154SMPL.d_6496788	AS CR MN NI TL
16SW02-220126MSD	1	09-Feb-2022 21:04	155SMPL.d_6496789	AS CR MN NI TL
16SW02-220126PDS	1	09-Feb-2022 21:06	156SMPL.d_6496790	AS CR MN NI TL
CCV 2	1	09-Feb-2022 21:08	157_CCV.d_6496791	AS CR MN NI TL
CCB 3	1	09-Feb-2022 21:10	158_CCB.d_6496792	AS CR MN NI TL
16SW01-220126	1	09-Feb-2022 21:12	159SMPL.d_6496793	AS CR MN NI TL
16SW01-220126-FD	1	09-Feb-2022 21:14	160SMPL.d_6496794	AS CR MN NI TL
16SW03-220126	1	09-Feb-2022 21:16	161SMPL.d_6496795	AS CR MN NI TL
CCV 3	1	09-Feb-2022 21:24	165_CCV.d_6496799	AS CR MN NI TL
CCB 4	1	09-Feb-2022 21:26	166_CCB.d_6496800	AS CR MN NI TL
CCV 4	1	09-Feb-2022 21:56	179_CCV.d_6496914	AS CR MN NI TL
CCB 5	1	09-Feb-2022 21:58	180_CCB.d_6496915	AS CR MN NI TL
CCV 5	1	09-Feb-2022 22:21	191_CCV.d_6496911	AS CR MN NI TL
CCB 6	1	09-Feb-2022 22:22	192_CCB.d_6496912	AS CR MN NI TL

ALS Houston, US

Date: 18-Feb-22

FORM 13 - ANALYSIS RUN LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233
Start Date: 10-Feb-2022 End Date: 10-Feb-2022

Run ID:ICPMS06_402006
Instrument:ICPMS06
Method:

Sample No.	D/F	Time	FileID	Analytes
ICPMS06_402006_Tune	1	10-Feb-2022 00:00	ICPMS06_402006_Tune_1	

Form 2 - Initial and Continuing Calibration Verification

Client: Aptim Environmental & Infrastucture, Inc. Run ID: ICPMS06_401893
Project: LHAAP 16 January 2022 Instrument: ICPMS06
WorkOrder: HS22011233 Method: SW6020A

ICV	Date: 09-Feb-2022 11:27		Seq: 6495477	ICV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Arsenic	100	105.285	105	90-110	
Chromium	100	100.031	100	90-110	
Manganese	100	101.785	102	90-110	
Nickel	100	103.718	104	90-110	
Thallium	100	106.321	106	90-110	

ICV	Date: 09-Feb-2022 20:41		Seq: 6496777	ICV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Arsenic	100	103.069	103	90-110	
Chromium	100	99.628	100	90-110	
Manganese	100	99.512	100	90-110	
Nickel	100	103.723	104	90-110	
Thallium	100	101.499	101	90-110	

CCV1	Date: 09-Feb-2022 20:51		Seq: 6496782	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Arsenic	100	103.05	103	90-110	
Chromium	100	99.403	99	90-110	
Manganese	100	99.984	100	90-110	
Nickel	100	104.087	104	90-110	
Thallium	100	101.749	102	90-110	

CCV2	Date: 09-Feb-2022 21:08		Seq: 6496791	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Arsenic	100	101.831	102	90-110	
Chromium	100	99.514	100	90-110	
Manganese	100	99.937	100	90-110	
Nickel	100	103.075	103	90-110	
Thallium	100	101.931	102	90-110	

CCV3	Date: 09-Feb-2022 21:24		Seq: 6496799	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Arsenic	100	104.082	104	90-110	
Chromium	100	98.965	99	90-110	
Manganese	100	99.067	99	90-110	
Nickel	100	102.504	103	90-110	
Thallium	100	105.416	105	90-110	

CCV4	Date: 09-Feb-2022 21:56		Seq: 6496914	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Arsenic	100	103.183	103	90-110	
Chromium	100	99.222	99	90-110	
Manganese	100	101.323	101	90-110	
Nickel	100	102.726	103	90-110	
Thallium	100	104.008	104	90-110	

CCV5	Date: 09-Feb-2022 22:21		Seq: 6496911	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Arsenic	100	103.355	103	90-110	
Chromium	100	101.567	102	90-110	
Manganese	100	103.525	104	90-110	
Nickel	100	103.78	104	90-110	
Thallium	100	106.568	107	90-110	

Form 3 - BLANKS

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

Run ID: ICPMS06_401893
Instrument: ICPMS06
Method: SW6020A

ICB	Date: 09-Feb-2022 11:33		Seq: 6495480	ICB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Arsenic	5	0.4	5	U	
Chromium	5	0.4	5	U	
Manganese	5	0.7	5	U	
Nickel	5	0.6	5	U	
Thallium	2	0.2	2	U	

ICCB1	Date: 09-Feb-2022 20:47		Seq: 6496780	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Arsenic	5	0.4	5	U	
Chromium	5	0.4	5	U	
Manganese	5	0.7	5	U	
Nickel	5	0.6	5	U	
Thallium	2	0.2	2	U	

CCB2	Date: 09-Feb-2022 20:53		Seq: 6496783	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Arsenic	2	0.4	2	U	
Chromium	4	0.4	4	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Thallium	2	0.2	2	U	

MBLK-175201	Date: 09-Feb-2022 20:55		Seq: 6496784	MBLK	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Arsenic	5	0.4	5	U	
Chromium	5	0.4	5	U	
Manganese	5	0.7	5	U	
Nickel	5	0.6	5	U	
Thallium	2	0.2	2	U	

CCB3	Date: 09-Feb-2022 21:10		Seq: 6496792	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Arsenic	2	0.4	2	U	
Chromium	4	0.4	4	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Thallium	2	0.2	2	U	

CCB4	Date: 09-Feb-2022 21:26		Seq: 6496800	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Arsenic	2	0.4	2	U	
Chromium	4	0.4	4	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Thallium	2	0.2	2	U	

CCB5	Date: 09-Feb-2022 21:58		Seq: 6496915	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Arsenic	2	0.4	2	U	
Chromium	4	0.4	4	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Thallium	2	0.2	2	U	

ALS Houston, US

Date: 18-Feb-22

Form 3 - BLANKS

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

Run ID: ICPMS06_401893
Instrument: ICPMS06
Method: SW6020A

CCB6 | Date: 09-Feb-2022 22:22 | Seq: 6496912 | CCB | Units: ug/L

Analyte	Result	MDL	Report Limit	Qual
Arsenic	2	0.4	2	U
Chromium	4	0.4	4	U
Manganese	5	0.7	5	U
Nickel	2	0.6	2	U
Thallium	2	0.2	2	U

Form 4 - ICP Interference Check Sample

Client: Aptim Environmental & Infrastucture, Inc. Run ID:ICPMS06_401893

Project: LHAAP 16 January 2022 Instrument:ICPMS06

WorkOrder: HS22011233 Method:SW6020A

ICSA	Date: 09-Feb-2022 11:39	Seq: 6495482	ICSA	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Arsenic		-0.029	0	
Chromium		1.98	0	
Manganese		0.521	0	
Nickel		0.551	0	
Thallium		-0.046	0	

ICSAB	Date: 09-Feb-2022 11:41	Seq: 6495483	ICSAB	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Arsenic	100	105.1	105	
Chromium	100	101	101	
Manganese	100	101.1	101	
Nickel	100	100.9	101	
Thallium	100	103.6	104	

ALS Houston, US

Date: 18-Feb-22

Form 5A - Matrix Spike/Matrix Spike Duplicate Recovery

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

Date Analyzed: 09-Feb-2022 21:04
Date Extracted: 09-Feb-2022 14:00
Units: ug/L

Matrix Spike: HS22011233-09MS
Client Sample ID: 16SW02-220126

Analysis Method: SW6020A

Analyte	Sample Result	MS Result	Spike Amount	% Rec	MSD Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Arsenic	0.4970	52.94	50.00	105	50.93	50.00	101	84-116	3.89	20
Chromium	5.000	50.34	50.00	100	48.40	50.00	96.1	85-116	3.93	20
Manganese	31.61	82.42	50.00	102	80.12	50.00	97.0	87-115	2.82	20
Nickel	1.126	53.46	50.00	105	51.31	50.00	100	85-117	4.10	20
Thallium	2.000	49.80	50.00	99.5	48.42	50.00	96.7	82-116	2.81	20

ALS Houston, US Date: 18-Feb-22

Form 5B - Post Digest Sample Recovery

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

Date Analyzed: 09-Feb-2022 21:06
Date Extracted: 09-Feb-2022 14:00
Units: ug/L

Lab Sample ID: HS22011233-09PDS
Client Sample ID: 16SW02-220126
Analysis Method: SW6020A

Analyte	Sample Result	PDS Result	Spike Amount	% Rec	% Rec Limits
Arsenic	0.497	95.36	100	95	80-120
Chromium	0	92.24	100	92	80-120
Manganese	31.61	130	100	98	80-120
Nickel	1.126	95.75	100	95	80-120
Thallium	0	90.9	100	91	80-120

ALS Houston, US Date: 18-Feb-22

Form 7 - Laboratory Control Sample

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

Date Analyzed: 09-Feb-2022 20:57
Date Extracted: 09-Feb-2022 14:00
Units: ug/L

Lab Sample ID: LCS-175201 Analysis Method: SW6020A

Analyte	Spike Amount	LCS Result	% Rec	% Rec Limits
Arsenic	50	52.04	104	84-116
Chromium	50	51.06	102	85-116
Manganese	50	52.1	104	87-115
Nickel	50	53.2	106	85-117
Thallium	50	49.57	99	82-116

ALS Houston, US Date: 18-Feb-22

Form 8 - ICP Serial Dilutions

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011233

Date Analyzed: 09-Feb-2022 21:00
Date Extracted: 09-Feb-2022 14:00
Units: ug/L

Lab Sample ID: HS22011233-09SD
Client Sample ID:16SW02-220126

Analysis Method: SW6020A

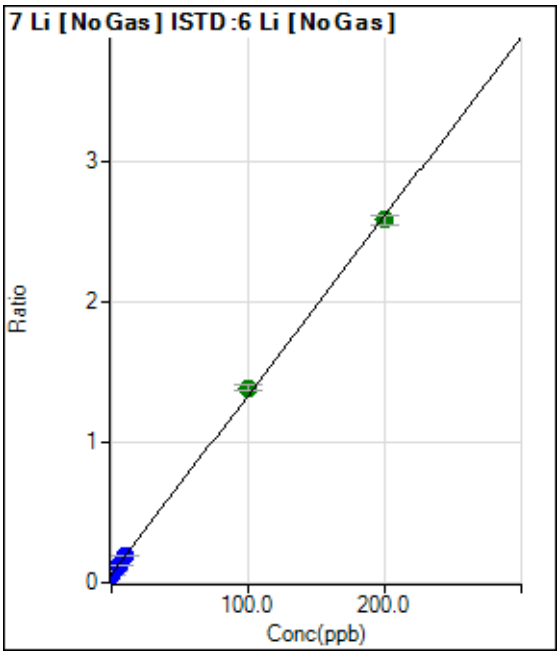
Analyte	Sample Result	C	SD Result	C	RPD	Q
Arsenic	0.497	J	0	U	0	
Chromium	0	U	0	U	0	
Manganese	31.61		31.44		1	
Nickel	1.126	J	0	U	0	
Thallium	0	U	0	U	0	

Calibration for 143_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\020922A.b\
Analysis File: 020922A.batch.bin
DA Date-Time: 2/10/2022 9:14:45 AM
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	136CALB.d	CAL BLK	2/9/2022 8:27:59 PM
2	137CALS.d	2/10/200	2/9/2022 8:29:56 PM
3	138CALS.d	5/25/500	2/9/2022 8:31:54 PM
4	139CALS.d	10/50/100	2/9/2022 8:33:52 PM
5	140CALS.d	100/500/10K	2/9/2022 8:35:49 PM
6	141CALS.d	200/1000/20K	2/9/2022 8:37:41 PM

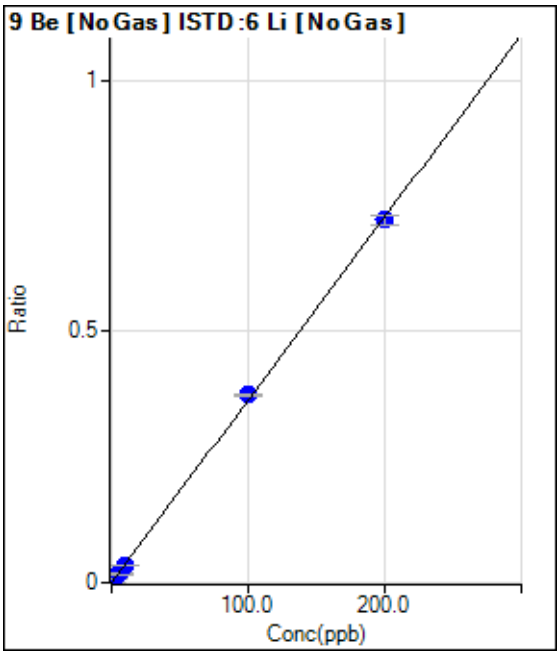
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	63771.87	0.0611	P	0.7
2	☐	2.000	1.928	89832.43	0.0857	P	0.7
3	☐	5.000	5.058	129776.57	0.1257	P	1.6
4	☐	10.000	10.039	194766.21	0.1892	P	3.4
5	☐	100.000	104.139	1362375.66	1.3896	A	2.3
6	☐	200.000	197.928	2467396.63	2.5860	A	2.5

y = 0.0128 * x + 0.0611
R = 0.9997
DL = 0.1032
BEC = 4.793

Weight: <None>
Min Conc: <None>

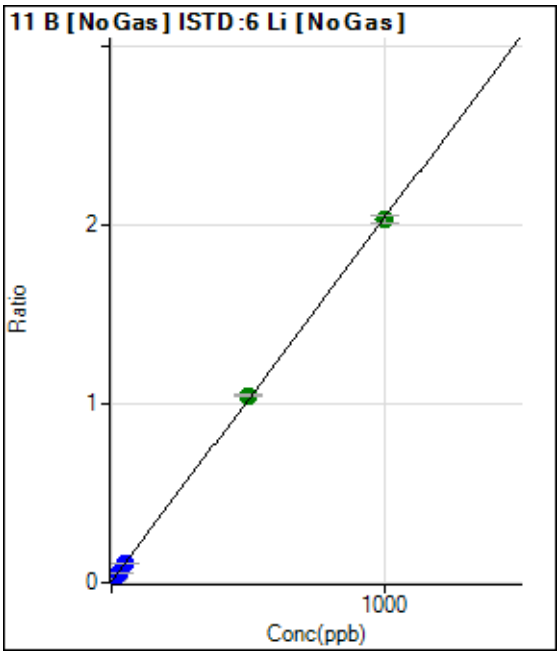


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	111.67	0.0001	P	18.0
2	☐	2.000	1.845	7138.54	0.0068	P	1.1
3	☐	5.000	4.718	17816.35	0.0172	P	1.2
4	☐	10.000	9.618	36094.57	0.0351	P	2.6
5	☐	100.000	102.825	366450.37	0.3737	P	1.5
6	☐	200.000	198.615	688689.00	0.7218	P	2.5

y = 0.0036 * x + 1.0675E-004
R = 0.9998
DL = 0.01586
BEC = 0.02938

Weight: <None>
Min Conc: <None>

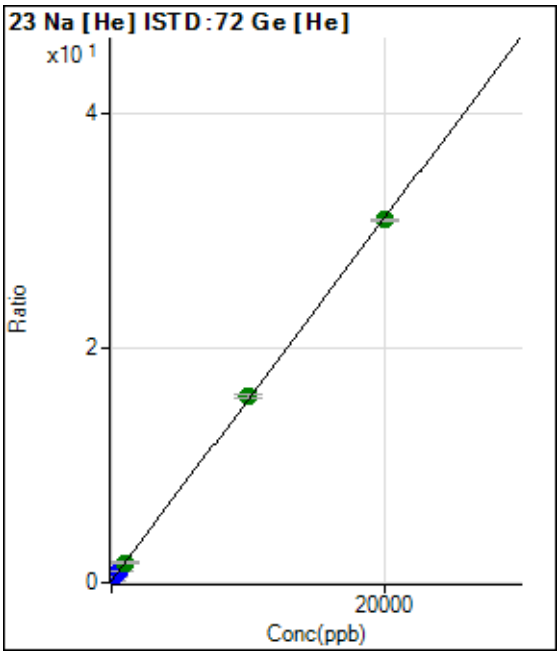
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6981.79	0.0067	P	0.1
2	☐	10.000	9.366	26964.25	0.0257	P	1.8
3	☐	25.000	24.685	58725.33	0.0569	P	1.0
4	☐	50.000	50.363	112276.14	0.1090	P	2.9
5	☐	500.000	511.267	1025604.83	1.0458	A	1.1
6	☐	1000.000	994.362	1935008.36	2.0276	A	2.0

y = 0.0020 * x + 0.0067
R = 0.9999
DL = 0.01378
BEC = 3.293

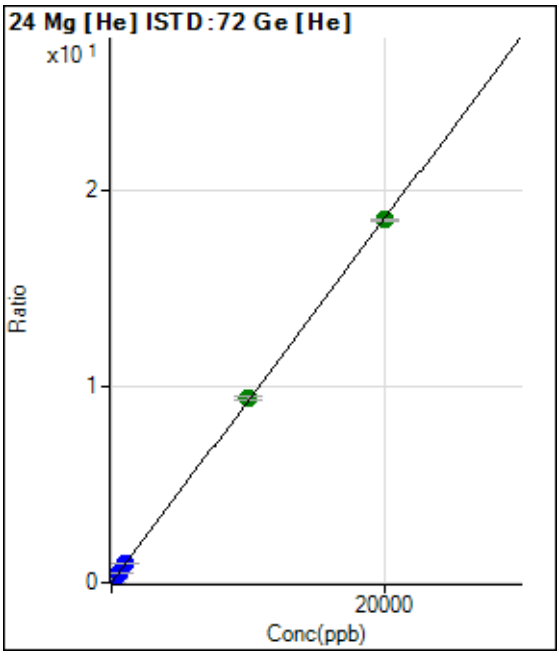
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	121324.11	0.1601	P	1.6
2	☐	200.000	193.068	348757.81	0.4587	P	0.8
3	☐	500.000	503.255	711065.33	0.9383	P	1.0
4	☐	1000.000	1002.088	1290842.48	1.7096	A	1.4
5	☐	10000.00	10205.05	11841219.82	15.9400	A	2.1
6	☐	20000.00	19897.35	22345032.17	30.9270	A	0.7

y = 0.0015 * x + 0.1601
R = 0.9999
DL = 4.954
BEC = 103.5

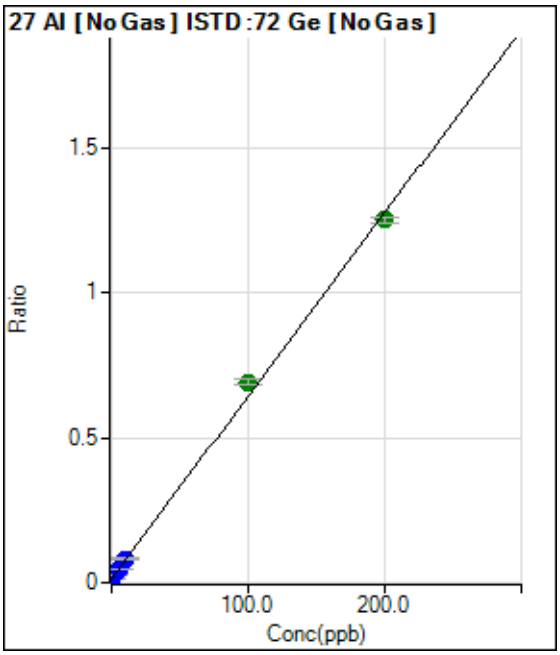
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1180.07	0.0016	P	5.7
2	☐	200.000	201.015	143273.09	0.1884	P	1.6
3	☐	500.000	516.733	365208.95	0.4819	P	0.3
4	☐	1000.000	1029.050	723515.25	0.9581	P	0.5
5	☐	10000.00	10127.70	6994780.31	9.4160	A	1.9
6	☐	20000.00	19934.26	13389140.63	18.5320	A	0.8

y = 9.2958E-004 * x + 0.0016
R = 1.0000
DL = 0.2883
BEC = 1.676

Weight: <None>
Min Conc: <None>

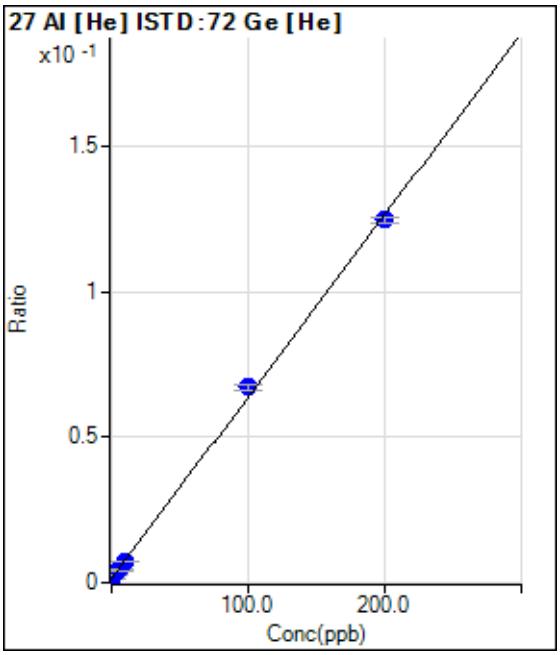


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	28376.01	0.0131	P	1.7
2	☐	2.000	2.027	56591.79	0.0259	P	2.3
3	☐	5.000	4.962	96892.18	0.0444	P	0.7
4	☐	10.000	10.730	174279.55	0.0808	P	7.4
5	☐	100.000	107.375	1474040.76	0.6912	A	2.7
6	☐	200.000	196.277	2624499.44	1.2526	A	1.9

y = 0.0063 * x + 0.0131
R = 0.9990
DL = 0.1044
BEC = 2.072

Weight: <None>
Min Conc: <None>

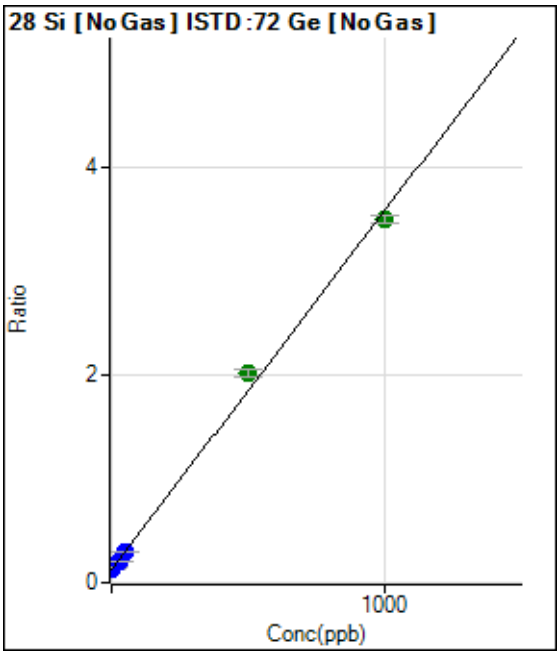
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1053.39	0.0014	P	4.2
2	☐	2.000	1.776	1900.17	0.0025	P	7.4
3	☐	5.000	4.706	3280.44	0.0043	P	2.4
4	☐	10.000	9.624	5587.92	0.0074	P	4.4
5	☐	100.000	105.268	49873.05	0.0671	P	2.2
6	☐	200.000	197.395	90063.69	0.1247	P	1.4

y = 6.2448E-004 * x + 0.0014
R = 0.9995
DL = 0.2797
BEC = 2.226

Weight: <None>
Min Conc: <None>

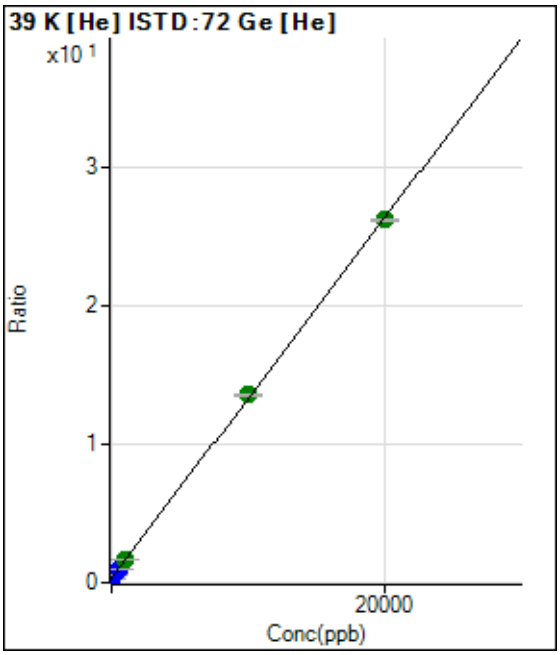


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	267184.96	0.1232	P	2.1
2	☐	10.000	9.978	344919.89	0.1577	P	1.0
3	☐	25.000	25.105	458227.48	0.2101	P	1.0
4	☐	50.000	51.536	650480.72	0.3015	P	0.8
5	☐	500.000	549.762	4319732.96	2.0256	A	3.3
6	☐	1000.000	975.040	7327337.19	3.4973	A	2.2

y = 0.0035 * x + 0.1232
R = 0.9982
DL = 2.195
BEC = 35.6

Weight: <None>
Min Conc: <None>

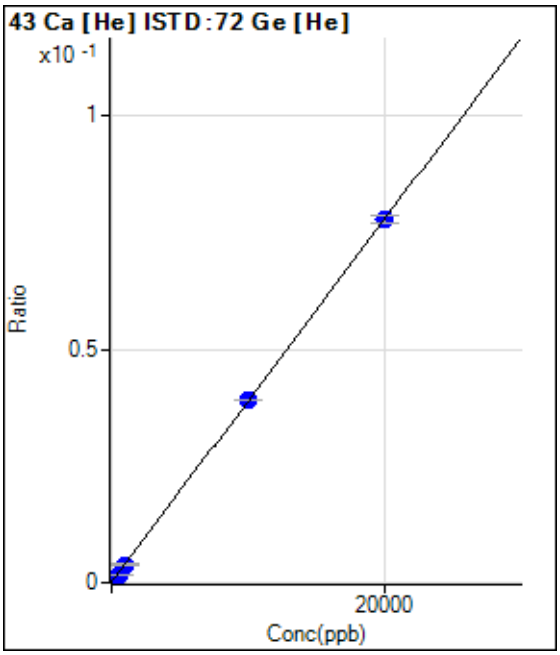
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	243028.40	0.3208	P	1.2
2	☐	200.000	197.131	438689.11	0.5769	P	1.2
3	☐	500.000	510.274	745612.46	0.9838	P	0.4
4	☐	1000.000	1008.632	1231620.50	1.6314	A	3.9
5	☐	10000.00	10176.51	10062145.06	13.5444	A	1.3
6	☐	20000.00	19911.08	18925238.89	26.1938	A	0.6

y = 0.0013 * x + 0.3208
R = 0.9999
DL = 9.195
BEC = 246.8

Weight: <None>
Min Conc: <None>

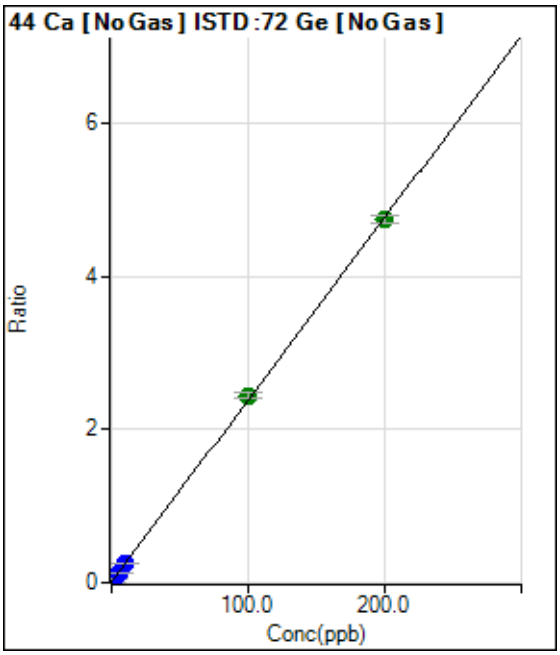


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	56.67	0.0001	P	26.5
2	☐	200.000	202.762	656.70	0.0009	P	16.4
3	☐	500.000	442.293	1360.09	0.0018	P	6.0
4	☐	1000.000	985.160	2950.37	0.0039	P	4.3
5	☐	10000.00	10071.92	29157.87	0.0392	P	0.5
6	☐	20000.00	19966.19	56154.83	0.0777	P	2.1

y = 3.8890E-006 * x + 7.4733E-005
R = 1.0000
DL = 15.25
BEC = 19.22

Weight: <None>
Min Conc: <None>

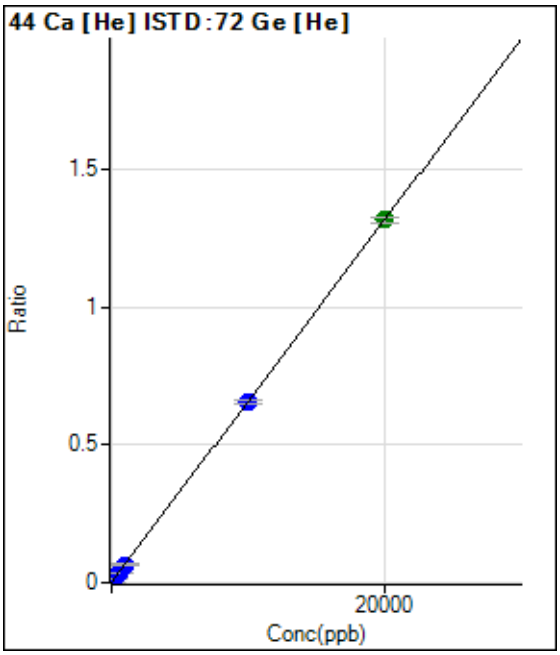
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	21577.22	0.0099	P	2.0
2	☐	2.000	1.952	123167.02	0.0563	P	1.7
3	☐	5.000	5.020	281812.72	0.1292	P	2.1
4	☐	10.000	10.187	543490.60	0.2520	P	1.2
5	☐	100.000	102.120	5195141.90	2.4361	A	3.2
6	☐	200.000	198.931	9922808.39	4.7362	A	2.3

y = 0.0238 * x + 0.0099
R = 0.9999
DL = 0.02515
BEC = 0.4187

Weight: <None>
Min Conc: <None>

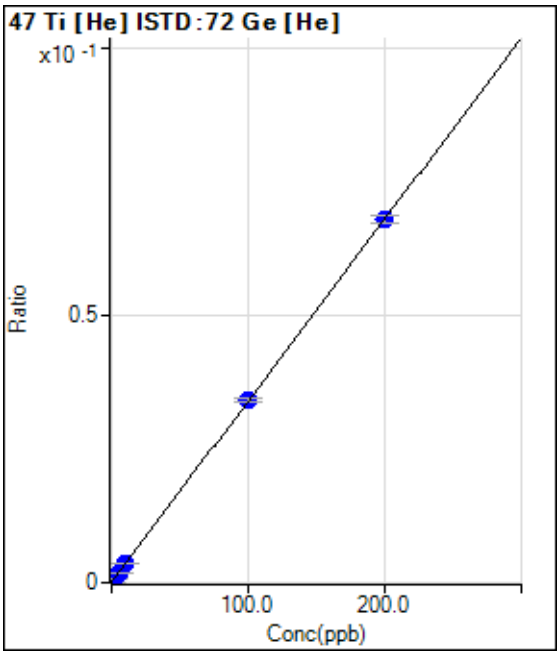


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	766.70	0.0010	P	7.2
2	☐	200.000	186.507	10097.19	0.0133	P	2.1
3	☐	500.000	481.584	24772.61	0.0327	P	2.1
4	☐	1000.000	990.066	49940.74	0.0661	P	1.6
5	☐	10000.00	9984.232	488537.43	0.6577	P	2.1
6	☐	20000.00	20008.97	951492.28	1.3170	A	1.3

y = 6.5768E-005 * x + 0.0010
R = 1.0000
DL = 3.323
BEC = 15.39

Weight: <None>
Min Conc: <None>

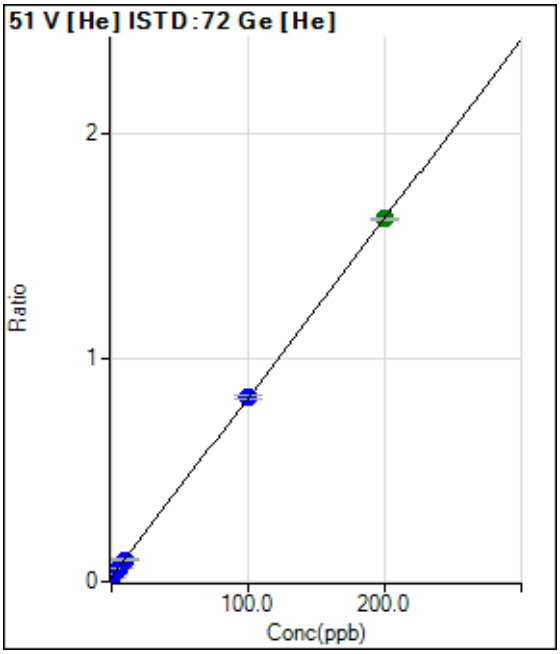
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	43.33	0.0001	P	34.2
2	☐	2.000	1.614	460.01	0.0006	P	11.2
3	☐	5.000	5.055	1343.43	0.0018	P	10.9
4	☐	10.000	10.013	2610.30	0.0035	P	1.9
5	☐	100.000	100.444	25380.43	0.0342	P	2.1
6	☐	200.000	199.780	49047.78	0.0679	P	2.0

y = 3.3953E-004 * x + 5.7078E-005
R = 1.0000
DL = 0.1726
BEC = 0.1681

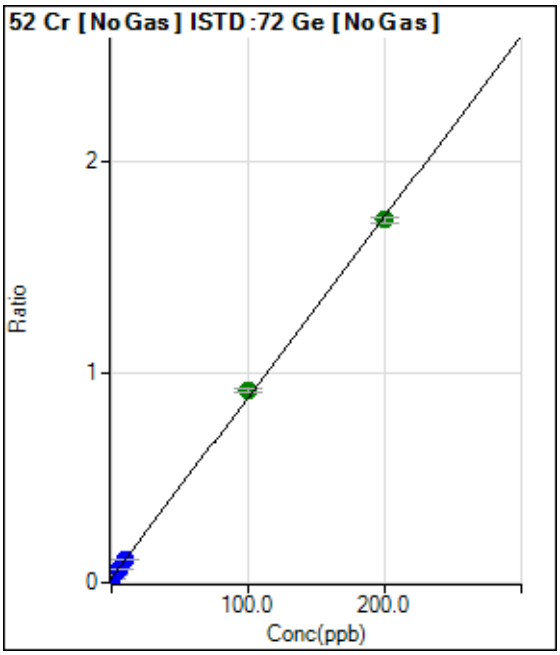
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	15992.69	0.0211	P	1.5
2	☐	2.000	1.821	27123.49	0.0357	P	0.4
3	☐	5.000	4.913	45778.30	0.0604	P	1.0
4	☐	10.000	9.695	74494.24	0.0987	P	1.4
5	☐	100.000	100.311	611811.43	0.8235	P	1.2
6	☐	200.000	199.864	1170385.40	1.6199	A	0.4

y = 0.0080 * x + 0.0211
R = 1.0000
DL = 0.1213
BEC = 2.638

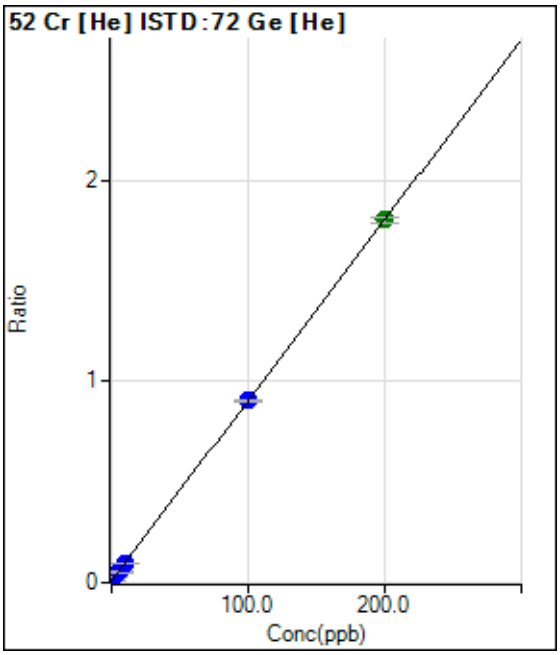
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	48830.54	0.0225	P	1.4
2	☐	2.000	1.807	83195.24	0.0380	P	0.9
3	☐	5.000	5.052	143792.11	0.0659	P	1.1
4	☐	10.000	10.242	238379.03	0.1105	P	2.1
5	☐	100.000	103.547	1945701.74	0.9122	A	1.9
6	☐	200.000	198.215	3616160.05	1.7257	A	1.5

y = 0.0086 * x + 0.0225
R = 0.9998
DL = 0.1119
BEC = 2.62

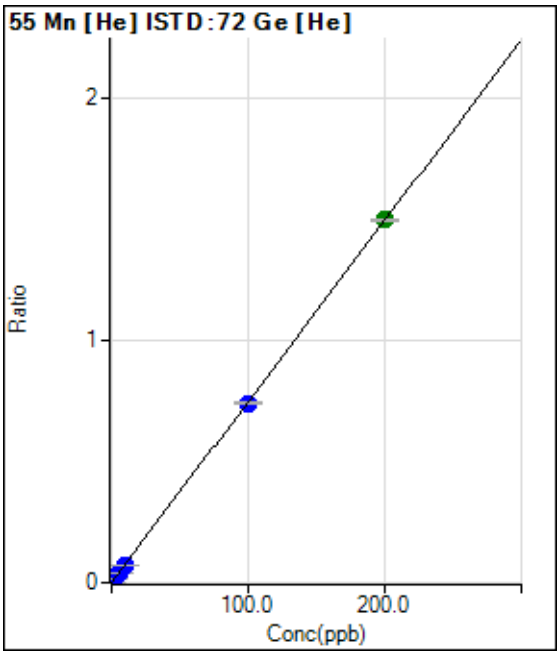
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6885.19	0.0091	P	7.2
2	☐	2.000	1.775	19013.34	0.0250	P	4.0
3	☐	5.000	4.873	40012.14	0.0528	P	2.9
4	☐	10.000	9.635	72119.33	0.0955	P	0.9
5	☐	100.000	99.786	671608.98	0.9040	P	1.2
6	☐	200.000	200.131	1303344.90	1.8040	A	1.4

y = 0.0090 * x + 0.0091
R = 1.0000
DL = 0.2204
BEC = 1.014

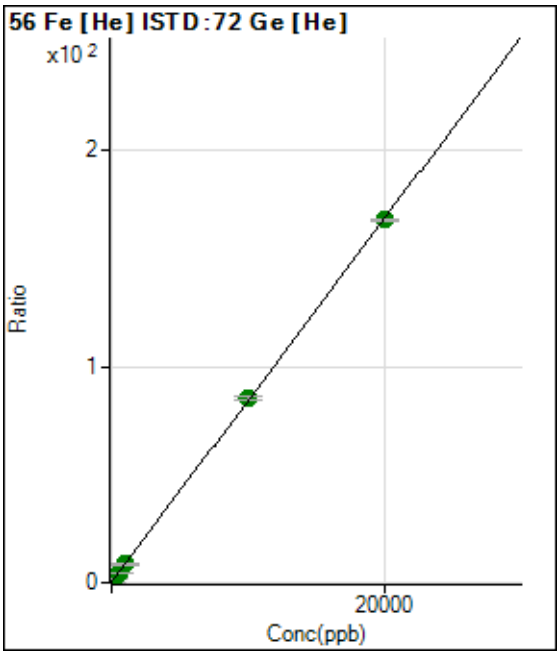
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	676.70	0.0009	P	5.8
2	☐	2.000	1.872	11288.18	0.0148	P	4.9
3	☐	5.000	4.793	27741.81	0.0366	P	0.4
4	☐	10.000	9.506	54160.73	0.0717	P	0.4
5	☐	100.000	99.142	549496.45	0.7396	P	1.0
6	☐	200.000	200.460	1079839.36	1.4946	A	0.8

y = 0.0075 * x + 8.9343E-004
R = 1.0000
DL = 0.02081
BEC = 0.1199

Weight: <None>
Min Conc: <None>

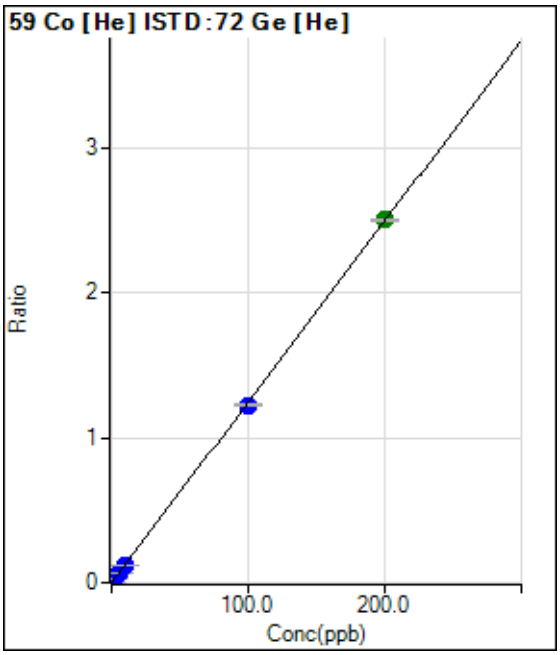


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	138622.63	0.1830	P	3.6
2	☐	200.000	180.898	1296051.99	1.7044	A	1.4
3	☐	500.000	488.251	3250954.53	4.2895	A	1.7
4	☐	1000.000	986.292	6400671.57	8.4784	A	3.1
5	☐	10000.00	10145.93	63528579.05	85.5173	A	1.7
6	☐	20000.00	19928.20	121228978.1	167.792	A	0.6

y = 0.0084 * x + 0.1830
R = 1.0000
DL = 2.355
BEC = 21.75

Weight: <None>
Min Conc: <None>

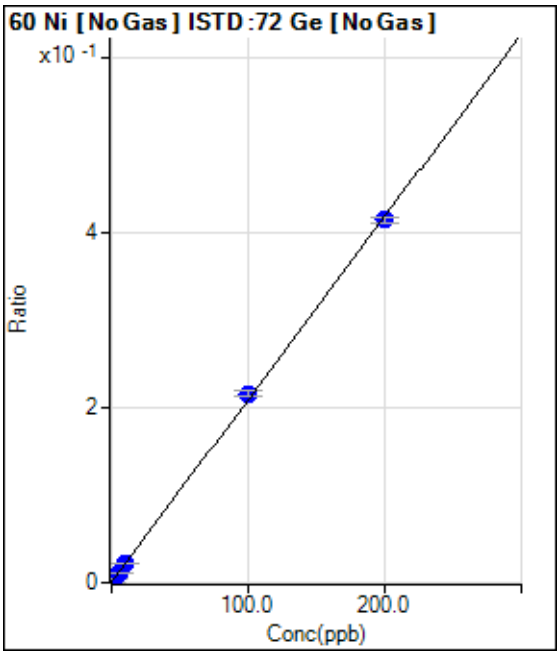
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	133.33	0.0002	P	22.4
2	☐	2.000	1.863	17778.49	0.0234	P	1.9
3	☐	5.000	4.784	45295.51	0.0598	P	0.2
4	☐	10.000	9.593	90358.29	0.1197	P	0.4
5	☐	100.000	98.430	910994.15	1.2262	P	1.0
6	☐	200.000	200.812	1807360.96	2.5016	A	0.8

y = 0.0125 * x + 1.7586E-004
R = 1.0000
DL = 0.009499
BEC = 0.01412

Weight: <None>
Min Conc: <None>

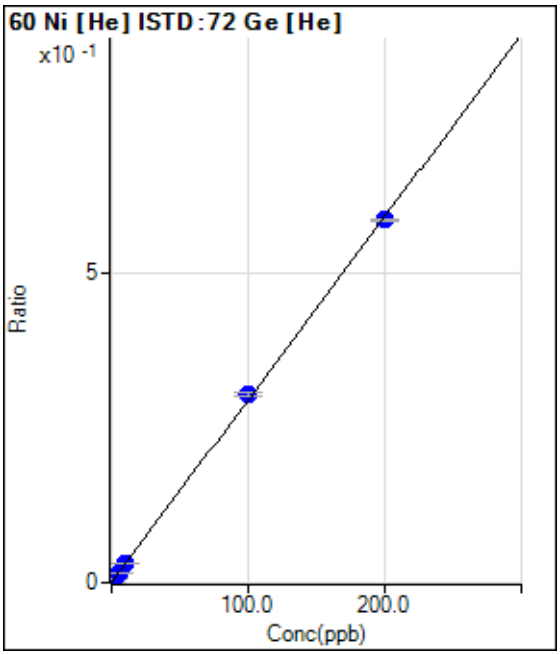


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1040.06	0.0005	P	9.3
2	☐	2.000	1.880	9626.90	0.0044	P	2.8
3	☐	5.000	5.092	24218.43	0.0111	P	0.9
4	☐	10.000	10.362	47676.84	0.0221	P	1.9
5	☐	100.000	103.317	460738.38	0.2160	P	2.3
6	☐	200.000	198.322	867936.76	0.4142	P	1.7

y = 0.0021 * x + 4.8001E-004
R = 0.9998
DL = 0.06427
BEC = 0.2301

Weight: <None>
Min Conc: <None>

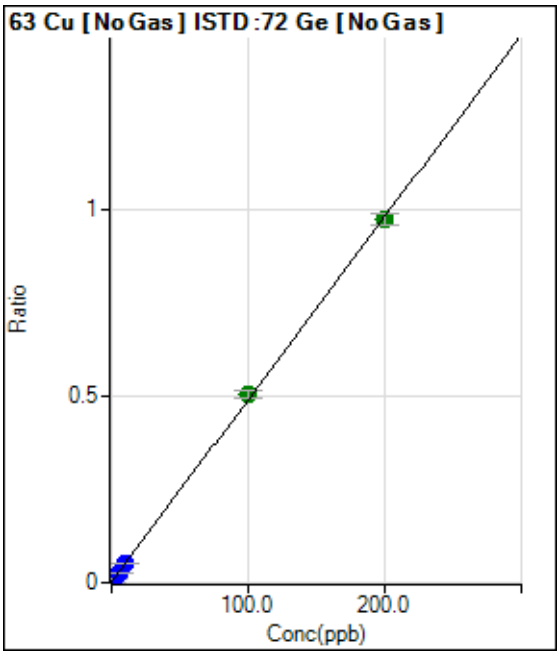
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	350.01	0.0005	P	10.8
2	☐	2.000	1.777	4330.77	0.0057	P	2.9
3	☐	5.000	4.983	11475.04	0.0151	P	4.1
4	☐	10.000	10.072	22756.10	0.0301	P	3.4
5	☐	100.000	103.047	225807.78	0.3040	P	1.9
6	☐	200.000	198.475	422693.63	0.5850	P	0.6

y = 0.0029 * x + 4.6173E-004
R = 0.9998
DL = 0.05061
BEC = 0.1568

Weight: <None>
Min Conc: <None>

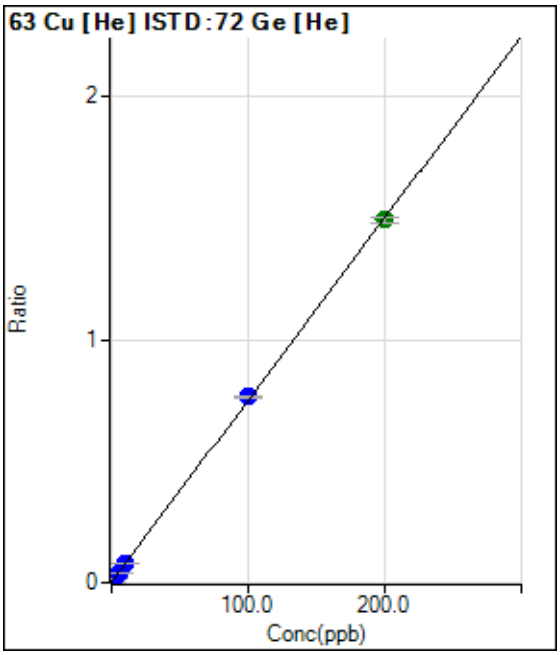


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4340.77	0.0020	P	2.0
2	☐	2.000	1.984	25584.40	0.0117	P	2.5
3	☐	5.000	5.174	59533.73	0.0273	P	1.0
4	☐	10.000	10.200	111880.76	0.0519	P	1.0
5	☐	100.000	102.926	1077386.47	0.5052	A	3.6
6	☐	200.000	198.523	2037402.16	0.9725	A	3.1

y = 0.0049 * x + 0.0020
R = 0.9998
DL = 0.02428
BEC = 0.4092

Weight: <None>
Min Conc: <None>

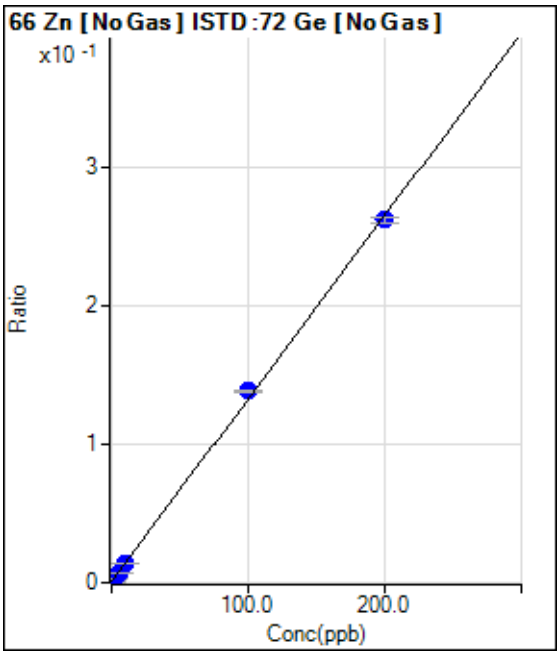
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1793.48	0.0024	P	2.7
2	☐	2.000	1.949	12903.00	0.0170	P	1.2
3	☐	5.000	5.080	30628.12	0.0404	P	0.8
4	☐	10.000	10.072	58747.03	0.0778	P	1.6
5	☐	100.000	101.791	568205.20	0.7648	P	0.4
6	☐	200.000	199.099	1079162.49	1.4936	A	1.6

y = 0.0075 * x + 0.0024
R = 0.9999
DL = 0.02583
BEC = 0.3161

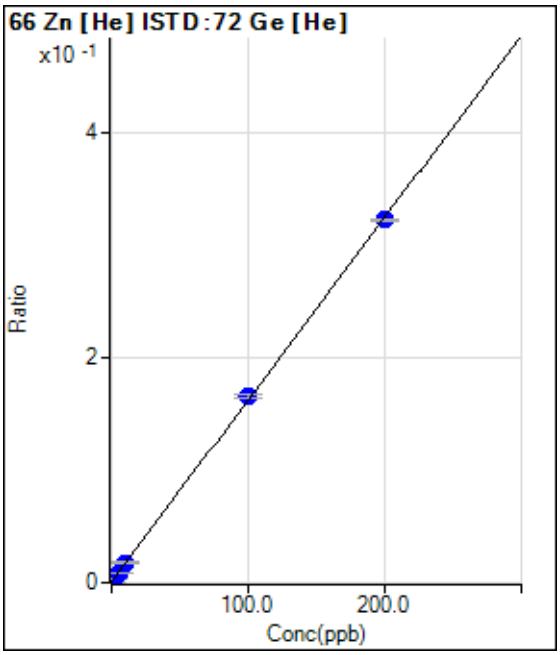
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1520.11	0.0007	P	6.8
2	☐	2.000	1.771	6655.08	0.0030	P	6.4
3	☐	5.000	4.732	15188.71	0.0070	P	4.7
4	☐	10.000	10.334	30999.02	0.0144	P	2.2
5	☐	100.000	104.387	296072.11	0.1388	P	1.1
6	☐	200.000	197.799	549744.42	0.2624	P	1.9

y = 0.0013 * x + 7.0132E-004
R = 0.9996
DL = 0.1088
BEC = 0.5301

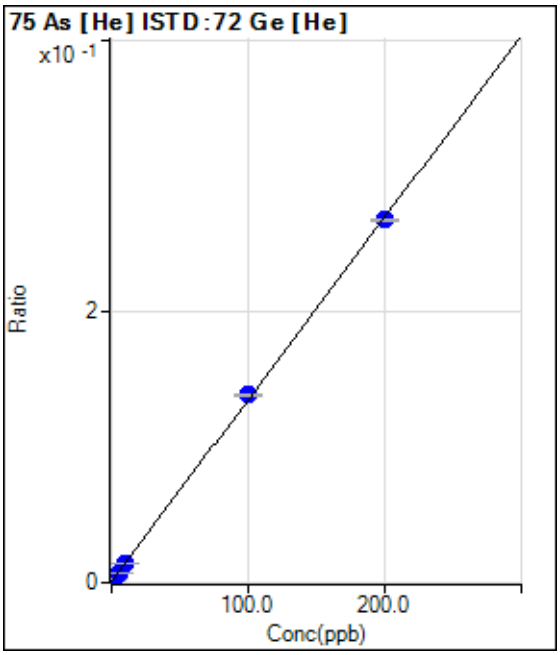
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	553.36	0.0007	P	12.4
2	☐	2.000	1.779	2740.33	0.0036	P	2.8
3	☐	5.000	4.894	6545.03	0.0086	P	0.9
4	☐	10.000	10.405	13246.70	0.0175	P	4.5
5	☐	100.000	102.264	123285.85	0.1660	P	1.8
6	☐	200.000	198.853	232648.03	0.3220	P	0.3

y = 0.0016 * x + 7.2955E-004
R = 0.9999
DL = 0.1684
BEC = 0.4516

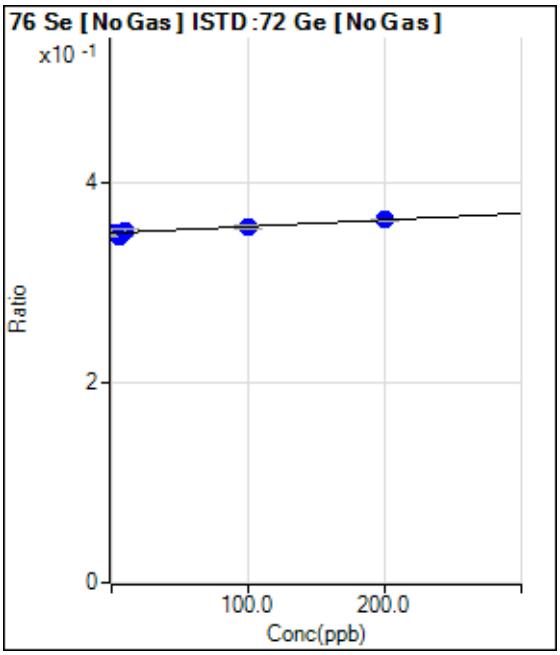
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	630.02	0.0008	P	5.0
2	☐	2.000	1.707	2374.67	0.0031	P	2.2
3	☐	5.000	4.838	5550.05	0.0073	P	1.4
4	☐	10.000	9.707	10464.09	0.0139	P	1.3
5	☐	100.000	102.532	102833.81	0.1384	P	1.3
6	☐	200.000	198.756	193304.07	0.2676	P	0.4

y = 0.0013 * x + 8.3147E-004
R = 0.9999
DL = 0.09381
BEC = 0.6196

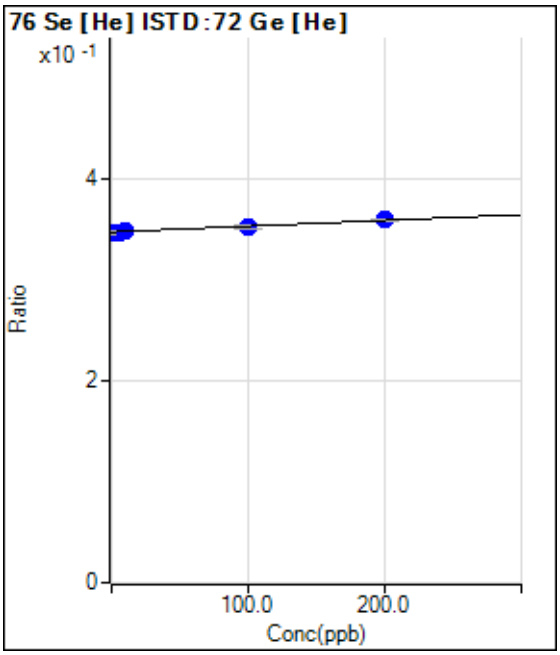
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	760027.90	0.3504	P	1.2
2	☐	2.000	4.876	766857.15	0.3507	P	1.5
3	☐	5.000	-51.049	756946.92	0.3470	P	0.6
4	☐	10.000	31.940	760339.68	0.3525	P	0.8
5	☐	100.000	101.138	761618.27	0.3570	P	1.0
6	☐	200.000	199.706	761695.80	0.3635	P	0.7

y = 6.5672E-005 * x + 0.3504
R = 0.9566
DL = 186.3
BEC = 5335

Weight: <None>
Min Conc: <None>

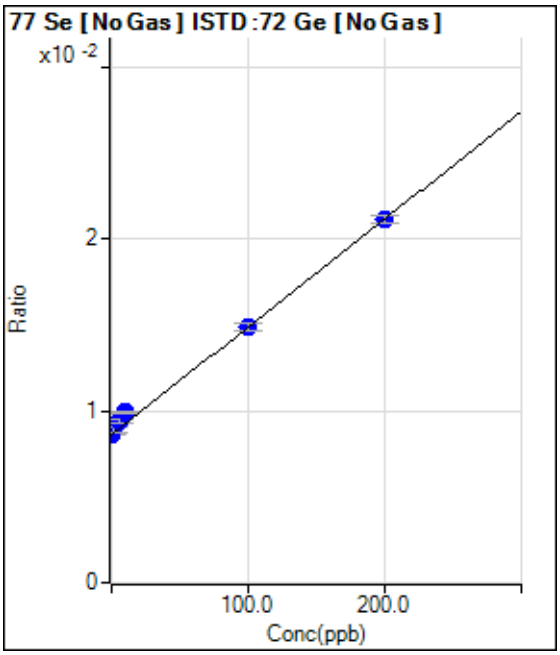


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	263737.61	0.3481	P	1.4
2	☐	2.000	-11.896	264166.98	0.3474	P	0.8
3	☐	5.000	-3.235	263651.43	0.3479	P	1.1
4	☐	10.000	19.149	263680.66	0.3492	P	0.5
5	☐	100.000	86.084	262305.47	0.3531	P	1.1
6	☐	200.000	206.846	260131.26	0.3600	P	0.7

y = 5.7779E-005 * x + 0.3481
R = 0.9933
DL = 249.6
BEC = 6025

Weight: <None>
Min Conc: <None>

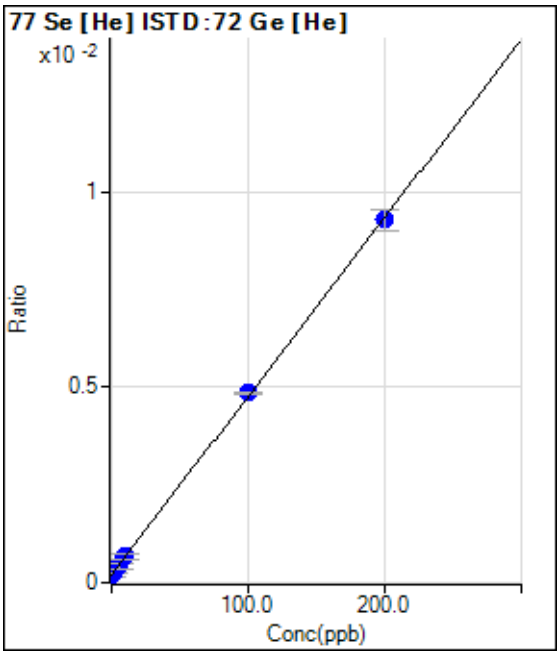
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	18699.92	0.0086	P	1.4
2	☐	2.000	4.333	19454.34	0.0089	P	4.6
3	☐	5.000	12.405	20502.64	0.0094	P	2.9
4	☐	10.000	20.863	21417.32	0.0099	P	1.3
5	☐	100.000	100.021	31751.09	0.0149	P	3.2
6	☐	200.000	199.238	44219.39	0.0211	P	2.0

y = 6.2655E-005 * x + 0.0086
R = 0.9987
DL = 5.757
BEC = 137.6

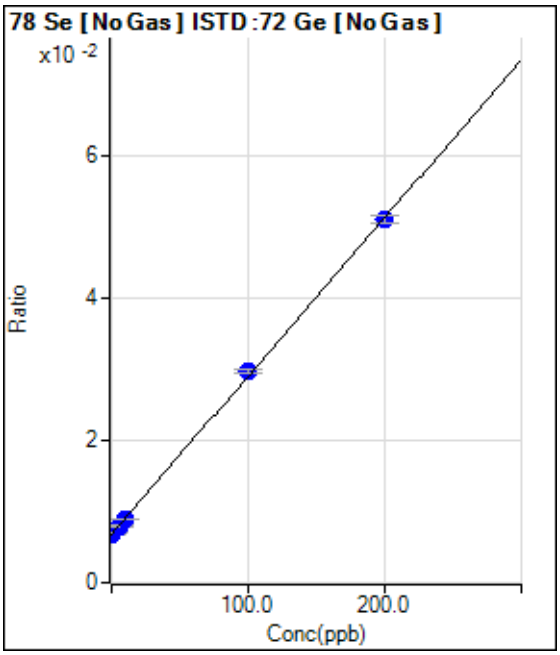
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	153.33	0.0002	P	31.2
2	☐	2.000	0.942	186.67	0.0002	P	8.0
3	☐	5.000	4.908	323.35	0.0004	P	29.1
4	☐	10.000	10.251	506.69	0.0007	P	18.9
5	☐	100.000	102.197	3613.88	0.0049	P	0.9
6	☐	200.000	198.902	6701.77	0.0093	P	5.8

y = 4.5611E-005 * x + 2.0248E-004
R = 0.9999
DL = 4.154
BEC = 4.439

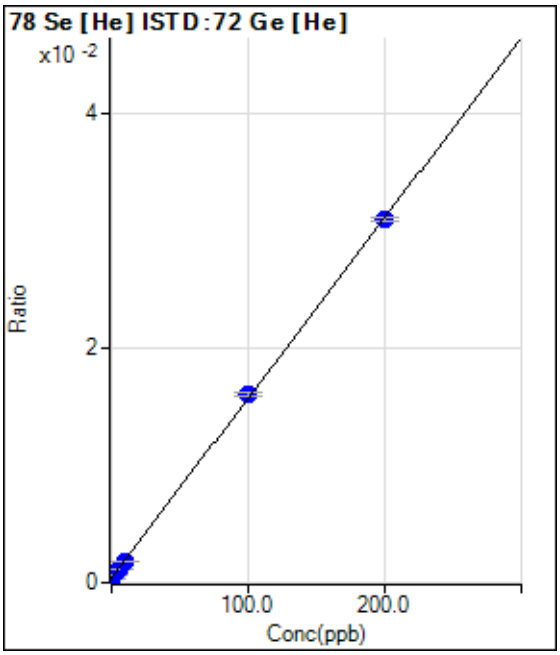
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	14795.03	0.0068	P	4.0
2	☐	2.000	2.092	15933.00	0.0073	P	4.9
3	☐	5.000	4.936	17278.07	0.0079	P	4.5
4	☐	10.000	9.347	19204.01	0.0089	P	2.4
5	☐	100.000	102.644	63221.82	0.0296	P	1.8
6	☐	200.000	198.712	106841.68	0.0510	P	2.1

y = 2.2228E-004 * x + 0.0068
R = 0.9999
DL = 3.695
BEC = 30.7

Weight: <None>
Min Conc: <None>

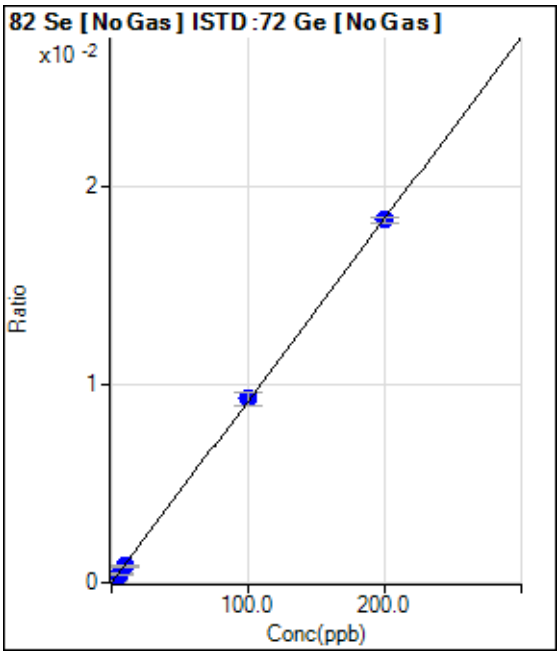


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	288.00	0.0004	P	6.8
2	☐	2.000	1.565	472.01	0.0006	P	4.9
3	☐	5.000	4.839	852.03	0.0011	P	3.1
4	☐	10.000	9.628	1405.41	0.0019	P	1.8
5	☐	100.000	102.085	11947.30	0.0161	P	1.4
6	☐	200.000	198.984	22387.22	0.0310	P	1.2

y = 1.5381E-004 * x + 3.8001E-004
R = 0.9999
DL = 0.5052
BEC = 2.471

Weight: <None>
Min Conc: <None>

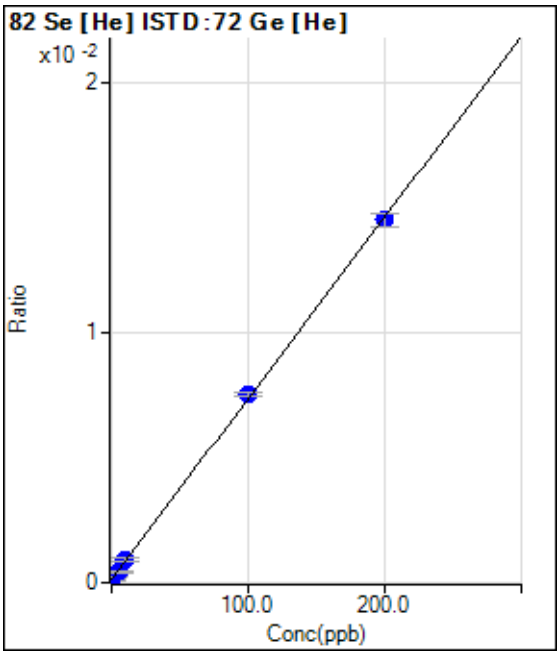
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	-19.46	0.0000	P	-238.9
2	☐	2.000	1.313	243.59	0.0001	P	29.2
3	☐	5.000	4.659	913.86	0.0004	P	22.6
4	☐	10.000	9.149	1793.78	0.0008	P	5.2
5	☐	100.000	101.026	19765.88	0.0093	P	6.9
6	☐	200.000	199.545	38399.86	0.0183	P	1.7

y = 9.1882E-005 * x - 9.2535E-006
R = 1.0000
DL = 0.7217
BEC = -0.1007

Weight: <None>
Min Conc: <None>

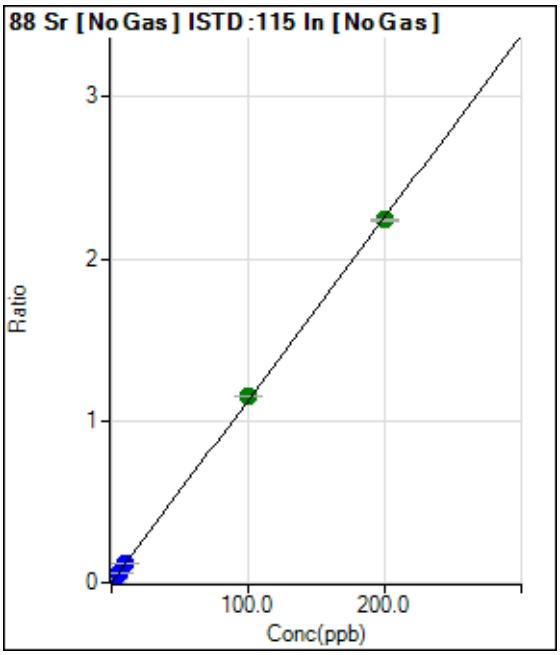


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	93.33	0.0001	P	42.7
2	☐	2.000	2.111	210.00	0.0003	P	40.9
3	☐	5.000	4.252	326.68	0.0004	P	5.9
4	☐	10.000	10.856	686.69	0.0009	P	15.9
5	☐	100.000	102.688	5617.92	0.0076	P	2.2
6	☐	200.000	198.631	10484.27	0.0145	P	3.6

y = 7.2436E-005 * x + 1.2301E-004
R = 0.9999
DL = 2.174
BEC = 1.698

Weight: <None>
Min Conc: <None>

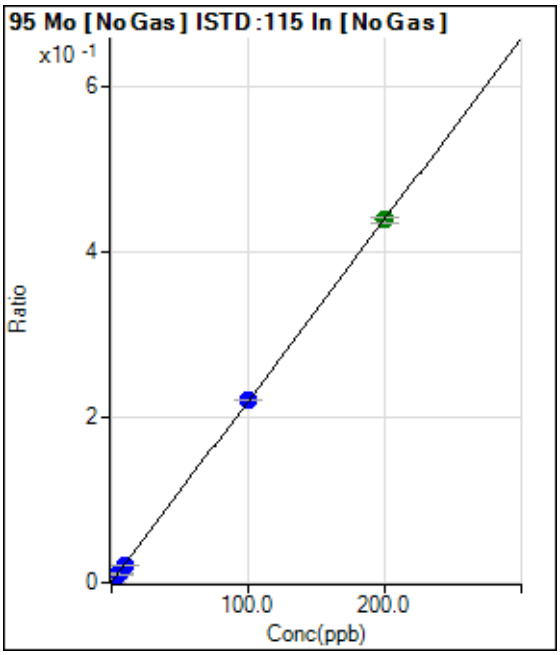
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2210.22	0.0009	P	5.7
2	☐	2.000	1.898	58136.37	0.0222	P	1.5
3	☐	5.000	4.911	145679.89	0.0562	P	2.9
4	☐	10.000	10.067	291722.28	0.1143	P	1.1
5	☐	100.000	102.441	2913762.46	1.1555	A	0.2
6	☐	200.000	198.779	5567604.29	2.2414	A	0.7

y = 0.0113 * x + 8.5724E-004
R = 0.9999
DL = 0.01297
BEC = 0.07605

Weight: <None>
Min Conc: <None>

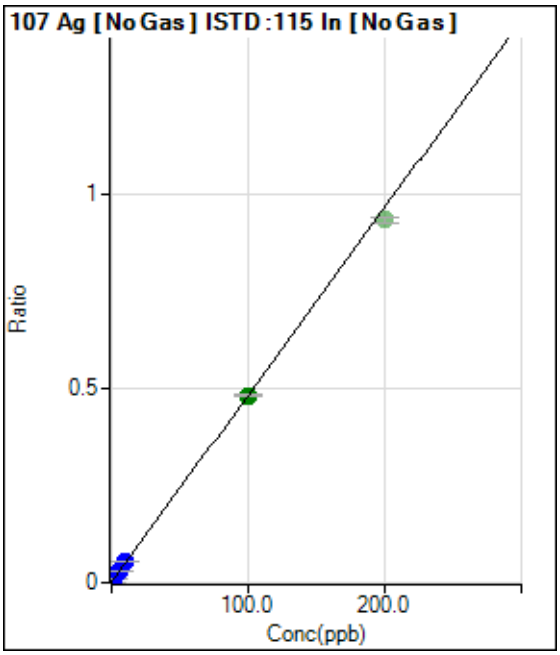


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1016.73	0.0004	P	9.3
2	☐	2.000	1.734	10984.75	0.0042	P	2.8
3	☐	5.000	4.663	27578.83	0.0106	P	3.4
4	☐	10.000	9.589	54772.75	0.0215	P	1.8
5	☐	100.000	100.415	557356.61	0.2210	P	0.6
6	☐	200.000	199.824	1091683.47	0.4395	A	1.8

y = 0.0022 * x + 3.9462E-004
R = 1.0000
DL = 0.05024
BEC = 0.1796

Weight: <None>
Min Conc: <None>

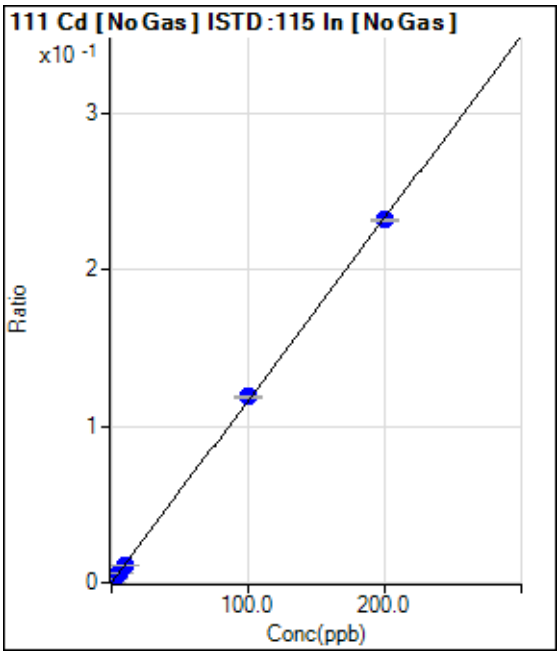
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2747.01	0.0011	P	4.1
2	☐	2.000	2.008	28080.17	0.0107	P	1.7
3	☐	5.000	5.613	72863.55	0.0281	P	3.3
4	☐	10.000	11.314	141864.56	0.0556	P	1.5
5	☐	100.000	99.838	1216023.24	0.4822	A	1.7
6	☑	200.000		2320154.44	0.9341	A	1.7

y = 0.0048 * x + 0.0011
R = 0.9999
DL = 0.02726
BEC = 0.221

Weight: <None>
Min Conc: <None>

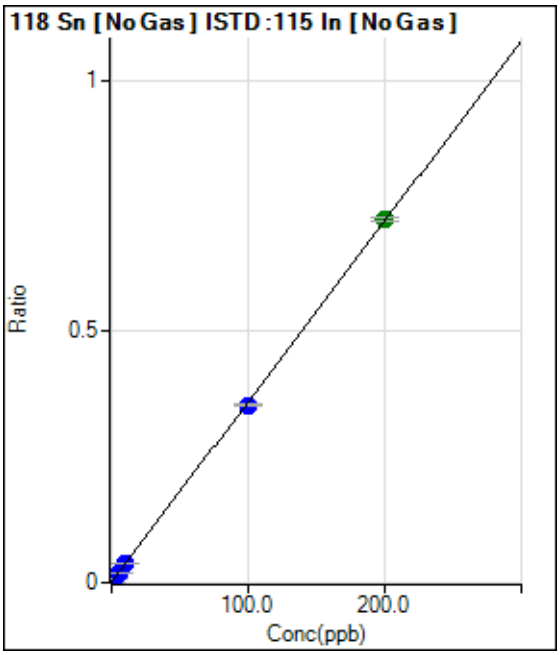


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	36.67	0.0000	P	62.0
2	☐	2.000	1.850	5657.99	0.0022	P	7.3
3	☐	5.000	4.801	14518.22	0.0056	P	0.4
4	☐	10.000	9.827	29205.96	0.0114	P	1.4
5	☐	100.000	101.859	298772.65	0.1185	P	2.0
6	☐	200.000	199.085	575304.46	0.2316	P	0.7

y = 0.0012 * x + 1.4058E-005
R = 0.9999
DL = 0.02249
BEC = 0.01208

Weight: <None>
Min Conc: <None>

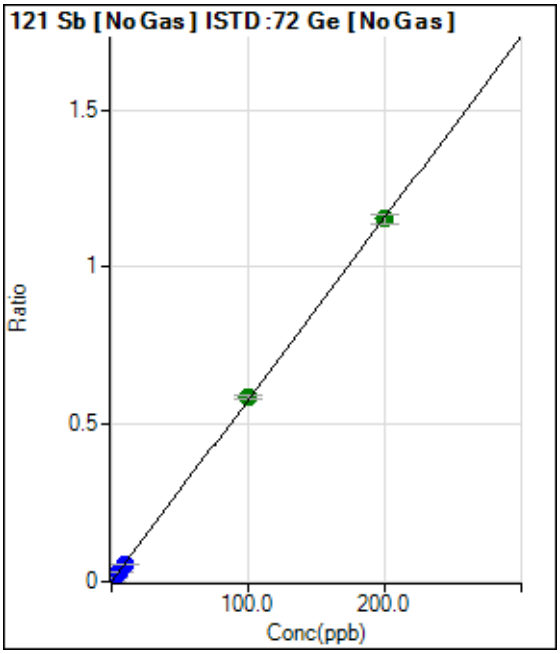
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2963.72	0.0011	P	3.0
2	☐	2.000	1.692	18870.47	0.0072	P	1.7
3	☐	5.000	4.647	46181.22	0.0178	P	4.0
4	☐	10.000	9.983	94334.29	0.0370	P	1.4
5	☐	100.000	98.110	890411.29	0.3532	P	1.5
6	☐	200.000	200.958	1793798.98	0.7222	A	1.1

y = 0.0036 * x + 0.0011
R = 0.9999
DL = 0.02847
BEC = 0.3202

Weight: <None>
Min Conc: <None>

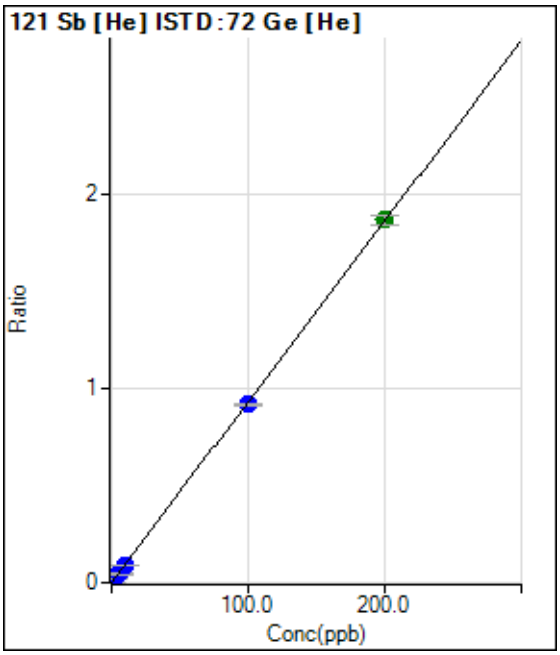


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1190.07	0.0005	P	14.7
2	☐	2.000	1.814	24115.86	0.0110	P	2.6
3	☐	5.000	4.703	60465.69	0.0277	P	1.1
4	☐	10.000	9.451	118942.12	0.0551	P	2.5
5	☐	100.000	101.113	1247122.01	0.5847	A	1.8
6	☐	200.000	199.480	2415585.23	1.1530	A	2.6

y = 0.0058 * x + 5.4895E-004
R = 1.0000
DL = 0.0418
BEC = 0.09502

Weight: <None>
Min Conc: <None>

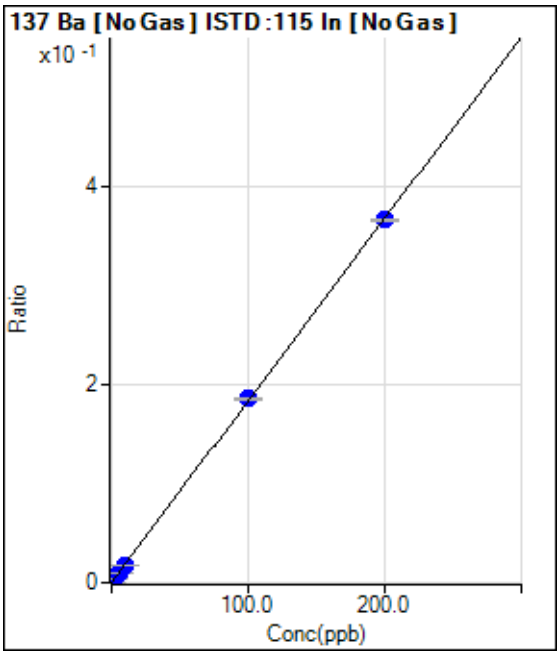
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	673.36	0.0009	P	5.8
2	☐	2.000	1.774	13250.21	0.0174	P	2.2
3	☐	5.000	4.710	33951.07	0.0448	P	1.3
4	☐	10.000	9.367	66605.60	0.0882	P	0.9
5	☐	100.000	98.566	683288.56	0.9198	P	1.3
6	☐	200.000	200.758	1352771.12	1.8724	A	2.7

y = 0.0093 * x + 8.8908E-004
R = 1.0000
DL = 0.01659
BEC = 0.09537

Weight: <None>
Min Conc: <None>

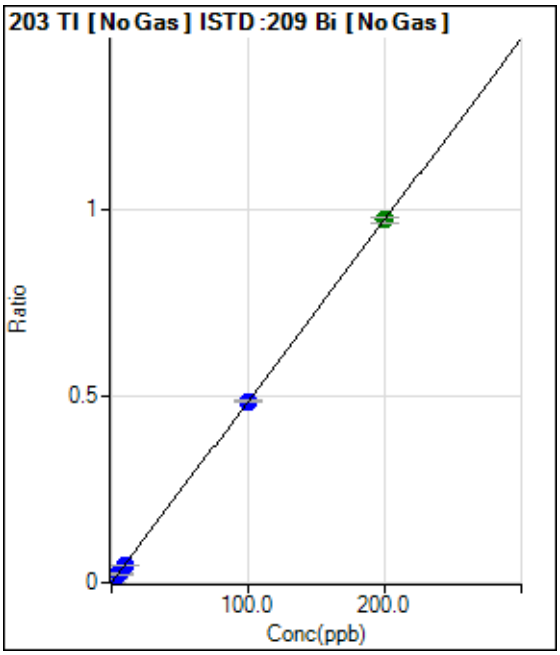


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	520.02	0.0002	P	7.6
2	☐	2.000	1.798	9143.36	0.0035	P	4.9
3	☐	5.000	4.813	23401.49	0.0090	P	3.6
4	☐	10.000	9.812	46443.13	0.0182	P	2.3
5	☐	100.000	101.131	468338.70	0.1857	P	1.2
6	☐	200.000	199.451	909407.90	0.3661	P	0.8

y = 0.0018 * x + 2.0161E-004
R = 1.0000
DL = 0.02495
BEC = 0.1099

Weight: <None>
Min Conc: <None>

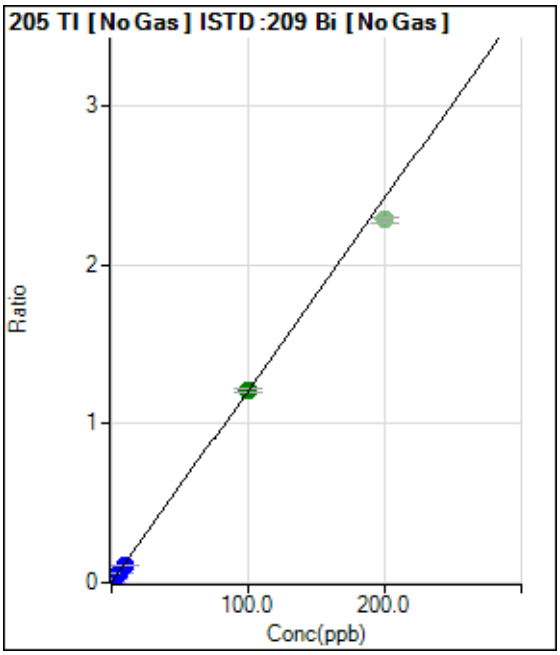
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	660.03	0.0003	P	12.9
2	☐	2.000	1.772	19492.19	0.0089	P	2.1
3	☐	5.000	4.714	51101.46	0.0233	P	1.9
4	☐	10.000	9.451	101076.42	0.0463	P	0.4
5	☐	100.000	99.971	1049191.78	0.4870	P	0.4
6	☐	200.000	200.052	2106337.41	0.9742	A	1.7

y = 0.0049 * x + 3.0741E-004
R = 1.0000
DL = 0.02443
BEC = 0.06315

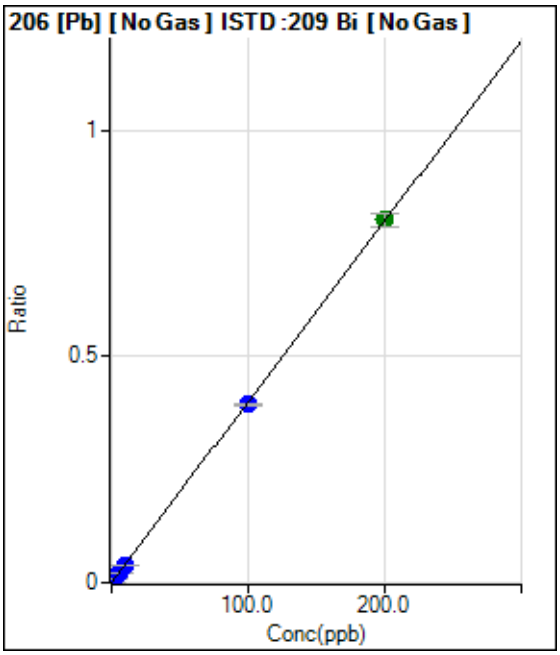
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1453.44	0.0007	P	4.2
2	☐	2.000	1.749	47638.00	0.0218	P	2.1
3	☐	5.000	4.476	120440.03	0.0548	P	0.9
4	☐	10.000	9.089	241336.07	0.1106	P	1.0
5	☐	100.000	100.122	2609813.50	1.2115	A	1.8
6	☑	200.000		4941496.91	2.2854	A	1.7

y = 0.0121 * x + 6.7638E-004
R = 1.0000
DL = 0.007097
BEC = 0.05593

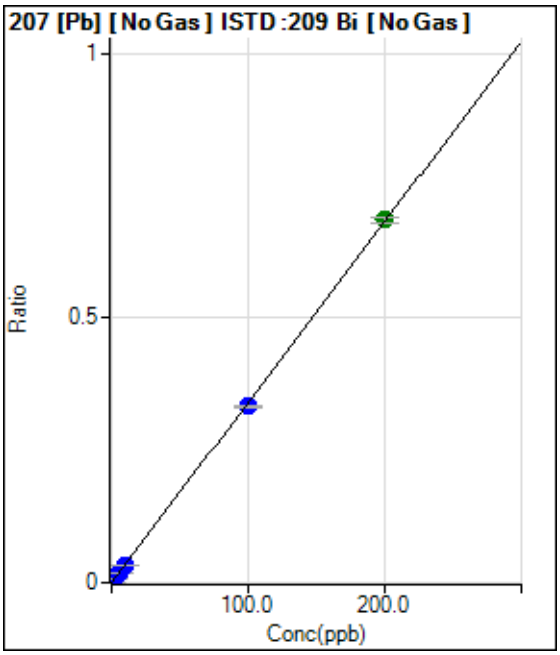
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	916.72	0.0004	P	1.7
2	☐	2.000	1.788	16497.83	0.0076	P	2.0
3	☐	5.000	4.724	42355.52	0.0193	P	1.4
4	☐	10.000	9.527	83871.37	0.0384	P	1.0
5	☐	100.000	98.445	847063.58	0.3932	P	1.2
6	☐	200.000	200.810	1732829.19	0.8016	A	3.5

y = 0.0040 * x + 4.2674E-004
R = 1.0000
DL = 0.005543
BEC = 0.107

Weight: <None>
Min Conc: <None>

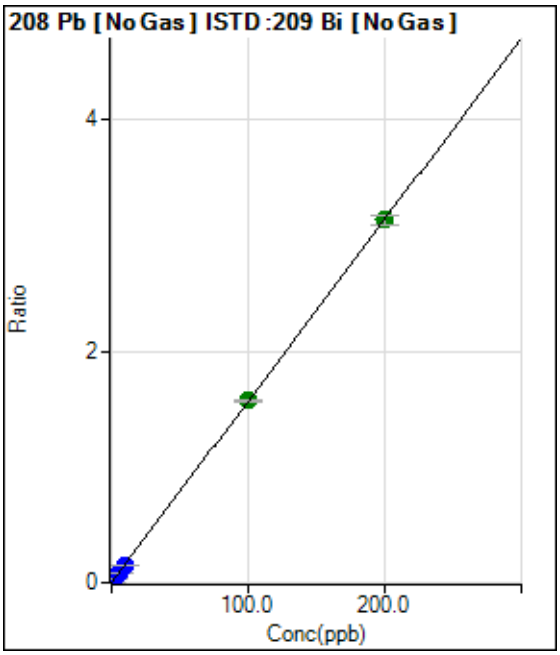


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	816.71	0.0004	P	11.1
2	☐	2.000	1.852	14592.15	0.0067	P	0.9
3	☐	5.000	4.745	36343.38	0.0165	P	1.4
4	☐	10.000	9.768	73419.45	0.0336	P	2.0
5	☐	100.000	97.691	717452.46	0.3330	P	0.8
6	☐	200.000	201.174	1482284.40	0.6854	A	1.5

y = 0.0034 * x + 3.8046E-004
R = 0.9999
DL = 0.03708
BEC = 0.1117

Weight: <None>
Min Conc: <None>

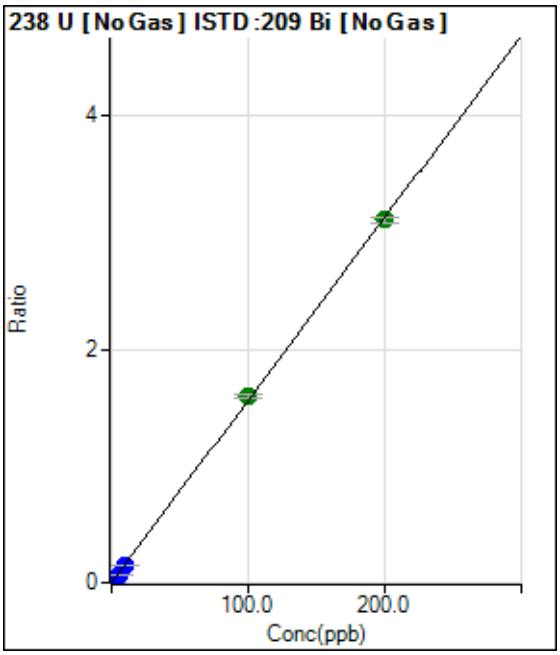
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3753.64	0.0017	P	4.7
2	☐	2.000	1.799	65310.76	0.0299	P	0.6
3	☐	5.000	4.737	166856.32	0.0759	P	1.6
4	☐	10.000	9.658	333872.65	0.1530	P	0.2
5	☐	100.000	100.228	3385342.32	1.5714	A	1.0
6	☐	200.000	199.912	6772720.63	3.1325	A	2.3

y = 0.0157 * x + 0.0017
R = 1.0000
DL = 0.01569
BEC = 0.1116

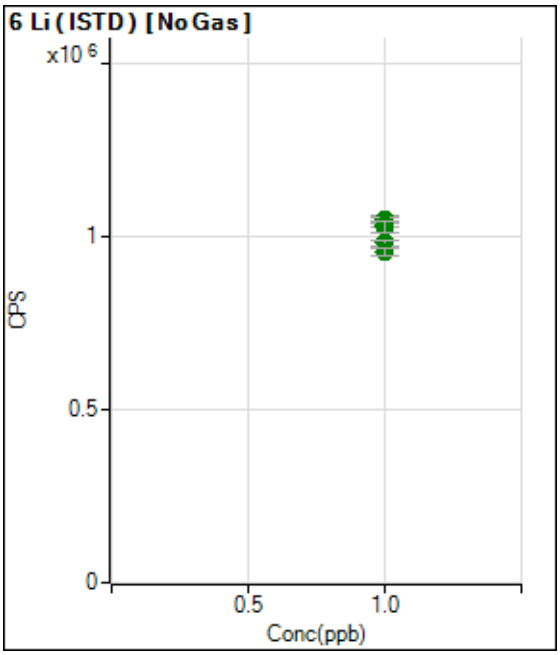
Weight: <None>
Min Conc: <None>



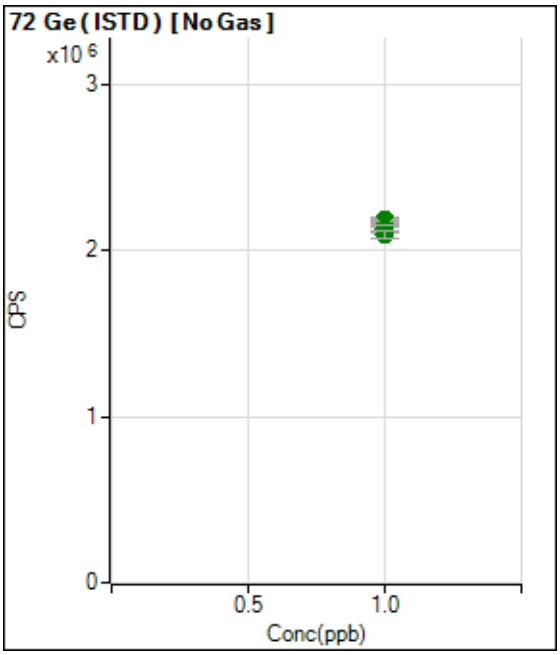
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2280.26	0.0011	P	7.3
2	☐	2.000	1.739	61581.62	0.0282	P	0.8
3	☐	5.000	4.569	159085.20	0.0724	P	2.2
4	☐	10.000	9.241	317198.27	0.1454	P	0.7
5	☐	100.000	102.201	3441583.08	1.5969	A	2.8
6	☐	200.000	198.951	6719538.65	3.1077	A	1.6

y = 0.0156 * x + 0.0011
R = 0.9999
DL = 0.01483
BEC = 0.06793

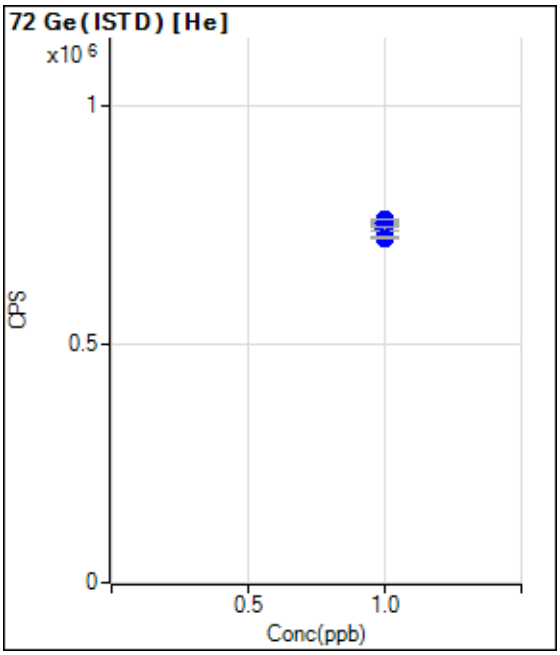
Weight: <None>
Min Conc: <None>



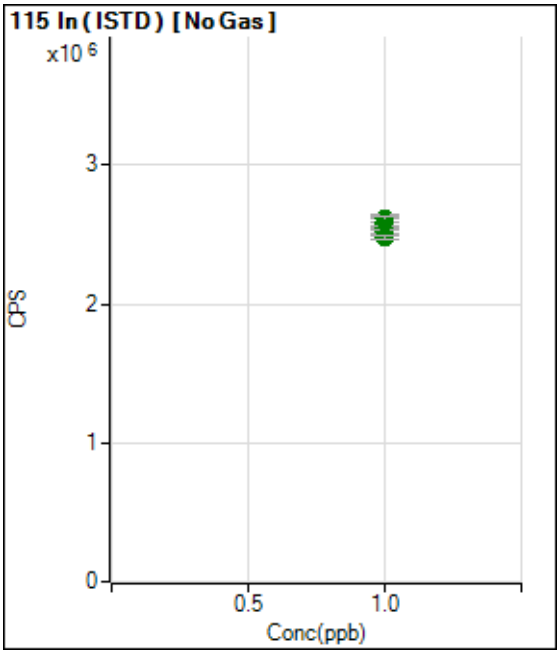
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1043272.54		A	3.3
2	☐	1.000		1047995.64		A	1.7
3	☐	1.000		1032814.88		A	0.7
4	☐	1.000		1030201.50		A	3.2
5	☐	1.000		980667.98		A	1.6
6	☐	1.000		954571.68		A	2.7



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2169251.84		A	2.3
2	☐	1.000		2186783.41		A	1.2
3	☐	1.000		2181292.00		A	0.9
4	☐	1.000		2157319.45		A	1.6
5	☐	1.000		2133415.44		A	2.0
6	☐	1.000		2095836.69		A	2.3

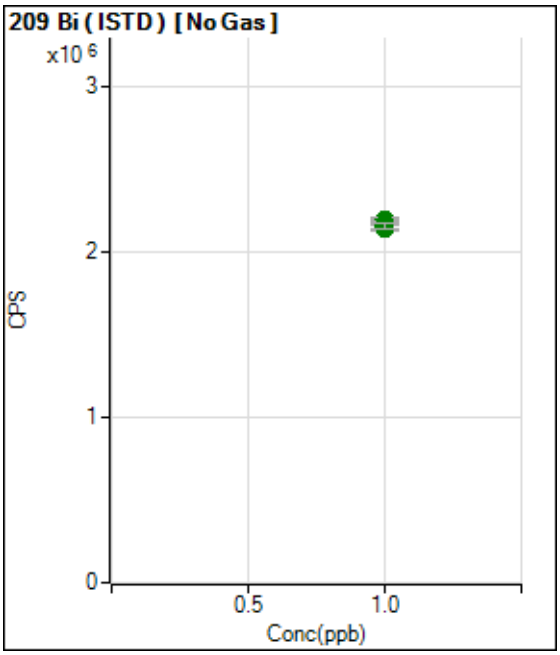


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		757743.58		P	1.3
2	☐	1.000		760402.28		P	0.4
3	☐	1.000		757858.56		P	0.6
4	☐	1.000		755130.17		P	1.2
5	☐	1.000		742971.08		P	1.2
6	☐	1.000		722501.50		P	0.3



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2581353.52		A	3.2
2	☐	1.000		2613887.34		A	2.2
3	☐	1.000		2593056.60		A	3.0
4	☐	1.000		2551959.07		A	1.2
5	☐	1.000		2521538.79		A	1.4
6	☐	1.000		2483997.19		A	1.0

Calibration for 143_ICV.d



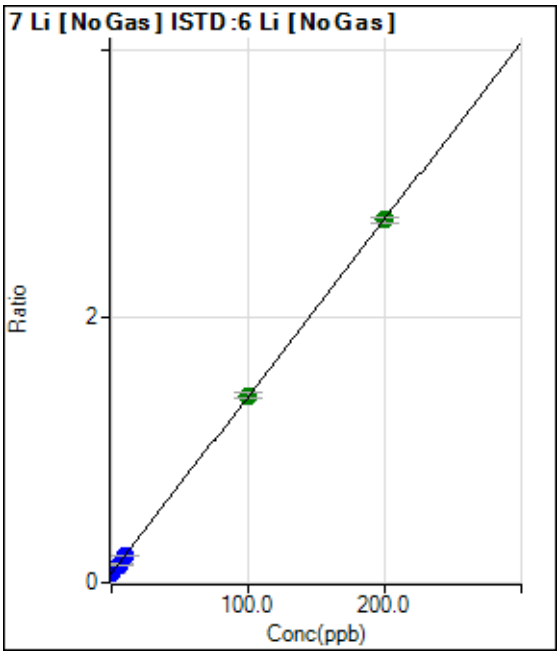
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2148397.31		A	1.2
2	☐	1.000		2182368.15		A	1.7
3	☐	1.000		2197575.33		A	1.3
4	☐	1.000		2182283.72		A	0.9
5	☐	1.000		2154570.90		A	1.4
6	☐	1.000		2162559.76		A	1.6

Calibration for 016_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\020922A.b\
Analysis File: 020922A.batch.bin
DA Date-Time: 2/10/2022 9:14:45 AM
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	009CALB.d	CAL BLK	2/9/2022 11:14:26 AM
2	010CALS.d	2/10/200	2/9/2022 11:16:24 AM
3	011CALS.d	5/25/500	2/9/2022 11:18:22 AM
4	012CALS.d	10/50/100	2/9/2022 11:20:19 AM
5	013CALS.d	100/500/10K	2/9/2022 11:22:16 AM
6	014CALS.d	200/1000/20K	2/9/2022 11:24:09 AM

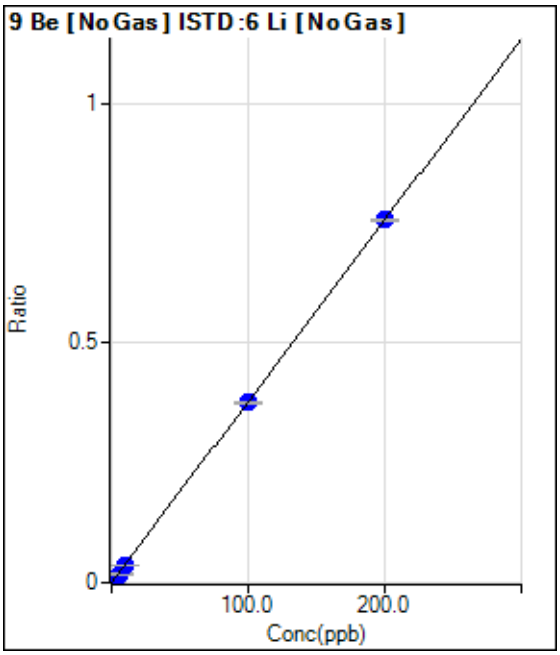
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	69376.36	0.0712	P	1.1
2	☐	2.000	1.987	94965.52	0.0976	P	1.5
3	☐	5.000	4.889	132012.18	0.1362	P	4.3
4	☐	10.000	9.849	191465.51	0.2021	P	3.8
5	☐	100.000	100.492	1250937.01	1.4061	A	2.5
6	☐	200.000	199.765	2396076.79	2.7248	A	1.5

y = 0.0133 * x + 0.0712
R = 1.0000
DL = 0.1836
BEC = 5.364

Weight: <None>
Min Conc: <None>

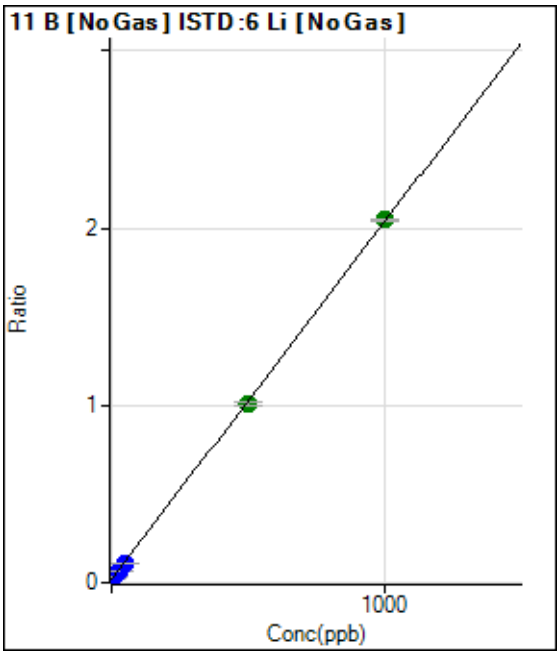


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	150.00	0.0002	P	18.1
2	☐	2.000	1.868	7010.14	0.0072	P	3.0
3	☐	5.000	4.710	17392.48	0.0179	P	5.1
4	☐	10.000	9.451	33980.97	0.0358	P	2.4
5	☐	100.000	99.472	334351.99	0.3758	P	0.6
6	☐	200.000	200.300	665358.98	0.7567	P	0.7

y = 0.0038 * x + 1.5418E-004
R = 1.0000
DL = 0.02219
BEC = 0.04082

Weight: <None>
Min Conc: <None>

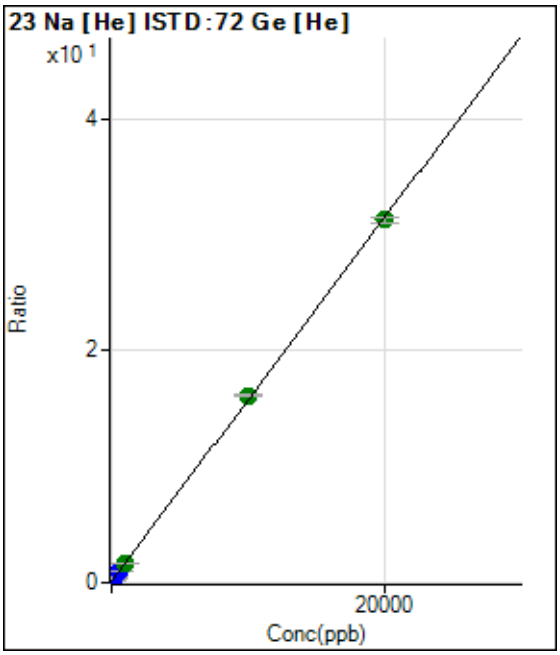
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	17772.96	0.0183	P	1.5
2	☐	10.000	8.501	34427.10	0.0354	P	2.4
3	☐	25.000	22.466	61605.92	0.0636	P	4.9
4	☐	50.000	46.553	106279.97	0.1121	P	2.6
5	☐	500.000	489.529	894484.02	1.0055	A	2.4
6	☐	1000.000	1005.486	1799242.94	2.0461	A	0.2

y = 0.0020 * x + 0.0183
R = 0.9999
DL = 0.4115
BEC = 9.051

Weight: <None>
Min Conc: <None>

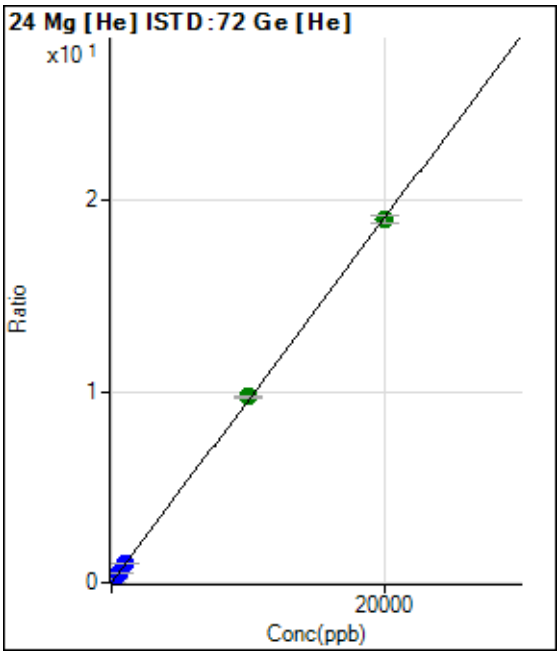


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	65922.12	0.1007	P	0.8
2	☐	200.000	199.658	274758.64	0.4135	P	1.3
3	☐	500.000	521.064	588986.32	0.9171	P	0.4
4	☐	1000.000	1037.648	1089930.82	1.7265	A	1.0
5	☐	10000.00	10229.80	10008026.10	16.1290	A	1.2
6	☐	20000.00	19882.69	20362460.95	31.2535	A	1.6

y = 0.0016 * x + 0.1007
R = 0.9999
DL = 1.556
BEC = 64.25

Weight: <None>
Min Conc: <None>

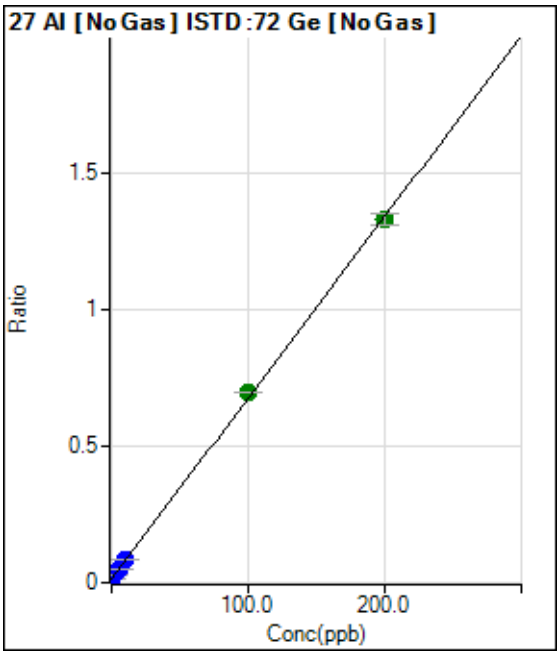
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	950.05	0.0014	P	12.9
2	☐	200.000	202.167	129238.28	0.1945	P	0.2
3	☐	500.000	527.572	324441.91	0.5052	P	1.0
4	☐	1000.000	1046.757	631894.20	1.0009	P	1.3
5	☐	10000.00	10201.21	6044815.12	9.7418	A	0.8
6	☐	20000.00	19896.34	12377552.73	18.9990	A	2.3

y = 9.5483E-004 * x + 0.0014
R = 0.9999
DL = 0.586
BEC = 1.518

Weight: <None>
Min Conc: <None>

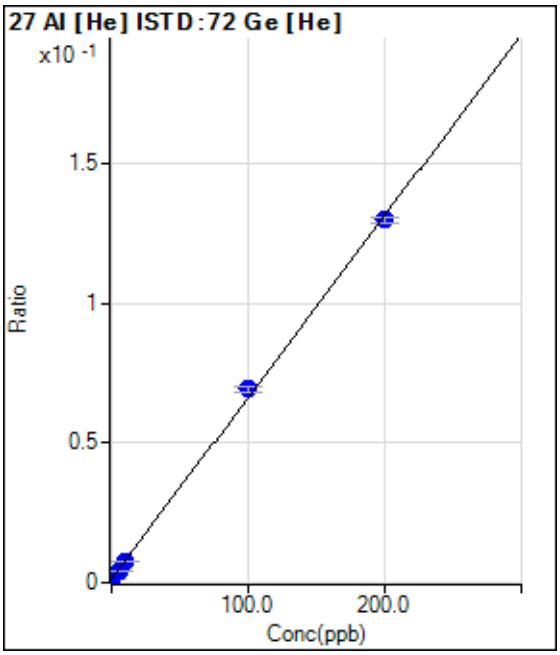


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	23627.04	0.0129	P	2.5
2	☐	2.000	2.009	48698.78	0.0263	P	5.1
3	☐	5.000	5.088	85038.48	0.0468	P	0.5
4	☐	10.000	10.399	145369.42	0.0821	P	1.0
5	☐	100.000	103.218	1224324.98	0.6990	A	0.9
6	☐	200.000	198.369	2350503.97	1.3315	A	3.0

y = 0.0066 * x + 0.0129
R = 0.9998
DL = 0.1455
BEC = 1.947

Weight: <None>
Min Conc: <None>

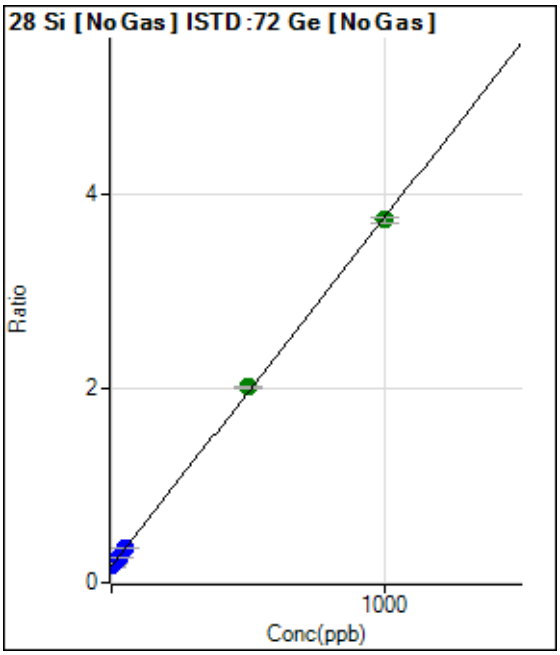
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	890.04	0.0014	P	10.6
2	☐	2.000	1.843	1696.80	0.0026	P	6.6
3	☐	5.000	4.419	2713.65	0.0042	P	6.0
4	☐	10.000	9.568	4777.55	0.0076	P	1.9
5	☐	100.000	104.502	42923.18	0.0692	P	2.5
6	☐	200.000	197.787	84506.44	0.1297	P	1.6

y = 6.4896E-004 * x + 0.0014
R = 0.9996
DL = 0.6669
BEC = 2.093

Weight: <None>
Min Conc: <None>

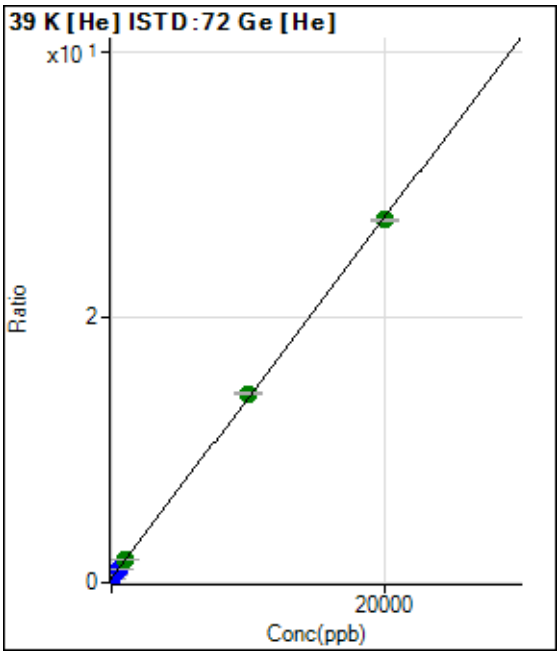


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	309050.48	0.1693	P	3.4
2	☐	10.000	10.287	382367.58	0.2064	P	2.2
3	☐	25.000	25.574	475368.21	0.2614	P	0.8
4	☐	50.000	53.662	642077.15	0.3625	P	1.8
5	☐	500.000	513.273	3532414.32	2.0169	A	1.1
6	☐	1000.000	993.163	6611472.61	3.7444	A	1.6

y = 0.0036 * x + 0.1693
R = 0.9999
DL = 4.861
BEC = 47.05

Weight: <None>
Min Conc: <None>

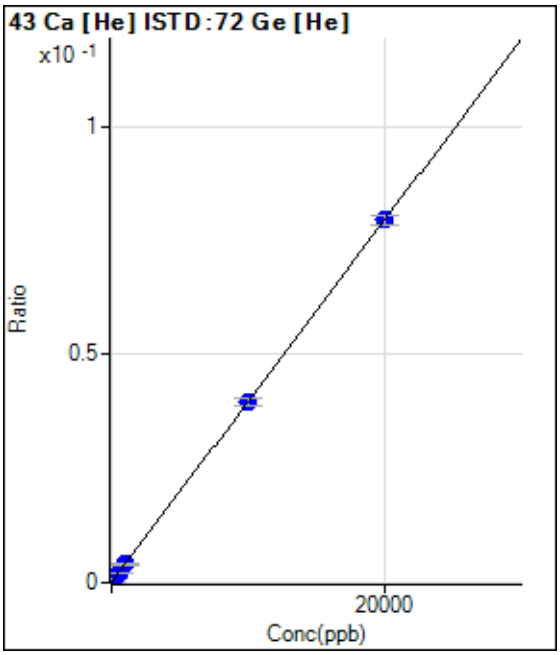
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	233406.01	0.3565	P	1.9
2	☐	200.000	194.274	412089.24	0.6201	P	0.2
3	☐	500.000	517.431	679952.85	1.0587	P	0.6
4	☐	1000.000	1054.927	1128935.82	1.7882	A	0.8
5	☐	10000.00	10248.73	8852283.83	14.2663	A	0.4
6	☐	20000.00	19872.50	17805101.40	27.3280	A	0.6

y = 0.0014 * x + 0.3565
R = 0.9999
DL = 15.31
BEC = 262.6

Weight: <None>
Min Conc: <None>

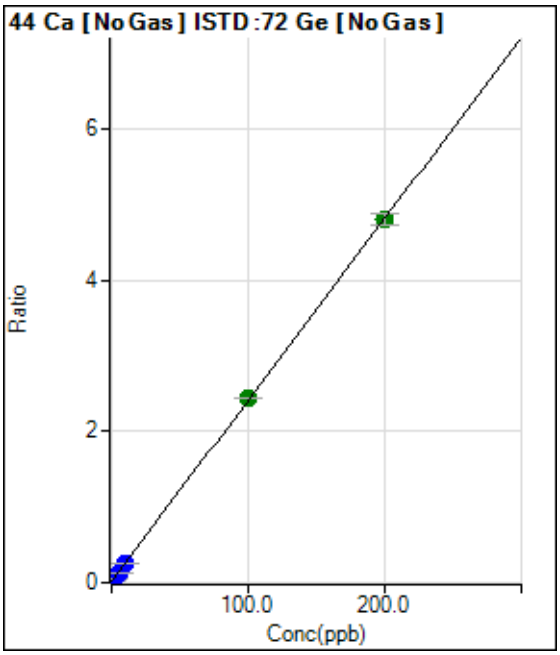


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	40.00	0.0001	P	65.5
2	☐	200.000	236.176	663.36	0.0010	P	5.1
3	☐	500.000	505.298	1326.75	0.0021	P	5.4
4	☐	1000.000	1018.783	2590.29	0.0041	P	8.3
5	☐	10000.00	9959.833	24555.50	0.0396	P	3.6
6	☐	20000.00	20018.65	51780.84	0.0795	P	2.4

y = 3.9672E-006 * x + 6.0967E-005
R = 1.0000
DL = 30.19
BEC = 15.37

Weight: <None>
Min Conc: <None>

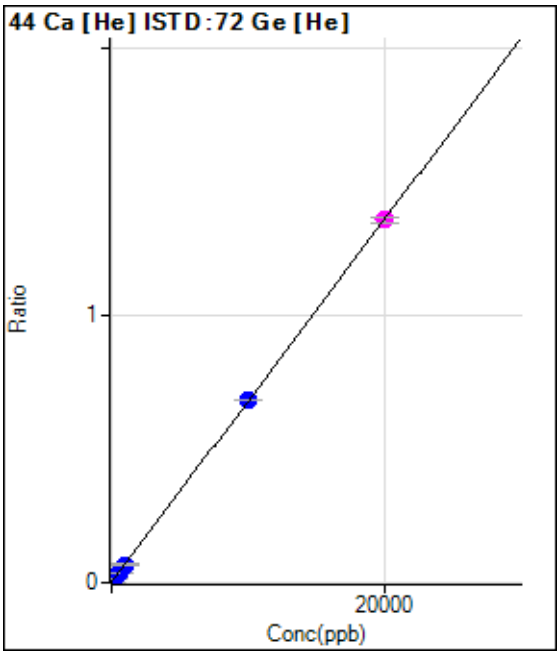
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	30140.07	0.0165	P	3.2
2	☐	2.000	1.942	116866.15	0.0631	P	2.3
3	☐	5.000	5.087	251853.66	0.1385	P	0.7
4	☐	10.000	10.298	466661.61	0.2634	P	1.1
5	☐	100.000	101.103	4275067.23	2.4409	A	0.9
6	☐	200.000	199.432	8471370.50	4.7988	A	3.1

y = 0.0240 * x + 0.0165
R = 1.0000
DL = 0.0658
BEC = 0.6887

Weight: <None>
Min Conc: <None>

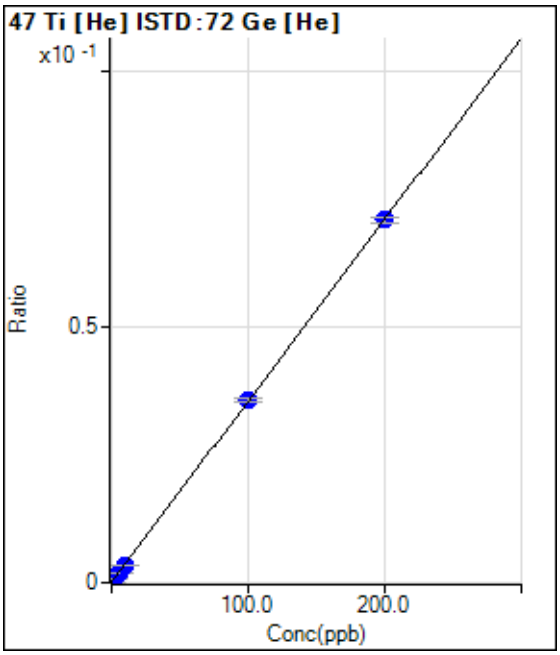


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	770.04	0.0012	P	12.9
2	☐	200.000	191.730	9430.03	0.0142	P	2.0
3	☐	500.000	496.890	22418.55	0.0349	P	1.4
4	☐	1000.000	983.932	42910.59	0.0680	P	1.5
5	☐	10000.00	10050.11	424073.31	0.6834	P	0.6
6	☐	20000.00	19975.90	884315.20	1.3573	M	1.9

y = 6.7886E-005 * x + 0.0012
R = 1.0000
DL = 6.73
BEC = 17.33

Weight: <None>
Min Conc: <None>

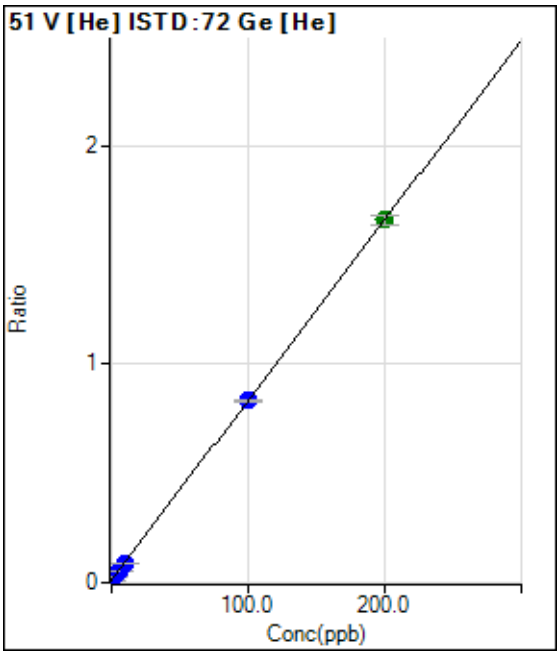
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	40.00	0.0001	P	24.1
2	☐	2.000	1.783	460.02	0.0007	P	11.8
3	☐	5.000	5.018	1180.07	0.0018	P	2.9
4	☐	10.000	9.509	2163.55	0.0034	P	4.7
5	☐	100.000	100.222	22051.34	0.0355	P	1.9
6	☐	200.000	199.915	46147.60	0.0708	P	1.7

y = 3.5399E-004 * x + 6.0980E-005
R = 1.0000
DL = 0.1246
BEC = 0.1723

Weight: <None>
Min Conc: <None>

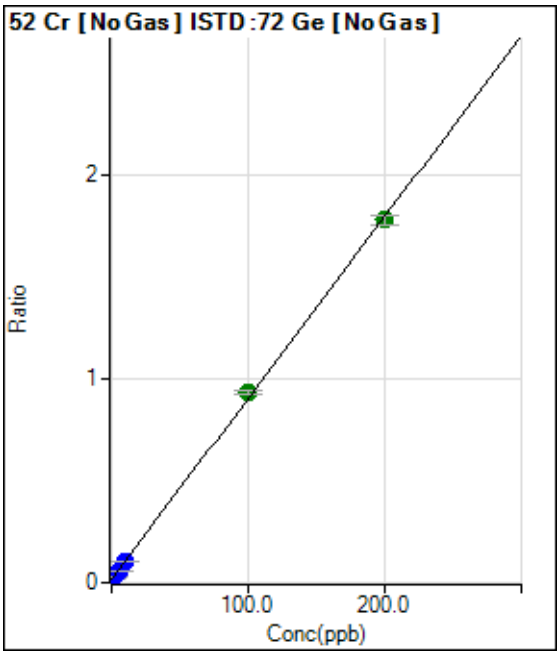


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	7565.45	0.0116	P	0.6
2	☐	2.000	1.771	17363.27	0.0261	P	3.3
3	☐	5.000	4.768	32622.02	0.0508	P	0.7
4	☐	10.000	9.661	57488.75	0.0911	P	0.7
5	☐	100.000	99.642	515996.67	0.8316	P	0.4
6	☐	200.000	200.204	1080952.18	1.6592	A	2.5

y = 0.0082 * x + 0.0116
R = 1.0000
DL = 0.02678
BEC = 1.404

Weight: <None>
Min Conc: <None>

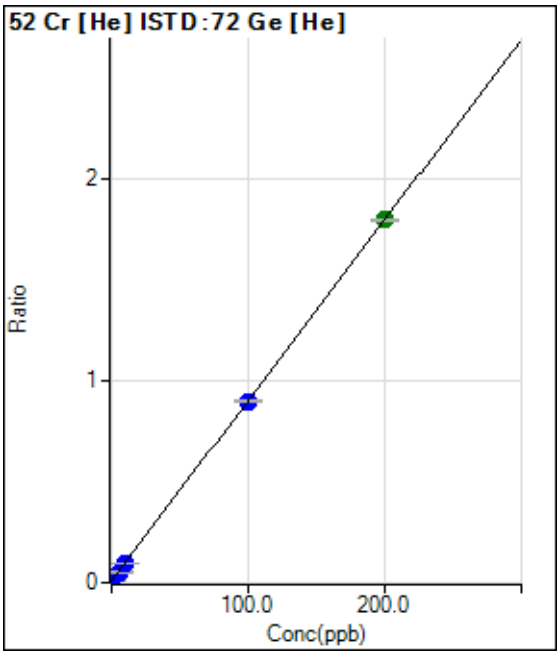
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	28930.88	0.0159	P	4.2
2	☐	2.000	1.772	58528.65	0.0316	P	1.4
3	☐	5.000	4.814	106552.56	0.0586	P	1.8
4	☐	10.000	9.805	182287.08	0.1029	P	0.7
5	☐	100.000	103.213	1632400.08	0.9322	A	2.3
6	☐	200.000	198.410	3137806.62	1.7773	A	2.5

y = 0.0089 * x + 0.0159
R = 0.9998
DL = 0.2257
BEC = 1.786

Weight: <None>
Min Conc: <None>

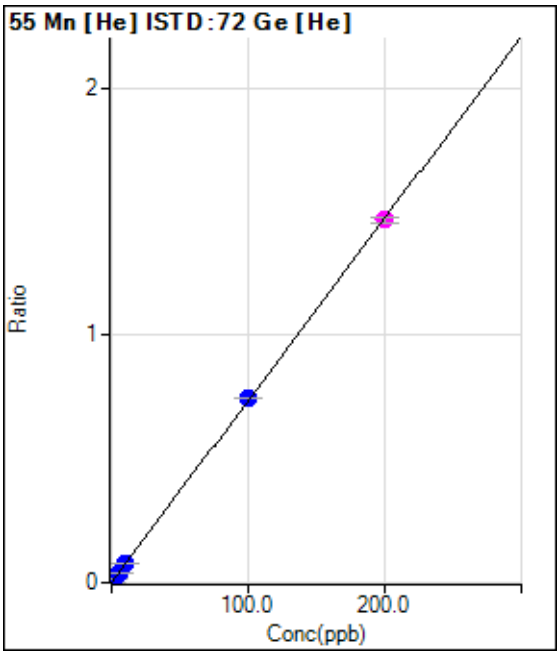


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6598.37	0.0101	P	1.8
2	☐	2.000	1.703	16810.60	0.0253	P	3.3
3	☐	5.000	4.740	33691.80	0.0525	P	1.0
4	☐	10.000	9.610	60607.18	0.0960	P	0.7
5	☐	100.000	99.617	558947.25	0.9008	P	1.0
6	☐	200.000	200.220	1173002.79	1.8003	A	0.7

y = 0.0089 * x + 0.0101
R = 1.0000
DL = 0.06093
BEC = 1.127

Weight: <None>
Min Conc: <None>

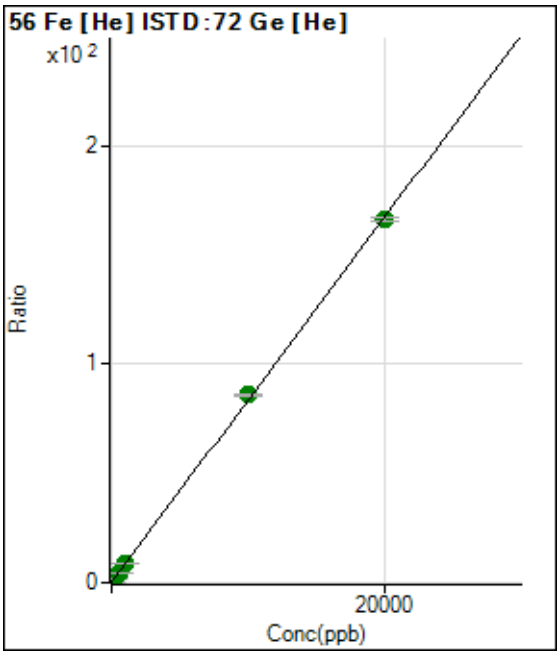
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	606.69	0.0009	P	20.5
2	☐	2.000	1.901	9900.42	0.0149	P	4.4
3	☐	5.000	4.965	24038.12	0.0374	P	2.1
4	☐	10.000	10.156	47723.39	0.0756	P	1.3
5	☐	100.000	101.398	463128.46	0.7464	P	0.5
6	☐	200.000	199.295	955163.30	1.4661	M	1.3

y = 0.0074 * x + 9.2782E-004
R = 1.0000
DL = 0.07775
BEC = 0.1262

Weight: <None>
Min Conc: <None>

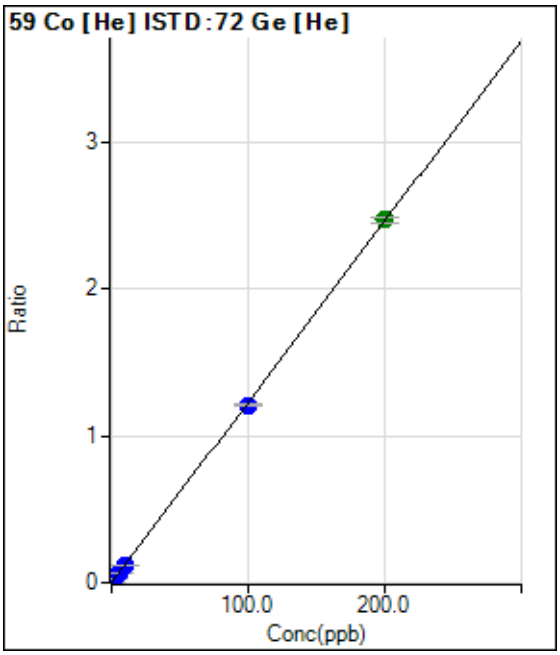


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	117975.70	0.1802	P	1.4
2	☐	200.000	183.920	1140034.93	1.7156	A	1.1
3	☐	500.000	513.604	2869418.19	4.4679	A	1.3
4	☐	1000.000	999.928	5383643.05	8.5278	A	1.6
5	☐	10000.00	10273.21	53327854.21	85.9433	A	1.2
6	☐	20000.00	19863.21	108152091.7	166.003	A	1.0

y = 0.0083 * x + 0.1802
R = 0.9999
DL = 0.9019
BEC = 21.58

Weight: <None>
Min Conc: <None>

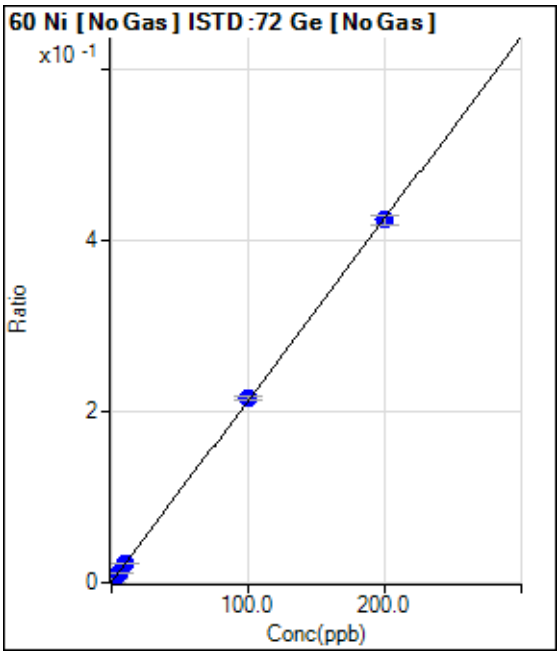
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	186.67	0.0003	P	3.8
2	☐	2.000	1.931	15982.89	0.0241	P	2.6
3	☐	5.000	4.926	39126.68	0.0609	P	1.4
4	☐	10.000	9.902	77138.13	0.1222	P	2.0
5	☐	100.000	98.262	750781.71	1.2100	P	1.3
6	☐	200.000	200.876	1611279.77	2.4732	A	1.3

y = 0.0123 * x + 2.8510E-004
R = 0.9999
DL = 0.002661
BEC = 0.02316

Weight: <None>
Min Conc: <None>

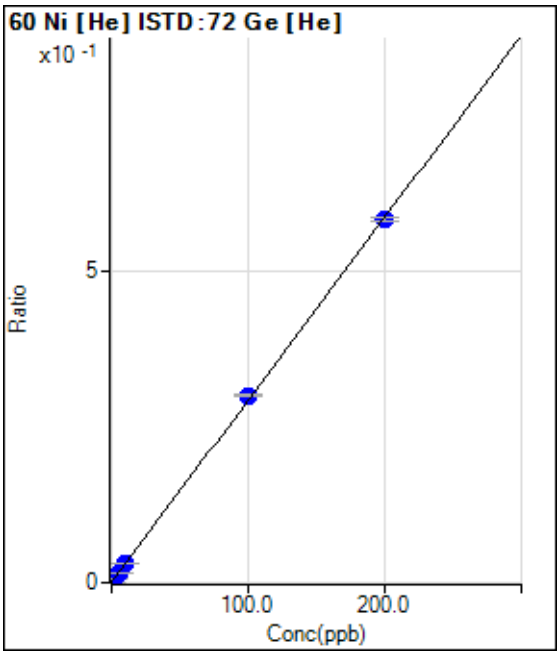


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	770.04	0.0004	P	14.6
2	☐	2.000	1.867	8142.59	0.0044	P	2.1
3	☐	5.000	5.071	20398.95	0.0112	P	2.8
4	☐	10.000	10.234	39333.71	0.0222	P	0.5
5	☐	100.000	101.348	378493.89	0.2161	P	1.7
6	☐	200.000	199.314	749728.82	0.4247	P	2.4

y = 0.0021 * x + 4.2123E-004
R = 1.0000
DL = 0.08693
BEC = 0.1979

Weight: <None>
Min Conc: <None>

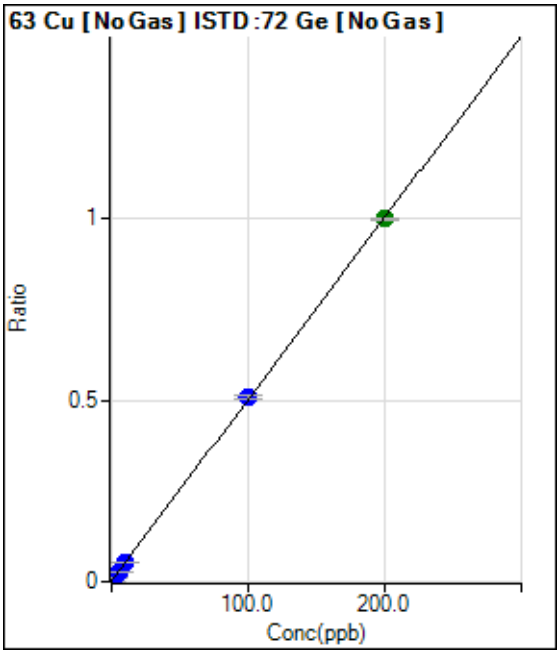
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	323.34	0.0005	P	10.3
2	☐	2.000	1.865	3947.31	0.0059	P	4.1
3	☐	5.000	5.034	9763.67	0.0152	P	3.5
4	☐	10.000	10.154	19040.27	0.0302	P	2.1
5	☐	100.000	102.399	185941.87	0.2997	P	1.1
6	☐	200.000	198.793	378715.54	0.5813	P	1.2

y = 0.0029 * x + 4.9403E-004
R = 0.9999
DL = 0.05228
BEC = 0.1691

Weight: <None>
Min Conc: <None>

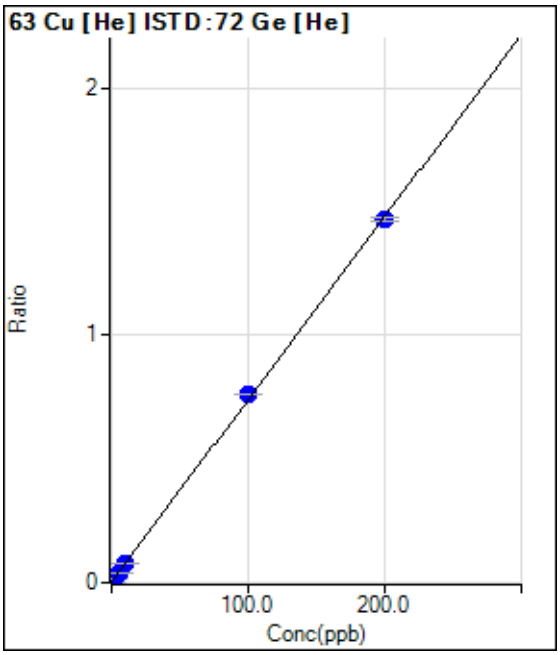


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4040.68	0.0022	P	4.1
2	☐	2.000	2.005	22682.56	0.0122	P	2.3
3	☐	5.000	5.090	50303.01	0.0277	P	0.6
4	☐	10.000	10.212	94346.08	0.0533	P	1.6
5	☐	100.000	101.202	889788.03	0.5081	P	2.2
6	☐	200.000	199.386	1764086.80	0.9990	A	0.9

y = 0.0050 * x + 0.0022
R = 1.0000
DL = 0.05381
BEC = 0.4428

Weight: <None>
Min Conc: <None>

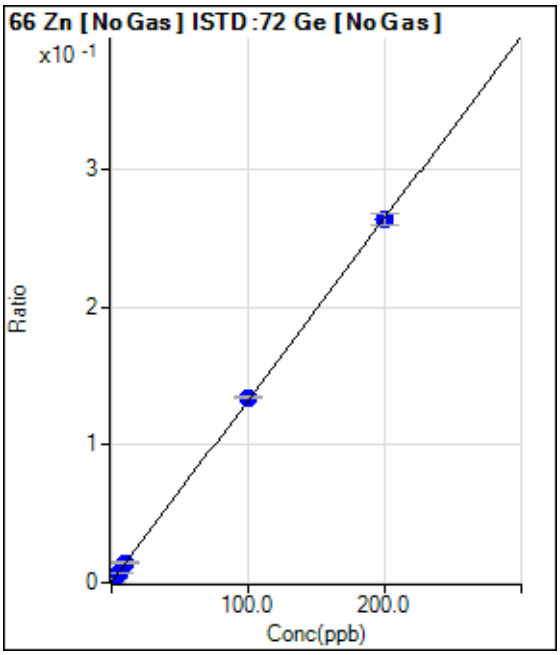
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1760.15	0.0027	P	6.4
2	☐	2.000	2.060	11888.73	0.0179	P	2.0
3	☐	5.000	5.112	25951.76	0.0404	P	1.5
4	☐	10.000	10.226	49326.51	0.0781	P	3.2
5	☐	100.000	103.067	473503.55	0.7631	P	0.5
6	☐	200.000	198.452	955669.96	1.4668	P	1.1

y = 0.0074 * x + 0.0027
R = 0.9998
DL = 0.07009
BEC = 0.3644

Weight: <None>
Min Conc: <None>

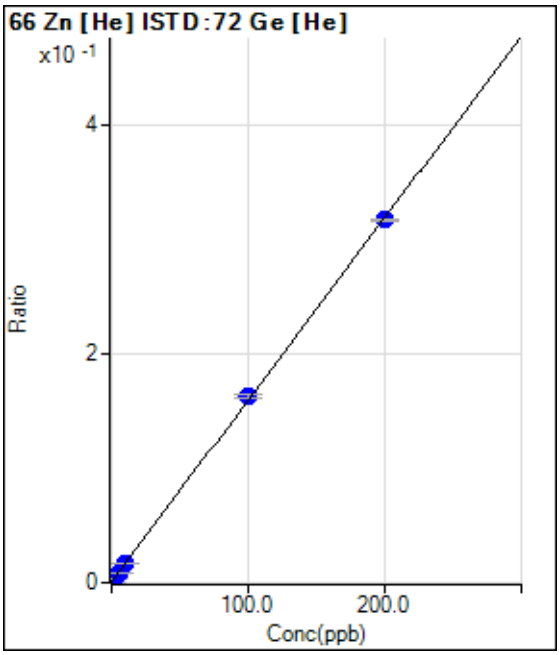


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1006.72	0.0006	P	5.8
2	☐	2.000	1.863	5571.25	0.0030	P	6.9
3	☐	5.000	4.867	12676.09	0.0070	P	2.0
4	☐	10.000	10.617	25778.11	0.0146	P	1.8
5	☐	100.000	101.640	235706.99	0.1346	P	1.6
6	☐	200.000	199.154	464629.51	0.2632	P	3.0

y = 0.0013 * x + 5.5187E-004
R = 0.9999
DL = 0.07293
BEC = 0.4185

Weight: <None>
Min Conc: <None>

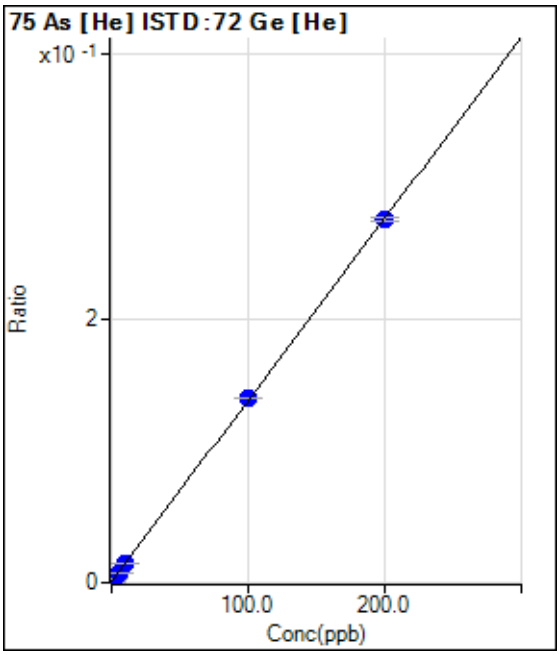
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	466.69	0.0007	P	19.4
2	☐	2.000	1.926	2506.95	0.0038	P	4.0
3	☐	5.000	5.075	5637.92	0.0088	P	1.8
4	☐	10.000	10.395	10881.18	0.0172	P	1.2
5	☐	100.000	101.865	100909.86	0.1626	P	1.7
6	☐	200.000	199.046	206590.76	0.3171	P	0.5

y = 0.0016 * x + 7.1275E-004
R = 0.9999
DL = 0.2615
BEC = 0.4484

Weight: <None>
Min Conc: <None>

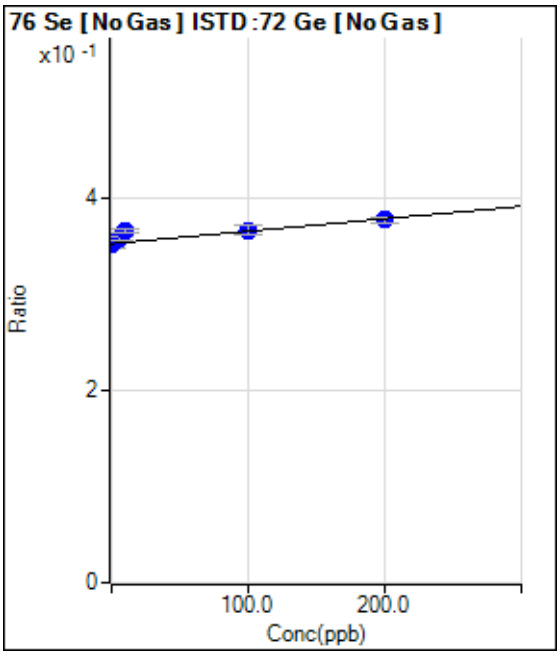


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	483.34	0.0007	P	8.2
2	☐	2.000	1.729	2069.06	0.0031	P	3.9
3	☐	5.000	4.859	4761.97	0.0074	P	3.9
4	☐	10.000	9.663	8847.39	0.0140	P	1.6
5	☐	100.000	101.217	86748.79	0.1398	P	0.7
6	☐	200.000	199.415	178986.91	0.2747	P	1.1

y = 0.0014 * x + 7.3760E-004
R = 1.0000
DL = 0.1325
BEC = 0.5368

Weight: <None>
Min Conc: <None>

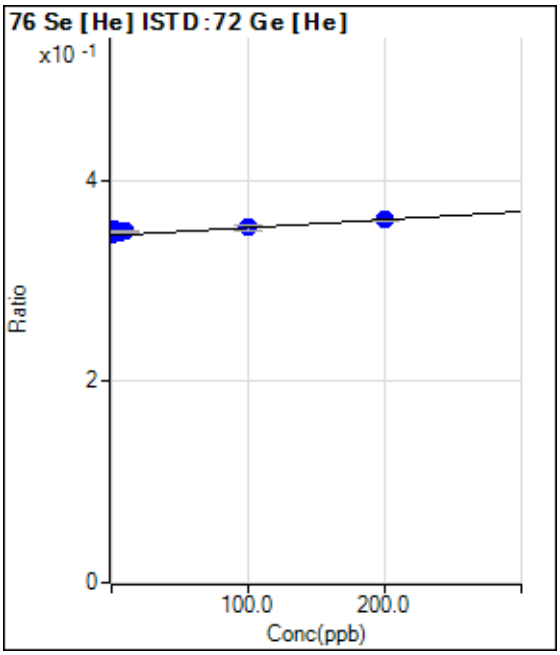
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	642435.25	0.3519	P	2.2
2	☐	2.000	14.402	655664.65	0.3538	P	0.9
3	☐	5.000	44.136	650386.97	0.3576	P	0.8
4	☐	10.000	97.165	645647.62	0.3645	P	1.1
5	☐	100.000	108.744	640861.84	0.3660	P	2.4
6	☐	200.000	190.167	664784.63	0.3765	P	1.9

y = 1.2921E-004 * x + 0.3519
R = 0.9013
DL = 176.1
BEC = 2724

Weight: <None>
Min Conc: <None>

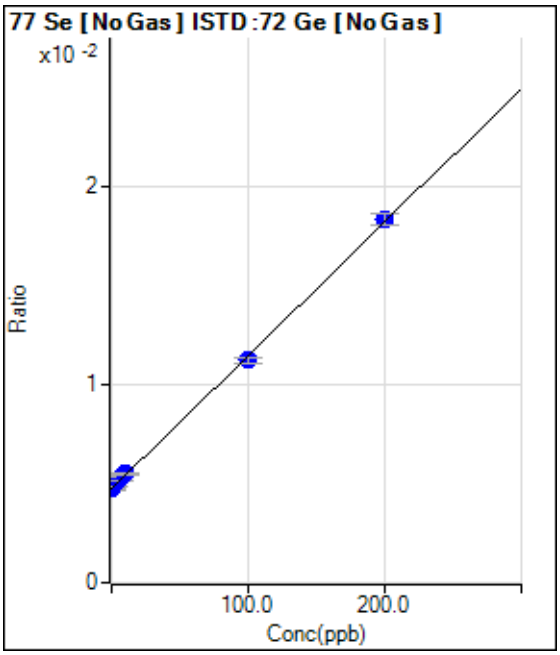


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	225752.17	0.3447	P	0.8
2	☐	2.000	83.789	233503.45	0.3514	P	0.1
3	☐	5.000	36.740	223272.68	0.3476	P	0.8
4	☐	10.000	51.660	220216.65	0.3488	P	0.4
5	☐	100.000	100.740	218870.89	0.3527	P	1.3
6	☐	200.000	195.936	234744.47	0.3603	P	0.3

y = 7.9545E-005 * x + 0.3447
R = 0.9164
DL = 106.9
BEC = 4334

Weight: <None>
Min Conc: <None>

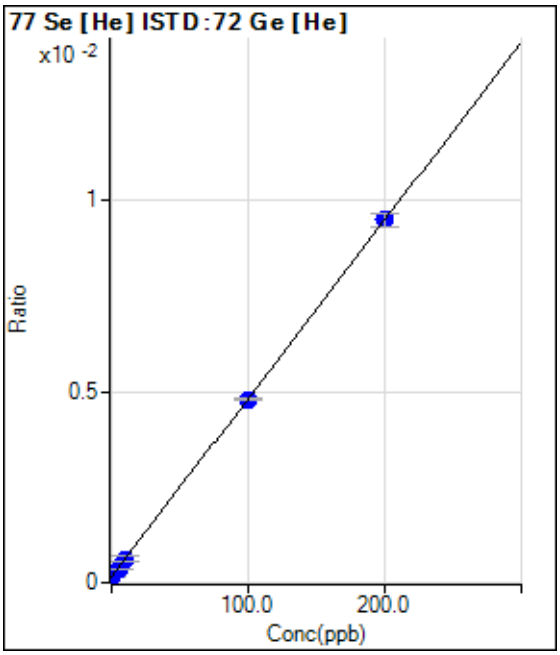
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	8652.91	0.0047	P	1.4
2	☐	2.000	3.453	9213.33	0.0050	P	3.3
3	☐	5.000	7.264	9510.19	0.0052	P	2.8
4	☐	10.000	11.355	9757.04	0.0055	P	0.9
5	☐	100.000	96.683	19748.07	0.0113	P	2.6
6	☐	200.000	201.520	32412.74	0.0184	P	3.2

y = 6.7586E-005 * x + 0.0047
R = 0.9997
DL = 3.035
BEC = 70.13

Weight: <None>
Min Conc: <None>

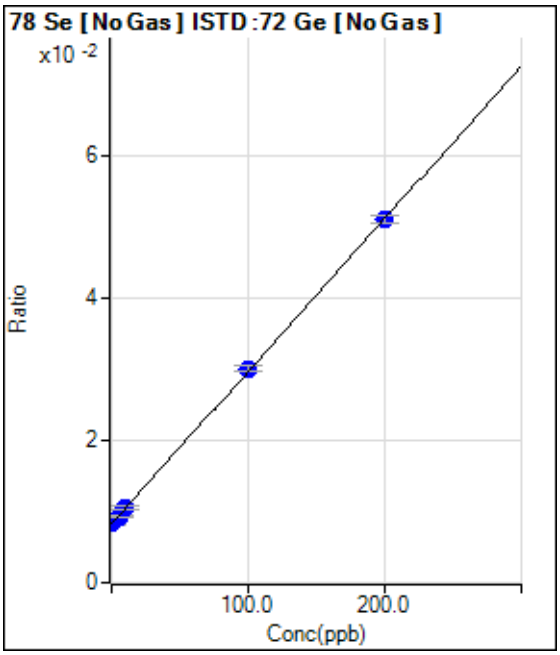


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	103.33	0.0002	P	21.7
2	☐	2.000	2.313	176.67	0.0003	P	24.6
3	☐	5.000	4.191	226.68	0.0004	P	9.3
4	☐	10.000	9.766	386.68	0.0006	P	24.1
5	☐	100.000	99.577	2977.05	0.0048	P	1.6
6	☐	200.000	200.240	6181.51	0.0095	P	3.6

y = 4.6598E-005 * x + 1.5765E-004
R = 1.0000
DL = 2.201
BEC = 3.383

Weight: <None>
Min Conc: <None>

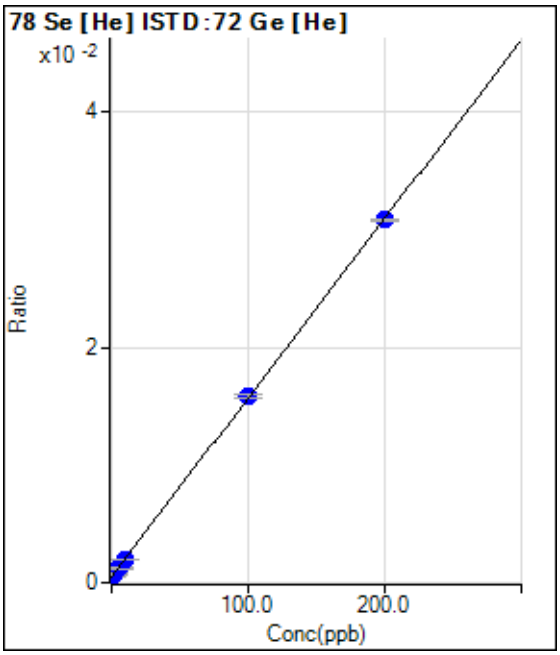
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	15088.74	0.0083	P	3.7
2	☐	2.000	1.821	16036.49	0.0087	P	3.1
3	☐	5.000	4.866	16927.50	0.0093	P	1.9
4	☐	10.000	10.955	18796.72	0.0106	P	4.3
5	☐	100.000	101.561	52613.02	0.0300	P	2.7
6	☐	200.000	199.177	90016.37	0.0510	P	2.1

y = 2.1446E-004 * x + 0.0083
R = 0.9999
DL = 4.26
BEC = 38.54

Weight: <None>
Min Conc: <None>

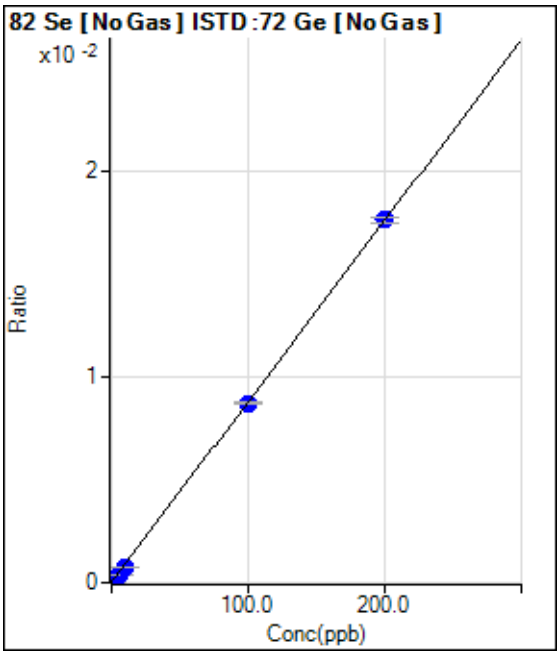


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	330.67	0.0005	P	5.5
2	☐	2.000	1.447	482.01	0.0007	P	13.1
3	☐	5.000	5.047	816.69	0.0013	P	7.8
4	☐	10.000	9.770	1256.06	0.0020	P	1.9
5	☐	100.000	101.177	9852.96	0.0159	P	1.9
6	☐	200.000	199.427	20072.26	0.0308	P	0.5

y = 1.5195E-004 * x + 5.0505E-004
R = 1.0000
DL = 0.5471
BEC = 3.324

Weight: <None>
Min Conc: <None>

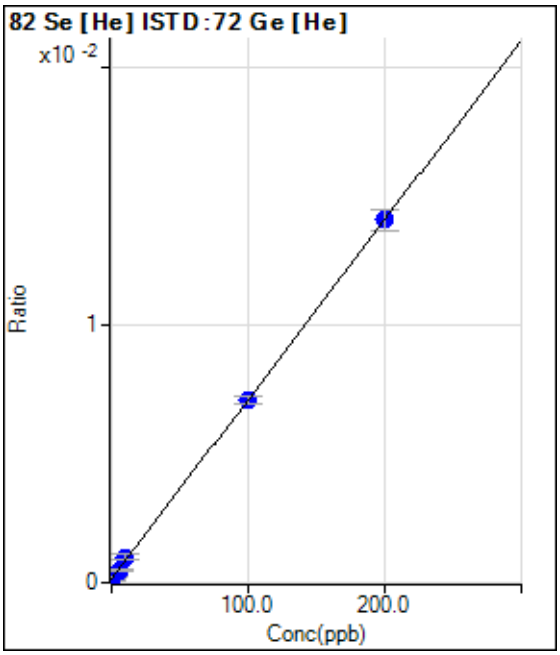
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	33.64	0.0000	P	156.9
2	☐	2.000	1.886	340.89	0.0002	P	14.6
3	☐	5.000	4.092	686.87	0.0004	P	12.2
4	☐	10.000	8.562	1363.53	0.0008	P	2.4
5	☐	100.000	99.217	15279.46	0.0087	P	0.9
6	☐	200.000	200.487	31091.02	0.0176	P	1.4

y = 8.7733E-005 * x + 1.8324E-005
R = 1.0000
DL = 0.9829
BEC = 0.2089

Weight: <None>
Min Conc: <None>

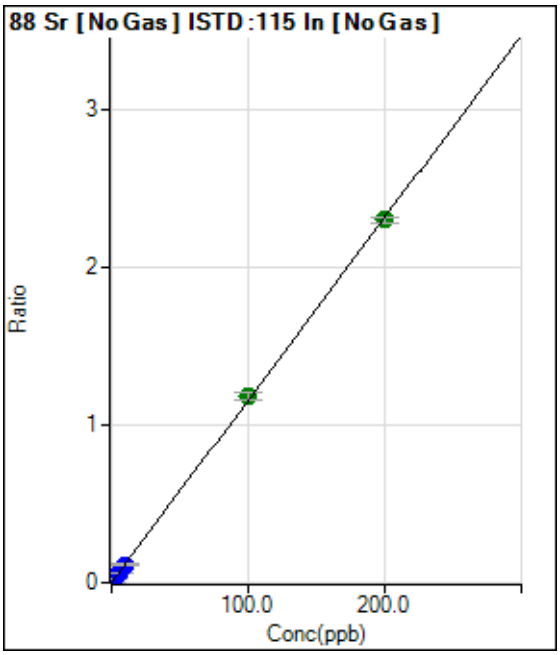


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	93.33	0.0001	P	51.2
2	☐	2.000	2.121	193.34	0.0003	P	25.8
3	☐	5.000	4.799	306.68	0.0005	P	12.2
4	☐	10.000	12.191	626.69	0.0010	P	20.9
5	☐	100.000	99.606	4397.48	0.0071	P	4.6
6	☐	200.000	200.091	9179.99	0.0141	P	5.7

y = 6.9718E-005 * x + 1.4287E-004
R = 0.9999
DL = 3.149
BEC = 2.049

Weight: <None>
Min Conc: <None>

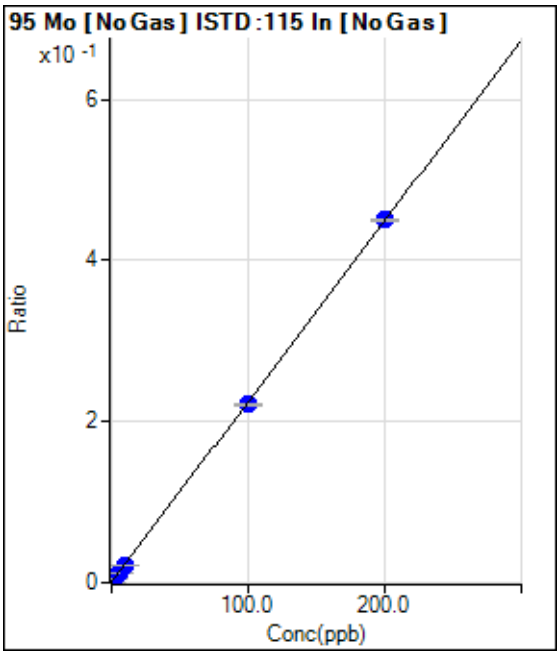
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1546.78	0.0007	P	3.5
2	☐	2.000	1.914	48277.17	0.0229	P	2.7
3	☐	5.000	4.881	120582.82	0.0572	P	2.8
4	☐	10.000	9.937	236395.38	0.1157	P	1.0
5	☐	100.000	102.235	2362200.02	1.1832	A	4.0
6	☐	200.000	198.889	4588039.52	2.3012	A	1.6

y = 0.0116 * x + 7.3602E-004
R = 0.9999
DL = 0.006602
BEC = 0.06363

Weight: <None>
Min Conc: <None>

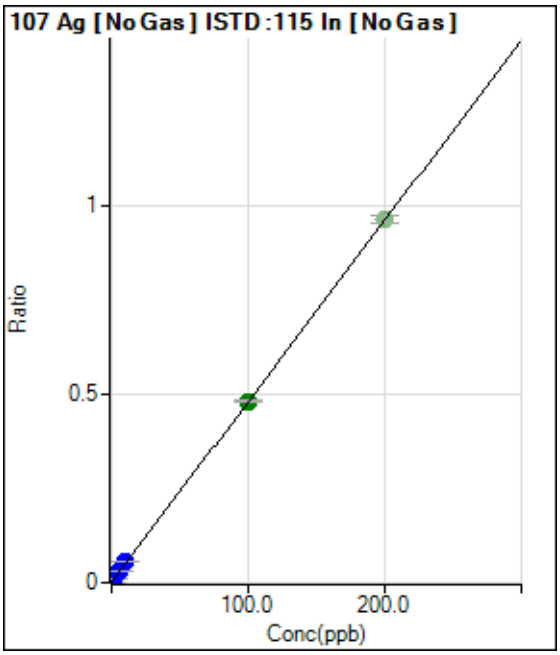


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	933.38	0.0004	P	12.4
2	☐	2.000	1.702	8993.18	0.0043	P	3.8
3	☐	5.000	4.623	22789.74	0.0108	P	0.4
4	☐	10.000	9.621	44979.39	0.0220	P	1.6
5	☐	100.000	98.708	442595.50	0.2217	P	1.1
6	☐	200.000	200.677	897737.77	0.4502	P	0.4

y = 0.0022 * x + 4.4422E-004
R = 1.0000
DL = 0.07345
BEC = 0.1982

Weight: <None>
Min Conc: <None>

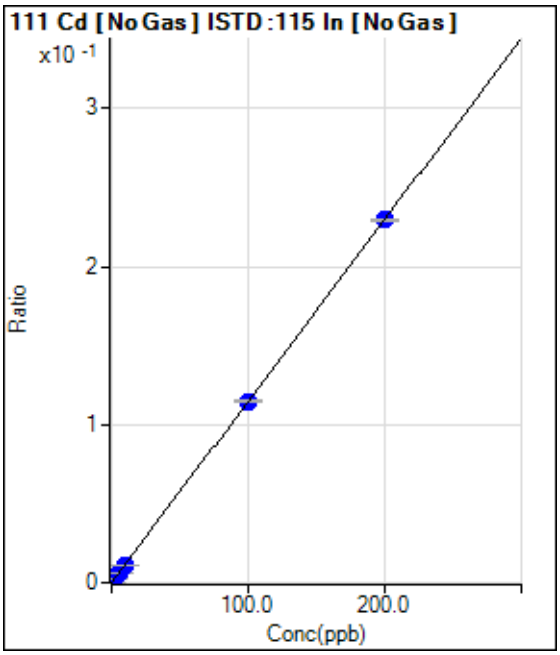
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2873.70	0.0014	P	4.9
2	☐	2.000	2.026	23400.98	0.0111	P	1.3
3	☐	5.000	5.673	60270.57	0.0286	P	1.4
4	☐	10.000	11.409	114623.39	0.0561	P	0.5
5	☐	100.000	99.825	958588.74	0.4801	A	1.1
6	☑	200.000		1919993.04	0.9630	A	2.0

y = 0.0048 * x + 0.0014
R = 0.9999
DL = 0.04216
BEC = 0.2851

Weight: <None>
Min Conc: <None>

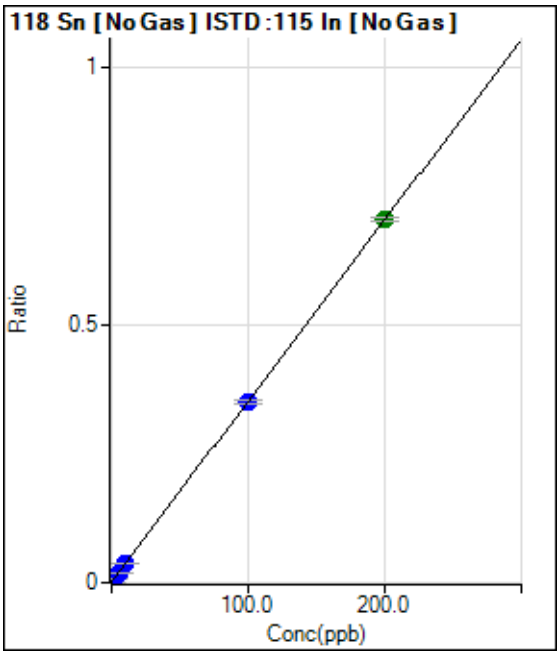


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	46.67	0.0000	P	44.3
2	☐	2.000	1.907	4664.26	0.0022	P	1.8
3	☐	5.000	5.125	12442.76	0.0059	P	2.0
4	☐	10.000	9.822	23063.87	0.0113	P	2.9
5	☐	100.000	100.017	229066.05	0.1147	P	1.1
6	☐	200.000	199.998	457412.37	0.2294	P	0.7

y = 0.0011 * x + 2.2203E-005
R = 1.0000
DL = 0.02574
BEC = 0.01936

Weight: <None>
Min Conc: <None>

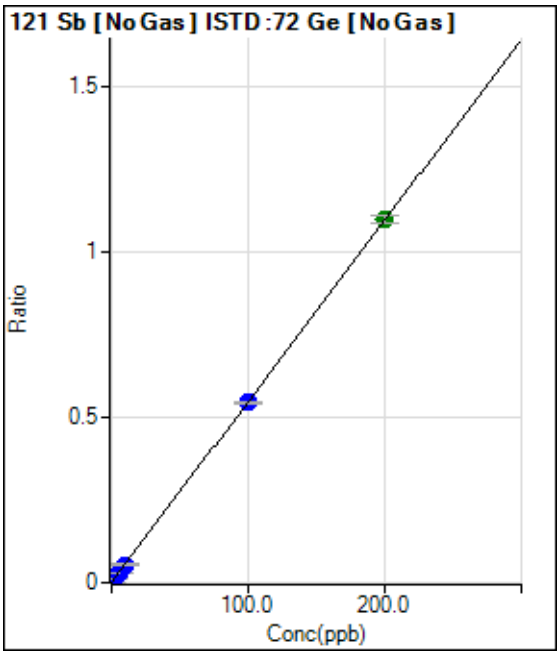
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2750.34	0.0013	P	3.8
2	☐	2.000	1.750	15716.30	0.0074	P	1.7
3	☐	5.000	4.731	37744.53	0.0179	P	3.0
4	☐	10.000	10.162	75496.08	0.0369	P	2.0
5	☐	100.000	99.503	699207.44	0.3502	P	1.9
6	☐	200.000	200.250	1402802.74	0.7035	A	1.0

y = 0.0035 * x + 0.0013
R = 1.0000
DL = 0.04278
BEC = 0.3733

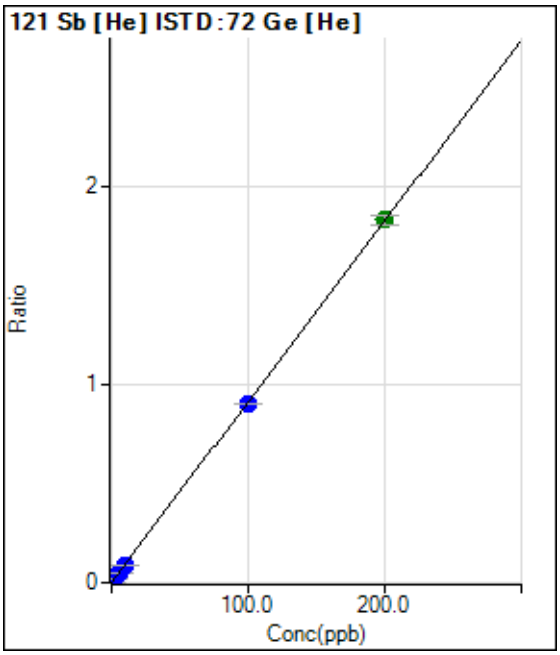
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1606.79	0.0009	P	9.4
2	☐	2.000	1.849	20376.11	0.0110	P	1.9
3	☐	5.000	4.786	49212.53	0.0271	P	1.6
4	☐	10.000	9.883	97325.86	0.0549	P	2.1
5	☐	100.000	99.298	952979.62	0.5441	P	0.4
6	☐	200.000	200.364	1936908.36	1.0970	A	2.0

y = 0.0055 * x + 8.8140E-004
R = 1.0000
DL = 0.04539
BEC = 0.1611

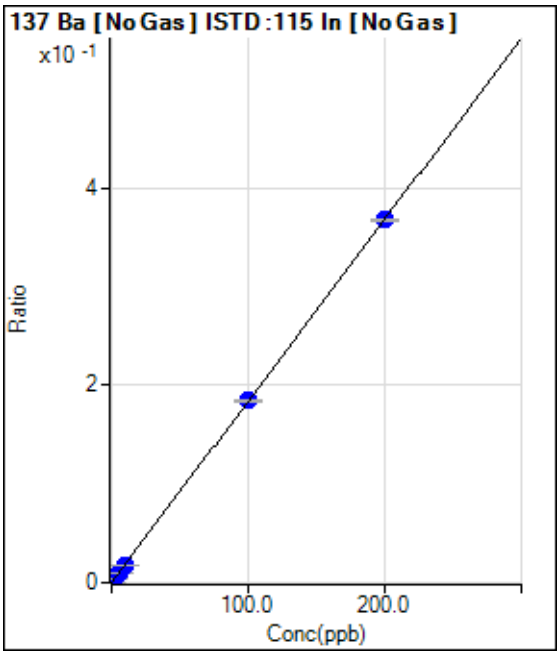
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	913.38	0.0014	P	3.7
2	☐	2.000	1.762	11595.30	0.0174	P	1.5
3	☐	5.000	4.673	28247.41	0.0440	P	1.4
4	☐	10.000	9.612	56180.34	0.0890	P	1.7
5	☐	100.000	98.634	558625.83	0.9003	P	0.1
6	☐	200.000	200.713	1192594.56	1.8306	A	2.3

y = 0.0091 * x + 0.0014
R = 1.0000
DL = 0.0169
BEC = 0.1531

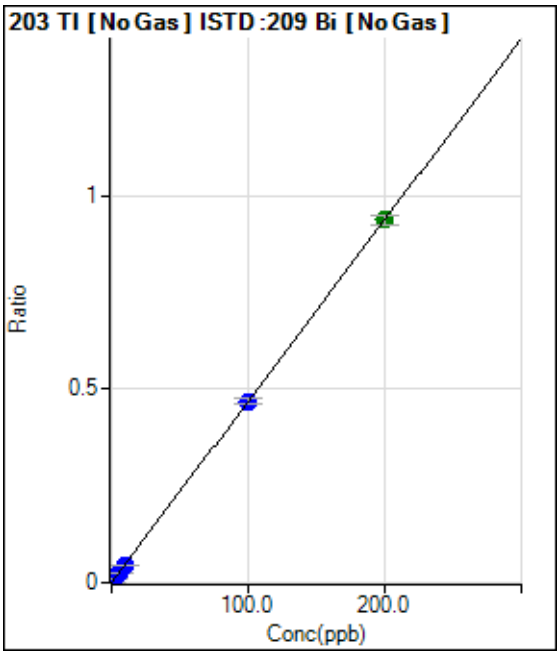
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	346.68	0.0002	P	20.2
2	☐	2.000	1.912	7759.10	0.0037	P	6.4
3	☐	5.000	4.930	19451.52	0.0092	P	2.4
4	☐	10.000	9.843	37300.54	0.0183	P	1.8
5	☐	100.000	100.138	367718.01	0.1842	P	0.5
6	☐	200.000	199.942	732892.31	0.3676	P	0.7

y = 0.0018 * x + 1.6486E-004
R = 1.0000
DL = 0.0544
BEC = 0.08972

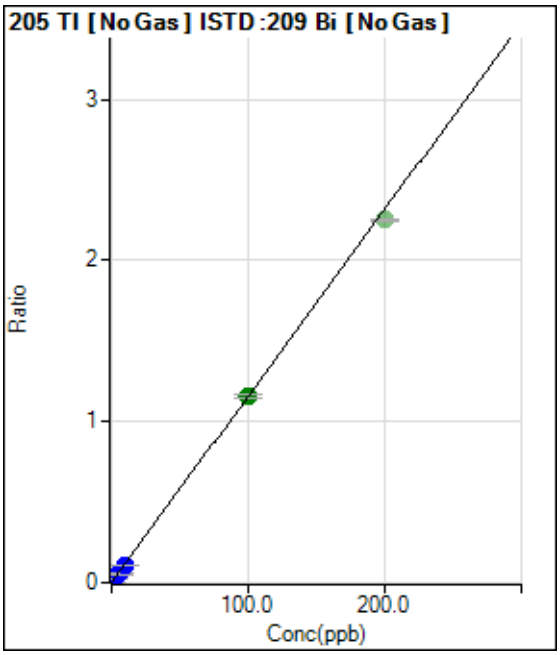
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	600.03	0.0003	P	21.7
2	☐	2.000	1.780	15433.10	0.0087	P	6.2
3	☐	5.000	4.772	39947.56	0.0227	P	1.4
4	☐	10.000	9.880	79234.06	0.0467	P	1.3
5	☐	100.000	99.882	780484.96	0.4686	P	3.0
6	☐	200.000	200.073	1612842.63	0.9383	A	2.6

y = 0.0047 * x + 3.4447E-004
R = 1.0000
DL = 0.0478
BEC = 0.07347

Weight: <None>
Min Conc: <None>

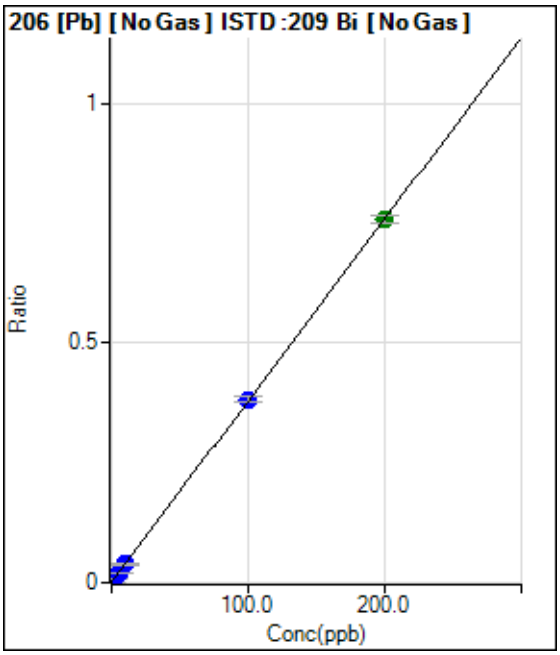


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1433.45	0.0008	P	6.5
2	☐	2.000	1.750	37443.31	0.0211	P	2.8
3	☐	5.000	4.603	95064.09	0.0541	P	2.6
4	☐	10.000	9.483	187652.69	0.1105	P	0.5
5	☐	100.000	100.077	1929480.70	1.1584	A	2.9
6	☑	200.000		3870241.71	2.2511	A	0.2

y = 0.0116 * x + 8.2180E-004
R = 1.0000
DL = 0.01381
BEC = 0.07104

Weight: <None>
Min Conc: <None>

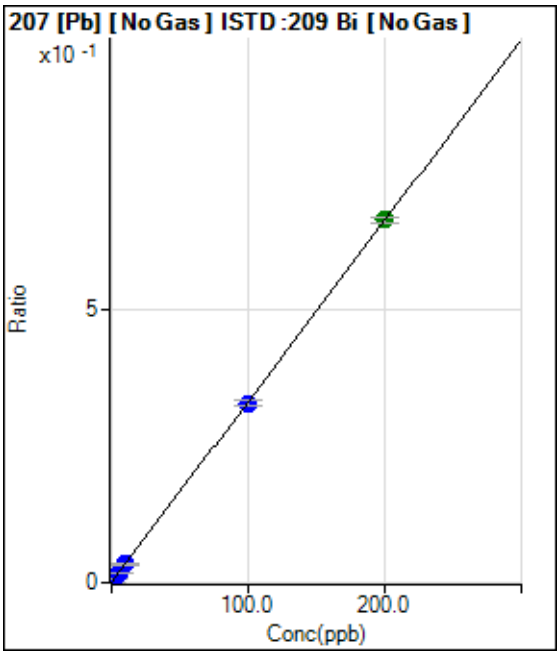
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1120.07	0.0006	P	7.9
2	☐	2.000	1.782	13143.83	0.0074	P	5.9
3	☐	5.000	4.957	34147.03	0.0194	P	4.4
4	☐	10.000	10.017	65535.93	0.0386	P	2.7
5	☐	100.000	100.696	636609.41	0.3822	P	2.9
6	☐	200.000	199.655	1301761.15	0.7572	A	2.2

y = 0.0038 * x + 6.4184E-004
R = 1.0000
DL = 0.03999
BEC = 0.1694

Weight: <None>
Min Conc: <None>

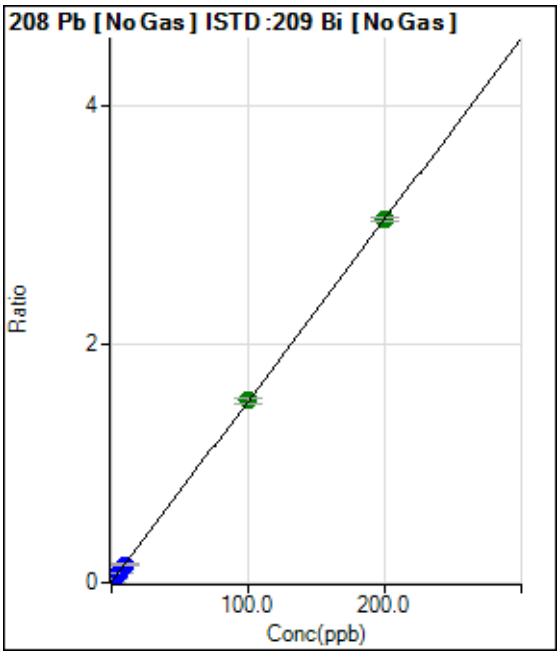


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	986.73	0.0006	P	4.8
2	☐	2.000	1.852	11875.82	0.0067	P	3.7
3	☐	5.000	4.839	29091.02	0.0165	P	3.6
4	☐	10.000	9.954	56786.18	0.0334	P	2.1
5	☐	100.000	99.139	546376.96	0.3281	P	3.2
6	☐	200.000	200.438	1139301.86	0.6627	A	1.4

y = 0.0033 * x + 5.6523E-004
R = 1.0000
DL = 0.02465
BEC = 0.1711

Weight: <None>
Min Conc: <None>

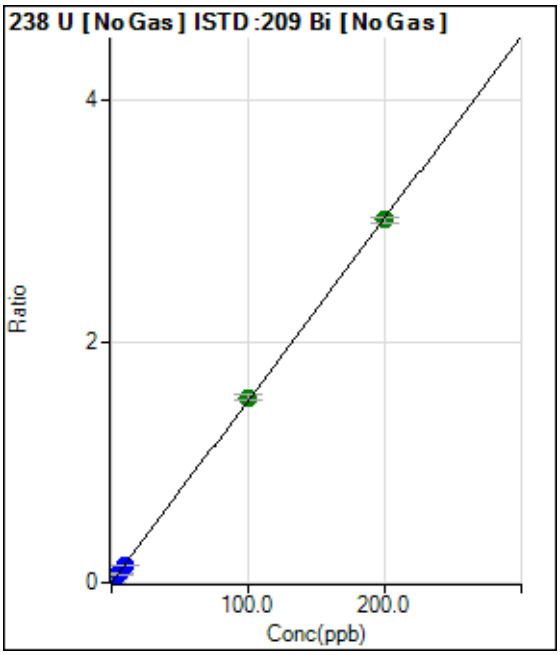
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4543.75	0.0026	P	2.8
2	☐	2.000	1.806	53455.71	0.0301	P	3.6
3	☐	5.000	4.873	134873.96	0.0767	P	3.3
4	☐	10.000	9.871	259363.77	0.1528	P	2.2
5	☐	100.000	100.272	2544795.09	1.5279	A	2.8
6	☐	200.000	199.876	5231145.16	3.0429	A	1.2

y = 0.0152 * x + 0.0026
R = 1.0000
DL = 0.01415
BEC = 0.1712

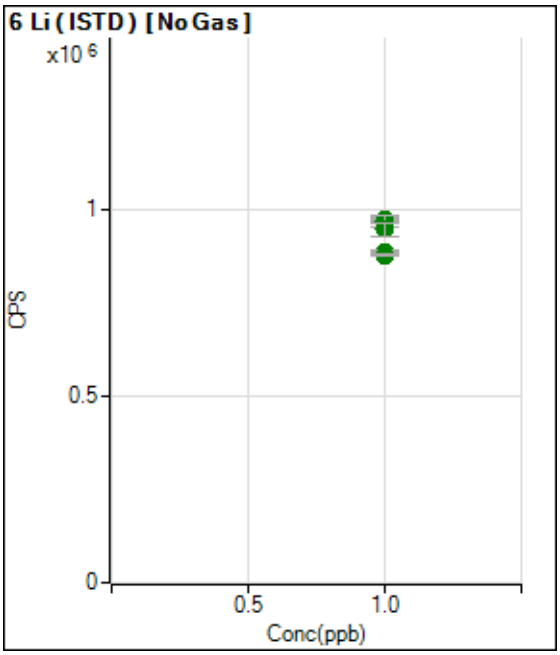
Weight: <None>
Min Conc: <None>



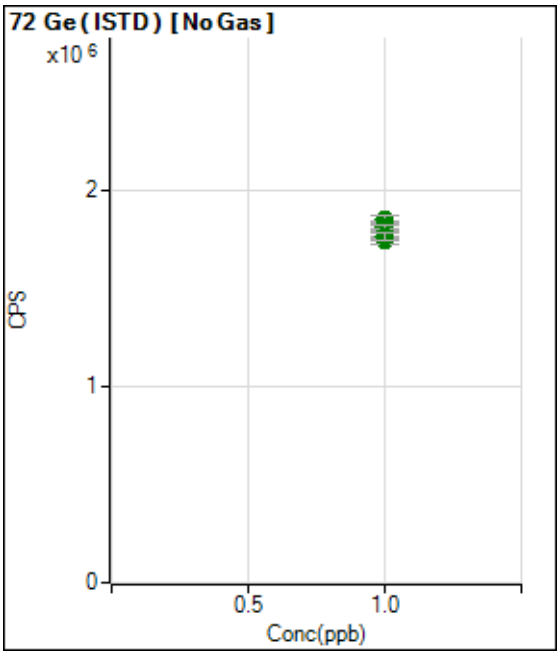
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2050.21	0.0012	P	7.0
2	☐	2.000	1.728	48516.66	0.0273	P	3.4
3	☐	5.000	4.711	127229.59	0.0724	P	3.2
4	☐	10.000	9.545	246937.11	0.1454	P	2.5
5	☐	100.000	101.594	2559319.39	1.5366	A	3.0
6	☐	200.000	199.235	5178629.82	3.0124	A	1.4

y = 0.0151 * x + 0.0012
R = 0.9999
DL = 0.01641
BEC = 0.07777

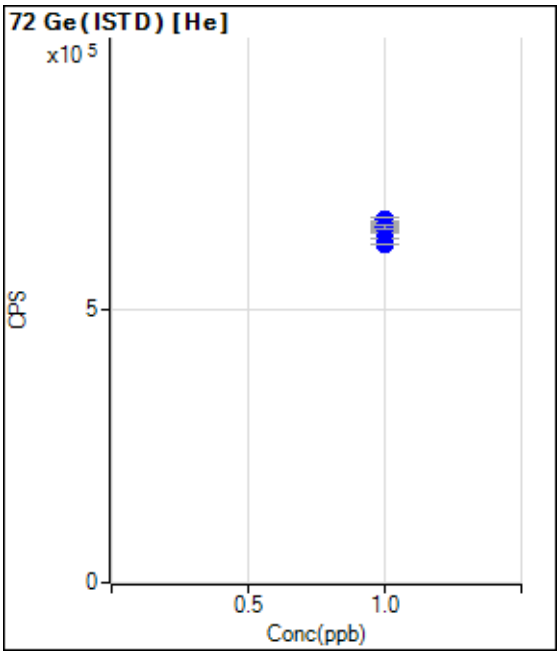
Weight: <None>
Min Conc: <None>



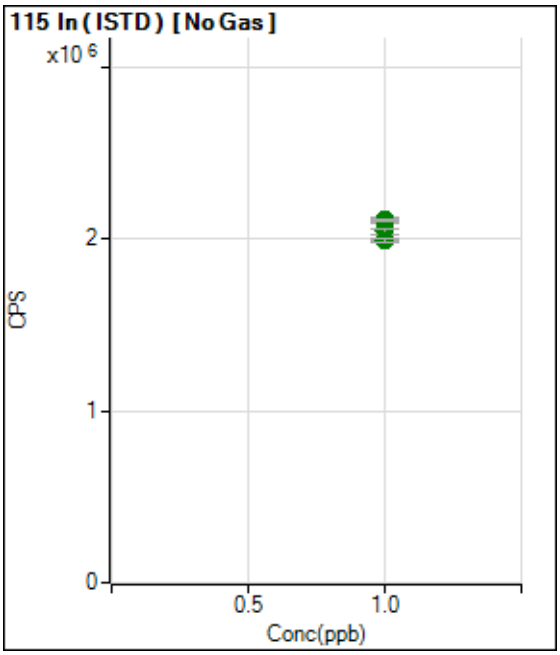
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		973737.00		A	0.7
2	☐	1.000		972712.94		A	1.4
3	☐	1.000		970321.98		A	3.6
4	☐	1.000		948344.51		A	3.6
5	☐	1.000		889601.43		A	0.3
6	☐	1.000		879366.47		A	1.0



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1826109.40		A	2.7
2	☐	1.000		1853390.44		A	2.2
3	☐	1.000		1818640.60		A	1.4
4	☐	1.000		1771537.37		A	1.6
5	☐	1.000		1751607.68		A	2.1
6	☐	1.000		1766146.28		A	2.3

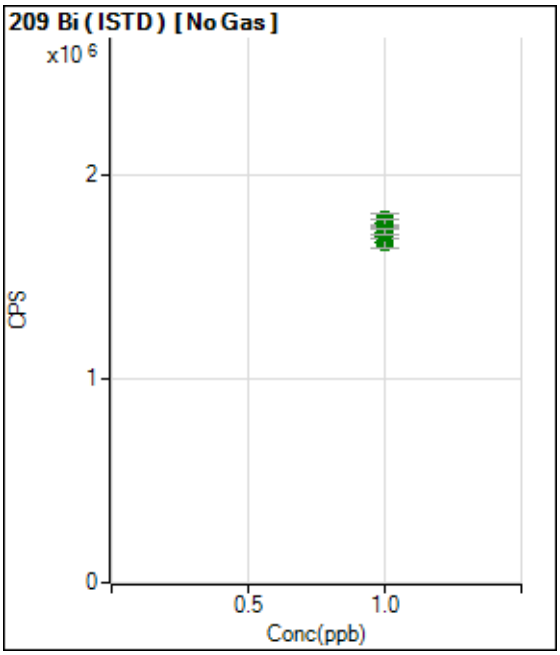


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		654894.70		P	1.1
2	☐	1.000		664528.92		P	1.1
3	☐	1.000		642245.17		P	0.6
4	☐	1.000		631307.37		P	0.2
5	☐	1.000		620500.90		P	0.1
6	☐	1.000		651526.41		P	0.6



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2101225.95		A	1.0
2	☐	1.000		2110995.88		A	1.3
3	☐	1.000		2108968.89		A	0.9
4	☐	1.000		2043853.54		A	1.4
5	☐	1.000		1996550.60		A	0.7
6	☐	1.000		1993914.27		A	1.2

Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1745333.10		A	1.5
2	☐	1.000		1778738.25		A	3.7
3	☐	1.000		1759003.77		A	2.8
4	☐	1.000		1698048.78		A	0.9
5	☐	1.000		1666378.94		A	2.6
6	☐	1.000		1719263.93		A	1.4

Calibration Blank Report

Sample Table

Sample Name	CAL BLK
Data File Name	009CALB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T11:14:26-06:00
Sample Type	CalBlk
Level	1
Dilution	1
Comment	

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	7	1	No Gas	69376	0.00
Be	9	1	No Gas	150	11.55
V	51	2	He	7565	0.01
Cr	52	2	He	6598	0.03
Fe	56	2	He	117976	0.00
Se	78	2	He	331	1.48
As	75	2	He	483	1.92
Ca	44	2	He	770	1.61
Na	23	2	He	65922	0.00
Mg	24	2	He	950	1.45
K	39	2	He	233406	0.00
Mn	55	2	He	607	3.18
Co	59	2	He	187	1.66
Ni	60	2	He	323	2.92
Cu	63	2	He	1760	0.32
Zn	66	2	He	467	4.17
Al	27	2	He	890	1.28
B	11	1	No Gas	17773	0.00
Al	27	1	No Gas	23627	0.01
Si	28	1	No Gas	309050	0.00
Ag	107	1	No Gas	2874	0.19
Cd	111	1	No Gas	47	95.59
Sr	88	1	No Gas	1547	0.27
Mo	95	1	No Gas	933	1.33
Sn	118	1	No Gas	2750	0.13
Sb	121	1	No Gas	1607	0.42
Ba	137	1	No Gas	347	6.02
Tl	205	1	No Gas	1433	0.36
Tl	203	1	No Gas	600	3.37
Pb	208	1	No Gas	4544	0.06
U	238	1	No Gas	2050	0.29
Ca	43	2	He	40	165.36
Sb	121	2	He	913	0.28
Ti	47	2	He	40	62.50
Cu	63	1	No Gas	4041	0.09

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD

Calibration Blank Report

Li	6	1	No Gas	973737	0.74
Ge	72	2	He	654895	1.13
Ge	72	1	No Gas	1826109	2.72
In	115	1	No Gas	2101226	1.02

Calibration Blank Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Bi	209	1	No Gas	1745333	1.46

Calibration Standard Report

Sample Table

Sample Name	2/10/200
Data File Name	010CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T11:16:24-06:00
Sample Type	CalStd
Level	2
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	7010	0.02
V	51	2	He	17363	0.02
Cr	52	2	He	16811	0.01
Fe	56	2	He	1140035	0.00
Se	78	2	He	482	2.84
As	75	2	He	2069	0.20
Ca	44	2	He	9430	0.01
Na	23	2	He	274759	0.00
Mg	24	2	He	129238	0.00
K	39	2	He	412089	0.00
Mn	55	2	He	9900	0.03
Co	59	2	He	15983	0.01
Ni	60	2	He	3947	0.08
Cu	63	2	He	11889	0.02
Zn	66	2	He	2507	0.12
Al	27	2	He	1697	0.33
B	11	1	No Gas	34427	0.01
Al	27	1	No Gas	48699	0.01
Si	28	1	No Gas	382368	0.00
Ag	107	1	No Gas	23401	0.01
Cd	111	1	No Gas	4664	0.07
Sr	88	1	No Gas	48277	0.00
Mo	95	1	No Gas	8993	0.05
Sn	118	1	No Gas	15716	0.00
Sb	121	1	No Gas	20376	0.00
Ba	137	1	No Gas	7759	0.07
Tl	205	1	No Gas	37443	0.00
Tl	203	1	No Gas	15433	0.02
Pb	208	1	No Gas	53456	0.01
U	238	1	No Gas	48517	0.00
Ca	43	2	He	663	0.92
Sb	121	2	He	11595	0.01
Cu	63	1	No Gas	22683	0.01

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	972713	1.43	973737	99.89	70	120	
Ge	72	2	He	664529	1.05	654895	101.47	70	120	
Ge	72	1	No Gas	1853390	2.18	1826109	101.49	70	120	

Calibration Standard Report

In	115	1	No Gas	2110996	1.28	2101226	100.46	70	120	
Bi	209	1	No Gas	1778738	3.75	1745333	101.91	70	120	

Calibration Standard Report

Sample Table

Sample Name	5/25/500
Data File Name	011CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T11:18:22-06:00
Sample Type	CalStd
Level	3
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	17392	0.02
V	51	2	He	32622	0.00
Cr	52	2	He	33692	0.00
Fe	56	2	He	2869418	0.00
Se	78	2	He	817	0.91
As	75	2	He	4762	0.09
Ca	44	2	He	22419	0.00
Na	23	2	He	588986	0.00
Mg	24	2	He	324442	0.00
K	39	2	He	679953	0.00
Mn	55	2	He	24038	0.01
Co	59	2	He	39127	0.00
Ni	60	2	He	9764	0.04
Cu	63	2	He	25952	0.01
Zn	66	2	He	5638	0.03
Al	27	2	He	2714	0.20
B	11	1	No Gas	61606	0.00
Al	27	1	No Gas	85038	0.00
Si	28	1	No Gas	475368	0.00
Ag	107	1	No Gas	60271	0.00
Cd	111	1	No Gas	12443	0.01
Sr	88	1	No Gas	120583	0.00
Mo	95	1	No Gas	22790	0.00
Sn	118	1	No Gas	37745	0.01
Sb	121	1	No Gas	49213	0.00
Ba	137	1	No Gas	19452	0.01
Tl	205	1	No Gas	95064	0.00
Tl	203	1	No Gas	39948	0.00
Pb	208	1	No Gas	134874	0.00
U	238	1	No Gas	127230	0.00
Ca	43	2	He	1327	0.43
Sb	121	2	He	28247	0.00
Cu	63	1	No Gas	50303	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	970322	3.56	973737	99.65	70	120	
Ge	72	2	He	642245	0.60	654895	98.07	70	120	
Ge	72	1	No Gas	1818641	1.40	1826109	99.59	70	120	

Calibration Standard Report

In	115	1	No Gas	2108969	0.94	2101226	100.37	70	120	
Bi	209	1	No Gas	1759004	2.85	1745333	100.78	70	120	

Calibration Standard Report

Sample Table

Sample Name	10/50/100
Data File Name	012CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T11:20:19-06:00
Sample Type	CalStd
Level	4
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	33981	0.01
V	51	2	He	57489	0.00
Cr	52	2	He	60607	0.00
Fe	56	2	He	5383643	0.00
Se	78	2	He	1256	0.13
As	75	2	He	8847	0.02
Ca	44	2	He	42911	0.00
Na	23	2	He	1089931	0.00
Mg	24	2	He	631894	0.00
K	39	2	He	1128936	0.00
Mn	55	2	He	47723	0.00
Co	59	2	He	77138	0.00
Ni	60	2	He	19040	0.01
Cu	63	2	He	49327	0.01
Zn	66	2	He	10881	0.01
Al	27	2	He	4778	0.04
B	11	1	No Gas	106280	0.00
Al	27	1	No Gas	145369	0.00
Si	28	1	No Gas	642077	0.00
Ag	107	1	No Gas	114623	0.00
Cd	111	1	No Gas	23064	0.01
Sr	88	1	No Gas	236395	0.00
Mo	95	1	No Gas	44979	0.00
Sn	118	1	No Gas	75496	0.00
Sb	121	1	No Gas	97326	0.00
Ba	137	1	No Gas	37301	0.00
Tl	205	1	No Gas	187653	0.00
Tl	203	1	No Gas	79234	0.00
Pb	208	1	No Gas	259364	0.00
U	238	1	No Gas	246937	0.00
Ca	43	2	He	2590	0.33
Sb	121	2	He	56180	0.00
Cu	63	1	No Gas	94346	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	948345	3.61	973737	97.39	70	120	
Ge	72	2	He	631307	0.21	654895	96.40	70	120	
Ge	72	1	No Gas	1771537	1.63	1826109	97.01	70	120	

Calibration Standard Report

In	115	1	No Gas	2043854	1.44	2101226	97.27	70	120	
Bi	209	1	No Gas	1698049	0.93	1745333	97.29	70	120	

Calibration Standard Report

Sample Table

Sample Name	100/500/10K
Data File Name	013CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T11:22:16-06:00
Sample Type	CalStd
Level	5
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	334352	0.00
V	51	2	He	515997	0.00
Cr	52	2	He	558947	0.00
Fe	56	2	He	53327854	0.00
Se	78	2	He	9853	0.02
As	75	2	He	86749	0.00
Ca	44	2	He	424073	0.00
Na	23	2	He	10008026	0.00
Mg	24	2	He	6044815	0.00
K	39	2	He	8852284	0.00
Mn	55	2	He	463128	0.00
Co	59	2	He	750782	0.00
Ni	60	2	He	185942	0.00
Cu	63	2	He	473504	0.00
Zn	66	2	He	100910	0.00
Al	27	2	He	42923	0.01
B	11	1	No Gas	894484	0.00
Al	27	1	No Gas	1224325	0.00
Si	28	1	No Gas	3532414	0.00
Ag	107	1	No Gas	958589	0.00
Cd	111	1	No Gas	229066	0.00
Sr	88	1	No Gas	2362200	0.00
Mo	95	1	No Gas	442596	0.00
Sn	118	1	No Gas	699207	0.00
Sb	121	1	No Gas	952980	0.00
Ba	137	1	No Gas	367718	0.00
Tl	205	1	No Gas	1929481	0.00
Tl	203	1	No Gas	780485	0.00
Pb	208	1	No Gas	2544795	0.00
U	238	1	No Gas	2559319	0.00
Ca	43	2	He	24556	0.01
Sb	121	2	He	558626	0.00
Cu	63	1	No Gas	889788	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	889601	0.33	973737	91.36	70	120	
Ge	72	2	He	620501	0.09	654895	94.75	70	120	
Ge	72	1	No Gas	1751608	2.10	1826109	95.92	70	120	

Calibration Standard Report

In	115	1	No Gas	1996551	0.65	2101226	95.02	70	120	
Bi	209	1	No Gas	1666379	2.57	1745333	95.48	70	120	

Calibration Standard Report

Sample Table

Sample Name	200/1000/20K
Data File Name	014CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T11:24:09-06:00
Sample Type	CalStd
Level	6
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	665359	0.00
V	51	2	He	1080952	0.00
Cr	52	2	He	1173003	0.00
Fe	56	2	He	108152092	0.00
Se	78	2	He	20072	0.00
As	75	2	He	178987	0.00
Ca	44	2	He	884315	0.00
Na	23	2	He	20362461	0.00
Mg	24	2	He	12377553	0.00
K	39	2	He	17805101	0.00
Mn	55	2	He	955163	0.00
Co	59	2	He	1611280	0.00
Ni	60	2	He	378716	0.00
Cu	63	2	He	955670	0.00
Zn	66	2	He	206591	0.00
Al	27	2	He	84506	0.00
B	11	1	No Gas	1799243	0.00
Al	27	1	No Gas	2350504	0.00
Si	28	1	No Gas	6611473	0.00
Ag	107	1	No Gas	1919993	0.00
Cd	111	1	No Gas	457412	0.00
Sr	88	1	No Gas	4588040	0.00
Mo	95	1	No Gas	897738	0.00
Sn	118	1	No Gas	1402803	0.00
Sb	121	1	No Gas	1936908	0.00
Ba	137	1	No Gas	732892	0.00
Tl	205	1	No Gas	3870242	0.00
Tl	203	1	No Gas	1612843	0.00
Pb	208	1	No Gas	5231145	0.00
U	238	1	No Gas	5178630	0.00
Ca	43	2	He	51781	0.00
Sb	121	2	He	1192595	0.00
Cu	63	1	No Gas	1764087	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	879366	0.97	973737	90.31	70	120	
Ge	72	2	He	651526	0.64	654895	99.49	70	120	
Ge	72	1	No Gas	1766146	2.34	1826109	96.72	70	120	

Calibration Standard Report

In	115	1	No Gas	1993914	1.20	2101226	94.89	70	120	
Bi	209	1	No Gas	1719264	1.44	1745333	98.51	70	120	

Initial Calibration Verification (ICV) Report

Sample Table

Sample Name	ICV
Data File Name	016_ICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T11:27:56-06:00
Sample Type	ICV
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Li	7	1	No Gas	100.838	2.679	1341865	1.06	100	100.8	90	110	
Be	9	1	No Gas	101.370	2.237	364336	0.87	100	101.4	90	110	
V	51	2	He	100.127	0.959	564804	0.95	100	100.1	90	110	
Cr	52	2	He	100.031	0.739	611385	0.13	100	100.0	90	110	
Fe	56	2	He	10308.192	1.286	58288206	0.55	10000	103.1	90	110	
Se	78	2	He	102.265	1.601	10845	1.28	100	102.3	90	110	
As	75	2	He	105.285	1.930	98273	1.19	100	105.3	90	110	
Ca	44	2	He	10006.208	0.518	459961	0.74	10000	100.1	90	110	
Na	23	2	He	10321.006	0.688	10998982	0.59	10000	103.2	90	110	
Mg	24	2	He	10283.808	1.093	6638100	0.51	10000	102.8	90	110	
K	39	2	He	10152.527	1.355	9554618	0.57	10000	101.5	90	110	
Mn	55	2	He	101.785	0.517	506456	1.17	100	101.8	90	110	
Co	59	2	He	99.796	0.742	830624	0.14	100	99.8	90	110	
Ni	60	2	He	103.718	1.386	205154	0.64	100	103.7	90	110	
Cu	63	2	He	102.823	0.766	514596	0.18	100	102.8	90	110	
Zn	66	2	He	104.133	1.640	112359	1.22	100	104.1	90	110	
Al	27	2	He	105.861	3.016	47351	2.39	100	105.9	90	110	
B	11	1	No Gas	494.115	3.711	965114	2.01	500	98.8	90	110	
Al	27	1	No Gas	107.404	2.748	1350041	2.26	100	107.4	90	110	
Si	28	1	No Gas	600.590	1.934	4329918	0.85	500	120.1	90	110	ICV Main CR1 Failed
Ag	107	1	No Gas	101.431	1.402	1047845	1.11	100	101.4	90	110	
Cd	111	1	No Gas	101.114	2.403	248617	0.09	100	101.1	90	110	
Sr	88	1	No Gas	101.619	3.078	2520531	0.77	100	101.6	90	110	
Mo	95	1	No Gas	98.314	2.098	473293	0.47	100	98.3	90	110	
Sn	118	1	No Gas	99.309	1.808	749305	0.93	100	99.3	90	110	
Sb	121	1	No Gas	103.352	1.323	1051782	0.38	100	103.4	90	110	
Ba	137	1	No Gas	101.947	2.341	401895	0.22	100	101.9	90	110	
Tl	205	1	No Gas	106.321	3.215	2178515	1.35	100	106.3	90	110	
Tl	203	1	No Gas	102.544	2.625	870640	0.76	100	102.5	90	110	
Pb	208	1	No Gas	101.829	3.031	2807712	1.22	100	101.8	90	110	
U	238	1	No Gas	105.938	3.273	2899521	1.61	100	105.9	90	110	
Ca	43	2	He	10055.668	1.992	27007	1.99	10000	100.6	90	110	
Sb	121	2	He	100.134	0.529	617780	0.36	100	100.1	90	110	
Ti	47	2	He	100.587	1.598	24108	1.09	100	100.6	90	110	
Cu	63	1	No Gas	102.546	0.861	956315	0.23	100	102.5	90	110	
Se	82	1	No Gas	104.119	4.037	17002	4.10	100	104.1	90	110	

QC ISTD Table

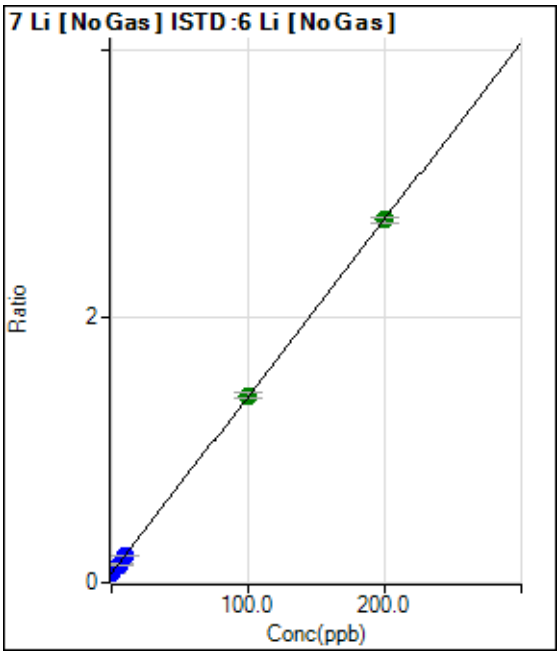
Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	951593	2.72	973737	97.73	70	120	
Ge	72	2	He	675963	0.76	654895	103.22	70	120	
Ge	72	1	No Gas	1857570	1.06	1826109	101.72	70	120	
In	115	1	No Gas	2144195	2.46	2101226	102.04	70	120	
Bi	209	1	No Gas	1810292	1.85	1745333	103.72	70	120	

Calibration for 016_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\020922A.b\
Analysis File: 020922A.batch.bin
DA Date-Time: 2/10/2022 9:14:45 AM
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	009CALB.d	CAL BLK	2/9/2022 11:14:26 AM
2	010CALS.d	2/10/200	2/9/2022 11:16:24 AM
3	011CALS.d	5/25/500	2/9/2022 11:18:22 AM
4	012CALS.d	10/50/100	2/9/2022 11:20:19 AM
5	013CALS.d	100/500/10K	2/9/2022 11:22:16 AM
6	014CALS.d	200/1000/20K	2/9/2022 11:24:09 AM

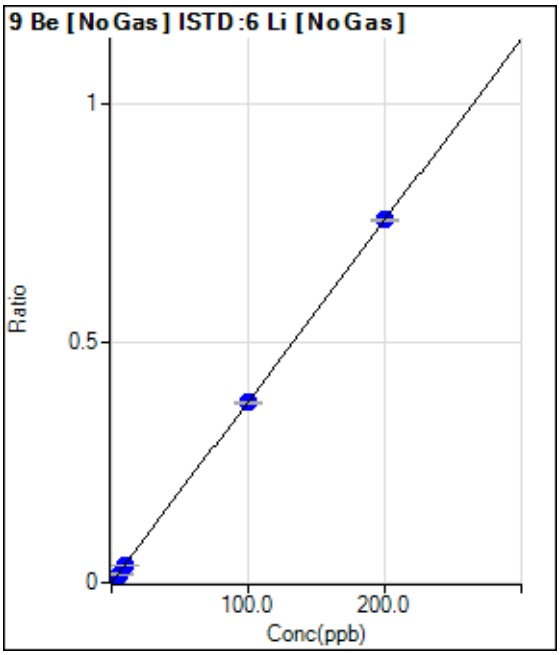
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	69376.36	0.0712	P	1.1
2	☐	2.000	1.987	94965.52	0.0976	P	1.5
3	☐	5.000	4.889	132012.18	0.1362	P	4.3
4	☐	10.000	9.849	191465.51	0.2021	P	3.8
5	☐	100.000	100.492	1250937.01	1.4061	A	2.5
6	☐	200.000	199.765	2396076.79	2.7248	A	1.5

y = 0.0133 * x + 0.0712
R = 1.0000
DL = 0.1836
BEC = 5.364

Weight: <None>
Min Conc: <None>

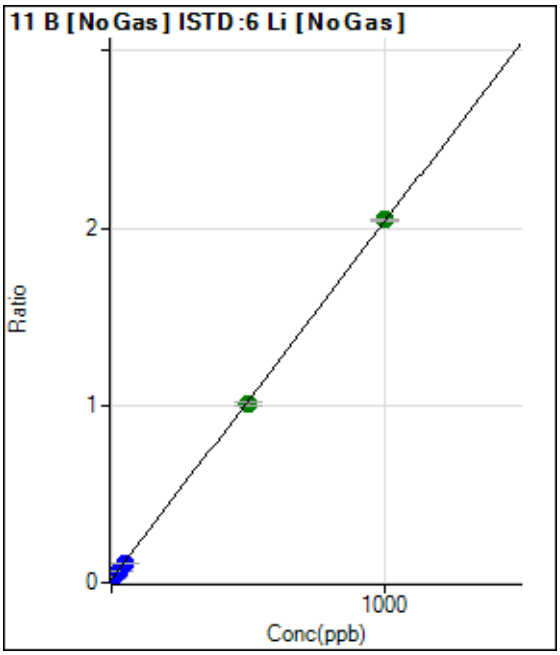


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	150.00	0.0002	P	18.1
2	☐	2.000	1.868	7010.14	0.0072	P	3.0
3	☐	5.000	4.710	17392.48	0.0179	P	5.1
4	☐	10.000	9.451	33980.97	0.0358	P	2.4
5	☐	100.000	99.472	334351.99	0.3758	P	0.6
6	☐	200.000	200.300	665358.98	0.7567	P	0.7

y = 0.0038 * x + 1.5418E-004
R = 1.0000
DL = 0.02219
BEC = 0.04082

Weight: <None>
Min Conc: <None>

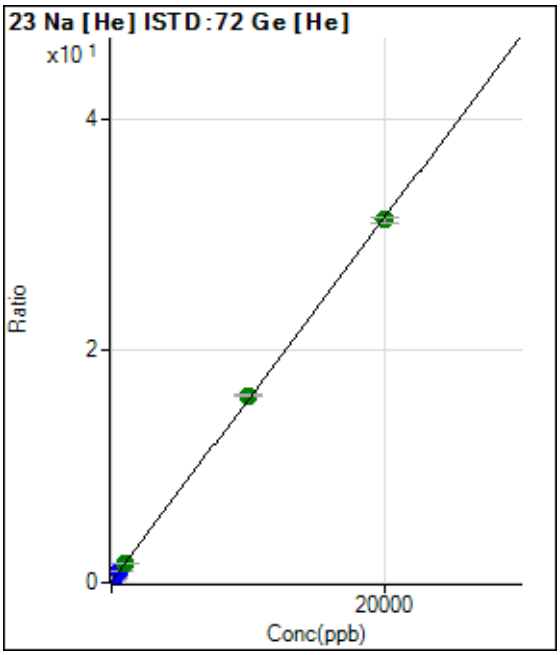
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	17772.96	0.0183	P	1.5
2	☐	10.000	8.501	34427.10	0.0354	P	2.4
3	☐	25.000	22.466	61605.92	0.0636	P	4.9
4	☐	50.000	46.553	106279.97	0.1121	P	2.6
5	☐	500.000	489.529	894484.02	1.0055	A	2.4
6	☐	1000.000	1005.486	1799242.94	2.0461	A	0.2

y = 0.0020 * x + 0.0183
R = 0.9999
DL = 0.4115
BEC = 9.051

Weight: <None>
Min Conc: <None>

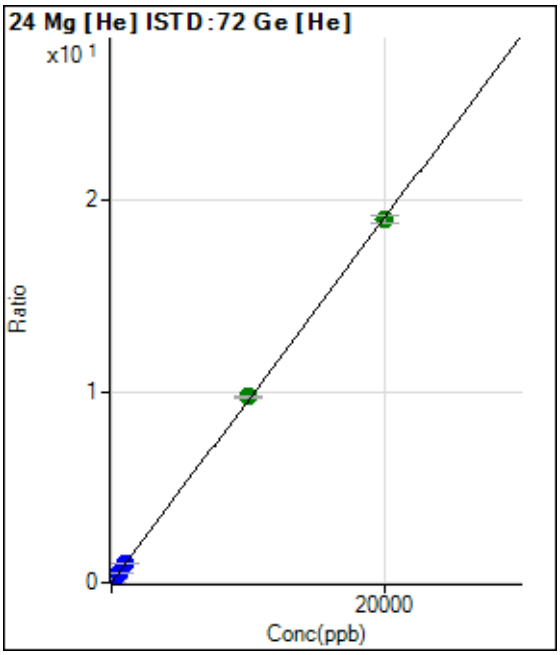


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	65922.12	0.1007	P	0.8
2	☐	200.000	199.658	274758.64	0.4135	P	1.3
3	☐	500.000	521.064	588986.32	0.9171	P	0.4
4	☐	1000.000	1037.648	1089930.82	1.7265	A	1.0
5	☐	10000.00	10229.80	10008026.10	16.1290	A	1.2
6	☐	20000.00	19882.69	20362460.95	31.2535	A	1.6

y = 0.0016 * x + 0.1007
R = 0.9999
DL = 1.556
BEC = 64.25

Weight: <None>
Min Conc: <None>

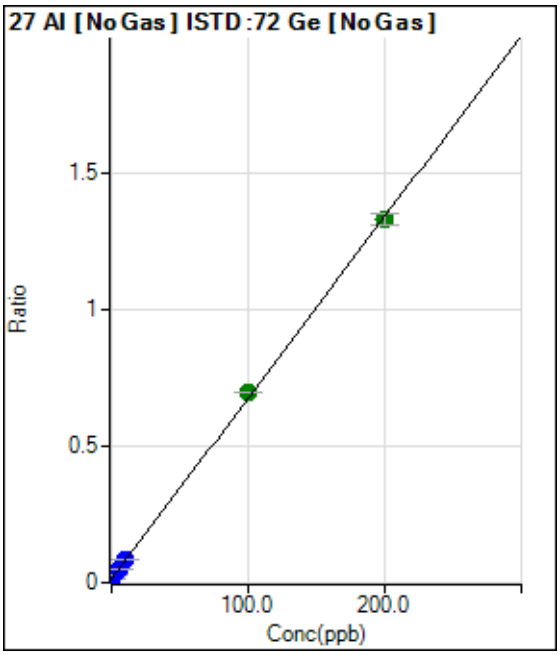
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	950.05	0.0014	P	12.9
2	☐	200.000	202.167	129238.28	0.1945	P	0.2
3	☐	500.000	527.572	324441.91	0.5052	P	1.0
4	☐	1000.000	1046.757	631894.20	1.0009	P	1.3
5	☐	10000.00	10201.21	6044815.12	9.7418	A	0.8
6	☐	20000.00	19896.34	12377552.73	18.9990	A	2.3

y = 9.5483E-004 * x + 0.0014
R = 0.9999
DL = 0.586
BEC = 1.518

Weight: <None>
Min Conc: <None>

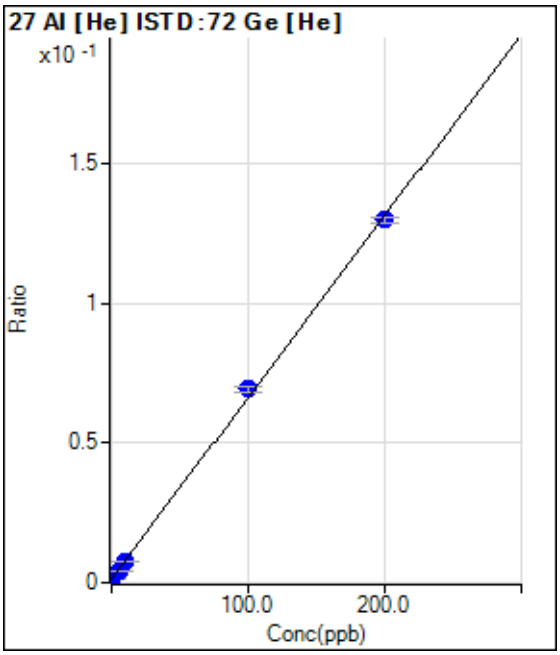


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	23627.04	0.0129	P	2.5
2	☐	2.000	2.009	48698.78	0.0263	P	5.1
3	☐	5.000	5.088	85038.48	0.0468	P	0.5
4	☐	10.000	10.399	145369.42	0.0821	P	1.0
5	☐	100.000	103.218	1224324.98	0.6990	A	0.9
6	☐	200.000	198.369	2350503.97	1.3315	A	3.0

y = 0.0066 * x + 0.0129
R = 0.9998
DL = 0.1455
BEC = 1.947

Weight: <None>
Min Conc: <None>

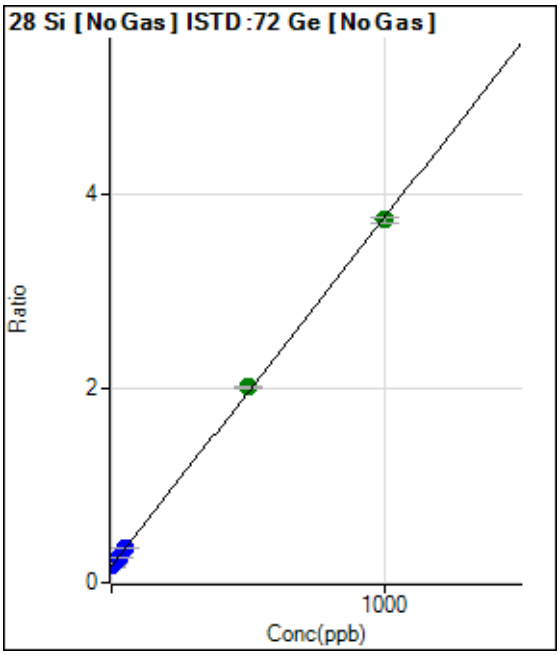
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	890.04	0.0014	P	10.6
2	☐	2.000	1.843	1696.80	0.0026	P	6.6
3	☐	5.000	4.419	2713.65	0.0042	P	6.0
4	☐	10.000	9.568	4777.55	0.0076	P	1.9
5	☐	100.000	104.502	42923.18	0.0692	P	2.5
6	☐	200.000	197.787	84506.44	0.1297	P	1.6

y = 6.4896E-004 * x + 0.0014
R = 0.9996
DL = 0.6669
BEC = 2.093

Weight: <None>
Min Conc: <None>

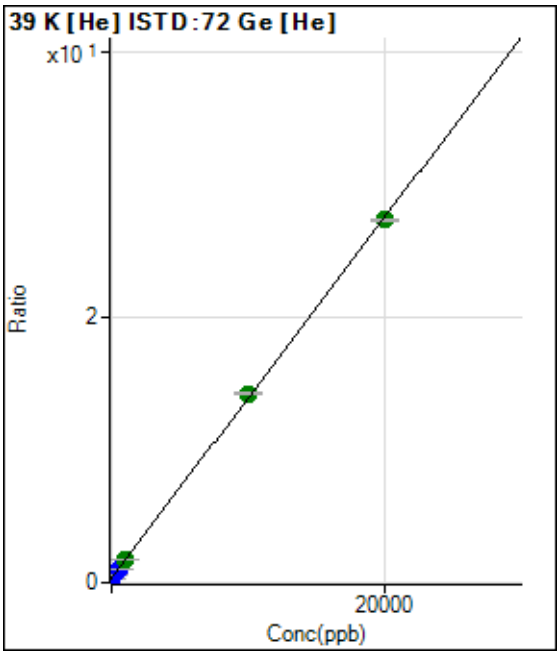


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	309050.48	0.1693	P	3.4
2	☐	10.000	10.287	382367.58	0.2064	P	2.2
3	☐	25.000	25.574	475368.21	0.2614	P	0.8
4	☐	50.000	53.662	642077.15	0.3625	P	1.8
5	☐	500.000	513.273	3532414.32	2.0169	A	1.1
6	☐	1000.000	993.163	6611472.61	3.7444	A	1.6

y = 0.0036 * x + 0.1693
R = 0.9999
DL = 4.861
BEC = 47.05

Weight: <None>
Min Conc: <None>

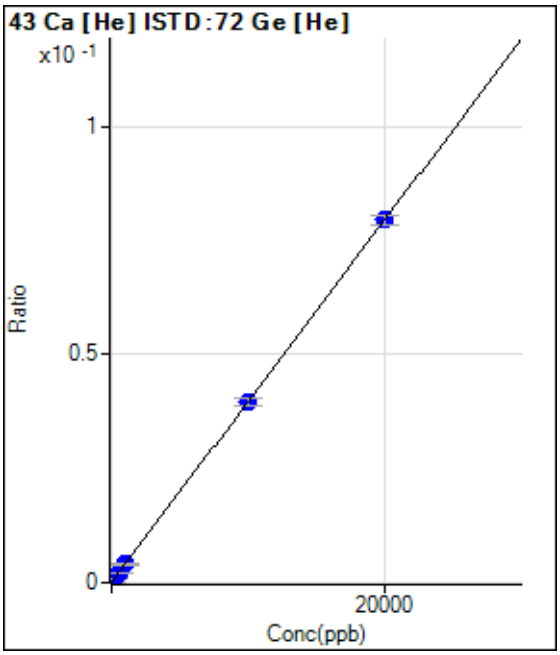
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	233406.01	0.3565	P	1.9
2	☐	200.000	194.274	412089.24	0.6201	P	0.2
3	☐	500.000	517.431	679952.85	1.0587	P	0.6
4	☐	1000.000	1054.927	1128935.82	1.7882	A	0.8
5	☐	10000.00	10248.73	8852283.83	14.2663	A	0.4
6	☐	20000.00	19872.50	17805101.40	27.3280	A	0.6

y = 0.0014 * x + 0.3565
R = 0.9999
DL = 15.31
BEC = 262.6

Weight: <None>
Min Conc: <None>

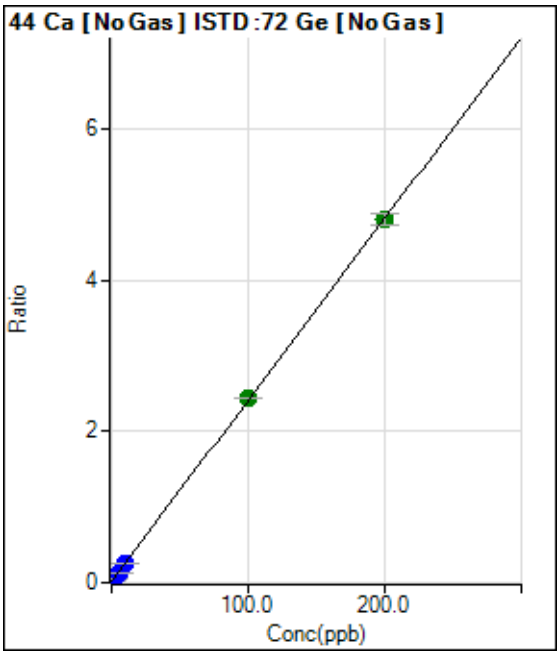


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	40.00	0.0001	P	65.5
2	☐	200.000	236.176	663.36	0.0010	P	5.1
3	☐	500.000	505.298	1326.75	0.0021	P	5.4
4	☐	1000.000	1018.783	2590.29	0.0041	P	8.3
5	☐	10000.00	9959.833	24555.50	0.0396	P	3.6
6	☐	20000.00	20018.65	51780.84	0.0795	P	2.4

y = 3.9672E-006 * x + 6.0967E-005
R = 1.0000
DL = 30.19
BEC = 15.37

Weight: <None>
Min Conc: <None>

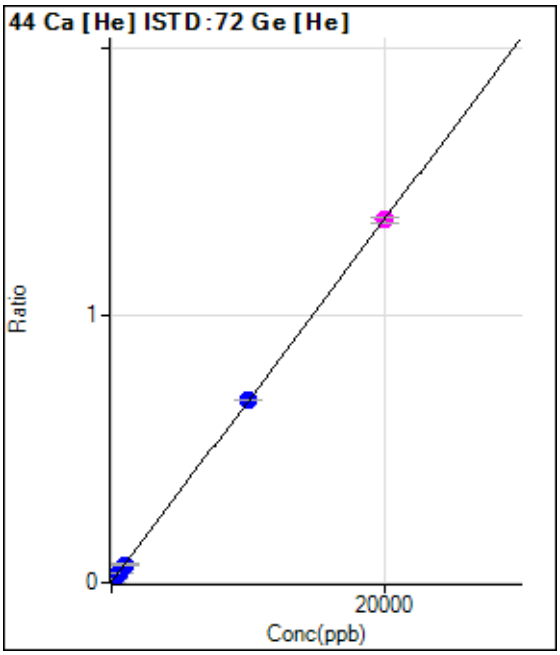
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	30140.07	0.0165	P	3.2
2	☐	2.000	1.942	116866.15	0.0631	P	2.3
3	☐	5.000	5.087	251853.66	0.1385	P	0.7
4	☐	10.000	10.298	466661.61	0.2634	P	1.1
5	☐	100.000	101.103	4275067.23	2.4409	A	0.9
6	☐	200.000	199.432	8471370.50	4.7988	A	3.1

y = 0.0240 * x + 0.0165
R = 1.0000
DL = 0.0658
BEC = 0.6887

Weight: <None>
Min Conc: <None>

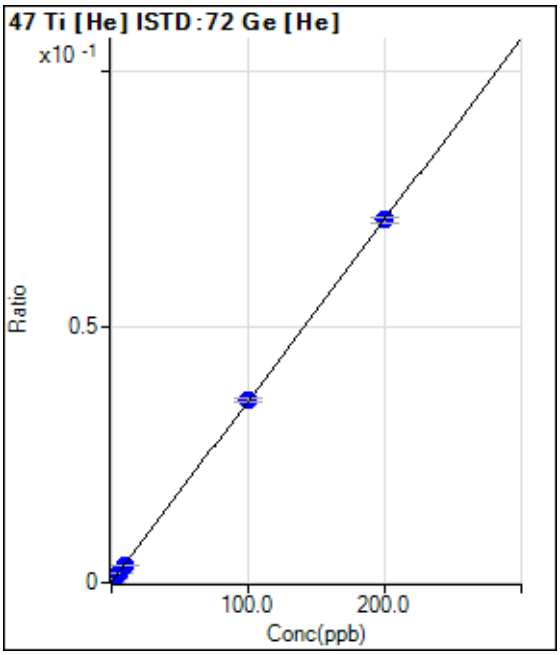


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	770.04	0.0012	P	12.9
2	☐	200.000	191.730	9430.03	0.0142	P	2.0
3	☐	500.000	496.890	22418.55	0.0349	P	1.4
4	☐	1000.000	983.932	42910.59	0.0680	P	1.5
5	☐	10000.00	10050.11	424073.31	0.6834	P	0.6
6	☐	20000.00	19975.90	884315.20	1.3573	M	1.9

y = 6.7886E-005 * x + 0.0012
R = 1.0000
DL = 6.73
BEC = 17.33

Weight: <None>
Min Conc: <None>

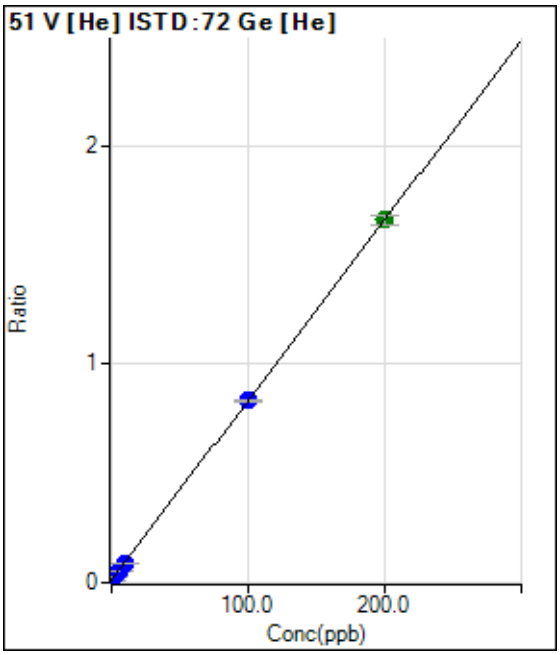
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	40.00	0.0001	P	24.1
2	☐	2.000	1.783	460.02	0.0007	P	11.8
3	☐	5.000	5.018	1180.07	0.0018	P	2.9
4	☐	10.000	9.509	2163.55	0.0034	P	4.7
5	☐	100.000	100.222	22051.34	0.0355	P	1.9
6	☐	200.000	199.915	46147.60	0.0708	P	1.7

y = 3.5399E-004 * x + 6.0980E-005
R = 1.0000
DL = 0.1246
BEC = 0.1723

Weight: <None>
Min Conc: <None>

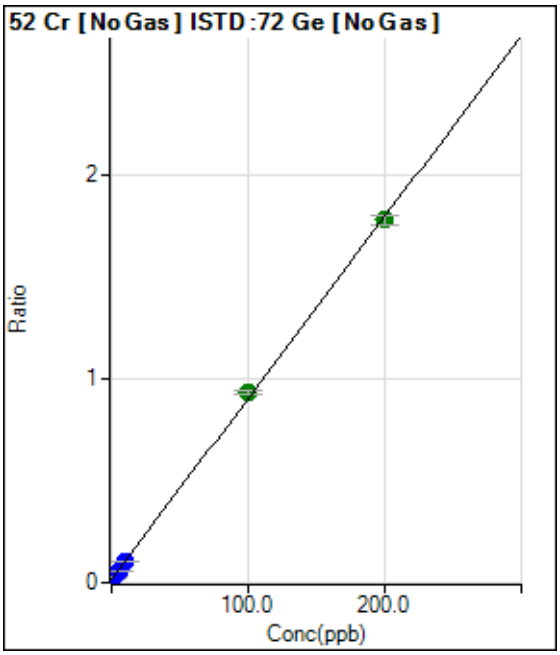


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	7565.45	0.0116	P	0.6
2	☐	2.000	1.771	17363.27	0.0261	P	3.3
3	☐	5.000	4.768	32622.02	0.0508	P	0.7
4	☐	10.000	9.661	57488.75	0.0911	P	0.7
5	☐	100.000	99.642	515996.67	0.8316	P	0.4
6	☐	200.000	200.204	1080952.18	1.6592	A	2.5

y = 0.0082 * x + 0.0116
R = 1.0000
DL = 0.02678
BEC = 1.404

Weight: <None>
Min Conc: <None>

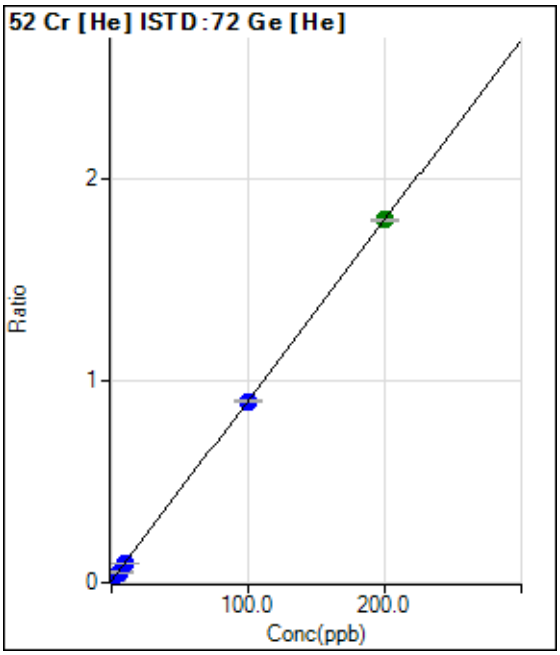
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	28930.88	0.0159	P	4.2
2	☐	2.000	1.772	58528.65	0.0316	P	1.4
3	☐	5.000	4.814	106552.56	0.0586	P	1.8
4	☐	10.000	9.805	182287.08	0.1029	P	0.7
5	☐	100.000	103.213	1632400.08	0.9322	A	2.3
6	☐	200.000	198.410	3137806.62	1.7773	A	2.5

y = 0.0089 * x + 0.0159
R = 0.9998
DL = 0.2257
BEC = 1.786

Weight: <None>
Min Conc: <None>

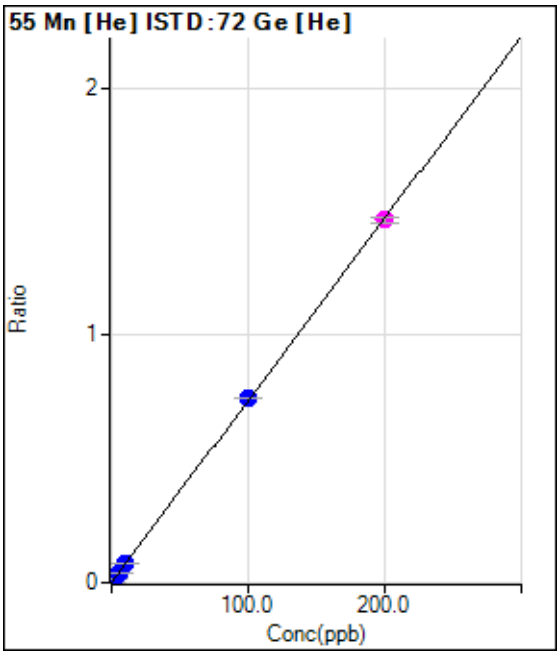


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6598.37	0.0101	P	1.8
2	☐	2.000	1.703	16810.60	0.0253	P	3.3
3	☐	5.000	4.740	33691.80	0.0525	P	1.0
4	☐	10.000	9.610	60607.18	0.0960	P	0.7
5	☐	100.000	99.617	558947.25	0.9008	P	1.0
6	☐	200.000	200.220	1173002.79	1.8003	A	0.7

y = 0.0089 * x + 0.0101
R = 1.0000
DL = 0.06093
BEC = 1.127

Weight: <None>
Min Conc: <None>

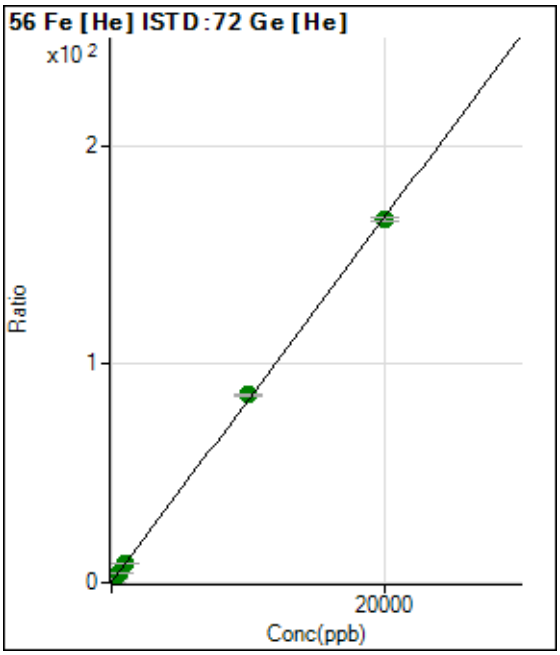
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	606.69	0.0009	P	20.5
2	☐	2.000	1.901	9900.42	0.0149	P	4.4
3	☐	5.000	4.965	24038.12	0.0374	P	2.1
4	☐	10.000	10.156	47723.39	0.0756	P	1.3
5	☐	100.000	101.398	463128.46	0.7464	P	0.5
6	☐	200.000	199.295	955163.30	1.4661	M	1.3

y = 0.0074 * x + 9.2782E-004
R = 1.0000
DL = 0.07775
BEC = 0.1262

Weight: <None>
Min Conc: <None>

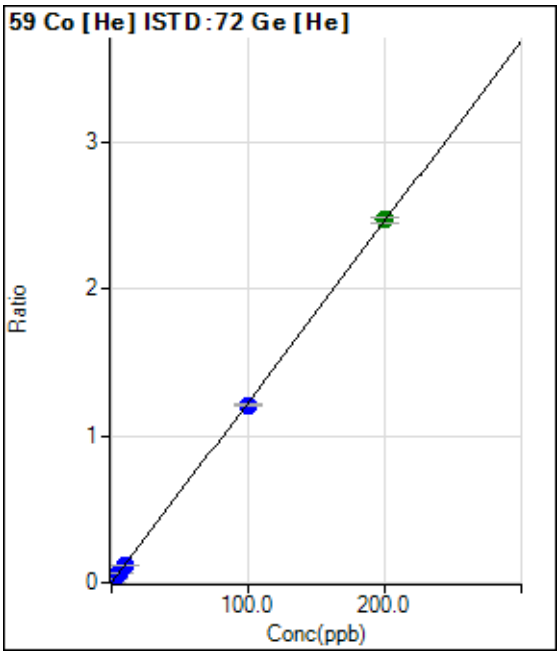


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	117975.70	0.1802	P	1.4
2	☐	200.000	183.920	1140034.93	1.7156	A	1.1
3	☐	500.000	513.604	2869418.19	4.4679	A	1.3
4	☐	1000.000	999.928	5383643.05	8.5278	A	1.6
5	☐	10000.00	10273.21	53327854.21	85.9433	A	1.2
6	☐	20000.00	19863.21	108152091.7	166.003	A	1.0

y = 0.0083 * x + 0.1802
R = 0.9999
DL = 0.9019
BEC = 21.58

Weight: <None>
Min Conc: <None>

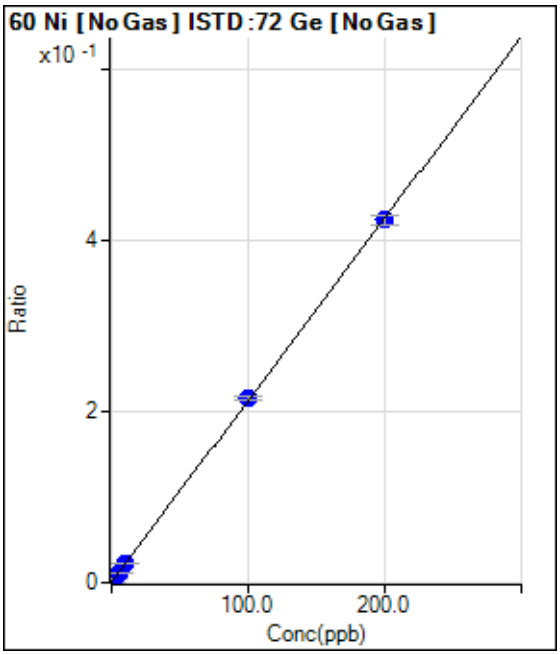
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	186.67	0.0003	P	3.8
2	☐	2.000	1.931	15982.89	0.0241	P	2.6
3	☐	5.000	4.926	39126.68	0.0609	P	1.4
4	☐	10.000	9.902	77138.13	0.1222	P	2.0
5	☐	100.000	98.262	750781.71	1.2100	P	1.3
6	☐	200.000	200.876	1611279.77	2.4732	A	1.3

y = 0.0123 * x + 2.8510E-004
R = 0.9999
DL = 0.002661
BEC = 0.02316

Weight: <None>
Min Conc: <None>

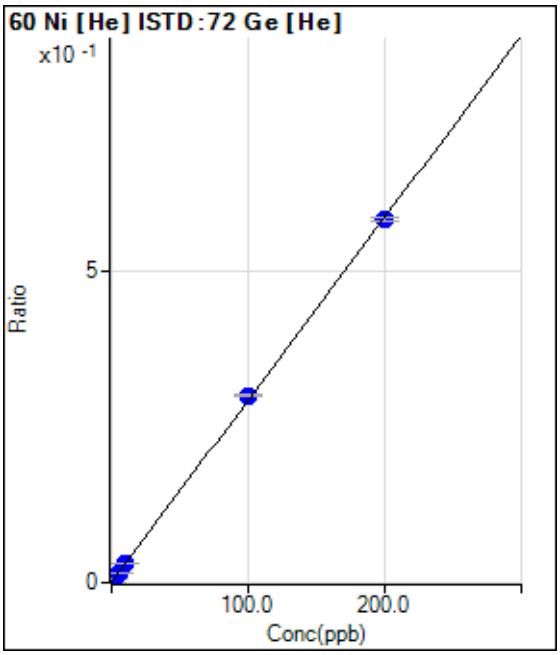


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	770.04	0.0004	P	14.6
2	☐	2.000	1.867	8142.59	0.0044	P	2.1
3	☐	5.000	5.071	20398.95	0.0112	P	2.8
4	☐	10.000	10.234	39333.71	0.0222	P	0.5
5	☐	100.000	101.348	378493.89	0.2161	P	1.7
6	☐	200.000	199.314	749728.82	0.4247	P	2.4

y = 0.0021 * x + 4.2123E-004
R = 1.0000
DL = 0.08693
BEC = 0.1979

Weight: <None>
Min Conc: <None>

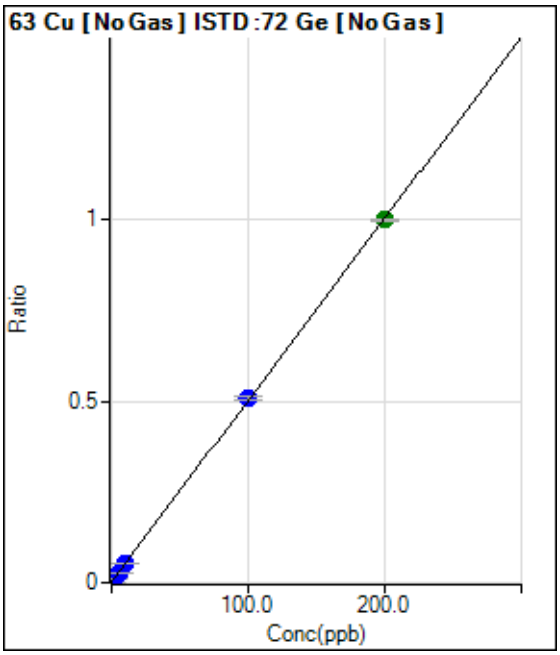
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	323.34	0.0005	P	10.3
2	☐	2.000	1.865	3947.31	0.0059	P	4.1
3	☐	5.000	5.034	9763.67	0.0152	P	3.5
4	☐	10.000	10.154	19040.27	0.0302	P	2.1
5	☐	100.000	102.399	185941.87	0.2997	P	1.1
6	☐	200.000	198.793	378715.54	0.5813	P	1.2

y = 0.0029 * x + 4.9403E-004
R = 0.9999
DL = 0.05228
BEC = 0.1691

Weight: <None>
Min Conc: <None>

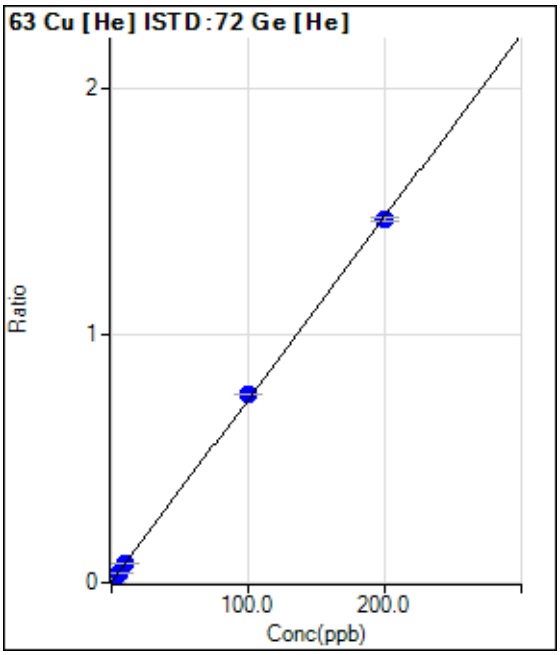


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4040.68	0.0022	P	4.1
2	☐	2.000	2.005	22682.56	0.0122	P	2.3
3	☐	5.000	5.090	50303.01	0.0277	P	0.6
4	☐	10.000	10.212	94346.08	0.0533	P	1.6
5	☐	100.000	101.202	889788.03	0.5081	P	2.2
6	☐	200.000	199.386	1764086.80	0.9990	A	0.9

y = 0.0050 * x + 0.0022
R = 1.0000
DL = 0.05381
BEC = 0.4428

Weight: <None>
Min Conc: <None>

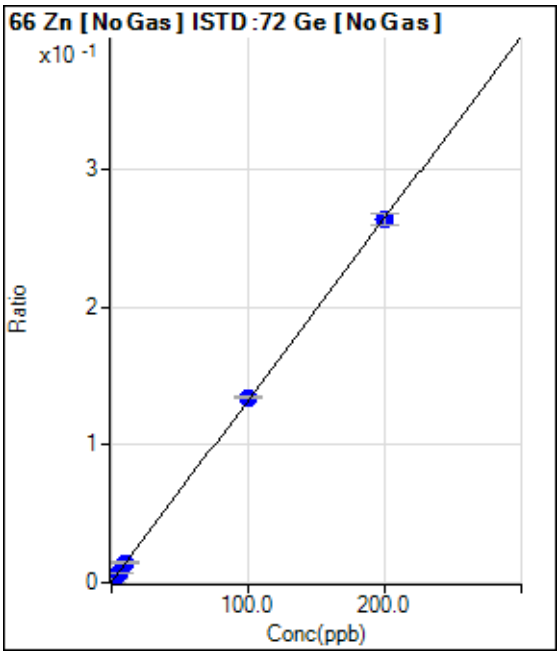
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1760.15	0.0027	P	6.4
2	☐	2.000	2.060	11888.73	0.0179	P	2.0
3	☐	5.000	5.112	25951.76	0.0404	P	1.5
4	☐	10.000	10.226	49326.51	0.0781	P	3.2
5	☐	100.000	103.067	473503.55	0.7631	P	0.5
6	☐	200.000	198.452	955669.96	1.4668	P	1.1

y = 0.0074 * x + 0.0027
R = 0.9998
DL = 0.07009
BEC = 0.3644

Weight: <None>
Min Conc: <None>

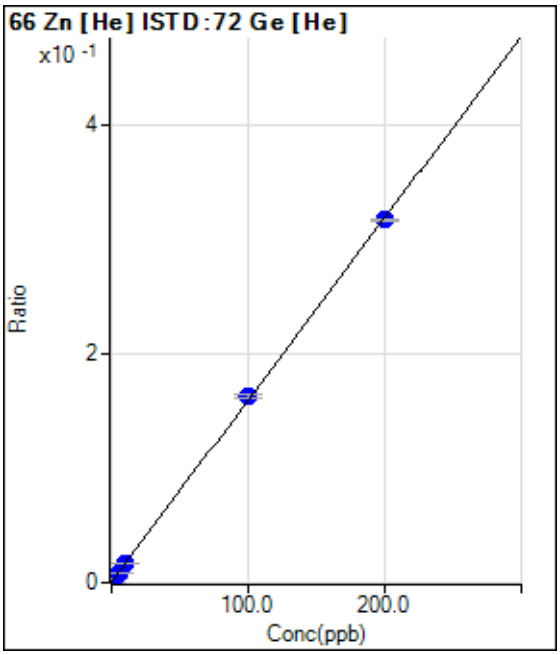


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1006.72	0.0006	P	5.8
2	☐	2.000	1.863	5571.25	0.0030	P	6.9
3	☐	5.000	4.867	12676.09	0.0070	P	2.0
4	☐	10.000	10.617	25778.11	0.0146	P	1.8
5	☐	100.000	101.640	235706.99	0.1346	P	1.6
6	☐	200.000	199.154	464629.51	0.2632	P	3.0

y = 0.0013 * x + 5.5187E-004
R = 0.9999
DL = 0.07293
BEC = 0.4185

Weight: <None>
Min Conc: <None>

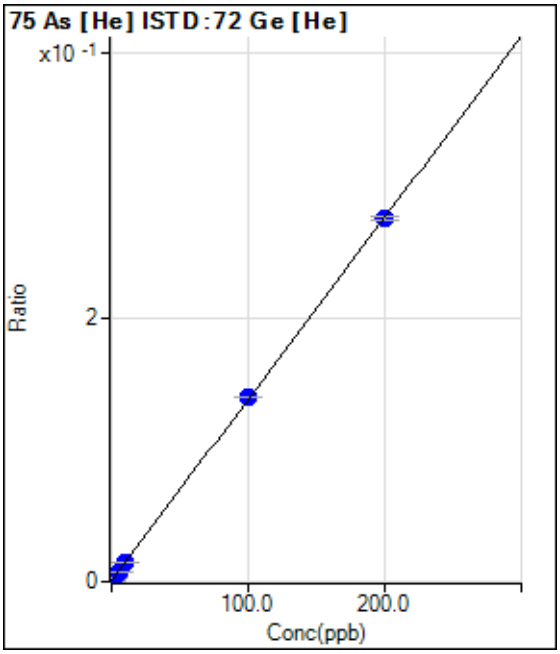
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	466.69	0.0007	P	19.4
2	☐	2.000	1.926	2506.95	0.0038	P	4.0
3	☐	5.000	5.075	5637.92	0.0088	P	1.8
4	☐	10.000	10.395	10881.18	0.0172	P	1.2
5	☐	100.000	101.865	100909.86	0.1626	P	1.7
6	☐	200.000	199.046	206590.76	0.3171	P	0.5

y = 0.0016 * x + 7.1275E-004
R = 0.9999
DL = 0.2615
BEC = 0.4484

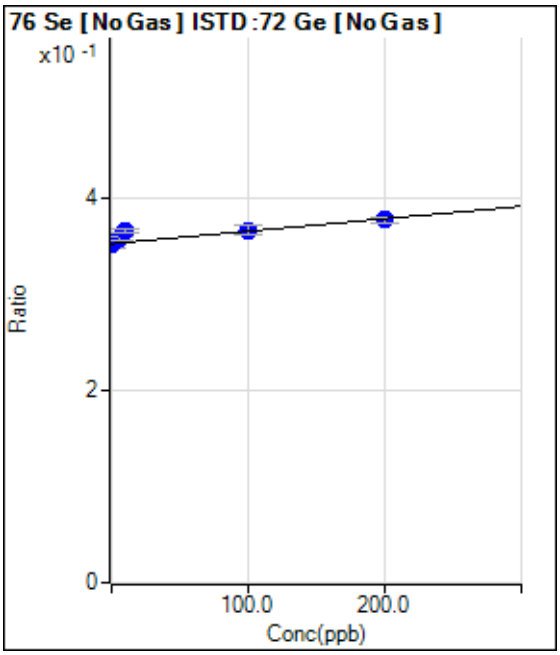
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	483.34	0.0007	P	8.2
2	☐	2.000	1.729	2069.06	0.0031	P	3.9
3	☐	5.000	4.859	4761.97	0.0074	P	3.9
4	☐	10.000	9.663	8847.39	0.0140	P	1.6
5	☐	100.000	101.217	86748.79	0.1398	P	0.7
6	☐	200.000	199.415	178986.91	0.2747	P	1.1

y = 0.0014 * x + 7.3760E-004
R = 1.0000
DL = 0.1325
BEC = 0.5368

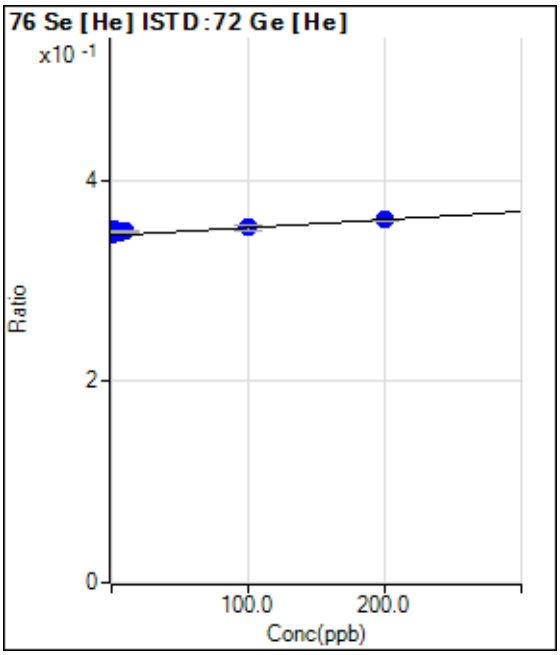
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	642435.25	0.3519	P	2.2
2	☐	2.000	14.402	655664.65	0.3538	P	0.9
3	☐	5.000	44.136	650386.97	0.3576	P	0.8
4	☐	10.000	97.165	645647.62	0.3645	P	1.1
5	☐	100.000	108.744	640861.84	0.3660	P	2.4
6	☐	200.000	190.167	664784.63	0.3765	P	1.9

y = 1.2921E-004 * x + 0.3519
R = 0.9013
DL = 176.1
BEC = 2724

Weight: <None>
Min Conc: <None>

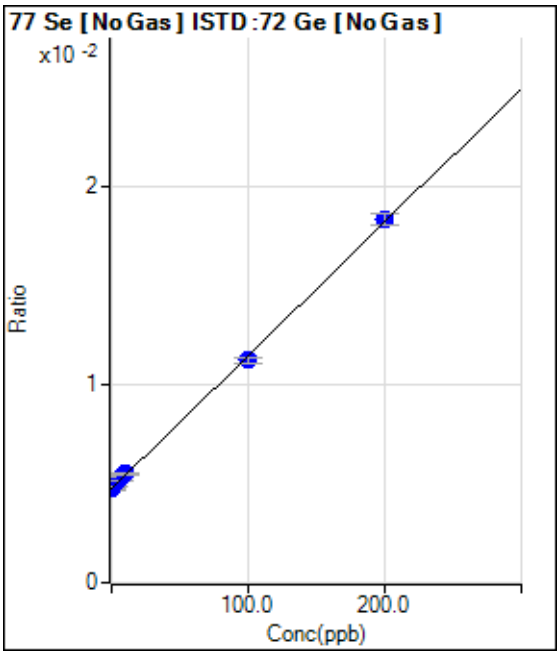


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	225752.17	0.3447	P	0.8
2	☐	2.000	83.789	233503.45	0.3514	P	0.1
3	☐	5.000	36.740	223272.68	0.3476	P	0.8
4	☐	10.000	51.660	220216.65	0.3488	P	0.4
5	☐	100.000	100.740	218870.89	0.3527	P	1.3
6	☐	200.000	195.936	234744.47	0.3603	P	0.3

y = 7.9545E-005 * x + 0.3447
R = 0.9164
DL = 106.9
BEC = 4334

Weight: <None>
Min Conc: <None>

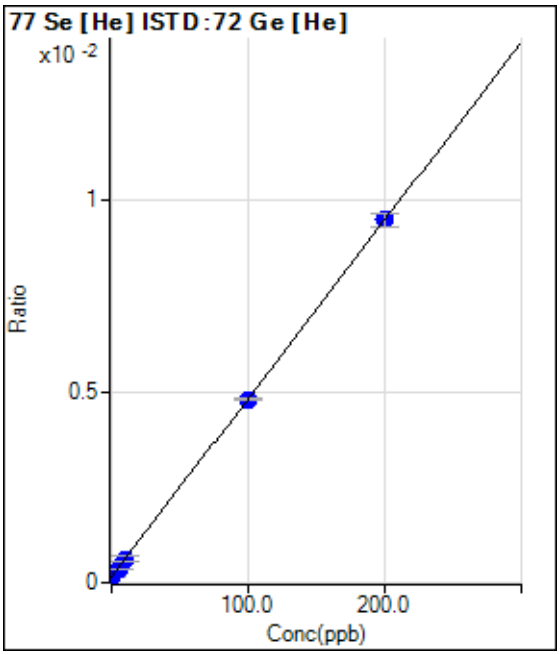
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	8652.91	0.0047	P	1.4
2	☐	2.000	3.453	9213.33	0.0050	P	3.3
3	☐	5.000	7.264	9510.19	0.0052	P	2.8
4	☐	10.000	11.355	9757.04	0.0055	P	0.9
5	☐	100.000	96.683	19748.07	0.0113	P	2.6
6	☐	200.000	201.520	32412.74	0.0184	P	3.2

y = 6.7586E-005 * x + 0.0047
R = 0.9997
DL = 3.035
BEC = 70.13

Weight: <None>
Min Conc: <None>

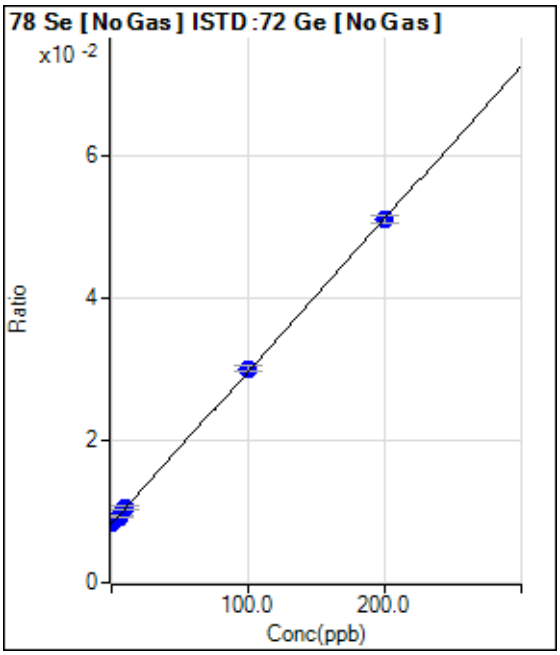


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	103.33	0.0002	P	21.7
2	☐	2.000	2.313	176.67	0.0003	P	24.6
3	☐	5.000	4.191	226.68	0.0004	P	9.3
4	☐	10.000	9.766	386.68	0.0006	P	24.1
5	☐	100.000	99.577	2977.05	0.0048	P	1.6
6	☐	200.000	200.240	6181.51	0.0095	P	3.6

y = 4.6598E-005 * x + 1.5765E-004
R = 1.0000
DL = 2.201
BEC = 3.383

Weight: <None>
Min Conc: <None>

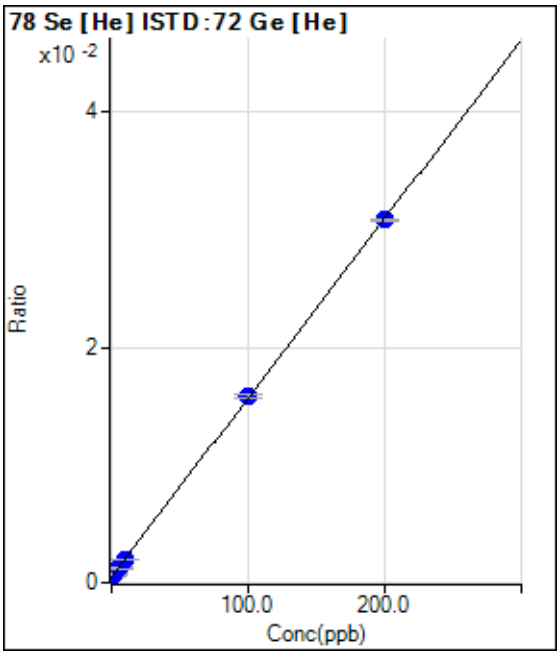
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	15088.74	0.0083	P	3.7
2	☐	2.000	1.821	16036.49	0.0087	P	3.1
3	☐	5.000	4.866	16927.50	0.0093	P	1.9
4	☐	10.000	10.955	18796.72	0.0106	P	4.3
5	☐	100.000	101.561	52613.02	0.0300	P	2.7
6	☐	200.000	199.177	90016.37	0.0510	P	2.1

y = 2.1446E-004 * x + 0.0083
R = 0.9999
DL = 4.26
BEC = 38.54

Weight: <None>
Min Conc: <None>

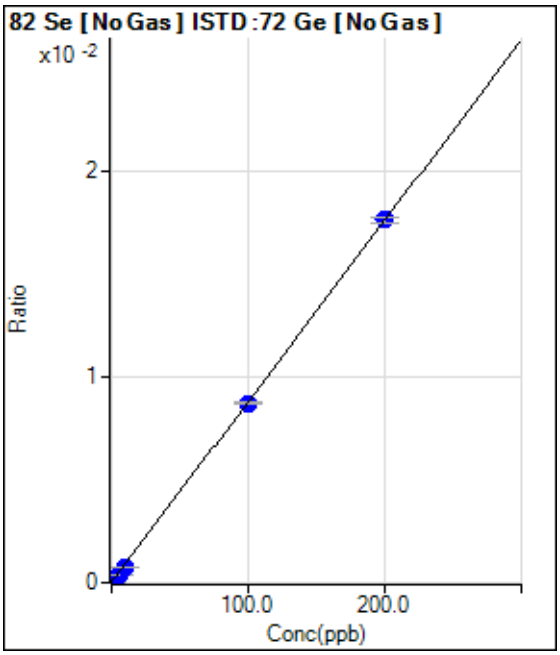


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	330.67	0.0005	P	5.5
2	☐	2.000	1.447	482.01	0.0007	P	13.1
3	☐	5.000	5.047	816.69	0.0013	P	7.8
4	☐	10.000	9.770	1256.06	0.0020	P	1.9
5	☐	100.000	101.177	9852.96	0.0159	P	1.9
6	☐	200.000	199.427	20072.26	0.0308	P	0.5

y = 1.5195E-004 * x + 5.0505E-004
R = 1.0000
DL = 0.5471
BEC = 3.324

Weight: <None>
Min Conc: <None>

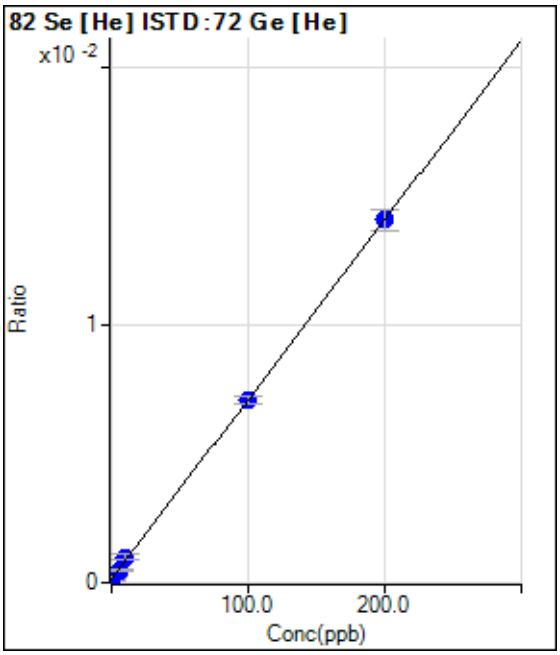
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	33.64	0.0000	P	156.9
2	☐	2.000	1.886	340.89	0.0002	P	14.6
3	☐	5.000	4.092	686.87	0.0004	P	12.2
4	☐	10.000	8.562	1363.53	0.0008	P	2.4
5	☐	100.000	99.217	15279.46	0.0087	P	0.9
6	☐	200.000	200.487	31091.02	0.0176	P	1.4

y = 8.7733E-005 * x + 1.8324E-005
R = 1.0000
DL = 0.9829
BEC = 0.2089

Weight: <None>
Min Conc: <None>

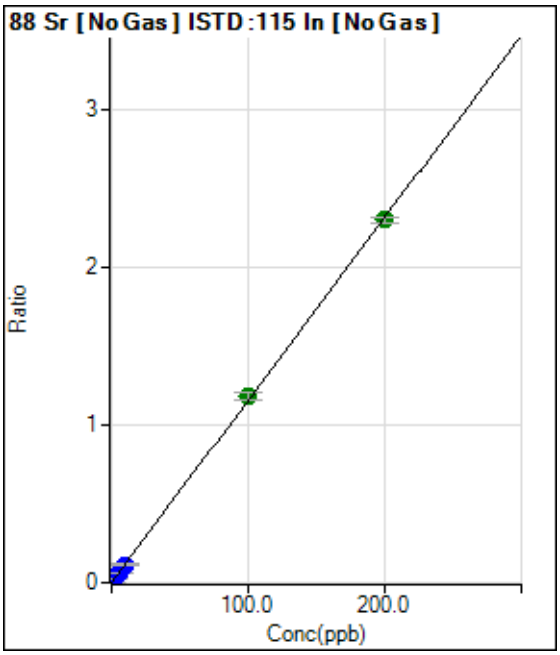


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	93.33	0.0001	P	51.2
2	☐	2.000	2.121	193.34	0.0003	P	25.8
3	☐	5.000	4.799	306.68	0.0005	P	12.2
4	☐	10.000	12.191	626.69	0.0010	P	20.9
5	☐	100.000	99.606	4397.48	0.0071	P	4.6
6	☐	200.000	200.091	9179.99	0.0141	P	5.7

y = 6.9718E-005 * x + 1.4287E-004
R = 0.9999
DL = 3.149
BEC = 2.049

Weight: <None>
Min Conc: <None>

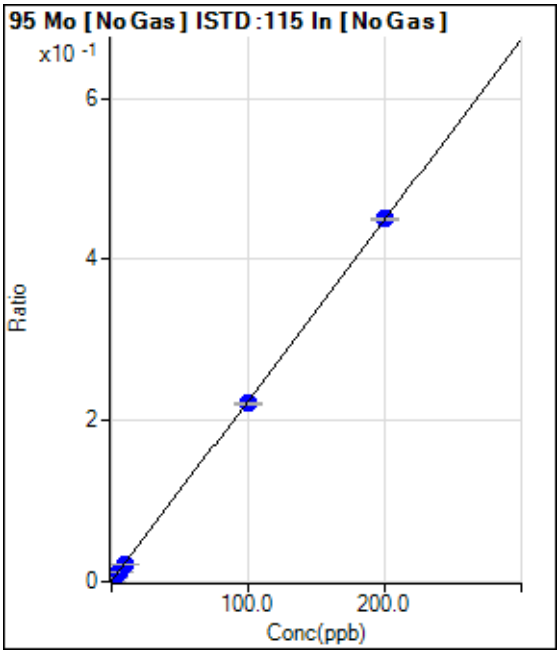
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1546.78	0.0007	P	3.5
2	☐	2.000	1.914	48277.17	0.0229	P	2.7
3	☐	5.000	4.881	120582.82	0.0572	P	2.8
4	☐	10.000	9.937	236395.38	0.1157	P	1.0
5	☐	100.000	102.235	2362200.02	1.1832	A	4.0
6	☐	200.000	198.889	4588039.52	2.3012	A	1.6

y = 0.0116 * x + 7.3602E-004
R = 0.9999
DL = 0.006602
BEC = 0.06363

Weight: <None>
Min Conc: <None>

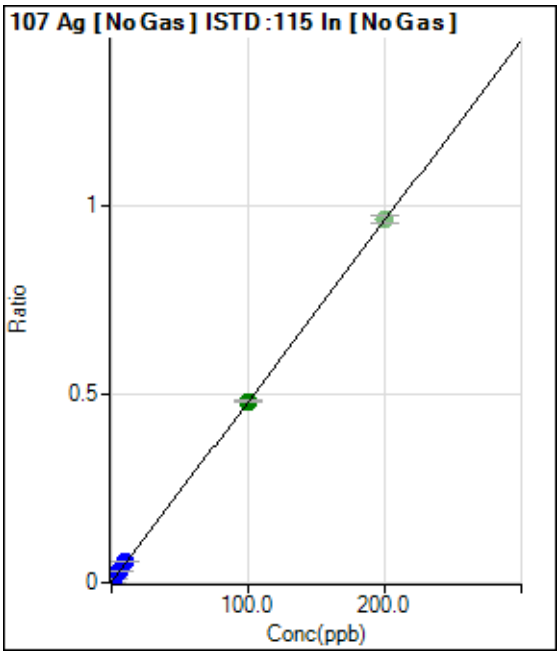


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	933.38	0.0004	P	12.4
2	☐	2.000	1.702	8993.18	0.0043	P	3.8
3	☐	5.000	4.623	22789.74	0.0108	P	0.4
4	☐	10.000	9.621	44979.39	0.0220	P	1.6
5	☐	100.000	98.708	442595.50	0.2217	P	1.1
6	☐	200.000	200.677	897737.77	0.4502	P	0.4

y = 0.0022 * x + 4.4422E-004
R = 1.0000
DL = 0.07345
BEC = 0.1982

Weight: <None>
Min Conc: <None>

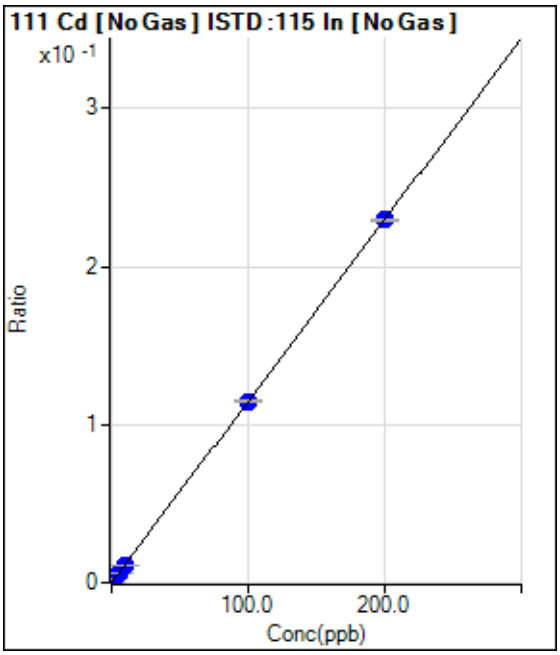
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2873.70	0.0014	P	4.9
2	☐	2.000	2.026	23400.98	0.0111	P	1.3
3	☐	5.000	5.673	60270.57	0.0286	P	1.4
4	☐	10.000	11.409	114623.39	0.0561	P	0.5
5	☐	100.000	99.825	958588.74	0.4801	A	1.1
6	☑	200.000		1919993.04	0.9630	A	2.0

y = 0.0048 * x + 0.0014
R = 0.9999
DL = 0.04216
BEC = 0.2851

Weight: <None>
Min Conc: <None>

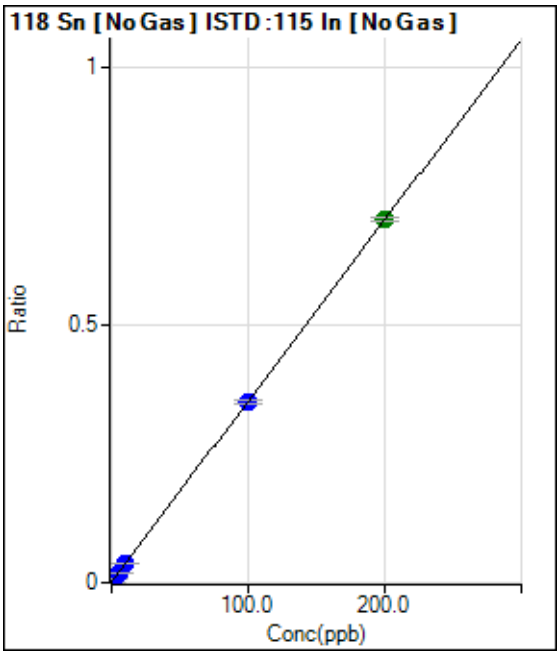


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	46.67	0.0000	P	44.3
2	☐	2.000	1.907	4664.26	0.0022	P	1.8
3	☐	5.000	5.125	12442.76	0.0059	P	2.0
4	☐	10.000	9.822	23063.87	0.0113	P	2.9
5	☐	100.000	100.017	229066.05	0.1147	P	1.1
6	☐	200.000	199.998	457412.37	0.2294	P	0.7

y = 0.0011 * x + 2.2203E-005
R = 1.0000
DL = 0.02574
BEC = 0.01936

Weight: <None>
Min Conc: <None>

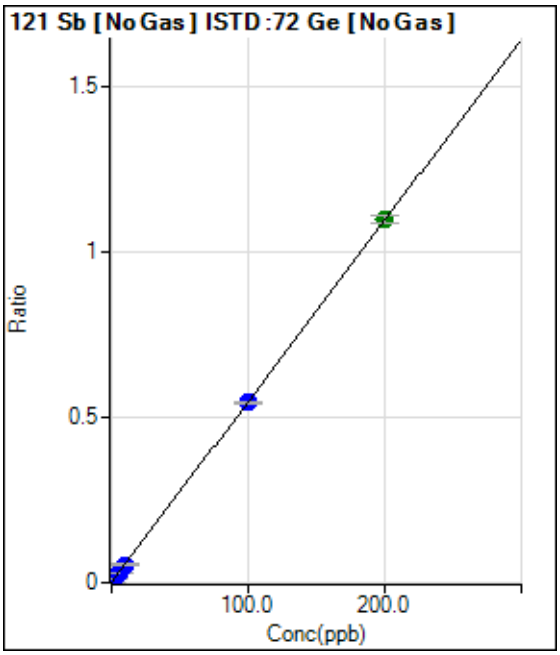
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2750.34	0.0013	P	3.8
2	☐	2.000	1.750	15716.30	0.0074	P	1.7
3	☐	5.000	4.731	37744.53	0.0179	P	3.0
4	☐	10.000	10.162	75496.08	0.0369	P	2.0
5	☐	100.000	99.503	699207.44	0.3502	P	1.9
6	☐	200.000	200.250	1402802.74	0.7035	A	1.0

y = 0.0035 * x + 0.0013
R = 1.0000
DL = 0.04278
BEC = 0.3733

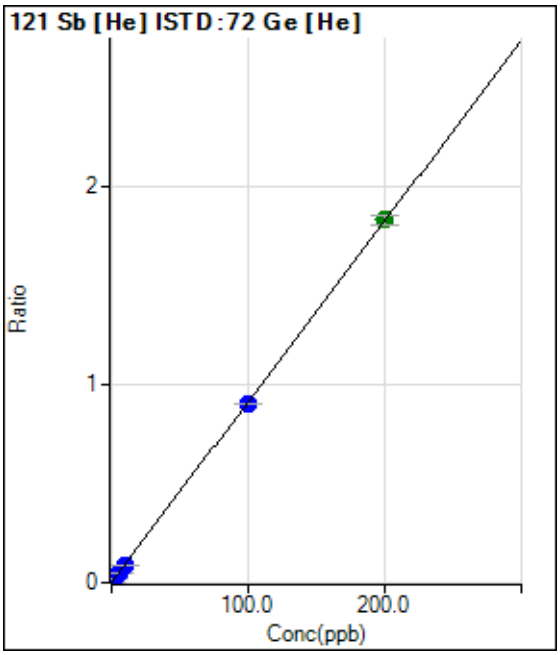
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1606.79	0.0009	P	9.4
2	☐	2.000	1.849	20376.11	0.0110	P	1.9
3	☐	5.000	4.786	49212.53	0.0271	P	1.6
4	☐	10.000	9.883	97325.86	0.0549	P	2.1
5	☐	100.000	99.298	952979.62	0.5441	P	0.4
6	☐	200.000	200.364	1936908.36	1.0970	A	2.0

y = 0.0055 * x + 8.8140E-004
R = 1.0000
DL = 0.04539
BEC = 0.1611

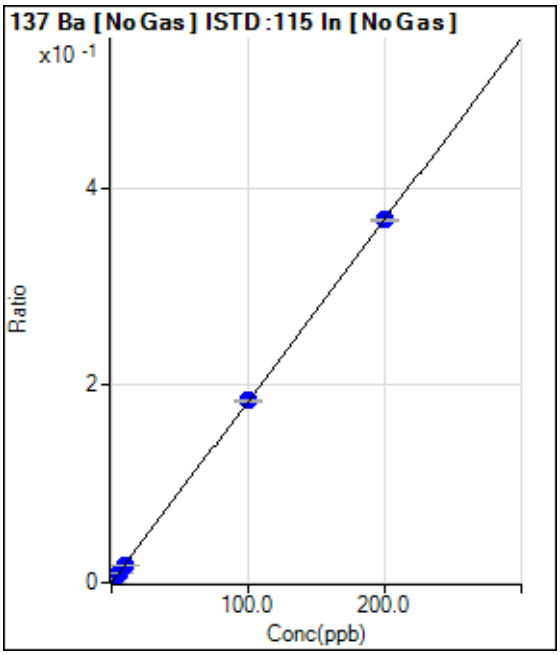
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	913.38	0.0014	P	3.7
2	☐	2.000	1.762	11595.30	0.0174	P	1.5
3	☐	5.000	4.673	28247.41	0.0440	P	1.4
4	☐	10.000	9.612	56180.34	0.0890	P	1.7
5	☐	100.000	98.634	558625.83	0.9003	P	0.1
6	☐	200.000	200.713	1192594.56	1.8306	A	2.3

y = 0.0091 * x + 0.0014
R = 1.0000
DL = 0.0169
BEC = 0.1531

Weight: <None>
Min Conc: <None>

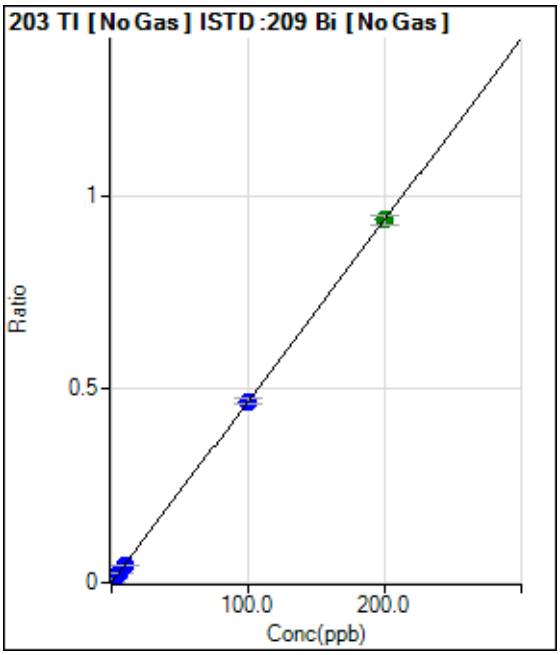


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	346.68	0.0002	P	20.2
2	☐	2.000	1.912	7759.10	0.0037	P	6.4
3	☐	5.000	4.930	19451.52	0.0092	P	2.4
4	☐	10.000	9.843	37300.54	0.0183	P	1.8
5	☐	100.000	100.138	367718.01	0.1842	P	0.5
6	☐	200.000	199.942	732892.31	0.3676	P	0.7

y = 0.0018 * x + 1.6486E-004
R = 1.0000
DL = 0.0544
BEC = 0.08972

Weight: <None>
Min Conc: <None>

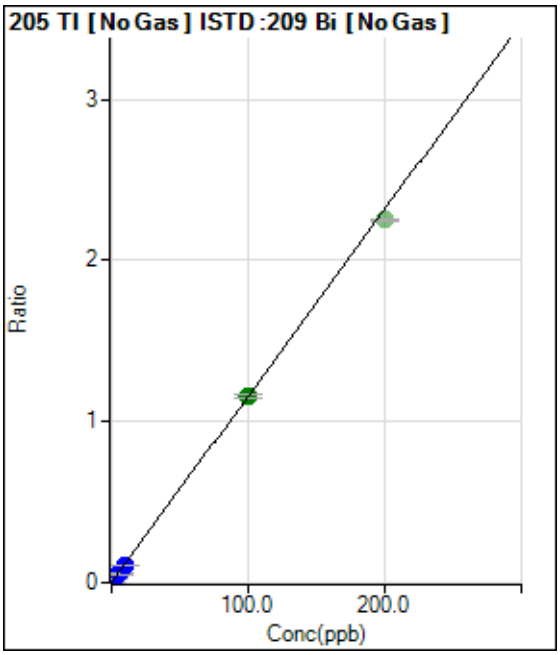
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	600.03	0.0003	P	21.7
2	☐	2.000	1.780	15433.10	0.0087	P	6.2
3	☐	5.000	4.772	39947.56	0.0227	P	1.4
4	☐	10.000	9.880	79234.06	0.0467	P	1.3
5	☐	100.000	99.882	780484.96	0.4686	P	3.0
6	☐	200.000	200.073	1612842.63	0.9383	A	2.6

y = 0.0047 * x + 3.4447E-004
R = 1.0000
DL = 0.0478
BEC = 0.07347

Weight: <None>
Min Conc: <None>

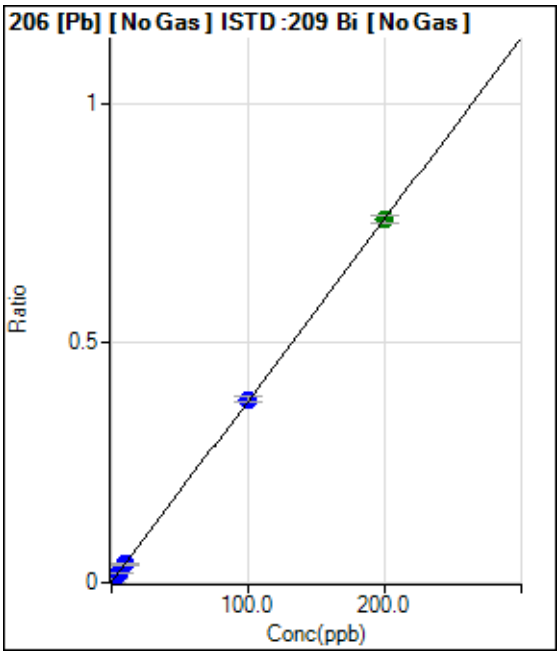


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1433.45	0.0008	P	6.5
2	☐	2.000	1.750	37443.31	0.0211	P	2.8
3	☐	5.000	4.603	95064.09	0.0541	P	2.6
4	☐	10.000	9.483	187652.69	0.1105	P	0.5
5	☐	100.000	100.077	1929480.70	1.1584	A	2.9
6	☑	200.000		3870241.71	2.2511	A	0.2

y = 0.0116 * x + 8.2180E-004
R = 1.0000
DL = 0.01381
BEC = 0.07104

Weight: <None>
Min Conc: <None>

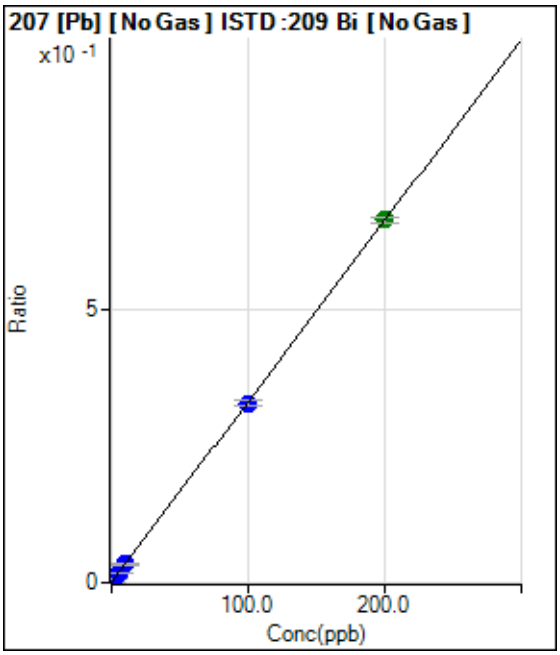
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1120.07	0.0006	P	7.9
2	☐	2.000	1.782	13143.83	0.0074	P	5.9
3	☐	5.000	4.957	34147.03	0.0194	P	4.4
4	☐	10.000	10.017	65535.93	0.0386	P	2.7
5	☐	100.000	100.696	636609.41	0.3822	P	2.9
6	☐	200.000	199.655	1301761.15	0.7572	A	2.2

y = 0.0038 * x + 6.4184E-004
R = 1.0000
DL = 0.03999
BEC = 0.1694

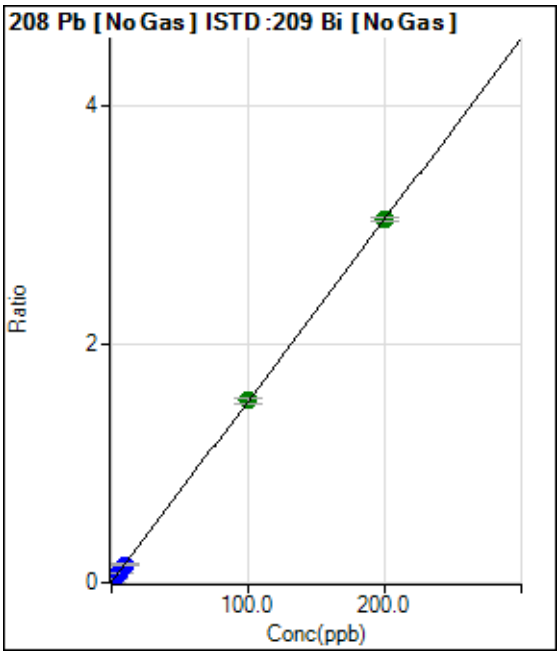
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	986.73	0.0006	P	4.8
2	☐	2.000	1.852	11875.82	0.0067	P	3.7
3	☐	5.000	4.839	29091.02	0.0165	P	3.6
4	☐	10.000	9.954	56786.18	0.0334	P	2.1
5	☐	100.000	99.139	546376.96	0.3281	P	3.2
6	☐	200.000	200.438	1139301.86	0.6627	A	1.4

y = 0.0033 * x + 5.6523E-004
R = 1.0000
DL = 0.02465
BEC = 0.1711

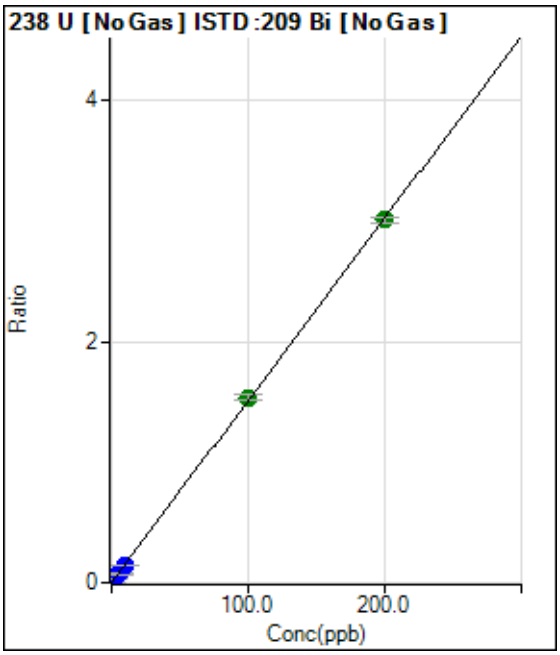
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4543.75	0.0026	P	2.8
2	☐	2.000	1.806	53455.71	0.0301	P	3.6
3	☐	5.000	4.873	134873.96	0.0767	P	3.3
4	☐	10.000	9.871	259363.77	0.1528	P	2.2
5	☐	100.000	100.272	2544795.09	1.5279	A	2.8
6	☐	200.000	199.876	5231145.16	3.0429	A	1.2

y = 0.0152 * x + 0.0026
R = 1.0000
DL = 0.01415
BEC = 0.1712

Weight: <None>
Min Conc: <None>

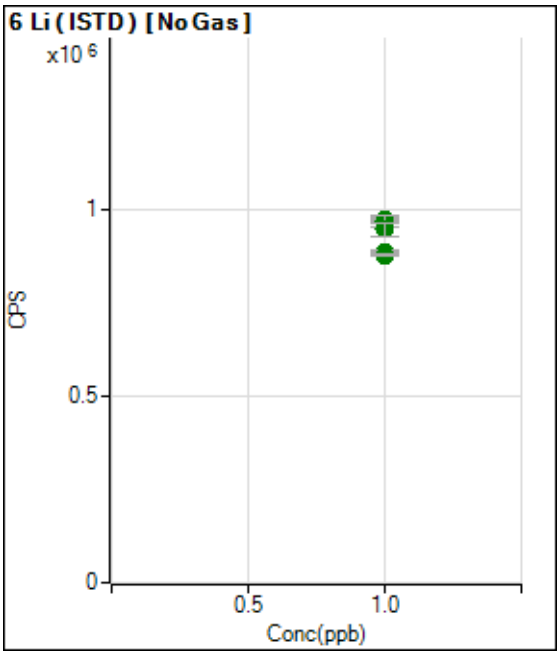


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2050.21	0.0012	P	7.0
2	☐	2.000	1.728	48516.66	0.0273	P	3.4
3	☐	5.000	4.711	127229.59	0.0724	P	3.2
4	☐	10.000	9.545	246937.11	0.1454	P	2.5
5	☐	100.000	101.594	2559319.39	1.5366	A	3.0
6	☐	200.000	199.235	5178629.82	3.0124	A	1.4

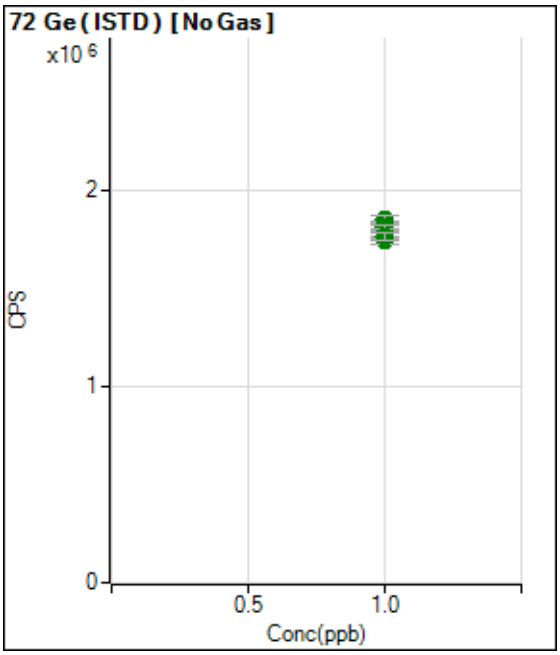
y = 0.0151 * x + 0.0012
R = 0.9999
DL = 0.01641
BEC = 0.07777

Weight: <None>
Min Conc: <None>

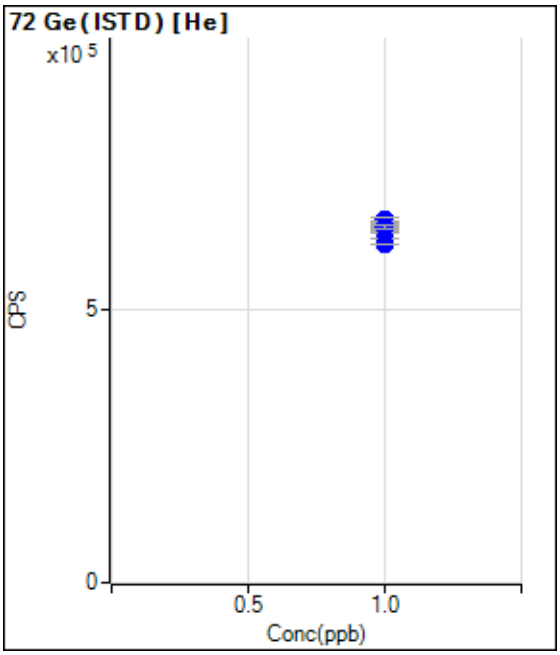
Calibration for 016_ICV.d



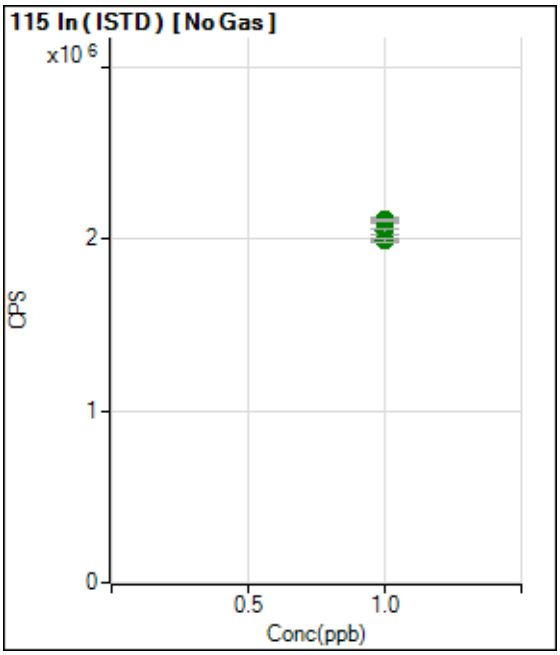
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		973737.00		A	0.7
2	☐	1.000		972712.94		A	1.4
3	☐	1.000		970321.98		A	3.6
4	☐	1.000		948344.51		A	3.6
5	☐	1.000		889601.43		A	0.3
6	☐	1.000		879366.47		A	1.0



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1826109.40		A	2.7
2	☐	1.000		1853390.44		A	2.2
3	☐	1.000		1818640.60		A	1.4
4	☐	1.000		1771537.37		A	1.6
5	☐	1.000		1751607.68		A	2.1
6	☐	1.000		1766146.28		A	2.3

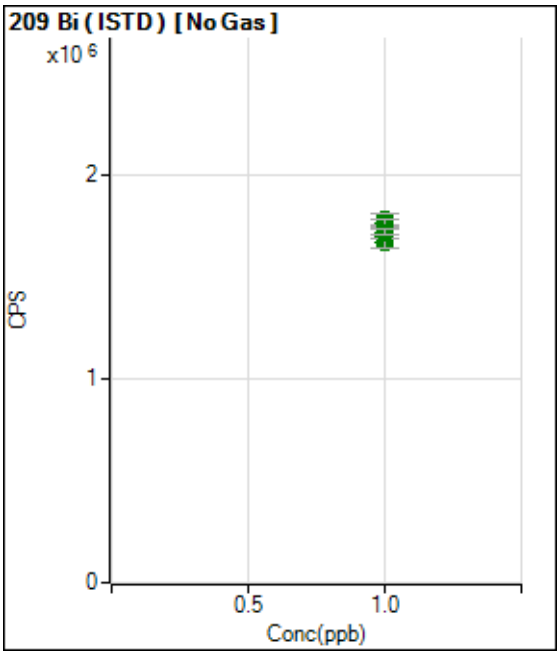


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		654894.70		P	1.1
2	☐	1.000		664528.92		P	1.1
3	☐	1.000		642245.17		P	0.6
4	☐	1.000		631307.37		P	0.2
5	☐	1.000		620500.90		P	0.1
6	☐	1.000		651526.41		P	0.6



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2101225.95		A	1.0
2	☐	1.000		2110995.88		A	1.3
3	☐	1.000		2108968.89		A	0.9
4	☐	1.000		2043853.54		A	1.4
5	☐	1.000		1996550.60		A	0.7
6	☐	1.000		1993914.27		A	1.2

Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1745333.10		A	1.5
2	☐	1.000		1778738.25		A	3.7
3	☐	1.000		1759003.77		A	2.8
4	☐	1.000		1698048.78		A	0.9
5	☐	1.000		1666378.94		A	2.6
6	☐	1.000		1719263.93		A	1.4

Sample Report

Sample Table

Sample Name	LLICV2
Data File Name	017LCV2.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T11:29:50-06:00
Sample Type	LLCCV2
Dilution	1
Comment	
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	1.766	1.766	10.96	93538	0.00	2	
Be	9	1	No Gas	1.833	1.833	7.45	6983	0.03	2	
V	51	2	He	1.587	1.587	2.52	16760	0.01	2	
Cr	52	2	He	1.621	1.621	9.24	16724	0.01	2	
Fe	56	2	He	185.277	185.277	3.31	1175696	0.02	200	
Se	78	2	He	1.586	1.586	8.56	508	0.31	2	
As	75	2	He	1.665	1.665	2.77	2060	0.08	2	
Ca	44	2	He	191.965	191.965	4.56	9674	1.98	200	
Na	23	2	He	199.709	199.709	1.61	281588	0.07	200	
Mg	24	2	He	203.282	203.282	1.46	133141	0.15	200	
K	39	2	He	184.217	184.217	1.10	412932	0.04	200	
Mn	55	2	He	2.000	2.000	0.48	10644	0.02	2	
Co	59	2	He	1.900	1.900	2.58	16116	0.01	2	
Ni	60	2	He	1.974	1.974	4.57	4264	0.05	2	
Cu	63	2	He	2.010	2.010	4.10	11925	0.02	2	
Zn	66	2	He	1.957	1.957	12.54	2604	0.08	2	
Al	27	2	He	1.551	1.551	14.67	1610	0.10	2	
B	11	1	No Gas	11.089	11.089	3.55	40131	0.03	10	
Al	27	1	No Gas	2.064	2.064	2.60	50348	0.00	2	
Si	28	1	No Gas	10.355	10.355	1.55	390189	0.00	10	
Ag	107	1	No Gas	2.121	2.121	3.92	25191	0.01	2	
Cd	111	1	No Gas	1.950	1.950	1.59	4924	0.04	2	
Sr	88	1	No Gas	1.883	1.883	2.40	49087	0.00	2	
Mo	95	1	No Gas	1.772	1.772	5.89	9627	0.02	2	
Sn	118	1	No Gas	1.853	1.853	2.47	17018	0.01	2	
Sb	121	1	No Gas	1.894	1.894	2.86	21231	0.01	2	
Ba	137	1	No Gas	1.837	1.837	4.06	7719	0.02	2	
Tl	205	1	No Gas	1.880	1.880	1.75	40523	0.00	2	
Tl	203	1	No Gas	1.937	1.937	0.92	17282	0.01	2	
Pb	208	1	No Gas	1.892	1.892	3.62	57529	0.00	2	
U	238	1	No Gas	1.822	1.822	0.89	52644	0.00	2	
Ca	43	2	He	201.879	201.879	6.98	587	34.41	200	
Sb	121	2	He	1.860	1.860	5.16	12490	0.01	2	
Ti	47	2	He	1.776	1.776	34.14	470	0.38	200	
Cu	63	1	No Gas	1.963	1.963	0.98	22713	0.01	2	
Se	82	1	No Gas	1.763	1.763	19.59	327	0.54	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	988334	3.41	973737	101.50	70	120	
Ge	72	2	He	680877	0.51	654895	103.97	70	120	
Ge	72	1	No Gas	1888395	1.54	1826109	103.41	70	120	

Sample Report

In	115	1	No Gas	2180453	2.11	2101226	103.77	70	120	
Bi	209	1	No Gas	1833531	0.87	1745333	105.05	70	120	

Sample Report

Sample Table

Sample Name	LLICV5
Data File Name	018LCV5.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T11:31:47-06:00
Sample Type	LLCCV5
Dilution	1
Comment	
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	4.836	4.836	2.40	132643	0.00	5	
Be	9	1	No Gas	4.740	4.740	1.92	17678	0.03	5	
V	51	2	He	4.637	4.637	0.95	33841	0.01	5	
Cr	52	2	He	4.649	4.649	1.07	35159	0.01	5	
Fe	56	2	He	509.642	509.642	1.43	3019021	0.02	500	
Se	78	2	He	4.565	4.565	12.58	816	0.56	5	
As	75	2	He	4.797	4.797	5.21	4989	0.10	5	
Ca	44	2	He	488.359	488.359	1.52	23370	2.09	500	
Na	23	2	He	513.725	513.725	0.73	616487	0.08	500	
Mg	24	2	He	520.734	520.734	1.13	339468	0.15	500	
K	39	2	He	484.560	484.560	1.81	690361	0.07	500	
Mn	55	2	He	4.901	4.901	0.96	25160	0.02	5	
Co	59	2	He	4.850	4.850	1.82	40838	0.01	5	
Ni	60	2	He	5.146	5.146	4.46	10571	0.05	5	
Cu	63	2	He	5.111	5.111	3.35	27502	0.02	5	
Zn	66	2	He	4.602	4.602	2.65	5465	0.08	5	
Al	27	2	He	4.827	4.827	2.36	3057	0.16	5	
B	11	1	No Gas	23.449	23.449	2.22	64171	0.04	25	
Al	27	1	No Gas	5.011	5.011	2.21	87269	0.01	5	
Si	28	1	No Gas	24.555	24.555	2.75	486281	0.01	25	
Ag	107	1	No Gas	5.669	5.669	1.43	62970	0.01	5	
Cd	111	1	No Gas	4.864	4.864	6.30	12323	0.04	5	
Sr	88	1	No Gas	4.887	4.887	2.24	126022	0.00	5	
Mo	95	1	No Gas	4.693	4.693	1.58	24132	0.02	5	
Sn	118	1	No Gas	4.760	4.760	4.03	39613	0.01	5	
Sb	121	1	No Gas	4.904	4.904	1.89	52281	0.01	5	
Ba	137	1	No Gas	4.775	4.775	1.85	19675	0.02	5	
Tl	205	1	No Gas	4.783	4.783	1.08	100530	0.00	5	
Tl	203	1	No Gas	4.926	4.926	1.59	42877	0.01	5	
Pb	208	1	No Gas	4.934	4.934	2.28	142065	0.00	5	
U	238	1	No Gas	4.743	4.743	2.00	133284	0.00	5	
Ca	43	2	He	492.003	492.003	15.87	1370	35.91	500	
Sb	121	2	He	4.831	4.831	1.40	30920	0.02	5	
Ti	47	2	He	5.168	5.168	6.48	1287	0.40	5	
Cu	63	1	No Gas	5.031	5.031	0.79	51628	0.01	5	
Se	82	1	No Gas	3.820	3.820	2.96	667	0.57	5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	979137	1.14	973737	100.55	70	120	
Ge	72	2	He	680757	0.24	654895	103.95	70	120	
Ge	72	1	No Gas	1886835	0.60	1826109	103.33	70	120	

Sample Report

In	115	1	No Gas	2201285	1.38	2101226	104.76	70	120	
Bi	209	1	No Gas	1829877	2.03	1745333	104.84	70	120	

Initial Calibration Blank (ICB) Report

Sample Table

Sample Name	ICB
Data File Name	019_ICB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T11:33:45-06:00
Sample Type	ICB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	-0.401	-37.6	67742	0.7	0.5	
Be	9	1	No Gas	-0.016	-29.1	98	20.5	0.5	
V	51	2	He	-0.351	-2.5	5945	0.6	2.5	
Cr	52	2	He	-0.322	-17.8	4938	7.0	2.5	
Fe	56	2	He	-17.710	-0.2	22178	1.0	100	
Se	78	2	He	-0.371	-51.8	308	6.3	1	
As	75	2	He	-0.248	-13.8	272	12.1	2.5	
Ca	44	2	He	-2.093	-16.4	710	2.4	100	
Na	23	2	He	-8.163	-2.9	60320	0.6	100	
Mg	24	2	He	-0.312	-61.5	790	15.8	100	
K	39	2	He	-26.903	-7.6	219611	0.7	100	
Mn	55	2	He	-0.028	-38.8	493	11.5	2.5	
Co	59	2	He	0.006	30.9	243	6.3	2.5	
Ni	60	2	He	-0.111	-9.5	117	17.8	2.5	
Cu	63	2	He	-0.079	-14.6	1443	3.9	1	
Zn	66	2	He	-0.180	-15.5	293	10.4	2.5	
Al	27	2	He	-0.559	-45.0	683	16.1	5	
B	11	1	No Gas	-1.904	-8.1	14825	4.3	0.5	
Al	27	1	No Gas	-0.415	-9.1	19708	2.6	5	
Si	28	1	No Gas	-3.243	-58.2	304960	2.3	10	
Ag	107	1	No Gas	-0.235	-1.5	527	6.1	2.5	
Cd	111	1	No Gas	-0.008	-86.6	30	57.7	1	
Sr	88	1	No Gas	-0.028	-20.8	907	17.5	2.5	
Mo	95	1	No Gas	-0.182	-1.3	83	13.9	2.5	
Sn	118	1	No Gas	-0.180	-11.9	1507	10.1	5	
Sb	121	1	No Gas	-0.082	-16.5	840	16.4	2.5	
Ba	137	1	No Gas	-0.038	-44.8	213	31.2	2.5	
Tl	205	1	No Gas	-0.037	-16.7	750	18.9	1	
Tl	203	1	No Gas	-0.035	-2.0	337	1.7	1	
Pb	208	1	No Gas	-0.099	-1.6	2023	3.8	2.5	
U	238	1	No Gas	-0.067	-3.1	297	18.6	2.5	
Ca	43	2	He	-0.671	-950.8	40	43.3	100	
Sb	121	2	He	-0.078	-13.0	470	13.3	2.5	
Ti	47	2	He	-0.145	-32.9	7	173.2	2.5	
Se	82	1	No Gas	-0.496	-101.2	-50	-173.5	1	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1028241	2.67	973737	105.60	70	120	

Initial Calibration Blank (ICB) Report

Ge	72	2	He	686421	0.25	654895	104.81	70	120	
Ge	72	1	No Gas	1935263	2.03	1826109	105.98	70	120	
In	115	1	No Gas	2229069	1.24	2101226	106.08	70	120	
Bi	209	1	No Gas	1848938	1.67	1745333	105.94	70	120	

Interference Check Solution A (ICS-A) Report

Sample Table

Sample Name	ICSA
Data File Name	021ICSA.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T11:39:11-06:00
Sample Type	ICSA
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.164	21.6	64522	1.3	0	ICSA Main CR1 Failed
Be	9	1	No Gas	-0.029	-18.9	40	45.1	0	ICSA Main CR1 Failed
V	51	2	He	0.435	12.4	9638	1.7	0	ICSA Main CR1 Failed
Cr	52	2	He	1.980	7.5	17692	4.1	0	ICSA Main CR1 Failed
Fe	56	2	He	99548.137	1.4	529488019	0.8	0	
Se	78	2	He	-0.346	-83.8	288	8.5	0	ICSA Main CR1 Failed
As	75	2	He	-0.029	-41.0	444	3.1	0	ICSA Main CR1 Failed
Ca	44	2	He	97039.099	2.5	4196553	1.3	0	
Na	23	2	He	98661.522	2.1	98527105	0.9	0	
Mg	24	2	He	97317.416	1.7	59189791	0.9	0	
K	39	2	He	99709.965	1.2	86447495	2.4	0	
Mn	55	2	He	0.521	7.2	3030	5.1	0	ICSA Main CR1 Failed
Co	59	2	He	0.195	4.6	1710	3.3	0	ICSA Main CR1 Failed
Ni	60	2	He	0.551	13.4	1340	9.8	0	ICSA Main CR1 Failed
Cu	63	2	He	0.218	22.5	2737	8.0	0	ICSA Main CR1 Failed
Zn	66	2	He	1.059	5.6	1527	4.9	0	ICSA Main CR1 Failed
Al	27	2	He	97362.330	0.8	40250160	0.5	0	
B	11	1	No Gas	-0.874	-8.9	14493	1.5	0	ICSA Main CR1 Failed
Al	27	1	No Gas	96844.131	0.4	1131299530	1.2	0	
Si	28	1	No Gas	28.239	4.2	476196	0.8	0	
Ag	107	1	No Gas	-0.218	-8.5	620	29.2	0	ICSA Main CR1 Failed
Cd	111	1	No Gas	2.501	9.0	5631	8.3	0	
Sr	88	1	No Gas	0.860	2.2	20810	2.4	0	ICSA Main CR1 Failed
Mo	95	1	No Gas	1990.236	1.7	8693972	1.8	0	
Sn	118	1	No Gas	-0.111	-36.7	1793	15.4	0	ICSA Main CR1 Failed
Sb	121	1	No Gas	-0.001	-798.2	1537	7.9	0	ICSA Main CR1 Failed
Ba	137	1	No Gas	0.586	4.8	2420	4.2	0	ICSA Main CR1 Failed
Tl	205	1	No Gas	-0.046	-15.0	470	25.9	0	ICSA Main CR1 Failed
Tl	203	1	No Gas	-0.046	-12.0	207	20.1	0	ICSA Main CR1 Failed
Pb	208	1	No Gas	-0.061	-12.2	2643	6.2	0	ICSA Main CR1 Failed
U	238	1	No Gas	-0.057	-3.3	503	9.4	0	ICSA Main CR1 Failed
Ca	43	2	He	98000.227	1.2	247693	0.5	0	
Sb	121	2	He	0.015	173.1	973	14.0	0	ICSA Main CR1 Failed
Ti	47	2	He	2012.324	1.1	453795	0.5	0	
Se	82	1	No Gas	-0.661	-172.8	-71	-251.3	0	ICSA Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	878824	1.61	973737	90.25	70	120	
Ge	72	2	He	637055	1.26	654895	97.28	70	120	
Ge	72	1	No Gas	1757408	1.18	1826109	96.24	70	120	
In	115	1	No Gas	1948756	1.04	2101226	92.74	70	120	
Bi	209	1	No Gas	1577129	0.79	1745333	90.36	70	120	

Interference Check Solution AB (ICS-AB) Report

Sample Table

Sample Name	ICSAB
Data File Name	022ICSB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T11:41:11-06:00
Sample Type	ICSB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Li	7	1	No Gas	102.396	1.047	1166416	0.85	100	102.4	180	120	ICSB Main CR1 Failed
Be	9	1	No Gas	107.544	1.498	331089	0.13	100	107.5	80	120	
V	51	2	He	100.593	0.724	528074	0.61	100	100.6	80	120	
Cr	52	2	He	101.026	0.880	574613	0.55	100	101.0	80	120	
Fe	56	2	He	112697.003	2.076	591958845	1.69	100	112697.0	80	120	ICSB Main CR1 Failed
Se	78	2	He	105.640	0.189	10417	1.05	100	105.6	80	120	
As	75	2	He	105.104	0.635	91316	1.21	100	105.1	80	120	
Ca	44	2	He	111021.518	3.330	4741405	2.47	100	111021.5	80	120	ICSB Main CR1 Failed
Na	23	2	He	110782.837	1.522	109263665	1.67	100	110782.8	80	120	ICSB Main CR1 Failed
Mg	24	2	He	109874.995	1.940	65994411	0.81	100	109875.0	80	120	ICSB Main CR1 Failed
K	39	2	He	111578.996	1.296	95490192	0.49	100	111579.0	80	120	
Mn	55	2	He	101.086	0.825	468097	0.47	100	101.1	80	120	
Co	59	2	He	98.346	1.726	761791	0.93	100	98.3	80	120	
Ni	60	2	He	100.942	1.256	185840	0.97	100	100.9	80	120	
Cu	63	2	He	98.471	0.316	458752	0.88	100	98.5	80	120	
Zn	66	2	He	103.249	0.456	103695	0.83	100	103.2	80	120	
Al	27	2	He	99687.260	1.596	40696457	0.53	100	99687.3	80	120	ICSB Main CR1 Failed
B	11	1	No Gas	521.555	2.175	871905	1.04	100	521.6	80	120	
Al	27	1	No Gas	97222.658	1.593	1142354916	0.11	100	97222.7	80	120	ICSB Main CR1 Failed
Si	28	1	No Gas	528.714	1.880	3663493	0.53	100	528.7	80	120	
Ag	107	1	No Gas	107.202	9.870	999792	9.60	100	107.2	80	120	
Cd	111	1	No Gas	103.762	0.571	230440	1.08	100	103.8	80	120	
Sr	88	1	No Gas	105.736	2.396	2368773	1.71	100	105.7	80	120	
Mo	95	1	No Gas	2174.692	0.599	9437497	1.16	100	2174.7	80	120	ICSB Main CR1 Failed
Sn	118	1	No Gas	101.295	0.841	690181	0.69	100	101.3	80	120	
Sb	121	1	No Gas	98.555	2.964	954460	1.54	100	98.6	80	120	
Ba	137	1	No Gas	103.804	0.671	369610	1.28	100	103.8	80	120	
Tl	205	1	No Gas	103.644	1.638	1884732	1.08	100	103.6	80	120	
Tl	203	1	No Gas	101.344	1.352	763609	1.28	100	101.3	80	120	
Pb	208	1	No Gas	103.265	1.355	2526815	0.83	100	103.3	80	120	
U	238	1	No Gas	107.712	2.304	2616295	2.04	100	107.7	80	120	
Ca	43	2	He	111020.628	0.588	277122	0.67	100	111020.6	80	120	ICSB Main CR1 Failed
Sb	121	2	He	100.141	2.216	574955	1.48	100	100.1	80	120	
Ti	47	2	He	2174.423	1.435	484237	0.36	100	2174.4	80	120	ICSB Main CR1 Failed
Cu	63	1	No Gas	96.348	2.257	855261	0.76	100	96.3	80	120	
Se	82	1	No Gas	101.246	2.279	15733	1.18	100	101.2	80	120	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	814943	1.54	973737	83.69	70	120	
Ge	72	2	He	629132	1.15	654895	96.07	70	120	
Ge	72	1	No Gas	1767945	1.48	1826109	96.81	70	120	
In	115	1	No Gas	1935929	0.68	2101226	92.13	70	120	
Bi	209	1	No Gas	1606066	0.82	1745333	92.02	70	120	

Calibration Blank Report

Sample Table

Sample Name	CAL BLK
Data File Name	136CALB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:27:59-06:00
Sample Type	CalBlk
Level	1
Dilution	1
Comment	

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	7	1	No Gas	63772	0.00
Be	9	1	No Gas	112	18.08
V	51	2	He	15993	0.01
Cr	52	2	He	6885	0.09
Fe	56	2	He	138623	0.00
Se	78	2	He	288	2.54
As	75	2	He	630	0.81
Ca	44	2	He	767	0.87
Na	23	2	He	121324	0.00
Mg	24	2	He	1180	0.38
K	39	2	He	243028	0.00
Mn	55	2	He	677	0.70
Co	59	2	He	133	17.18
Ni	60	2	He	350	3.27
Cu	63	2	He	1793	0.09
Zn	66	2	He	553	2.47
Al	27	2	He	1053	0.45
B	11	1	No Gas	6982	0.05
Al	27	1	No Gas	28376	0.00
Si	28	1	No Gas	267185	0.00
Ag	107	1	No Gas	2747	0.06
Cd	111	1	No Gas	37	171.77
Sr	88	1	No Gas	2210	0.12
Mo	95	1	No Gas	1017	0.64
Sn	118	1	No Gas	2964	0.05
Sb	121	1	No Gas	1190	1.18
Ba	137	1	No Gas	520	1.28
Tl	205	1	No Gas	1453	0.35
Tl	203	1	No Gas	660	1.84
Pb	208	1	No Gas	3754	0.10
U	238	1	No Gas	2280	0.37
Ca	43	2	He	57	47.57
Sb	121	2	He	673	0.67
Ti	47	2	He	43	81.35
Cu	63	1	No Gas	4341	0.10

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD

Calibration Blank Report

Li	6	1	No Gas	1043273	3.27
Ge	72	2	He	757744	1.29
Ge	72	1	No Gas	2169252	2.29
In	115	1	No Gas	2581354	3.20

Calibration Blank Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Bi	209	1	No Gas	2148397	1.24

Calibration Standard Report

Sample Table

Sample Name	2/10/200
Data File Name	137CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:29:56-06:00
Sample Type	CalStd
Level	2
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	7139	0.01
V	51	2	He	27123	0.00
Cr	52	2	He	19013	0.02
Fe	56	2	He	1296052	0.00
Se	78	2	He	472	1.09
As	75	2	He	2375	0.10
Ca	44	2	He	10097	0.02
Na	23	2	He	348758	0.00
Mg	24	2	He	143273	0.00
K	39	2	He	438689	0.00
Mn	55	2	He	11288	0.05
Co	59	2	He	17778	0.01
Ni	60	2	He	4331	0.08
Cu	63	2	He	12903	0.01
Zn	66	2	He	2740	0.12
Al	27	2	He	1900	0.38
B	11	1	No Gas	26964	0.01
Al	27	1	No Gas	56592	0.00
Si	28	1	No Gas	344920	0.00
Ag	107	1	No Gas	28080	0.01
Cd	111	1	No Gas	5658	0.11
Sr	88	1	No Gas	58136	0.00
Mo	95	1	No Gas	10985	0.01
Sn	118	1	No Gas	18870	0.00
Sb	121	1	No Gas	24116	0.01
Ba	137	1	No Gas	9143	0.03
Tl	205	1	No Gas	47638	0.00
Tl	203	1	No Gas	19492	0.00
Pb	208	1	No Gas	65311	0.00
U	238	1	No Gas	61582	0.00
Ca	43	2	He	657	2.55
Sb	121	2	He	13250	0.02
Cu	63	1	No Gas	25584	0.01

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1047996	1.69	1043273	100.45	70	120	
Ge	72	2	He	760402	0.36	757744	100.35	70	120	
Ge	72	1	No Gas	2186783	1.16	2169252	100.81	70	120	

Calibration Standard Report

In	115	1	No Gas	2613887	2.17	2581354	101.26	70	120	
Bi	209	1	No Gas	2182368	1.75	2148397	101.58	70	120	

Calibration Standard Report

Sample Table

Sample Name	5/25/500
Data File Name	138CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:31:54-06:00
Sample Type	CalStd
Level	3
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	17816	0.01
V	51	2	He	45778	0.00
Cr	52	2	He	40012	0.01
Fe	56	2	He	3250955	0.00
Se	78	2	He	852	0.31
As	75	2	He	5550	0.02
Ca	44	2	He	24773	0.01
Na	23	2	He	711065	0.00
Mg	24	2	He	365209	0.00
K	39	2	He	745612	0.00
Mn	55	2	He	27742	0.00
Co	59	2	He	45296	0.00
Ni	60	2	He	11475	0.04
Cu	63	2	He	30628	0.00
Zn	66	2	He	6545	0.02
Al	27	2	He	3280	0.06
B	11	1	No Gas	58725	0.00
Al	27	1	No Gas	96892	0.00
Si	28	1	No Gas	458227	0.00
Ag	107	1	No Gas	72864	0.00
Cd	111	1	No Gas	14518	0.02
Sr	88	1	No Gas	145680	0.00
Mo	95	1	No Gas	27579	0.01
Sn	118	1	No Gas	46181	0.00
Sb	121	1	No Gas	60466	0.00
Ba	137	1	No Gas	23401	0.00
Tl	205	1	No Gas	120440	0.00
Tl	203	1	No Gas	51101	0.00
Pb	208	1	No Gas	166856	0.00
U	238	1	No Gas	159085	0.00
Ca	43	2	He	1360	0.42
Sb	121	2	He	33951	0.00
Cu	63	1	No Gas	59534	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1032815	0.73	1043273	99.00	70	120	
Ge	72	2	He	757859	0.56	757744	100.02	70	120	
Ge	72	1	No Gas	2181292	0.88	2169252	100.56	70	120	

Calibration Standard Report

In	115	1	No Gas	2593057	2.99	2581354	100.45	70	120	
Bi	209	1	No Gas	2197575	1.32	2148397	102.29	70	120	

Calibration Standard Report

Sample Table

Sample Name	10/50/100
Data File Name	139CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:33:52-06:00
Sample Type	CalStd
Level	4
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	36095	0.00
V	51	2	He	74494	0.00
Cr	52	2	He	72119	0.00
Fe	56	2	He	6400672	0.00
Se	78	2	He	1405	0.21
As	75	2	He	10464	0.01
Ca	44	2	He	49941	0.01
Na	23	2	He	1290842	0.00
Mg	24	2	He	723515	0.00
K	39	2	He	1231621	0.00
Mn	55	2	He	54161	0.00
Co	59	2	He	90358	0.00
Ni	60	2	He	22756	0.02
Cu	63	2	He	58747	0.00
Zn	66	2	He	13247	0.04
Al	27	2	He	5588	0.08
B	11	1	No Gas	112276	0.00
Al	27	1	No Gas	174280	0.00
Si	28	1	No Gas	650481	0.00
Ag	107	1	No Gas	141865	0.00
Cd	111	1	No Gas	29206	0.00
Sr	88	1	No Gas	291722	0.00
Mo	95	1	No Gas	54773	0.00
Sn	118	1	No Gas	94334	0.00
Sb	121	1	No Gas	118942	0.00
Ba	137	1	No Gas	46443	0.00
Tl	205	1	No Gas	241336	0.00
Tl	203	1	No Gas	101076	0.00
Pb	208	1	No Gas	333873	0.00
U	238	1	No Gas	317198	0.00
Ca	43	2	He	2950	0.18
Sb	121	2	He	66606	0.00
Cu	63	1	No Gas	111881	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1030202	3.21	1043273	98.75	70	120	
Ge	72	2	He	755130	1.22	757744	99.66	70	120	
Ge	72	1	No Gas	2157319	1.61	2169252	99.45	70	120	

Calibration Standard Report

In	115	1	No Gas	2551959	1.22	2581354	98.86	70	120	
Bi	209	1	No Gas	2182284	0.89	2148397	101.58	70	120	

Calibration Standard Report

Sample Table

Sample Name	100/500/10K
Data File Name	140CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:35:49-06:00
Sample Type	CalStd
Level	5
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	366450	0.00
V	51	2	He	611811	0.00
Cr	52	2	He	671609	0.00
Fe	56	2	He	63528579	0.00
Se	78	2	He	11947	0.01
As	75	2	He	102834	0.00
Ca	44	2	He	488537	0.00
Na	23	2	He	11841220	0.00
Mg	24	2	He	6994780	0.00
K	39	2	He	10062145	0.00
Mn	55	2	He	549496	0.00
Co	59	2	He	910994	0.00
Ni	60	2	He	225808	0.00
Cu	63	2	He	568205	0.00
Zn	66	2	He	123286	0.00
Al	27	2	He	49873	0.00
B	11	1	No Gas	1025605	0.00
Al	27	1	No Gas	1474041	0.00
Si	28	1	No Gas	4319733	0.00
Ag	107	1	No Gas	1216023	0.00
Cd	111	1	No Gas	298773	0.00
Sr	88	1	No Gas	2913762	0.00
Mo	95	1	No Gas	557357	0.00
Sn	118	1	No Gas	890411	0.00
Sb	121	1	No Gas	1247122	0.00
Ba	137	1	No Gas	468339	0.00
Tl	205	1	No Gas	2609814	0.00
Tl	203	1	No Gas	1049192	0.00
Pb	208	1	No Gas	3385342	0.00
U	238	1	No Gas	3441583	0.00
Ca	43	2	He	29158	0.00
Sb	121	2	He	683289	0.00
Cu	63	1	No Gas	1077386	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	980668	1.58	1043273	94.00	70	120	
Ge	72	2	He	742971	1.23	757744	98.05	70	120	
Ge	72	1	No Gas	2133415	1.97	2169252	98.35	70	120	

Calibration Standard Report

In	115	1	No Gas	2521539	1.36	2581354	97.68	70	120	
Bi	209	1	No Gas	2154571	1.39	2148397	100.29	70	120	

Calibration Standard Report

Sample Table

Sample Name	200/1000/20K
Data File Name	141CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:37:41-06:00
Sample Type	CalStd
Level	6
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	688689	0.00
V	51	2	He	1170385	0.00
Cr	52	2	He	1303345	0.00
Fe	56	2	He	121228978	0.00
Se	78	2	He	22387	0.00
As	75	2	He	193304	0.00
Ca	44	2	He	951492	0.00
Na	23	2	He	22345032	0.00
Mg	24	2	He	13389141	0.00
K	39	2	He	18925239	0.00
Mn	55	2	He	1079839	0.00
Co	59	2	He	1807361	0.00
Ni	60	2	He	422694	0.00
Cu	63	2	He	1079162	0.00
Zn	66	2	He	232648	0.00
Al	27	2	He	90064	0.00
B	11	1	No Gas	1935008	0.00
Al	27	1	No Gas	2624499	0.00
Si	28	1	No Gas	7327337	0.00
Ag	107	1	No Gas	2320154	0.00
Cd	111	1	No Gas	575304	0.00
Sr	88	1	No Gas	5567604	0.00
Mo	95	1	No Gas	1091683	0.00
Sn	118	1	No Gas	1793799	0.00
Sb	121	1	No Gas	2415585	0.00
Ba	137	1	No Gas	909408	0.00
Tl	205	1	No Gas	4941497	0.00
Tl	203	1	No Gas	2106337	0.00
Pb	208	1	No Gas	6772721	0.00
U	238	1	No Gas	6719539	0.00
Ca	43	2	He	56155	0.00
Sb	121	2	He	1352771	0.00
Cu	63	1	No Gas	2037402	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	954572	2.70	1043273	91.50	70	120	
Ge	72	2	He	722502	0.34	757744	95.35	70	120	
Ge	72	1	No Gas	2095837	2.27	2169252	96.62	70	120	

Calibration Standard Report

In	115	1	No Gas	2483997	0.99	2581354	96.23	70	120	
Bi	209	1	No Gas	2162560	1.62	2148397	100.66	70	120	

Initial Calibration Verification (ICV) Report

Sample Table

Sample Name	ICCV
Data File Name	143_ICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:41:28-06:00
Sample Type	ICV
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Li	7	1	No Gas	105.254	3.711	1425503	2.24	100	105.3	90	110	
Be	9	1	No Gas	99.985	1.925	369078	0.52	100	100.0	90	110	
V	51	2	He	99.976	0.772	615129	0.25	100	100.0	90	110	
Cr	52	2	He	99.628	1.528	676357	0.63	100	99.6	90	110	
Fe	56	2	He	10264.009	1.009	64826676	0.24	10000	102.6	90	110	
Se	78	2	He	102.223	1.607	12067	0.85	100	102.2	90	110	
As	75	2	He	103.069	1.179	104276	1.68	100	103.1	90	110	
Ca	44	2	He	10075.468	1.129	497309	0.21	10000	100.8	90	110	
Na	23	2	He	10218.659	2.192	11959733	1.42	10000	102.2	90	110	
Mg	24	2	He	10246.129	1.387	7138772	1.56	10000	102.5	90	110	
K	39	2	He	10154.256	1.521	10127750	0.92	10000	101.5	90	110	
Mn	55	2	He	99.512	0.444	556332	0.55	100	99.5	90	110	
Co	59	2	He	99.437	1.474	928262	0.59	100	99.4	90	110	
Ni	60	2	He	103.723	0.979	229275	0.50	100	103.7	90	110	
Cu	63	2	He	102.733	2.285	578341	1.42	100	102.7	90	110	
Zn	66	2	He	102.276	1.325	124373	1.06	100	102.3	90	110	
Al	27	2	He	103.746	2.443	49589	1.94	100	103.7	90	110	
B	11	1	No Gas	489.409	0.976	1017202	2.02	500	97.9	90	110	
Al	27	1	No Gas	107.361	1.387	1486517	0.62	100	107.4	90	110	
Si	28	1	No Gas	578.955	4.399	4572799	2.15	500	115.8	90	110	ICV Main CR1 Failed
Ag	107	1	No Gas	105.986	1.646	1273362	1.40	100	106.0	90	110	
Cd	111	1	No Gas	102.408	0.756	304181	1.19	100	102.4	90	110	
Sr	88	1	No Gas	103.298	2.232	2974145	0.37	100	103.3	90	110	
Mo	95	1	No Gas	100.760	1.826	566193	0.17	100	100.8	90	110	
Sn	118	1	No Gas	98.220	1.984	902505	0.36	100	98.2	90	110	
Sb	121	1	No Gas	101.387	0.744	1261235	1.42	100	101.4	90	110	
Ba	137	1	No Gas	103.209	1.151	483885	0.71	100	103.2	90	110	
Tl	205	1	No Gas	106.189	0.091	2673508	1.68	100	106.2	90	110	
Tl	203	1	No Gas	102.032	0.988	1081837	0.69	100	102.0	90	110	
Pb	208	1	No Gas	103.162	1.227	3520292	0.54	100	103.2	90	110	
U	238	1	No Gas	104.943	1.484	3569024	0.65	100	104.9	90	110	
Ca	43	2	He	9903.000	3.878	28914	3.47	10000	99.0	90	110	
Sb	121	2	He	99.076	0.370	692817	0.61	100	99.1	90	110	
Ti	47	2	He	102.562	2.711	26135	1.93	100	102.6	90	110	
Cu	63	1	No Gas	102.616	1.282	1083377	0.78	100	102.6	90	110	
Se	82	1	No Gas	99.402	2.746	19626	2.49	100	99.4	90	110	

QC ISTD Table

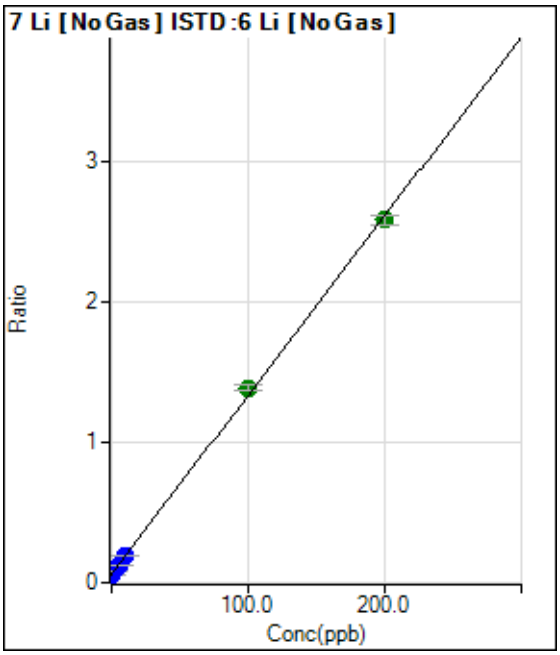
Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1015915	2.41	1043273	97.38	70	120	
Ge	72	2	He	749400	0.98	757744	98.90	70	120	
Ge	72	1	No Gas	2151378	1.95	2169252	99.18	70	120	
In	115	1	No Gas	2553200	1.84	2581354	98.91	70	120	
Bi	209	1	No Gas	2176902	1.65	2148397	101.33	70	120	

Calibration for 143_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\020922A.b\
Analysis File: 020922A.batch.bin
DA Date-Time: 2/10/2022 9:14:45 AM
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	136CALB.d	CAL BLK	2/9/2022 8:27:59 PM
2	137CALS.d	2/10/200	2/9/2022 8:29:56 PM
3	138CALS.d	5/25/500	2/9/2022 8:31:54 PM
4	139CALS.d	10/50/100	2/9/2022 8:33:52 PM
5	140CALS.d	100/500/10K	2/9/2022 8:35:49 PM
6	141CALS.d	200/1000/20K	2/9/2022 8:37:41 PM

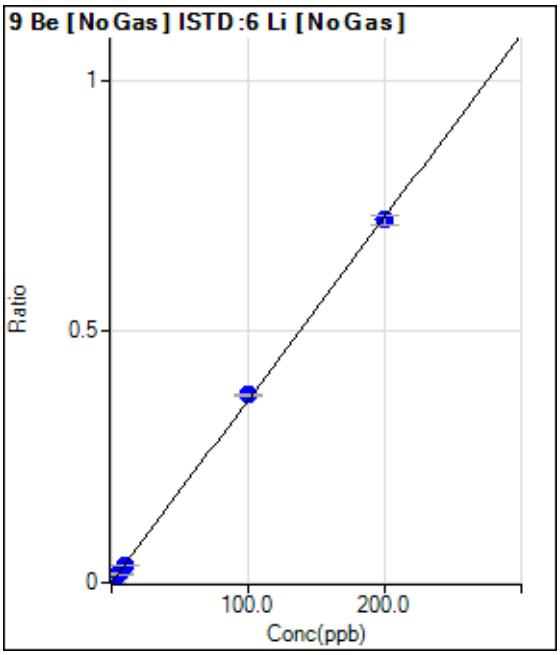
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	63771.87	0.0611	P	0.7
2	☐	2.000	1.928	89832.43	0.0857	P	0.7
3	☐	5.000	5.058	129776.57	0.1257	P	1.6
4	☐	10.000	10.039	194766.21	0.1892	P	3.4
5	☐	100.000	104.139	1362375.66	1.3896	A	2.3
6	☐	200.000	197.928	2467396.63	2.5860	A	2.5

y = 0.0128 * x + 0.0611
R = 0.9997
DL = 0.1032
BEC = 4.793

Weight: <None>
Min Conc: <None>

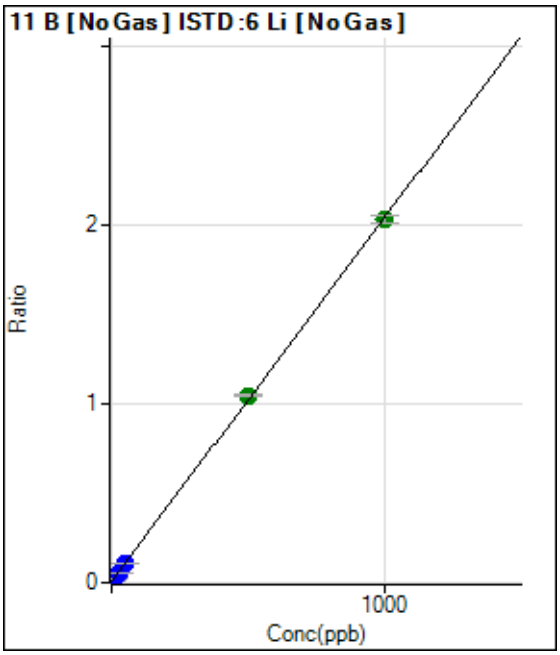


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	111.67	0.0001	P	18.0
2	☐	2.000	1.845	7138.54	0.0068	P	1.1
3	☐	5.000	4.718	17816.35	0.0172	P	1.2
4	☐	10.000	9.618	36094.57	0.0351	P	2.6
5	☐	100.000	102.825	366450.37	0.3737	P	1.5
6	☐	200.000	198.615	688689.00	0.7218	P	2.5

y = 0.0036 * x + 1.0675E-004
R = 0.9998
DL = 0.01586
BEC = 0.02938

Weight: <None>
Min Conc: <None>

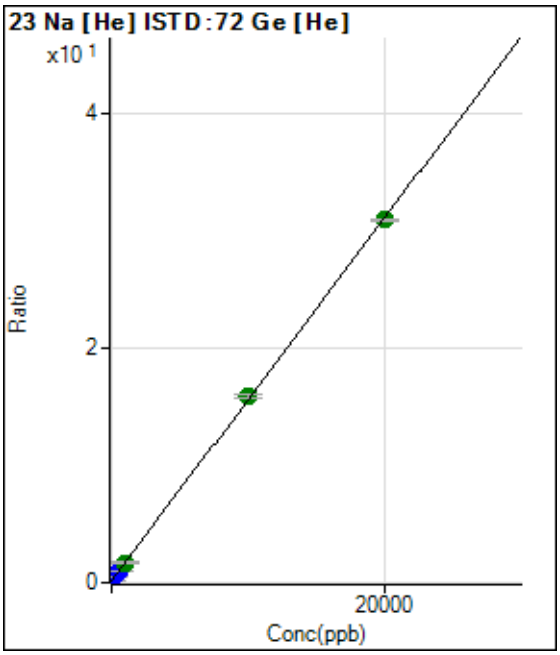
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6981.79	0.0067	P	0.1
2	☐	10.000	9.366	26964.25	0.0257	P	1.8
3	☐	25.000	24.685	58725.33	0.0569	P	1.0
4	☐	50.000	50.363	112276.14	0.1090	P	2.9
5	☐	500.000	511.267	1025604.83	1.0458	A	1.1
6	☐	1000.000	994.362	1935008.36	2.0276	A	2.0

y = 0.0020 * x + 0.0067
R = 0.9999
DL = 0.01378
BEC = 3.293

Weight: <None>
Min Conc: <None>

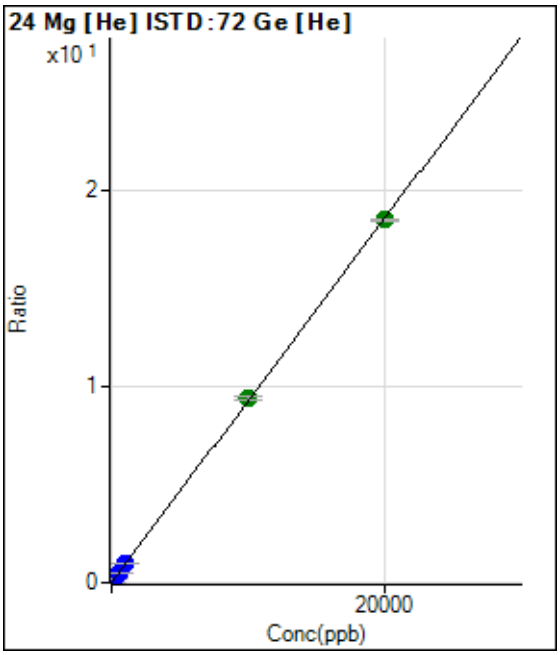


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	121324.11	0.1601	P	1.6
2	☐	200.000	193.068	348757.81	0.4587	P	0.8
3	☐	500.000	503.255	711065.33	0.9383	P	1.0
4	☐	1000.000	1002.088	1290842.48	1.7096	A	1.4
5	☐	10000.00	10205.05	11841219.82	15.9400	A	2.1
6	☐	20000.00	19897.35	22345032.17	30.9270	A	0.7

y = 0.0015 * x + 0.1601
R = 0.9999
DL = 4.954
BEC = 103.5

Weight: <None>
Min Conc: <None>

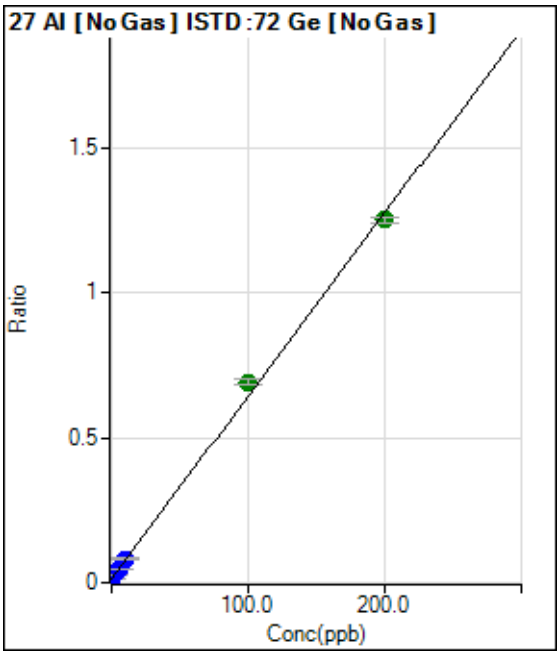
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1180.07	0.0016	P	5.7
2	☐	200.000	201.015	143273.09	0.1884	P	1.6
3	☐	500.000	516.733	365208.95	0.4819	P	0.3
4	☐	1000.000	1029.050	723515.25	0.9581	P	0.5
5	☐	10000.00	10127.70	6994780.31	9.4160	A	1.9
6	☐	20000.00	19934.26	13389140.63	18.5320	A	0.8

y = 9.2958E-004 * x + 0.0016
R = 1.0000
DL = 0.2883
BEC = 1.676

Weight: <None>
Min Conc: <None>

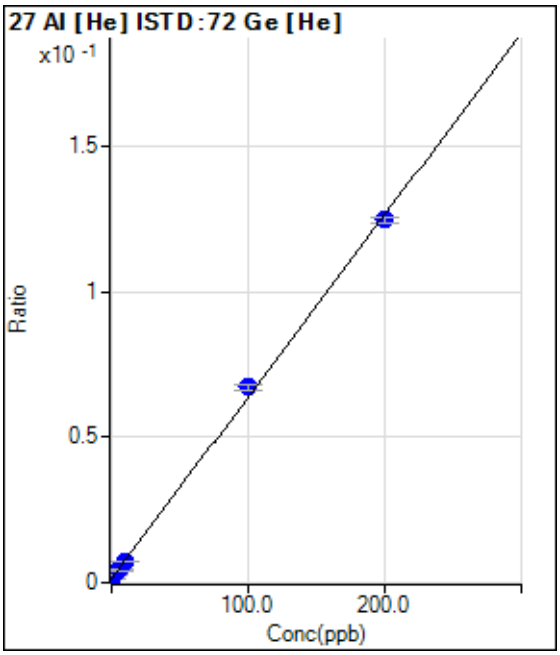


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	28376.01	0.0131	P	1.7
2	☐	2.000	2.027	56591.79	0.0259	P	2.3
3	☐	5.000	4.962	96892.18	0.0444	P	0.7
4	☐	10.000	10.730	174279.55	0.0808	P	7.4
5	☐	100.000	107.375	1474040.76	0.6912	A	2.7
6	☐	200.000	196.277	2624499.44	1.2526	A	1.9

y = 0.0063 * x + 0.0131
R = 0.9990
DL = 0.1044
BEC = 2.072

Weight: <None>
Min Conc: <None>

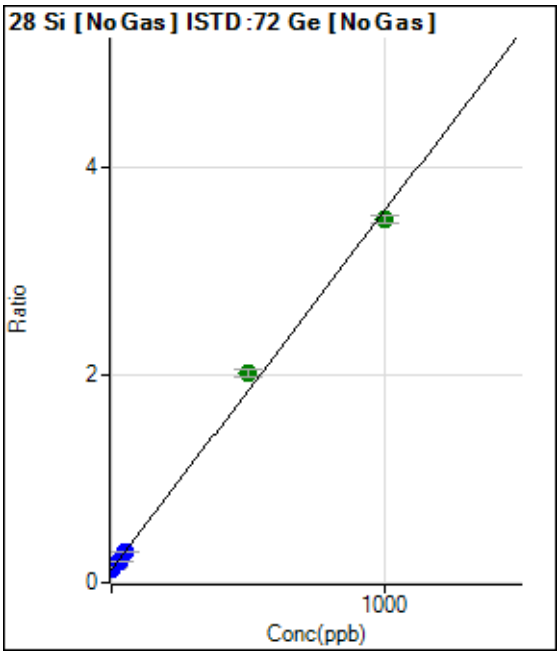
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1053.39	0.0014	P	4.2
2	☐	2.000	1.776	1900.17	0.0025	P	7.4
3	☐	5.000	4.706	3280.44	0.0043	P	2.4
4	☐	10.000	9.624	5587.92	0.0074	P	4.4
5	☐	100.000	105.268	49873.05	0.0671	P	2.2
6	☐	200.000	197.395	90063.69	0.1247	P	1.4

y = 6.2448E-004 * x + 0.0014
R = 0.9995
DL = 0.2797
BEC = 2.226

Weight: <None>
Min Conc: <None>

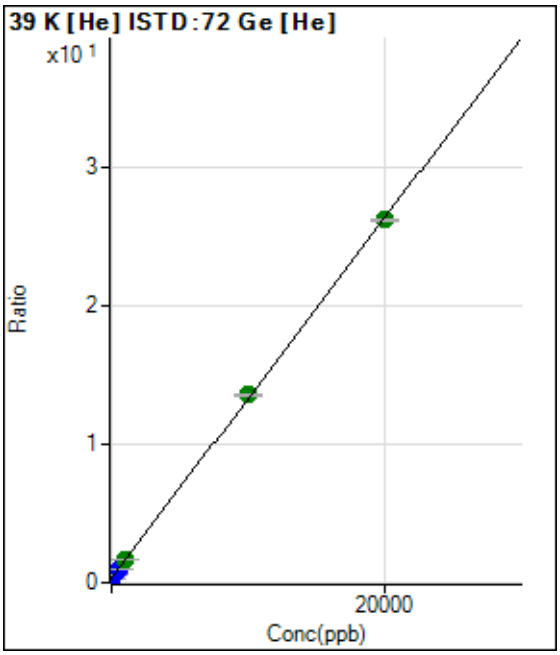


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	267184.96	0.1232	P	2.1
2	☐	10.000	9.978	344919.89	0.1577	P	1.0
3	☐	25.000	25.105	458227.48	0.2101	P	1.0
4	☐	50.000	51.536	650480.72	0.3015	P	0.8
5	☐	500.000	549.762	4319732.96	2.0256	A	3.3
6	☐	1000.000	975.040	7327337.19	3.4973	A	2.2

y = 0.0035 * x + 0.1232
R = 0.9982
DL = 2.195
BEC = 35.6

Weight: <None>
Min Conc: <None>

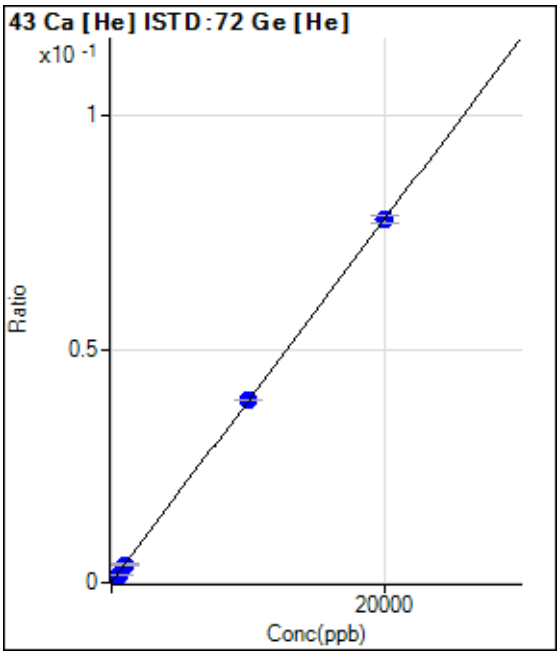
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	243028.40	0.3208	P	1.2
2	☐	200.000	197.131	438689.11	0.5769	P	1.2
3	☐	500.000	510.274	745612.46	0.9838	P	0.4
4	☐	1000.000	1008.632	1231620.50	1.6314	A	3.9
5	☐	10000.00	10176.51	10062145.06	13.5444	A	1.3
6	☐	20000.00	19911.08	18925238.89	26.1938	A	0.6

y = 0.0013 * x + 0.3208
R = 0.9999
DL = 9.195
BEC = 246.8

Weight: <None>
Min Conc: <None>

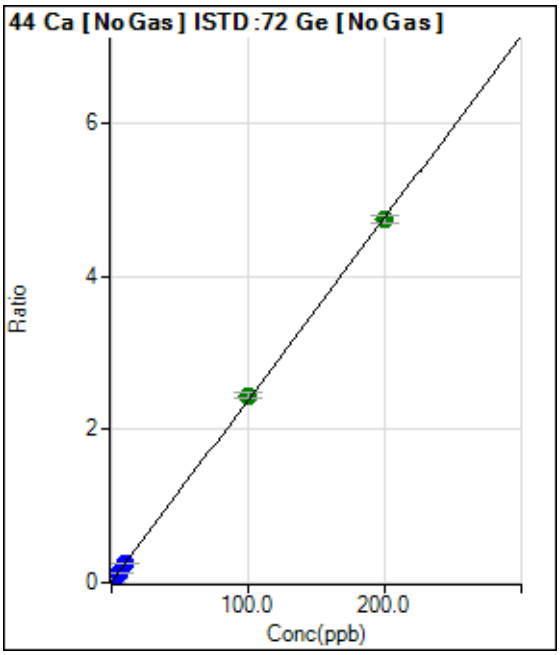


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	56.67	0.0001	P	26.5
2	☐	200.000	202.762	656.70	0.0009	P	16.4
3	☐	500.000	442.293	1360.09	0.0018	P	6.0
4	☐	1000.000	985.160	2950.37	0.0039	P	4.3
5	☐	10000.00	10071.92	29157.87	0.0392	P	0.5
6	☐	20000.00	19966.19	56154.83	0.0777	P	2.1

y = 3.8890E-006 * x + 7.4733E-005
R = 1.0000
DL = 15.25
BEC = 19.22

Weight: <None>
Min Conc: <None>

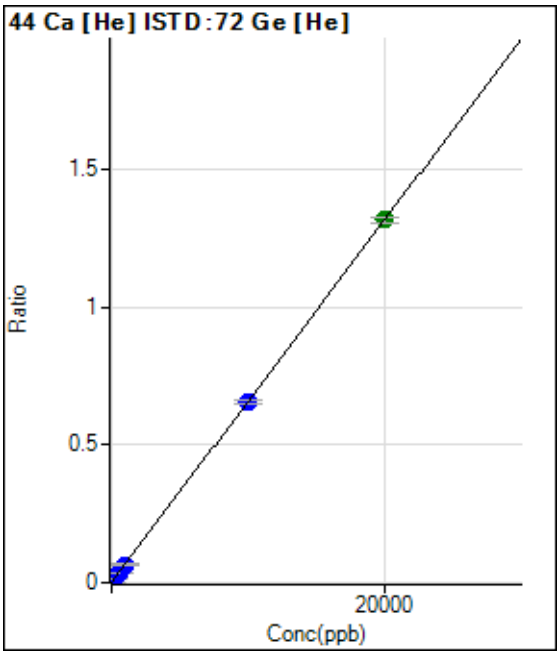
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	21577.22	0.0099	P	2.0
2	☐	2.000	1.952	123167.02	0.0563	P	1.7
3	☐	5.000	5.020	281812.72	0.1292	P	2.1
4	☐	10.000	10.187	543490.60	0.2520	P	1.2
5	☐	100.000	102.120	5195141.90	2.4361	A	3.2
6	☐	200.000	198.931	9922808.39	4.7362	A	2.3

y = 0.0238 * x + 0.0099
R = 0.9999
DL = 0.02515
BEC = 0.4187

Weight: <None>
Min Conc: <None>

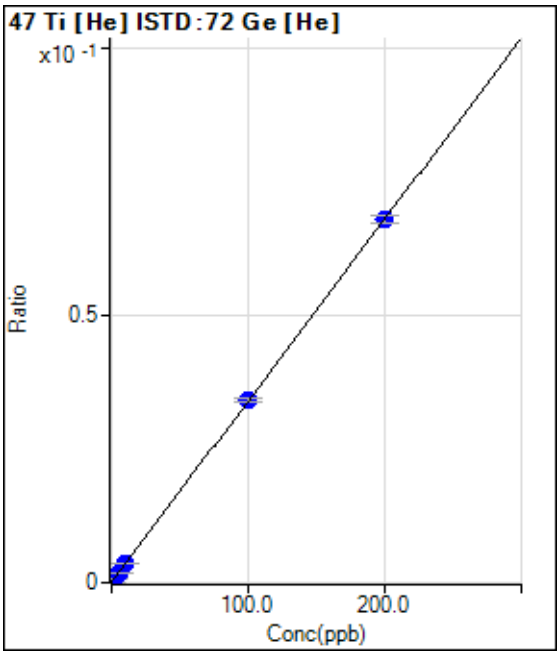


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	766.70	0.0010	P	7.2
2	☐	200.000	186.507	10097.19	0.0133	P	2.1
3	☐	500.000	481.584	24772.61	0.0327	P	2.1
4	☐	1000.000	990.066	49940.74	0.0661	P	1.6
5	☐	10000.00	9984.232	488537.43	0.6577	P	2.1
6	☐	20000.00	20008.97	951492.28	1.3170	A	1.3

y = 6.5768E-005 * x + 0.0010
R = 1.0000
DL = 3.323
BEC = 15.39

Weight: <None>
Min Conc: <None>

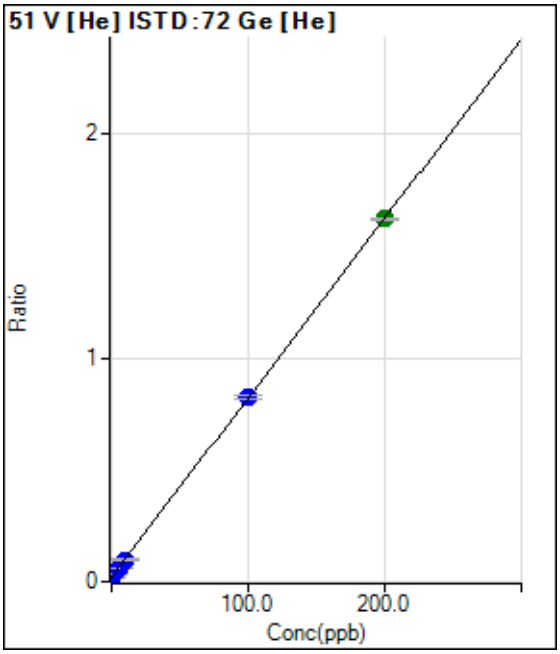
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	43.33	0.0001	P	34.2
2	☐	2.000	1.614	460.01	0.0006	P	11.2
3	☐	5.000	5.055	1343.43	0.0018	P	10.9
4	☐	10.000	10.013	2610.30	0.0035	P	1.9
5	☐	100.000	100.444	25380.43	0.0342	P	2.1
6	☐	200.000	199.780	49047.78	0.0679	P	2.0

y = 3.3953E-004 * x + 5.7078E-005
R = 1.0000
DL = 0.1726
BEC = 0.1681

Weight: <None>
Min Conc: <None>

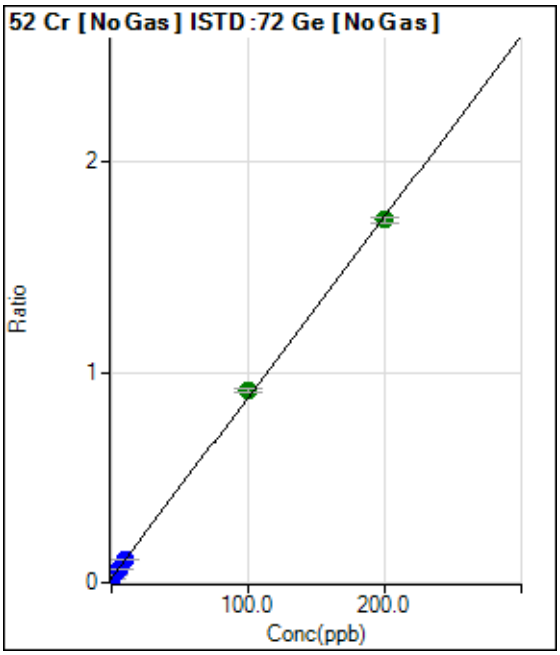


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	15992.69	0.0211	P	1.5
2	☐	2.000	1.821	27123.49	0.0357	P	0.4
3	☐	5.000	4.913	45778.30	0.0604	P	1.0
4	☐	10.000	9.695	74494.24	0.0987	P	1.4
5	☐	100.000	100.311	611811.43	0.8235	P	1.2
6	☐	200.000	199.864	1170385.40	1.6199	A	0.4

y = 0.0080 * x + 0.0211
R = 1.0000
DL = 0.1213
BEC = 2.638

Weight: <None>
Min Conc: <None>

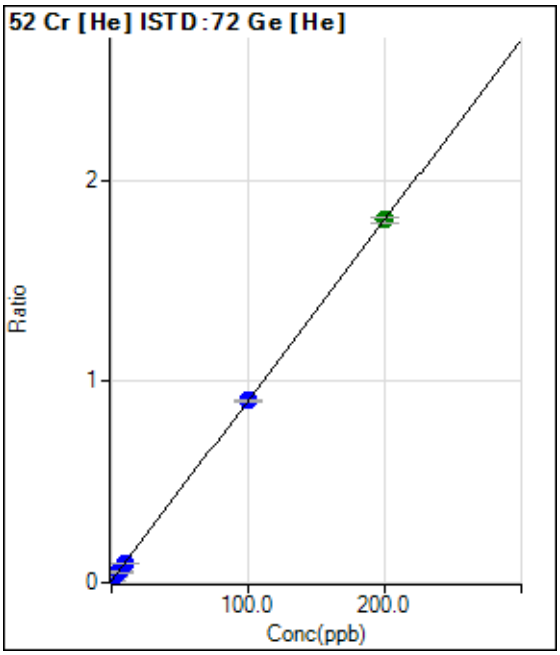
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	48830.54	0.0225	P	1.4
2	☐	2.000	1.807	83195.24	0.0380	P	0.9
3	☐	5.000	5.052	143792.11	0.0659	P	1.1
4	☐	10.000	10.242	238379.03	0.1105	P	2.1
5	☐	100.000	103.547	1945701.74	0.9122	A	1.9
6	☐	200.000	198.215	3616160.05	1.7257	A	1.5

y = 0.0086 * x + 0.0225
R = 0.9998
DL = 0.1119
BEC = 2.62

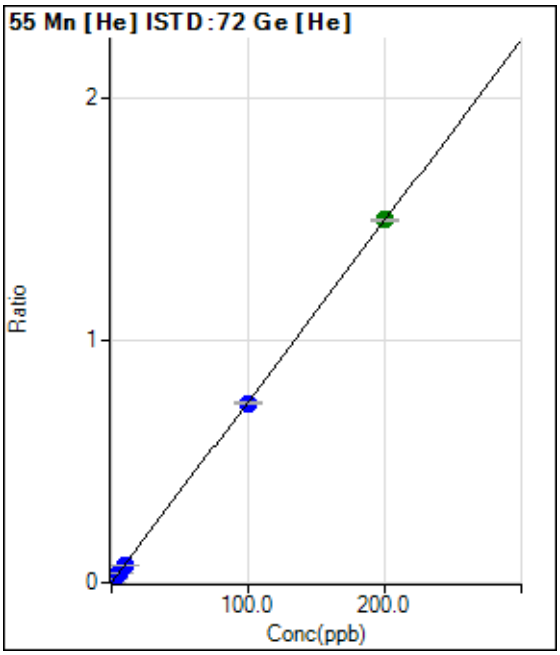
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6885.19	0.0091	P	7.2
2	☐	2.000	1.775	19013.34	0.0250	P	4.0
3	☐	5.000	4.873	40012.14	0.0528	P	2.9
4	☐	10.000	9.635	72119.33	0.0955	P	0.9
5	☐	100.000	99.786	671608.98	0.9040	P	1.2
6	☐	200.000	200.131	1303344.90	1.8040	A	1.4

y = 0.0090 * x + 0.0091
R = 1.0000
DL = 0.2204
BEC = 1.014

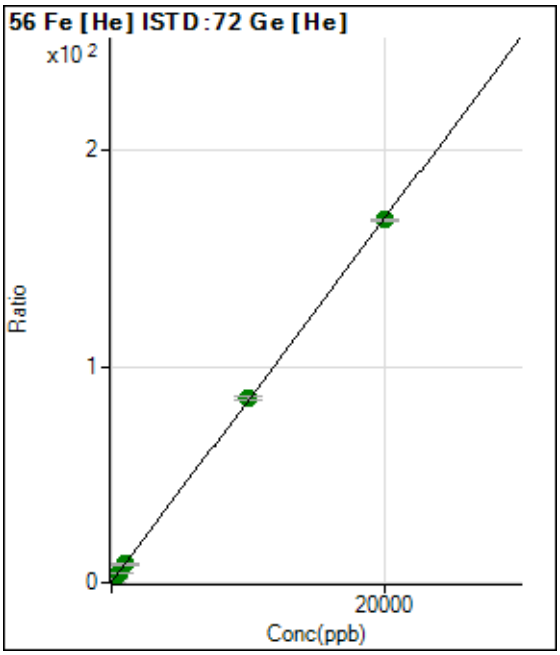
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	676.70	0.0009	P	5.8
2	☐	2.000	1.872	11288.18	0.0148	P	4.9
3	☐	5.000	4.793	27741.81	0.0366	P	0.4
4	☐	10.000	9.506	54160.73	0.0717	P	0.4
5	☐	100.000	99.142	549496.45	0.7396	P	1.0
6	☐	200.000	200.460	1079839.36	1.4946	A	0.8

y = 0.0075 * x + 8.9343E-004
R = 1.0000
DL = 0.02081
BEC = 0.1199

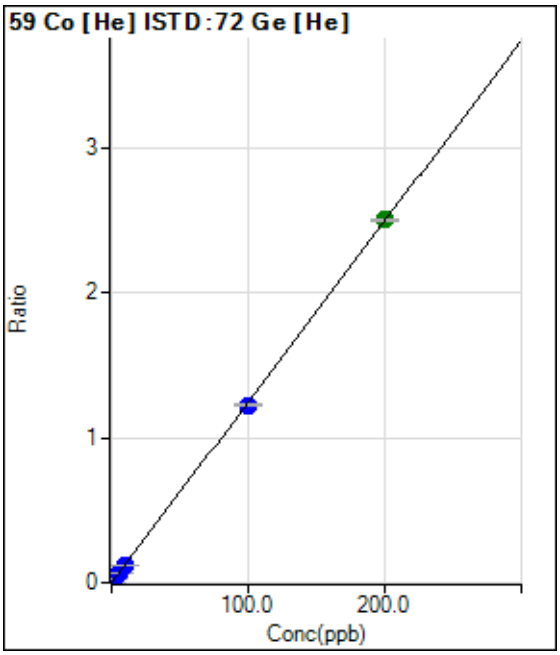
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	138622.63	0.1830	P	3.6
2	☐	200.000	180.898	1296051.99	1.7044	A	1.4
3	☐	500.000	488.251	3250954.53	4.2895	A	1.7
4	☐	1000.000	986.292	6400671.57	8.4784	A	3.1
5	☐	10000.00	10145.93	63528579.05	85.5173	A	1.7
6	☐	20000.00	19928.20	121228978.1	167.792	A	0.6

y = 0.0084 * x + 0.1830
R = 1.0000
DL = 2.355
BEC = 21.75

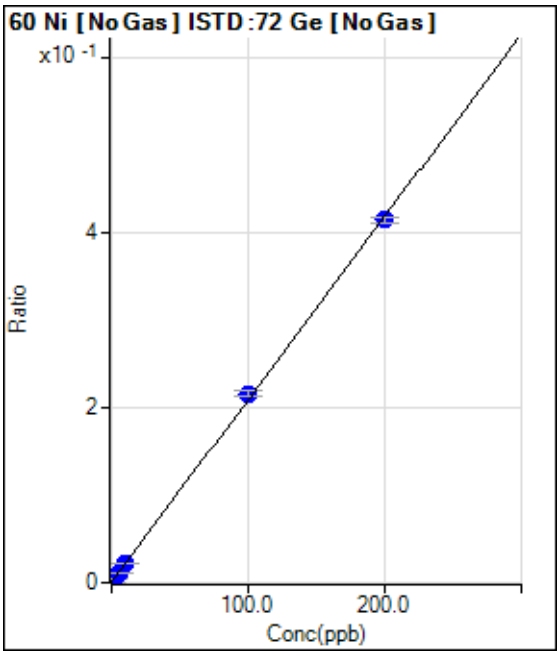
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	133.33	0.0002	P	22.4
2	☐	2.000	1.863	17778.49	0.0234	P	1.9
3	☐	5.000	4.784	45295.51	0.0598	P	0.2
4	☐	10.000	9.593	90358.29	0.1197	P	0.4
5	☐	100.000	98.430	910994.15	1.2262	P	1.0
6	☐	200.000	200.812	1807360.96	2.5016	A	0.8

y = 0.0125 * x + 1.7586E-004
R = 1.0000
DL = 0.009499
BEC = 0.01412

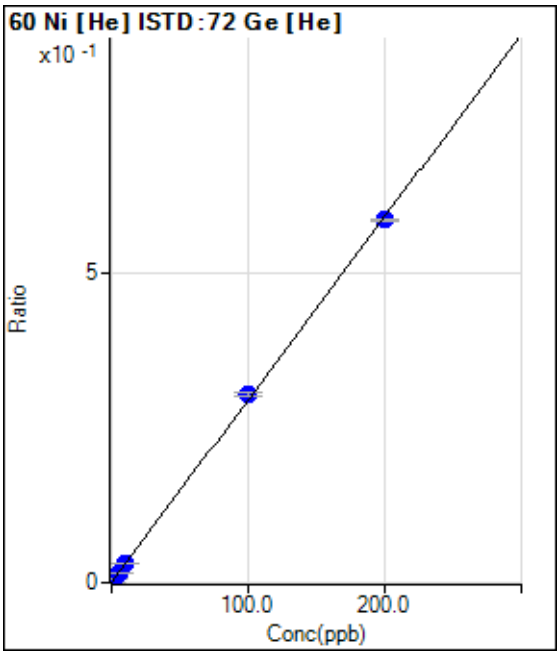
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1040.06	0.0005	P	9.3
2	☐	2.000	1.880	9626.90	0.0044	P	2.8
3	☐	5.000	5.092	24218.43	0.0111	P	0.9
4	☐	10.000	10.362	47676.84	0.0221	P	1.9
5	☐	100.000	103.317	460738.38	0.2160	P	2.3
6	☐	200.000	198.322	867936.76	0.4142	P	1.7

y = 0.0021 * x + 4.8001E-004
R = 0.9998
DL = 0.06427
BEC = 0.2301

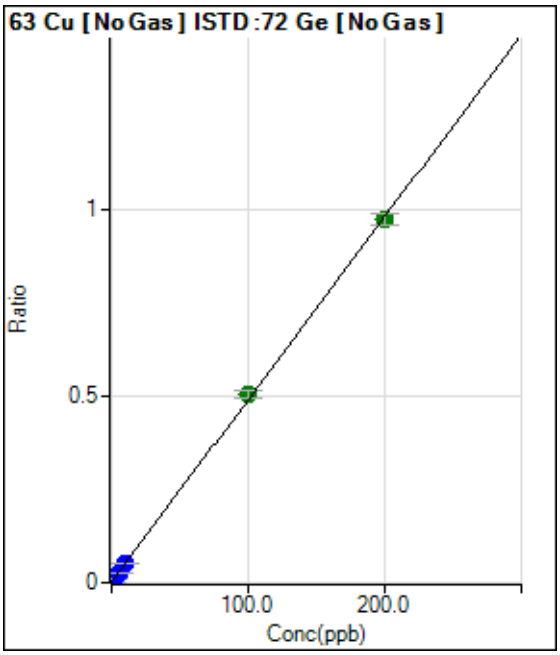
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	350.01	0.0005	P	10.8
2	☐	2.000	1.777	4330.77	0.0057	P	2.9
3	☐	5.000	4.983	11475.04	0.0151	P	4.1
4	☐	10.000	10.072	22756.10	0.0301	P	3.4
5	☐	100.000	103.047	225807.78	0.3040	P	1.9
6	☐	200.000	198.475	422693.63	0.5850	P	0.6

y = 0.0029 * x + 4.6173E-004
R = 0.9998
DL = 0.05061
BEC = 0.1568

Weight: <None>
Min Conc: <None>

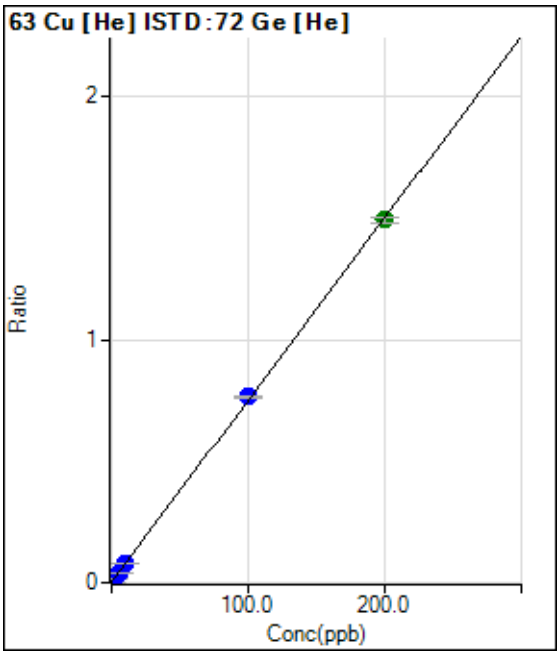


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4340.77	0.0020	P	2.0
2	☐	2.000	1.984	25584.40	0.0117	P	2.5
3	☐	5.000	5.174	59533.73	0.0273	P	1.0
4	☐	10.000	10.200	111880.76	0.0519	P	1.0
5	☐	100.000	102.926	1077386.47	0.5052	A	3.6
6	☐	200.000	198.523	2037402.16	0.9725	A	3.1

y = 0.0049 * x + 0.0020
R = 0.9998
DL = 0.02428
BEC = 0.4092

Weight: <None>
Min Conc: <None>

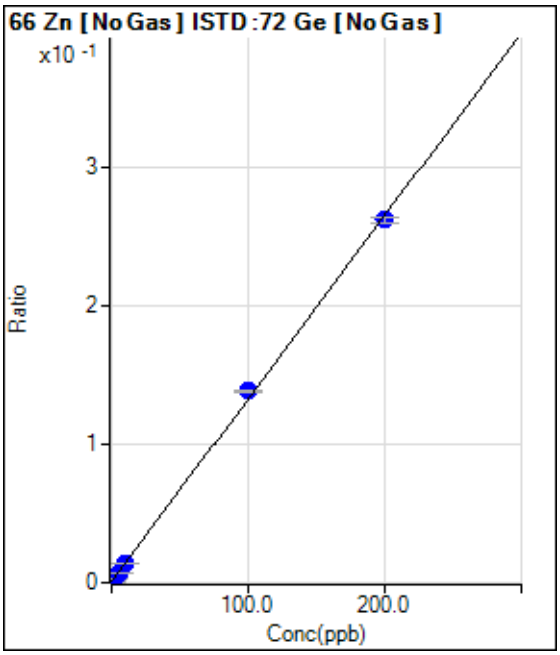
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1793.48	0.0024	P	2.7
2	☐	2.000	1.949	12903.00	0.0170	P	1.2
3	☐	5.000	5.080	30628.12	0.0404	P	0.8
4	☐	10.000	10.072	58747.03	0.0778	P	1.6
5	☐	100.000	101.791	568205.20	0.7648	P	0.4
6	☐	200.000	199.099	1079162.49	1.4936	A	1.6

y = 0.0075 * x + 0.0024
R = 0.9999
DL = 0.02583
BEC = 0.3161

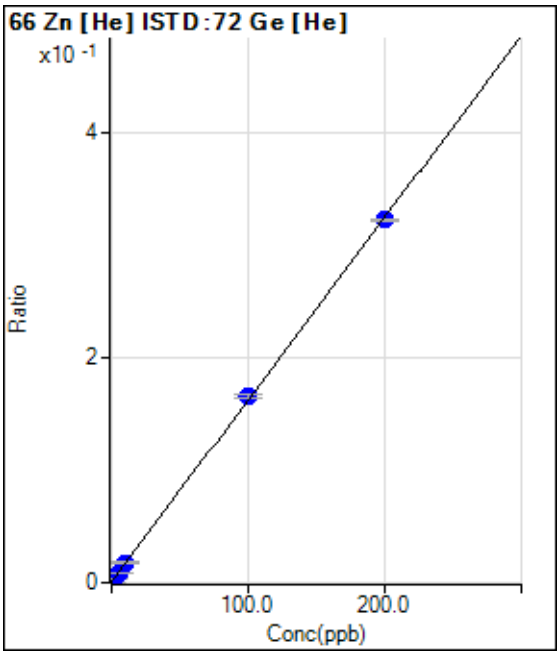
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1520.11	0.0007	P	6.8
2	☐	2.000	1.771	6655.08	0.0030	P	6.4
3	☐	5.000	4.732	15188.71	0.0070	P	4.7
4	☐	10.000	10.334	30999.02	0.0144	P	2.2
5	☐	100.000	104.387	296072.11	0.1388	P	1.1
6	☐	200.000	197.799	549744.42	0.2624	P	1.9

y = 0.0013 * x + 7.0132E-004
R = 0.9996
DL = 0.1088
BEC = 0.5301

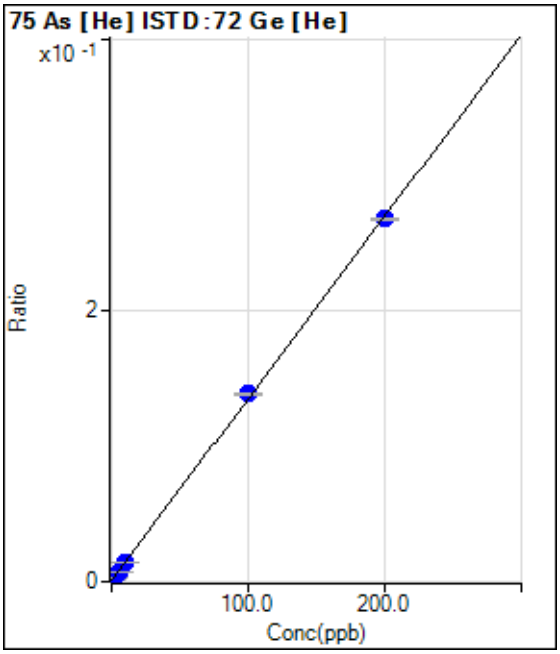
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	553.36	0.0007	P	12.4
2	☐	2.000	1.779	2740.33	0.0036	P	2.8
3	☐	5.000	4.894	6545.03	0.0086	P	0.9
4	☐	10.000	10.405	13246.70	0.0175	P	4.5
5	☐	100.000	102.264	123285.85	0.1660	P	1.8
6	☐	200.000	198.853	232648.03	0.3220	P	0.3

y = 0.0016 * x + 7.2955E-004
R = 0.9999
DL = 0.1684
BEC = 0.4516

Weight: <None>
Min Conc: <None>

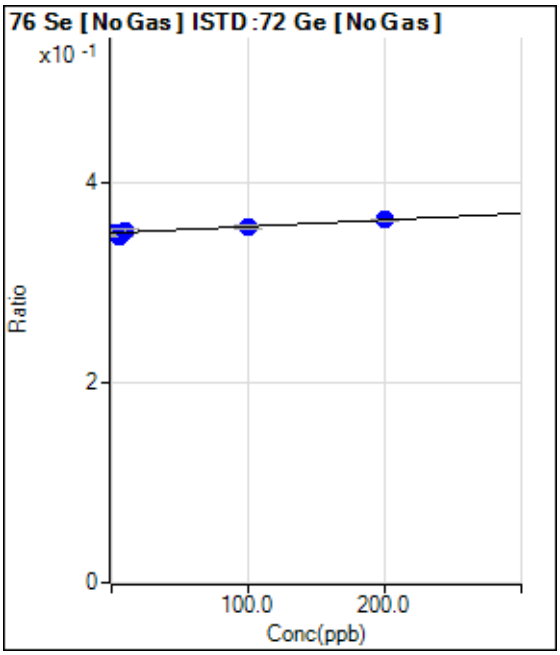


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	630.02	0.0008	P	5.0
2	☐	2.000	1.707	2374.67	0.0031	P	2.2
3	☐	5.000	4.838	5550.05	0.0073	P	1.4
4	☐	10.000	9.707	10464.09	0.0139	P	1.3
5	☐	100.000	102.532	102833.81	0.1384	P	1.3
6	☐	200.000	198.756	193304.07	0.2676	P	0.4

y = 0.0013 * x + 8.3147E-004
R = 0.9999
DL = 0.09381
BEC = 0.6196

Weight: <None>
Min Conc: <None>

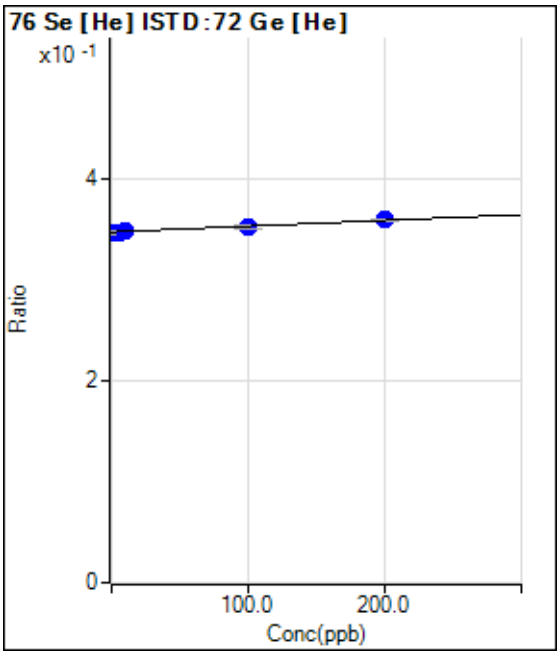
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	760027.90	0.3504	P	1.2
2	☐	2.000	4.876	766857.15	0.3507	P	1.5
3	☐	5.000	-51.049	756946.92	0.3470	P	0.6
4	☐	10.000	31.940	760339.68	0.3525	P	0.8
5	☐	100.000	101.138	761618.27	0.3570	P	1.0
6	☐	200.000	199.706	761695.80	0.3635	P	0.7

y = 6.5672E-005 * x + 0.3504
R = 0.9566
DL = 186.3
BEC = 5335

Weight: <None>
Min Conc: <None>

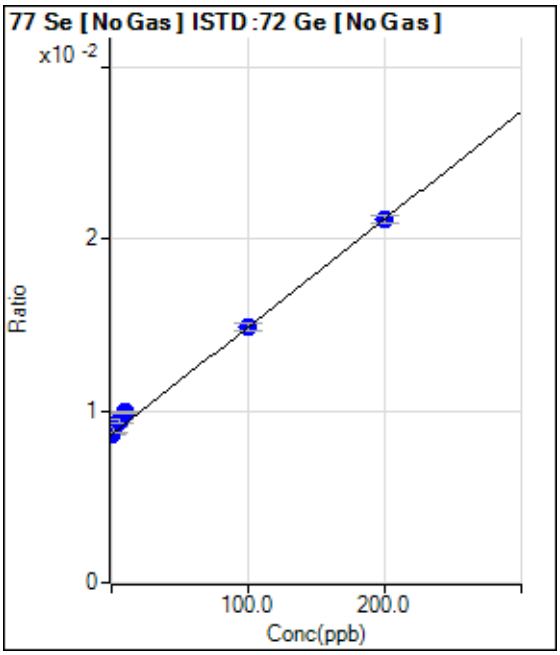


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	263737.61	0.3481	P	1.4
2	☐	2.000	-11.896	264166.98	0.3474	P	0.8
3	☐	5.000	-3.235	263651.43	0.3479	P	1.1
4	☐	10.000	19.149	263680.66	0.3492	P	0.5
5	☐	100.000	86.084	262305.47	0.3531	P	1.1
6	☐	200.000	206.846	260131.26	0.3600	P	0.7

y = 5.7779E-005 * x + 0.3481
R = 0.9933
DL = 249.6
BEC = 6025

Weight: <None>
Min Conc: <None>

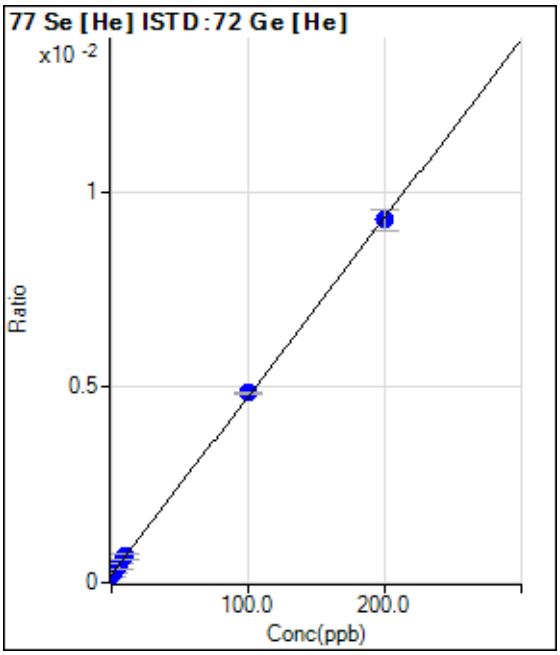
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	18699.92	0.0086	P	1.4
2	☐	2.000	4.333	19454.34	0.0089	P	4.6
3	☐	5.000	12.405	20502.64	0.0094	P	2.9
4	☐	10.000	20.863	21417.32	0.0099	P	1.3
5	☐	100.000	100.021	31751.09	0.0149	P	3.2
6	☐	200.000	199.238	44219.39	0.0211	P	2.0

y = 6.2655E-005 * x + 0.0086
R = 0.9987
DL = 5.757
BEC = 137.6

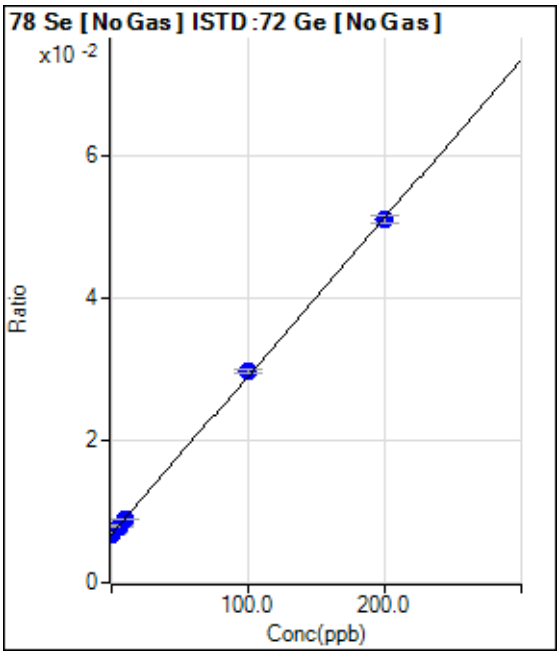
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	153.33	0.0002	P	31.2
2	☐	2.000	0.942	186.67	0.0002	P	8.0
3	☐	5.000	4.908	323.35	0.0004	P	29.1
4	☐	10.000	10.251	506.69	0.0007	P	18.9
5	☐	100.000	102.197	3613.88	0.0049	P	0.9
6	☐	200.000	198.902	6701.77	0.0093	P	5.8

y = 4.5611E-005 * x + 2.0248E-004
R = 0.9999
DL = 4.154
BEC = 4.439

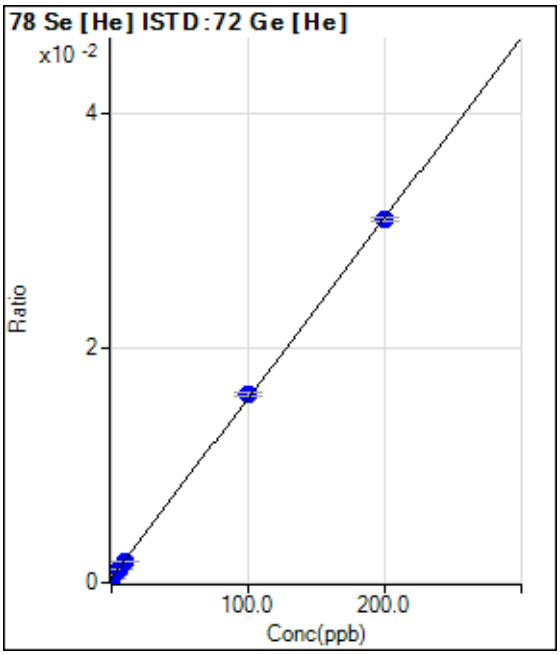
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	14795.03	0.0068	P	4.0
2	☐	2.000	2.092	15933.00	0.0073	P	4.9
3	☐	5.000	4.936	17278.07	0.0079	P	4.5
4	☐	10.000	9.347	19204.01	0.0089	P	2.4
5	☐	100.000	102.644	63221.82	0.0296	P	1.8
6	☐	200.000	198.712	106841.68	0.0510	P	2.1

y = 2.2228E-004 * x + 0.0068
R = 0.9999
DL = 3.695
BEC = 30.7

Weight: <None>
Min Conc: <None>

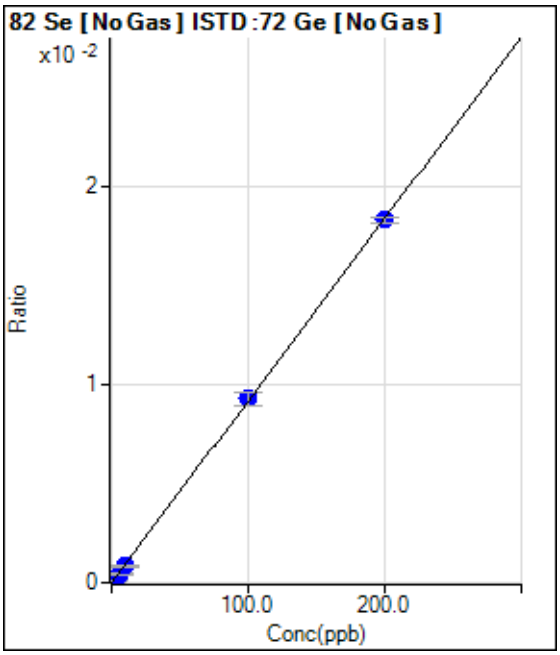


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	288.00	0.0004	P	6.8
2	☐	2.000	1.565	472.01	0.0006	P	4.9
3	☐	5.000	4.839	852.03	0.0011	P	3.1
4	☐	10.000	9.628	1405.41	0.0019	P	1.8
5	☐	100.000	102.085	11947.30	0.0161	P	1.4
6	☐	200.000	198.984	22387.22	0.0310	P	1.2

y = 1.5381E-004 * x + 3.8001E-004
R = 0.9999
DL = 0.5052
BEC = 2.471

Weight: <None>
Min Conc: <None>

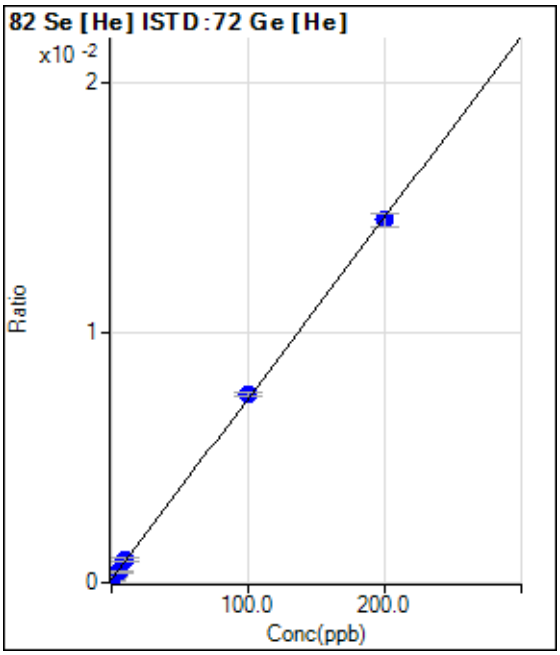
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	-19.46	0.0000	P	-238.9
2	☐	2.000	1.313	243.59	0.0001	P	29.2
3	☐	5.000	4.659	913.86	0.0004	P	22.6
4	☐	10.000	9.149	1793.78	0.0008	P	5.2
5	☐	100.000	101.026	19765.88	0.0093	P	6.9
6	☐	200.000	199.545	38399.86	0.0183	P	1.7

y = 9.1882E-005 * x - 9.2535E-006
R = 1.0000
DL = 0.7217
BEC = -0.1007

Weight: <None>
Min Conc: <None>

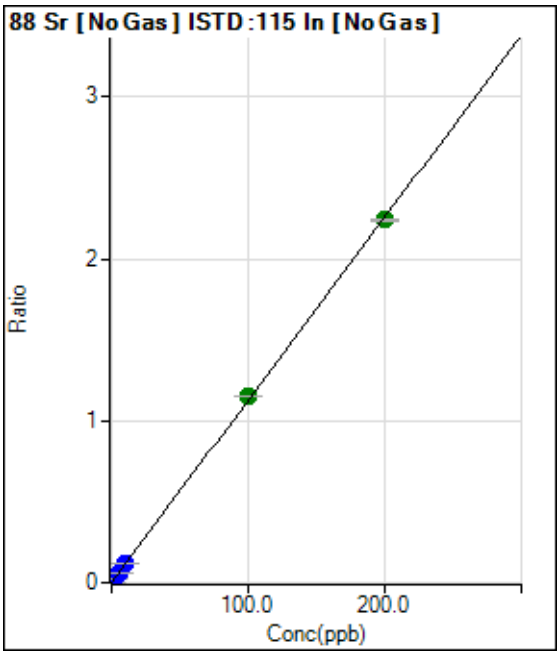


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	93.33	0.0001	P	42.7
2	☐	2.000	2.111	210.00	0.0003	P	40.9
3	☐	5.000	4.252	326.68	0.0004	P	5.9
4	☐	10.000	10.856	686.69	0.0009	P	15.9
5	☐	100.000	102.688	5617.92	0.0076	P	2.2
6	☐	200.000	198.631	10484.27	0.0145	P	3.6

y = 7.2436E-005 * x + 1.2301E-004
R = 0.9999
DL = 2.174
BEC = 1.698

Weight: <None>
Min Conc: <None>

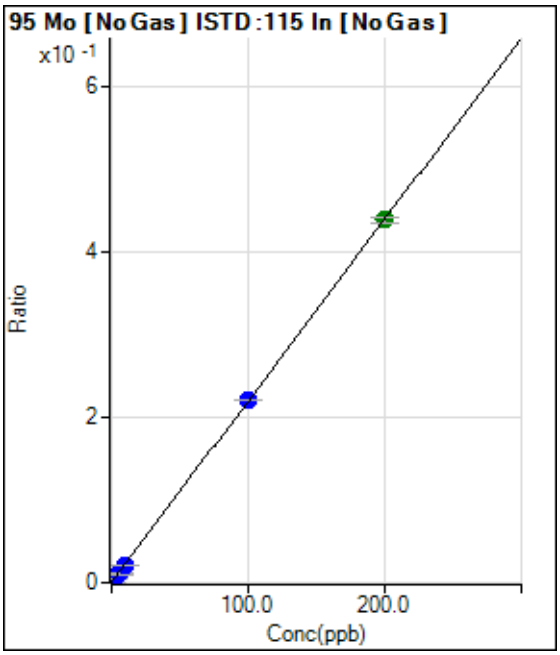
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2210.22	0.0009	P	5.7
2	☐	2.000	1.898	58136.37	0.0222	P	1.5
3	☐	5.000	4.911	145679.89	0.0562	P	2.9
4	☐	10.000	10.067	291722.28	0.1143	P	1.1
5	☐	100.000	102.441	2913762.46	1.1555	A	0.2
6	☐	200.000	198.779	5567604.29	2.2414	A	0.7

y = 0.0113 * x + 8.5724E-004
R = 0.9999
DL = 0.01297
BEC = 0.07605

Weight: <None>
Min Conc: <None>

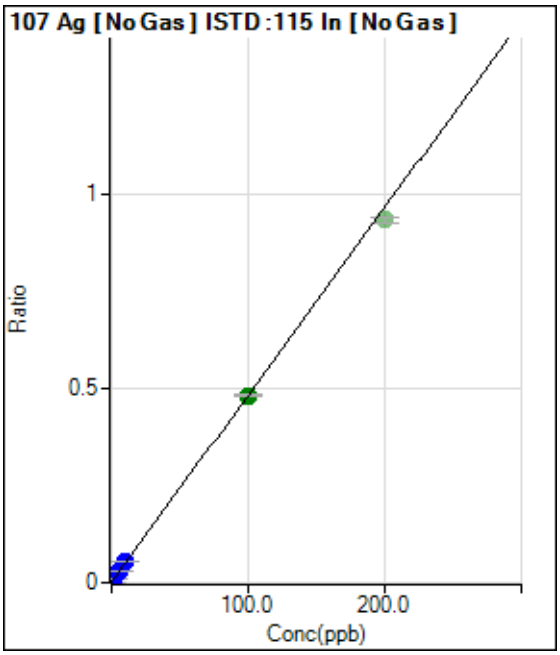


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1016.73	0.0004	P	9.3
2	☐	2.000	1.734	10984.75	0.0042	P	2.8
3	☐	5.000	4.663	27578.83	0.0106	P	3.4
4	☐	10.000	9.589	54772.75	0.0215	P	1.8
5	☐	100.000	100.415	557356.61	0.2210	P	0.6
6	☐	200.000	199.824	1091683.47	0.4395	A	1.8

y = 0.0022 * x + 3.9462E-004
R = 1.0000
DL = 0.05024
BEC = 0.1796

Weight: <None>
Min Conc: <None>

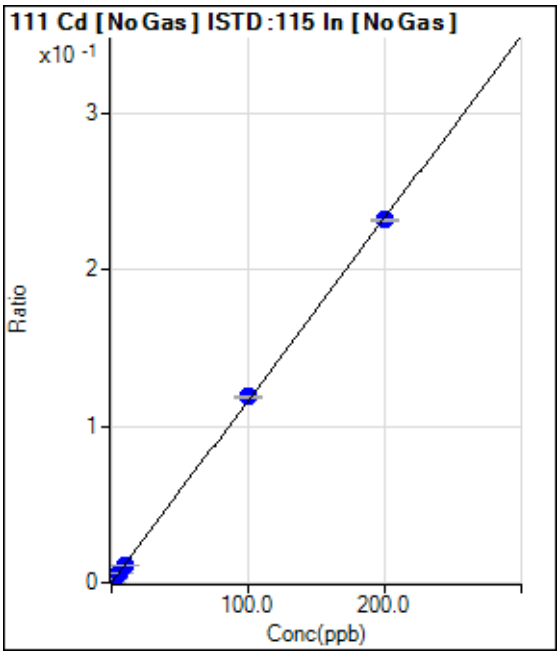
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2747.01	0.0011	P	4.1
2	☐	2.000	2.008	28080.17	0.0107	P	1.7
3	☐	5.000	5.613	72863.55	0.0281	P	3.3
4	☐	10.000	11.314	141864.56	0.0556	P	1.5
5	☐	100.000	99.838	1216023.24	0.4822	A	1.7
6	☑	200.000		2320154.44	0.9341	A	1.7

y = 0.0048 * x + 0.0011
R = 0.9999
DL = 0.02726
BEC = 0.221

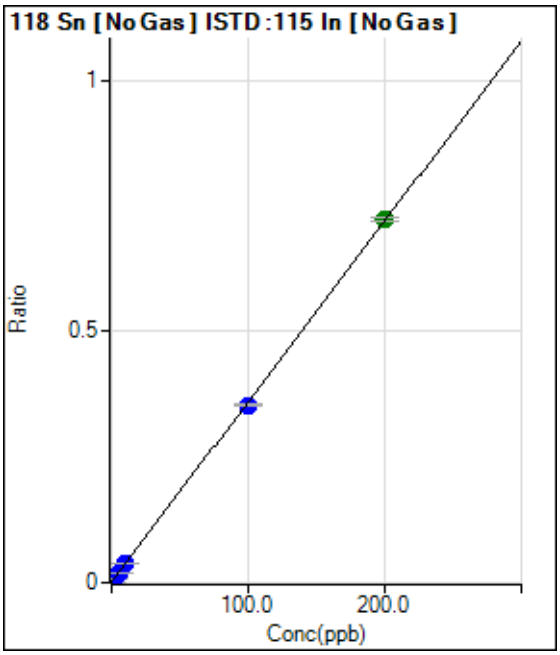
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	36.67	0.0000	P	62.0
2	☐	2.000	1.850	5657.99	0.0022	P	7.3
3	☐	5.000	4.801	14518.22	0.0056	P	0.4
4	☐	10.000	9.827	29205.96	0.0114	P	1.4
5	☐	100.000	101.859	298772.65	0.1185	P	2.0
6	☐	200.000	199.085	575304.46	0.2316	P	0.7

y = 0.0012 * x + 1.4058E-005
R = 0.9999
DL = 0.02249
BEC = 0.01208

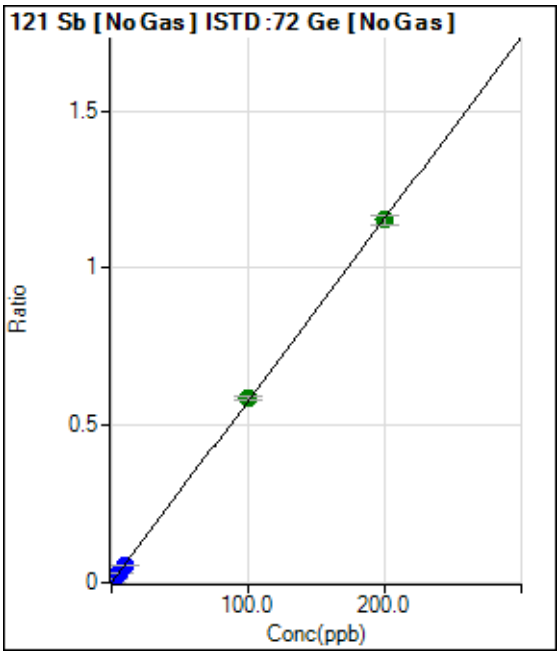
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2963.72	0.0011	P	3.0
2	☐	2.000	1.692	18870.47	0.0072	P	1.7
3	☐	5.000	4.647	46181.22	0.0178	P	4.0
4	☐	10.000	9.983	94334.29	0.0370	P	1.4
5	☐	100.000	98.110	890411.29	0.3532	P	1.5
6	☐	200.000	200.958	1793798.98	0.7222	A	1.1

y = 0.0036 * x + 0.0011
R = 0.9999
DL = 0.02847
BEC = 0.3202

Weight: <None>
Min Conc: <None>

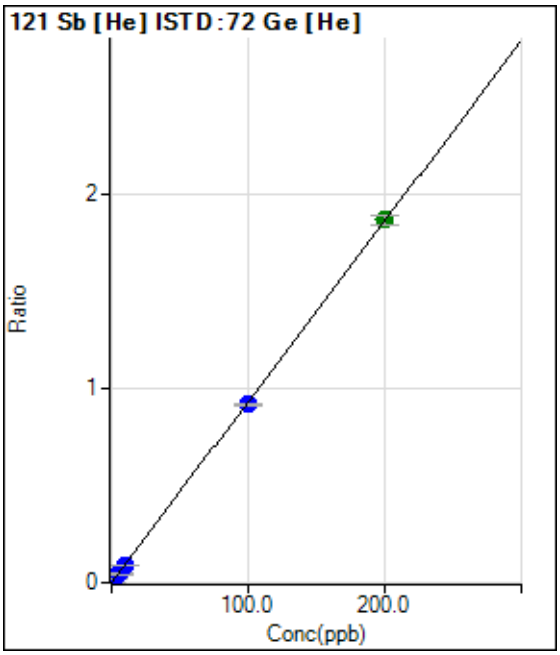


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1190.07	0.0005	P	14.7
2	☐	2.000	1.814	24115.86	0.0110	P	2.6
3	☐	5.000	4.703	60465.69	0.0277	P	1.1
4	☐	10.000	9.451	118942.12	0.0551	P	2.5
5	☐	100.000	101.113	1247122.01	0.5847	A	1.8
6	☐	200.000	199.480	2415585.23	1.1530	A	2.6

y = 0.0058 * x + 5.4895E-004
R = 1.0000
DL = 0.0418
BEC = 0.09502

Weight: <None>
Min Conc: <None>

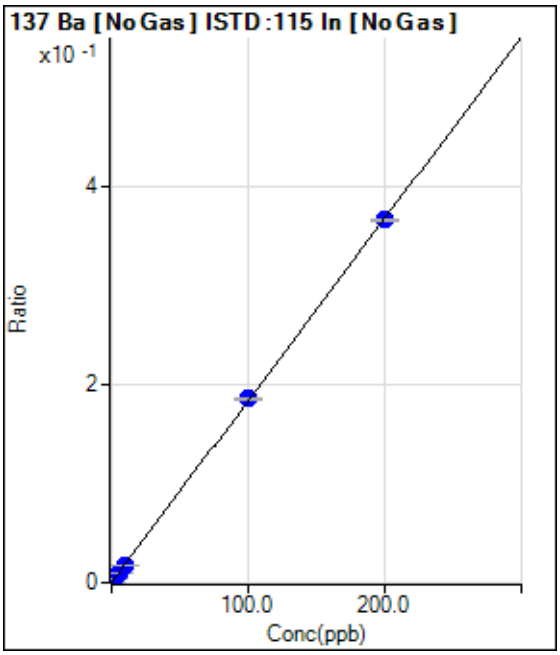
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	673.36	0.0009	P	5.8
2	☐	2.000	1.774	13250.21	0.0174	P	2.2
3	☐	5.000	4.710	33951.07	0.0448	P	1.3
4	☐	10.000	9.367	66605.60	0.0882	P	0.9
5	☐	100.000	98.566	683288.56	0.9198	P	1.3
6	☐	200.000	200.758	1352771.12	1.8724	A	2.7

y = 0.0093 * x + 8.8908E-004
R = 1.0000
DL = 0.01659
BEC = 0.09537

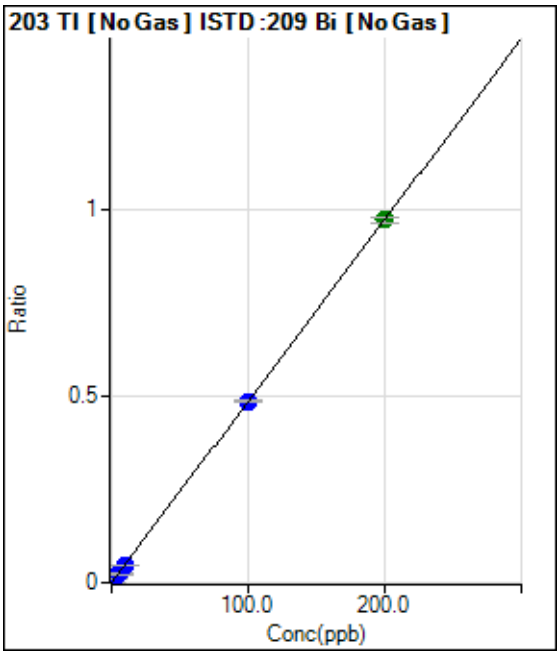
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	520.02	0.0002	P	7.6
2	☐	2.000	1.798	9143.36	0.0035	P	4.9
3	☐	5.000	4.813	23401.49	0.0090	P	3.6
4	☐	10.000	9.812	46443.13	0.0182	P	2.3
5	☐	100.000	101.131	468338.70	0.1857	P	1.2
6	☐	200.000	199.451	909407.90	0.3661	P	0.8

y = 0.0018 * x + 2.0161E-004
R = 1.0000
DL = 0.02495
BEC = 0.1099

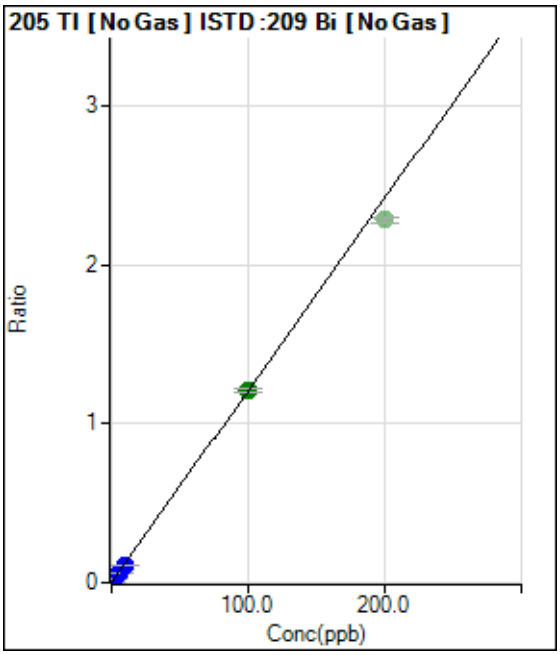
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	660.03	0.0003	P	12.9
2	☐	2.000	1.772	19492.19	0.0089	P	2.1
3	☐	5.000	4.714	51101.46	0.0233	P	1.9
4	☐	10.000	9.451	101076.42	0.0463	P	0.4
5	☐	100.000	99.971	1049191.78	0.4870	P	0.4
6	☐	200.000	200.052	2106337.41	0.9742	A	1.7

y = 0.0049 * x + 3.0741E-004
R = 1.0000
DL = 0.02443
BEC = 0.06315

Weight: <None>
Min Conc: <None>

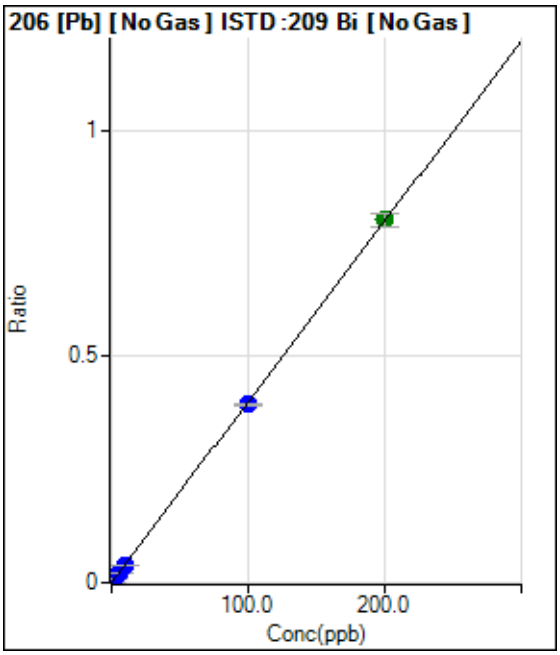


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1453.44	0.0007	P	4.2
2	☐	2.000	1.749	47638.00	0.0218	P	2.1
3	☐	5.000	4.476	120440.03	0.0548	P	0.9
4	☐	10.000	9.089	241336.07	0.1106	P	1.0
5	☐	100.000	100.122	2609813.50	1.2115	A	1.8
6	☑	200.000		4941496.91	2.2854	A	1.7

y = 0.0121 * x + 6.7638E-004
R = 1.0000
DL = 0.007097
BEC = 0.05593

Weight: <None>
Min Conc: <None>

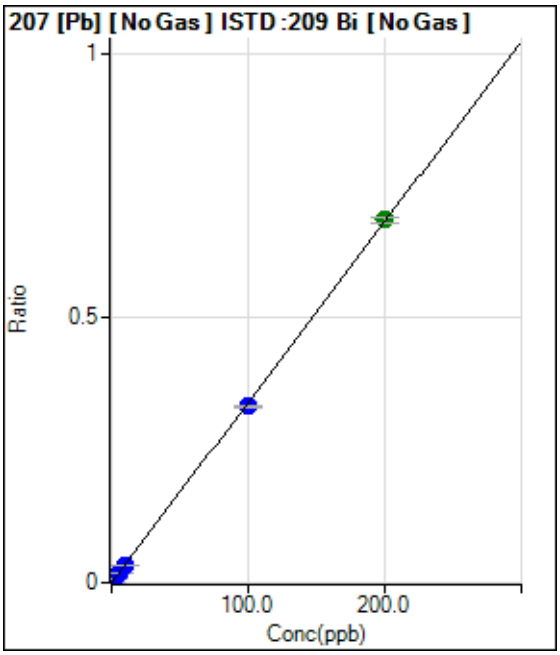
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	916.72	0.0004	P	1.7
2	☐	2.000	1.788	16497.83	0.0076	P	2.0
3	☐	5.000	4.724	42355.52	0.0193	P	1.4
4	☐	10.000	9.527	83871.37	0.0384	P	1.0
5	☐	100.000	98.445	847063.58	0.3932	P	1.2
6	☐	200.000	200.810	1732829.19	0.8016	A	3.5

y = 0.0040 * x + 4.2674E-004
R = 1.0000
DL = 0.005543
BEC = 0.107

Weight: <None>
Min Conc: <None>

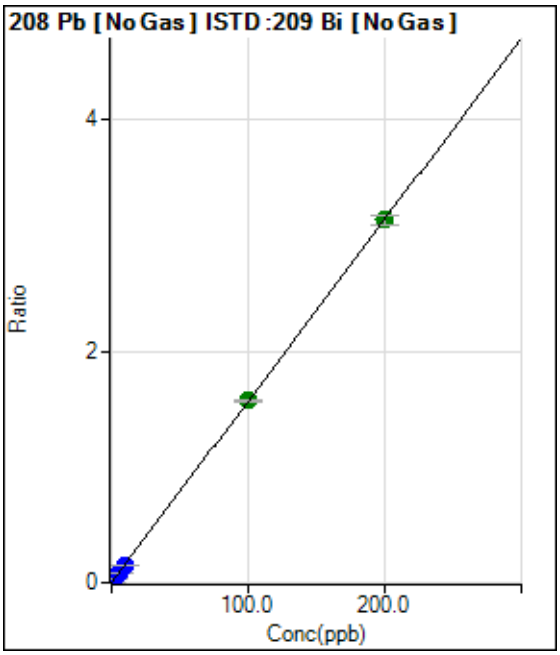


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	816.71	0.0004	P	11.1
2	☐	2.000	1.852	14592.15	0.0067	P	0.9
3	☐	5.000	4.745	36343.38	0.0165	P	1.4
4	☐	10.000	9.768	73419.45	0.0336	P	2.0
5	☐	100.000	97.691	717452.46	0.3330	P	0.8
6	☐	200.000	201.174	1482284.40	0.6854	A	1.5

y = 0.0034 * x + 3.8046E-004
R = 0.9999
DL = 0.03708
BEC = 0.1117

Weight: <None>
Min Conc: <None>

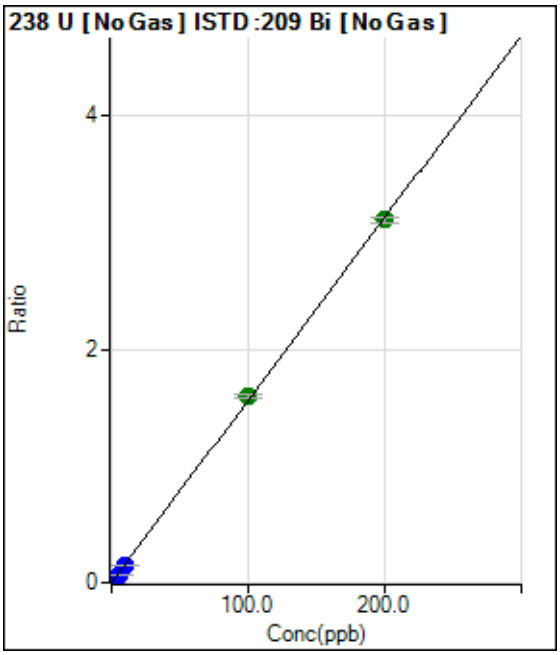
Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3753.64	0.0017	P	4.7
2	☐	2.000	1.799	65310.76	0.0299	P	0.6
3	☐	5.000	4.737	166856.32	0.0759	P	1.6
4	☐	10.000	9.658	333872.65	0.1530	P	0.2
5	☐	100.000	100.228	3385342.32	1.5714	A	1.0
6	☐	200.000	199.912	6772720.63	3.1325	A	2.3

y = 0.0157 * x + 0.0017
R = 1.0000
DL = 0.01569
BEC = 0.1116

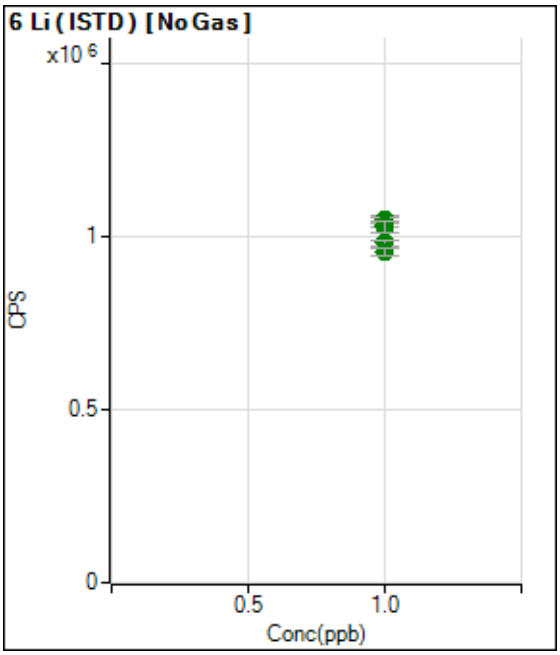
Weight: <None>
Min Conc: <None>



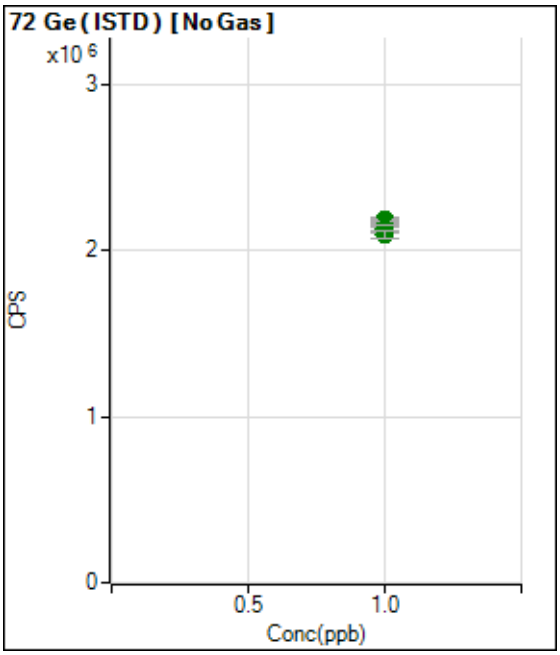
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2280.26	0.0011	P	7.3
2	☐	2.000	1.739	61581.62	0.0282	P	0.8
3	☐	5.000	4.569	159085.20	0.0724	P	2.2
4	☐	10.000	9.241	317198.27	0.1454	P	0.7
5	☐	100.000	102.201	3441583.08	1.5969	A	2.8
6	☐	200.000	198.951	6719538.65	3.1077	A	1.6

y = 0.0156 * x + 0.0011
R = 0.9999
DL = 0.01483
BEC = 0.06793

Weight: <None>
Min Conc: <None>

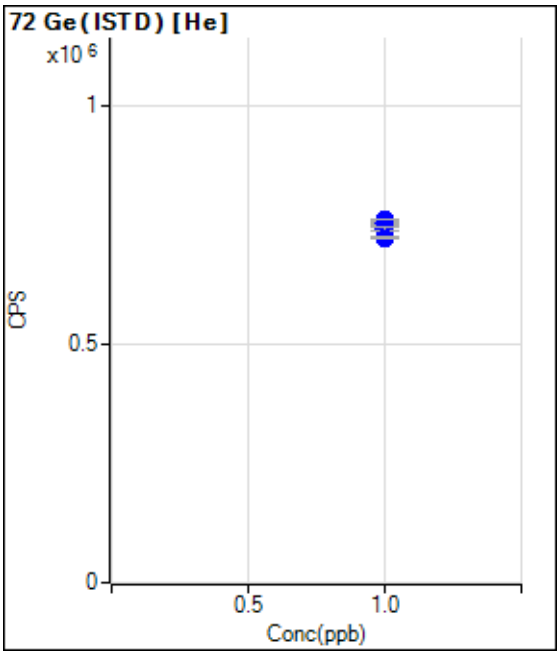


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1043272.54		A	3.3
2	☐	1.000		1047995.64		A	1.7
3	☐	1.000		1032814.88		A	0.7
4	☐	1.000		1030201.50		A	3.2
5	☐	1.000		980667.98		A	1.6
6	☐	1.000		954571.68		A	2.7

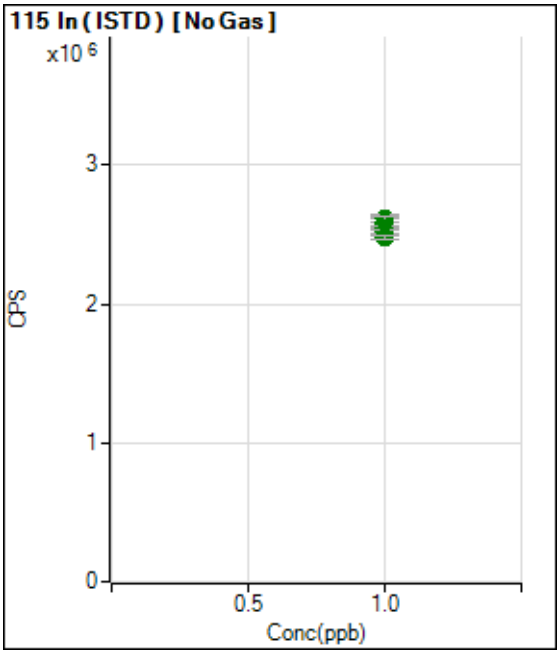


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2169251.84		A	2.3
2	☐	1.000		2186783.41		A	1.2
3	☐	1.000		2181292.00		A	0.9
4	☐	1.000		2157319.45		A	1.6
5	☐	1.000		2133415.44		A	2.0
6	☐	1.000		2095836.69		A	2.3

Calibration for 143_ICV.d

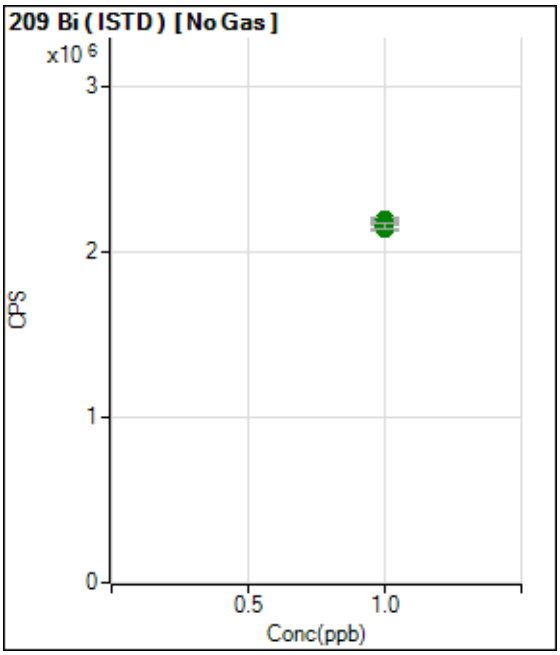


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		757743.58		P	1.3
2	☐	1.000		760402.28		P	0.4
3	☐	1.000		757858.56		P	0.6
4	☐	1.000		755130.17		P	1.2
5	☐	1.000		742971.08		P	1.2
6	☐	1.000		722501.50		P	0.3



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2581353.52		A	3.2
2	☐	1.000		2613887.34		A	2.2
3	☐	1.000		2593056.60		A	3.0
4	☐	1.000		2551959.07		A	1.2
5	☐	1.000		2521538.79		A	1.4
6	☐	1.000		2483997.19		A	1.0

Calibration for 143_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2148397.31		A	1.2
2	☐	1.000		2182368.15		A	1.7
3	☐	1.000		2197575.33		A	1.3
4	☐	1.000		2182283.72		A	0.9
5	☐	1.000		2154570.90		A	1.4
6	☐	1.000		2162559.76		A	1.6

Sample Report

Sample Table

Sample Name	LLICCV2
Data File Name	144LCV2.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:43:21-06:00
Sample Type	LLCCV2
Dilution	1
Comment	
ISTD Ref FileName	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	2.041	2.041	10.22	89019	0.00	2	
Be	9	1	No Gas	1.857	1.857	4.86	6998	0.03	2	
V	51	2	He	0.463	0.463	7.63	18104	0.00	2	NewName Main CR1 Failed
Cr	52	2	He	1.762	1.762	5.53	18166	0.01	2	
Fe	56	2	He	179.854	179.854	3.81	1237250	0.01	200	
Se	78	2	He	1.896	1.896	4.38	490	0.39	2	
As	75	2	He	1.596	1.596	4.01	2169	0.07	2	
Ca	44	2	He	191.582	191.582	5.45	9934	1.93	200	
Na	23	2	He	178.721	178.721	0.90	318458	0.06	200	
Mg	24	2	He	205.995	205.995	0.50	140852	0.15	200	
K	39	2	He	170.193	170.193	1.33	395391	0.04	200	
Mn	55	2	He	1.894	1.894	0.97	10948	0.02	2	
Co	59	2	He	1.913	1.913	1.64	17515	0.01	2	
Ni	60	2	He	1.868	1.868	2.64	4351	0.04	2	
Cu	63	2	He	2.071	2.071	2.05	13043	0.02	2	
Zn	66	2	He	1.788	1.788	5.34	2640	0.07	2	
Al	27	2	He	1.878	1.878	15.05	1870	0.10	2	
B	11	1	No Gas	12.116	12.116	6.47	31966	0.04	10	
Al	27	1	No Gas	2.111	2.111	0.43	55136	0.00	2	
Si	28	1	No Gas	10.980	10.980	9.58	336395	0.00	10	
Ag	107	1	No Gas	2.152	2.152	1.26	28290	0.01	2	
Cd	111	1	No Gas	1.879	1.879	3.27	5571	0.03	2	
Sr	88	1	No Gas	1.953	1.953	1.95	57919	0.00	2	
Mo	95	1	No Gas	1.854	1.854	4.42	11318	0.02	2	
Sn	118	1	No Gas	1.841	1.841	1.21	19635	0.01	2	
Sb	121	1	No Gas	1.919	1.919	4.11	24283	0.01	2	
Ba	137	1	No Gas	1.902	1.902	3.78	9344	0.02	2	
Tl	205	1	No Gas	1.949	1.949	0.55	49887	0.00	2	
Tl	203	1	No Gas	1.964	1.964	2.35	21215	0.01	2	
Pb	208	1	No Gas	1.917	1.917	2.89	68301	0.00	2	
U	238	1	No Gas	1.841	1.841	2.54	64082	0.00	2	
Ca	43	2	He	205.139	205.139	3.36	637	32.22	200	
Sb	121	2	He	1.740	1.740	0.95	12486	0.01	2	
Ti	47	2	He	1.676	1.676	16.98	457	0.37	200	
Cu	63	1	No Gas	2.023	2.023	0.77	24820	0.01	2	
Se	82	1	No Gas	1.824	1.824	29.27	330	0.55	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1022058	3.79	1043273	97.97	70	120	
Ge	72	2	He	729634	0.59	757744	96.29	70	120	
Ge	72	1	No Gas	2087311	1.67	2169252	96.22	70	120	
In	115	1	No Gas	2532423	1.28	2581354	98.10	70	120	
Bi	209	1	No Gas	2149864	0.92	2148397	100.07	70	120	

Sample Report

Sample Table

Sample Name	LLICCV5
Data File Name	145LCV5.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:45:19-06:00
Sample Type	LLCCV5
Dilution	1
Comment	
ISTD Ref FileName	136CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	5.185	5.185	6.76	127378	0.00	5	
Be	9	1	No Gas	4.658	4.658	1.68	17050	0.03	5	
V	51	2	He	3.502	3.502	0.47	36700	0.01	5	
Cr	52	2	He	4.863	4.863	4.49	39367	0.01	5	
Fe	56	2	He	488.495	488.495	0.66	3206168	0.02	500	
Se	78	2	He	4.542	4.542	5.56	806	0.56	5	
As	75	2	He	4.684	4.684	0.47	5318	0.09	5	
Ca	44	2	He	485.396	485.396	1.04	24606	1.97	500	
Na	23	2	He	486.384	486.384	2.38	681416	0.07	500	
Mg	24	2	He	517.907	517.907	1.12	360829	0.14	500	
K	39	2	He	471.552	471.552	1.75	697400	0.07	500	
Mn	55	2	He	4.818	4.818	3.68	27485	0.02	5	
Co	59	2	He	4.906	4.906	1.25	45784	0.01	5	
Ni	60	2	He	5.104	5.104	4.13	11582	0.04	5	
Cu	63	2	He	5.127	5.127	3.37	30465	0.02	5	
Zn	66	2	He	4.793	4.793	4.30	6328	0.08	5	
Al	27	2	He	4.778	4.778	20.50	3264	0.15	5	
B	11	1	No Gas	24.556	24.556	3.45	56649	0.04	25	
Al	27	1	No Gas	5.035	5.035	3.85	93402	0.01	5	
Si	28	1	No Gas	24.638	24.638	4.15	433877	0.01	25	
Ag	107	1	No Gas	5.643	5.643	1.50	69831	0.01	5	
Cd	111	1	No Gas	4.740	4.740	2.26	14001	0.03	5	
Sr	88	1	No Gas	4.909	4.909	2.27	142307	0.00	5	
Mo	95	1	No Gas	4.711	4.711	2.12	27221	0.02	5	
Sn	118	1	No Gas	4.640	4.640	1.69	45078	0.01	5	
Sb	121	1	No Gas	4.773	4.773	1.95	58537	0.01	5	
Ba	137	1	No Gas	4.873	4.873	3.68	23148	0.02	5	
Tl	205	1	No Gas	4.799	4.799	1.84	121753	0.00	5	
Tl	203	1	No Gas	4.694	4.694	1.06	50228	0.01	5	
Pb	208	1	No Gas	4.815	4.815	1.05	167327	0.00	5	
U	238	1	No Gas	4.642	4.642	1.04	159513	0.00	5	
Ca	43	2	He	498.373	498.373	8.70	1503	33.15	500	
Sb	121	2	He	4.712	4.712	1.62	33480	0.01	5	
Ti	47	2	He	4.613	4.613	6.81	1213	0.38	5	
Cu	63	1	No Gas	5.165	5.165	0.28	56731	0.01	5	
Se	82	1	No Gas	4.240	4.240	17.29	791	0.54	5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1001332	2.48	1043273	95.98	70	120	
Ge	72	2	He	747125	1.37	757744	98.60	70	120	
Ge	72	1	No Gas	2081751	1.96	2169252	95.97	70	120	

Sample Report

In	115	1	No Gas	2533631	2.79	2581354	98.15	70	120	
Bi	209	1	No Gas	2169039	1.76	2148397	100.96	70	120	

Initial Calibration Blank (ICB) Report

Sample Table

Sample Name	ICCB
Data File Name	146_ICB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:47:16-06:00
Sample Type	ICB
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.100	63.8	65014	1.8	0.5	
Be	9	1	No Gas	-0.006	-119.5	90	29.4	0.5	
V	51	2	He	-1.325	-0.6	7813	1.4	2.5	
Cr	52	2	He	-0.201	-39.9	5414	9.0	2.5	
Fe	56	2	He	-17.907	-0.4	24061	2.1	100	
Se	78	2	He	-0.390	-47.3	238	9.5	1	
As	75	2	He	-0.312	-6.5	307	6.1	2.5	
Ca	44	2	He	-2.709	-13.9	620	3.2	100	
Na	23	2	He	-30.960	-2.3	83449	1.6	100	
Mg	24	2	He	-0.485	-34.8	823	14.0	100	
K	39	2	He	-29.692	-6.2	209792	1.6	100	
Mn	55	2	He	-0.028	-44.0	510	13.7	2.5	
Co	59	2	He	0.005	13.6	173	3.3	2.5	
Ni	60	2	He	-0.072	-19.1	187	16.4	2.5	
Cu	63	2	He	-0.063	-27.2	1410	7.1	1	
Zn	66	2	He	-0.160	-33.1	350	18.7	2.5	
Al	27	2	He	-0.732	-27.3	693	13.1	5	
B	11	1	No Gas	0.498	25.7	8024	2.5	0.5	
Al	27	1	No Gas	-0.487	-10.4	21768	1.6	5	
Si	28	1	No Gas	-1.859	-11.4	253989	1.5	10	
Ag	107	1	No Gas	-0.202	-2.8	297	21.9	2.5	
Cd	111	1	No Gas	0.001	751.5	40	66.1	1	
Sr	88	1	No Gas	-0.037	-17.1	1160	14.1	2.5	
Mo	95	1	No Gas	-0.144	-2.1	207	10.1	2.5	
Sn	118	1	No Gas	-0.148	-13.2	1607	10.1	5	
Sb	121	1	No Gas	-0.058	-6.8	460	10.9	2.5	
Ba	137	1	No Gas	-0.056	-38.2	257	40.0	2.5	
Tl	205	1	No Gas	-0.026	-14.9	837	11.5	1	
Tl	203	1	No Gas	-0.032	-17.0	343	16.0	1	
Pb	208	1	No Gas	-0.066	-11.6	1580	16.1	2.5	
U	238	1	No Gas	-0.054	-5.6	493	20.5	2.5	
Ca	43	2	He	-12.332	-48.3	20	86.6	100	
Sb	121	2	He	-0.065	-6.8	213	13.5	2.5	
Ti	47	2	He	-0.128	-0.3	10	0.0	2.5	
Se	82	1	No Gas	-0.112	-397.7	-43	-207.0	1	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1041607	1.22	1043273	99.84	70	120	

Initial Calibration Blank (ICB) Report

Ge	72	2	He	743453	0.92	757744	98.11	70	120	
Ge	72	1	No Gas	2175154	1.72	2169252	100.27	70	120	
In	115	1	No Gas	2607944	1.79	2581354	101.03	70	120	
Bi	209	1	No Gas	2231483	0.93	2148397	103.87	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	148_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:51:12-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	103.549	2.251	1387934	2.41	100	103.5	90	110	
Be	9	1	No Gas	99.813	1.983	364275	0.75	100	99.8	90	110	
V	51	2	He	100.026	0.700	613561	0.37	100	100.0	90	110	
Cr	52	2	He	99.403	0.350	672839	0.27	100	99.4	90	110	
Fe	56	2	He	10238.867	1.225	64472921	0.98	10000	102.4	90	110	
Se	78	2	He	99.822	1.788	11754	1.42	100	99.8	90	110	
As	75	2	He	103.050	0.510	103936	0.50	100	103.0	90	110	
Ca	44	2	He	10037.643	0.560	493963	0.59	10000	100.4	90	110	
Na	23	2	He	10149.062	1.179	11843811	0.78	10000	101.5	90	110	
Mg	24	2	He	10320.688	0.157	7168831	0.54	10000	103.2	90	110	
K	39	2	He	10294.480	0.939	10233573	0.86	10000	102.9	90	110	
Mn	55	2	He	99.984	1.231	557257	0.93	100	100.0	90	110	
Co	59	2	He	99.397	0.170	925143	0.53	100	99.4	90	110	
Ni	60	2	He	104.087	0.447	229388	0.62	100	104.1	90	110	
Cu	63	2	He	102.259	0.573	573991	0.29	100	102.3	90	110	
Zn	66	2	He	101.490	0.864	123047	0.48	100	101.5	90	110	
Al	27	2	He	105.716	1.918	50358	1.50	100	105.7	90	110	
B	11	1	No Gas	498.982	3.310	1024969	2.48	500	99.8	90	110	
Al	27	1	No Gas	110.078	3.614	1490921	0.91	100	110.1	90	110	CCV Main CR1-2 Failed
Si	28	1	No Gas	584.924	3.664	4520438	0.98	5000	11.7	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	103.602	3.812	1219239	1.13	100	103.6	90	110	
Cd	111	1	No Gas	101.228	3.002	294538	0.88	100	101.2	90	110	
Sr	88	1	No Gas	102.815	3.108	2900234	0.35	100	102.8	90	110	
Mo	95	1	No Gas	101.389	3.283	558129	0.50	100	101.4	90	110	
Sn	118	1	No Gas	99.141	2.088	892612	0.70	100	99.1	90	110	
Sb	121	1	No Gas	102.416	3.982	1246551	0.46	100	102.4	90	110	
Ba	137	1	No Gas	103.615	2.881	475902	0.56	100	103.6	90	110	
Tl	205	1	No Gas	106.450	4.036	2653013	1.77	100	106.5	90	110	
Tl	203	1	No Gas	102.625	3.209	1077394	1.29	100	102.6	90	110	
Pb	208	1	No Gas	102.377	1.075	3460276	1.35	100	102.4	90	110	
U	238	1	No Gas	104.231	2.296	3510940	2.06	100	104.2	90	110	
Ca	43	2	He	9961.862	0.863	29001	1.26	10000	99.6	90	110	
Sb	121	2	He	98.341	0.536	685583	0.24	100	98.3	90	110	
Ti	47	2	He	100.892	1.794	25634	1.40	100	100.9	90	110	
Cu	63	1	No Gas	102.416	4.360	1057932	0.10	100	102.4	90	110	
Se	82	1	No Gas	100.217	5.269	19355	0.83	100	100.2	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1004279	1.22	1043273	96.26	70	120	
Ge	72	2	He	747106	0.40	757744	98.60	70	120	
Ge	72	1	No Gas	2107289	4.41	2169252	97.14	70	120	
In	115	1	No Gas	2502181	2.74	2581354	96.93	70	120	
Bi	209	1	No Gas	2156270	2.41	2148397	100.37	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	149_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:53:06-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.179	42.4	63281	1.1	0.5	
Be	9	1	No Gas	0.036	78.5	237	42.0	0.5	
V	51	2	He	-1.321	-2.4	7853	2.9	2.5	
Cr	52	2	He	-0.161	-45.6	5698	9.2	2.5	
Fe	56	2	He	-15.882	-2.8	36807	7.1	100	
Se	78	2	He	0.048	193.1	289	3.2	2	
As	75	2	He	-0.270	-6.2	350	5.3	2.5	
Ca	44	2	He	0.598	169.1	783	5.8	100	
Na	23	2	He	-29.466	-1.1	85370	0.7	100	
Mg	24	2	He	1.024	23.5	1870	8.6	100	
K	39	2	He	-20.635	-11.5	219057	0.7	100	
Mn	55	2	He	-0.030	-53.9	497	18.2	2.5	
Co	59	2	He	0.014	45.0	257	21.5	2.5	
Ni	60	2	He	-0.044	-50.5	247	20.0	2.5	
Cu	63	2	He	0.032	49.7	1940	4.0	2	
Zn	66	2	He	-0.089	-58.4	437	14.0	2.5	
Al	27	2	He	-1.080	-29.9	533	28.5	5	
B	11	1	No Gas	1.902	27.6	10524	8.4	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-0.737	-2.2	17124	1.7	5	
Si	28	1	No Gas	1.698	55.6	262242	0.8	10	
Ag	107	1	No Gas	-0.140	-14.3	1007	21.1	2.5	
Cd	111	1	No Gas	0.023	68.3	100	45.8	1	
Sr	88	1	No Gas	-0.009	-60.3	1857	6.5	2.5	
Mo	95	1	No Gas	-0.042	-120.4	740	35.1	2.5	
Sn	118	1	No Gas	-0.062	-50.6	2280	10.0	5	
Sb	121	1	No Gas	-0.010	-56.5	993	7.6	2.5	
Ba	137	1	No Gas	-0.035	-29.7	337	12.4	2.5	
Tl	205	1	No Gas	0.067	48.5	3010	26.8	1	
Tl	203	1	No Gas	0.071	52.4	1353	28.2	1	
Pb	208	1	No Gas	-0.010	-269.9	3297	28.5	2.5	
U	238	1	No Gas	0.004	508.5	2320	26.0	2.5	
Ca	43	2	He	-10.015	-19.9	27	21.7	100	
Sb	121	2	He	-0.037	-12.2	403	7.6	2.5	
Ti	47	2	He	-0.089	-76.9	20	86.6	2.5	
Cu	63	1	No Gas	0.015	211.3	4207	5.0	2.5	
Se	82	1	No Gas	-0.002	-18169.0	-19	-419.9	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	997950	1.93	1043273	95.66	70	120	
Ge	72	2	He	745251	0.56	757744	98.35	70	120	
Ge	72	1	No Gas	2032347	2.31	2169252	93.69	70	120	
In	115	1	No Gas	2463283	1.96	2581354	95.43	70	120	
Bi	209	1	No Gas	2076266	0.87	2148397	96.64	70	120	

Sample Report

Sample Table

Sample Name	MBLK-175201
Data File Name	150SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:55:05-06:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 175201
ISTD Ref FileName	136CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	-0.062	-0.062	-109.41	64274	0.00	2000	
Be	9	1	No Gas	-0.012	-0.012	-44.82	68	-0.02	2000	
V	51	2	He	-1.355	-1.355	-1.08	7523	-0.02	2000	
Cr	52	2	He	-0.148	-0.148	-20.50	5685	0.00	2000	
Fe	56	2	He	-16.961	-16.961	-0.34	29536	-0.06	200000	
Se	78	2	He	-0.156	-0.156	-217.36	261	-0.06	2000	
As	75	2	He	-0.283	-0.283	-18.86	331	-0.09	2000	
Ca	44	2	He	5.088	5.088	32.23	987	0.52	200000	
Na	23	2	He	-29.197	-29.197	-1.55	84213	-0.03	200000	
Mg	24	2	He	15.785	15.785	2.69	11889	0.13	200000	
K	39	2	He	-16.568	-16.568	-2.30	219188	-0.01	200000	
Mn	55	2	He	0.066	0.066	37.68	1017	0.01	2000	
Co	59	2	He	-0.009	-0.009	-17.54	43	-0.02	2000	
Ni	60	2	He	-0.012	-0.012	-317.38	313	0.00	2000	
Cu	63	2	He	0.272	0.272	15.38	3227	0.01	2000	
Zn	66	2	He	0.531	0.531	4.11	1163	0.05	2000	
Al	27	2	He	7.978	7.978	2.90	4668	0.17	2000	
B	11	1	No Gas	0.119	0.119	57.83	7384	0.00	2000	
Al	27	1	No Gas	8.160	8.160	3.10	135844	0.01	2000	
Si	28	1	No Gas	31.254	31.254	5.70	486377	0.01	2000	
Ag	107	1	No Gas	-0.205	-0.205	-2.20	260	-0.08	2000	
Cd	111	1	No Gas	-0.004	-0.004	-87.04	23	-0.02	2000	
Sr	88	1	No Gas	0.024	0.024	8.66	2914	0.00	2000	
Mo	95	1	No Gas	-0.149	-0.149	-8.42	170	-0.09	2000	
Sn	118	1	No Gas	-0.124	-0.124	-1.42	1807	-0.01	2000	
Sb	121	1	No Gas	-0.066	-0.066	-10.55	357	-0.02	2000	
Ba	137	1	No Gas	0.076	0.076	13.13	877	0.01	2000	
Tl	205	1	No Gas	-0.041	-0.041	-9.28	460	-0.01	2000	
Tl	203	1	No Gas	-0.044	-0.044	-13.03	203	-0.02	2000	
Pb	208	1	No Gas	-0.065	-0.065	-4.93	1630	0.00	2000	
U	238	1	No Gas	-0.063	-0.063	-4.00	180	-0.03	2000	
Ca	43	2	He	5.371	5.371	68.15	70	7.67	200000	
Sb	121	2	He	-0.070	-0.070	-5.69	170	-0.04	2000	
Ti	47	2	He	-0.088	-0.088	-79.46	20	-0.44	2000	
Cu	63	1	No Gas	0.239	0.239	6.65	6662	0.00	2000	
Zn	66	1	No Gas	0.453	0.453	3.88	2734	0.02	2000	
Se	82	1	No Gas	0.531	0.531	189.41	81	0.66	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1065210	1.92	1043273	102.10	70	120	
Ge	72	2	He	732497	0.61	757744	96.67	70	120	
Ge	72	1	No Gas	2102982	2.05	2169252	96.95	70	120	
In	115	1	No Gas	2573806	1.74	2581354	99.71	70	120	

Sample Report

Bi	209	1	No Gas	2213965	0.95	2148397	103.05	70	120	

Sample Report

Sample Table

Sample Name	LCS-175201
Data File Name	151SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:57:04-06:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 175201
ISTD Ref FileName	136CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	0.044	0.044	199.52	63993	0.00	2000	
Be	9	1	No Gas	49.369	49.369	0.23	186198	0.03	2000	
V	51	2	He	50.989	50.989	0.23	315920	0.02	2000	
Cr	52	2	He	51.061	51.061	0.46	343935	0.01	2000	
Fe	56	2	He	5092.478	5092.478	0.91	31676474	0.02	200000	
Se	78	2	He	50.917	50.917	1.37	6047	0.84	2000	
As	75	2	He	52.037	52.037	1.26	52038	0.10	2000	
Ca	44	2	He	5036.674	5036.674	0.13	244688	2.06	200000	
Na	23	2	He	5446.283	5446.283	0.91	6319746	0.09	200000	
Mg	24	2	He	5263.459	5263.459	1.40	3604345	0.15	200000	
K	39	2	He	5218.668	5218.668	1.09	5230131	0.10	200000	
Mn	55	2	He	52.100	52.100	0.25	286546	0.02	2000	
Co	59	2	He	51.190	51.190	0.22	469704	0.01	2000	
Ni	60	2	He	53.200	53.200	0.65	115732	0.05	2000	
Cu	63	2	He	53.513	53.513	0.55	296916	0.02	2000	
Zn	66	2	He	57.574	57.574	0.79	69039	0.08	2000	
Al	27	2	He	83.135	83.135	1.35	39255	0.21	2000	
B	11	1	No Gas	0.093	0.093	124.09	7137	0.00	2000	
Al	27	1	No Gas	83.577	83.577	0.99	1148807	0.01	2000	
Si	28	1	No Gas	47.795	47.795	1.94	613107	0.01	2000	
Ag	107	1	No Gas	62.097	62.097	0.40	722401	0.01	2000	
Cd	111	1	No Gas	52.819	52.819	0.40	151695	0.03	2000	
Sr	88	1	No Gas	0.069	0.069	14.75	4031	0.00	2000	
Mo	95	1	No Gas	51.858	51.858	0.94	282231	0.02	2000	
Sn	118	1	No Gas	-0.132	-0.132	-18.25	1667	-0.01	2000	
Sb	121	1	No Gas	50.471	50.471	1.35	620469	0.01	2000	
Ba	137	1	No Gas	52.011	52.011	0.97	235994	0.02	2000	
Tl	205	1	No Gas	51.858	51.858	1.74	1273879	0.00	2000	
Tl	203	1	No Gas	49.377	49.377	1.50	510897	0.01	2000	
Pb	208	1	No Gas	50.924	50.924	2.21	1696471	0.00	2000	
U	238	1	No Gas	-0.064	-0.064	-1.48	140	-0.05	2000	
Ca	43	2	He	4960.426	4960.426	5.02	14261	34.78	200000	
Sb	121	2	He	49.842	49.842	0.63	342833	0.01	2000	
Ti	47	2	He	49.795	49.795	2.04	12493	0.40	2000	
Cu	63	1	No Gas	53.816	53.816	1.67	562977	0.01	2000	
Zn	66	1	No Gas	57.244	57.244	1.28	162328	0.04	2000	
Se	82	1	No Gas	49.972	49.972	3.10	9731	0.51	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1037395	1.32	1043273	99.44	70	120	
Ge	72	2	He	736425	0.15	757744	97.19	70	120	
Ge	72	1	No Gas	2124146	1.83	2169252	97.92	70	120	
In	115	1	No Gas	2468190	1.21	2581354	95.62	70	120	

Sample Report

Bi	209	1	No Gas	2122953	1.23	2148397	98.82	70	120	

Sample Report

Sample Table

Sample Name	HS22011233-09
Data File Name	152SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T20:59:01-06:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 175201
ISTD Ref FileName	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	11.035	11.035	0.75	209166	0.01	2000	
Be	9	1	No Gas	0.025	0.025	18.58	205	0.01	2000	
V	51	2	He	0.588	0.588	17.16	18763	0.00	2000	
Cr	52	2	He	0.359	0.359	5.69	8950	0.00	2000	
Fe	56	2	He	1076.852	1076.852	1.37	6716790	0.02	200000	
Se	78	2	He	-0.073	-0.073	-258.75	268	-0.03	2000	
As	75	2	He	0.497	0.497	9.59	1089	0.05	2000	
Ca	44	2	He	11738.046	11738.046	0.36	561913	2.09	200000	
Na	23	2	He	22993.408	22993.408	0.60	25961415	0.09	200000	
Mg	24	2	He	6271.209	6271.209	0.81	4238705	0.15	200000	
K	39	2	He	2411.588	2411.588	1.07	2511082	0.10	200000	
Mn	55	2	He	31.614	31.614	0.96	171886	0.02	2000	
Co	59	2	He	0.178	0.178	8.27	1737	0.01	2000	
Ni	60	2	He	1.126	1.126	8.56	2747	0.04	2000	
Cu	63	2	He	0.498	0.498	4.61	4431	0.01	2000	
Zn	66	2	He	2.092	2.092	7.26	2987	0.07	2000	
Al	27	2	He	267.082	267.082	5.30	122259	0.22	2000	
B	11	1	No Gas	14.389	14.389	1.06	37229	0.04	2000	
Al	27	1	No Gas	274.724	274.724	9.15	3693997	0.01	2000	
Si	28	1	No Gas	13861.877	13861.877	1.06	101612455	0.01	2000	>LDR
Ag	107	1	No Gas	-0.201	-0.201	-4.22	307	-0.07	2000	
Cd	111	1	No Gas	0.011	0.011	104.27	67	0.02	2000	
Sr	88	1	No Gas	213.122	213.122	1.09	6059660	0.00	2000	
Mo	95	1	No Gas	0.014	0.014	217.34	1073	0.00	2000	
Sn	118	1	No Gas	-0.142	-0.142	-4.78	1610	-0.01	2000	
Sb	121	1	No Gas	0.060	0.060	26.91	1887	0.00	2000	
Ba	137	1	No Gas	68.099	68.099	1.52	315540	0.02	2000	
Tl	205	1	No Gas	0.049	0.049	56.94	2664	0.00	2000	
Tl	203	1	No Gas	0.058	0.058	31.96	1263	0.00	2000	
Pb	208	1	No Gas	0.314	0.314	3.97	14260	0.00	2000	
U	238	1	No Gas	-0.007	-0.007	-156.23	2040	0.00	2000	
Ca	43	2	He	11699.628	11699.628	2.30	33130	35.31	200000	
Sb	121	2	He	0.044	0.044	9.46	947	0.00	2000	
Ti	47	2	He	6.017	6.017	20.38	1527	0.39	2000	
Cu	63	1	No Gas	0.630	0.630	9.68	10738	0.01	2000	
Zn	66	1	No Gas	2.075	2.075	1.34	7282	0.03	2000	
Se	82	1	No Gas	0.410	0.410	71.19	60	0.68	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1035958	0.26	1043273	99.30	70	120	
Ge	72	2	He	726921	0.46	757744	95.93	70	120	
Ge	72	1	No Gas	2112928	0.40	2169252	97.40	70	120	
In	115	1	No Gas	2521828	1.43	2581354	97.69	70	120	

Sample Report

Bi	209	1	No Gas	2141263	1.06	2148397	99.67	70	120	

Sample Report

Sample Table

Sample Name	HS22011233-09SD
Data File Name	153SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T21:00:58-06:00
Sample Type	Sample
Dilution	5
Comment	DOD TW 175201
ISTD Ref FileName	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	2.473	12.367	7.81	89609	0.00	2000	
Be	9	1	No Gas	0.010	0.048	77.00	137	0.01	2000	
V	51	2	He	-0.746	-3.728	-6.96	10793	-0.01	2000	
Cr	52	2	He	-0.089	-0.445	-25.26	5911	0.00	2000	
Fe	56	2	He	207.174	1035.870	2.45	1372454	0.02	200000	
Se	78	2	He	0.127	0.634	135.93	285	0.04	2000	
As	75	2	He	-0.097	-0.486	-59.81	500	-0.02	2000	
Ca	44	2	He	2326.399	11631.997	0.57	109799	2.12	200000	
Na	23	2	He	4550.453	22752.264	2.10	5129734	0.09	200000	
Mg	24	2	He	1244.190	6220.950	0.53	825639	0.15	200000	
K	39	2	He	464.094	2320.468	1.57	658569	0.07	200000	
Mn	55	2	He	6.287	31.436	2.88	34036	0.02	2000	
Co	59	2	He	0.026	0.128	14.82	353	0.01	2000	
Ni	60	2	He	0.113	0.566	19.83	567	0.02	2000	
Cu	63	2	He	0.186	0.928	23.82	2677	0.01	2000	
Zn	66	2	He	1.007	5.037	10.53	1680	0.06	2000	
Al	27	2	He	55.271	276.353	3.09	25605	0.22	2000	
B	11	1	No Gas	3.067	15.335	6.01	12496	0.02	2000	
Al	27	1	No Gas	54.145	270.723	16.01	718538	0.01	2000	
Si	28	1	No Gas	2821.798	14108.990	2.89	20038970	0.01	2000	>LDR
Ag	107	1	No Gas	-0.198	-0.988	-4.21	330	-0.06	2000	
Cd	111	1	No Gas	0.002	0.011	422.74	40	0.01	2000	
Sr	88	1	No Gas	45.114	225.572	1.54	1228626	0.00	2000	
Mo	95	1	No Gas	-0.116	-0.580	-2.76	337	-0.03	2000	
Sn	118	1	No Gas	-0.181	-0.906	-2.83	1203	-0.02	2000	
Sb	121	1	No Gas	-0.034	-0.169	-11.09	717	0.00	2000	
Ba	137	1	No Gas	13.956	69.781	1.27	62256	0.02	2000	
Tl	205	1	No Gas	-0.026	-0.132	-10.35	770	0.00	2000	
Tl	203	1	No Gas	-0.034	-0.168	-22.53	297	-0.01	2000	
Pb	208	1	No Gas	0.019	0.093	26.07	4217	0.00	2000	
U	238	1	No Gas	-0.046	-0.231	-10.29	703	-0.01	2000	
Ca	43	2	He	2371.680	11858.401	1.27	6628	35.78	200000	
Sb	121	2	He	-0.043	-0.216	-24.62	347	-0.01	2000	
Ti	47	2	He	0.738	3.692	35.10	220	0.34	2000	
Cu	63	1	No Gas	0.196	0.978	9.82	5995	0.00	2000	
Zn	66	1	No Gas	0.843	4.214	9.75	3681	0.02	2000	
Se	82	1	No Gas	0.355	1.775	30.90	47	0.75	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	967327	3.16	1043273	92.72	70	120	
Ge	72	2	He	712941	1.37	757744	94.09	70	120	
Ge	72	1	No Gas	2027247	1.71	2169252	93.45	70	120	
In	115	1	No Gas	2412254	1.70	2581354	93.45	70	120	

Sample Report

Bi	209	1	No Gas	2070061	0.91	2148397	96.35	70	120	

Sample Report

Sample Table

Sample Name	HS22011233-09MS
Data File Name	154SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T21:02:56-06:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 175201
ISTD Ref FileName	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	11.262	11.262	0.63	206966	0.01	2000	
Be	9	1	No Gas	50.538	50.538	1.16	185679	0.03	2000	
V	51	2	He	51.989	51.989	0.63	317068	0.02	2000	
Cr	52	2	He	50.345	50.345	0.21	334207	0.02	2000	
Fe	56	2	He	6203.411	6203.411	0.76	37988649	0.02	200000	
Se	78	2	He	52.385	52.385	1.63	6122	0.86	2000	
As	75	2	He	52.945	52.945	0.29	52155	0.10	2000	
Ca	44	2	He	16831.057	16831.057	0.38	803898	2.09	200000	
Na	23	2	He	28287.828	28287.828	1.15	31852721	0.09	200000	
Mg	24	2	He	11363.794	11363.794	1.48	7665424	0.15	200000	
K	39	2	He	7492.518	7492.518	0.42	7296827	0.10	200000	
Mn	55	2	He	82.420	82.420	0.75	446247	0.02	2000	
Co	59	2	He	51.067	51.067	0.69	461663	0.01	2000	
Ni	60	2	He	53.457	53.457	2.34	114569	0.05	2000	
Cu	63	2	He	53.464	53.464	0.62	292270	0.02	2000	
Zn	66	2	He	55.240	55.240	1.25	65284	0.08	2000	
Al	27	2	He	299.149	299.149	1.50	136551	0.22	2000	
B	11	1	No Gas	14.791	14.791	1.16	37141	0.04	2000	
Al	27	1	No Gas	302.927	302.927	3.83	4053700	0.01	2000	
Si	28	1	No Gas	14078.534	14078.534	1.30	102793702	0.01	2000	>LDR
Ag	107	1	No Gas	60.644	60.644	1.17	713358	0.01	2000	
Cd	111	1	No Gas	51.916	51.916	0.04	150758	0.03	2000	
Sr	88	1	No Gas	218.754	218.754	2.11	6154902	0.00	2000	
Mo	95	1	No Gas	50.727	50.727	2.47	279133	0.02	2000	
Sn	118	1	No Gas	-0.154	-0.154	-5.72	1490	-0.01	2000	
Sb	121	1	No Gas	50.129	50.129	1.96	610611	0.01	2000	
Ba	137	1	No Gas	120.330	120.330	1.33	551383	0.02	2000	
Tl	205	1	No Gas	52.102	52.102	2.20	1257331	0.00	2000	
Tl	203	1	No Gas	50.308	50.308	2.71	511326	0.01	2000	
Pb	208	1	No Gas	51.461	51.461	3.11	1684062	0.00	2000	
U	238	1	No Gas	-0.008	-0.008	-32.53	1960	0.00	2000	
Ca	43	2	He	16830.744	16830.744	1.40	47545	35.40	200000	
Sb	121	2	He	50.073	50.073	1.17	339332	0.01	2000	
Ti	47	2	He	54.986	54.986	2.31	13587	0.40	2000	
Cu	63	1	No Gas	53.432	53.432	2.44	553884	0.01	2000	
Zn	66	1	No Gas	54.974	54.974	2.54	154515	0.04	2000	
Se	82	1	No Gas	51.864	51.864	1.64	10011	0.52	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1010617	0.79	1043273	96.87	70	120	
Ge	72	2	He	725571	0.38	757744	95.75	70	120	
Ge	72	1	No Gas	2104842	1.52	2169252	97.03	70	120	
In	115	1	No Gas	2495608	0.88	2581354	96.68	70	120	

Sample Report

Bi	209	1	No Gas	2085985	1.98	2148397	97.09	70	120	

Sample Report

Sample Table

Sample Name	HS22011233-09MSD
Data File Name	155SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T21:04:53-06:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 175201
ISTD Ref FileName	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	10.881	10.881	2.19	202338	0.01	2000	
Be	9	1	No Gas	48.071	48.071	1.92	176861	0.03	2000	
V	51	2	He	49.385	49.385	1.25	302812	0.02	2000	
Cr	52	2	He	48.403	48.403	1.65	322482	0.02	2000	
Fe	56	2	He	5952.927	5952.927	1.40	36563398	0.02	200000	
Se	78	2	He	50.004	50.004	2.05	5873	0.85	2000	
As	75	2	He	50.927	50.927	1.40	50331	0.10	2000	
Ca	44	2	He	16327.151	16327.151	1.16	782066	2.09	200000	
Na	23	2	He	27276.794	27276.794	0.99	30806825	0.09	200000	
Mg	24	2	He	10908.297	10908.297	0.89	7379548	0.15	200000	
K	39	2	He	7219.309	7219.309	0.79	7059494	0.10	200000	
Mn	55	2	He	80.125	80.125	1.11	435070	0.02	2000	
Co	59	2	He	48.607	48.607	0.52	440698	0.01	2000	
Ni	60	2	He	51.308	51.308	0.64	110304	0.05	2000	
Cu	63	2	He	51.061	51.061	1.54	279997	0.02	2000	
Zn	66	2	He	53.013	53.013	1.82	62862	0.08	2000	
Al	27	2	He	349.314	349.314	3.89	159745	0.22	2000	
B	11	1	No Gas	14.225	14.225	1.93	36029	0.04	2000	
Al	27	1	No Gas	336.402	336.402	13.24	4503794	0.01	2000	
Si	28	1	No Gas	13772.404	13772.404	1.77	100633152	0.01	2000	>LDR
Ag	107	1	No Gas	57.855	57.855	0.94	682806	0.01	2000	
Cd	111	1	No Gas	49.683	49.683	0.56	144720	0.03	2000	
Sr	88	1	No Gas	212.122	212.122	1.63	5987224	0.00	2000	
Mo	95	1	No Gas	48.399	48.399	0.91	267217	0.02	2000	
Sn	118	1	No Gas	-0.151	-0.151	-9.03	1520	-0.01	2000	
Sb	121	1	No Gas	48.527	48.527	0.46	591631	0.01	2000	
Ba	137	1	No Gas	116.974	116.974	0.52	537719	0.02	2000	
Tl	205	1	No Gas	50.656	50.656	1.50	1219038	0.00	2000	
Tl	203	1	No Gas	48.418	48.418	2.22	490762	0.01	2000	
Pb	208	1	No Gas	49.552	49.552	2.08	1617290	0.00	2000	
U	238	1	No Gas	-0.010	-0.010	-35.74	1890	0.00	2000	
Ca	43	2	He	16452.027	16452.027	1.52	46609	35.30	200000	
Sb	121	2	He	47.601	47.601	1.52	323528	0.01	2000	
Ti	47	2	He	58.049	58.049	4.59	14383	0.40	2000	
Cu	63	1	No Gas	51.542	51.542	1.16	534893	0.01	2000	
Zn	66	1	No Gas	53.741	53.741	0.81	151218	0.04	2000	
Se	82	1	No Gas	49.052	49.052	3.64	9474	0.52	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1012135	1.49	1043273	97.02	70	120	
Ge	72	2	He	727690	1.16	757744	96.03	70	120	
Ge	72	1	No Gas	2106193	0.47	2169252	97.09	70	120	
In	115	1	No Gas	2503306	0.40	2581354	96.98	70	120	

Sample Report

Bi	209	1	No Gas	2079812	1.45	2148397	96.81	70	120	

Sample Report

Sample Table

Sample Name	HS22011233-09PDS
Data File Name	156SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T21:06:49-06:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 175201
ISTD Ref FileName	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	10.812	10.812	1.68	199958	0.01	2000	
Be	9	1	No Gas	93.654	93.654	0.95	341925	0.03	2000	
V	51	2	He	93.501	93.501	1.23	567713	0.02	2000	
Cr	52	2	He	92.238	92.238	1.42	617376	0.01	2000	
Fe	56	2	He	10214.934	10214.934	0.66	63557296	0.02	200000	
Se	78	2	He	93.869	93.869	0.74	10939	0.86	2000	
As	75	2	He	95.359	95.359	0.95	95079	0.10	2000	
Ca	44	2	He	20190.963	20190.963	3.52	980882	2.06	200000	
Na	23	2	He	30898.831	30898.831	1.97	35386534	0.09	200000	
Mg	24	2	He	15201.588	15201.588	0.68	10432675	0.15	200000	
K	39	2	He	11457.333	11457.333	1.20	11226800	0.10	200000	
Mn	55	2	He	130.005	130.005	0.52	715762	0.02	2000	
Co	59	2	He	91.229	91.229	0.97	838993	0.01	2000	
Ni	60	2	He	95.753	95.753	1.55	208524	0.05	2000	
Cu	63	2	He	95.218	95.218	1.13	528215	0.02	2000	
Zn	66	2	He	98.082	98.082	0.90	117519	0.08	2000	
Al	27	2	He	346.502	346.502	3.58	160750	0.22	2000	
B	11	1	No Gas	13.918	13.918	2.62	35134	0.04	2000	
Al	27	1	No Gas	334.237	334.237	10.94	4576746	0.01	2000	
Si	28	1	No Gas	12973.165	12973.165	1.51	96971242	0.01	2000	>LDR
Ag	107	1	No Gas	91.641	91.641	0.49	1071060	0.01	2000	
Cd	111	1	No Gas	95.180	95.180	0.37	274925	0.03	2000	
Sr	88	1	No Gas	207.409	207.409	1.94	5805446	0.00	2000	
Mo	95	1	No Gas	94.547	94.547	0.63	516761	0.02	2000	
Sn	118	1	No Gas	-0.134	-0.134	-13.18	1660	-0.01	2000	
Sb	121	1	No Gas	86.534	86.534	1.72	1078133	0.01	2000	
Ba	137	1	No Gas	160.172	160.172	0.35	730006	0.02	2000	
Tl	205	1	No Gas	95.100	95.100	1.78	2330475	0.00	2000	
Tl	203	1	No Gas	91.519	91.519	2.64	944459	0.01	2000	
Pb	208	1	No Gas	94.600	94.600	2.27	3142271	0.00	2000	
U	238	1	No Gas	-0.013	-0.013	-15.61	1814	0.00	2000	
Ca	43	2	He	20045.053	20045.053	1.49	57600	34.80	200000	
Sb	121	2	He	87.299	87.299	0.92	601425	0.01	2000	
Ti	47	2	He	99.279	99.279	4.43	24923	0.40	2000	
Cu	63	1	No Gas	94.396	94.396	0.03	998440	0.01	2000	
Zn	66	1	No Gas	97.916	97.916	0.64	280565	0.03	2000	
Se	82	1	No Gas	90.331	90.331	0.78	17860	0.51	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1004540	1.10	1043273	96.29	70	120	
Ge	72	2	He	738221	0.73	757744	97.42	70	120	
Ge	72	1	No Gas	2154285	0.74	2169252	99.31	70	120	
In	115	1	No Gas	2482608	0.81	2581354	96.17	70	120	

Sample Report

Bi	209	1	No Gas	2119123	1.92	2148397	98.64	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	157_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T21:08:44-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	105.841	5.935	1322805	2.85	100	105.8	90	110	
Be	9	1	No Gas	100.346	3.999	341942	0.29	100	100.3	90	110	
V	51	2	He	99.939	0.901	586027	0.61	100	99.9	90	110	
Cr	52	2	He	99.514	0.356	643902	0.35	100	99.5	90	110	
Fe	56	2	He	10172.396	1.263	61234846	1.44	10000	101.7	90	110	
Se	78	2	He	98.432	1.456	11085	1.72	100	98.4	90	110	
As	75	2	He	101.831	0.543	98189	0.63	100	101.8	90	110	
Ca	44	2	He	10060.144	1.207	473252	1.19	10000	100.6	90	110	
Na	23	2	He	10133.564	0.486	11305213	0.73	10000	101.3	90	110	
Mg	24	2	He	10089.349	1.073	6699180	0.78	10000	100.9	90	110	
K	39	2	He	10210.006	0.844	9704186	0.62	10000	102.1	90	110	
Mn	55	2	He	99.937	0.558	532465	0.67	100	99.9	90	110	
Co	59	2	He	98.954	0.623	880423	0.51	100	99.0	90	110	
Ni	60	2	He	103.075	1.152	217145	0.82	100	103.1	90	110	
Cu	63	2	He	102.604	0.236	550546	0.11	100	102.6	90	110	
Zn	66	2	He	100.307	1.474	116261	1.35	100	100.3	90	110	
Al	27	2	He	106.220	1.330	48368	1.64	100	106.2	90	110	
B	11	1	No Gas	496.404	2.849	952437	0.94	500	99.3	90	110	
Al	27	1	No Gas	108.220	3.461	1385977	1.17	100	108.2	90	110	
Si	28	1	No Gas	595.737	0.263	4349633	2.34	5000	11.9	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	103.032	3.100	1171191	0.76	100	103.0	90	110	
Cd	111	1	No Gas	100.594	3.113	282666	0.83	100	100.6	90	110	
Sr	88	1	No Gas	100.807	2.551	2746625	0.93	100	100.8	90	110	
Mo	95	1	No Gas	99.907	2.357	531262	1.08	100	99.9	90	110	
Sn	118	1	No Gas	97.582	2.832	848431	0.64	100	97.6	90	110	
Sb	121	1	No Gas	103.870	3.982	1195072	1.66	100	103.9	90	110	
Ba	137	1	No Gas	102.481	2.656	454636	1.64	100	102.5	90	110	
Tl	205	1	No Gas	106.641	0.999	2512926	1.10	100	106.6	90	110	
Tl	203	1	No Gas	103.023	0.690	1022493	0.94	100	103.0	90	110	
Pb	208	1	No Gas	103.455	1.108	3304456	0.45	100	103.5	90	110	
U	238	1	No Gas	104.767	1.617	3335453	1.93	100	104.8	90	110	
Ca	43	2	He	10144.163	2.682	28229	2.80	10000	101.4	90	110	
Sb	121	2	He	98.566	0.581	656869	0.26	100	98.6	90	110	
Ti	47	2	He	102.726	2.377	24950	2.09	100	102.7	90	110	
Cu	63	1	No Gas	105.390	1.944	1029433	0.70	100	105.4	90	110	
Se	82	1	No Gas	99.084	5.556	18093	3.82	100	99.1	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	938513	3.82	1043273	89.96	70	120	
Ge	72	2	He	714185	0.34	757744	94.25	70	120	
Ge	72	1	No Gas	1991000	2.58	2169252	91.78	70	120	
In	115	1	No Gas	2416828	3.39	2581354	93.63	70	120	
Bi	209	1	No Gas	2037588	1.36	2148397	94.84	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	158_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T21:10:37-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.114	111.5	61423	1.7	0.5	
Be	9	1	No Gas	0.063	54.1	330	37.8	0.5	
V	51	2	He	-1.295	-1.6	7728	1.4	2.5	
Cr	52	2	He	-0.173	-11.0	5425	2.3	2.5	
Fe	56	2	He	-14.664	-1.8	42891	4.0	100	
Se	78	2	He	0.259	116.7	302	11.3	2	
As	75	2	He	-0.262	-15.5	346	11.5	2.5	
Ca	44	2	He	2.017	85.8	823	10.2	100	
Na	23	2	He	-16.116	-3.3	97227	0.7	100	
Mg	24	2	He	2.307	30.6	2664	17.9	100	
K	39	2	He	-16.281	-9.6	215460	0.5	100	
Mn	55	2	He	-0.015	-85.6	563	11.8	2.5	
Co	59	2	He	0.021	33.4	317	20.3	2.5	
Ni	60	2	He	-0.048	-54.0	230	24.2	2.5	
Cu	63	2	He	0.023	182.8	1827	12.2	2	
Zn	66	2	He	-0.090	-37.5	420	9.5	2.5	
Al	27	2	He	-1.194	-16.7	463	19.3	5	
B	11	1	No Gas	1.840	12.3	10240	5.2	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-0.631	-9.5	18415	6.7	5	
Si	28	1	No Gas	4.523	26.4	280677	1.1	10	
Ag	107	1	No Gas	-0.110	-18.4	1333	15.2	2.5	
Cd	111	1	No Gas	0.062	89.9	207	73.4	1	
Sr	88	1	No Gas	0.016	107.1	2520	16.6	2.5	
Mo	95	1	No Gas	-0.041	-57.8	737	15.3	2.5	
Sn	118	1	No Gas	-0.063	-54.5	2237	11.4	5	
Sb	121	1	No Gas	0.152	4.5	2884	2.9	2.5	
Ba	137	1	No Gas	0.019	106.9	573	15.0	2.5	
Tl	205	1	No Gas	0.109	27.7	3974	18.7	1	
Tl	203	1	No Gas	0.097	31.3	1600	19.3	1	
Pb	208	1	No Gas	0.012	208.0	3987	21.6	2.5	
U	238	1	No Gas	0.005	205.4	2350	15.8	2.5	
Ca	43	2	He	-2.524	-296.3	47	44.6	100	
Sb	121	2	He	0.100	3.4	1307	1.6	2.5	
Ti	47	2	He	-0.086	-126.2	20	132.3	2.5	
Cu	63	1	No Gas	0.060	51.0	4638	3.9	2.5	
Se	82	1	No Gas	0.211	146.4	21	279.2	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	981447	0.91	1043273	94.07	70	120	
Ge	72	2	He	719156	0.25	757744	94.91	70	120	
Ge	72	1	No Gas	2022314	2.68	2169252	93.23	70	120	
In	115	1	No Gas	2431546	1.97	2581354	94.20	70	120	
Bi	209	1	No Gas	2051139	1.52	2148397	95.47	70	120	

Sample Report

Sample Table

Sample Name	HS22011233-07
Data File Name	159SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T21:12:37-06:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 175201
ISTD Ref FileName	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	10.408	10.408	0.66	198006	0.01	2000	
Be	9	1	No Gas	0.022	0.022	54.67	192	0.01	2000	
V	51	2	He	-0.082	-0.082	-60.75	15220	0.00	2000	
Cr	52	2	He	0.244	0.244	23.87	8396	0.00	2000	
Fe	56	2	He	919.972	919.972	1.39	5895282	0.02	200000	
Se	78	2	He	0.022	0.022	1118.46	285	0.01	2000	
As	75	2	He	0.423	0.423	10.12	1041	0.04	2000	
Ca	44	2	He	10947.098	10947.098	0.79	536644	2.04	200000	
Na	23	2	He	21444.071	21444.071	0.68	24799255	0.09	200000	
Mg	24	2	He	5732.681	5732.681	0.34	3967610	0.14	200000	
K	39	2	He	2260.718	2260.718	1.80	2425202	0.09	200000	
Mn	55	2	He	46.764	46.764	0.98	260021	0.02	2000	
Co	59	2	He	0.204	0.204	2.44	2020	0.01	2000	
Ni	60	2	He	0.987	0.987	9.07	2507	0.04	2000	
Cu	63	2	He	0.534	0.534	5.88	4738	0.01	2000	
Zn	66	2	He	3.327	3.327	2.89	4544	0.07	2000	
Al	27	2	He	105.508	105.508	4.07	50073	0.21	2000	
B	11	1	No Gas	14.212	14.212	1.89	36327	0.04	2000	
Al	27	1	No Gas	115.624	115.624	8.79	1593195	0.01	2000	
Si	28	1	No Gas	12527.118	12527.118	1.08	93214185	0.01	2000	>LDR
Ag	107	1	No Gas	-0.204	-0.204	-2.67	280	-0.07	2000	
Cd	111	1	No Gas	0.001	0.001	261.41	40	0.00	2000	
Sr	88	1	No Gas	198.301	198.301	2.25	5751685	0.00	2000	
Mo	95	1	No Gas	-0.053	-0.053	-22.74	713	-0.01	2000	
Sn	118	1	No Gas	-0.138	-0.138	-9.04	1680	-0.01	2000	
Sb	121	1	No Gas	0.085	0.085	21.35	2224	0.00	2000	
Ba	137	1	No Gas	63.790	63.790	0.87	301546	0.02	2000	
Tl	205	1	No Gas	-0.030	-0.030	-5.80	703	0.00	2000	
Tl	203	1	No Gas	-0.041	-0.041	-9.37	230	-0.02	2000	
Pb	208	1	No Gas	0.255	0.255	7.81	12283	0.00	2000	
U	238	1	No Gas	-0.017	-0.017	-20.05	1710	0.00	2000	
Ca	43	2	He	11073.526	11073.526	1.70	32111	34.49	200000	
Sb	121	2	He	0.110	0.110	3.35	1423	0.01	2000	
Ti	47	2	He	2.484	2.484	25.03	670	0.37	2000	
Cu	63	1	No Gas	0.638	0.638	4.82	10981	0.01	2000	
Zn	66	1	No Gas	3.299	3.299	2.58	10861	0.03	2000	
Se	82	1	No Gas	0.289	0.289	54.03	37	0.78	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1021205	0.91	1043273	97.88	70	120	
Ge	72	2	He	744317	0.33	757744	98.23	70	120	
Ge	72	1	No Gas	2144398	1.39	2169252	98.85	70	120	
In	115	1	No Gas	2572284	0.58	2581354	99.65	70	120	

Sample Report

Bi	209	1	No Gas	2135649	2.78	2148397	99.41	70	120	

Sample Report

Sample Table

Sample Name	HS22011233-08
Data File Name	160SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T21:14:34-06:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 175201
ISTD Ref FileName	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	10.756	10.756	1.56	201556	0.01	2000	
Be	9	1	No Gas	0.008	0.008	56.05	137	0.01	2000	
V	51	2	He	0.178	0.178	46.78	16917	0.00	2000	
Cr	52	2	He	0.500	0.500	6.96	10194	0.00	2000	
Fe	56	2	He	959.439	959.439	1.15	6196621	0.02	200000	
Se	78	2	He	0.024	0.024	818.95	288	0.01	2000	
As	75	2	He	0.488	0.488	12.67	1117	0.04	2000	
Ca	44	2	He	11340.450	11340.450	0.65	560811	2.02	200000	
Na	23	2	He	22102.326	22102.326	0.67	25783278	0.09	200000	
Mg	24	2	He	5959.094	5959.094	2.42	4160315	0.14	200000	
K	39	2	He	2377.660	2377.660	1.57	2560930	0.09	200000	
Mn	55	2	He	32.246	32.246	1.39	181087	0.02	2000	
Co	59	2	He	0.143	0.143	8.35	1473	0.01	2000	
Ni	60	2	He	1.390	1.390	7.22	3421	0.04	2000	
Cu	63	2	He	0.635	0.635	10.59	5348	0.01	2000	
Zn	66	2	He	4.187	4.187	1.25	5628	0.07	2000	
Al	27	2	He	121.163	121.163	3.28	57853	0.21	2000	
B	11	1	No Gas	15.175	15.175	2.33	38139	0.04	2000	
Al	27	1	No Gas	124.073	124.073	1.95	1740530	0.01	2000	
Si	28	1	No Gas	12948.578	12948.578	1.95	98150509	0.01	2000	>LDR
Ag	107	1	No Gas	-0.206	-0.206	-2.50	247	-0.08	2000	
Cd	111	1	No Gas	-0.001	-0.001	-282.05	33	0.00	2000	
Sr	88	1	No Gas	209.376	209.376	3.39	6009116	0.00	2000	
Mo	95	1	No Gas	-0.044	-0.044	-7.86	760	-0.01	2000	
Sn	118	1	No Gas	-0.133	-0.133	-6.59	1710	-0.01	2000	
Sb	121	1	No Gas	0.060	0.060	26.10	1954	0.00	2000	
Ba	137	1	No Gas	65.242	65.242	3.88	305147	0.02	2000	
Tl	205	1	No Gas	-0.041	-0.041	-3.67	440	-0.01	2000	
Tl	203	1	No Gas	-0.047	-0.047	-5.38	170	-0.03	2000	
Pb	208	1	No Gas	0.257	0.257	4.06	12366	0.00	2000	
U	238	1	No Gas	-0.016	-0.016	-21.61	1750	0.00	2000	
Ca	43	2	He	11445.101	11445.101	0.48	33481	34.18	200000	
Sb	121	2	He	0.064	0.064	19.19	1117	0.01	2000	
Ti	47	2	He	1.753	1.753	9.28	490	0.36	2000	
Cu	63	1	No Gas	0.751	0.751	2.97	12389	0.01	2000	
Zn	66	1	No Gas	3.848	3.848	3.10	12656	0.03	2000	
Se	82	1	No Gas	0.237	0.237	84.98	27	0.88	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1016243	0.94	1043273	97.41	70	120	
Ge	72	2	He	750927	0.92	757744	99.10	70	120	
Ge	72	1	No Gas	2184816	1.30	2169252	100.72	70	120	
In	115	1	No Gas	2546700	2.41	2581354	98.66	70	120	

Sample Report

Bi	209	1	No Gas	2143606	0.34	2148397	99.78	70	120	

Sample Report

Sample Table

Sample Name	HS22011233-10
Data File Name	161SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T21:16:31-06:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 175201
ISTD Ref FileName	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	11.536	11.536	1.76	206910	0.01	2000	
Be	9	1	No Gas	0.014	0.014	22.03	157	0.01	2000	
V	51	2	He	0.666	0.666	16.08	19765	0.00	2000	
Cr	52	2	He	0.362	0.362	7.88	9223	0.00	2000	
Fe	56	2	He	1057.460	1057.460	1.13	6787493	0.02	200000	
Se	78	2	He	0.207	0.207	196.79	308	0.07	2000	
As	75	2	He	0.567	0.567	7.24	1191	0.05	2000	
Ca	44	2	He	11713.296	11713.296	0.35	576823	2.03	200000	
Na	23	2	He	22934.421	22934.421	0.99	26638102	0.09	200000	
Mg	24	2	He	6138.557	6138.557	0.21	4268229	0.14	200000	
K	39	2	He	2393.930	2393.930	1.04	2566011	0.09	200000	
Mn	55	2	He	29.569	29.569	0.49	165425	0.02	2000	
Co	59	2	He	0.163	0.163	4.52	1650	0.01	2000	
Ni	60	2	He	0.992	0.992	5.79	2530	0.04	2000	
Cu	63	2	He	0.435	0.435	8.36	4207	0.01	2000	
Zn	66	2	He	1.516	1.516	3.89	2377	0.06	2000	
Al	27	2	He	228.742	228.742	5.55	107856	0.21	2000	
B	11	1	No Gas	16.011	16.011	0.32	38974	0.04	2000	
Al	27	1	No Gas	295.596	295.596	27.12	4034331	0.01	2000	
Si	28	1	No Gas	14157.897	14157.897	0.86	105387478	0.01	2000	>LDR
Ag	107	1	No Gas	-0.206	-0.206	-0.88	247	-0.08	2000	
Cd	111	1	No Gas	-0.004	-0.004	-90.22	23	-0.02	2000	
Sr	88	1	No Gas	216.548	216.548	1.95	6187333	0.00	2000	
Mo	95	1	No Gas	-0.057	-0.057	-28.33	683	-0.01	2000	
Sn	118	1	No Gas	-0.173	-0.173	-3.05	1340	-0.01	2000	
Sb	121	1	No Gas	0.021	0.021	5.27	1443	0.00	2000	
Ba	137	1	No Gas	68.599	68.599	2.30	319413	0.02	2000	
Tl	205	1	No Gas	-0.041	-0.041	-10.54	433	-0.01	2000	
Tl	203	1	No Gas	-0.042	-0.042	-10.18	220	-0.02	2000	
Pb	208	1	No Gas	0.279	0.279	3.37	12856	0.00	2000	
U	238	1	No Gas	-0.006	-0.006	-52.46	2017	0.00	2000	
Ca	43	2	He	11741.987	11741.987	1.57	34203	34.33	200000	
Sb	121	2	He	0.009	0.009	62.82	727	0.00	2000	
Ti	47	2	He	4.756	4.756	12.30	1250	0.38	2000	
Cu	63	1	No Gas	0.557	0.557	3.88	10134	0.01	2000	
Zn	66	1	No Gas	1.435	1.435	7.00	5578	0.03	2000	
Se	82	1	No Gas	0.119	0.119	406.30	4	3.26	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	993424	0.54	1043273	95.22	70	120	
Ge	72	2	He	747784	0.20	757744	98.69	70	120	
Ge	72	1	No Gas	2145622	0.71	2169252	98.91	70	120	
In	115	1	No Gas	2534716	2.08	2581354	98.19	70	120	

Sample Report

Bi	209	1	No Gas	2099599	1.20	2148397	97.73	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	165_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T21:24:25-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	104.847	2.180	1342973	1.45	100	104.8	90	110	
Be	9	1	No Gas	103.860	1.844	362469	0.84	100	103.9	90	110	
V	51	2	He	100.260	0.272	602673	0.06	100	100.3	90	110	
Cr	52	2	He	98.965	0.537	656517	0.51	100	99.0	90	110	
Fe	56	2	He	10080.081	0.123	62207589	0.23	10000	100.8	90	110	
Se	78	2	He	100.684	0.819	11617	0.72	100	100.7	90	110	
As	75	2	He	104.082	0.543	102872	0.26	100	104.1	90	110	
Ca	44	2	He	10037.872	1.311	484098	1.26	10000	100.4	90	110	
Na	23	2	He	10262.750	1.125	11735852	0.82	10000	102.6	90	110	
Mg	24	2	He	10086.888	1.207	6866417	1.33	10000	100.9	90	110	
K	39	2	He	10338.255	0.995	10070522	0.65	10000	103.4	90	110	
Mn	55	2	He	99.067	0.521	541126	0.49	100	99.1	90	110	
Co	59	2	He	97.739	0.318	891516	0.07	100	97.7	90	110	
Ni	60	2	He	102.504	0.671	221386	0.53	100	102.5	90	110	
Cu	63	2	He	101.207	0.345	556749	0.08	100	101.2	90	110	
Zn	66	2	He	102.169	0.427	121393	0.49	100	102.2	90	110	
Al	27	2	He	103.436	1.111	48311	0.95	100	103.4	90	110	
B	11	1	No Gas	496.969	1.810	976366	1.87	500	99.4	90	110	
Al	27	1	No Gas	112.136	3.627	1476562	0.60	100	112.1	90	110	CCV Main CR1-2 Failed
Si	28	1	No Gas	615.478	4.057	4612373	1.04	5000	12.3	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	105.206	2.322	1198173	0.36	100	105.2	90	110	
Cd	111	1	No Gas	101.810	2.561	286632	0.77	100	101.8	90	110	
Sr	88	1	No Gas	103.445	3.736	2823105	1.77	100	103.4	90	110	
Mo	95	1	No Gas	100.338	2.006	534537	0.60	100	100.3	90	110	
Sn	118	1	No Gas	97.152	2.551	846323	1.23	100	97.2	90	110	
Sb	121	1	No Gas	101.379	3.189	1200284	0.49	100	101.4	90	110	
Ba	137	1	No Gas	102.359	1.050	454988	0.95	100	102.4	90	110	
Tl	205	1	No Gas	110.287	1.175	2512970	2.03	100	110.3	90	110	CCV Main CR1-2 Failed
Tl	203	1	No Gas	104.354	2.232	1001281	1.32	100	104.4	90	110	
Pb	208	1	No Gas	104.275	0.887	3220590	1.39	100	104.3	90	110	
U	238	1	No Gas	105.638	1.989	3251263	0.34	100	105.6	90	110	
Ca	43	2	He	9796.503	1.506	27949	1.20	10000	98.0	90	110	
Sb	121	2	He	98.287	0.351	671512	0.11	100	98.3	90	110	
Ti	47	2	He	100.330	1.556	24983	1.44	100	100.3	90	110	
Cu	63	1	No Gas	104.580	2.822	1050923	0.30	100	104.6	90	110	
Se	82	1	No Gas	102.509	5.855	19255	2.88	100	102.5	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	960336	1.02	1043273	92.05	70	120	
Ge	72	2	He	732171	0.32	757744	96.63	70	120	
Ge	72	1	No Gas	2048665	2.90	2169252	94.44	70	120	
In	115	1	No Gas	2420614	1.95	2581354	93.77	70	120	
Bi	209	1	No Gas	1970195	1.70	2148397	91.71	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	166_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T21:26:19-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.155	101.9	62419	1.9	0.5	
Be	9	1	No Gas	0.034	27.6	227	14.4	0.5	
V	51	2	He	-0.775	-8.0	10854	3.5	2.5	
Cr	52	2	He	-0.087	-48.6	6048	4.6	2.5	
Fe	56	2	He	-15.045	-2.9	41082	6.3	100	
Se	78	2	He	0.107	55.5	289	2.2	2	
As	75	2	He	-0.243	-15.6	368	9.8	2.5	
Ca	44	2	He	-1.050	-115.9	687	8.8	100	
Na	23	2	He	77.811	4.7	204159	1.8	100	
Mg	24	2	He	1.871	22.5	2400	11.6	100	
K	39	2	He	-0.542	-742.8	233006	1.4	100	
Mn	55	2	He	-0.023	-26.2	523	6.1	2.5	
Co	59	2	He	0.015	4.7	263	2.2	2.5	
Ni	60	2	He	-0.063	-12.6	200	8.7	2.5	
Cu	63	2	He	0.034	62.7	1907	6.3	2	
Zn	66	2	He	-0.075	-48.3	443	9.4	2.5	
Al	27	2	He	-1.075	-13.0	523	12.4	5	
B	11	1	No Gas	2.370	18.0	11385	7.3	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-0.748	-10.2	17215	3.8	5	
Si	28	1	No Gas	5.540	22.8	293328	0.8	10	
Ag	107	1	No Gas	-0.131	-17.0	1103	18.5	2.5	
Cd	111	1	No Gas	0.050	39.2	177	26.8	1	
Sr	88	1	No Gas	0.031	60.6	2950	12.8	2.5	
Mo	95	1	No Gas	-0.061	-68.8	633	30.9	2.5	
Sn	118	1	No Gas	-0.061	-63.2	2284	9.8	5	
Sb	121	1	No Gas	0.014	200.5	1293	23.3	2.5	
Ba	137	1	No Gas	-0.001	-4128.8	490	20.4	2.5	
Tl	205	1	No Gas	0.070	50.2	3094	25.9	1	
Tl	203	1	No Gas	0.055	68.0	1193	30.0	1	
Pb	208	1	No Gas	-0.005	-420.9	3457	19.7	2.5	
U	238	1	No Gas	0.006	326.7	2410	26.9	2.5	
Ca	43	2	He	-12.145	-50.5	20	86.6	100	
Sb	121	2	He	-0.035	-18.4	407	11.1	2.5	
Ti	47	2	He	-0.074	-63.2	23	49.5	2.5	
Cu	63	1	No Gas	0.059	39.5	4718	2.4	2.5	
Se	82	1	No Gas	-0.237	-106.5	-63	-72.5	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	989467	2.43	1043273	94.84	70	120	
Ge	72	2	He	728037	0.30	757744	96.08	70	120	
Ge	72	1	No Gas	2061263	2.56	2169252	95.02	70	120	
In	115	1	No Gas	2466720	5.18	2581354	95.56	70	120	
Bi	209	1	No Gas	2082883	2.97	2148397	96.95	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	179_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T21:56:08-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	103.207	1.994	1395676	1.72	100	103.2	90	110	
Be	9	1	No Gas	99.051	0.831	364723	0.79	100	99.1	90	110	
V	51	2	He	100.356	1.376	599691	0.63	100	100.4	90	110	
Cr	52	2	He	99.222	1.574	654326	0.90	100	99.2	90	110	
Fe	56	2	He	10197.567	1.504	62560176	0.79	10000	102.0	90	110	
Se	78	2	He	99.639	0.706	11432	0.77	100	99.6	90	110	
As	75	2	He	103.183	0.331	101395	0.74	100	103.2	90	110	
Ca	44	2	He	10136.194	1.160	485961	0.45	10000	101.4	90	110	
Na	23	2	He	10457.714	0.946	11886798	0.64	10000	104.6	90	110	
Mg	24	2	He	10317.378	0.913	6982062	0.43	10000	103.2	90	110	
K	39	2	He	10319.665	1.118	9994065	0.67	10000	103.2	90	110	
Mn	55	2	He	101.323	1.293	550187	0.80	100	101.3	90	110	
Co	59	2	He	98.512	1.203	893294	0.58	100	98.5	90	110	
Ni	60	2	He	102.726	1.284	220571	1.28	100	102.7	90	110	
Cu	63	2	He	101.227	0.644	553602	0.07	100	101.2	90	110	
Zn	66	2	He	100.842	1.138	119119	0.42	100	100.8	90	110	
Al	27	2	He	107.418	2.378	49836	1.88	100	107.4	90	110	
B	11	1	No Gas	482.614	1.128	1000441	0.72	500	96.5	90	110	
Al	27	1	No Gas	114.250	3.981	1464141	1.41	100	114.3	90	110	CCV Main CR1-2 Failed
Si	28	1	No Gas	615.720	2.999	4493148	0.60	5000	12.3	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	107.886	3.712	1183024	2.32	100	107.9	90	110	
Cd	111	1	No Gas	104.467	1.488	283265	0.71	100	104.5	90	110	
Sr	88	1	No Gas	108.529	1.148	2853232	1.60	100	108.5	90	110	
Mo	95	1	No Gas	103.341	1.815	530140	0.72	100	103.3	90	110	
Sn	118	1	No Gas	101.952	2.829	855063	0.90	100	102.0	90	110	
Sb	121	1	No Gas	104.805	4.592	1207699	1.50	100	104.8	90	110	
Ba	137	1	No Gas	106.041	1.804	453839	0.17	100	106.0	90	110	
Tl	205	1	No Gas	104.008	3.676	2546932	0.98	100	104.0	90	110	
Tl	203	1	No Gas	103.369	3.260	1019108	0.14	100	103.4	90	110	
Pb	208	1	No Gas	104.464	2.901	3314933	0.52	100	104.5	90	110	
U	238	1	No Gas	106.475	2.027	3368315	1.85	100	106.5	90	110	
Ca	43	2	He	10247.863	2.874	29061	2.27	10000	102.5	90	110	
Sb	121	2	He	99.100	0.280	673121	0.64	100	99.1	90	110	
Ti	47	2	He	101.543	3.627	25133	2.92	100	101.5	90	110	
Cu	63	1	No Gas	106.546	2.986	1042339	1.14	100	106.5	90	110	
Se	82	1	No Gas	102.881	6.673	18811	3.53	100	102.9	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1013160	1.49	1043273	97.11	70	120	
Ge	72	2	He	727906	0.71	757744	96.06	70	120	
Ge	72	1	No Gas	1994680	3.15	2169252	91.95	70	120	
In	115	1	No Gas	2330980	1.90	2581354	90.30	70	120	
Bi	209	1	No Gas	2025452	3.40	2148397	94.28	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	180_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T21:58:01-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.855	10.9	71649	1.7	0.5	CCB Main CR1 Failed
Be	9	1	No Gas	0.047	26.7	277	16.3	0.5	
V	51	2	He	-1.225	-4.2	8094	4.4	2.5	
Cr	52	2	He	-0.113	-24.3	5781	3.3	2.5	
Fe	56	2	He	-14.907	-3.4	41196	6.4	100	
Se	78	2	He	0.014	1211.5	273	5.7	2	
As	75	2	He	-0.286	-19.5	320	16.7	2.5	
Ca	44	2	He	9.965	14.4	1193	5.9	100	
Na	23	2	He	172.464	4.3	305380	1.8	100	CCB Main CR1 Failed
Mg	24	2	He	2.986	14.2	3100	8.7	100	
K	39	2	He	8.170	41.5	237129	0.5	100	
Mn	55	2	He	0.003	454.2	653	10.2	2.5	
Co	59	2	He	0.024	21.2	340	12.8	2.5	
Ni	60	2	He	-0.052	-18.5	220	9.1	2.5	
Cu	63	2	He	0.232	14.3	2937	5.1	2	
Zn	66	2	He	-0.106	-3.7	400	0.0	2.5	
Al	27	2	He	-0.729	-49.1	670	24.8	5	
B	11	1	No Gas	4.366	13.2	15479	7.3	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-0.533	-59.4	19505	23.0	5	
Si	28	1	No Gas	11.666	13.5	327287	1.2	10	CCB Main CR1 Failed
Ag	107	1	No Gas	-0.105	-30.9	1363	25.6	2.5	
Cd	111	1	No Gas	0.034	44.2	127	31.9	1	
Sr	88	1	No Gas	0.087	28.4	4377	14.2	2.5	
Mo	95	1	No Gas	-0.036	-97.9	753	24.1	2.5	
Sn	118	1	No Gas	0.042	62.9	3104	7.0	5	
Sb	121	1	No Gas	0.023	105.2	1360	17.2	2.5	
Ba	137	1	No Gas	0.004	559.0	500	20.3	2.5	
Tl	205	1	No Gas	0.083	40.4	3347	23.2	1	
Tl	203	1	No Gas	0.085	38.5	1440	21.3	1	
Pb	208	1	No Gas	-0.006	-372.3	3297	19.7	2.5	
U	238	1	No Gas	0.020	103.3	2730	22.6	2.5	
Ca	43	2	He	2.290	406.5	60	44.1	100	
Sb	121	2	He	-0.010	-114.0	570	13.2	2.5	
Ti	47	2	He	-0.099	-49.0	17	69.3	2.5	
Cu	63	1	No Gas	0.284	24.2	6768	7.2	2.5	
Se	82	1	No Gas	-0.178	-242.7	-53	-150.8	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	994529	0.28	1043273	95.33	70	120	
Ge	72	2	He	715651	1.12	757744	94.45	70	120	
Ge	72	1	No Gas	2002081	3.11	2169252	92.29	70	120	
In	115	1	No Gas	2388908	0.99	2581354	92.54	70	120	
Bi	209	1	No Gas	1993486	0.96	2148397	92.79	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	191_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T22:21:05-06:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	104.038	2.043	1650400	1.23	100	104.0	90	110	
Be	9	1	No Gas	95.696	2.034	413496	1.38	100	95.7	90	110	
V	51	2	He	104.358	0.434	653882	0.30	100	104.4	90	110	
Cr	52	2	He	101.567	1.308	702831	1.10	100	101.6	90	110	
Fe	56	2	He	10328.875	1.691	66505076	1.50	10000	103.3	90	110	
Se	78	2	He	101.044	0.854	12164	0.67	100	101.0	90	110	
As	75	2	He	103.355	0.489	106593	0.66	100	103.4	90	110	
Ca	44	2	He	10649.108	0.365	535822	0.22	10000	106.5	90	110	
Na	23	2	He	12247.299	1.530	14589631	1.38	10000	122.5	90	110	CCV Main CR1-2 Failed
Mg	24	2	He	11073.383	1.235	7864874	1.09	10000	110.7	90	110	CCV Main CR1-2 Failed
K	39	2	He	11183.721	1.760	11346985	1.59	10000	111.8	90	110	CCV Main CR1-2 Failed
Mn	55	2	He	103.525	1.450	589981	1.27	100	103.5	90	110	
Co	59	2	He	99.861	0.996	950407	0.87	100	99.9	90	110	
Ni	60	2	He	103.780	0.754	233871	0.86	100	103.8	90	110	
Cu	63	2	He	102.939	0.592	590827	0.41	100	102.9	90	110	
Zn	66	2	He	101.793	1.271	126197	1.09	100	101.8	90	110	
Al	27	2	He	116.158	1.687	56478	1.83	100	116.2	90	110	CCV Main CR1-2 Failed
B	11	1	No Gas	473.338	2.189	1151515	0.64	500	94.7	90	110	
Al	27	1	No Gas	122.314	4.206	1628313	1.50	100	122.3	90	110	CCV Main CR1-2 Failed
Si	28	1	No Gas	655.974	4.514	4960368	0.25	5000	13.1	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	106.596	2.023	1160699	0.41	100	106.6	90	110	
Cd	111	1	No Gas	103.552	1.328	278780	1.09	100	103.6	90	110	
Sr	88	1	No Gas	115.289	1.616	3008877	1.29	100	115.3	90	110	CCV Main CR1-2 Failed
Mo	95	1	No Gas	105.427	1.109	536988	1.02	100	105.4	90	110	
Sn	118	1	No Gas	99.481	1.803	828524	0.06	100	99.5	90	110	
Sb	121	1	No Gas	97.042	4.815	1163004	0.68	100	97.0	90	110	
Ba	137	1	No Gas	103.611	2.082	440260	0.54	100	103.6	90	110	
Tl	205	1	No Gas	106.568	1.487	2303894	1.37	100	106.6	90	110	
Tl	203	1	No Gas	104.231	1.388	907170	1.24	100	104.2	90	110	
Pb	208	1	No Gas	104.364	1.170	2923610	1.77	100	104.4	90	110	
U	238	1	No Gas	106.559	1.452	2974910	1.27	100	106.6	90	110	
Ca	43	2	He	10616.763	0.304	31600	0.35	10000	106.2	90	110	
Sb	121	2	He	93.405	0.609	665899	0.57	100	93.4	90	110	
Ti	47	2	He	106.452	2.491	27655	2.30	100	106.5	90	110	
Cu	63	1	No Gas	108.732	3.496	1106192	1.48	100	108.7	90	110	
Se	82	1	No Gas	102.512	3.080	19512	1.98	100	102.5	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1189156	2.52	1043273	113.98	70	120	
Ge	72	2	He	763952	0.19	757744	100.82	70	120	
Ge	72	1	No Gas	2075095	4.05	2169252	95.66	70	120	
In	115	1	No Gas	2314227	1.75	2581354	89.65	70	120	
Bi	209	1	No Gas	1786885	1.33	2148397	83.17	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	192_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq Date Time	2022-02-09T22:22:58-06:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	136CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Fail

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	4.226	0.5	146872	1.6	0.5	CCB Main CR1 Failed
Be	9	1	No Gas	0.021	55.6	233	21.9	0.5	
V	51	2	He	-1.340	-3.2	7946	3.5	2.5	
Cr	52	2	He	-0.041	-162.3	6675	6.8	2.5	
Fe	56	2	He	-15.731	-2.1	38762	5.2	100	
Se	78	2	He	0.311	28.5	327	2.8	2	
As	75	2	He	-0.233	-24.3	397	14.0	2.5	
Ca	44	2	He	12.498	5.6	1403	2.3	100	
Na	23	2	He	1302.132	1.8	1663143	1.0	100	CCB Main CR1 Failed
Mg	24	2	He	2.491	8.6	2964	5.0	100	
K	39	2	He	16.906	16.0	262253	0.5	100	
Mn	55	2	He	0.002	749.9	697	13.9	2.5	
Co	59	2	He	0.020	31.2	330	18.9	2.5	
Ni	60	2	He	-0.050	-9.8	240	4.2	2.5	
Cu	63	2	He	0.317	9.2	3631	4.3	2	
Zn	66	2	He	-0.060	-110.0	483	16.6	2.5	
Al	27	2	He	-1.006	-10.7	583	9.4	5	
B	11	1	No Gas	7.943	7.7	29135	3.7	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-0.645	-8.4	19061	3.3	5	
Si	28	1	No Gas	7.951	21.4	318618	0.5	10	
Ag	107	1	No Gas	-0.099	-15.8	1430	11.5	2.5	
Cd	111	1	No Gas	0.040	58.5	143	44.3	1	
Sr	88	1	No Gas	3.475	14.2	95706	13.5	2.5	CCB Main CR1 Failed
Mo	95	1	No Gas	-0.048	-61.6	693	22.4	2.5	
Sn	118	1	No Gas	-0.047	-59.5	2344	10.3	5	
Sb	121	1	No Gas	-0.023	-66.0	877	21.2	2.5	
Ba	137	1	No Gas	0.416	17.7	2307	13.7	2.5	
Tl	205	1	No Gas	0.062	65.4	2604	32.7	1	
Tl	203	1	No Gas	0.063	46.6	1120	21.4	1	
Pb	208	1	No Gas	-0.019	-81.2	2670	14.7	2.5	
U	238	1	No Gas	0.007	248.6	2154	23.2	2.5	
Ca	43	2	He	6.521	75.9	77	19.9	100	
Sb	121	2	He	-0.048	-23.2	340	23.5	2.5	
Ti	47	2	He	-0.117	-19.0	13	43.3	2.5	
Cu	63	1	No Gas	1.153	1.2	16166	4.2	2.5	
Se	82	1	No Gas	2.917	30.2	546	30.6	2	CCB Main CR1 Failed

QC ISTD Table

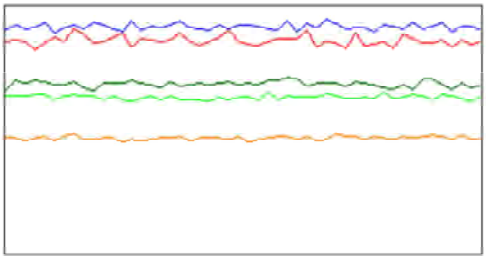
Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1276728	1.81	1043273	122.38	70	120	ISTD Failed
Ge	72	2	He	765228	0.76	757744	100.99	70	120	
Ge	72	1	No Gas	2116011	3.81	2169252	97.55	70	120	
In	115	1	No Gas	2392521	0.98	2581354	92.68	70	120	
Bi	209	1	No Gas	1835325	1.67	2148397	85.43	70	120	

Tune Check Report

Operator Name	ALSHS NoUser
Acq/Data Batch	C:\Agilent\ICPMH\1\DATA\020922A.b
Acq. Date-Time	2/9/2022 10:34:42 AM
Report Comment	---
Instrument Name	G8421A SG18523544

[No Gas]

Sensitivity



Sampling Period [sec]	0.514
Integration Time [sec]	0.1

Mass	Range	Count	Resp [cps/ug/l]	Resp (Required) [cps/ug/l]	Resp (Flag)
9	5000	4310	43101.99		
24	20000	12652	126522.52		
59	20000	18379	183788.37		
115	50000	23433	234333.00		
208	20000	13736	137361.75		

Mass	Resp Ratio	Resp Ratio (Required)	Resp Ratio (Flag)
9		-	
24		-	
59		-	
115		-	
208		-	

Mass	RSD%	RSD% (Required)	RSD% (Flag)
9	2.253	5.000	
24	1.559	5.000	
59	1.528	5.000	
115	1.591	5.000	
208	1.718	5.000	

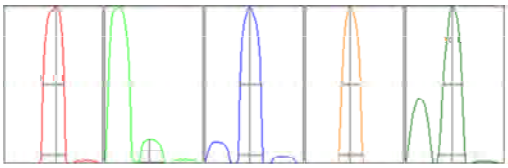
Mass	Background	Background (Required)	Background (Flag)
9	1.000		
24	1.200		
59	0.500		
115	0.300		
208	1.800		

Oxide/Doubly Charged Ratio

Oxide	156 / 140 1.330 %
Doubly Charged	70 / 140 1.414 %

Tune Check Report

Resolution/Axis



Integration Time [sec]	0.1
Acquisition Time [sec]	37.4
Y Axis	Linear

Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)
9	4362.63	9.10	8.90 - 9.10	
24	12596.27	23.90	23.90 - 24.10	
59	19175.57	58.90	58.90 - 59.10	
115	24567.28	114.90	114.90 - 115.10	
208	13900.62	207.95	207.90 - 208.10	

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
9	0.66	0.743		
24	0.65	0.747		
59	0.63	0.741		
115	0.56	0.729		
208	0.58	0.803		

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.49 L/min	Dilution Gas	0.55 L/min
RF Power	1600 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.80 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	10.0 V	Deflect	14.0 V
Extract 2	-195.0 V	Cell Entrance	-30 V	Plate Bias	-45 V
Omega Bias	-90 V	Cell Exit	-50 V		

Cell Parameters

Use Gas	No	3rd Gas Flow	---	Energy Discrimination	5.0 V
He Flow	0.0 mL/min	OctP Bias	-8.0 V		
H2 Flow	---	OctP RF	200 V		

QP Parameters

Mass Gain	132	Axis Gain	0.9999	QP Bias	-3.0 V
Mass Offset	125	Axis Offset	0.10		

Hardware Settings

Torch

Torch H	0.8 mm	Torch V	-0.4 mm

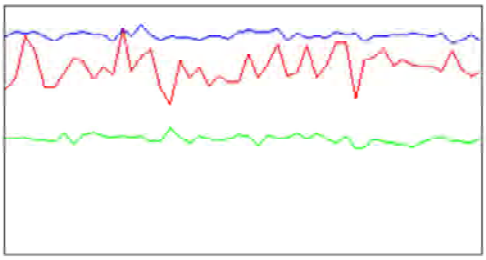
EM

Discriminator	4.4 mV	Analog HV	2635 V	Pulse HV	1407 V

[He]

Tune Check Report

Sensitivity



Sampling Period [sec]	0.306
Integration Time [sec]	0.1

Mass	Range	Count	Resp [cps/ug/l]	Resp (Required) [cps/ug/l]	Resp (Flag)
9	200	151	1507.88		
24	2000	925	9253.45		
59	10000	8843	88427.48		

Mass	Resp Ratio	Resp Ratio (Required)	Resp Ratio (Flag)
9		-	
24		-	
59		-	

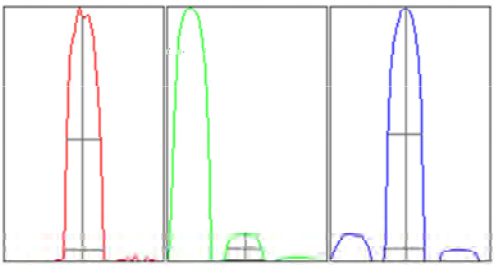
Mass	RSD%	RSD% (Required)	RSD% (Flag)
9	8.549	5.000	Fail
24	3.741	5.000	
59	1.671	5.000	

Mass	Background	Background (Required)	Background (Flag)
9	0.000		
24	0.000		
59	0.100		

Oxide/Doubly Charged Ratio

Oxide	156 / 140 1.327 %
Doubly Charged	70 / 140 1.089 %

Resolution/Axis



Integration Time [sec]	0.1
Acquisition Time [sec]	22.24
Y Axis	Linear

Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)
9	153.51	9.00	8.90 - 9.10	
24	913.33	24.00	23.90 - 24.10	
59	8882.77	58.95	58.90 - 59.10	

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
9	0.64	0.742		
24	0.65	0.744		

Tune Check Report

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
59	0.63	0.740		

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.49 L/min	Dilution Gas	0.55 L/min
RF Power	1600 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.80 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	10.0 V	Deflect	0.2 V
Extract 2	-195.0 V	Cell Entrance	-40 V	Plate Bias	-60 V
Omega Bias	-80 V	Cell Exit	-60 V		

Cell Parameters

Use Gas	Yes	3rd Gas Flow	---	Energy Discrimination	3.0 V
He Flow	3.8 mL/min	OctP Bias	-18.0 V		
H2 Flow	---	OctP RF	200 V		

QP Parameters

Mass Gain	132	Axis Gain	0.9999	QP Bias	-15.0 V
Mass Offset	125	Axis Offset	0.10		

Hardware Settings

Torch

Torch H	0.8 mm	Torch V	-0.4 mm

EM

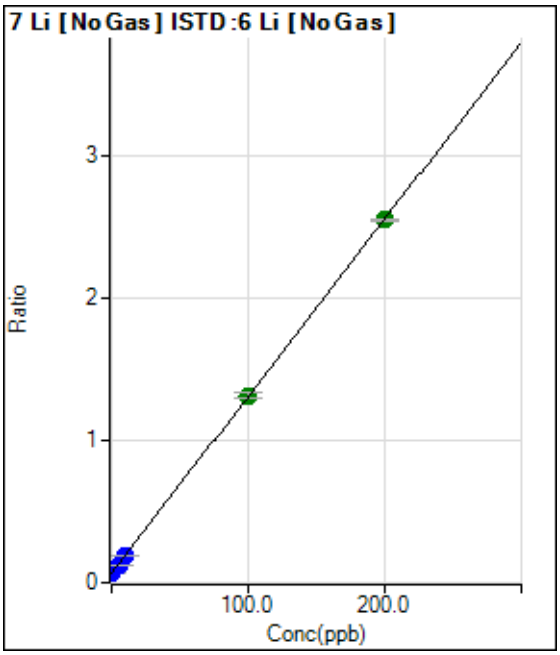
Discriminator	4.4 mV	Analog HV	2635 V	Pulse HV	1407 V

Calibration for 269_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\021022A.b\
Analysis File: 021022A.batch.bin
DA Date-Time: 2/11/2022 12:16:12 AM
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	262CALB.d	CAL BLK	2/11/2022 12:01:48 AM
2	263CALS.d	2/10/200	2/11/2022 12:03:47 AM
3	264CALS.d	5/25/500	2/11/2022 12:05:45 AM
4	265CALS.d	10/50/100	2/11/2022 12:07:43 AM
5	266CALS.d	100/500/10K	2/11/2022 12:09:41 AM
6	267CALS.d	200/1000/20K	2/11/2022 12:11:35 AM

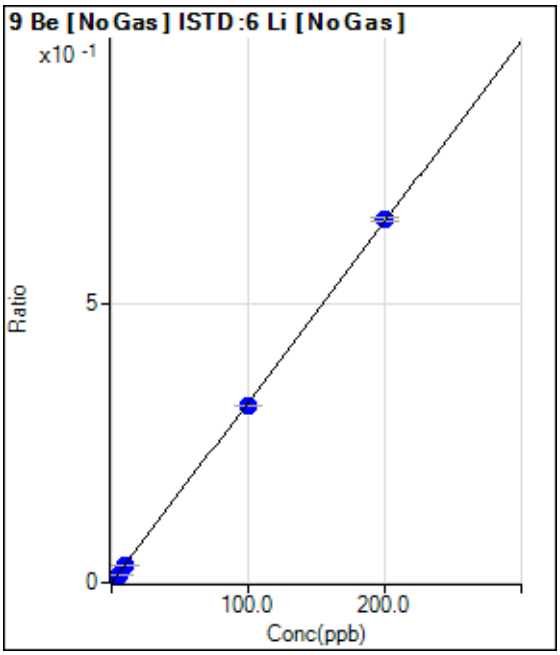
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	56485.96	0.0660	P	0.3
2	☐	2.000	2.003	78592.66	0.0909	P	2.4
3	☐	5.000	4.656	110171.81	0.1239	P	2.7
4	☐	10.000	9.666	161154.02	0.1862	P	2.5
5	☐	100.000	100.603	1080927.25	1.3171	A	2.3
6	☐	200.000	199.724	1906706.38	2.5497	A	0.8

y = 0.0124 * x + 0.0660
R = 1.0000
DL = 0.0531
BEC = 5.31

Weight: <None>
Min Conc: <None>

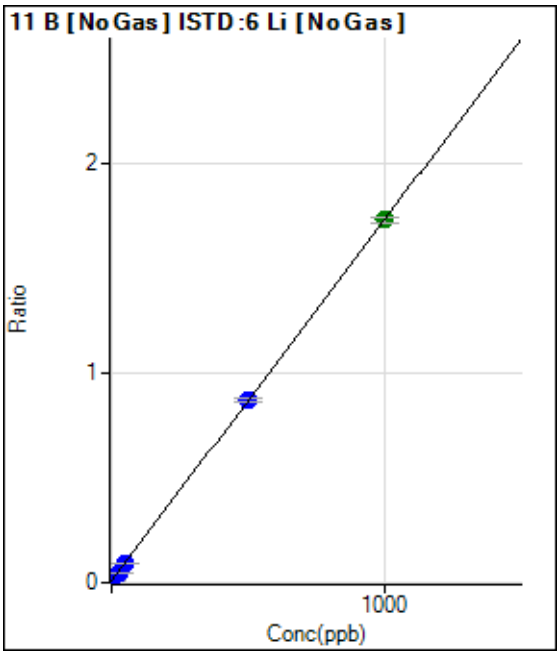


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	26.67	0.0000	P	11.8
2	☐	2.000	2.008	5622.84	0.0065	P	2.6
3	☐	5.000	4.619	13269.68	0.0149	P	3.0
4	☐	10.000	9.373	26181.11	0.0303	P	3.2
5	☐	100.000	98.040	259571.92	0.3162	P	0.8
6	☐	200.000	201.021	484868.81	0.6484	P	1.0

y = 0.0032 * x + 3.1200E-005
R = 0.9999
DL = 0.003426
BEC = 0.009674

Weight: <None>
Min Conc: <None>

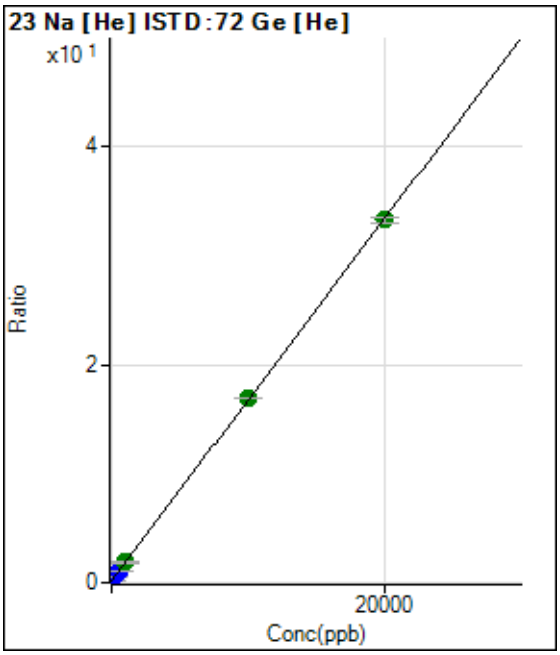
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6648.28	0.0078	P	1.5
2	☐	10.000	9.614	21019.09	0.0243	P	4.8
3	☐	25.000	22.680	41629.77	0.0468	P	4.9
4	☐	50.000	47.188	77049.78	0.0891	P	4.2
5	☐	500.000	500.814	714571.42	0.8706	P	2.4
6	☐	1000.000	999.796	1294054.38	1.7304	A	1.5

y = 0.0017 * x + 0.0078
R = 1.0000
DL = 0.1971
BEC = 4.511

Weight: <None>
Min Conc: <None>

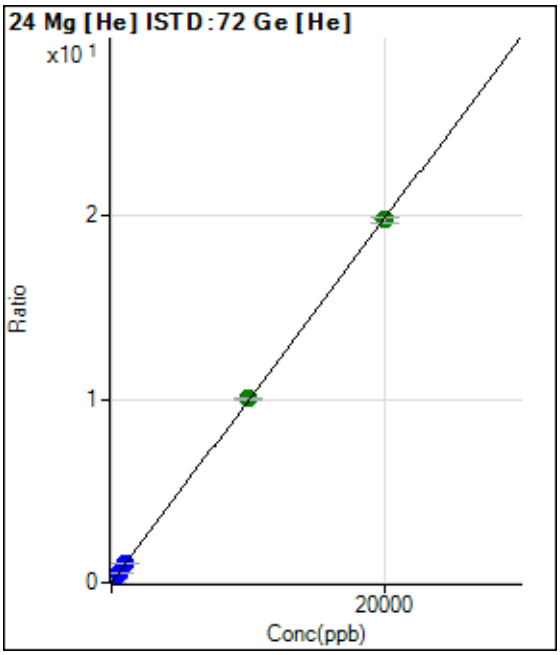


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	80776.12	0.1651	P	2.7
2	☐	200.000	209.169	252119.37	0.5125	P	0.6
3	☐	500.000	517.946	498636.71	1.0253	P	1.3
4	☐	1000.000	1018.073	898585.14	1.8560	A	1.5
5	☐	10000.000	10109.214	8107609.88	16.9551	A	0.8
6	☐	20000.000	19943.949	14902126.03	33.2893	A	1.4

y = 0.0017 * x + 0.1651
R = 1.0000
DL = 8.098
BEC = 99.39

Weight: <None>
Min Conc: <None>

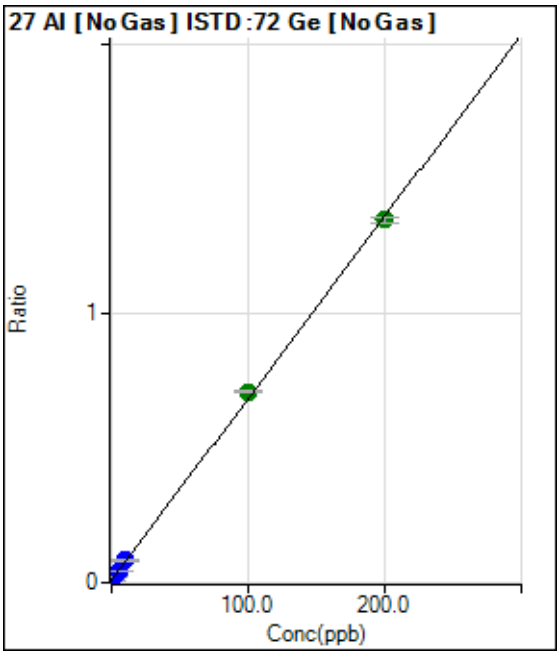
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	313.34	0.0006	P	10.3
2	☐	200.000	216.334	105799.82	0.2151	P	1.1
3	☐	500.000	532.154	256817.17	0.5281	P	1.2
4	☐	1000.000	1058.257	508083.91	1.0495	P	1.9
5	☐	10000.000	10127.363	4800296.38	10.0383	A	1.2
6	☐	20000.000	19932.438	8844542.99	19.7566	A	1.4

y = 9.9114E-004 * x + 6.4041E-004
R = 1.0000
DL = 0.1999
BEC = 0.6461

Weight: <None>
Min Conc: <None>

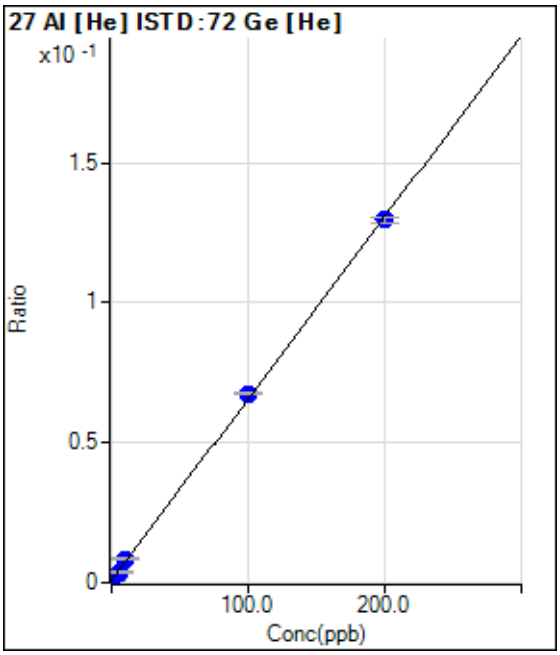


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	12125.48	0.0086	P	5.0
2	☐	2.000	2.033	32378.05	0.0223	P	2.1
3	☐	5.000	4.983	60896.60	0.0422	P	1.6
4	☐	10.000	10.948	117580.34	0.0824	P	1.5
5	☐	100.000	103.490	963897.27	0.7071	A	0.9
6	☐	200.000	198.208	1766902.01	1.3464	A	1.9

y = 0.0067 * x + 0.0086
R = 0.9998
DL = 0.1918
BEC = 1.267

Weight: <None>
Min Conc: <None>

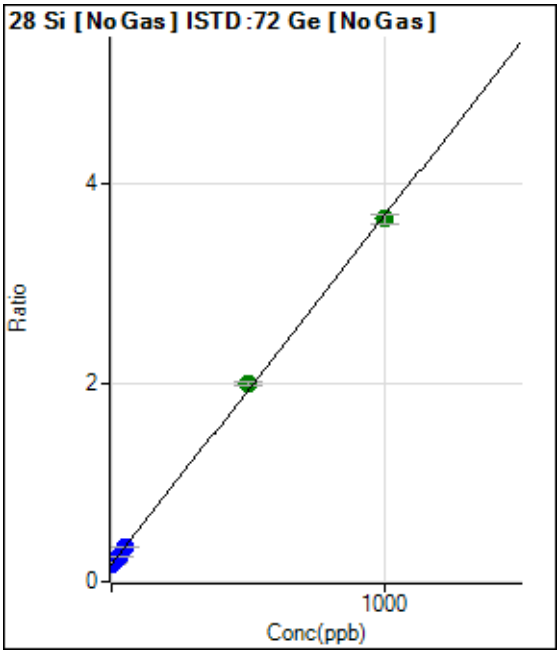
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	393.34	0.0008	P	9.4
2	☐	2.000	2.271	1120.06	0.0023	P	6.1
3	☐	5.000	4.573	1833.48	0.0038	P	1.1
4	☐	10.000	11.815	4100.66	0.0085	P	3.9
5	☐	100.000	102.787	32267.63	0.0675	P	1.0
6	☐	200.000	198.524	58011.09	0.1296	P	1.6

y = 6.4867E-004 * x + 8.0355E-004
R = 0.9998
DL = 0.3505
BEC = 1.239

Weight: <None>
Min Conc: <None>

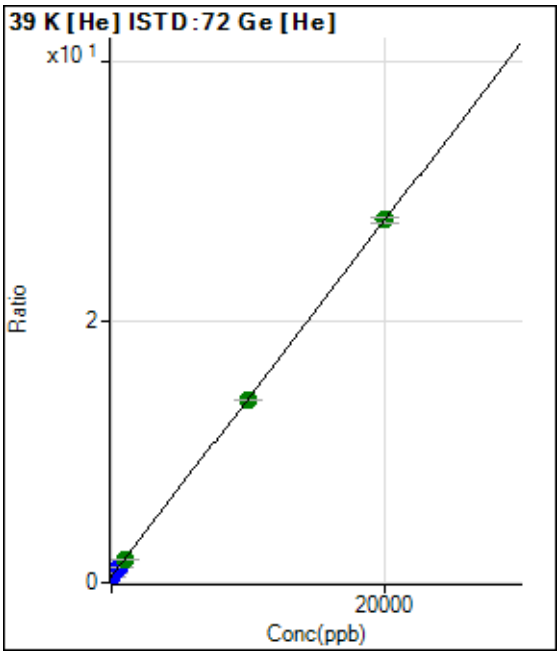


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	248185.82	0.1750	P	2.9
2	☐	10.000	7.541	292694.17	0.2014	P	2.6
3	☐	25.000	23.428	371016.23	0.2570	P	0.1
4	☐	50.000	48.871	493625.70	0.3462	P	1.7
5	☐	500.000	517.899	2711244.13	1.9892	A	2.2
6	☐	1000.000	991.171	4785054.31	3.6470	A	2.6

y = 0.0035 * x + 0.1750
R = 0.9998
DL = 4.412
BEC = 49.95

Weight: <None>
Min Conc: <None>

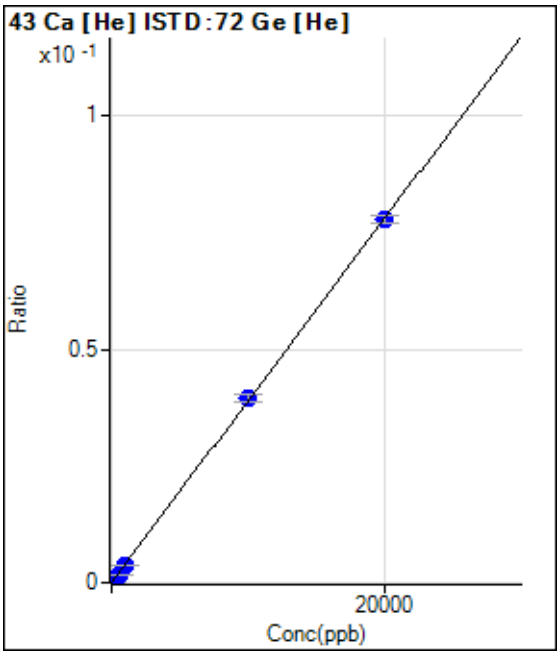
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	235784.59	0.4817	P	0.3
2	☐	200.000	193.120	366515.58	0.7450	P	0.9
3	☐	500.000	468.076	544627.79	1.1198	P	0.8
4	☐	1000.000	980.473	880362.96	1.8184	A	0.9
5	☐	10000.000	9929.744	6703393.24	14.0186	A	0.7
6	☐	20000.000	20036.971	12443524.82	27.7973	A	1.8

y = 0.0014 * x + 0.4817
R = 1.0000
DL = 3.496
BEC = 353.4

Weight: <None>
Min Conc: <None>

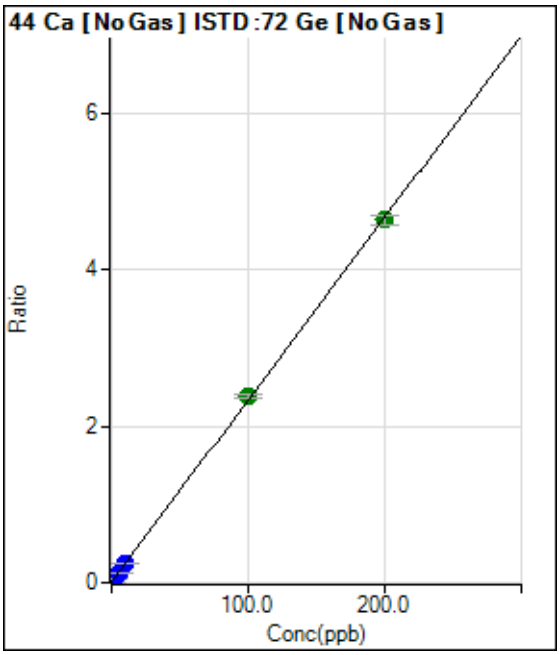


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	13.33	0.0000	P	114.1
2	☐	200.000	219.056	433.35	0.0009	P	6.9
3	☐	500.000	439.733	846.71	0.0017	P	9.3
4	☐	1000.000	948.790	1803.49	0.0037	P	3.3
5	☐	10000.000	10144.655	18906.61	0.0395	P	3.3
6	☐	20000.000	19931.549	34781.03	0.0777	P	2.1

y = 3.8957E-006 * x + 2.7369E-005
R = 1.0000
DL = 24.04
BEC = 7.026

Weight: <None>
Min Conc: <None>

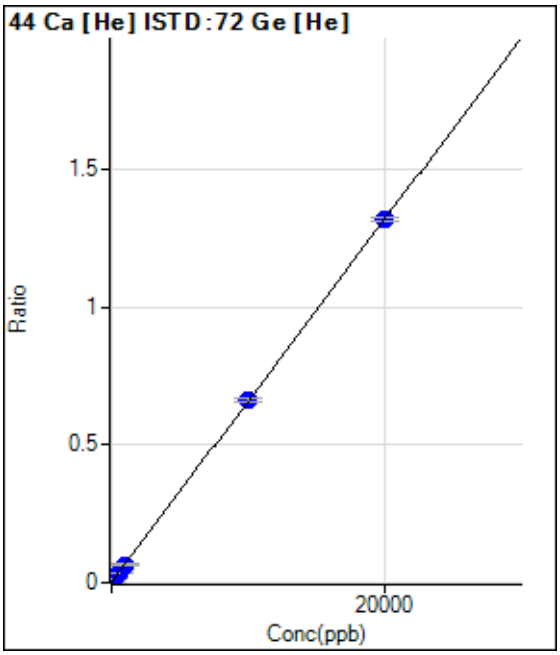
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	12439.17	0.0088	P	4.9
2	☐	2.000	2.087	83411.90	0.0574	P	1.9
3	☐	5.000	5.005	180903.10	0.1253	P	1.0
4	☐	10.000	10.072	347028.84	0.2433	P	1.0
5	☐	100.000	102.288	3259590.48	2.3910	A	2.6
6	☐	200.000	198.851	6088133.03	4.6400	A	2.4

y = 0.0233 * x + 0.0088
R = 0.9999
DL = 0.055
BEC = 0.3766

Weight: <None>
Min Conc: <None>

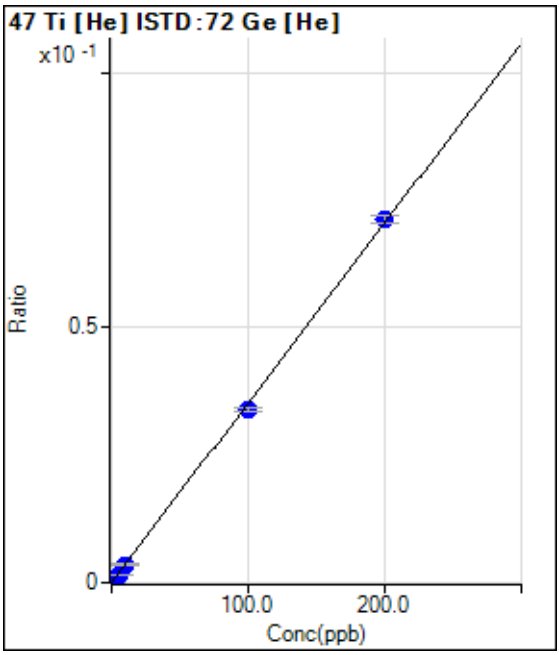


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	463.35	0.0009	P	6.3
2	☐	200.000	208.183	7215.35	0.0147	P	4.7
3	☐	500.000	493.614	16276.51	0.0335	P	4.2
4	☐	1000.000	991.707	32094.58	0.0663	P	2.8
5	☐	10000.000	10042.331	316929.29	0.6628	P	1.4
6	☐	20000.000	19979.327	589864.58	1.3176	P	1.1

y = 6.5902E-005 * x + 9.4716E-004
R = 1.0000
DL = 2.732
BEC = 14.37

Weight: <None>
Min Conc: <None>

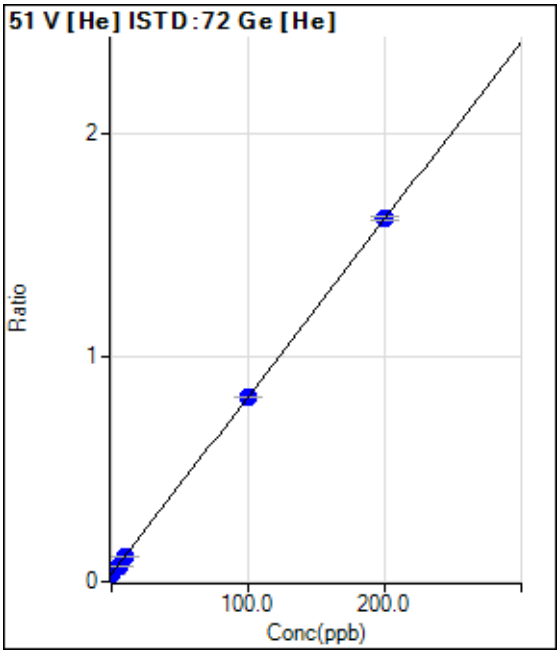
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	13.33	0.0000	P	41.8
2	☐	2.000	2.059	370.01	0.0008	P	24.4
3	☐	5.000	4.648	810.04	0.0017	P	2.5
4	☐	10.000	9.951	1710.14	0.0035	P	8.2
5	☐	100.000	96.325	16243.22	0.0340	P	1.8
6	☐	200.000	201.848	31853.97	0.0712	P	2.2

y = 3.5242E-004 * x + 2.7136E-005
R = 0.9998
DL = 0.09644
BEC = 0.077

Weight: <None>
Min Conc: <None>

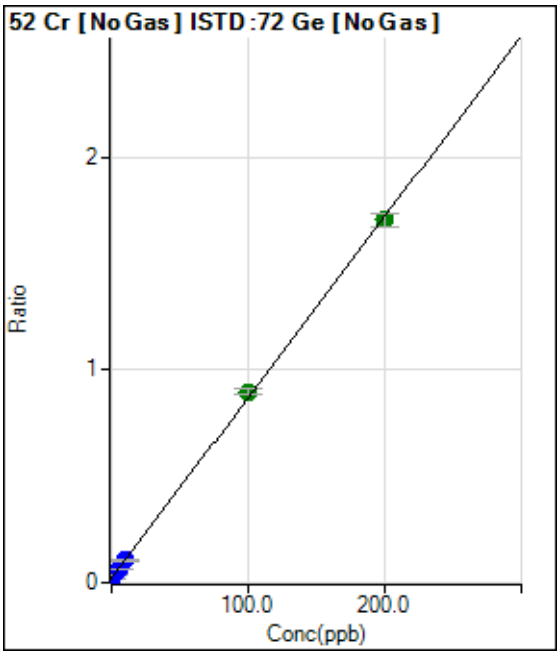


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	17017.25	0.0348	P	2.6
2	☐	2.000	1.848	24299.30	0.0494	P	1.5
3	☐	5.000	4.414	33887.32	0.0697	P	1.0
4	☐	10.000	9.400	52835.76	0.1091	P	0.7
5	☐	100.000	99.661	393554.05	0.8231	P	0.5
6	☐	200.000	200.216	724512.82	1.6184	P	0.9

y = 0.0079 * x + 0.0348
R = 1.0000
DL = 0.3372
BEC = 4.396

Weight: <None>
Min Conc: <None>

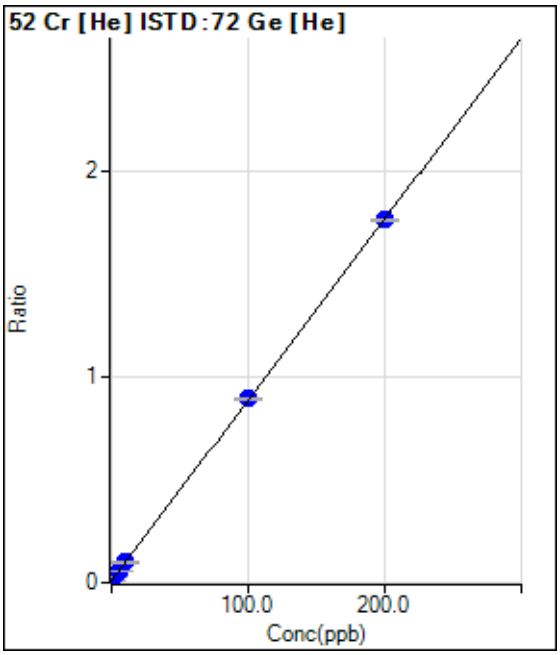
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	30009.92	0.0212	P	5.7
2	☐	2.000	1.971	55074.23	0.0379	P	2.9
3	☐	5.000	4.837	89820.08	0.0622	P	0.8
4	☐	10.000	9.757	148283.25	0.1040	P	1.8
5	☐	100.000	103.400	1225116.36	0.8989	A	3.5
6	☐	200.000	198.317	2236303.20	1.7047	A	3.4

y = 0.0085 * x + 0.0212
R = 0.9998
DL = 0.4259
BEC = 2.493

Weight: <None>
Min Conc: <None>

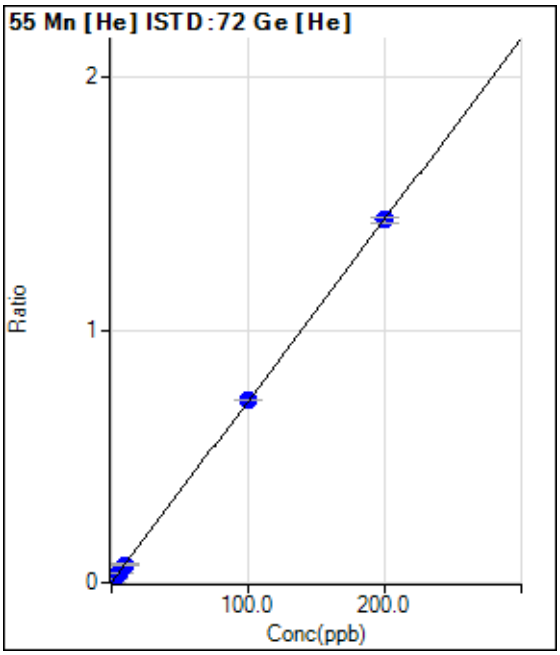


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4514.15	0.0092	P	3.9
2	☐	2.000	1.962	13039.80	0.0265	P	1.1
3	☐	5.000	4.965	25747.84	0.0529	P	2.3
4	☐	10.000	10.207	47974.26	0.0991	P	2.1
5	☐	100.000	100.677	428309.82	0.8958	P	1.2
6	☐	200.000	199.653	791181.24	1.7673	P	0.7

y = 0.0088 * x + 0.0092
R = 1.0000
DL = 0.123
BEC = 1.048

Weight: <None>
Min Conc: <None>

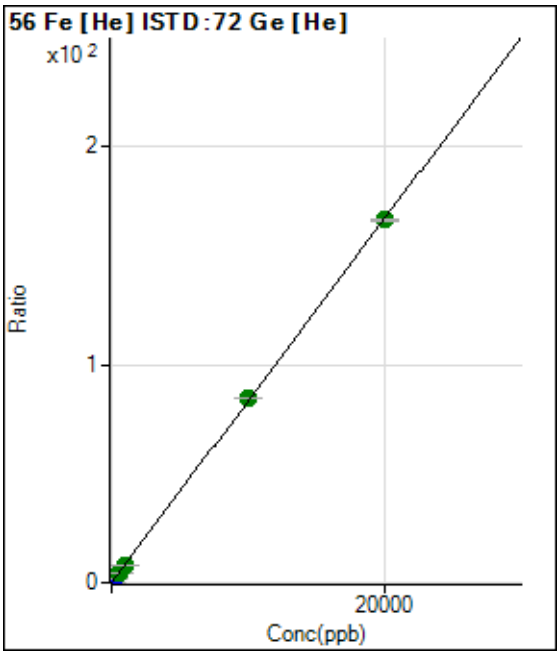
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	413.35	0.0008	P	15.4
2	☐	2.000	2.062	7692.31	0.0156	P	5.0
3	☐	5.000	4.877	17431.35	0.0358	P	1.0
4	☐	10.000	9.875	34710.96	0.0717	P	2.0
5	☐	100.000	100.324	344620.52	0.7207	P	0.2
6	☐	200.000	199.847	642292.20	1.4349	P	1.8

y = 0.0072 * x + 8.4449E-004
R = 1.0000
DL = 0.05422
BEC = 0.1177

Weight: <None>
Min Conc: <None>

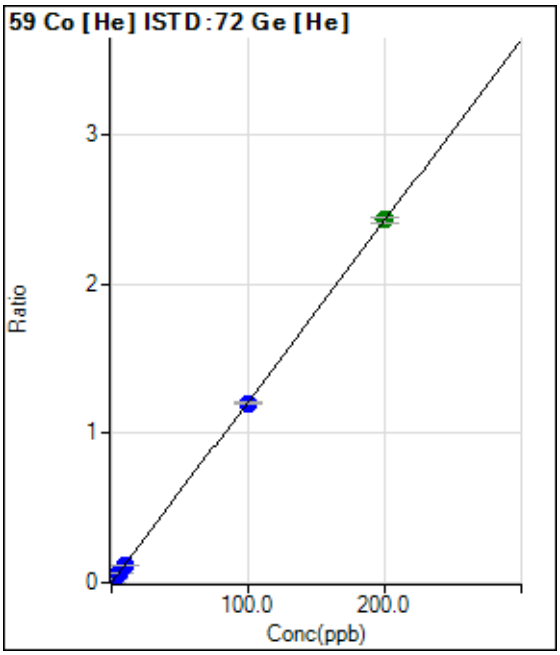


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	17898.69	0.0366	P	2.0
2	☐	200.000	206.939	867445.71	1.7632	P	1.0
3	☐	500.000	503.634	2061430.18	4.2386	A	1.6
4	☐	1000.000	994.445	4034823.69	8.3337	A	0.8
5	☐	10000.000	10117.220	40379234.40	84.4494	A	0.5
6	☐	20000.000	19941.507	74501497.22	166.4181	A	0.7

y = 0.0083 * x + 0.0366
R = 1.0000
DL = 0.2632
BEC = 4.383

Weight: <None>
Min Conc: <None>

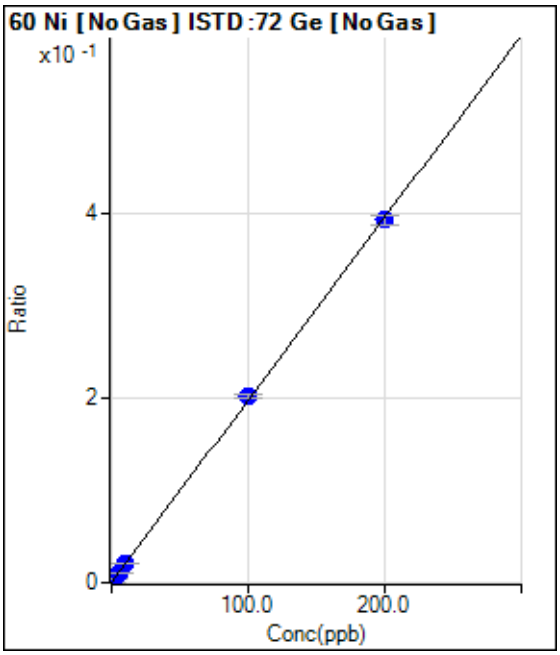
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	56.67	0.0001	P	56.4
2	☐	2.000	2.048	12269.06	0.0249	P	0.9
3	☐	5.000	4.880	28814.18	0.0593	P	2.2
4	☐	10.000	9.889	58070.50	0.1199	P	1.4
5	☐	100.000	99.186	574806.60	1.2021	P	0.9
6	☐	200.000	200.415	1087357.27	2.4288	A	1.6

y = 0.0121 * x + 1.1563E-004
R = 1.0000
DL = 0.01614
BEC = 0.009542

Weight: <None>
Min Conc: <None>

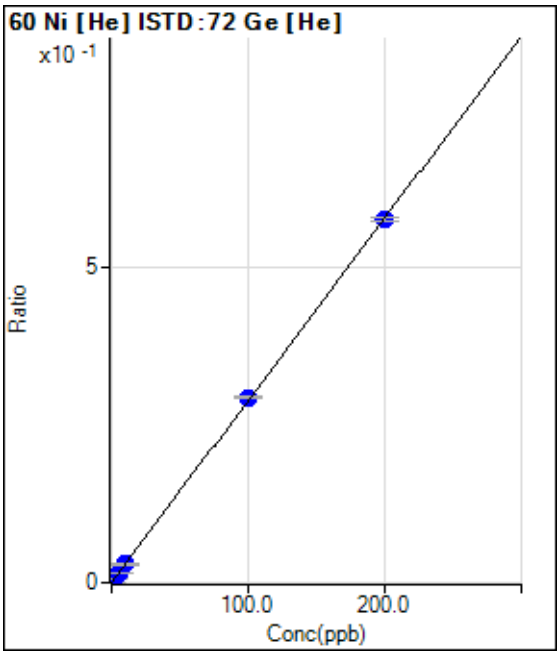


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	400.01	0.0003	P	26.8
2	☐	2.000	1.961	6058.12	0.0042	P	1.3
3	☐	5.000	4.933	14508.01	0.0101	P	2.1
4	☐	10.000	10.089	28894.34	0.0203	P	2.7
5	☐	100.000	102.363	276665.53	0.2030	P	2.4
6	☐	200.000	198.816	516949.81	0.3940	P	2.4

y = 0.0020 * x + 2.8321E-004
R = 0.9999
DL = 0.1152
BEC = 0.143

Weight: <None>
Min Conc: <None>

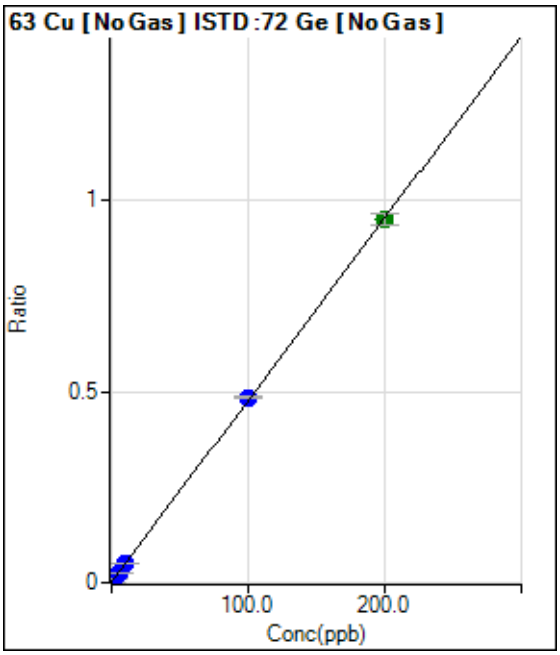
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	63.33	0.0001	P	38.5
2	☐	2.000	2.135	3097.07	0.0063	P	2.7
3	☐	5.000	5.146	7292.05	0.0150	P	2.4
4	☐	10.000	9.994	14037.42	0.0290	P	0.7
5	☐	100.000	101.528	140267.10	0.2934	P	1.2
6	☐	200.000	199.232	257655.87	0.5756	P	1.2

y = 0.0029 * x + 1.2907E-004
R = 1.0000
DL = 0.05166
BEC = 0.04469

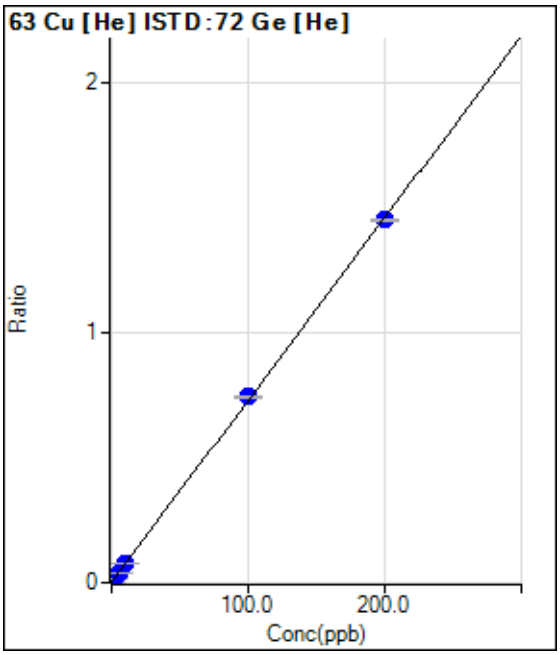
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1653.46	0.0012	P	16.7
2	☐	2.000	1.964	15288.92	0.0105	P	3.4
3	☐	5.000	4.930	35573.43	0.0246	P	0.3
4	☐	10.000	9.920	69035.23	0.0484	P	1.8
5	☐	100.000	101.591	661076.30	0.4850	P	1.7
6	☐	200.000	199.211	1246095.55	0.9499	A	3.3

y = 0.0048 * x + 0.0012
R = 1.0000
DL = 0.1229
BEC = 0.2454

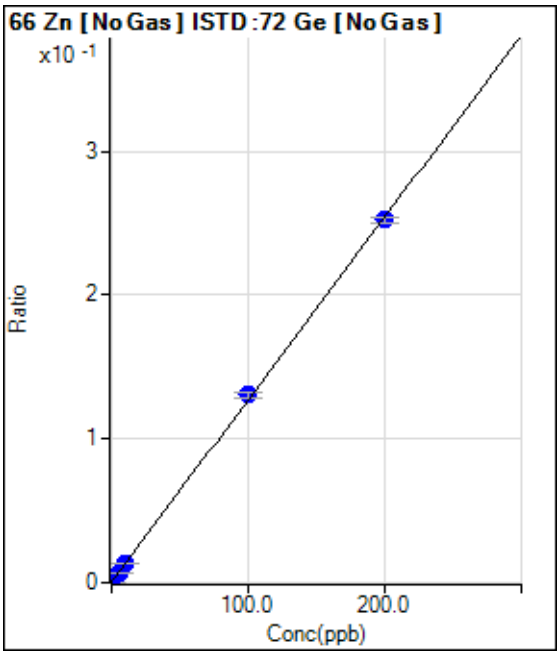
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	610.03	0.0012	P	14.6
2	☐	2.000	2.158	8342.71	0.0170	P	3.3
3	☐	5.000	5.177	18936.76	0.0389	P	1.0
4	☐	10.000	10.058	36061.46	0.0745	P	0.6
5	☐	100.000	101.888	355322.09	0.7431	P	0.7
6	☐	200.000	199.047	649377.76	1.4505	P	0.9

y = 0.0073 * x + 0.0012
R = 0.9999
DL = 0.07481
BEC = 0.1709

Weight: <None>
Min Conc: <None>

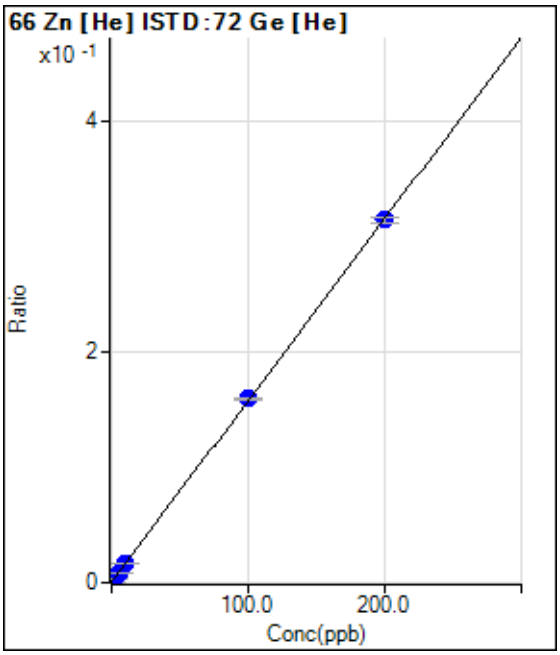


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	600.03	0.0004	P	3.7
2	☐	2.000	2.525	5264.42	0.0036	P	3.3
3	☐	5.000	4.790	9373.36	0.0065	P	3.3
4	☐	10.000	9.972	18626.44	0.0131	P	2.1
5	☐	100.000	102.690	177945.83	0.1306	P	2.8
6	☐	200.000	198.656	330908.94	0.2522	P	1.6

y = 0.0013 * x + 4.2295E-004
R = 0.9999
DL = 0.03673
BEC = 0.3338

Weight: <None>
Min Conc: <None>

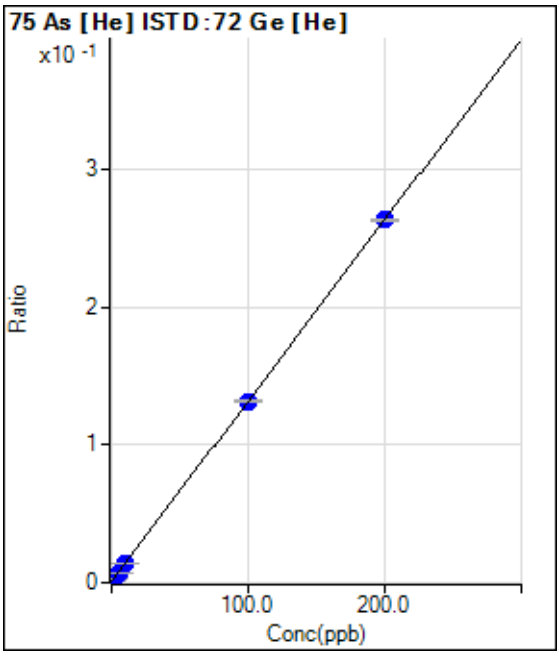
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	223.34	0.0005	P	12.2
2	☐	2.000	2.347	2043.53	0.0042	P	3.6
3	☐	5.000	5.127	4147.37	0.0085	P	6.8
4	☐	10.000	10.327	8099.19	0.0167	P	3.3
5	☐	100.000	100.866	76176.63	0.1593	P	1.1
6	☐	200.000	199.544	140895.30	0.3147	P	1.4

y = 0.0016 * x + 4.5663E-004
R = 1.0000
DL = 0.1065
BEC = 0.2899

Weight: <None>
Min Conc: <None>

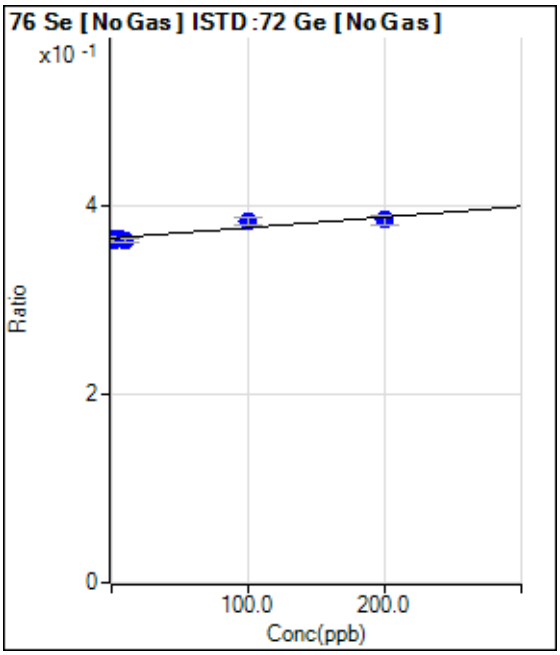


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	423.34	0.0009	P	16.0
2	☐	2.000	1.916	1662.33	0.0034	P	1.9
3	☐	5.000	4.708	3426.01	0.0070	P	2.7
4	☐	10.000	9.801	6645.00	0.0137	P	3.3
5	☐	100.000	99.676	62964.90	0.1317	P	0.5
6	☐	200.000	200.180	118002.95	0.2636	P	0.6

y = 0.0013 * x + 8.6412E-004
R = 1.0000
DL = 0.3155
BEC = 0.6584

Weight: <None>
Min Conc: <None>

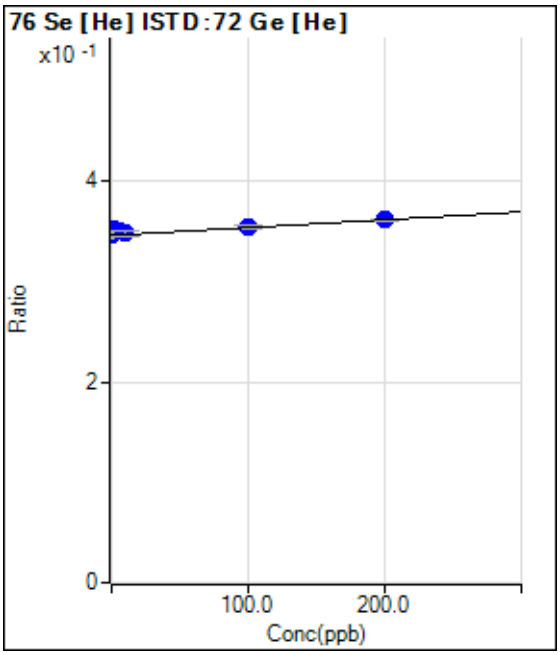
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	520079.85	0.3666	P	1.7
2	☐	2.000	-28.282	528216.94	0.3634	P	1.0
3	☐	5.000	-6.989	527926.17	0.3658	P	1.2
4	☐	10.000	-26.038	518551.58	0.3636	P	0.9
5	☐	100.000	160.025	524198.23	0.3846	P	1.7
6	☐	200.000	172.392	506405.63	0.3860	P	2.5

y = 1.1262E-004 * x + 0.3666
R = 0.9279
DL = 169.1
BEC = 3255

Weight: <None>
Min Conc: <None>

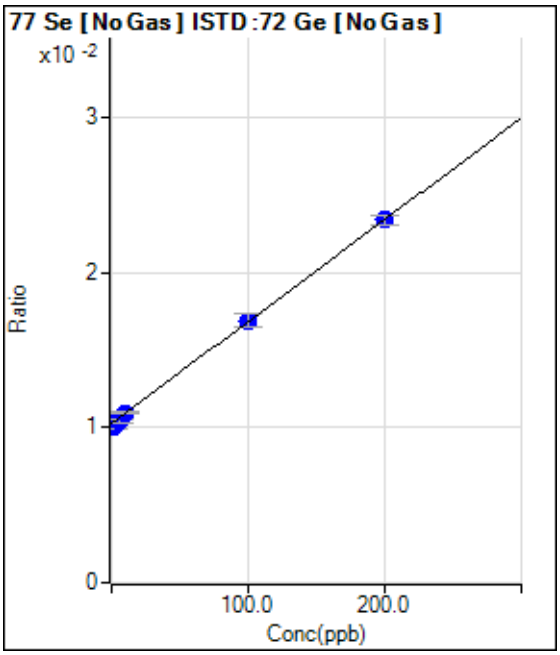


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	169334.19	0.3459	P	1.4
2	☐	2.000	80.033	173246.01	0.3522	P	1.1
3	☐	5.000	48.857	170085.14	0.3497	P	0.9
4	☐	10.000	24.391	168383.77	0.3478	P	1.4
5	☐	100.000	100.508	169164.81	0.3538	P	1.3
6	☐	200.000	197.150	161744.31	0.3613	P	0.9

y = 7.8075E-005 * x + 0.3459
R = 0.9204
DL = 184.9
BEC = 4430

Weight: <None>
Min Conc: <None>

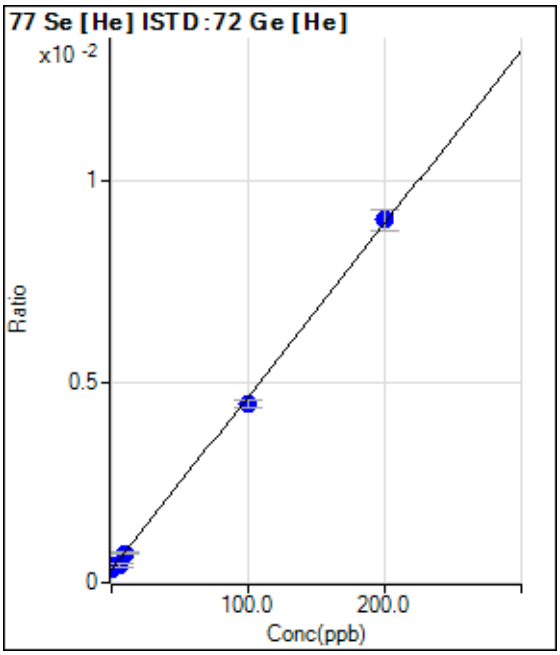
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	14584.81	0.0103	P	6.5
2	☐	2.000	-3.602	14594.80	0.0100	P	3.3
3	☐	5.000	1.728	15001.95	0.0104	P	2.4
4	☐	10.000	10.321	15625.94	0.0110	P	0.8
5	☐	100.000	100.826	23029.95	0.0169	P	4.9
6	☐	200.000	199.709	30701.86	0.0234	P	2.4

y = 6.5684E-005 * x + 0.0103
R = 0.9996
DL = 30.35
BEC = 156.5

Weight: <None>
Min Conc: <None>

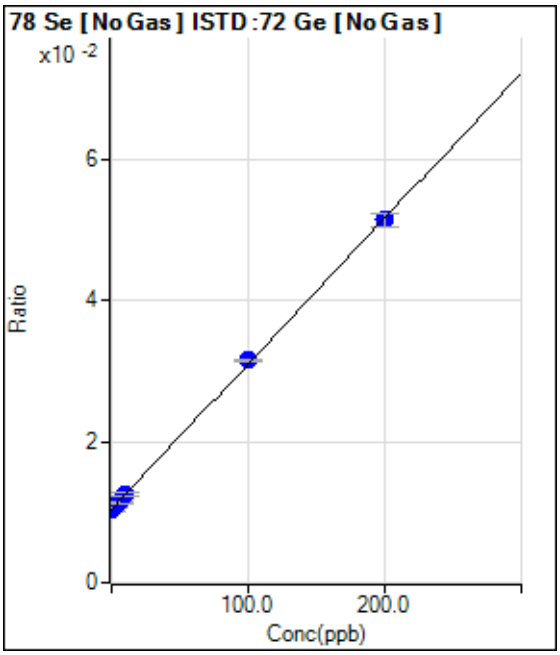


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	160.00	0.0003	P	11.6
2	☐	2.000	2.796	220.00	0.0004	P	43.9
3	☐	5.000	2.424	210.00	0.0004	P	29.1
4	☐	10.000	9.364	353.35	0.0007	P	7.3
5	☐	100.000	95.976	2133.54	0.0045	P	4.3
6	☐	200.000	202.100	4044.00	0.0090	P	5.5

y = 4.3100E-005 * x + 3.2670E-004
R = 0.9997
DL = 2.646
BEC = 7.58

Weight: <None>
Min Conc: <None>

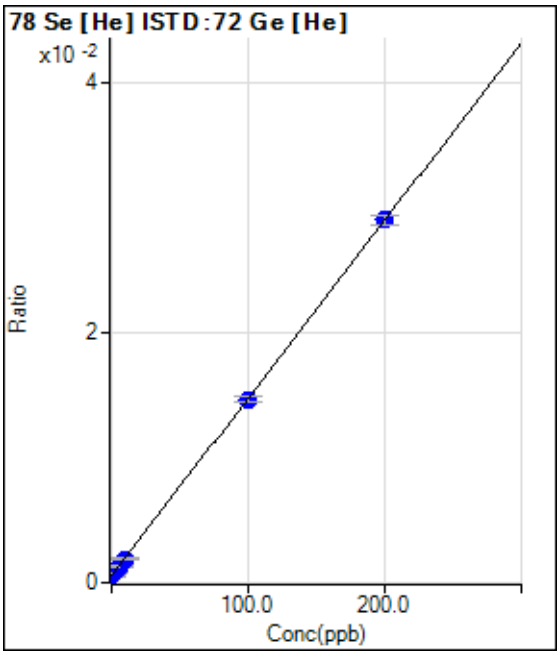
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	14771.62	0.0104	P	5.7
2	☐	2.000	1.337	15549.31	0.0107	P	0.8
3	☐	5.000	4.649	16423.57	0.0114	P	2.9
4	☐	10.000	10.115	17838.71	0.0125	P	2.8
5	☐	100.000	102.377	43005.54	0.0315	P	1.0
6	☐	200.000	198.821	67492.25	0.0514	P	3.4

y = 2.0634E-004 * x + 0.0104
R = 0.9999
DL = 8.7
BEC = 50.5

Weight: <None>
Min Conc: <None>

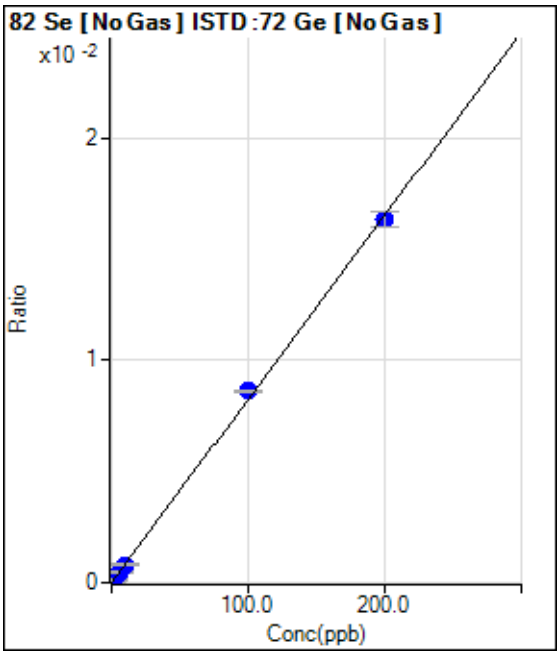


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	274.67	0.0006	P	14.1
2	☐	2.000	1.693	394.68	0.0008	P	15.5
3	☐	5.000	5.246	634.68	0.0013	P	10.1
4	☐	10.000	9.544	927.37	0.0019	P	1.0
5	☐	100.000	99.187	6993.83	0.0146	P	3.3
6	☐	200.000	200.426	12972.25	0.0290	P	2.9

y = 1.4180E-004 * x + 5.6184E-004
R = 1.0000
DL = 1.678
BEC = 3.962

Weight: <None>
Min Conc: <None>

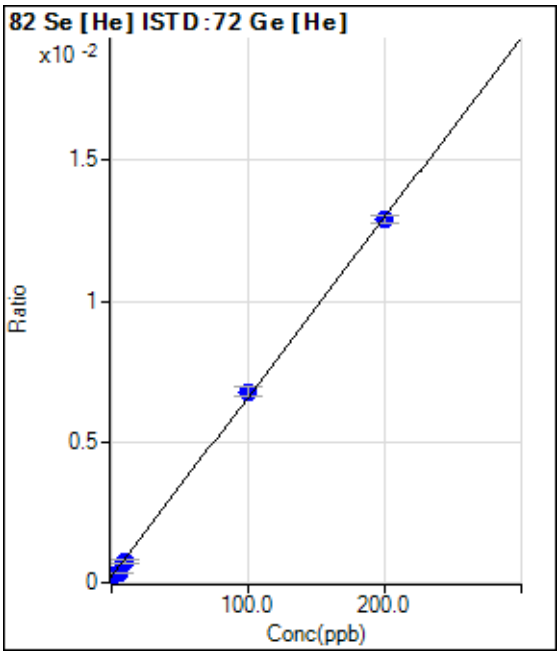
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	-6.03	0.0000	P	-325.6
2	☐	2.000	1.733	200.91	0.0001	P	20.0
3	☐	5.000	5.638	663.87	0.0005	P	31.5
4	☐	10.000	9.899	1157.34	0.0008	P	5.2
5	☐	100.000	104.471	11735.99	0.0086	P	1.6
6	☐	200.000	197.756	21385.03	0.0163	P	4.3

y = 8.2457E-005 * x - 4.5054E-006
R = 0.9996
DL = 0.5337
BEC = -0.05464

Weight: <None>
Min Conc: <None>

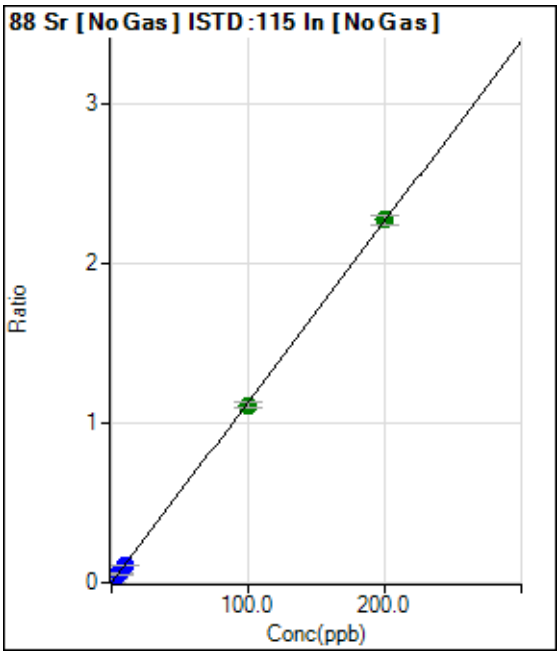


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	106.67	0.0002	P	5.5
2	☐	2.000	0.828	133.34	0.0003	P	33.3
3	☐	5.000	1.738	160.00	0.0003	P	10.0
4	☐	10.000	8.693	373.34	0.0008	P	19.1
5	☐	100.000	103.121	3250.45	0.0068	P	4.7
6	☐	200.000	198.598	5768.00	0.0129	P	2.0

y = 6.3787E-005 * x + 2.1794E-004
R = 0.9997
DL = 0.5671
BEC = 3.417

Weight: <None>
Min Conc: <None>

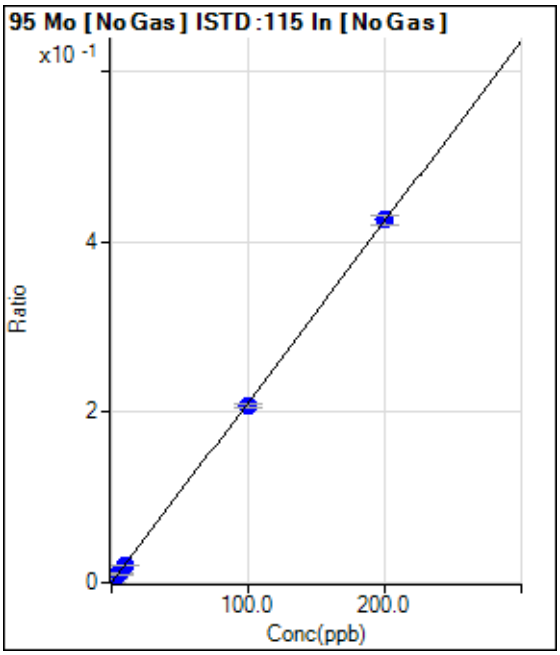
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1116.74	0.0007	P	12.4
2	☐	2.000	1.932	37202.09	0.0225	P	0.9
3	☐	5.000	4.785	90196.23	0.0547	P	5.3
4	☐	10.000	9.564	178907.65	0.1087	P	2.0
5	☐	100.000	98.323	1768711.07	1.1108	A	3.0
6	☐	200.000	200.866	3313200.37	2.2686	A	2.9

y = 0.0113 * x + 6.9024E-004
R = 1.0000
DL = 0.02277
BEC = 0.06113

Weight: <None>
Min Conc: <None>

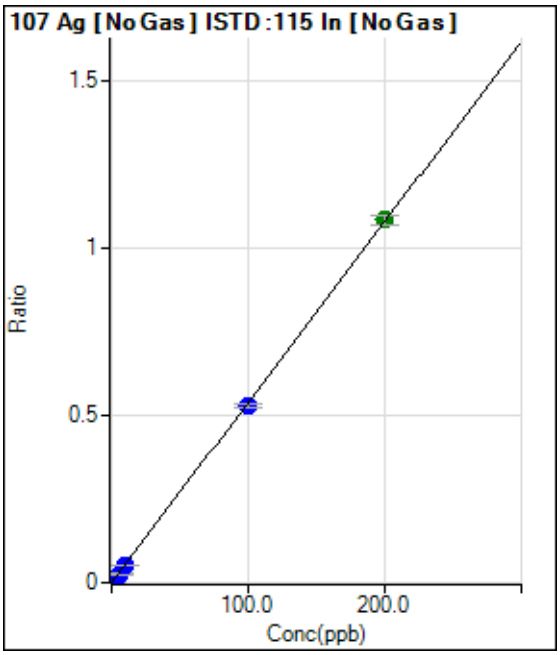


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	53.33	0.0000	P	13.4
2	☐	2.000	1.860	6558.39	0.0040	P	2.1
3	☐	5.000	4.801	16797.60	0.0102	P	5.6
4	☐	10.000	9.352	32636.97	0.0198	P	0.9
5	☐	100.000	98.148	330709.09	0.2077	P	1.7
6	☐	200.000	200.965	621042.54	0.4252	P	2.6

y = 0.0021 * x + 3.2980E-005
R = 0.9999
DL = 0.006265
BEC = 0.01559

Weight: <None>
Min Conc: <None>

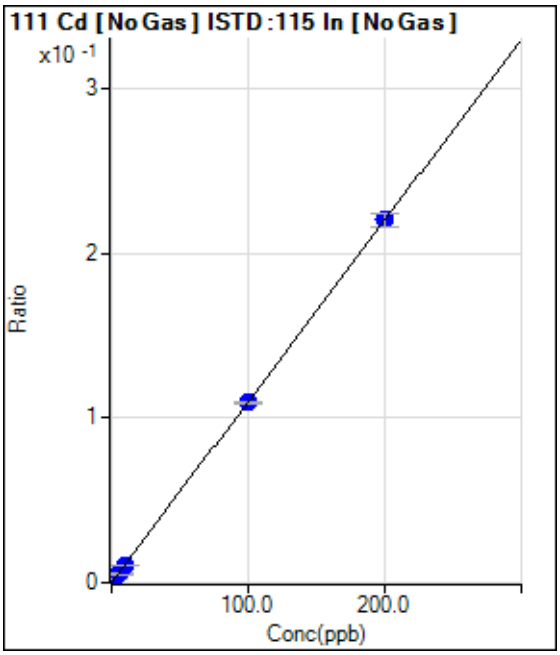
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	86.67	0.0001	P	15.9
2	☐	2.000	1.991	17862.28	0.0108	P	0.5
3	☐	5.000	4.749	42358.09	0.0257	P	4.7
4	☐	10.000	9.502	84546.09	0.0514	P	1.3
5	☐	100.000	97.892	841604.23	0.5285	P	1.6
6	☐	200.000	201.085	1585625.18	1.0856	A	2.9

y = 0.0054 * x + 5.3615E-005
R = 0.9999
DL = 0.004742
BEC = 0.009931

Weight: <None>
Min Conc: <None>

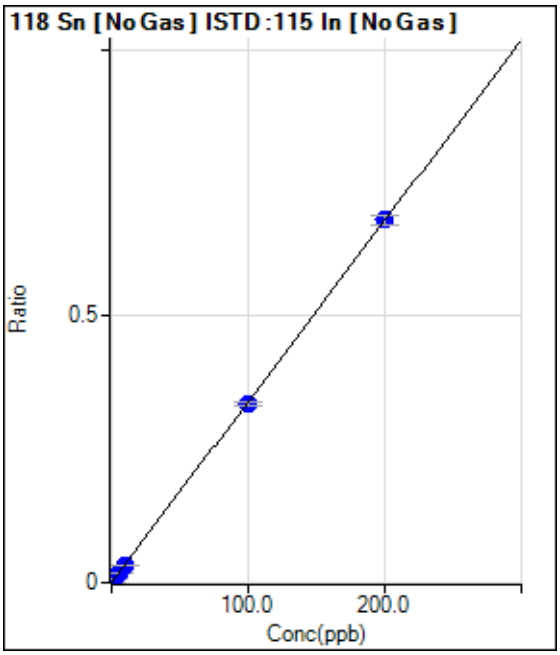


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	0.00	0.0000	P	
2	☐	2.000	1.917	3483.87	0.0021	P	5.5
3	☐	5.000	4.831	8759.74	0.0053	P	2.2
4	☐	10.000	9.746	17622.04	0.0107	P	4.4
5	☐	100.000	99.306	173706.04	0.1091	P	1.1
6	☐	200.000	200.365	321377.80	0.2201	P	3.8

y = 0.0011 * x + 0.0000E+000
R = 1.0000
DL = 0
BEC = 0

Weight: <None>
Min Conc: <None>

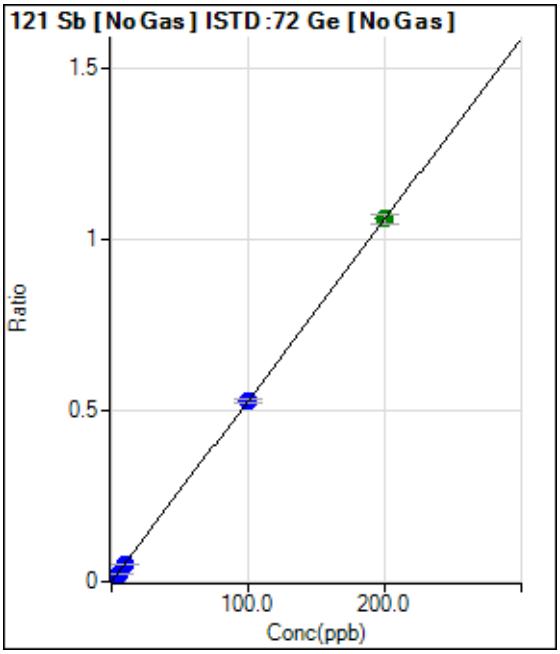
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	686.70	0.0004	P	10.9
2	☐	2.000	1.970	11745.43	0.0071	P	3.6
3	☐	5.000	4.857	27876.53	0.0169	P	1.9
4	☐	10.000	9.511	53806.78	0.0327	P	2.8
5	☐	100.000	98.976	535249.22	0.3361	P	2.1
6	☐	200.000	200.540	994095.09	0.6807	P	2.7

y = 0.0034 * x + 4.2437E-004
R = 1.0000
DL = 0.04095
BEC = 0.1251

Weight: <None>
Min Conc: <None>

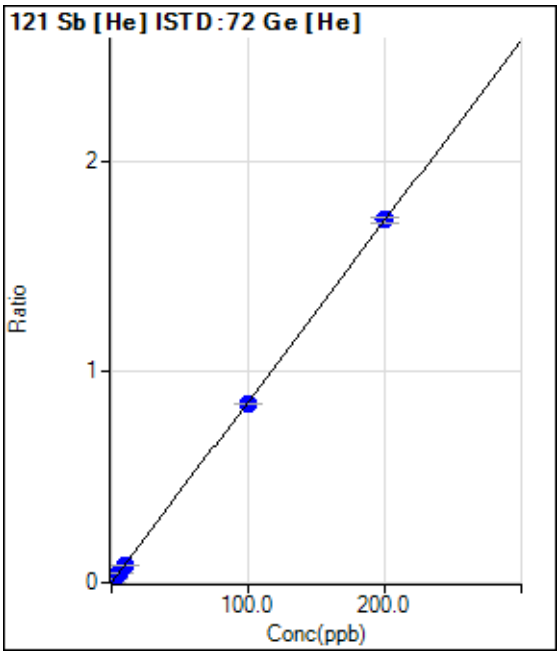


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	463.35	0.0003	P	13.9
2	☐	2.000	1.864	14818.62	0.0102	P	2.6
3	☐	5.000	4.681	36233.69	0.0251	P	0.5
4	☐	10.000	9.354	71072.37	0.0498	P	2.4
5	☐	100.000	99.353	717245.35	0.5262	P	2.2
6	☐	200.000	200.365	1391963.26	1.0609	A	2.7

y = 0.0053 * x + 3.2736E-004
R = 1.0000
DL = 0.02584
BEC = 0.06185

Weight: <None>
Min Conc: <None>

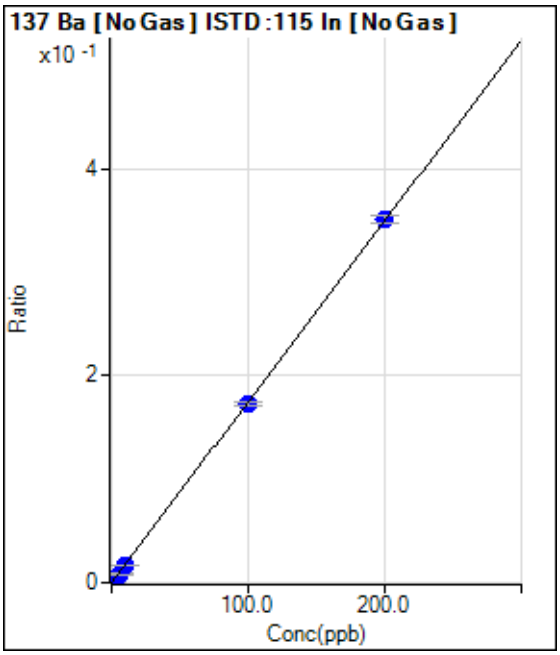
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	213.34	0.0004	P	23.2
2	☐	2.000	1.873	8122.64	0.0165	P	3.1
3	☐	5.000	4.790	20202.54	0.0415	P	2.0
4	☐	10.000	9.752	40733.52	0.0841	P	2.5
5	☐	100.000	98.857	405908.85	0.8489	P	0.3
6	☐	200.000	200.590	770893.35	1.7220	P	1.3

y = 0.0086 * x + 4.3588E-004
R = 1.0000
DL = 0.03531
BEC = 0.05079

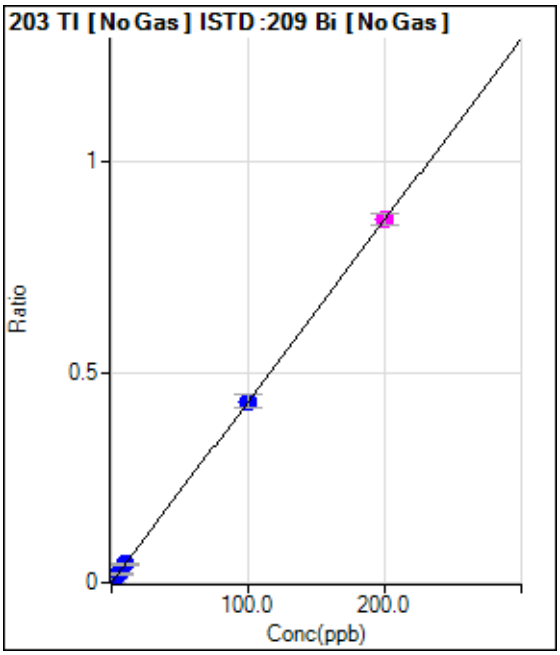
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	76.67	0.0000	P	37.1
2	☐	2.000	1.893	5541.28	0.0034	P	1.5
3	☐	5.000	4.743	13727.52	0.0083	P	6.9
4	☐	10.000	9.517	27439.38	0.0167	P	2.6
5	☐	100.000	98.661	274435.58	0.1724	P	2.1
6	☐	200.000	200.701	512024.25	0.3506	P	2.2

y = 0.0017 * x + 4.7261E-005
R = 1.0000
DL = 0.03011
BEC = 0.02706

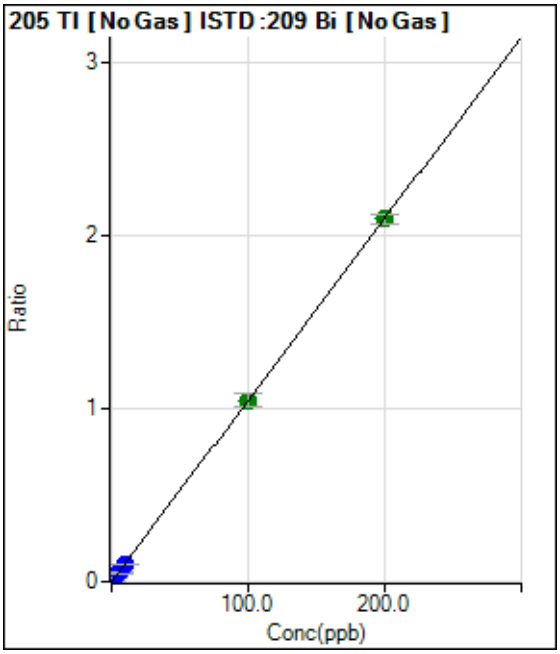
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	36.67	0.0000	P	64.1
2	☐	2.000	2.027	12052.73	0.0088	P	13.1
3	☐	5.000	4.813	29107.45	0.0208	P	3.4
4	☐	10.000	10.082	59940.62	0.0435	P	6.1
5	☐	100.000	99.783	586864.49	0.4302	P	7.5
6	☐	200.000	200.109	1109893.68	0.8626	M	3.1

y = 0.0043 * x + 2.7477E-005
R = 1.0000
DL = 0.01225
BEC = 0.006374

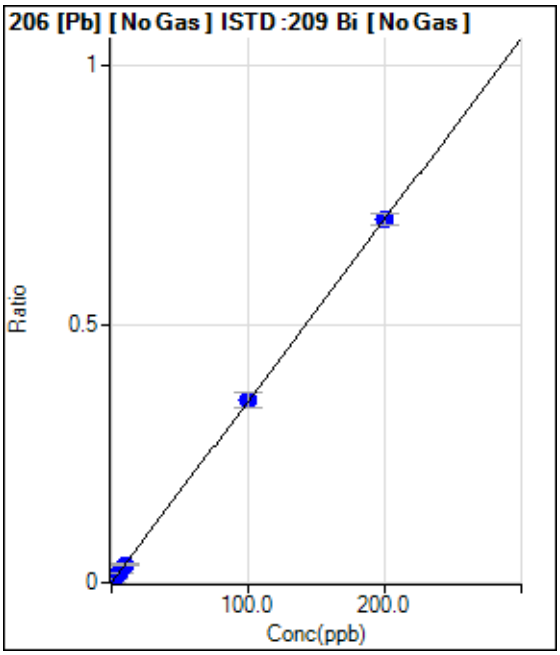
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	90.00	0.0001	P	20.1
2	☐	2.000	2.004	29030.85	0.0211	P	5.5
3	☐	5.000	4.777	70234.29	0.0501	P	4.8
4	☐	10.000	9.727	140636.40	0.1020	P	5.4
5	☐	100.000	100.144	1431351.12	1.0496	A	8.4
6	☐	200.000	199.947	2696147.98	2.0955	A	3.0

y = 0.0105 * x + 6.6444E-005
R = 1.0000
DL = 0.003815
BEC = 0.00634

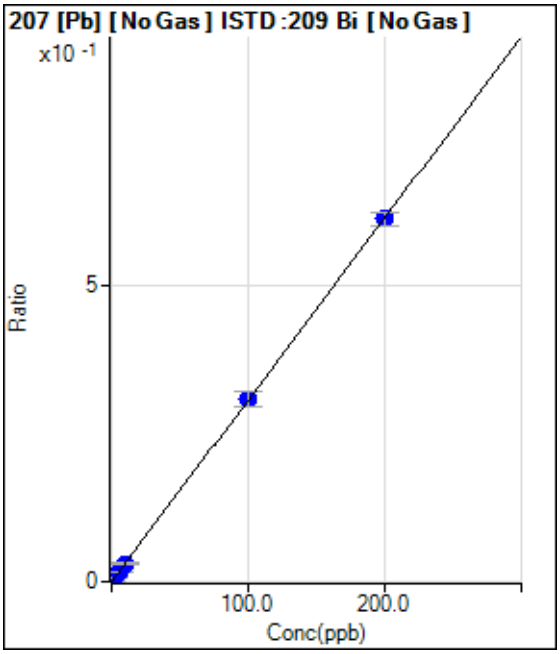
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	106.67	0.0001	P	32.8
2	☐	2.000	2.010	9824.03	0.0071	P	6.9
3	☐	5.000	4.943	24414.23	0.0174	P	5.4
4	☐	10.000	10.007	48531.29	0.0352	P	5.1
5	☐	100.000	100.239	479827.34	0.3518	P	8.2
6	☐	200.000	199.881	902521.19	0.7015	P	3.0

y = 0.0035 * x + 7.9543E-005
R = 1.0000
DL = 0.02229
BEC = 0.02267

Weight: <None>
Min Conc: <None>

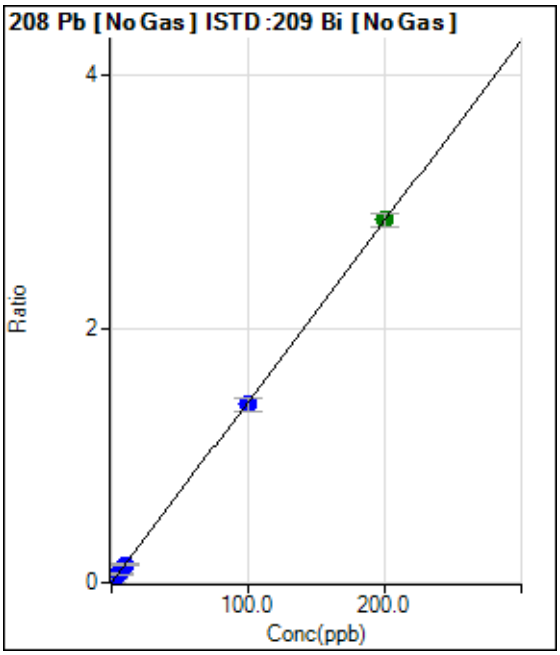


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	106.67	0.0001	P	14.4
2	☐	2.000	2.013	8636.47	0.0063	P	6.5
3	☐	5.000	4.931	21335.26	0.0152	P	6.8
4	☐	10.000	9.934	42215.29	0.0306	P	4.5
5	☐	100.000	100.608	421753.29	0.3092	P	8.0
6	☐	200.000	199.701	789547.20	0.6137	P	3.5

y = 0.0031 * x + 7.9050E-005
R = 1.0000
DL = 0.01113
BEC = 0.02573

Weight: <None>
Min Conc: <None>

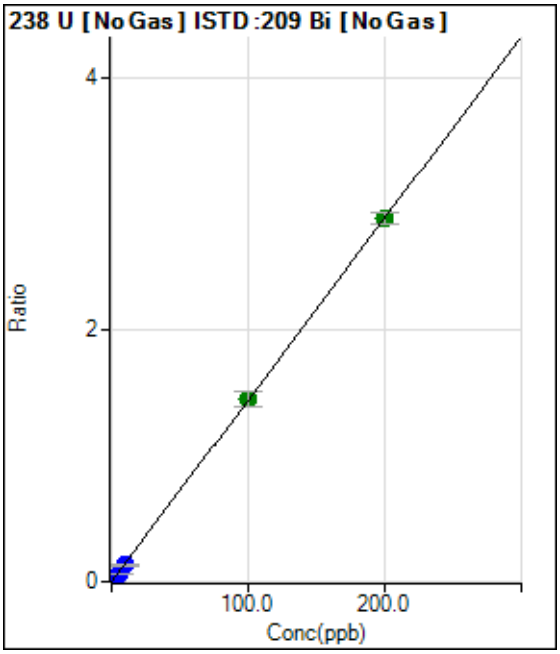
Calibration for 269_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	503.34	0.0004	P	9.6
2	☐	2.000	1.984	39545.28	0.0287	P	4.7
3	☐	5.000	4.824	96934.95	0.0692	P	4.7
4	☐	10.000	9.809	193427.98	0.1403	P	5.6
5	☐	100.000	98.737	1921977.93	1.4089	P	7.6
6	☐	200.000	200.646	3683104.82	2.8626	A	3.5

y = 0.0143 * x + 3.7360E-004
R = 1.0000
DL = 0.007526
BEC = 0.02619

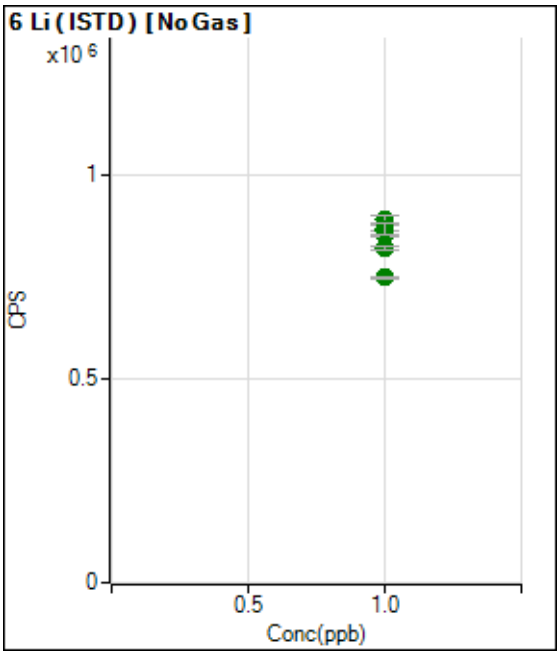
Weight: <None>
Min Conc: <None>



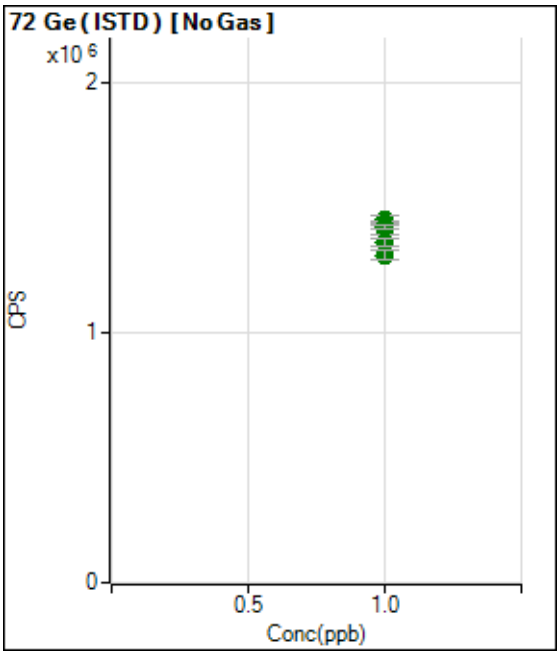
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	13.33	0.0000	P	116.5
2	☐	2.000	1.862	36992.99	0.0268	P	4.9
3	☐	5.000	4.523	91299.47	0.0652	P	2.5
4	☐	10.000	9.209	182827.90	0.1327	P	6.5
5	☐	100.000	100.600	1977035.28	1.4490	A	7.5
6	☐	200.000	199.753	3701923.38	2.8772	A	3.3

y = 0.0144 * x + 1.0166E-005
R = 1.0000
DL = 0.002467
BEC = 0.0007058

Weight: <None>
Min Conc: <None>

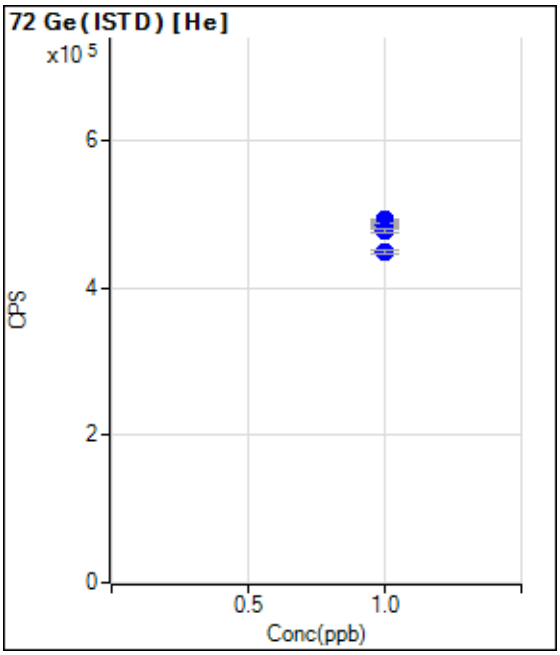


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		855377.73		A	1.5
2	☐	1.000		864643.14		A	3.5
3	☐	1.000		889407.18		A	2.8
4	☐	1.000		865782.80		A	3.2
5	☐	1.000		820891.91		A	1.5
6	☐	1.000		747863.40		A	1.0

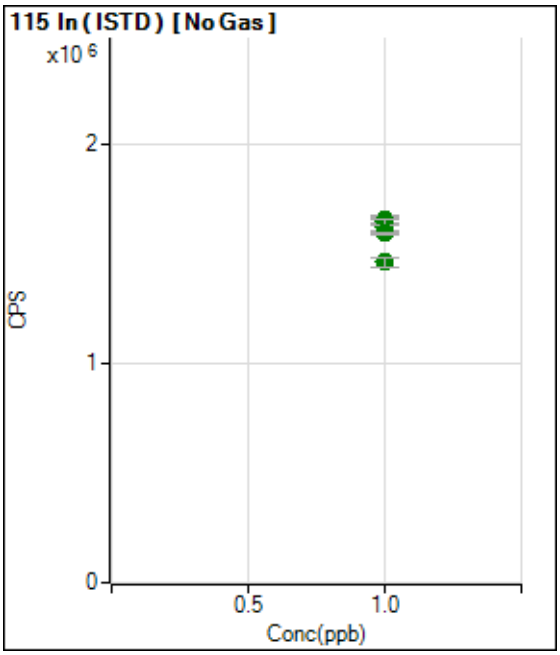


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1419220.97		A	3.1
2	☐	1.000		1453846.80		A	2.0
3	☐	1.000		1443387.01		A	0.6
4	☐	1.000		1426088.57		A	0.9
5	☐	1.000		1363423.31		A	2.4
6	☐	1.000		1312599.38		A	2.6

Calibration for 269_ICV.d

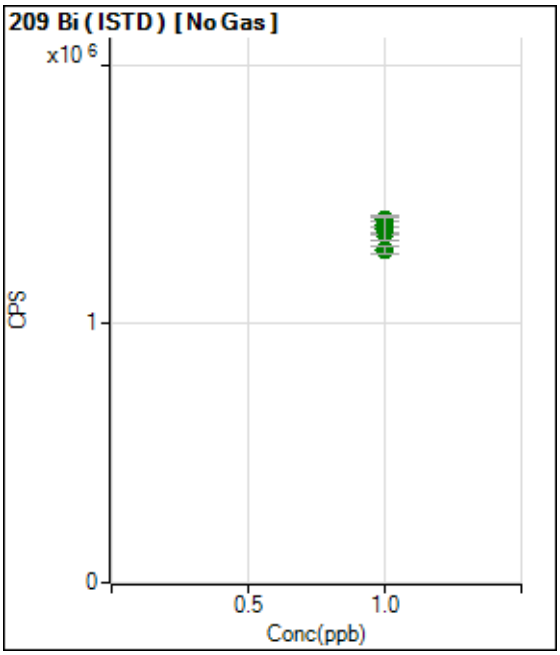


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		489484.62		P	1.5
2	☐	1.000		491976.02		P	0.5
3	☐	1.000		486369.74		P	1.3
4	☐	1.000		484189.58		P	1.4
5	☐	1.000		478160.64		P	1.0
6	☐	1.000		447705.40		P	1.4



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1620649.01		A	2.5
2	☐	1.000		1653184.60		A	1.9
3	☐	1.000		1649995.64		A	2.6
4	☐	1.000		1646637.15		A	1.6
5	☐	1.000		1592369.66		A	0.4
6	☐	1.000		1461306.39		A	3.3

Calibration for 269_ICV.d



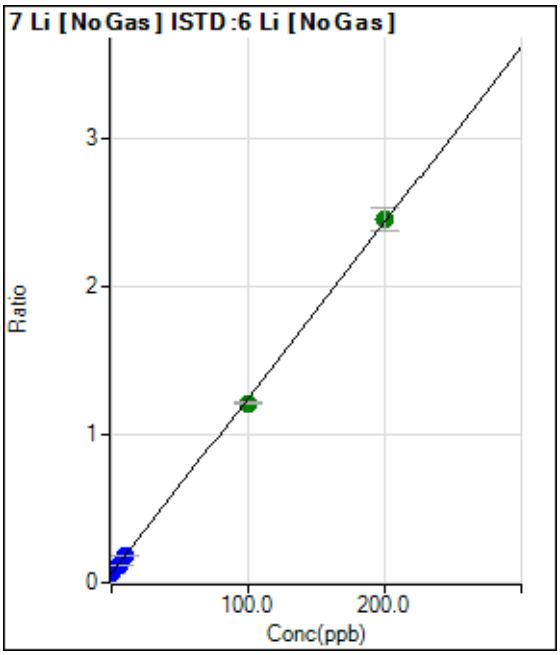
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1350351.41		A	3.7
2	☐	1.000		1380584.14		A	4.7
3	☐	1.000		1401506.80		A	1.0
4	☐	1.000		1381303.00		A	5.2
5	☐	1.000		1368746.49		A	6.5
6	☐	1.000		1287231.78		A	2.3

Calibration for 205_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\021022A.b\
Analysis File: 021022A.batch.bin
DA Date-Time: 2/10/2022 11:52:45 PM
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	188CALB.d	CAL BLK	2/10/2022 9:13:38 PM
2	189CALS.d	2/10/200	2/10/2022 9:15:37 PM
3	190CALS.d	5/25/500	2/10/2022 9:17:35 PM
4	191CALS.d	10/50/100	2/10/2022 9:19:33 PM
5	192CALS.d	100/500/10K	2/10/2022 9:21:30 PM
6	193CALS.d	200/1000/20K	2/10/2022 9:23:25 PM

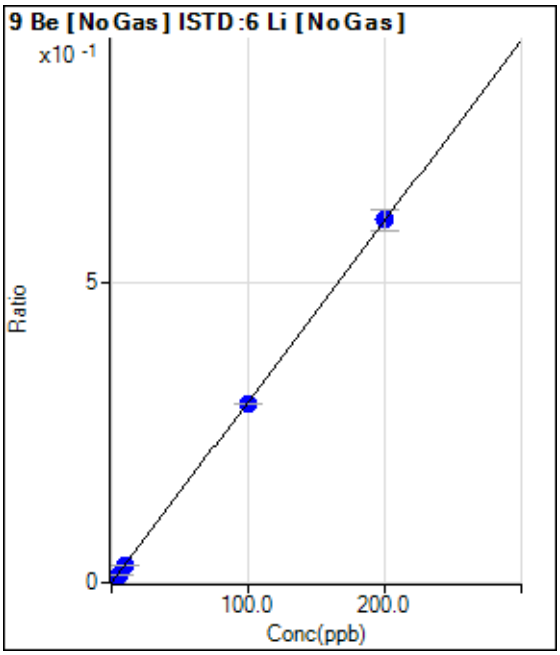
Calibration for 205_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	58420.61	0.0629	P	2.2
2	☐	2.000	1.864	77463.17	0.0850	P	0.5
3	☐	5.000	4.765	106836.47	0.1194	P	1.6
4	☐	10.000	9.799	162170.54	0.1791	P	3.5
5	☐	100.000	97.040	1062418.99	1.2140	A	1.3
6	☐	200.000	201.497	1993224.24	2.4530	A	6.5

y = 0.0119 * x + 0.0629
R = 0.9998
DL = 0.3468
BEC = 5.303

Weight: <None>
Min Conc: <None>

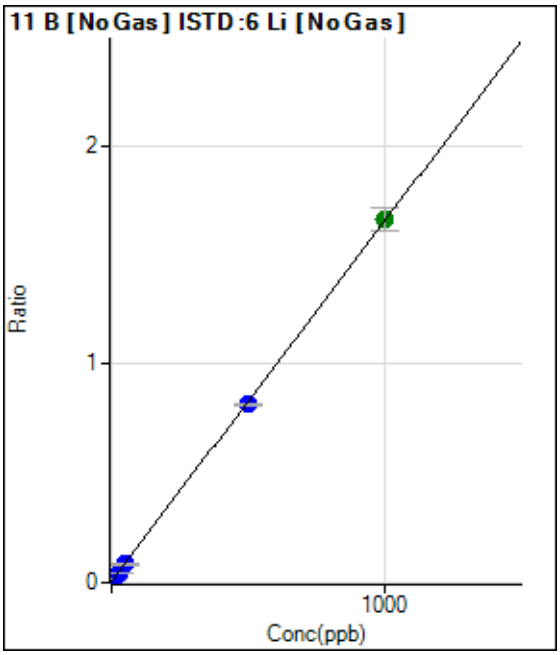


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	25.00	0.0000	P	20.3
2	☐	2.000	1.834	5069.28	0.0056	P	6.0
3	☐	5.000	4.607	12470.58	0.0139	P	2.8
4	☐	10.000	9.606	26282.92	0.0290	P	4.0
5	☐	100.000	98.727	260962.59	0.2982	P	0.2
6	☐	200.000	200.668	492529.62	0.6060	P	5.6

y = 0.0030 * x + 2.6929E-005
R = 1.0000
DL = 0.005433
BEC = 0.008918

Weight: <None>
Min Conc: <None>

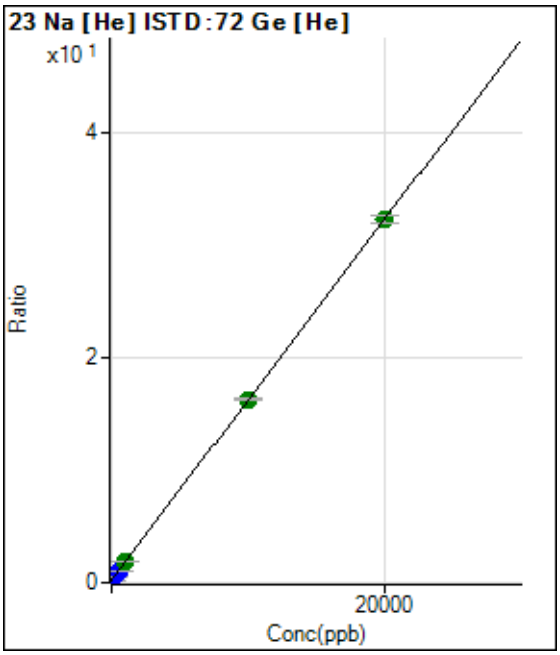
Calibration for 205_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6051.35	0.0065	P	2.4
2	☐	10.000	9.102	19615.45	0.0215	P	0.7
3	☐	25.000	23.156	39991.80	0.0447	P	2.3
4	☐	50.000	47.865	77344.86	0.0855	P	4.9
5	☐	500.000	492.549	716724.55	0.8188	P	1.0
6	☐	1000.000	1003.887	1350497.69	1.6621	A	6.5

y = 0.0016 * x + 0.0065
R = 1.0000
DL = 0.2848
BEC = 3.95

Weight: <None>
Min Conc: <None>

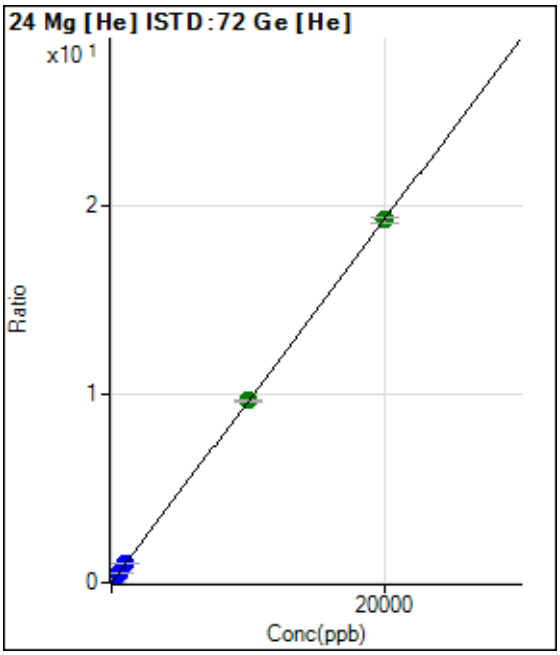


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	128679.09	0.2494	P	2.8
2	☐	200.000	204.050	293876.21	0.5761	P	1.3
3	☐	500.000	516.067	536731.63	1.0756	P	1.0
4	☐	1000.000	1012.848	966820.17	1.8710	A	1.1
5	☐	10000.000	10020.771	8315444.25	16.2928	A	1.5
6	☐	20000.000	19988.530	15681408.93	32.2512	A	2.0

y = 0.0016 * x + 0.2494
R = 1.0000
DL = 12.87
BEC = 155.8

Weight: <None>
Min Conc: <None>

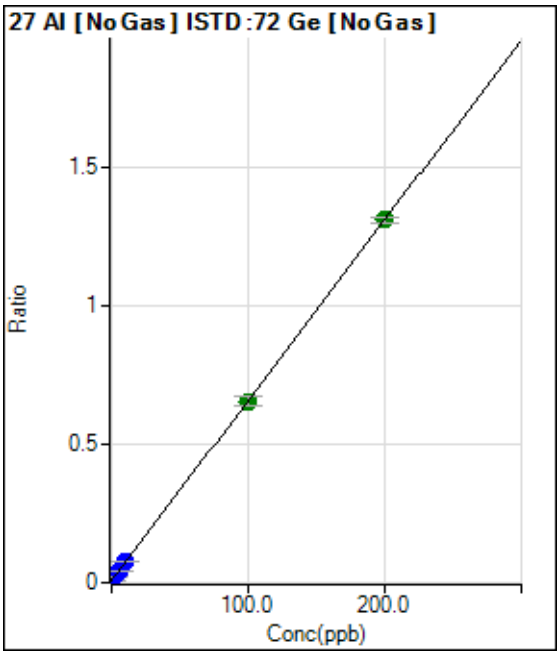
Calibration for 205_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	266.68	0.0005	P	4.1
2	☐	200.000	209.258	103106.18	0.2021	P	1.1
3	☐	500.000	529.016	254561.67	0.5102	P	0.3
4	☐	1000.000	1057.344	526545.61	1.0191	P	2.0
5	☐	10000.000	10018.021	4925203.05	9.6515	A	2.0
6	☐	20000.000	19987.304	9362629.65	19.2555	A	1.4

y = 9.6336E-004 * x + 5.1676E-004
R = 1.0000
DL = 0.06655
BEC = 0.5364

Weight: <None>
Min Conc: <None>

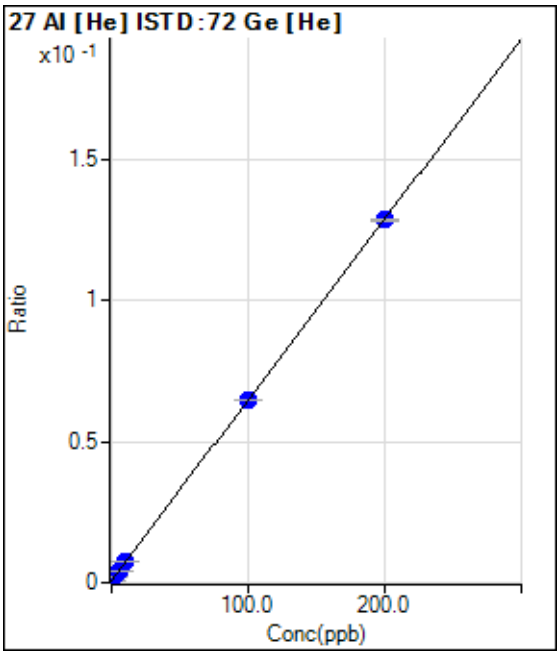


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	12225.60	0.0082	P	1.4
2	☐	2.000	1.997	31175.43	0.0212	P	1.8
3	☐	5.000	5.047	59560.68	0.0410	P	1.0
4	☐	10.000	10.506	115742.33	0.0765	P	2.7
5	☐	100.000	99.496	978468.16	0.6556	A	5.9
6	☐	200.000	200.226	1832988.31	1.3111	A	1.4

y = 0.0065 * x + 0.0082
R = 1.0000
DL = 0.05379
BEC = 1.254

Weight: <None>
Min Conc: <None>

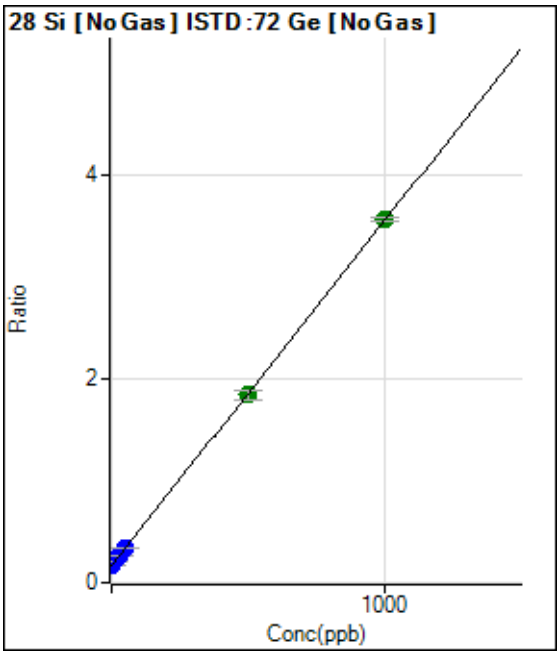
Calibration for 205_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	406.68	0.0008	P	13.1
2	☐	2.000	2.140	1100.06	0.0022	P	8.4
3	☐	5.000	5.081	2016.86	0.0040	P	7.2
4	☐	10.000	10.530	3890.62	0.0075	P	2.7
5	☐	100.000	100.135	33123.10	0.0649	P	0.9
6	☐	200.000	199.902	62614.13	0.1288	P	0.6

y = 6.4025E-004 * x + 7.8779E-004
R = 1.0000
DL = 0.4832
BEC = 1.23

Weight: <None>
Min Conc: <None>

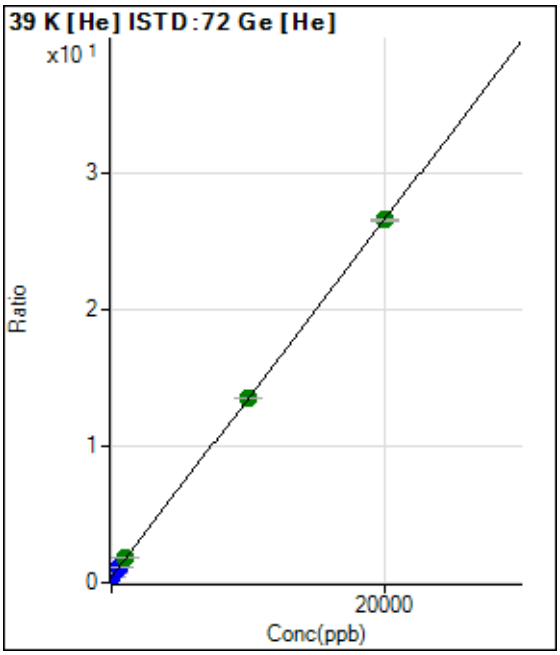


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	250226.99	0.1670	P	0.7
2	☐	10.000	10.263	297318.22	0.2018	P	2.9
3	☐	25.000	27.898	379939.46	0.2615	P	0.5
4	☐	50.000	49.747	507550.06	0.3356	P	1.2
5	☐	500.000	494.450	2749983.19	1.8422	A	5.0
6	☐	1000.000	1002.713	4982714.61	3.5642	A	1.0

y = 0.0034 * x + 0.1670
R = 1.0000
DL = 1.027
BEC = 49.3

Weight: <None>
Min Conc: <None>

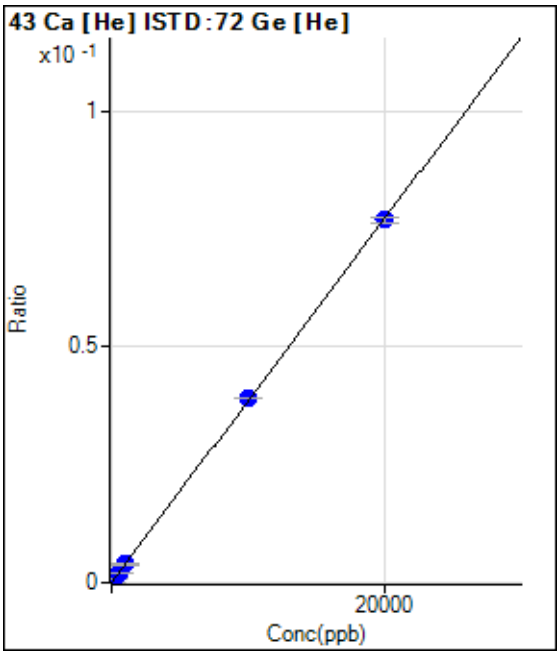
Calibration for 205_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	210072.10	0.4071	P	1.4
2	☐	200.000	210.185	347781.77	0.6818	P	1.4
3	☐	500.000	521.584	543261.02	1.0887	P	0.5
4	☐	1000.000	1048.447	918354.65	1.7772	A	1.3
5	☐	10000.000	10016.262	6888156.77	13.4965	A	0.2
6	☐	20000.000	19988.805	12899355.64	26.5288	A	0.6

y = 0.0013 * x + 0.4071
R = 1.0000
DL = 13.15
BEC = 311.5

Weight: <None>
Min Conc: <None>

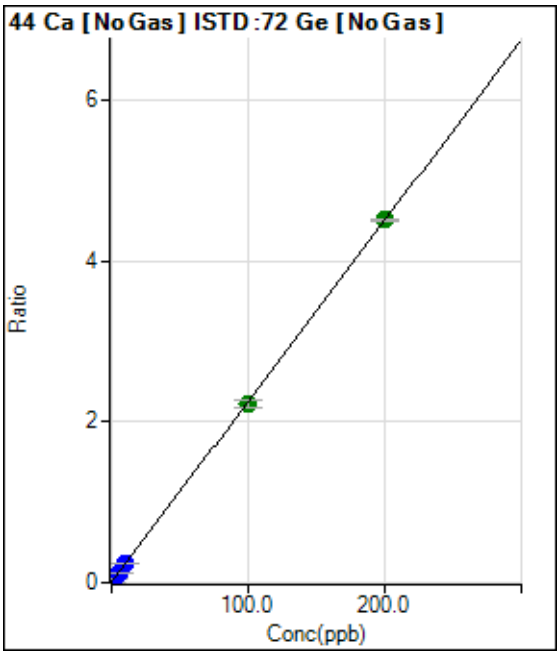


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	16.67	0.0000	P	68.9
2	☐	200.000	210.774	430.02	0.0008	P	16.0
3	☐	500.000	505.157	986.72	0.0020	P	11.6
4	☐	1000.000	1001.113	2010.18	0.0039	P	2.4
5	☐	10000.000	10116.217	19908.03	0.0390	P	0.2
6	☐	20000.000	19941.599	37374.46	0.0769	P	1.9

y = 3.8528E-006 * x + 3.2243E-005
R = 1.0000
DL = 17.29
BEC = 8.369

Weight: <None>
Min Conc: <None>

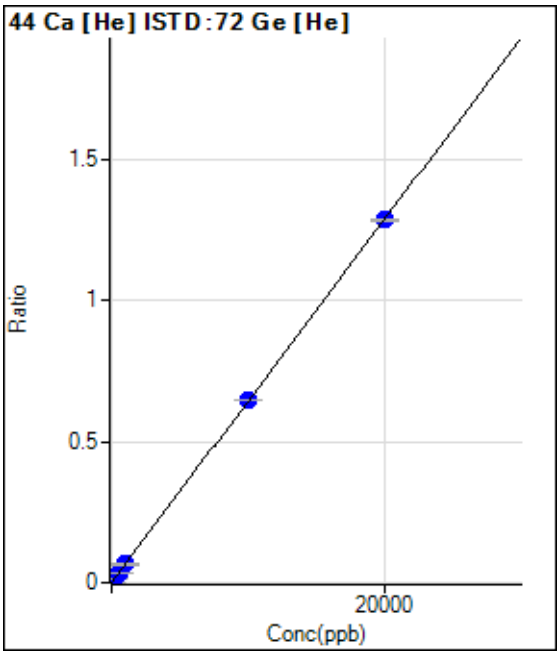
Calibration for 205_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	12295.70	0.0082	P	5.6
2	☐	2.000	2.059	80219.82	0.0545	P	3.6
3	☐	5.000	5.104	178438.38	0.1228	P	0.6
4	☐	10.000	10.156	357384.16	0.2363	P	1.2
5	☐	100.000	99.089	3334651.09	2.2336	A	4.3
6	☐	200.000	200.444	6304485.53	4.5098	A	0.9

y = 0.0225 * x + 0.0082
R = 1.0000
DL = 0.06094
BEC = 0.3655

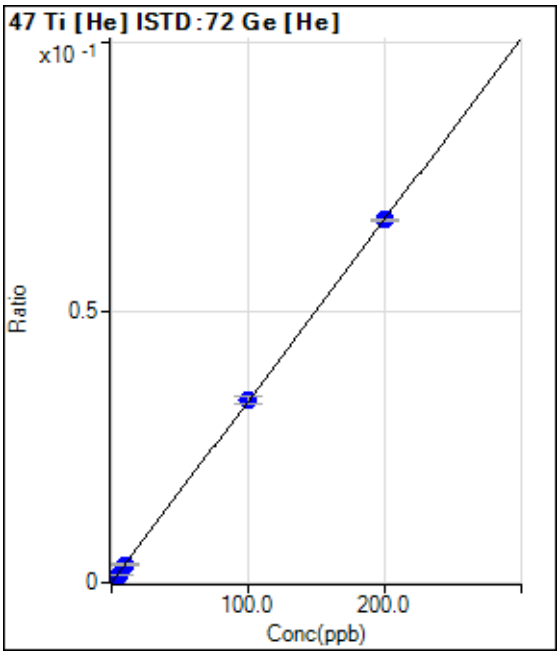
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	326.68	0.0006	P	29.6
2	☐	200.000	205.030	7041.91	0.0138	P	7.1
3	☐	500.000	499.121	16323.35	0.0327	P	3.4
4	☐	1000.000	996.494	33417.50	0.0647	P	3.4
5	☐	10000.000	10055.500	330187.39	0.6470	P	0.9
6	☐	20000.000	19972.397	624525.74	1.2844	P	0.6

y = 6.4277E-005 * x + 6.3389E-004
R = 1.0000
DL = 8.76
BEC = 9.862

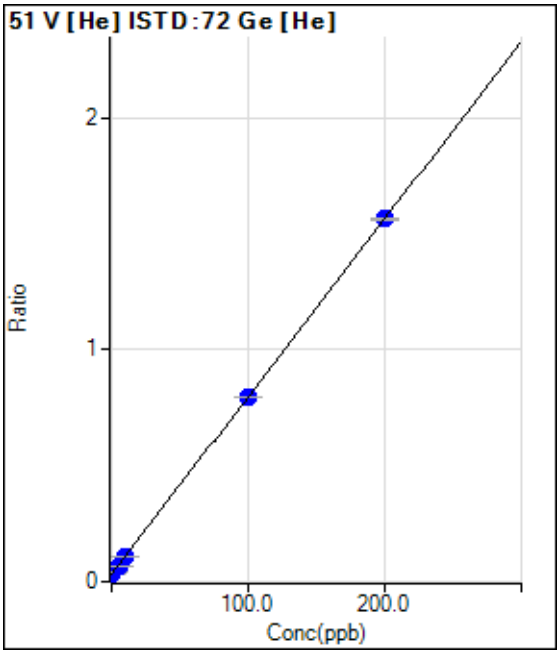
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	13.33	0.0000	P	42.3
2	☐	2.000	1.816	323.34	0.0006	P	17.2
3	☐	5.000	4.343	740.03	0.0015	P	5.2
4	☐	10.000	9.753	1703.47	0.0033	P	5.2
5	☐	100.000	100.306	17181.06	0.0337	P	4.3
6	☐	200.000	199.878	32612.48	0.0671	P	0.4

y = 3.3544E-004 * x + 2.5770E-005
R = 1.0000
DL = 0.09739
BEC = 0.07683

Weight: <None>
Min Conc: <None>

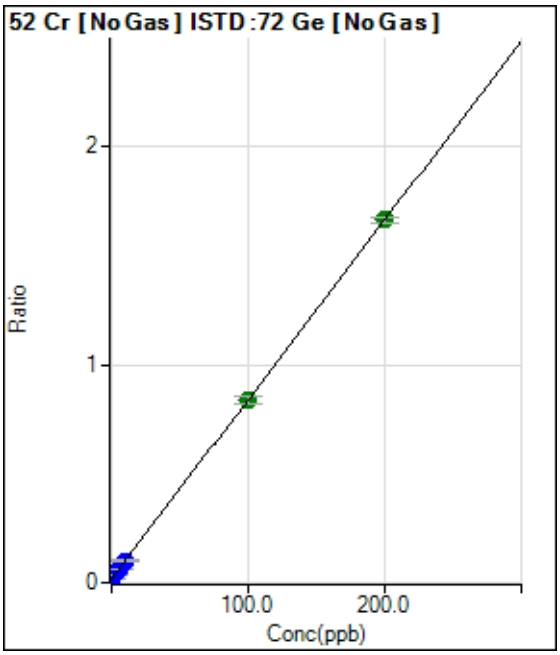


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	16632.36	0.0322	P	1.4
2	☐	2.000	1.827	23578.08	0.0462	P	2.9
3	☐	5.000	4.881	34741.66	0.0696	P	1.1
4	☐	10.000	9.781	55370.07	0.1072	P	1.4
5	☐	100.000	99.782	406529.41	0.7966	P	0.9
6	☐	200.000	200.125	761089.47	1.5653	P	0.5

y = 0.0077 * x + 0.0322
R = 1.0000
DL = 0.1779
BEC = 4.207

Weight: <None>
Min Conc: <None>

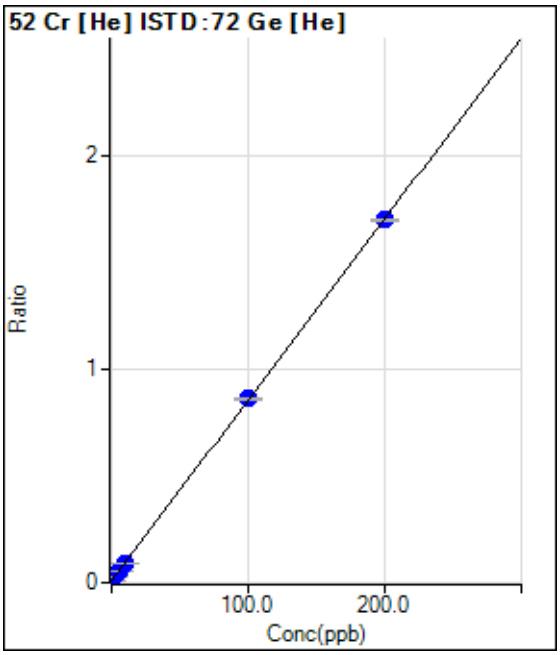
Calibration for 205_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	26706.52	0.0178	P	2.8
2	☐	2.000	2.053	51118.82	0.0347	P	3.2
3	☐	5.000	5.146	87327.17	0.0601	P	1.0
4	☐	10.000	10.118	152716.94	0.1010	P	1.0
5	☐	100.000	99.531	1247656.39	0.8357	A	4.6
6	☐	200.000	200.225	2324769.08	1.6632	A	1.8

y = 0.0082 * x + 0.0178
R = 1.0000
DL = 0.185
BEC = 2.169

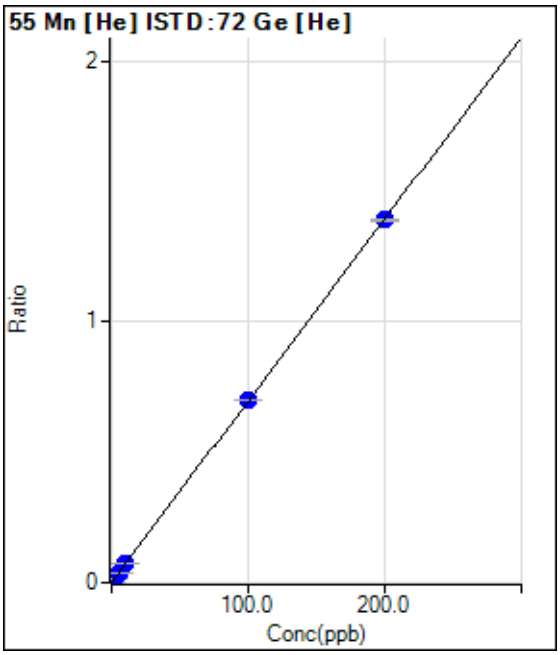
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4444.13	0.0086	P	4.3
2	☐	2.000	1.885	12552.63	0.0246	P	1.5
3	☐	5.000	5.059	25714.42	0.0515	P	0.6
4	☐	10.000	9.900	47850.52	0.0926	P	1.5
5	☐	100.000	100.781	440800.93	0.8637	P	0.7
6	☐	200.000	199.614	827731.94	1.7023	P	0.2

y = 0.0085 * x + 0.0086
R = 1.0000
DL = 0.13
BEC = 1.015

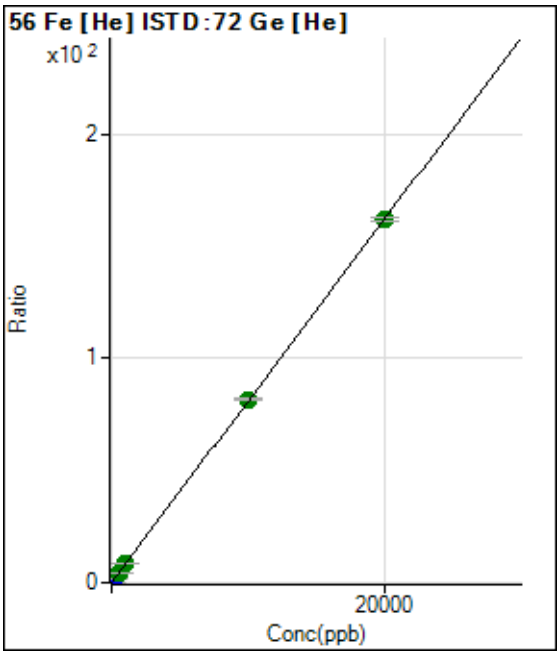
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	400.01	0.0008	P	17.7
2	☐	2.000	2.015	7555.54	0.0148	P	1.1
3	☐	5.000	4.976	17678.36	0.0354	P	2.7
4	☐	10.000	10.066	36622.77	0.0709	P	1.5
5	☐	100.000	100.675	358177.28	0.7018	P	0.6
6	☐	200.000	199.660	676415.09	1.3911	P	0.6

y = 0.0070 * x + 7.7557E-004
R = 1.0000
DL = 0.05919
BEC = 0.1114

Weight: <None>
Min Conc: <None>

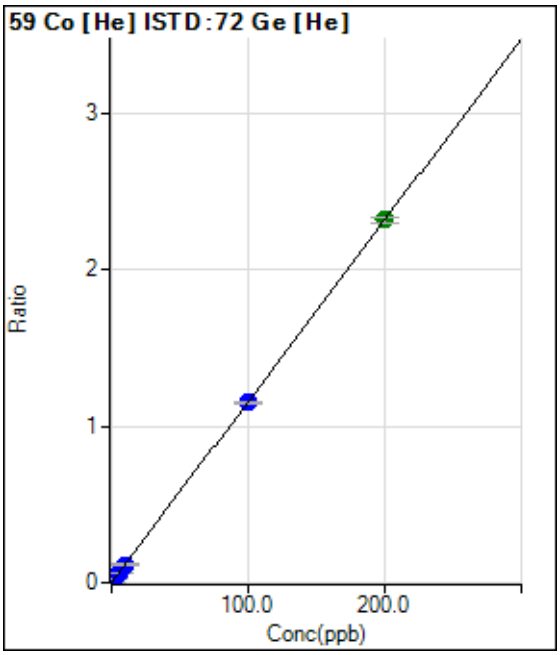


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	15262.07	0.0296	P	1.8
2	☐	200.000	200.444	842683.56	1.6520	P	1.8
3	☐	500.000	505.559	2056601.38	4.1215	A	0.5
4	☐	1000.000	1004.129	4215189.31	8.1569	A	0.1
5	☐	10000.000	10068.316	41603108.55	81.5212	A	1.2
6	☐	20000.000	19965.492	78589762.16	161.6277	A	1.0

y = 0.0081 * x + 0.0296
R = 1.0000
DL = 0.2021
BEC = 3.654

Weight: <None>
Min Conc: <None>

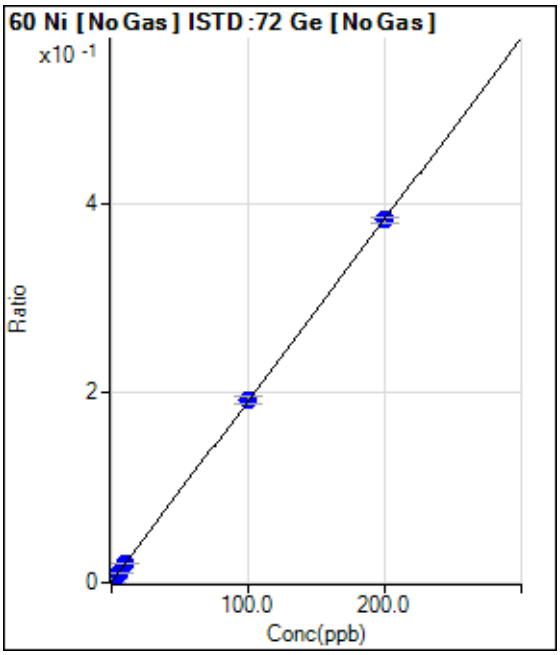
Calibration for 205_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	46.67	0.0001	P	33.8
2	☐	2.000	1.920	11368.24	0.0223	P	4.6
3	☐	5.000	4.955	28640.38	0.0574	P	0.9
4	☐	10.000	10.010	59865.02	0.1159	P	2.1
5	☐	100.000	99.447	587058.18	1.1504	P	1.1
6	☐	200.000	200.278	1126433.32	2.3166	A	1.3

y = 0.0116 * x + 9.0677E-005
R = 1.0000
DL = 0.007957
BEC = 0.007839

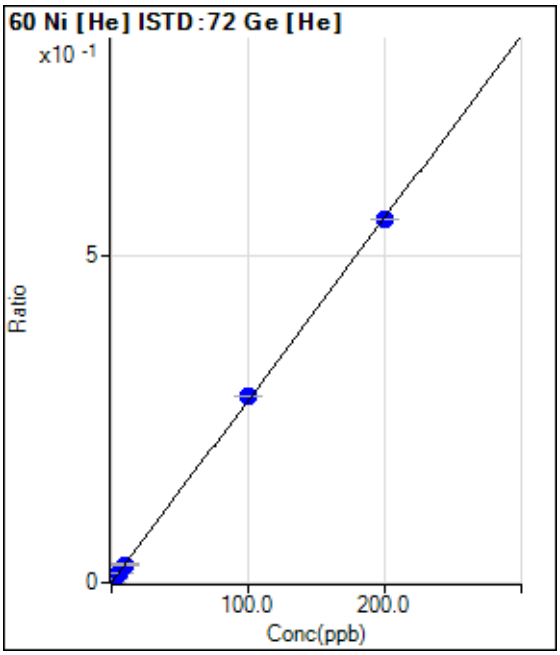
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	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	946.72	0.0006	P	12.6
2	☐	2.000	1.935	6384.92	0.0043	P	2.1
3	☐	5.000	5.020	14864.98	0.0102	P	0.3
4	☐	10.000	10.053	30033.36	0.0199	P	0.7
5	☐	100.000	100.510	287926.35	0.1928	P	4.1
6	☐	200.000	199.743	534896.67	0.3826	P	1.5

y = 0.0019 * x + 6.3145E-004
R = 1.0000
DL = 0.1252
BEC = 0.3302

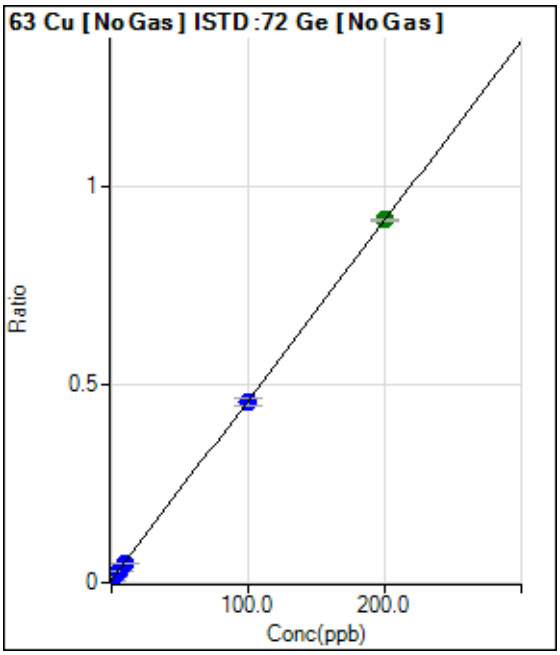
Weight: <None>
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	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	73.33	0.0001	P	61.1
2	☐	2.000	1.940	2823.67	0.0055	P	6.6
3	☐	5.000	5.054	7085.31	0.0142	P	5.3
4	☐	10.000	9.950	14371.12	0.0278	P	2.1
5	☐	100.000	102.118	145015.70	0.2842	P	0.4
6	☐	200.000	198.942	269099.48	0.5534	P	0.2

y = 0.0028 * x + 1.4158E-004
R = 0.9999
DL = 0.09329
BEC = 0.05091

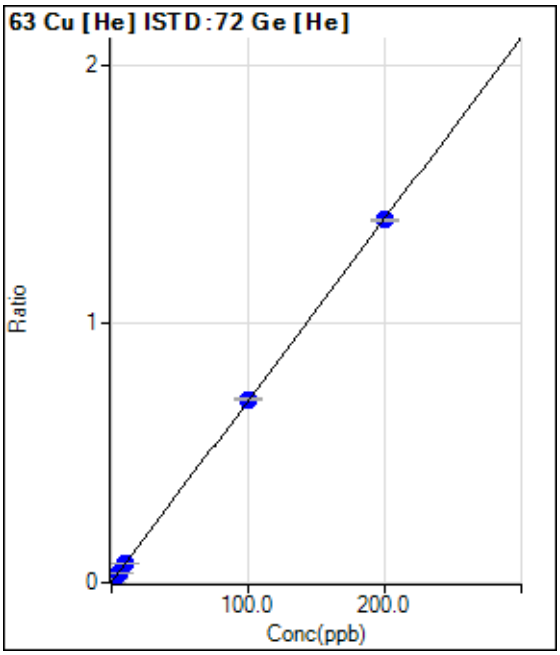
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	9980.51	0.0067	P	6.1
2	☐	2.000	2.014	23253.53	0.0158	P	6.5
3	☐	5.000	4.734	40821.53	0.0281	P	2.9
4	☐	10.000	9.666	76303.21	0.0504	P	0.5
5	☐	100.000	99.296	681520.85	0.4565	P	4.0
6	☐	200.000	200.375	1278186.96	0.9143	A	0.5

y = 0.0045 * x + 0.0067
R = 1.0000
DL = 0.2681
BEC = 1.471

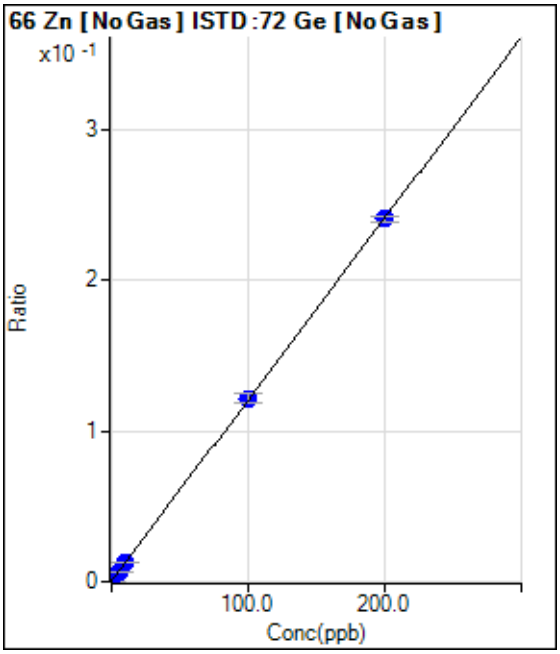
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	780.04	0.0015	P	7.7
2	☐	2.000	1.911	7608.92	0.0149	P	4.8
3	☐	5.000	5.075	18516.18	0.0371	P	2.2
4	☐	10.000	10.040	37157.85	0.0719	P	2.2
5	☐	100.000	100.877	361801.48	0.7090	P	0.8
6	☐	200.000	199.558	681201.99	1.4010	P	0.6

y = 0.0070 * x + 0.0015
R = 1.0000
DL = 0.04982
BEC = 0.2154

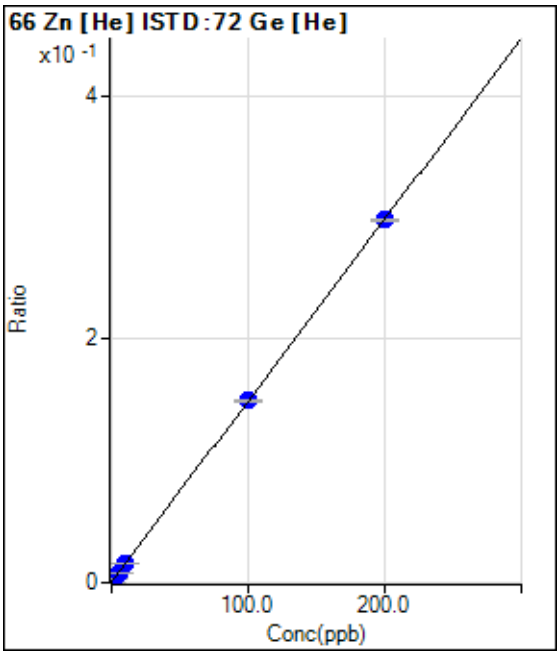
Weight: <None>
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	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	556.69	0.0004	P	19.8
2	☐	2.000	2.448	4887.65	0.0033	P	5.8
3	☐	5.000	4.826	8979.81	0.0062	P	1.0
4	☐	10.000	9.916	18619.71	0.0123	P	0.4
5	☐	100.000	100.510	181179.86	0.1214	P	5.3
6	☐	200.000	199.749	336735.83	0.2409	P	1.7

y = 0.0012 * x + 3.7100E-004
R = 1.0000
DL = 0.183
BEC = 0.3081

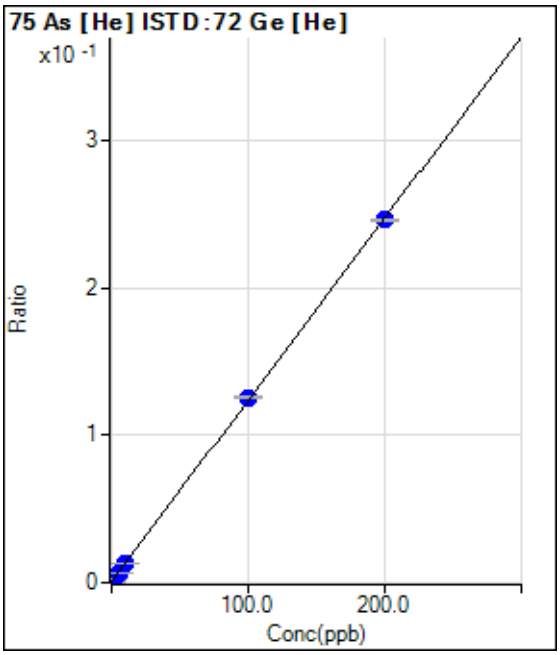
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	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	236.67	0.0005	P	16.1
2	☐	2.000	2.143	1863.49	0.0037	P	5.0
3	☐	5.000	4.753	3760.59	0.0075	P	5.5
4	☐	10.000	10.067	7985.84	0.0155	P	3.0
5	☐	100.000	100.258	76427.94	0.1498	P	1.0
6	☐	200.000	199.872	144947.60	0.2981	P	0.5

y = 0.0015 * x + 4.5924E-004
R = 1.0000
DL = 0.149
BEC = 0.3084

Weight: <None>
Min Conc: <None>

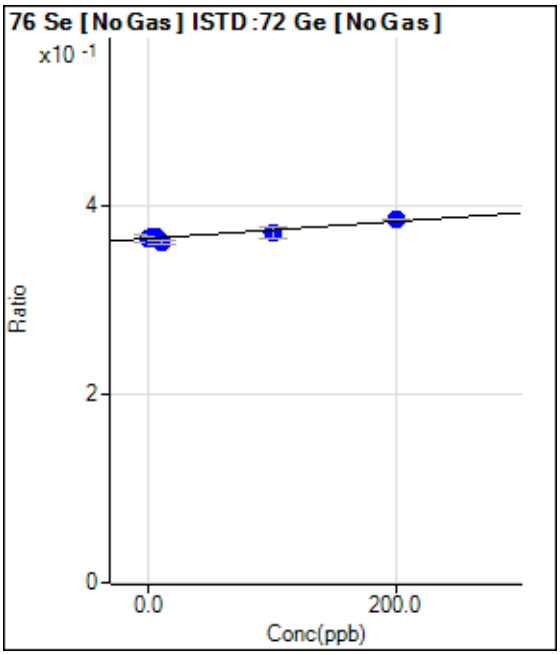


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	330.01	0.0006	P	7.5
2	☐	2.000	1.942	1547.88	0.0030	P	7.8
3	☐	5.000	4.865	3314.87	0.0066	P	4.1
4	☐	10.000	9.817	6591.64	0.0128	P	0.8
5	☐	100.000	101.462	64232.98	0.1259	P	0.6
6	☐	200.000	199.282	119897.52	0.2466	P	0.9

y = 0.0012 * x + 6.3934E-004
R = 1.0000
DL = 0.1164
BEC = 0.518

Weight: <None>
Min Conc: <None>

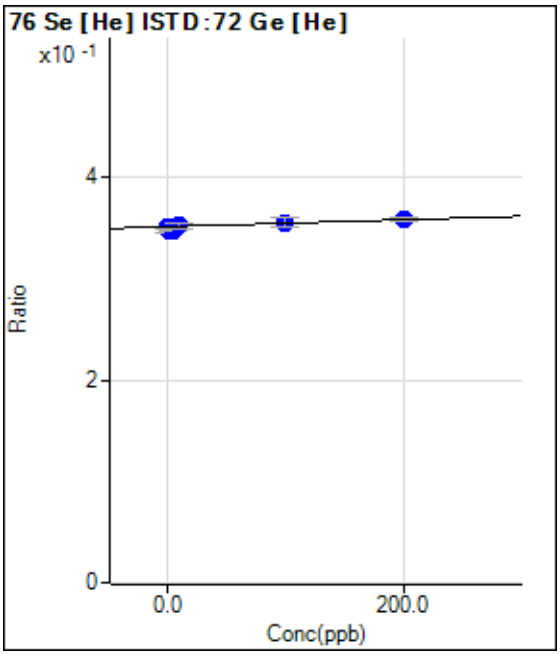
Calibration for 205_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	547812.61	0.3657	P	1.9
2	☐	2.000	16.353	541118.37	0.3672	P	1.0
3	☐	5.000	19.587	533847.70	0.3675	P	0.4
4	☐	10.000	-37.774	547947.40	0.3623	P	1.1
5	☐	100.000	71.315	555784.90	0.3722	P	3.2
6	☐	200.000	216.223	538764.16	0.3854	P	0.4

y = 9.0999E-005 * x + 0.3657
R = 0.9551
DL = 229.5
BEC = 4019

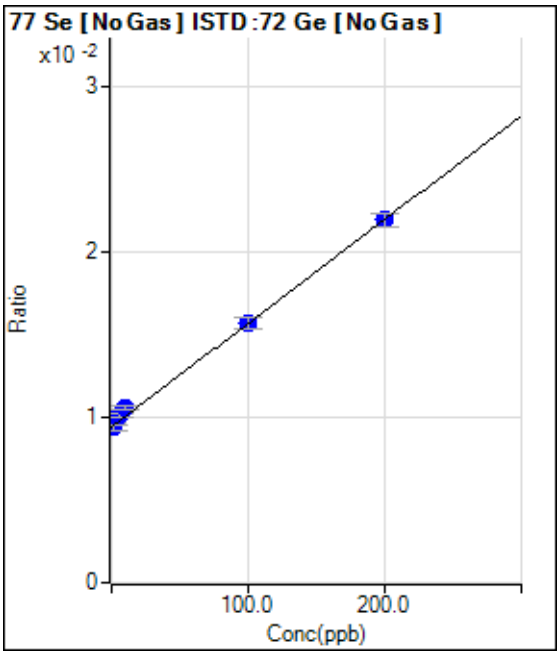
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	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	181235.72	0.3512	P	0.2
2	☐	2.000	-130.628	176847.53	0.3467	P	1.3
3	☐	5.000	-96.957	173564.62	0.3478	P	0.8
4	☐	10.000	19.709	181817.83	0.3519	P	1.7
5	☐	100.000	122.830	181383.92	0.3554	P	2.3
6	☐	200.000	191.975	173987.93	0.3578	P	0.9

y = 3.4601E-005 * x + 0.3512
R = 0.8780
DL = 55.29
BEC = 1.015E+04

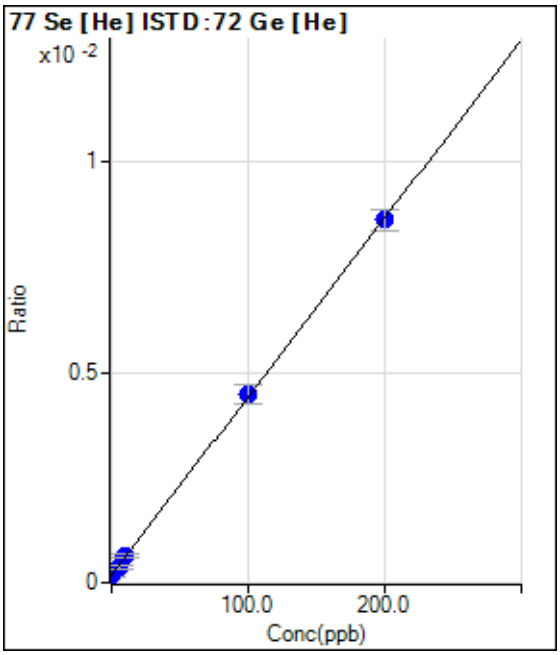
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	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	14090.92	0.0094	P	4.8
2	☐	2.000	-0.931	13770.60	0.0093	P	4.9
3	☐	5.000	11.258	14684.88	0.0101	P	2.8
4	☐	10.000	18.689	15993.04	0.0106	P	1.4
5	☐	100.000	99.761	23363.91	0.0156	P	4.7
6	☐	200.000	199.558	30608.43	0.0219	P	3.4

y = 6.2610E-005 * x + 0.0094
R = 0.9986
DL = 21.53
BEC = 150.2

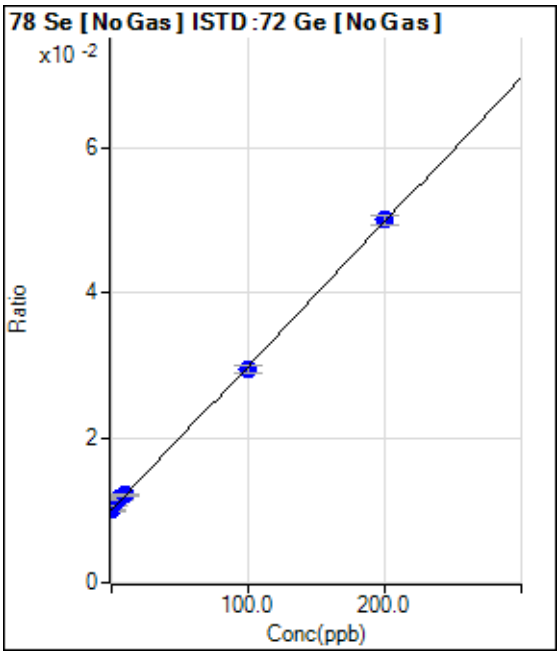
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	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	93.33	0.0002	P	28.2
2	☐	2.000	2.349	143.33	0.0003	P	7.2
3	☐	5.000	4.243	180.01	0.0004	P	25.0
4	☐	10.000	10.944	333.34	0.0006	P	13.9
5	☐	100.000	101.711	2293.58	0.0045	P	10.0
6	☐	200.000	199.113	4194.06	0.0086	P	5.7

y = 4.2412E-005 * x + 1.8123E-004
R = 0.9999
DL = 3.613
BEC = 4.273

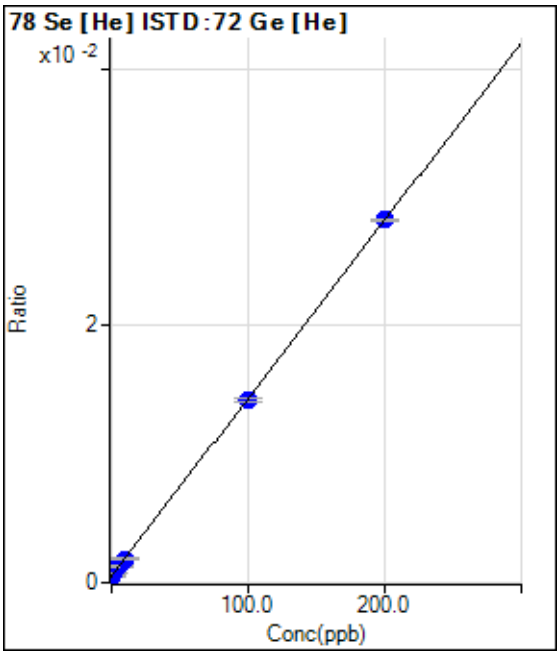
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	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	14998.56	0.0100	P	2.9
2	☐	2.000	4.069	15942.98	0.0108	P	4.1
3	☐	5.000	7.678	16764.03	0.0115	P	2.5
4	☐	10.000	10.706	18362.77	0.0121	P	2.9
5	☐	100.000	97.325	43821.47	0.0293	P	3.7
6	☐	200.000	201.215	69864.24	0.0500	P	2.7

y = 1.9866E-004 * x + 0.0100
R = 0.9997
DL = 4.427
BEC = 50.4

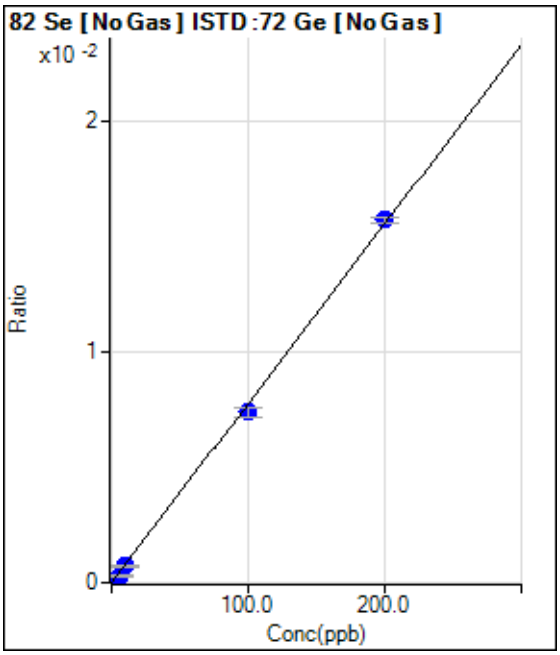
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Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	270.00	0.0005	P	5.9
2	☐	2.000	1.884	400.01	0.0008	P	1.6
3	☐	5.000	5.592	647.35	0.0013	P	5.1
4	☐	10.000	9.701	964.71	0.0019	P	2.7
5	☐	100.000	99.301	7282.64	0.0143	P	2.0
6	☐	200.000	200.351	13741.68	0.0283	P	0.8

y = 1.3845E-004 * x + 5.2329E-004
R = 1.0000
DL = 0.6653
BEC = 3.78

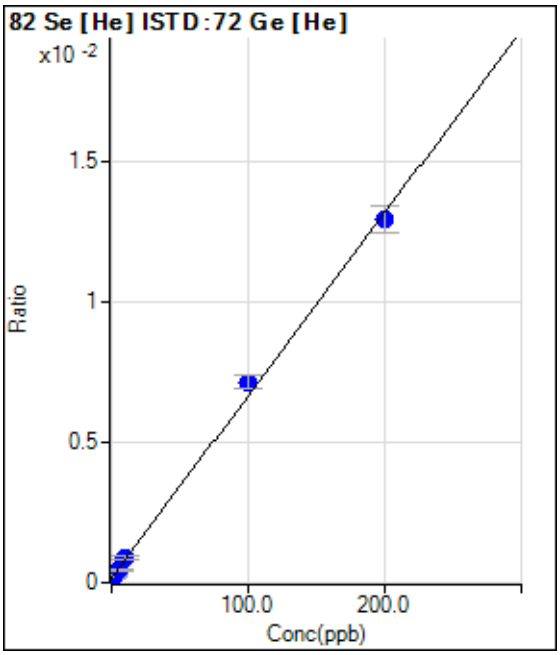
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	-36.03	0.0000	P	-40.5
2	☐	2.000	1.301	113.61	0.0001	P	86.6
3	☐	5.000	3.614	373.51	0.0003	P	46.3
4	☐	10.000	9.391	1070.31	0.0007	P	6.7
5	☐	100.000	95.142	11028.17	0.0074	P	5.8
6	☐	200.000	202.501	22025.49	0.0158	P	1.4

y = 7.7917E-005 * x - 2.3972E-005
R = 0.9996
DL = 0.374
BEC = -0.3077

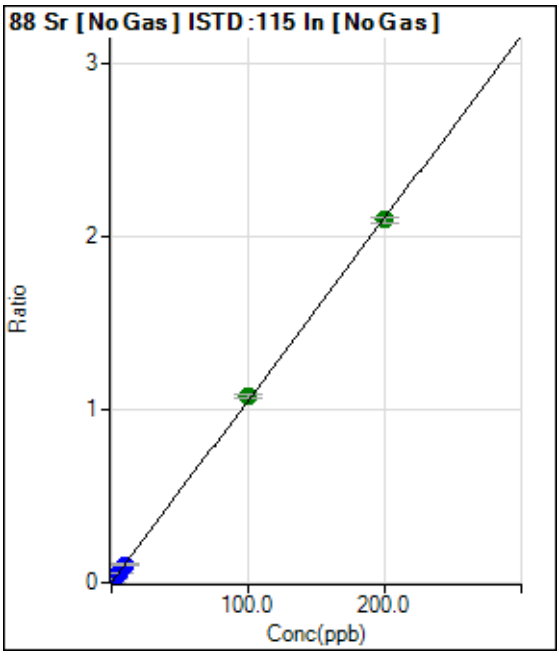
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Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	83.33	0.0002	P	25.5
2	☐	2.000	0.919	113.33	0.0002	P	38.4
3	☐	5.000	4.398	223.34	0.0004	P	6.3
4	☐	10.000	11.403	466.68	0.0009	P	14.4
5	☐	100.000	107.415	3643.88	0.0071	P	6.8
6	☐	200.000	196.248	6278.26	0.0129	P	7.3

y = 6.4980E-005 * x + 1.6168E-004
R = 0.9989
DL = 1.901
BEC = 2.488

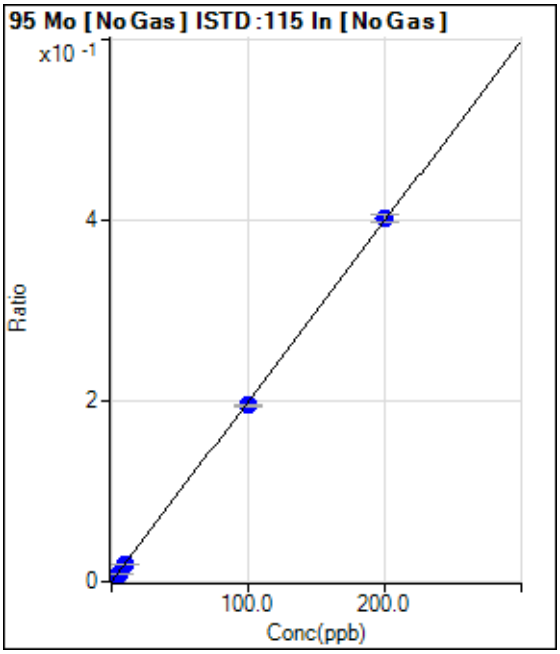
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Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1036.73	0.0006	P	5.6
2	☐	2.000	1.953	35988.84	0.0211	P	3.4
3	☐	5.000	4.892	87716.34	0.0520	P	1.4
4	☐	10.000	9.901	182353.35	0.1047	P	1.5
5	☐	100.000	101.926	1831079.92	1.0725	A	2.0
6	☐	200.000	199.045	3383605.78	2.0938	A	1.8

y = 0.0105 * x + 6.0109E-004
R = 0.9999
DL = 0.009564
BEC = 0.05716

Weight: <None>
Min Conc: <None>

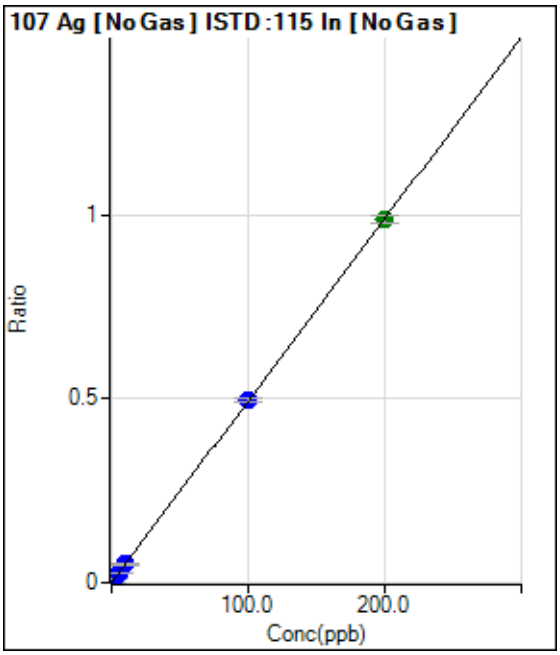


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	50.00	0.0000	P	61.1
2	☐	2.000	1.822	6241.57	0.0037	P	6.1
3	☐	5.000	4.712	15913.13	0.0094	P	2.7
4	☐	10.000	9.485	33027.87	0.0190	P	3.7
5	☐	100.000	97.765	333392.48	0.1953	P	1.5
6	☐	200.000	201.152	649248.96	0.4018	P	2.1

y = 0.0020 * x + 2.9269E-005
R = 0.9999
DL = 0.02686
BEC = 0.01466

Weight: <None>
Min Conc: <None>

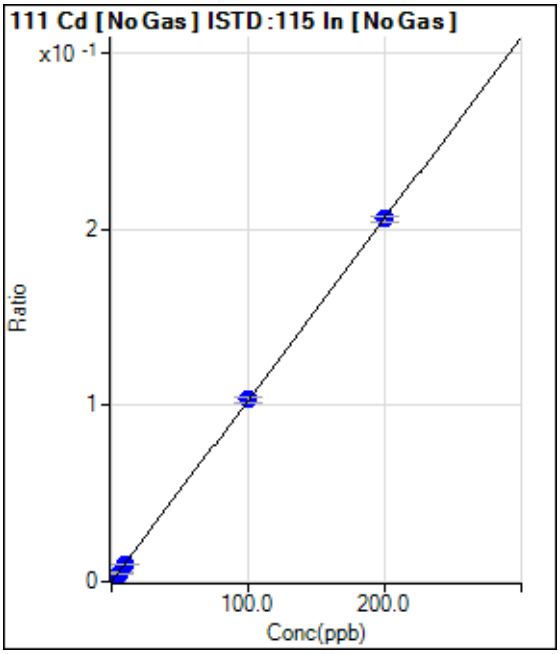
Calibration for 205_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	60.00	0.0000	P	57.4
2	☐	2.000	2.010	16961.10	0.0100	P	1.9
3	☐	5.000	4.990	41592.31	0.0247	P	1.9
4	☐	10.000	10.105	86944.96	0.0499	P	2.2
5	☐	100.000	100.754	849554.46	0.4976	P	1.6
6	☐	200.000	199.618	1593211.28	0.9859	A	2.0

y = 0.0049 * x + 3.4656E-005
R = 1.0000
DL = 0.01208
BEC = 0.007017

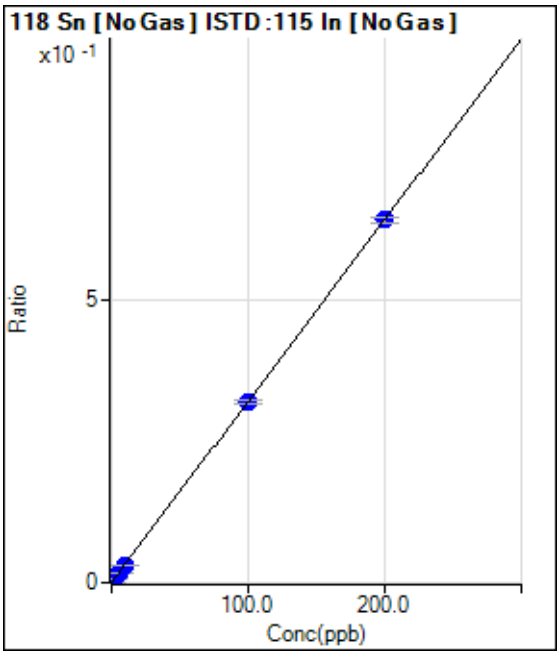
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3.33	0.0000	P	173.2
2	☐	2.000	1.929	3387.16	0.0020	P	8.9
3	☐	5.000	4.743	8229.37	0.0049	P	4.5
4	☐	10.000	9.880	17708.88	0.0102	P	2.0
5	☐	100.000	100.160	175984.97	0.1031	P	2.3
6	☐	200.000	199.933	332550.58	0.2058	P	1.9

y = 0.0010 * x + 1.8656E-006
R = 1.0000
DL = 0.009418
BEC = 0.001813

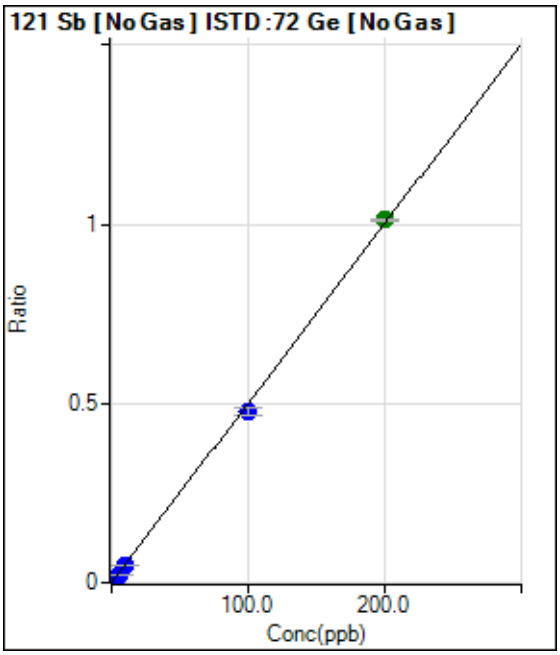
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	780.04	0.0005	P	11.2
2	☐	2.000	2.001	11682.08	0.0069	P	2.4
3	☐	5.000	4.796	26630.67	0.0158	P	1.4
4	☐	10.000	9.760	55196.16	0.0317	P	1.9
5	☐	100.000	99.856	546366.82	0.3200	P	2.4
6	☐	200.000	200.089	1035553.14	0.6408	P	1.6

y = 0.0032 * x + 4.5306E-004
R = 1.0000
DL = 0.04747
BEC = 0.1416

Weight: <None>
Min Conc: <None>

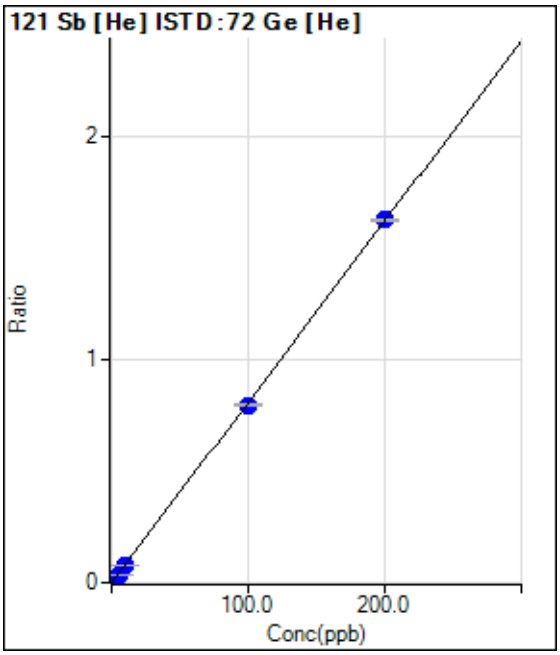


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	190.01	0.0001	P	17.4
2	☐	2.000	1.660	12429.45	0.0084	P	1.2
3	☐	5.000	4.502	32921.67	0.0227	P	1.6
4	☐	10.000	9.192	69785.34	0.0461	P	1.9
5	☐	100.000	95.696	715368.43	0.4792	P	4.3
6	☐	200.000	202.208	1415207.42	1.0123	A	0.5

y = 0.0050 * x + 1.2669E-004
R = 0.9997
DL = 0.0132
BEC = 0.02531

Weight: <None>
Min Conc: <None>

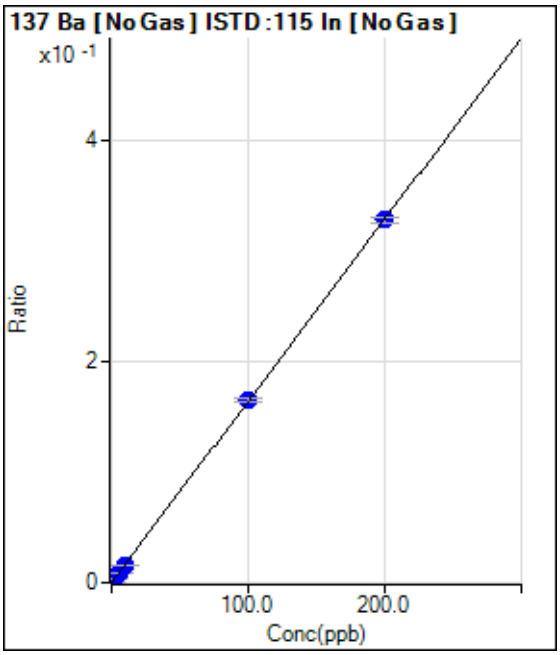
Calibration for 205_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	106.67	0.0002	P	20.9
2	☐	2.000	1.660	6958.64	0.0136	P	1.1
3	☐	5.000	4.569	18550.01	0.0372	P	2.3
4	☐	10.000	9.484	39767.30	0.0770	P	1.7
5	☐	100.000	98.212	405702.49	0.7950	P	0.8
6	☐	200.000	200.934	790714.21	1.6262	P	0.4

y = 0.0081 * x + 2.0708E-004
R = 0.9999
DL = 0.01608
BEC = 0.02559

Weight: <None>
Min Conc: <None>

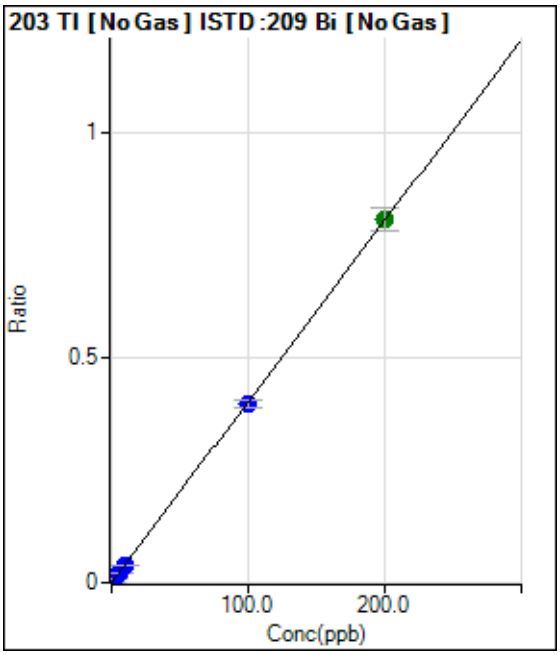


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	90.00	0.0001	P	41.9
2	☐	2.000	1.863	5287.84	0.0031	P	7.5
3	☐	5.000	4.840	13467.22	0.0080	P	2.2
4	☐	10.000	9.720	27856.91	0.0160	P	2.4
5	☐	100.000	100.297	280949.12	0.1646	P	2.0
6	☐	200.000	199.871	529885.21	0.3279	P	1.7

y = 0.0016 * x + 5.2369E-005
R = 1.0000
DL = 0.04016
BEC = 0.03193

Weight: <None>
Min Conc: <None>

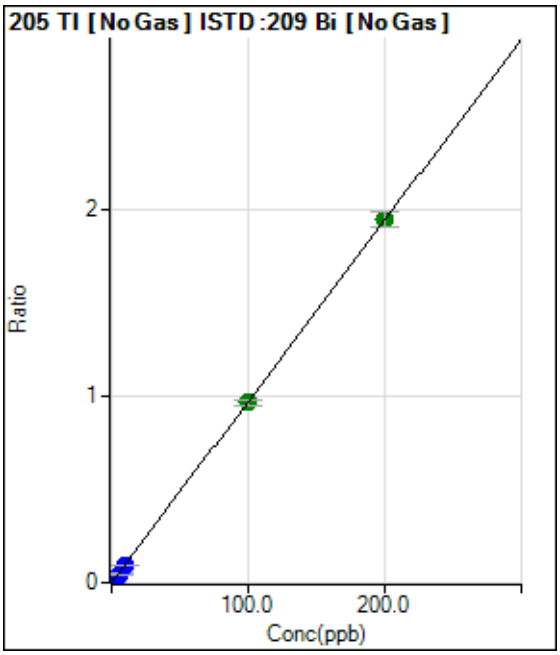
Calibration for 205_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	66.67	0.0000	P	83.5
2	☐	2.000	1.960	11572.28	0.0079	P	5.9
3	☐	5.000	4.917	28813.51	0.0198	P	1.2
4	☐	10.000	9.795	59287.47	0.0394	P	3.1
5	☐	100.000	98.912	598718.78	0.3976	P	3.9
6	☐	200.000	200.557	1173912.48	0.8062	A	6.5

y = 0.0040 * x + 4.5995E-005
R = 1.0000
DL = 0.02868
BEC = 0.01144

Weight: <None>
Min Conc: <None>

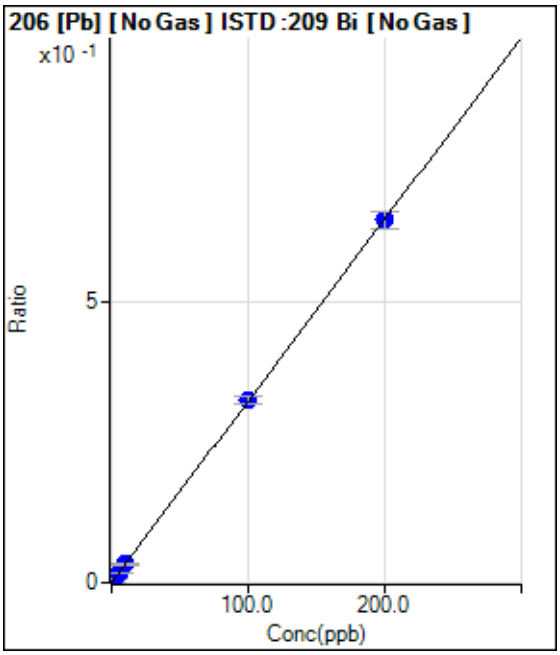


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	153.34	0.0001	P	12.3
2	☐	2.000	1.909	27193.36	0.0186	P	9.2
3	☐	5.000	4.744	67114.14	0.0462	P	3.2
4	☐	10.000	9.766	142673.39	0.0949	P	3.8
5	☐	100.000	99.352	1452291.23	0.9644	A	3.2
6	☐	200.000	200.343	2833013.50	1.9446	A	4.3

y = 0.0097 * x + 1.0477E-004
R = 1.0000
DL = 0.003984
BEC = 0.0108

Weight: <None>
Min Conc: <None>

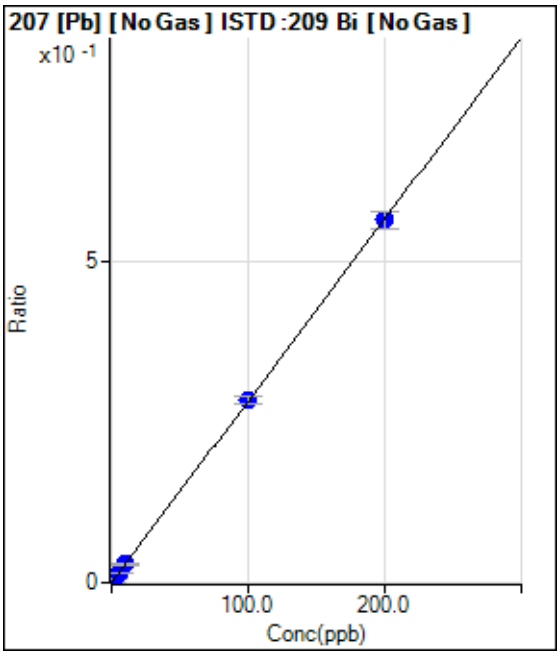
Calibration for 205_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	146.67	0.0001	P	19.3
2	☐	2.000	2.071	9904.15	0.0068	P	6.7
3	☐	5.000	5.005	23622.69	0.0162	P	3.1
4	☐	10.000	10.065	48979.87	0.0326	P	2.6
5	☐	100.000	100.497	488254.07	0.3243	P	4.2
6	☐	200.000	199.747	938654.83	0.6444	P	4.7

y = 0.0032 * x + 1.0083E-004
R = 1.0000
DL = 0.01812
BEC = 0.03126

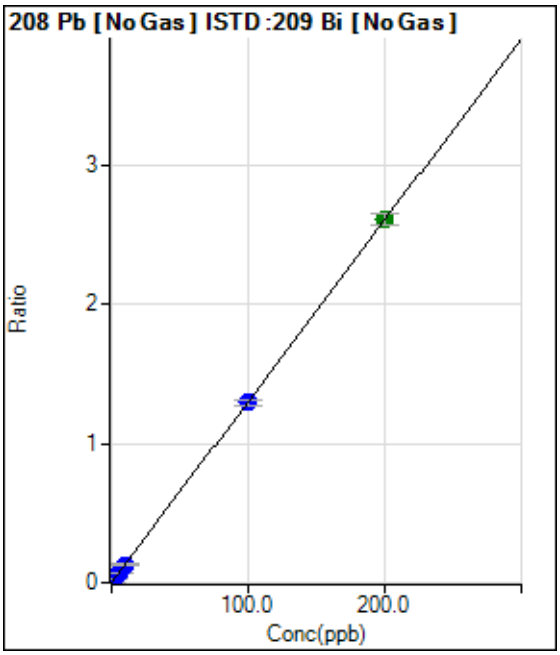
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	156.67	0.0001	P	9.6
2	☐	2.000	1.981	8349.64	0.0057	P	6.3
3	☐	5.000	4.961	20553.88	0.0141	P	2.8
4	☐	10.000	10.131	43228.58	0.0288	P	4.1
5	☐	100.000	100.572	428366.62	0.2845	P	3.5
6	☐	200.000	199.709	822594.73	0.5648	P	4.9

y = 0.0028 * x + 1.0692E-004
R = 1.0000
DL = 0.01093
BEC = 0.03781

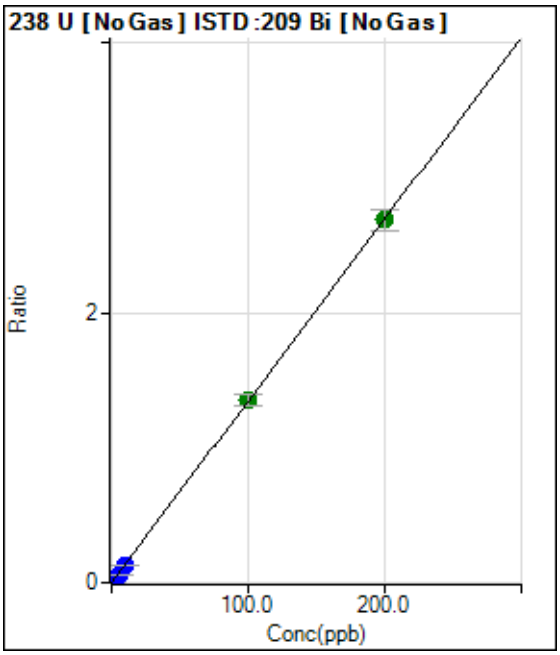
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	613.35	0.0004	P	15.4
2	☐	2.000	1.999	38617.42	0.0264	P	5.2
3	☐	5.000	4.891	93176.83	0.0641	P	2.9
4	☐	10.000	9.970	195720.45	0.1302	P	3.4
5	☐	100.000	99.465	1949695.34	1.2948	P	3.6
6	☐	200.000	200.272	3798038.28	2.6066	A	3.0

y = 0.0130 * x + 4.2079E-004
R = 1.0000
DL = 0.01495
BEC = 0.03234

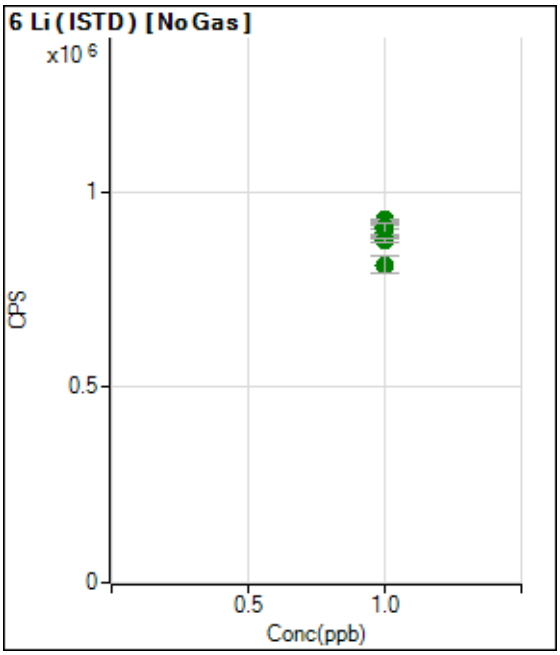
Weight: <None>
Min Conc: <None>



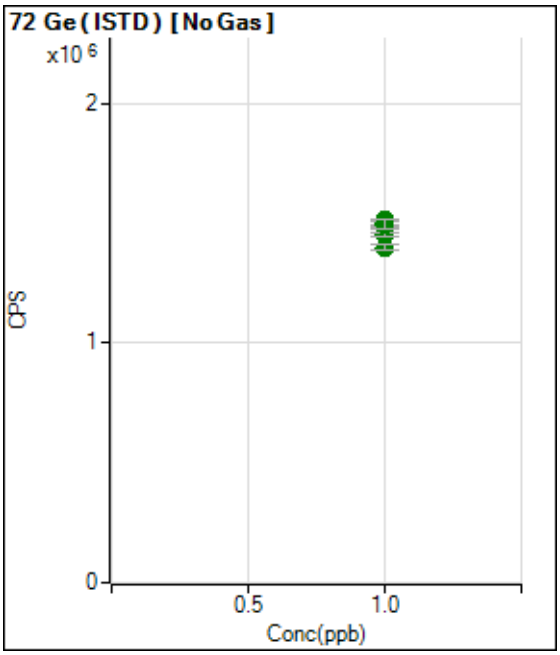
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	10.00	0.0000	P	97.4
2	☐	2.000	1.826	35909.70	0.0246	P	5.3
3	☐	5.000	4.521	88485.41	0.0608	P	2.8
4	☐	10.000	9.244	186997.18	0.1244	P	4.3
5	☐	100.000	100.802	2041499.19	1.3564	A	6.2
6	☐	200.000	199.650	3912298.59	2.6865	A	5.7

y = 0.0135 * x + 6.7138E-006
R = 1.0000
DL = 0.001458
BEC = 0.000499

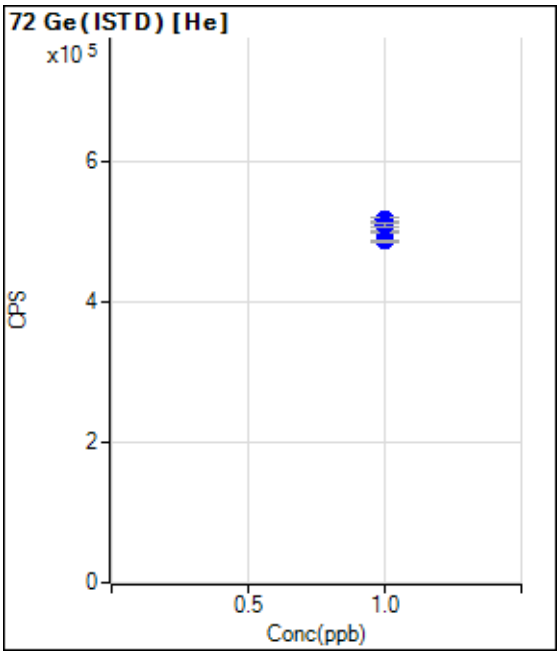
Weight: <None>
Min Conc: <None>



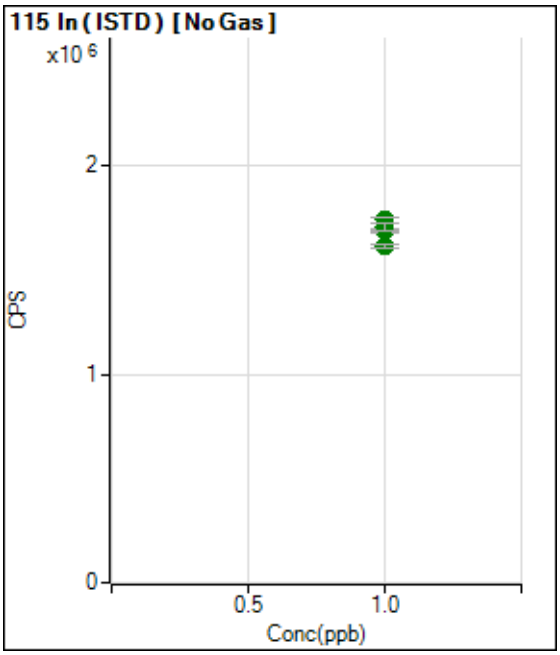
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		928836.90		A	0.5
2	☐	1.000		911206.79		A	0.9
3	☐	1.000		894817.59		A	2.0
4	☐	1.000		905954.38		A	3.0
5	☐	1.000		875246.34		A	1.3
6	☐	1.000		814444.76		A	5.5



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1498159.56		A	1.2
2	☐	1.000		1473788.47		A	1.6
3	☐	1.000		1452711.07		A	1.0
4	☐	1.000		1512562.06		A	0.5
5	☐	1.000		1494196.23		A	3.0
6	☐	1.000		1398039.35		A	1.6

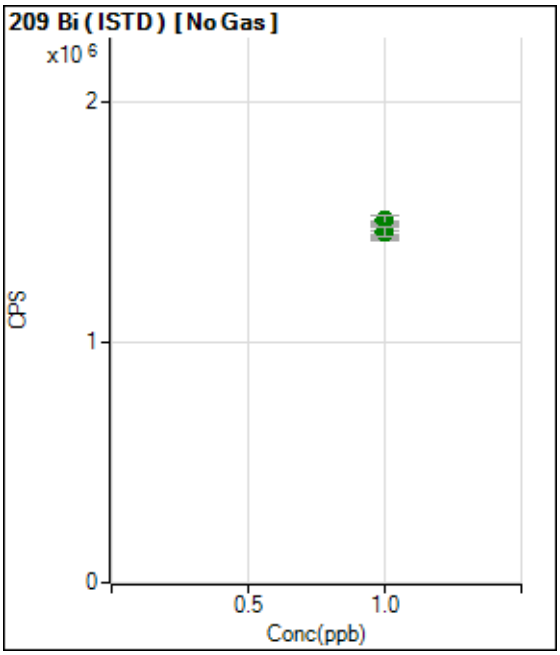


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		516060.73		P	1.3
2	☐	1.000		510180.66		P	1.6
3	☐	1.000		499000.08		P	0.7
4	☐	1.000		516762.01		P	1.4
5	☐	1.000		510359.81		P	1.0
6	☐	1.000		486232.99		P	0.3



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1725432.75		A	3.1
2	☐	1.000		1703409.55		A	2.4
3	☐	1.000		1685557.30		A	1.1
4	☐	1.000		1741463.11		A	1.8
5	☐	1.000		1707573.07		A	2.0
6	☐	1.000		1616247.90		A	1.1

Calibration for 205_ICV.d



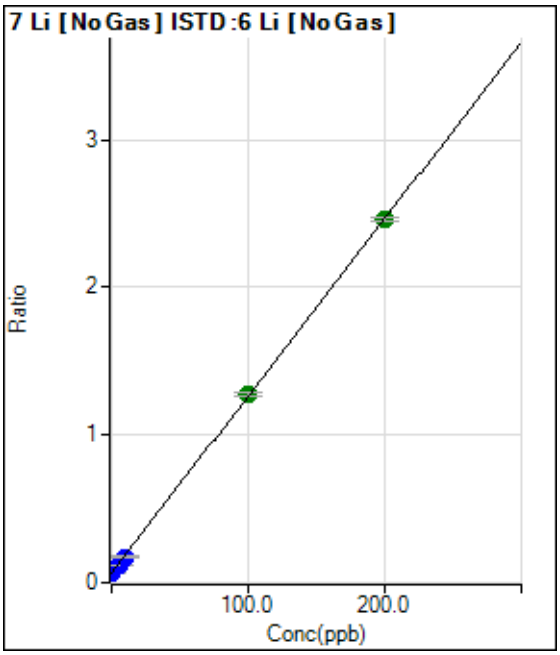
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1462331.64		A	4.2
2	☐	1.000		1463610.39		A	5.2
3	☐	1.000		1454598.16		A	1.2
4	☐	1.000		1504717.32		A	3.2
5	☐	1.000		1506766.54		A	2.7
6	☐	1.000		1457996.75		A	3.2

Calibration for 144_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\021022A.b\
Analysis File: 021022A.batch.bin
DA Date-Time: 2/10/2022 11:52:45 PM
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	137CALB.d	CAL BLK	2/10/2022 4:46:28 PM
2	138CALS.d	2/10/200	2/10/2022 4:48:26 PM
3	139CALS.d	5/25/500	2/10/2022 4:50:25 PM
4	140CALS.d	10/50/100	2/10/2022 4:52:22 PM
5	141CALS.d	100/500/10K	2/10/2022 4:54:20 PM
6	142CALS.d	200/1000/20K	2/10/2022 4:56:15 PM

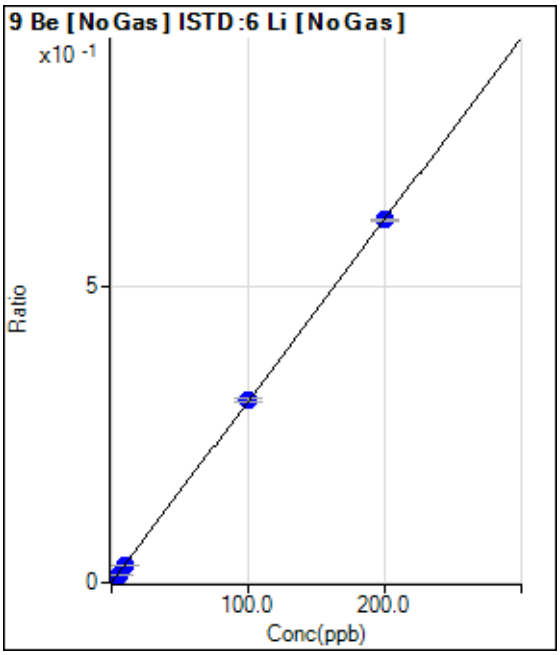
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	55691.13	0.0667	P	1.0
2	☐	2.000	1.870	74580.96	0.0891	P	3.3
3	☐	5.000	4.699	103144.25	0.1230	P	1.2
4	☐	10.000	8.982	150063.65	0.1743	P	2.2
5	☐	100.000	101.012	996392.23	1.2770	A	2.5
6	☐	200.000	199.553	1855348.88	2.4577	A	0.9

y = 0.0120 * x + 0.0667
R = 1.0000
DL = 0.16
BEC = 5.563

Weight: <None>
Min Conc: <None>

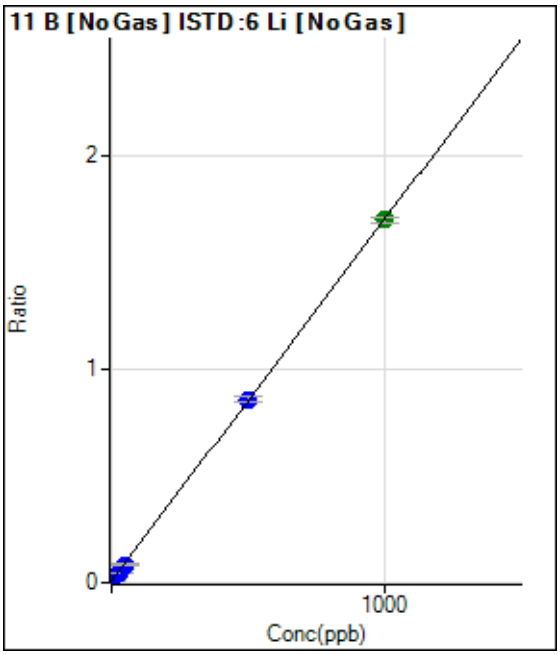


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	28.33	0.0000	P	27.3
2	☐	2.000	1.886	4860.88	0.0058	P	1.6
3	☐	5.000	4.602	11835.04	0.0141	P	5.4
4	☐	10.000	9.149	24125.69	0.0280	P	1.7
5	☐	100.000	100.380	239623.34	0.3071	P	1.7
6	☐	200.000	199.863	461549.93	0.6114	P	0.8

y = 0.0031 * x + 3.3927E-005
R = 1.0000
DL = 0.009069
BEC = 0.01109

Weight: <None>
Min Conc: <None>

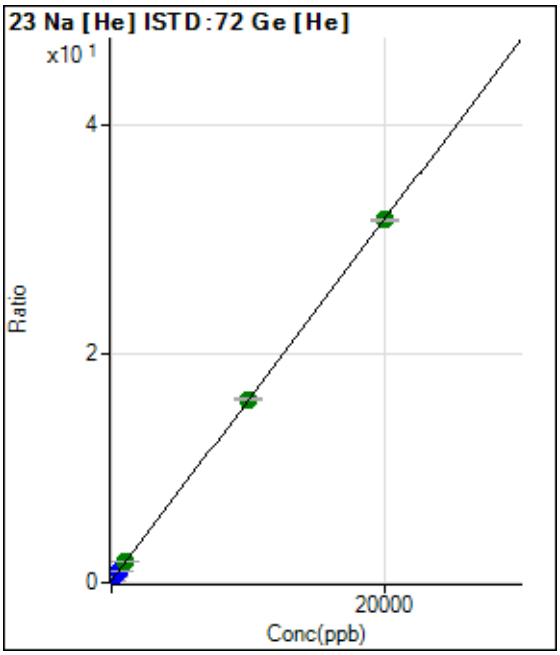
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	7393.66	0.0088	P	2.8
2	☐	10.000	9.110	20286.33	0.0242	P	4.5
3	☐	25.000	22.727	39615.65	0.0472	P	0.2
4	☐	50.000	45.083	73177.79	0.0850	P	2.2
5	☐	500.000	502.261	668650.15	0.8569	P	2.8
6	☐	1000.000	999.181	1280545.45	1.6960	A	1.5

y = 0.0017 * x + 0.0088
R = 1.0000
DL = 0.4346
BEC = 5.241

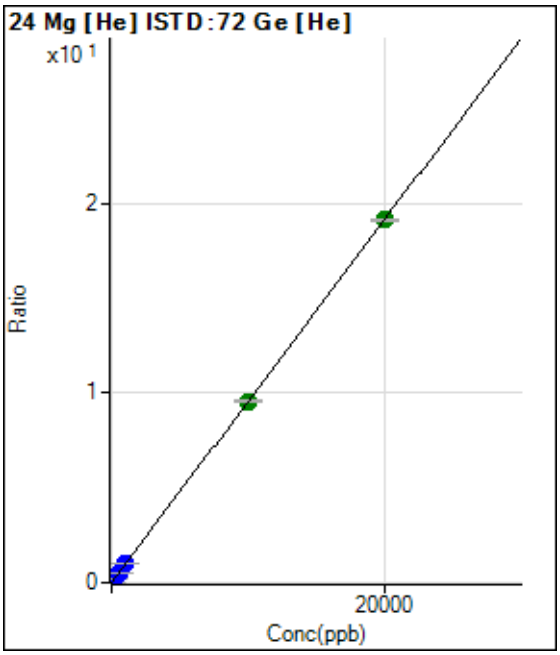
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	84538.42	0.1753	P	1.6
2	☐	200.000	201.695	240636.88	0.4941	P	0.4
3	☐	500.000	517.481	479297.14	0.9932	P	0.7
4	☐	1000.000	1038.398	876742.51	1.8166	A	0.0
5	☐	10000.000	10036.000	7582473.64	16.0387	A	0.5
6	☐	20000.000	19979.626	14623624.78	31.7561	A	0.5

y = 0.0016 * x + 0.1753
R = 1.0000
DL = 5.294
BEC = 110.9

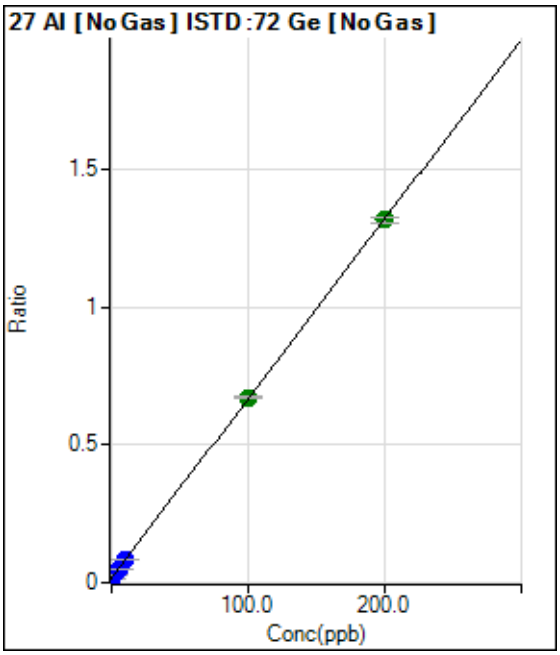
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	520.02	0.0011	P	10.7
2	☐	200.000	204.675	95931.60	0.1970	P	0.5
3	☐	500.000	519.657	240520.82	0.4984	P	0.6
4	☐	1000.000	1034.546	478353.47	0.9912	P	0.7
5	☐	10000.000	10004.871	4527325.24	9.5762	A	1.6
6	☐	20000.000	19995.299	8812764.66	19.1375	A	0.2

y = 9.5705E-004 * x + 0.0011
R = 1.0000
DL = 0.363
BEC = 1.126

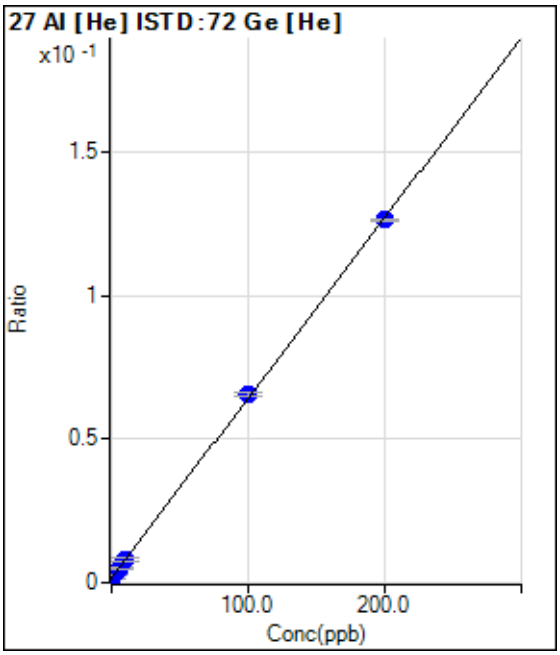
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	24104.56	0.0169	P	1.9
2	☐	2.000	1.884	42110.71	0.0292	P	1.6
3	☐	5.000	4.591	68384.39	0.0468	P	1.3
4	☐	10.000	10.464	120747.10	0.0851	P	1.5
5	☐	100.000	100.714	925423.66	0.6731	A	0.5
6	☐	200.000	199.631	1759513.52	1.3176	A	1.9

y = 0.0065 * x + 0.0169
R = 1.0000
DL = 0.1454
BEC = 2.595

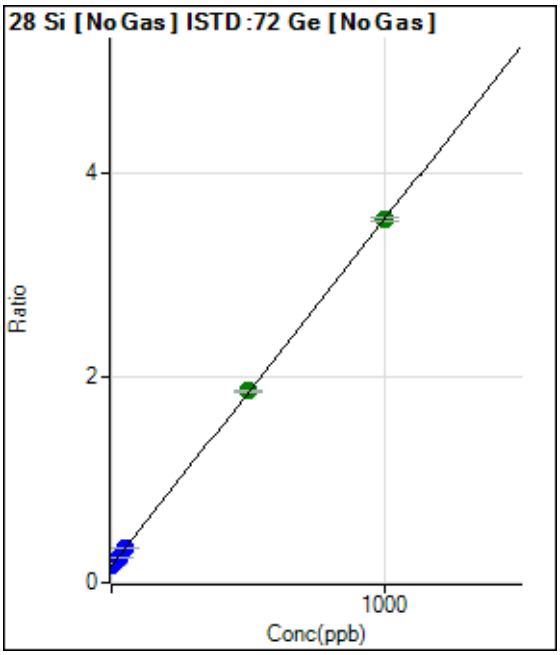
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	720.03	0.0015	P	8.8
2	☐	2.000	1.773	1270.08	0.0026	P	7.9
3	☐	5.000	5.430	2366.92	0.0049	P	11.9
4	☐	10.000	10.425	3880.61	0.0080	P	10.8
5	☐	100.000	102.101	31041.65	0.0657	P	2.9
6	☐	200.000	198.920	58258.60	0.1265	P	0.8

y = 6.2851E-004 * x + 0.0015
R = 0.9999
DL = 0.6265
BEC = 2.375

Weight: <None>
Min Conc: <None>

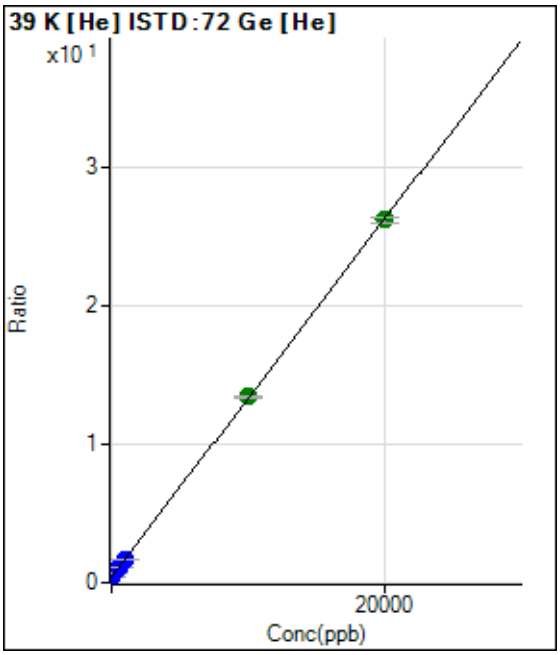


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	234992.13	0.1649	P	1.7
2	☐	10.000	8.040	277070.96	0.1920	P	2.0
3	☐	25.000	23.233	355510.22	0.2434	P	1.4
4	☐	50.000	49.735	472717.04	0.3331	P	1.8
5	☐	500.000	503.495	2568351.94	1.8680	A	0.9
6	☐	1000.000	998.330	4729592.95	3.5418	A	1.2

y = 0.0034 * x + 0.1649
R = 1.0000
DL = 2.511
BEC = 48.74

Weight: <None>
Min Conc: <None>

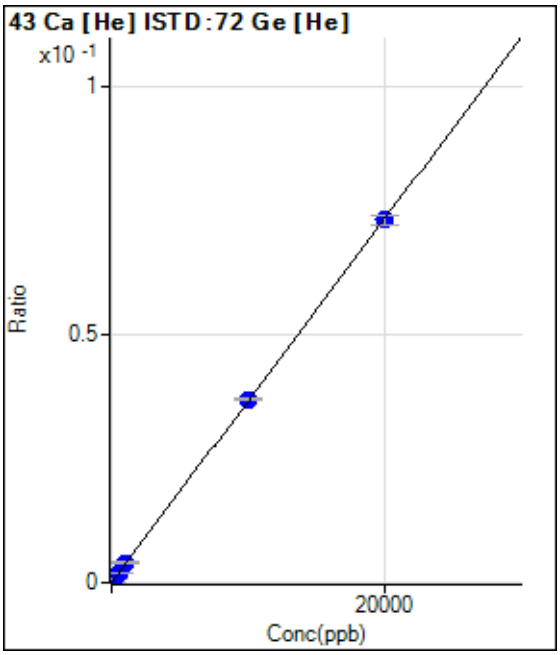
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	194700.34	0.4036	P	1.2
2	☐	200.000	198.380	321674.90	0.6604	P	0.3
3	☐	500.000	511.599	514397.54	1.0659	P	0.5
4	☐	1000.000	1024.787	835100.17	1.7303	P	0.8
5	☐	10000.000	10079.532	6360411.99	13.4526	A	1.5
6	☐	20000.000	19958.721	12085540.65	26.2423	A	1.3

y = 0.0013 * x + 0.4036
R = 1.0000
DL = 11.64
BEC = 311.8

Weight: <None>
Min Conc: <None>

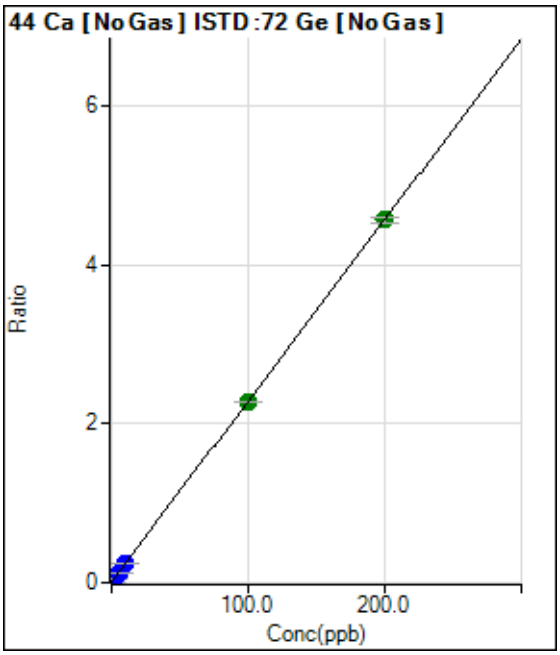


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	10.00	0.0000	P	0.8
2	☐	200.000	188.339	346.68	0.0007	P	8.7
3	☐	500.000	499.161	893.37	0.0019	P	9.2
4	☐	1000.000	1082.911	1926.84	0.0040	P	9.8
5	☐	10000.000	10085.905	17504.73	0.0370	P	0.3
6	☐	20000.000	19953.040	33714.91	0.0732	P	2.5

y = 3.6690E-006 * x + 2.0731E-005
R = 1.0000
DL = 0.1441
BEC = 5.65

Weight: <None>
Min Conc: <None>

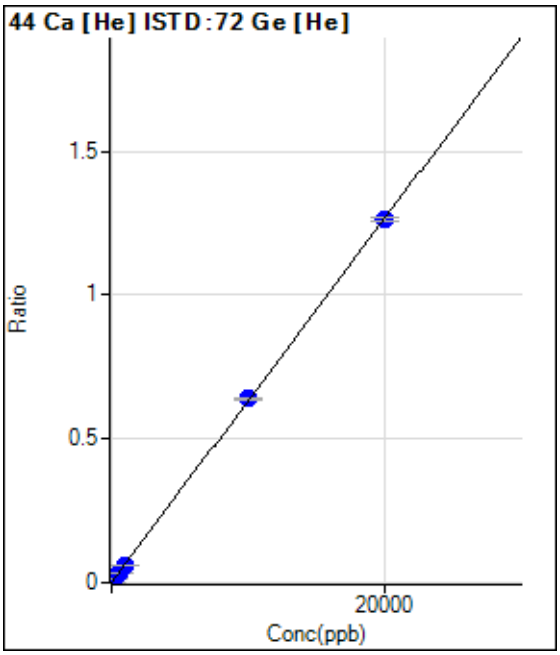
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	13610.31	0.0095	P	1.6
2	☐	2.000	1.992	79267.41	0.0549	P	3.0
3	☐	5.000	4.819	174323.35	0.1194	P	1.1
4	☐	10.000	10.000	336932.69	0.2374	P	2.0
5	☐	100.000	99.926	3143995.68	2.2866	A	0.1
6	☐	200.000	200.041	6100692.62	4.5680	A	1.5

y = 0.0228 * x + 0.0095
R = 1.0000
DL = 0.01986
BEC = 0.419

Weight: <None>
Min Conc: <None>

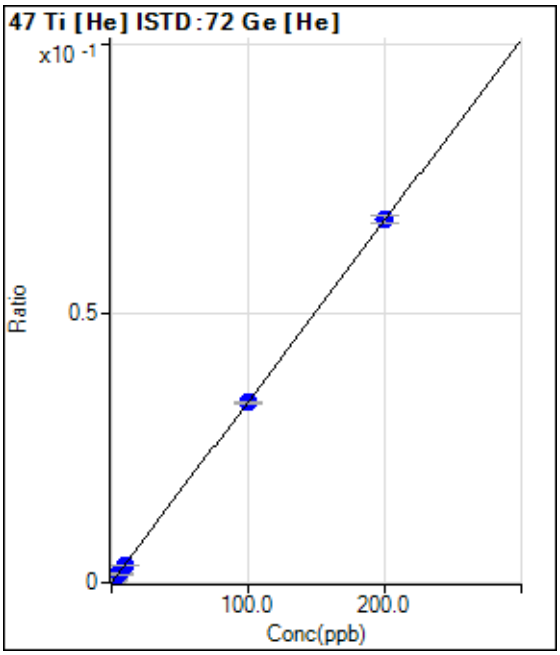


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	390.01	0.0008	P	5.8
2	☐	200.000	197.494	6471.65	0.0133	P	1.1
3	☐	500.000	490.102	15335.41	0.0318	P	1.3
4	☐	1000.000	971.381	30013.08	0.0622	P	0.7
5	☐	10000.000	10124.000	302793.41	0.6405	P	0.9
6	☐	20000.000	19939.703	580506.84	1.2607	P	0.9

y = 6.3184E-005 * x + 8.0870E-004
R = 1.0000
DL = 2.225
BEC = 12.8

Weight: <None>
Min Conc: <None>

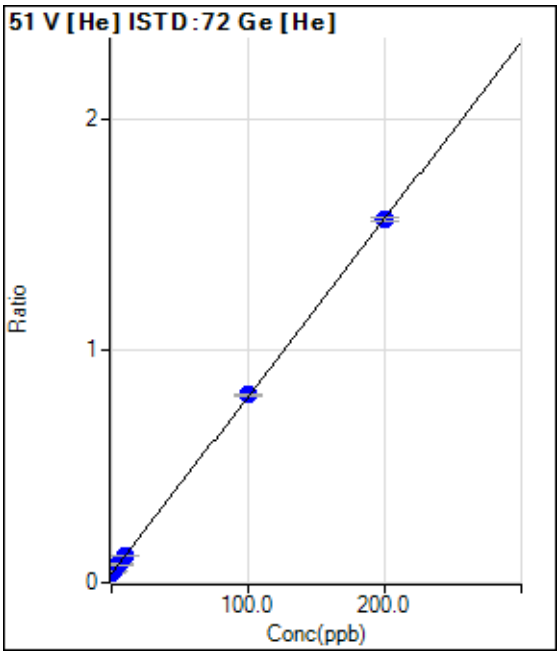
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6.67	0.0000	P	86.6
2	☐	2.000	1.627	273.34	0.0006	P	27.5
3	☐	5.000	4.792	783.37	0.0016	P	10.1
4	☐	10.000	9.333	1520.11	0.0032	P	3.9
5	☐	100.000	99.383	15795.99	0.0334	P	1.3
6	☐	200.000	200.351	31008.66	0.0673	P	2.3

y = 3.3607E-004 * x + 1.3867E-005
R = 1.0000
DL = 0.1072
BEC = 0.04126

Weight: <None>
Min Conc: <None>

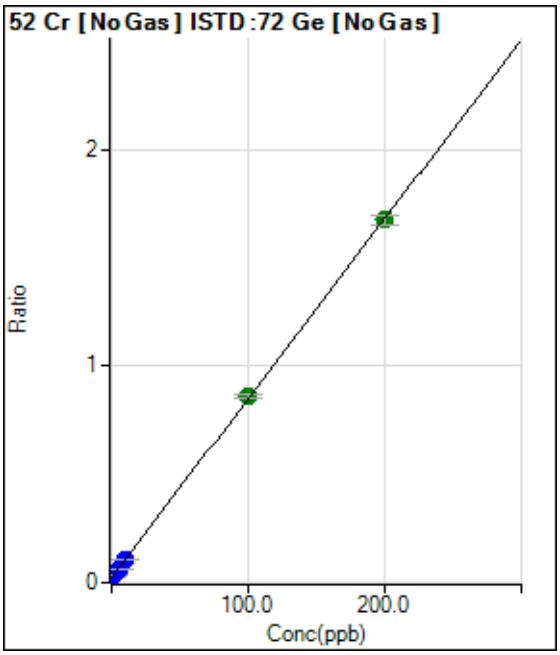


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	18600.43	0.0386	P	1.9
2	☐	2.000	1.857	25689.58	0.0527	P	0.9
3	☐	5.000	5.265	38019.18	0.0788	P	1.6
4	☐	10.000	10.565	57558.92	0.1193	P	0.7
5	☐	100.000	100.919	382698.57	0.8095	P	0.7
6	☐	200.000	199.507	719541.19	1.5626	P	1.1

y = 0.0076 * x + 0.0386
R = 1.0000
DL = 0.2842
BEC = 5.047

Weight: <None>
Min Conc: <None>

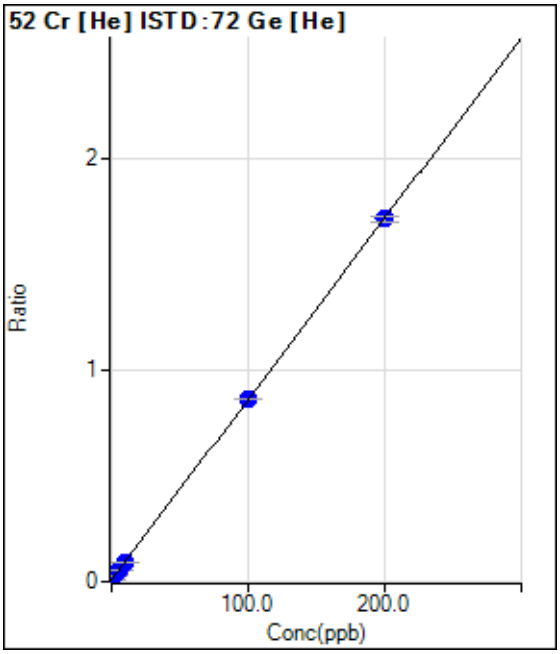
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	32141.32	0.0225	P	0.8
2	☐	2.000	1.831	54401.60	0.0377	P	3.0
3	☐	5.000	4.753	90407.05	0.0619	P	1.0
4	☐	10.000	9.997	149485.68	0.1053	P	2.4
5	☐	100.000	100.862	1179222.67	0.8578	A	2.0
6	☐	200.000	199.577	2237211.74	1.6752	A	2.8

y = 0.0083 * x + 0.0225
R = 1.0000
DL = 0.06943
BEC = 2.723

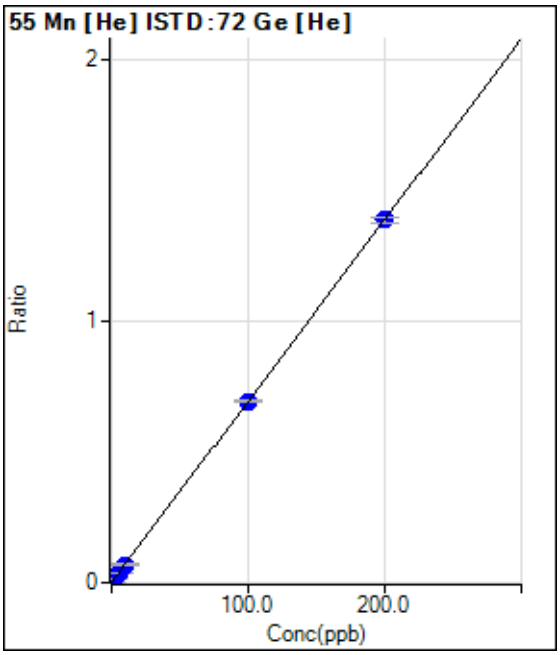
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4154.04	0.0086	P	5.6
2	☐	2.000	2.001	12502.56	0.0257	P	2.4
3	☐	5.000	4.986	24672.60	0.0511	P	1.6
4	☐	10.000	9.924	44997.44	0.0933	P	3.7
5	☐	100.000	100.212	408143.89	0.8633	P	0.5
6	☐	200.000	199.898	789026.37	1.7136	P	1.3

y = 0.0085 * x + 0.0086
R = 1.0000
DL = 0.1686
BEC = 1.009

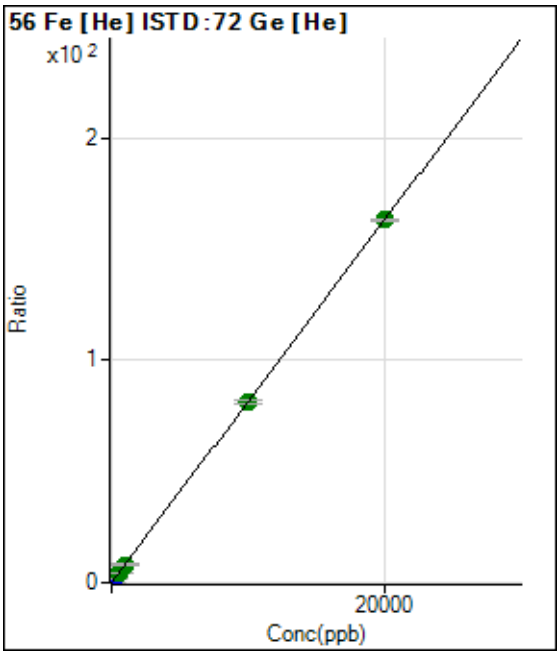
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	470.02	0.0010	P	20.2
2	☐	2.000	1.952	7071.96	0.0145	P	1.4
3	☐	5.000	4.936	17000.85	0.0352	P	0.2
4	☐	10.000	9.854	33467.94	0.0694	P	2.5
5	☐	100.000	99.899	328195.50	0.6942	P	0.5
6	☐	200.000	200.060	639698.54	1.3893	P	1.2

y = 0.0069 * x + 9.7342E-004
R = 1.0000
DL = 0.08515
BEC = 0.1403

Weight: <None>
Min Conc: <None>

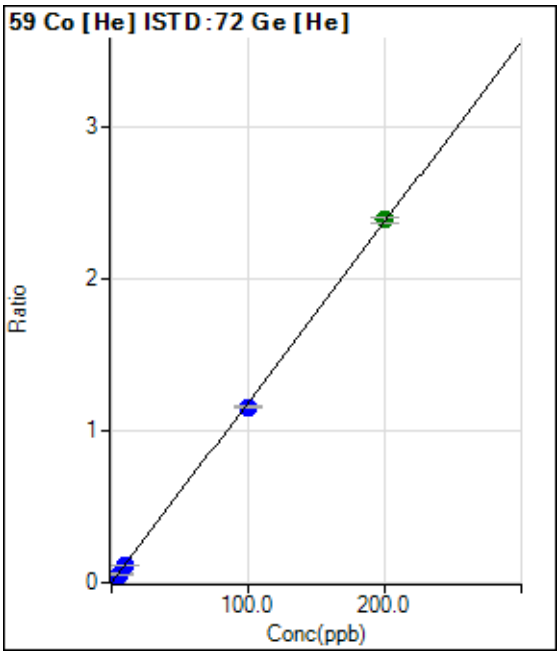


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	20652.56	0.0428	P	2.0
2	☐	200.000	196.352	800860.07	1.6443	P	0.9
3	☐	500.000	505.863	2011755.13	4.1688	A	0.5
4	☐	1000.000	998.586	3951735.88	8.1877	A	0.9
5	☐	10000.000	9982.614	38511768.59	81.4650	A	1.4
6	☐	20000.000	20008.654	75168780.54	163.2415	A	0.7

y = 0.0082 * x + 0.0428
R = 1.0000
DL = 0.3202
BEC = 5.249

Weight: <None>
Min Conc: <None>

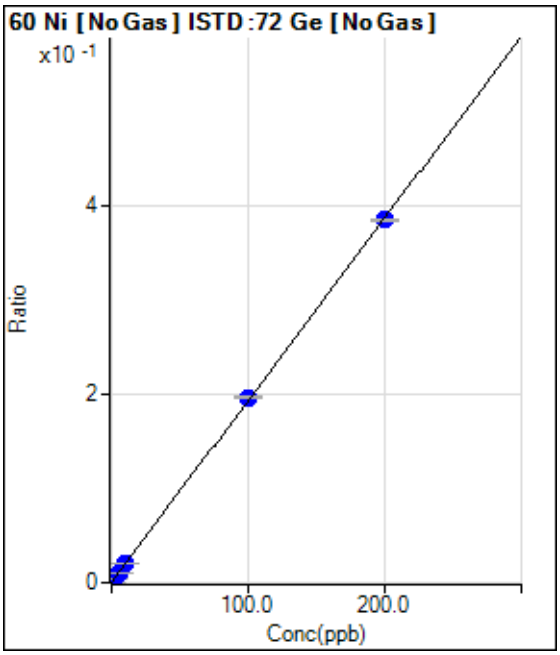
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	23.33	0.0000	P	49.6
2	☐	2.000	1.879	10867.83	0.0223	P	2.2
3	☐	5.000	4.791	27431.29	0.0568	P	1.0
4	☐	10.000	9.698	55499.71	0.1150	P	0.7
5	☐	100.000	97.564	546764.65	1.1565	P	0.3
6	☐	200.000	201.239	1098594.41	2.3854	A	1.8

y = 0.0119 * x + 4.8411E-005
R = 0.9999
DL = 0.006081
BEC = 0.004084

Weight: <None>
Min Conc: <None>

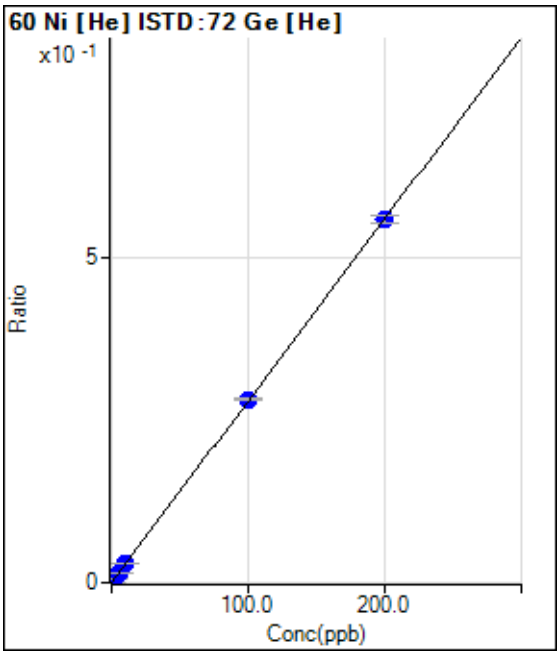


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	423.35	0.0003	P	17.5
2	☐	2.000	1.952	5878.04	0.0041	P	5.3
3	☐	5.000	4.888	14240.94	0.0098	P	1.9
4	☐	10.000	10.111	28186.22	0.0199	P	2.6
5	☐	100.000	101.596	270630.33	0.1968	P	0.8
6	☐	200.000	199.200	515018.53	0.3857	P	0.7

y = 0.0019 * x + 2.9691E-004
R = 1.0000
DL = 0.08056
BEC = 0.1535

Weight: <None>
Min Conc: <None>

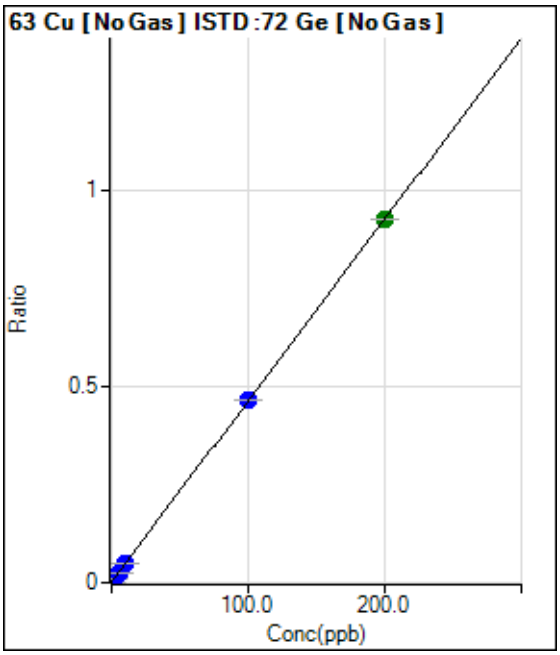
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	70.00	0.0001	P	13.7
2	☐	2.000	2.027	2837.02	0.0058	P	7.2
3	☐	5.000	5.121	6995.26	0.0145	P	4.6
4	☐	10.000	10.266	13957.36	0.0289	P	2.2
5	☐	100.000	100.702	133499.33	0.2824	P	1.4
6	☐	200.000	199.632	257701.20	0.5597	P	2.1

y = 0.0028 * x + 1.4503E-004
R = 1.0000
DL = 0.02132
BEC = 0.05175

Weight: <None>
Min Conc: <None>

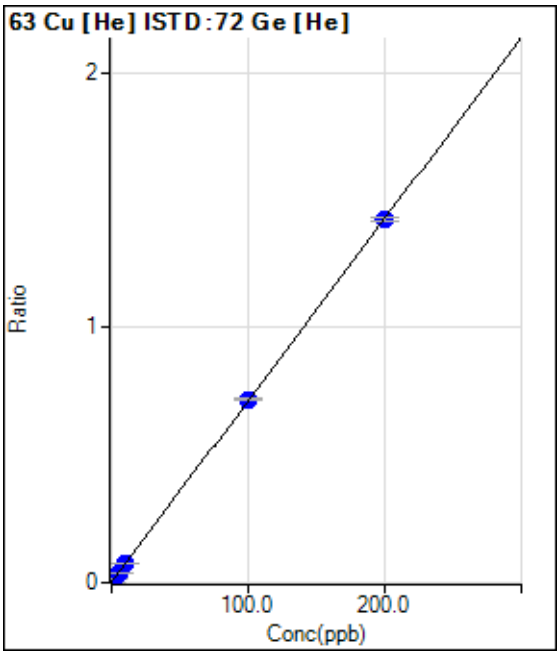


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2400.25	0.0017	P	1.3
2	☐	2.000	1.878	14935.12	0.0104	P	2.2
3	☐	5.000	4.837	35075.60	0.0240	P	1.4
4	☐	10.000	9.897	67222.23	0.0474	P	2.8
5	☐	100.000	100.476	640034.17	0.4655	P	0.9
6	☐	200.000	199.772	1233856.47	0.9239	A	0.1

y = 0.0046 * x + 0.0017
R = 1.0000
DL = 0.01463
BEC = 0.3647

Weight: <None>
Min Conc: <None>

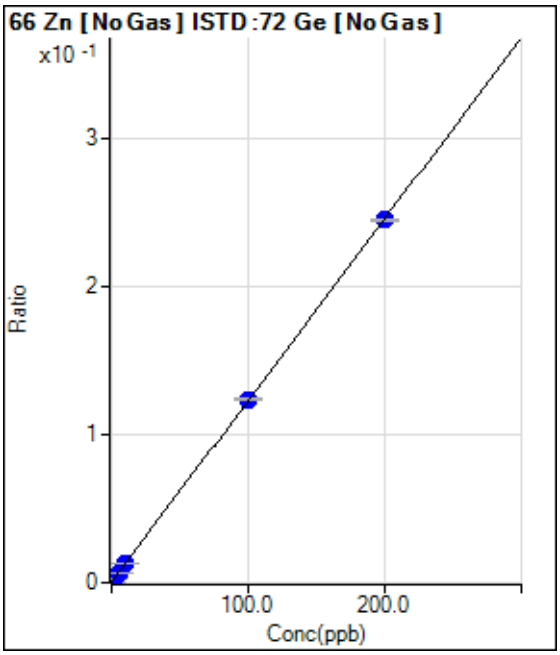
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	743.37	0.0015	P	2.0
2	☐	2.000	1.930	7438.83	0.0153	P	7.4
3	☐	5.000	4.902	17574.94	0.0364	P	2.7
4	☐	10.000	10.190	35747.34	0.0741	P	2.7
5	☐	100.000	100.865	340056.32	0.7193	P	1.5
6	☐	200.000	199.561	654641.68	1.4217	P	1.2

y = 0.0071 * x + 0.0015
R = 1.0000
DL = 0.01274
BEC = 0.2165

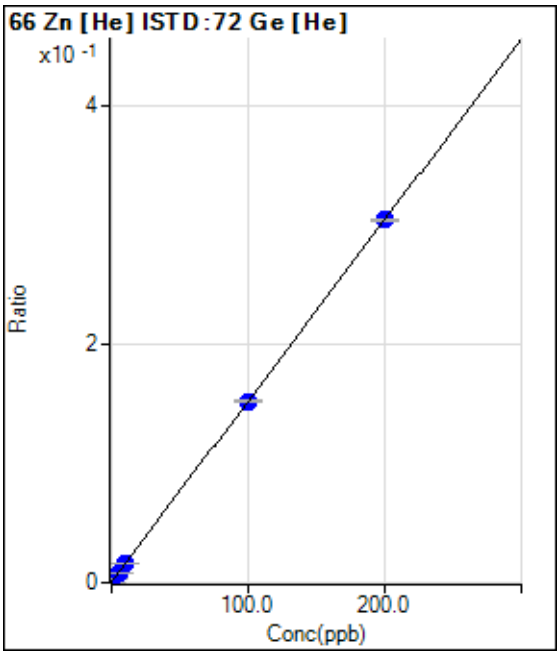
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	643.36	0.0005	P	6.8
2	☐	2.000	2.146	4450.80	0.0031	P	7.1
3	☐	5.000	4.845	9343.33	0.0064	P	0.8
4	☐	10.000	9.834	17768.54	0.0125	P	2.3
5	☐	100.000	100.839	170793.94	0.1242	P	0.6
6	☐	200.000	199.591	327750.23	0.2454	P	0.6

y = 0.0012 * x + 4.5142E-004
R = 1.0000
DL = 0.07536
BEC = 0.3678

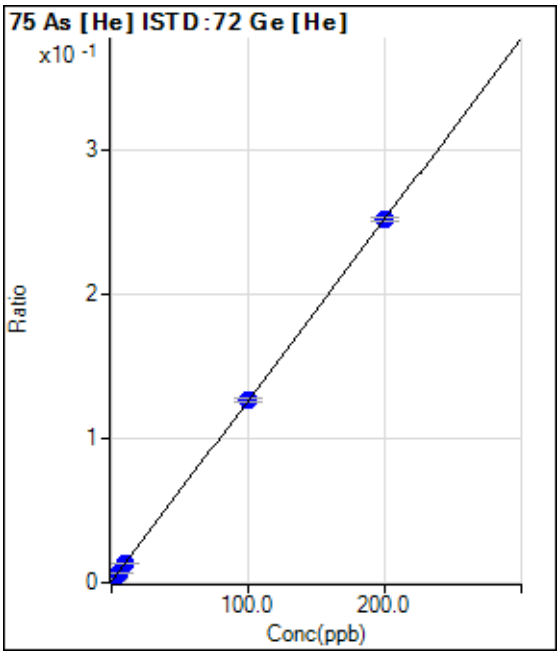
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	300.01	0.0006	P	18.0
2	☐	2.000	2.270	1983.52	0.0041	P	6.0
3	☐	5.000	4.912	3903.96	0.0081	P	9.1
4	☐	10.000	9.923	7578.94	0.0157	P	4.3
5	☐	100.000	99.809	72020.54	0.1523	P	1.5
6	☐	200.000	200.099	140356.13	0.3048	P	0.8

y = 0.0015 * x + 6.2228E-004
R = 1.0000
DL = 0.2213
BEC = 0.4094

Weight: <None>
Min Conc: <None>

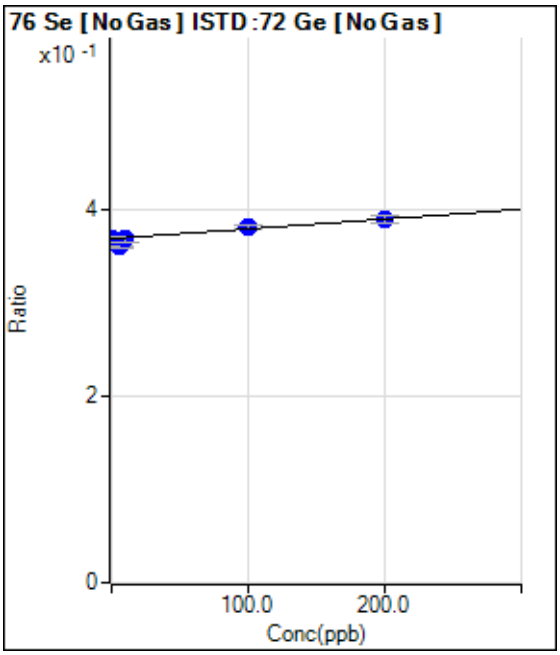


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	356.67	0.0007	P	7.7
2	☐	2.000	1.974	1568.99	0.0032	P	1.4
3	☐	5.000	4.816	3279.31	0.0068	P	2.4
4	☐	10.000	9.968	6405.98	0.0133	P	4.7
5	☐	100.000	100.458	60081.77	0.1271	P	1.9
6	☐	200.000	199.777	116038.59	0.2520	P	1.2

y = 0.0013 * x + 7.3906E-004
R = 1.0000
DL = 0.1366
BEC = 0.5876

Weight: <None>
Min Conc: <None>

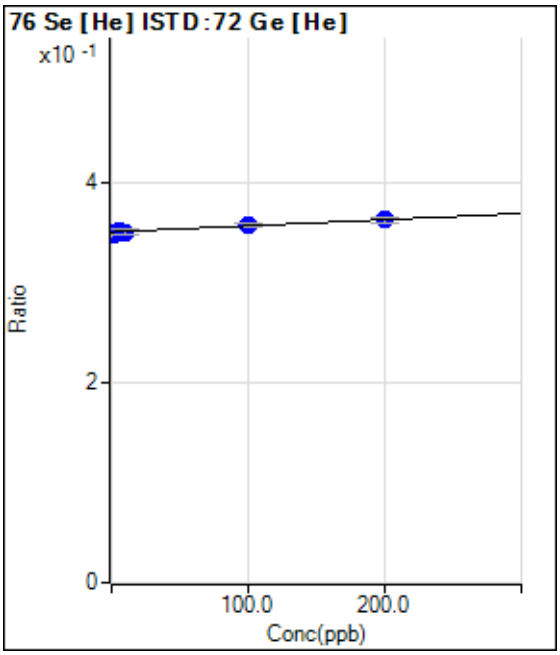
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	524911.83	0.3682	P	0.9
2	☐	2.000	-26.840	527177.90	0.3654	P	1.7
3	☐	5.000	-86.673	524450.40	0.3591	P	0.8
4	☐	10.000	-4.876	521847.03	0.3677	P	1.7
5	☐	100.000	124.854	524274.09	0.3813	P	1.1
6	☐	200.000	190.897	518495.88	0.3883	P	2.0

y = 1.0503E-004 * x + 0.3682
R = 0.9369
DL = 90.49
BEC = 3506

Weight: <None>
Min Conc: <None>

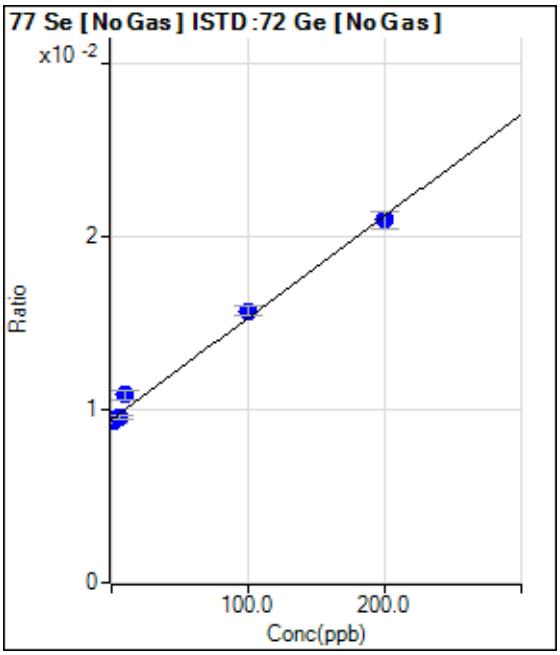


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	168836.26	0.3500	P	0.5
2	☐	2.000	-41.449	169221.76	0.3474	P	1.3
3	☐	5.000	16.390	169380.42	0.3510	P	1.2
4	☐	10.000	-5.715	168733.06	0.3496	P	1.5
5	☐	100.000	112.859	168742.48	0.3569	P	1.2
6	☐	200.000	194.506	166662.35	0.3620	P	1.7

y = 6.1509E-005 * x + 0.3500
R = 0.9739
DL = 90.63
BEC = 5690

Weight: <None>
Min Conc: <None>

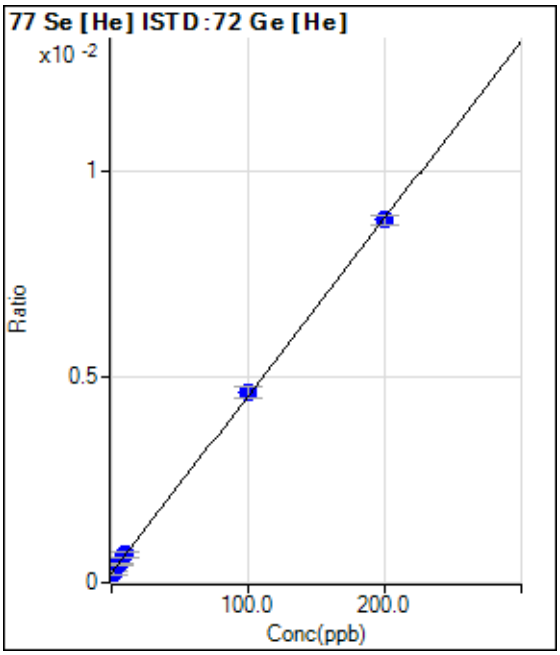
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	13446.93	0.0094	P	1.8
2	☐	2.000	-1.223	13503.65	0.0094	P	3.9
3	☐	5.000	2.508	13990.82	0.0096	P	2.9
4	☐	10.000	24.028	15392.37	0.0108	P	5.0
5	☐	100.000	106.636	21587.61	0.0157	P	3.4
6	☐	200.000	196.075	27996.05	0.0210	P	4.4

y = 5.8812E-005 * x + 0.0094
R = 0.9963
DL = 8.622
BEC = 160.4

Weight: <None>
Min Conc: <None>

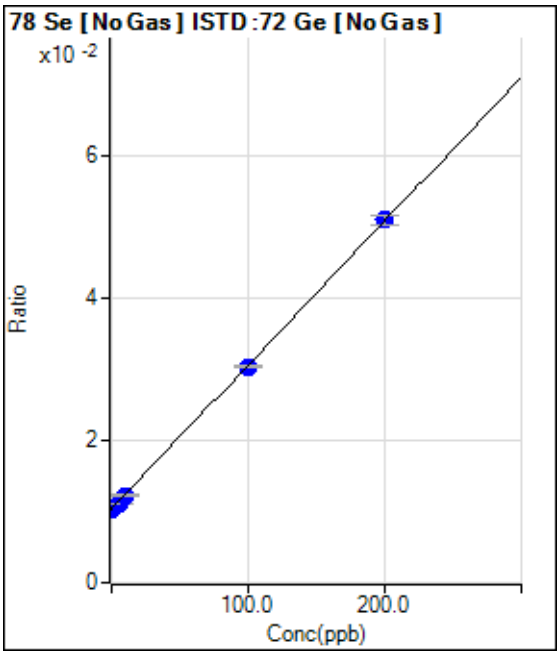


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	113.33	0.0002	P	40.5
2	☐	2.000	0.250	120.00	0.0002	P	35.8
3	☐	5.000	4.963	216.67	0.0004	P	14.3
4	☐	10.000	10.593	333.34	0.0007	P	19.8
5	☐	100.000	101.676	2180.21	0.0046	P	5.8
6	☐	200.000	199.151	4057.35	0.0088	P	2.3

y = 4.3054E-005 * x + 2.3536E-004
R = 0.9999
DL = 6.647
BEC = 5.467

Weight: <None>
Min Conc: <None>

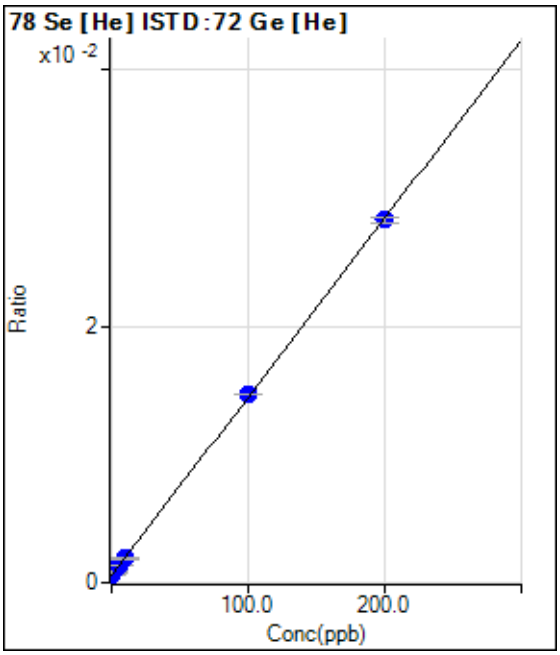
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	14811.67	0.0104	P	1.7
2	☐	2.000	1.139	15318.93	0.0106	P	3.7
3	☐	5.000	3.285	16143.27	0.0111	P	0.3
4	☐	10.000	9.012	17334.74	0.0122	P	2.7
5	☐	100.000	98.736	41708.17	0.0303	P	1.1
6	☐	200.000	200.733	68025.32	0.0509	P	2.5

y = 2.0202E-004 * x + 0.0104
R = 1.0000
DL = 2.618
BEC = 51.43

Weight: <None>
Min Conc: <None>

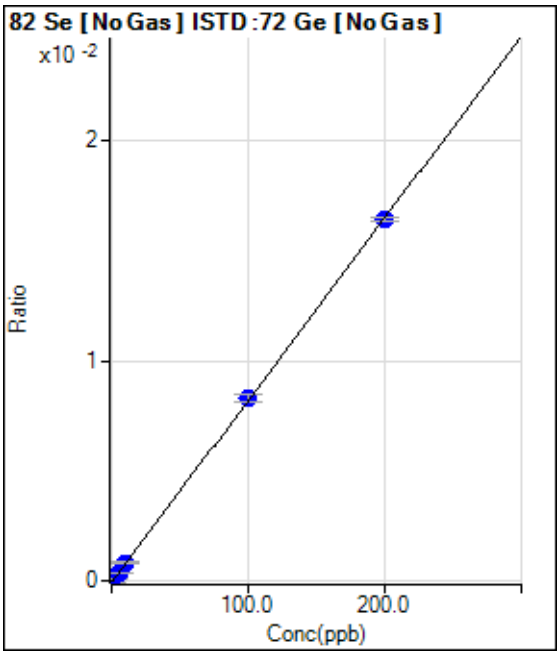


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	268.00	0.0006	P	4.6
2	☐	2.000	1.969	404.01	0.0008	P	5.8
3	☐	5.000	5.568	642.02	0.0013	P	2.2
4	☐	10.000	9.642	915.37	0.0019	P	4.8
5	☐	100.000	101.424	6935.14	0.0147	P	0.6
6	☐	200.000	199.292	13025.63	0.0283	P	1.4

y = 1.3915E-004 * x + 5.5548E-004
R = 1.0000
DL = 0.5521
BEC = 3.992

Weight: <None>
Min Conc: <None>

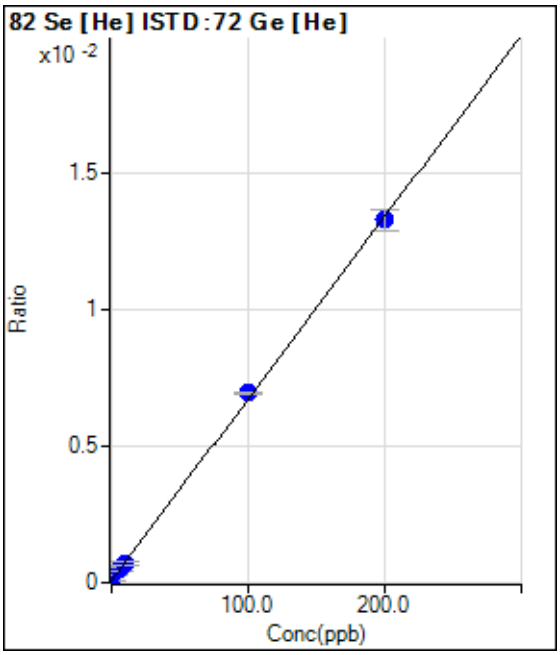
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	-66.22	0.0000	P	-162.7
2	☐	2.000	2.728	257.43	0.0002	P	39.8
3	☐	5.000	5.169	554.27	0.0004	P	14.1
4	☐	10.000	10.916	1210.77	0.0009	P	12.4
5	☐	100.000	101.189	11405.87	0.0083	P	3.6
6	☐	200.000	199.348	21882.52	0.0164	P	0.7

y = 8.2431E-005 * x - 4.6306E-005
R = 1.0000
DL = 2.741
BEC = -0.5618

Weight: <None>
Min Conc: <None>

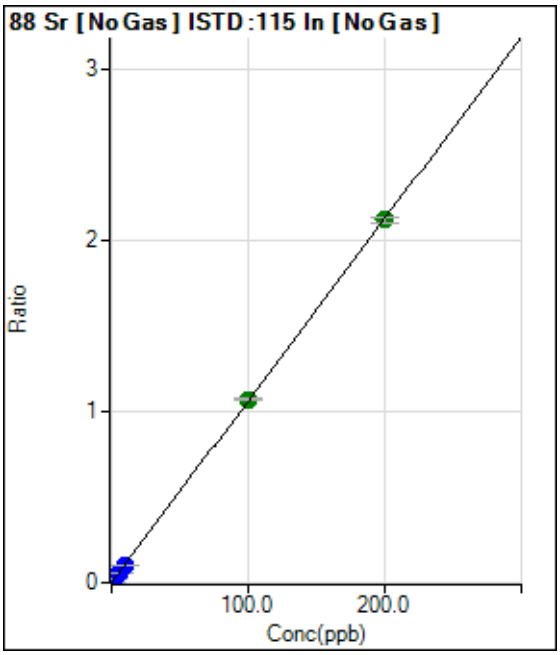


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	36.67	0.0001	P	32.4
2	☐	2.000	3.692	156.67	0.0003	P	33.0
3	☐	5.000	6.338	240.01	0.0005	P	28.0
4	☐	10.000	9.449	340.01	0.0007	P	14.3
5	☐	100.000	103.094	3280.46	0.0069	P	1.8
6	☐	200.000	198.430	6114.83	0.0133	P	5.6

y = 6.6560E-005 * x + 7.6146E-005
R = 0.9998
DL = 1.112
BEC = 1.144

Weight: <None>
Min Conc: <None>

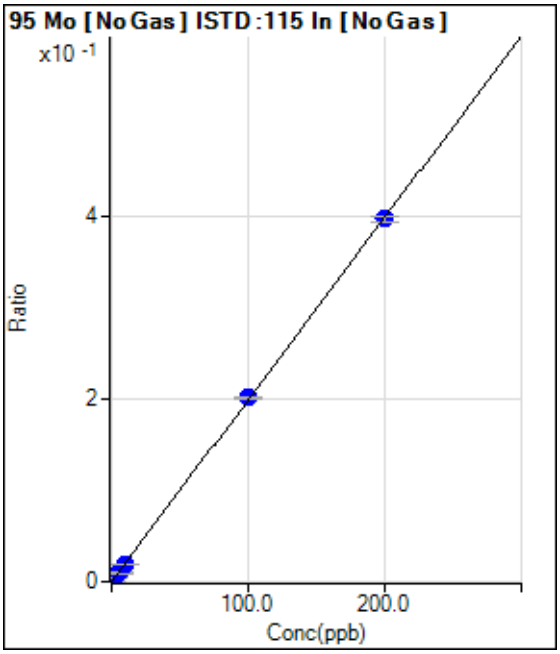
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1190.08	0.0007	P	5.9
2	☐	2.000	1.937	35370.42	0.0213	P	2.8
3	☐	5.000	4.905	87474.60	0.0527	P	2.0
4	☐	10.000	9.872	173452.79	0.1055	P	1.9
5	☐	100.000	100.922	1733639.72	1.0715	A	0.9
6	☐	200.000	199.548	3381915.47	2.1180	A	1.4

y = 0.0106 * x + 7.0832E-004
R = 1.0000
DL = 0.01189
BEC = 0.06676

Weight: <None>
Min Conc: <None>

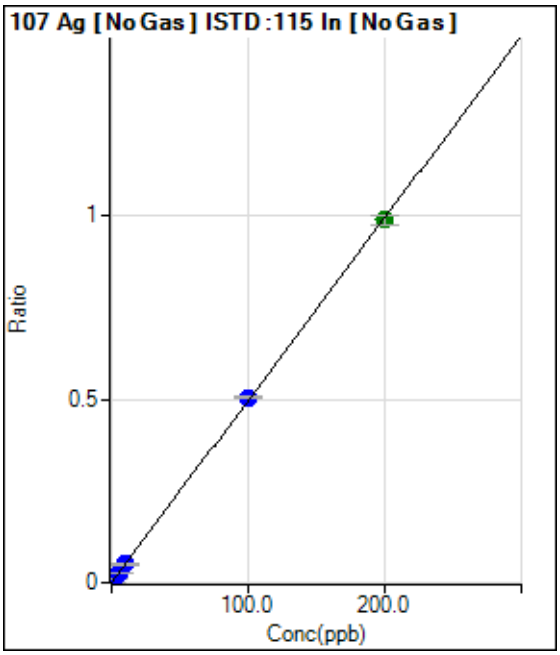


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	36.67	0.0000	P	17.7
2	☐	2.000	1.916	6398.32	0.0038	P	3.6
3	☐	5.000	4.813	15973.11	0.0096	P	3.0
4	☐	10.000	9.742	32032.07	0.0195	P	0.8
5	☐	100.000	101.201	326937.72	0.2021	P	1.2
6	☐	200.000	199.418	635817.87	0.3982	P	1.6

y = 0.0020 * x + 2.1863E-005
R = 1.0000
DL = 0.005823
BEC = 0.01095

Weight: <None>
Min Conc: <None>

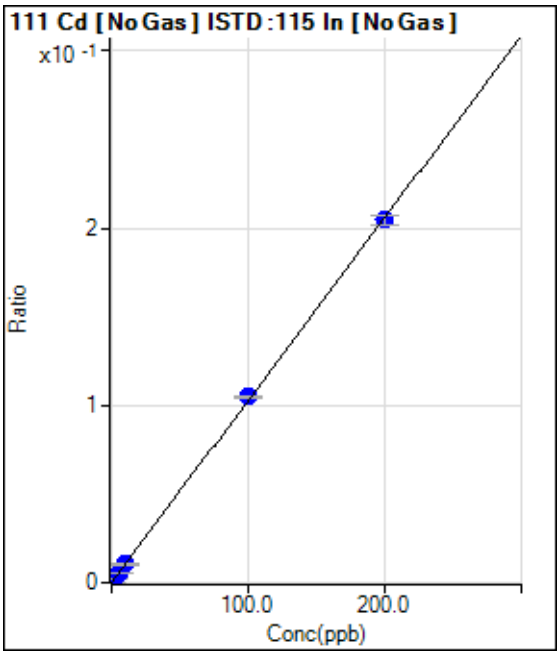
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	83.33	0.0000	P	51.3
2	☐	2.000	1.952	16236.82	0.0098	P	2.9
3	☐	5.000	4.995	41294.83	0.0249	P	1.9
4	☐	10.000	10.021	82063.73	0.0499	P	1.9
5	☐	100.000	101.822	819446.68	0.5065	P	1.3
6	☐	200.000	199.089	1581066.85	0.9903	A	2.4

y = 0.0050 * x + 4.9834E-005
R = 0.9999
DL = 0.01543
BEC = 0.01002

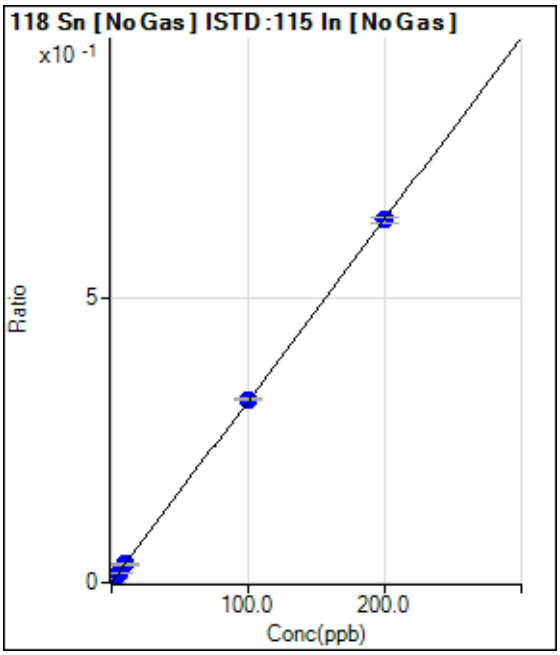
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3.33	0.0000	P	173.2
2	☐	2.000	2.042	3497.19	0.0021	P	2.7
3	☐	5.000	5.043	8602.93	0.0052	P	0.5
4	☐	10.000	10.213	17271.57	0.0105	P	6.0
5	☐	100.000	101.975	169629.26	0.1048	P	1.0
6	☐	200.000	199.000	326652.48	0.2046	P	2.7

y = 0.0010 * x + 1.9320E-006
R = 0.9999
DL = 0.009764
BEC = 0.001879

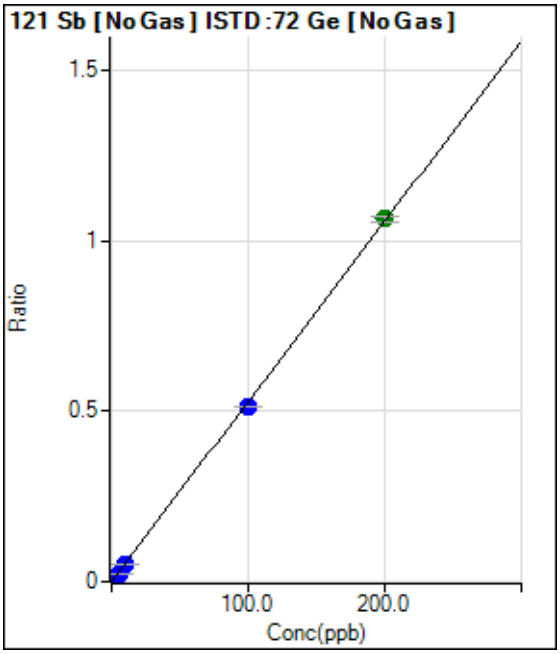
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	706.70	0.0004	P	9.1
2	☐	2.000	1.965	11131.58	0.0067	P	3.4
3	☐	5.000	5.026	27308.72	0.0165	P	0.4
4	☐	10.000	9.997	53174.28	0.0323	P	1.9
5	☐	100.000	100.601	520190.06	0.3215	P	0.9
6	☐	200.000	199.699	1018467.46	0.6378	P	1.9

y = 0.0032 * x + 4.2061E-004
R = 1.0000
DL = 0.03579
BEC = 0.1318

Weight: <None>
Min Conc: <None>

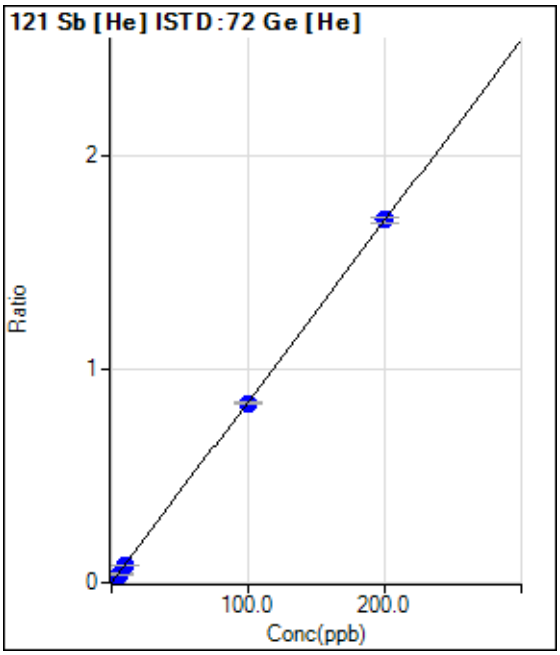


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	183.34	0.0001	P	20.2
2	☐	2.000	1.733	13407.12	0.0093	P	3.9
3	☐	5.000	4.518	35070.67	0.0240	P	1.8
4	☐	10.000	9.183	69081.80	0.0487	P	1.7
5	☐	100.000	97.057	705662.54	0.5132	P	0.8
6	☐	200.000	201.527	1423108.83	1.0656	A	1.9

y = 0.0053 * x + 1.2853E-004
R = 0.9999
DL = 0.01476
BEC = 0.02431

Weight: <None>
Min Conc: <None>

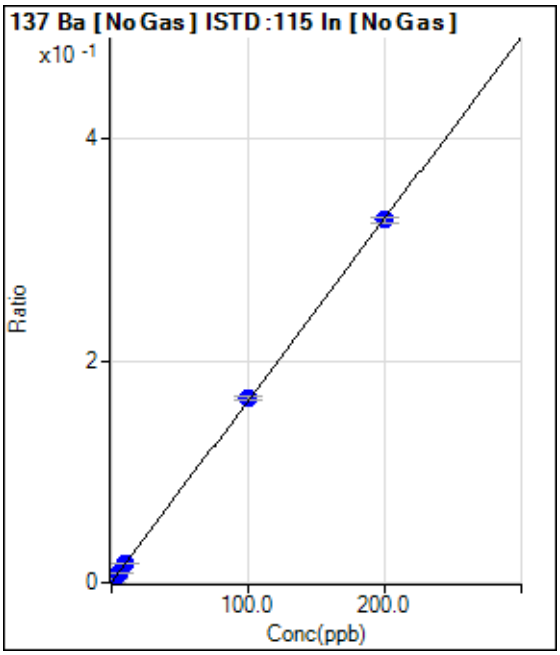
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	136.67	0.0003	P	24.1
2	☐	2.000	1.749	7348.86	0.0151	P	5.3
3	☐	5.000	4.735	19481.45	0.0404	P	2.5
4	☐	10.000	9.390	38503.63	0.0798	P	1.2
5	☐	100.000	98.989	396337.86	0.8384	P	1.1
6	☐	200.000	200.545	781911.08	1.6982	P	1.8

y = 0.0085 * x + 2.8363E-004
R = 1.0000
DL = 0.02425
BEC = 0.0335

Weight: <None>
Min Conc: <None>

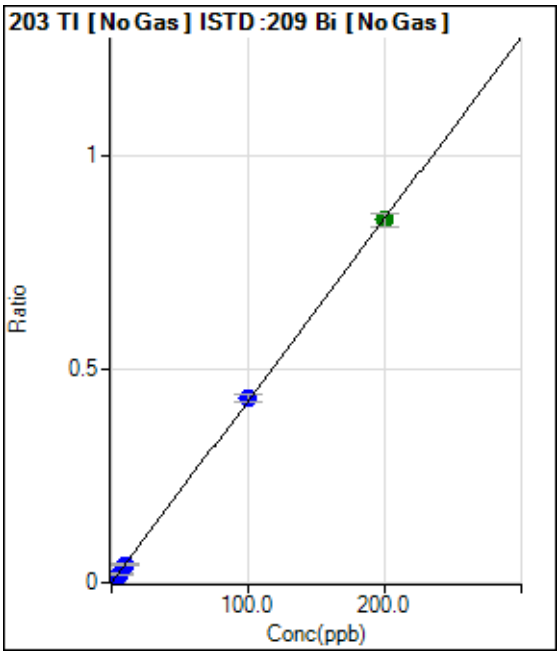


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	426.68	0.0003	P	13.6
2	☐	2.000	1.839	5437.91	0.0033	P	5.3
3	☐	5.000	4.898	13730.81	0.0083	P	4.7
4	☐	10.000	10.187	27876.87	0.0169	P	2.2
5	☐	100.000	101.199	268720.31	0.1661	P	1.6
6	☐	200.000	199.395	522121.14	0.3270	P	1.3

y = 0.0016 * x + 2.5425E-004
R = 1.0000
DL = 0.06331
BEC = 0.1552

Weight: <None>
Min Conc: <None>

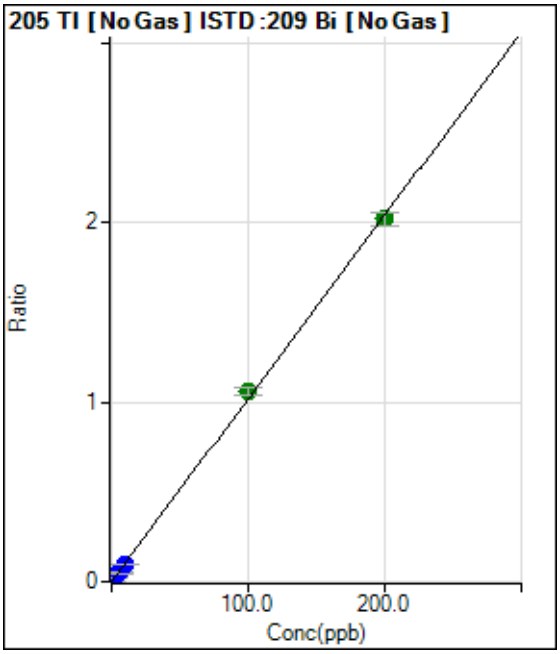
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	70.00	0.0000	P	52.5
2	☐	2.000	1.897	11538.85	0.0081	P	2.8
3	☐	5.000	4.727	28873.87	0.0202	P	5.5
4	☐	10.000	9.883	60221.63	0.0422	P	5.0
5	☐	100.000	101.191	593633.78	0.4318	P	4.0
6	☐	200.000	199.418	1210141.94	0.8509	A	3.7

y = 0.0043 * x + 4.9835E-005
R = 1.0000
DL = 0.01839
BEC = 0.01168

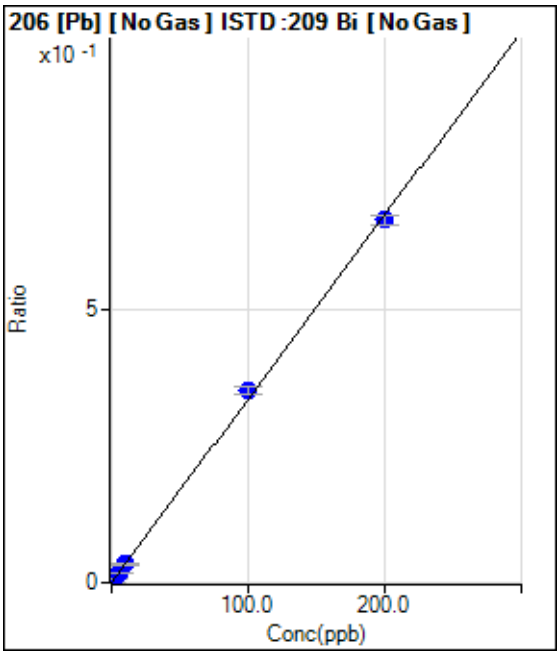
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	206.67	0.0001	P	25.7
2	☐	2.000	1.945	28232.32	0.0200	P	6.2
3	☐	5.000	4.812	70184.01	0.0491	P	5.1
4	☐	10.000	9.676	140781.61	0.0987	P	4.0
5	☐	100.000	103.746	1452647.11	1.0566	A	4.1
6	☐	200.000	198.148	2869623.29	2.0179	A	3.6

y = 0.0102 * x + 1.4698E-004
R = 0.9997
DL = 0.01115
BEC = 0.01443

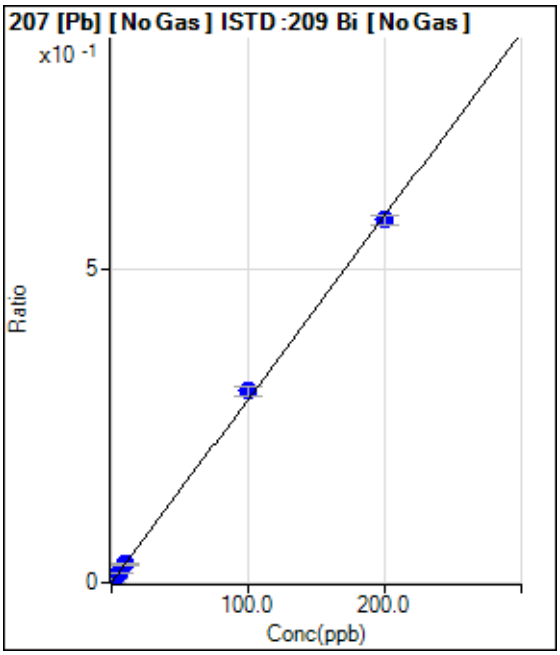
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	220.01	0.0002	P	8.8
2	☐	2.000	2.002	9740.65	0.0069	P	5.7
3	☐	5.000	5.068	24537.85	0.0172	P	2.5
4	☐	10.000	10.120	48695.51	0.0341	P	5.2
5	☐	100.000	104.868	484293.66	0.3523	P	4.2
6	☐	200.000	197.558	943756.18	0.6636	P	3.0

y = 0.0034 * x + 1.5571E-004
R = 0.9996
DL = 0.01228
BEC = 0.04637

Weight: <None>
Min Conc: <None>

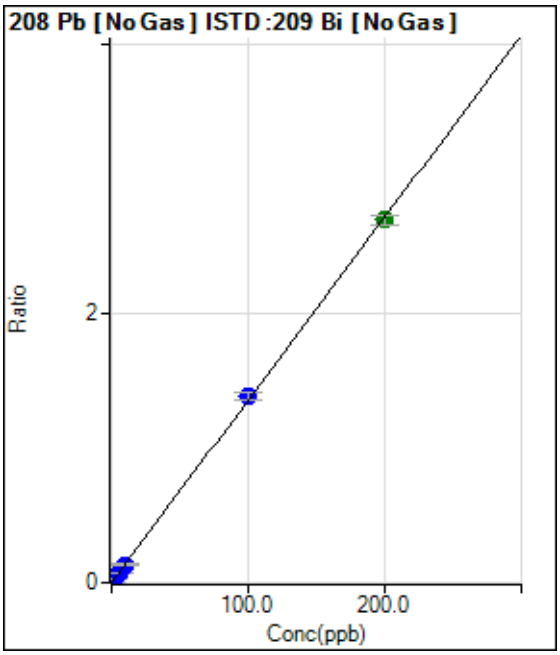


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	123.34	0.0001	P	33.4
2	☐	2.000	2.053	8639.78	0.0061	P	7.3
3	☐	5.000	4.903	20647.45	0.0145	P	7.1
4	☐	10.000	10.167	42633.12	0.0299	P	5.9
5	☐	100.000	104.324	420510.93	0.3059	P	4.8
6	☐	200.000	197.831	825025.61	0.5801	P	3.0

y = 0.0029 * x + 8.6660E-005
R = 0.9997
DL = 0.02963
BEC = 0.02956

Weight: <None>
Min Conc: <None>

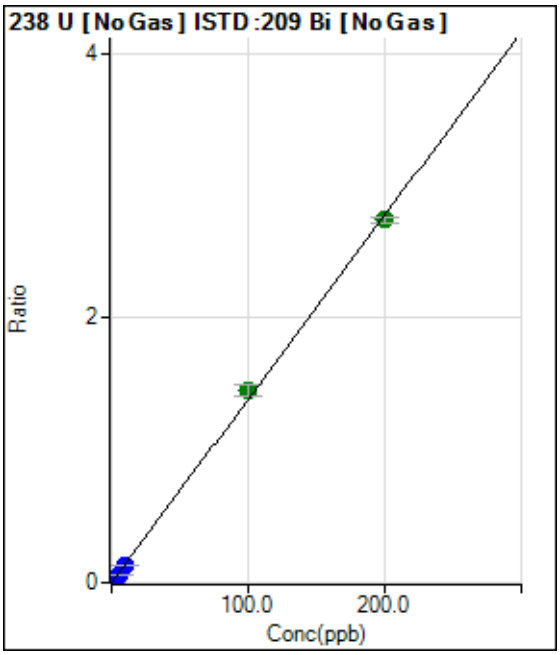
Calibration for 144_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	810.03	0.0006	P	9.7
2	☐	2.000	1.987	38984.43	0.0275	P	6.1
3	☐	5.000	4.959	97006.74	0.0679	P	3.8
4	☐	10.000	9.895	192467.47	0.1349	P	5.4
5	☐	100.000	102.521	1914511.87	1.3927	P	4.3
6	☐	200.000	198.746	3839282.34	2.6994	A	3.0

y = 0.0136 * x + 5.7219E-004
R = 0.9999
DL = 0.01226
BEC = 0.04214

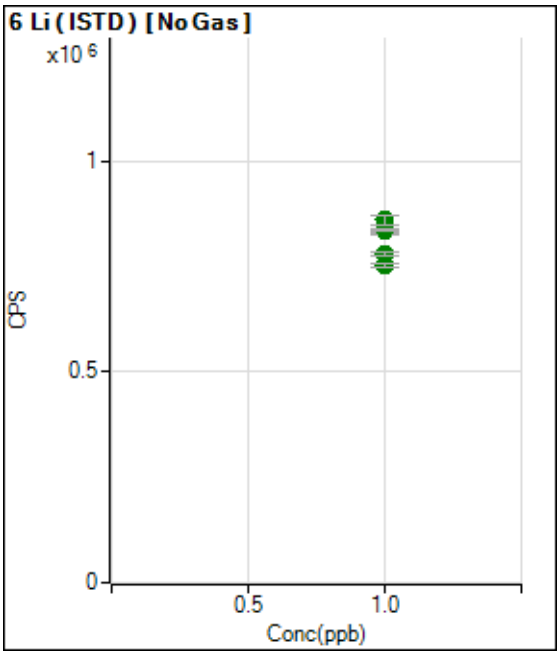
Weight: <None>
Min Conc: <None>



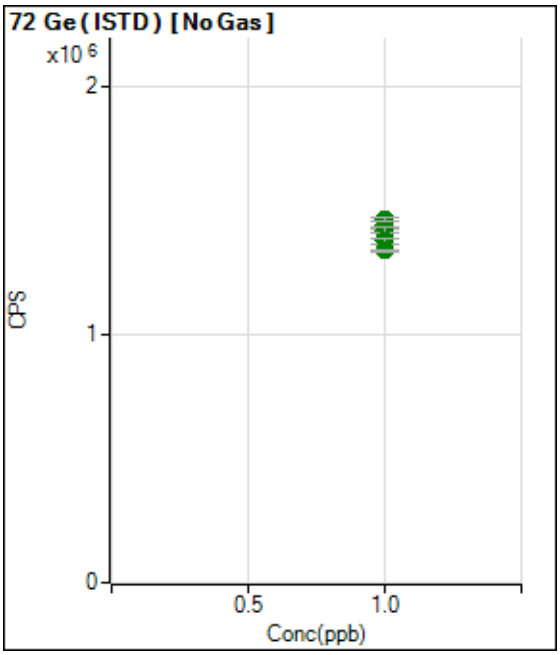
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6.67	0.0000	P	86.7
2	☐	2.000	1.860	36474.76	0.0258	P	8.3
3	☐	5.000	4.585	90792.17	0.0636	P	4.0
4	☐	10.000	9.287	183685.20	0.1287	P	4.1
5	☐	100.000	104.673	1993792.11	1.4510	A	6.1
6	☐	200.000	197.711	3898520.04	2.7407	A	1.8

y = 0.0139 * x + 4.6560E-006
R = 0.9996
DL = 0.0008733
BEC = 0.0003359

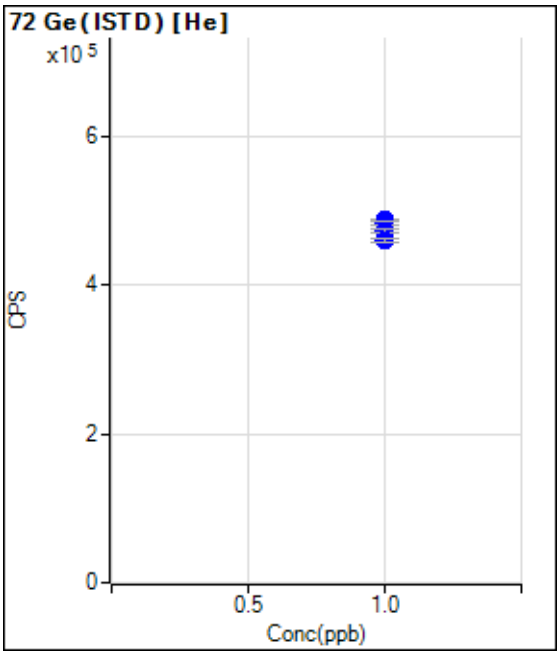
Weight: <None>
Min Conc: <None>



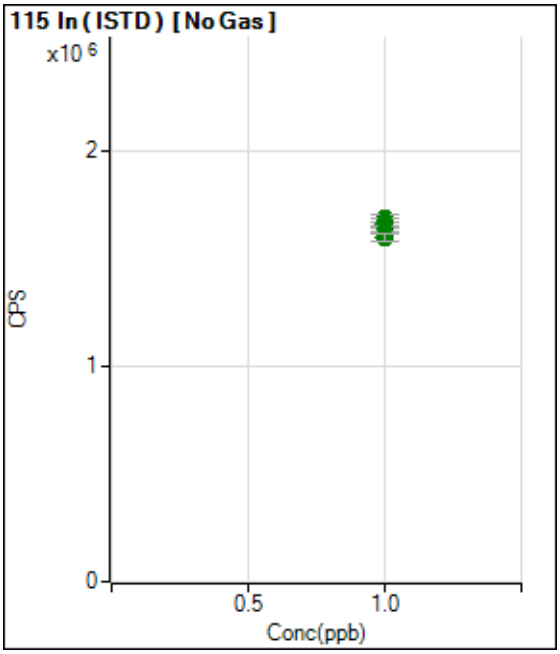
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		835464.43		A	0.9
2	☐	1.000		837856.48		A	2.8
3	☐	1.000		838871.50		A	0.7
4	☐	1.000		861320.38		A	2.5
5	☐	1.000		780442.33		A	1.3
6	☐	1.000		754960.46		A	1.2



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1425537.90		A	0.6
2	☐	1.000		1442913.52		A	1.2
3	☐	1.000		1460441.07		A	0.9
4	☐	1.000		1419404.82		A	1.7
5	☐	1.000		1374959.88		A	1.4
6	☐	1.000		1335463.52		A	1.1

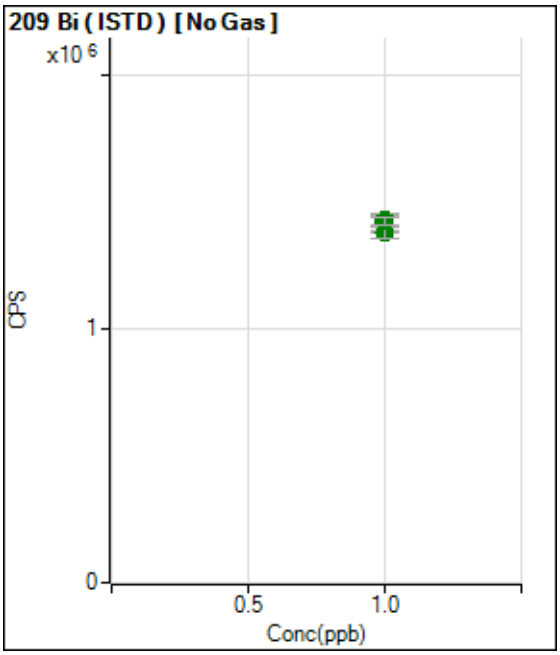


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		482392.81		P	0.8
2	☐	1.000		487053.38		P	0.5
3	☐	1.000		482583.16		P	0.9
4	☐	1.000		482626.78		P	0.9
5	☐	1.000		472773.70		P	0.8
6	☐	1.000		460500.63		P	1.1



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1681607.95		A	2.3
2	☐	1.000		1664072.00		A	2.5
3	☐	1.000		1658655.73		A	1.5
4	☐	1.000		1644981.78		A	0.7
5	☐	1.000		1617930.39		A	0.3
6	☐	1.000		1596879.04		A	1.9

Calibration for 144_ICV.d



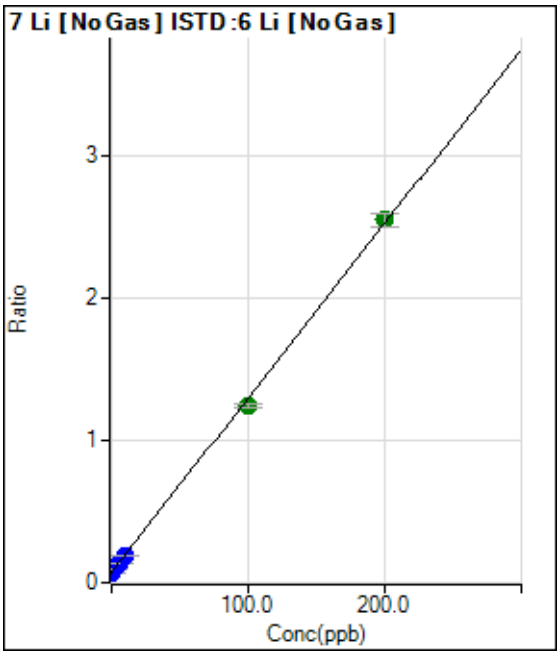
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1413121.18		A	3.3
2	☐	1.000		1418123.89		A	5.3
3	☐	1.000		1429236.85		A	2.4
4	☐	1.000		1428028.88		A	3.4
5	☐	1.000		1375909.46		A	3.3
6	☐	1.000		1422797.48		A	2.0

Calibration for 016_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\021022A.b\
Analysis File: 021022A.batch.bin
DA Date-Time: 2/10/2022 11:52:45 PM
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	009CALB.d	CAL BLK	2/10/2022 11:35:06 AM
2	010CALS.d	2/10/200	2/10/2022 11:37:05 AM
3	011CALS.d	5/25/500	2/10/2022 11:39:04 AM
4	012CALS.d	10/50/100	2/10/2022 11:41:03 AM
5	013CALS.d	100/500/10K	2/10/2022 11:43:01 AM
6	014CALS.d	200/1000/20K	2/10/2022 11:44:58 AM

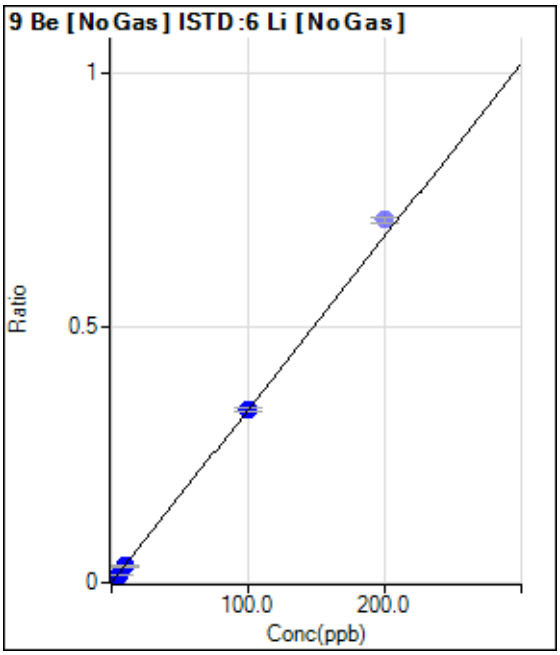
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	46561.64	0.0737	P	1.1
2	☐	2.000	1.966	61754.55	0.0978	P	2.6
3	☐	5.000	4.720	85566.23	0.1316	P	0.8
4	☐	10.000	9.572	124942.09	0.1911	P	0.2
5	☐	100.000	95.772	773907.10	1.2484	A	2.7
6	☐	200.000	202.143	1466108.99	2.5530	A	4.1

y = 0.0123 * x + 0.0737
R = 0.9997
DL = 0.1953
BEC = 6.009

Weight: <None>
Min Conc: <None>

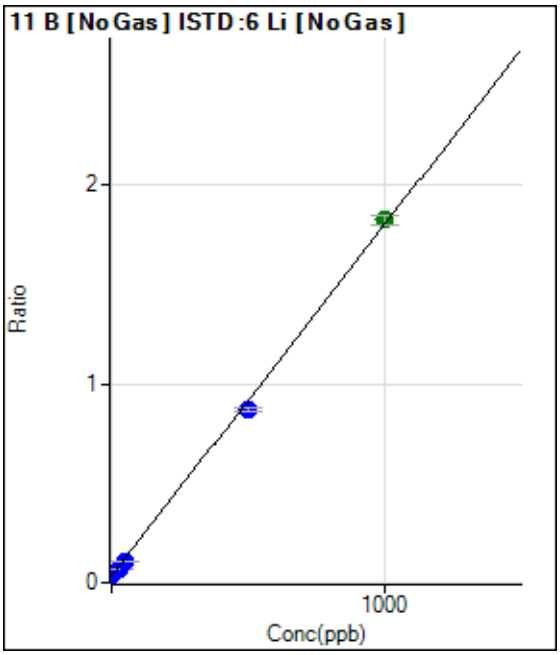


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	83.33	0.0001	P	29.1
2	☐	2.000	1.901	4157.31	0.0066	P	2.2
3	☐	5.000	4.826	10735.83	0.0165	P	1.2
4	☐	10.000	9.489	21144.31	0.0323	P	1.7
5	☐	100.000	100.062	210598.04	0.3397	P	2.8
6	☑	200.000		408797.08	0.7117	P	1.7

y = 0.0034 * x + 1.3165E-004
R = 1.0000
DL = 0.03385
BEC = 0.03879

Weight: <None>
Min Conc: <None>

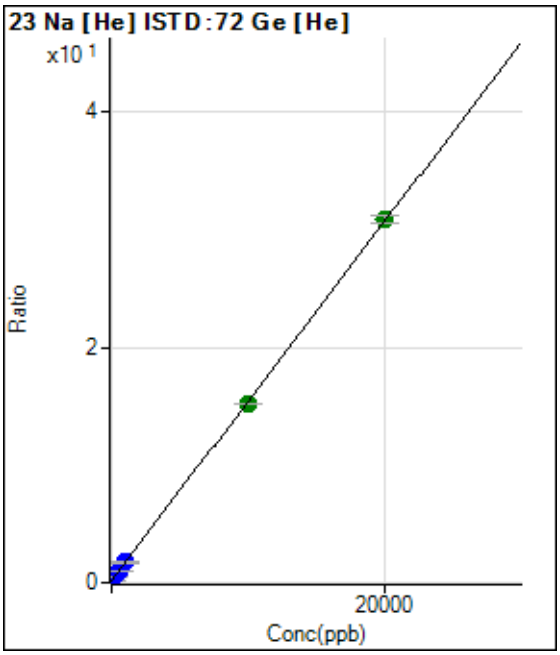
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	21765.28	0.0345	P	1.6
2	☐	10.000	7.984	30663.48	0.0486	P	2.7
3	☐	25.000	19.348	44638.98	0.0687	P	1.0
4	☐	50.000	39.668	68355.19	0.1046	P	1.9
5	☐	500.000	473.444	540078.83	0.8712	P	3.2
6	☐	1000.000	1013.956	1049089.80	1.8265	A	2.6

y = 0.0018 * x + 0.0345
R = 0.9995
DL = 0.9517
BEC = 19.5

Weight: <None>
Min Conc: <None>

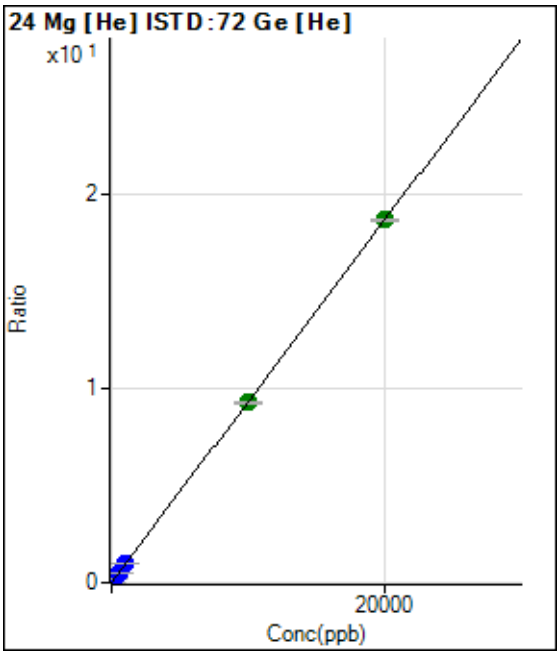


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	73184.77	0.1876	P	1.6
2	☐	200.000	195.734	193381.61	0.4863	P	1.6
3	☐	500.000	509.025	384729.51	0.9646	P	0.4
4	☐	1000.000	1011.313	692596.50	1.7313	P	1.6
5	☐	10000.000	9803.353	5979191.79	15.1518	A	0.2
6	☐	20000.000	20097.575	11713893.99	30.8653	A	2.2

y = 0.0015 * x + 0.1876
R = 0.9999
DL = 5.907
BEC = 122.9

Weight: <None>
Min Conc: <None>

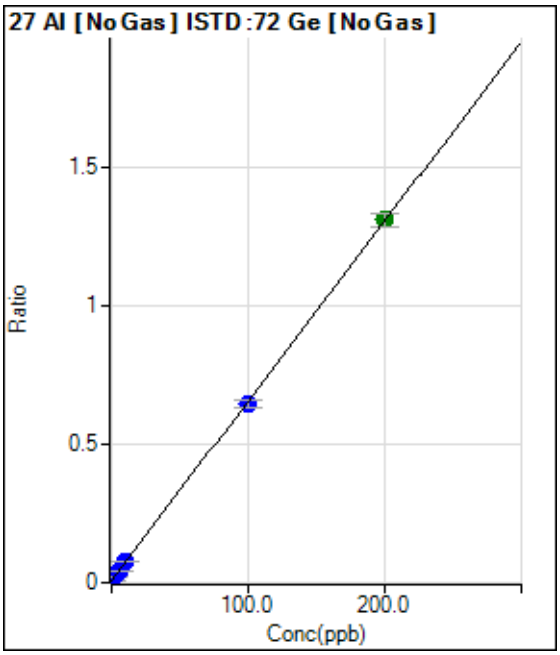
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1043.39	0.0027	P	20.2
2	☐	200.000	205.523	77434.77	0.1947	P	1.1
3	☐	500.000	526.736	197402.80	0.4949	P	0.7
4	☐	1000.000	1029.853	386120.79	0.9651	P	0.8
5	☐	10000.000	9944.795	3668525.26	9.2963	A	1.0
6	☐	20000.000	20025.386	7104251.97	18.7168	A	0.9

y = 9.3452E-004 * x + 0.0027
R = 1.0000
DL = 1.729
BEC = 2.86

Weight: <None>
Min Conc: <None>

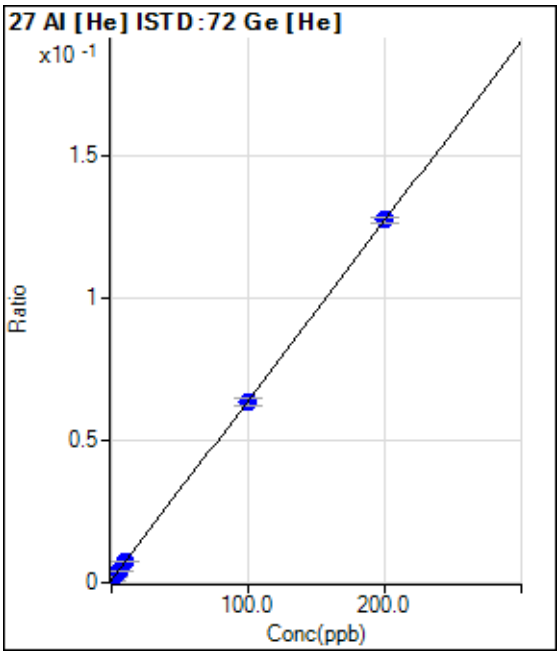


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	8756.27	0.0080	P	6.7
2	☐	2.000	1.949	22759.02	0.0207	P	2.8
3	☐	5.000	4.824	44173.83	0.0393	P	0.7
4	☐	10.000	10.257	82423.38	0.0746	P	2.5
5	☐	100.000	98.340	699814.68	0.6462	P	3.6
6	☐	200.000	200.822	1352770.66	1.3113	A	3.5

y = 0.0065 * x + 0.0080
R = 0.9999
DL = 0.2494
BEC = 1.24

Weight: <None>
Min Conc: <None>

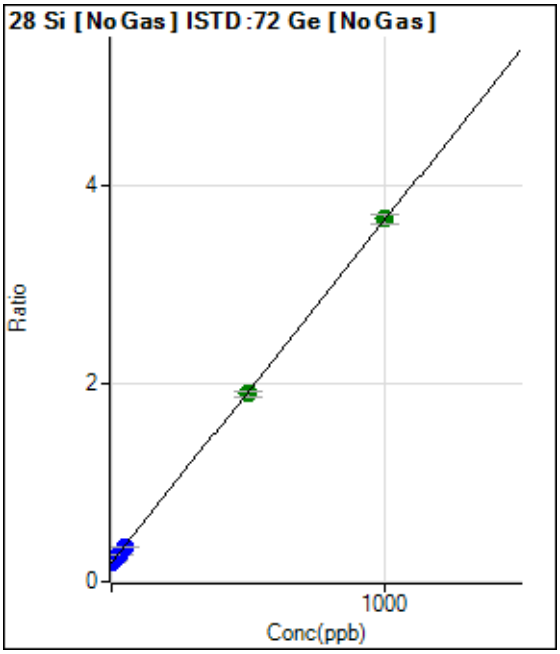
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	356.68	0.0009	P	11.1
2	☐	2.000	1.818	820.04	0.0021	P	2.3
3	☐	5.000	5.141	1660.13	0.0042	P	8.5
4	☐	10.000	10.065	2910.35	0.0073	P	4.0
5	☐	100.000	99.004	25039.53	0.0635	P	4.8
6	☐	200.000	200.493	48414.58	0.1276	P	1.6

y = 6.3165E-004 * x + 9.1378E-004
R = 1.0000
DL = 0.4829
BEC = 1.447

Weight: <None>
Min Conc: <None>

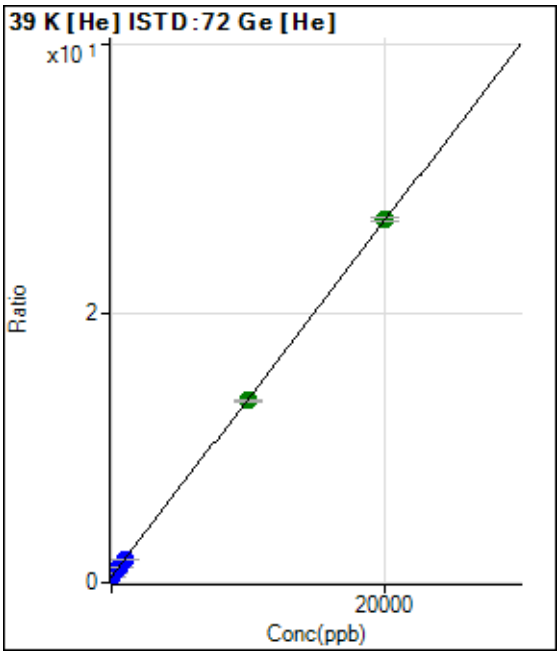


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	208979.38	0.1920	P	1.7
2	☐	10.000	8.601	243771.34	0.2217	P	2.0
3	☐	25.000	21.013	297001.55	0.2646	P	1.6
4	☐	50.000	45.447	385636.84	0.3490	P	1.9
5	☐	500.000	492.545	2051470.91	1.8944	A	3.6
6	☐	1000.000	1004.069	3779216.19	3.6625	A	2.5

y = 0.0035 * x + 0.1920
R = 1.0000
DL = 2.817
BEC = 55.54

Weight: <None>
Min Conc: <None>

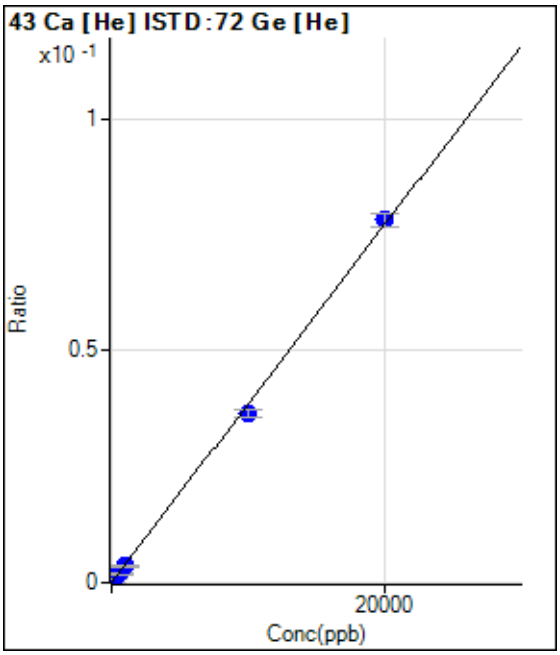
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	176884.69	0.4534	P	0.1
2	☐	200.000	188.384	279280.18	0.7024	P	1.3
3	☐	500.000	473.654	430552.84	1.0794	P	0.4
4	☐	1000.000	960.406	689223.51	1.7228	P	1.2
5	☐	10000.000	9889.008	5336730.34	13.5241	A	1.0
6	☐	20000.000	20058.251	10234840.89	26.9653	A	1.1

y = 0.0013 * x + 0.4534
R = 1.0000
DL = 1.44
BEC = 343

Weight: <None>
Min Conc: <None>

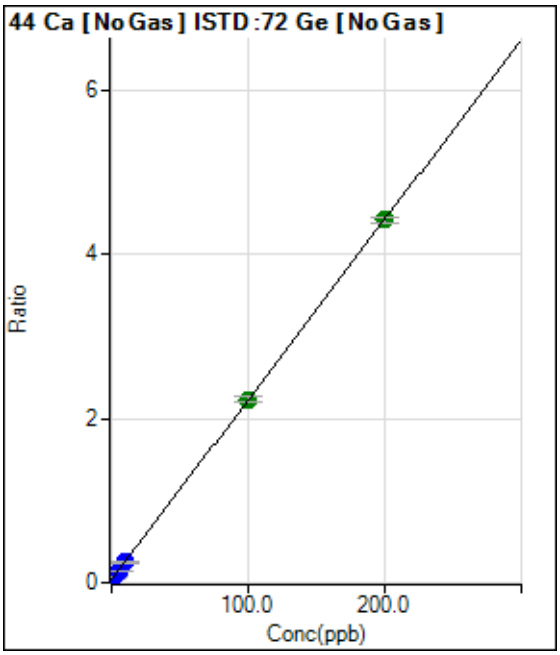


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6.67	0.0000	P	86.6
2	☐	200.000	195.351	306.68	0.0008	P	22.7
3	☐	500.000	499.816	776.70	0.0019	P	20.3
4	☐	1000.000	926.714	1436.77	0.0036	P	10.0
5	☐	10000.000	9448.522	14391.06	0.0365	P	4.2
6	☐	20000.000	20279.454	29699.06	0.0783	P	3.4

y = 3.8583E-006 * x + 1.7115E-005
R = 0.9995
DL = 11.53
BEC = 4.436

Weight: <None>
Min Conc: <None>

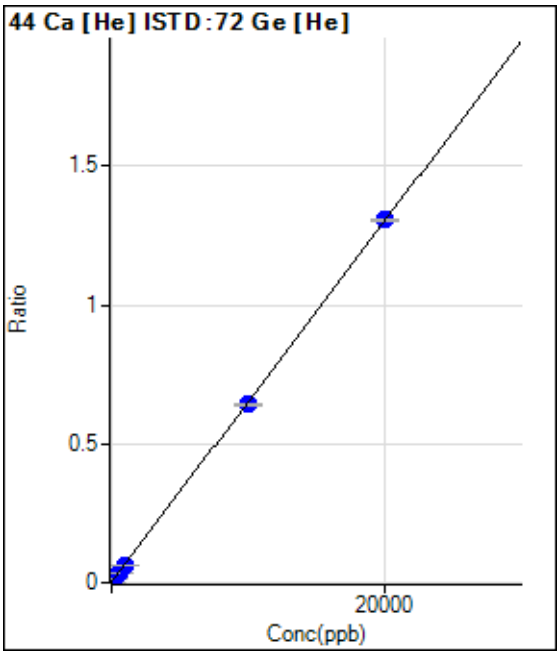
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	39005.70	0.0358	P	2.1
2	☐	2.000	1.935	85984.27	0.0782	P	3.4
3	☐	5.000	4.700	155807.39	0.1388	P	0.1
4	☐	10.000	9.684	273951.36	0.2480	P	2.5
5	☐	100.000	100.177	2415348.14	2.2302	A	3.1
6	☐	200.000	199.935	4556915.77	4.4155	A	1.6

y = 0.0219 * x + 0.0358
R = 1.0000
DL = 0.1046
BEC = 1.636

Weight: <None>
Min Conc: <None>

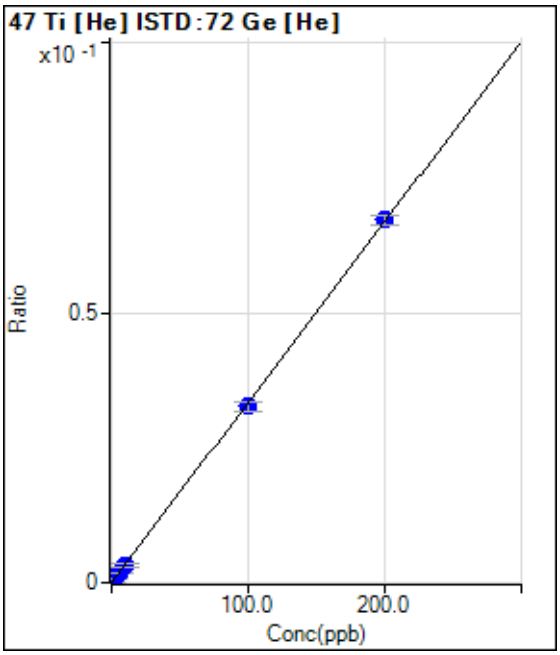


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	600.02	0.0015	P	18.4
2	☐	200.000	187.822	5464.53	0.0137	P	4.4
3	☐	500.000	478.080	13006.32	0.0326	P	3.1
4	☐	1000.000	965.031	25707.70	0.0642	P	2.8
5	☐	10000.000	9850.869	253194.21	0.6416	P	0.5
6	☐	20000.000	20076.984	495749.90	1.3061	P	0.8

y = 6.4978E-005 * x + 0.0015
R = 1.0000
DL = 13.11
BEC = 23.68

Weight: <None>
Min Conc: <None>

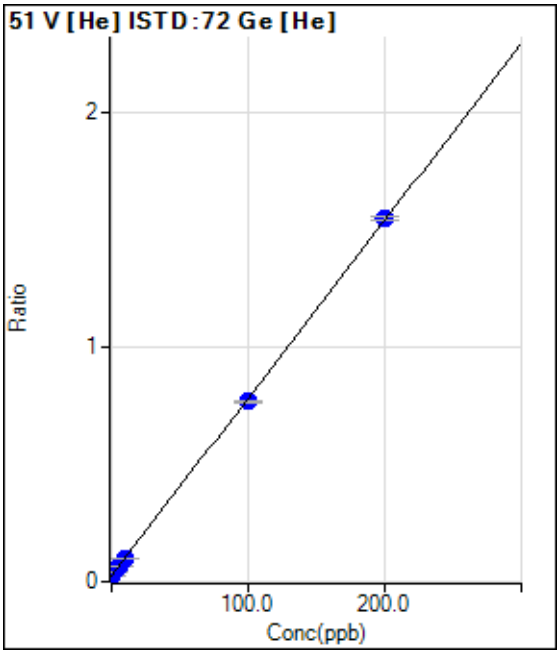
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3.33	0.0000	P	173.2
2	☐	2.000	2.284	306.68	0.0008	P	12.0
3	☐	5.000	5.332	713.37	0.0018	P	12.0
4	☐	10.000	9.990	1340.09	0.0033	P	23.4
5	☐	100.000	97.650	12872.93	0.0326	P	5.7
6	☐	200.000	201.164	25507.43	0.0672	P	2.9

y = 3.3401E-004 * x + 8.6028E-006
R = 0.9999
DL = 0.1338
BEC = 0.02576

Weight: <None>
Min Conc: <None>

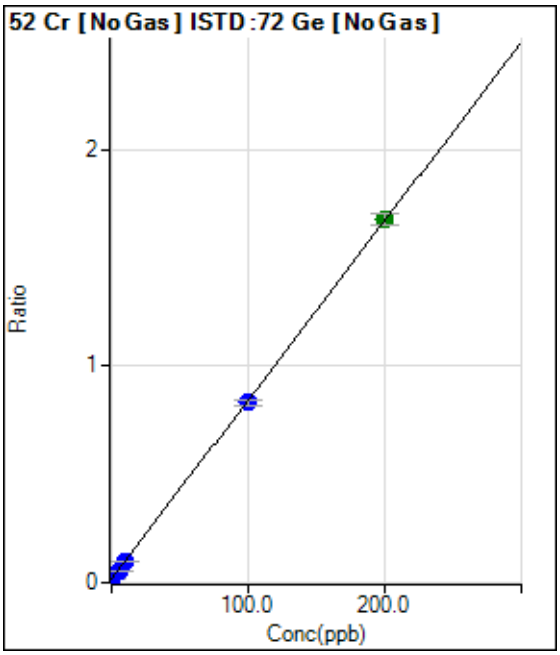


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	10102.66	0.0259	P	2.6
2	☐	2.000	1.893	15983.80	0.0402	P	1.7
3	☐	5.000	4.959	25277.71	0.0634	P	1.4
4	☐	10.000	9.437	38891.55	0.0972	P	1.1
5	☐	100.000	97.987	302449.64	0.7664	P	1.0
6	☐	200.000	201.037	586501.64	1.5452	P	1.2

y = 0.0076 * x + 0.0259
R = 0.9999
DL = 0.264
BEC = 3.426

Weight: <None>
Min Conc: <None>

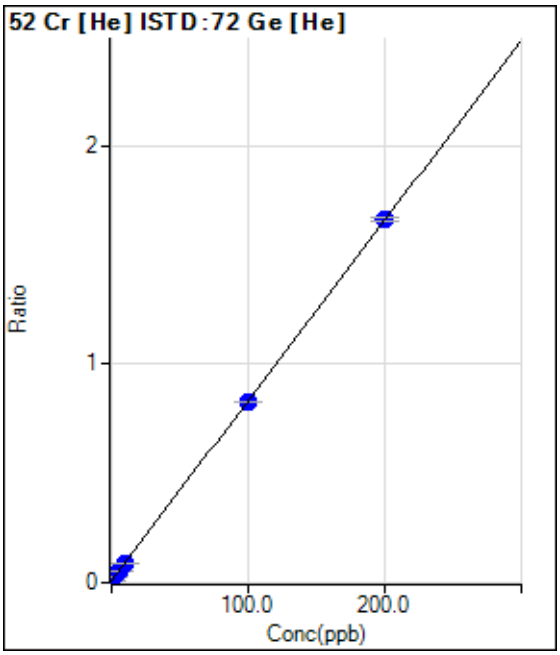
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	18476.03	0.0170	P	4.0
2	☐	2.000	1.903	35934.06	0.0327	P	4.1
3	☐	5.000	4.674	62408.54	0.0556	P	0.5
4	☐	10.000	9.627	106649.57	0.0965	P	1.9
5	☐	100.000	98.707	901811.65	0.8327	P	3.2
6	☐	200.000	200.674	1728574.50	1.6754	A	3.2

y = 0.0083 * x + 0.0170
R = 1.0000
DL = 0.249
BEC = 2.052

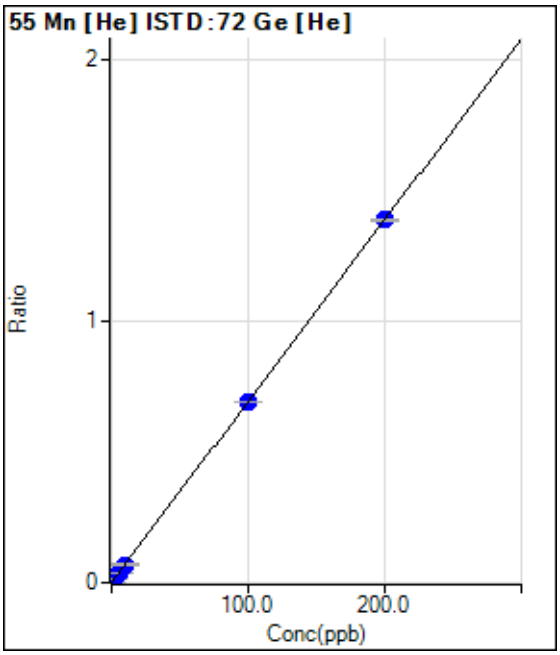
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3480.50	0.0089	P	8.5
2	☐	2.000	1.899	9777.00	0.0246	P	1.4
3	☐	5.000	5.030	20108.46	0.0504	P	3.5
4	☐	10.000	9.837	36027.79	0.0901	P	1.3
5	☐	100.000	99.279	326642.38	0.8277	P	0.6
6	☐	200.000	200.369	630625.71	1.6615	P	1.2

y = 0.0082 * x + 0.0089
R = 1.0000
DL = 0.2754
BEC = 1.082

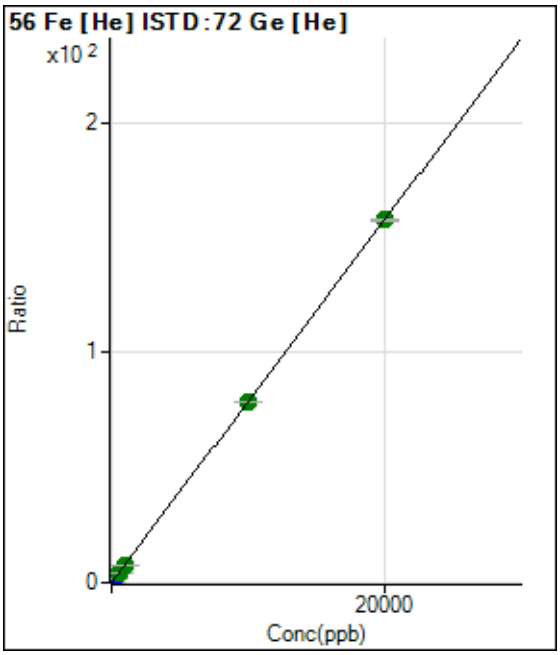
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	336.68	0.0009	P	9.9
2	☐	2.000	1.963	5741.32	0.0144	P	3.5
3	☐	5.000	4.978	14077.51	0.0353	P	1.6
4	☐	10.000	9.877	27681.72	0.0692	P	2.5
5	☐	100.000	99.669	272401.75	0.6903	P	0.4
6	☐	200.000	200.172	525900.19	1.3855	P	0.7

y = 0.0069 * x + 8.6260E-004
R = 1.0000
DL = 0.03707
BEC = 0.1247

Weight: <None>
Min Conc: <None>

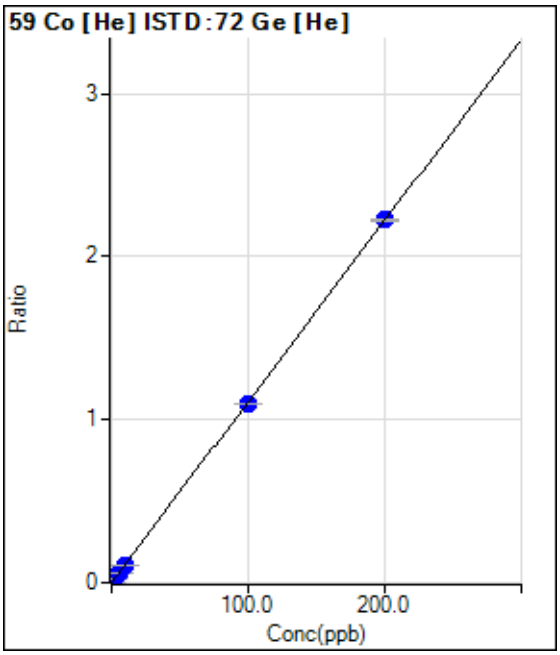


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	16069.67	0.0412	P	1.5
2	☐	200.000	198.172	637749.16	1.6038	P	0.8
3	☐	500.000	511.209	1624357.94	4.0722	A	1.1
4	☐	1000.000	992.357	3147120.79	7.8661	A	1.0
5	☐	10000.000	9982.509	31078359.54	78.7554	A	0.2
6	☐	20000.000	20008.866	59903775.77	157.8153	A	0.5

y = 0.0079 * x + 0.0412
R = 1.0000
DL = 0.2286
BEC = 5.223

Weight: <None>
Min Conc: <None>

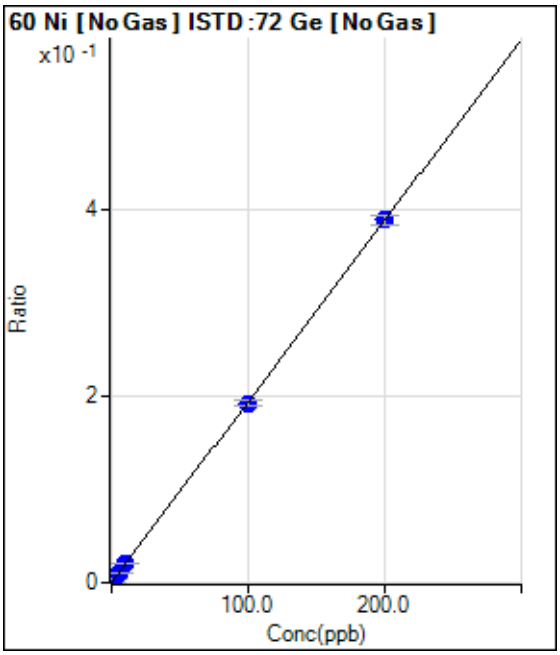
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	156.67	0.0004	P	15.6
2	☐	2.000	1.957	8796.31	0.0221	P	3.1
3	☐	5.000	4.986	22231.79	0.0557	P	1.6
4	☐	10.000	9.876	44001.26	0.1100	P	1.8
5	☐	100.000	99.055	433915.40	1.0996	P	0.1
6	☐	200.000	200.480	844593.89	2.2251	P	0.5

y = 0.0111 * x + 4.0133E-004
R = 1.0000
DL = 0.0169
BEC = 0.03617

Weight: <None>
Min Conc: <None>

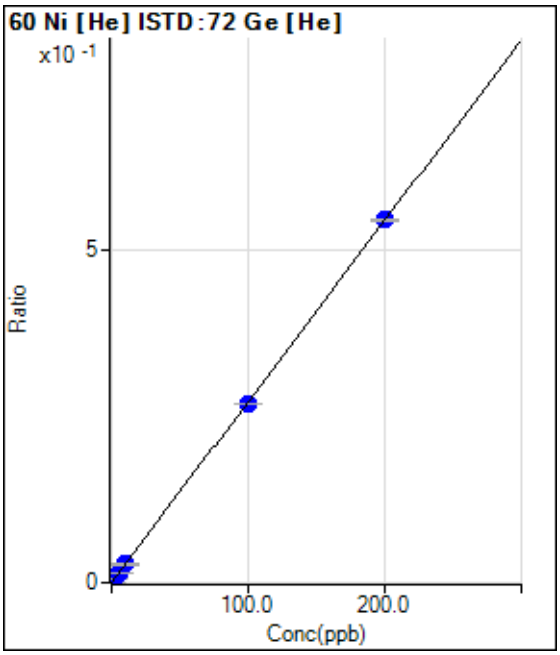


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	263.34	0.0002	P	7.8
2	☐	2.000	1.776	4057.35	0.0037	P	4.4
3	☐	5.000	5.010	11191.47	0.0100	P	1.1
4	☐	10.000	10.072	21881.24	0.0198	P	0.8
5	☐	100.000	99.240	208969.79	0.1929	P	2.9
6	☐	200.000	200.379	401704.42	0.3893	P	3.0

y = 0.0019 * x + 2.4186E-004
R = 1.0000
DL = 0.02925
BEC = 0.1246

Weight: <None>
Min Conc: <None>

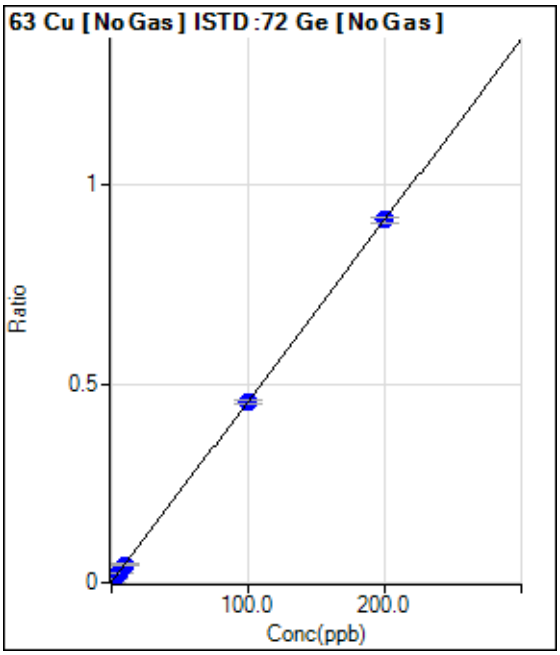
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	83.33	0.0002	P	14.2
2	☐	2.000	1.750	1973.51	0.0050	P	8.4
3	☐	5.000	5.069	5567.91	0.0140	P	5.3
4	☐	10.000	10.114	11061.36	0.0276	P	4.5
5	☐	100.000	98.887	105933.21	0.2684	P	0.3
6	☐	200.000	200.552	206570.05	0.5442	P	0.6

y = 0.0027 * x + 2.1365E-004
R = 1.0000
DL = 0.03345
BEC = 0.07877

Weight: <None>
Min Conc: <None>

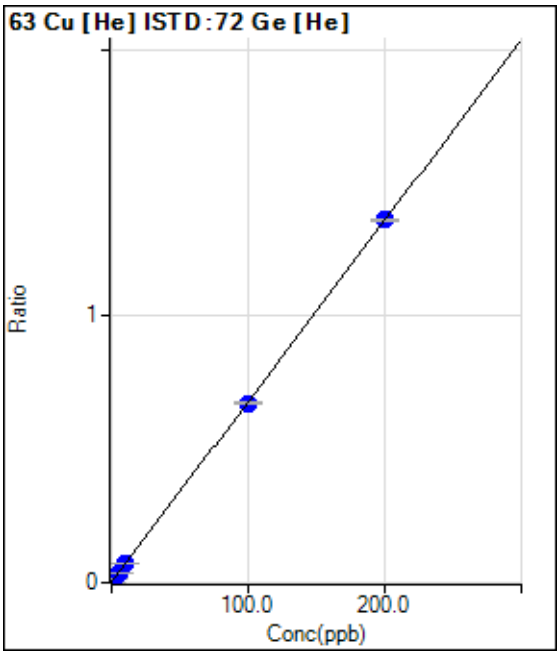


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1236.75	0.0011	P	9.6
2	☐	2.000	1.986	11174.72	0.0102	P	4.8
3	☐	5.000	4.877	26175.48	0.0233	P	2.1
4	☐	10.000	9.824	50607.77	0.0458	P	1.7
5	☐	100.000	99.611	491795.45	0.4541	P	2.8
6	☐	200.000	200.206	940599.44	0.9115	P	1.9

y = 0.0045 * x + 0.0011
R = 1.0000
DL = 0.07224
BEC = 0.2498

Weight: <None>
Min Conc: <None>

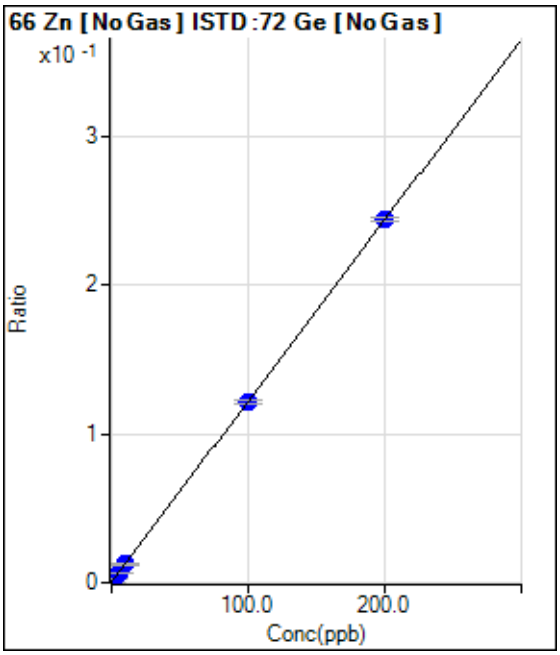
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	503.35	0.0013	P	5.2
2	☐	2.000	1.953	5784.66	0.0145	P	5.0
3	☐	5.000	5.183	14551.36	0.0365	P	1.7
4	☐	10.000	9.992	27655.01	0.0691	P	1.5
5	☐	100.000	99.123	266063.48	0.6742	P	0.5
6	☐	200.000	200.435	517017.27	1.3620	P	0.8

y = 0.0068 * x + 0.0013
R = 1.0000
DL = 0.0294
BEC = 0.19

Weight: <None>
Min Conc: <None>

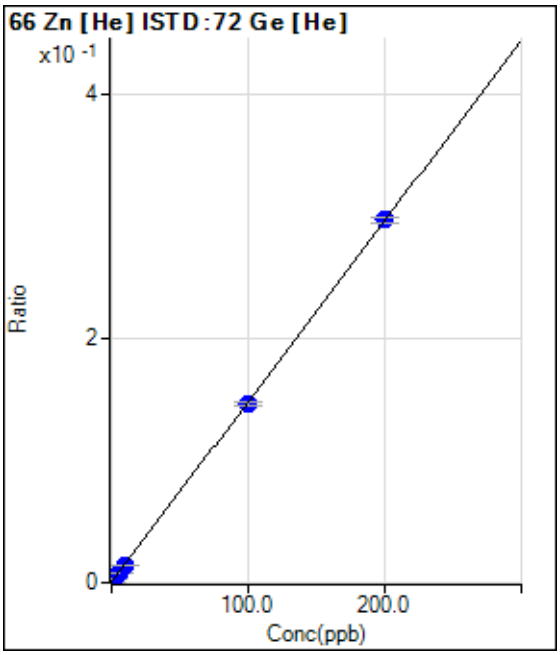


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	443.35	0.0004	P	16.2
2	☐	2.000	2.189	3373.82	0.0031	P	5.0
3	☐	5.000	4.782	6981.93	0.0062	P	5.7
4	☐	10.000	9.768	13567.01	0.0123	P	4.3
5	☐	100.000	99.499	131479.04	0.1214	P	2.1
6	☐	200.000	200.266	251725.13	0.2439	P	1.0

y = 0.0012 * x + 4.0779E-004
R = 1.0000
DL = 0.1633
BEC = 0.3354

Weight: <None>
Min Conc: <None>

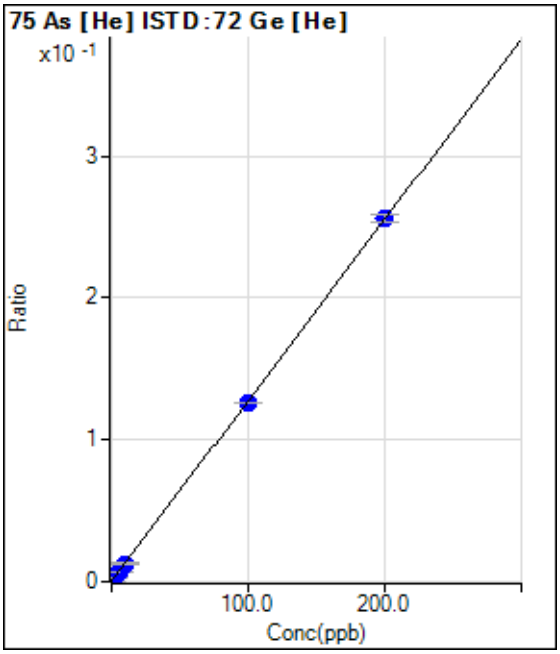
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	183.33	0.0005	P	6.6
2	☐	2.000	2.219	1490.11	0.0038	P	14.5
3	☐	5.000	5.076	3180.44	0.0080	P	3.6
4	☐	10.000	9.512	5814.67	0.0145	P	0.2
5	☐	100.000	98.713	57779.91	0.1464	P	1.8
6	☐	200.000	200.664	112776.64	0.2971	P	1.9

y = 0.0015 * x + 4.6996E-004
R = 1.0000
DL = 0.06317
BEC = 0.3179

Weight: <None>
Min Conc: <None>

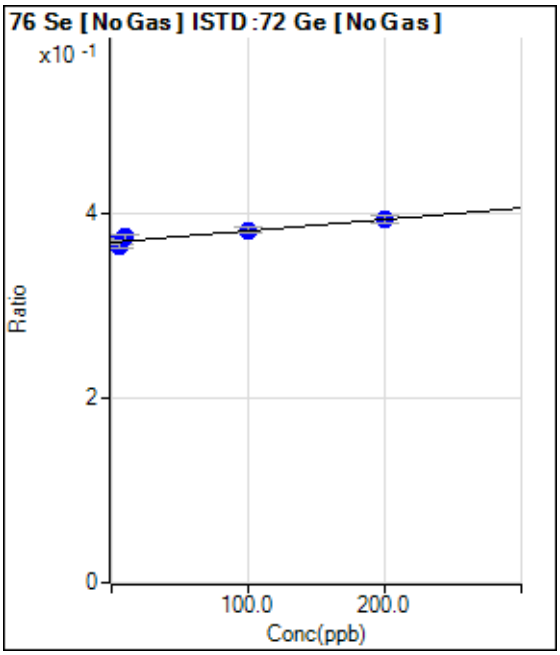


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	244.45	0.0006	P	9.5
2	☐	2.000	1.848	1183.39	0.0030	P	7.1
3	☐	5.000	4.784	2674.73	0.0067	P	3.4
4	☐	10.000	9.575	5116.55	0.0128	P	3.8
5	☐	100.000	98.772	49772.43	0.1261	P	0.4
6	☐	200.000	200.642	96992.19	0.2556	P	2.0

y = 0.0013 * x + 6.2670E-004
R = 1.0000
DL = 0.1409
BEC = 0.4932

Weight: <None>
Min Conc: <None>

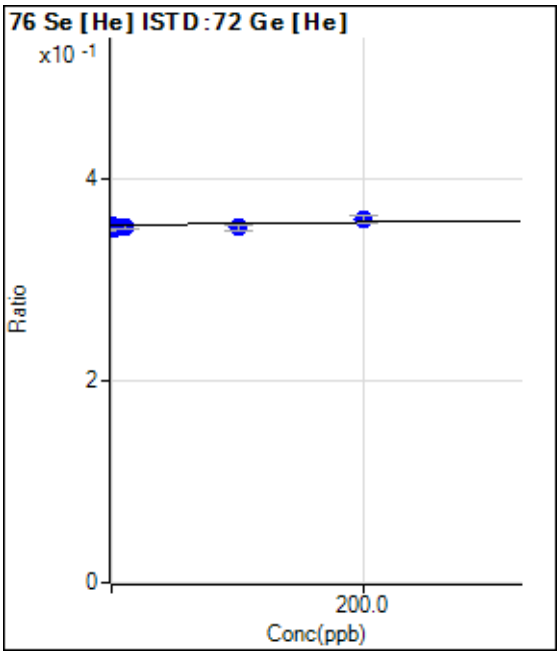
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	400817.78	0.3681	P	0.5
2	☐	2.000	3.851	405333.48	0.3686	P	2.0
3	☐	5.000	-32.379	408759.24	0.3641	P	0.9
4	☐	10.000	45.735	412981.11	0.3738	P	1.7
5	☐	100.000	107.611	413223.86	0.3814	P	1.7
6	☐	200.000	195.323	404809.17	0.3923	P	2.1

y = 1.2367E-004 * x + 0.3681
R = 0.9608
DL = 43.66
BEC = 2977

Weight: <None>
Min Conc: <None>

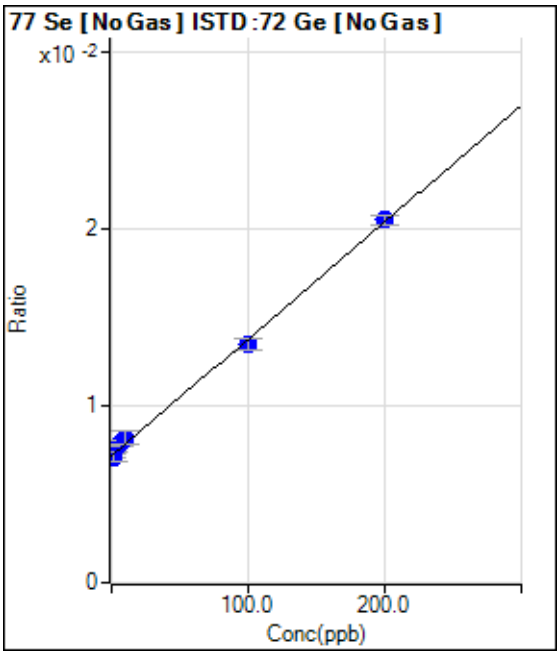


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	138108.26	0.3540	P	1.1
2	☐	2.000	-308.277	139017.65	0.3496	P	1.9
3	☐	5.000	-201.376	140041.60	0.3511	P	1.3
4	☐	10.000	-159.594	140705.20	0.3517	P	1.3
5	☐	100.000	-170.141	138730.92	0.3516	P	1.4
6	☐	200.000	351.812	136226.53	0.3589	P	2.0

y = 1.4143E-005 * x + 0.3540
R = 0.7933
DL = 825.7
BEC = 2.503E+04

Weight: <None>
Min Conc: <None>

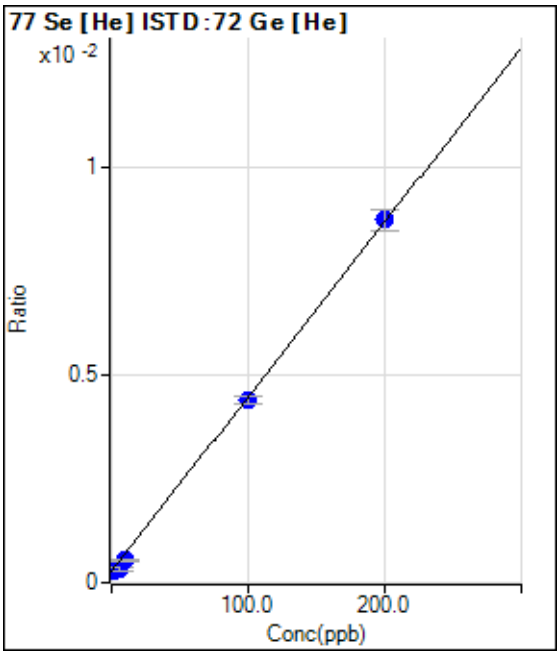
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	7812.40	0.0072	P	4.0
2	☐	2.000	-1.267	7795.74	0.0071	P	7.8
3	☐	5.000	10.133	8813.02	0.0078	P	4.3
4	☐	10.000	15.177	9029.86	0.0082	P	9.5
5	☐	100.000	95.599	14611.44	0.0135	P	4.8
6	☐	200.000	201.846	21180.32	0.0205	P	2.7

y = 6.6080E-005 * x + 0.0072
R = 0.9988
DL = 12.93
BEC = 108.6

Weight: <None>
Min Conc: <None>

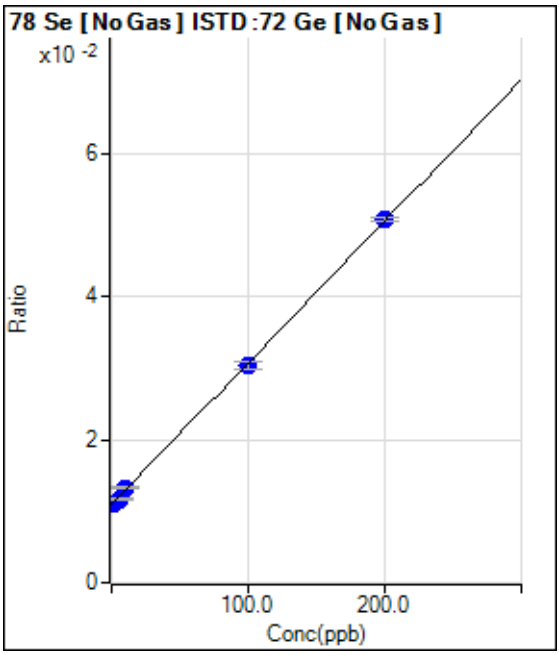


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	106.67	0.0003	P	36.2
2	☐	2.000	0.459	116.67	0.0003	P	19.0
3	☐	5.000	1.249	130.00	0.0003	P	20.9
4	☐	10.000	6.169	213.34	0.0005	P	9.4
5	☐	100.000	97.923	1730.14	0.0044	P	4.8
6	☐	200.000	201.339	3313.81	0.0087	P	5.5

y = 4.1982E-005 * x + 2.7378E-004
R = 0.9998
DL = 7.073
BEC = 6.521

Weight: <None>
Min Conc: <None>

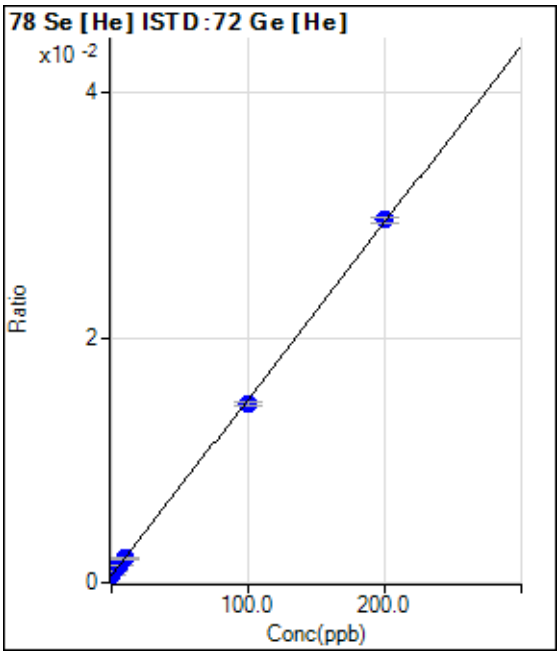
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	11945.52	0.0110	P	5.2
2	☐	2.000	0.386	12155.69	0.0111	P	1.7
3	☐	5.000	3.643	13129.91	0.0117	P	2.4
4	☐	10.000	11.449	14634.88	0.0132	P	2.5
5	☐	100.000	98.320	33007.61	0.0305	P	3.2
6	☐	200.000	200.817	52455.78	0.0508	P	1.1

y = 1.9836E-004 * x + 0.0110
R = 0.9999
DL = 8.711
BEC = 55.33

Weight: <None>
Min Conc: <None>

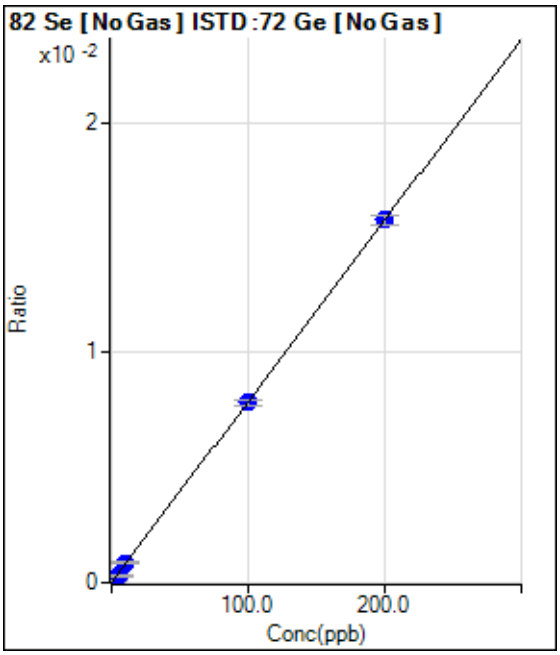


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	223.33	0.0006	P	5.4
2	☐	2.000	2.750	385.34	0.0010	P	0.8
3	☐	5.000	5.648	553.34	0.0014	P	4.5
4	☐	10.000	10.163	815.36	0.0020	P	7.5
5	☐	100.000	97.016	5748.58	0.0146	P	1.7
6	☐	200.000	201.460	11246.70	0.0296	P	1.8

y = 1.4425E-004 * x + 5.7234E-004
R = 0.9998
DL = 0.6402
BEC = 3.968

Weight: <None>
Min Conc: <None>

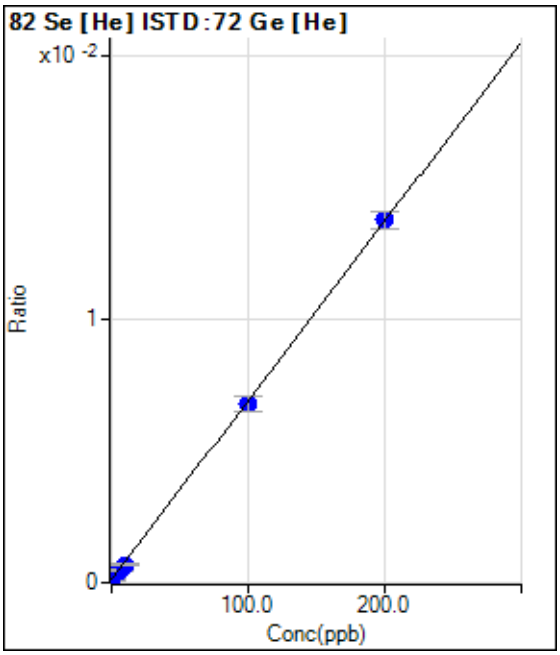
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	10.93	0.0000	P	610.0
2	☐	2.000	1.539	144.54	0.0001	P	43.8
3	☐	5.000	3.878	354.37	0.0003	P	29.2
4	☐	10.000	10.774	947.93	0.0009	P	5.9
5	☐	100.000	99.367	8490.75	0.0078	P	2.8
6	☐	200.000	200.310	16294.28	0.0158	P	2.3

y = 7.8757E-005 * x + 9.7273E-006
R = 1.0000
DL = 2.26
BEC = 0.1235

Weight: <None>
Min Conc: <None>

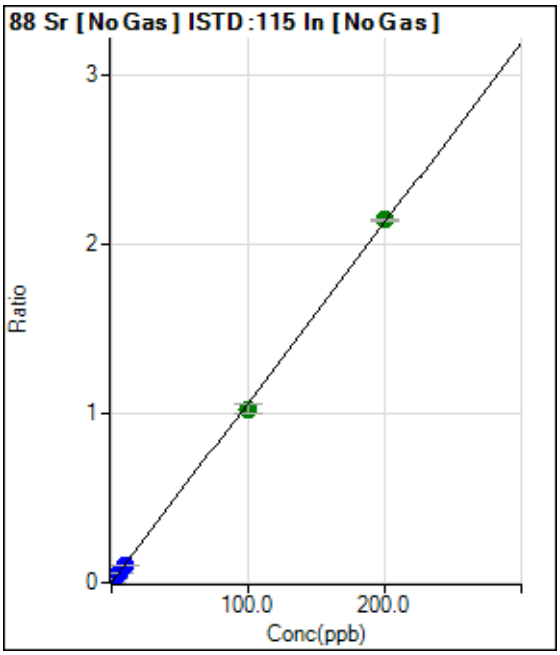


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	46.67	0.0001	P	65.2
2	☐	2.000	3.043	130.00	0.0003	P	34.4
3	☐	5.000	5.008	183.34	0.0005	P	7.0
4	☐	10.000	8.408	276.68	0.0007	P	9.6
5	☐	100.000	98.310	2683.65	0.0068	P	9.2
6	☐	200.000	200.914	5231.13	0.0138	P	4.8

y = 6.7971E-005 * x + 1.1937E-004
R = 0.9999
DL = 3.433
BEC = 1.756

Weight: <None>
Min Conc: <None>

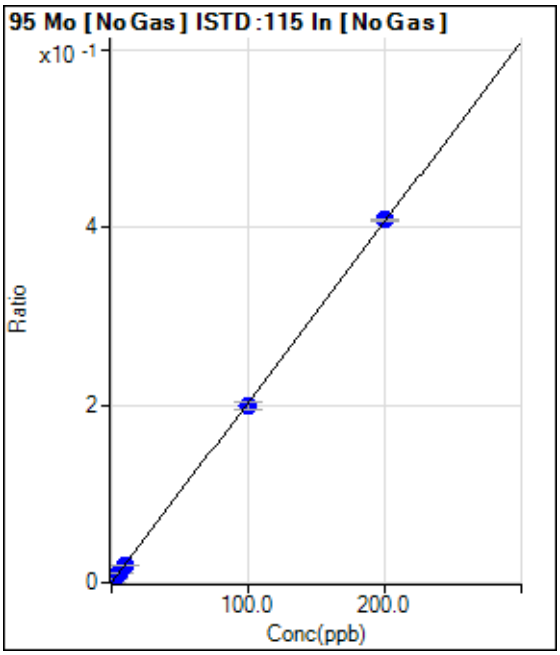
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1000.05	0.0008	P	12.4
2	☐	2.000	1.861	25604.79	0.0206	P	0.9
3	☐	5.000	4.883	67383.05	0.0528	P	1.7
4	☐	10.000	9.547	133787.77	0.1024	P	2.5
5	☐	100.000	96.694	1287826.26	1.0296	A	5.3
6	☐	200.000	201.680	2548871.94	2.1466	A	0.7

y = 0.0106 * x + 7.9849E-004
R = 0.9998
DL = 0.028
BEC = 0.07505

Weight: <None>
Min Conc: <None>

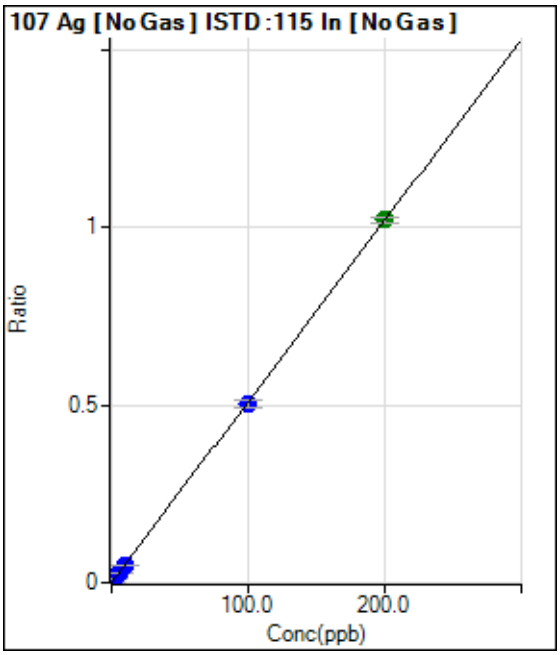


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	63.33	0.0001	P	36.9
2	☐	2.000	1.835	4694.25	0.0038	P	4.8
3	☐	5.000	4.885	12736.28	0.0100	P	1.5
4	☐	10.000	9.530	25361.08	0.0194	P	1.4
5	☐	100.000	97.793	248438.74	0.1986	P	4.7
6	☐	200.000	201.132	484964.41	0.4084	P	0.6

y = 0.0020 * x + 5.0646E-005
R = 0.9999
DL = 0.02759
BEC = 0.02494

Weight: <None>
Min Conc: <None>

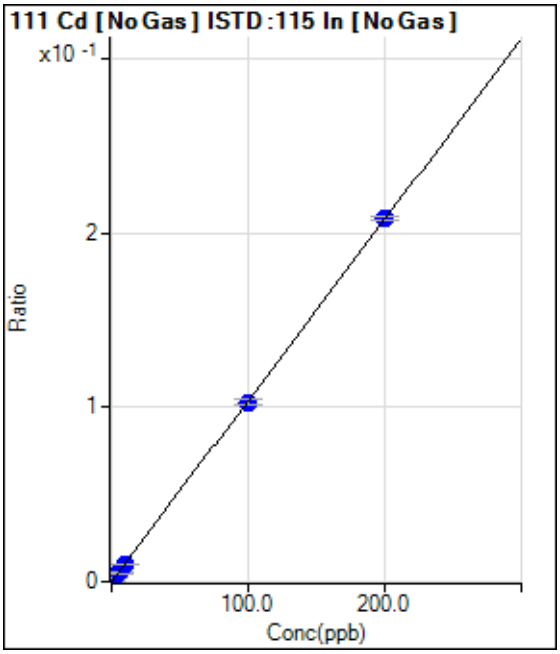
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	190.00	0.0002	P	29.4
2	☐	2.000	1.944	12502.80	0.0101	P	2.8
3	☐	5.000	4.870	31888.69	0.0250	P	3.1
4	☐	10.000	9.704	64845.78	0.0496	P	1.1
5	☐	100.000	99.189	632579.31	0.5056	P	4.5
6	☐	200.000	200.424	1213093.29	1.0216	A	1.4

y = 0.0051 * x + 1.5178E-004
R = 1.0000
DL = 0.02622
BEC = 0.02978

Weight: <None>
Min Conc: <None>

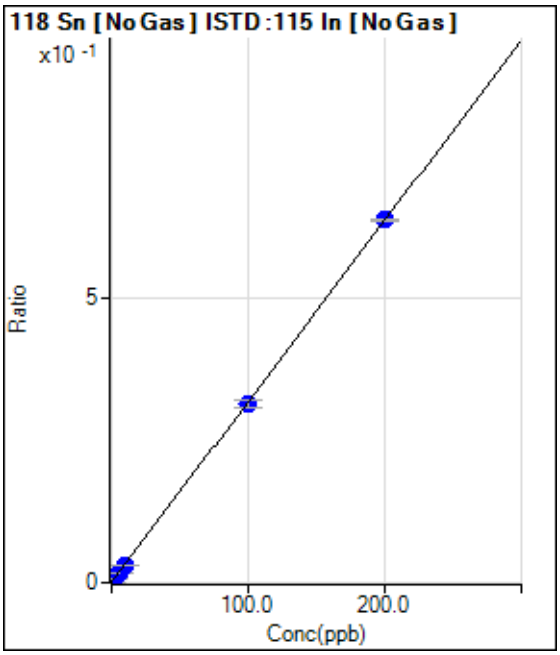


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	33.33	0.0000	P	45.0
2	☐	2.000	1.982	2586.97	0.0021	P	7.9
3	☐	5.000	4.915	6538.40	0.0051	P	9.4
4	☐	10.000	9.376	12739.73	0.0098	P	5.9
5	☐	100.000	99.140	128774.13	0.1029	P	2.9
6	☐	200.000	200.464	247016.84	0.2080	P	0.9

y = 0.0010 * x + 2.6574E-005
R = 1.0000
DL = 0.03461
BEC = 0.02561

Weight: <None>
Min Conc: <None>

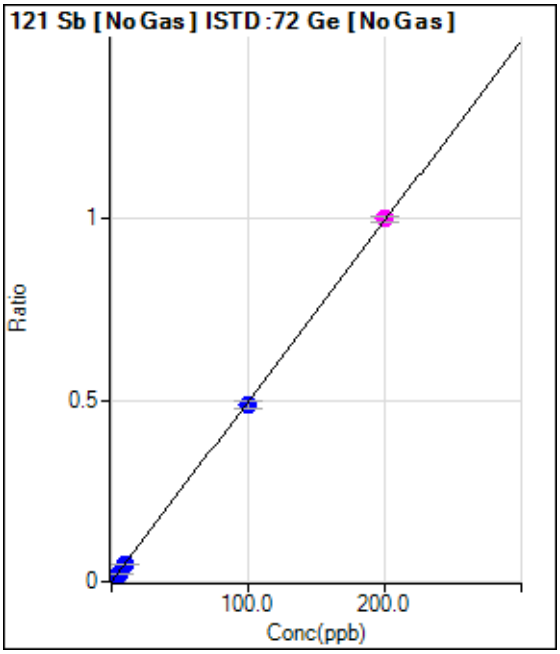
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	830.05	0.0007	P	16.1
2	☐	2.000	1.965	8586.29	0.0069	P	5.9
3	☐	5.000	4.924	20843.42	0.0163	P	1.8
4	☐	10.000	9.517	40419.07	0.0309	P	1.6
5	☐	100.000	98.996	394573.26	0.3154	P	4.7
6	☐	200.000	200.529	757860.64	0.6382	P	0.6

y = 0.0032 * x + 6.6341E-004
R = 1.0000
DL = 0.101
BEC = 0.2087

Weight: <None>
Min Conc: <None>

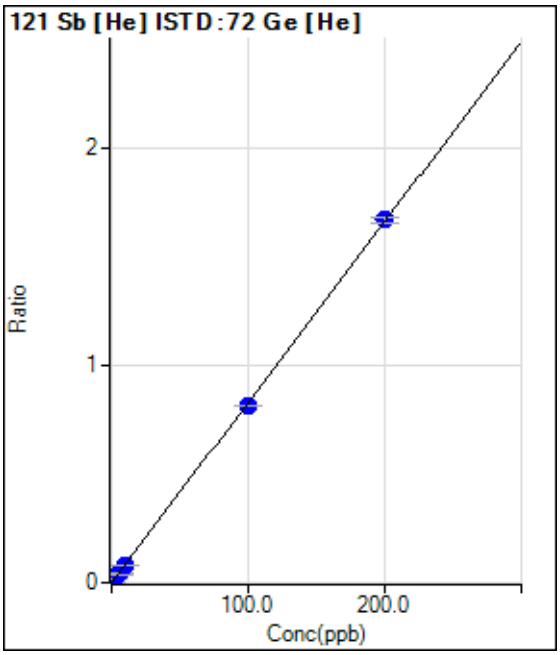


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	630.03	0.0006	P	3.4
2	☐	2.000	1.651	9660.43	0.0088	P	5.2
3	☐	5.000	4.480	25635.28	0.0228	P	3.2
4	☐	10.000	9.443	52478.42	0.0475	P	2.6
5	☐	100.000	97.962	527791.75	0.4874	P	3.8
6	☐	200.000	201.063	1031750.82	0.9997	M	1.4

y = 0.0050 * x + 5.7870E-004
R = 0.9999
DL = 0.01183
BEC = 0.1165

Weight: <None>
Min Conc: <None>

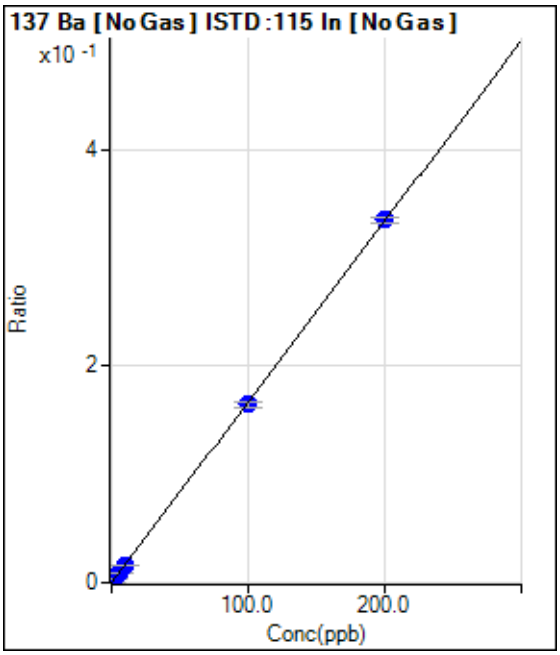
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	266.67	0.0007	P	22.9
2	☐	2.000	1.739	6008.14	0.0151	P	1.5
3	☐	5.000	4.727	15913.27	0.0399	P	2.8
4	☐	10.000	9.591	32102.93	0.0802	P	1.1
5	☐	100.000	97.853	320572.88	0.8124	P	0.6
6	☐	200.000	201.103	633424.46	1.6688	P	1.3

y = 0.0083 * x + 6.8361E-004
R = 0.9999
DL = 0.05672
BEC = 0.08241

Weight: <None>
Min Conc: <None>

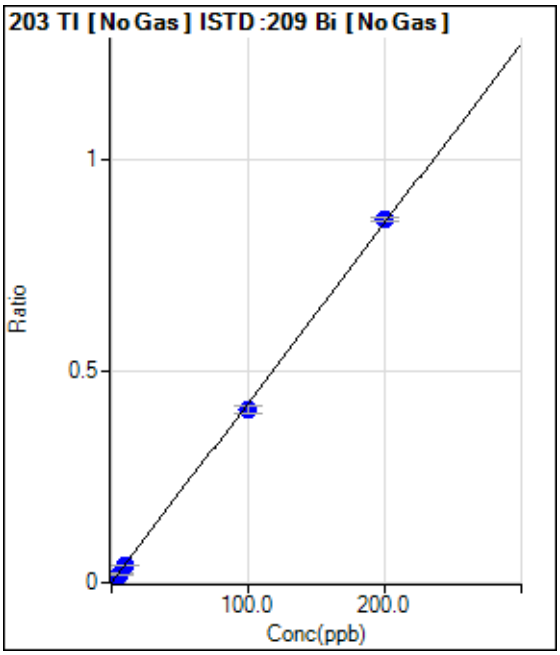


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	86.67	0.0001	P	39.9
2	☐	2.000	1.931	4084.07	0.0033	P	6.4
3	☐	5.000	4.905	10524.46	0.0082	P	4.1
4	☐	10.000	9.644	21097.39	0.0161	P	1.7
5	☐	100.000	98.437	205342.02	0.1641	P	4.1
6	☐	200.000	200.802	397409.45	0.3347	P	1.6

y = 0.0017 * x + 6.9123E-005
R = 1.0000
DL = 0.04964
BEC = 0.04148

Weight: <None>
Min Conc: <None>

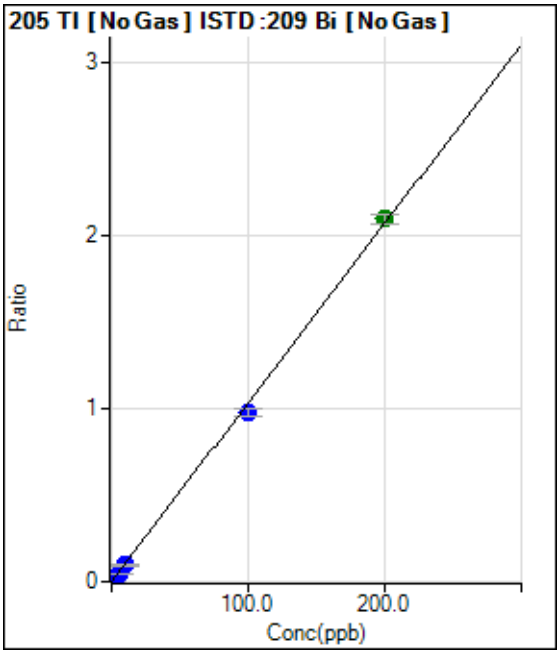
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	246.68	0.0002	P	19.5
2	☐	2.000	1.909	9136.82	0.0084	P	2.8
3	☐	5.000	4.711	23125.09	0.0203	P	6.3
4	☐	10.000	9.399	46419.85	0.0402	P	3.0
5	☐	100.000	96.294	451726.09	0.4099	P	4.8
6	☐	200.000	201.891	878409.05	0.8591	P	1.0

y = 0.0043 * x + 2.2998E-004
R = 0.9998
DL = 0.0317
BEC = 0.05406

Weight: <None>
Min Conc: <None>

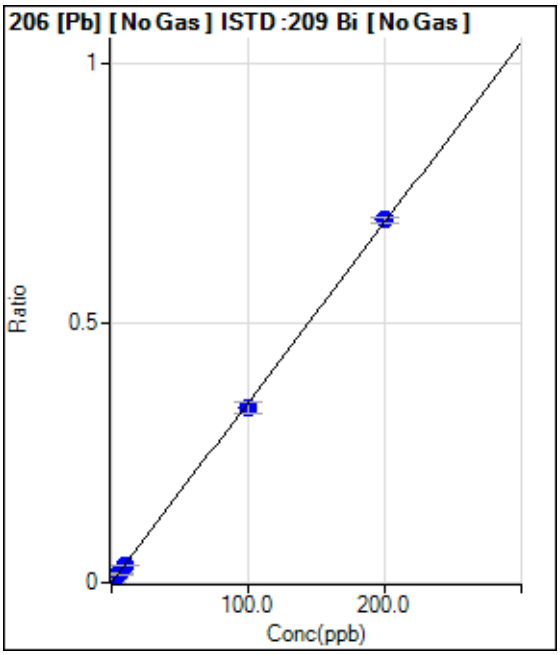


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	533.36	0.0005	P	13.4
2	☐	2.000	1.803	20954.54	0.0192	P	3.0
3	☐	5.000	4.653	55480.01	0.0486	P	5.5
4	☐	10.000	9.225	110718.90	0.0959	P	4.1
5	☐	100.000	94.594	1079201.23	0.9791	P	4.7
6	☐	200.000	202.752	2145067.26	2.0981	A	2.9

y = 0.0103 * x + 4.9433E-004
R = 0.9995
DL = 0.01919
BEC = 0.04778

Weight: <None>
Min Conc: <None>

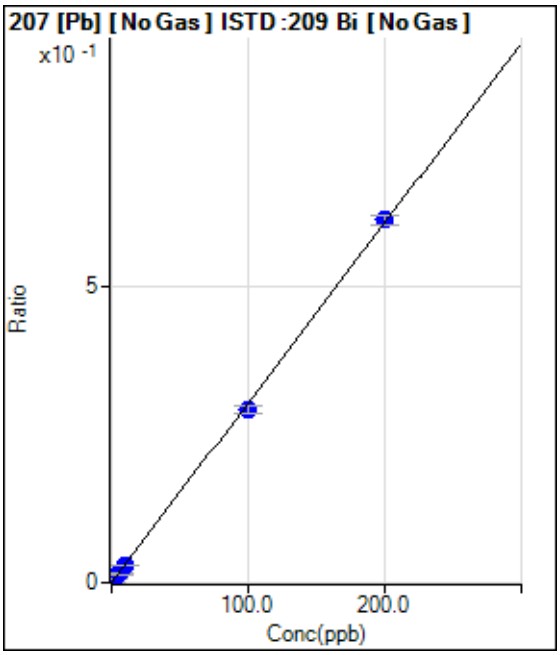
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	380.02	0.0004	P	12.8
2	☐	2.000	1.851	7412.36	0.0068	P	3.5
3	☐	5.000	4.741	19161.64	0.0168	P	7.0
4	☐	10.000	9.505	38452.86	0.0333	P	4.5
5	☐	100.000	97.170	371776.99	0.3374	P	5.6
6	☐	200.000	201.448	714900.69	0.6991	P	1.4

y = 0.0035 * x + 3.5386E-004
R = 0.9999
DL = 0.03904
BEC = 0.102

Weight: <None>
Min Conc: <None>

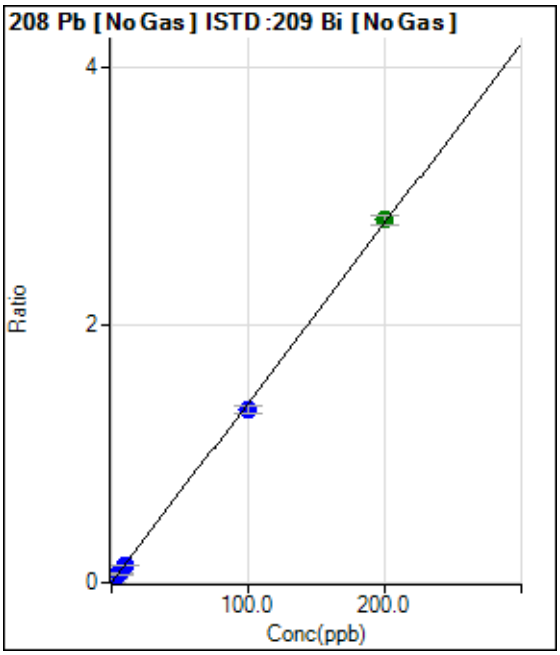


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	290.01	0.0003	P	15.9
2	☐	2.000	1.924	6675.22	0.0061	P	4.1
3	☐	5.000	4.826	16995.24	0.0149	P	4.9
4	☐	10.000	9.613	33939.86	0.0294	P	4.5
5	☐	100.000	96.502	322756.66	0.2928	P	4.0
6	☐	200.000	201.773	625657.33	0.6119	P	2.7

y = 0.0030 * x + 2.7029E-004
R = 0.9998
DL = 0.04263
BEC = 0.08917

Weight: <None>
Min Conc: <None>

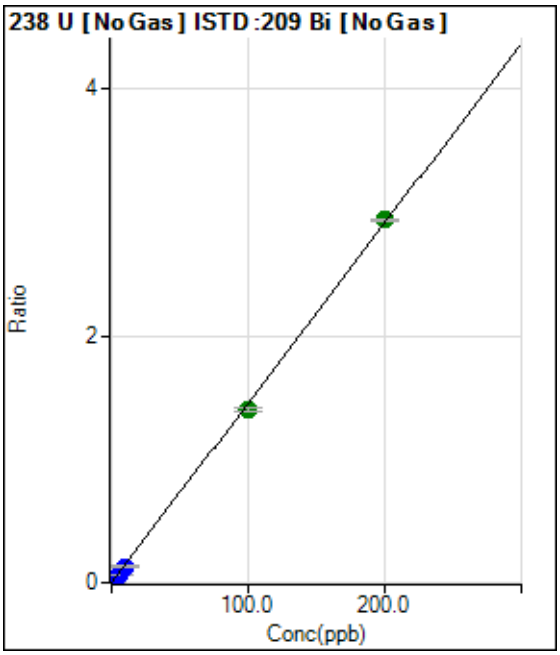
Calibration for 016_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1566.74	0.0015	P	13.1
2	☐	2.000	1.889	30391.86	0.0278	P	3.5
3	☐	5.000	4.738	76970.81	0.0675	P	5.0
4	☐	10.000	9.433	153331.73	0.1329	P	4.7
5	☐	100.000	96.091	1477165.62	1.3401	P	4.4
6	☐	200.000	201.991	2878938.84	2.8154	A	2.4

y = 0.0139 * x + 0.0015
R = 0.9997
DL = 0.04121
BEC = 0.1047

Weight: <None>
Min Conc: <None>

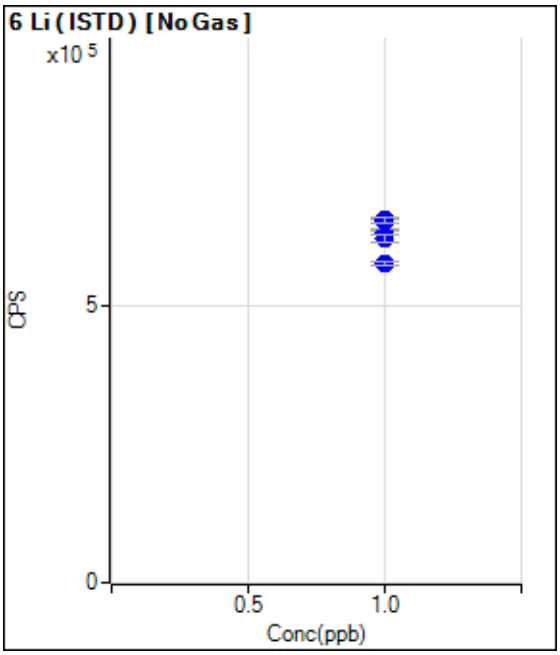


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	300.01	0.0003	P	19.9
2	☐	2.000	1.757	28246.18	0.0258	P	6.9
3	☐	5.000	4.489	74821.63	0.0656	P	5.8
4	☐	10.000	8.969	150919.14	0.1308	P	3.9
5	☐	100.000	96.225	1544327.16	1.4002	A	2.6
6	☐	200.000	201.954	3004622.87	2.9384	A	0.7

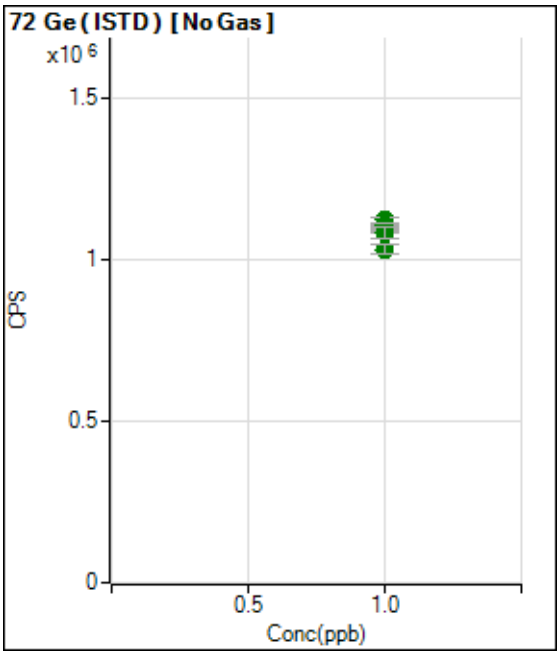
y = 0.0145 * x + 2.7982E-004
R = 0.9998
DL = 0.01151
BEC = 0.01923

Weight: <None>
Min Conc: <None>

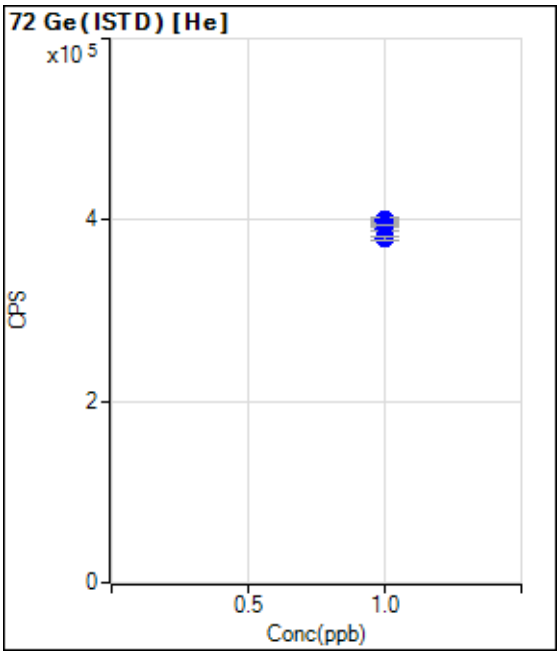
Calibration for 016_ICV.d



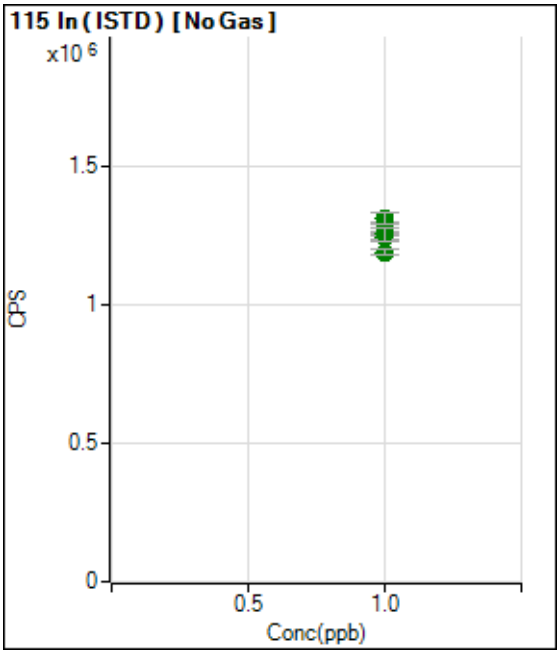
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		631671.10		P	1.1
2	☐	1.000		631470.38		P	1.5
3	☐	1.000		650225.94		P	1.0
4	☐	1.000		653778.74		P	1.6
5	☐	1.000		620190.04		P	2.4
6	☐	1.000		574478.74		P	1.5



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1088813.37		A	1.5
2	☐	1.000		1099839.07		A	1.6
3	☐	1.000		1122640.27		A	1.4
4	☐	1.000		1105092.56		A	1.9
5	☐	1.000		1083697.04		A	3.1
6	☐	1.000		1032286.08		A	2.6

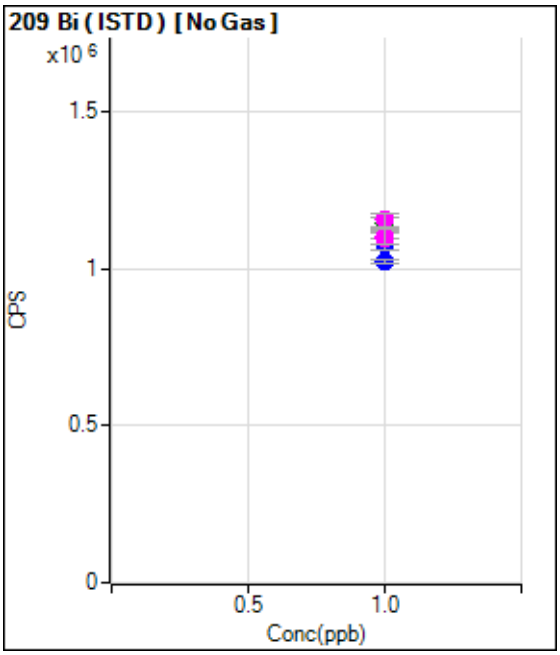


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		390163.25		P	0.6
2	☐	1.000		397665.15		P	1.0
3	☐	1.000		398872.57		P	0.7
4	☐	1.000		400112.65		P	1.4
5	☐	1.000		394618.95		P	0.4
6	☐	1.000		379597.48		P	1.5



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1251662.47		A	0.8
2	☐	1.000		1243361.52		A	2.1
3	☐	1.000		1277723.12		A	2.9
4	☐	1.000		1307572.55		A	3.3
5	☐	1.000		1252431.35		A	3.8
6	☐	1.000		1187522.22		A	1.9

Calibration for 016_ICV.d



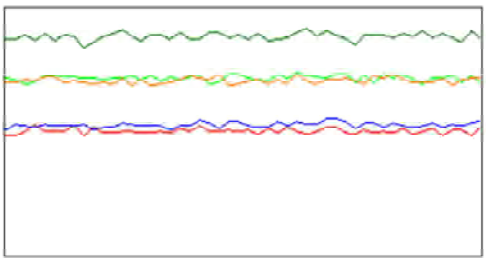
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1076762.43		P	3.3
2	☐	1.000		1094922.72		M	3.6
3	☐	1.000		1142230.06		A	3.7
4	☐	1.000		1155167.72		M	3.5
5	☐	1.000		1103746.00		M	4.5
6	☐	1.000		1022517.95		P	1.1

Tune Check Report

Operator Name	ALSHS NoUser
Acq/Data Batch	C:\Agilent\ICPMH\1\DATA\021022A.b
Acq. Date-Time	2/10/2022 10:43:47 AM
Report Comment	---
Instrument Name	G8421A SG18523544

[No Gas]

Sensitivity



Sampling Period [sec]	0.514
Integration Time [sec]	0.1

Mass	Range	Count	Resp [cps/ug/l]	Resp (Required) [cps/ug/l]	Resp (Flag)
9	5000	2519	25189.35		
24	10000	7181	71814.48		
59	20000	10584	105841.01		
115	20000	14160	141601.09		
208	10000	8865	88650.97		

Mass	Resp Ratio	Resp Ratio (Required)	Resp Ratio (Flag)
9		-	
24		-	
59		-	
115		-	
208		-	

Mass	RSD%	RSD% (Required)	RSD% (Flag)
9	2.263	5.000	
24	1.763	5.000	
59	2.036	5.000	
115	1.693	5.000	
208	1.755	5.000	

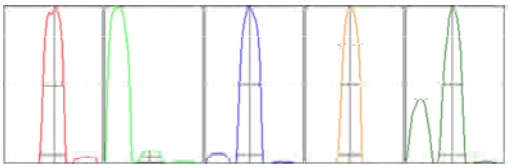
Mass	Background	Background (Required)	Background (Flag)
9	0.600		
24	0.300		
59	0.300		
115	0.600		
208	0.800		

Oxide/Doubly Charged Ratio

Oxide	156 / 140 1.217 %
Doubly Charged	70 / 140 0.924 %

Tune Check Report

Resolution/Axis



Integration Time [sec]	0.1
Acquisition Time [sec]	37.4
Y Axis	Linear

Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)
9	2576.18	9.05	8.90 - 9.10	
24	7220.28	23.90	23.90 - 24.10	
59	10833.02	58.90	58.90 - 59.10	
115	14771.27	114.90	114.90 - 115.10	
208	8987.73	207.95	207.90 - 208.10	

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
9	0.64	0.782		
24	0.66	0.786		
59	0.64	0.787		
115	0.57	0.724		
208	0.59	0.783		

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.49 L/min	Dilution Gas	0.55 L/min
RF Power	1600 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.80 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	10.0 V	Deflect	14.0 V
Extract 2	-195.0 V	Cell Entrance	-30 V	Plate Bias	-45 V
Omega Bias	-90 V	Cell Exit	-50 V		

Cell Parameters

Use Gas	No	3rd Gas Flow	---	Energy Discrimination	5.0 V
He Flow	0.0 mL/min	OctP Bias	-8.0 V		
H2 Flow	---	OctP RF	200 V		

QP Parameters

Mass Gain	132	Axis Gain	1.0000	QP Bias	-3.0 V
Mass Offset	125	Axis Offset	0.09		

Hardware Settings

Torch

Torch H	0.8 mm	Torch V	-0.4 mm

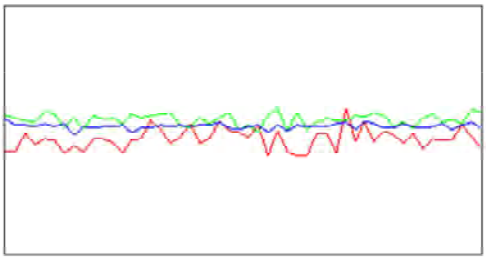
EM

Discriminator	4.4 mV	Analog HV	2635 V	Pulse HV	1407 V

[He]

Tune Check Report

Sensitivity



Sampling Period [sec]	0.306
Integration Time [sec]	0.1

Mass	Range	Count	Resp [cps/ug/l]	Resp (Required) [cps/ug/l]	Resp (Flag)
9	200	93	926.23		
24	1000	543	5428.25		
59	10000	5154	51541.93		

Mass	Resp Ratio	Resp Ratio (Required)	Resp Ratio (Flag)
9		-	
24		-	
59		-	

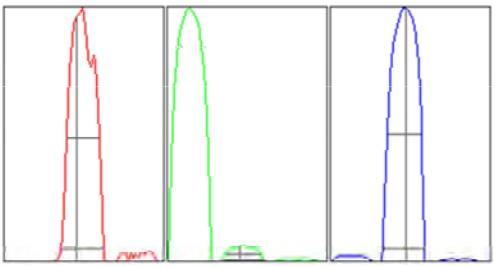
Mass	RSD%	RSD% (Required)	RSD% (Flag)
9	9.151	5.000	Fail
24	4.525	5.000	
59	2.196	5.000	

Mass	Background	Background (Required)	Background (Flag)
9	0.100		
24	0.100		
59	0.100		

Oxide/Doubly Charged Ratio

Oxide	156 / 140 1.209 %
Doubly Charged	70 / 140 0.803 %

Resolution/Axis



Integration Time [sec]	0.1
Acquisition Time [sec]	22.24
Y Axis	Linear

Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)
9	91.76	8.90	8.90 - 9.10	
24	556.13	23.90	23.90 - 24.10	
59	5218.10	58.95	58.90 - 59.10	

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
9	0.63	0.787		
24	0.66	0.787		

Tune Check Report

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
59	0.63	0.785		

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.49 L/min	Dilution Gas	0.55 L/min
RF Power	1600 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.80 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	10.0 V	Deflect	0.2 V
Extract 2	-195.0 V	Cell Entrance	-40 V	Plate Bias	-60 V
Omega Bias	-80 V	Cell Exit	-60 V		

Cell Parameters

Use Gas	Yes	3rd Gas Flow	---	Energy Discrimination	3.0 V
He Flow	3.8 mL/min	OctP Bias	-18.0 V		
H2 Flow	---	OctP RF	200 V		

QP Parameters

Mass Gain	132	Axis Gain	1.0000	QP Bias	-15.0 V
Mass Offset	125	Axis Offset	0.09		

Hardware Settings

Torch

Torch H	0.8 mm	Torch V	-0.4 mm

EM

Discriminator	4.4 mV	Analog HV	2635 V	Pulse HV	1407 V

HS22011233 Wet Chemistry

ALS WO# HS22011233

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H5220111233

	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result	Notes
1	Standard	NPOC	CAL	3100605108	01_07_2022	1.000		
2	Unknown	NPOC	ICV	3100605001	01_07_2022	1.000	NPOC:10.48mg/L	
3	Unknown	NPOC	ICB		01_07_2022	1.000	NPOC:0.2145mg/L	

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	Status	Date / Time	Vial
1	Completed	1/7/2022 3:14:17 P	1, 2, 3, 4, 5,
2	Completed	1/7/2022 3:49:44 P	8
3	Completed	1/7/2022 4:05:17 P	1

TOC-Control L Report

2022_01_07_004_CAL.tlx

Instr.Information

Instrument Options: TOC/ASI/IC Unit/
Catalyst: Regular Sensitivity

Cal. Curve

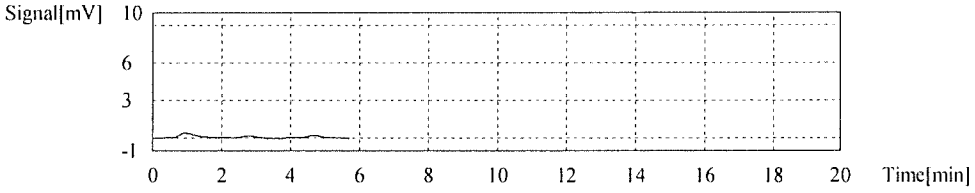
Sample Name: CAL
Sample ID: 3100605108
Cal. Curve: 01_07_2022_CAL.2022_01_07_13_39_18.cal
Status: Completed

Type	Anal.
Standard	NPOC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1.141	50uL	1.000	*******		1/7/2022 1:47:14 PM
2	0.3472	50uL	1.000	*******		1/7/2022 1:49:21 PM
3	0.3203	50uL	1.000	*******		1/7/2022 1:51:31 PM

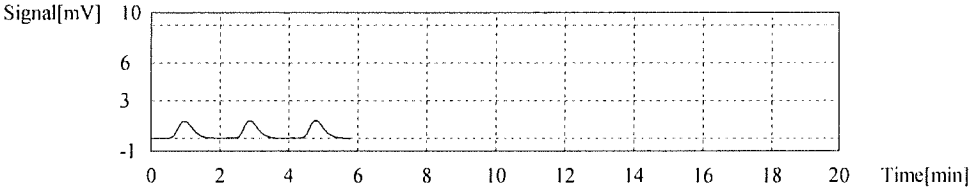
Acid Add. 1.500%
Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 0.6028



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	4.210	50uL	1.000	*******		1/7/2022 1:59:36 PM
2	4.020	50uL	1.000	*******		1/7/2022 2:01:43 PM
3	4.103	50uL	1.000	*******		1/7/2022 2:03:53 PM

Acid Add. 1.500%
Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 4.111



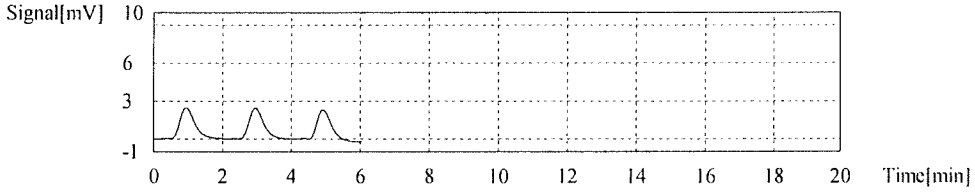
Conc: 2.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	7.265	50uL	1.000	*******		1/7/2022 2:12:01 PM
2	7.202	50uL	1.000	*******		1/7/2022 2:14:17 PM
3	6.721	50uL	1.000	*******		1/7/2022 2:16:35 PM

TOC-Control L Report

2022_01_07_004_CAL.tlx

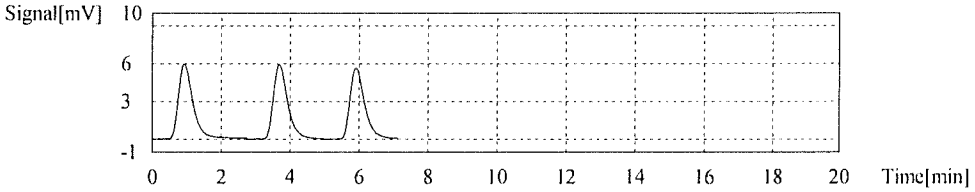
Acid Add. 1.500%
Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 7.063



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	17.57	50uL	1.000	*******		1/7/2022 2:25:30 PM
2	17.17	50uL	1.000	*******		1/7/2022 2:27:59 PM
3	16.55	50uL	1.000	*******		1/7/2022 2:30:23 PM

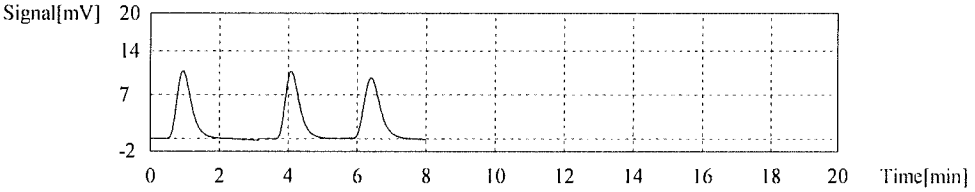
Acid Add. 1.500%
Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 17.10



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	33.96	50uL	1.000	*******		1/7/2022 2:39:42 PM
2	31.65	50uL	1.000	*******		1/7/2022 2:42:13 PM
3	32.92	50uL	1.000	*******		1/7/2022 2:45:02 PM

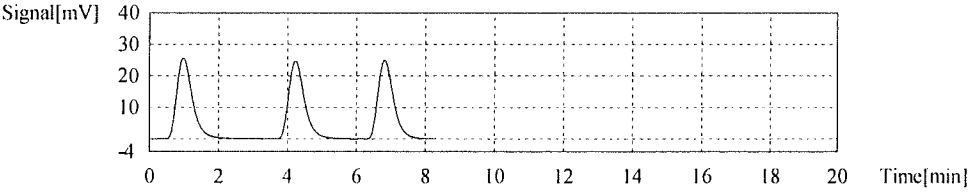
Acid Add. 1.500%
Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 32.84



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	82.21	50uL	1.000	*******		1/7/2022 2:54:26 PM
2	79.52	50uL	1.000	*******		1/7/2022 2:57:17 PM
3	79.28	50uL	1.000	*******		1/7/2022 3:00:00 PM

Acid Add. 1.500%
Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 80.34



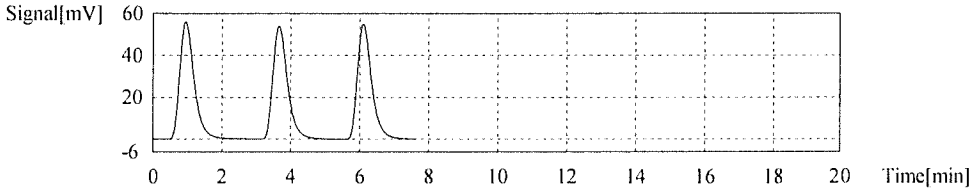
Conc: 50.00mg/L

TOC-Control L Report

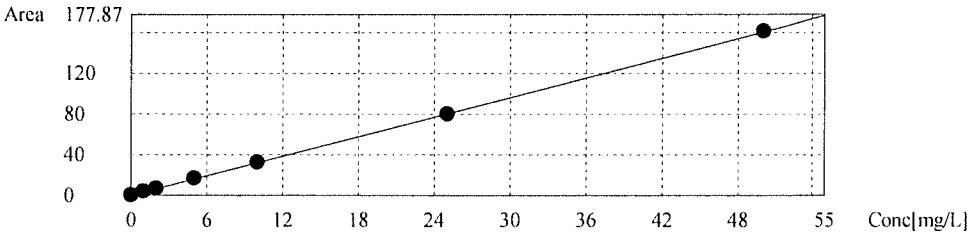
2022_01_07_004_CAL.tlx

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	164.7	50uL	1.000	*******		1/7/2022 3:08:52 PM
2	160.4	50uL	1.000	*******		1/7/2022 3:11:34 PM
3	160.0	50uL	1.000	*******		1/7/2022 3:14:17 PM

Acid Add. 1.500%
Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 161.7



Slope: 3.214
Intercept 0.000
r^2 1.0000
r 1.0000
RSE(%) N/A
Zero Shift Yes



Sample

Sample Name: ICV
Sample ID: 3100605001
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

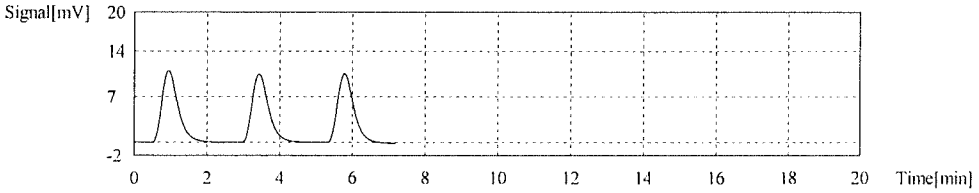
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 10.48mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	34.59	10.76mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 3:44:32 PM
2	33.20	10.33mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 3:47:08 PM
3	33.24	10.34mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 3:49:44 PM

Mean Area 33.68
Mean Conc. 10.48mg/L



Sample

TOC-Control L Report

2022_01_07_004_CAL.tlx

Sample Name: ICB
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

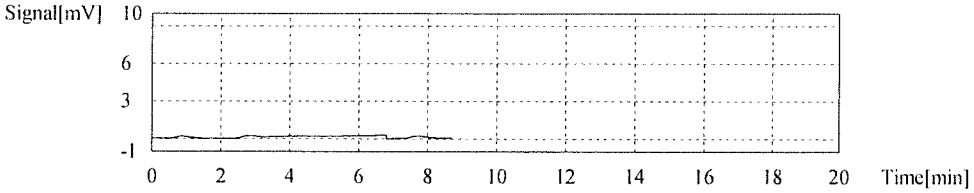
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.2145mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.4378	0.1362mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 3:58:00 PM
2	1.183	0.3681mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 4:03:08 PM
3	0.4476	0.1393mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 4:05:17 PM

Mean Area 0.6895
Mean Conc. 0.2145mg/L



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	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result	Notes
1	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:25.05mg/L	
2	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.1648mg/L	
3	Unknown	NPOC	MBLK-02102022		01_07_2022	1.000	NPOC:0.1493mg/L	
4	Unknown	NPOC	LCS-02102022	3100605001	01_07_2022	1.000	NPOC:10.56mg/L	
5	Unknown	NPOC	LCSD-02102022	3100605001	01_07_2022	1.000	NPOC:10.69mg/L	
6	Unknown	NPOC	HS22011279-02		01_07_2022	1.000	NPOC:6.932mg/L	
7	Unknown	NPOC	HS22011279-02MS		01_07_2022	1.000	NPOC:28.10mg/L	
8	Unknown	NPOC	HS22011279-05		01_07_2022	1.000	NPOC:20.87mg/L	
9	Unknown	NPOC	HS22011279-07DF100		01_07_2022	1.000	NPOC:1467mg/L	
10	Unknown	NPOC	HS22011279-08DF100		01_07_2022	1.000	NPOC:1435mg/L	
11	Unknown	NPOC	HS22011279-09DF100		01_07_2022	1.000	NPOC:26.27mg/L	
12	Unknown	NPOC	HS22020224-01		01_07_2022	1.000	NPOC:10.66mg/L	
13	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:24.59mg/L	
14	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.3096mg/L	
15	Unknown	NPOC	HS22020346-01		01_07_2022	1.000	NPOC:0.2258mg/L	
16	Unknown	NPOC	HS22020349-01		01_07_2022	1.000	NPOC:0.2231mg/L	
17	Unknown	NPOC	HS22020262-01		01_07_2022	1.000	NPOC:9.338mg/L	
18	Unknown	NPOC	HS22020270-01		01_07_2022	1.000	NPOC:13.43mg/L	
19	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:25.20mg/L	
20	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.3099mg/L	
21	Unknown	NPOC	MBLK-02102022		01_07_2022	1.000	NPOC:0.2206mg/L	
22	Unknown	NPOC	LCS-02102022	3100605001	01_07_2022	1.000	NPOC:10.21mg/L	
23	Unknown	NPOC	LCSD-02102022	3100605001	01_07_2022	1.000	NPOC:10.24mg/L	
24	Unknown	NPOC	HS22020375-01		01_07_2022	1.000	NPOC:18.74mg/L	
25	Unknown	NPOC	HS22020080-01		01_07_2022	1.000	NPOC:3.418mg/L	
26	Unknown	NPOC	HS22020112-01		01_07_2022	1.000	NPOC:4.842mg/L	
27	Unknown	NPOC	HS22020119-01		01_07_2022	1.000	NPOC:1.360mg/L	
28	Unknown	NPOC	HS22020119-02		01_07_2022	1.000	NPOC:1.514mg/L	
29	Unknown	NPOC	HS22020119-02MS		01_07_2022	1.000	NPOC:19.02mg/L	
30	Unknown	NPOC	HS22020119-03		01_07_2022	1.000	NPOC:1.397mg/L	
31	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:25.01mg/L	
32	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.2974mg/L	
33	Unknown	NPOC	HS22020119-04		01_07_2022	1.000	NPOC:1.371mg/L	
34	Unknown	NPOC	HS22020119-05		01_07_2022	1.000	NPOC:1.836mg/L	
35	Unknown	NPOC	HS22020119-06		01_07_2022	1.000	NPOC:2.052mg/L	
36	Unknown	NPOC	HS22020119-07		01_07_2022	1.000	NPOC:2.863mg/L	
37	Unknown	NPOC	CCV	318173804	TOC_W 906	1.000	NPOC:24.82mg/L	
38	Unknown	NPOC	CCB		TOC_W 906	1.000	NPOC:0.2469mg/L	
39	Unknown	NPOC	MBLK-02102022		TOC_W 906	1.000	NPOC:0.1361mg/L	
40	Unknown	NPOC	LCS-02102022		TOC_W 906	1.000	NPOC:10.06mg/L	
41	Unknown	NPOC	LCSD-02102022		TOC_W 906	1.000	NPOC:10.24mg/L	
42	Unknown	NPOC	HS22011287-02		TOC_W 906	1.000	NPOC:12.28mg/L	
43	Unknown	NPOC	HS22011287-02MS		TOC_W 906	1.000	NPOC:30.61mg/L	
44	Unknown	NPOC	HS22020413-02		TOC_W 906	1.000	NPOC:0.8310mg/L	
45	Unknown	NPOC	HS22020413-04		TOC_W 906	1.000	NPOC:1.043mg/L	
46	Unknown	NPOC	HS22020413-05		TOC_W 906	1.000	NPOC:6.212mg/L	
47	Unknown	NPOC	HS22020413-06		TOC_W 906	1.000	NPOC:1.481mg/L	
48	Unknown	NPOC	HS22020413-07		TOC_W 906	1.000	NPOC:3.632mg/L	
49	Unknown	NPOC	CCV	318173804	TOC_W 906	1.000	NPOC:25.23mg/L	
50	Unknown	NPOC	CCB		TOC_W 906	1.000	NPOC:0.3404mg/L	
51	Unknown	NPOC	HS22020472-01		TOC_W 906	1.000	NPOC:6.973mg/L	

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	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result	Notes
52	Unknown	NPOC	HS22020477-01		TOC_W 906	1.000	NPOC:7.168mg/L	
53	Unknown	NPOC	HS22020233-01		TOC_W 906	1.000	NPOC:16.92mg/L	
54	Unknown	NPOC	HS22020237-01		TOC_W 906	1.000	NPOC:33.57mg/L	
55	Unknown	NPOC	CCV	318173804	TOC_W 906	1.000	NPOC:24.55mg/L	
56	Unknown	NPOC	CCB		TOC_W 906	1.000	NPOC:0.2115mg/L	

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	Status	Date / Time	Vial
1	Completed	2/10/2022 4:33:15 P	1
2	Completed	2/10/2022 4:45:34 P	2
3	Completed	2/10/2022 4:57:53 P	3
4	Completed	2/10/2022 5:48:01 P	4
5	Completed	2/10/2022 6:01:25 P	5
6	Completed	2/10/2022 6:14:51 P	6
7	Completed	2/10/2022 6:29:04 P	7
8	Completed	2/10/2022 6:42:42 P	8
9	Completed	2/10/2022 7:01:11 P	9
10	Completed	2/10/2022 7:19:28 P	10
11	Completed	2/10/2022 7:33:34 P	11
12	Completed	2/10/2022 7:46:54 P	12
13	Completed	2/10/2022 8:00:58 P	1
14	Completed	2/10/2022 8:13:18 P	2
15	Completed	2/10/2022 8:25:44 P	13
16	Completed	2/10/2022 8:38:04 P	14
17	Completed	2/10/2022 8:51:38 P	15
18	Completed	2/10/2022 9:05:29 P	16
19	Completed	2/10/2022 9:20:07 P	1
20	Completed	2/10/2022 9:32:28 P	2
21	Completed	2/10/2022 9:44:48 P	3
22	Completed	2/10/2022 9:58:11 P	4
23	Completed	2/10/2022 10:11:27	5
24	Completed	2/10/2022 10:25:46	17
25	Completed	2/10/2022 10:38:40	18
26	Completed	2/10/2022 10:51:33	19
27	Completed	2/10/2022 11:03:57	20
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36	Completed	2/11/2022 12:59:03	29
37	Completed	2/11/2022 1:16:11 A	24
38	Completed	2/11/2022 1:30:37 A	25
39	Completed	2/11/2022 1:45:05 A	3
40	Completed	2/11/2022 2:00:57 A	4
41	Completed	2/11/2022 2:16:51 A	5
42	Completed	2/11/2022 2:33:00 A	30
43	Completed	2/11/2022 2:49:32 A	31
44	Completed	2/11/2022 3:04:00 A	32
45	Completed	2/11/2022 3:18:28 A	33
46	Completed	2/11/2022 3:34:02 A	34
47	Completed	2/11/2022 3:48:31 A	35
48	Completed	2/11/2022 4:03:29 A	36
49	Completed	2/11/2022 4:20:26 A	24
50	Completed	2/11/2022 4:34:52 A	25
51	Completed	2/11/2022 4:50:32 A	37

C:\TOC-L\Data\2022_02_10_002.tlx

	Status	Date / Time	Vial
52	Completed	2/11/2022 5:06:14 A	38
53	Completed	2/11/2022 5:22:37 A	39
54	Completed	2/11/2022 5:39:15 A	40
55	Completed	2/11/2022 5:56:14 A	24
56	Completed	2/11/2022 6:10:40 A	25

TOC-Control L Report

2022_02_10_002.tlx

Instr.Information

Instrument Options: TOC/ASI/IC Unit/
Catalyst: Regular Sensitivity

Sample

Sample Name: CCV
Sample ID: 318173804
Origin: TOC_W 9060.met
Status: Completed
Chk. Result:

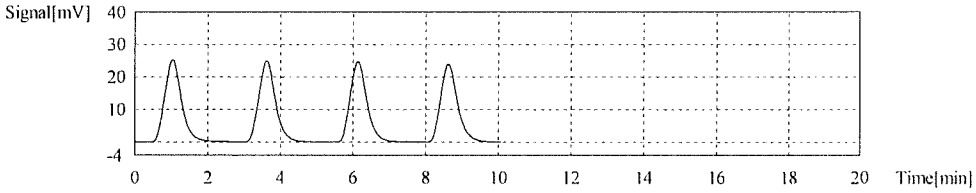
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:24.82mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	81.29	25.29mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 1:07:59 AM
2	79.91	24.86mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 1:10:46 AM
3	79.47	24.73mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 1:13:31 AM
4	78.39	24.39mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 1:16:11 AM

Mean Area: 79.77
Mean Conc.: 24.82mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC_W 9060.met
Status: Completed
Chk. Result:

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.2469mg/L

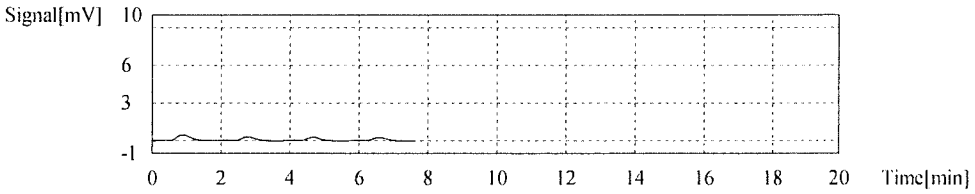
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1.172	0.3647mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 1:24:13 AM
2	0.7587	0.2361mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 1:26:21 AM
3	0.6439	0.2004mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 1:28:29 AM
4	0.5999	0.1867mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 1:30:37 AM

TOC-Control L Report

Mean Area 0.7936
Mean Conc. 0.2469mg/L



Sample

Sample Name: MBLK-02102022
Sample ID:
Origin: TOC_W 9060.met
Status Completed
Chk. Result

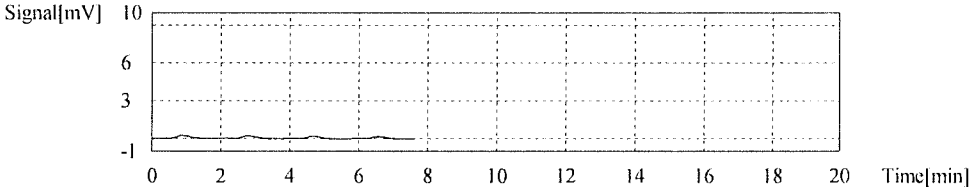
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1361mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.5360	0.1668mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 1:38:41 AM
2	0.5344	0.1663mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 1:40:49 AM
3	0.3708	0.1154mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 1:42:57 AM
4	0.3082	0.09590mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 1:45:05 AM

Mean Area 0.4374
Mean Conc. 0.1361mg/L



Sample

Sample Name: LCS-02102022
Sample ID:
Origin: TOC_W 9060.met
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.06mg/L

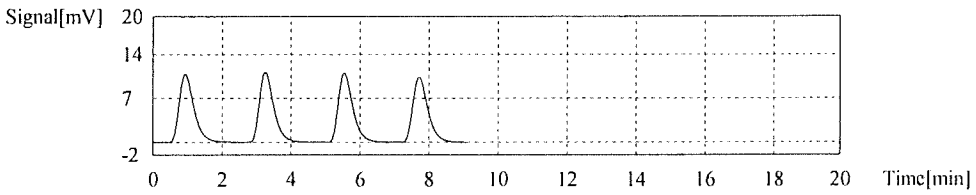
1. Det

Anal.: NPOC

TOC-Control L Report

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	32.51	10.12mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 1:53:32 AM
2	32.80	10.21mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 1:56:03 AM
3	32.24	10.03mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 1:58:25 AM
4	31.81	9.898mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 2:00:57 AM

Mean Area 32.34
Mean Conc. 10.06mg/L



Sample

Sample Name: LCSD-02102022
Sample ID:
Origin: TOC_W 9060.met
Status Completed
Chk. Result

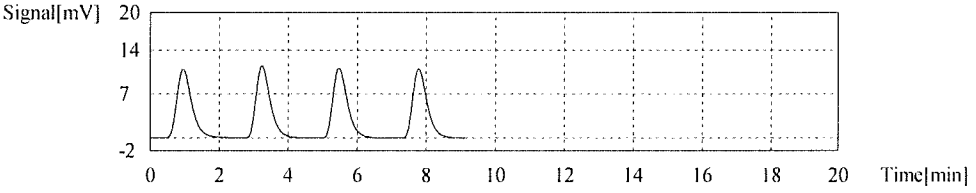
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.24mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	32.90	10.24mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 2:09:23 AM
2	33.43	10.40mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 2:11:52 AM
3	33.11	10.30mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 2:14:24 AM
4	32.20	10.02mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 2:16:51 AM

Mean Area 32.91
Mean Conc. 10.24mg/L



Sample

Sample Name: HS22011287-02
Sample ID:
Origin: TOC_W 9060.met
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:12.28mg/L

TOC-Control L Report

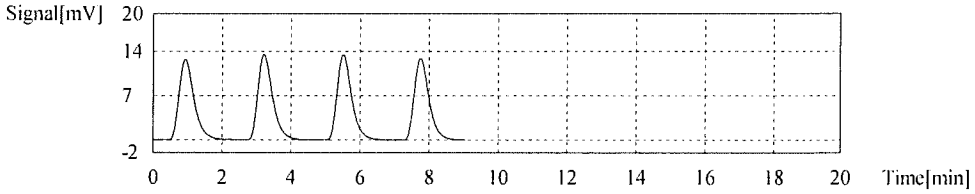
2022_02_10_002.tlx

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.83	12.08mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 2:25:33 AM
2	40.54	12.61mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 2:28:04 AM
3	39.77	12.37mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 2:30:32 AM
4	38.75	12.06mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 2:33:00 AM

Mean Area 39.47
Mean Conc. 12.28mg/L



Sample

Sample Name: HS22011287-02MS
Sample ID:
Origin: TOC_W 9060.met
Status Completed
Chk. Result

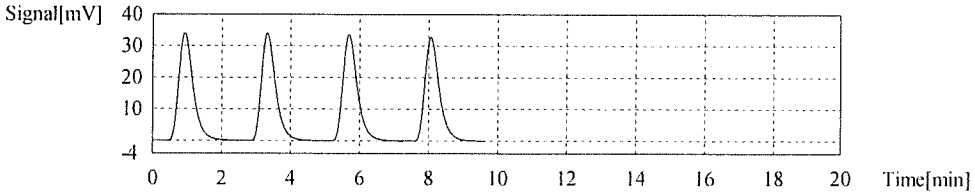
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:30.61mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	99.48	30.95mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 2:41:34 AM
2	98.45	30.63mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 2:44:11 AM
3	98.97	30.80mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 2:46:48 AM
4	96.55	30.04mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 2:49:32 AM

Mean Area 98.36
Mean Conc. 30.61mg/L



Sample

Sample Name: CCV
Sample ID: 318173804
Origin: TOC_W 9060.met
Status Completed
Chk. Result

TOC-Control L Report

2022_02_10_002.tlx

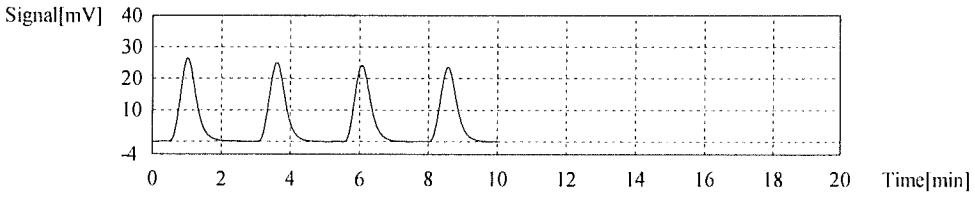
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 25.23mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	84.90	26.42mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 4:12:18 AM
2	82.06	25.53mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 4:15:03 AM
3	78.92	24.56mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 4:17:45 AM
4	78.45	24.41mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 4:20:26 AM

Mean Area 81.08
Mean Conc. 25.23mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC_W 9060.met
Status Completed
Chk. Result

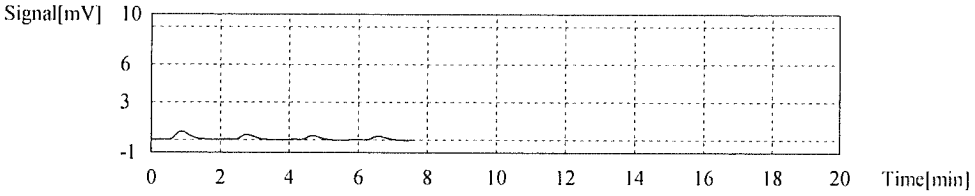
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 0.3404mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1.755	0.5461mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 4:28:28 AM
2	0.9789	0.3046mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 4:30:36 AM
3	0.8549	0.2660mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 4:32:44 AM
4	0.7875	0.2450mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 4:34:52 AM

Mean Area 1.094
Mean Conc. 0.3404mg/L



Sample

TOC-Control L Report

2022_02_10_002.tlx

Sample Name: HS22020233-01
Sample ID:
Origin: TOC_W 9060.met
Status Completed
Chk. Result

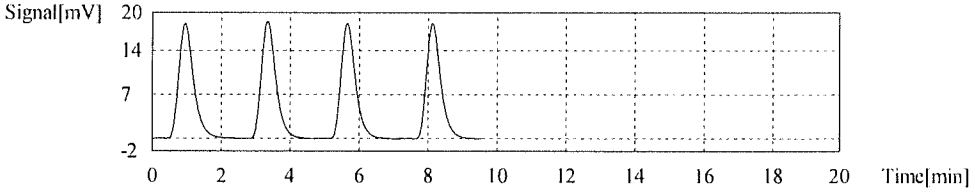
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 16.92mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	55.31	17.21mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 5:14:46 AM
2	54.97	17.10mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 5:17:19 AM
3	53.86	16.76mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 5:20:02 AM
4	53.39	16.61mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 5:22:37 AM

Mean Area 54.38
Mean Conc. 16.92mg/L



Sample

Sample Name: CCV
Sample ID: 318173804
Origin: TOC_W 9060.met
Status Completed
Chk. Result

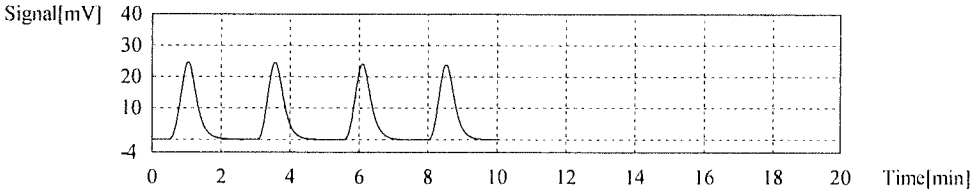
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 24.55mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	81.01	25.21mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 5:48:00 AM
2	79.51	24.74mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 5:50:46 AM
3	78.41	24.40mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 5:53:27 AM
4	76.63	23.84mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 5:56:14 AM

Mean Area 78.89
Mean Conc. 24.55mg/L



TOC-Control L Report

2022_02_10_002.tlx

Sample

Sample Name: CCB
Sample ID:
Origin: TOC_W 9060.met
Status Completed
Chk. Result

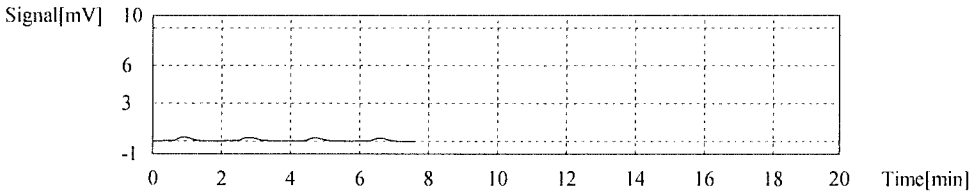
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.2115mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.7685	0.2391mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 6:04:16 AM
2	0.6758	0.2103mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 6:06:24 AM
3	0.5752	0.1790mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 6:08:32 AM
4	0.6990	0.2175mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 6:10:40 AM

Mean Area 0.6796
Mean Conc. 0.2115mg/L



HS22011279 LHAAP 16 January 2022 Cover Page

ALS WO# HS22011279

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WorkOrder: HS22011279

LHAAP 16 January 2022

Aptim Environmental & Infrastucture, Inc.

Vicki Graves
10333 Richmond Ave Ste 1030
Houston TX 77042

15-Feb-2022

HS22011279 LHAAP 16 January 2022 Final

ALS WO# HS22011279

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February 14, 2022

Vicki Graves
Aptim Environmental & Infrastucture, Inc.
10333 Richmond Ave
Ste 1030
Houston, TX 77042

Work Order: **HS22011279**

Laboratory Results for: **LHAAP 16 January 2022**

Dear Vicki Graves ,

ALS Environmental received 10 sample(s) on Jan 28, 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
Ragen Giga
Project Manager

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Work Order: HS22011279

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22011279-01	16WW13-220127	Groundwater		27-Jan-2022 07:40	28-Jan-2022 10:15	☐
HS22011279-02	16WW42-220127	Groundwater		27-Jan-2022 08:20	28-Jan-2022 10:15	☐
HS22011279-03	16WW23-220127	Groundwater		27-Jan-2022 09:10	28-Jan-2022 10:15	☐
HS22011279-04	16WW24-220127	Groundwater		27-Jan-2022 09:50	28-Jan-2022 10:15	☐
HS22011279-05	16EW03-220127	Groundwater		27-Jan-2022 10:35	28-Jan-2022 10:15	☐
HS22011279-06	16EW06-220127	Oil		27-Jan-2022 11:30	28-Jan-2022 10:15	☐
HS22011279-07	16EW05-220127	Groundwater		27-Jan-2022 12:15	28-Jan-2022 10:15	☐
HS22011279-08	16EW05-220127-FD	Groundwater		27-Jan-2022 12:15	28-Jan-2022 10:15	☐
HS22011279-09	16IW03-220127	Groundwater		27-Jan-2022 13:05	28-Jan-2022 10:15	☐
HS22011279-10	Trip Blank-220127	Water	CG-101321-154	27-Jan-2022 00:00	28-Jan-2022 10:15	☐

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP 16 January 2022
Work Order: HS22011279

Work Order Comments

- Sample Fraction # 06 - matrix is an Oil , Test codes adjusted accordingly for applicable analyses, RSK/TOC analyses removed for this sample.

GC Semivolatiles by Method RSK-175

Batch ID: R401999

Sample ID: 16IW03-220127 (HS22011279-09)

- Preservation of VOA vials can only be verified after samples are analyzed. Based on the post-analytical screening, the following chemically-preserved samples were found to have a pH >2.

GCMS Volatiles by Method SW8260

Batch ID: R401839

Sample ID: 16EW03-220127 (HS22011279-05)

- Lowest practical dilution for sample HS22011279-05 due to matrix.

Sample ID: 16EW05-220127 (HS22011279-07)

- Lowest practical dilution for sample H22011279-07 due to high concentration of non-target compound.

Sample ID: 16EW05-220127-FD (HS22011279-08)

- Lowest practical dilution for sample HS22011279-08 due to high concentration of non-target compound.

Sample ID: 16IW03-220127 (HS22011279-09)

- Surrogate recoveries exceeded QC limits for sample HS22011279-09, confirmed by re-analysis @ higher dilution.

Sample ID: 16WW42-220127 (HS22011279-02)

- Surrogate recoveries exceeded QC limits for sample HS22011279-02. Compound reported however is not affected by these surrogates.

Batch ID: R401664

Sample ID: 16EW06-220127 (HS22011279-06)

- Lowest practical dilution for sample HS22011279-06 due to matrix. Sample is product.

Batch ID: R401928

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

WetChemistry by Method SM5310B

Batch ID: R402056,R402095

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

WetChemistry by Method SM2320B

Batch ID: 175217,R401499

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

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Work Order: HS22011279

CASE NARRATIVE

WetChemistry by Method SW9056

Batch ID: R401289

Sample ID: 16EW05-220127 (HS22011279-07)

- Dilution due to sample matrix

Sample ID: 16EW05-220127-FD (HS22011279-08)

- Dilution due to sample matrix

Sample ID: 16IW03-220127 (HS22011279-09)

- Dilution due to sample matrix

Batch ID: 175115

Sample ID: HS22011180-09MS

- MS and MSD are for an unrelated sample (Sulfate)

Batch ID: R402064

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

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16WW13-220127
Collection Date: 27-Jan-2022 07:40

ANALYTICAL REPORT
WorkOrder:HS22011279
Lab ID:HS22011279-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	10	U	3.0	10	10	ug/L	10	08-Feb-2022 21:05
1,1-Dichloroethene	5.0	U	2.0	5.0	10	ug/L	10	08-Feb-2022 21:05
1,2-Dichloroethane	5.0	U	2.0	5.0	10	ug/L	10	08-Feb-2022 21:05
cis-1,2-Dichloroethene	**690**		**2.0**	**5.0**	**10**	**ug/L**	10	08-Feb-2022 21:05
Methylene chloride	20	U	4.0	20	20	ug/L	10	08-Feb-2022 21:05
Trichloroethene	**2,300**		**5.0**	**12**	**25**	**ug/L**	25	09-Feb-2022 15:12
Vinyl chloride	**10**		**2.0**	**5.0**	**10**	**ug/L**	10	08-Feb-2022 21:05
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*81-118*	*%REC*	*10*	*08-Feb-2022 21:05*
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*25*	*09-Feb-2022 15:12*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*10*	*08-Feb-2022 21:05*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*25*	*09-Feb-2022 15:12*
Surr: Dibromofluoromethane	*97.6*			**0**	*80-119*	*%REC*	*10*	*08-Feb-2022 21:05*
Surr: Dibromofluoromethane	*99.5*			**0**	*80-119*	*%REC*	*25*	*09-Feb-2022 15:12*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*10*	*08-Feb-2022 21:05*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*25*	*09-Feb-2022 15:12*

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

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16WW42-220127
Collection Date: 27-Jan-2022 08:20

ANALYTICAL REPORT
WorkOrder:HS22011279
Lab ID:HS22011279-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	ug/L	5	08-Feb-2022 19:36
1,1-Dichloroethene	2.5	U	1.0	2.5	5.0	ug/L	5	08-Feb-2022 19:36
1,2-Dichloroethane	2.5	U	1.0	2.5	5.0	ug/L	5	08-Feb-2022 19:36
cis-1,2-Dichloroethene	**1,200**		**5.0**	**12**	**25**	**ug/L**	25	08-Feb-2022 19:58
Methylene chloride	10	U	2.0	10	10	ug/L	5	08-Feb-2022 19:36
Trichloroethene	**190**		**1.0**	**2.5**	**5.0**	**ug/L**	5	08-Feb-2022 19:36
Vinyl chloride	2.5	U	1.0	2.5	5.0	ug/L	5	08-Feb-2022 19:36
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*5*	*08-Feb-2022 19:36*
Surr: 1,2-Dichloroethane-d4	*119*	*S*		**0**	*81-118*	*%REC*	*25*	*08-Feb-2022 19:58*
Surr: 4-Bromofluorobenzene	*111*			**0**	*85-114*	*%REC*	*25*	*08-Feb-2022 19:58*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*5*	*08-Feb-2022 19:36*
Surr: Dibromofluoromethane	*111*			**0**	*80-119*	*%REC*	*25*	*08-Feb-2022 19:58*
Surr: Dibromofluoromethane	*99.6*			**0**	*80-119*	*%REC*	*5*	*08-Feb-2022 19:36*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*5*	*08-Feb-2022 19:36*
Surr: Toluene-d8	*116*	*S*		**0**	*89-112*	*%REC*	*25*	*08-Feb-2022 19:58*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	0.000500	U	0.000144	0.000500	0.00100	mg/L	1	08-Feb-2022 11:51
Ethene	0.000500	U	0.000234	0.000500	0.00100	mg/L	1	08-Feb-2022 11:51
Methane	**0.00845**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	08-Feb-2022 11:51
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**6.93**		**0.500**	**1.00**	**1.00**	**mg/L**	1	10-Feb-2022 18:14

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

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16WW23-220127
Collection Date: 27-Jan-2022 09:10

ANALYTICAL REPORT
WorkOrder:HS22011279
Lab ID:HS22011279-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	08-Feb-2022 18:52
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 18:52
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 18:52
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 18:52
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	08-Feb-2022 18:52
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 18:52
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 18:52
Surr: 1,2-Dichloroethane-d4	*104*			**0**	*81-118*	*%REC*	*1*	*08-Feb-2022 18:52*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*08-Feb-2022 18:52*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*08-Feb-2022 18:52*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*08-Feb-2022 18:52*

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

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16WW24-220127
Collection Date: 27-Jan-2022 09:50

ANALYTICAL REPORT
WorkOrder:HS22011279
Lab ID:HS22011279-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	08-Feb-2022 19:14
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 19:14
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 19:14
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 19:14
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	08-Feb-2022 19:14
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 19:14
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 19:14
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*1*	*08-Feb-2022 19:14*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*08-Feb-2022 19:14*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*08-Feb-2022 19:14*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*08-Feb-2022 19:14*

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

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16EW03-220127
Collection Date: 27-Jan-2022 10:35

ANALYTICAL REPORT
WorkOrder:HS22011279
Lab ID:HS22011279-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	ug/L	5	08-Feb-2022 20:21
1,1-Dichloroethene	2.5	U	1.0	2.5	5.0	ug/L	5	08-Feb-2022 20:21
1,2-Dichloroethane	2.5	U	1.0	2.5	5.0	ug/L	5	08-Feb-2022 20:21
cis-1,2-Dichloroethene	**1,000**		**1.0**	**2.5**	**5.0**	**ug/L**	5	08-Feb-2022 20:21
Methylene chloride	10	U	2.0	10	10	ug/L	5	08-Feb-2022 20:21
Trichloroethene	**84**		**1.0**	**2.5**	**5.0**	**ug/L**	5	08-Feb-2022 20:21
Vinyl chloride	**230**		**1.0**	**2.5**	**5.0**	**ug/L**	5	08-Feb-2022 20:21
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*5*	*08-Feb-2022 20:21*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*5*	*08-Feb-2022 20:21*
Surr: Dibromofluoromethane	*98.9*			**0**	*80-119*	*%REC*	*5*	*08-Feb-2022 20:21*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*5*	*08-Feb-2022 20:21*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	0.000500	U	0.000144	0.000500	0.00100	mg/L	1	08-Feb-2022 11:59
Ethene	**0.175**		**0.0117**	**0.0250**	**0.0500**	**mg/L**	50	08-Feb-2022 14:56
Methane	**0.574**		**0.00535**	**0.0250**	**0.0250**	**mg/L**	50	08-Feb-2022 14:56
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**1,160**		**5.00**	**5.00**	**5.00**	**mg/L**	1	02-Feb-2022 21:15
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**20.9**		**0.500**	**1.00**	**1.00**	**mg/L**	1	10-Feb-2022 18:42
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**7.37**		**0.150**	**0.500**	**0.500**	**mg/L**	5	10-Feb-2022 21:12
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	28-Jan-2022 18:37
Sulfate	**1,920**		**10.0**	**25.0**	**25.0**	**mg/L**	50	10-Feb-2022 21:18

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

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16EW06-220127
Collection Date: 27-Jan-2022 11:30

ANALYTICAL REPORT
WorkOrder:HS22011279
Lab ID:HS22011279-06
Matrix:Oil

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY SW8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	4,900	U	2400	4900	24000	ug/Kg	5000	04-Feb-2022 15:09
1,1-Dichloroethene	2,400	U	2400	2400	24000	ug/Kg	5000	04-Feb-2022 15:09
1,2-Dichloroethane	2,400	U	2900	2400	24000	ug/Kg	5000	04-Feb-2022 15:09
cis-1,2-Dichloroethene	2,400	U	3900	2400	24000	ug/Kg	5000	04-Feb-2022 15:09
Methylene chloride	9,800	U	4900	9800	49000	ug/Kg	5000	04-Feb-2022 15:09
Trichloroethene	2,400	U	2900	2400	24000	ug/Kg	5000	04-Feb-2022 15:09
Vinyl chloride	2,400	U	3900	2400	9800	ug/Kg	5000	04-Feb-2022 15:09
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*71-136*	*%REC*	*5000*	*04-Feb-2022 15:09*
Surr: 4-Bromofluorobenzene	*102*			**0**	*79-119*	*%REC*	*5000*	*04-Feb-2022 15:09*
Surr: Dibromofluoromethane	*96.4*			**0**	*78-119*	*%REC*	*5000*	*04-Feb-2022 15:09*
Surr: Toluene-d8	*106*			**0**	*85-116*	*%REC*	*5000*	*04-Feb-2022 15:09*
ALKALINITY BY SM2320B MOD.		**Method:SM2320B**				Prep:ASTM Leachate / 09-Feb-2022		Analyst: TH
Alkalinity, Total (As CaCO3)	10.0	aU	10.0	10.0	10.0	mg/Kg	1	09-Feb-2022 23:48
ANIONS BY SW9056A		**Method:SW9056**				Prep:SW9056 / 07-Feb-2022		Analyst: YP
Bromide	0.996	U	0.299	0.996	0.996	mg/Kg	1	09-Feb-2022 16:18
Nitrogen, Nitrate (As N)	**0.449**	J	**0.299**	**0.996**	**0.996**	**mg/Kg**	1	09-Feb-2022 16:18
Sulfate	4.98	U	1.99	4.98	4.98	mg/Kg	1	09-Feb-2022 16:18

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

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16EW05-220127
Collection Date: 27-Jan-2022 12:15

ANALYTICAL REPORT
WorkOrder:HS22011279
Lab ID:HS22011279-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5,000	U	1500	5000	5000	ug/L	5000	08-Feb-2022 18:07
1,1-Dichloroethene	2,500	U	1000	2500	5000	ug/L	5000	08-Feb-2022 18:07
1,2-Dichloroethane	2,500	U	1000	2500	5000	ug/L	5000	08-Feb-2022 18:07
cis-1,2-Dichloroethene	2,500	U	1000	2500	5000	ug/L	5000	08-Feb-2022 18:07
Methylene chloride	10,000	U	2000	10000	10000	ug/L	5000	08-Feb-2022 18:07
Trichloroethene	2,500	U	1000	2500	5000	ug/L	5000	08-Feb-2022 18:07
Vinyl chloride	2,500	U	1000	2500	5000	ug/L	5000	08-Feb-2022 18:07
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*5000*	*08-Feb-2022 18:07*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*5000*	*08-Feb-2022 18:07*
Surr: Dibromofluoromethane	*98.6*			**0**	*80-119*	*%REC*	*5000*	*08-Feb-2022 18:07*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*5000*	*08-Feb-2022 18:07*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	**0.0342**		**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	08-Feb-2022 15:42
Ethene	**0.0261**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	08-Feb-2022 15:42
Methane	**6.44**		**0.0214**	**0.100**	**0.100**	**mg/L**	200	08-Feb-2022 15:23
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**346**		**5.00**	**5.00**	**5.00**	**mg/L**	1	02-Feb-2022 21:20
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**161,000**		**2000**	**4000**	**4000**	**mg/L**	4000	11-Feb-2022 14:25
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**70.2**		**0.300**	**1.00**	**1.00**	**mg/L**	10	10-Feb-2022 21:23
Nitrogen, Nitrate (As N)	0.200	U	0.0600	0.200	0.200	mg/L	2	28-Jan-2022 18:45
Sulfate	**104**		**0.400**	**1.00**	**1.00**	**mg/L**	2	28-Jan-2022 18:45

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

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16EW05-220127-FD
Collection Date: 27-Jan-2022 12:15

ANALYTICAL REPORT
WorkOrder:HS22011279
Lab ID:HS22011279-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5,000	U	1500	5000	5000	ug/L	5000	08-Feb-2022 18:29
1,1-Dichloroethene	2,500	U	1000	2500	5000	ug/L	5000	08-Feb-2022 18:29
1,2-Dichloroethane	2,500	U	1000	2500	5000	ug/L	5000	08-Feb-2022 18:29
cis-1,2-Dichloroethene	2,500	U	1000	2500	5000	ug/L	5000	08-Feb-2022 18:29
Methylene chloride	10,000	U	2000	10000	10000	ug/L	5000	08-Feb-2022 18:29
Trichloroethene	2,500	U	1000	2500	5000	ug/L	5000	08-Feb-2022 18:29
Vinyl chloride	2,500	U	1000	2500	5000	ug/L	5000	08-Feb-2022 18:29
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*81-118*	*%REC*	*5000*	*08-Feb-2022 18:29*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*5000*	*08-Feb-2022 18:29*
Surr: Dibromofluoromethane	*98.8*			**0**	*80-119*	*%REC*	*5000*	*08-Feb-2022 18:29*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*5000*	*08-Feb-2022 18:29*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	**0.0352**		**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	08-Feb-2022 12:21
Ethene	**0.0292**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	08-Feb-2022 12:21
Methane	**7.47**		**0.0428**	**0.200**	**0.200**	**mg/L**	400	08-Feb-2022 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**501**		**5.00**	**5.00**	**5.00**	**mg/L**	1	02-Feb-2022 21:27
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**165,000**		**2000**	**4000**	**4000**	**mg/L**	4000	11-Feb-2022 14:39
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**70.1**		**0.300**	**1.00**	**1.00**	**mg/L**	10	10-Feb-2022 21:28
Nitrogen, Nitrate (As N)	**0.156**	J	**0.0600**	**0.200**	**0.200**	**mg/L**	2	28-Jan-2022 18:52
Sulfate	**2.40**		**0.400**	**1.00**	**1.00**	**mg/L**	2	28-Jan-2022 18:52

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

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: 16IW03-220127
Collection Date: 27-Jan-2022 13:05

ANALYTICAL REPORT
WorkOrder:HS22011279
Lab ID:HS22011279-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	25	U	7.5	25	25	ug/L	25	08-Feb-2022 14:47
1,1-Dichloroethene	**42**		**5.0**	**12**	**25**	**ug/L**	25	08-Feb-2022 14:47
1,2-Dichloroethane	12	U	5.0	12	25	ug/L	25	08-Feb-2022 14:47
cis-1,2-Dichloroethene	**15,000**		**50**	**120**	**250**	**ug/L**	250	08-Feb-2022 15:54
Methylene chloride	50	U	10	50	50	ug/L	25	08-Feb-2022 14:47
Trichloroethene	**5,600**		**50**	**120**	**250**	**ug/L**	250	08-Feb-2022 15:54
Vinyl chloride	**3,000**		**5.0**	**12**	**25**	**ug/L**	25	08-Feb-2022 14:47
Surr: 1,2-Dichloroethane-d4	*197*	*S*		**0**	*81-118*	*%REC*	*25*	*08-Feb-2022 14:47*
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*81-118*	*%REC*	*250*	*08-Feb-2022 15:54*
Surr: 4-Bromofluorobenzene	*194*	*S*		**0**	*85-114*	*%REC*	*25*	*08-Feb-2022 14:47*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*250*	*08-Feb-2022 15:54*
Surr: Dibromofluoromethane	*187*	*S*		**0**	*80-119*	*%REC*	*25*	*08-Feb-2022 14:47*
Surr: Dibromofluoromethane	*99.0*			**0**	*80-119*	*%REC*	*250*	*08-Feb-2022 15:54*
Surr: Toluene-d8	*190*	*S*		**0**	*89-112*	*%REC*	*25*	*08-Feb-2022 14:47*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*250*	*08-Feb-2022 15:54*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PPM
Ethane	0.000500	U	0.000144	0.000500	0.00100	mg/L	1	08-Feb-2022 12:29
Ethene	**0.876**		**0.0468**	**0.100**	**0.200**	**mg/L**	200	08-Feb-2022 16:00
Methane	**3.21**		**0.0214**	**0.100**	**0.100**	**mg/L**	200	08-Feb-2022 16:00
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**1,320**		**5.00**	**5.00**	**5.00**	**mg/L**	1	02-Feb-2022 21:37
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**2,630**		**50.0**	**100**	**100**	**mg/L**	100	10-Feb-2022 19:33
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**12.6**		**0.0600**	**0.200**	**0.200**	**mg/L**	2	28-Jan-2022 19:00
Nitrogen, Nitrate (As N)	0.200	U	0.0600	0.200	0.200	mg/L	2	28-Jan-2022 19:00
Sulfate	1.00	U	0.400	1.00	1.00	mg/L	2	28-Jan-2022 19:00

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

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
Sample ID: Trip Blank-220127
Collection Date: 27-Jan-2022 00:00

ANALYTICAL REPORT
WorkOrder:HS22011279
Lab ID:HS22011279-10
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	08-Feb-2022 13:41
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 13:41
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 13:41
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 13:41
Methylene chloride	2.0	U	0.40	2.0	2.0	ug/L	1	08-Feb-2022 13:41
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 13:41
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Feb-2022 13:41
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*1*	*08-Feb-2022 13:41*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*08-Feb-2022 13:41*
Surr: Dibromofluoromethane	*99.3*			**0**	*80-119*	*%REC*	*1*	*08-Feb-2022 13:41*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*08-Feb-2022 13:41*

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

Weight / Prep Log

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

Batch ID: 4808 **Start Date:** 02 Feb 2022 08:04 **End Date:** 02 Feb 2022 08:04
Method: VOLATILES ORGANICS BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS22011279-06	1	5.096 (g)	5 (mL)	0.98	Bulk (5030B)

Batch ID: 175115 **Start Date:** 07 Feb 2022 13:46 **End Date:** 07 Feb 2022 16:00
Method: 9056 ANIONS SOIL PREP **Prep Code:** 9056_S_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22011279-06		5.0211 (g)	50 (mL)	9.958	120 mL Plastic Neat

Batch ID: 175217 **Start Date:** 09 Feb 2022 09:00 **End Date:**
Method: ALK LEACH **Prep Code:** ALK LEACH PREP

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22011279-06		5 (grams)	50 (mL)	10	120 mL Plastic Neat

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 175115 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Oil	
HS22011279-06	16EW06-220127	27 Jan 2022 11:30		07 Feb 2022 13:46	09 Feb 2022 16:18	1
Batch ID: 175217 (0)	**Test Name :** ALKALINITY BY SM2320B MOD.				**Matrix:** Oil	
HS22011279-06	16EW06-220127	27 Jan 2022 11:30		09 Feb 2022 09:00	09 Feb 2022 23:48	1
Batch ID: R401289 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS22011279-05	16EW03-220127	27 Jan 2022 10:35			28 Jan 2022 18:37	1
HS22011279-07	16EW05-220127	27 Jan 2022 12:15			28 Jan 2022 18:45	2
HS22011279-08	16EW05-220127-FD	27 Jan 2022 12:15			28 Jan 2022 18:52	2
HS22011279-09	16IW03-220127	27 Jan 2022 13:05			28 Jan 2022 19:00	2
Batch ID: R401499 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Groundwater	
HS22011279-05	16EW03-220127	27 Jan 2022 10:35			02 Feb 2022 21:15	1
HS22011279-07	16EW05-220127	27 Jan 2022 12:15			02 Feb 2022 21:20	1
HS22011279-08	16EW05-220127-FD	27 Jan 2022 12:15			02 Feb 2022 21:27	1
HS22011279-09	16IW03-220127	27 Jan 2022 13:05			02 Feb 2022 21:37	1
Batch ID: R401664 (0)	**Test Name :** VOLATILES ORGANICS BY SW8260C				**Matrix:** Oil	
HS22011279-06	16EW06-220127	27 Jan 2022 11:30			04 Feb 2022 15:09	5000
Batch ID: R401839 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS22011279-10	Trip Blank-220127	27 Jan 2022 00:00			08 Feb 2022 13:41	1
Batch ID: R401839 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS22011279-01	16WW13-220127	27 Jan 2022 07:40			08 Feb 2022 21:05	10
HS22011279-02	16WW42-220127	27 Jan 2022 08:20			08 Feb 2022 19:58	25
HS22011279-02	16WW42-220127	27 Jan 2022 08:20			08 Feb 2022 19:36	5
HS22011279-03	16WW23-220127	27 Jan 2022 09:10			08 Feb 2022 18:52	1
HS22011279-04	16WW24-220127	27 Jan 2022 09:50			08 Feb 2022 19:14	1
HS22011279-05	16EW03-220127	27 Jan 2022 10:35			08 Feb 2022 20:21	5
HS22011279-07	16EW05-220127	27 Jan 2022 12:15			08 Feb 2022 18:07	5000
HS22011279-08	16EW05-220127-FD	27 Jan 2022 12:15			08 Feb 2022 18:29	5000
HS22011279-09	16IW03-220127	27 Jan 2022 13:05			08 Feb 2022 15:54	250
HS22011279-09	16IW03-220127	27 Jan 2022 13:05			08 Feb 2022 14:47	25
Batch ID: R401928 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS22011279-01	16WW13-220127	27 Jan 2022 07:40			09 Feb 2022 15:12	25

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R401999 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Groundwater	
HS22011279-02	16WW42-220127	27 Jan 2022 08:20			08 Feb 2022 11:51	1
HS22011279-05	16EW03-220127	27 Jan 2022 10:35			08 Feb 2022 14:56	50
HS22011279-05	16EW03-220127	27 Jan 2022 10:35			08 Feb 2022 11:59	1
HS22011279-07	16EW05-220127	27 Jan 2022 12:15			08 Feb 2022 15:42	1
HS22011279-07	16EW05-220127	27 Jan 2022 12:15			08 Feb 2022 15:23	200
HS22011279-08	16EW05-220127-FD	27 Jan 2022 12:15			08 Feb 2022 15:51	400
HS22011279-08	16EW05-220127-FD	27 Jan 2022 12:15			08 Feb 2022 12:21	1
HS22011279-09	16IW03-220127	27 Jan 2022 13:05			08 Feb 2022 16:00	200
HS22011279-09	16IW03-220127	27 Jan 2022 13:05			08 Feb 2022 12:29	1
Batch ID: R402056 (0)	**Test Name :** TOTAL ORGANIC CARBON - SM5310B-2011				**Matrix:** Groundwater	
HS22011279-02	16WW42-220127	27 Jan 2022 08:20			10 Feb 2022 18:14	1
HS22011279-05	16EW03-220127	27 Jan 2022 10:35			10 Feb 2022 18:42	1
HS22011279-09	16IW03-220127	27 Jan 2022 13:05			10 Feb 2022 19:33	100
Batch ID: R402064 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS22011279-05	16EW03-220127	27 Jan 2022 10:35			10 Feb 2022 21:18	50
HS22011279-05	16EW03-220127	27 Jan 2022 10:35			10 Feb 2022 21:12	5
HS22011279-07	16EW05-220127	27 Jan 2022 12:15			10 Feb 2022 21:23	10
HS22011279-08	16EW05-220127-FD	27 Jan 2022 12:15			10 Feb 2022 21:28	10
Batch ID: R402095 (0)	**Test Name :** TOTAL ORGANIC CARBON - SM5310B-2011				**Matrix:** Groundwater	
HS22011279-07	16EW05-220127	27 Jan 2022 12:15			11 Feb 2022 14:25	4000
HS22011279-08	16EW05-220127-FD	27 Jan 2022 12:15			11 Feb 2022 14:39	4000

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: R401999 (0) **Instrument: FID-4** **Method: DISSOLVED GASES BY RSK-175**

MBLK Sample ID: **MBLK-220208** Units: **mg/L** Analysis Date: **08-Feb-2022 10:19**
Client ID: Run ID: **FID-4_401999** SeqNo: **6497541** 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-220208** Units: **mg/L** Analysis Date: **08-Feb-2022 10:28**
Client ID: Run ID: **FID-4_401999** SeqNo: **6497542** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0202	0.00100	0.01804	0	112	75 - 125				
Ethene	0.0174	0.00100	0.0168	0	103	75 - 125				
Methane	0.0113	0.000500	0.009647	0	117	75 - 125				

LCSD Sample ID: **LCSD-220208** Units: **mg/L** Analysis Date: **08-Feb-2022 10:40**
Client ID: Run ID: **FID-4_401999** SeqNo: **6497543** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0201	0.00100	0.01804	0	111	75 - 125	0.02023	0.828	30	
Ethene	0.0175	0.00100	0.0168	0	104	75 - 125	0.01739	0.539	30	
Methane	0.0107	0.000500	0.009647	0	111	75 - 125	0.01127	5.58	30	

DUP Sample ID: **HS22011326-04DUP** Units: **mg/L** Analysis Date: **08-Feb-2022 14:14**
Client ID: Run ID: **FID-4_401999** SeqNo: **6497557** 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					0	0	30	U
Ethene	0.000500	0.00100					0	0	30	U
Methane	0.0158	0.000500					0.01640	3.74	30	

The following samples were analyzed in this batch: HS22011279-02 HS22011279-05 HS22011279-07 HS22011279-08 HS22011279-09

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: R401664 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY SW8260C**

MBLK Sample ID: **VBLKM-220204** Units: **ug/Kg** Analysis Date: **04-Feb-2022 13:41**
Client ID: Run ID: **VOA9_401664** SeqNo: **6490683** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	50	250								U
1,1-Dichloroethene	25	250								U
1,2-Dichloroethane	25	250								U
cis-1,2-Dichloroethene	25	250								U
Methylene chloride	100	500								U
Trichloroethene	25	250								U
Vinyl chloride	25	100								U
Surr: Toluene-d8	*2606*	*250*	*2500*	*0*	*104*	*85 - 116*				
Surr: 1,2-Dichloroethane-d4	*2519*	*250*	*2500*	*0*	*101*	*71 - 136*				
Surr: 4-Bromofluorobenzene	*2472*	*250*	*2500*	*0*	*98.9*	*79 - 119*				
Surr: Dibromofluoromethane	*2413*	*250*	*2500*	*0*	*96.5*	*78 - 119*				

LCS Sample ID: **VLCSW-220204** Units: **ug/L** Analysis Date: **04-Feb-2022 13:19**
Client ID: Run ID: **VOA9_401664** SeqNo: **6490678** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.89	1.0	20	0	99.4	80 - 119				
1,1-Dichloroethene	21.69	1.0	20	0	108	71 - 131				
1,2-Dichloroethane	22.55	1.0	20	0	113	73 - 128				
cis-1,2-Dichloroethene	20.08	1.0	20	0	100	78 - 123				
Methylene chloride	22.46	2.0	20	0	112	74 - 124				
Trichloroethene	19.96	1.0	20	0	99.8	79 - 123				
Vinyl chloride	19.86	1.0	20	0	99.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.99*	*1.0*	*50*	*0*	*92.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*44.69*	*1.0*	*50*	*0*	*89.4*	*85 - 114*				
Surr: Dibromofluoromethane	*44.66*	*1.0*	*50*	*0*	*89.3*	*80 - 119*				
Surr: Toluene-d8	*44.55*	*1.0*	*50*	*0*	*89.1*	*89 - 112*				

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: R401664 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY SW8260C**

MS Sample ID: **HS22011233-09MS** Units: **ug/L** Analysis Date: **04-Feb-2022 15:53**
Client ID: Run ID: **VOA9_401664** SeqNo: **6490680** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	18.89	1.0	20	0	94.4	80 - 119				
1,1-Dichloroethene	21.69	1.0	20	0	108	71 - 131				
1,2-Dichloroethane	20.82	1.0	20	0	104	73 - 128				
cis-1,2-Dichloroethene	18.67	1.0	20	0	93.4	78 - 123				
Methylene chloride	20.31	2.0	20	0	102	74 - 124				
Trichloroethene	21.17	1.0	20	0	106	79 - 123				
Vinyl chloride	19.26	1.0	20	0	96.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.15*	*1.0*	*50*	*0*	*98.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.03*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*49.13*	*1.0*	*50*	*0*	*98.3*	*80 - 119*				
Surr: Toluene-d8	*52.73*	*1.0*	*50*	*0*	*105*	*89 - 112*				

MSD Sample ID: **HS22011233-09MSD** Units: **ug/L** Analysis Date: **04-Feb-2022 16:15**
Client ID: Run ID: **VOA9_401664** SeqNo: **6490681** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	18.9	1.0	20	0	94.5	80 - 119	18.89	0.0737	20	
1,1-Dichloroethene	20.88	1.0	20	0	104	71 - 131	21.69	3.81	20	
1,2-Dichloroethane	21.23	1.0	20	0	106	73 - 128	20.82	1.99	20	
cis-1,2-Dichloroethene	18.23	1.0	20	0	91.1	78 - 123	18.67	2.41	20	
Methylene chloride	20.47	2.0	20	0	102	74 - 124	20.31	0.762	20	
Trichloroethene	20.1	1.0	20	0	101	79 - 123	21.17	5.18	20	
Vinyl chloride	19.24	1.0	20	0	96.2	58 - 137	19.26	0.105	20	
Surr: 1,2-Dichloroethane-d4	*49.91*	*1.0*	*50*	*0*	*99.8*	*81 - 118*	*49.15*	*1.54*	*20*	
Surr: 4-Bromofluorobenzene	*53.21*	*1.0*	*50*	*0*	*106*	*85 - 114*	*53.03*	*0.333*	*20*	
Surr: Dibromofluoromethane	*49.57*	*1.0*	*50*	*0*	*99.1*	*80 - 119*	*49.13*	*0.873*	*20*	
Surr: Toluene-d8	*52.89*	*1.0*	*50*	*0*	*106*	*89 - 112*	*52.73*	*0.297*	*20*	

The following samples were analyzed in this batch: HS22011279-06

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: R401839 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-220208** Units: **ug/L** Analysis Date: **08-Feb-2022 12:34**
Client ID: Run ID: **VOA9_401839** SeqNo: **6494360** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	2.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*51.12*	*1.0*	*50*	*0*	*102*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.18*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*49.05*	*1.0*	*50*	*0*	*98.1*	*80 - 119*				
Surr: Toluene-d8	*52.29*	*1.0*	*50*	*0*	*105*	*89 - 112*				

LCS Sample ID: **VLCSW-220208** Units: **ug/L** Analysis Date: **08-Feb-2022 11:49**
Client ID: Run ID: **VOA9_401839** SeqNo: **6494359** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	20.08	1.0	20	0	100	80 - 119				
1,1-Dichloroethene	21.83	1.0	20	0	109	71 - 131				
1,2-Dichloroethane	21.85	1.0	20	0	109	73 - 128				
cis-1,2-Dichloroethene	20.02	1.0	20	0	100	78 - 123				
Methylene chloride	21.7	2.0	20	0	108	74 - 124				
Trichloroethene	19.67	1.0	20	0	98.3	79 - 123				
Vinyl chloride	21.27	1.0	20	0	106	58 - 137				
Surr: 1,2-Dichloroethane-d4	*55.16*	*1.0*	*50*	*0*	*110*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.38*	*1.0*	*50*	*0*	*105*	*85 - 114*				
Surr: Dibromofluoromethane	*52.88*	*1.0*	*50*	*0*	*106*	*80 - 119*				
Surr: Toluene-d8	*51.53*	*1.0*	*50*	*0*	*103*	*89 - 112*				

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: R401839 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS22020118-05MS** Units: **ug/L** Analysis Date: **08-Feb-2022 15:10**
Client ID: Run ID: **VOA9_401839** SeqNo: **6494367** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.97	1.0	20	0	99.8	80 - 119				
1,1-Dichloroethene	21.31	1.0	20	0	107	71 - 131				
1,2-Dichloroethane	22.18	1.0	20	0	111	73 - 128				
cis-1,2-Dichloroethene	20.08	1.0	20	0	100	78 - 123				
Methylene chloride	20.35	2.0	20	0	102	74 - 124				
Trichloroethene	20.74	1.0	20	0	104	79 - 123				
Vinyl chloride	19.21	1.0	20	0	96.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.82*	*1.0*	*50*	*0*	*99.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.81*	*1.0*	*50*	*0*	*108*	*85 - 114*				
Surr: Dibromofluoromethane	*50.05*	*1.0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*53.26*	*1.0*	*50*	*0*	*107*	*89 - 112*				

MSD Sample ID: **HS22020118-05MSD** Units: **ug/L** Analysis Date: **08-Feb-2022 15:32**
Client ID: Run ID: **VOA9_401839** SeqNo: **6494368** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.47	1.0	20	0	97.4	80 - 119	19.97	2.5	20	
1,1-Dichloroethene	20.7	1.0	20	0	104	71 - 131	21.31	2.9	20	
1,2-Dichloroethane	20.76	1.0	20	0	104	73 - 128	22.18	6.65	20	
cis-1,2-Dichloroethene	19.27	1.0	20	0	96.3	78 - 123	20.08	4.14	20	
Methylene chloride	19.8	2.0	20	0	99.0	74 - 124	20.35	2.72	20	
Trichloroethene	19.57	1.0	20	0	97.8	79 - 123	20.74	5.81	20	
Vinyl chloride	18.35	1.0	20	0	91.8	58 - 137	19.21	4.59	20	
Surr: 1,2-Dichloroethane-d4	*49.86*	*1.0*	*50*	*0*	*99.7*	*81 - 118*	*49.82*	*0.0662*	*20*	
Surr: 4-Bromofluorobenzene	*53.02*	*1.0*	*50*	*0*	*106*	*85 - 114*	*53.81*	*1.47*	*20*	
Surr: Dibromofluoromethane	*50.31*	*1.0*	*50*	*0*	*101*	*80 - 119*	*50.05*	*0.523*	*20*	
Surr: Toluene-d8	*53.3*	*1.0*	*50*	*0*	*107*	*89 - 112*	*53.26*	*0.0622*	*20*	

The following samples were analyzed in this batch:

HS22011279-01	HS22011279-02	HS22011279-03	HS22011279-04
HS22011279-05	HS22011279-07	HS22011279-08	HS22011279-09
HS22011279-10			

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: R401928 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-220209** Units: **ug/L** Analysis Date: **09-Feb-2022 12:15**
Client ID: Run ID: **VOA9_401928** SeqNo: **6496135** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*51.29*	*1.0*	*50*	*0*	*103*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.65*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*50.02*	*1.0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*53.23*	*1.0*	*50*	*0*	*106*	*89 - 112*				

LCS Sample ID: **VLCSW-220209** Units: **ug/L** Analysis Date: **09-Feb-2022 11:30**
Client ID: Run ID: **VOA9_401928** SeqNo: **6496134** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	19.34	1.0	20	0	96.7	79 - 123				
Surr: 1,2-Dichloroethane-d4	*53.98*	*1.0*	*50*	*0*	*108*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.11*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*51.48*	*1.0*	*50*	*0*	*103*	*80 - 119*				
Surr: Toluene-d8	*50.5*	*1.0*	*50*	*0*	*101*	*89 - 112*				

MS Sample ID: **HS22011297-15MS** Units: **ug/L** Analysis Date: **09-Feb-2022 14:28**
Client ID: Run ID: **VOA9_401928** SeqNo: **6496137** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	20.94	1.0	20	0	105	79 - 123				
Surr: 1,2-Dichloroethane-d4	*51.17*	*1.0*	*50*	*0*	*102*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.13*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*50.27*	*1.0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*52.64*	*1.0*	*50*	*0*	*105*	*89 - 112*				

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: R401928 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS22011297-15MSD** Units: **ug/L** Analysis Date: **09-Feb-2022 14:50**
Client ID: Run ID: **VOA9_401928** SeqNo: **6496138** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	20.18	1.0	20	0	101	79 - 123	20.94	3.67	20	
Surr: 1,2-Dichloroethane-d4	*50.53*	*1.0*	*50*	*0*	*101*	*81 - 118*	*51.17*	*1.25*	*20*	
Surr: 4-Bromofluorobenzene	*53.4*	*1.0*	*50*	*0*	*107*	*85 - 114*	*53.13*	*0.507*	*20*	
Surr: Dibromofluoromethane	*49.21*	*1.0*	*50*	*0*	*98.4*	*80 - 119*	*50.27*	*2.13*	*20*	
Surr: Toluene-d8	*52.52*	*1.0*	*50*	*0*	*105*	*89 - 112*	*52.64*	*0.229*	*20*	

The following samples were analyzed in this batch: HS22011279-01

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: 175115 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-175115** Units: **mg/Kg** Analysis Date: **07-Feb-2022 21:11**
Client ID: Run ID: **ICS-Integrion_401785** SeqNo: **6493123** PrepDate: **07-Feb-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	1.00	1.00								U
Nitrogen, Nitrate (As N)	1.00	1.00								U
Sulfate	5.00	5.00								U

LCS Sample ID: **LCS-175115** Units: **mg/Kg** Analysis Date: **07-Feb-2022 21:17**
Client ID: Run ID: **ICS-Integrion_401785** SeqNo: **6493124** PrepDate: **07-Feb-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	39.32	1.00	40	0	98.3	80 - 120				
Nitrogen, Nitrate (As N)	39.83	1.00	40	0	99.6	80 - 120				
Sulfate	201	5.00	200	0	101	80 - 120				

MS Sample ID: **HS22011180-09MS** Units: **mg/Kg** Analysis Date: **07-Feb-2022 21:59**
Client ID: Run ID: **ICS-Integrion_401785** SeqNo: **6493131** PrepDate: **07-Feb-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	22.79	0.990	19.81	0	115	80 - 120				
Nitrogen, Nitrate (As N)	23.75	0.990	19.81	0.7545	116	80 - 120				
Sulfate	126.8	4.95	99.05	6.24	122	80 - 120				S

MSD Sample ID: **HS22011180-09MSD** Units: **mg/Kg** Analysis Date: **07-Feb-2022 22:05**
Client ID: Run ID: **ICS-Integrion_401785** SeqNo: **6493132** PrepDate: **07-Feb-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	23	1.00	20	0	115	80 - 120	22.79	0.92	20	
Nitrogen, Nitrate (As N)	23.98	1.00	20	0.7545	116	80 - 120	23.75	0.966	20	
Sulfate	127.8	5.00	99.98	6.24	122	80 - 120	126.8	0.785	20	S

The following samples were analyzed in this batch: HS22011279-06

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: 175217 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM2320B MOD.**

MBLK Sample ID: **MBLK-175217** Units: **mg/Kg** Analysis Date: **09-Feb-2022 23:40**
Client ID: Run ID: **ManTech01_401950** SeqNo: **6496828** PrepDate: **09-Feb-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	10.0	50.0								U

LCS Sample ID: **LCS-175217** Units: **mg/Kg** Analysis Date: **09-Feb-2022 23:26**
Client ID: Run ID: **ManTech01_401950** SeqNo: **6496826** PrepDate: **09-Feb-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	10340	50.0	10000	0	103	80 - 120				

LCSD Sample ID: **LCSD-175217** Units: **mg/Kg** Analysis Date: **09-Feb-2022 23:35**
Client ID: Run ID: **ManTech01_401950** SeqNo: **6496827** PrepDate: **09-Feb-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	10240	50.0	10000	0	102	80 - 120	10340	0.997	20	

DUP Sample ID: **HS22011279-06DUP** Units: **mg/Kg** Analysis Date: **09-Feb-2022 23:52**
Client ID: **16EW06-220127** Run ID: **ManTech01_401950** SeqNo: **6496830** PrepDate: **09-Feb-2022** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	10.0	50.0					-17.8	0	20	U

The following samples were analyzed in this batch: HS22011279-06

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: R401289 (0) **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **28-Jan-2022 15:48**
Client ID: Run ID: **ICS2100_401289** SeqNo: **6482831** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								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: **28-Jan-2022 15:56**
Client ID: Run ID: **ICS2100_401289** SeqNo: **6482832** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.249	0.100	4	0	106	80 - 120				
Nitrogen, Nitrate (As N)	3.958	0.100	4	0	99.0	80 - 120				
Sulfate	20.23	0.500	20	0	101	80 - 120				

MS Sample ID: **HS22011274-02MS** Units: **mg/L** Analysis Date: **28-Jan-2022 17:37**
Client ID: Run ID: **ICS2100_401289** SeqNo: **6482836** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	1.808	0.100	2	0	90.4	80 - 120				
Nitrogen, Nitrate (As N)	2.018	0.100	2	0.0589	98.0	80 - 120				
Sulfate	33.22	0.500	10	23.64	95.8	80 - 120				

MSD Sample ID: **HS22011274-02MSD** Units: **mg/L** Analysis Date: **28-Jan-2022 17:45**
Client ID: Run ID: **ICS2100_401289** SeqNo: **6482837** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	1.693	0.100	2	0	84.7	80 - 120	1.808	6.55	20	
Nitrogen, Nitrate (As N)	1.994	0.100	2	0.0589	96.7	80 - 120	2.018	1.25	20	
Sulfate	32.95	0.500	10	23.64	93.1	80 - 120	33.22	0.81	20	

The following samples were analyzed in this batch: HS22011279-05 HS22011279-07 HS22011279-08 HS22011279-09

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: R401499 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM 2320B-2011**

MBLK Sample ID: **WBLKW1-220202** Units: **mg/L** Analysis Date: **02-Feb-2022 18:03**
Client ID: Run ID: **ManTech01_401499** SeqNo: **6487483** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	5.00	5.00								U

LCS Sample ID: **LCS1-220202** Units: **mg/L** Analysis Date: **02-Feb-2022 18:11**
Client ID: Run ID: **ManTech01_401499** SeqNo: **6487484** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1026	5.00	1000	0	103	85 - 115				

LCSD Sample ID: **LCSD1-220202** Units: **mg/L** Analysis Date: **02-Feb-2022 18:20**
Client ID: Run ID: **ManTech01_401499** SeqNo: **6487485** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1018	5.00	1000	0	102	85 - 115	1026	0.731	20	

DUP Sample ID: **HS22011151-12DUP** Units: **mg/L** Analysis Date: **02-Feb-2022 18:38**
Client ID: Run ID: **ManTech01_401499** SeqNo: **6487487** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1105	5.00					1129	2.16	20	

The following samples were analyzed in this batch: HS22011279-05 HS22011279-07 HS22011279-08 HS22011279-09

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: R402056 (0) **Instrument:** TOC_04 **Method:** TOTAL ORGANIC CARBON - SM5310B-2011

MBLK Sample ID: **MBLK-02102022** Units: **mg/L** Analysis Date: **10-Feb-2022 16:57**
Client ID: Run ID: **TOC_04_402056** SeqNo: **6498850** 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-02102022** Units: **mg/L** Analysis Date: **10-Feb-2022 17:48**
Client ID: Run ID: **TOC_04_402056** SeqNo: **6498851** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.56	1.00	10	0	106	85 - 115				

LCSD Sample ID: **LCSD-02102022** Units: **mg/L** Analysis Date: **10-Feb-2022 18:01**
Client ID: Run ID: **TOC_04_402056** SeqNo: **6498852** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.69	1.00	10	0	107	85 - 115	10.56	1.22	20	

MS Sample ID: **HS22011279-02MS** Units: **mg/L** Analysis Date: **10-Feb-2022 18:29**
Client ID: **16WW42-220127** Run ID: **TOC_04_402056** SeqNo: **6498854** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	28.1	1.00	20	6.932	106	80 - 120				

The following samples were analyzed in this batch: HS22011279-02 HS22011279-05 HS22011279-09

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: R402064 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **10-Feb-2022 22:05**
Client ID: Run ID: **ICS-Integrion_402064** SeqNo: **6498966** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **10-Feb-2022 22:11**
Client ID: Run ID: **ICS-Integrion_402064** SeqNo: **6498967** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.894	0.100	4	0	97.3	80 - 120				
Sulfate	20.18	0.500	20	0	101	80 - 120				

MS Sample ID: **HS22011326-03MS** Units: **mg/L** Analysis Date: **10-Feb-2022 21:44**
Client ID: Run ID: **ICS-Integrion_402064** SeqNo: **6498962** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	21.03	1.00	20	2.529	92.5	80 - 120				
Sulfate	315	5.00	100	225.5	89.5	80 - 120				

MSD Sample ID: **HS22011326-03MSD** Units: **mg/L** Analysis Date: **10-Feb-2022 21:50**
Client ID: Run ID: **ICS-Integrion_402064** SeqNo: **6498963** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	20.99	1.00	20	2.529	92.3	80 - 120	21.03	0.167	20	
Sulfate	314.9	5.00	100	225.5	89.4	80 - 120	315	0.0495	20	

The following samples were analyzed in this batch: HS22011279-05 HS22011279-07 HS22011279-08

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: HS22011279

QC BATCH REPORT

Batch ID: R402095 (0) **Instrument:** TOC_04 **Method:** TOTAL ORGANIC CARBON - SM5310B-2011

MBLK Sample ID: **MBLK-02112022** Units: **mg/L** Analysis Date: **11-Feb-2022 12:05**
Client ID: Run ID: **TOC_04_402095** SeqNo: **6499613** 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-02112022** Units: **mg/L** Analysis Date: **11-Feb-2022 12:19**
Client ID: Run ID: **TOC_04_402095** SeqNo: **6499614** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.29	1.00	10	0	103	85 - 115				

LCSD Sample ID: **LCSD-02112022** Units: **mg/L** Analysis Date: **11-Feb-2022 12:32**
Client ID: Run ID: **TOC_04_402095** SeqNo: **6499615** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.36	1.00	10	0	104	85 - 115	10.29	0.678	20	

MS Sample ID: **HS22020406-01MS** Units: **mg/L** Analysis Date: **11-Feb-2022 13:35**
Client ID: Run ID: **TOC_04_402095** SeqNo: **6499619** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	42.7	1.00	10	31.21	115	80 - 120				

The following samples were analyzed in this batch: HS22011279-07 HS22011279-08

ALS Houston, US Date: 14-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 16 January 2022
WorkOrder: **HS22011279**

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
Date	
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	21-022-0	26-Mar-2022
Florida	E87611-33	30-Jun-2022
Illinois	2000322021-7	09-May-2022
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2021-2022	30-Jun-2022
Texas	T104704231-21-28	30-Apr-2022

ALS Houston, US Date: 14-Feb-22

Sample Receipt Checklist

Work Order ID: HS22011279 **Date/Time Received:** 28-Jan-2022 10:15

Client Name: CBI-Houston **Received by:** Paresh M. Giga

Completed By: /S/ Paresh M. Giga (eSignature) 28-Jan-2022 12:46 (Date/Time) **Reviewed by:** /S/ Ragen Giga (eSignature) 29-Jan-2022 10:35 (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):	0.3C/0.8C U/C	IR31
Cooler(s)/Kit(s):	48336	
Date/Time sample(s) sent to storage:	1/28/2022 13:10	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: Ragen Giga

Page 1 of 1

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: LHAAP 16 January 2022

Prepared By: Scott Beesinger

P.O. Number

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 (bromide, sulfate, nitrate) by SW9056 and Alkalinity by SM2320	Bromide by SW9056	Metals (arsenic, chromium, manganese, nickel, thallium) by					Remarks (Preservatives, etc.)	Lab I.D.#
16WW13-220127	WG	1/27/22 0740		3	X											
16WW42-220127	WG	1/27/22 0840		8	X	X	X									
16WW23-220127	WG	1/27/22 0910		3	X											
16WW24-220127	WG	1/27/22 0950		3	X											
16EW03-220127	WG	1/27/22 1035		9	X	X	X	X	X							
16EW06-220127	WG	1/27/22 1130		9	X	X	X	X	X							
16EW05-220127	WG	1/27/22 1215		9	X	X	X	X	X							
16EW05-220127-FD	WG	1/27/22 1215		9	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	1/27/22	1430	[signature]	1/28/2022	10:15						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date

Remarks:
48336 0.5
#31
C1120

HS22011279

Aptim Environmental & Infrastructure, Inc.
Longhorn Army Ammunition Plant 16 January 2022

(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 (281) 530-5656 ATTN: Ragen Giga

Page 1 of 1

Project: APTIM LONGHORN ARMY AMMN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS	Project No. 501032
Job: **LHAAP 16 January 2022**	
Prepared By: Scott Beesinger	P.O. Number

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 (bromide, sulfate, nitrate) by SW9056 and Alkalinity by SM2320	Bromide by SW9056	Metals (arsenic, chromium, manganese, nickel, thallium) by				Remarks (Preservatives, etc.)	Lab I.D.#
16IW03-220127	WG	1/27/22 1305		9	X	X	X	X	X						
TRIP BLANK-220127	W	1/27/22		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
Scott Beesinger	1/27/22	1430	[signature]	1/28/2022	10:15						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

HS22011279

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant 16 January 2022

(Word) S:\I-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

48336

CUSTODY SEAL

Date: 1/27/22 Time: 1430
Name: Scott Beesinger
Company: BGE

Seal Broken By: SNJ
Date: 01/28/22

48336 JAN 28 2022

48336

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINGER
APTIM ENVIRONMENTAL & INFASTRUCTURE
1203-B EAST GRAND AVE
PMB 202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 28JUN21
ACTWGT: 1.00 LB MAN
CAD: 022247/CAFE3504
DIMS: 26X15X14 IN

TO SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-16-B0 79249-RG
RMA:

FedEx Express

TRK# 0473 0845 1346

PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

4230674 27JA02022 GOOA 560C4/E789/1D23

HS22011279 8260

ALS WO# HS22011279

MSVOA09 -Logbook

Batch: 48001
Date: 01-21-2022
Method: 8260
Comments:

Analyst: Presenta Cabascango
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pl
1	BFB	BFB	01-21-2022 11:00 am	1.00	0.00 mL	0.00 mL	U012101.D	Liquid	Y	N/
2	VSTD000.25	CALIB_1	01-21-2022 11:22 am	1.00	5.00 mL	0.00 mL	U012102.D	Liquid	Y	N/
3	VSTD000.5	CALIB_2	01-21-2022 11:44 am	1.00	5.00 mL	0.00 mL	U012103.D	Liquid	Y	N/
4	VSTD001	CALIB_3	01-21-2022 12:28 pm	1.00	5.00 mL	0.00 mL	U012104.D	Liquid	Y	N/
5	VSTD002	CALIB_4	01-21-2022 12:50 pm	1.00	5.00 mL	0.00 mL	U012105.D	Liquid	Y	N/
6	VSTD005	CALIB_5	01-21-2022 01:12 pm	1.00	5.00 mL	0.00 mL	U012106.D	Liquid	Y	N/
7	VSTD020	CALIB_6	01-21-2022 01:34 pm	1.00	5.00 mL	0.00 mL	U012107.D	Liquid	Y	N/
8	VSTD050	CALIB_7	01-21-2022 01:56 pm	1.00	5.00 mL	0.00 mL	U012108.D	Liquid	Y	N/
9	VSTD100	CALIB_8	01-21-2022 02:18 pm	1.00	5.00 mL	0.00 mL	U012109.D	Liquid	Y	N/
10	VSTD150	CALIB_9	01-21-2022 02:40 pm	1.00	5.00 mL	0.00 mL	U012110.D	Liquid	Y	N/
11	VSTD200	CALIB_10	01-21-2022 03:02 pm	1.00	5.00 mL	0.00 mL	U012111.D	Liquid	Y	N/
12	BLANK	SAMP	01-21-2022 03:24 pm	1.00	5.00 mL	0.00 mL	U012112.D	Liquid	Y	N/
13	VSTD050	CCV	01-21-2022 03:46 pm	1.00	5.00 mL	0.00 mL	U012113.D	Liquid	Y	N/
14	BLANK	SAMP	01-21-2022 04:08 pm	1.00	5.00 mL	0.00 mL	U012114.D	Liquid	Y	N/
15	BFB	BFB	01-21-2022 04:30 pm	1.00	0.00 mL	0.00 mL	V012101.D	Liquid	Y	N/
16	VSTD050	CCV	01-21-2022 04:53 pm	1.00	5.00 mL	0.00 mL	V012102a.D	Liquid	Y	N/
17	VSTD050	CCV	01-21-2022 05:15 pm	1.00	5.00 mL	0.00 mL	V012103.D	Liquid	Y	N/
18	CCB	SAMP	01-21-2022 05:37 pm	1.00	5.00 mL	0.00 mL	V012104.D	Liquid	Y	N/
19	VLCSW-220121	LCS	01-21-2022 05:59 pm	1.00	5.00 mL	0.00 mL	V012105.D	Liquid	Y	N/
20	BLANK	SAMP	01-21-2022 06:21 pm	1.00	5.00 mL	0.00 mL	V012106.D	Liquid	Y	N/
21	VBLKW-220121	MBLK	01-21-2022 06:43 pm	1.00	5.00 mL	0.00 mL	V012107.D	Liquid	Y	N/
22	HS22010829-06	SAMP	01-21-2022 07:06 pm	1.00	5.00 mL	0.00 mL	V012108.D	Liquid	Y	N/
23	HS22010829-02	SAMP	01-21-2022 07:28 pm	1.00	5.00 mL	0.00 mL	V012109.D	Liquid	Y	N/
24	HS22010829-01	SAMP	01-21-2022 07:50 pm	1.00	5.00 mL	0.00 mL	V012110.D	Liquid	Y	N/
25	HS22010753-05	SAMP	01-21-2022 08:12 pm	1.00	5.00 mL	0.00 mL	V012111.D	Liquid	Y	N/
26	HS22010753-06	SAMP	01-21-2022 08:35 pm	1.00	5.00 mL	0.00 mL	V012112.D	Liquid	Y	N/
27	HS22010614-01	SAMP	01-21-2022 08:57 pm	1.00	5.00 mL	0.00 mL	V012113.D	Liquid	Y	N/
28	HS22010614-03	SAMP	01-21-2022 09:19 pm	1.00	5.00 mL	0.00 mL	V012114.D	Liquid	Y	N/
29	HS22010614-05	SAMP	01-21-2022 09:41 pm	1.00	5.00 mL	0.00 mL	V012115.D	Liquid	Y	N/
30	HS22010753-03	SAMP	01-21-2022 10:04 pm	200.0(	5.00 mL	0.00 mL	V012116.D	Liquid	Y	N/
31	HS22010753-03	SAMP	01-21-2022 10:26 pm	20.00	5.00 mL	0.00 mL	V012117.D	Liquid	Y	N/
32	HS22010753-03MS	MS	01-21-2022 10:48 pm	200.0(	5.00 mL	0.00 mL	V012118.D	Liquid	Y	N/
33	HS22010753-03MSD	MSD	01-21-2022 11:10 pm	200.0(	5.00 mL	0.00 mL	V012119.D	Liquid	Y	N/
34	BLANK	SAMP	01-21-2022 11:32 pm	1.00	5.00 mL	0.00 mL	V012120.D	Liquid	Y	N/
35	HS22010614-06	SAMP	01-21-2022 11:55 pm	1.00	5.00 mL	0.00 mL	V012121.D	Liquid	Y	N/
36	HS22010614-07	SAMP	01-22-2022 12:17 am	1.00	5.00 mL	0.00 mL	V012122.D	Liquid	Y	N/
37	HS22010753-01	SAMP	01-22-2022 12:39 am	1.00	5.00 mL	0.00 mL	V012123.D	Liquid	Y	N/
38	HS22010753-02	SAMP	01-22-2022 01:01 am	1.00	5.00 mL	0.00 mL	V012124.D	Liquid	Y	N/
39	HS22010753-04	SAMP	01-22-2022 01:24 am	1.00	5.00 mL	0.00 mL	V012125.D	Liquid	Y	N/
40	HS22010753-04	SAMP	01-22-2022 01:46 am	25.00	5.00 mL	0.00 mL	V012126.D	Liquid	Y	N/
41	HS22010614-04	SAMP	01-22-2022 02:08 am	5.00	5.00 mL	0.00 mL	V012127.D	Liquid	Y	N/

MSVOA09 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pl
42	HS22010614-04n/r	SAMP	01-22-2022 02:30 am	25.00	5.00 mL	0.00 mL	V012128.D	Liquid	Y	N/
43	HS22010614-02	SAMP	01-22-2022 02:53 am	10.00	5.00 mL	0.00 mL	V012129.D	Liquid	Y	N/
44	HS22010614-02n/r	SAMP	01-22-2022 03:15 am	50.00	5.00 mL	0.00 mL	V012130.D	Liquid	Y	N/
45	VSTD050-END	CCV	01-22-2022 03:37 am	1.00	5.00 mL	0.00 mL	V012131.D	Liquid	Y	N/
46	BLANK	SAMP	01-22-2022 03:59 am	1.00	5.00 mL	0.00 mL	V012132.D	Liquid	Y	N/
47	BLANK	SAMP	01-22-2022 04:21 am	1.00	5.00 mL	0.00 mL	V012133.D	Liquid	Y	N/

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Matrix Spike - Sample No.: ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
Trichloroethene	50.00	46.46	93	80-120
Methylene Chloride	50.00	48.09	96	80-120
cis-1,2-Dichloroethene	50.00	46.44	93	80-120
Vinyl Chloride	50.00	46.34	93	80-120
1,1,2-Trichloroethane	50.00	48.34	97	80-120
1,1-Dichloroethene	50.00	47.33	95	80-120
1,2-Dichloroethane	50.00	47.40	95	80-120

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

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Lab File ID: U012101 BFB Injection Date: 01/21/22

Instrument ID: VOA9 BFB Injection Time: 1100

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.3
75	30.0 - 60.0% of mass 95	49.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.3
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	83.2
175	5.0 - 9.0% of mass 174	7.3 (8.8)1
176	95.0 - 101.0% of mass 174	80.2 (96.4)1
177	5.0 - 9.0% of mass 176	5.2 (6.5)2

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

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD000.25	VSTD000.25	U012102	01/21/22	1122
02	VSTD000.5	VSTD000.5	U012103	01/21/22	1144
03	VSTD001	VSTD001	U012104	01/21/22	1228
04	VSTD002	VSTD002	U012105	01/21/22	1250
05	VSTD005	VSTD005	U012106	01/21/22	1312
06	VSTD020	VSTD020	U012107	01/21/22	1334
07	VSTD050	VSTD050	U012108	01/21/22	1356
08	VSTD100	VSTD100	U012109	01/21/22	1418
09	VSTD150	VSTD150	U012110	01/21/22	1440
10	VSTD200	VSTD200	U012111	01/21/22	1502
11	ICV	ICV	U012113	01/21/22	1546
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Instrument ID: VOA9 Calibration Date(s): 01/21/22 01/21/22

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1122 1502

LAB FILE ID: RF0.25: U012102 RF0.5: U012103 RF1: U012104
RF2: U012105 RF5: U012106 RF20: U012107

COMPOUND	RF0.25	RF0.5	RF1	RF2	RF5	RF20
Trichloroethene		0.350	0.419	0.369	0.334	0.335
Methylene Chloride		6806	10698	17383	39937	146064
cis-1,2-Dichloroethene		0.711	0.647	0.665	0.650	0.631
Vinyl Chloride		0.713	0.892	0.780	0.717	0.734
1,1,2-Trichloroethane		0.327	0.318	0.325	0.320	0.322
1,1-Dichloroethene		0.528	0.434	0.478	0.474	0.463
1,2-Dichloroethane		0.431	0.518	0.521	0.540	0.524
Toluene-d8		1.478	1.322	1.395	1.243	1.290
Dibromofluoromethane		5745	6292	14192	32715	133630
1,2-Dichloroethane-d4		7908	9353	19107	42917	171723
4-Bromofluorobenzene		12738	12907	26873	48837	180431

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS2201127

Instrument ID: VOA9 Calibration Date(s): 01/21/22 01/21/22

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1122 1502

LAB FILE ID: RF50: U012108 RF100: U012109 RF150: U012110
RF200: U012111

COMPOUND	RF50	RF100	RF150	RF200
Trichloroethene	0.335	0.350	0.340	0.336
Methylene Chloride	362049	743158	1115598	1534403
cis-1,2-Dichloroethene	0.635	0.641	0.629	0.621
Vinyl Chloride	0.752	0.792	0.750	0.746
1,1,2-Trichloroethane	0.309	0.312	0.305	0.298
1,1-Dichloroethene	0.450	0.483	0.457	0.455
1,2-Dichloroethane	0.511	0.503	0.489	0.474
Toluene-d8	1.175	1.287	1.181	1.163
Dibromofluoromethane	315169	693277	1007785	1407841
1,2-Dichloroethane-d4	410662	875745	1283450	1765372
4-Bromofluorobenzene	445798	983774	1438840	1994348

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS2201127

Instrument ID: VOA9 Calibration Date(s): 01/21/22 01/21/22

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1122 1502

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2
Trichloroethene	AVRG		0.35221959	7.840	20.000
Methylene Chloride	LINR	-2.81e-002	1.82461352	0.9996122	0.9900000
cis-1,2-Dichloroethene	AVRG		0.64785104	4.193	20.000
Vinyl Chloride	AVRG		0.76411694	7.131	20.000
1,1,2-Trichloroethane	AVRG		0.31513236	3.046	20.000
1,1-Dichloroethene	AVRG		0.46944793	5.714	20.000
1,2-Dichloroethane	AVRG		0.50139539	6.549	20.000
Toluene-d8	AVRG		1.28149917	8.283	20.000
Dibromofluoromethane	LINR	-1.72e-002	1.98882817	0.9991391	0.9900000
1,2-Dichloroethane-d4	LINR	-2.67e-002	1.58003383	0.9991022	0.9900000
4-Bromofluorobenzene	LINR	-2.47e-002	2.19842936	0.9992224	0.9900000

FORM VI VOA

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012101.D

Date : 21-JAN-2022 11:00

Client ID: BFB

Instrument: VOA9.i

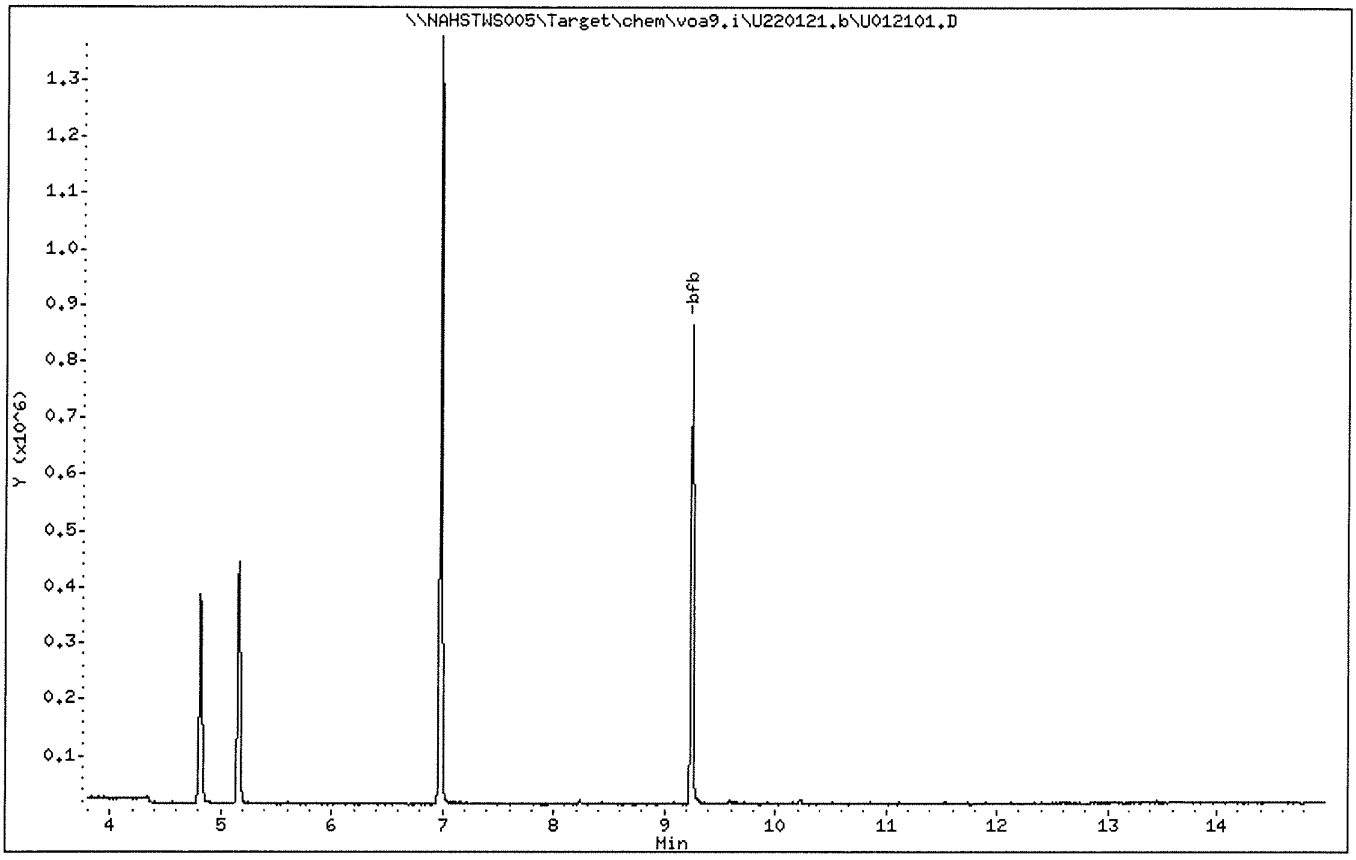
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012101.D Page 2

Date : 21-JAN-2022 11:00

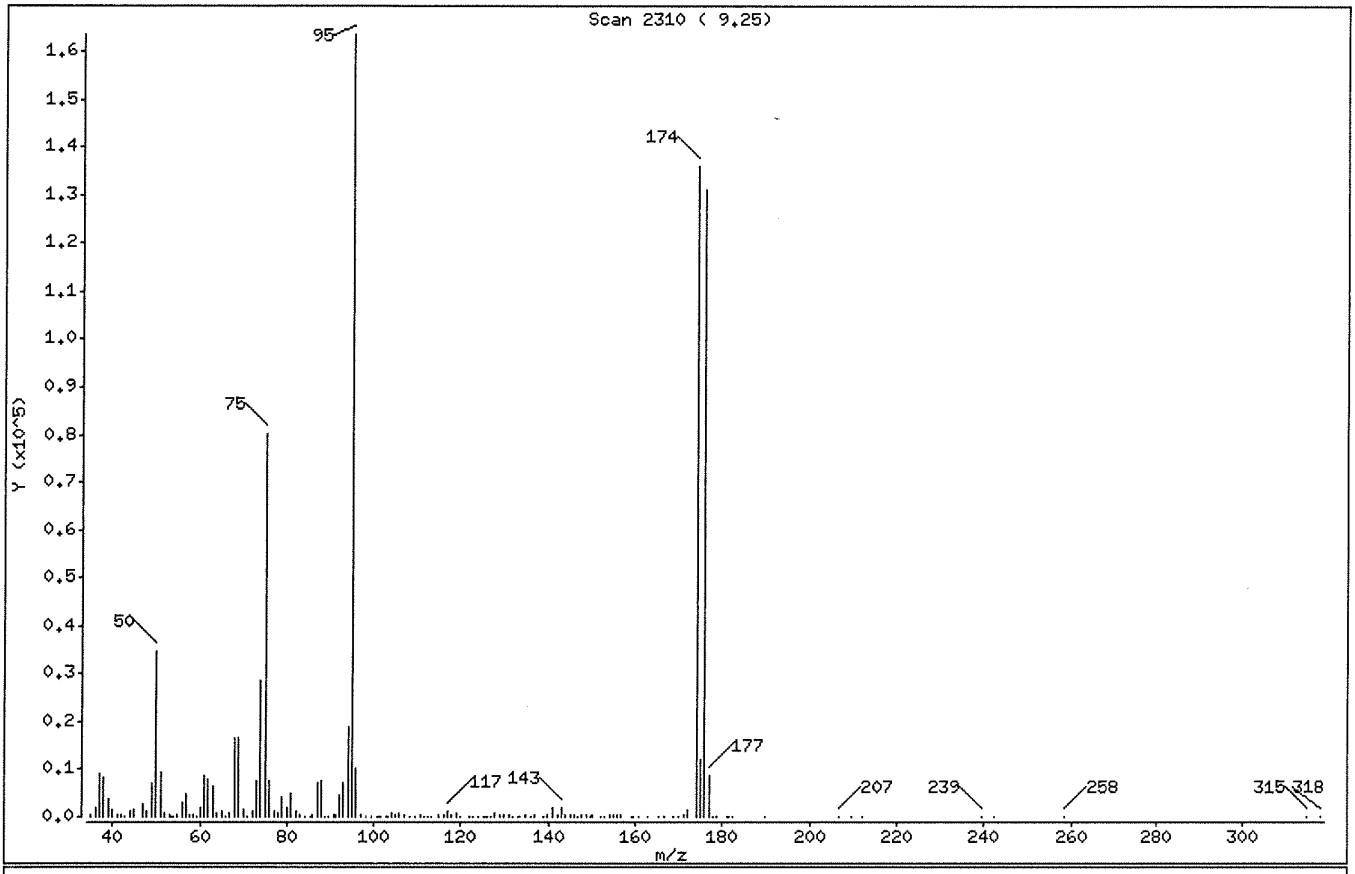
Client ID: BFB Instrument: VOA9.i

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	21.31
75	30.00 - 60.00% of mass 95	49.12
96	5.00 - 9.00% of mass 95	6.31
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	83.20
175	5.00 - 9.00% of mass 174	7.30 (8.78)
176	95.00 - 101.00% of mass 174	80.22 (96.42)
177	5.00 - 9.00% of mass 176	5.21 (6.49)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012101.D

Date : 21-JAN-2022 11:00

Client ID: BFB

Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: U012101.D
Spectrum: Scan 2310 (9.25)
Location of Maximum: 95.05
Number of points: 152

m/z	Y	m/z	Y	m/z	Y	m/z	Y
35.10	248	73.00	7435	110.90	327	150.00	222
36.10	2040	74.00	28600	111.70	106	152.00	96
37.00	8929	75.00	80256	112.50	125	152.90	167
38.00	8329	76.00	7597	113.00	151	154.00	200
39.10	3654	77.10	1135	114.80	253	155.00	479
39.90	1371	78.00	886	116.00	474	156.00	283
41.10	328	78.90	4026	116.90	1229	156.80	317
41.80	283	80.00	1722	117.90	512	159.00	179
42.60	170	80.90	4898	118.80	927	159.70	71
44.00	1152	82.00	1212	119.70	110	160.90	122
45.00	1448	82.90	223	121.90	84	162.70	109
47.00	2623	84.30	82	122.70	83	165.40	53
47.90	1134	85.30	161	123.80	155	166.80	105
49.00	7332	85.70	204	125.00	57	168.80	94
50.00	34824	87.00	7341	125.60	132	169.90	122
51.10	9531	88.00	7354	126.00	117	171.00	340
52.10	643	88.80	165	126.70	150	172.00	1380
53.00	199	89.40	65	127.80	667	173.90	135936
53.50	173	90.90	436	128.90	332	175.00	11934
54.10	107	91.10	441	129.80	492	175.90	131072
54.90	431	92.00	4597	130.90	323	176.90	8507
56.00	3061	93.00	7087	131.80	93	177.80	187
57.00	4944	94.10	18872	133.10	59	178.70	100
57.90	279	95.00	163392	133.60	96	181.20	56
58.50	260	96.00	10317	134.90	282	181.70	79
59.20	182	97.10	540	135.80	124	182.50	77
60.00	1848	98.30	76	136.90	289	189.60	70
61.00	8563	99.70	92	138.80	142	206.80	81
62.00	7792	100.70	80	139.90	223	209.50	79
63.10	6535	101.30	101	140.90	1821	212.20	55
64.00	819	101.80	72	142.00	321	239.40	82
65.10	974	102.70	77	142.90	1952	242.50	69
66.10	168	103.20	117	143.90	203	258.50	86
67.00	799	104.00	585	145.00	314	314.70	84
68.00	16632	104.90	363	145.80	196	318.00	53

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012101.D

Date : 21-JAN-2022 11:00

Client ID: BFB Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: U012101.D
Spectrum: Scan 2310 (9.25)
Location of Maximum: 95.05
Number of points: 152

m/z	Y	m/z	Y	m/z	Y	m/z	Y
69.00	16672	105.90	901	146.90	91		
70.00	1410	106.80	288	147.70	408		
70.80	110	108.10	133	148.90	253		
72.00	947	109.60	70	149.50	139		

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012102.D Page 1
Report Date: 08-Feb-2022 10:37

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012102.D
Lab Smp Id: VSTD000.25 Client Smp ID: VSTD000.25
Inj Date : 21-JAN-2022 11:22
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD000.25;VSTD000.25;1;1;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:37 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 15:02 Cal File: U012111.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

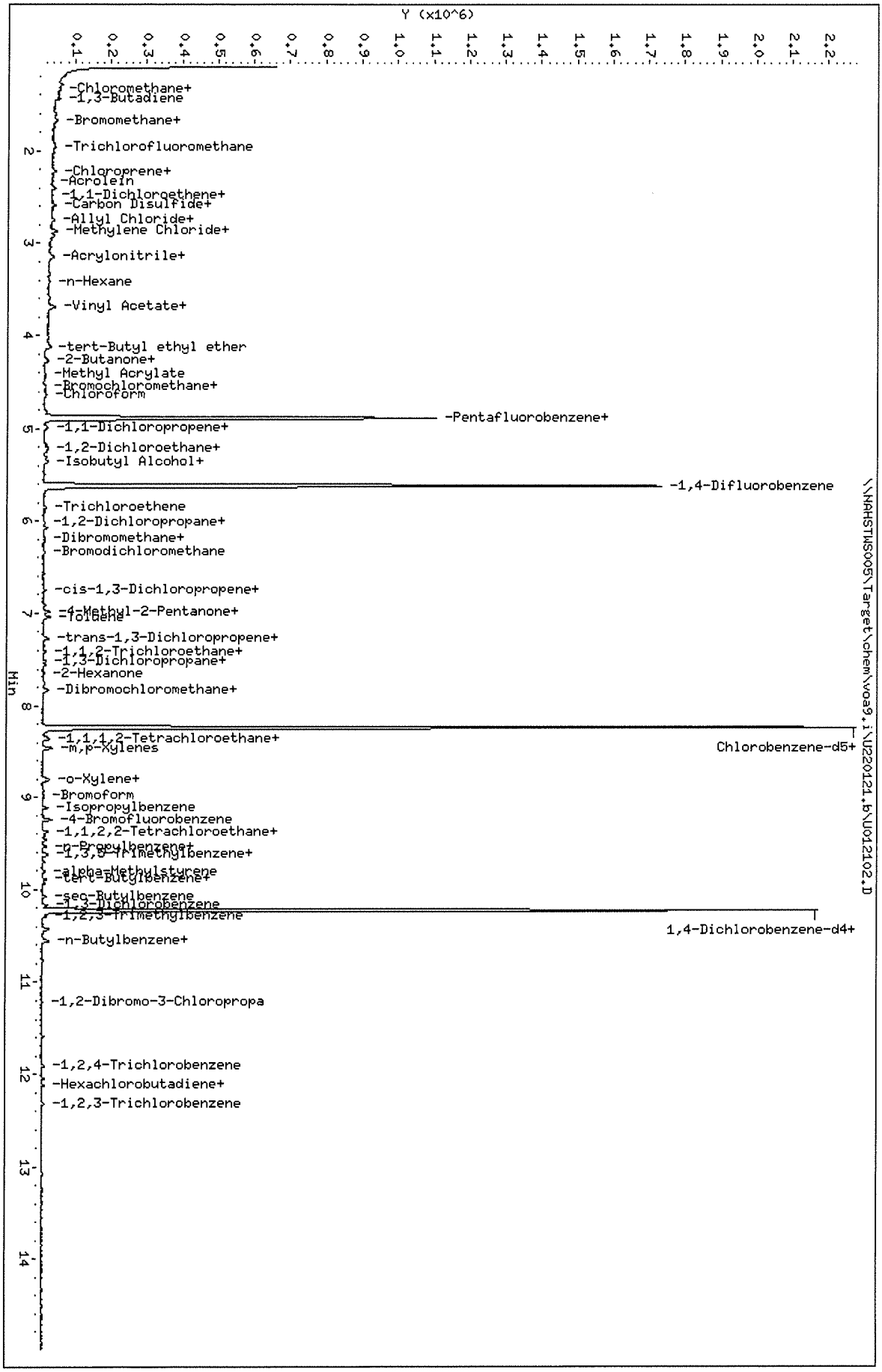
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.886	4.886	(1.000)	691359	50.0000	
* 36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	1186874	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	1048159	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	506306	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.168	5.168	(1.058)	4793	0.25000	(a)
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	7056	0.25000	(aM)
$ 30 Dibromofluoromethane	113	4.823	4.823	(0.987)	3086	0.25000	
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	7231	0.25000	0.26 (aM)
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	2944	0.25000	0.44 (a)
11 1,1-Dichloroethene	96	2.401	2.401	(0.491)	2518	0.25000	0.38 (a)
33 1,2-Dichloroethane	62	5.250	5.250	(0.935)	5106	0.25000	0.42 (a)
27 cis-1,2-Dichloroethene	96	4.279	4.279	(0.876)	3304	0.25000	0.36 (a)
17 Methylene Chloride	84	2.862	2.862	(0.586)	5657	0.25000	(a)
38 Trichloroethene	130	5.850	5.850	(1.041)	3183	0.25000	0.38 (aM)
5 Vinyl Chloride	62	1.419	1.419	(0.290)	4490	0.25000	0.42 (a)

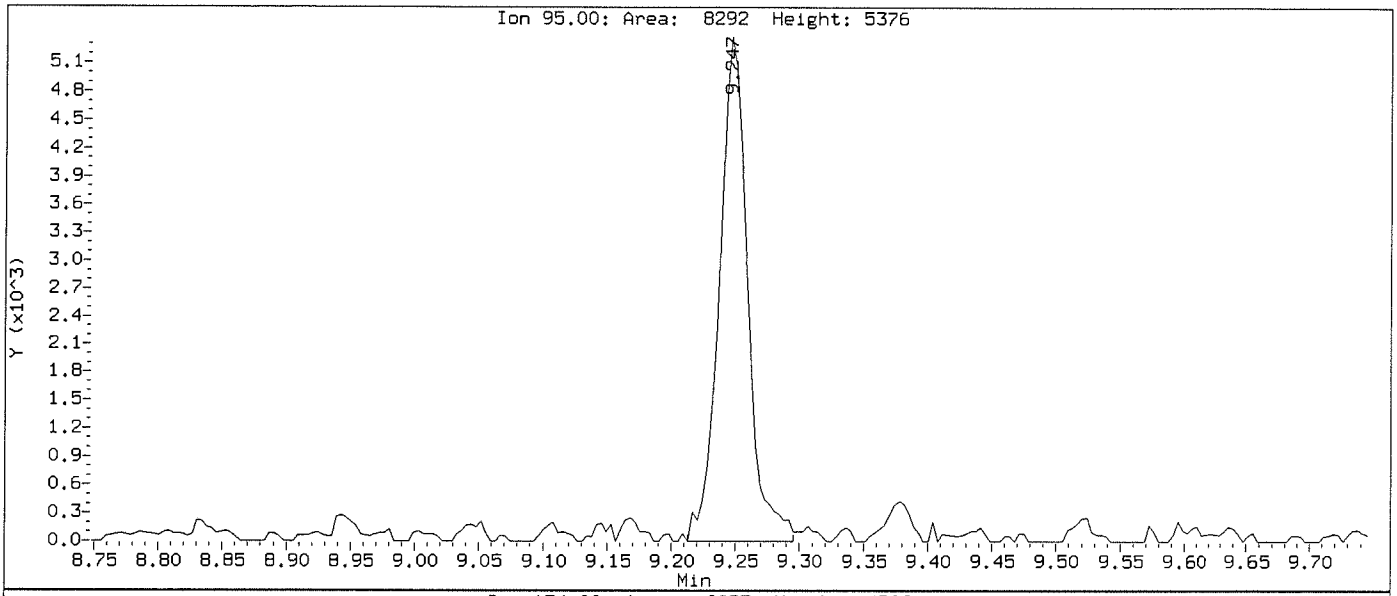
QC Flag Legend

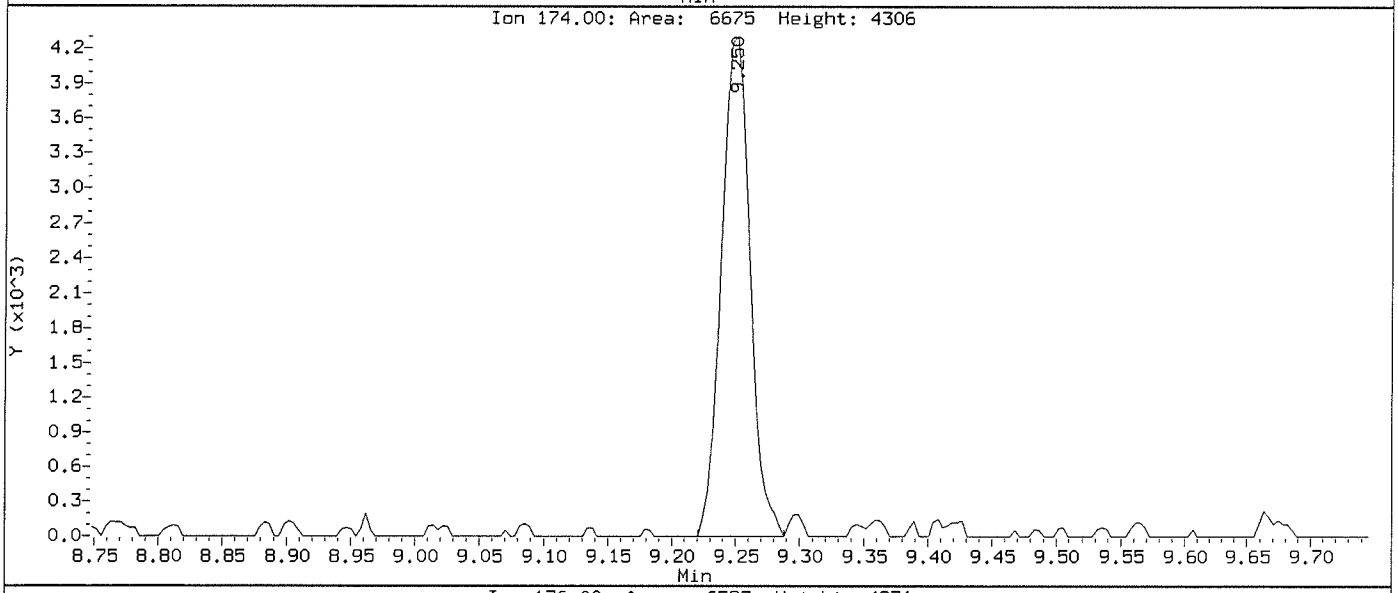
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

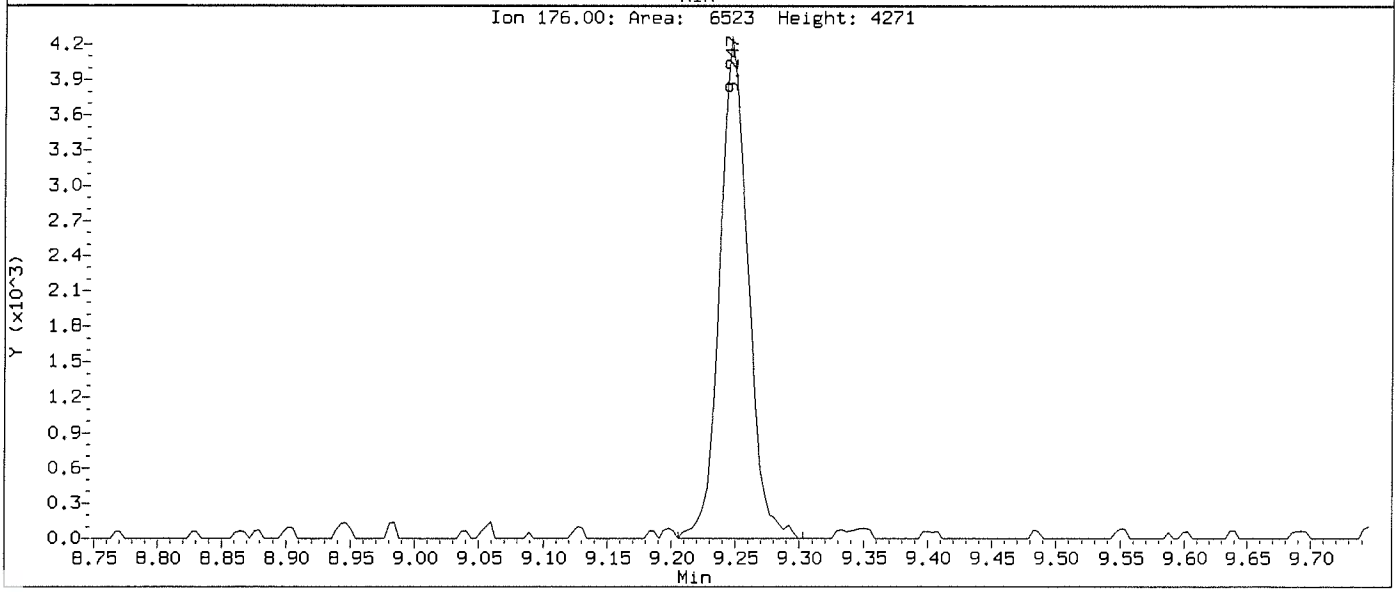

Y (x10^6)
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2
-Chloromethane+
-1,3-Butadiene
-Bromomethane+
-Trichlorofluoromethane
-Chloroprene+
-Acrolein
-1,1-Dichloroethene+
-Carbon Disulfide+
-Allyl Chloride+
-Methylene Chloride+
-Acrylonitrile+
-n-Hexane
-Vinyl Acetate+
-tert-Butyl ethyl ether
-2-Butanone+
-Methyl Acrylate
-Bromochloromethane+
-Chloroform
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-Isobutyl Alcohol+
-1,4-Difluorobenzene
-Trichloroethene
-1,2-Dichloropropane+
-Dibromomethane+
-Bromodichloromethane
-cis-1,3-Dichloropropene+
-4-Methyl-2-Pentanone+
-Toluene
-trans-1,3-Dichloropropene+
-1,1,2-Trichloroethane+
-1,3-Dichloropropane+
-2-Hexanone
-Dibromochloromethane+
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes
Chlorobenzene-d5+
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-1,1,2,2-Tetrachloroethane+
-n-Propylbenzene+
-1,3,5-Trimethylbenzene+
-alpha-Methylstyrene
-tert-Butylbenzene+
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,2,3-Trimethylbenzene
1,4-Dichlorobenzene-d4+
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene+
-1,2,3-Trichlorobenzene
Min
1 2 3 4 5 6 7 8 9 10 11 12 13 14
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Data File: \\NAHSTWS005\Target\chem\voa9,i\U220121,b\U012102,D
Date : 21-JAN-2022 11:22
Client ID: VSTD000.25
Sample Info: VSTD000.25;VSTD000.25;1;1;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\Before\U012102.D
Injection Date: 21-JAN-2022 11:22
Instrument: VOA9.i
Client Sample ID: VSTD000.25

Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4

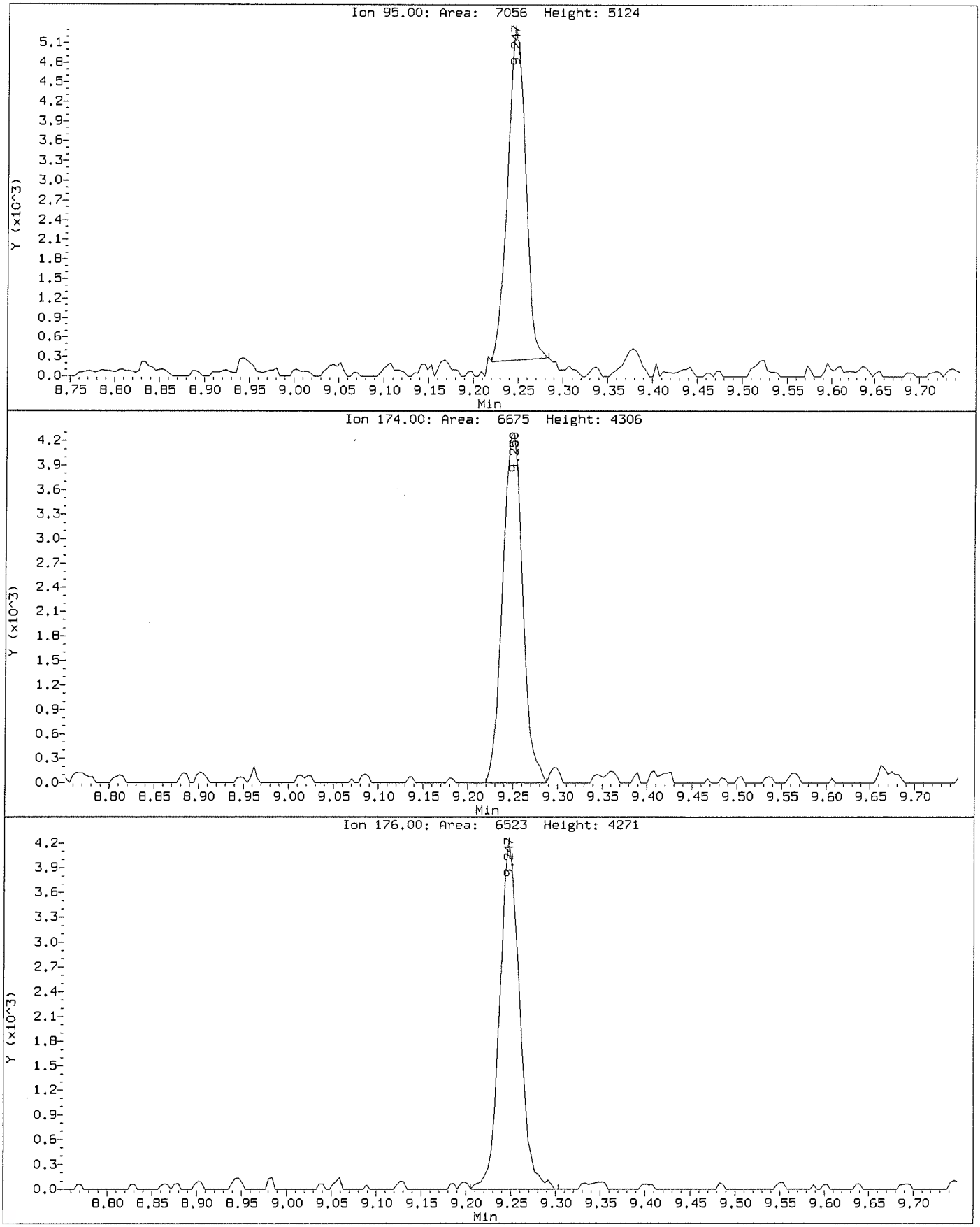






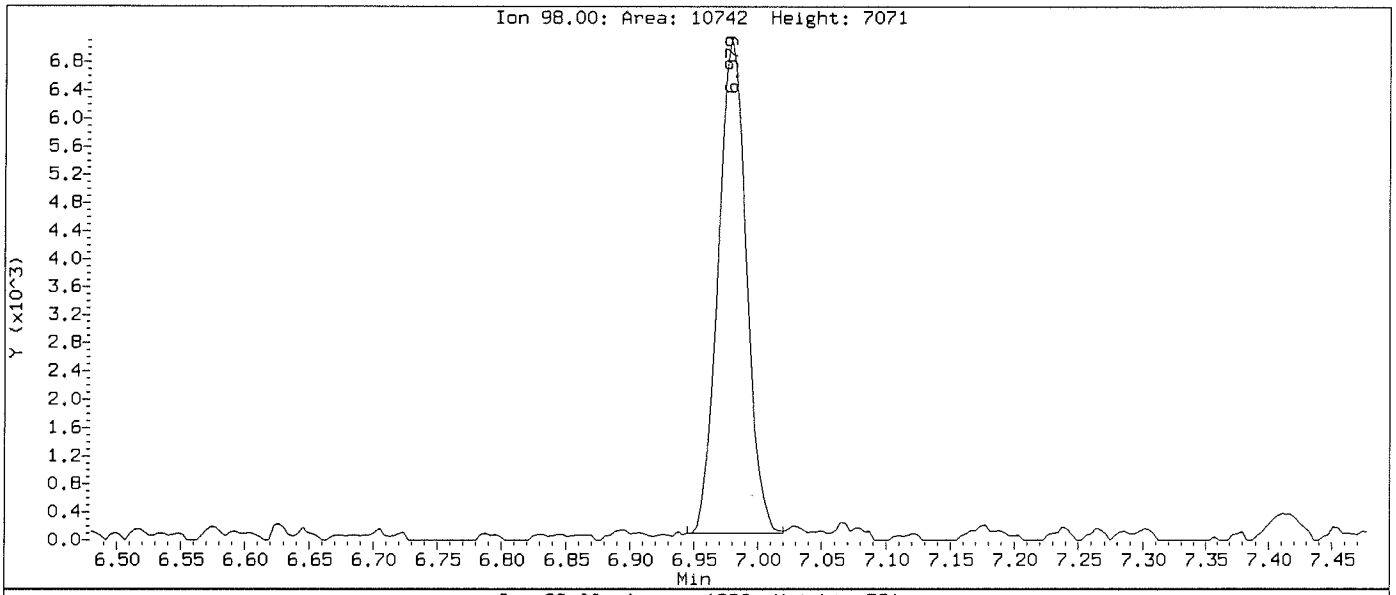
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Injection Date: 21-JAN-2022 11:22
Instrument: VOA9.i
Client Sample ID: VSTD000.25

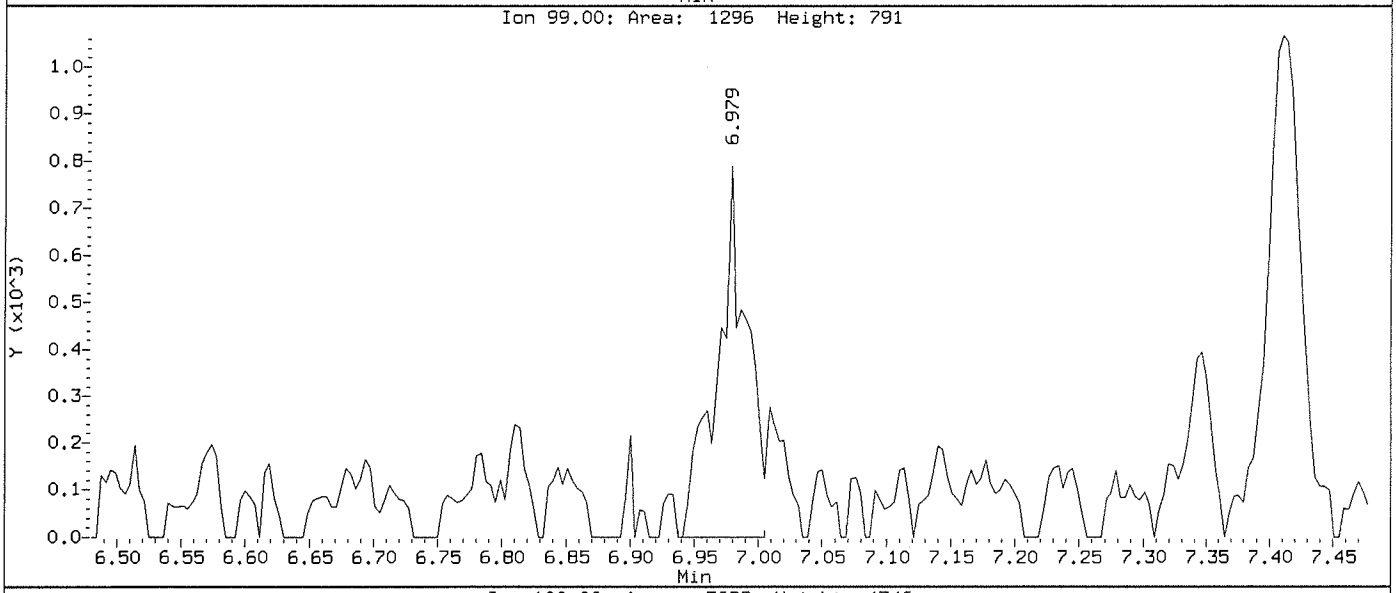
Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4

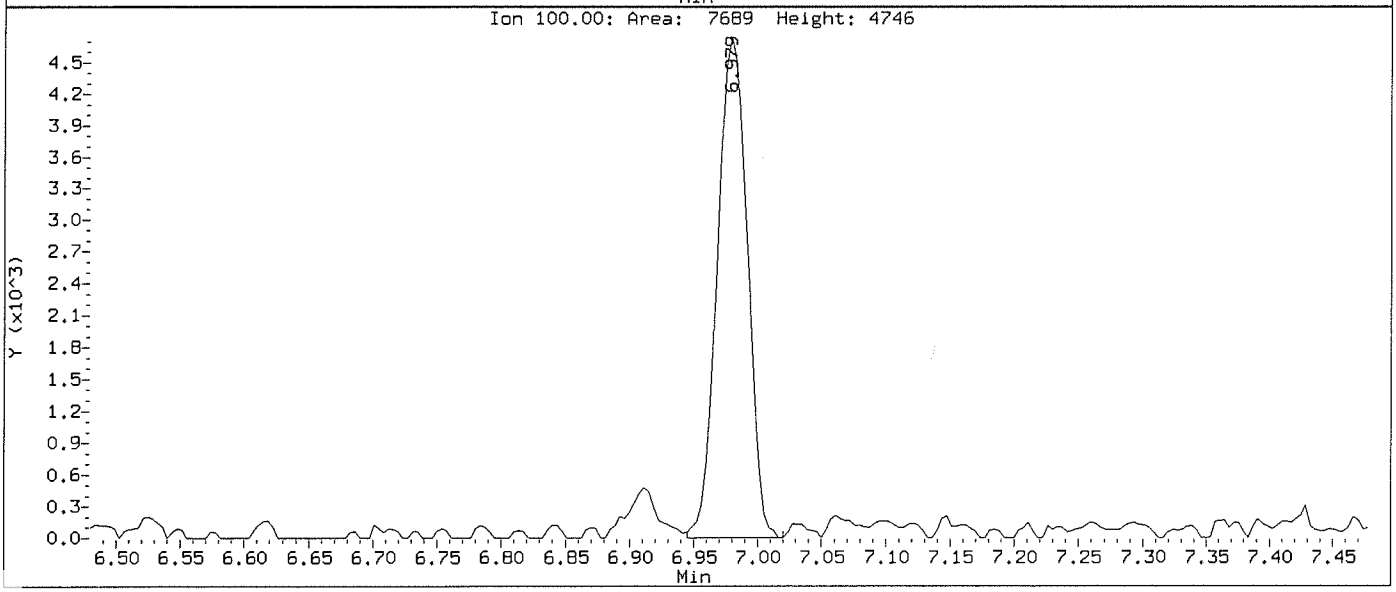


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Injection Date: 21-JAN-2022 11:22
Instrument: VOA9.i
Client Sample ID: VSTD000.25

Compound: Toluene-d8
CAS Number: 2037-26-5

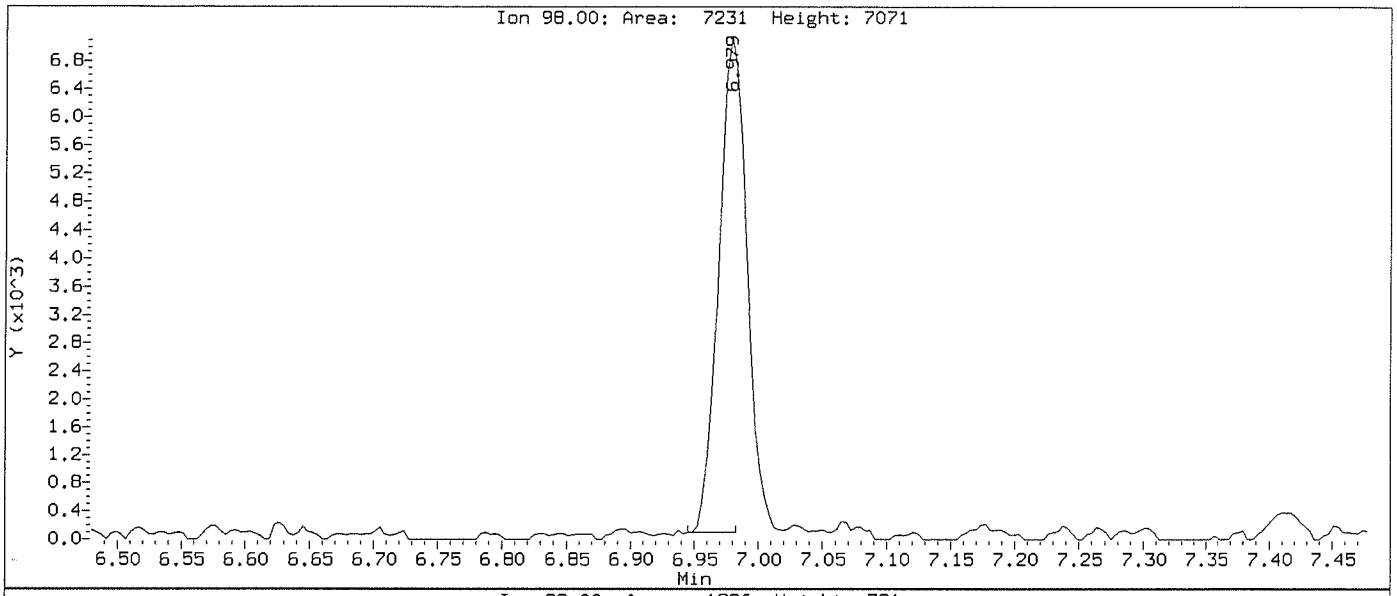


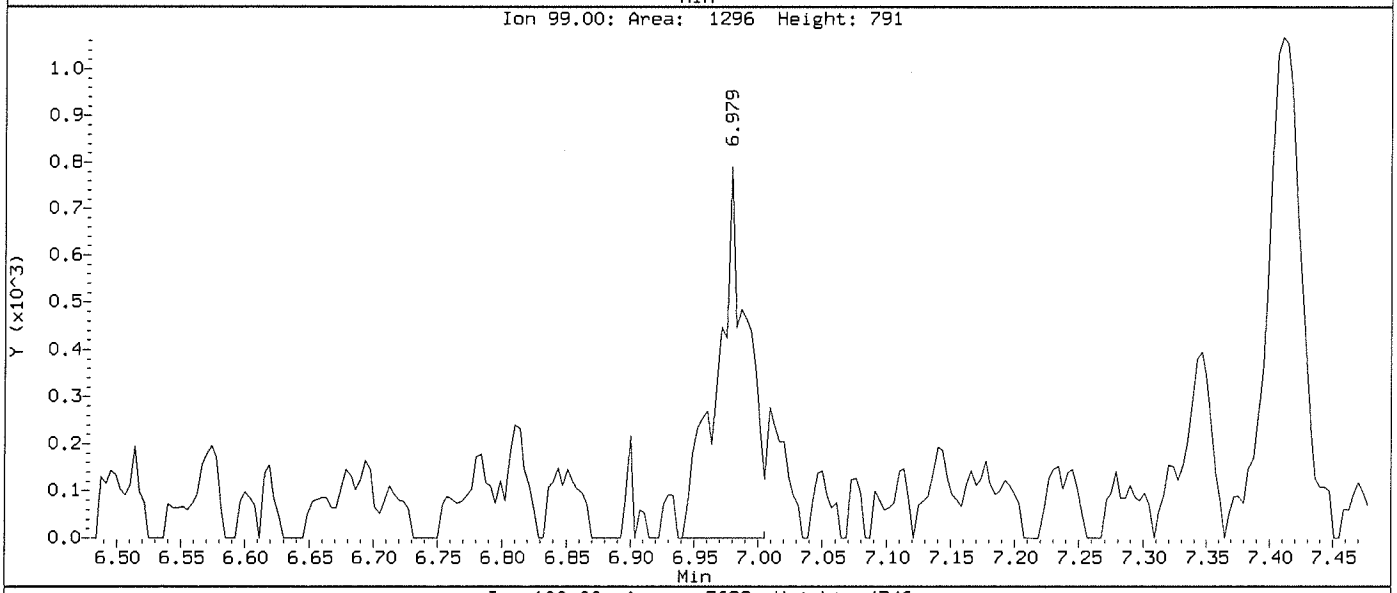


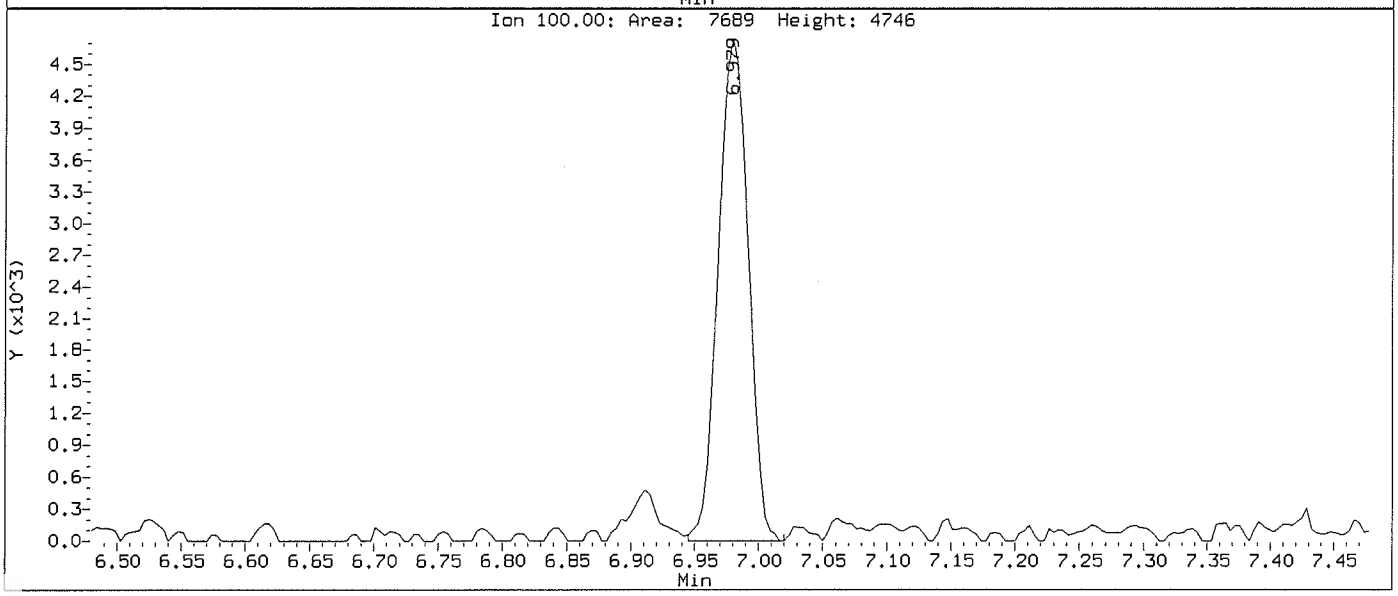


Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012102.D
Injection Date: 21-JAN-2022 11:22
Instrument: VOA9.i
Client Sample ID: VSTD000.25

Compound: Toluene-d8
CAS Number: 2037-26-5

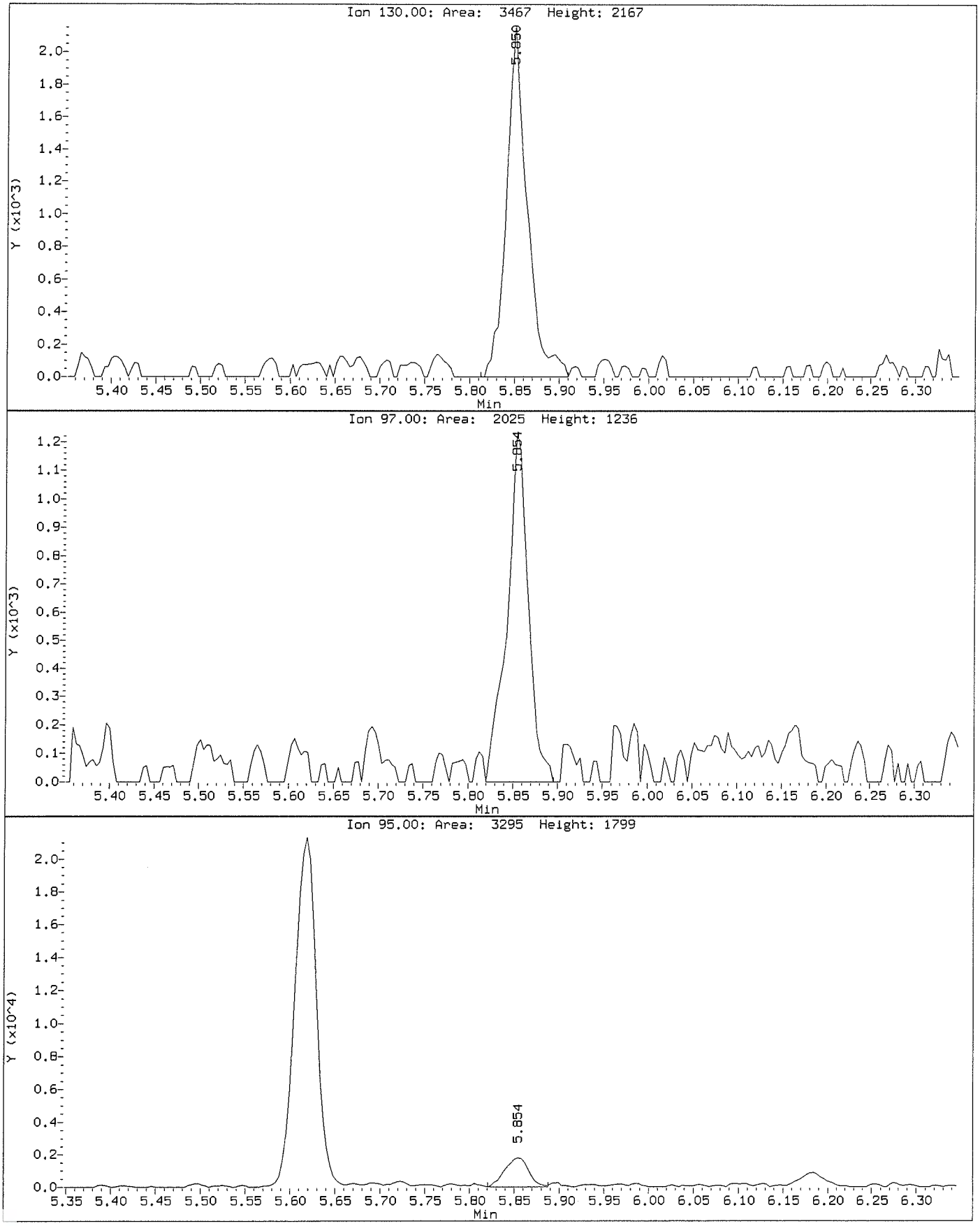






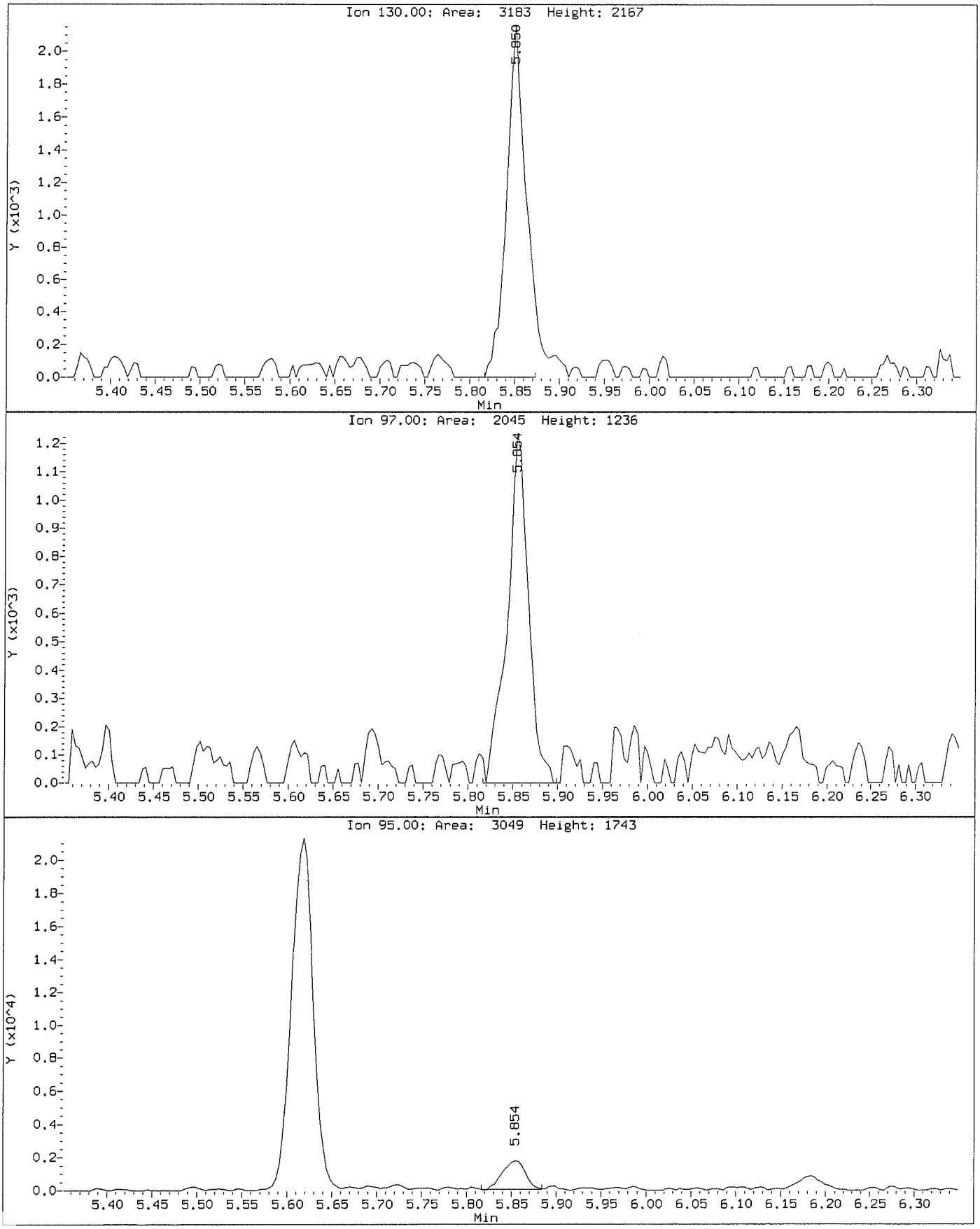
Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\Before\U012102.D
Injection Date: 21-JAN-2022 11:22
Instrument: VOA9.i
Client Sample ID: VSTD000.25

Compound: Trichloroethene
CAS Number: 79-01-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012102.D
Injection Date: 21-JAN-2022 11:22
Instrument: VOA9.i
Client Sample ID: VSTD000.25

Compound: Trichloroethene
CAS Number: 79-01-6



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012103.D Page 1
Report Date: 08-Feb-2022 10:37

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Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012103.D
Lab Smp Id: VSTD000.5 Client Smp ID: VSTD000.5
Inj Date : 21-JAN-2022 11:44
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD000.5;VSTD000.5;1;2;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:37 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 11:22 Cal File: U012102.D
Als bottle: 3 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

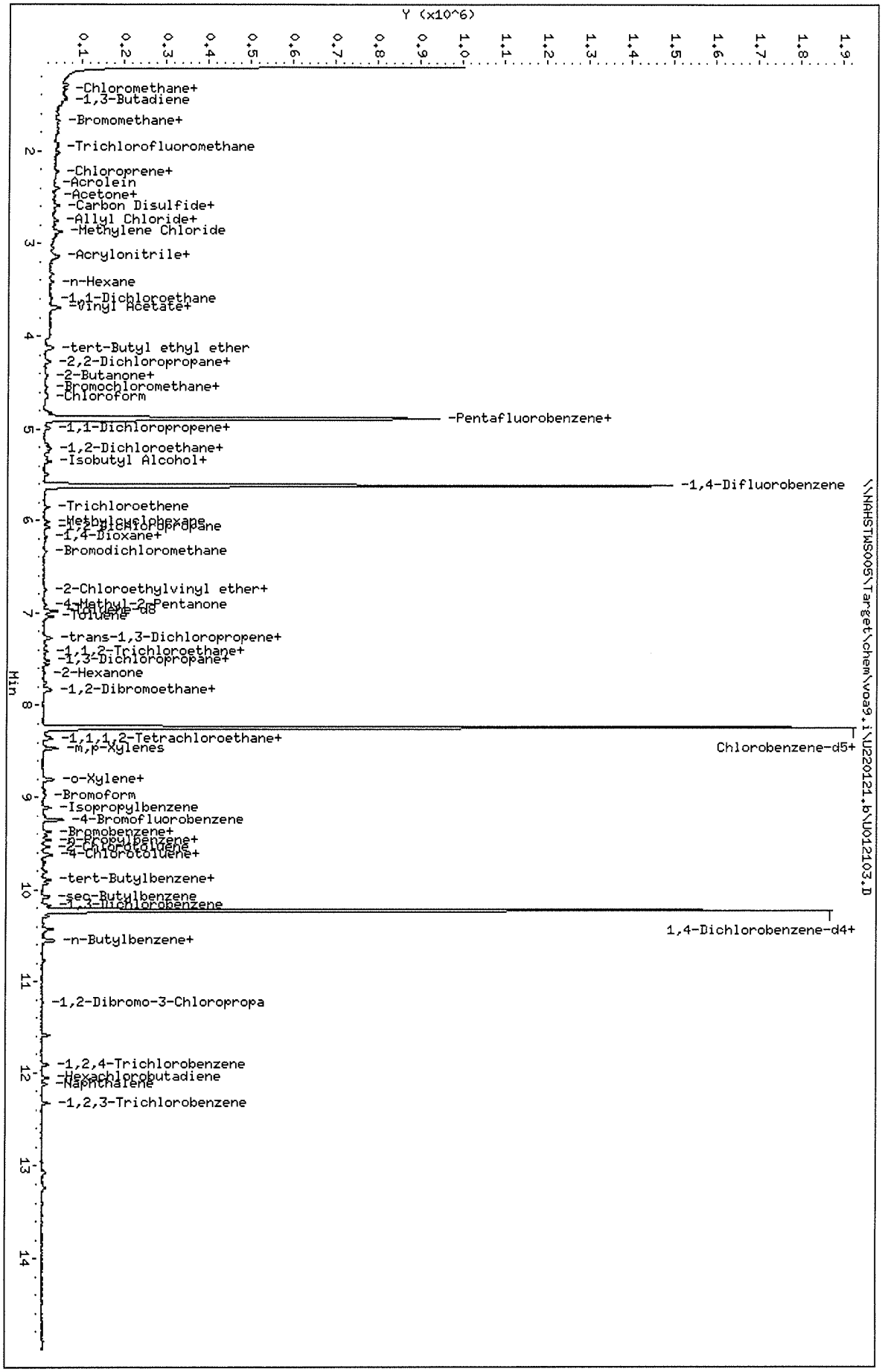
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.886	4.886	(1.000)	592566	50.0000	
* 36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	1014166	50.0000	
* 47 Chlorobenzene-d5	117	8.241	8.241	(1.000)	905077	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	428313	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.167	5.167	(1.058)	7908	0.50000	(a)
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	12738	0.50000	0.31(aM)
$ 30 Dibromofluoromethane	113	4.823	4.823	(0.987)	5745	0.50000	0.10(M)
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	13376	0.50000	0.57(aM)
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	2956	0.50000	0.51(a)
11 1,1-Dichloroethene	96	2.397	2.397	(0.491)	3132	0.50000	0.56(a)
33 1,2-Dichloroethane	62	5.246	5.246	(0.934)	4373	0.50000	0.42(a)
27 cis-1,2-Dichloroethene	96	4.283	4.283	(0.876)	4216	0.50000	0.54(a)
17 Methylene Chloride	84	2.866	2.866	(0.587)	6806	0.50000	(a)
38 Trichloroethene	130	5.853	5.853	(1.042)	3554	0.50000	0.49(a)
5 Vinyl Chloride	62	1.423	1.423	(0.291)	4226	0.50000	0.46(a)

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012103.D
Date : 21-JAN-2022 11:44
Client ID: VSTD000.5
Sample Info: VSTD000.5;VSTD000.5;1;2;;;
Purge Volume: 5.0
Column phase: DB624

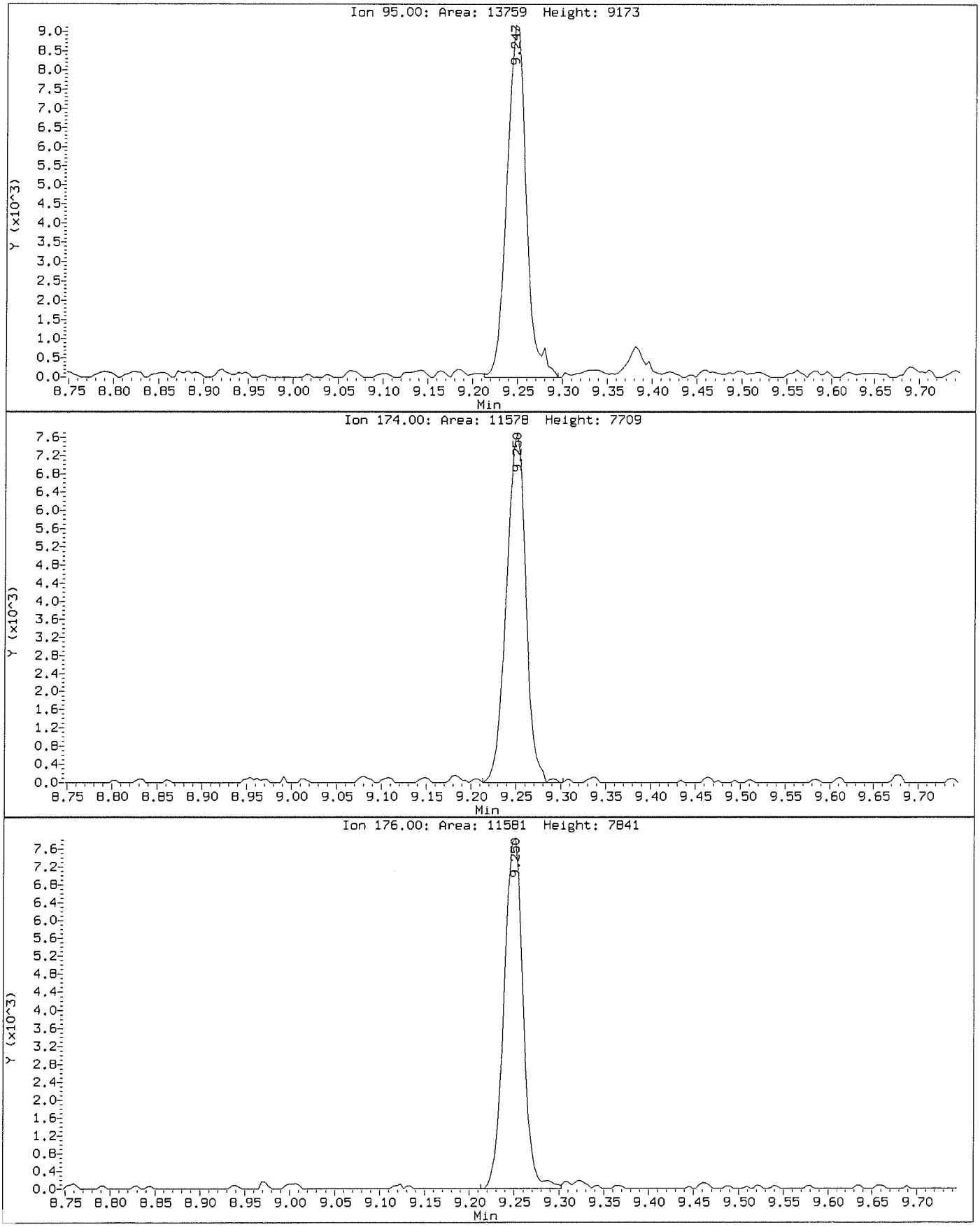
Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

\\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012103.D

Page 2

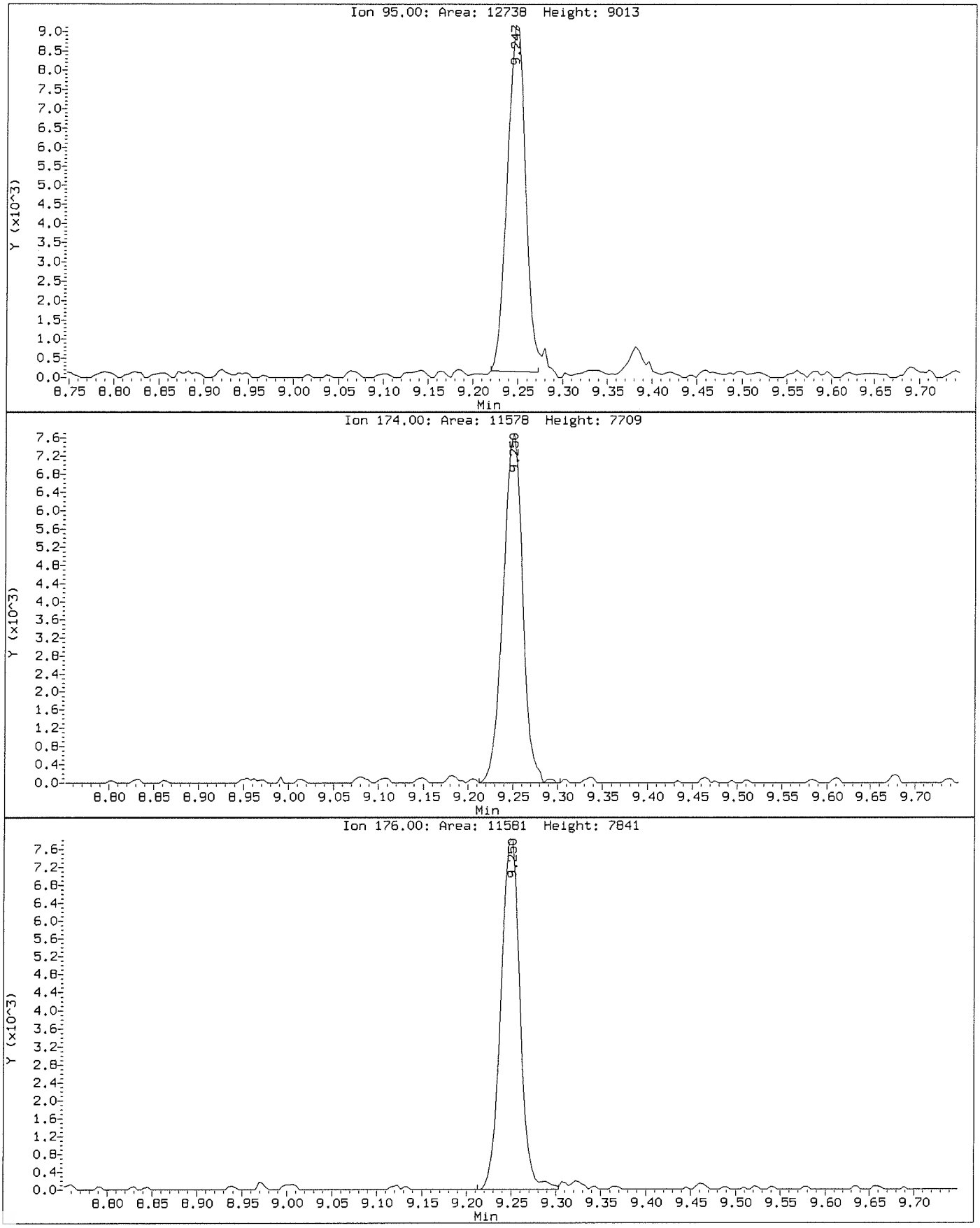
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Injection Date: 21-JAN-2022 11:44
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4



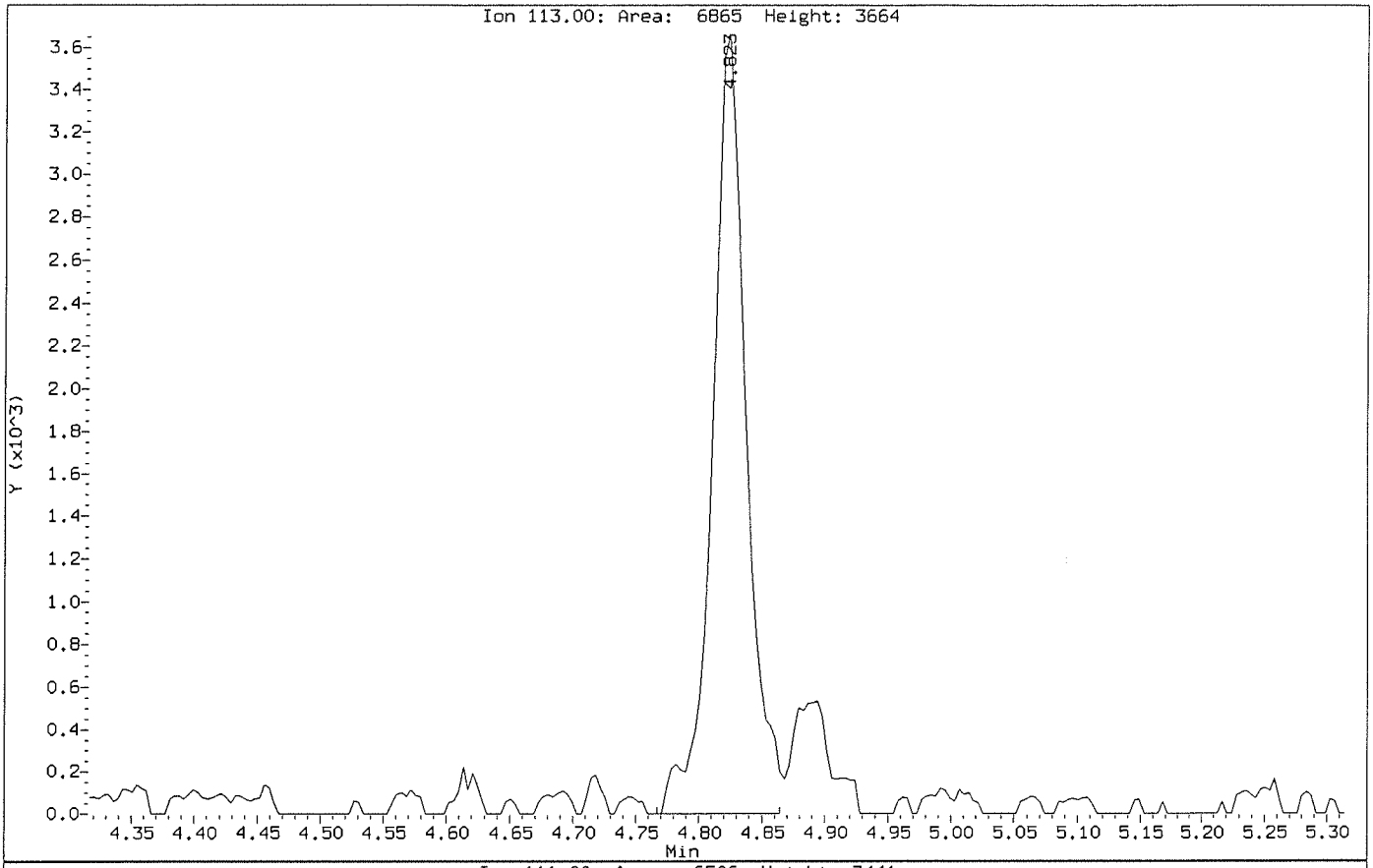
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Injection Date: 21-JAN-2022 11:44
Instrument: VOA9.i
Client Sample ID: VSTD000.5

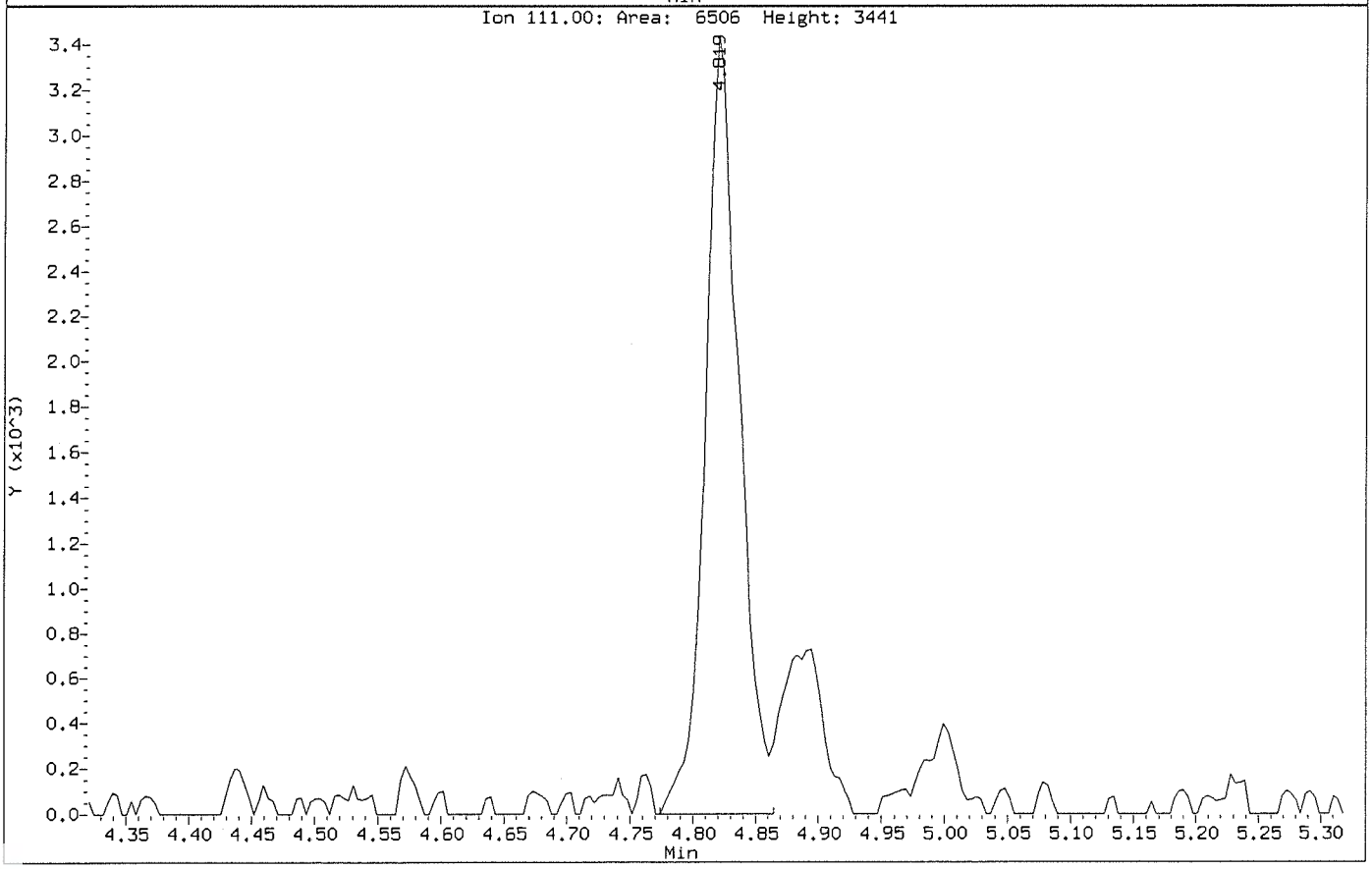
Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\Before\U012103.D
Injection Date: 21-JAN-2022 11:44
Instrument: VOA9.i
Client Sample ID: VSTD000.5

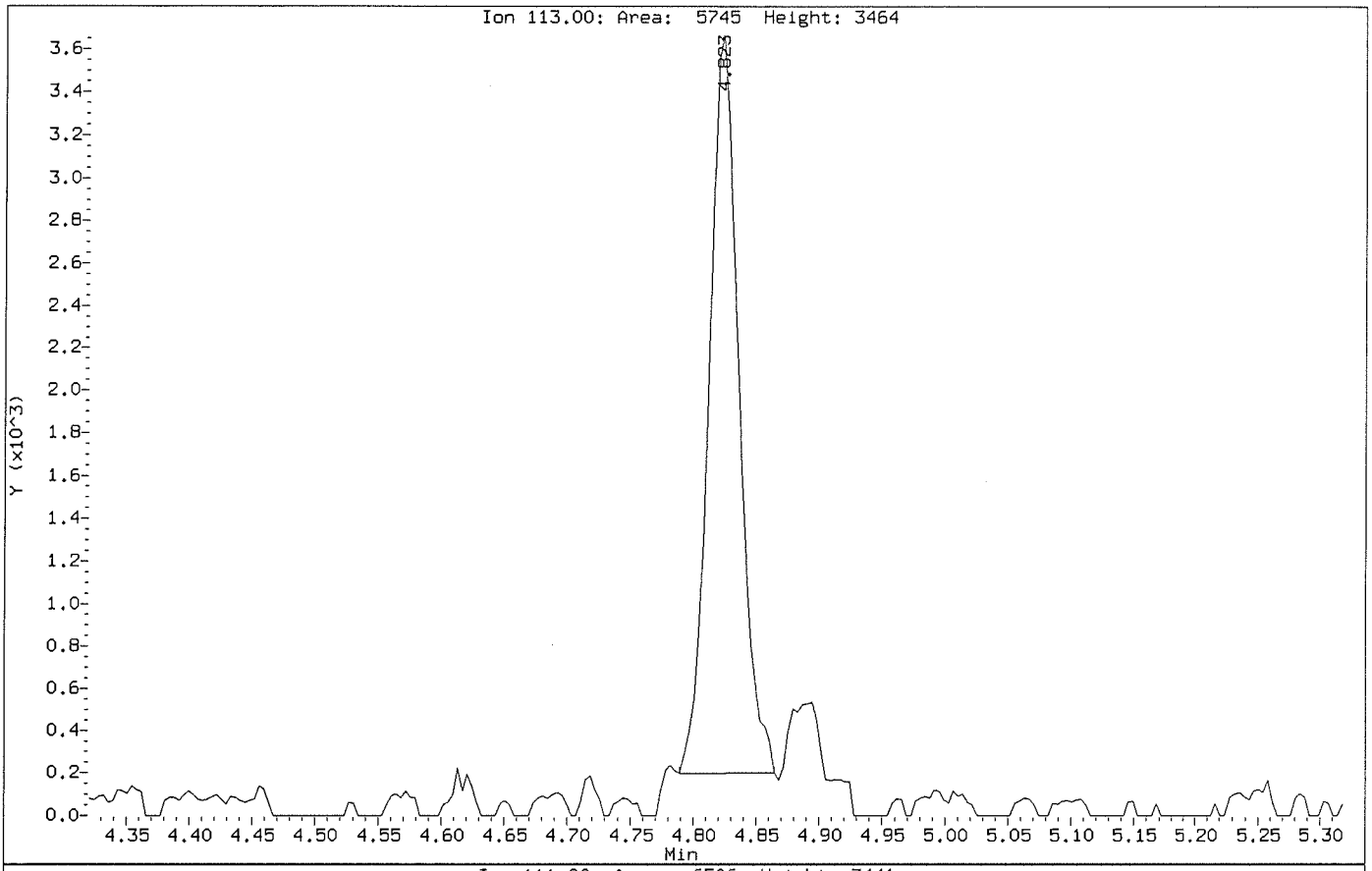
Compound: Dibromofluoromethane
CAS Number: 1868-53-7

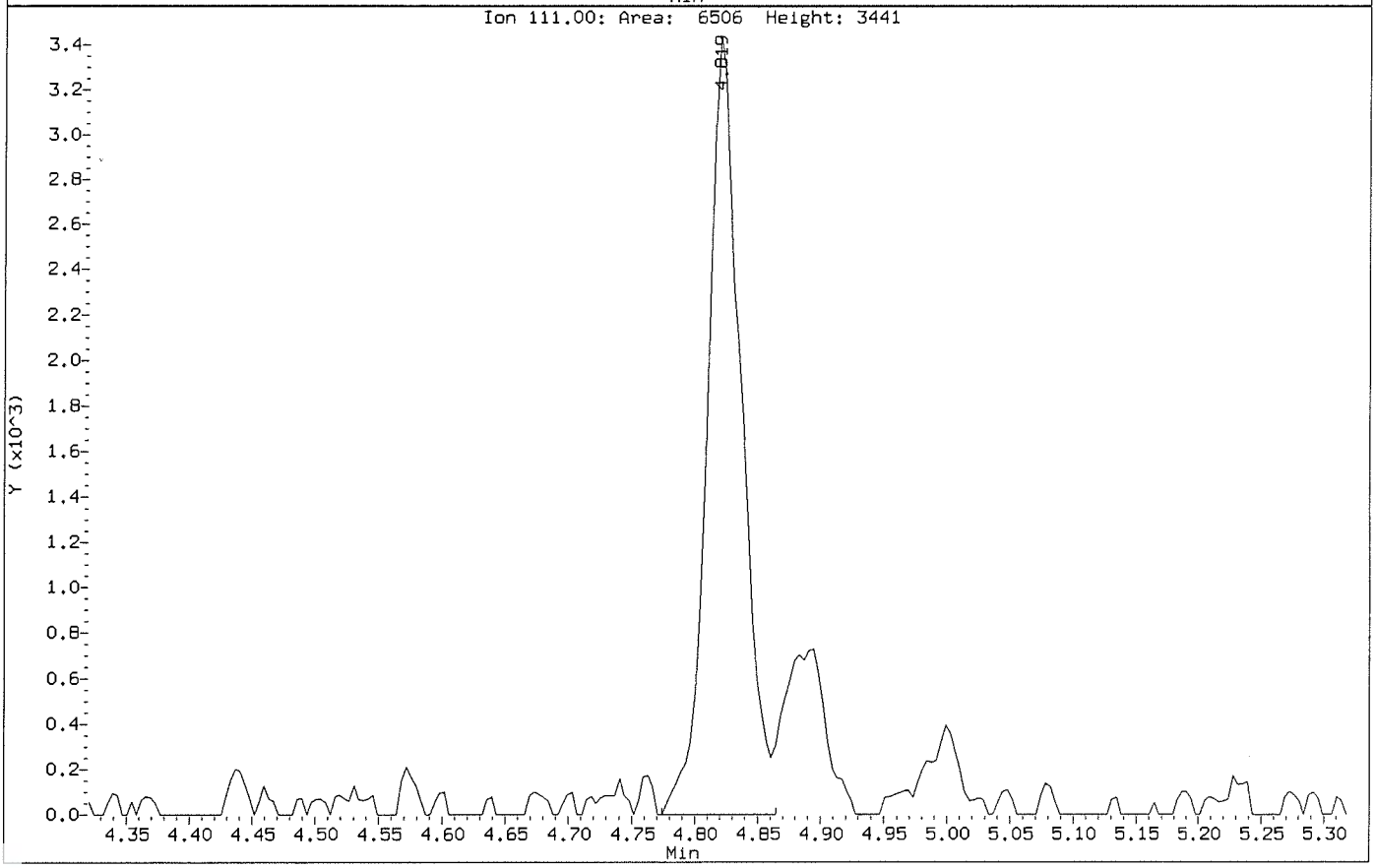




Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012103.D
Injection Date: 21-JAN-2022 11:44
Instrument: VOA9.i
Client Sample ID: VSTD000.5

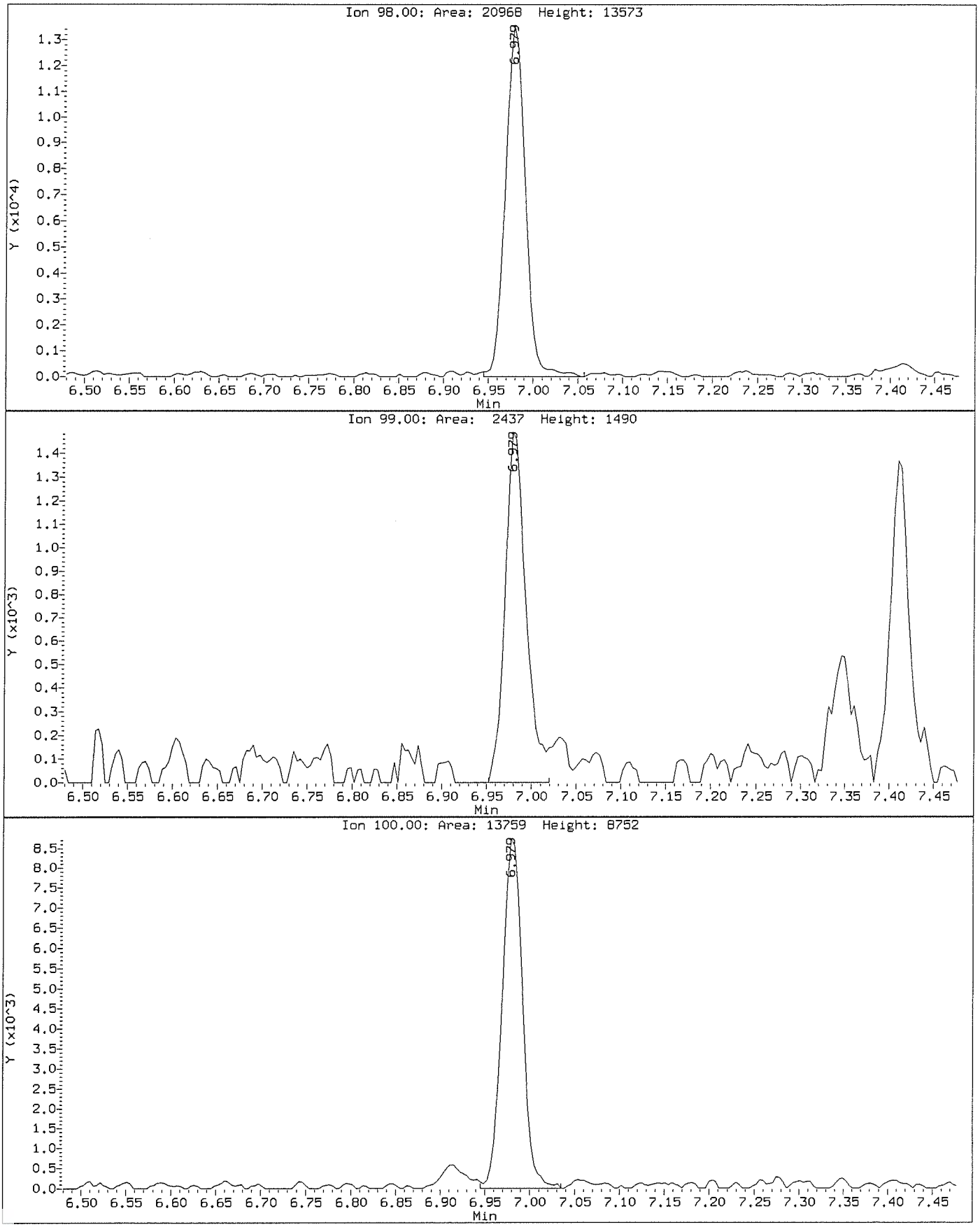
Compound: Dibromofluoromethane
CAS Number: 1868-53-7





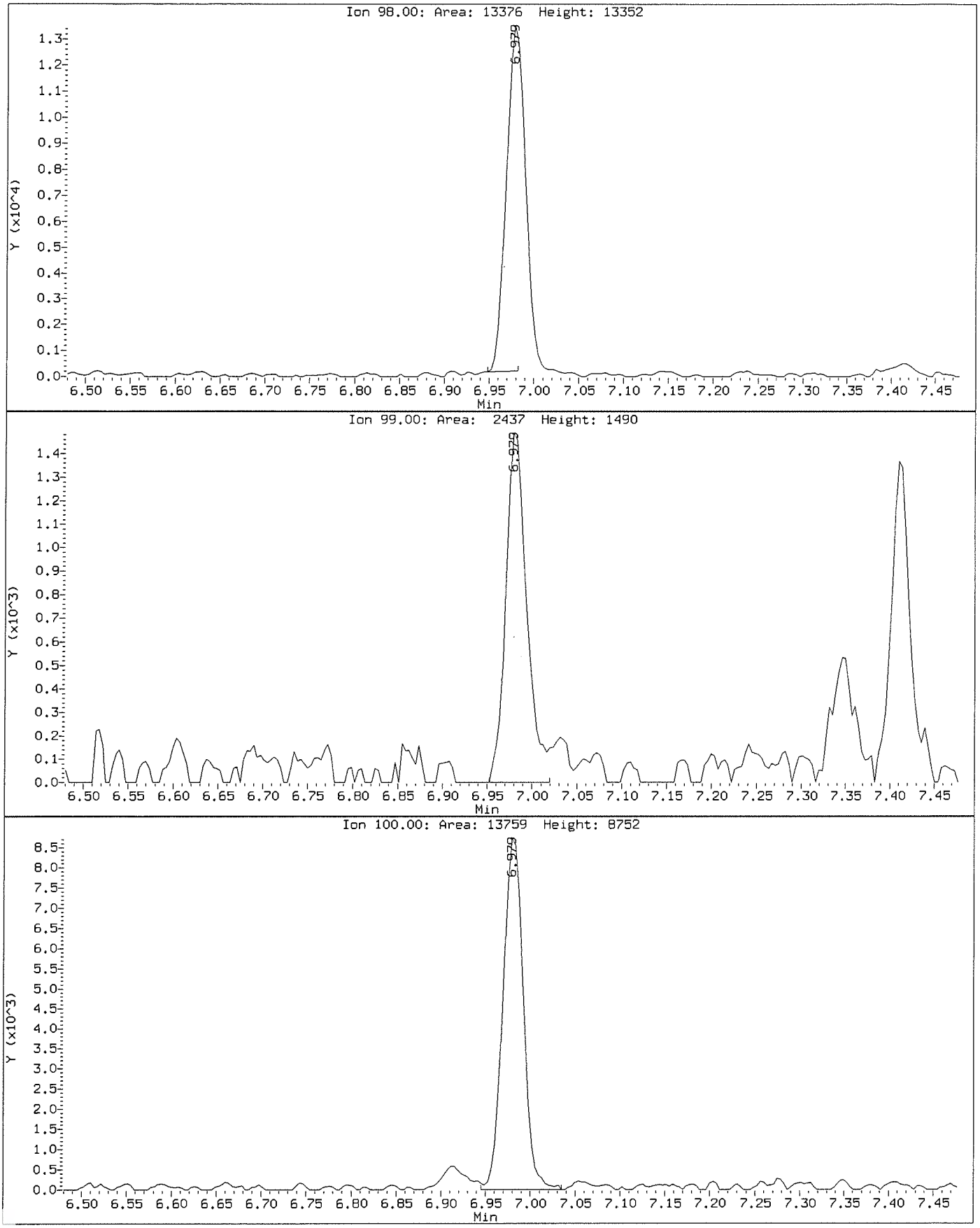
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Injection Date: 21-JAN-2022 11:44
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: Toluene-d8
CAS Number: 2037-26-5



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012103.D
Injection Date: 21-JAN-2022 11:44
Instrument: VOA9.i
Client Sample ID: VSTD000.5

Compound: Toluene-d8
CAS Number: 2037-26-5



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Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012104.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 21-JAN-2022 12:28
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD001;VSTD001;1;3;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:37 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 11:44 Cal File: U012103.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

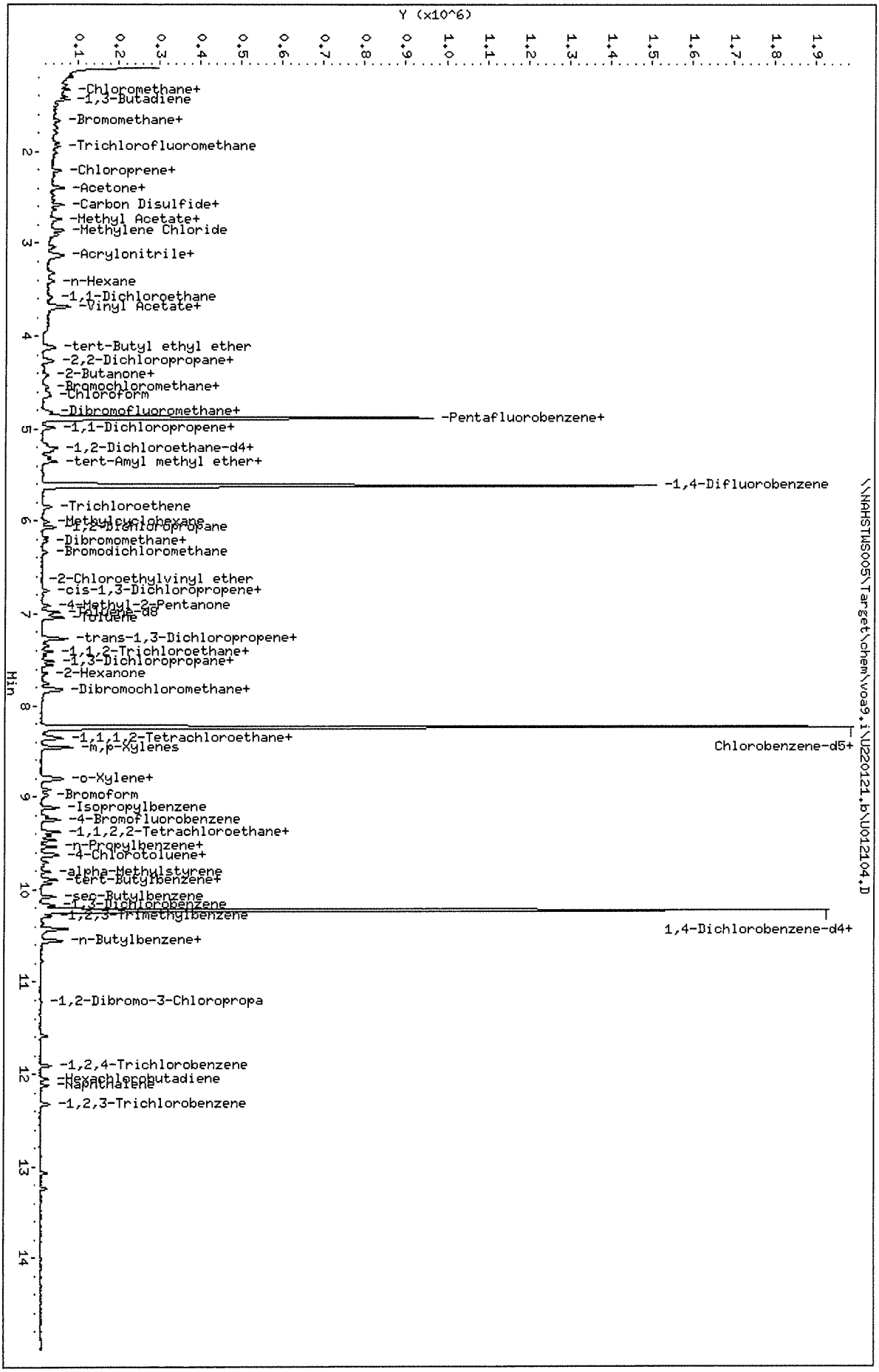
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.883	4.883	(1.000)	596951	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1028670	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	923640	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	432737	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	9353	1.00000	(a)
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	12907	1.00000	0.29(a)
$	30 Dibromofluoromethane	113	4.815	4.815	(0.986)	6292	1.00000	0.18
$	48 Toluene-d8	98	6.978	6.978	(0.847)	24428	1.00000	1.03(a)
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	5885	1.00000	1.01(a)
	11 1,1-Dichloroethene	96	2.390	2.390	(0.490)	5185	1.00000	0.92(a)
	33 1,2-Dichloroethane	62	5.243	5.243	(0.934)	10651	1.00000	1.03(aM)
	27 cis-1,2-Dichloroethene	96	4.268	4.268	(0.874)	7728	1.00000	0.99(a)
	17 Methylene Chloride	84	2.859	2.859	(0.585)	10698	1.00000	0.23(a)
	38 Trichloroethene	130	5.850	5.850	(1.042)	8624	1.00000	1.19(a)
	5 Vinyl Chloride	62	1.412	1.412	(0.289)	10649	1.00000	1.16(a)

QC Flag Legend

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

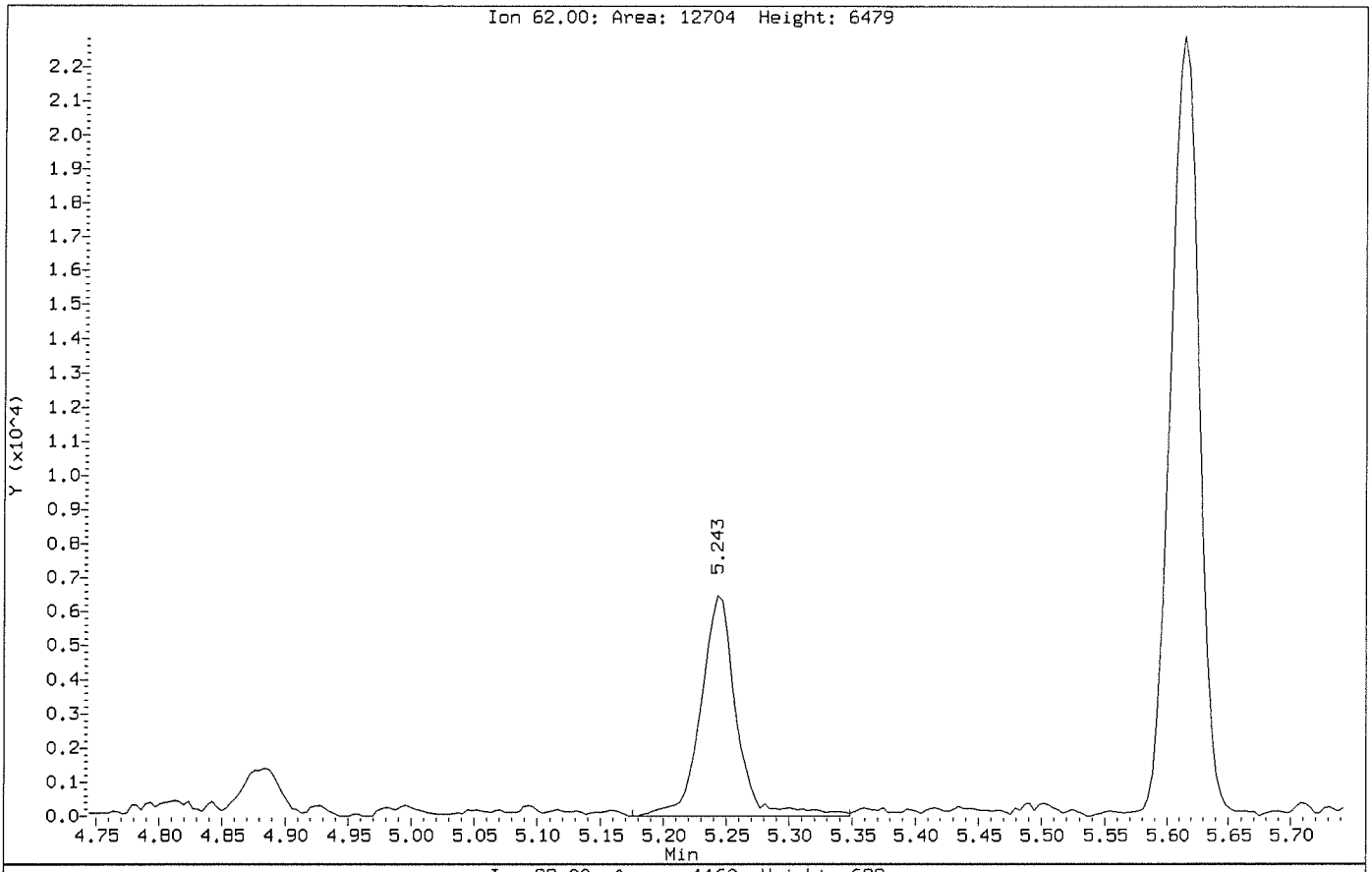


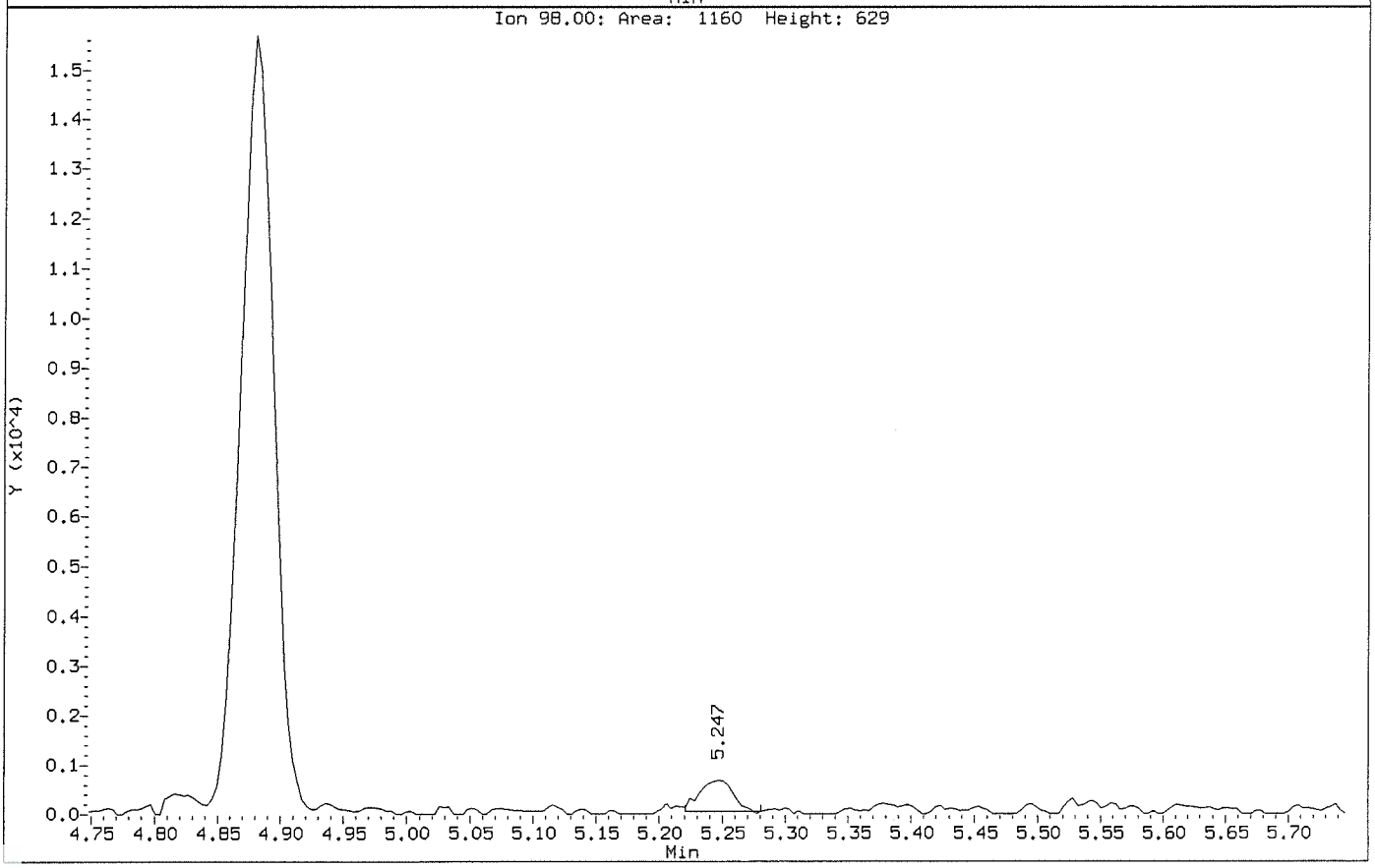
Data File: \\NAHSTWS005\Target\chem\voa9,i\U220121,b\U012104,D
Date : 21-JAN-2022 12:28
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;3;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\Before\U012104.D
Injection Date: 21-JAN-2022 12:28
Instrument: VOA9.i
Client Sample ID: VSTD001

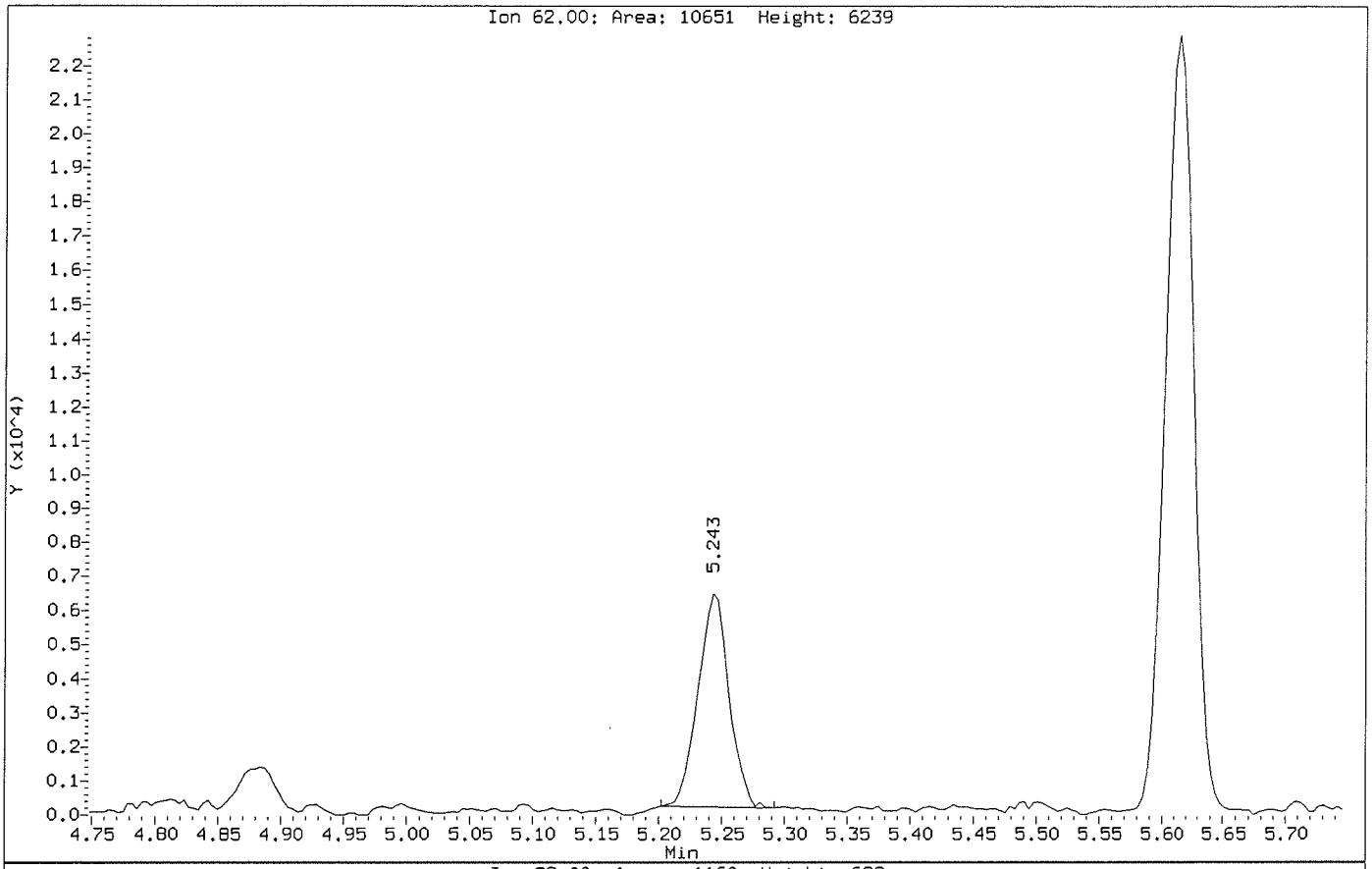
Compound: 1,2-Dichloroethane
CAS Number: 107-06-2

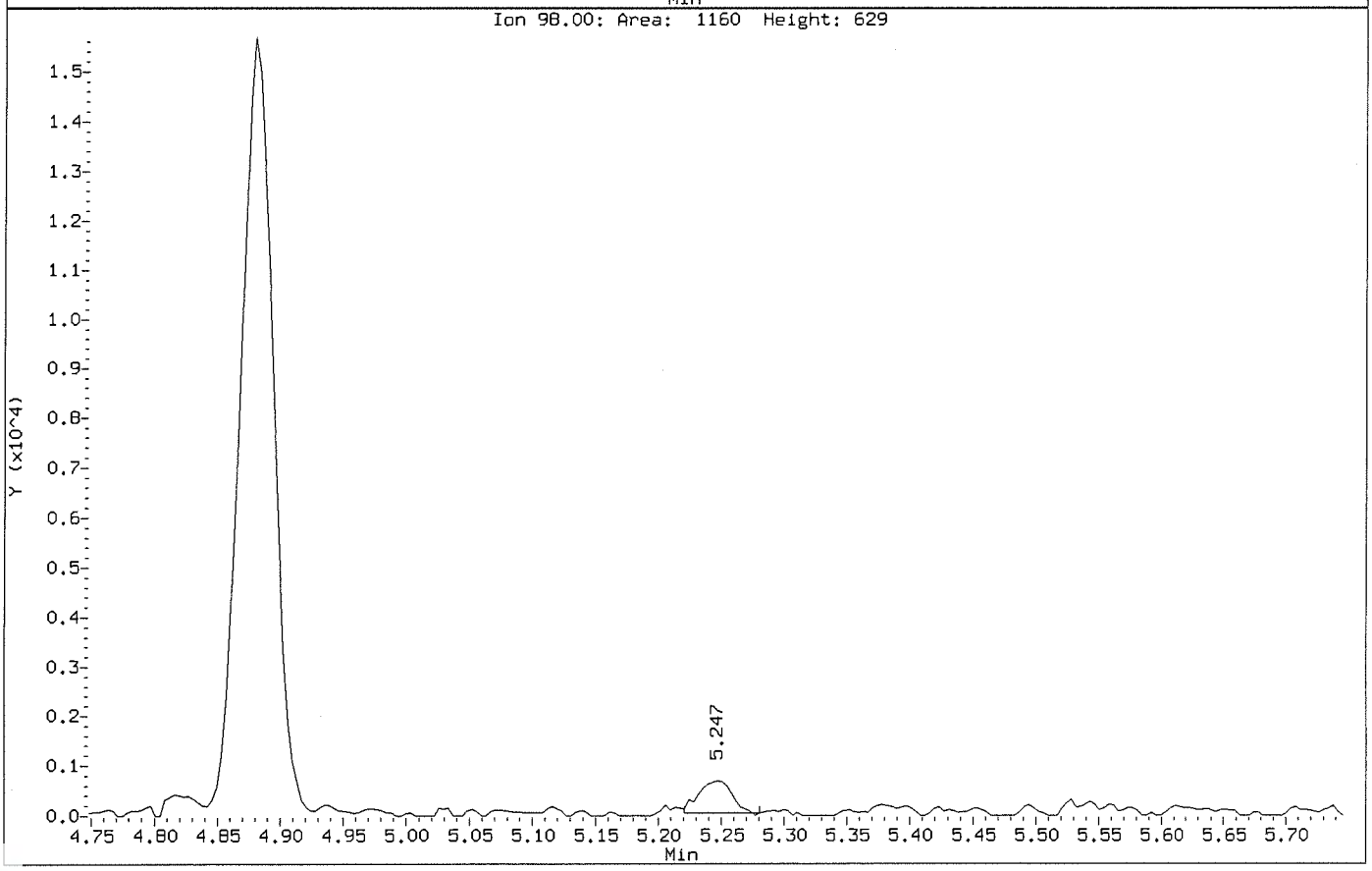




Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012104.D
Injection Date: 21-JAN-2022 12:28
Instrument: VOA9.i
Client Sample ID: VSTD001

Compound: 1,2-Dichloroethane
CAS Number: 107-06-2





Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012105.D Page 1
Report Date: 08-Feb-2022 10:37

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Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012105.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 21-JAN-2022 12:50
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD002;VSTD002;1;4;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:37 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 12:28 Cal File: U012104.D
Als bottle: 6 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

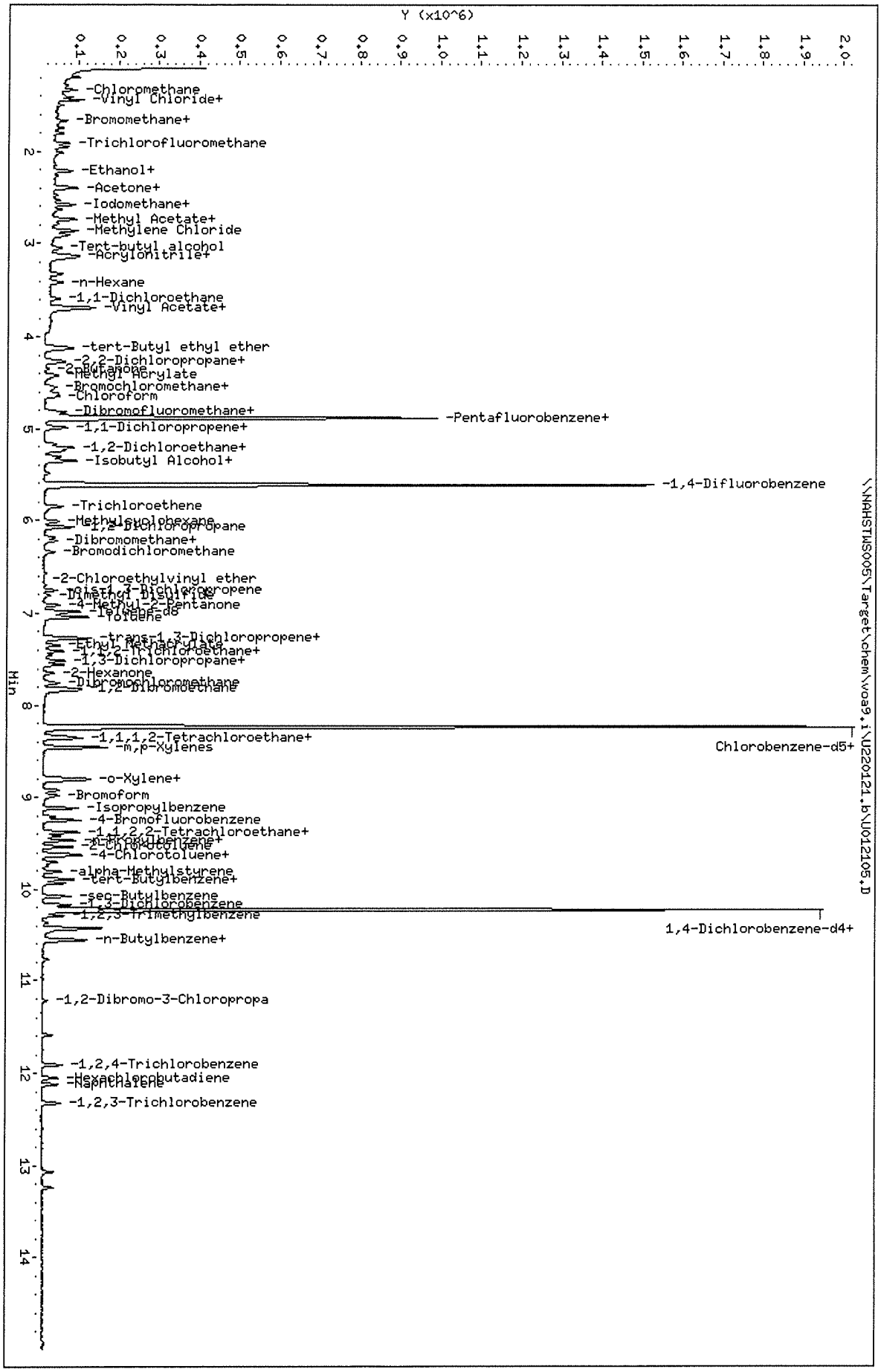
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.883	4.883	(1.000)	603041	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1047343	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	938565	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	445559	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.168	5.168	(1.058)	19107	2.00000	1.17(a)
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	26873	2.00000	1.91(a)
$	30 Dibromofluoromethane	113	4.819	4.819	(0.987)	14192	2.00000	1.47
$	48 Toluene-d8	98	6.978	6.978	(0.847)	52357	2.00000	2.17(a)
	53 1,1,2-Trichloroethane	83	7.413	7.413	(0.900)	12204	2.00000	2.06(a)
	11 1,1-Dichloroethene	96	2.394	2.394	(0.490)	11542	2.00000	2.03(a)
	33 1,2-Dichloroethane	62	5.246	5.246	(0.935)	21845	2.00000	2.07(a)
	27 cis-1,2-Dichloroethene	96	4.275	4.275	(0.876)	16034	2.00000	2.05(a)
	17 Methylene Chloride	84	2.862	2.862	(0.586)	17383	2.00000	1.22(a)
	38 Trichloroethene	130	5.850	5.850	(1.042)	15476	2.00000	2.09(a)
	5 Vinyl Chloride	62	1.415	1.415	(0.290)	18823	2.00000	2.04(a)

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012105.D
Date : 21-JAN-2022 12:50
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;4;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012106.D Page 1
Report Date: 08-Feb-2022 10:37

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012106.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 21-JAN-2022 13:12
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD005;VSTD005;1;5;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:37 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 12:50 Cal File: U012105.D
Als bottle: 7 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

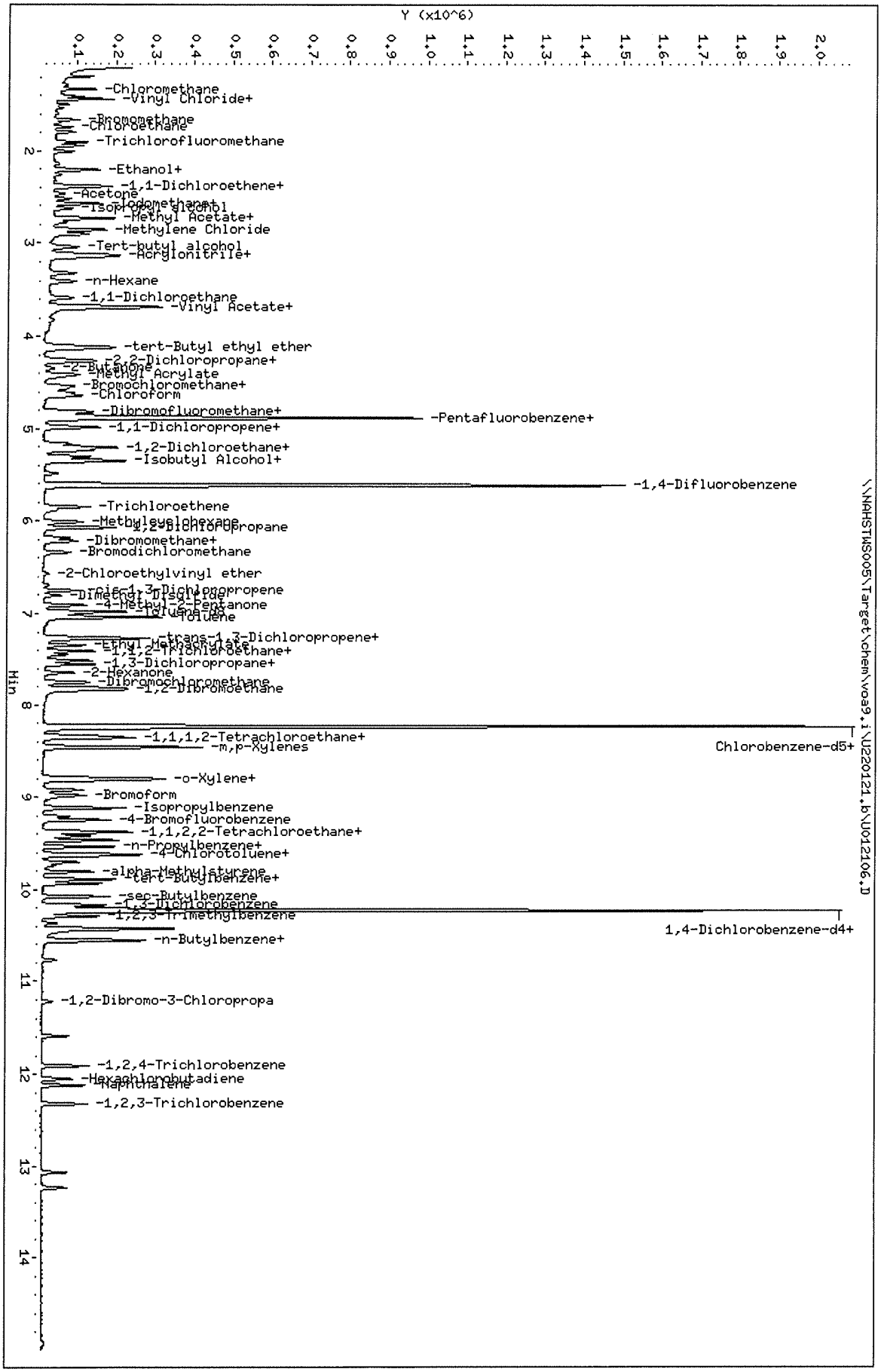
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.879	4.879	(1.000)	602262	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1033018	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	937234	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	456880	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	42917	5.00000	4.29(a)
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	48837	5.00000	4.49(a)
$ 30 Dibromofluoromethane	113	4.819	4.819	(0.988)	32715	5.00000	4.54
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	116503	5.00000	4.84(a)
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	29958	5.00000	5.07
11 1,1-Dichloroethene	96	2.386	2.386	(0.489)	28583	5.00000	5.05
33 1,2-Dichloroethane	62	5.242	5.242	(0.934)	55838	5.00000	5.39
27 cis-1,2-Dichloroethene	96	4.271	4.271	(0.876)	39136	5.00000	5.01
17 Methylene Chloride	84	2.854	2.854	(0.585)	39937	5.00000	4.64(a)
38 Trichloroethene	130	5.850	5.850	(1.042)	34563	5.00000	4.74(a)
5 Vinyl Chloride	62	1.407	1.407	(0.289)	43211	5.00000	4.69(a)

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012106.D
Date : 21-JAN-2022 13:12
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;5;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012107.D Page 1
Report Date: 08-Feb-2022 10:37

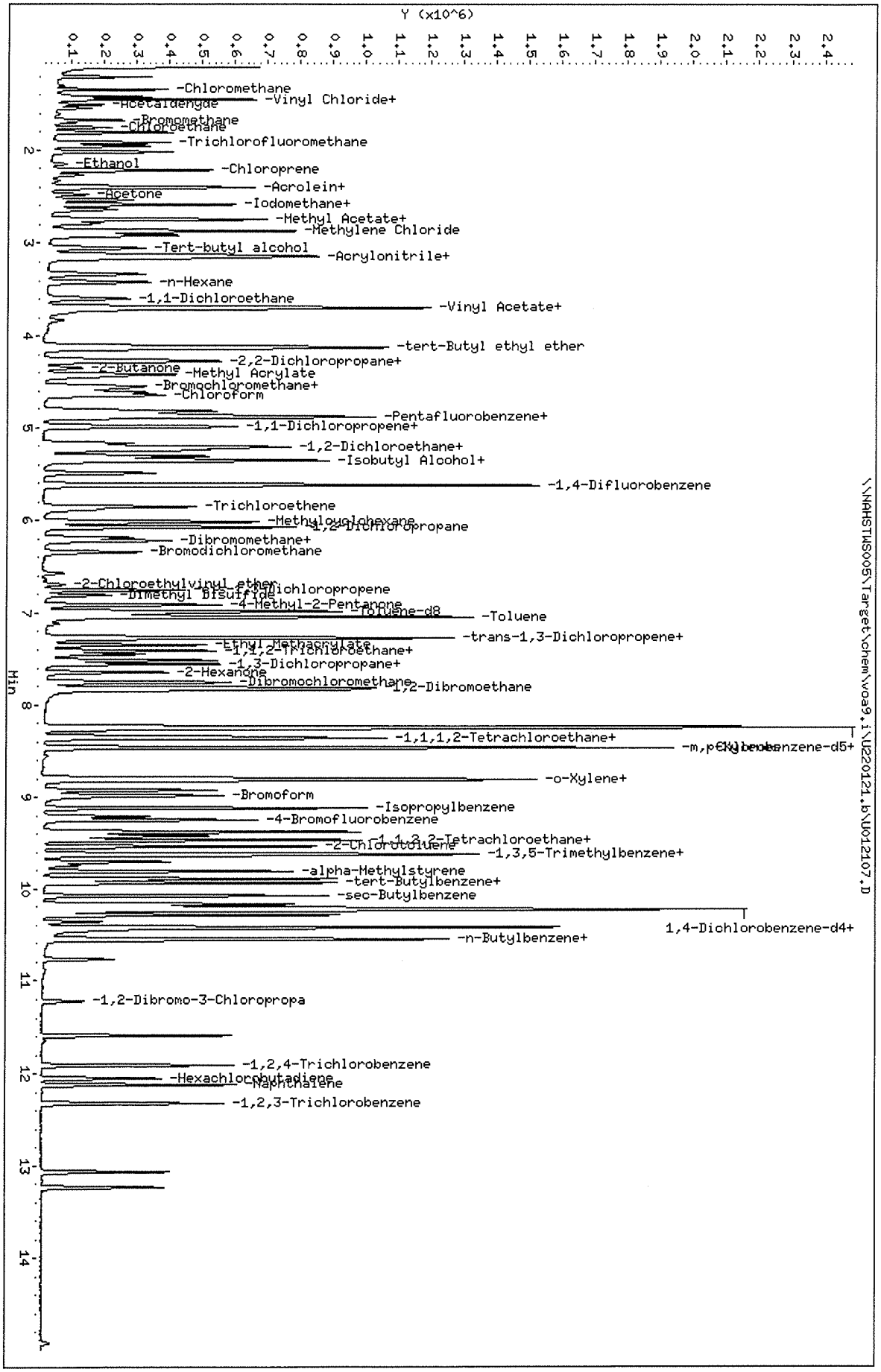
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012107.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 21-JAN-2022 13:34
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD020;VSTD020;1;6;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:37 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:12 Cal File: U012106.D
Als bottle: 8 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.886	4.886	(1.000)	608297	50.0000	
*	36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	1038948	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	952323	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	468678	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.168	5.168	(1.058)	171723	20.0000	20.96
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	180431	20.0000	19.58
$	30 Dibromofluoromethane	113	4.823	4.823	(0.987)	133630	20.0000	20.98
$	48 Toluene-d8	98	6.978	6.978	(0.847)	491308	20.0000	20.12
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	122557	20.0000	20.41
	11 1,1-Dichloroethene	96	2.397	2.397	(0.491)	112726	20.0000	19.73
	33 1,2-Dichloroethane	62	5.246	5.246	(0.934)	217619	20.0000	20.88
	27 cis-1,2-Dichloroethene	96	4.279	4.279	(0.876)	153590	20.0000	19.48
	17 Methylene Chloride	84	2.866	2.866	(0.587)	146064	20.0000	20.50
	38 Trichloroethene	130	5.854	5.854	(1.042)	139073	20.0000	19.00
	5 Vinyl Chloride	62	1.419	1.419	(0.290)	178660	20.0000	19.21



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220121.b\U012107.D
Date : 21-JAN-2022 13:34
Client ID: VSTD020
Sample Info: VSTD020;VSTD020;1;6;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

\\NAHSTWS005\Target\chem\voa9,i\U220121.b\U012107.D

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012108.D Page 1
Report Date: 08-Feb-2022 10:37

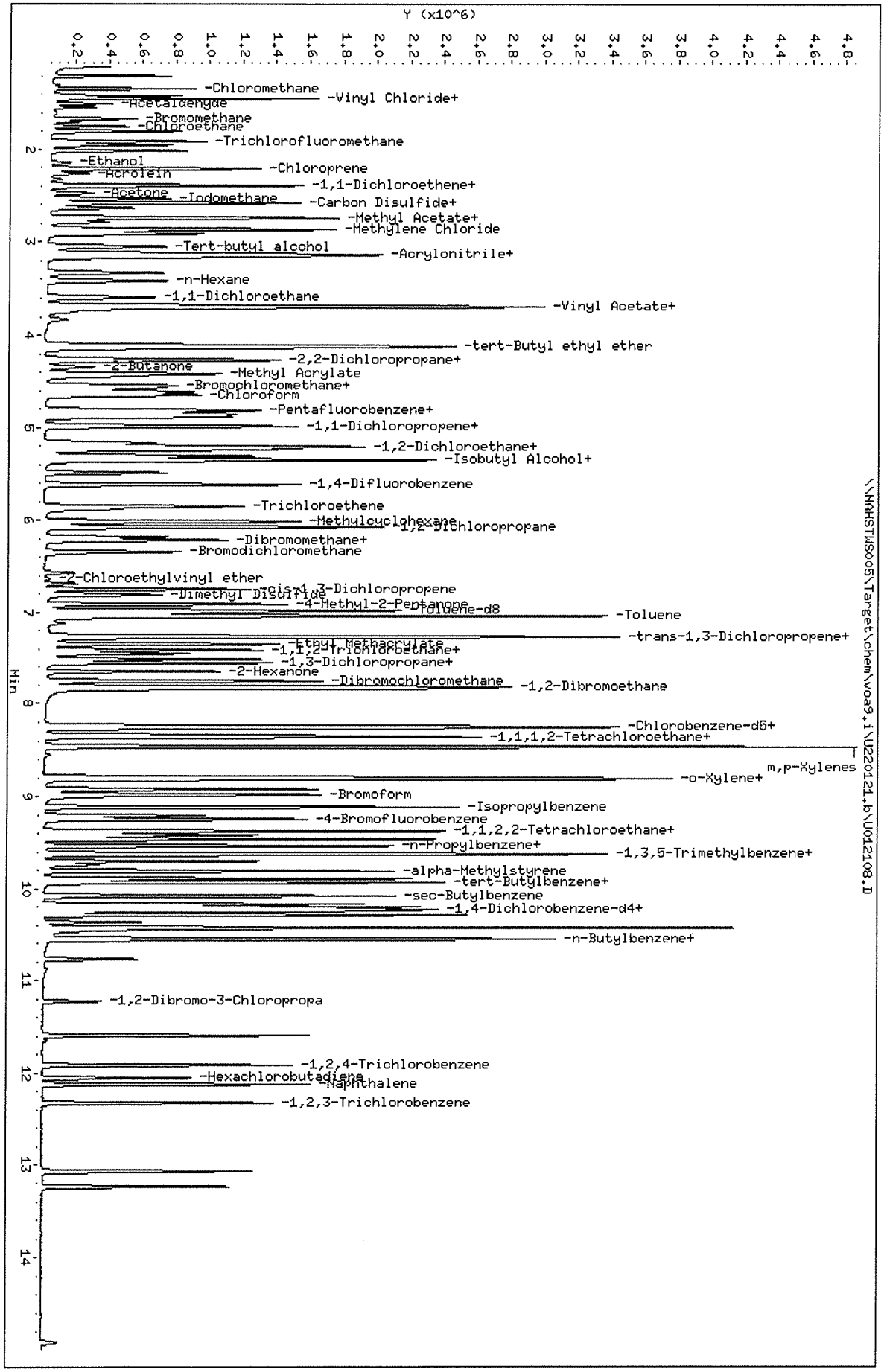
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012108.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 21-JAN-2022 13:56
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050;VSTD050;1;7;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:37 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:34 Cal File: U012107.D
Als bottle: 9 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.883	(1.000)	629767	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1058668	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	970798	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	487743	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.167	5.167	(1.058)	410662	50.0000	50.18
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	445798	50.0000	49.23
$ 30 Dibromofluoromethane	113	4.819	4.819	(0.987)	315169	50.0000	48.90
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1140385	50.0000	45.83
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	300431	50.0000	49.10
11 1,1-Dichloroethene	96	2.393	2.393	(0.490)	283761	50.0000	47.99
33 1,2-Dichloroethane	62	5.242	5.242	(0.934)	541279	50.0000	50.98
27 cis-1,2-Dichloroethene	96	4.275	4.275	(0.876)	399792	50.0000	48.99
17 Methylene Chloride	84	2.862	2.862	(0.586)	362049	50.0000	51.04
38 Trichloroethene	130	5.850	5.850	(1.042)	354722	50.0000	47.56
5 Vinyl Chloride	62	1.415	1.415	(0.290)	473606	50.0000	49.20


Y (x10^6)
0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0 3.2 3.4 3.6 3.8 4.0 4.2 4.4 4.6 4.8
Min
2 3 4 5 6 7 8 9 10 11 12 13 14
-Chloromethane
-Vinyl Chloride+
-Acetaldehyde
-Bromomethane
-Chloroethane
-Trichlorofluoromethane
-Ethanol
-Chloroprene
-Acrolein
-1,1-Dichloroethene+
-Acetone
-Iodomethane
-Carbon Disulfide+
-Methyl Acetate+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Vinyl Acetate+
-tert-Butyl ethyl ether
-2,2-Dichloropropane+
-2-Butanone
-Methyl Acrylate
-Bromochloromethane+
-Chloroform
-Pentafluorobenzene+
-1,1-Dichloropropene+
-1,2-Dichloroethane+
-Isobutyl Alcohol+
-1,4-Difluorobenzene
-Trichloroethene
-Methylcyclohexane
-1,2-Dichloropropane
-Dibromomethane+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-Dimethyl Disulfide
-4-Methyl-2-Pentanone
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate
-1,1,2-Trichloroethane+
-1,3-Dichloropropane+
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-1,1,2,2-Tetrachloroethane+
-n-Propylbenzene+
-1,3,5-Trimethylbenzene+
-alpha-Methylstyrene
-tert-Butylbenzene+
-sec-Butylbenzene
-1,4-Dichlorobenzene-d4+
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
\\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012108.D
Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012108.D
Date : 21-JAN-2022 13:56
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA9.i
Operator: PC
Column diameter: 0.18
Page 2

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012109.D Page 1
Report Date: 08-Feb-2022 10:37

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012109.D
Lab Smp Id: VSTD100 Client Smp ID: VSTD100
Inj Date : 21-JAN-2022 14:18
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD100;VSTD100;1;8;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:37 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 10 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

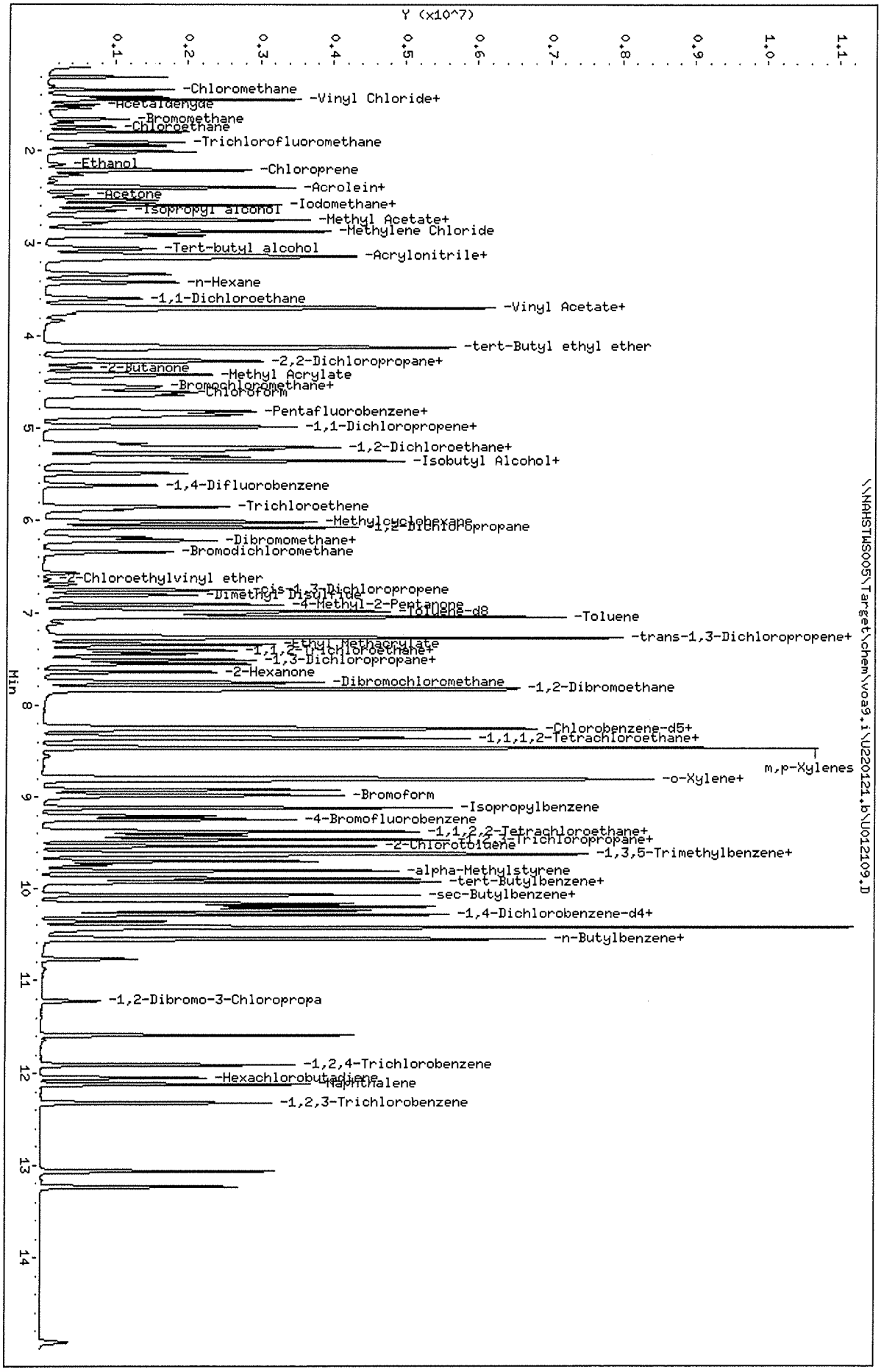
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.887	4.887	(1.000)	648471	50.0000	
* 36 1,4-Difluorobenzene	114	5.618	5.618	(1.000)	1104494	50.0000	
* 47 Chlorobenzene-d5	117	8.242	8.242	(1.000)	1016315	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	510482	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.168	5.168	(1.058)	875745	100.000	105.35
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	983774	100.000	105.16
$ 30 Dibromofluoromethane	113	4.823	4.823	(0.987)	693277	100.000	105.45
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	2616189	100.000	100.43(A)
53 1,1,2-Trichloroethane	83	7.413	7.413	(0.899)	634033	100.000	98.98
11 1,1-Dichloroethene	96	2.394	2.394	(0.490)	626059	100.000	102.82
33 1,2-Dichloroethane	62	5.246	5.246	(0.934)	1112211	100.000	100.41
27 cis-1,2-Dichloroethene	96	4.275	4.275	(0.875)	831737	100.000	98.98
17 Methylene Chloride	84	2.866	2.866	(0.587)	743158	100.000	103.14
38 Trichloroethene	130	5.850	5.850	(1.041)	773665	100.000	99.43
5 Vinyl Chloride	62	1.419	1.419	(0.290)	1027574	100.000	103.68

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012109.D
Date : 21-JAN-2022 14:18
Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1;8;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012110.D Page 1
Report Date: 08-Feb-2022 10:37

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012110.D
Lab Smp Id: VSTD150 Client Smp ID: VSTD150
Inj Date : 21-JAN-2022 14:40
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD150;VSTD150;1;9;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:37 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 14:18 Cal File: U012109.D
Als bottle: 11 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

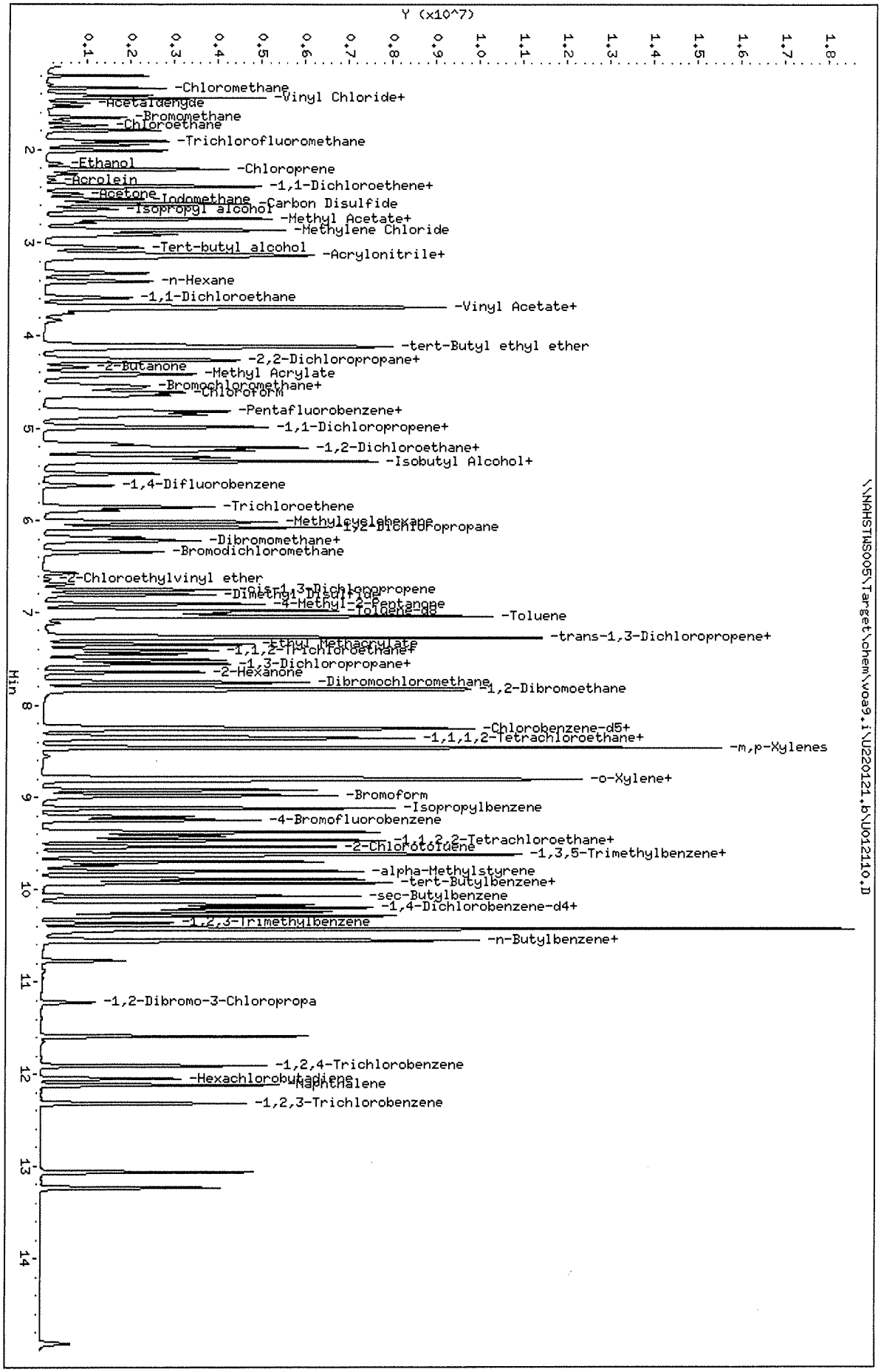
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.883	4.883	(1.000)	672041	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1139082	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	1045733	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	519744	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	1283450	150.000	149.54
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	1438840	150.000	150.00
$	30 Dibromofluoromethane	113	4.819	4.819	(0.987)	1007785	150.000	148.26
$	48 Toluene-d8	98	6.978	6.978	(0.847)	3704114	150.000	138.20(A)
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	956491	150.000	145.12
	11 1,1-Dichloroethene	96	2.390	2.390	(0.490)	921832	150.000	146.09
	33 1,2-Dichloroethane	62	5.243	5.243	(0.934)	1672191	150.000	146.39
	27 cis-1,2-Dichloroethene	96	4.272	4.272	(0.875)	1268111	150.000	145.63
	17 Methylene Chloride	84	2.858	2.858	(0.585)	1115598	150.000	150.04
	38 Trichloroethene	130	5.850	5.850	(1.042)	1162435	150.000	144.86
	5 Vinyl Chloride	62	1.411	1.411	(0.289)	1512003	150.000	147.22

QC Flag Legend

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



Data File: \\NAHSTNS005\Target\chem\voa9.i\JJ220121.b\UU12110.D
Date : 21-JAN-2022 14:40
Client ID: VSTD150
Sample Info: VSTD150;VSTD150;1;9;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012111.D Page 1
Report Date: 08-Feb-2022 10:37

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012111.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 21-JAN-2022 15:02
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD200;VSTD200;1;10;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:37 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 14:40 Cal File: U012110.D
Als bottle: 12 Calibration Sample, Level: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

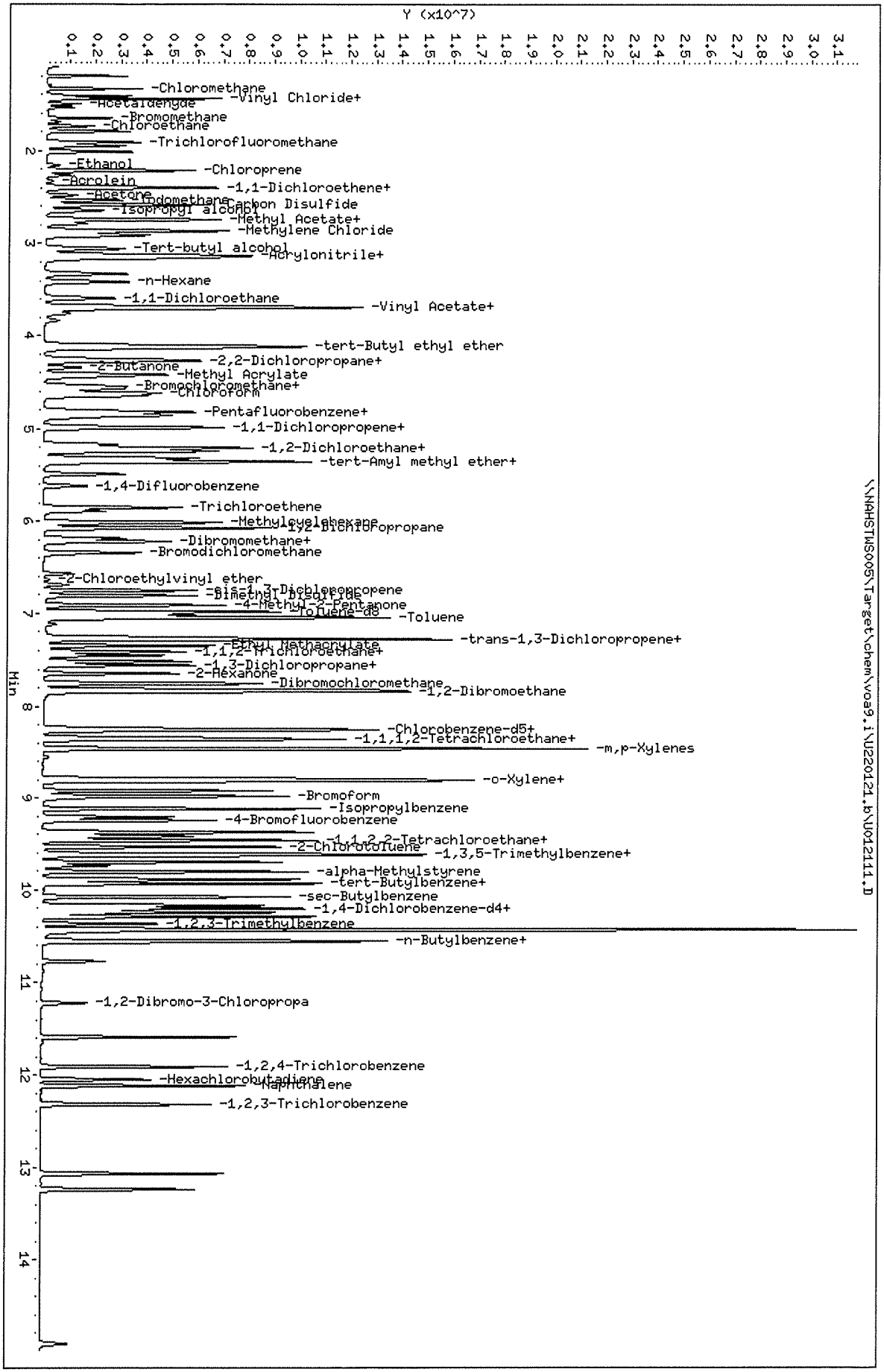
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.886	4.886	(1.000)	701938	50.0000	
* 36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	1196847	50.0000	
* 47 Chlorobenzene-d5	117	8.241	8.241	(1.000)	1103135	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	536921	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.168	5.168	(1.058)	1765372	200.000	197.35
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	1994348	200.000	197.48
$ 30 Dibromofluoromethane	113	4.819	4.819	(0.986)	1407841	200.000	198.58
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	5133212	200.000	181.55(A)
53 1,1,2-Trichloroethane	83	7.413	7.413	(0.899)	1316195	200.000	189.30
11 1,1-Dichloroethene	96	2.394	2.394	(0.490)	1278345	200.000	193.96
33 1,2-Dichloroethane	62	5.246	5.246	(0.934)	2268842	200.000	189.04
27 cis-1,2-Dichloroethene	96	4.275	4.275	(0.875)	1743645	200.000	191.71
17 Methylene Chloride	84	2.862	2.862	(0.586)	1534403	200.000	198.02
38 Trichloroethene	130	5.850	5.850	(1.041)	1609757	200.000	190.93
5 Vinyl Chloride	62	1.415	1.415	(0.290)	2093350	200.000	195.14

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220121,b\U012111,D
Date : 21-JAN-2022 15:02
Client ID: VSTD200
Instrument: VOA9,i
Sample Info: VSTD200;VSTD200;1;10;;;
Purge Volume: 5.0
Operator: PC
Column phase: DB624
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012113.D Page 1
Report Date: 08-Feb-2022 10:37

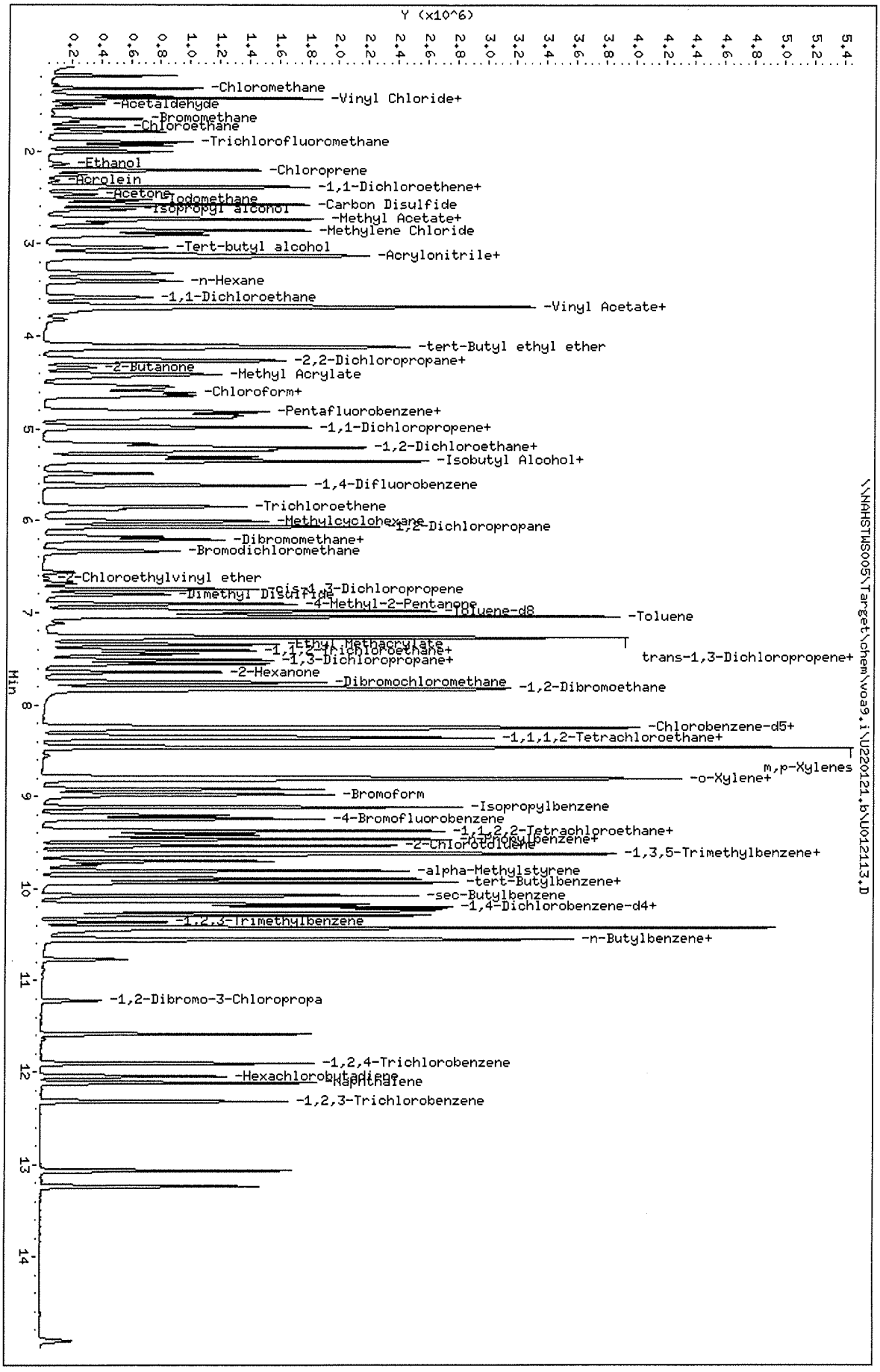
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012113.D
Lab Smp Id: ICV Client Smp ID: ICV
Inj Date : 21-JAN-2022 15:46
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050;VSTD050;2;;;ICV
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa9.i\U220121.b\8260C.m
Meth Date : 08-Feb-2022 10:37 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 15:02 Cal File: U012111.D
Als bottle: 14 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.879	4.886	(1.000)	747430	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.617	(1.000)	1251557	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.241	(1.000)	1117686	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	558522	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.168	(1.058)	475522	48.9285	48.92
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	541395	52.0079	52.00
$ 30 Dibromofluoromethane	113	4.815	4.819	(0.987)	379412	49.6183	49.61
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1450449	50.6331	50.63
53 1,1,2-Trichloroethane	83	7.409	7.413	(0.899)	340576	48.3472	48.34
11 1,1-Dichloroethene	96	2.382	2.394	(0.488)	332210	47.3396	47.33
33 1,2-Dichloroethane	62	5.239	5.246	(0.933)	594966	47.4058	47.40
27 cis-1,2-Dichloroethene	96	4.268	4.275	(0.875)	449794	46.4449	46.44
17 Methylene Chloride	84	2.851	2.862	(0.584)	405511	48.0921	48.09
38 Trichloroethene	130	5.846	5.850	(1.041)	409684	46.4681	46.46
5 Vinyl Chloride	62	1.408	1.415	(0.289)	529318	46.3400	46.34



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220121.b\U012113.D
Date : 21-JAN-2022 15:46
Client ID: ICV
Sample Info: WSTD050;WSTD050;2;;;ICV
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

MSVOA09 -Logbook

Batch: 48147
Date: 02-04-2022
Method: 8260
Comments:

Analyst: Presenta Cabascango
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	BFB	02-04-2022 11:51 am	1.00	0.00 mL	0.00 mL	U020401.D	Liquid	Y	NA
2	VSTD050	CCV	02-04-2022 12:13 pm	1.00	5.00 mL	0.00 mL	U020402a.D	Liquid	Y	NA
3	VSTD050	CCV	02-04-2022 12:35 pm	1.00	5.00 mL	0.00 mL	U020403.D	Liquid	Y	NA
4	CCB	SAMP	02-04-2022 12:57 pm	1.00	5.00 mL	0.00 mL	U020404.D	Liquid	Y	NA
5	VLCSW-220204	LCS	02-04-2022 01:19 pm	1.00	5.00 mL	0.00 mL	U020405.D	Liquid	Y	NA
6	VBLKM-220204	MBLK	02-04-2022 01:41 pm	50.00	5.00 mL	0.00 mL	U020406.D	Liquid	Y	NA
7	VBLKW-220204	MBLK	02-04-2022 02:03 pm	1.00	5.00 mL	0.00 mL	U020407.D	Liquid	Y	NA
8	HS22011233-11	SAMP	02-04-2022 02:25 pm	1.00	5.00 mL	0.00 mL	U020408.D	Liquid	Y	NA
9	HS22011233-09	SAMP	02-04-2022 02:47 pm	1.00	5.00 mL	0.00 mL	U020409.D	Liquid	Y	NA
10	HS22011279-06	SAMP	02-04-2022 03:09 pm	5000.0	5.00 mL	0.00 mL	U020410.D	Liquid	Y	NA
11	HS22011151-07	SAMP	02-04-2022 03:31 pm	1.00	5.00 mL	0.00 mL	U020411.D	Liquid	Y	NA
12	HS22011233-09MS	MS	02-04-2022 03:53 pm	1.00	5.00 mL	0.00 mL	U020412.D	Liquid	Y	NA
13	HS22011233-09MSD	MSD	02-04-2022 04:15 pm	1.00	5.00 mL	0.00 mL	U020413.D	Liquid	Y	NA
14	HS22011151-05	SAMP	02-04-2022 04:37 pm	25.00	5.00 mL	0.00 mL	U020414.D	Liquid	Y	NA
15	HS22011151-06	SAMP	02-04-2022 04:59 pm	25.00	5.00 mL	0.00 mL	U020415.D	Liquid	Y	NA
16	HS22011151-14	SAMP	02-04-2022 05:22 pm	10.00	5.00 mL	0.00 mL	U020416.D	Liquid	Y	NA
17	HS22011233-03	SAMP	02-04-2022 05:44 pm	1.00	5.00 mL	0.00 mL	U020417.D	Liquid	Y	NA
18	HS22011233-04	SAMP	02-04-2022 06:06 pm	1.00	5.00 mL	0.00 mL	U020418.D	Liquid	Y	NA
19	HS22011233-07	SAMP	02-04-2022 06:28 pm	1.00	5.00 mL	0.00 mL	U020419.D	Liquid	Y	NA
20	HS22011233-08	SAMP	02-04-2022 06:50 pm	1.00	5.00 mL	0.00 mL	U020420.D	Liquid	Y	NA
21	HS22011233-10	SAMP	02-04-2022 07:12 pm	1.00	5.00 mL	0.00 mL	U020421.D	Liquid	Y	NA
22	HS22011233-02	SAMP	02-04-2022 07:34 pm	1.00	5.00 mL	0.00 mL	U020422.D	Liquid	Y	NA
23	HS22011233-02	SAMP	02-04-2022 07:56 pm	10.00	5.00 mL	0.00 mL	U020423.D	Liquid	Y	NA
24	HS22011233-05	SAMP	02-04-2022 08:18 pm	1.00	5.00 mL	0.00 mL	U020424.D	Liquid	Y	NA
25	HS22011233-05	SAMP	02-04-2022 08:40 pm	10.00	5.00 mL	0.00 mL	U020425.D	Liquid	Y	NA
26	HS22011233-01	SAMP	02-04-2022 09:02 pm	5.00	5.00 mL	0.00 mL	U020426.D	Liquid	Y	NA
27	HS22011233-01	SAMP	02-04-2022 09:25 pm	25.00	5.00 mL	0.00 mL	U020427.D	Liquid	Y	NA
28	HS22011233-06	SAMP	02-04-2022 09:47 pm	5.00	5.00 mL	0.00 mL	U020428.D	Liquid	Y	NA
29	HS22011233-06	SAMP	02-04-2022 10:09 pm	25.00	5.00 mL	0.00 mL	U020429.D	Liquid	Y	NA
30	VSTD050-END	CCV	02-04-2022 10:31 pm	1.00	5.00 mL	0.00 mL	U020430.D	Liquid	Y	NA
31	BFB	BFB	02-04-2022 10:52 pm	1.00	0.00 mL	0.00 mL	V020401.D	Liquid	Y	NA
32	VSTD050	CCV	02-04-2022 11:14 pm	1.00	5.00 mL	0.00 mL	V020402a.D	Liquid	Y	NA
33	VSTD050	CCV	02-04-2022 11:36 pm	1.00	5.00 mL	0.00 mL	V020403.D	Liquid	Y	NA
34	CCB	SAMP	02-04-2022 11:58 pm	1.00	5.00 mL	0.00 mL	V020404.D	Liquid	Y	NA
35	VLCSW-220204	LCS	02-05-2022 12:20 am	1.00	5.00 mL	0.00 mL	V020405.D	Liquid	Y	NA
36	BLANK	SAMP	02-05-2022 12:42 am	1.00	5.00 mL	0.00 mL	V020406.D	Liquid	Y	NA
37	VBLKW-220204	MBLK	02-05-2022 01:05 am	1.00	5.00 mL	0.00 mL	V020407.D	Liquid	Y	NA
38	HS22020138-01	SAMP	02-05-2022 01:27 am	1.00	5.00 mL	0.00 mL	V020408.D	Liquid	Y	NA
39	HS22020138-01MS	MS	02-05-2022 01:49 am	1.00	5.00 mL	0.00 mL	V020409.D	Liquid	Y	NA
40	HS22020138-01MSD	MSD	02-05-2022 02:11 am	1.00	5.00 mL	0.00 mL	V020410.D	Liquid	Y	NA
41	HS22020138-02	SAMP	02-05-2022 02:33 am	1.00	5.00 mL	0.00 mL	V020411.D	Liquid	Y	NA

MSVOA09 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
42	HS22011312-26	SAMP	02-05-2022 02:55 am	1.00	5.00 mL	0.00 mL	V020412.D	Liquid	Y	NA
43	HS22011312-27	SAMP	02-05-2022 03:17 am	1.00	5.00 mL	0.00 mL	V020413.D	Liquid	Y	NA
44	HS22011312-15	SAMP	02-05-2022 03:39 am	10.00	5.00 mL	0.00 mL	V020414.D	Liquid	Y	NA
45	HS22011312-15n/r	SAMP	02-05-2022 04:01 am	100.0(	5.00 mL	0.00 mL	V020415.D	Liquid	Y	NA
46	HS22011312-14	SAMP	02-05-2022 04:23 am	10.00	5.00 mL	0.00 mL	V020416.D	Liquid	Y	NA
47	HS22011312-14n/r	SAMP	02-05-2022 04:45 am	100.0(	5.00 mL	0.00 mL	V020417.D	Liquid	Y	NA
48	HS22011312-10	SAMP	02-05-2022 05:07 am	100.0(	5.00 mL	0.00 mL	V020418.D	Liquid	Y	NA
49	HS22011312-10	SAMP	02-05-2022 05:29 am	2500.0	5.00 mL	0.00 mL	V020419.D	Liquid	Y	NA
50	HS22011312-13	SAMP	02-05-2022 05:51 am	100.0(	5.00 mL	0.00 mL	V020420.D	Liquid	Y	NA
51	HS22011312-13	SAMP	02-05-2022 06:13 am	2500.0	5.00 mL	0.00 mL	V020421.D	Liquid	Y	NA
52	HS22011312-12	SAMP	02-05-2022 06:35 am	25.00	5.00 mL	0.00 mL	V020422.D	Liquid	Y	NA
53	HS22011312-12	SAMP	02-05-2022 06:57 am	5.00	5.00 mL	0.00 mL	V020423.D	Liquid	Y	NA
54	HS22020138-03	SAMP	02-05-2022 07:19 am	1.00	5.00 mL	0.00 mL	V020424.D	Liquid	Y	NA
55	HS22020138-04	SAMP	02-05-2022 07:41 am	1.00	5.00 mL	0.00 mL	V020425.D	Liquid	Y	NA
56	HS22020138-05	SAMP	02-05-2022 08:04 am	1.00	5.00 mL	0.00 mL	V020426.D	Liquid	Y	NA
57	HS22020138-06	SAMP	02-05-2022 08:25 am	1.00	5.00 mL	0.00 mL	V020427.D	Liquid	Y	NA
58	HS22020138-07	SAMP	02-05-2022 08:48 am	1.00	5.00 mL	0.00 mL	V020428.D	Liquid	Y	NA
59	HS22020138-08	SAMP	02-05-2022 09:10 am	1.00	5.00 mL	0.00 mL	V020429.D	Liquid	Y	NA
60	HS22020138-09	SAMP	02-05-2022 09:32 am	1.00	5.00 mL	0.00 mL	V020430.D	Liquid	Y	NA
61	HS22020138-10	SAMP	02-05-2022 09:54 am	1.00	5.00 mL	0.00 mL	V020431.D	Liquid	Y	NA
62	HS22020138-11	SAMP	02-05-2022 10:16 am	1.00	5.00 mL	0.00 mL	V020432.D	Liquid	Y	NA

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

	CLIENT SAMPLE NO.	SMC1 (TOL)#	SMC2 #	SMC3 (DCE)#	OTHER #	TOT OUT
01	VLCSW-220204	89	89	92	89	0
02	VBLKM-220204	104	96	101	99	0
03	HS22011279-06	106	96	102	102	0
04	HS22011233-09MS	105	98	98	106	0
05	HS22011233-09MSD	106	99	100	106	0
06						
07						
08						
09						
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28						

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(78-123)
SMC2	= Dibromofluoromethane	(74-125)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(0-130)
OTHER	= 4-Bromofluorobenzene	(0-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLKM-220204

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Lab File ID: U020406 Lab Sample ID: VBLKM-220204

Date Analyzed: 02/04/22 Time Analyzed: 1341

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

Instrument ID: VOA9

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VLCSW-220204	VLCSW-220204	U020405	1319
02	HS22011279-06	HS22011279-06	U020410	1509
03	HS22011233-09MS	HS22011233-09MS	U020412	1553
04	HS22011233-09MSD	HS22011233-09MSD	U020413	1615
05				
06				
07				
08				
09				
10				
11				
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COMMENTS:

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Lab File ID: U020401 BFB Injection Date: 02/04/22

Instrument ID: VOA9 BFB Injection Time: 1151

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.3
75	30.0 - 60.0% of mass 95	53.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	71.9
175	5.0 - 9.0% of mass 174	6.2 (8.7)1
176	95.0 - 101.0% of mass 174	72.2 (100.4)1
177	5.0 - 9.0% of mass 176	4.6 (6.4)2

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

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	U020403	02/04/22	1235
02	VLCSW-220204	VLCSW-220204	U020405	02/04/22	1319
03	VBLKM-220204	VBLKM-220204	U020406	02/04/22	1341
04	HS22011279-06	HS22011279-06	U020410	02/04/22	1509
05	HS22011233-09MS	HS22011233-09MS	U020412	02/04/22	1553
06	HS22011233-09MSD	HS22011233-09MSD	U020413	02/04/22	1615
07	CCV-END	CCV-END	U020430	02/04/22	2231
08					
09					
10					
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19					
20					
21					
22					

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Instrument ID: VOA9 Calibration Date: 02/04/22 Time: 1235

Lab File ID: U020403 Init. Calib. Date(s): 01/21/22 01/21/22

Init. Calib. Times: 1122 1502

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Trichloroethene	0.3520000	0.3309768	0.3309768	0.2	5.97	20.00	AVRG
Methylene Chloride	51.961621	50.000000	0.5849555	0.1	-3.92	20.00	LINR
cis-1,2-Dichloroethene	0.6480000	0.6040459	0.6040459	0.1	6.78	20.00	AVRG
Vinyl Chloride	0.7640000	0.7026577	0.7026577	0.1	8.03	20.00	AVRG
1,1,2-Trichloroethane	0.3150000	0.2949858	0.2949858	0.1	6.35	20.00	AVRG
1,1-Dichloroethene	0.4690000	0.4626169	0.4626169	0.1	1.36	20.00	AVRG
1,2-Dichloroethane	0.5010000	0.5236504	0.5236504	0.1	-4.52	20.00	AVRG
Toluene-d8	1.2820000	1.1568607	1.1568607	0.1	9.76	20.00	AVRG
Dibromofluoromethane	45.626349	50.000000	0.4674783	0.1	8.75	20.00	LINR
1,2-Dichloroethane-d4	45.681768	50.000000	0.5951120	0.1	8.64	20.00	LINR
4-Bromofluorobenzene	46.464652	50.000000	0.4339598	0.1	7.07	20.00	LINR

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Instrument ID: VOA9 Calibration Date: 02/04/22 Time: 2231

Lab File ID: U020430 Init. Calib. Date(s): 01/21/22 01/21/22

Init. Calib. Times: 1122 1502

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Trichloroethene	0.3520000	0.3572617	0.3572617	0.2	-1.49	50.00	AVRG
Methylene Chloride	58.423048	50.000000	0.6557807	0.1	-16.85	50.00	LINR
cis-1,2-Dichloroethene	0.6480000	0.6612225	0.6612225	0.1	-2.04	50.00	AVRG
Vinyl Chloride	0.7640000	0.8285137	0.8285137	0.1	-8.44	50.00	AVRG
1,1,2-Trichloroethane	0.3150000	0.3090103	0.3090103	0.1	1.90	50.00	AVRG
1,1-Dichloroethene	0.4690000	0.5355231	0.5355231	0.1	-14.18	50.00	AVRG
1,2-Dichloroethane	0.5010000	0.5406438	0.5406438	0.1	-7.91	50.00	AVRG
Toluene-d8	1.2820000	1.2570479	1.2570479	0.1	1.95	50.00	AVRG
Dibromofluoromethane	53.636110	50.000000	0.5480258	0.1	-7.27	50.00	LINR
1,2-Dichloroethane-d4	54.337106	50.000000	0.7046709	0.1	-8.67	50.00	LINR
4-Bromofluorobenzene	50.488064	50.000000	0.4705625	0.1	-0.98	50.00	LINR

FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Lab File ID (Standard): U020403 Date Analyzed: 02/04/22

Instrument ID: VOA9 Time Analyzed: 1235

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

		IS1 AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	622461	4.88	1021821	5.61	936506	8.24
	UPPER LIMIT	1244922	5.38	2043642	6.11	1873012	8.74
	LOWER LIMIT	311231	4.38	510911	5.11	468253	7.74
	CLIENT SAMPLE NO.						
01	VLCSW-220204	580866	4.88	970952	5.61	883130	8.24
02	VBLKM-220204	689158	4.88	1120541	5.61	992142	8.24
03	HS22011279-06	668875	4.88	1080193	5.61	962253	8.24
04	HS22011233-09MS	679388	4.88	1098041	5.61	985353	8.24
05	HS22011233-09MSD	682099	4.88	1107178	5.61	991980	8.24
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Lab File ID (Standard): U020403 Date Analyzed: 02/04/22

Instrument ID: VOA9 Time Analyzed: 1235

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

		IS4 (DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	471359	10.23				
	UPPER LIMIT	942718	10.73				
	LOWER LIMIT	235680	9.73				
	CLIENT SAMPLE NO.						
01	VLCSW-220204	439207	10.22				
02	VBLKM-220204	475537	10.22				
03	HS22011279-06	460918	10.22				
04	HS22011233-09MS	500990	10.23				
05	HS22011233-09MSD	492163	10.23				
06							
07							
08							
09							
10							
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17							
18							
19							
20							

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020401.D Page 1

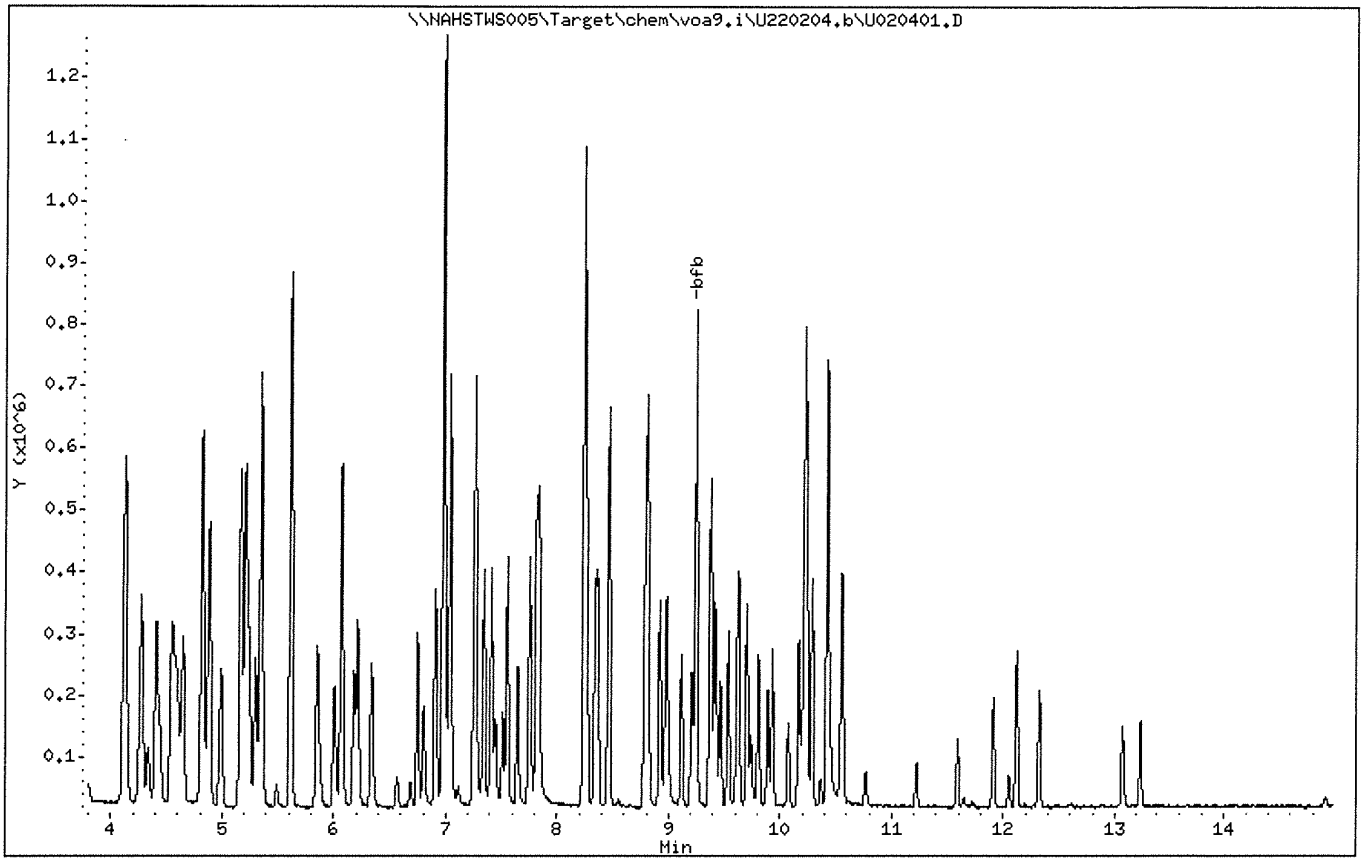
Date : 04-FEB-2022 11:51

Client ID: BFB Instrument: VOA9.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\voa9.i\U220204.b\U020401.D Page 2

Date : 04-FEB-2022 11:51

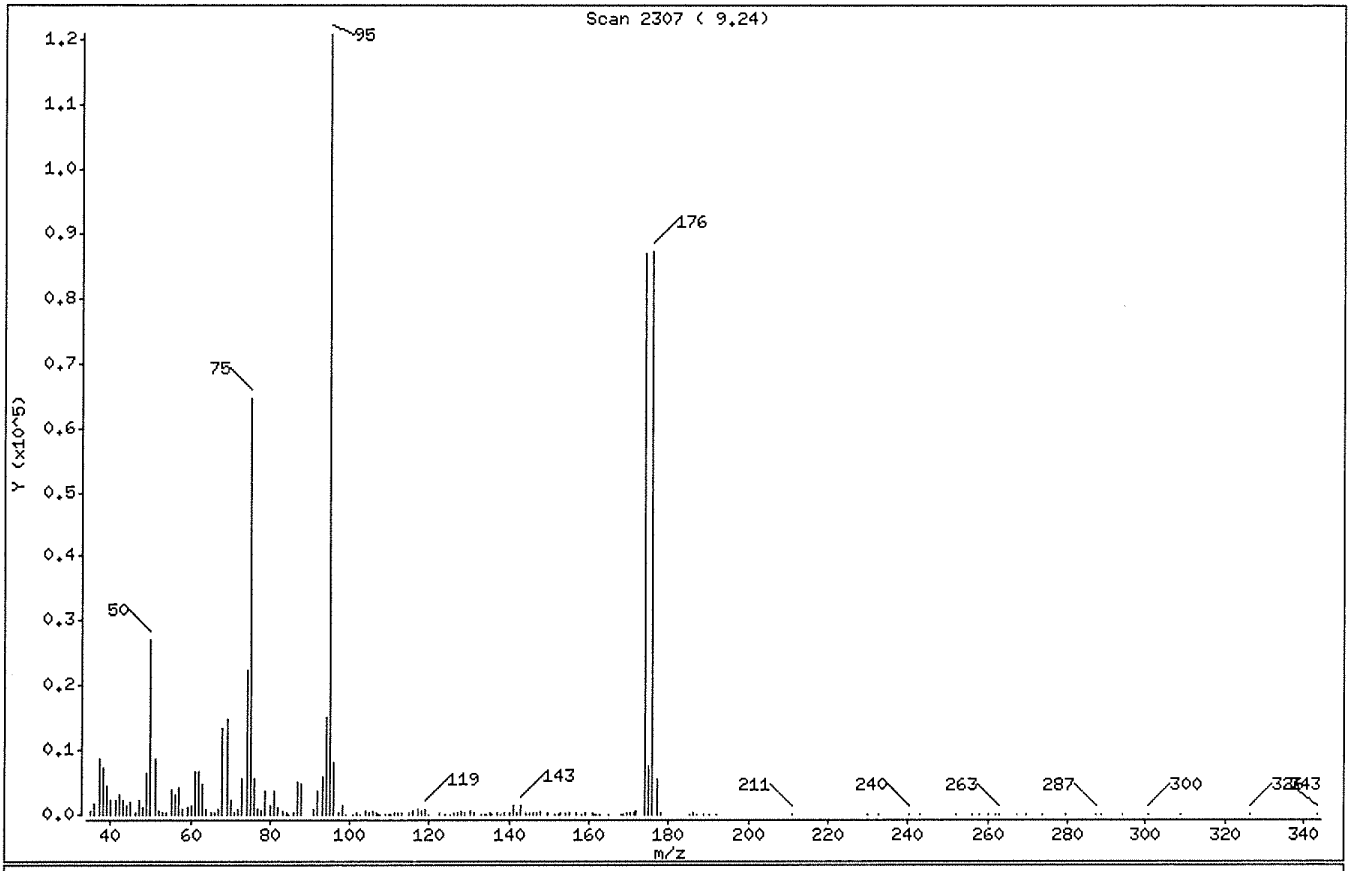
Client ID: BFB Instrument: VOA9.i

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	22.33
75	30.00 - 60.00% of mass 95	53.52
96	5.00 - 9.00% of mass 95	6.79
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	71.87
175	5.00 - 9.00% of mass 174	6.24 (8.68)
176	95.00 - 101.00% of mass 174	72.17 (100.42)
177	5.00 - 9.00% of mass 176	4.61 (6.39)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020401.D

Date : 04-FEB-2022 11:51

Client ID: BFB Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: U020401.D
Spectrum: Scan 2307 (9.24)
Location of Maximum: 95.00
Number of points: 163

m/z	Y	m/z	Y	m/z	Y	m/z	Y
35.00	473	76.00	5449	118.80	902	164.90	79
36.00	1764	77.00	906	120.00	61	168.10	70
37.00	8506	77.90	474	122.70	168	168.70	82
38.00	7194	78.90	3719	123.80	98	169.60	205
39.00	4353	79.90	1354	125.20	73	170.40	150
40.00	2315	80.90	3707	126.00	140	171.10	290
41.10	2289	81.90	1102	126.80	258	171.90	606
42.10	3137	83.10	583	127.80	546	173.90	86888
43.00	2285	84.10	162	128.80	314	175.00	7539
44.00	1477	84.70	122	130.00	585	175.90	87256
45.00	2037	86.00	233	130.90	282	176.90	5577
46.20	289	87.00	5151	132.80	66	177.90	254
46.90	2152	87.90	4861	133.60	75	185.20	105
48.00	1126	91.00	700	134.30	70	186.00	155
49.00	6304	92.00	3671	134.90	250	187.10	54
50.00	26992	93.00	5902	135.60	112	188.70	91
51.00	8606	94.00	14904	136.80	226	190.20	97
52.10	565	95.00	120896	137.70	75	191.80	95
52.90	387	96.00	8208	138.80	177	210.80	104
53.90	398	97.00	395	140.20	265	230.10	56
55.00	3832	98.10	1494	140.90	1304	232.60	59
56.00	3007	98.90	114	141.90	387	240.10	71
57.00	4185	100.80	79	142.90	1442	243.20	58
58.00	742	101.90	143	144.00	245	251.90	53
59.10	1184	102.40	96	144.90	250	256.30	61
60.00	1311	103.90	494	146.00	279	257.90	60
61.00	6619	104.90	293	146.90	162	260.30	58
62.00	6779	105.90	616	147.90	499	261.80	62
63.00	4663	106.80	182	149.70	199	263.10	75
64.00	819	107.30	94	151.50	94	267.40	56
65.00	313	107.80	110	152.10	59	269.60	67
66.00	156	108.80	59	152.90	191	273.50	60
66.90	731	109.70	139	154.00	144	279.60	72
68.00	13326	110.40	72	155.00	252	287.20	94
69.00	14775	111.10	167	156.80	227	288.40	61

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020401.D

Date : 04-FEB-2022 11:51

Client ID: BFB

Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: U020401.D
Spectrum: Scan 2307 (9.24)
Location of Maximum: 95.00
Number of points: 163

m/z	Y	m/z	Y	m/z	Y	m/z	Y
70.00	2333	112.00	178	158.20	54	294.10	51
71.10	254	112.90	168	159.00	142	300.60	62
72.00	865	114.90	152	160.70	141	309.10	61
73.00	5515	115.90	485	161.10	124	326.50	55
74.00	22248	116.90	775	161.60	56	343.60	71
75.00	64704	117.80	450	162.70	63		

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020403.D Page 1
Report Date: 15-Feb-2022 09:46

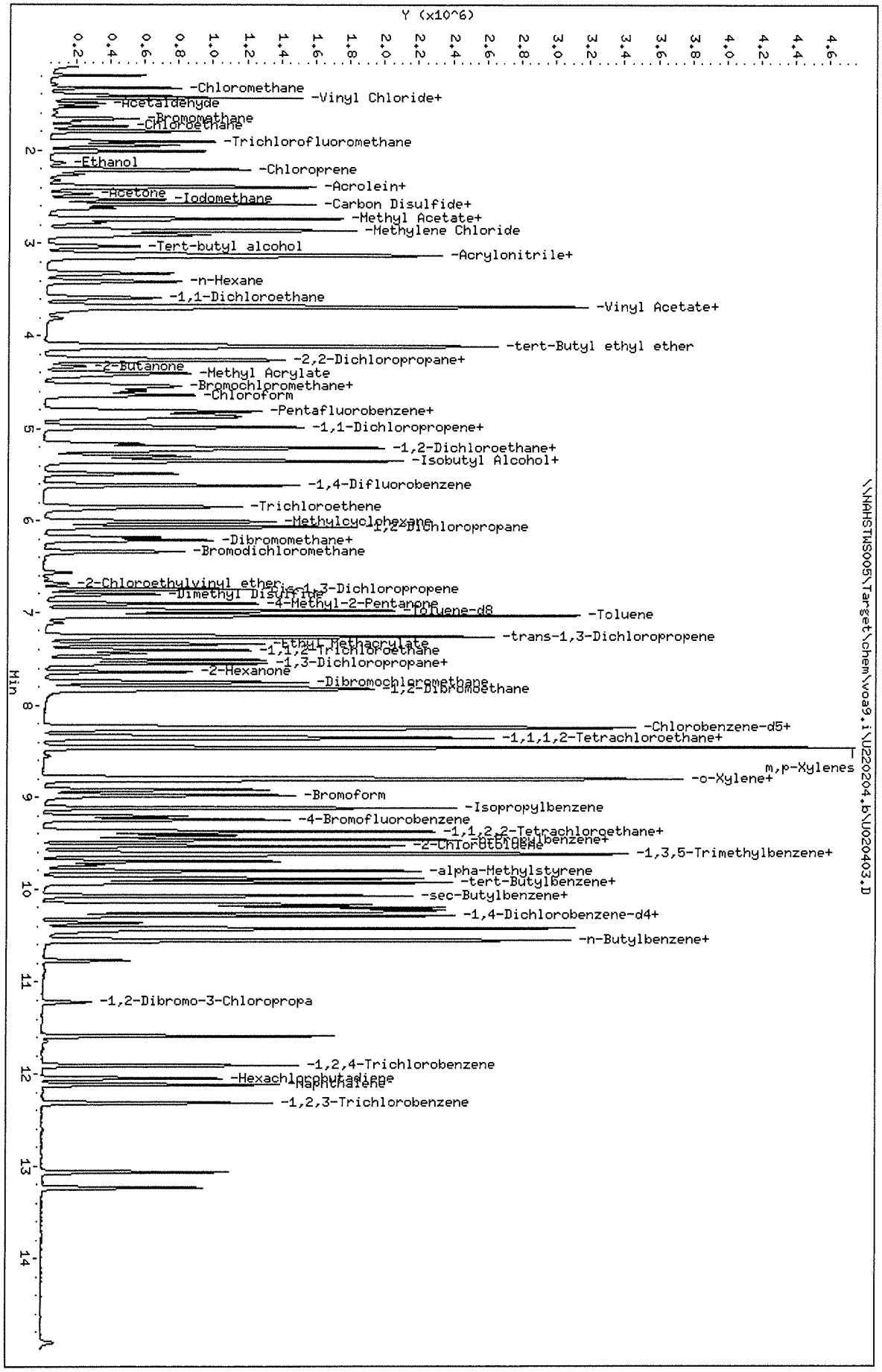
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020403.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 04-FEB-2022 12:35
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050;VSTD050;2;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 15-Feb-2022 09:46 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.879	4.879	(1.000)	622461	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1021821	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	936506	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	471359	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.160	5.160	(1.058)	370434	50.0000	45.68
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	406406	50.0000	46.46
$	30 Dibromofluoromethane	113	4.815	4.815	(0.987)	290987	50.0000	45.62
$	48 Toluene-d8	98	6.974	6.974	(0.847)	1083407	50.0000	45.13
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	276256	50.0000	46.80
	11 1,1-Dichloroethene	96	2.390	2.390	(0.490)	287961	50.0000	49.27
	33 1,2-Dichloroethane	62	5.239	5.239	(0.933)	535077	50.0000	52.21
	27 cis-1,2-Dichloroethene	96	4.268	4.268	(0.875)	375995	50.0000	46.61
	17 Methylene Chloride	84	2.858	2.858	(0.586)	364112	50.0000	51.96
	38 Trichloroethene	130	5.846	5.846	(1.041)	338199	50.0000	46.98
	5 Vinyl Chloride	62	1.411	1.411	(0.289)	437377	50.0000	45.97



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020403.D
Date : 04-FEB-2022 12:35
Client ID: CCV
Sample Info: VSTD050;VSTD050;2;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i

Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020405.D Page 1
Report Date: 15-Feb-2022 09:46

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020405.D
Lab Smp Id: VLCSW-220204 Client Smp ID: VLCSW-220204
Inj Date : 04-FEB-2022 13:19
Operator : PC Inst ID: VOA9.i
Smp Info : VLCSW-220204;VLCSW-220204;3;;LCS
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 15-Feb-2022 09:46 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

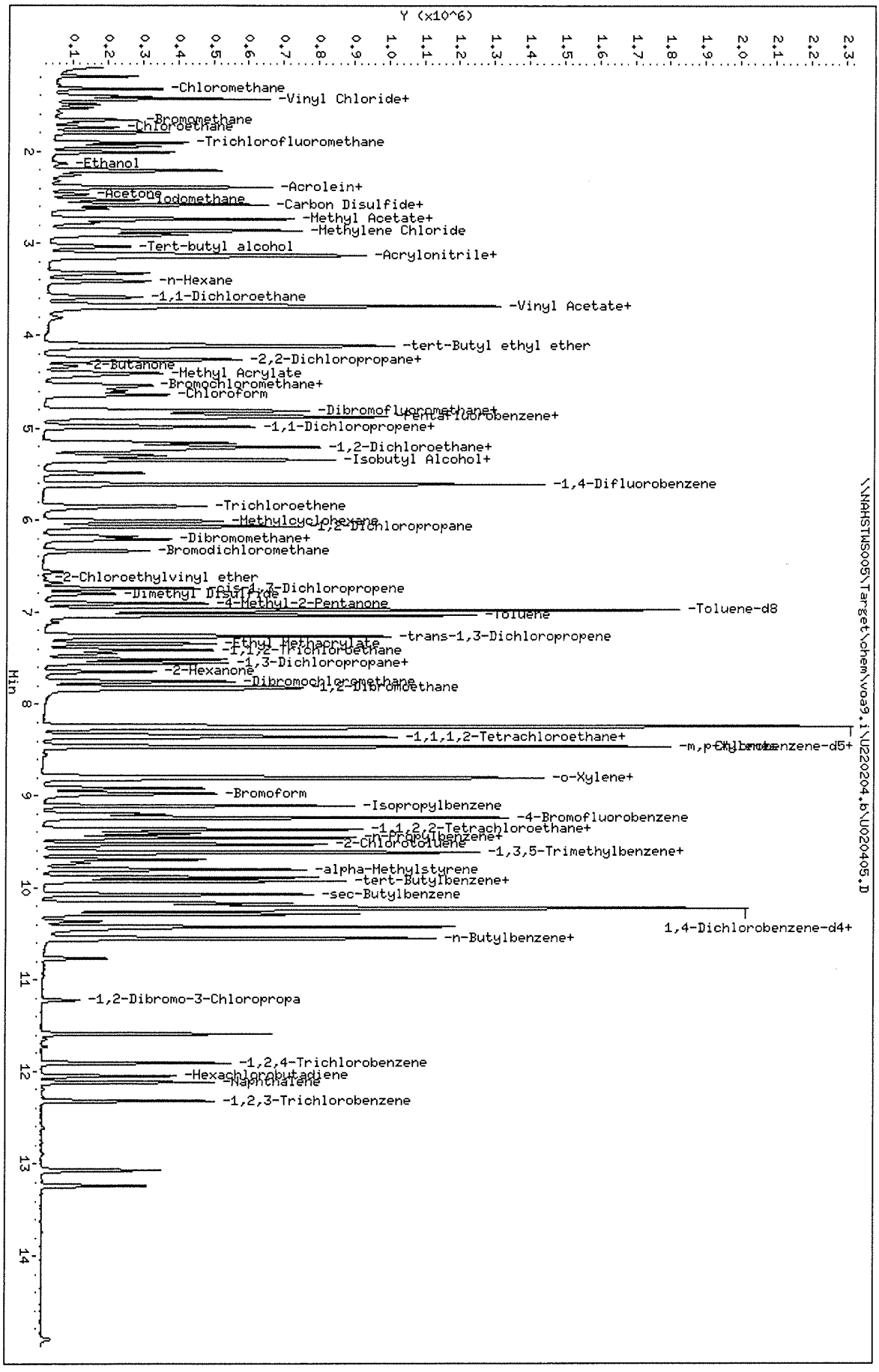
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.879	4.879	(1.000)	580866	50.0000	
* 36 1,4-Difluorobenzene	114	5.610	5.614	(1.000)	970952	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	883130	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.225	(1.000)	439207	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.160	5.160	(1.058)	347913	45.9854	45.98
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	369020	44.6943	44.69
$ 30 Dibromofluoromethane	113	4.815	4.815	(0.987)	265877	44.6565	44.65
$ 48 Toluene-d8	98	6.974	6.974	(0.847)	1008437	44.5529	44.55(M)
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	110694	19.8873	19.88
11 1,1-Dichloroethene	96	2.386	2.390	(0.489)	118318	21.6949	21.69
33 1,2-Dichloroethane	62	5.239	5.239	(0.934)	219596	22.5536	22.55
27 cis-1,2-Dichloroethene	96	4.268	4.268	(0.875)	151162	20.0845	20.08
17 Methylene Chloride	84	2.855	2.858	(0.585)	151937	22.4589	22.45
38 Trichloroethene	130	5.846	5.846	(1.042)	136529	19.9611	19.96
5 Vinyl Chloride	62	1.408	1.411	(0.289)	176309	19.8613	19.86

QC Flag Legend

M - Compound response manually integrated.

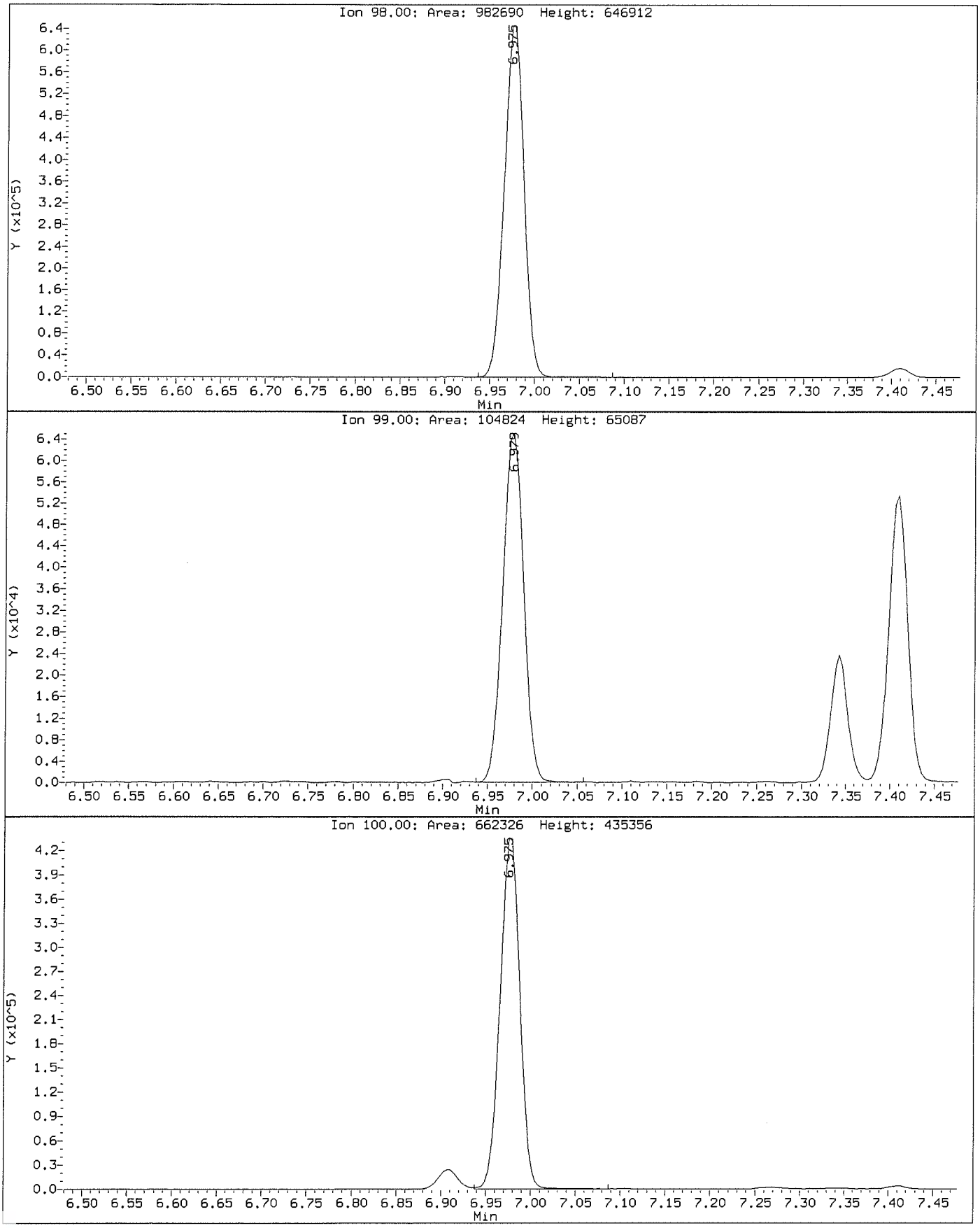


Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020405.D
Date : 04-FEB-2022 13:19
Client ID: VLCSW-220204
Sample Info: VLCSW-220204;VLCSW-220204;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

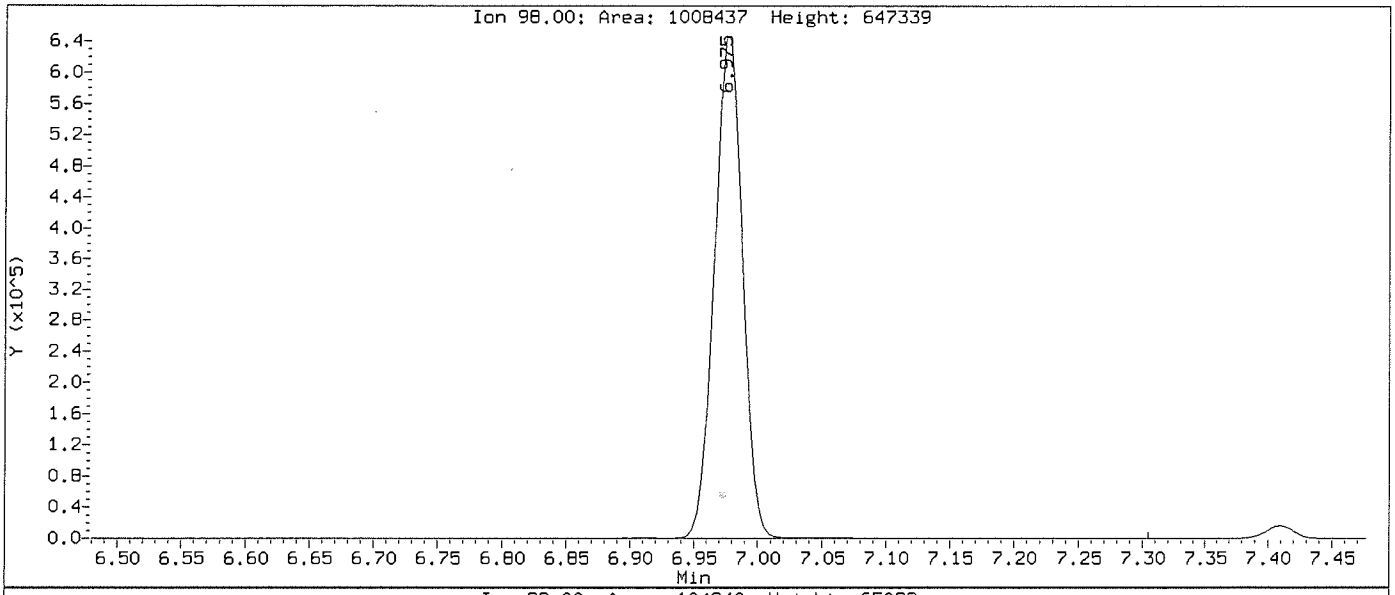
Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\before\U020405.D
Injection Date: 04-FEB-2022 13:19
Instrument: VOA9.i
Client Sample ID: VLCSW-220204

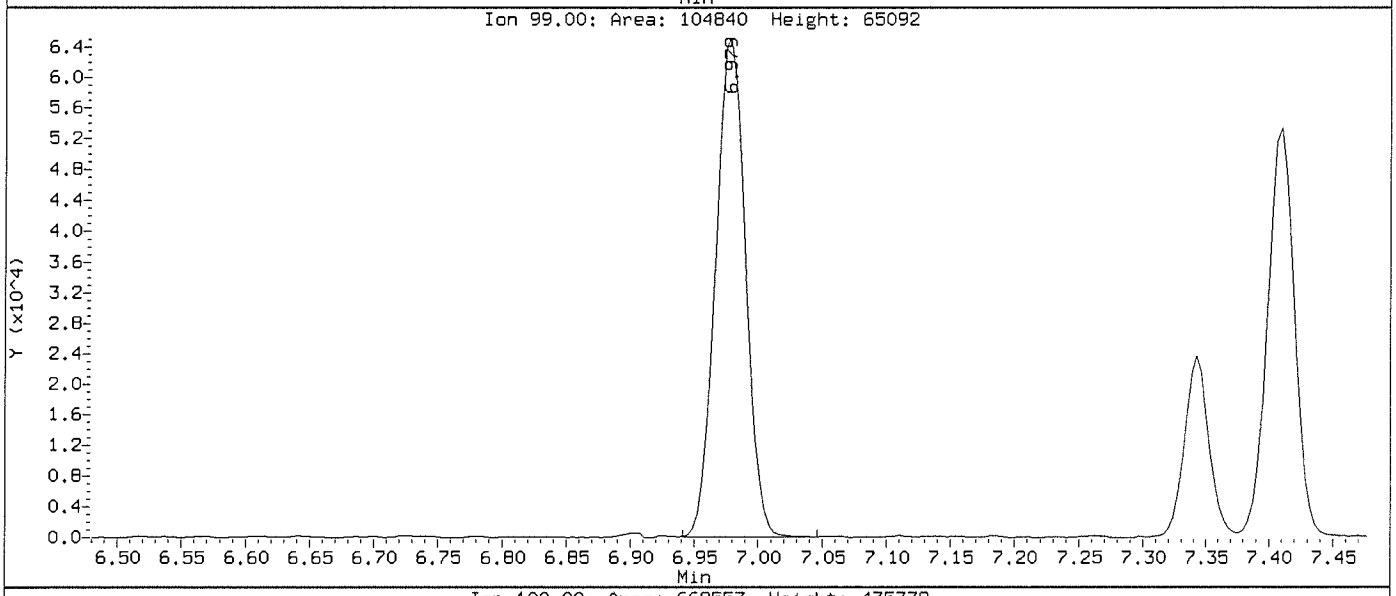
Compound: Toluene-d8
CAS Number: 2037-26-5

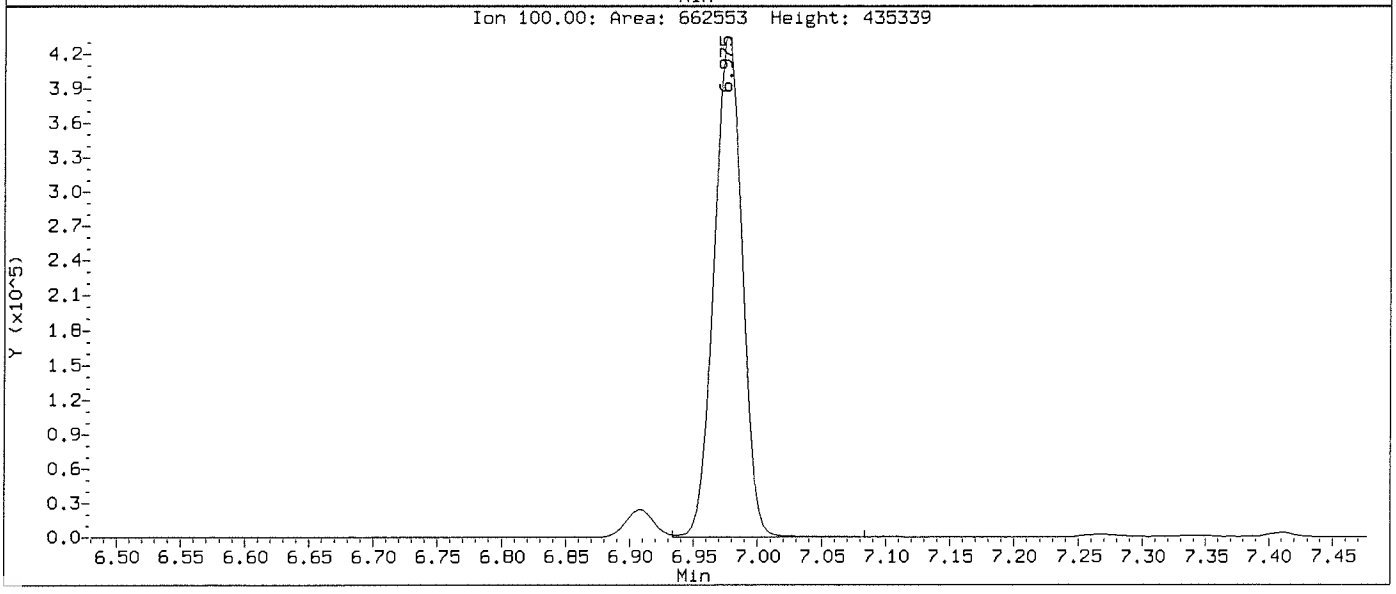


Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020405.D
Injection Date: 04-FEB-2022 13:19
Instrument: VOA9.i
Client Sample ID: VLCSW-220204

Compound: Toluene-d8
CAS Number: 2037-26-5







Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020406.D Page 1
Report Date: 15-Feb-2022 09:46

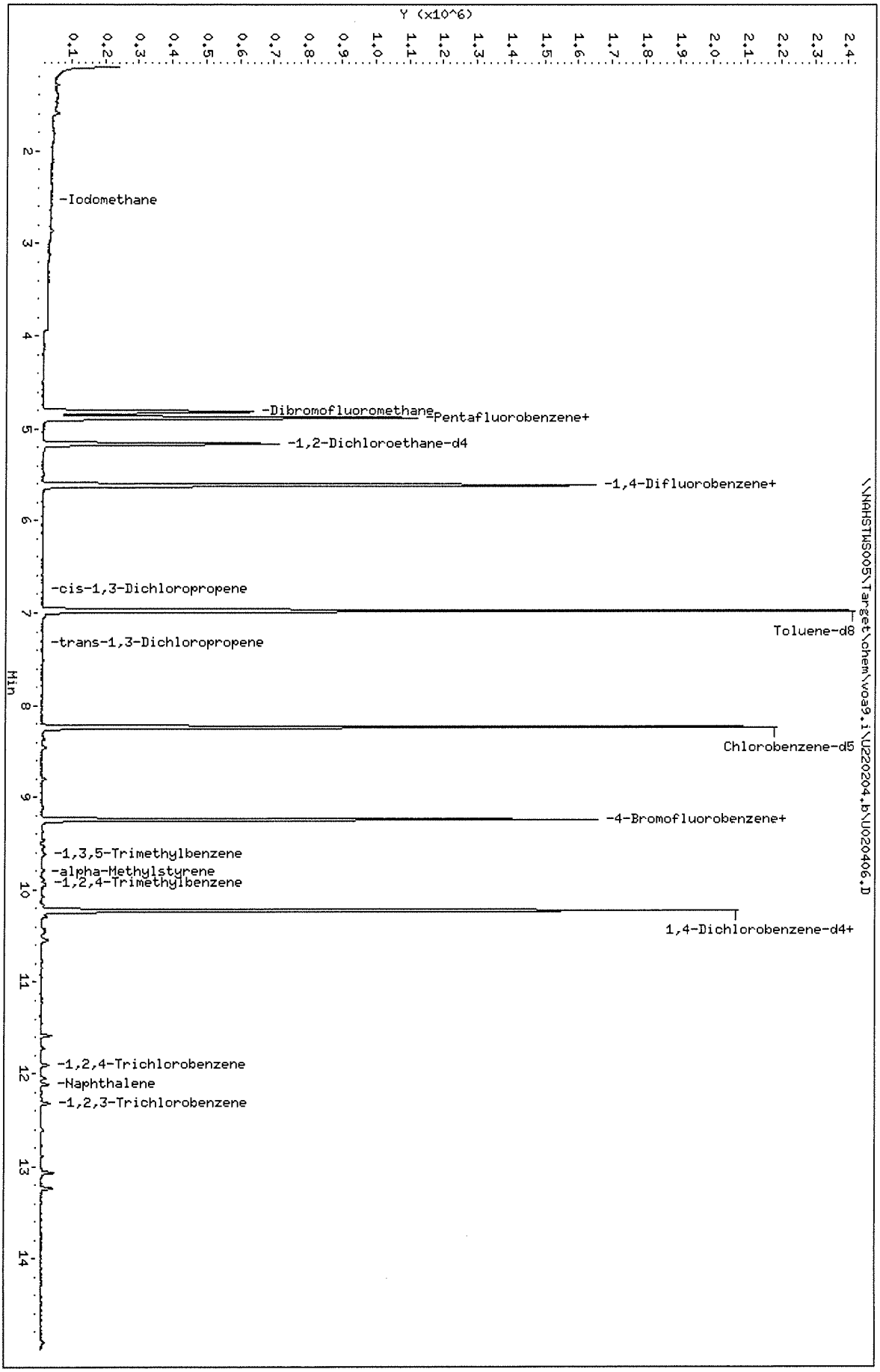
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020406.D
Lab Smp Id: VBLKM-220204 Client Smp ID: VBLKM-220204
Inj Date : 04-FEB-2022 13:41
Operator : PC Inst ID: VOA9.i
Smp Info : VBLKM-220204;VBLKM-220204;3;;BLANK
Misc Info : 180315V9;WATER;0;50;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 15-Feb-2022 09:46 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 6 QC Sample: BLANK
Dil Factor: 50.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

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

Name	Value	Description
DF	50.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.882	4.879	(1.000)	689158	50.0000	
* 36 1,4-Difluorobenzene	114	5.613	5.614	(1.000)	1120541	50.0000	
* 47 Chlorobenzene-d5	117	8.237	8.238	(1.000)	992142	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.225	(1.000)	475537	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.160	(1.058)	451104	50.3793	50.37
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	457334	49.4321	49.43
$ 30 Dibromofluoromethane	113	4.815	4.815	(0.986)	340379	48.2543	48.25
$ 48 Toluene-d8	98	6.978	6.974	(0.847)	1325256	52.1168	52.11



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020406.D
Date : 04-FEB-2022 13:41
Client ID: VBLKM-220204
Sample Info: VBLKM-220204;VBLKM-220204;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020410.D Page 1
Report Date: 15-Feb-2022 09:43

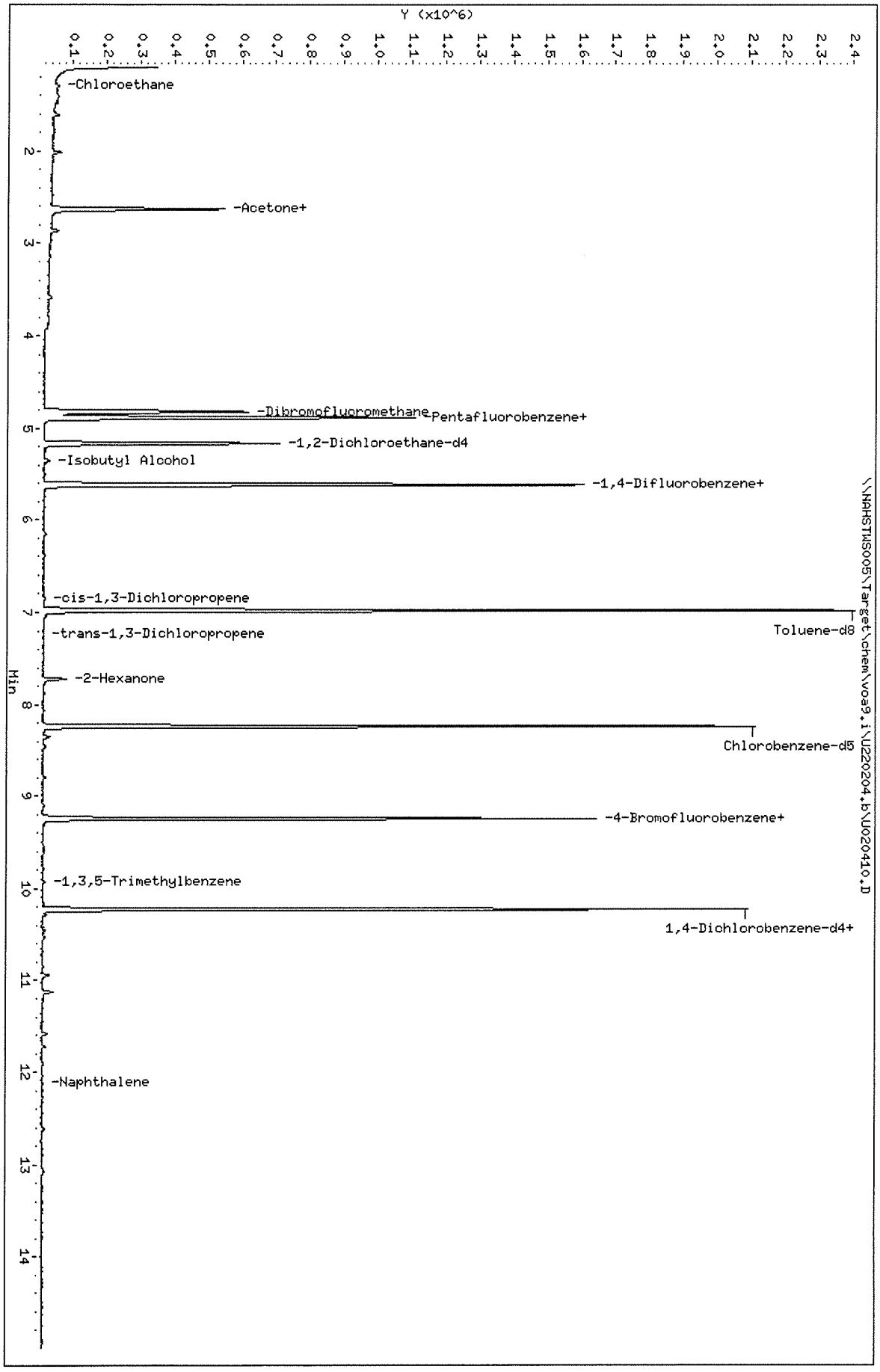
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020410.D
Lab Smp Id: HS22011279-06 Client Smp ID: HS22011279-06
Inj Date : 04-FEB-2022 15:09
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011279-06;HS22011279-06;;;
Misc Info : 180315V9;WATER;0;5000;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 15-Feb-2022 09:42 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 10
Dil Factor: 5000.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

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

Name	Value	Description
DF	5000.000	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)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.883	4.886	(1.000)	668875	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.617	(1.000)	1080193	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	962253	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	460918	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.167	(1.058)	444173	51.1288	51.12
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	456392	50.8984	50.89
$ 30 Dibromofluoromethane	113	4.819	4.823	(0.987)	330143	48.2219	48.22
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1302245	52.8026	52.80



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020410.D
Date : 04-FEB-2022 15:09
Client ID: HS220111279-06
Sample Info: HS220111279-06;HS220111279-06;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020412.D Page 1
Report Date: 15-Feb-2022 09:46

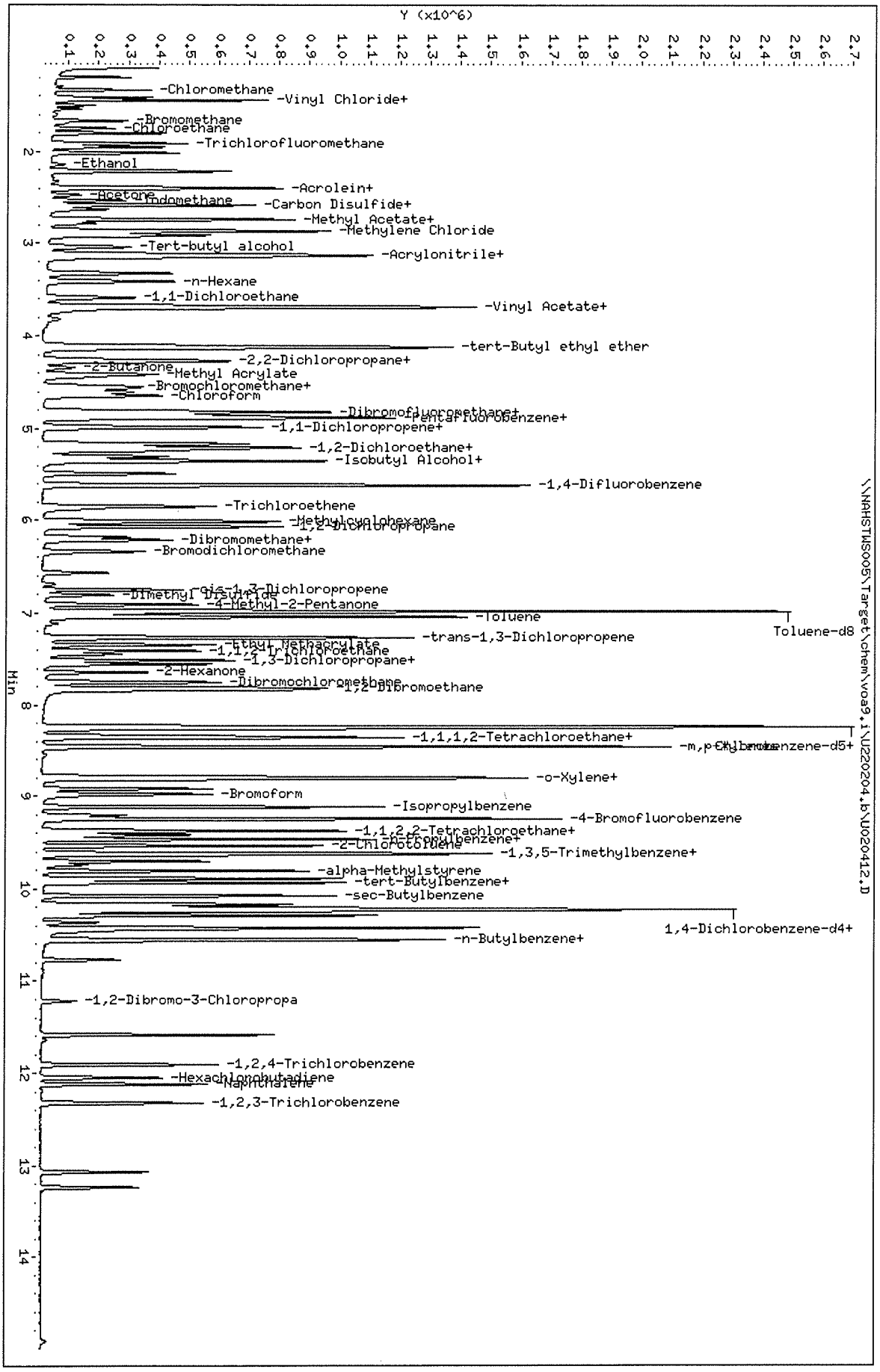
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020412.D
Lab Smp Id: HS22011233-09MS Client Smp ID: HS22011233-09MS
Inj Date : 04-FEB-2022 15:53
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-09MS;HS22011233-09MS;3;;MS
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 15-Feb-2022 09:46 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 12 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.879	(1.000)	679388	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1098041	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	985353	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	500990	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.160	(1.058)	434147	49.1511	49.15
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	486497	53.0345	53.03
$ 30 Dibromofluoromethane	113	4.819	4.815	(0.987)	341569	49.1348	49.13
$ 48 Toluene-d8	98	6.978	6.974	(0.847)	1331768	52.7337	52.73
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	117308	18.8892	18.88
11 1,1-Dichloroethene	96	2.394	2.390	(0.490)	138338	21.6873	21.68
33 1,2-Dichloroethane	62	5.243	5.239	(0.934)	229205	20.8159	20.81
27 cis-1,2-Dichloroethene	96	4.275	4.268	(0.876)	164362	18.6715	18.67
17 Methylene Chloride	84	2.862	2.858	(0.586)	161722	20.3123	20.31
38 Trichloroethene	130	5.850	5.846	(1.042)	163754	21.1704	21.17
5 Vinyl Chloride	62	1.415	1.411	(0.290)	199955	19.2586	19.25



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020412.D
Date : 04-FEB-2022 15:53
Client ID: HS22011233-09HS
Sample Info: HS22011233-09HS;HS22011233-09HS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020413.D Page 1
Report Date: 15-Feb-2022 09:46

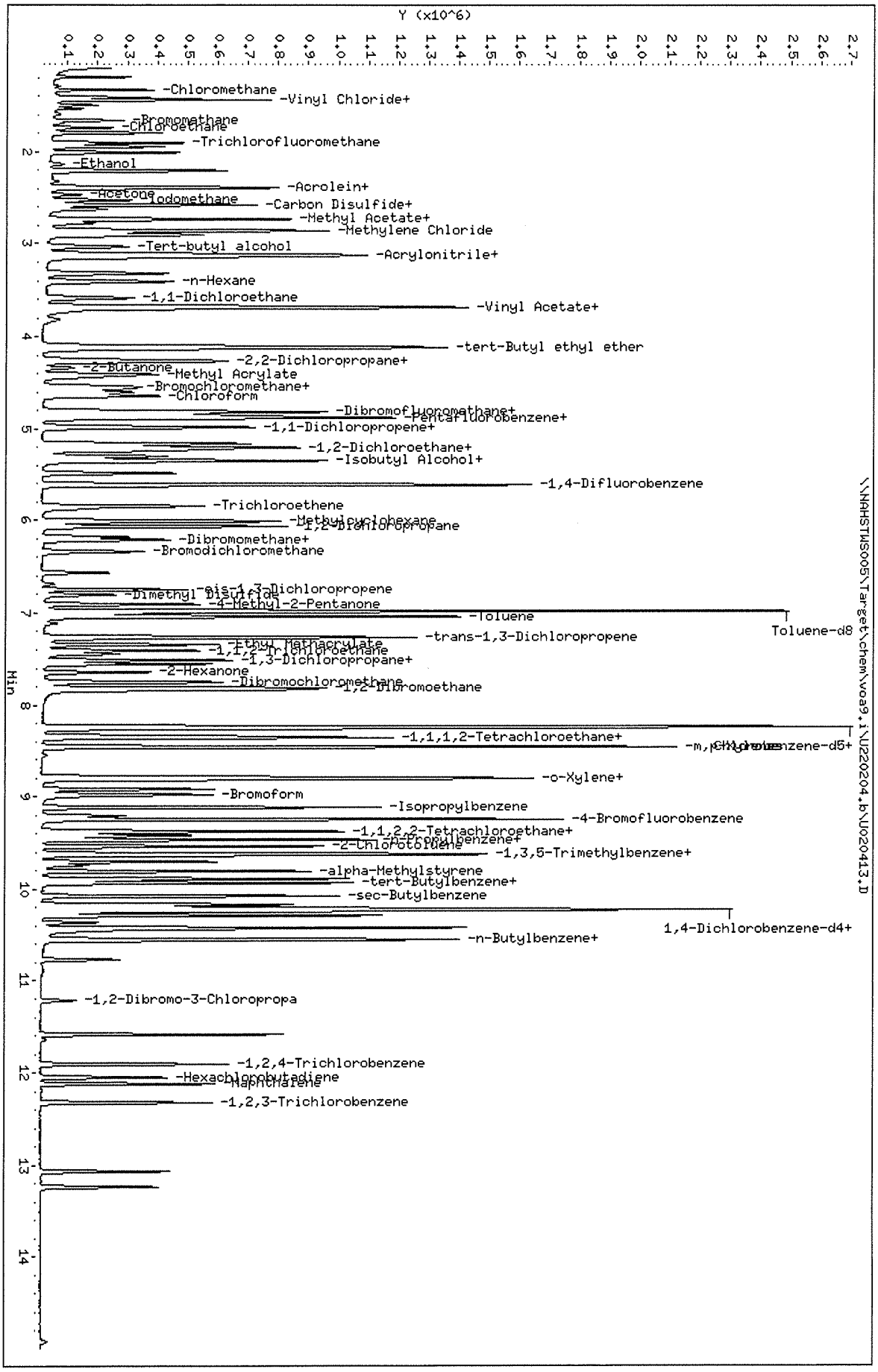
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020413.D
Lab Smp Id: HS22011233-09MSD Client Smp ID: HS22011233-09MSD
Inj Date : 04-FEB-2022 16:15
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011233-09MSD;HS22011233-09MSD;3;;MSD
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 15-Feb-2022 09:46 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 12 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.879	4.879	(1.000)	682099	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1107178	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	991980	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	492163	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.160	(1.058)	442448	49.9119	49.91
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	491367	53.2116	53.21
$	30 Dibromofluoromethane	113	4.815	4.815	(0.987)	345886	49.5655	49.56
$	48 Toluene-d8	98	6.978	6.974	(0.847)	1344718	52.8908	52.89
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	118184	18.9031	18.90
	11 1,1-Dichloroethene	96	2.386	2.390	(0.489)	133700	20.8769	20.87
	33 1,2-Dichloroethane	62	5.243	5.239	(0.934)	235751	21.2337	21.23
	27 cis-1,2-Dichloroethene	96	4.272	4.268	(0.876)	161083	18.2262	18.22
	17 Methylene Chloride	84	2.855	2.858	(0.585)	163529	20.4677	20.46
	38 Trichloroethene	130	5.850	5.846	(1.042)	156774	20.1008	20.10
	5 Vinyl Chloride	62	1.411	1.411	(0.289)	200542	19.2384	19.23



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020413.D
Date : 04-FEB-2022 16:15
Client ID: HS22011233-09MSD
Sample Info: HS22011233-09MSD;HS22011233-09MSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020430.D Page 1
Report Date: 15-Feb-2022 09:46

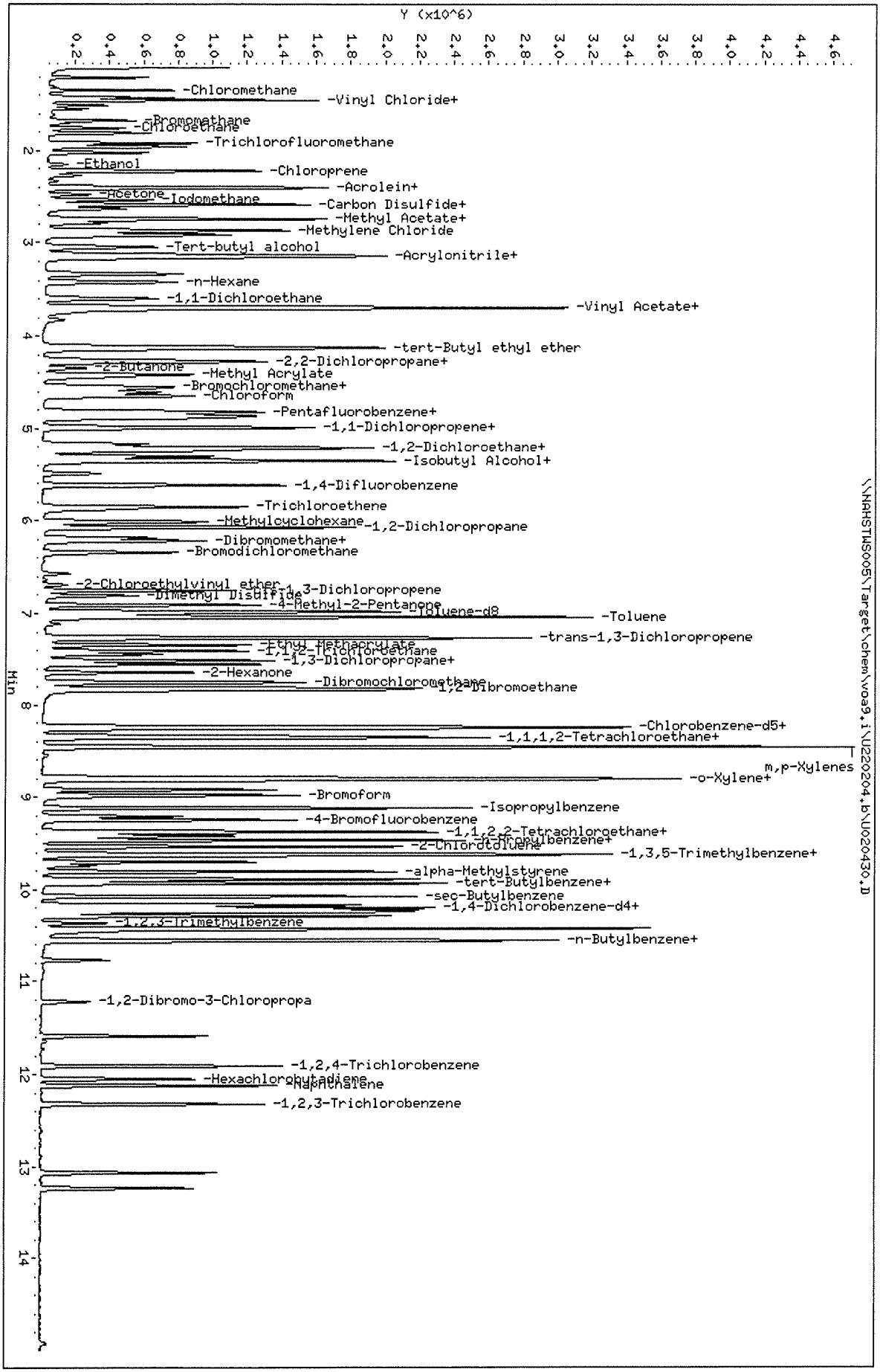
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020430.D
Lab Smp Id: CCV-END Client Smp ID: CCV-END
Inj Date : 04-FEB-2022 22:31
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050-END;VSTD050-END;2;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220204.b\8260C.m
Meth Date : 15-Feb-2022 09:46 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 29 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.886	4.886	(1.000)	547799	50.0000	
* 36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	953332	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	878385	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	440167	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.167	5.167	(1.058)	386018	50.0000	54.33
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	413335	50.0000	50.48
$ 30 Dibromofluoromethane	113	4.823	4.823	(0.987)	300208	50.0000	53.63
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1104172	50.0000	49.04
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	271430	50.0000	49.02
11 1,1-Dichloroethene	96	2.401	2.401	(0.491)	293359	50.0000	57.03
33 1,2-Dichloroethane	62	5.246	5.246	(0.934)	515413	50.0000	53.91
27 cis-1,2-Dichloroethene	96	4.279	4.279	(0.876)	362217	50.0000	51.03
17 Methylene Chloride	84	2.870	2.870	(0.587)	359236	50.0000	58.42
38 Trichloroethene	130	5.853	5.853	(1.042)	340589	50.0000	50.71
5 Vinyl Chloride	62	1.423	1.423	(0.291)	453859	50.0000	54.21



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220204.b\U020430.D
Date : 04-FEB-2022 22:31
Client ID: CCV-END
Sample Info: VSTD050-END;VSTD050-END;2;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

MSVOA09 -Logbook

Batch: 48205 **Analyst:** Presenta Cabascango
Date: 02-08-2022 **Reviewer:**
Method: 8260 **Laboratory:** Houston
Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	BFB	02-08-2022 10:21 am	1.00	0.00 mL	0.00 mL	U020801.D	Liquid	Y	NA
2	VSTD050	CCV	02-08-2022 10:43 am	1.00	5.00 mL	0.00 mL	U020802a.D	Liquid	Y	NA
3	VSTD050	CCV	02-08-2022 11:05 am	1.00	5.00 mL	0.00 mL	U020803.D	Liquid	Y	NA
4	CCB	SAMP	02-08-2022 11:27 am	1.00	5.00 mL	0.00 mL	U020804.D	Liquid	Y	NA
5	VLCSW-220208	LCS	02-08-2022 11:49 am	1.00	5.00 mL	0.00 mL	U020805.D	Liquid	Y	NA
6	BLANK	SAMP	02-08-2022 12:12 pm	1.00	5.00 mL	0.00 mL	U020806.D	Liquid	Y	NA
7	VBLKW-220208	MBLK	02-08-2022 12:34 pm	1.00	5.00 mL	0.00 mL	U020807.D	Liquid	Y	NA
8	HS22020118-01	SAMP	02-08-2022 12:56 pm	1.00	5.00 mL	0.00 mL	U020808.D	Liquid	Y	NA
9	HS22020280-03	SAMP	02-08-2022 01:18 pm	1.00	5.00 mL	0.00 mL	U020809.D	Liquid	Y	NA
10	HS22011279-10	SAMP	02-08-2022 01:41 pm	1.00	5.00 mL	0.00 mL	U020810.D	Liquid	Y	NA
11	HS22020118-05	SAMP	02-08-2022 02:03 pm	1.00	5.00 mL	0.00 mL	U020811.D	Liquid	Y	NA
12	HS22020280-01	SAMP	02-08-2022 02:25 pm	1.00	5.00 mL	0.00 mL	U020812.D	Liquid	Y	NA
13	HS22011279-09	SAMP	02-08-2022 02:47 pm	25.00	5.00 mL	0.00 mL	U020813.D	Liquid	Y	NA
14	HS22020118-05MS	MS	02-08-2022 03:10 pm	1.00	5.00 mL	0.00 mL	U020814.D	Liquid	Y	NA
15	HS22020118-05MSD	MSD	02-08-2022 03:32 pm	1.00	5.00 mL	0.00 mL	U020815.D	Liquid	Y	NA
16	HS22011279-09	SAMP	02-08-2022 03:54 pm	250.0(	5.00 mL	0.00 mL	U020816.D	Liquid	Y	NA
17	BLANK	SAMP	02-08-2022 04:16 pm	1.00	5.00 mL	0.00 mL	U020817.D	Liquid	Y	NA
18	HS22020118-02	SAMP	02-08-2022 04:38 pm	1.00	5.00 mL	0.00 mL	U020818.D	Liquid	Y	NA
19	HS22020118-03	SAMP	02-08-2022 05:01 pm	1.00	5.00 mL	0.00 mL	U020819.D	Liquid	Y	NA
20	HS22020118-04	SAMP	02-08-2022 05:23 pm	1.00	5.00 mL	0.00 mL	U020820.D	Liquid	Y	NA
21	HS22020118-06	SAMP	02-08-2022 05:45 pm	1.00	5.00 mL	0.00 mL	U020821.D	Liquid	Y	NA
22	HS22011279-07	SAMP	02-08-2022 06:07 pm	5000.0	5.00 mL	0.00 mL	U020822.D	Liquid	Y	NA
23	HS22011279-08	SAMP	02-08-2022 06:29 pm	5000.0	5.00 mL	0.00 mL	U020823.D	Liquid	Y	NA
24	HS22011279-03	SAMP	02-08-2022 06:52 pm	1.00	5.00 mL	0.00 mL	U020824.D	Liquid	Y	NA
25	HS22011279-04	SAMP	02-08-2022 07:14 pm	1.00	5.00 mL	0.00 mL	U020825.D	Liquid	Y	NA
26	HS22011279-02	SAMP	02-08-2022 07:36 pm	5.00	5.00 mL	0.00 mL	U020826.D	Liquid	Y	NA
27	HS22011279-02	SAMP	02-08-2022 07:58 pm	25.00	5.00 mL	0.00 mL	U020827.D	Liquid	Y	NA
28	HS22011279-05	SAMP	02-08-2022 08:21 pm	5.00	5.00 mL	0.00 mL	U020828.D	Liquid	Y	NA
29	HS22011279-05n/r	SAMP	02-08-2022 08:43 pm	25.00	5.00 mL	0.00 mL	U020829.D	Liquid	Y	NA
30	HS22011279-01	SAMP	02-08-2022 09:05 pm	10.00	5.00 mL	0.00 mL	U020830.D	Liquid	Y	NA
31	VSTD050-END	CCV	02-08-2022 09:27 pm	1.00	5.00 mL	0.00 mL	U020831.D	Liquid	Y	NA
32	BFB	BFB	02-08-2022 09:49 pm	1.00	0.00 mL	0.00 mL	V020801.D	Liquid	Y	NA
33	VSTD050	CCV	02-08-2022 10:11 pm	1.00	5.00 mL	0.00 mL	V020802.D	Liquid	Y	NA
34	BLANK	SAMP	02-08-2022 10:33 pm	1.00	5.00 mL	0.00 mL	V020803.D	Liquid	Y	NA
35	CCB	SAMP	02-08-2022 10:56 pm	1.00	5.00 mL	0.00 mL	V020804.D	Liquid	Y	NA
36	VLCSW-220208	LCS	02-08-2022 11:18 pm	1.00	5.00 mL	0.00 mL	V020805.D	Liquid	Y	NA
37	BLANK	SAMP	02-08-2022 11:40 pm	1.00	5.00 mL	0.00 mL	V020806.D	Liquid	Y	NA
38	VBLKW-220208	MBLK	02-09-2022 12:02 am	1.00	5.00 mL	0.00 mL	V020807.D	Liquid	Y	NA
39	HS22011297-08	SAMP	02-09-2022 12:24 am	1.00	5.00 mL	0.00 mL	V020808.D	Liquid	Y	NA
40	HS22011297-02	SAMP	02-09-2022 12:46 am	1.00	5.00 mL	0.00 mL	V020809.D	Liquid	Y	NA
41	HS22011297-08MS	MS	02-09-2022 01:08 am	1.00	5.00 mL	0.00 mL	V020810.D	Liquid	Y	NA

MSVOA09 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
42	HS22011297-08MSD	MSD	02-09-2022 01:31 am	1.00	5.00 mL	0.00 mL	V020811.D	Liquid	Y	NA
43	BLANK	SAMP	02-09-2022 01:53 am	1.00	5.00 mL	0.00 mL	V020812.D	Liquid	Y	NA
44	HS22011297-03	SAMP	02-09-2022 02:15 am	1.00	5.00 mL	0.00 mL	V020813.D	Liquid	Y	NA
45	HS22011297-04	SAMP	02-09-2022 02:37 am	1.00	5.00 mL	0.00 mL	V020814.D	Liquid	Y	NA
46	HS22011297-05	SAMP	02-09-2022 02:59 am	1.00	5.00 mL	0.00 mL	V020815.D	Liquid	Y	NA
47	HS22011297-06	SAMP	02-09-2022 03:21 am	1.00	5.00 mL	0.00 mL	V020816.D	Liquid	Y	NA
48	HS22011297-11	SAMP	02-09-2022 03:44 am	1.00	5.00 mL	0.00 mL	V020817.D	Liquid	Y	NA
49	HS22011297-12	SAMP	02-09-2022 04:06 am	1.00	5.00 mL	0.00 mL	V020818.D	Liquid	Y	NA
50	HS22011297-09	SAMP	02-09-2022 04:28 am	1.00	5.00 mL	0.00 mL	V020819.D	Liquid	Y	NA
51	HS22011297-13	SAMP	02-09-2022 04:50 am	1.00	5.00 mL	0.00 mL	V020820.D	Liquid	Y	NA
52	HS22011297-16	SAMP	02-09-2022 05:12 am	1.00	5.00 mL	0.00 mL	V020821.D	Liquid	Y	NA
53	HS22011297-17	SAMP	02-09-2022 05:34 am	1.00	5.00 mL	0.00 mL	V020822.D	Liquid	Y	NA
54	HS22011297-18	SAMP	02-09-2022 05:57 am	1.00	5.00 mL	0.00 mL	V020823.D	Liquid	Y	NA
55	HS22011297-19	SAMP	02-09-2022 06:19 am	1.00	5.00 mL	0.00 mL	V020824.D	Liquid	Y	NA
56	HS22011297-20	SAMP	02-09-2022 06:41 am	1.00	5.00 mL	0.00 mL	V020825.D	Liquid	Y	NA
57	HS22011297-21	SAMP	02-09-2022 07:03 am	1.00	5.00 mL	0.00 mL	V020826.D	Liquid	Y	NA
58	HS22011297-22	SAMP	02-09-2022 07:25 am	1.00	5.00 mL	0.00 mL	V020827.D	Liquid	Y	NA
59	HS22011297-07	SAMP	02-09-2022 07:48 am	1.00	5.00 mL	0.00 mL	V020828.D	Liquid	Y	NA
60	BLANK	SAMP	02-09-2022 08:10 am	1.00	5.00 mL	0.00 mL	V020829.D	Liquid	Y	NA
61	HS22011297-14	SAMP	02-09-2022 08:32 am	1.00	5.00 mL	0.00 mL	V020830.D	Liquid	Y	NA
62	BLANK	SAMP	02-09-2022 08:54 am	1.00	5.00 mL	0.00 mL	V020831.D	Liquid	Y	NA
63	HS22011297-10	SAMP	02-09-2022 09:16 am	1.00	5.00 mL	0.00 mL	V020832.D	Liquid	Y	NA

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

	CLIENT SAMPLE NO.	SMC1 (TOL)#	SMC2 #	SMC3 (DCE)#	OTHER #	TOT OUT
01	VLCSW-220208	103	106	110	105	0
02	VBLKW-220208	104	98	102	102	0
03	HS22011279-10	104	99	103	102	0
04	HS22011279-09	190*	187*	196*	194*	4
05	HS22020118-05MS	106	100	100	108	0
06	HS22020118-05MSD	106	101	100	106	0
07	HS22011279-09	106	99	102	103	0
08	HS22011279-07	105	99	103	102	0
09	HS22011279-08	105	99	101	101	0
10	HS22011279-03	106	101	104	100	0
11	HS22011279-04	106	101	103	102	0
12	HS22011279-02	105	100	103	102	0
13	HS22011279-02	116	111	119	111	0
14	HS22011279-05	106	99	103	102	0
15	HS22011279-01	106	98	102	102	0
16						
17						
18						
19						
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23						
24						
25						
26						
27						
28						

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(78-123)
SMC2	= Dibromofluoromethane	(74-125)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(0-130)
OTHER	= 4-Bromofluorobenzene	(0-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.
VBLKW-220208

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Lab File ID: U020807 Lab Sample ID: VBLKW-220208

Date Analyzed: 02/08/22 Time Analyzed: 1234

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

Instrument ID: VOA9

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VLCSW-220208	VLCSW-220208	U020805	1149
02	HS22011279-10	HS22011279-10	U020810	1341
03	HS22011279-09	HS22011279-09	U020813	1447
04	HS22020118-05MS	HS22020118-05MS	U020814	1510
05	HS22020118-05MSD	HS22020118-05MSD	U020815	1532
06	HS22011279-09	HS22011279-09	U020816	1554
07	HS22011279-07	HS22011279-07	U020822	1807
08	HS22011279-08	HS22011279-08	U020823	1829
09	HS22011279-03	HS22011279-03	U020824	1852
10	HS22011279-04	HS22011279-04	U020825	1914
11	HS22011279-02	HS22011279-02	U020826	1936
12	HS22011279-02	HS22011279-02	U020827	1958
13	HS22011279-05	HS22011279-05	U020828	2021
14	HS22011279-01	HS22011279-01	U020830	2105
15				
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COMMENTS:

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Lab File ID: U020801 BFB Injection Date: 02/08/22

Instrument ID: VOA9 BFB Injection Time: 1021

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.3
75	30.0 - 60.0% of mass 95	51.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.3
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	84.6
175	5.0 - 9.0% of mass 174	6.8 (8.0)1
176	95.0 - 101.0% of mass 174	81.5 (96.3)1
177	5.0 - 9.0% of mass 176	5.2 (6.4)2

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

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	U020803	02/08/22	1105
02	VLCSW-220208	VLCSW-220208	U020805	02/08/22	1149
03	VBLKW-220208	VBLKW-220208	U020807	02/08/22	1234
04	HS22011279-10	HS22011279-10	U020810	02/08/22	1341
05	HS22011279-09	HS22011279-09	U020813	02/08/22	1447
06	HS22020118-05MS	HS22020118-05MS	U020814	02/08/22	1510
07	HS22020118-05MSD	HS22020118-05MSD	U020815	02/08/22	1532
08	HS22011279-09	HS22011279-09	U020816	02/08/22	1554
09	HS22011279-07	HS22011279-07	U020822	02/08/22	1807
10	HS22011279-08	HS22011279-08	U020823	02/08/22	1829
11	HS22011279-03	HS22011279-03	U020824	02/08/22	1852
12	HS22011279-04	HS22011279-04	U020825	02/08/22	1914
13	HS22011279-02	HS22011279-02	U020826	02/08/22	1936
14	HS22011279-02	HS22011279-02	U020827	02/08/22	1958
15	HS22011279-05	HS22011279-05	U020828	02/08/22	2021
16	HS22011279-01	HS22011279-01	U020830	02/08/22	2105
17	CCV-END	CCV-END	U020831	02/08/22	2127
18					
19					
20					
21					
22					

FORM V VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Instrument ID: VOA9 Calibration Date: 02/08/22 Time: 1105

Lab File ID: U020803 Init. Calib. Date(s): 01/21/22 01/21/22

Init. Calib. Times: 1122 1502

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Trichloroethene	0.3520000	0.3242768	0.3242768	0.2	7.88	20.00	AVRG
Methylene Chloride	51.918544	50.000000	0.5844833	0.1	-3.84	20.00	LINR
cis-1,2-Dichloroethene	0.6480000	0.6099911	0.6099911	0.1	5.86	20.00	AVRG
Vinyl Chloride	0.7640000	0.7626080	0.7626080	0.1	0.18	20.00	AVRG
1,1,2-Trichloroethane	0.3150000	0.3050123	0.3050123	0.1	3.17	20.00	AVRG
1,1-Dichloroethene	0.4690000	0.4768928	0.4768928	0.1	-1.68	20.00	AVRG
1,2-Dichloroethane	0.5010000	0.5190294	0.5190294	0.1	-3.60	20.00	AVRG
Toluene-d8	1.2820000	1.3159541	1.3159541	0.1	-2.65	20.00	AVRG
Dibromofluoromethane	52.293548	50.000000	0.5345248	0.1	-4.59	20.00	LINR
1,2-Dichloroethane-d4	54.531441	50.000000	0.7071308	0.1	-9.06	20.00	LINR
4-Bromofluorobenzene	52.525784	50.000000	0.4891004	0.1	-5.05	20.00	LINR

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Instrument ID: VOA9 Calibration Date: 02/08/22 Time: 2127

Lab File ID: U020831 Init. Calib. Date(s): 01/21/22 01/21/22

Init. Calib. Times: 1122 1502

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Trichloroethene	0.3520000	0.3499420	0.3499420	0.2	0.58	50.00	AVRG
Methylene Chloride	57.422375	50.000000	0.6448121	0.1	-14.84	50.00	LINR
cis-1,2-Dichloroethene	0.6480000	0.6646881	0.6646881	0.1	-2.58	50.00	AVRG
Vinyl Chloride	0.7640000	0.8167648	0.8167648	0.1	-6.91	50.00	AVRG
1,1,2-Trichloroethane	0.3150000	0.3115706	0.3115706	0.1	1.09	50.00	AVRG
1,1-Dichloroethene	0.4690000	0.5079373	0.5079373	0.1	-8.30	50.00	AVRG
1,2-Dichloroethane	0.5010000	0.5464938	0.5464938	0.1	-9.08	50.00	AVRG
Toluene-d8	1.2820000	1.3310651	1.3310651	0.1	-3.83	50.00	AVRG
Dibromofluoromethane	56.143768	50.000000	0.5732433	0.1	-12.29	50.00	LINR
1,2-Dichloroethane-d4	58.194597	50.000000	0.7534988	0.1	-16.39	50.00	LINR
4-Bromofluorobenzene	53.850401	50.000000	0.5011510	0.1	-7.70	50.00	LINR

FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Lab File ID (Standard): U020803 Date Analyzed: 02/08/22

Instrument ID: VOA9 Time Analyzed: 1105

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

		IS1 AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	610286	4.88	1024048	5.61	925356	8.24
	UPPER LIMIT	1220572	5.38	2048096	6.11	1850712	8.74
	LOWER LIMIT	305143	4.38	512024	5.11	462678	7.74
	CLIENT SAMPLE NO.						
01	VLCSW-220208	587559	4.89	982754	5.62	897677	8.24
02	VBLKW-220208	690154	4.88	1123134	5.61	993756	8.24
03	HS22011279-10	663609	4.89	1083112	5.62	960025	8.24
04	HS22011279-09	639023	4.89	1043522	5.62	938761	8.24
05	HS22020118-05MS	648679	4.88	1048557	5.61	930207	8.24
06	HS22020118-05MSD	665051	4.88	1083981	5.62	967007	8.24
07	HS22011279-09	662456	4.88	1078764	5.61	952728	8.24
08	HS22011279-07	627703	4.88	1028077	5.61	920313	8.24
09	HS22011279-08	637130	4.88	1027208	5.62	926743	8.24
10	HS22011279-03	617981	4.88	1023231	5.61	907312	8.24
11	HS22011279-04	622357	4.88	1022733	5.61	899671	8.24
12	HS22011279-02	618340	4.88	1012362	5.61	901826	8.24
13	HS22011279-02	626868	4.88	1031592	5.61	910102	8.24
14	HS22011279-05	635878	4.88	1040213	5.61	918507	8.24
15	HS22011279-01	638100	4.88	1031885	5.61	905268	8.24
16							
17							
18							
19							
20							

IS1 = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Lab File ID (Standard): U020803 Date Analyzed: 02/08/22

Instrument ID: VOA9 Time Analyzed: 1105

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

		IS4(DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	462762	10.22				
	UPPER LIMIT	925524	10.72				
	LOWER LIMIT	231381	9.72				
	CLIENT SAMPLE NO.						
01	VLCSW-220208	448309	10.23				
02	VBLKW-220208	478578	10.23				
03	HS22011279-10	463191	10.22				
04	HS22011279-09	461455	10.22				
05	HS22020118-05MS	468091	10.23				
06	HS22020118-05MSD	487664	10.23				
07	HS22011279-09	461835	10.23				
08	HS22011279-07	439076	10.23				
09	HS22011279-08	437397	10.22				
10	HS22011279-03	429700	10.23				
11	HS22011279-04	438511	10.23				
12	HS22011279-02	430682	10.23				
13	HS22011279-02	431848	10.23				
14	HS22011279-05	439882	10.22				
15	HS22011279-01	434478	10.22				
16							
17							
18							
19							
20							

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020801.D Page 1

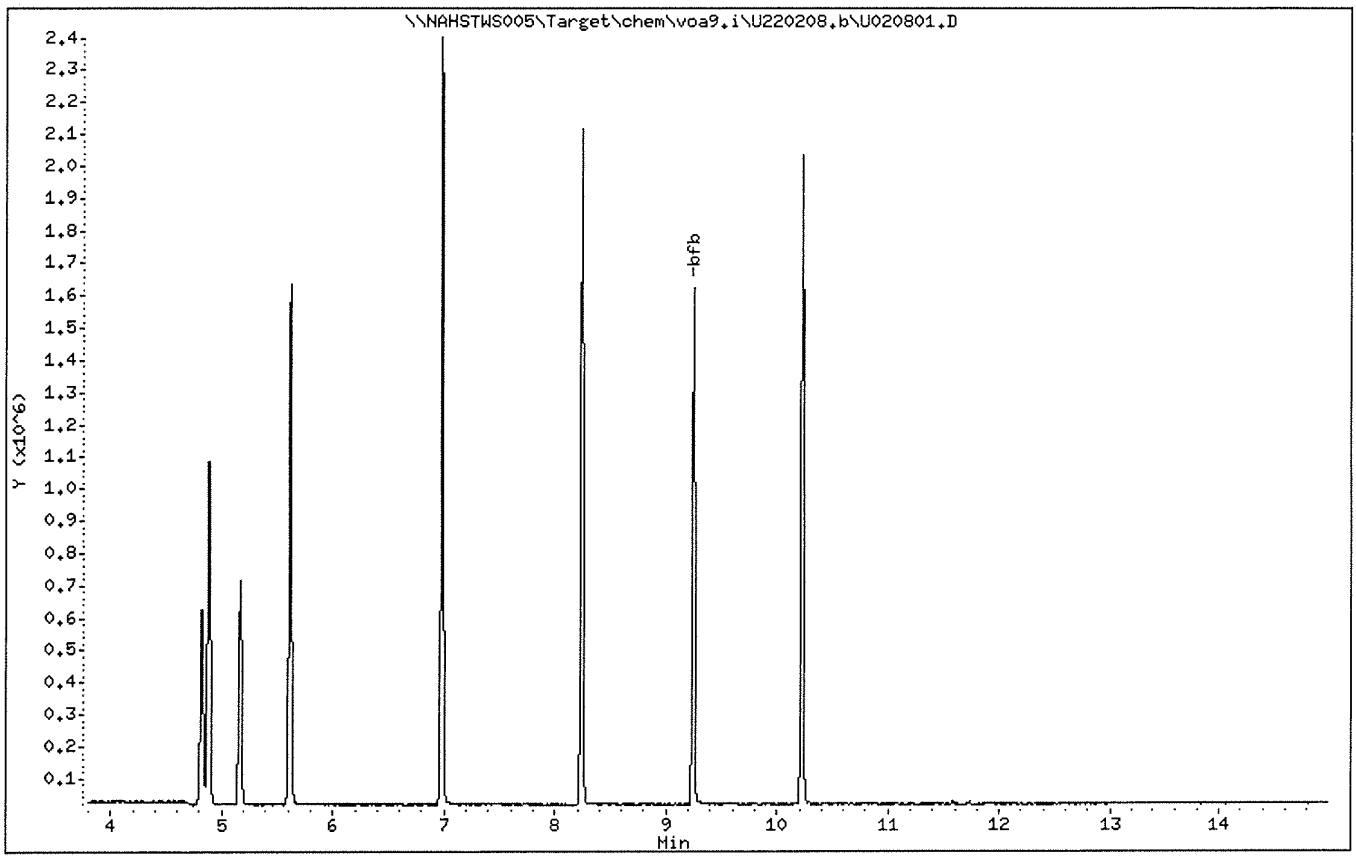
Date : 08-FEB-2022 10:21

Client ID: BFB Instrument: VOA9.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\voa9.i\U220208.b\U020801.D Page 2

Date : 08-FEB-2022 10:21

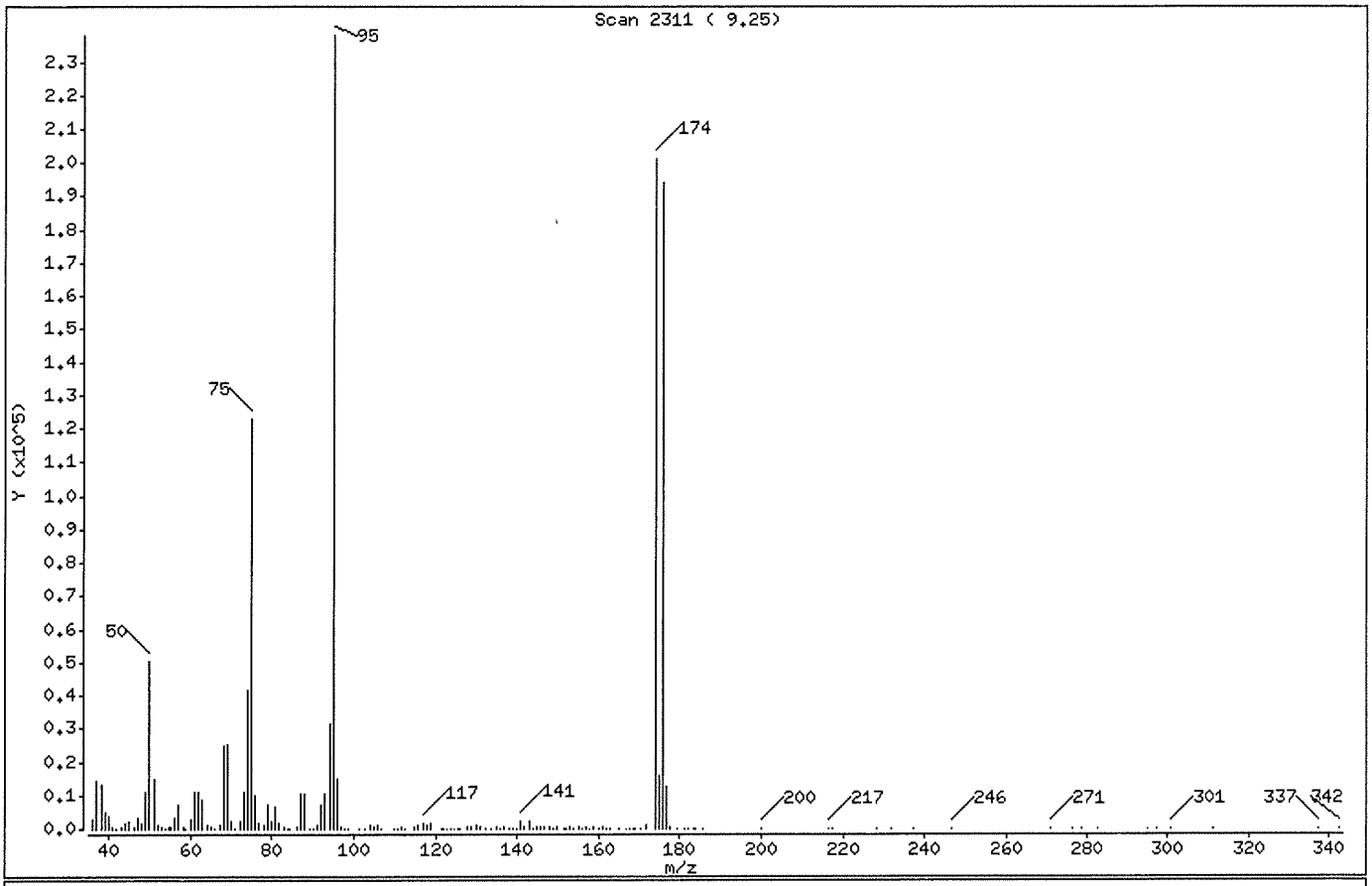
Client ID: BFB Instrument: VOA9.i

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	21.27
75	30.00 - 60.00% of mass 95	51.55
96	5.00 - 9.00% of mass 95	6.26
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	84.59
175	5.00 - 9.00% of mass 174	6.79 (8.02)
176	95.00 - 101.00% of mass 174	81.47 (96.31)
177	5.00 - 9.00% of mass 176	5.22 (6.41)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020801.D

Date : 08-FEB-2022 10:21

Client ID: BFB

Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: U020801.D
Spectrum: Scan 2311 (9.25)
Location of Maximum: 95.05
Number of points: 159

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	2694	75.00	122664	121.40	95	161.00	363
37.00	14507	76.00	9857	121.90	138	162.00	58
38.00	13348	76.90	1503	123.00	77	163.00	59
39.10	5208	78.00	1164	123.90	204	164.90	90
40.00	3699	78.90	7258	124.80	133	166.80	73
40.90	348	79.90	2345	125.50	68	167.70	91
41.80	248	80.90	6676	126.10	135	168.50	87
43.00	304	81.80	1520	127.80	799	169.10	74
44.10	1880	82.90	379	128.90	506	170.30	198
45.00	2304	83.90	131	129.90	936	171.90	1044
46.20	366	84.40	80	130.80	331	173.90	201280
47.00	3263	86.10	486	132.40	57	175.00	16152
48.00	1880	87.00	10540	133.80	90	175.90	193856
49.00	10832	88.00	10428	135.00	401	176.90	12430
50.00	50624	89.20	84	135.80	125	177.80	310
51.00	14706	90.10	87	136.90	655	179.30	93
51.90	839	91.10	1016	138.00	77	181.10	89
52.90	276	92.00	7293	139.00	171	181.90	59
53.90	241	93.00	10307	139.80	263	183.20	53
54.80	665	94.00	31312	140.00	265	183.70	68
55.20	729	95.00	237952	140.90	2465	185.50	61
56.00	3442	96.00	14887	141.90	458	199.90	78
57.00	7265	97.00	502	142.90	2437	216.70	127
58.20	397	97.90	114	144.00	237	217.30	52
58.80	141	98.50	96	144.80	344	228.30	72
60.00	2485	101.40	91	145.80	414	231.80	86
61.00	11158	102.90	214	146.80	356	237.40	61
62.00	10840	104.00	1102	147.90	622	246.60	60
63.00	8553	104.80	495	148.80	188	246.80	60
64.00	852	105.90	965	149.80	380	270.90	83
65.00	690	106.80	260	151.60	180	276.40	62
65.90	160	109.90	225	152.20	81	278.50	81
67.20	910	110.90	259	152.90	351	282.30	52
68.00	24520	111.90	288	153.90	212	295.20	51
69.00	25320	112.70	247	155.00	692	297.20	51

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020801.D Page 4

Date : 08-FEB-2022 10:21

Client ID: BFB Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: U020801.D
Spectrum: Scan 2311 (9.25)
Location of Maximum: 95.05
Number of points: 159

m/z	Y	m/z	Y	m/z	Y	m/z	Y
70.00	2196	114.80	346	155.90	231	300.70	127
71.00	224	115.90	1035	156.80	386	311.10	83
72.00	1933	117.00	1705	157.70	139	337.00	54
73.00	11150	118.00	1052	158.80	397	342.50	65
74.00	41840	118.90	1550	159.90	56		

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020803.D Page 1
Report Date: 15-Feb-2022 09:27

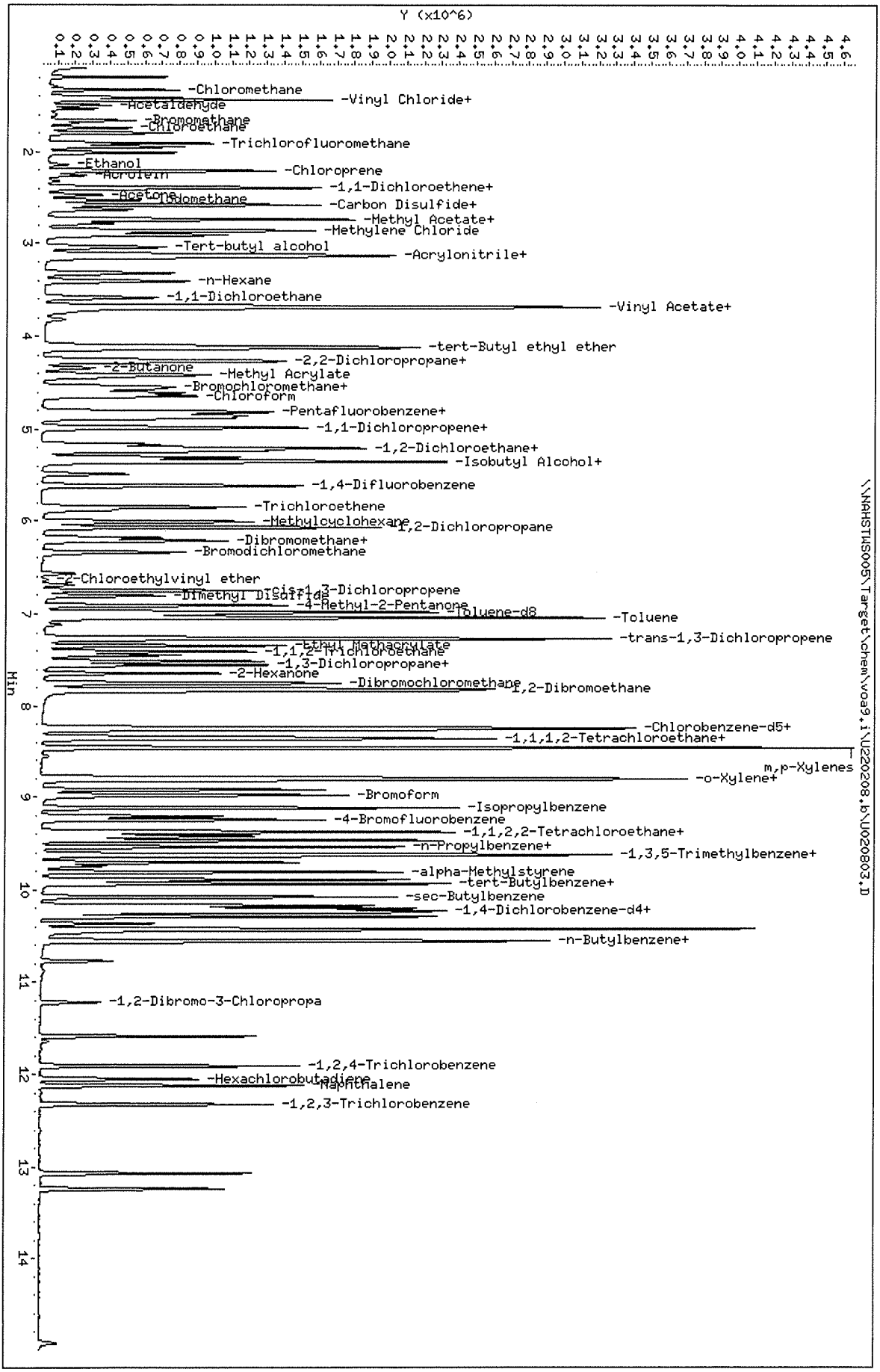
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020803.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 08-FEB-2022 11:05
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050;VSTD050;2;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:27 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.883	(1.000)	610286	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1024048	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	925356	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	462762	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	431552	50.0000	54.53
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	452592	50.0000	52.52
$ 30 Dibromofluoromethane	113	4.815	4.815	(0.986)	326213	50.0000	52.29
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1217726	50.0000	51.34
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	282245	50.0000	48.39
11 1,1-Dichloroethene	96	2.390	2.390	(0.489)	291041	50.0000	50.79
33 1,2-Dichloroethane	62	5.242	5.242	(0.934)	531511	50.0000	51.75
27 cis-1,2-Dichloroethene	96	4.272	4.272	(0.875)	372269	50.0000	47.07
17 Methylene Chloride	84	2.858	2.858	(0.585)	356702	50.0000	51.91
38 Trichloroethene	130	5.850	5.850	(1.042)	332075	50.0000	46.03
5 Vinyl Chloride	62	1.411	1.411	(0.289)	465409	50.0000	49.90



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220208,b\U020803,D
Date : 08-FEB-2022 11:05
Client ID: CCV
Sample Info: VSTD050;VSTD050;2;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020805.D Page 1
Report Date: 15-Feb-2022 09:27

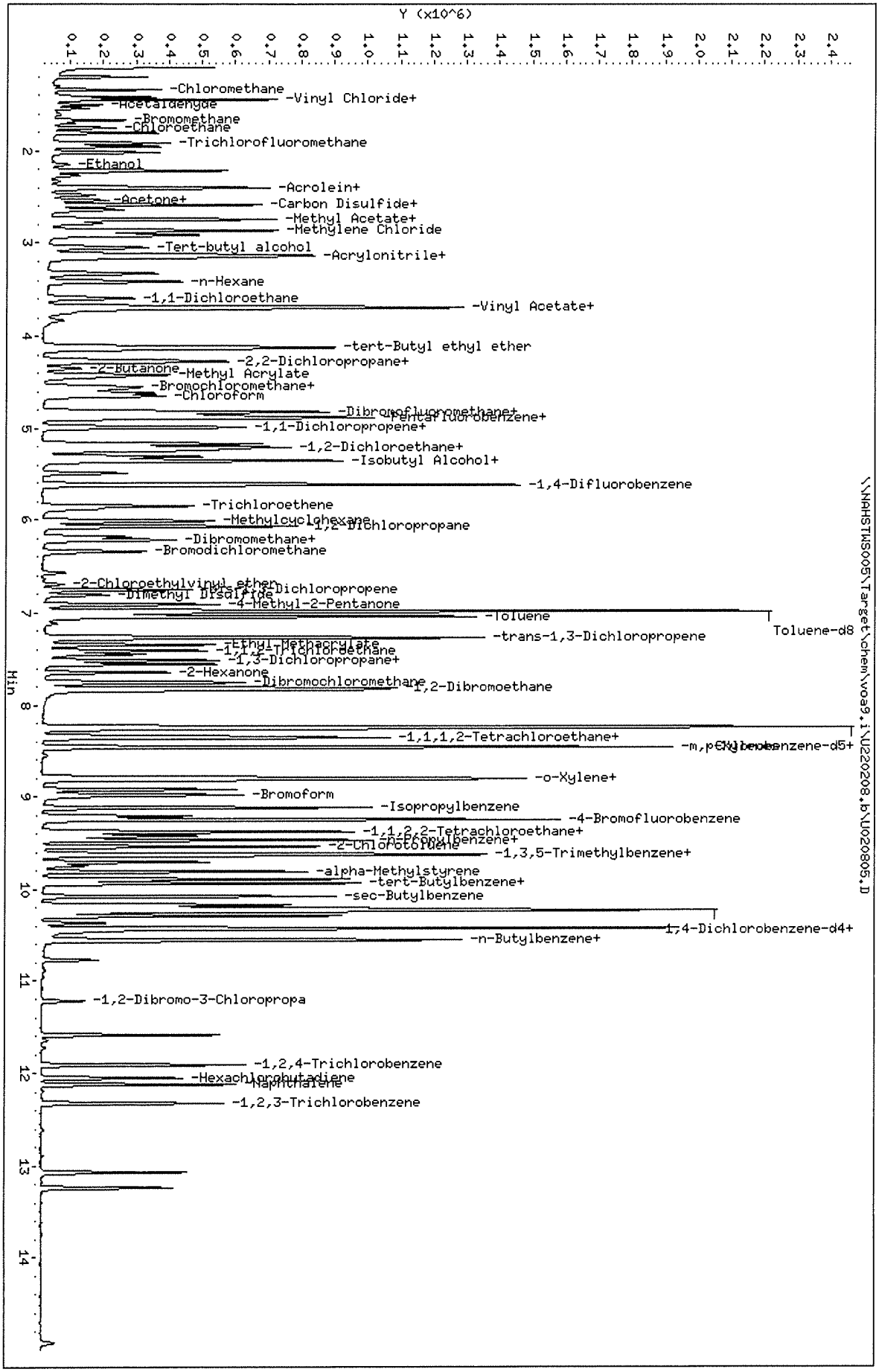
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020805.D
Lab Smp Id: VLCSW-220208 Client Smp ID: VLCSW-220208
Inj Date : 08-FEB-2022 11:49
Operator : PC Inst ID: VOA9.i
Smp Info : VLCSW-220208;VLCSW-220208;3;;LCS
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:27 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.886	4.883	(1.000)	587559	50.0000	
*	36 1,4-Difluorobenzene	114	5.617	5.614	(1.000)	982754	50.0000	
*	47 Chlorobenzene-d5	117	8.242	8.238	(1.000)	897677	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	448309	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.168	5.164	(1.058)	420166	55.1614	55.16
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	437843	52.3775	52.37
$	30 Dibromofluoromethane	113	4.823	4.815	(0.987)	317511	52.8768	52.87
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1185585	51.5305	51.53
	53 1,1,2-Trichloroethane	83	7.413	7.409	(0.899)	113597	20.0782	20.07
	11 1,1-Dichloroethene	96	2.397	2.390	(0.491)	120414	21.8277	21.82
	33 1,2-Dichloroethane	62	5.246	5.242	(0.934)	215355	21.8524	21.85
	27 cis-1,2-Dichloroethene	96	4.275	4.272	(0.875)	152391	20.0172	20.01
	17 Methylene Chloride	84	2.862	2.858	(0.586)	148793	21.6989	21.69
	38 Trichloroethene	130	5.850	5.850	(1.041)	136152	19.6669	19.66
	5 Vinyl Chloride	62	1.419	1.411	(0.290)	190952	21.2659	21.26



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220208,b\U020805.D
Date : 08-FEB-2022 11:49
Client ID: VLCSW-220208
Sample Info: VLCSW-220208;VLCSW-220208;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020807.D Page 1
Report Date: 15-Feb-2022 09:27

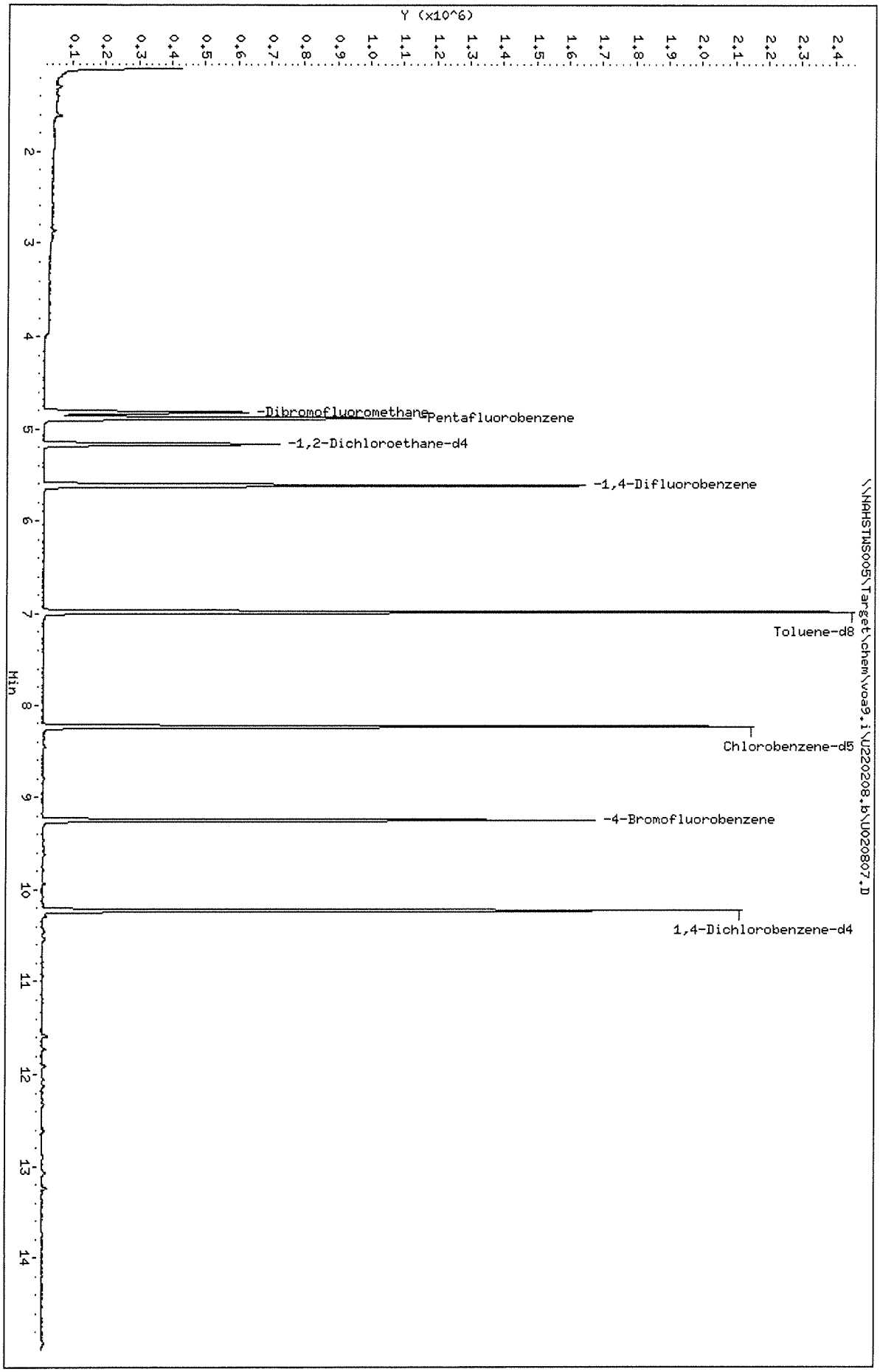
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020807.D
Lab Smp Id: VBLKW-220208 Client Smp ID: VBLKW-220208
Inj Date : 08-FEB-2022 12:34
Operator : PC Inst ID: VOA9.i
Smp Info : VBLKW-220208;VBLKW-220208;3;;BLANK
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:27 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.883	(1.000)	690154	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1123134	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	993756	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	478578	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.168	5.164	(1.058)	458260	51.1238	51.12
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	473864	51.1783	51.17
$	30 Dibromofluoromethane	113	4.819	4.815	(0.987)	346370	49.0467	49.04
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1331866	52.2917	52.29



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020807.D
Date : 08-FEB-2022 12:34
Client ID: VBLKW-220208
Sample Info: VBLKW-220208;VBLKW-220208;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020810.D Page 1
Report Date: 15-Feb-2022 09:26

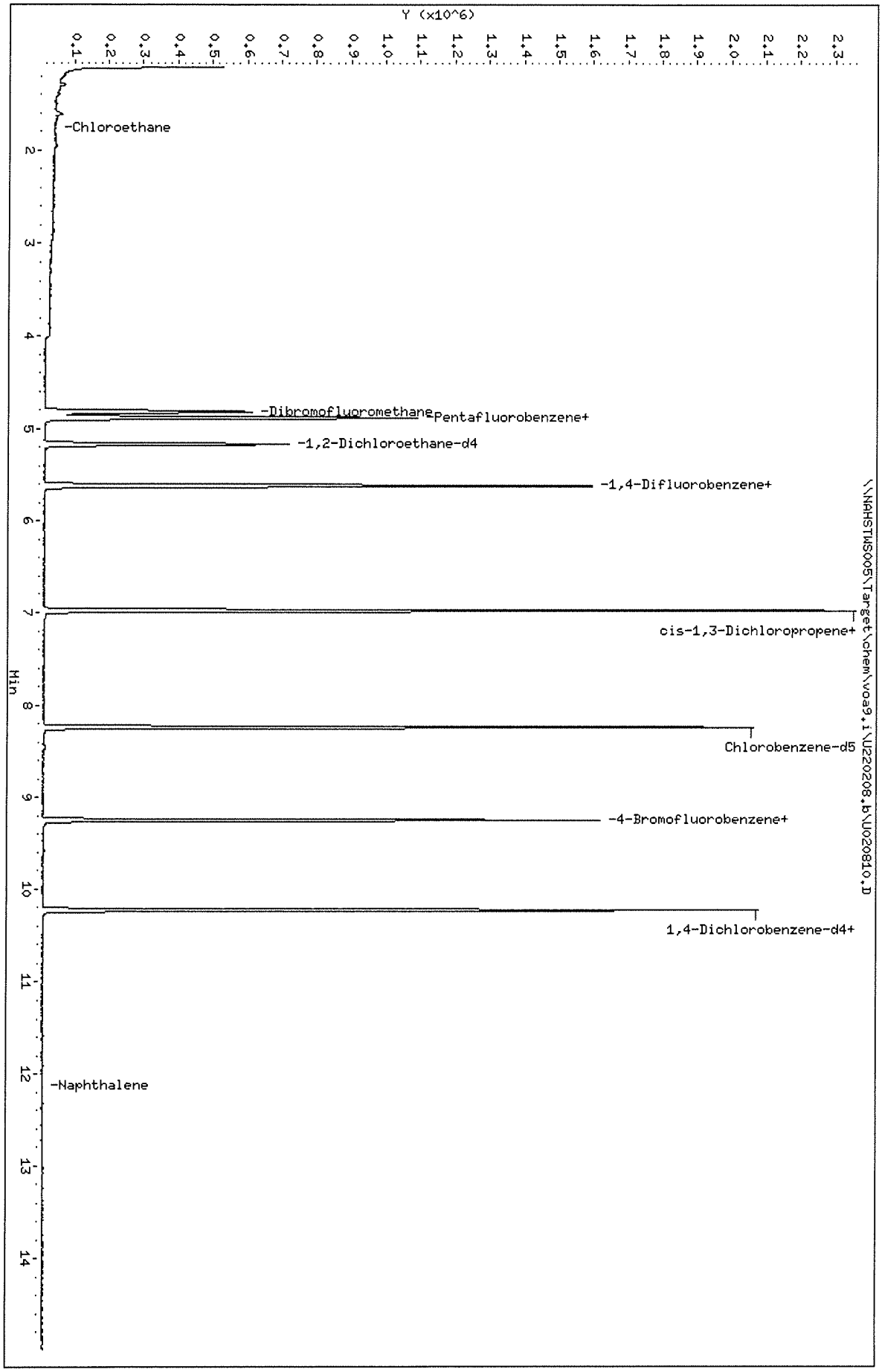
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020810.D
Lab Smp Id: HS22011279-10 Client Smp ID: HS22011279-10
Inj Date : 08-FEB-2022 13:41
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011279-10;HS22011279-10;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:23 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.886	4.883	(1.000)	663609	50.0000	
*	36 1,4-Difluorobenzene	114	5.617	5.614	(1.000)	1083112	50.0000	
*	47 Chlorobenzene-d5	117	8.241	8.238	(1.000)	960025	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	463191	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.167	5.164	(1.058)	443900	51.5126	51.51
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	454233	50.7722	50.77
$	30 Dibromofluoromethane	113	4.819	4.815	(0.986)	337203	49.6693	49.66
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1281372	52.0768	52.07



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020810.D
Date : 08-FEB-2022 13:41
Client ID: HS22011279-10
Sample Info: HS22011279-10;HS22011279-10;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020813.D Page 1
Report Date: 15-Feb-2022 09:26

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020813.D
Lab Smp Id: HS22011279-09 Client Smp ID: HS22011279-09
Inj Date : 08-FEB-2022 14:47
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011279-09;HS22011279-09;;;
Misc Info : 180315V9;WATER;0;25;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:23 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 13
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

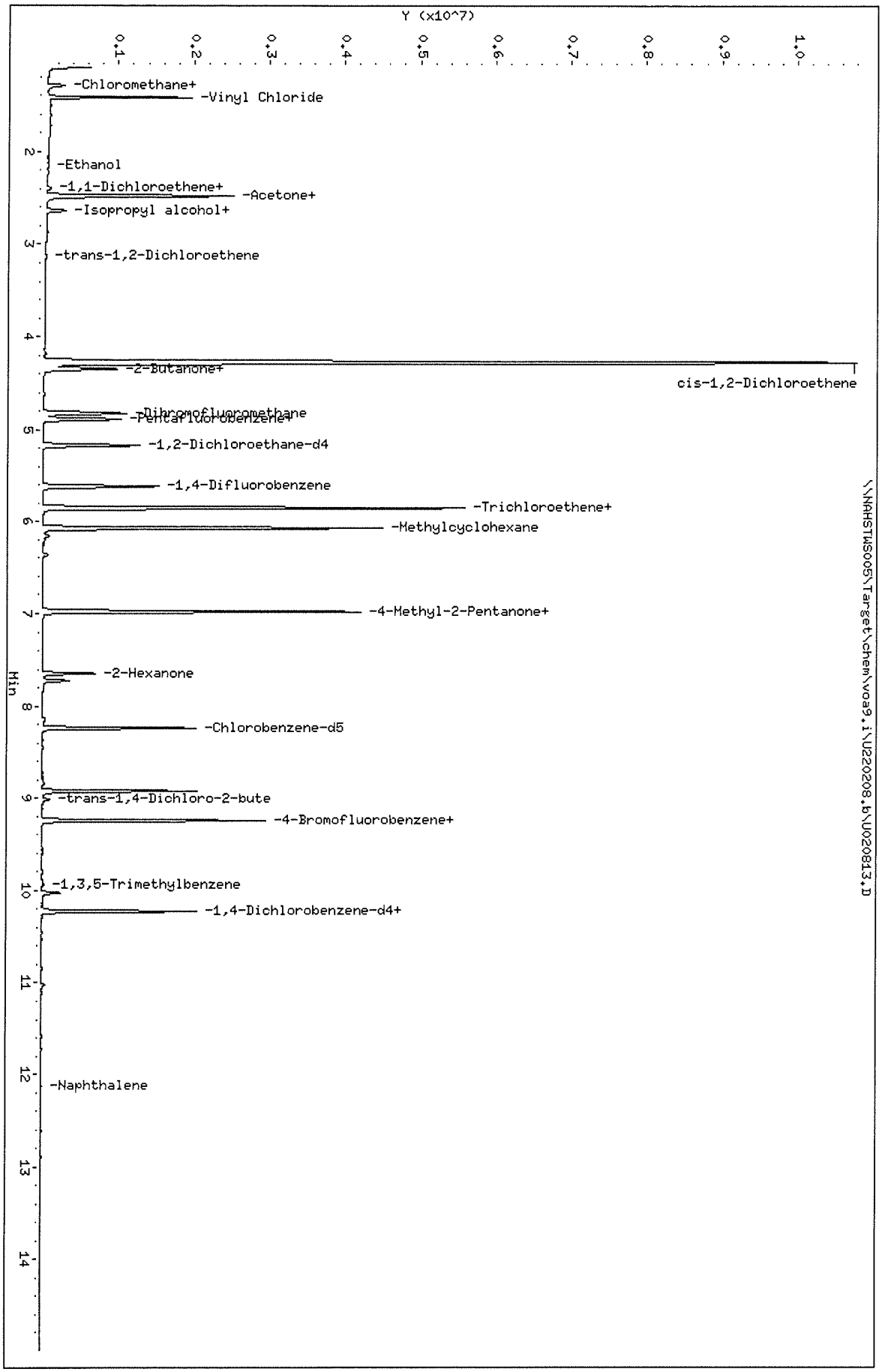
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.886	4.883	(1.000)	639023	50.0000	
* 36 1,4-Difluorobenzene	114	5.617	5.614	(1.000)	1043522	50.0000	
* 47 Chlorobenzene-d5	117	8.241	8.238	(1.000)	938761	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	461455	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.167	5.164	(1.058)	805864	98.2950	98.29(R)
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	839296	97.0381	97.03(R)
$ 30 Dibromofluoromethane	113	4.822	4.815	(0.987)	606257	93.4822	93.48(R)
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	2286136	95.0164	95.01(R)
11 1,1-Dichloroethene	96	2.397	2.386	(0.491)	9994	1.66573	41.64(a)
27 cis-1,2-Dichloroethene	96	4.275	4.268	(0.875)	4668076	563.789	14094.71(A)
38 Trichloroethene	130	5.853	5.850	(1.042)	1622010	220.652	5516.30(A)
5 Vinyl Chloride	62	1.419	1.408	(0.290)	1167769	119.578	2989.44

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.
R - Spike/Surrogate failed recovery limits.



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220208,b\U020813.D
Date : 08-FEB-2022 14:47
Client ID: HS220112279-09
Sample Info: HS220112279-09;HS220112279-09;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020813.D Page 3

Date : 08-FEB-2022 14:47

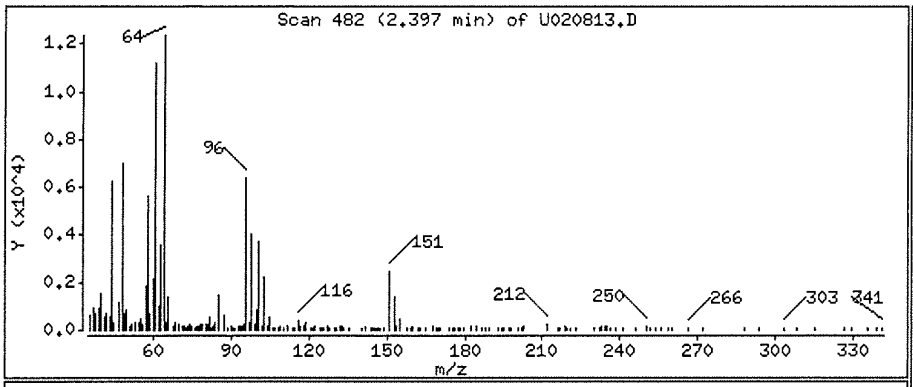
Client ID: HS22011279-09 Instrument: VOA9.i

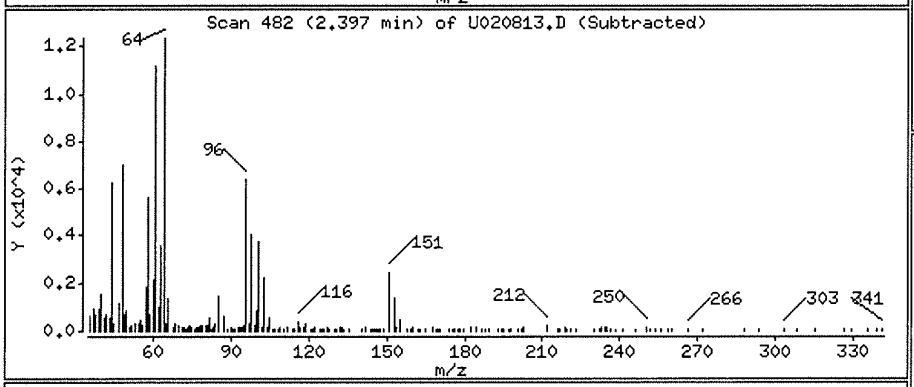
Sample Info: HS22011279-09;HS22011279-09;;;

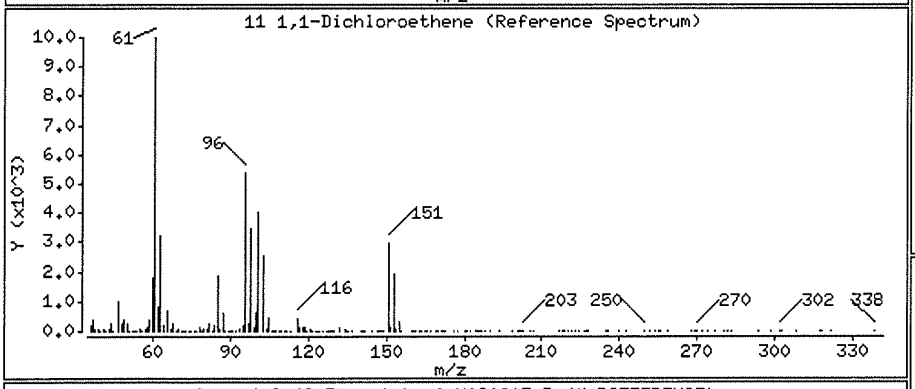
Purge Volume: 5.0 Operator: PC

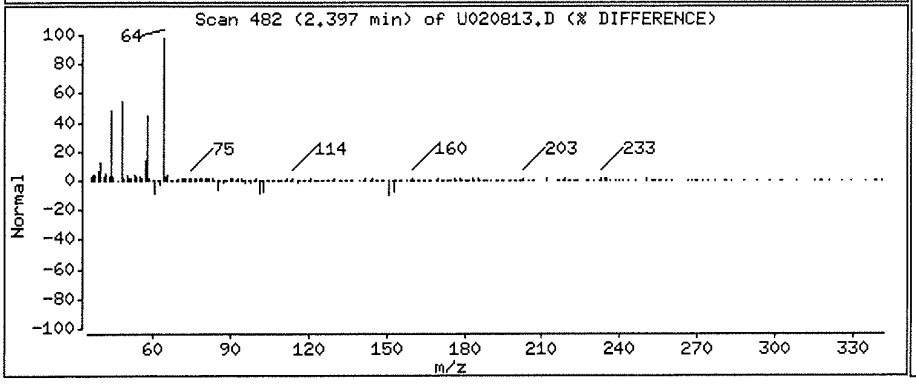
Column phase: DB624 Column diameter: 0.18

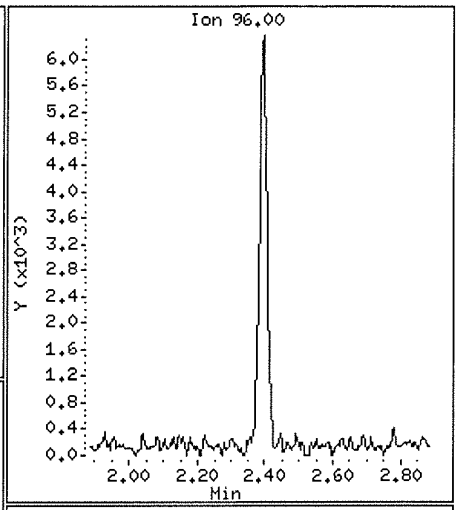
11 1,1-Dichloroethene Concentration: 41.64 ug/l

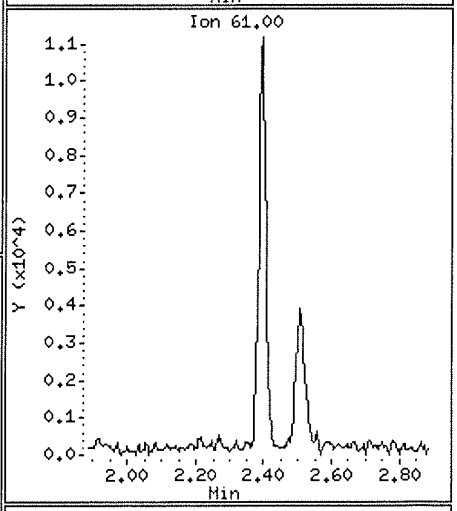


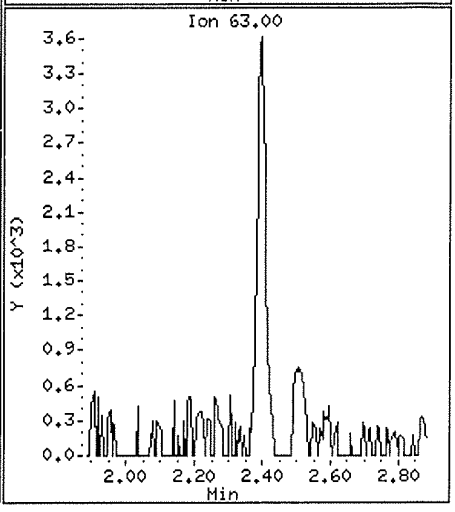












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020813.D

Date : 08-FEB-2022 14:47

Client ID: HS22011279-09

Instrument: VOA9.i

Sample Info: HS22011279-09;HS22011279-09;;;

Purge Volume: 5.0

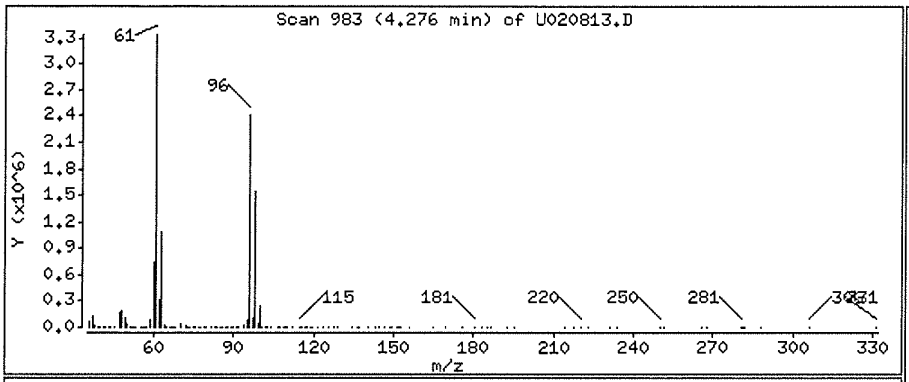
Operator: PC

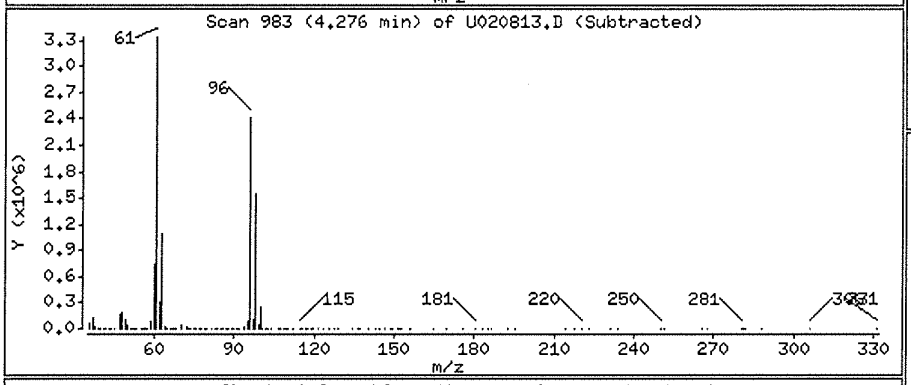
Column phase: DB624

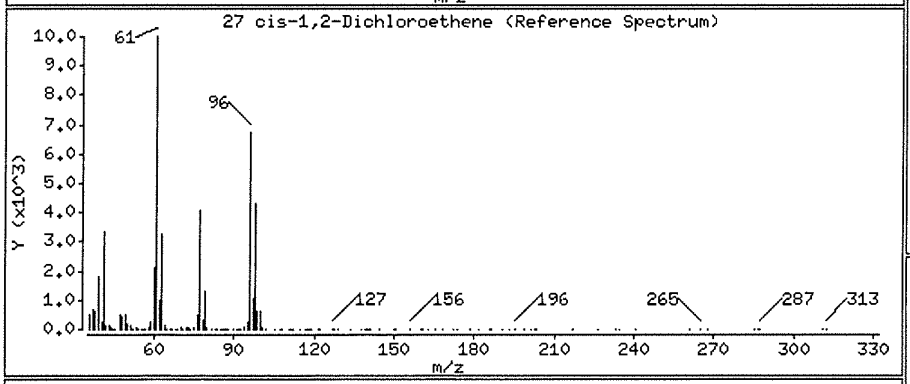
Column diameter: 0.18

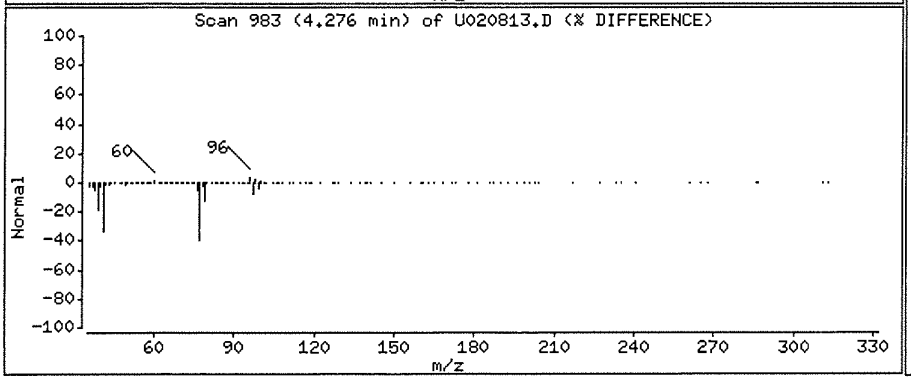
27 cis-1,2-Dichloroethene

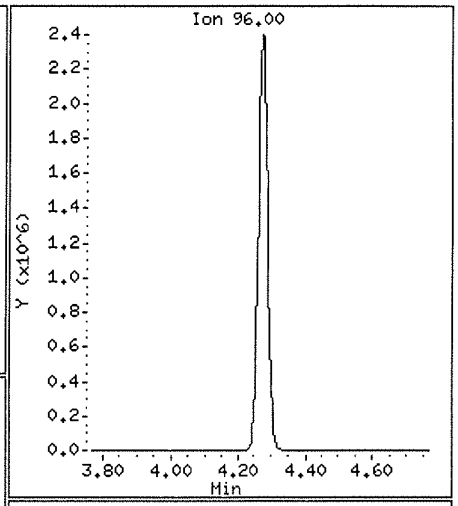
Concentration: 14094.71 ug/l

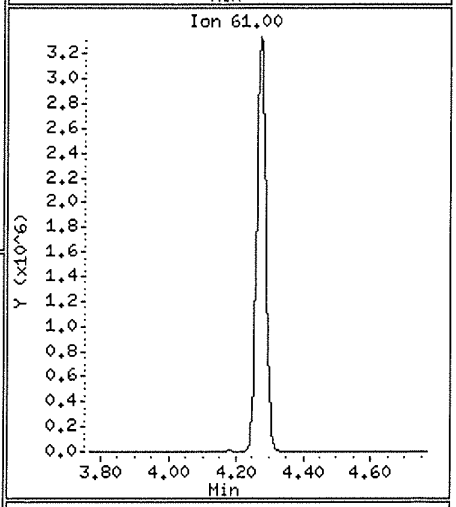


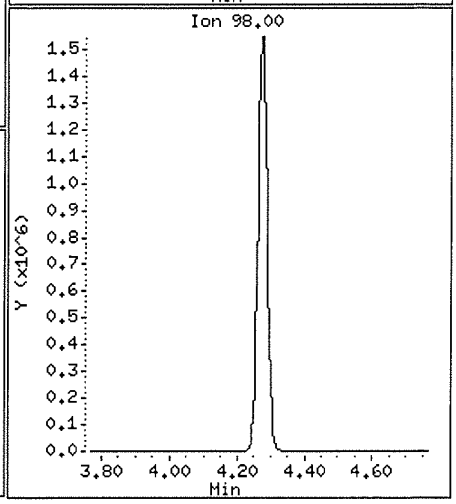












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020813.D

Date : 08-FEB-2022 14:47

Client ID: HS22011279-09

Instrument: VOA9.i

Sample Info: HS22011279-09;HS22011279-09;;;

Purge Volume: 5.0

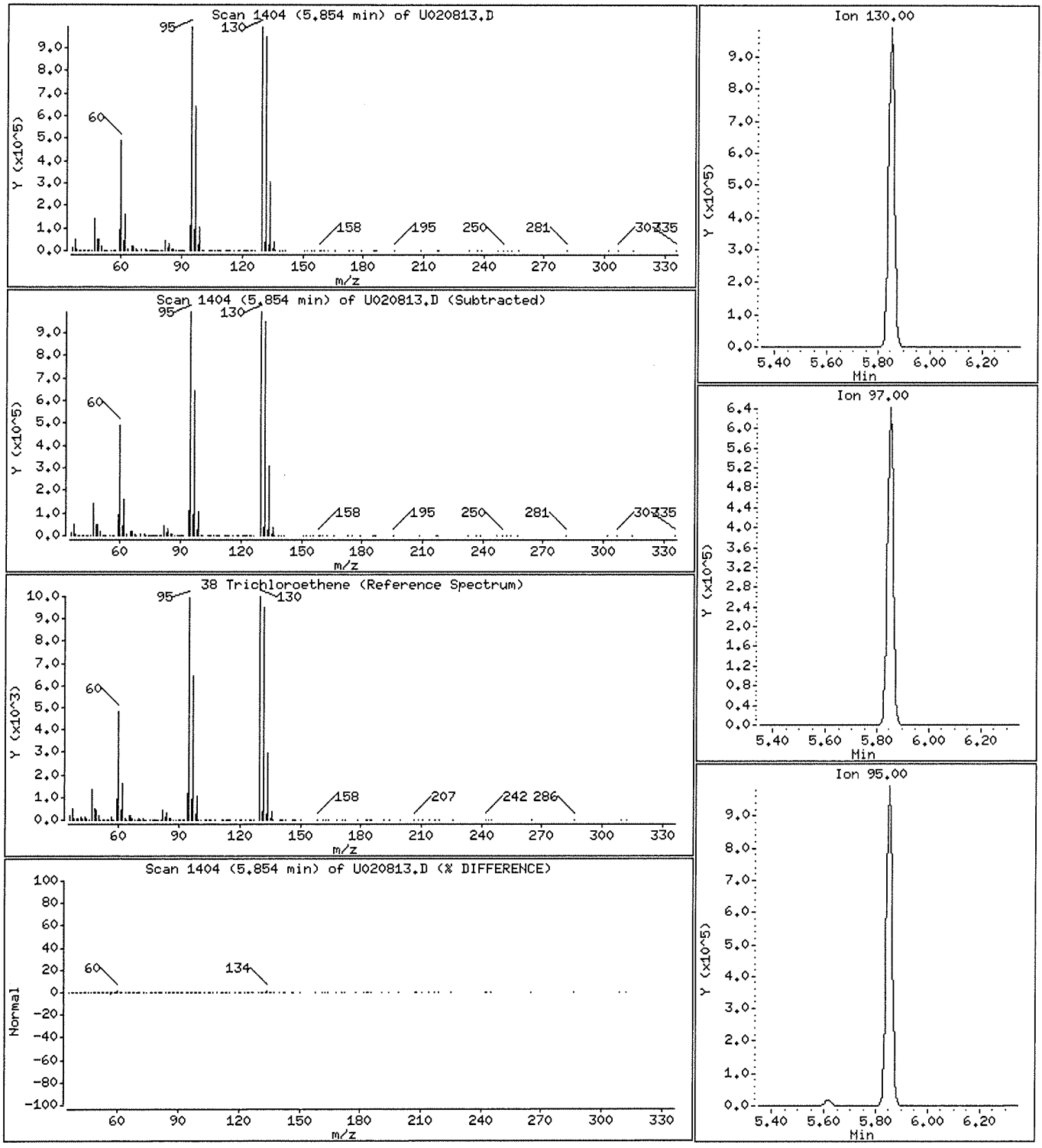
Operator: PC

Column phase: DB624

Column diameter: 0.18

38 Trichloroethene

Concentration: 5516.30 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020813.D Page 6

Date : 08-FEB-2022 14:47

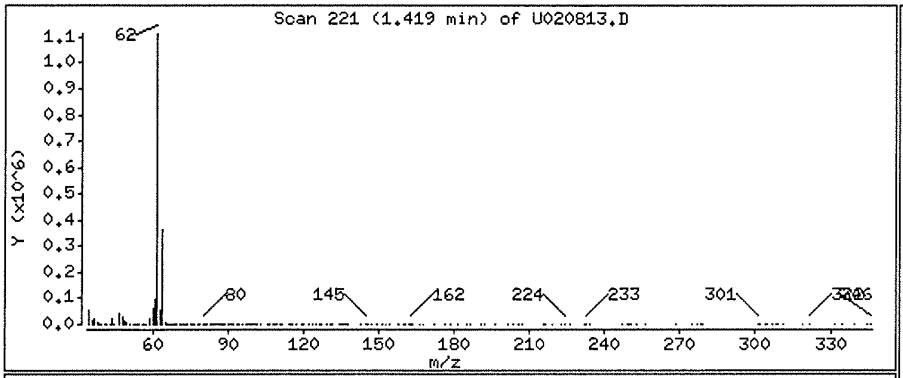
Client ID: HS22011279-09 Instrument: VOA9.i

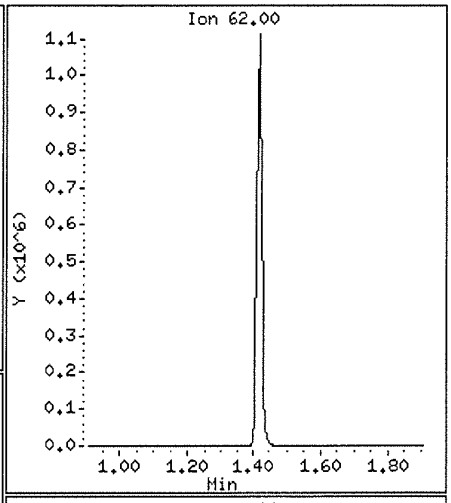
Sample Info: HS22011279-09;HS22011279-09;;;

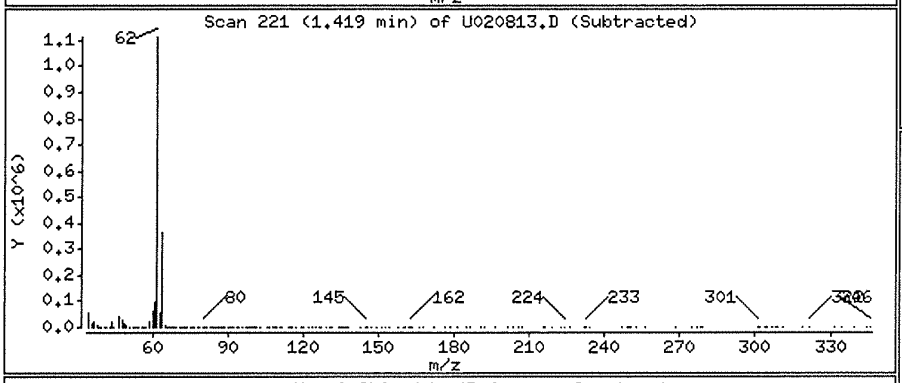
Purge Volume: 5.0 Operator: PC

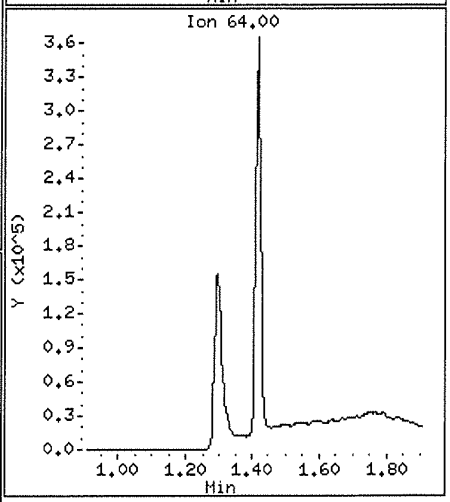
Column phase: DB624 Column diameter: 0.18

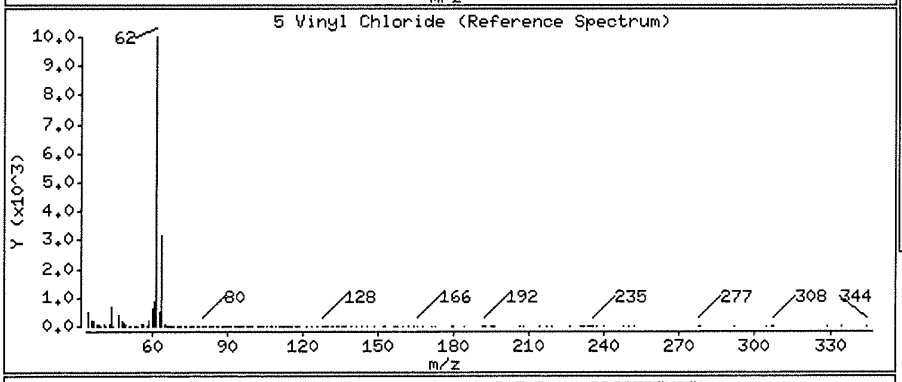
5 Vinyl Chloride Concentration: 2989.44 ug/l

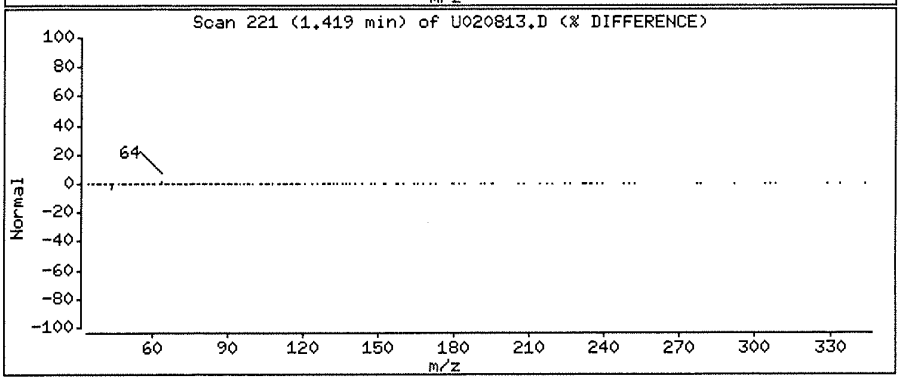












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020814.D Page 1
Report Date: 15-Feb-2022 09:27

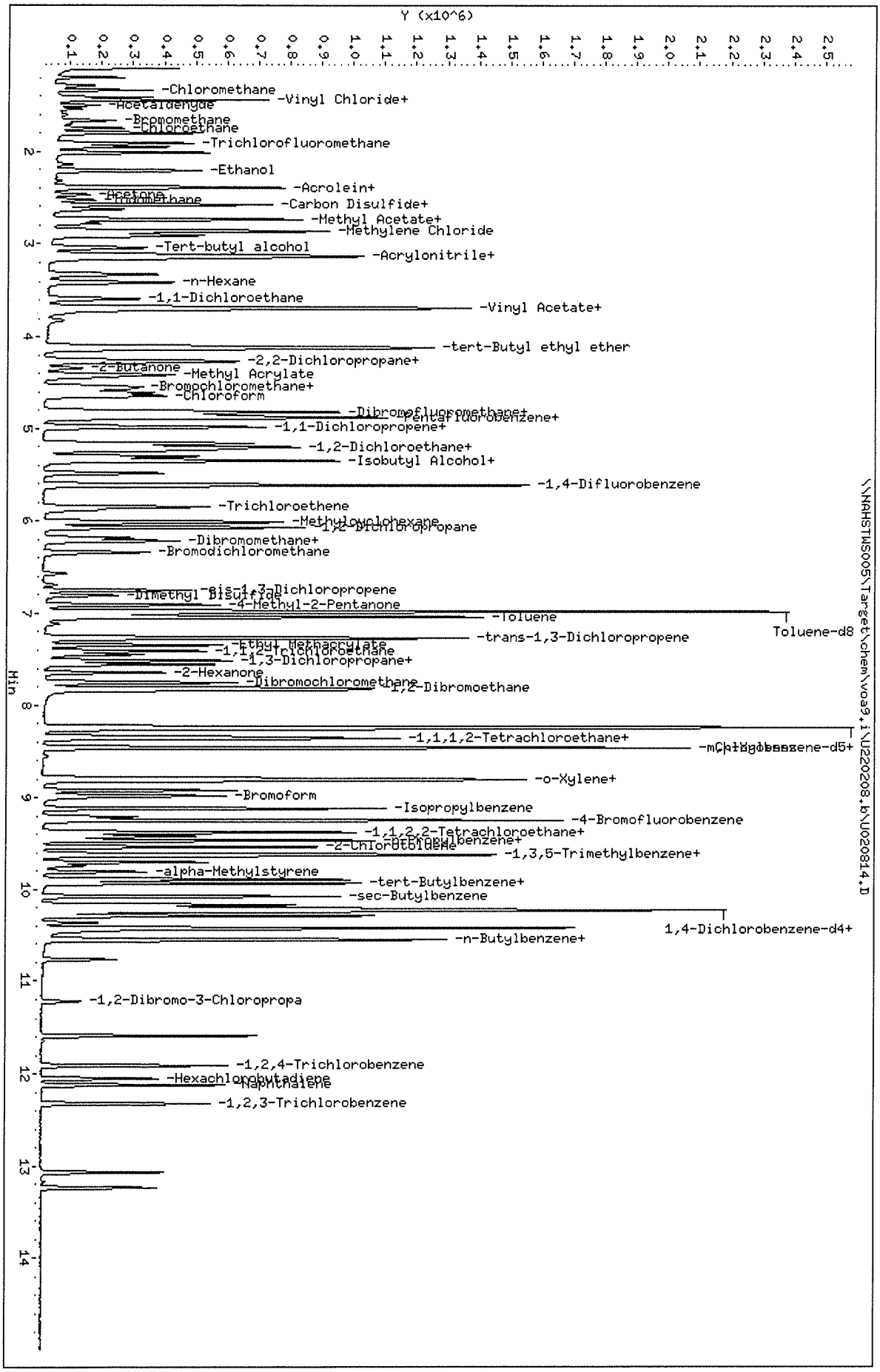
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020814.D
Lab Smp Id: HS22020118-05MS Client Smp ID: HS22020118-05MS
Inj Date : 08-FEB-2022 15:10
Operator : PC Inst ID: VOA9.i
Smp Info : HS22020118-05MS;HS22020118-05MS;3;;MS
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:27 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 14 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.883	(1.000)	648679	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1048557	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	930207	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	468091	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	420032	49.8220	49.82
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	465818	53.8083	53.80
$ 30 Dibromofluoromethane	113	4.819	4.815	(0.987)	332069	50.0453	50.04
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1269853	53.2630	53.26
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	117057	19.9662	19.96
11 1,1-Dichloroethene	96	2.394	2.390	(0.490)	129797	21.3117	21.31
33 1,2-Dichloroethane	62	5.243	5.242	(0.934)	233248	22.1828	22.18
27 cis-1,2-Dichloroethene	96	4.272	4.272	(0.875)	168789	20.0821	20.08
17 Methylene Chloride	84	2.858	2.858	(0.585)	154666	20.3481	20.34
38 Trichloroethene	130	5.850	5.850	(1.042)	153182	20.7383	20.73
5 Vinyl Chloride	62	1.415	1.411	(0.290)	190482	19.2147	19.21



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220208,b\U020814,D
Date : 08-FEB-2022 15:10
Client ID: HS22020118-05MS
Sample Info: HS22020118-05MS;HS22020118-05MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020815.D Page 1
Report Date: 15-Feb-2022 09:27

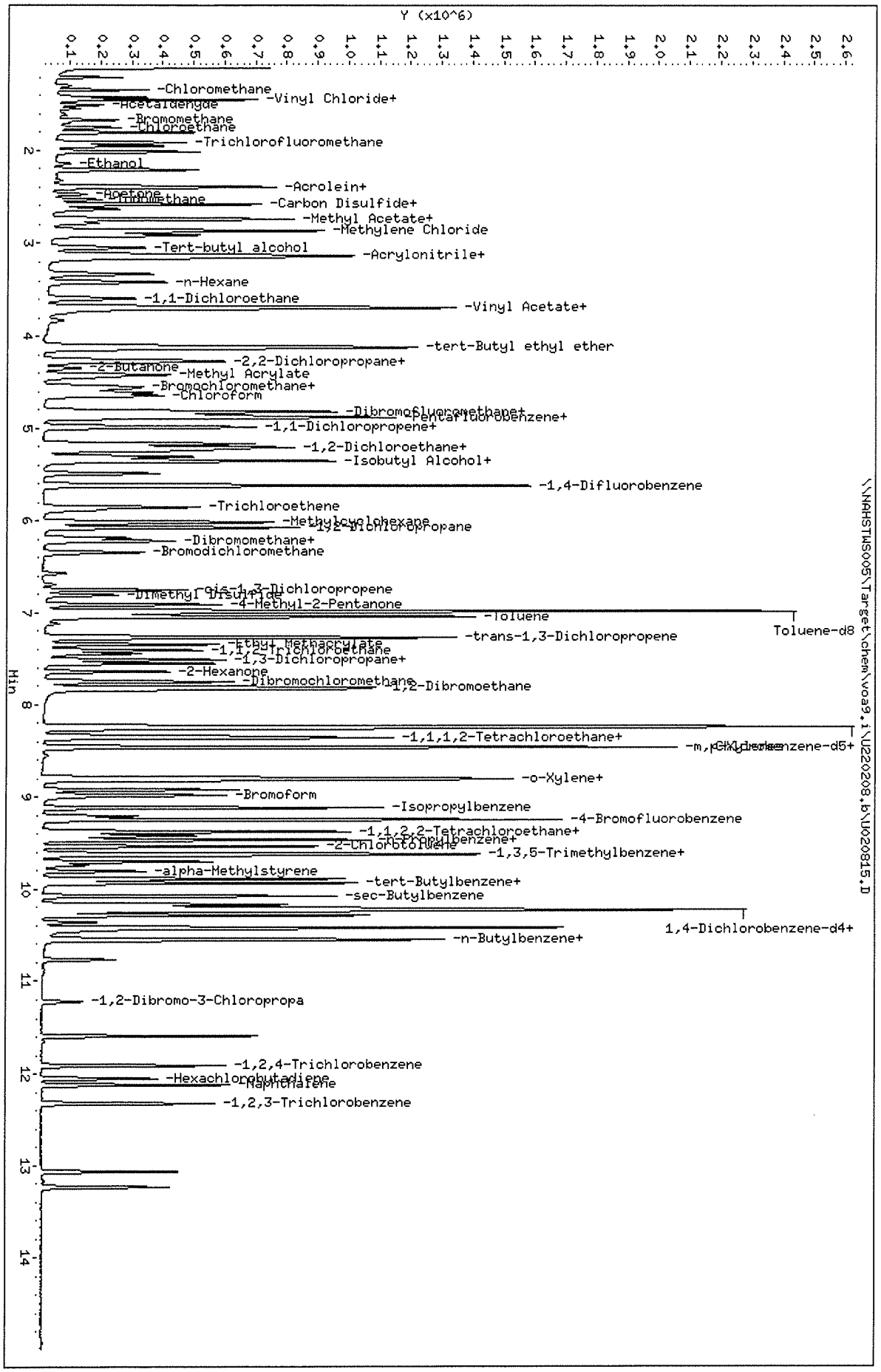
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020815.D
Lab Smp Id: HS22020118-05MSD Client Smp ID: HS22020118-05MSD
Inj Date : 08-FEB-2022 15:32
Operator : PC Inst ID: VOA9.i
Smp Info : HS22020118-05MSD;HS22020118-05MSD;3;;MSD
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:27 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 14 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.883	(1.000)	665051	50.0000	
* 36 1,4-Difluorobenzene	114	5.617	5.614	(1.000)	1083981	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	967007	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	487664	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.168	5.164	(1.058)	430911	49.8550	49.85
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	477329	53.0220	53.02
$ 30 Dibromofluoromethane	113	4.819	4.815	(0.987)	342205	50.3077	50.30
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1320911	53.2961	53.29
53 1,1,2-Trichloroethane	83	7.413	7.409	(0.900)	118679	19.4725	19.47
11 1,1-Dichloroethene	96	2.394	2.390	(0.490)	129265	20.7018	20.70
33 1,2-Dichloroethane	62	5.246	5.242	(0.934)	225616	20.7557	20.75
27 cis-1,2-Dichloroethene	96	4.275	4.272	(0.876)	166033	19.2679	19.26
17 Methylene Chloride	84	2.862	2.858	(0.586)	154589	19.8020	19.80
38 Trichloroethene	130	5.850	5.850	(1.041)	149414	19.5671	19.56
5 Vinyl Chloride	62	1.415	1.411	(0.290)	186532	18.3531	18.35



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020815.D
Date : 08-FEB-2022 15:32
Client ID: HS22020118-05HSD
Instrument: VOA9.i
Sample Info: HS22020118-05HSD;HS22020118-05HSD;3;;HSD
Purge Volume: 5.0
Operator: PC
Column phase: DB624
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020816.D Page 1
Report Date: 15-Feb-2022 09:26

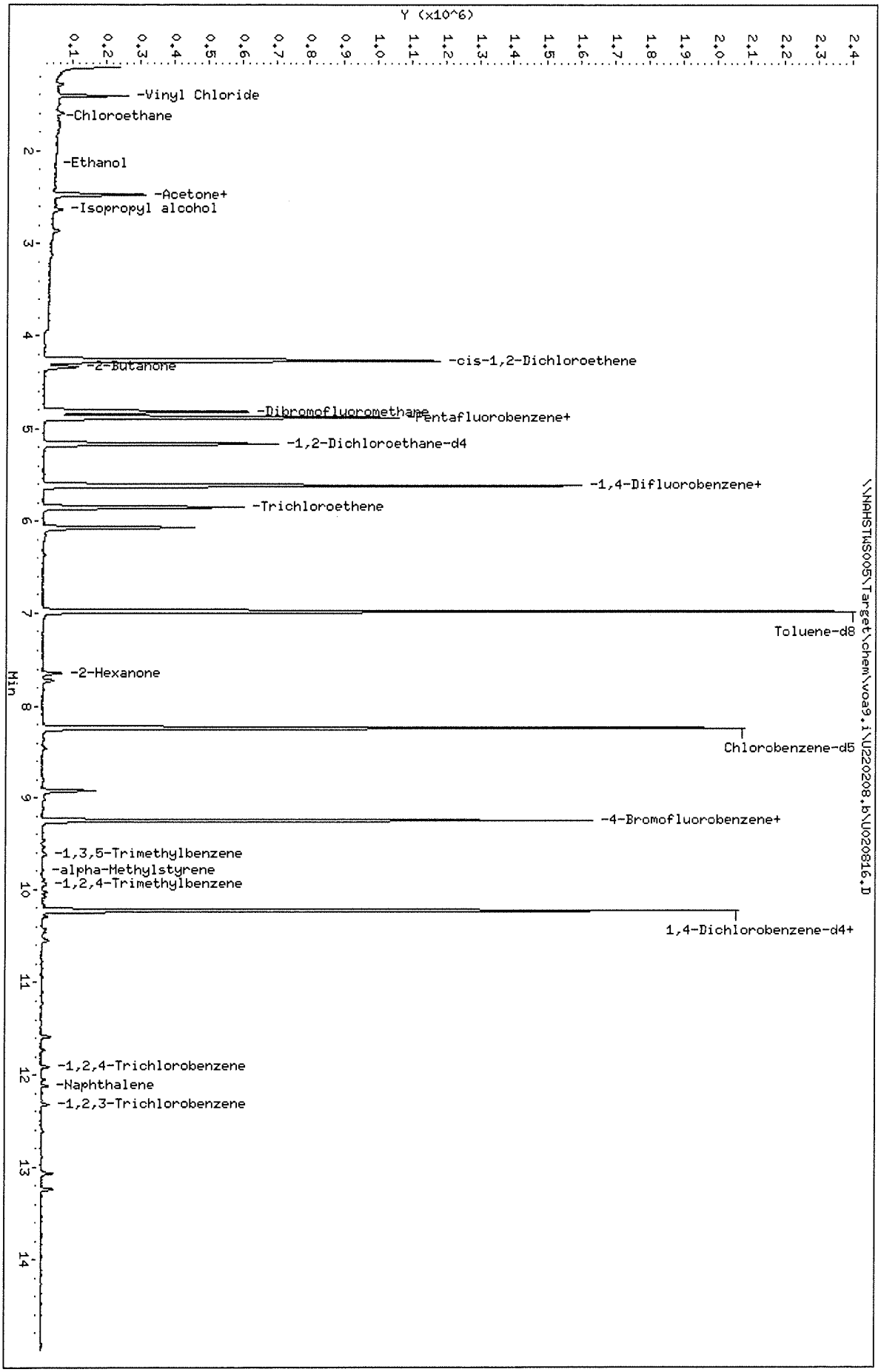
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020816.D
Lab Smp Id: HS22011279-09 Client Smp ID: HS22011279-09
Inj Date : 08-FEB-2022 15:54
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011279-09;HS22011279-09;;;
Misc Info : 180315V9;WATER;0;250;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:23 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 15
Dil Factor: 250.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.883	(1.000)	662456	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1078764	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	952728	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	461835	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	439429	51.0714	51.07
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	456223	51.4001	51.40
$	30 Dibromofluoromethane	113	4.819	4.815	(0.987)	335449	49.4940	49.49
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1288817	52.7806	52.78
	27 cis-1,2-Dichloroethene	96	4.272	4.268	(0.875)	509737	59.3860	14846.49
	38 Trichloroethene	130	5.850	5.850	(1.042)	171002	22.5025	5625.63
	5 Vinyl Chloride	62	1.411	1.408	(0.289)	126754	12.5203	3130.07



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020816.D
Date : 08-FEB-2022 15:54
Client ID: HS22011279-09
Sample Info: HS22011279-09;HS22011279-09;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020816.D Page 3

Date : 08-FEB-2022 15:54

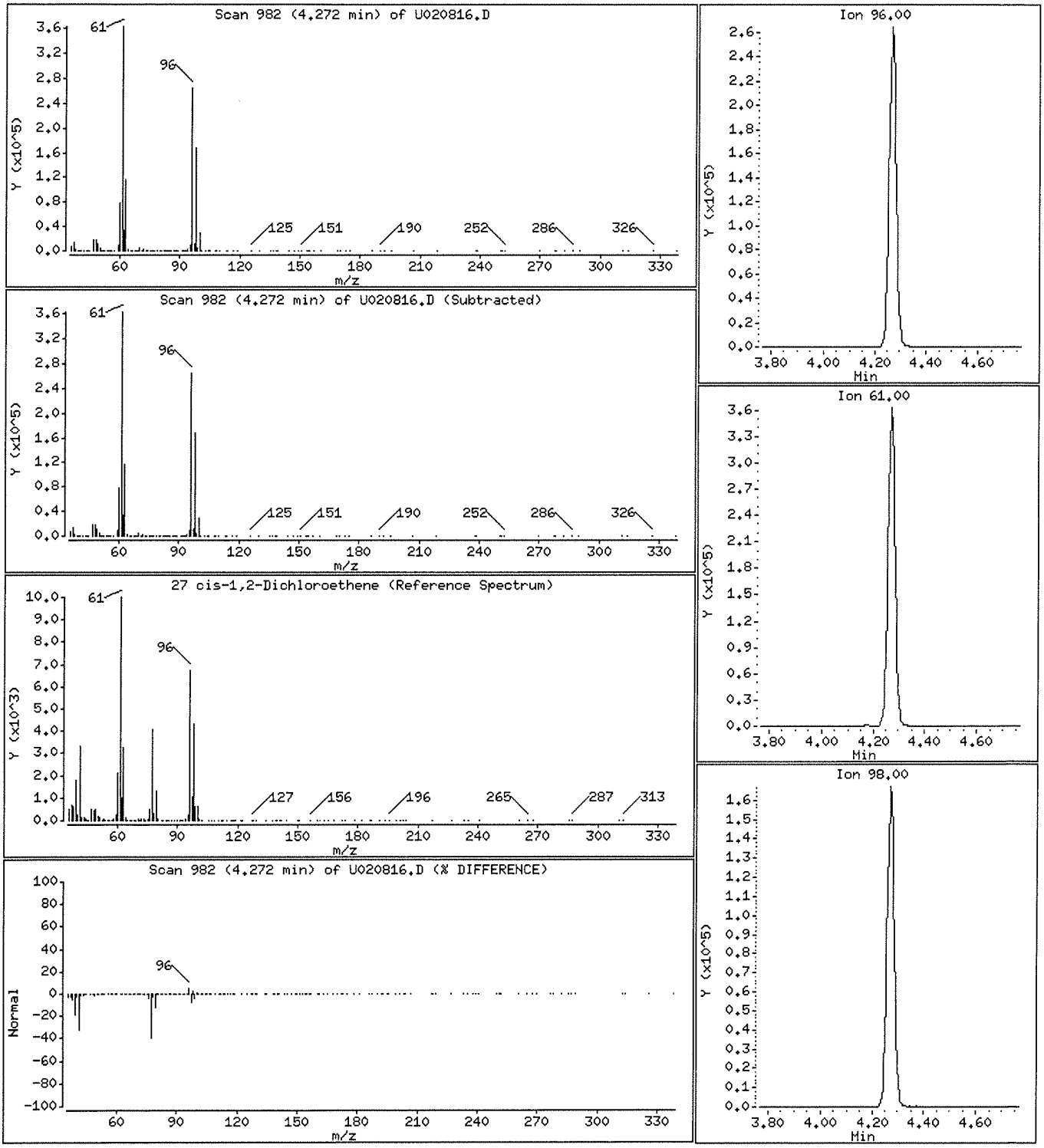
Client ID: HS22011279-09 Instrument: VOA9.i

Sample Info: HS22011279-09;HS22011279-09;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

27 cis-1,2-Dichloroethene Concentration: 14846.49 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020816.D Page 4

Date : 08-FEB-2022 15:54

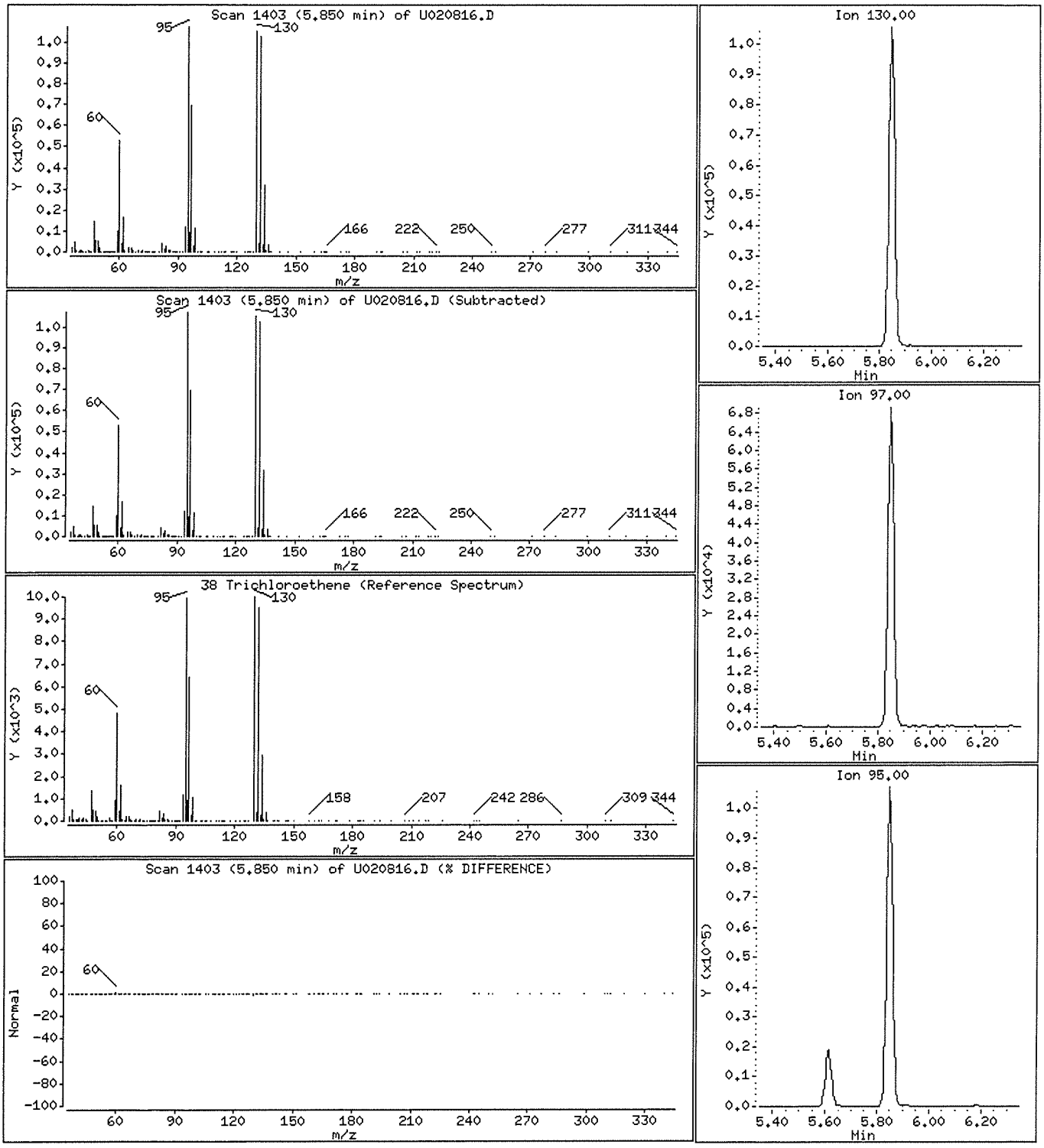
Client ID: HS22011279-09 Instrument: VOA9.i

Sample Info: HS22011279-09;HS22011279-09;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

38 Trichloroethene Concentration: 5625.63 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020816.D Page 5

Date : 08-FEB-2022 15:54

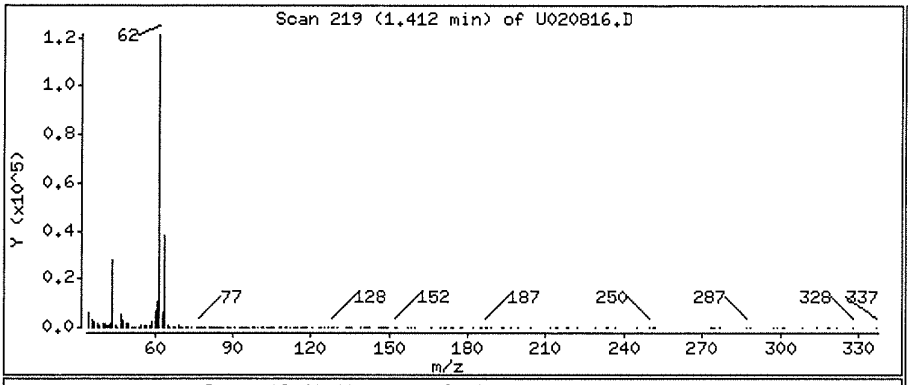
Client ID: HS22011279-09 Instrument: VOA9.i

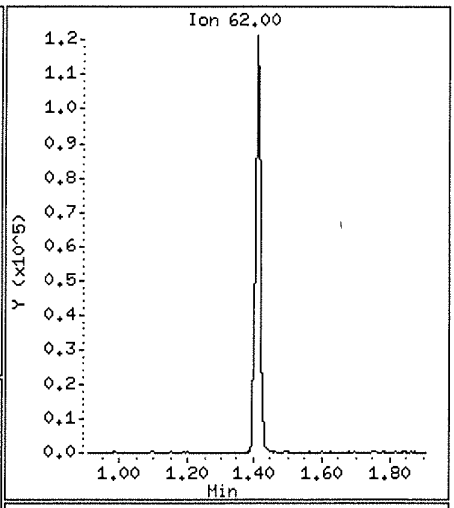
Sample Info: HS22011279-09;HS22011279-09;;;

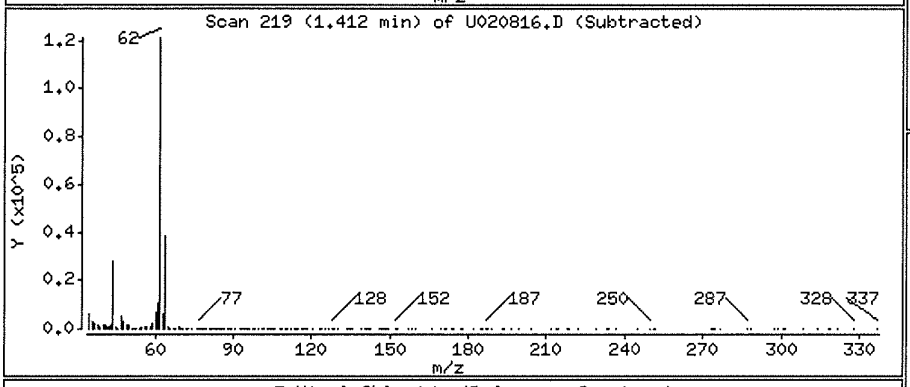
Purge Volume: 5.0 Operator: PC

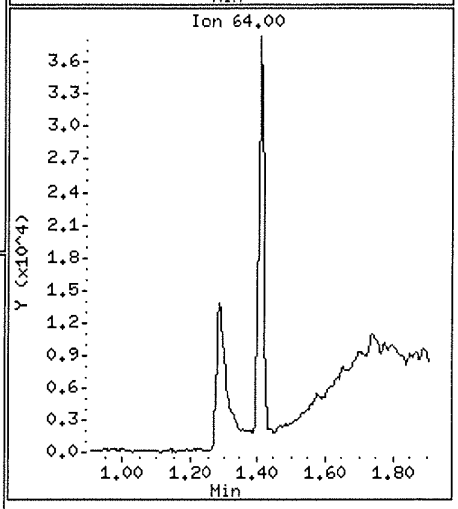
Column phase: DB624 Column diameter: 0.18

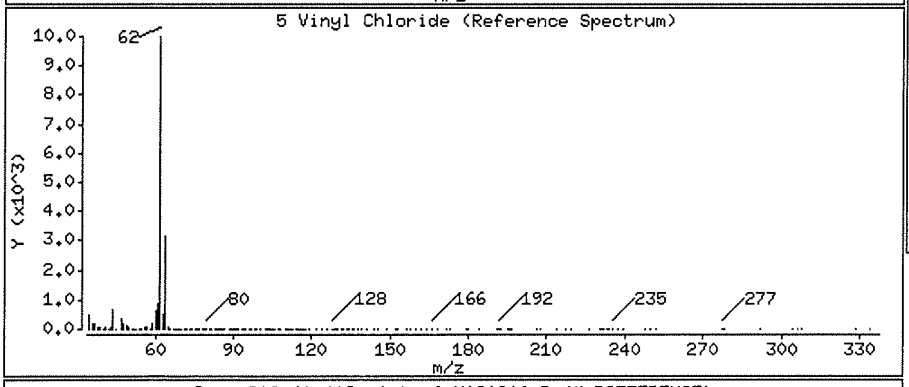
5 Vinyl Chloride Concentration: 3130.07 ug/l

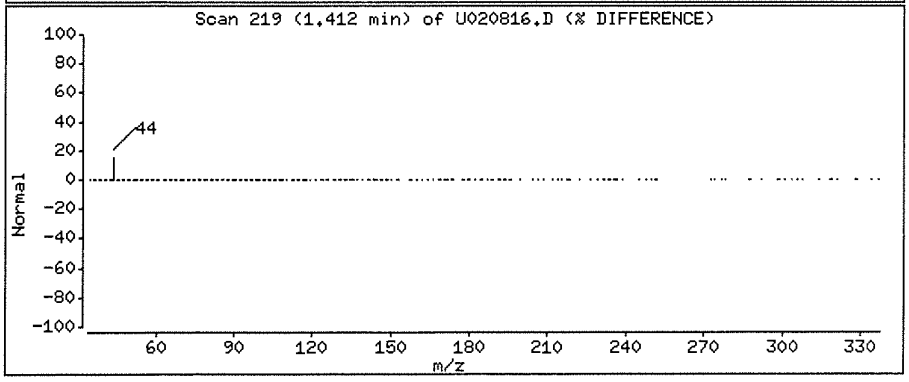












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020822.D Page 1
Report Date: 15-Feb-2022 09:26

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020822.D
Lab Smp Id: HS22011279-07 Client Smp ID: HS22011279-07
Inj Date : 08-FEB-2022 18:07
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011279-07;HS22011279-07;;;
Misc Info : 180315V9;WATER;0;5000;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:23 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 21
Dil Factor: 5000.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

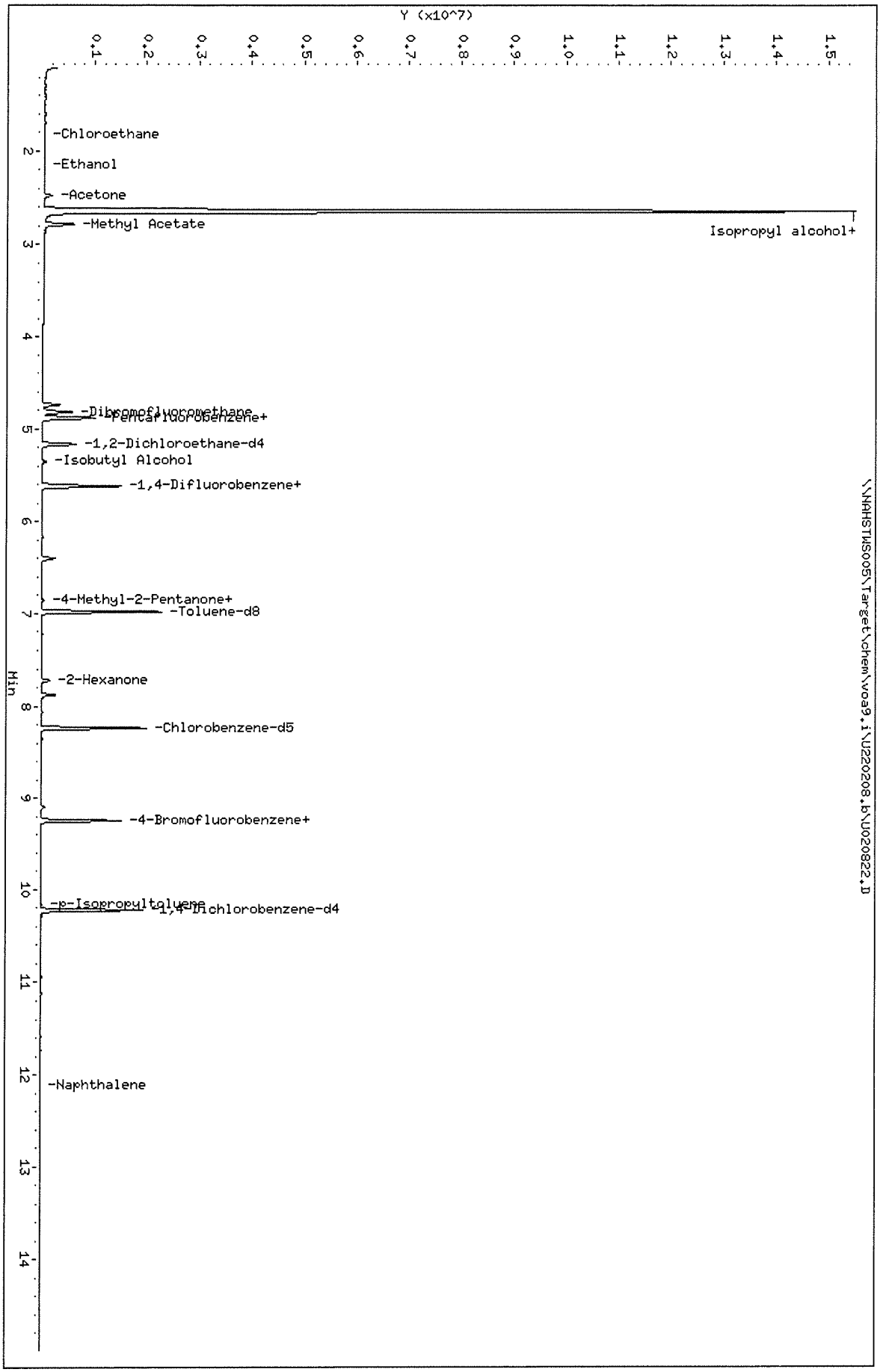
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	5000.000	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)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.883	4.883	(1.000)	627703	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1028077	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	920313	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	439076	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	418845	51.3821	51.38
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	435852	50.8210	50.82
$ 30 Dibromofluoromethane	113	4.819	4.815	(0.987)	316699	49.3115	49.31
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1241050	52.6145	52.61

Data File: \\NAHSTMS005\Target\chem\voa9.i\U220208.b\U020822.D
Date : 08-FEB-2022 18:07
Client ID: HS220111279-07
Sample Info: HS220111279-07;HS220111279-07;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020823.D Page 1
Report Date: 15-Feb-2022 09:26

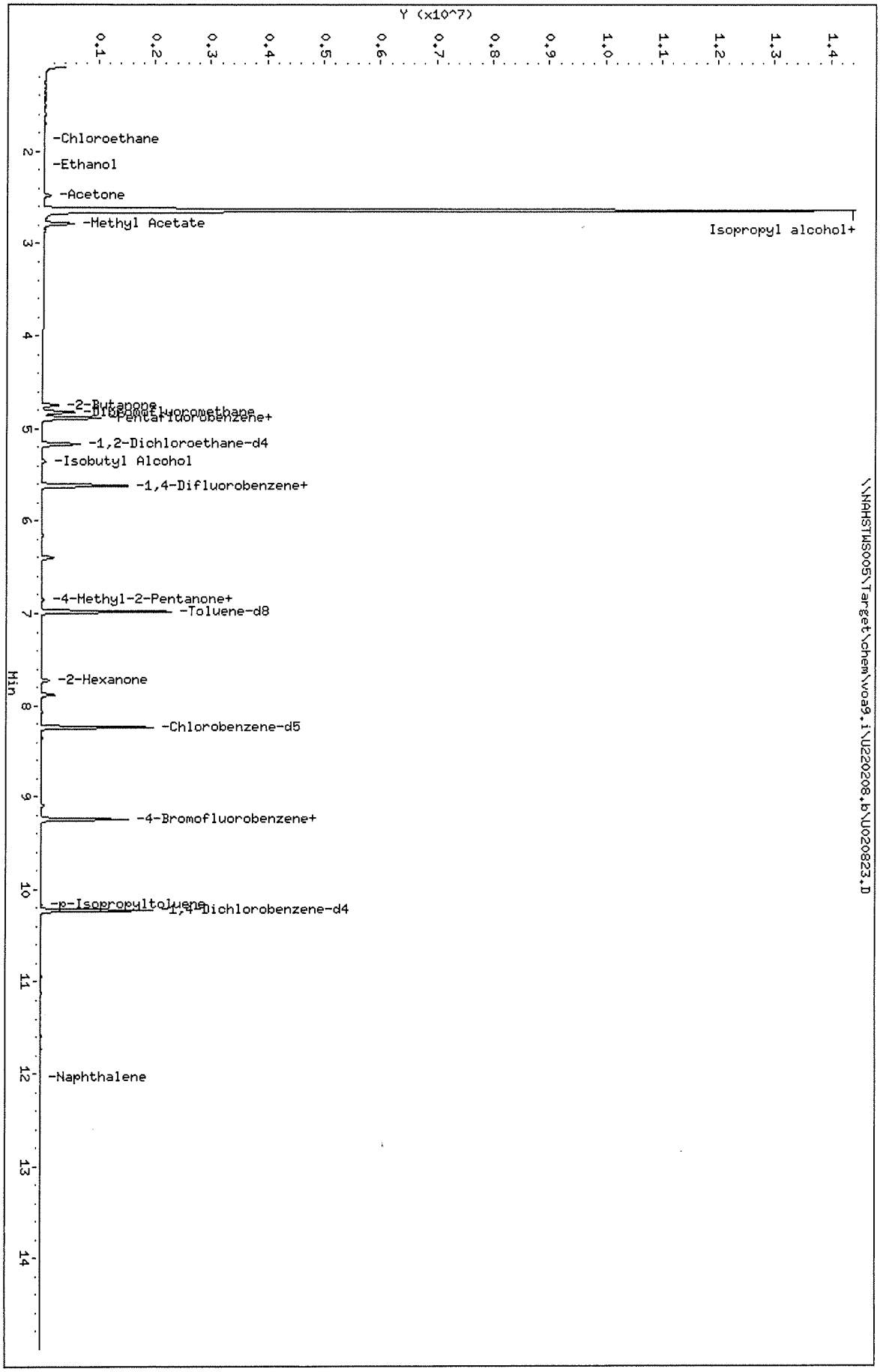
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020823.D
Lab Smp Id: HS22011279-08 Client Smp ID: HS22011279-08
Inj Date : 08-FEB-2022 18:29
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011279-08;HS22011279-08;;;
Misc Info : 180315V9;WATER;0;5000;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:23 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 22
Dil Factor: 5000.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

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

Name	Value	Description
DF	5000.000	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	4.883	4.883	(1.000)	637130	50.0000	
*	36 1,4-Difluorobenzene	114	5.617	5.614	(1.000)	1027208	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	926743	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	437397	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.168	5.164	(1.058)	417258	50.4053	50.40
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	436241	50.5059	50.50
$	30 Dibromofluoromethane	113	4.819	4.815	(0.987)	321982	49.3937	49.39
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1243899	52.3694	52.36



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020823.D
Date : 08-FEB-2022 18:29
Client ID: HS220411279-08
Sample Info: HS220411279-08;HS220411279-08;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020824.D Page 1
Report Date: 15-Feb-2022 09:26

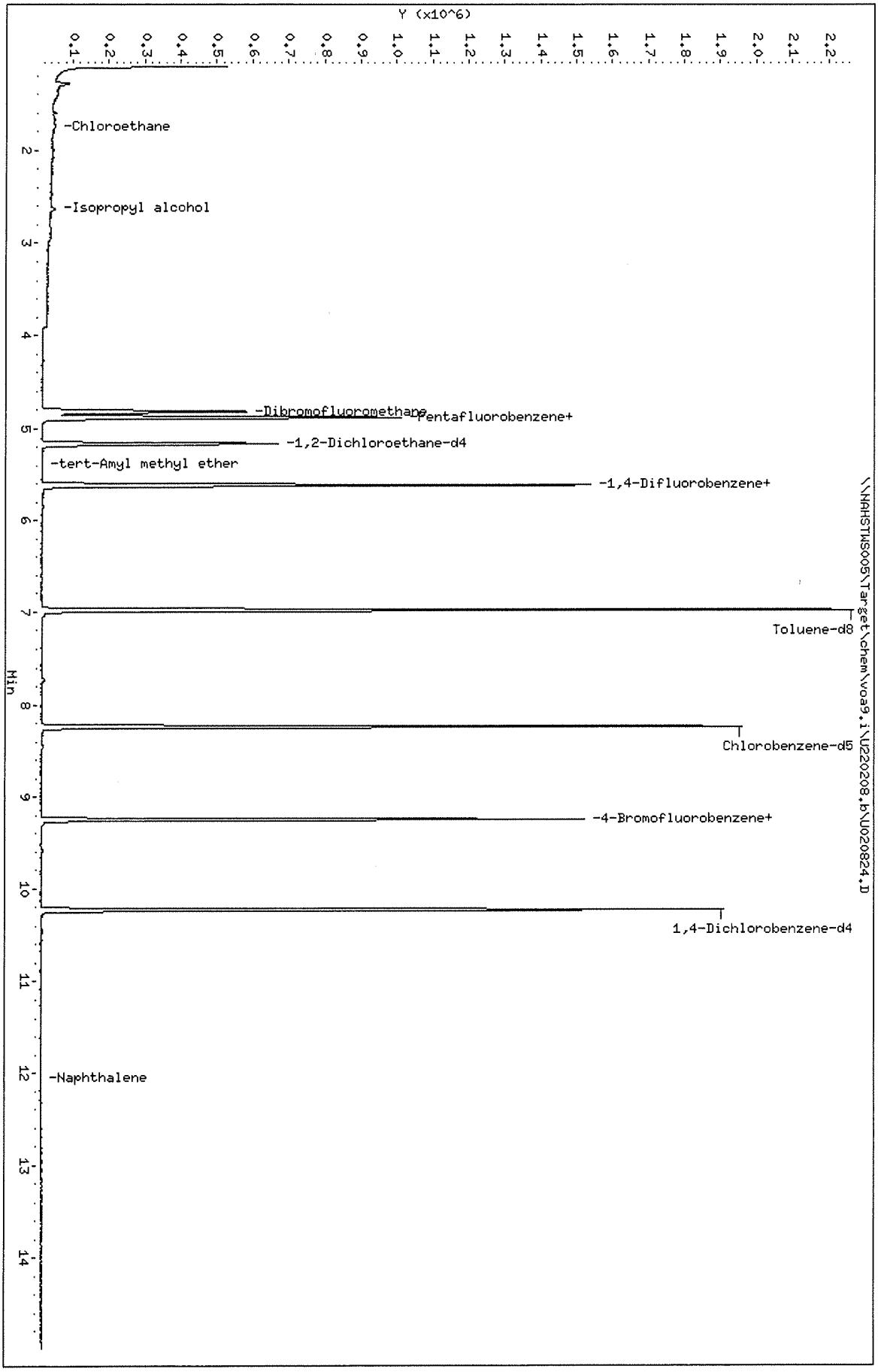
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Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020824.D
Lab Smp Id: HS22011279-03 Client Smp ID: HS22011279-03
Inj Date : 08-FEB-2022 18:52
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011279-03;HS22011279-03;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:23 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 23
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.883	(1.000)	617981	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1023231	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	907312	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	429700	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	415340	51.7633	51.76
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	423803	50.1072	50.10
$	30 Dibromofluoromethane	113	4.819	4.815	(0.987)	319213	50.5053	50.50
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1227132	52.7699	52.76



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020824.D
Date : 08-FEB-2022 18:52
Client ID: HS22011279-03
Sample Info: HS22011279-03;HS22011279-03;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020825.D Page 1
Report Date: 15-Feb-2022 09:26

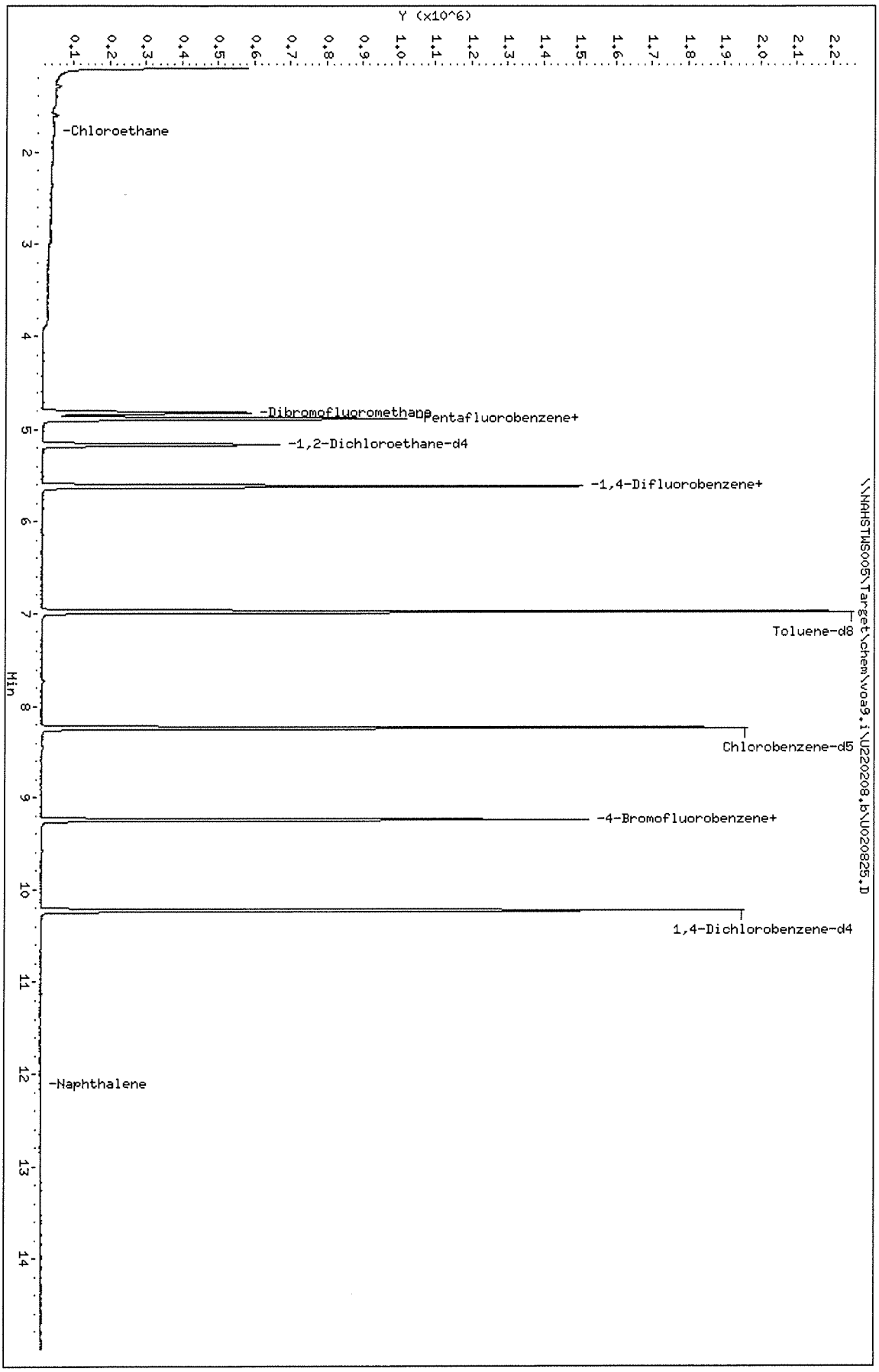
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020825.D
Lab Smp Id: HS22011279-04 Client Smp ID: HS22011279-04
Inj Date : 08-FEB-2022 19:14
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011279-04;HS22011279-04;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:23 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 24
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.883	(1.000)	622357	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1022733	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	899671	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	438511	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.168	5.164	(1.058)	417519	51.6666	51.66
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	427212	50.9598	50.95
$ 30 Dibromofluoromethane	113	4.819	4.815	(0.987)	321266	50.4722	50.47
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1223600	53.0649	53.06



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220208,b\U020825,D
Date : 08-FEB-2022 19:14
Client ID: HS22011279-04
Sample Info: HS22011279-04;HS22011279-04;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020826.D Page 1
Report Date: 15-Feb-2022 09:26

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020826.D
Lab Smp Id: HS22011279-02 Client Smp ID: HS22011279-02
Inj Date : 08-FEB-2022 19:36
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011279-02;HS22011279-02;;;
Misc Info : 180315V9;WATER;0;5;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:23 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 25
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

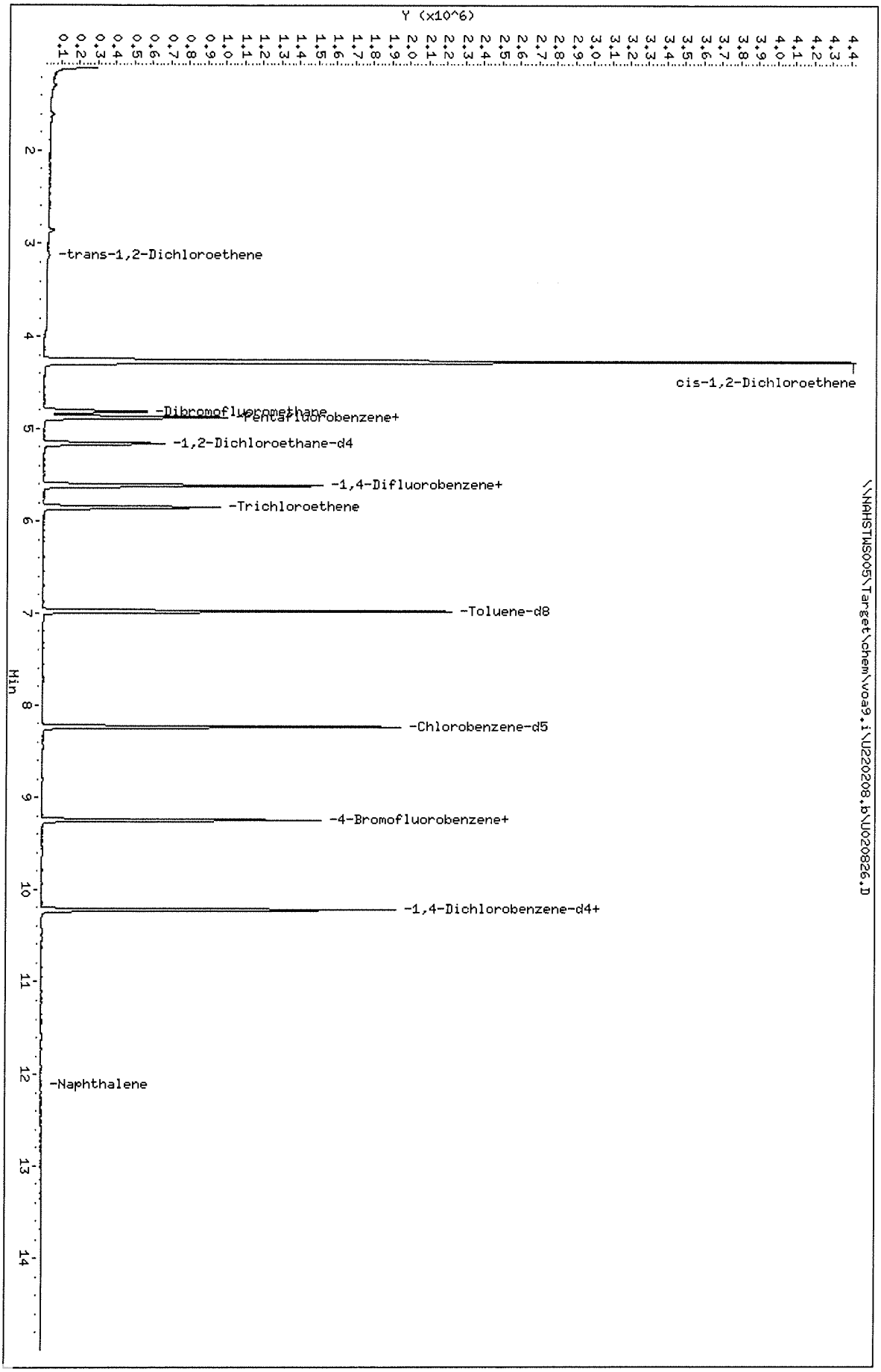
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.883	4.883	(1.000)	618340	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1012362	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	901826	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	430682	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	412922	51.4235	51.42
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	426867	50.7930	50.79
$ 30 Dibromofluoromethane	113	4.819	4.815	(0.987)	314963	49.7920	49.79
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1214838	52.5590	52.55
27 cis-1,2-Dichloroethene	96	4.272	4.268	(0.875)	1918353	239.440	1197.19(A)
38 Trichloroethene	130	5.850	5.850	(1.042)	271359	38.0509	190.25

QC Flag Legend

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



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020826.D
Date : 08-FEB-2022 19:36
Client ID: HS22011279-02
Sample Info: HS22011279-02;HS22011279-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020826.D Page 3

Date : 08-FEB-2022 19:36

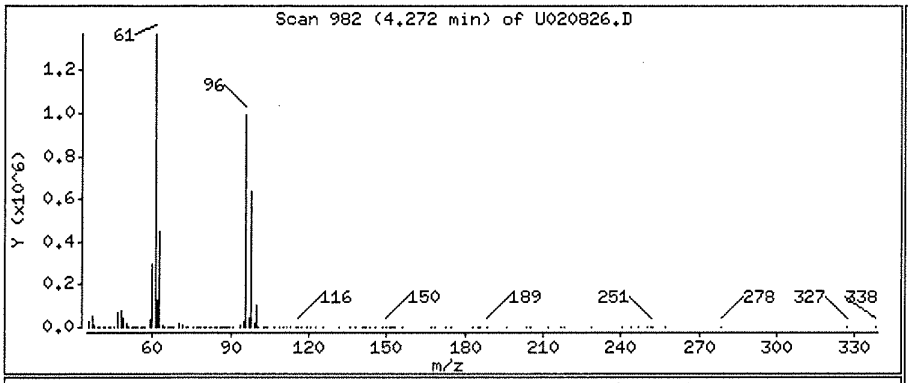
Client ID: HS22011279-02 Instrument: VOA9.i

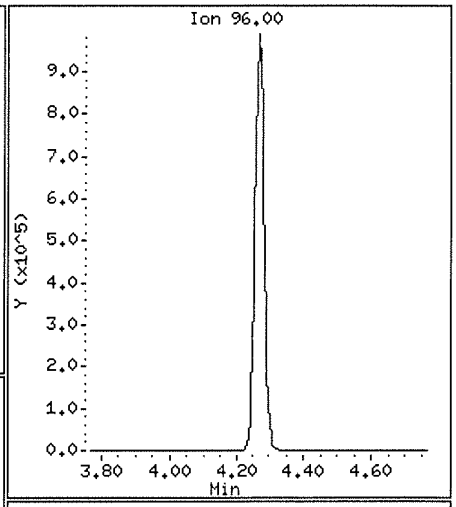
Sample Info: HS22011279-02;HS22011279-02;;;

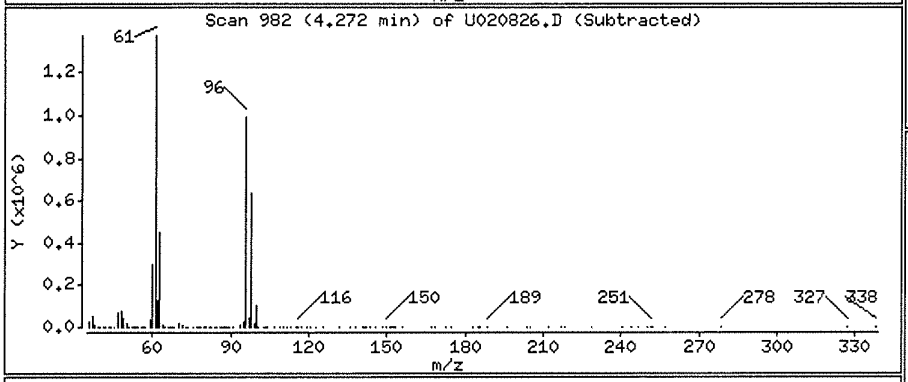
Purge Volume: 5.0 Operator: PC

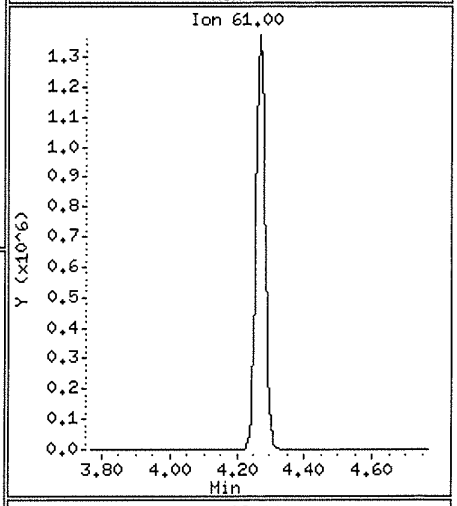
Column phase: DB624 Column diameter: 0.18

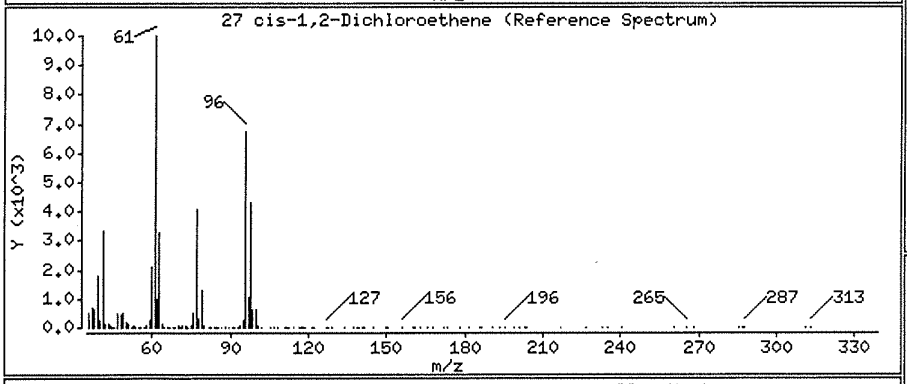
27 cis-1,2-Dichloroethene Concentration: 1197.19 ug/l

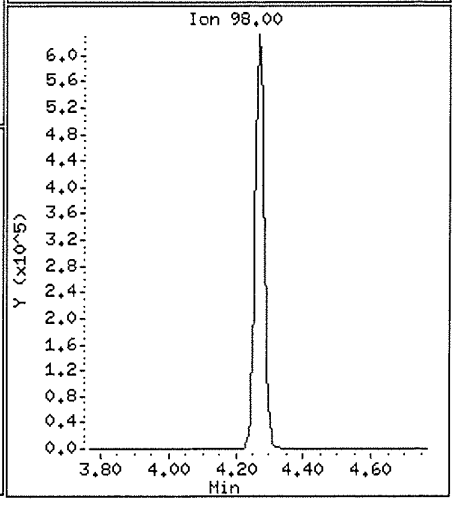


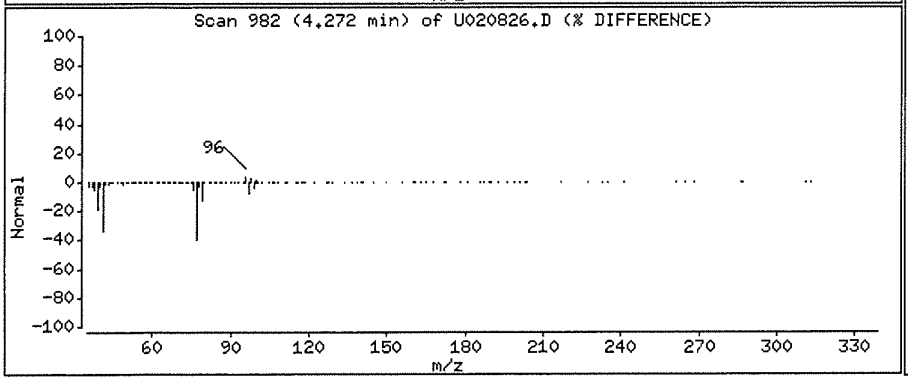












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020826.D

Date : 08-FEB-2022 19:36

Client ID: HS22011279-02

Instrument: VOA9.i

Sample Info: HS22011279-02;HS22011279-02;;;

Purge Volume: 5.0

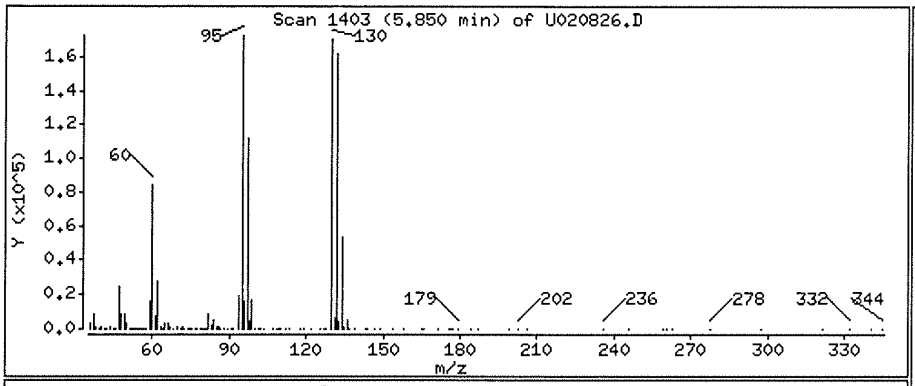
Operator: PC

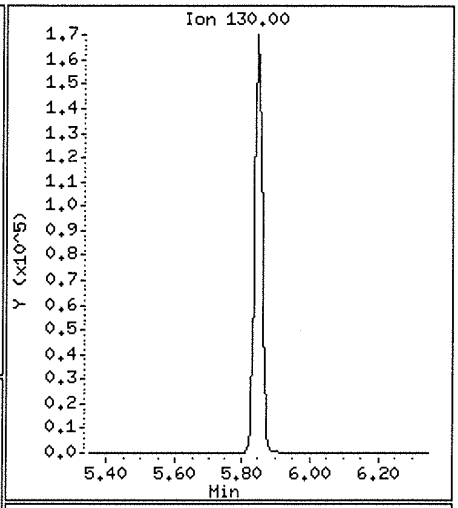
Column phase: DB624

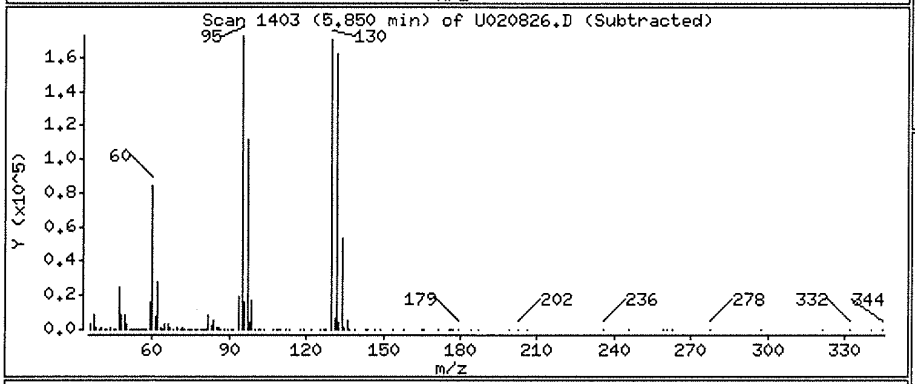
Column diameter: 0.18

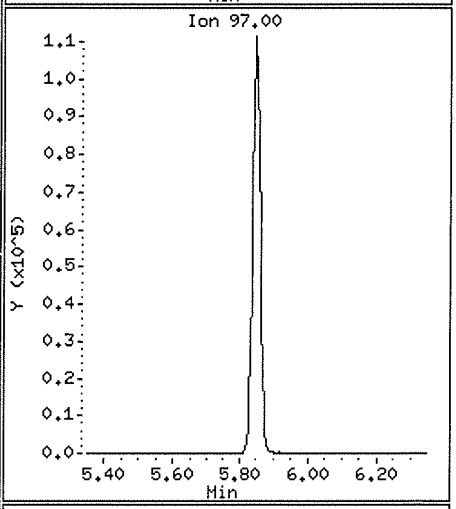
38 Trichloroethene

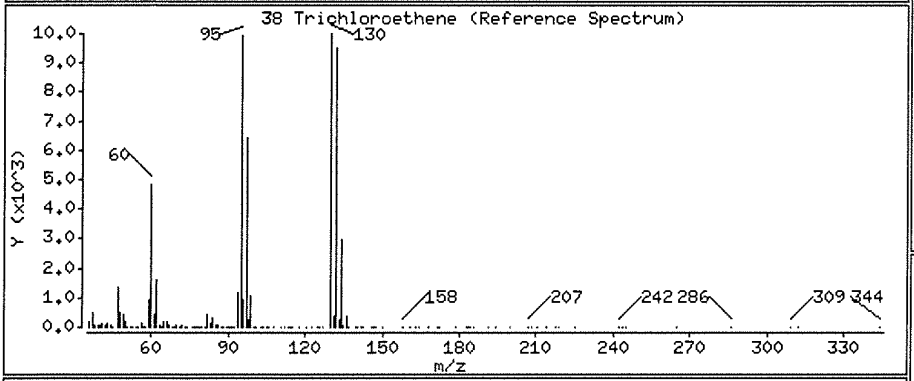
Concentration: 190.25 ug/l

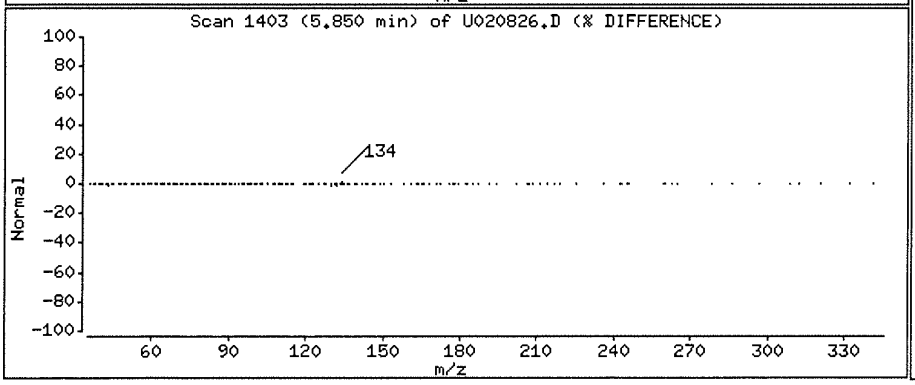


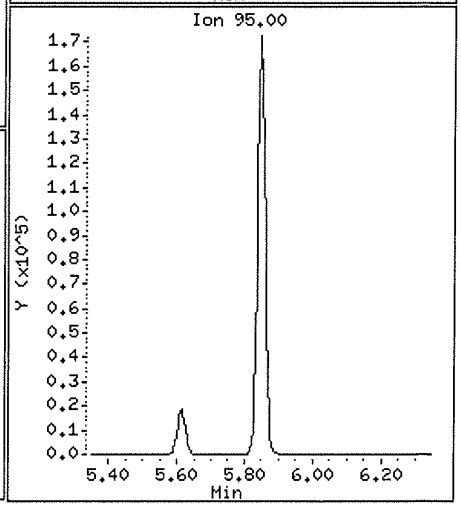












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020827.D Page 1
Report Date: 15-Feb-2022 09:26

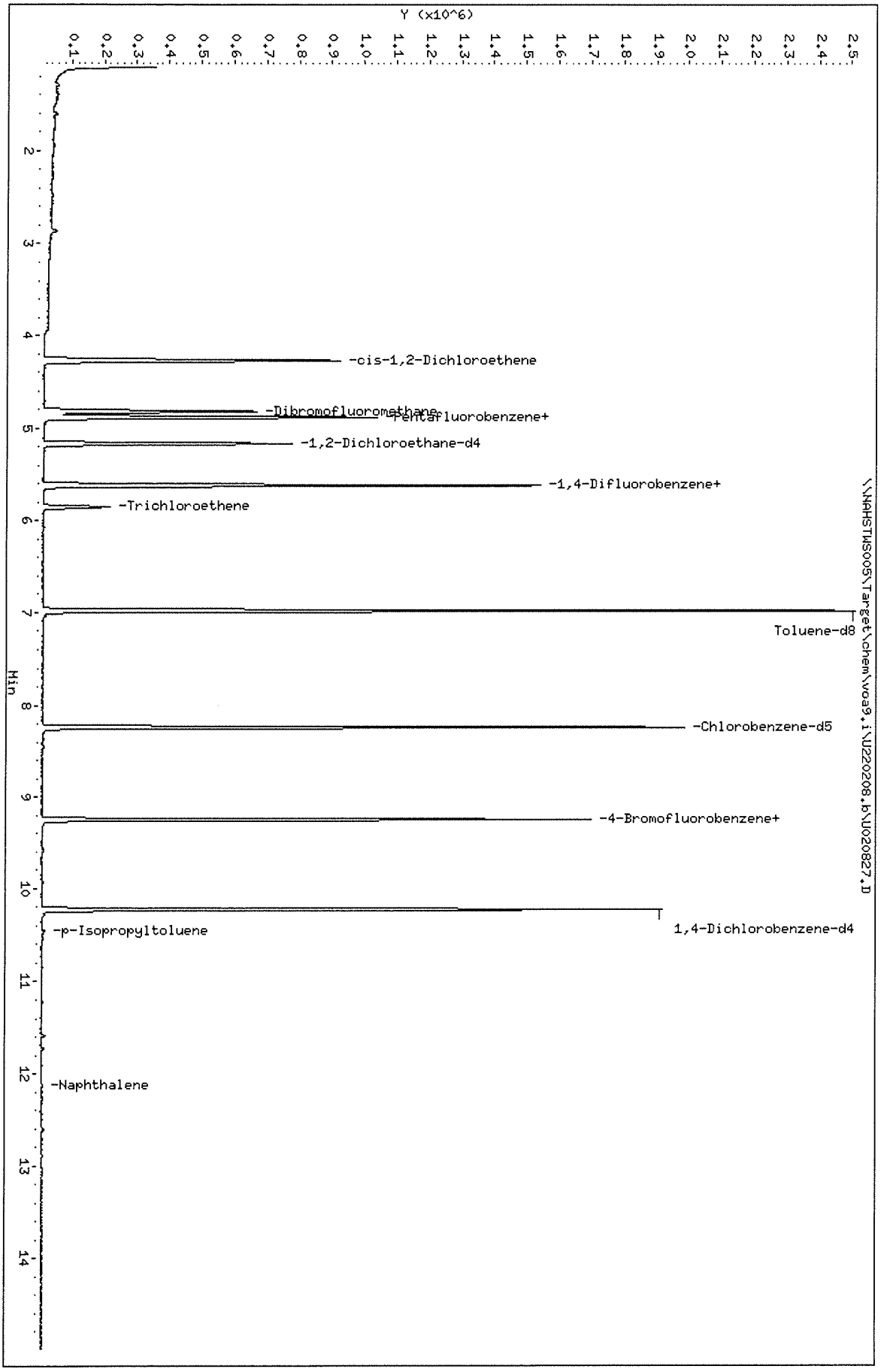
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020827.D
Lab Smp Id: HS22011279-02 Client Smp ID: HS22011279-02
Inj Date : 08-FEB-2022 19:58
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011279-02;HS22011279-02;;;
Misc Info : 180315V9;WATER;0;25;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:23 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 26
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.883	(1.000)	626868	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1031592	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	910102	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.224	(1.000)	431848	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	483533	59.6047	59.60
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	471545	55.7160	55.71
$ 30 Dibromofluoromethane	113	4.819	4.815	(0.987)	356413	55.6782	55.67
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1354961	58.0883	58.08
27 cis-1,2-Dichloroethene	96	4.272	4.268	(0.875)	400800	49.3454	1233.63
38 Trichloroethene	130	5.850	5.850	(1.042)	59905	8.24350	206.08



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220208,b\U020827,D
Date : 08-FEB-2022 19:58
Client ID: HS220112279-02
Sample Info: HS220112279-02;HS220112279-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020827.D Page 3

Date : 08-FEB-2022 19:58

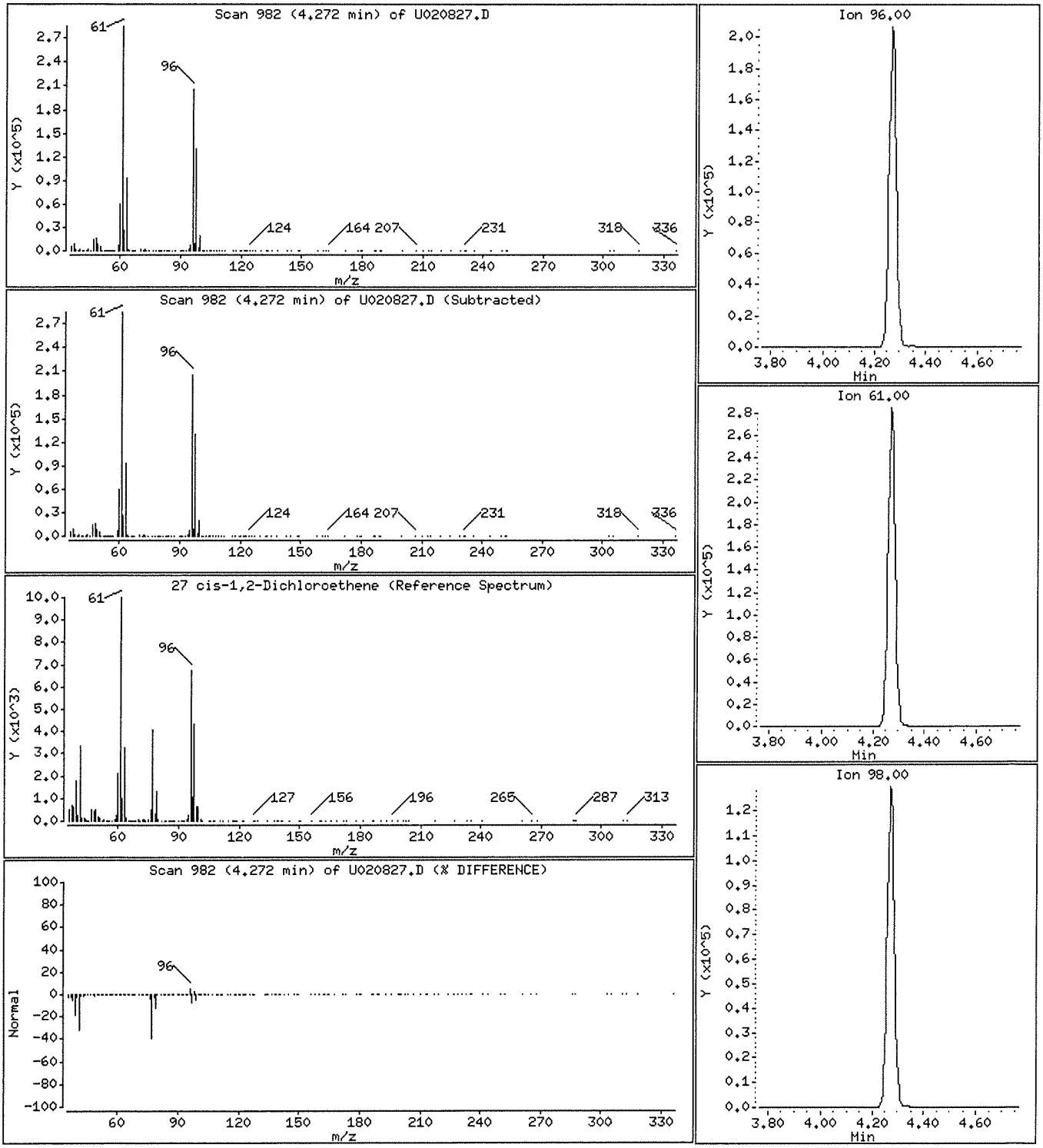
Client ID: HS22011279-02 Instrument: VOA9.i

Sample Info: HS22011279-02;HS22011279-02;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

27 cis-1,2-Dichloroethene Concentration: 1233.63 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020827.D Page 4

Date : 08-FEB-2022 19:58

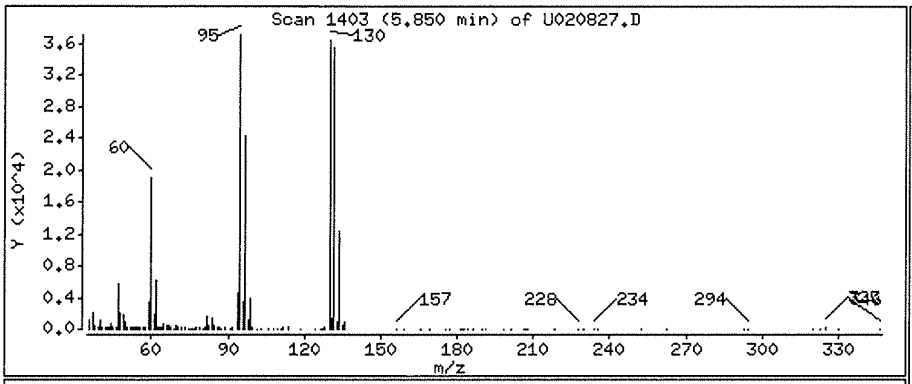
Client ID: HS22011279-02 Instrument: VOA9.i

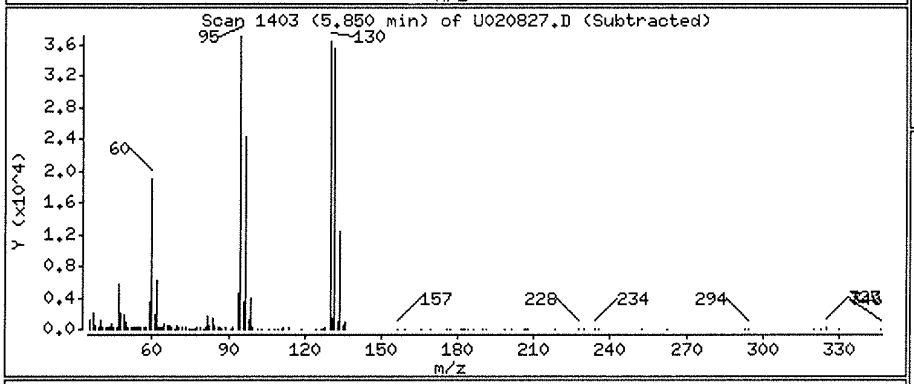
Sample Info: HS22011279-02;HS22011279-02;;;

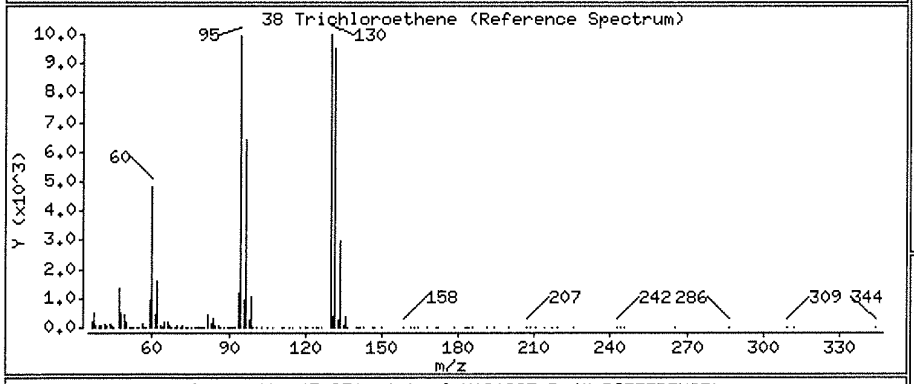
Purge Volume: 5.0 Operator: PC

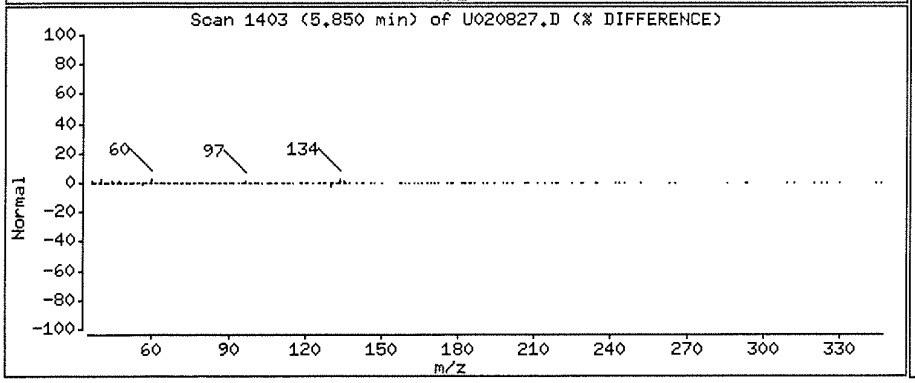
Column phase: DB624 Column diameter: 0.18

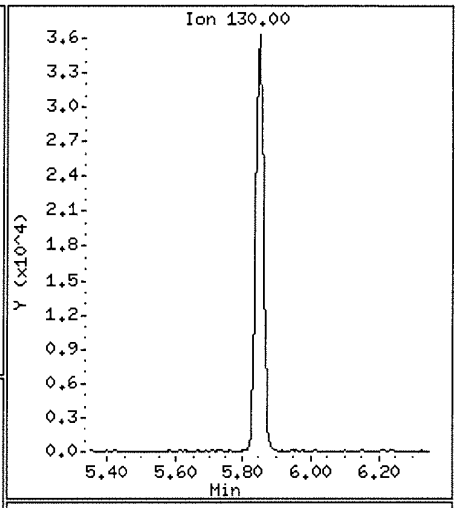
38 Trichloroethene Concentration: 206.08 ug/l

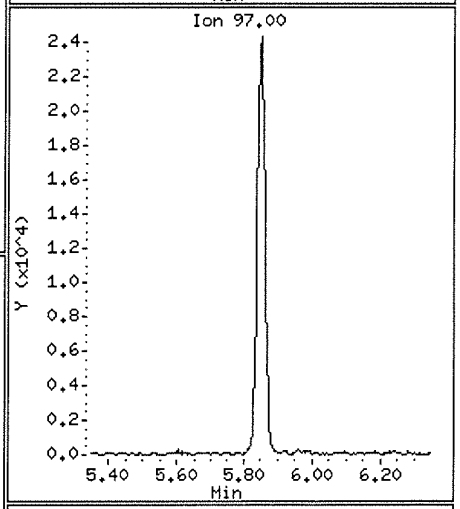


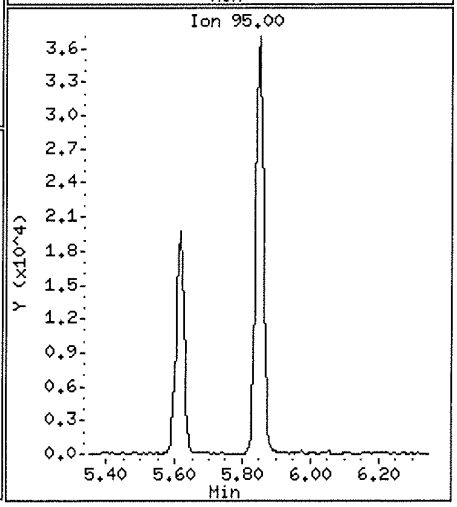












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020828.D Page 1
Report Date: 15-Feb-2022 09:26

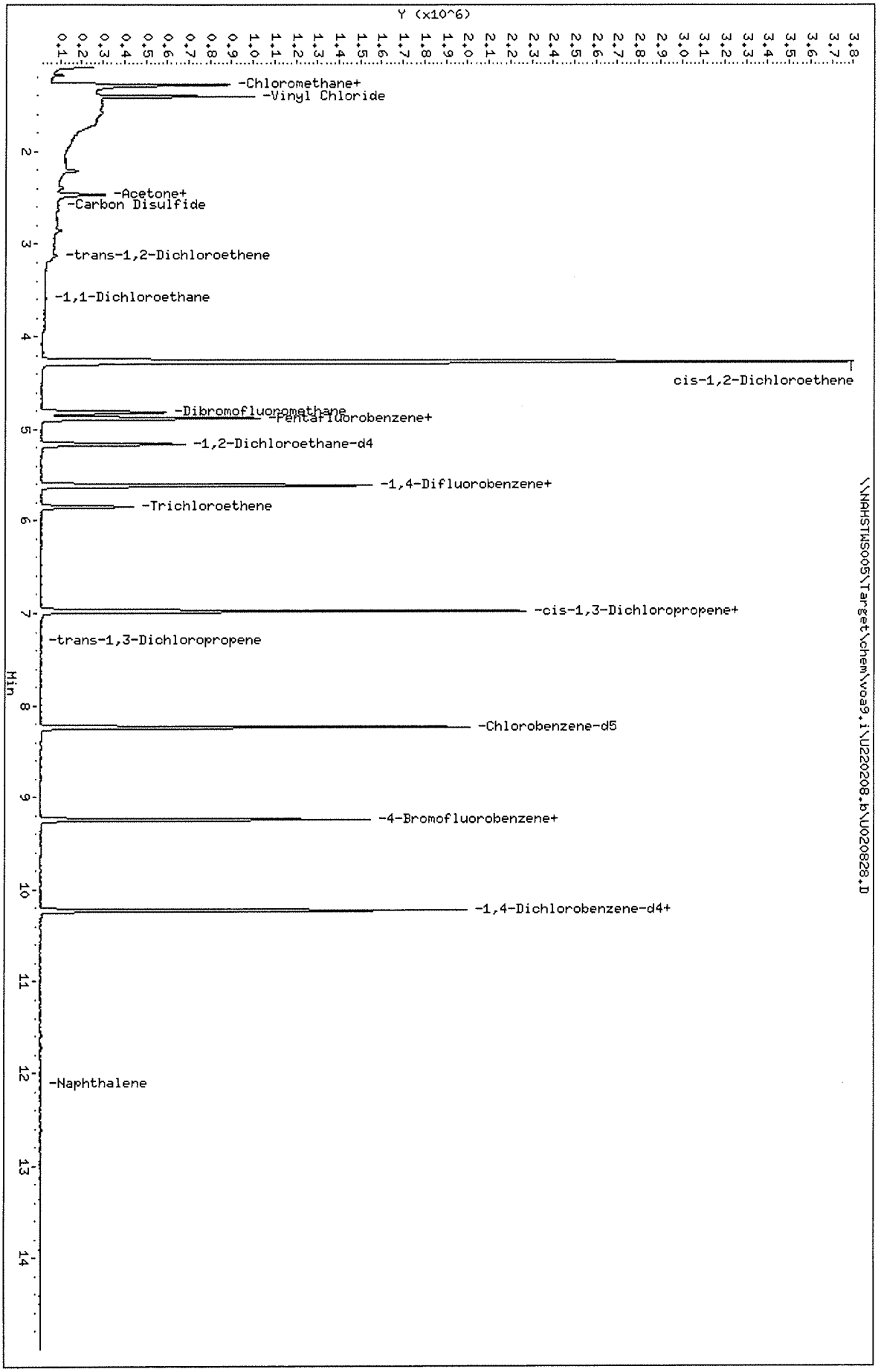
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020828.D
Lab Smp Id: HS22011279-05 Client Smp ID: HS22011279-05
Inj Date : 08-FEB-2022 20:21
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011279-05;HS22011279-05;;;
Misc Info : 180315V9;WATER;0;5;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:23 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 27
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

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	4.879	4.883	(1.000)	635878	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1040213	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	918507	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	439882	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	425192	51.4929	51.49
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	438183	51.2023	51.20
$	30 Dibromofluoromethane	113	4.815	4.815	(0.987)	321694	49.4476	49.44
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1245981	52.9274	52.92
	27 cis-1,2-Dichloroethene	96	4.268	4.268	(0.875)	1645216	199.684	998.42
	38 Trichloroethene	130	5.850	5.850	(1.042)	122842	16.7641	83.82
	5 Vinyl Chloride	62	1.408	1.408	(0.289)	452155	46.5290	232.64



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220208,b\U020828.D
Date : 08-FEB-2022 20:21
Client ID: HS22011279-05
Sample Info: HS22011279-05;HS22011279-05;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020828.D

Date : 08-FEB-2022 20:21

Client ID: HS22011279-05

Instrument: VOA9.i

Sample Info: HS22011279-05;HS22011279-05;;;

Purge Volume: 5.0

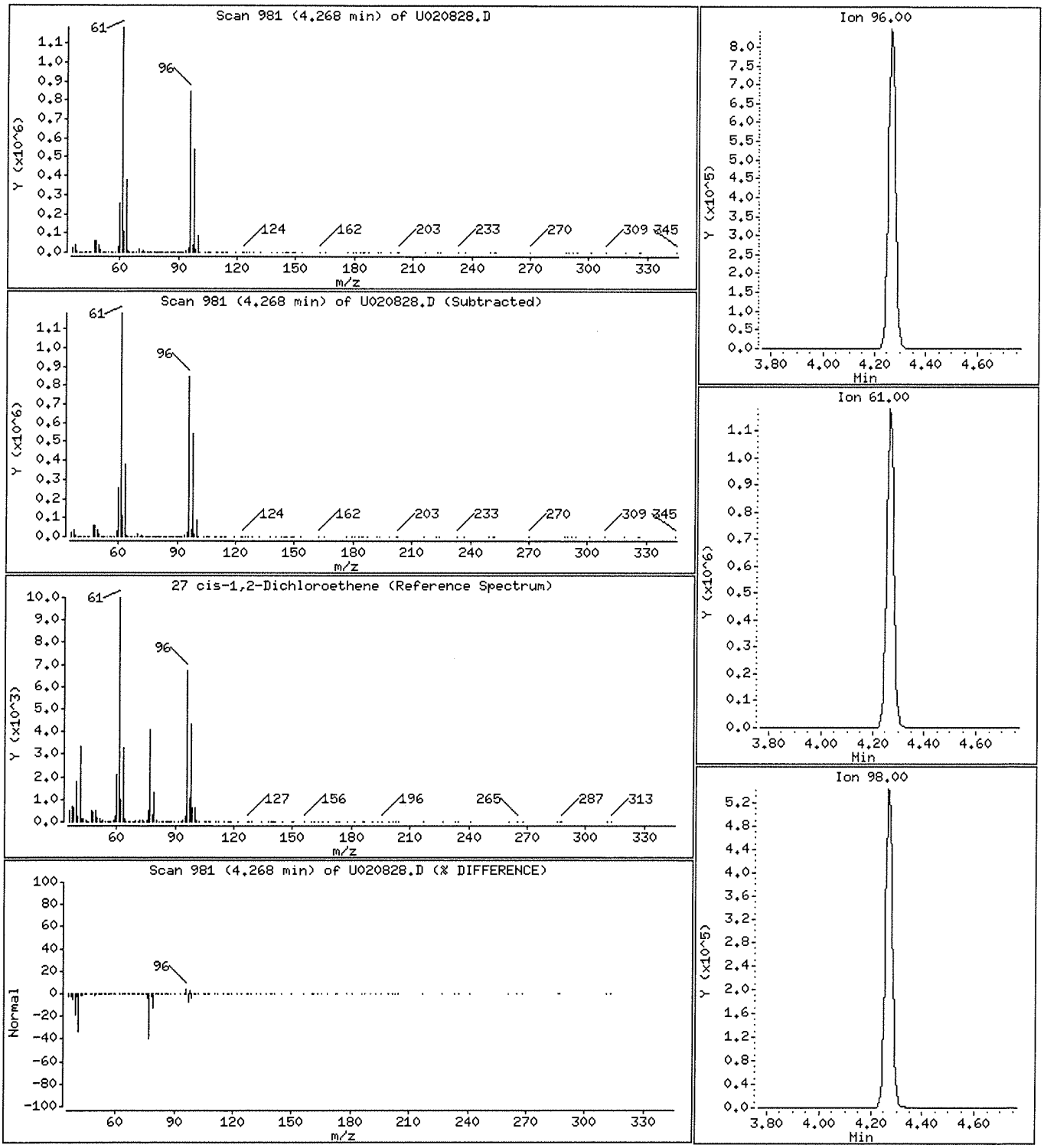
Operator: PC

Column phase: DB624

Column diameter: 0.18

27 cis-1,2-Dichloroethene

Concentration: 998.42 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020828.D Page 4

Date : 08-FEB-2022 20:21

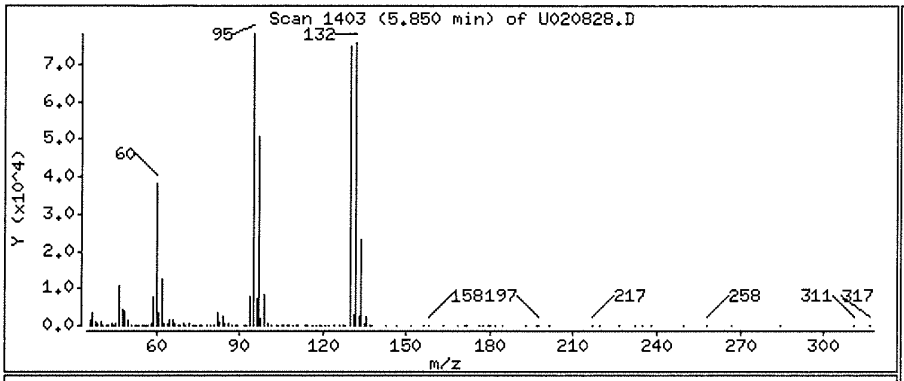
Client ID: HS22011279-05 Instrument: VOA9.i

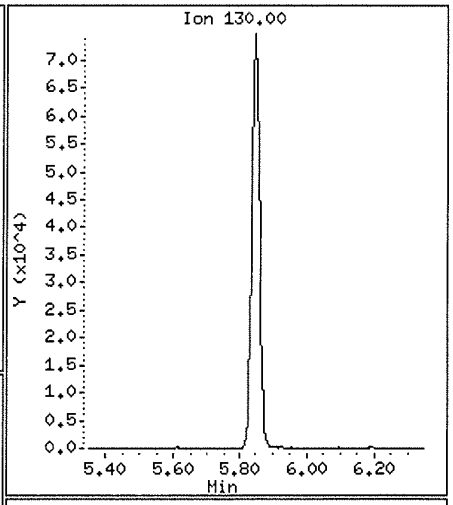
Sample Info: HS22011279-05;HS22011279-05;;;

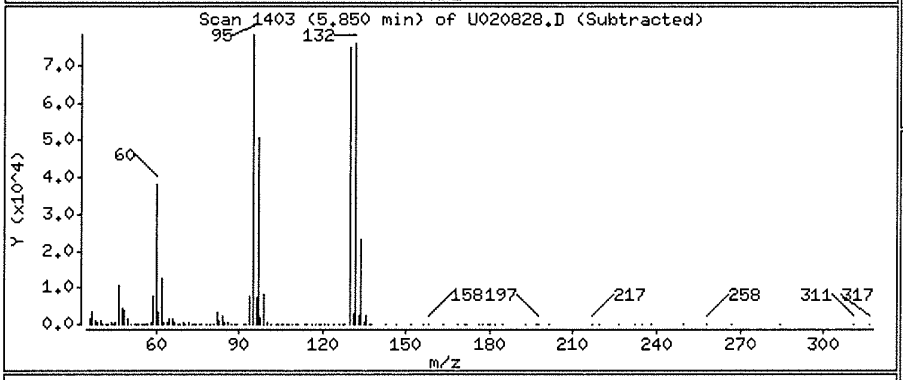
Purge Volume: 5.0 Operator: PC

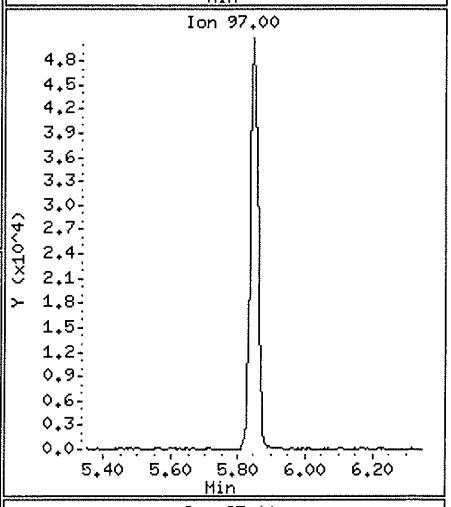
Column phase: DB624 Column diameter: 0.18

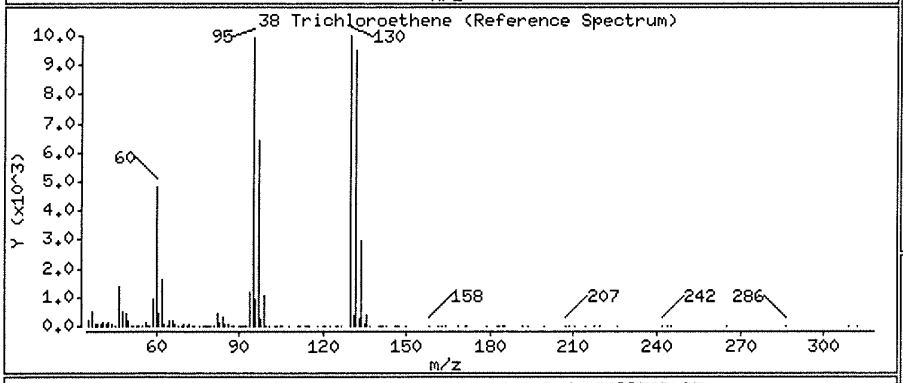
38 Trichloroethene Concentration: 83.82 ug/l

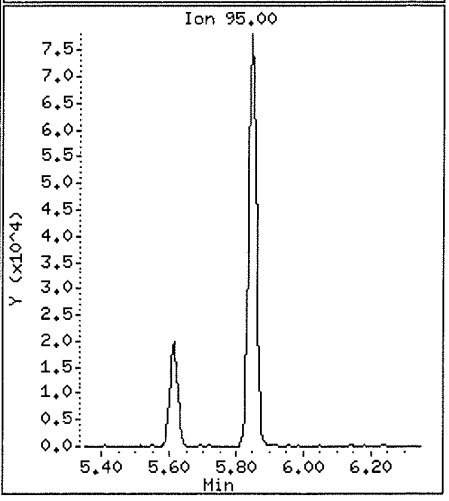


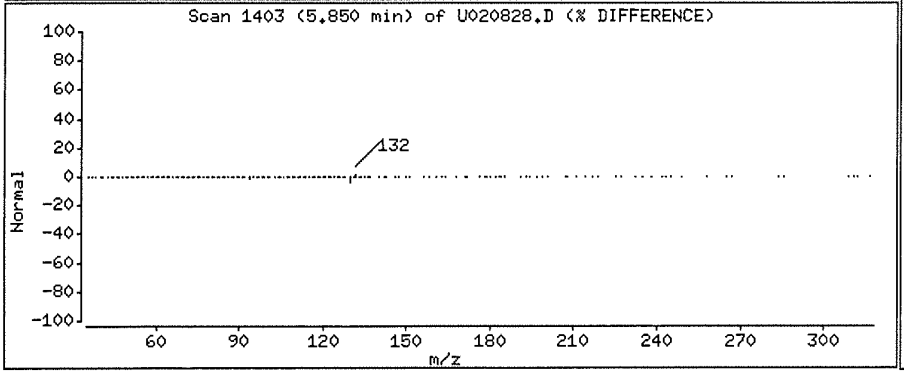












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020828.D Page 5

Date : 08-FEB-2022 20:21

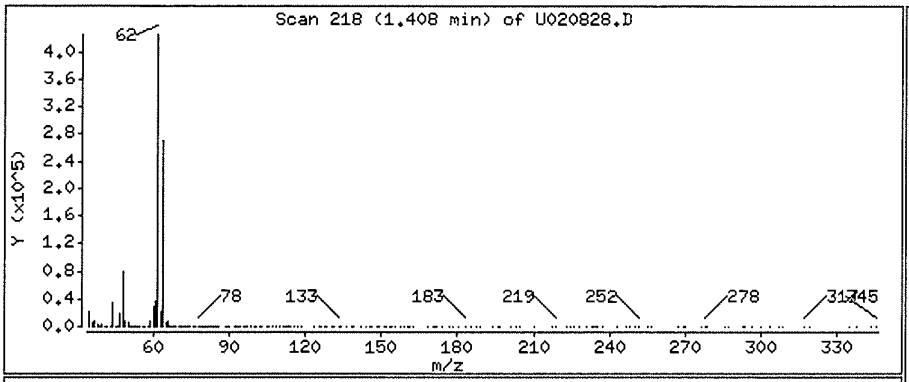
Client ID: HS22011279-05 Instrument: VOA9.i

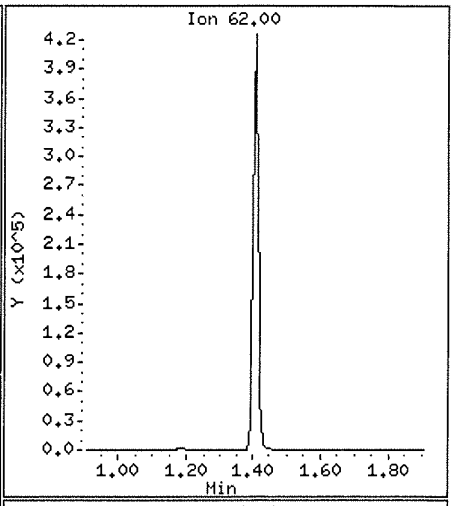
Sample Info: HS22011279-05;HS22011279-05;;;

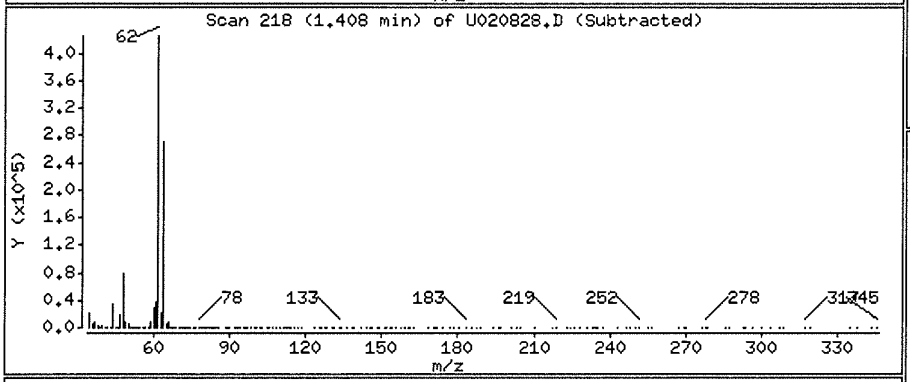
Purge Volume: 5.0 Operator: PC

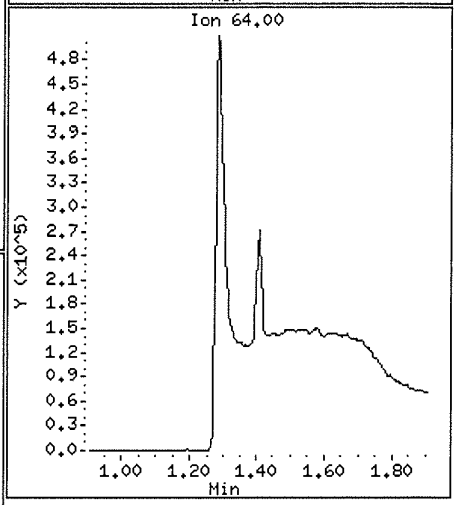
Column phase: DB624 Column diameter: 0.18

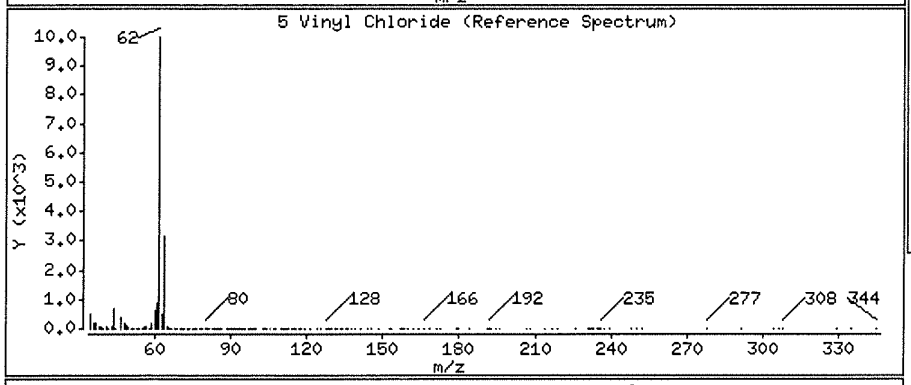
5 Vinyl Chloride Concentration: 232.64 ug/l

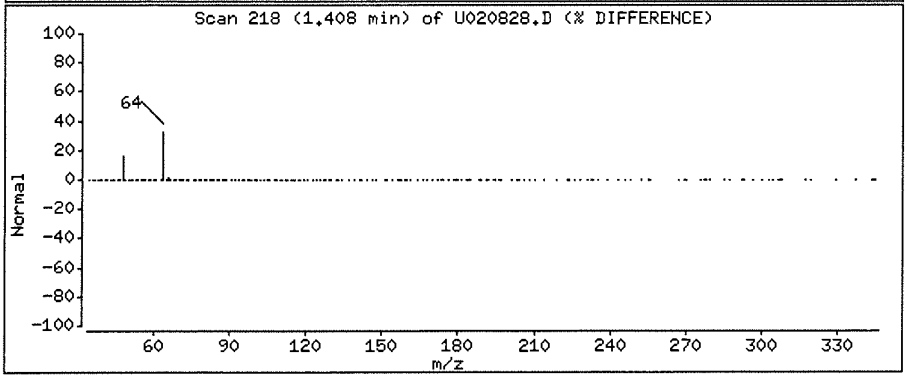












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020830.D Page 1
Report Date: 15-Feb-2022 09:26

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020830.D
Lab Smp Id: HS22011279-01 Client Smp ID: HS22011279-01
Inj Date : 08-FEB-2022 21:05
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011279-01;HS22011279-01;;;
Misc Info : 180315V9;WATER;0;10;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:23 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 29
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
Target Version: 4.14
Processing Host: NAHSTW7017

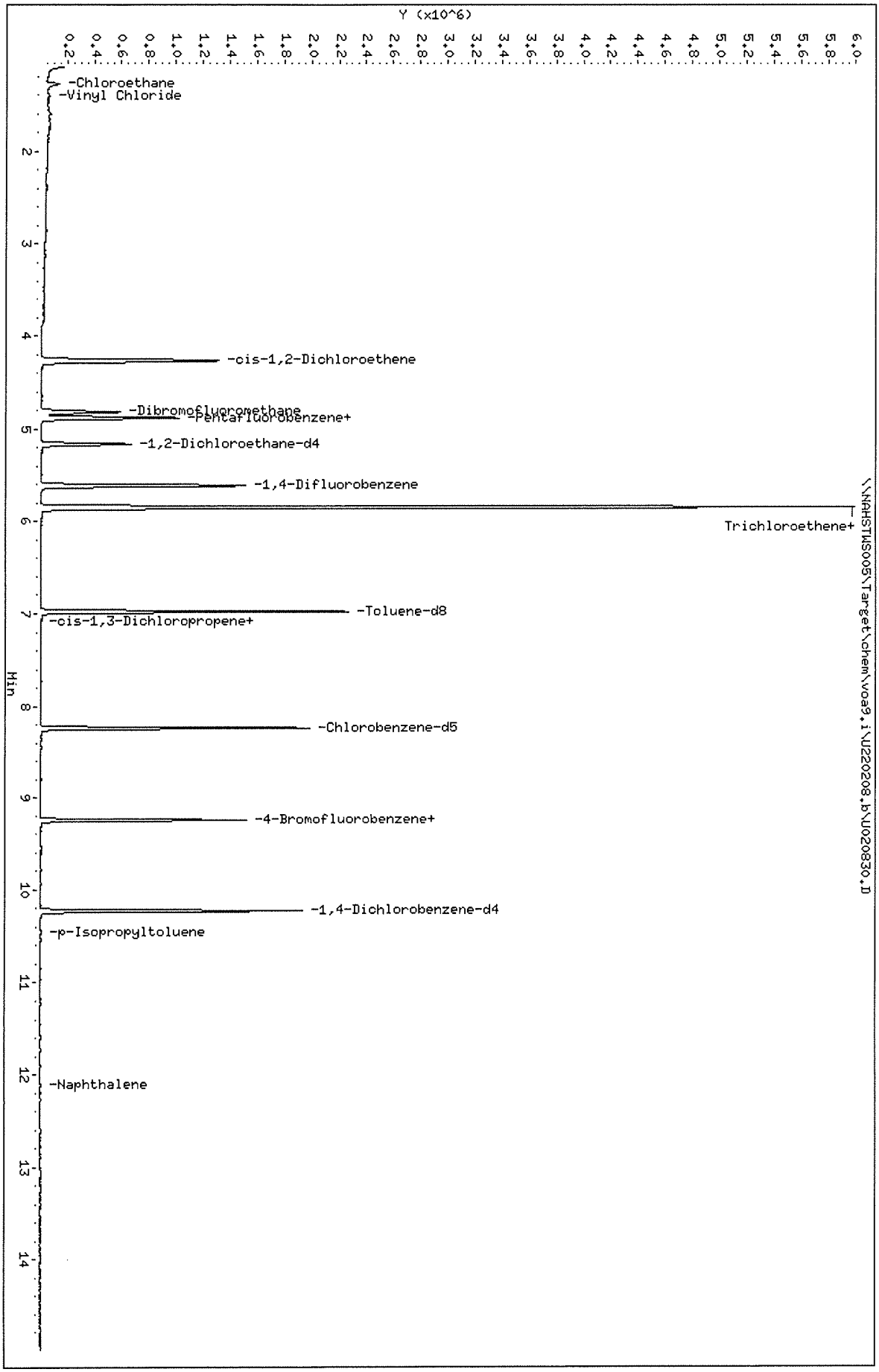
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

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	4.879	4.883	(1.000)	638100	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1031885	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	905268	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	434478	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	424121	51.1764	51.17
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	428993	50.8533	50.85
$ 30 Dibromofluoromethane	113	4.815	4.815	(0.987)	318672	48.8014	48.80
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1226541	52.8636	52.86
27 cis-1,2-Dichloroethene	96	4.268	4.268	(0.875)	569626	68.8963	688.96
38 Trichloroethene	130	5.850	5.850	(1.042)	1720464	236.685	2366.85(A)
5 Vinyl Chloride	62	1.408	1.408	(0.289)	9898	1.01501	10.15(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\voa9,i\U220208,b\U020830.D
Date : 08-FEB-2022 21:05
Client ID: HS22011279-01
Sample Info: HS22011279-01;HS22011279-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020830.D

Date : 08-FEB-2022 21:05

Client ID: HS22011279-01

Instrument: VOA9.i

Sample Info: HS22011279-01;HS22011279-01;;;

Purge Volume: 5.0

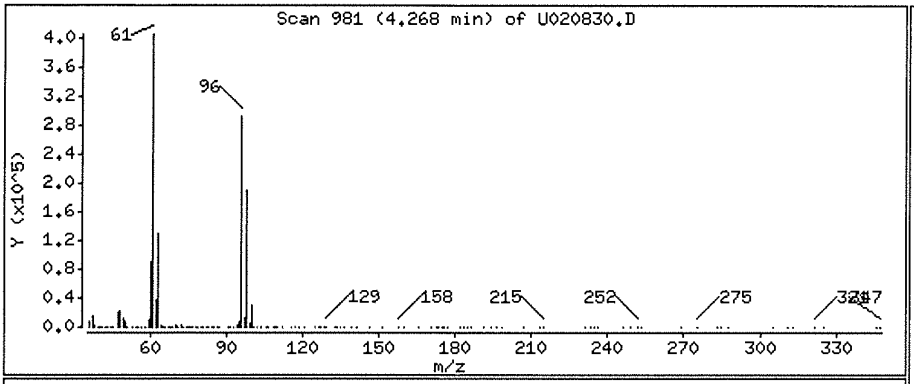
Operator: PC

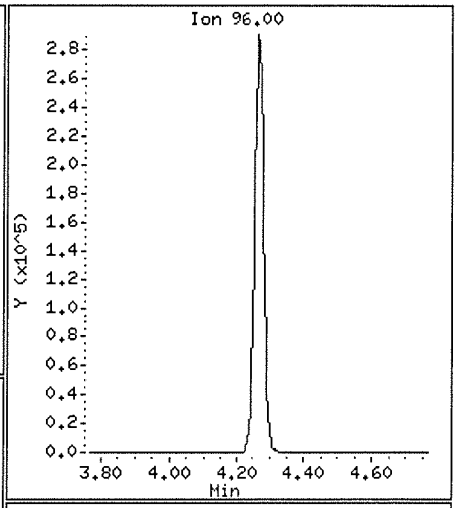
Column phase: DB624

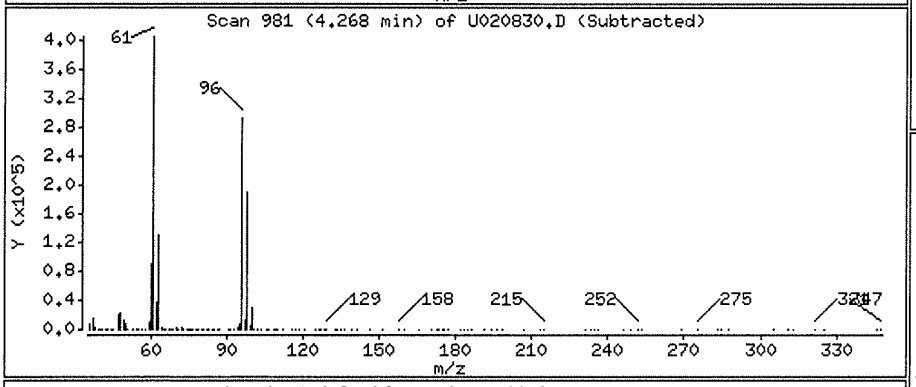
Column diameter: 0.18

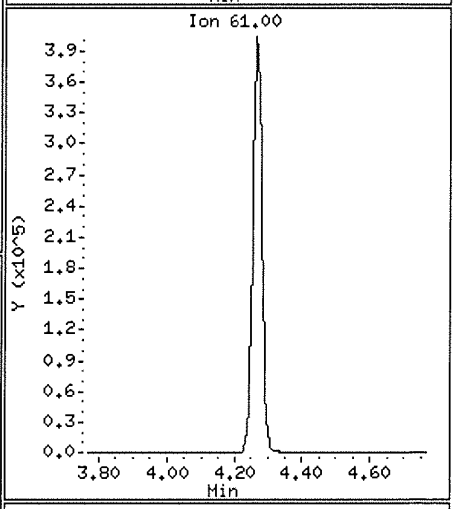
27 cis-1,2-Dichloroethene

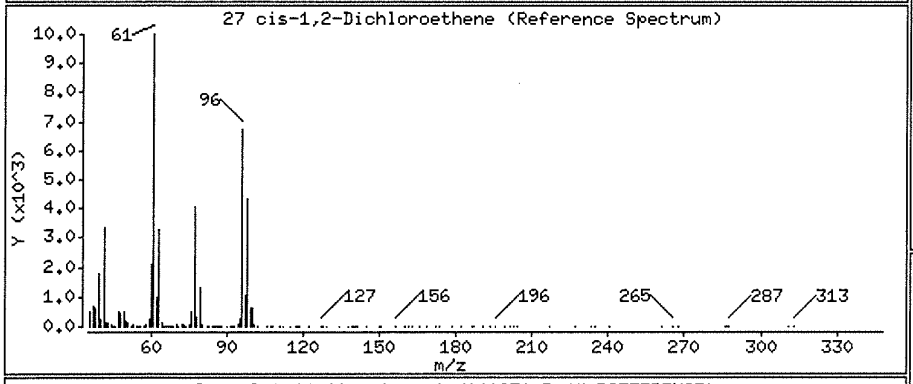
Concentration: 688.96 ug/l

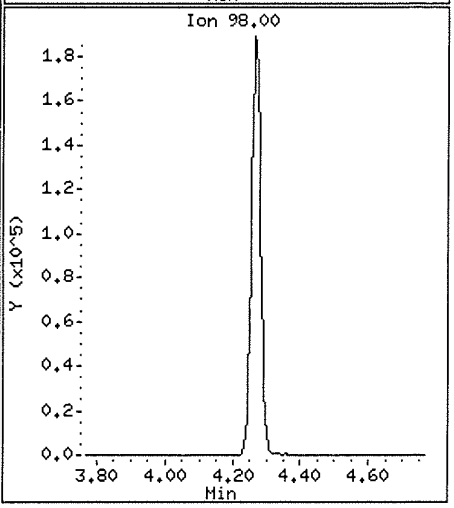


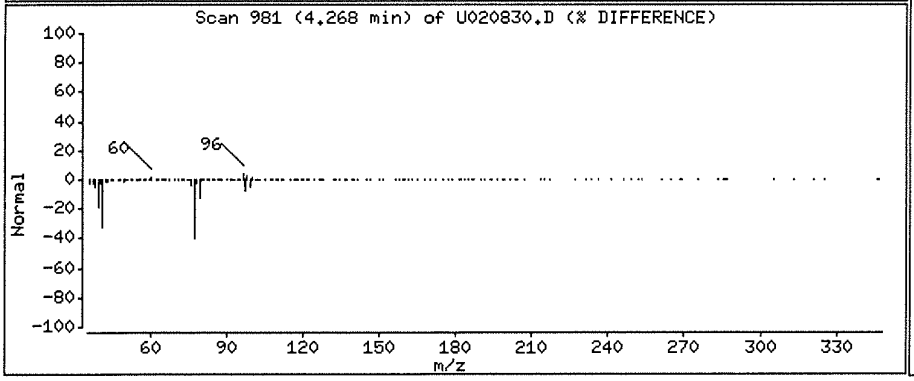












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020830.D Page 4

Date : 08-FEB-2022 21:05

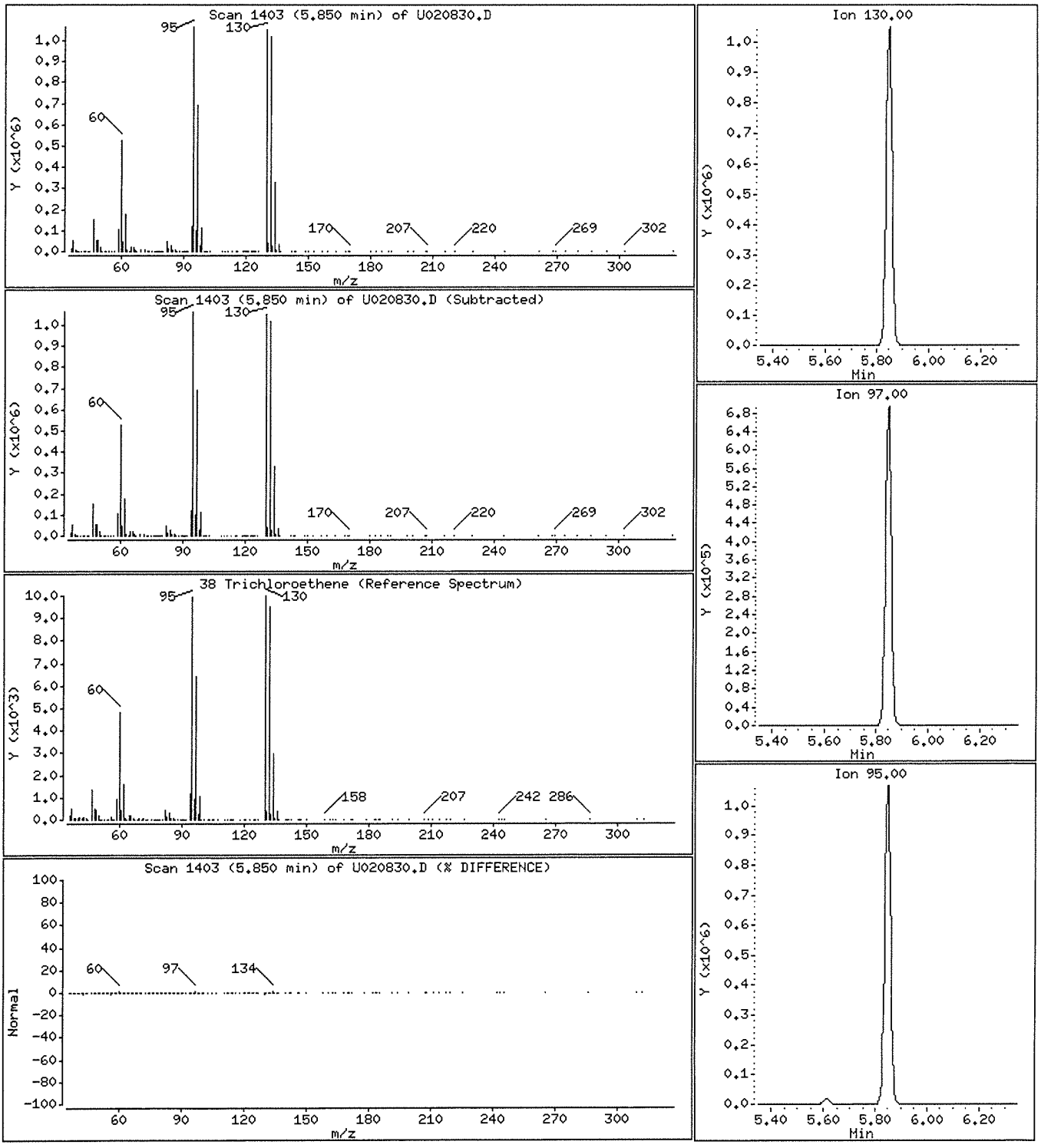
Client ID: HS22011279-01 Instrument: VOA9.i

Sample Info: HS22011279-01;HS22011279-01;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

38 Trichloroethene Concentration: 2366.85 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020830.D Page 5

Date : 08-FEB-2022 21:05

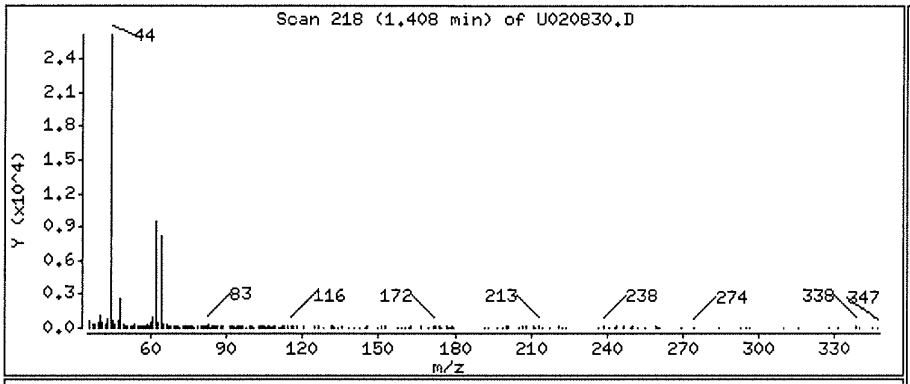
Client ID: HS22011279-01 Instrument: VOA9.i

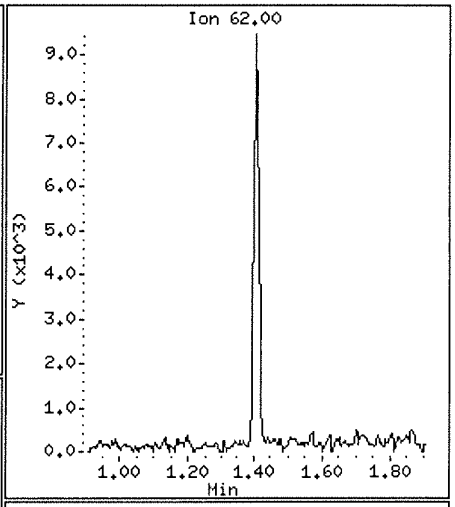
Sample Info: HS22011279-01;HS22011279-01;;;

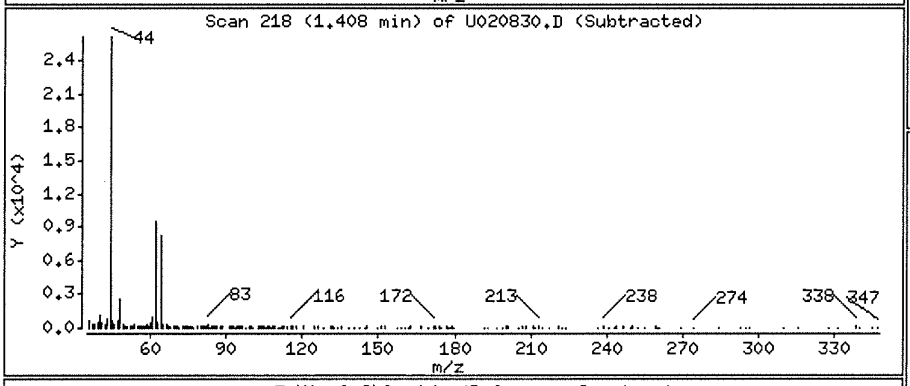
Purge Volume: 5.0 Operator: PC

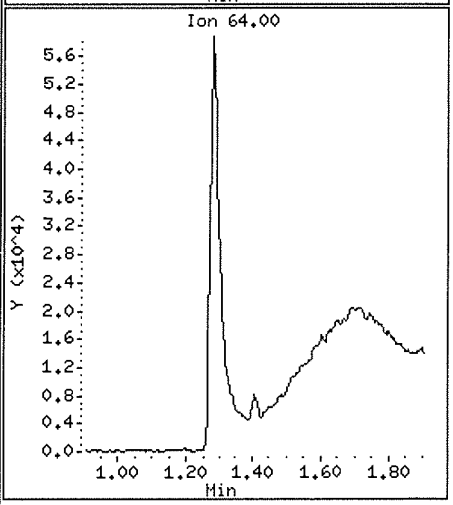
Column phase: DB624 Column diameter: 0.18

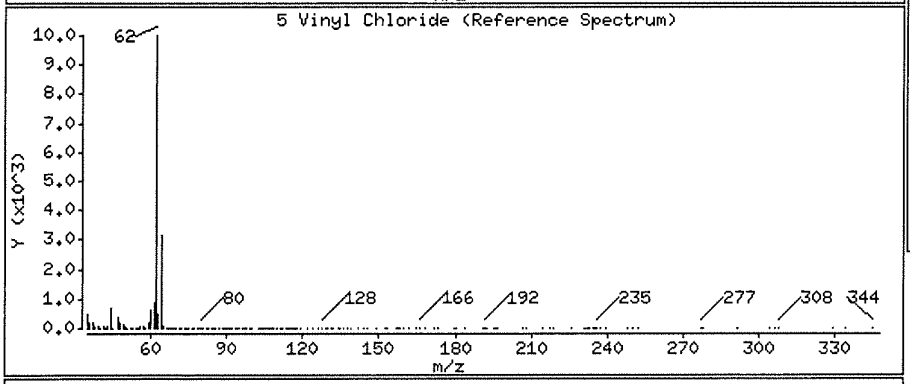
5 Vinyl Chloride Concentration: 10.15 ug/l

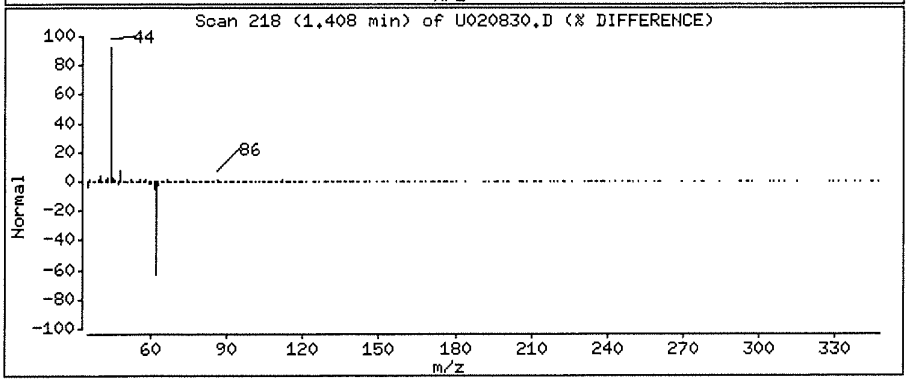












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020831.D Page 1
Report Date: 15-Feb-2022 09:27

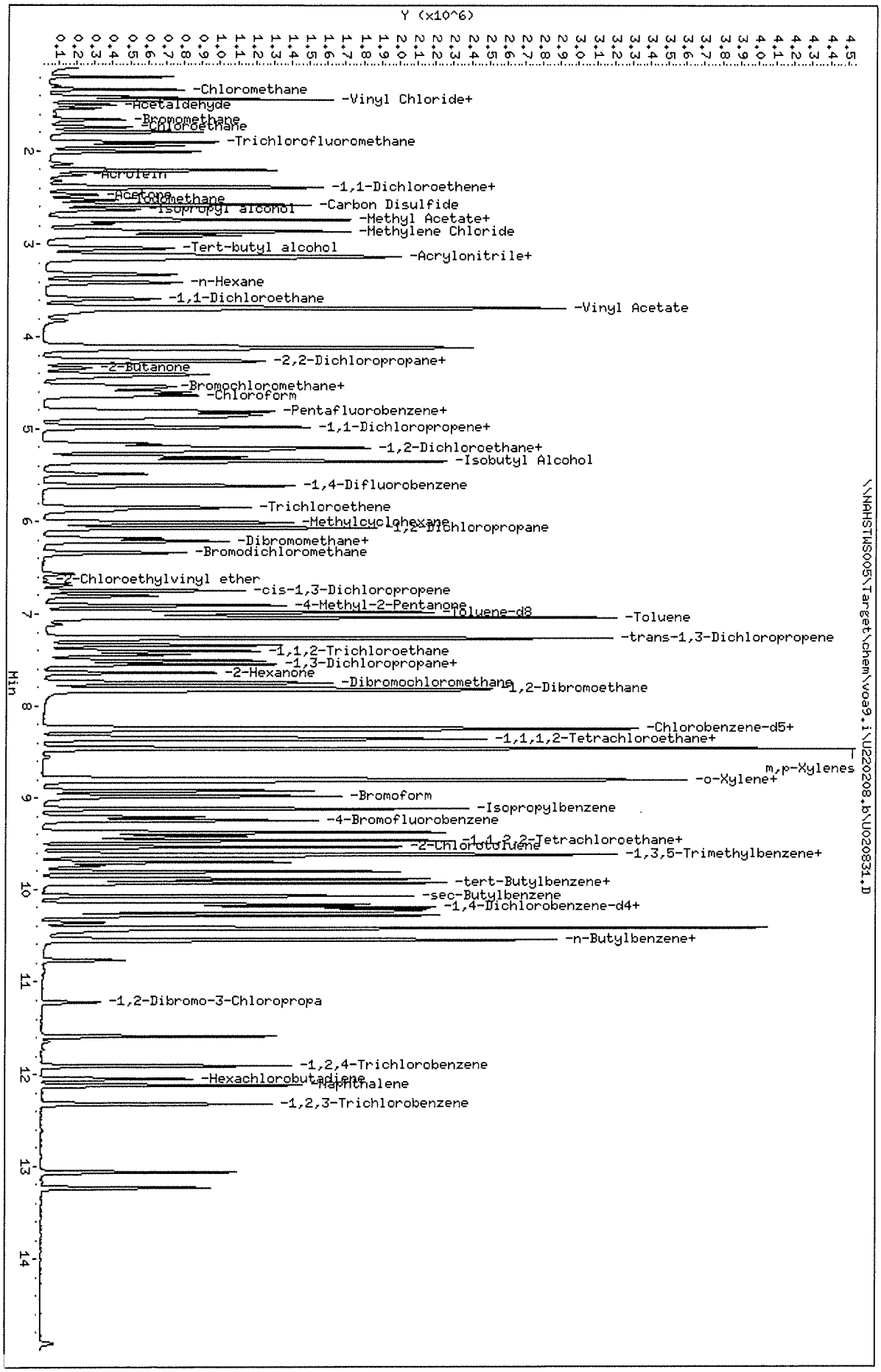
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020831.D
Lab Smp Id: CCV-END Client Smp ID: CCV-END
Inj Date : 08-FEB-2022 21:27
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050-END;VSTD050-END;2;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220208.b\8260C.m
Meth Date : 15-Feb-2022 09:27 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 30 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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)	AMOUNTS ON-COL (ug/l)
*	1 Pentafluorobenzene	168	4.883	4.883	(1.000)	547040	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	953138	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	869684	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	422432	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	412194	50.0000	58.19
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	435843	50.0000	53.85
$	30 Dibromofluoromethane	113	4.815	4.815	(0.986)	313587	50.0000	56.14
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1157606	50.0000	51.93
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	270968	50.0000	49.43
	11 1,1-Dichloroethene	96	2.386	2.386	(0.489)	277862	50.0000	54.09
	33 1,2-Dichloroethane	62	5.242	5.242	(0.934)	520884	50.0000	54.49
	27 cis-1,2-Dichloroethene	96	4.268	4.268	(0.874)	363611	50.0000	51.29
	17 Methylene Chloride	84	2.855	2.855	(0.585)	352738	50.0000	57.42
	38 Trichloroethene	130	5.850	5.850	(1.042)	333543	50.0000	49.67
	5 Vinyl Chloride	62	1.408	1.408	(0.288)	446803	50.0000	53.44



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220208.b\U020831.D
Date : 08-FEB-2022 21:27
Client ID: CCV-END
Sample Info: VSTD050-END;VSTD050-END;2;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

MSVOA09 -Logbook

Batch: 48255
Date: 02-09-2022
Method: 8260
Comments:

Analyst: Presenta Cabascango
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	BFB	02-09-2022 10:02 am	1.00	0.00 mL	0.00 mL	U020901.D	Liquid	Y	NA
2	VSTD050	CCV	02-09-2022 10:24 am	1.00	5.00 mL	0.00 mL	U020902a.D	Liquid	Y	NA
3	VSTD050	CCV	02-09-2022 10:46 am	1.00	5.00 mL	0.00 mL	U020903.D	Liquid	Y	NA
4	CCB	SAMP	02-09-2022 11:08 am	1.00	5.00 mL	0.00 mL	U020904.D	Liquid	Y	NA
5	VLCSW-220209	LCS	02-09-2022 11:30 am	1.00	5.00 mL	0.00 mL	U020905.D	Liquid	Y	NA
6	BLANK	SAMP	02-09-2022 11:52 am	1.00	5.00 mL	0.00 mL	U020906.D	Liquid	Y	NA
7	VBLKW-220209	MBLK	02-09-2022 12:15 pm	1.00	5.00 mL	0.00 mL	U020907.D	Liquid	Y	NA
8	HS22020179-12	SAMP	02-09-2022 12:37 pm	1.00	5.00 mL	0.00 mL	U020908.D	Liquid	Y	NA
9	HS22011297-27	SAMP	02-09-2022 12:59 pm	1.00	5.00 mL	0.00 mL	U020909.D	Liquid	Y	NA
10	HS22011297-15	SAMP	02-09-2022 01:21 pm	1.00	5.00 mL	0.00 mL	U020910.D	Liquid	Y	NA
11	HS22011297-28	SAMP	02-09-2022 01:43 pm	1.00	5.00 mL	0.00 mL	U020911.D	Liquid	Y	NA
12	HS22011240-09	SAMP	02-09-2022 02:06 pm	10.00	5.00 mL	0.00 mL	U020912.D	Liquid	Y	NA
13	HS22011297-15MS	MS	02-09-2022 02:28 pm	1.00	5.00 mL	0.00 mL	U020913.D	Liquid	Y	NA
14	HS22011297-15MSD	MSD	02-09-2022 02:50 pm	1.00	5.00 mL	0.00 mL	U020914.D	Liquid	Y	NA
15	HS22011279-01	SAMP	02-09-2022 03:12 pm	25.00	5.00 mL	0.00 mL	U020915.D	Liquid	Y	NA
16	VSTD050-END	CCV	02-09-2022 03:35 pm	1.00	5.00 mL	0.00 mL	U020916.D	Liquid	Y	NA
17	HS22011297-10	SAMP	02-09-2022 03:57 pm	10.00	5.00 mL	0.00 mL	U020917.D	Liquid	Y	NA
18	HS22011297-25	SAMP	02-09-2022 04:19 pm	1.00	5.00 mL	0.00 mL	U020918.D	Liquid	Y	NA
19	HS22011297-26	SAMP	02-09-2022 04:41 pm	1.00	5.00 mL	0.00 mL	U020919.D	Liquid	Y	NA
20	HS22011297-23	SAMP	02-09-2022 05:03 pm	1.00	5.00 mL	0.00 mL	U020920.D	Liquid	Y	NA
21	HS22011297-24	SAMP	02-09-2022 05:26 pm	1.00	5.00 mL	0.00 mL	U020921.D	Liquid	Y	NA
22	HS22011297-29	SAMP	02-09-2022 05:48 pm	1.00	5.00 mL	0.00 mL	U020922.D	Liquid	Y	NA
23	HS22011297-07	SAMP	02-09-2022 06:10 pm	10.00	5.00 mL	0.00 mL	U020923.D	Liquid	Y	NA
24	HS22011291-66	SAMP	02-09-2022 06:32 pm	50.00	5.00 mL	0.00 mL	U020924.D	Liquid	Y	NA
25	HS22011297-14	SAMP	02-09-2022 06:55 pm	5.00	5.00 mL	0.00 mL	U020925.D	Liquid	Y	NA
26	HS22011291-66	SAMP	02-09-2022 07:17 pm	500.0(	5.00 mL	0.00 mL	U020926.D	Liquid	Y	NA
27	HS22020100-01	SAMP	02-09-2022 07:39 pm	1.00	5.00 mL	0.00 mL	U020927.D	Liquid	Y	NA
28	HS22011348-01	SAMP	02-09-2022 08:01 pm	1.00	5.00 mL	0.00 mL	U020928.D	Liquid	Y	NA
29	BLANK	SAMP	02-09-2022 08:23 pm	1.00	5.00 mL	0.00 mL	U020929.D	Liquid	Y	NA
30	HS22020136-06	SAMP	02-09-2022 08:46 pm	250.0(	5.00 mL	0.00 mL	U020930.D	Liquid	Y	NA
31	HS22020136-06	SAMP	02-09-2022 09:08 pm	2500.0	5.00 mL	0.00 mL	U020931.D	Liquid	Y	NA
32	BFB	BFB	02-09-2022 09:30 pm	1.00	5.00 mL	0.00 mL	V020901.D	Liquid	Y	NA
33	VSTD050	CCV	02-10-2022 09:52 am	1.00	5.00 mL	0.00 mL	V020902.D	Liquid	Y	NA

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

	CLIENT SAMPLE NO.	SMC1 (TOL)#	SMC2 #	SMC3 (DCE)#	OTHER #	TOT OUT
01	VLCSW-220209	101	103	108	102	0
02	VBLKW-220209	106	100	102	101	0
03	HS22011297-15MS	105	100	102	106	0
04	HS22011297-15MSD	105	98	101	107	0
05	HS22011279-01	104	99	103	101	0
06						
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28						

		QC LIMITS
SMC1 (TOL)	= Toluene-d8	(78-123)
SMC2	= Dibromofluoromethane	(74-125)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(0-130)
OTHER	= 4-Bromofluorobenzene	(0-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLKW-220209

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Lab File ID: U020907 Lab Sample ID: VBLKW-220209

Date Analyzed: 02/09/22 Time Analyzed: 1215

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

Instrument ID: VOA9

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	VLCSW-220209	VLCSW-220209	U020905	1130
02	HS22011297-15MS	HS22011297-15MS	U020913	1428
03	HS22011297-15MSD	HS22011297-15MSD	U020914	1450
04	HS22011279-01	HS22011279-01	U020915	1512
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COMMENTS:

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Lab File ID: U020901 BFB Injection Date: 02/09/22

Instrument ID: VOA9 BFB Injection Time: 1002

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.8
75	30.0 - 60.0% of mass 95	53.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	73.3
175	5.0 - 9.0% of mass 174	6.4 (8.7)1
176	95.0 - 101.0% of mass 174	70.1 (95.6)1
177	5.0 - 9.0% of mass 176	4.7 (6.7)2

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

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	U020903	02/09/22	1046
02	VLCSW-220209	VLCSW-220209	U020905	02/09/22	1130
03	VBLKW-220209	VBLKW-220209	U020907	02/09/22	1215
04	HS22011297-15MS	HS22011297-15MS	U020913	02/09/22	1428
05	HS22011297-15MSD	HS22011297-15MSD	U020914	02/09/22	1450
06	HS22011279-01	HS22011279-01	U020915	02/09/22	1512
07	CCV-END	CCV-END	U020916	02/09/22	1535
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Instrument ID: VOA9 Calibration Date: 02/09/22 Time: 1046

Lab File ID: U020903 Init. Calib. Date(s): 01/21/22 01/21/22

Init. Calib. Times: 1122 1502

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Trichloroethene	0.3520000	0.3205615	0.3205615	0.2	8.93	20.00	AVRG
Methylene Chloride	50.535895	50.000000	0.5693278	0.1	-1.07	20.00	LINR
cis-1,2-Dichloroethene	0.6480000	0.6062824	0.6062824	0.1	6.44	20.00	AVRG
Vinyl Chloride	0.7640000	0.7426700	0.7426700	0.1	2.79	20.00	AVRG
1,1,2-Trichloroethane	0.3150000	0.3016821	0.3016821	0.1	4.23	20.00	AVRG
1,1-Dichloroethene	0.4690000	0.4624686	0.4624686	0.1	1.39	20.00	AVRG
1,2-Dichloroethane	0.5010000	0.5185472	0.5185472	0.1	-3.50	20.00	AVRG
Toluene-d8	1.2820000	1.2946625	1.2946625	0.1	-0.99	20.00	AVRG
Dibromofluoromethane	52.188709	50.000000	0.5334705	0.1	-4.38	20.00	LINR
1,2-Dichloroethane-d4	53.504443	50.000000	0.6941311	0.1	-7.01	20.00	LINR
4-Bromofluorobenzene	52.190731	50.000000	0.4860523	0.1	-4.38	20.00	LINR

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Instrument ID: VOA9 Calibration Date: 02/09/22 Time: 1535

Lab File ID: U020916 Init. Calib. Date(s): 01/21/22 01/21/22

Init. Calib. Times: 1122 1502

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Trichloroethene	0.3520000	0.3268938	0.3268938	0.2	7.13	50.00	AVRG
Methylene Chloride	54.456727	50.000000	0.6123049	0.1	-8.91	50.00	LINR
cis-1,2-Dichloroethene	0.6480000	0.6392105	0.6392105	0.1	1.36	50.00	AVRG
Vinyl Chloride	0.7640000	0.7524704	0.7524704	0.1	1.51	50.00	AVRG
1,1,2-Trichloroethane	0.3150000	0.3053007	0.3053007	0.1	3.08	50.00	AVRG
1,1-Dichloroethene	0.4690000	0.4598187	0.4598187	0.1	1.96	50.00	AVRG
1,2-Dichloroethane	0.5010000	0.5252073	0.5252073	0.1	-4.83	50.00	AVRG
Toluene-d8	1.2820000	1.2951825	1.2951825	0.1	-1.03	50.00	AVRG
Dibromofluoromethane	55.575017	50.000000	0.5675238	0.1	-11.15	50.00	LINR
1,2-Dichloroethane-d4	58.306189	50.000000	0.7549114	0.1	-16.61	50.00	LINR
4-Bromofluorobenzene	51.950391	50.000000	0.4838658	0.1	-3.90	50.00	LINR

FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Lab File ID (Standard): U020903 Date Analyzed: 02/09/22

Instrument ID: VOA9 Time Analyzed: 1046

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

		IS1 AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	585097	4.88	980227	5.61	895058	8.24
	UPPER LIMIT	1170194	5.38	1960454	6.11	1790116	8.74
	LOWER LIMIT	292549	4.38	490114	5.11	447529	7.74
	CLIENT SAMPLE NO.						
01	VLCSW-220209	585757	4.88	989414	5.61	891365	8.24
02	VBLKW-220209	644228	4.88	1054941	5.61	928125	8.24
03	HS22011297-15MS	624105	4.88	1023319	5.61	916461	8.24
04	HS22011297-15MSD	642194	4.89	1032392	5.62	936125	8.24
05	HS22011279-01	639096	4.88	1037176	5.61	934990	8.24
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Lab File ID (Standard): U020903 Date Analyzed: 02/09/22

Instrument ID: VOA9 Time Analyzed: 1046

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

		IS4(DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	445089	10.23				
	UPPER LIMIT	890178	10.73				
	LOWER LIMIT	222545	9.73				
	CLIENT SAMPLE NO.						
01	VLCSW-220209	443670	10.23				
02	VBLKW-220209	443579	10.22				
03	HS22011297-15MS	459835	10.23				
04	HS22011297-15MSD	465998	10.22				
05	HS22011279-01	445785	10.22				
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020901.D

Date : 09-FEB-2022 10:02

Client ID: BFB

Instrument: VOA9.i

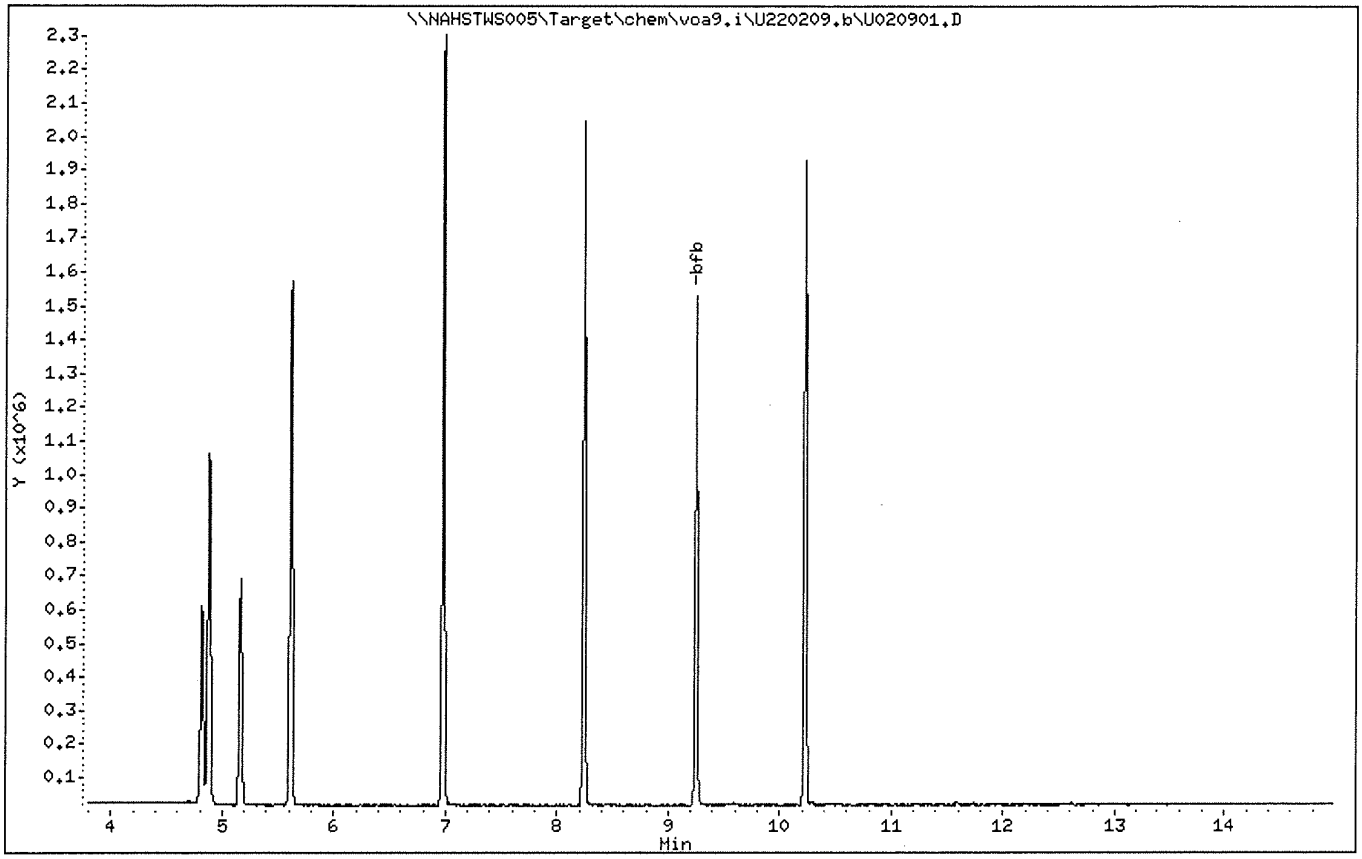
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020901.D Page 2

Date : 09-FEB-2022 10:02

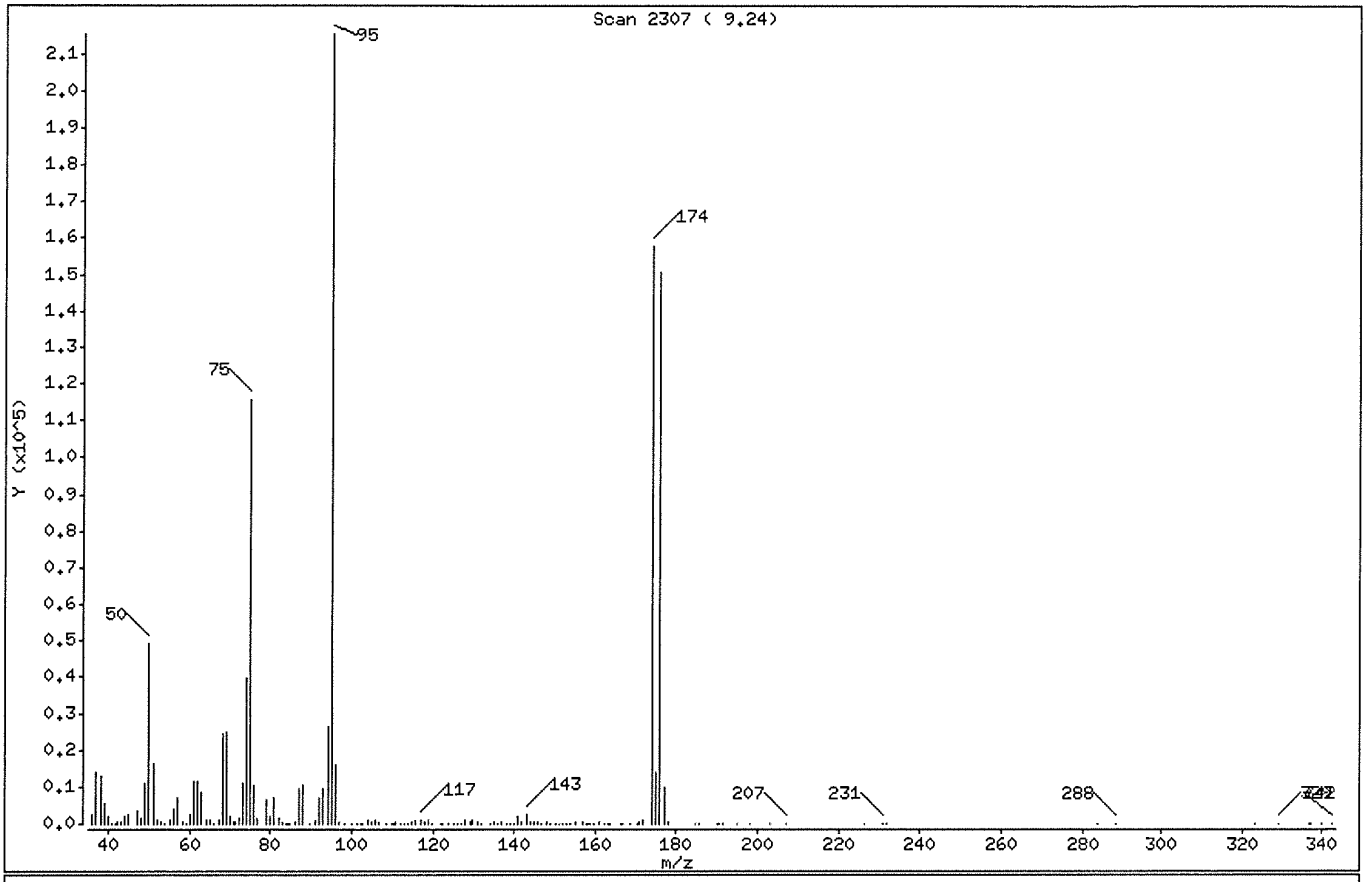
Client ID: BFB Instrument: VOA9.i

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	22.77
75	30.00 - 60.00% of mass 95	53.57
96	5.00 - 9.00% of mass 95	7.45
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	73.33
175	5.00 - 9.00% of mass 174	6.36 (8.68)
176	95.00 - 101.00% of mass 174	70.12 (95.62)
177	5.00 - 9.00% of mass 176	4.71 (6.71)

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020901.D Page 3

Date : 09-FEB-2022 10:02

Client ID: BFB Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: U020901.D
Spectrum: Scan 2307 (9.24)
Location of Maximum: 95.00
Number of points: 157

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	2688	75.00	115304	116.90	1230	158.90	233
37.00	13990	76.00	10462	117.80	667	159.60	53
38.10	12830	76.90	1526	118.90	1200	160.80	367
39.10	5242	78.90	6538	119.90	95	162.30	61
40.00	2180	80.00	2127	121.80	127	163.10	71
40.90	188	80.90	6953	122.60	111	163.80	52
41.50	196	81.90	1606	123.70	236	166.40	67
42.00	272	83.00	308	124.90	246	167.00	81
43.20	307	83.70	84	126.00	156	168.40	86
44.00	1955	84.30	78	126.90	161	170.30	151
45.00	2262	84.90	125	127.80	781	171.00	464
47.00	3600	85.90	435	129.00	505	171.80	1180
47.90	1631	87.00	9616	129.80	775	173.90	157824
49.00	10976	87.90	10629	131.00	431	175.00	13693
50.00	49000	89.80	116	131.70	51	175.90	150912
51.00	16512	91.00	822	134.10	129	176.90	10133
52.00	789	92.00	6870	134.80	341	178.00	483
53.00	301	93.00	9525	136.00	66	184.90	61
53.80	154	94.10	26328	136.80	455	185.60	109
55.00	780	95.00	215232	138.00	112	189.90	87
56.00	4032	96.00	16028	139.00	144	190.60	78
57.00	6970	96.90	547	140.10	115	191.30	84
58.10	415	98.20	67	141.00	1921	194.90	68
59.20	221	99.90	52	141.90	348	198.20	93
59.90	2333	101.20	71	142.90	2298	202.90	67
61.00	11212	102.20	63	143.90	271	207.10	149
62.00	11623	102.80	102	144.90	284	226.40	64
63.00	8653	103.90	865	145.80	413	231.00	79
64.00	900	104.90	520	146.70	171	231.60	63
65.00	1084	105.90	878	147.80	479	284.00	62
65.90	230	106.90	257	148.80	187	288.30	72
67.10	973	108.70	103	150.10	241	323.30	61
68.00	24184	109.70	183	151.00	113	328.90	91
69.00	24872	110.20	72	151.80	138	336.70	89
70.10	1966	110.80	273	152.80	140	337.20	52

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020901.D

Date : 09-FEB-2022 10:02

Client ID: BFB

Instrument: VOA9.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: U020901.D
Spectrum: Scan 2307 (9.24)
Location of Maximum: 95.00
Number of points: 157

m/z	Y	m/z	Y	m/z	Y	m/z	Y
70.80	272	111.90	212	153.80	163	339.80	58
71.10	253	112.90	239	155.00	699	342.40	54
72.00	1654	113.80	136	156.90	386		
73.00	10664	114.90	282	157.60	57		
74.00	39504	115.90	823	158.30	83		

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020903.D Page 1
Report Date: 15-Feb-2022 09:09

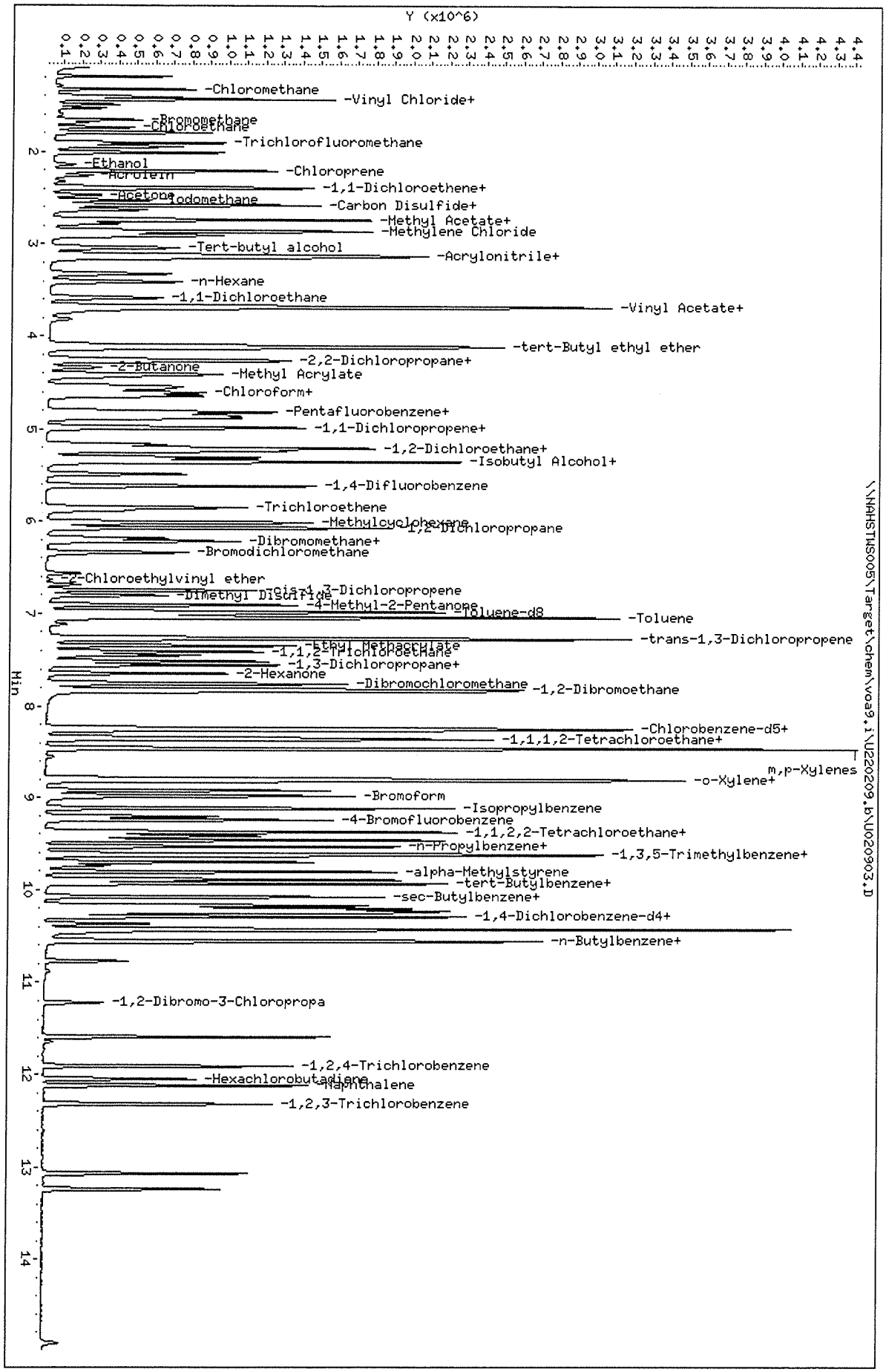
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020903.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 09-FEB-2022 10:46
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050;VSTD050;2;;;
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220209.b\8260C.m
Meth Date : 15-Feb-2022 09:09 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.883	(1.000)	585097	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	980227	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	895058	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	445089	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	406134	50.0000	53.50
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	435045	50.0000	52.19
$	30 Dibromofluoromethane	113	4.815	4.815	(0.986)	312132	50.0000	52.18
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1158798	50.0000	50.51
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	270023	50.0000	47.86
	11 1,1-Dichloroethene	96	2.386	2.386	(0.489)	270589	50.0000	49.25
	33 1,2-Dichloroethane	62	5.243	5.243	(0.934)	508294	50.0000	51.71
	27 cis-1,2-Dichloroethene	96	4.272	4.272	(0.875)	354734	50.0000	46.79
	17 Methylene Chloride	84	2.858	2.858	(0.585)	333112	50.0000	50.53
	38 Trichloroethene	130	5.850	5.850	(1.042)	314223	50.0000	45.50
	5 Vinyl Chloride	62	1.408	1.408	(0.288)	434534	50.0000	48.59



Data File: \\NAHSTWS005\Target\chem\voa9,i\U220209,b\U020903,D
Date : 09-FEB-2022 10:46
Client ID: CCV
Sample Info: VSTD050;VSTD050;2;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9,i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020905.D Page 1
Report Date: 15-Feb-2022 09:09

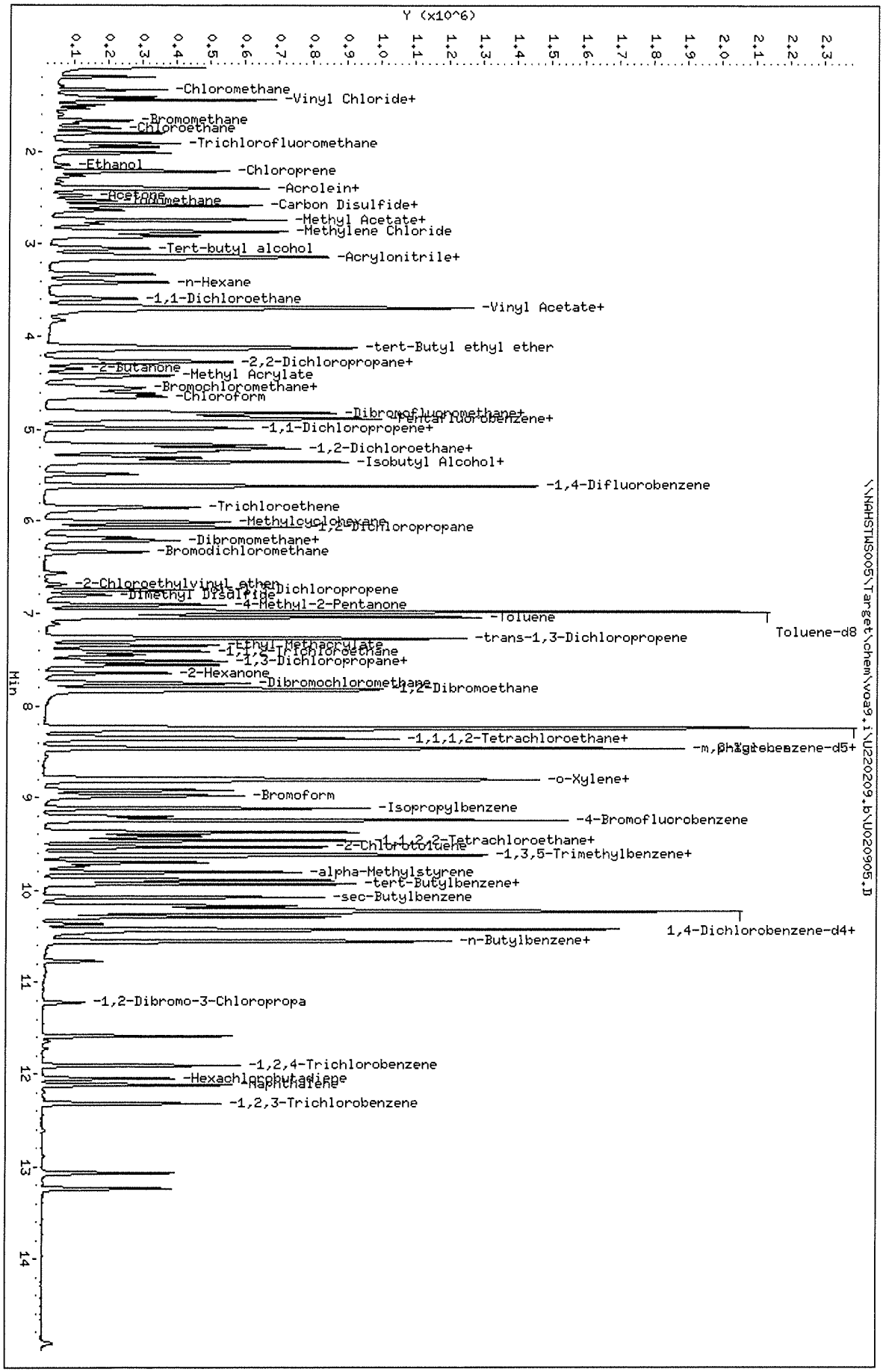
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020905.D
Lab Smp Id: VLCSW-220209 Client Smp ID: VLCSW-220209
Inj Date : 09-FEB-2022 11:30
Operator : PC Inst ID: VOA9.i
Smp Info : VLCSW-220209;VLCSW-220209;3;;LCS
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220209.b\8260C.m
Meth Date : 15-Feb-2022 09:09 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.883	(1.000)	585757	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	989414	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	891365	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	443670	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.168	5.164	(1.058)	410145	53.9836	53.98
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	424502	51.1119	51.11
$	30 Dibromofluoromethane	113	4.819	4.815	(0.987)	308285	51.4758	51.47
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1153767	50.5027	50.50
	53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	110205	19.6166	19.61
	11 1,1-Dichloroethene	96	2.394	2.386	(0.490)	114894	20.8912	20.89
	33 1,2-Dichloroethane	62	5.246	5.243	(0.935)	213333	21.5015	21.50
	27 cis-1,2-Dichloroethene	96	4.276	4.272	(0.876)	148900	19.6188	19.61
	17 Methylene Chloride	84	2.862	2.858	(0.586)	141576	20.6460	20.64
	38 Trichloroethene	130	5.850	5.850	(1.042)	134819	19.3433	19.34
	5 Vinyl Chloride	62	1.415	1.408	(0.290)	183014	20.4445	20.44



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020905.D
Date : 09-FEB-2022 11:30
Client ID: VLCSW-220209
Sample Info: VLCSW-220209;VLCSW-220209;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020907.D Page 1
Report Date: 15-Feb-2022 09:09

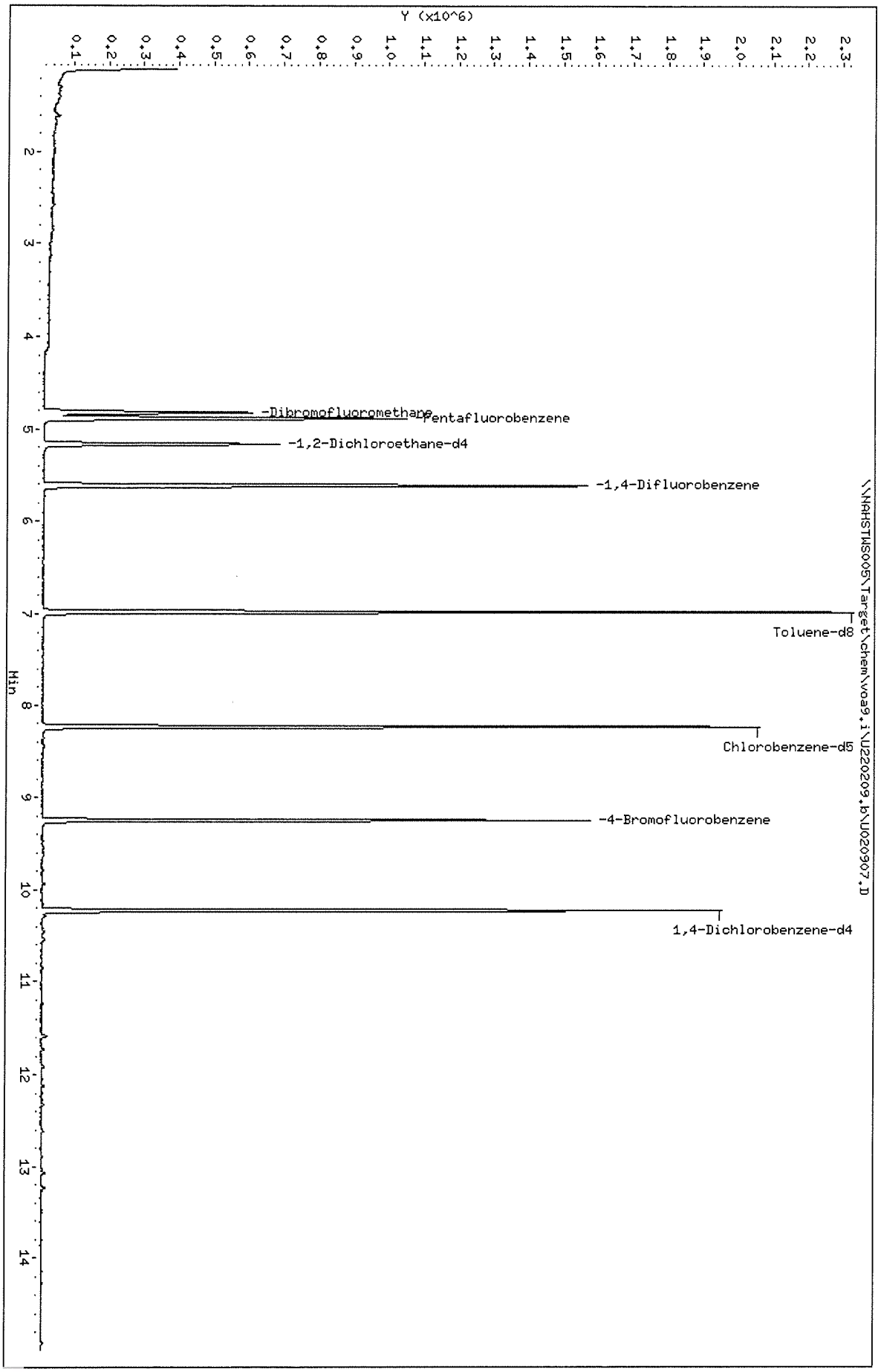
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020907.D
Lab Smp Id: VBLKW-220209 Client Smp ID: VBLKW-220209
Inj Date : 09-FEB-2022 12:15
Operator : PC Inst ID: VOA9.i
Smp Info : VBLKW-220209;VBLKW-220209;3;;BLANK
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220209.b\8260C.m
Meth Date : 15-Feb-2022 09:09 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.883	4.883	(1.000)	644228	50.0000	
*	36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1054941	50.0000	
*	47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	928125	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	10.224	10.225	(1.000)	443579	50.0000	
$	35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	429151	51.2937	51.29
$	69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	438084	50.6471	50.64
$	30 Dibromofluoromethane	113	4.819	4.815	(0.987)	329655	50.0244	50.02
$	48 Toluene-d8	98	6.978	6.978	(0.847)	1266192	53.2286	53.22



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020907.D
Date : 09-FEB-2022 12:15
Client ID: VBLKW-220209
Sample Info: VBLKW-220209;VBLKW-220209;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020913.D Page 1
Report Date: 15-Feb-2022 09:09

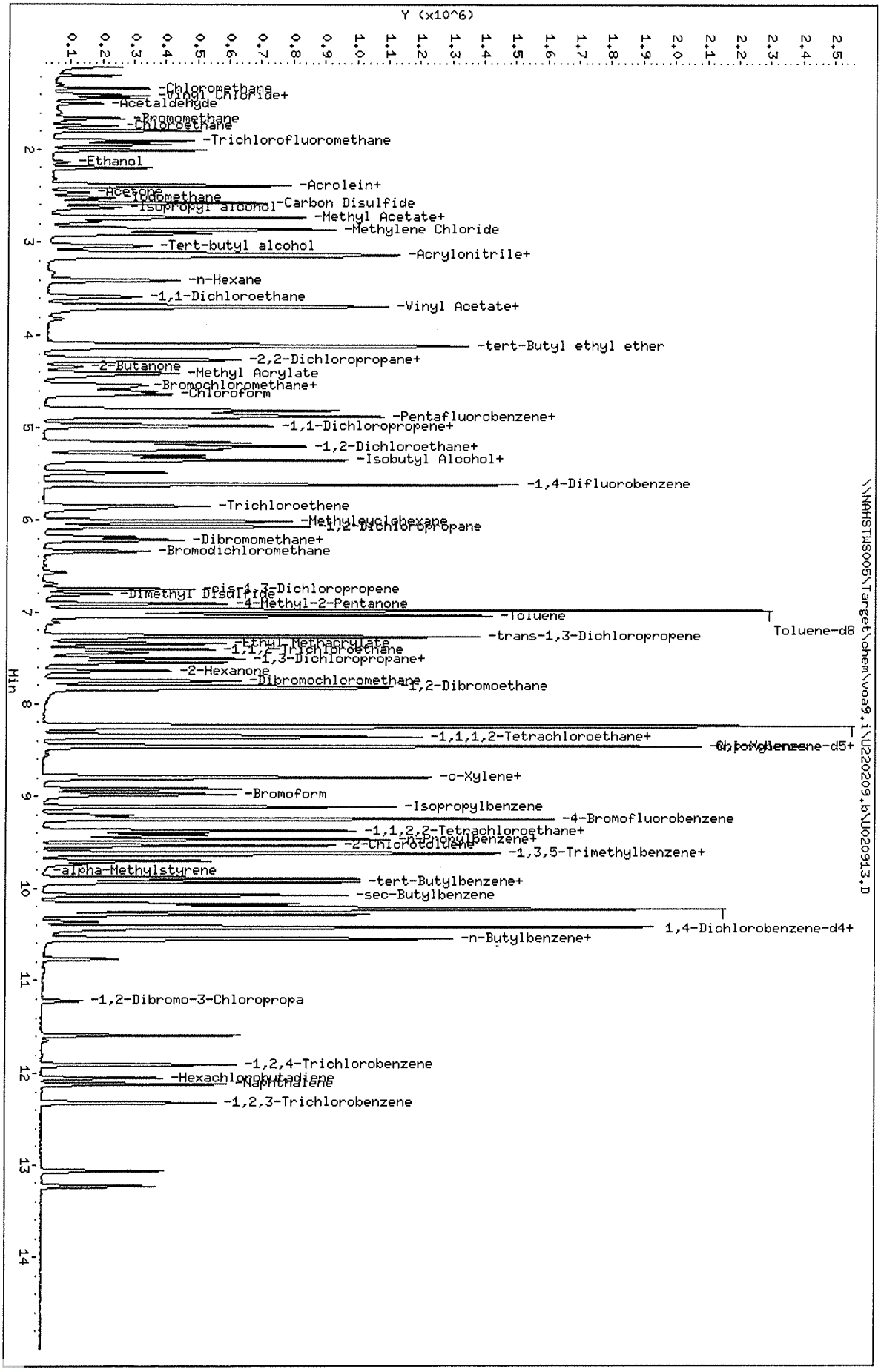
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020913.D
Lab Smp Id: HS22011297-15MS Client Smp ID: HS22011297-15MS
Inj Date : 09-FEB-2022 14:28
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011297-15MS;HS22011297-15MS;3;;MS
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220209.b\8260C.m
Meth Date : 15-Feb-2022 09:09 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 13 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.879	4.883	(1.000)	624105	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1023319	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	916461	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.225	10.225	(1.000)	459835	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	414735	51.1657	51.16
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	453257	53.1274	53.12
$ 30 Dibromofluoromethane	113	4.815	4.815	(0.987)	320915	50.2725	50.27
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1236531	52.6433	52.64
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	120145	20.8003	20.80
11 1,1-Dichloroethene	96	2.386	2.386	(0.489)	133350	22.7572	22.75
33 1,2-Dichloroethane	62	5.243	5.243	(0.934)	235283	22.9282	22.92
27 cis-1,2-Dichloroethene	96	4.268	4.272	(0.875)	161747	20.0020	20.00
17 Methylene Chloride	84	2.855	2.858	(0.585)	157554	21.6267	21.62
38 Trichloroethene	130	5.850	5.850	(1.042)	150943	20.9391	20.93
5 Vinyl Chloride	62	1.408	1.408	(0.289)	191534	20.0816	20.08



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020913.D
Date : 09-FEB-2022 14:28
Client ID: HS22011297-15MS
Sample Info: HS22011297-15MS;HS22011297-15MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020914.D Page 1
Report Date: 15-Feb-2022 09:09

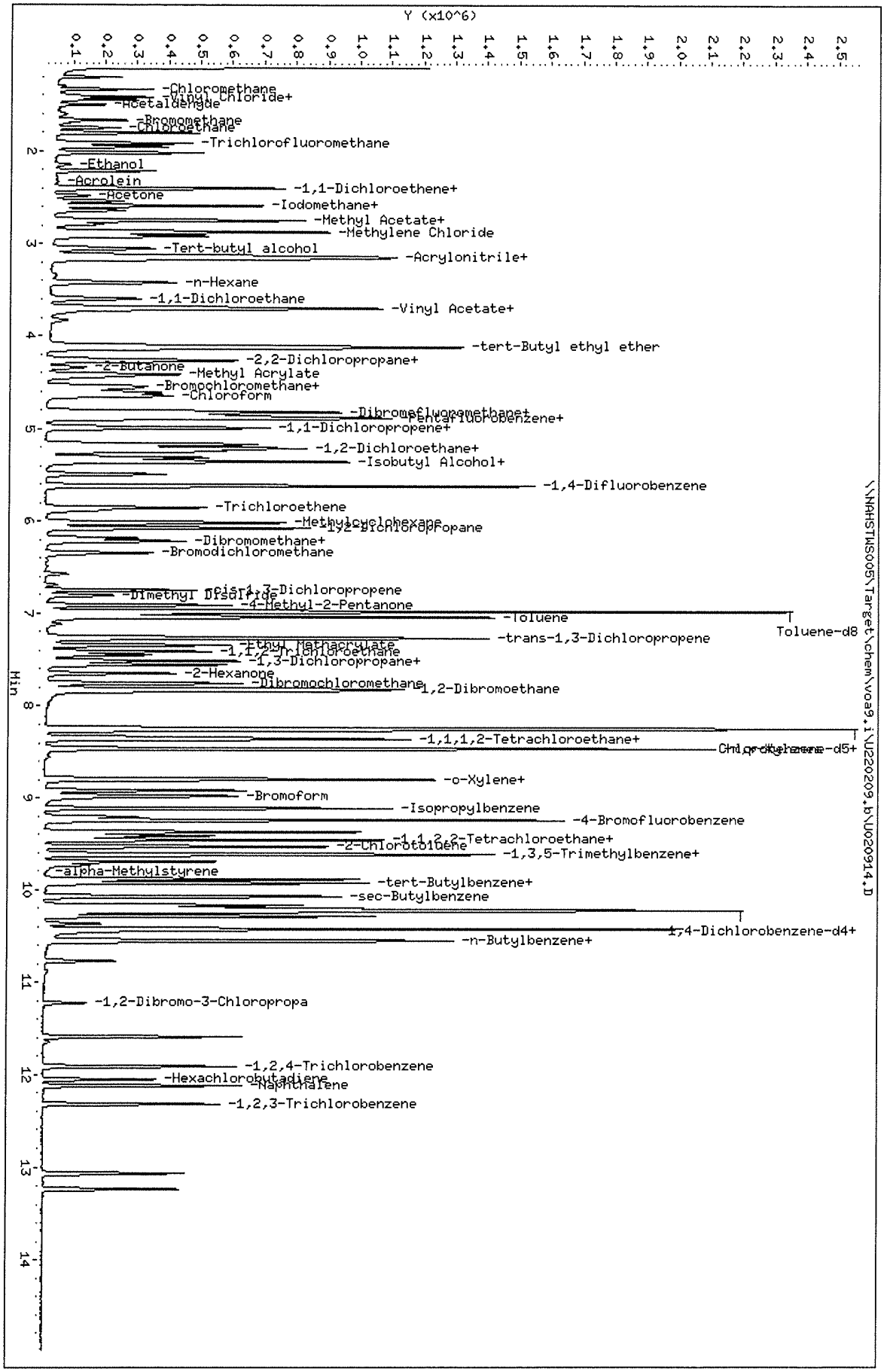
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020914.D
Lab Smp Id: HS22011297-15MSD Client Smp ID: HS22011297-15MSD
Inj Date : 09-FEB-2022 14:50
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011297-15MSD;HS22011297-15MSD;3;;MSD
Misc Info : 180315V9;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220209.b\8260C.m
Meth Date : 15-Feb-2022 09:09 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 13 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.886	4.883	(1.000)	642194	50.0000	
* 36 1,4-Difluorobenzene	114	5.617	5.614	(1.000)	1032392	50.0000	
* 47 Chlorobenzene-d5	117	8.241	8.238	(1.000)	936125	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.225	(1.000)	465998	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.167	5.164	(1.058)	421582	50.5293	50.52
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	465281	53.3973	53.39
$ 30 Dibromofluoromethane	113	4.822	4.815	(0.987)	323359	49.2106	49.21
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1260172	52.5228	52.52
53 1,1,2-Trichloroethane	83	7.413	7.409	(0.899)	121815	20.6464	20.64
11 1,1-Dichloroethene	96	2.397	2.386	(0.491)	129007	21.3959	21.39
33 1,2-Dichloroethane	62	5.246	5.243	(0.934)	226712	21.8988	21.89
27 cis-1,2-Dichloroethene	96	4.275	4.272	(0.875)	164412	19.7589	19.75
17 Methylene Chloride	84	2.865	2.858	(0.587)	152017	20.1914	20.19
38 Trichloroethene	130	5.853	5.850	(1.042)	146792	20.1843	20.18
5 Vinyl Chloride	62	1.419	1.408	(0.290)	185241	18.8747	18.87



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020914.D
Date : 09-FEB-2022 14:50
Client ID: HS220411297-15MSD
Sample Info: HS220411297-15MSD;HS220411297-15MSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020915.D Page 1
Report Date: 15-Feb-2022 09:07

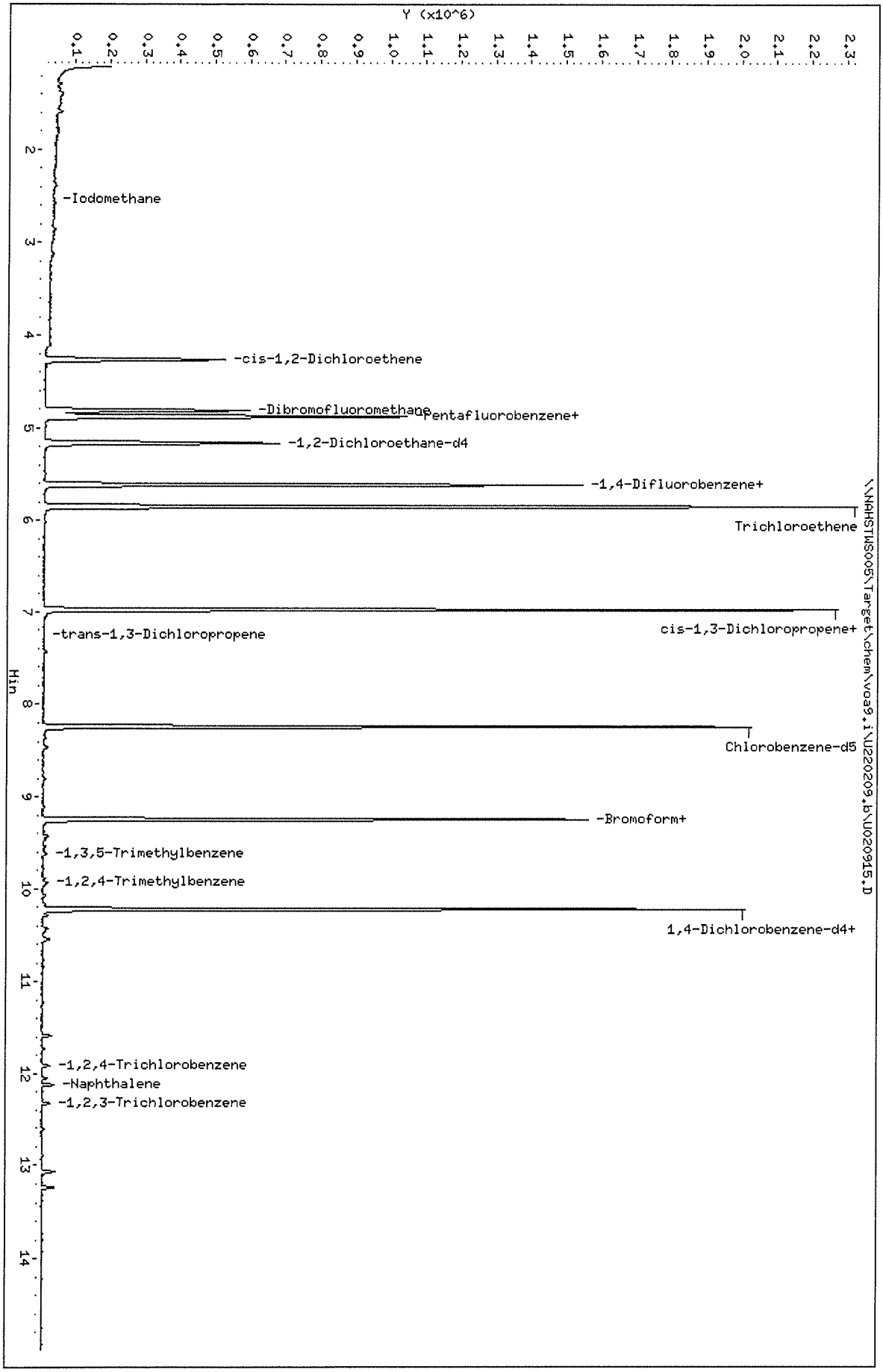
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020915.D
Lab Smp Id: HS22011279-01 Client Smp ID: HS22011279-01
Inj Date : 09-FEB-2022 15:12
Operator : PC Inst ID: VOA9.i
Smp Info : HS22011279-01;HS22011279-01;;;
Misc Info : 180315V9;WATER;0;25;
Comment :
Method : \\nahstws005\Target\chem\voa9.i\U220209.b\8260C.m
Meth Date : 15-Feb-2022 09:05 kori.bagsb Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 14
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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	4.879	4.879	(1.000)	639096	50.0000	
* 36 1,4-Difluorobenzene	114	5.614	5.614	(1.000)	1037176	50.0000	
* 47 Chlorobenzene-d5	117	8.238	8.238	(1.000)	934990	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	445785	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.164	5.164	(1.058)	425848	51.3080	51.30
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	438604	50.3273	50.32
$ 30 Dibromofluoromethane	113	4.815	4.815	(0.987)	325164	49.7342	49.73
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1243240	51.8800	51.87
27 cis-1,2-Dichloroethene	96	4.268	4.272	(0.875)	224294	27.0861	677.15
38 Trichloroethene	130	5.850	5.850	(1.042)	669399	91.6197	2290.49



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020915.D
Date : 09-FEB-2022 15:12
Client ID: HS22011279-01
Sample Info: HS22011279-01;HS22011279-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020915.D

Date : 09-FEB-2022 15:12

Client ID: HS22011279-01

Instrument: VOA9.i

Sample Info: HS22011279-01;HS22011279-01;;;

Purge Volume: 5.0

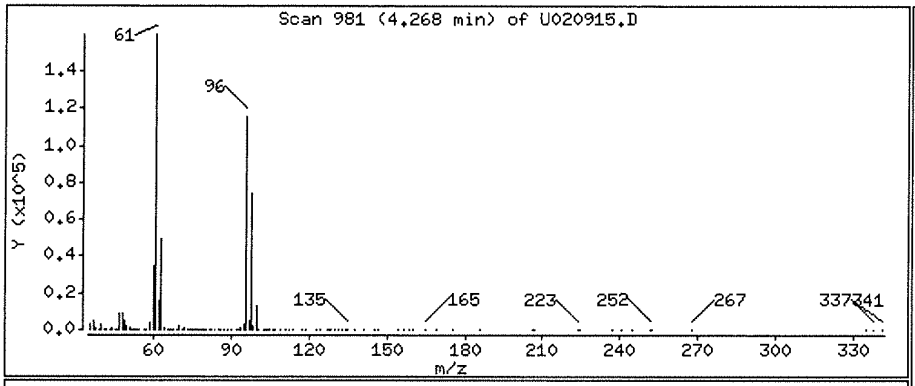
Operator: PC

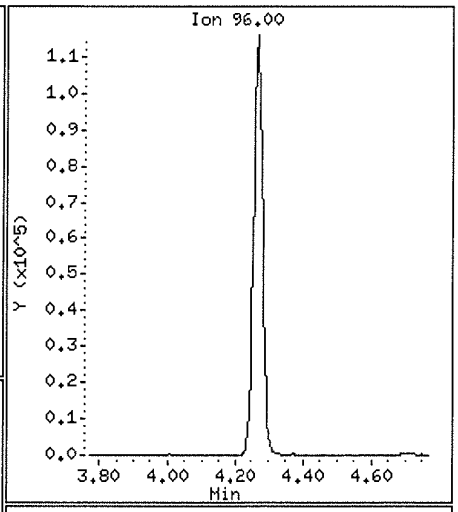
Column phase: DB624

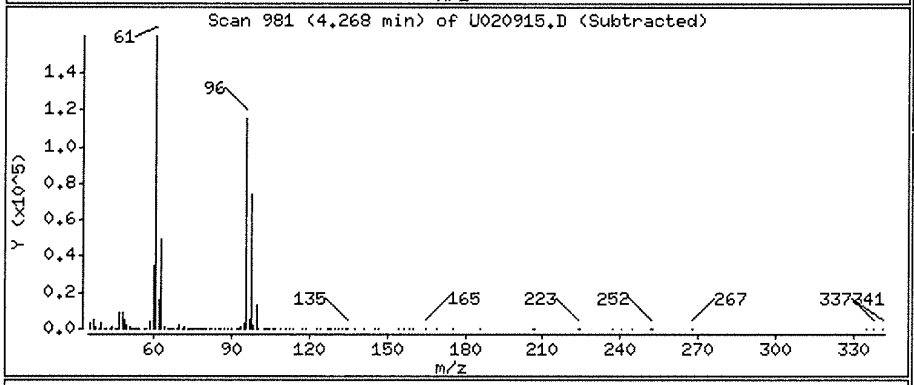
Column diameter: 0.18

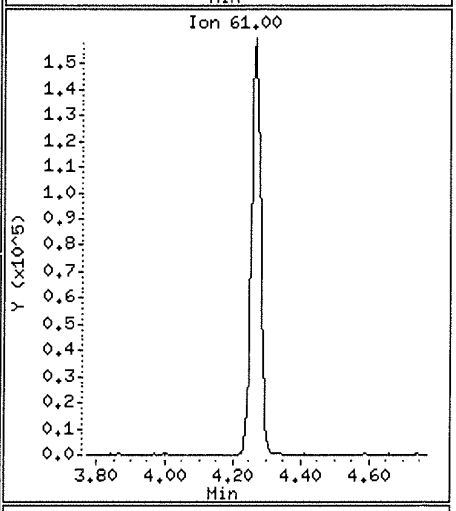
27 cis-1,2-Dichloroethene

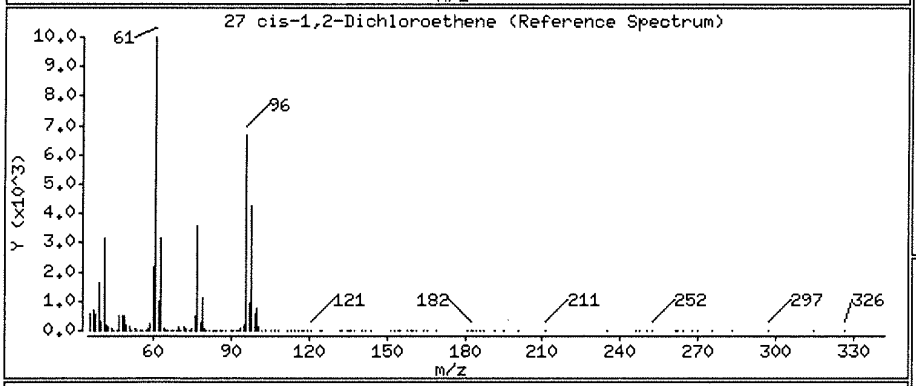
Concentration: 677.15 ug/l

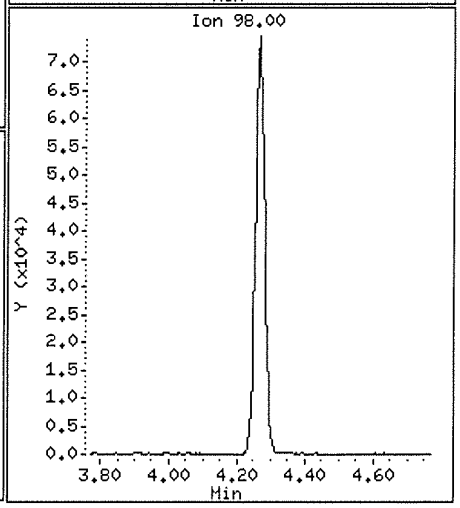


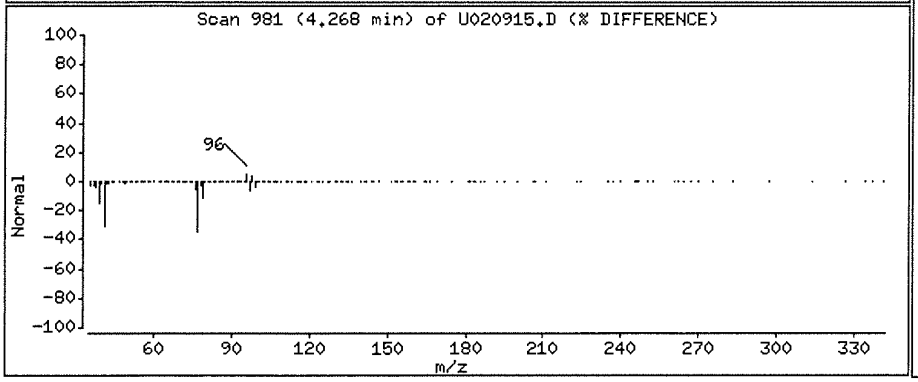












Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020915.D

Date : 09-FEB-2022 15:12

Client ID: HS22011279-01

Instrument: VOA9.i

Sample Info: HS22011279-01;HS22011279-01;;;

Purge Volume: 5.0

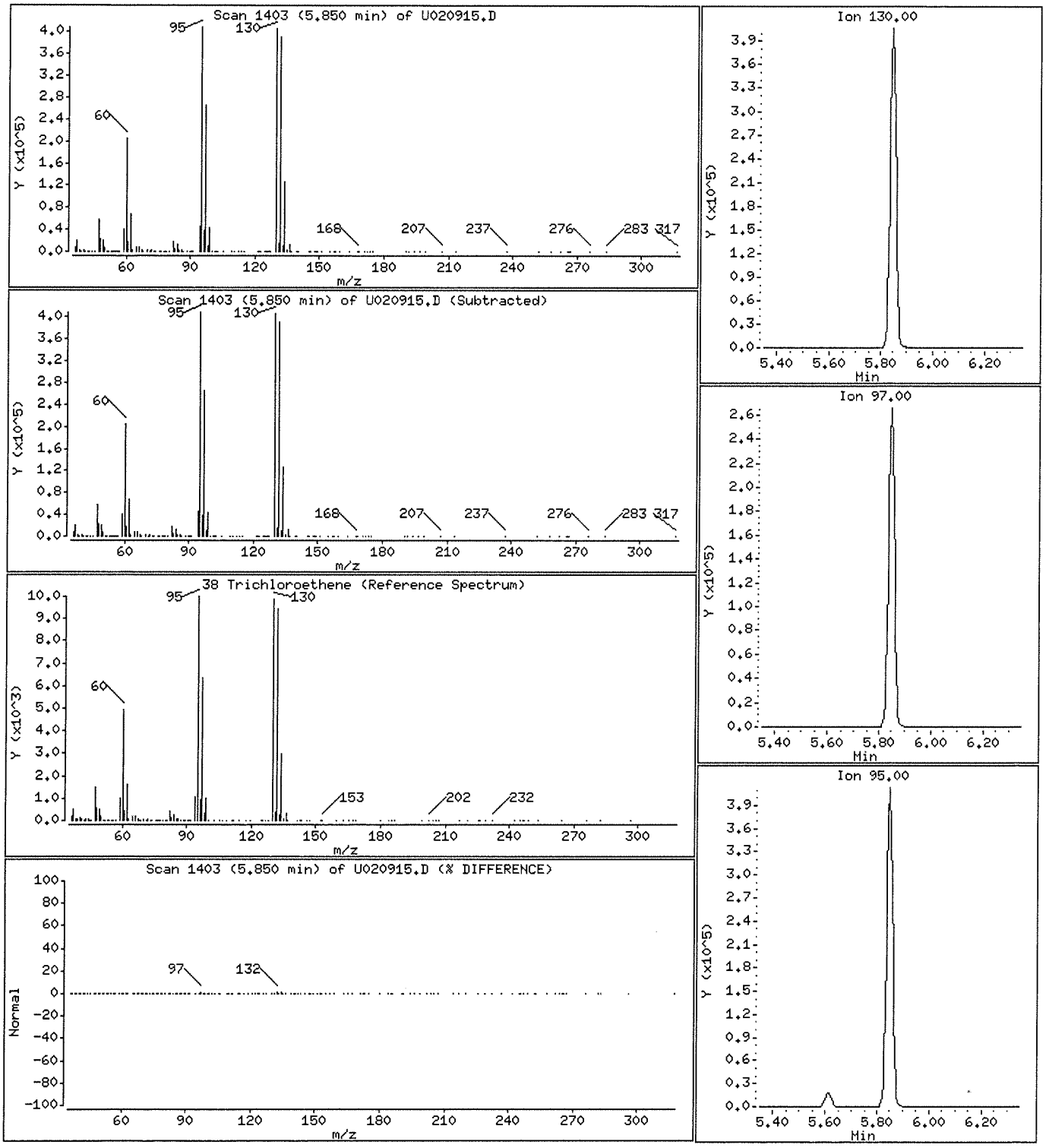
Operator: PC

Column phase: DB624

Column diameter: 0.18

38 Trichloroethene

Concentration: 2290.49 ug/l



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020916.D Page 1
Report Date: 15-Feb-2022 09:09

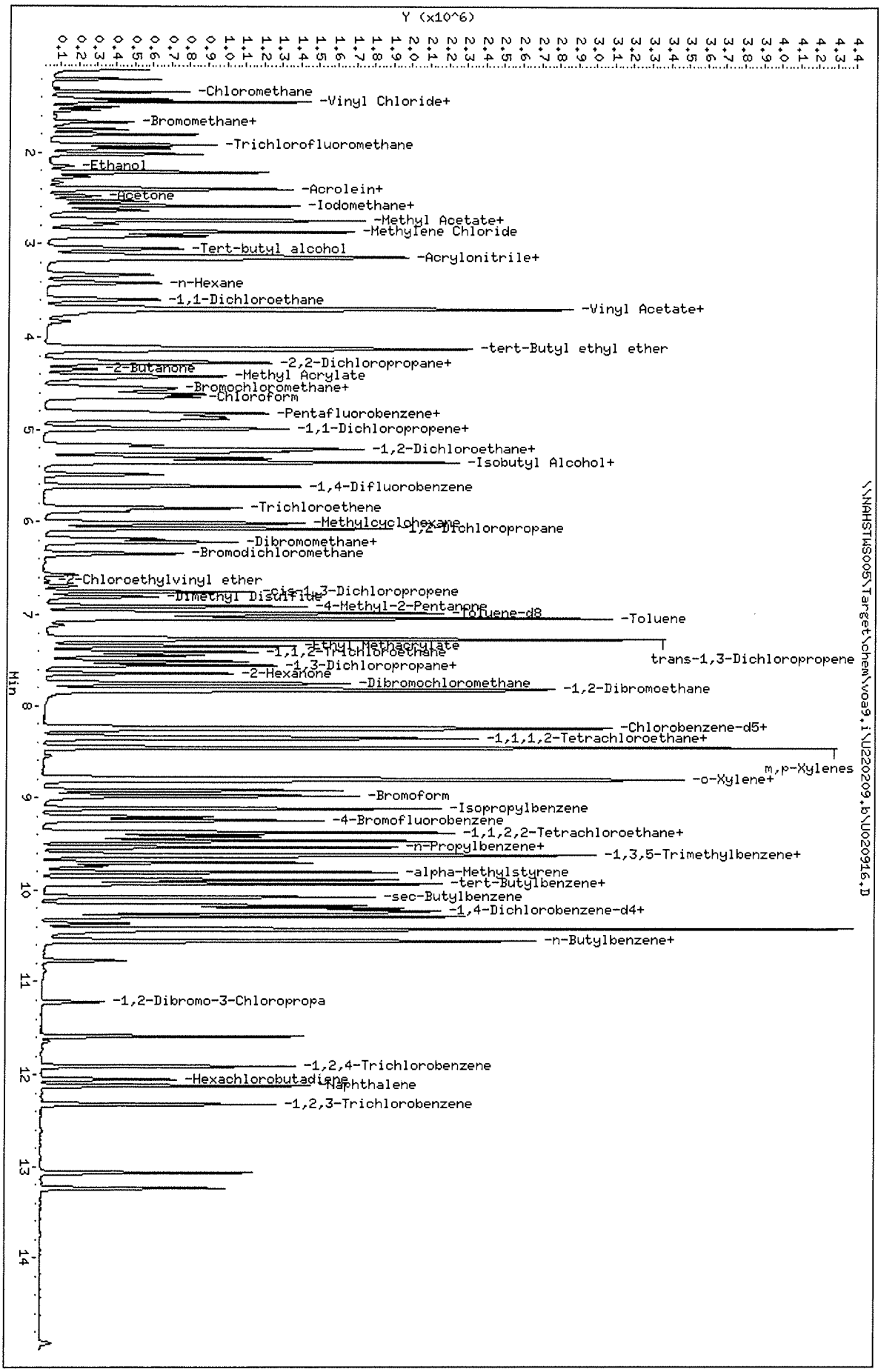
ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020916.D
Lab Smp Id: CCV-END Client Smp ID: CCV-END
Inj Date : 09-FEB-2022 15:35
Operator : PC Inst ID: VOA9.i
Smp Info : VSTD050-END;VSTD050-END;2;;;
Misc Info : 180315V9;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa9.i\U220209.b\8260C.m
Meth Date : 15-Feb-2022 09:09 VOA9.i Quant Type: ISTD
Cal Date : 21-JAN-2022 13:56 Cal File: U012108.D
Als bottle: 15 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 0CBI-VOA_short.su
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)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.886	4.886	(1.000)	542416	50.0000	
* 36 1,4-Difluorobenzene	114	5.617	5.617	(1.000)	950636	50.0000	
* 47 Chlorobenzene-d5	117	8.241	8.241	(1.000)	879500	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	10.224	10.224	(1.000)	430300	50.0000	
$ 35 1,2-Dichloroethane-d4	65	5.167	5.167	(1.058)	409476	50.0000	58.30
$ 69 4-Bromofluorobenzene	95	9.246	9.246	(1.122)	425560	50.0000	51.95
$ 30 Dibromofluoromethane	113	4.823	4.823	(0.987)	307834	50.0000	55.57
$ 48 Toluene-d8	98	6.978	6.978	(0.847)	1139113	50.0000	50.53
53 1,1,2-Trichloroethane	83	7.409	7.409	(0.899)	268512	50.0000	48.44
11 1,1-Dichloroethene	96	2.393	2.393	(0.490)	249413	50.0000	48.97
33 1,2-Dichloroethane	62	5.246	5.246	(0.934)	499281	50.0000	52.37
27 cis-1,2-Dichloroethene	96	4.275	4.275	(0.875)	346718	50.0000	49.33
17 Methylene Chloride	84	2.862	2.862	(0.586)	332124	50.0000	54.45
38 Trichloroethene	130	5.850	5.850	(1.041)	310757	50.0000	46.40
5 Vinyl Chloride	62	1.419	1.419	(0.290)	408152	50.0000	49.23



Data File: \\NAHSTWS005\Target\chem\voa9.i\U220209.b\U020916.D
Date : 09-FEB-2022 15:35
Client ID: CCV-END
Sample Info: VSTD050-END;VSTD050-END;2;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA9.i
Operator: PC
Column diameter: 0.18

HS22011279 RSK175

ALS WO# HS22011279

FID04 -Logbook

Batch: 26730
Date: 01-24-2017
Method: RSK 175 ICAL
Comments: Target Sequence 170124

Analyst: Nosa Izekor
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	p
1	ICAL1	CALIB_1	01-24-2017 09:06 am	1.00	0.00 mL	0.00 mL	001.D	Liquid	Y	N
2	ICAL2	CALIB_2	01-24-2017 09:30 am	1.00	0.00 mL	0.00 mL	002.D	Liquid	Y	N
3	ICAL3	CALIB_3	01-24-2017 09:59 am	1.00	0.00 mL	0.00 mL	003.D	Liquid	Y	N
4	ICAL4	CALIB_4	01-24-2017 10:15 am	1.00	0.00 mL	0.00 mL	004.D	Liquid	Y	N
5	ICAL5	CALIB_5	01-24-2017 10:39 am	1.00	0.00 mL	0.00 mL	005.D	Liquid	Y	N
6	ICAL6	CALIB_6	01-24-2017 10:57 am	1.00	0.00 mL	0.00 mL	006.D	Liquid	Y	N
7	ICAL7	CALIB_7	01-24-2017 11:13 am	1.00	0.00 mL	0.00 mL	007.D	Liquid	Y	N
8	ICV	METHSPIKI	01-24-2017 12:05 pm	1.00	0.00 mL	0.00 mL	008.D	Liquid	Y	N
9	LCS-170124	LCS	01-24-2017 12:24 pm	1.00	0.00 mL	0.00 mL	009.D	Liquid	Y	N
10	LCSD-170124	LCSD	01-24-2017 12:40 pm	1.00	0.00 mL	0.00 mL	010.D	Liquid	Y	N
11	MBLK-170124	MBLK	01-24-2017 12:57 pm	1.00	0.00 mL	0.00 mL	011.D	Liquid	Y	N
12	HS17010778-01	SAMP	01-24-2017 01:14 pm	1.00	0.00 mL	0.00 mL	012.D	Liquid	Y	N
13	HS17010779-01	SAMP	01-24-2017 01:31 pm	1.00	0.00 mL	0.00 mL	013.D	Liquid	Y	N
14	HS17010779-01DUP	SAMP	01-24-2017 01:47 pm	1.00	0.00 mL	0.00 mL	014.D	Liquid	Y	N
15	CCV	CCV	01-24-2017 02:01 pm	1.00	0.00 mL	0.00 mL	015.D	Liquid	Y	N

Chemical	Value
ICAL STD ID	30010700217
ICV STD ID	30010700610

FORM 3
WATER GASES METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Matrix Spike - ENG SC Sample No.: ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
Ethene	16.800	19.090	114	75-125
Methane	9.647	9.597	99	75-125
Ethane	18.043	19.657	109	75-125
Propane	26.463	27.238	103	75-125
N-Butane	34.955	36.010	103	75-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

_____

FORM III GASES

FORM 6
GASES INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Instrument ID: FID-4 Calibration Date(s): 01/24/17 01/24/17

Column: RTX-PLOT ID: 0.53 (mm) Calibration Time(s): 0906 1113

LAB FILE ID: RF10: 001 RF25: 002 RF50: 003
RF100: 004 RF250: 005 RF500: 006

COMPOUND	RF10	RF25	RF50	RF100	RF250	RF500
Ethene	535.608	567.359	564.985	516.024	665.282	425.678
Methane	968.912	978.238	1019.699	880.798	960.713	930.704
Ethane	602.493	670.177	658.908	597.201	808.513	817.630
Propane	500	1279	2602	4785	18294	38286
N-Butane	438	936	2034	3864	18446	42817

FORM VI GASES

FORM 6
GASES INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS2201127

Instrument ID: FID-4 Calibration Date(s): 01/24/17 01/24/17

Column: RTX-PLOT ID: 0.53 (mm) Calibration Time(s): 0906 1113

RF1000: 007

COMPOUND	RF1000	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MA
Ethene	828.858	AVRG		586.256273		21.932	
Methane	1081.580	AVRG		974.377787		6.550	
Ethane	999.335	AVRG		736.322546		19.885	
Propane	96509	2ORDR	0.97987006	1.529e-003	-4.58e-009	0.9991365	0
N-Butane	114164	2ORDR	2.46870151	1.834e-003	-5.54e-009	0.9980766	0

FORM VI GASES

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\001.D
Lab Smp Id: ICAL1 Client Smp ID: ICAL1
Inj Date : 24-JAN-2017 09:06
Operator : JA Inst ID: FID-4.i
Smp Info : ICAL1;ICAL1;;;
Misc Info :
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 09:06 Cal File: 001.D
Als bottle: 1 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

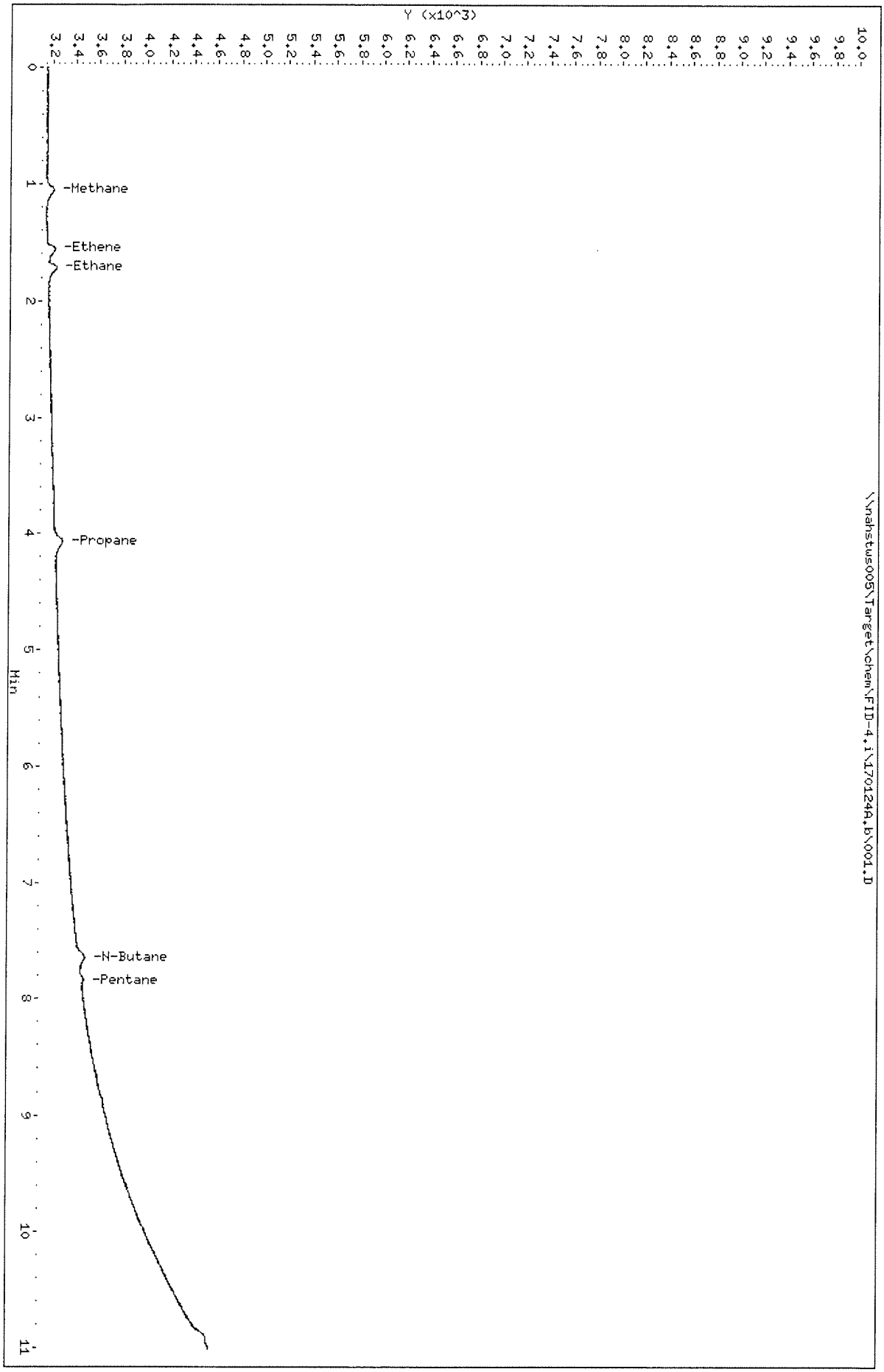
Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	ON-COL (ug/L)
1 Methane	1.043	1.030	0.013	374	0.38600	0.383(a)
2 Ethene	1.553	1.556	-0.003	361	0.67400	0.615(a)
3 Ethane	1.716	1.723	-0.007	435	0.72200	0.590(a)
4 Propane	4.073	4.113	-0.040	500	1.05900	1.743
5 N-Butane	7.640	7.690	-0.050	438	1.39800	3.271

QC Flag Legend

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

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\001.D
Date : 24-JAN-2017 09:06
Client ID: ICAL1
Sample Info: ICAL1;ICAL1;;;
Column phase: Rtx-PLOT

Instrument: FID-4.i
Operator: JA
Column diameter: 0.53



Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\002.D Page 1
Report Date: 27-Dec-2021 13:16

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\002.D
Lab Smp Id: ICAL2 Client Smp ID: ICAL2
Inj Date : 24-JAN-2017 09:30
Operator : MA Inst ID: FID-4.i
Smp Info : ICAL2;ICAL2;;;
Misc Info : ;1;0;1
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 09:59 Cal File: 003.D
Als bottle: 2 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Methane	1.023	1.030	-0.007	944	0.96500	0.968
2 Ethene	1.560	1.556	0.004	956	1.68500	1.630
3 Ethane	1.723	1.723	0.000	1209	1.80400	1.641
4 Propane	4.123	4.113	0.010	1279	2.64600	2.927
5 N-Butane	7.716	7.690	0.026	936	3.49600	4.180

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\002.D

Date : 24-JAN-2017 09:30

Client ID: ICAL2

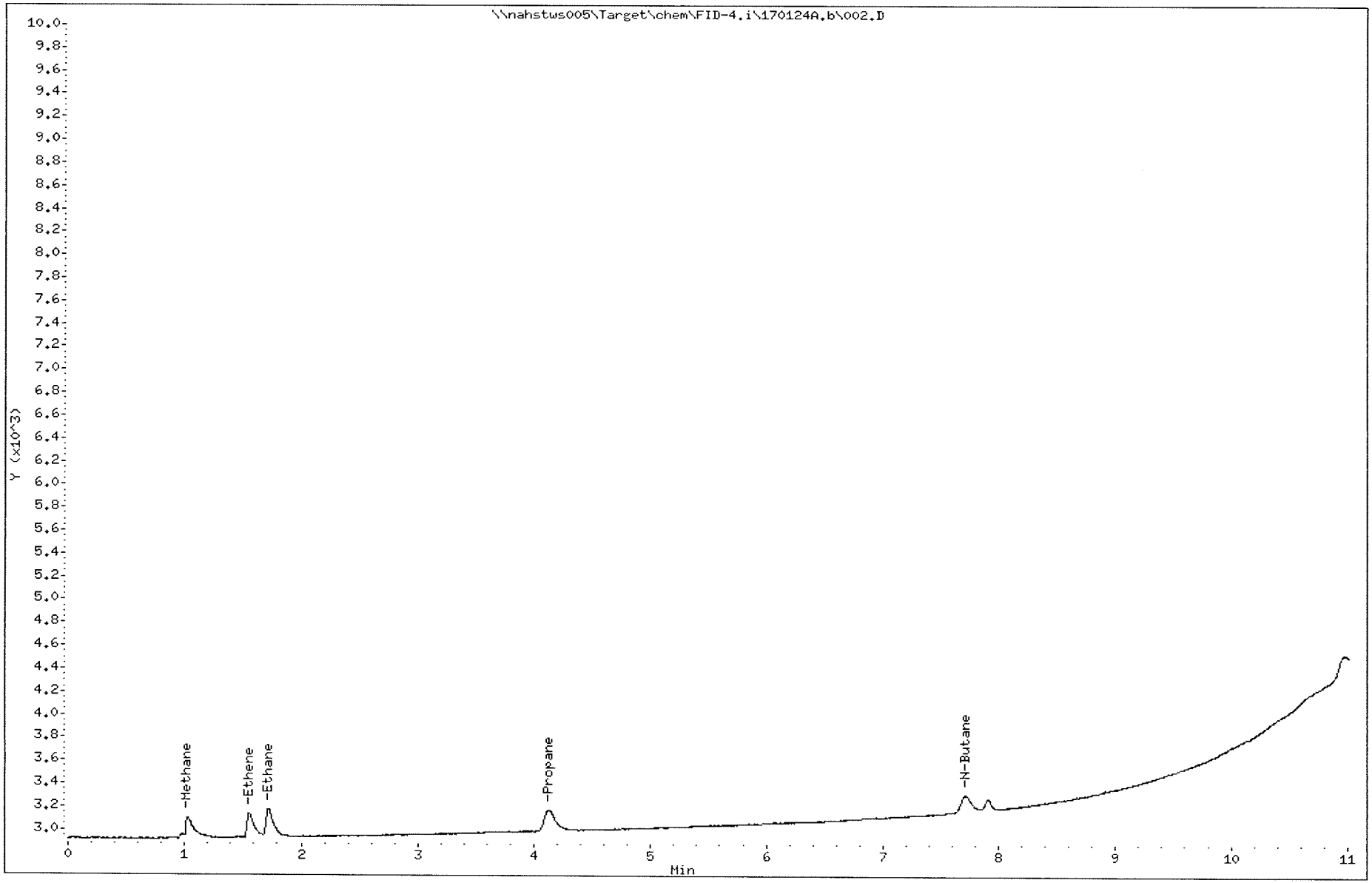
Sample Info: ICAL2;ICAL2;;;

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: MA

Column diameter: 0.53



Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\003.D Page 1
Report Date: 27-Dec-2021 13:16

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\003.D
Lab Smp Id: ICAL3 Client Smp ID: ICAL3
Inj Date : 24-JAN-2017 09:59
Operator : MA Inst ID: FID-4.i
Smp Info : ICAL3;ICAL3;;;
Misc Info : ;1;0;1
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 11:13 Cal File: 007.D
Als bottle: 3 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					AMOUNTS	
					CAL-AMT	ON-COL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	1.043	1.030	0.013	1967	1.92900	2.018
2 Ethene	1.570	1.556	0.014	1904	3.37000	3.247
3 Ethane	1.736	1.723	0.013	2378	3.60900	3.229
4 Propane	4.123	4.113	0.010	2602	5.29300	4.926
5 N-Butane	7.703	7.690	0.013	2034	6.99100	6.176

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\003.D

Date : 24-JAN-2017 09:59

Client ID: ICAL3

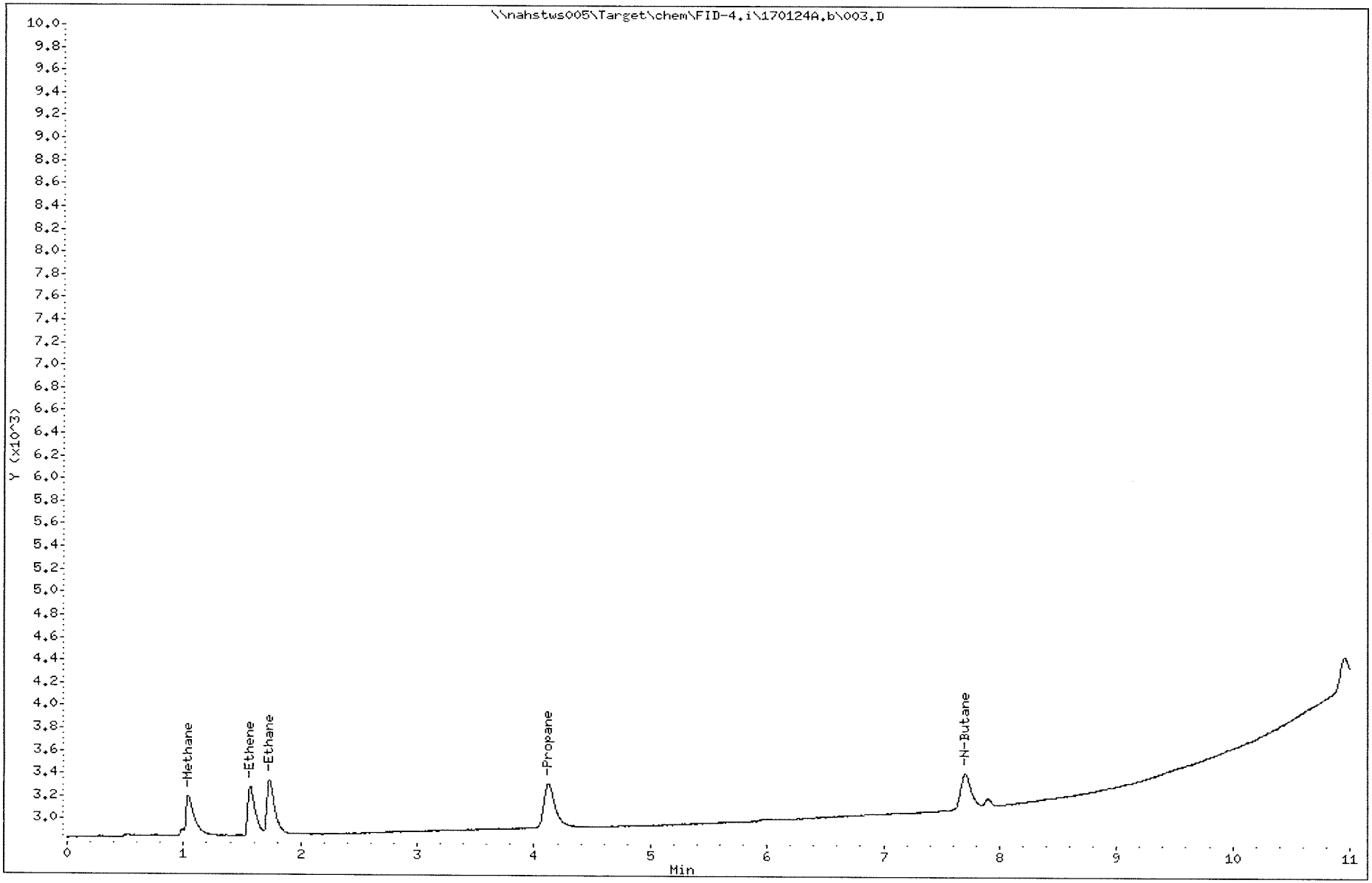
Sample Info: ICAL3;ICAL3;;;

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: MA

Column diameter: 0.53



Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\004.D Page 1
Report Date: 27-Dec-2021 13:16

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\004.D
Lab Smp Id: ICAL4 Client Smp ID: ICAL4
Inj Date : 24-JAN-2017 10:15
Operator : MA Inst ID: FID-4.i
Smp Info : ICAL4;ICAL4;;;
Misc Info : ;1;0;1
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 09:30 Cal File: 002.D
Als bottle: 4 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					AMOUNTS	
					CAL-AMT	ON-COL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	1.033	1.030	0.003	3399	3.85900	3.488
2 Ethene	1.563	1.556	0.007	3478	6.74000	5.932
3 Ethane	1.726	1.723	0.003	4310	7.21700	5.853
4 Propane	4.120	4.113	0.007	4785	10.5850	8.190
5 N-Butane	7.703	7.690	0.013	3864	13.9820	9.473(M)

QC Flag Legend

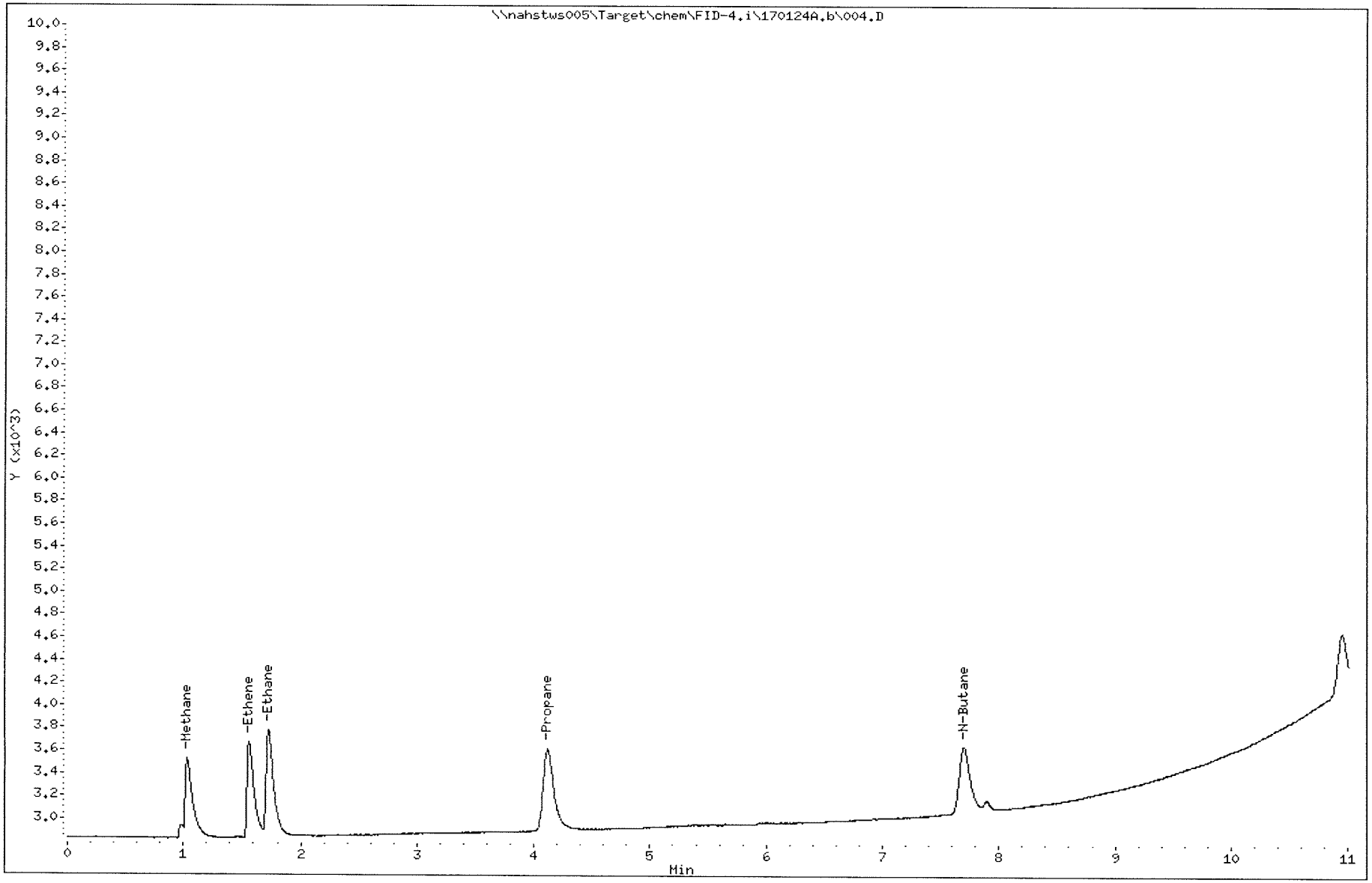
M - Compound response manually integrated.

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\004.D
Date : 24-JAN-2017 10:15
Client ID: ICAL4
Sample Info: ICAL4;ICAL4;;;

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: MA
Column diameter: 0.53



Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\005.D Page 1
Report Date: 27-Dec-2021 13:16

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\005.D
Lab Smp Id: ICAL5 Client Smp ID: ICAL5
Inj Date : 24-JAN-2017 10:39
Operator : MA Inst ID: FID-4.i
Smp Info : ICAL5;ICAL5;;;
Misc Info : ;1;0;1
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:39 Cal File: 005.D
Als bottle: 5 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	ON-COL (ug/L)
1 Methane	1.043	1.030	0.013	9268	9.64700	9.511
2 Ethene	1.570	1.556	0.014	11210	16.8500	19.121
3 Ethane	1.733	1.723	0.010	14588	18.0430	19.811
4 Propane	4.120	4.113	0.007	18294	26.4630	27.415
5 N-Butane	7.700	7.690	0.010	18446	34.9550	34.419(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\005.D

Date : 24-JAN-2017 10:39

Client ID: ICAL5

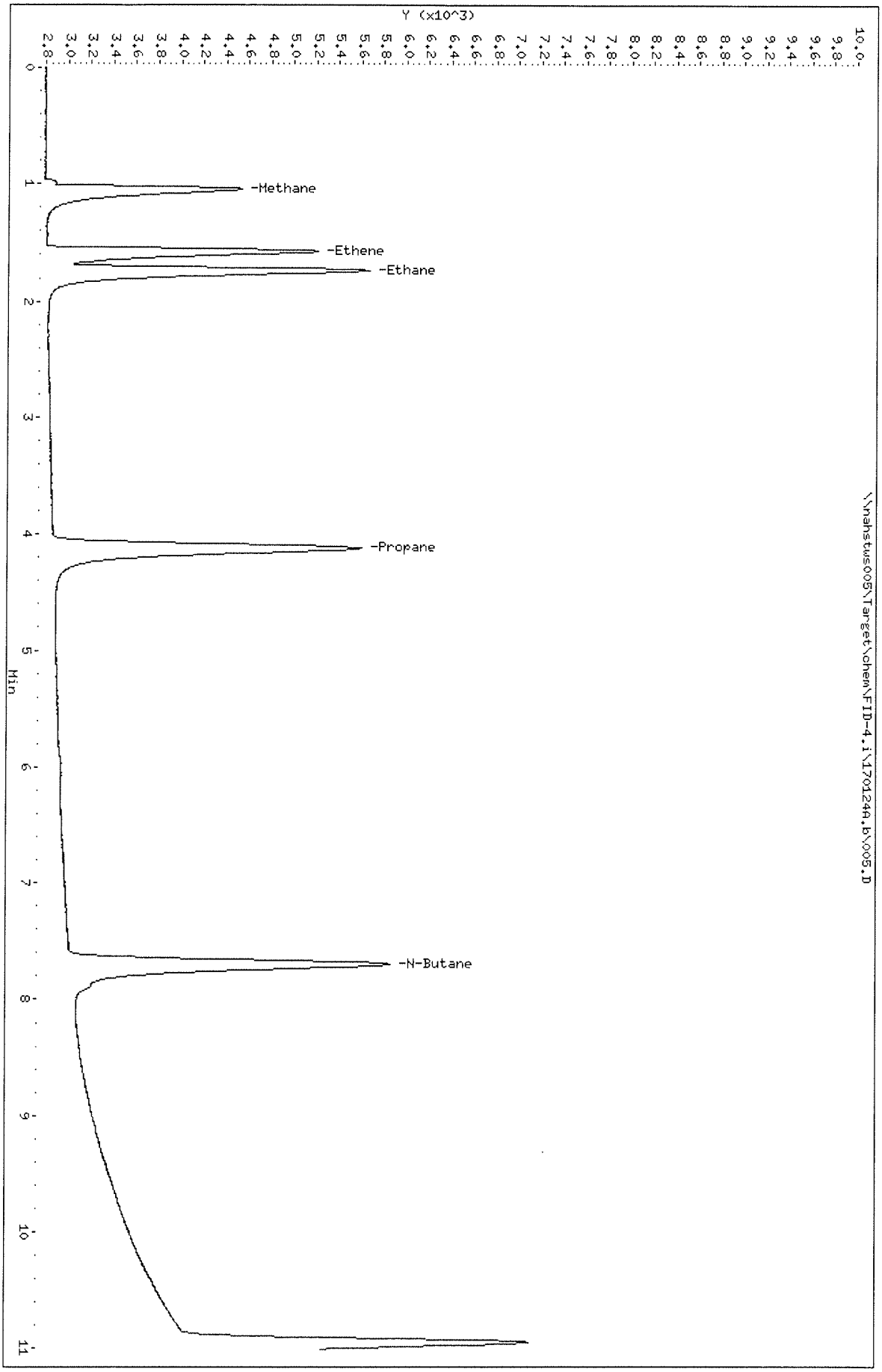
Sample Info: ICAL5;ICAL5;;;

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: MA

Column diameter: 0.53



Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\006.D Page 1
Report Date: 27-Dec-2021 13:16

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\006.D
Lab Smp Id: ICAL6 Client Smp ID: ICAL6
Inj Date : 24-JAN-2017 10:57
Operator : MA Inst ID: FID-4.i
Smp Info : ICAL6;ICAL6;;;
Misc Info : ;1;0;1
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:39 Cal File: 005.D
Als bottle: 6 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

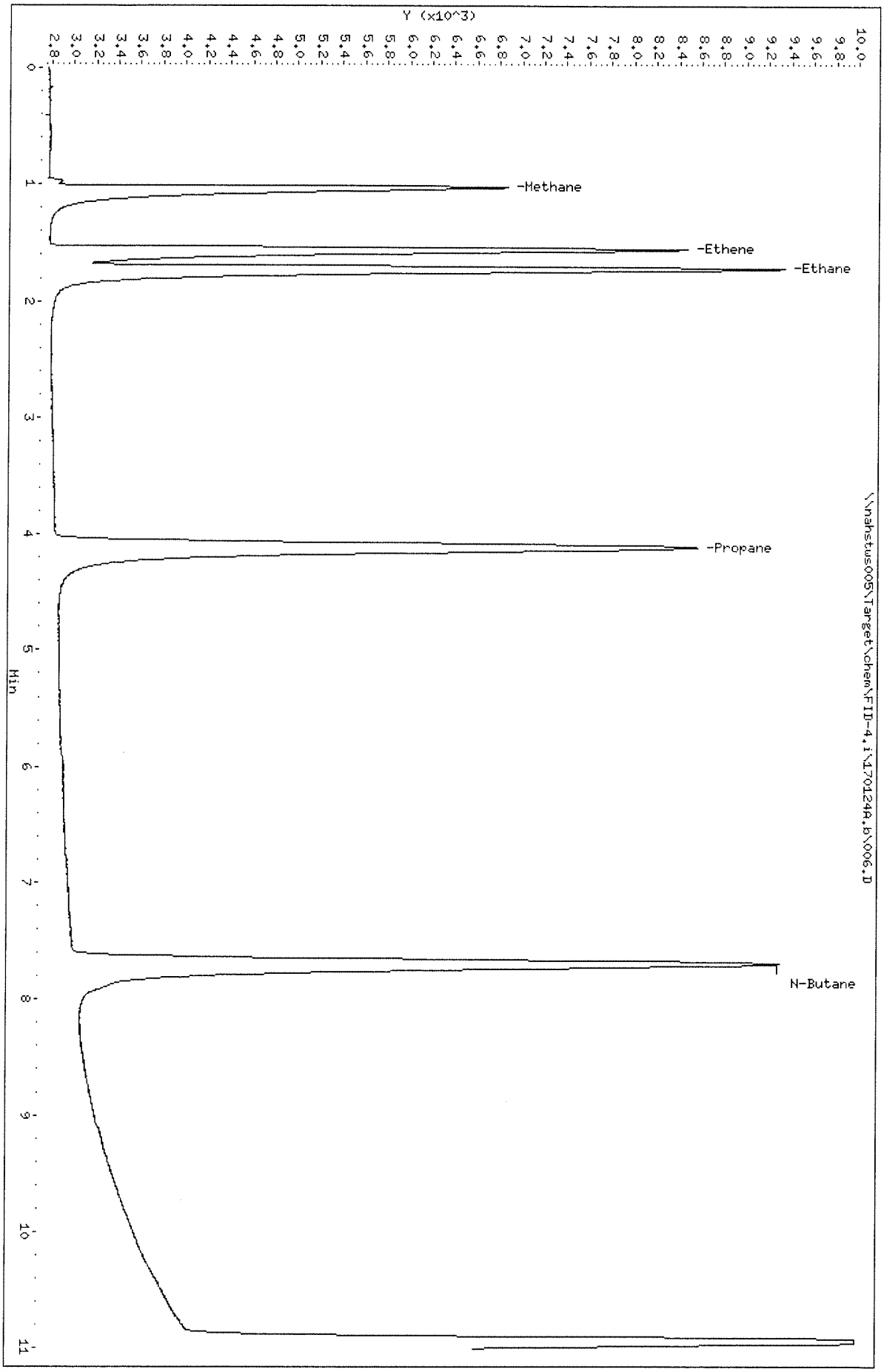
Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Methane	1.023	1.030	-0.007	17957	19.2940	18.429
2 Ethene	1.550	1.556	-0.006	22910	53.8200	39.078
3 Ethane	1.716	1.723	-0.007	29505	36.0860	40.070
4 Propane	4.110	4.113	-0.003	38286	52.9260	52.796
5 N-Butane	7.696	7.690	0.006	42817	69.9110	70.855

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\006.D
Date : 24-JAN-2017 10:57
Client ID: ICAL6
Sample Info: ICAL6;ICAL6;;;

Instrument: FID-4.i
Operator: MA
Column diameter: 0.53

Column phase: Rtx-PLOT



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\007.D
Lab Smp Id: ICAL7 Client Smp ID: ICAL7
Inj Date : 24-JAN-2017 11:13
Operator : MA Inst ID: FID-4.i
Smp Info : ICAL7;ICAL7;;;
Misc Info : ;1;0;1
Comment :
Method : \\nahstws005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 10:57 Cal File: 006.D
Als bottle: 7 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Methane	1.030	1.030	0.000	41736	38.5880	42.833(A)
2 Ethene	1.556	1.556	0.000	55865	67.4000	95.291(A)
3 Ethane	1.723	1.723	0.000	72124	72.1720	97.951(A)
4 Propane	4.113	4.113	0.000	96509	105.852	105.844
5 N-Butane	7.690	7.690	0.000	114164	139.821	139.707

QC Flag Legend

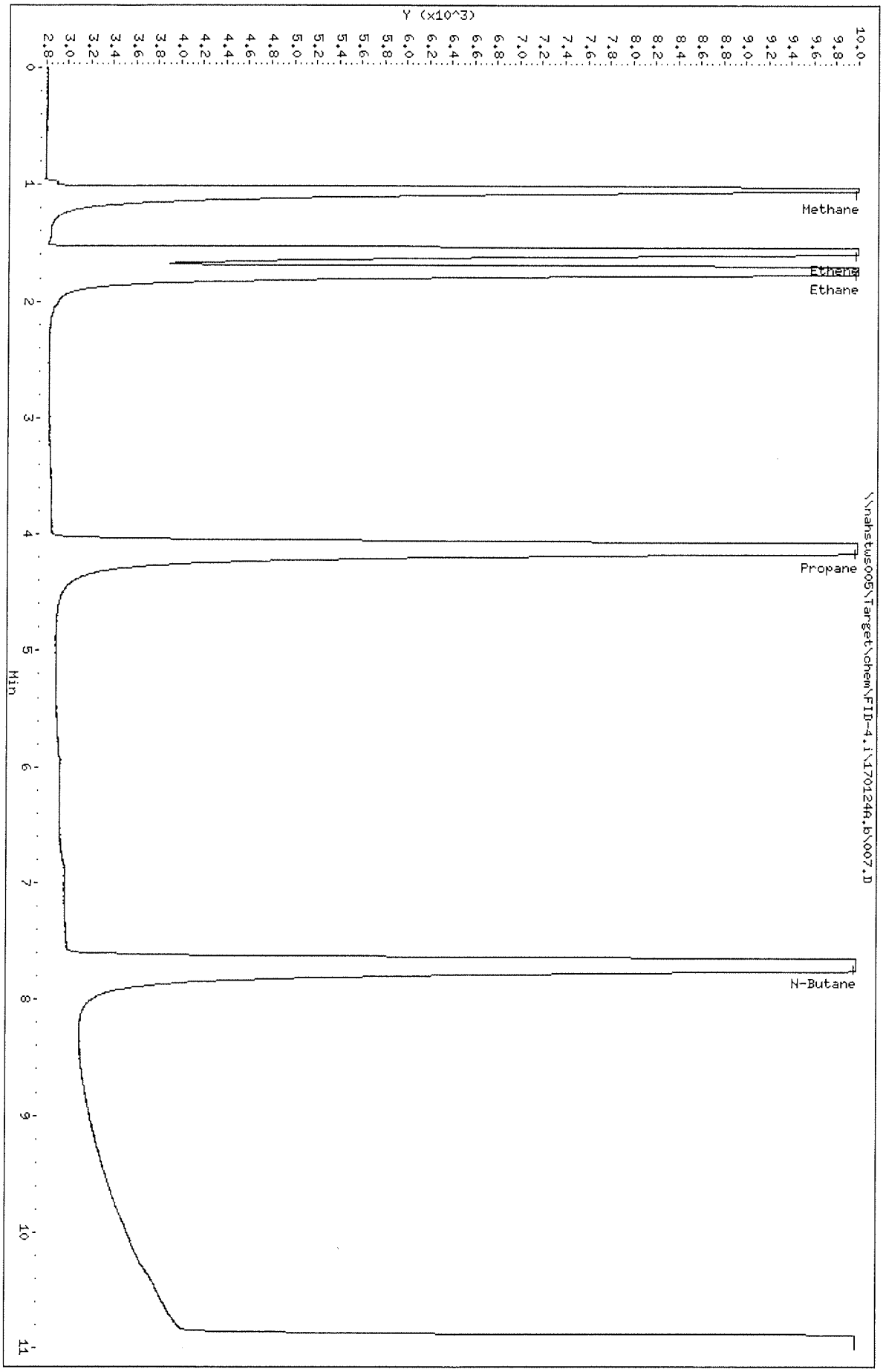
A - Target compound detected but, quantitated amount exceeded maximum amount.

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\007.D
Date : 24-JAN-2017 11:13
Client ID: ICAL7
Sample Info: ICAL7;ICAL7;;;

Instrument: FID-4.i

Operator: MA
Column diameter: 0.53

Column phase: Rtx-PLOT



Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\008.D Page 1
Report Date: 27-Dec-2021 13:16

ALS Laboratory Group

Dissolved Gases Analysis

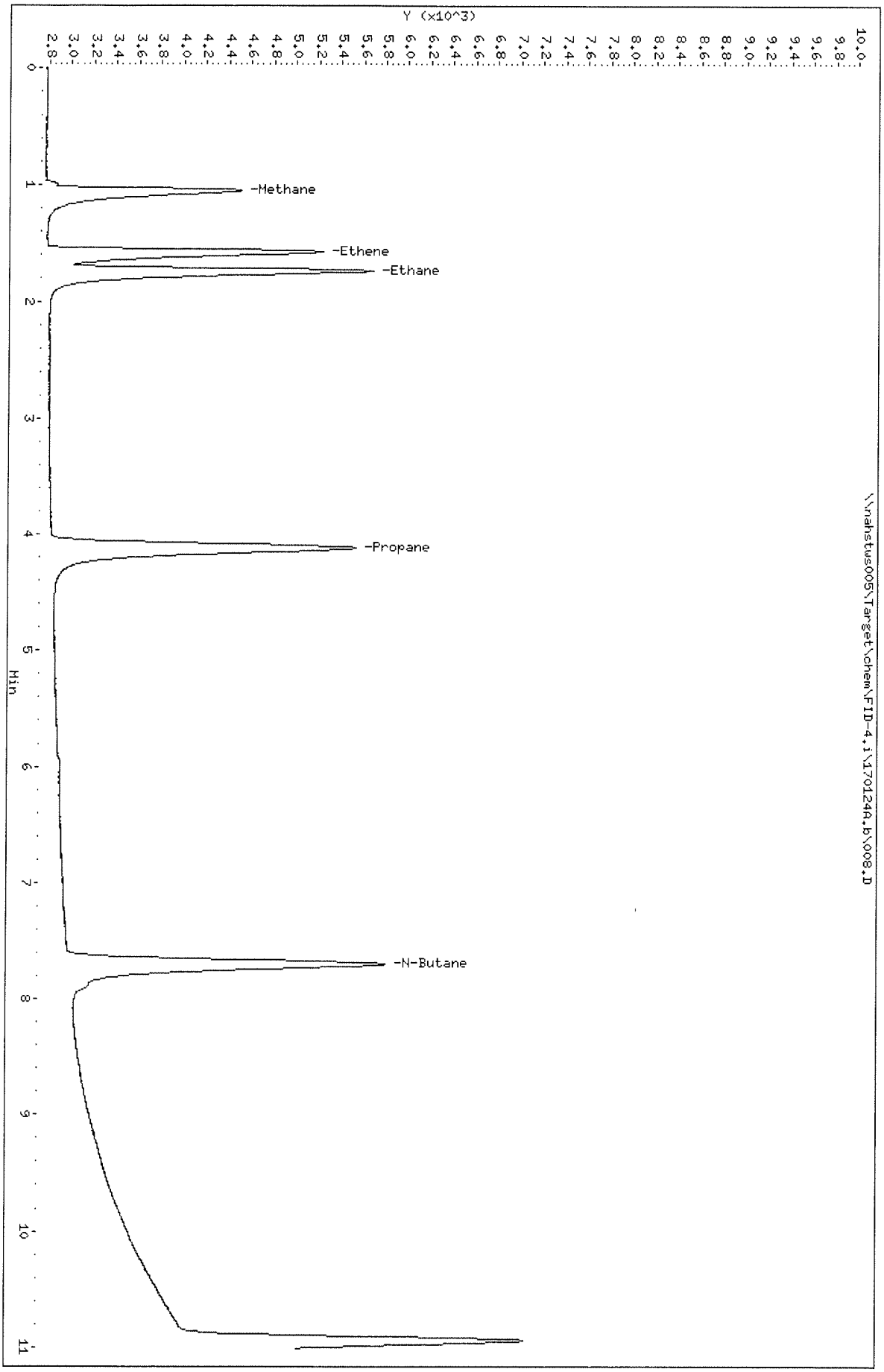
Data file : \\nahstws005\Target\chem\FID-4.i\170124A.b\008.D
Lab Smp Id: ICV Client Smp ID: ICV
Inj Date : 24-JAN-2017 12:05
Operator : MA Inst ID: FID-4.i
Smp Info : ICV;ICV;;;
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\170124A.b\RSKNI2.m
Meth Date : 22-Dec-2021 11:10 FID-4.i Quant Type: ESTD
Cal Date : 24-JAN-2017 11:13 Cal File: 007.D
Als bottle: 8 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: stdNIP2.sub
Target Version: 4.14

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	1.046	1.030	0.016	9352	9.59792	9.597
2 Ethene	1.573	1.556	0.017	11192	19.0906	19.090
3 Ethane	1.736	1.723	0.013	14474	19.6571	19.657
4 Propane	4.116	4.113	0.003	18164	27.2381	27.238
5 N-Butane	7.696	7.690	0.006	19425	36.0103	36.010

Data File: \\nahstws005\Target\chem\FID-4.i\170124A.b\008.D
Date : 24-JAN-2017 12:05
Client ID: ICV
Sample Info: ICV;ICV;;;
Column phase: Rtx-PLOT

Instrument: FID-4.i
Operator: MA
Column diameter: 0.53



FID04 -Logbook

Batch: 48206 **Analyst:** Purvi Lad
Date: 02-08-2022 **Reviewer:**
Method: RSK175 **Laboratory:** Houston
Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	p
1	RSK-CCV	CCV	02-08-2022 10:02 am	1.00	0.00 mL	0.00 mL	001.D	Liquid	Y	N
2	MBLK-220208	MBLK	02-08-2022 10:19 am	1.00	0.00 mL	0.00 mL	002.D	Liquid	Y	N
3	LCS-220208	LCS	02-08-2022 10:28 am	1.00	0.00 mL	0.00 mL	003.D	Liquid	Y	N
4	LCSD-220208	LCSD	02-08-2022 10:40 am	1.00	0.00 mL	0.00 mL	004.D	Liquid	Y	N
5	HS22011279-02	SAMP	02-08-2022 11:51 am	1.00	0.00 mL	0.00 mL	005.D	Liquid	Y	<
6	HS22011279-05	SAMP	02-08-2022 11:59 am	1.00	0.00 mL	0.00 mL	006.D	Liquid	Y	<
7	HS22011279-07	SAMP	02-08-2022 12:10 pm	1.00	0.00 mL	0.00 mL	007.D	Liquid	Y	<
8	HS22011279-08	SAMP	02-08-2022 12:21 pm	1.00	0.00 mL	0.00 mL	008.D	Liquid	Y	<
9	HS22011279-09	SAMP	02-08-2022 12:29 pm	1.00	0.00 mL	0.00 mL	009.D	Liquid	Y	>
10	HS22011281-01	SAMP	02-08-2022 12:37 pm	1.00	0.00 mL	0.00 mL	010.D	Liquid	Y	<
11	RSK-CCV	CCV	02-08-2022 12:48 pm	1.00	0.00 mL	0.00 mL	011.D	Liquid	Y	N
12	HS22011281-02	SAMP	02-08-2022 01:04 pm	1.00	0.00 mL	0.00 mL	012.D	Liquid	Y	<
13	HS22011281-03	SAMP	02-08-2022 01:15 pm	1.00	0.00 mL	0.00 mL	013.D	Liquid	Y	<
14	HS22011281-04	SAMP	02-08-2022 01:24 pm	1.00	0.00 mL	0.00 mL	014.D	Liquid	Y	<
15	HS22011326-01	SAMP	02-08-2022 01:32 pm	1.00	0.00 mL	0.00 mL	015.D	Liquid	Y	<
16	HS22011326-02	SAMP	02-08-2022 01:42 pm	1.00	0.00 mL	0.00 mL	016.D	Liquid	Y	<
17	HS22011326-03	SAMP	02-08-2022 01:51 pm	1.00	0.00 mL	0.00 mL	017.D	Liquid	Y	<
18	HS22011326-04	SAMP	02-08-2022 02:06 pm	1.00	0.00 mL	0.00 mL	018.D	Liquid	Y	<
19	HS22011326-04DUP	SAMP	02-08-2022 02:14 pm	1.00	0.00 mL	0.00 mL	019.D	Liquid	Y	<
20	HS22011279-05	SAMP	02-08-2022 02:56 pm	50.00	0.00 mL	0.00 mL	020.D	Liquid	Y	<
21	HS22011279-07	SAMP	02-08-2022 03:23 pm	200.0(	0.00 mL	0.00 mL	021.D	Liquid	Y	N
22	RSK-CCV	CCV	02-08-2022 03:30 pm	1.00	0.00 mL	0.00 mL	022.D	Liquid	Y	N
23	HS22011279-07	SAMP	02-08-2022 03:42 pm	1.00	0.00 mL	0.00 mL	023.D	Liquid	Y	<
24	HS22011279-08	SAMP	02-08-2022 03:51 pm	400.0(	0.00 mL	0.00 mL	024.D	Liquid	Y	N
25	HS22011279-09	SAMP	02-08-2022 04:00 pm	200.0(	0.00 mL	0.00 mL	025.D	Liquid	Y	N
26	HS22011281-01	SAMP	02-08-2022 04:10 pm	100.0(	0.00 mL	0.00 mL	026.D	Liquid	Y	N
27	HS22011281-02	SAMP	02-08-2022 04:21 pm	100.0(	0.00 mL	0.00 mL	027.D	Liquid	Y	N
28	HS22011281-03	SAMP	02-08-2022 04:30 pm	200.0(	0.00 mL	0.00 mL	028.D	Liquid	Y	N
29	HS22011281-04	SAMP	02-08-2022 04:46 pm	500.0(	0.00 mL	0.00 mL	029.D	Liquid	Y	N
30	HS22011326-01	SAMP	02-08-2022 04:55 pm	500.0(	0.00 mL	0.00 mL	030.D	Liquid	Y	N
31	HS22011326-02	SAMP	02-08-2022 05:04 pm	4.00	0.00 mL	0.00 mL	031.D	Liquid	Y	N
32	HS22011326-03	SAMP	02-08-2022 05:19 pm	10.00	0.00 mL	0.00 mL	032.D	Liquid	Y	N
33	RSK-CCV	CCV	02-08-2022 05:27 pm	1.00	0.00 mL	0.00 mL	033.D	Liquid	Y	N

Chemical	Value
pH Paper	300107065-15
CCV/LC/LSD/MS/MSD	300107064-16/63-06

FORM 7B
GASES CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Instrument ID: FID-4 Calibration Date: 02/08/22 Time: 1002

Lab File ID: 001 Init. Calib. Date(s): 01/24/17 01/24/17

Init. Calib. Times: 0906 1113

GC Column: RTX-PLOT ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF250.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
Ethane	719.48900	846.20074	0.01	-17.61	20.00	AVRG
Methane	974.99200	1075.8785	0.01	-10.35	20.00	AVRG
Ethene	585.76000	619.64392	0.01	-5.78	20.00	AVRG

FORM VII GASES

FORM 7B
GASES CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Instrument ID: FID-4 Calibration Date: 02/08/22 Time: 1248

Lab File ID: 011 Init. Calib. Date(s): 01/24/17 01/24/17

Init. Calib. Times: 0906 1113

GC Column: RTX-PLOT ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF250.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
Ethane	719.48900	847.91886	0.01	-17.85	20.00	AVRG
Methane	974.99200	1052.8662	0.01	-7.99	20.00	AVRG
Ethene	585.76000	550.44510	0.01	6.03	20.00	AVRG

FORM VII GASES

FORM 7B
GASES CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Instrument ID: FID-4 Calibration Date: 02/08/22 Time: 1530

Lab File ID: 022 Init. Calib. Date(s): 01/24/17 01/24/17

Init. Calib. Times: 0906 1113

GC Column: RTX-PLOT ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF250.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
Ethane	719.48900	756.19354	0.01	-5.10	20.00	AVRG
Methane	974.99200	994.71338	0.01	-2.02	20.00	AVRG
Ethene	585.76000	547.59644	0.01	6.52	20.00	AVRG

FORM VII GASES

FORM 7B
GASES CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS22011279

Instrument ID: FID-4 Calibration Date: 02/08/22 Time: 1727

Lab File ID: 033 Init. Calib. Date(s): 01/24/17 01/24/17

Init. Calib. Times: 0906 1113

GC Column: RTX-PLOT ID: 0.53 (mm)

COMPOUND	RRF OR AMOUNT	RRF250.00 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
Ethane	719.48900	765.94801	0.01	-6.46	20.00	AVRG
Methane	974.99200	1025.0855	0.01	-5.14	20.00	AVRG
Ethene	585.76000	600.11869	0.01	-2.45	20.00	AVRG

FORM VII GASES

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\001.D
Lab Smp Id: RSK-CCV Client Smp ID: RSK-CCV
Inj Date : 08-FEB-2022 10:02
Operator : PL Inst ID: FID-4.i
Smp Info : RSK-CCV;RSK-CCV;2;4
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 1 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

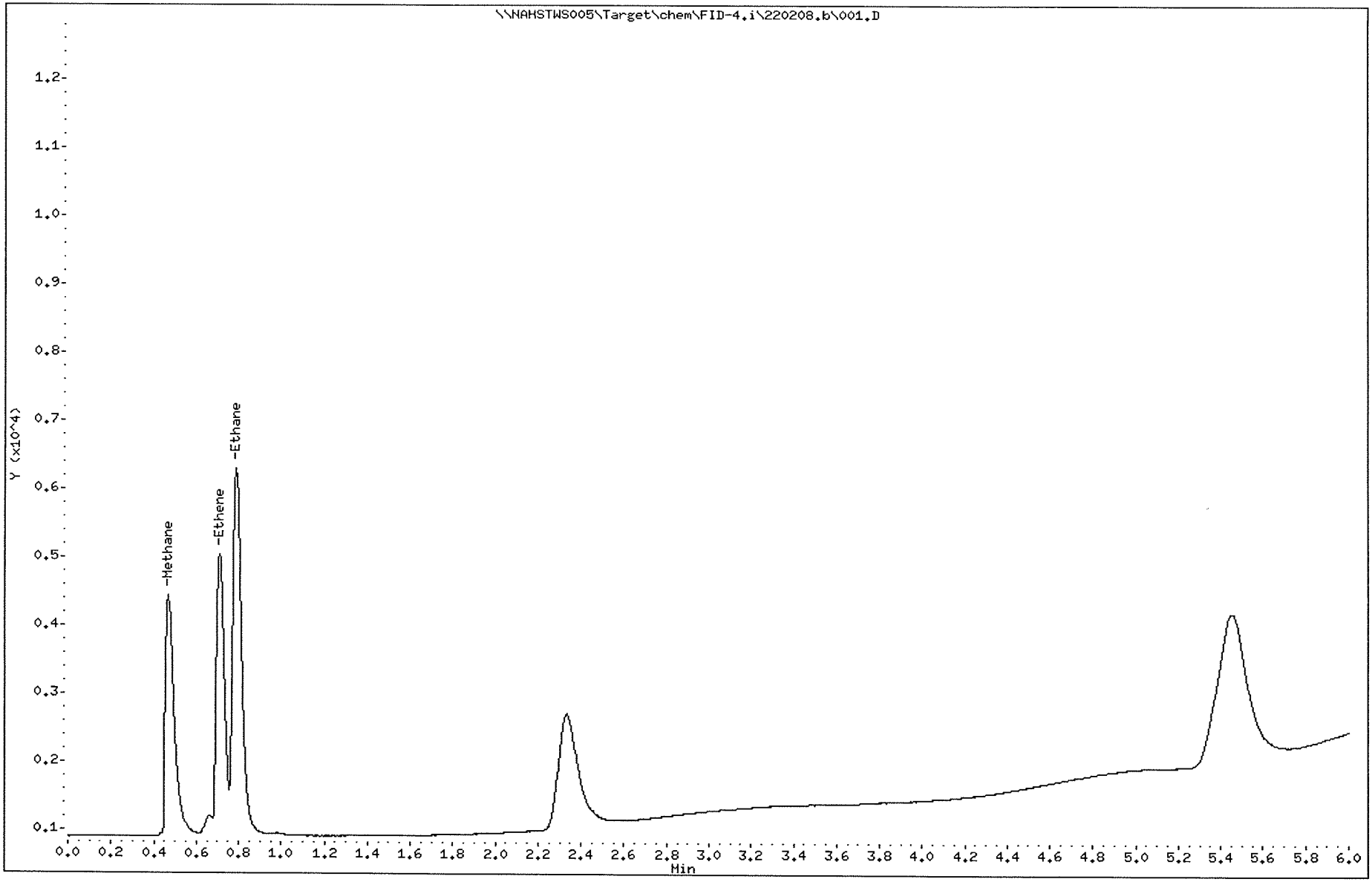
					AMOUNTS	
					CAL-AMT	ON-COL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.466	0.463	0.003	10379	9.64700	10.645
2 Ethene	0.710	0.703	0.007	10441	16.8500	17.824
3 Ethane	0.790	0.783	0.007	15268	18.0430	21.220

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\001.D
Date : 08-FEB-2022 10:02
Client ID: RSK-CCV
Sample Info: RSK-CCV;RSK-CCV;2;4

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\002.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\002.D
Lab Smp Id: MBLK-220208 Client Smp ID: MBLK-220208
Inj Date : 08-FEB-2022 10:19
Operator : PL Inst ID: FID-4.i
Smp Info : MBLK-220208;MBLK-220208;3;;BLANK
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 2 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

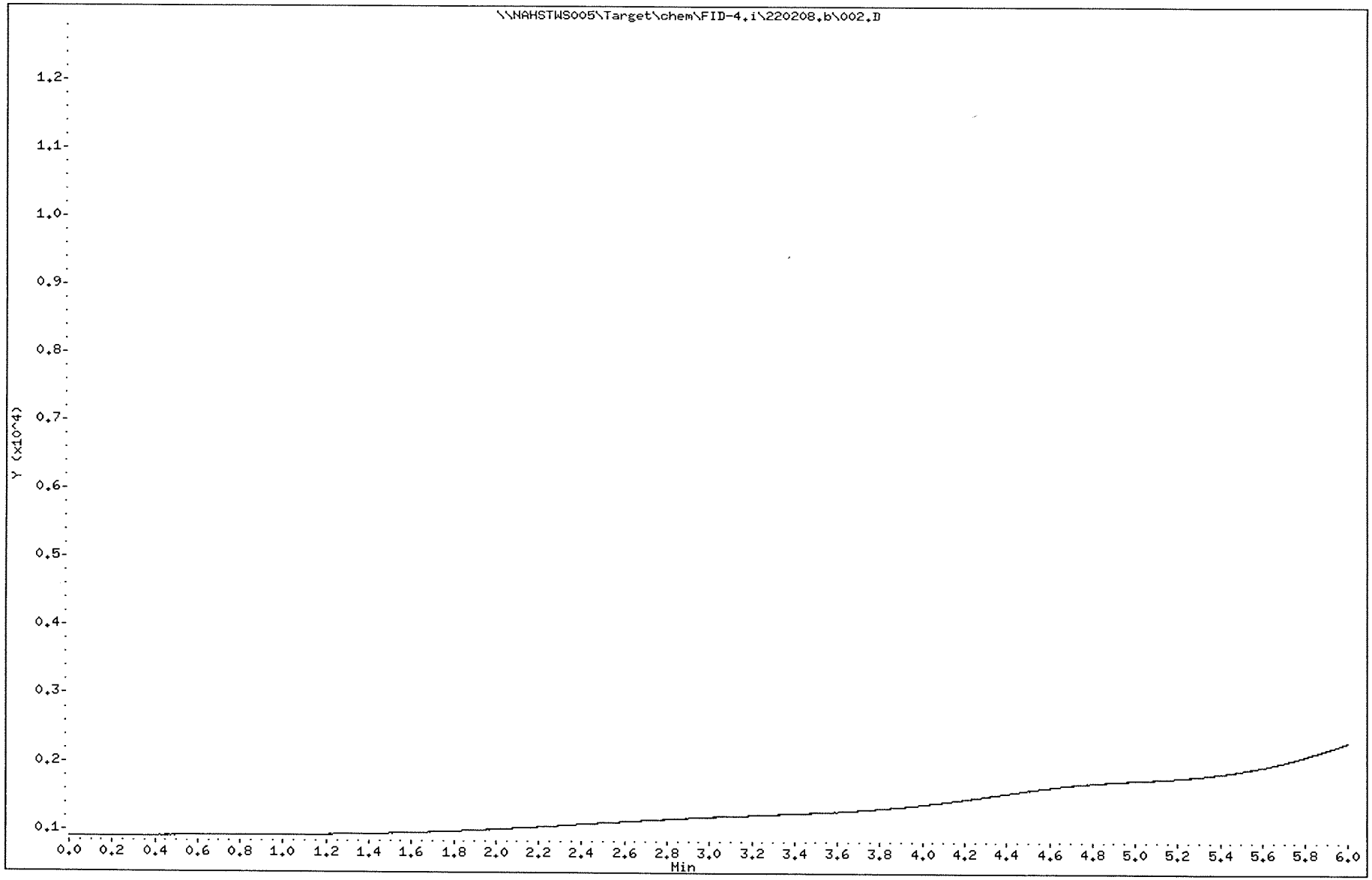
Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\002.D
Date : 08-FEB-2022 10:19
Client ID: MBLK-220208
Sample Info: MBLK-220208;MBLK-220208;3;;BLANK

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\003.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\003.D
Lab Smp Id: LCS-220208 Client Smp ID: LCS-220208
Inj Date : 08-FEB-2022 10:28
Operator : PL Inst ID: FID-4.i
Smp Info : LCS-220208;LCS-220208;3;;LCS
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 3 QC Sample: LCS
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

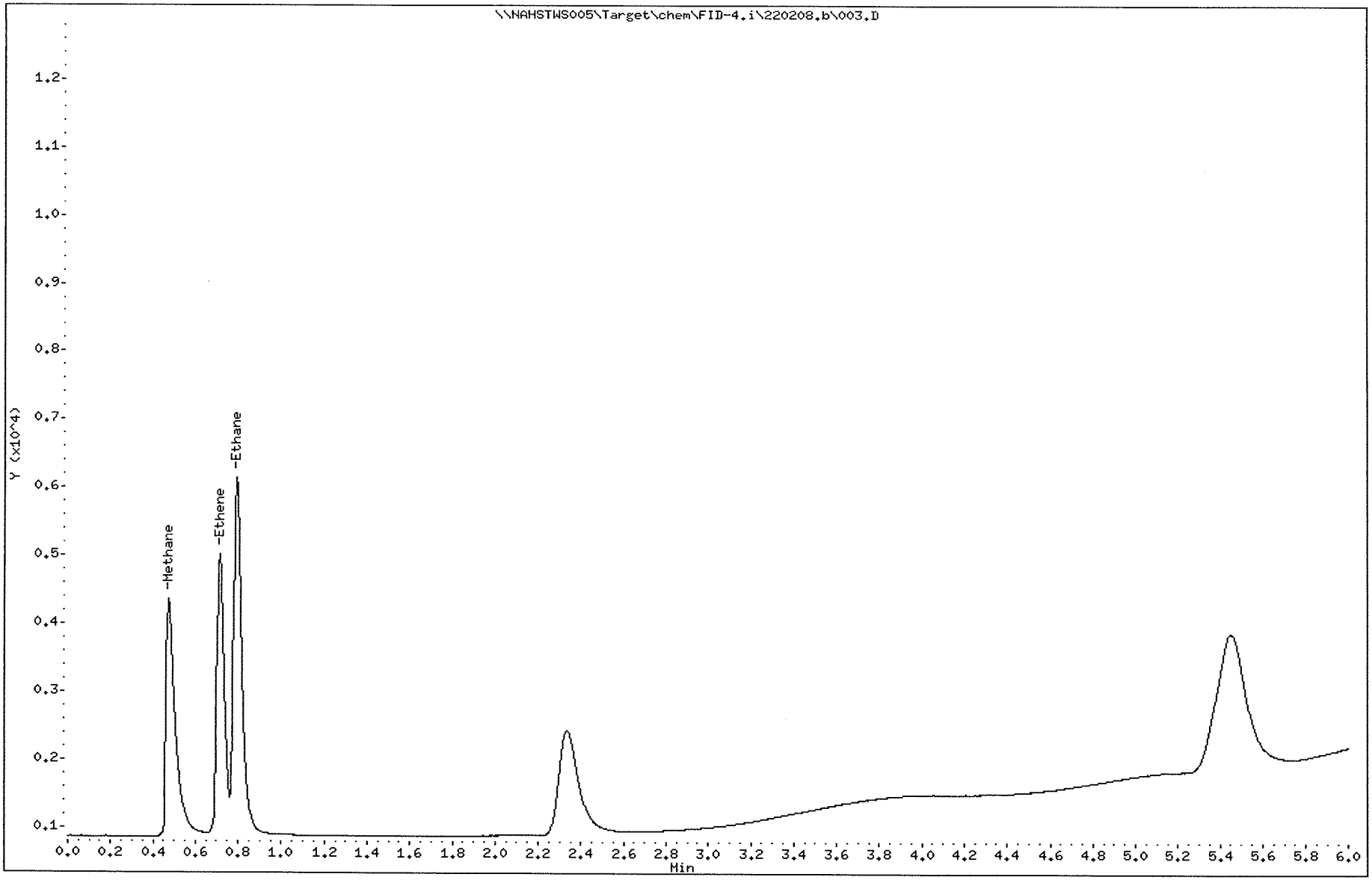
Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
1 Methane	0.473	0.463	0.010	10991	11.2729	11.272
2 Ethene	0.713	0.703	0.010	10184	17.3859	17.385
3 Ethane	0.793	0.783	0.010	14556	20.2310	20.231

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\003.D
Date : 08-FEB-2022 10:28
Client ID: LCS-220208
Sample Info: LCS-220208;LCS-220208;3;;LCS

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\004.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\004.D
Lab Smp Id: LCSD-220208 Client Smp ID: LCSD-220208
Inj Date : 08-FEB-2022 10:40
Operator : PL Inst ID: FID-4.i
Smp Info : LCSD-220208;LCSD-220208;3;;LCSD
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 4 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.470	0.463	0.007	10394	10.6606	10.660
2 Ethene	0.713	0.703	0.010	10239	17.4798	17.479
3 Ethane	0.790	0.783	0.007	14436	20.0642	20.064

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\004.D

Date : 08-FEB-2022 10:40

Client ID: LCSD-220208

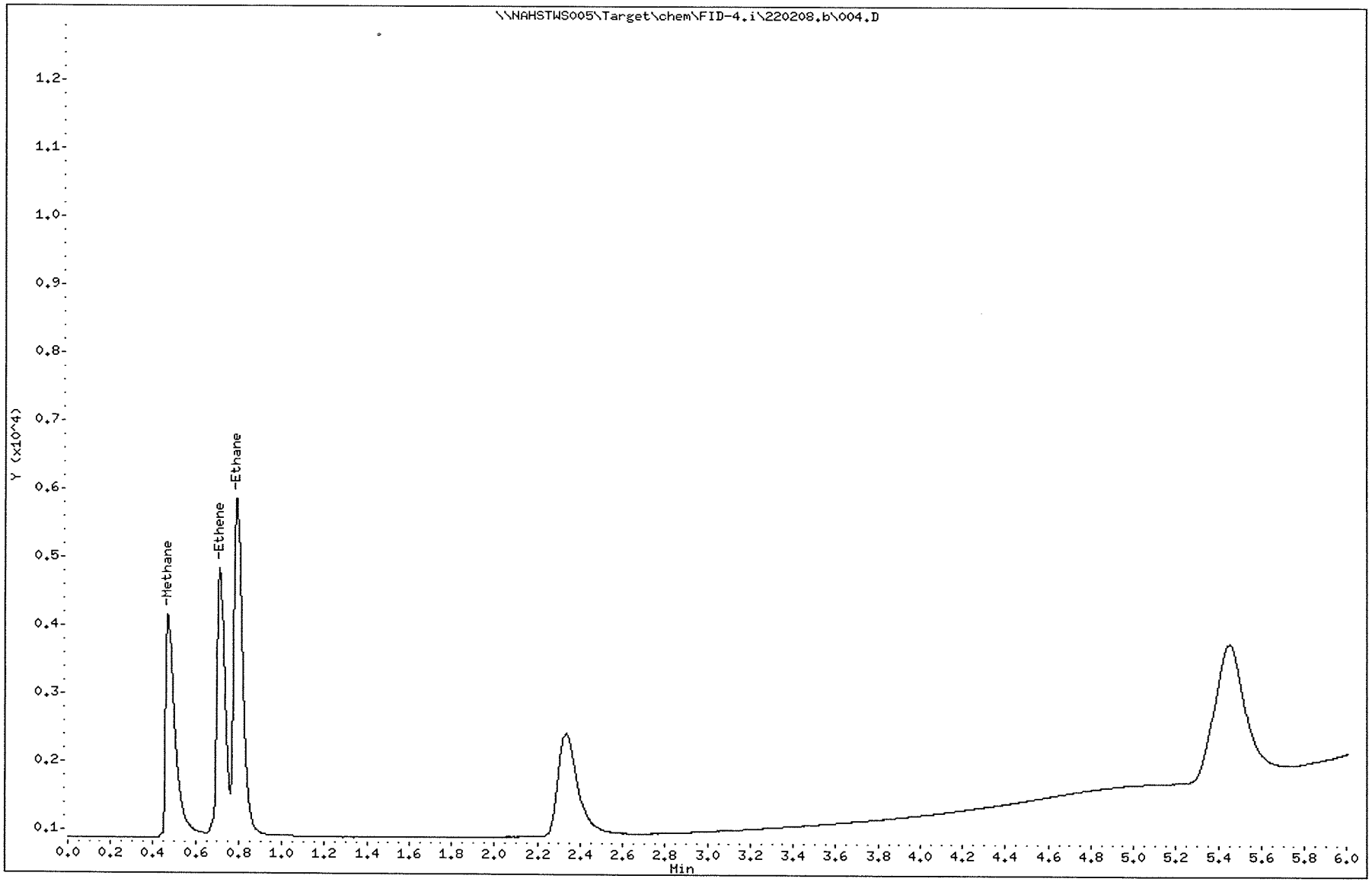
Sample Info: LCSD-220208;LCSD-220208;3;;LCSD

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\005.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\005.D
Lab Smp Id: HS22011279-02 Client Smp ID: HS22011279-02
Inj Date : 08-FEB-2022 11:51
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-02;HS22011279-02
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 5
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

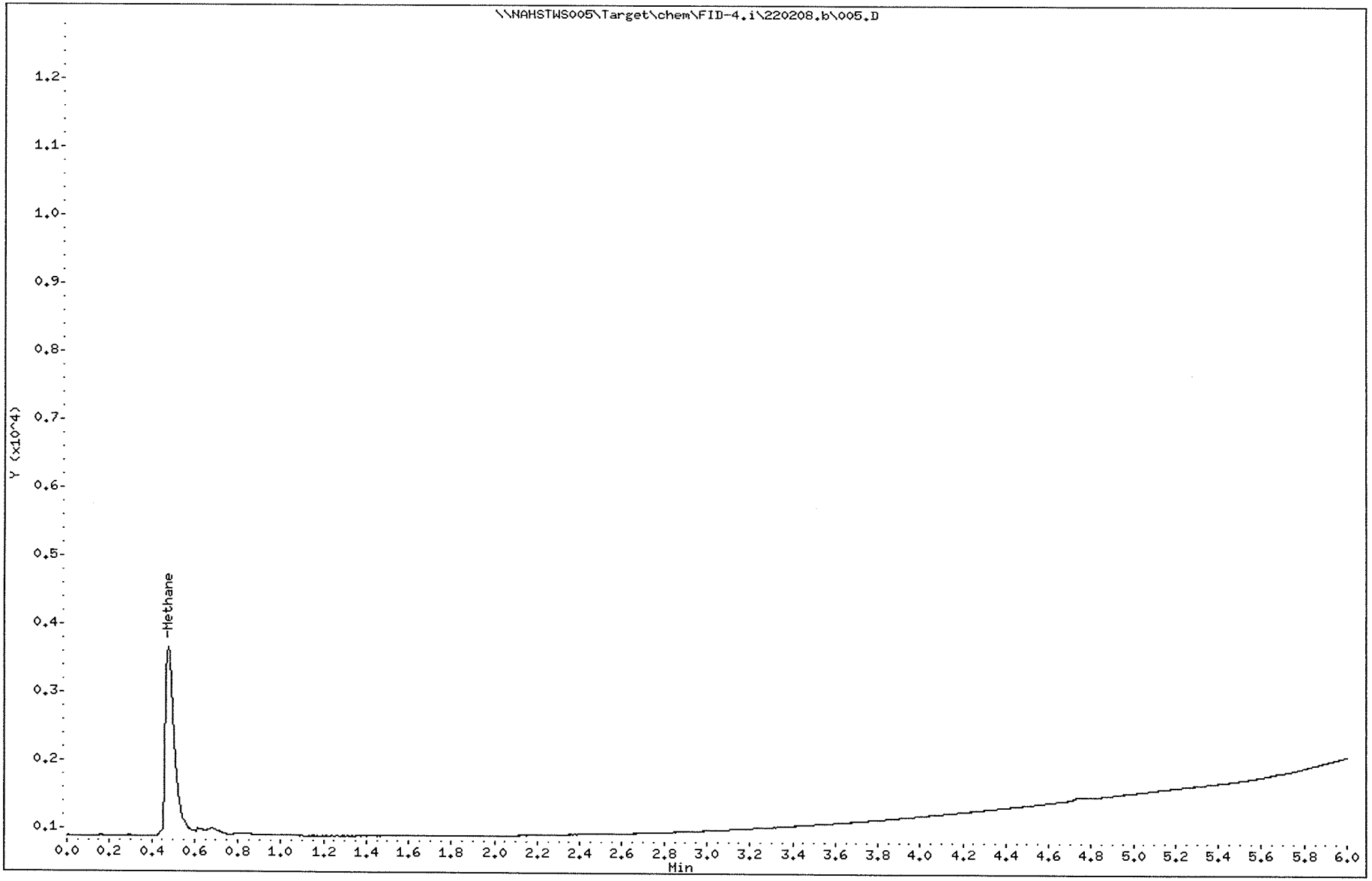
					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.480	0.463	0.017	8236	8.44725	8.447

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\005.D
Date : 08-FEB-2022 11:51
Client ID: HS22011279-02
Sample Info: HS22011279-02;HS22011279-02

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\006.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\006.D
Lab Smp Id: HS22011279-05 Client Smp ID: HS22011279-05
Inj Date : 08-FEB-2022 11:59
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-05;HS22011279-05
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 6
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

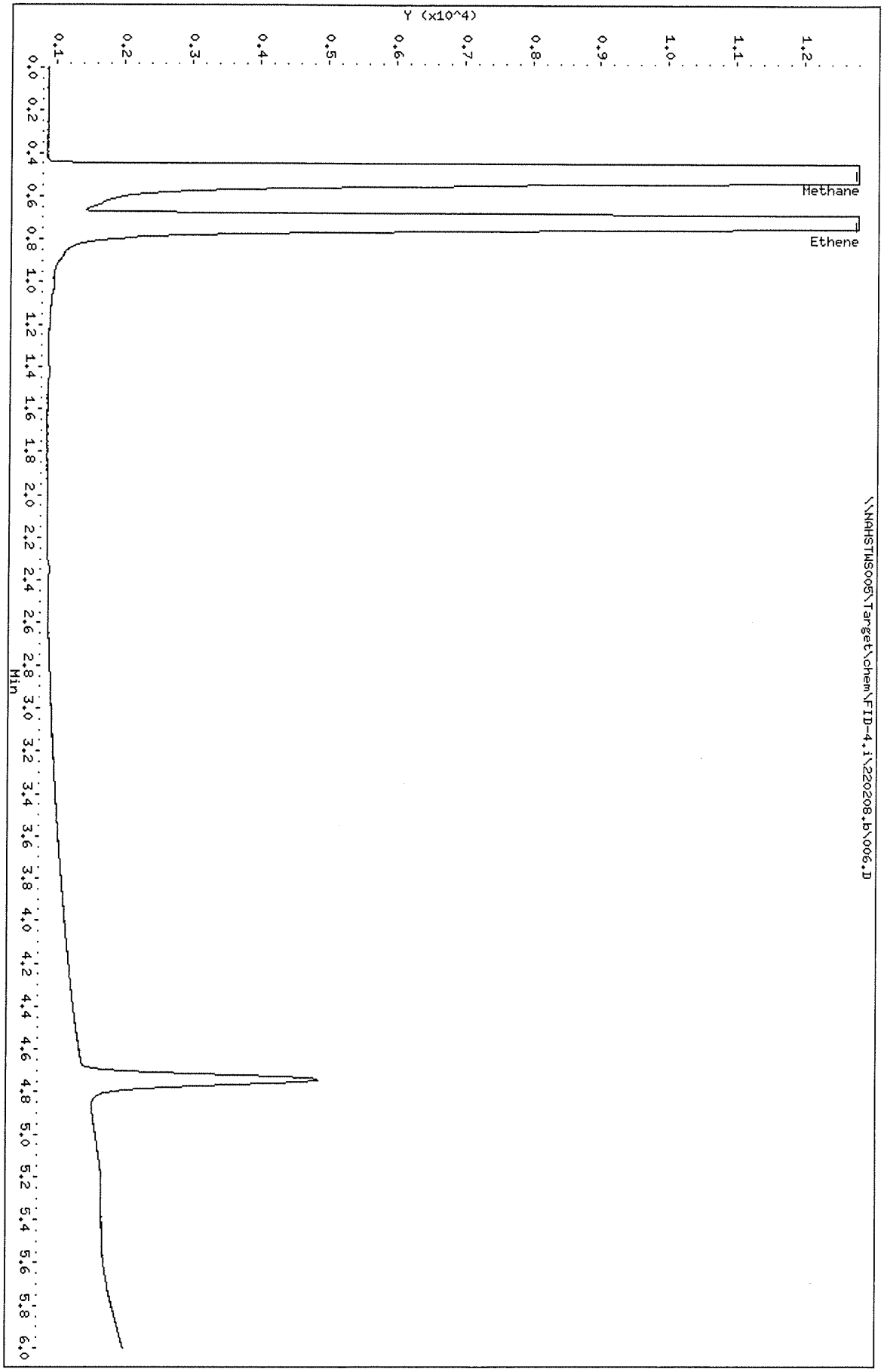
Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
1 Methane	0.473	0.463	0.010	595663	610.941	610.941(A)
2 Ethene	0.710	0.703	0.007	107076	182.798	182.798(A)

QC Flag Legend

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

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\006.D
Date : 08-FEB-2022 11:59
Client ID: HS22011279-05
Sample Info: HS22011279-05;HS22011279-05
Instrument: FID-4.i
Operator: PL
Column diameter: 0.53
Column phase: Rtx-PLOT



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\008.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\008.D
Lab Smp Id: HS22011279-08 Client Smp ID: HS22011279-08
Inj Date : 08-FEB-2022 12:21
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-08;HS22011279-08
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.473	0.463	0.010	7073230	7254.65	7254.651(AM)
2 Ethene	0.690	0.703	-0.013	17084	29.1655	29.165(M)
3 Ethane	0.793	0.783	0.010	25333	35.2097	35.209(M)

QC Flag Legend

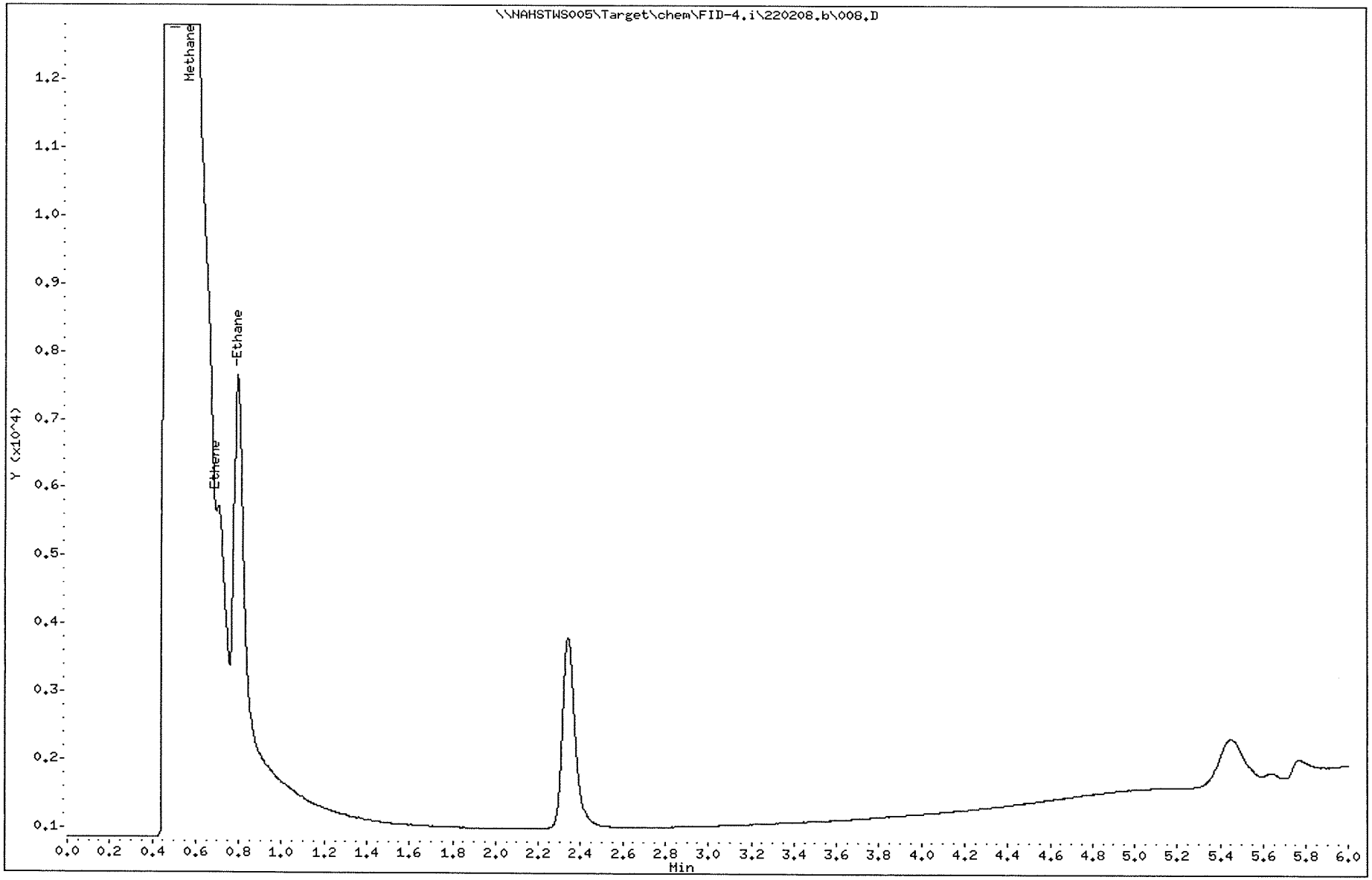
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\008.D
Date : 08-FEB-2022 12:21
Client ID: HS22011279-08
Sample Info: HS22011279-08;HS22011279-08

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\Before\008.D
Lab Smp Id: HS22011279-08 Client Smp ID: HS22011279-08
Inj Date : 08-FEB-2022 12:21
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-08;HS22011279-08
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.473	0.463	0.010	7113335	7295.79	7295.785(A)
3 Ethane	0.793	0.783	0.010	43610	60.6124	60.612

QC Flag Legend

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

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\Before\008.D

Date : 08-FEB-2022 12:21

Client ID: HS22011279-08

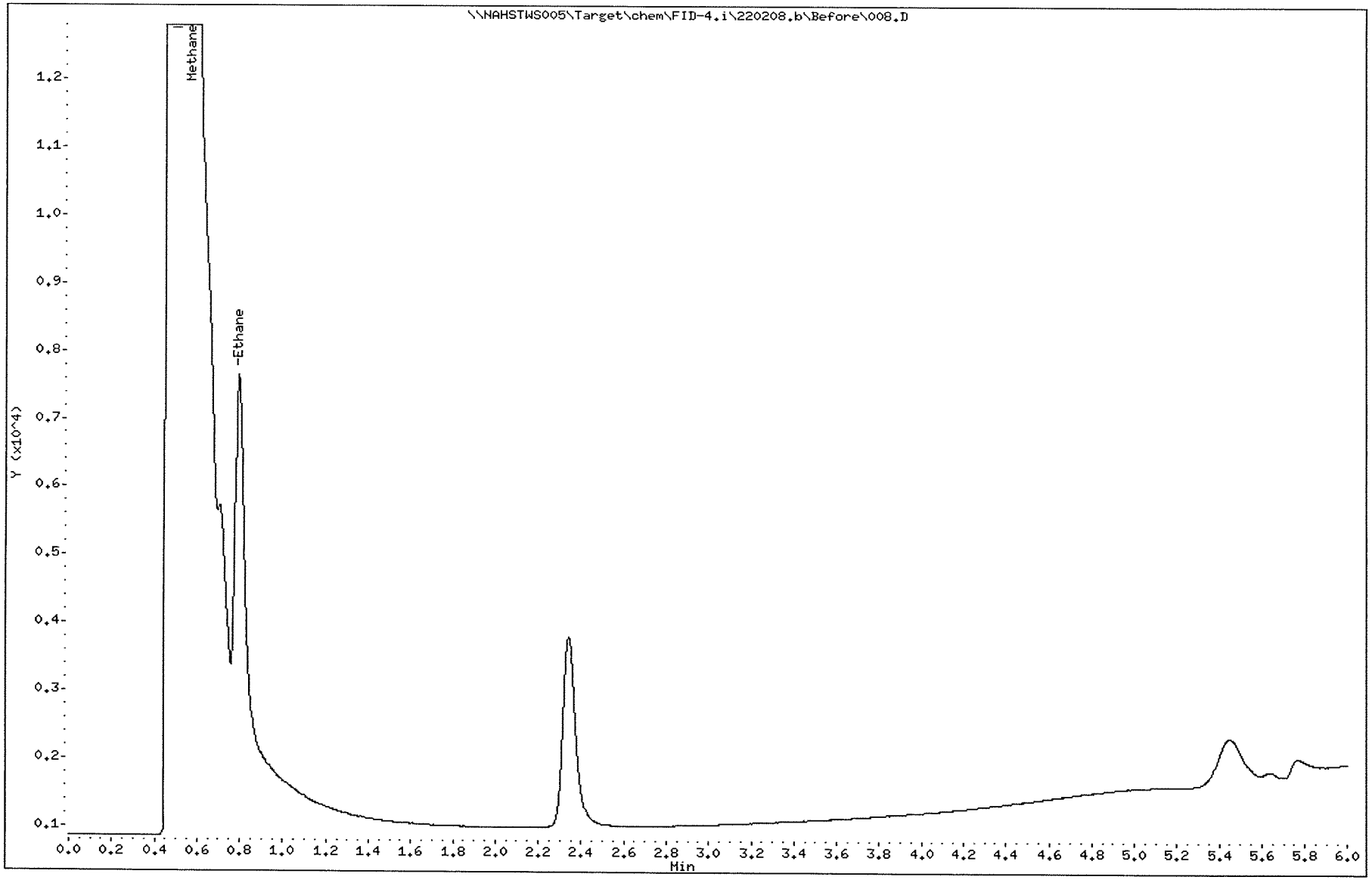
Sample Info: HS22011279-08;HS22011279-08

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\009.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\009.D
Lab Smp Id: HS22011279-09 Client Smp ID: HS22011279-09
Inj Date : 08-FEB-2022 12:29
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-09;HS22011279-09
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 9
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.470	0.463	0.007	3234407	3317.37	3317.366(A)
2 Ethene	0.713	0.703	0.010	547004	933.836	933.835(A)

QC Flag Legend

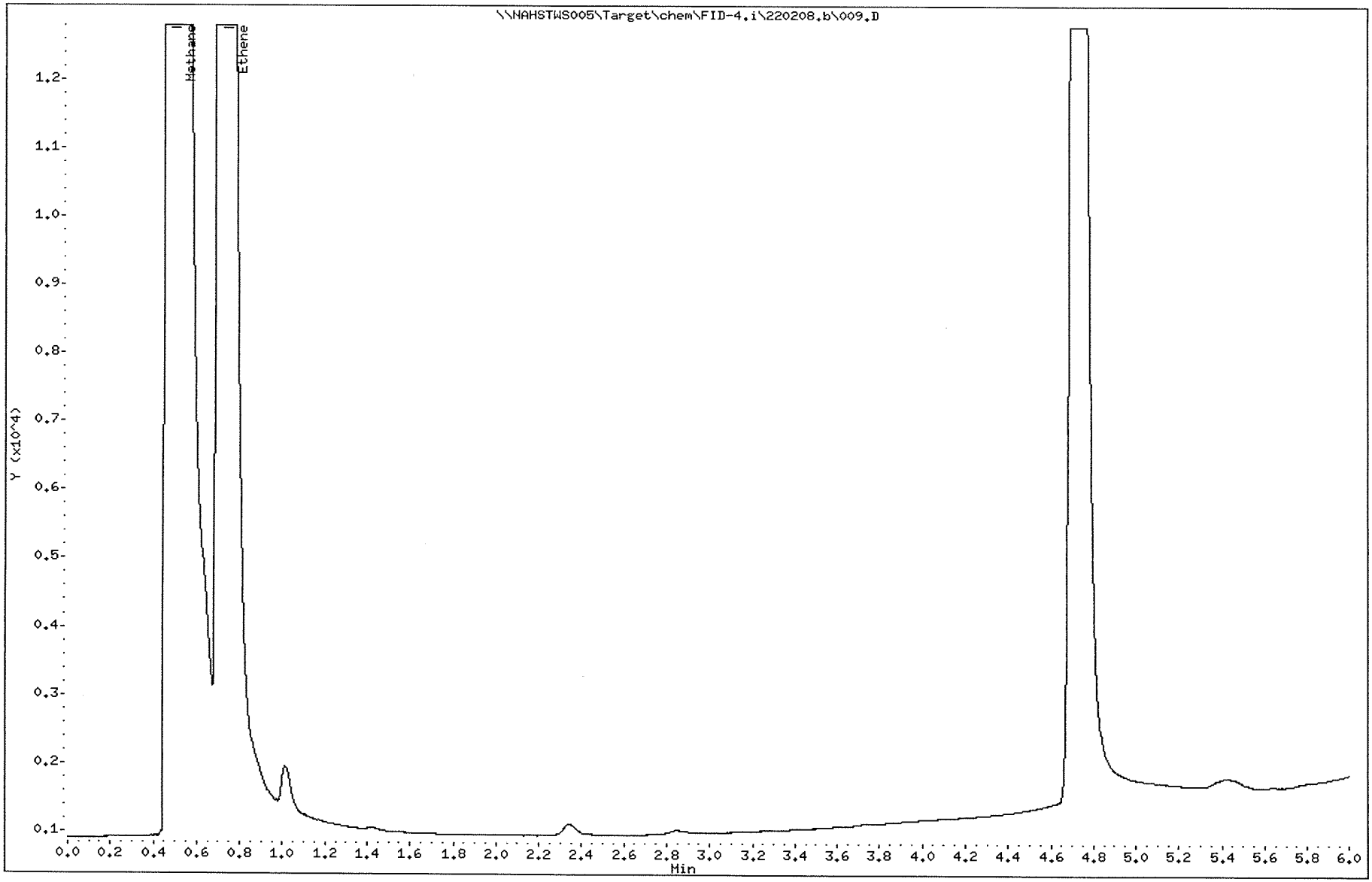
A - Target compound detected but, quantitated amount exceeded maximum amount.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\009.D
Date : 08-FEB-2022 12:29
Client ID: HS22011279-09
Sample Info: HS22011279-09;HS22011279-09

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\011.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\011.D
Lab Smp Id: RSK-CCV Client Smp ID: RSK-CCV
Inj Date : 08-FEB-2022 12:48
Operator : PL Inst ID: FID-4.i
Smp Info : RSK-CCV;RSK-CCV;2;4
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 11 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

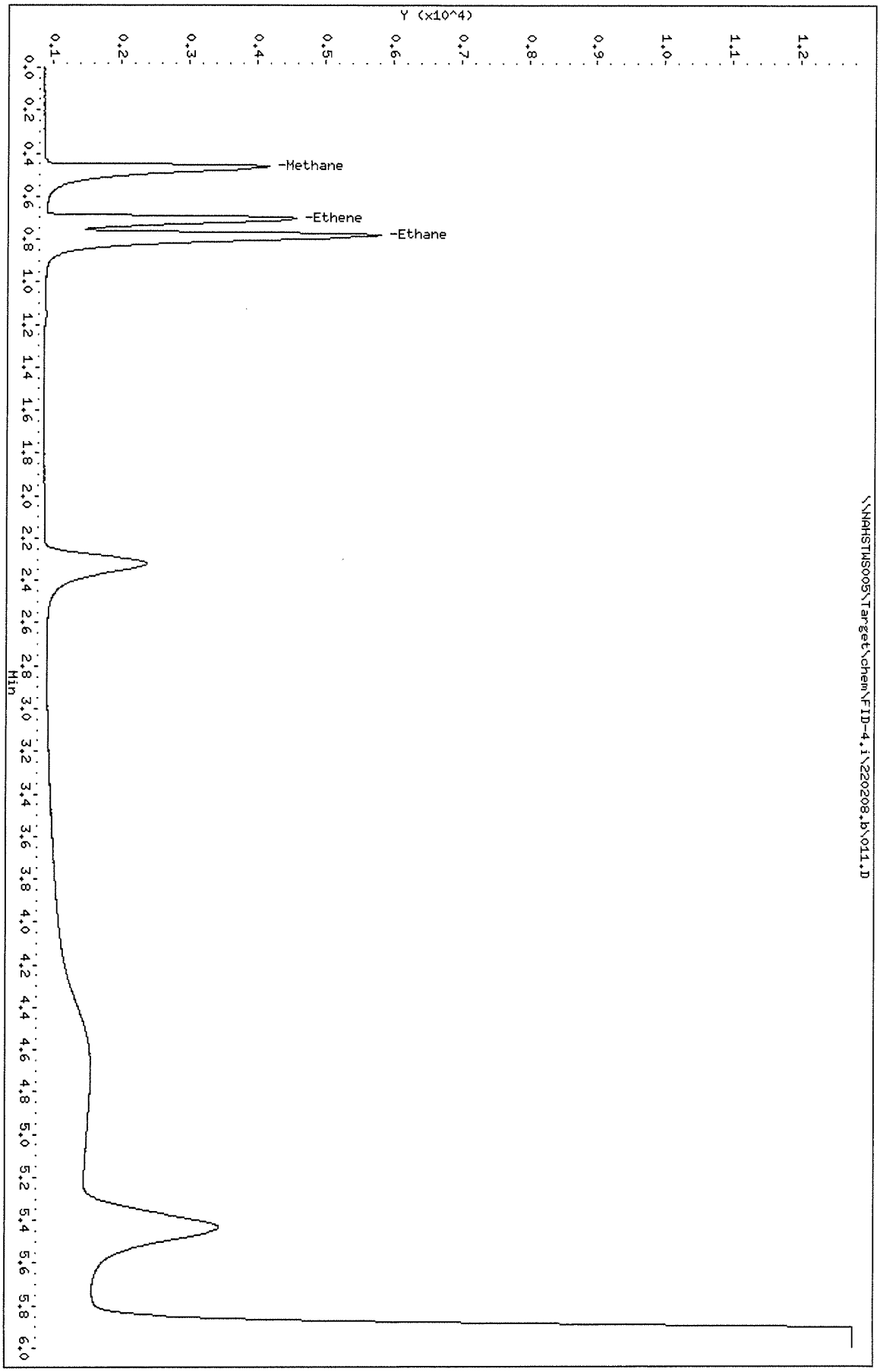
Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Methane	0.463	0.463	0.000	10157	9.64700	10.417
2 Ethene	0.703	0.703	0.000	9275	16.8500	15.834
3 Ethane	0.783	0.783	0.000	15299	18.0430	21.263

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\011.D
Date : 08-FEB-2022 12:48
Client ID: RSK-CCV
Sample Info: RSK-CCV;RSK-CCV;2;4

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53

Column phase: Rtx-PLOT



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\019.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\019.D
Lab Smp Id: HS22011326-04DUP Client Smp ID: HS22011326-04DUP
Inj Date : 08-FEB-2022 14:14
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011326-04DUP;HS22011326-04DUP
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.473	0.463	0.010	15407	15.8022	15.802(M)

QC Flag Legend

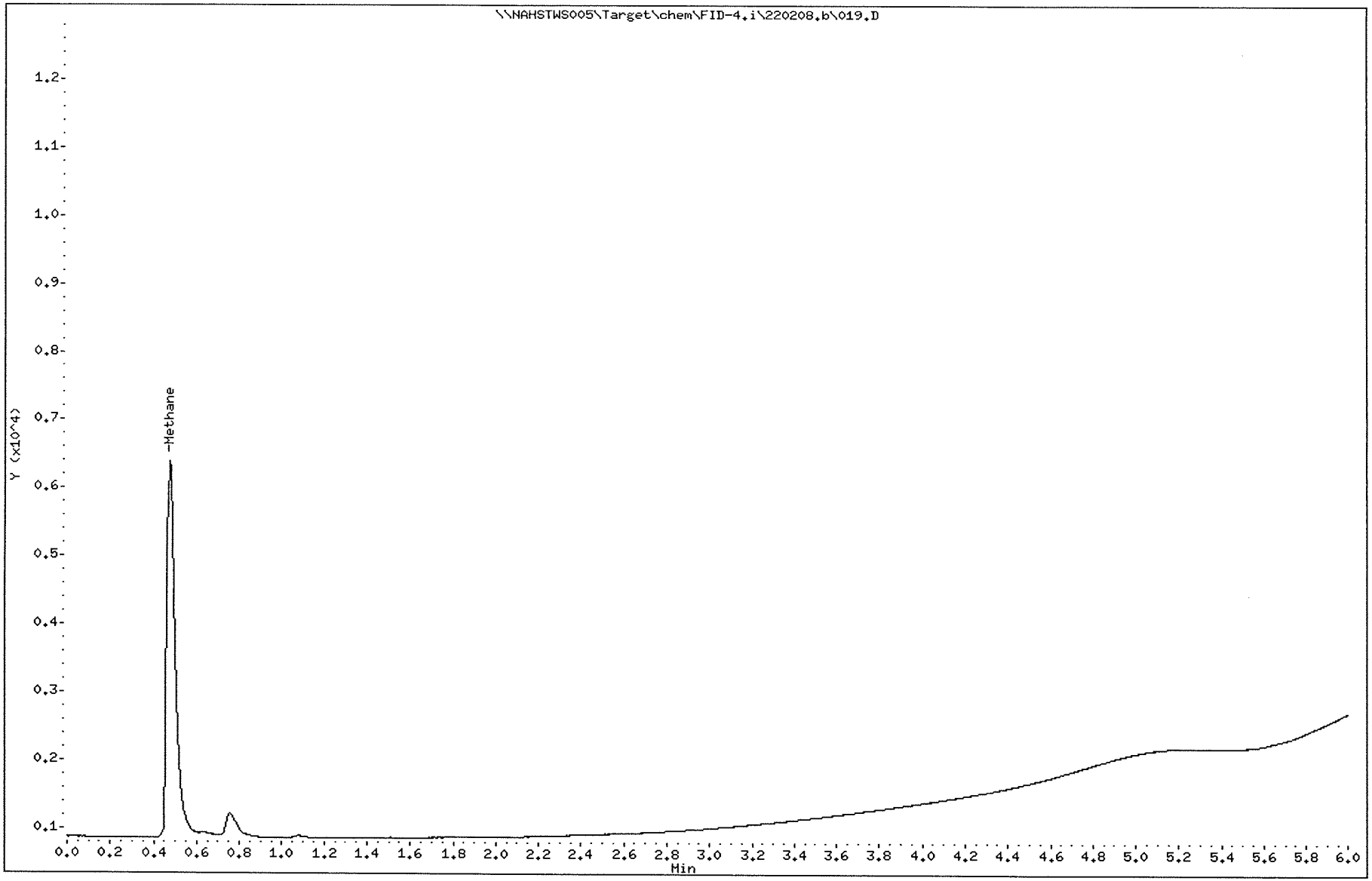
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\019.D
Date : 08-FEB-2022 14:14
Client ID: HS22011326-04DUP
Sample Info: HS22011326-04DUP;HS22011326-04DUP

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\Before\019.D
Lab Smp Id: HS22011326-04DUP Client Smp ID: HS22011326-04DUP
Inj Date : 08-FEB-2022 14:14
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011326-04DUP;HS22011326-04DUP
Misc Info : ;1;0;1
Comment   :
Method   : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.473	0.463	0.010	15757	16.1612	16.161
3 Ethane	0.756	0.783	-0.027	1352	1.87911	1.879

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\Before\019.D

Date : 08-FEB-2022 14:14

Client ID: HS22011326-04DUP

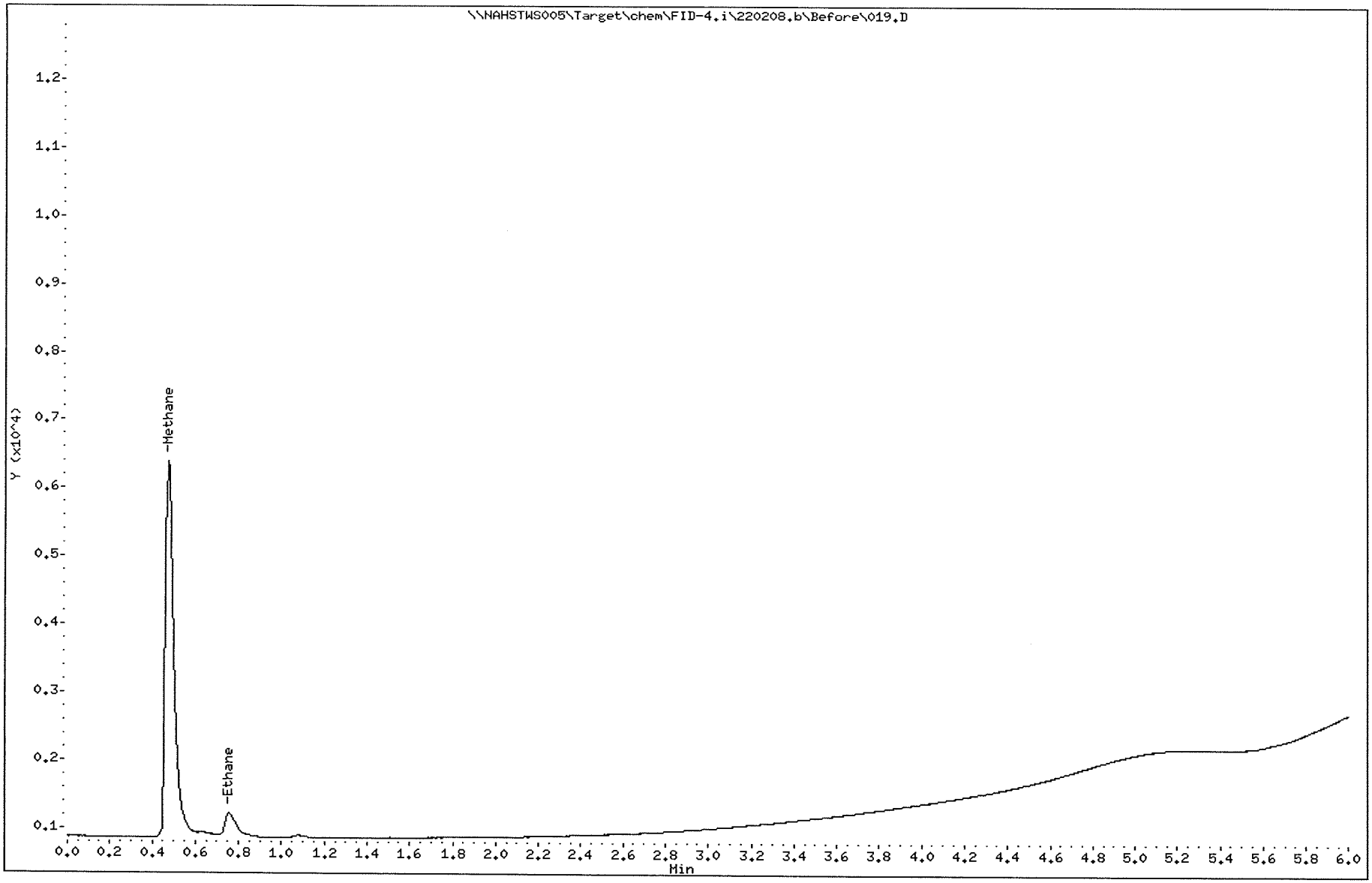
Instrument: FID-4.i

Sample Info: HS22011326-04DUP;HS22011326-04DUP

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\020.D
Lab Smp Id: HS22011279-05 Client Smp ID: HS22011279-05
Inj Date : 08-FEB-2022 14:56
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-05;HS22011279-05
Misc Info : ;1;0;50
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 20
Dil Factor: 50.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
1 Methane	0.486	0.463	0.023	11185	11.4719	573.594
2 Ethene	0.726	0.703	0.023	2054	3.50655	175.327(M)

QC Flag Legend

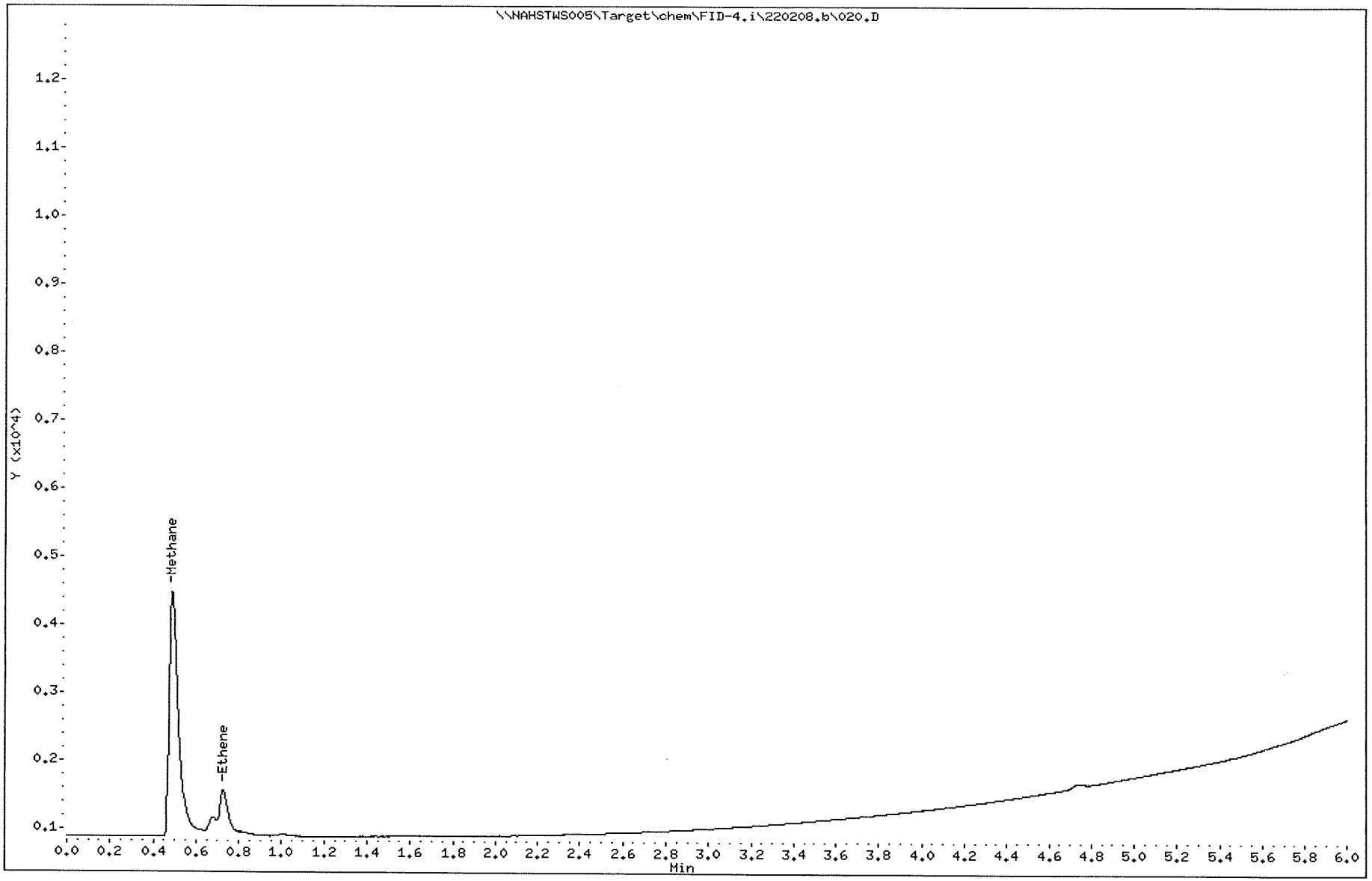
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\020.D
Date : 08-FEB-2022 14:56
Client ID: HS22011279-05
Sample Info: HS22011279-05;HS22011279-05

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\Before\020.D
Lab Smp Id: HS22011279-05 Client Smp ID: HS22011279-05
Inj Date : 08-FEB-2022 14:56
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-05;HS22011279-05
Misc Info : ;1;0;50
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 20
Dil Factor: 50.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
1 Methane	0.486	0.463	0.023	11185	11.4719	573.594
2 Ethene	0.726	0.703	0.023	2313	3.94871	197.435

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\Before\020.D

Date : 08-FEB-2022 14:56

Client ID: HS22011279-05

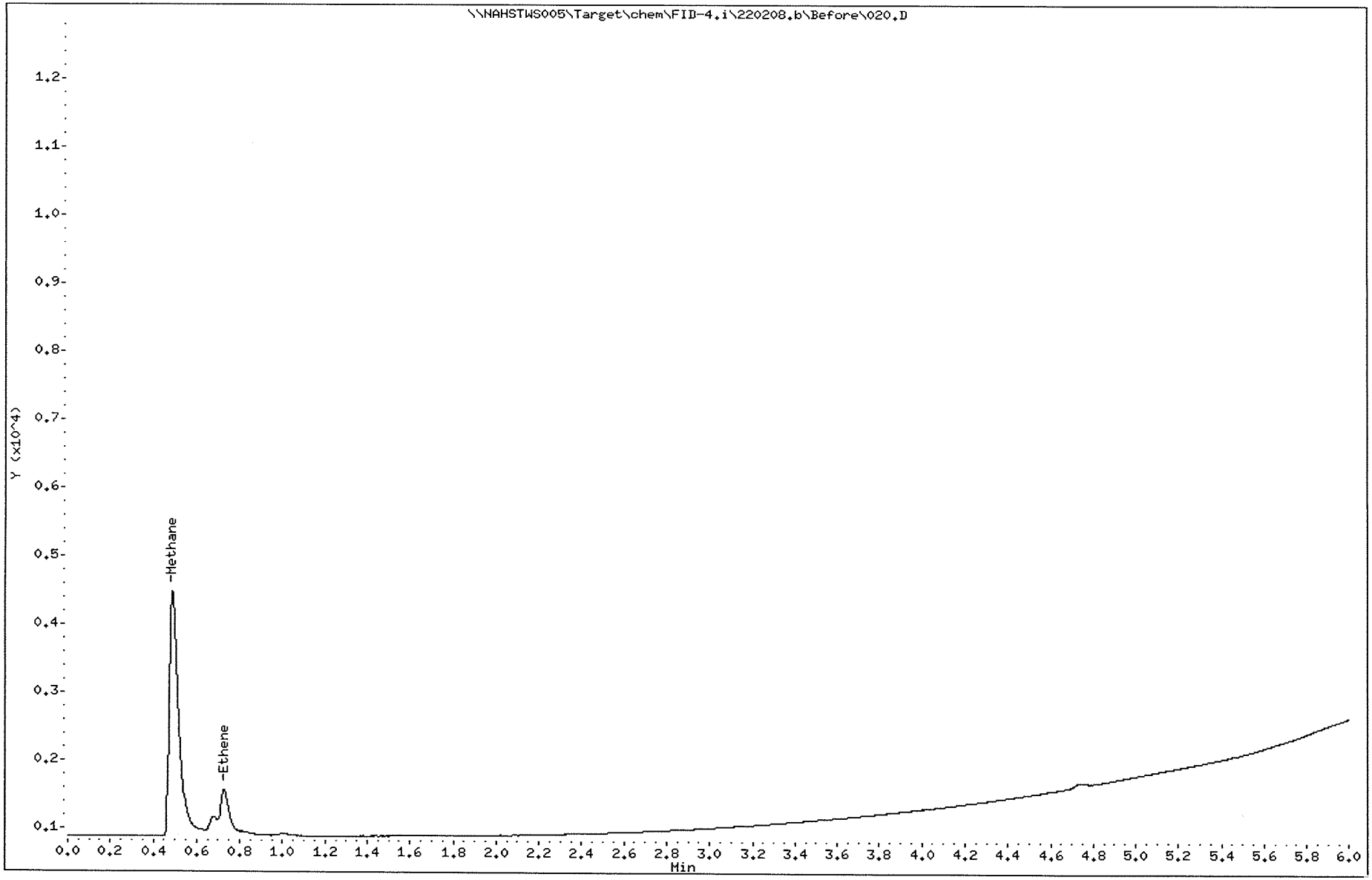
Instrument: FID-4.i

Sample Info: HS22011279-05;HS22011279-05

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\021.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\021.D
Lab Smp Id: HS22011279-07 Client Smp ID: HS22011279-07
Inj Date : 08-FEB-2022 15:23
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-07;HS22011279-07
Misc Info : ;1;0;200
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 21
Dil Factor: 200.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.486	0.463	0.023	31377	32.1818	6436.358

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\021.D

Date : 08-FEB-2022 15:23

Client ID: HS22011279-07

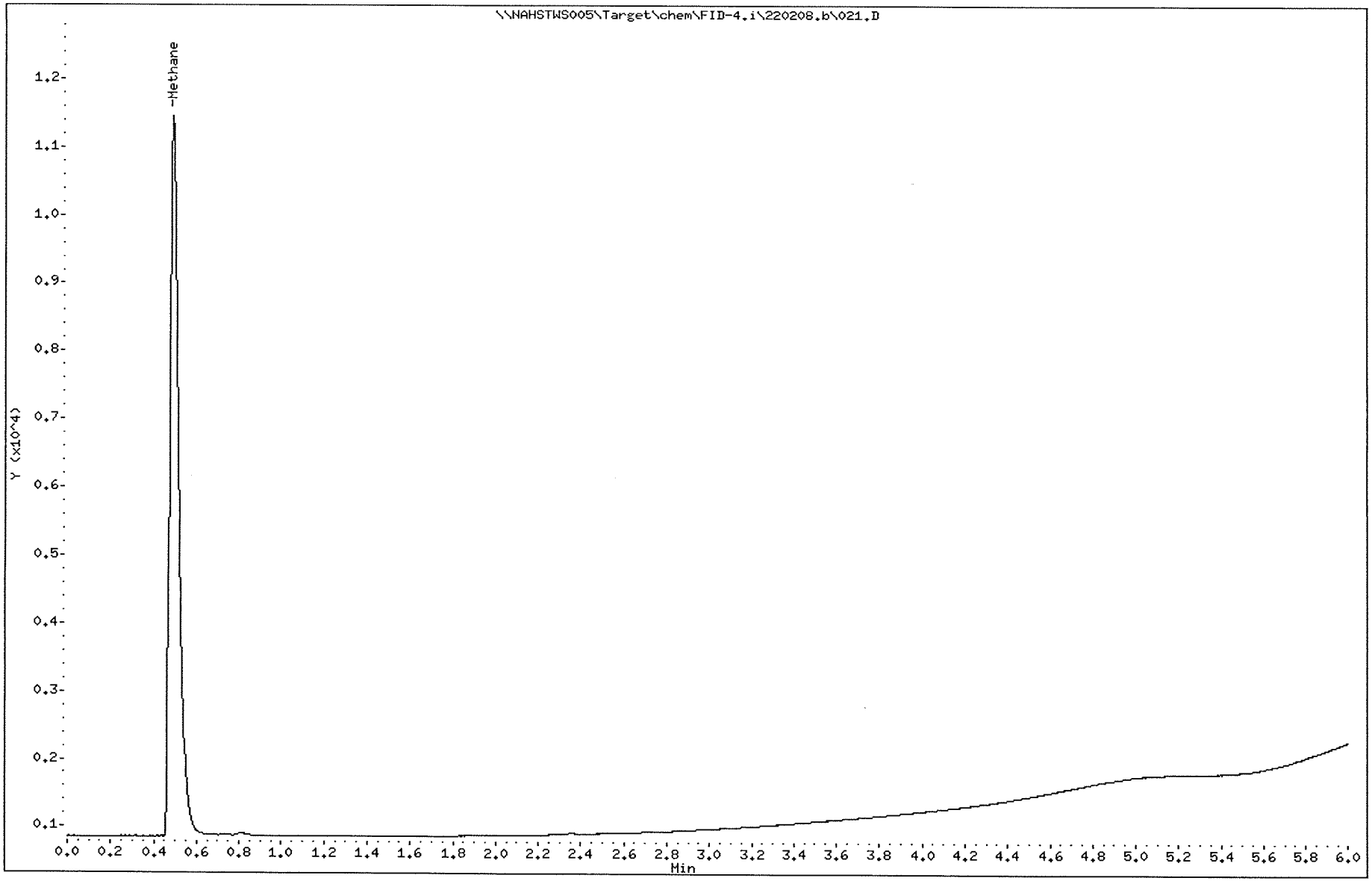
Sample Info: HS22011279-07;HS22011279-07

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\022.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\022.D
Lab Smp Id: RSK-CCV Client Smp ID: RSK-CCV
Inj Date : 08-FEB-2022 15:30
Operator : PL Inst ID: FID-4.i
Smp Info : RSK-CCV;RSK-CCV;2;4
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 22 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					AMOUNTS	
					CAL-AMT	ON-COL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.470	0.463	0.007	9596	9.64700	9.842(M)
2 Ethene	0.713	0.703	0.010	9227	16.8500	15.752(M)
3 Ethane	0.793	0.783	0.010	13644	18.0430	18.963(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\022.D

Date : 08-FEB-2022 15:30

Client ID: RSK-CCV

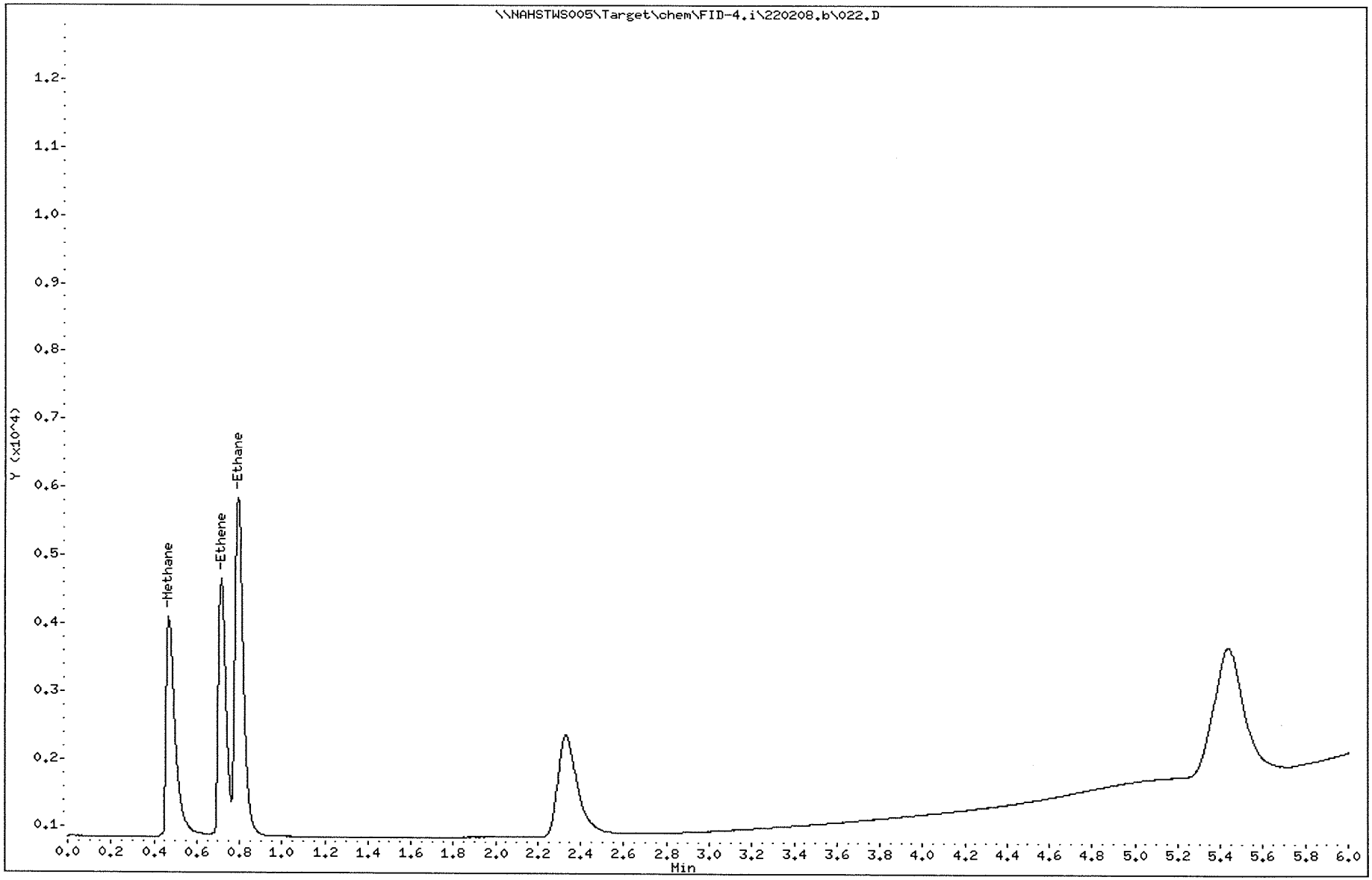
Instrument: FID-4.i

Sample Info: RSK-CCV;RSK-CCV;2;4

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

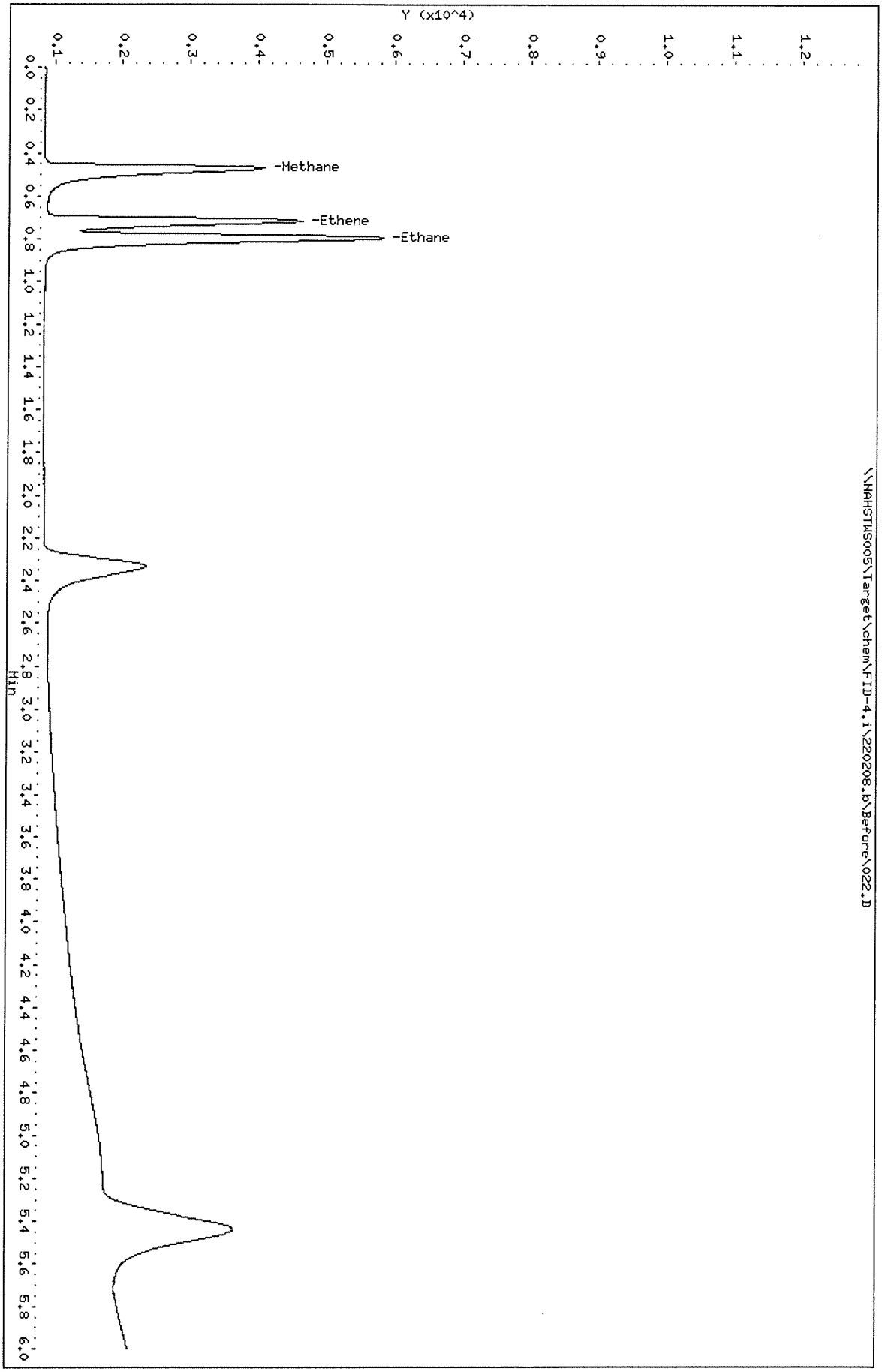
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Lab Smp Id: RSK-CCV Client Smp ID: RSK-CCV
Inj Date : 08-FEB-2022 15:30
Operator : PL Inst ID: FID-4.i
Smp Info : RSK-CCV;RSK-CCV;2;4
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 22 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Methane	0.470	0.463	0.007	9563	9.64700	9.808
2 Ethene	0.713	0.703	0.010	9143	16.8500	15.608
3 Ethane	0.793	0.783	0.010	13526	18.0430	18.799

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\Before\022.D
Date : 08-FEB-2022 15:30
Client ID: RSK-CCV
Sample Info: RSK-CCV;RSK-CCV;2;4
Column phase: Rtx-PLOT

Instrument: FID-4.i
Operator: PL
Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\023.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\023.D
Lab Smp Id: HS22011279-07 Client Smp ID: HS22011279-07
Inj Date : 08-FEB-2022 15:42
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-07;HS22011279-07
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 23
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.473	0.463	0.010	6839875	7015.31	7015.311(AM)
2 Ethene	0.710	0.703	0.007	15301	26.1216	26.121(M)
3 Ethane	0.793	0.783	0.010	24592	34.1798	34.179(M)

QC Flag Legend

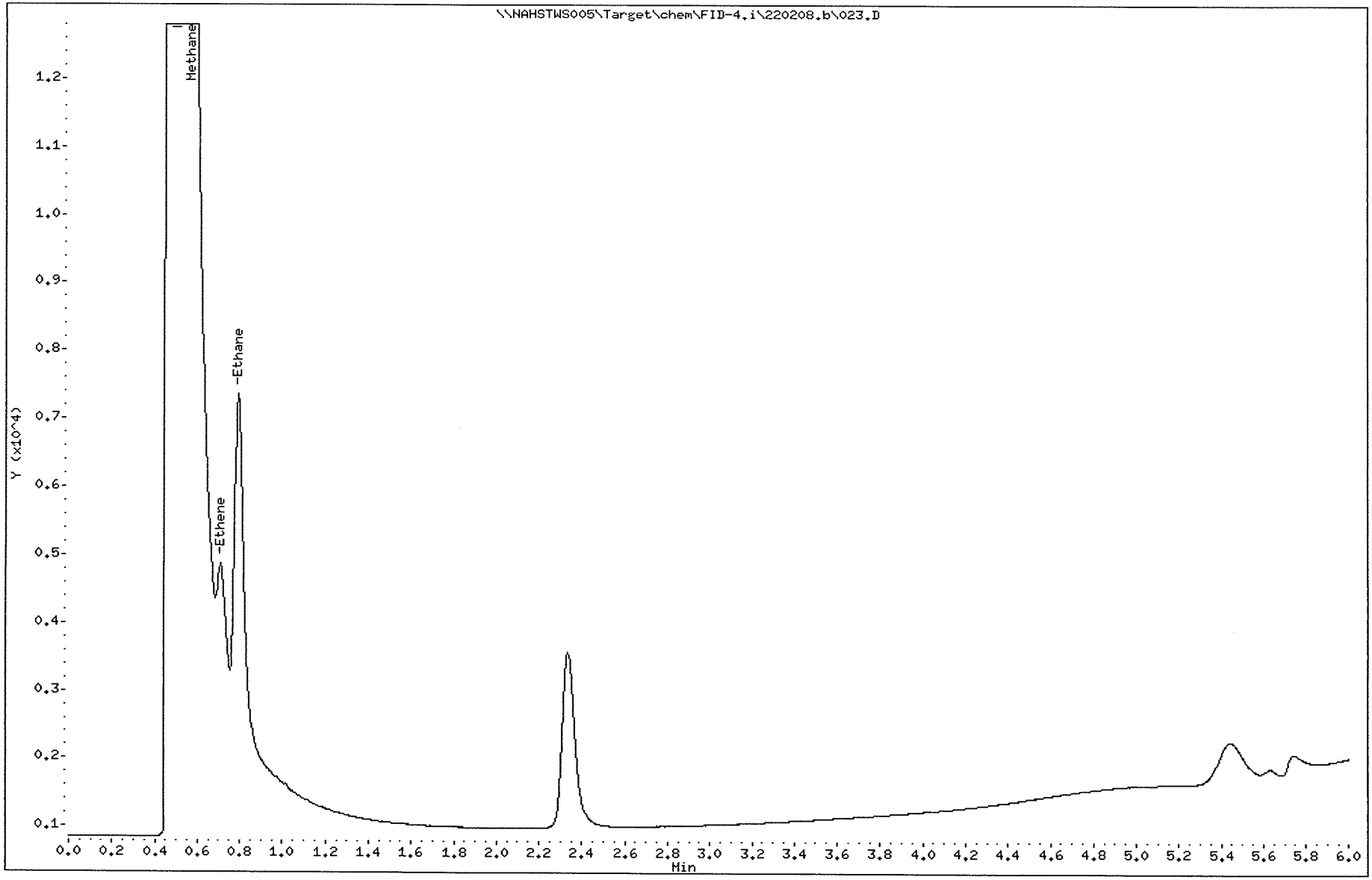
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\023.D
Date : 08-FEB-2022 15:42
Client ID: HS22011279-07
Sample Info: HS22011279-07;HS22011279-07

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\Before\023.D
Lab Smp Id: HS22011279-07 Client Smp ID: HS22011279-07
Inj Date : 08-FEB-2022 15:42
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-07;HS22011279-07
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 23
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

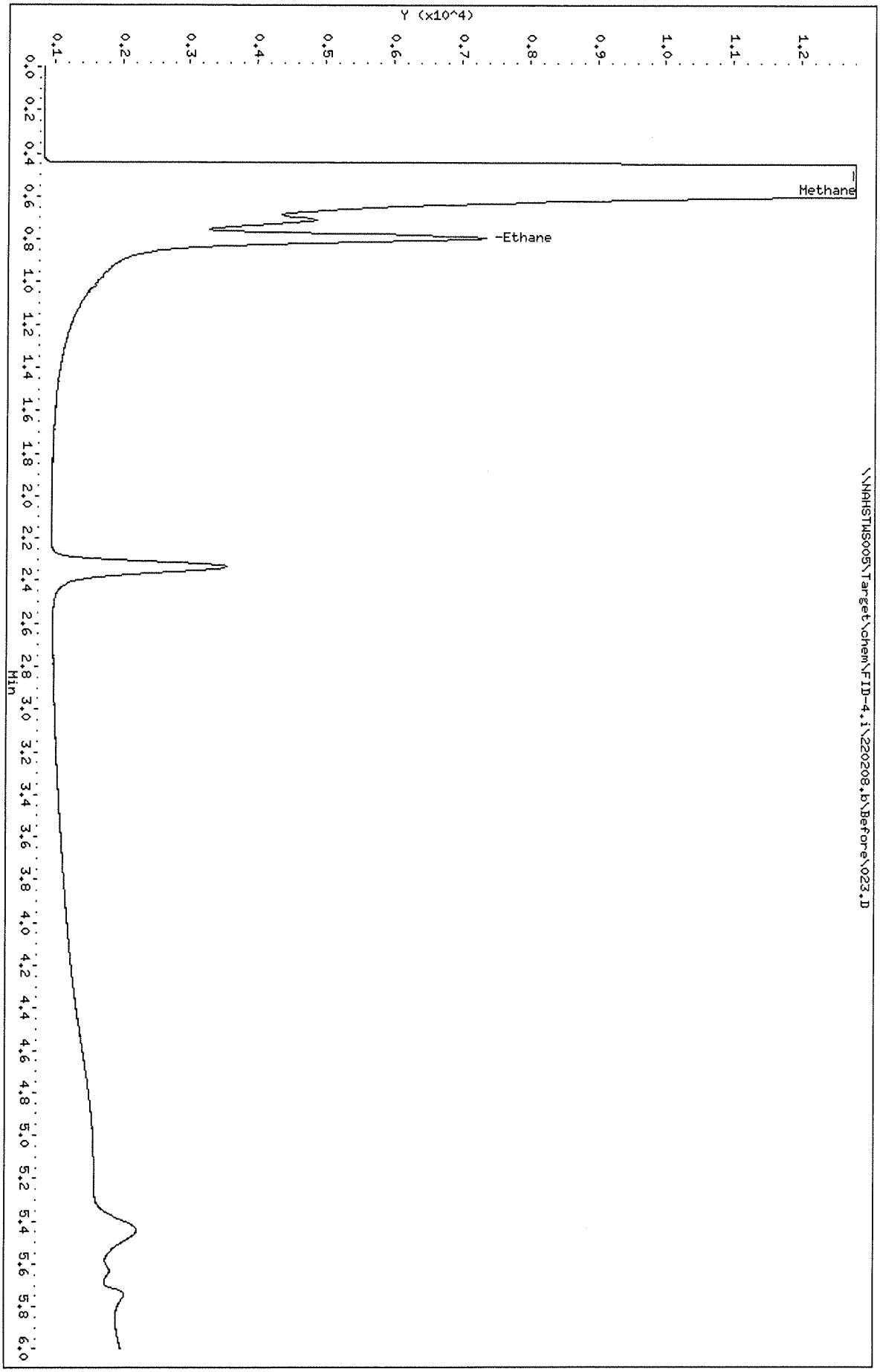
					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.473	0.463	0.010	6854155	7029.96	7029.957(A)
3 Ethane	0.793	0.783	0.010	43423	60.3525	60.352

QC Flag Legend

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

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\Before\023.D
Date : 08-FEB-2022 15:42
Client ID: HS22011279-07
Sample Info: HS22011279-07;HS22011279-07
Column phase: Rtx-PLOT

Instrument: FID-4.i
Operator: PL
Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\024.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\024.D
Lab Smp Id: HS22011279-08 Client Smp ID: HS22011279-08
Inj Date : 08-FEB-2022 15:51
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-08;HS22011279-08
Misc Info : ;1;0;400
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 24
Dil Factor: 400.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.493	0.463	0.030	18201	18.6678	7467.135(M)

QC Flag Legend

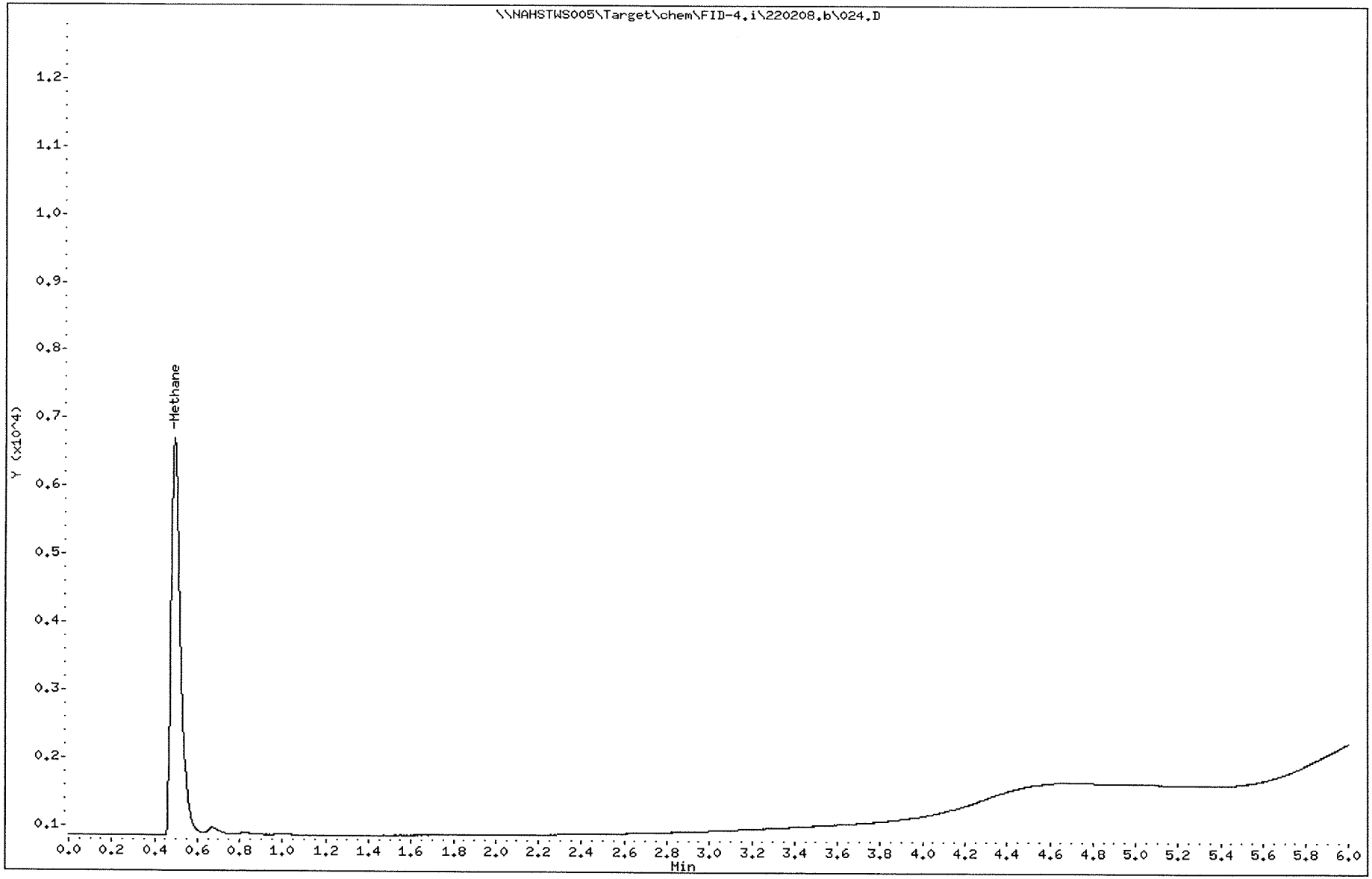
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\024.D
Date : 08-FEB-2022 15:51
Client ID: HS22011279-08
Sample Info: HS22011279-08;HS22011279-08

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\Before\024.D
Lab Smp Id: HS22011279-08 Client Smp ID: HS22011279-08
Inj Date : 08-FEB-2022 15:51
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-08;HS22011279-08
Misc Info : ;1;0;400
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 24
Dil Factor: 400.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1 Methane	0.493	0.463	0.030	18612	19.0894	7635.752
3 Ethane	0.820	0.783	0.037	147	0.20431	81.724(a)

QC Flag Legend

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

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\Before\024.D

Date : 08-FEB-2022 15:51

Client ID: HS22011279-08

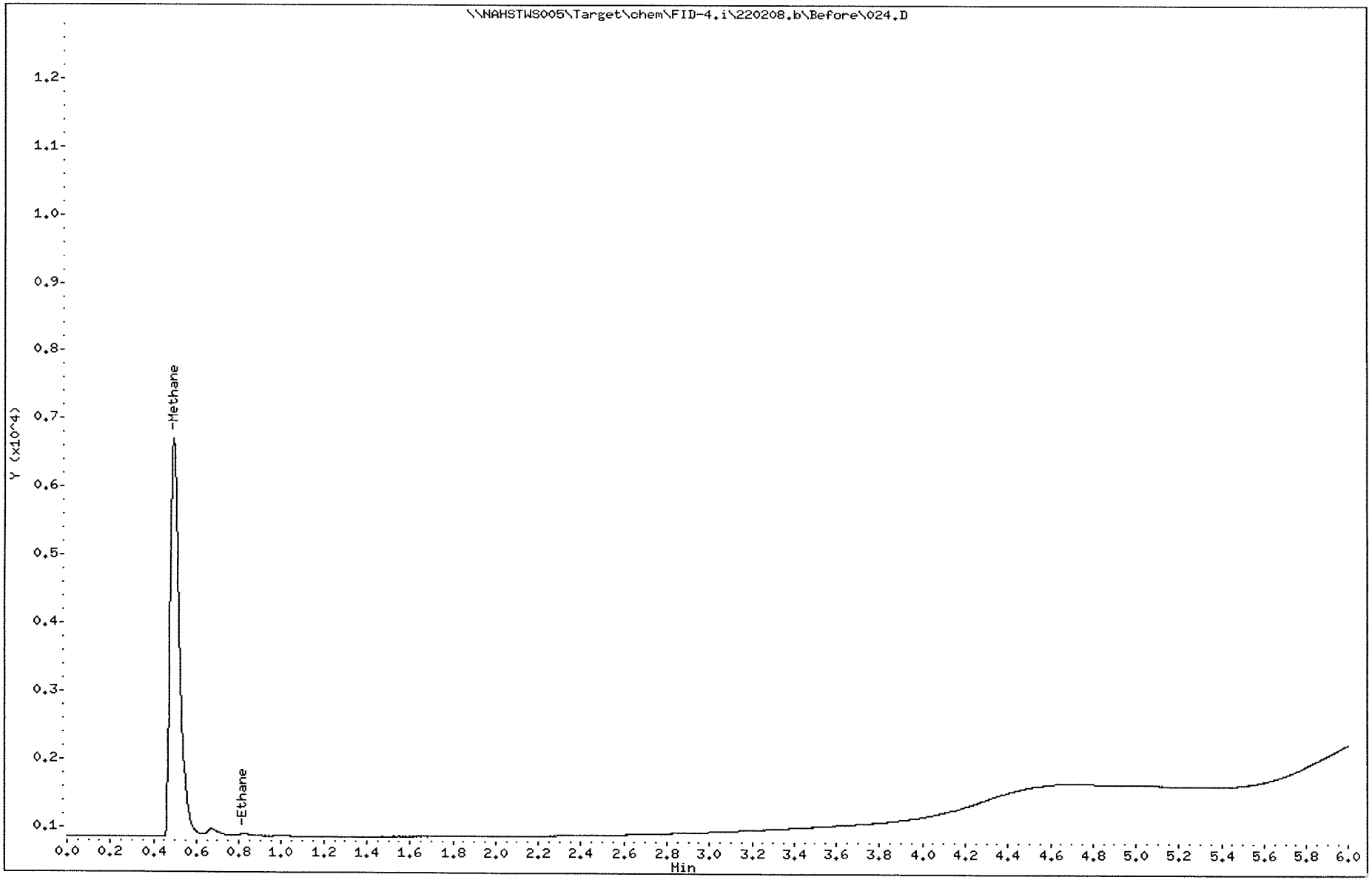
Sample Info: HS22011279-08;HS22011279-08

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL

Column diameter: 0.53



Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\025.D Page 1
Report Date: 14-Feb-2022 11:00

ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\025.D
Lab Smp Id: HS22011279-09 Client Smp ID: HS22011279-09
Inj Date : 08-FEB-2022 16:00
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-09;HS22011279-09
Misc Info : ;1;0;200
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 25
Dil Factor: 200.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					CONCENTRATIONS	
					ON-COLUMN	FINAL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.486	0.463	0.023	15653	16.0545	3210.897
2 Ethene	0.726	0.703	0.023	2566	4.38063	876.126(M)

QC Flag Legend

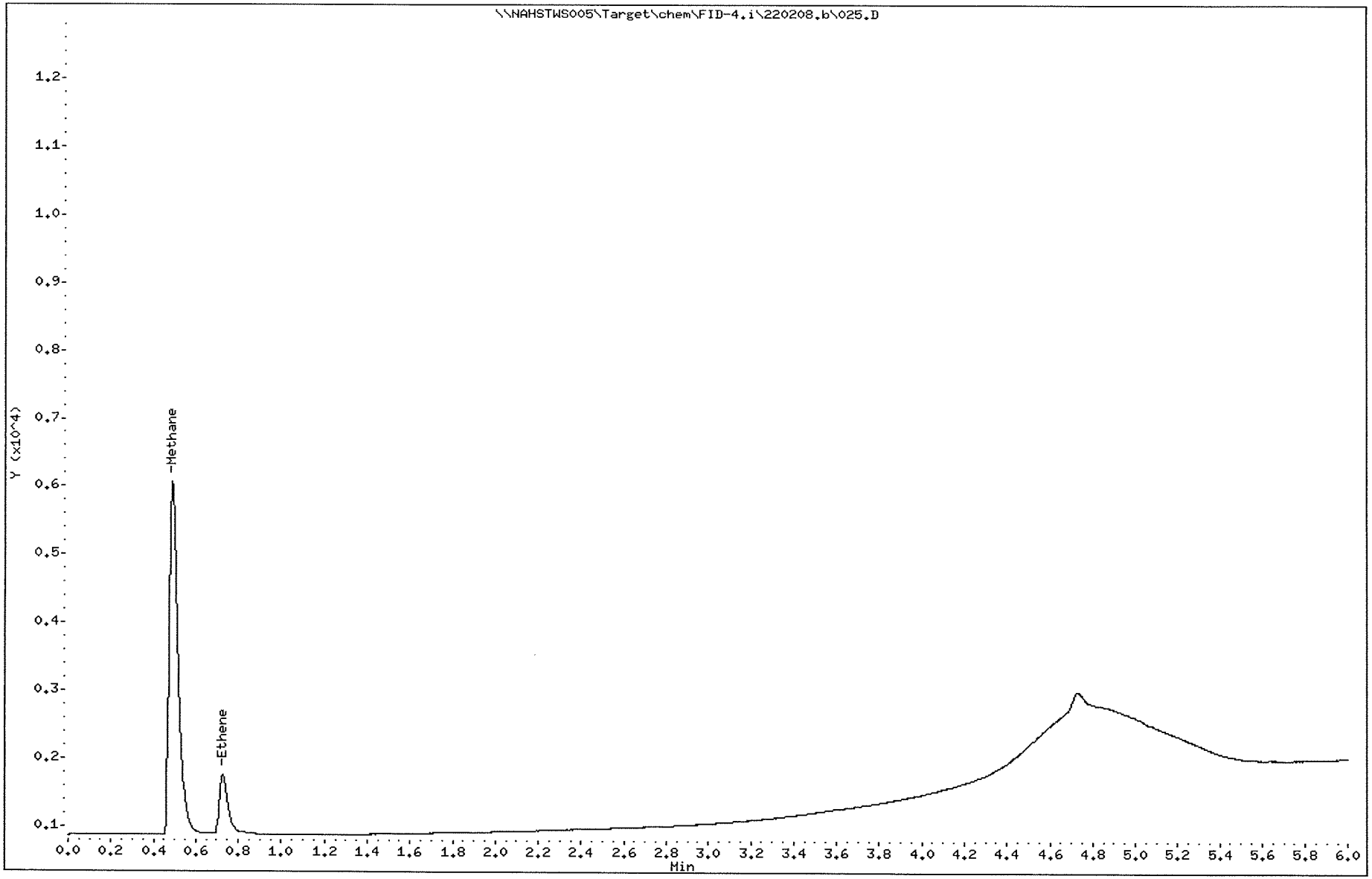
M - Compound response manually integrated.

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\025.D
Date : 08-FEB-2022 16:00
Client ID: HS22011279-09
Sample Info: HS22011279-09;HS22011279-09

Column phase: Rtx-PLOT

Instrument: FID-4.i

Operator: PL
Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\Before\025.D
Lab Smp Id: HS22011279-09 Client Smp ID: HS22011279-09
Inj Date : 08-FEB-2022 16:00
Operator : PL Inst ID: FID-4.i
Smp Info : HS22011279-09;HS22011279-09
Misc Info : ;1;0;200
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 25
Dil Factor: 200.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
1 Methane	0.486	0.463	0.023	15616	16.0165	3203.307
2 Ethene	0.726	0.703	0.023	2670	4.55818	911.635

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\Before\025.D

Date : 08-FEB-2022 16:00

Client ID: HS22011279-09

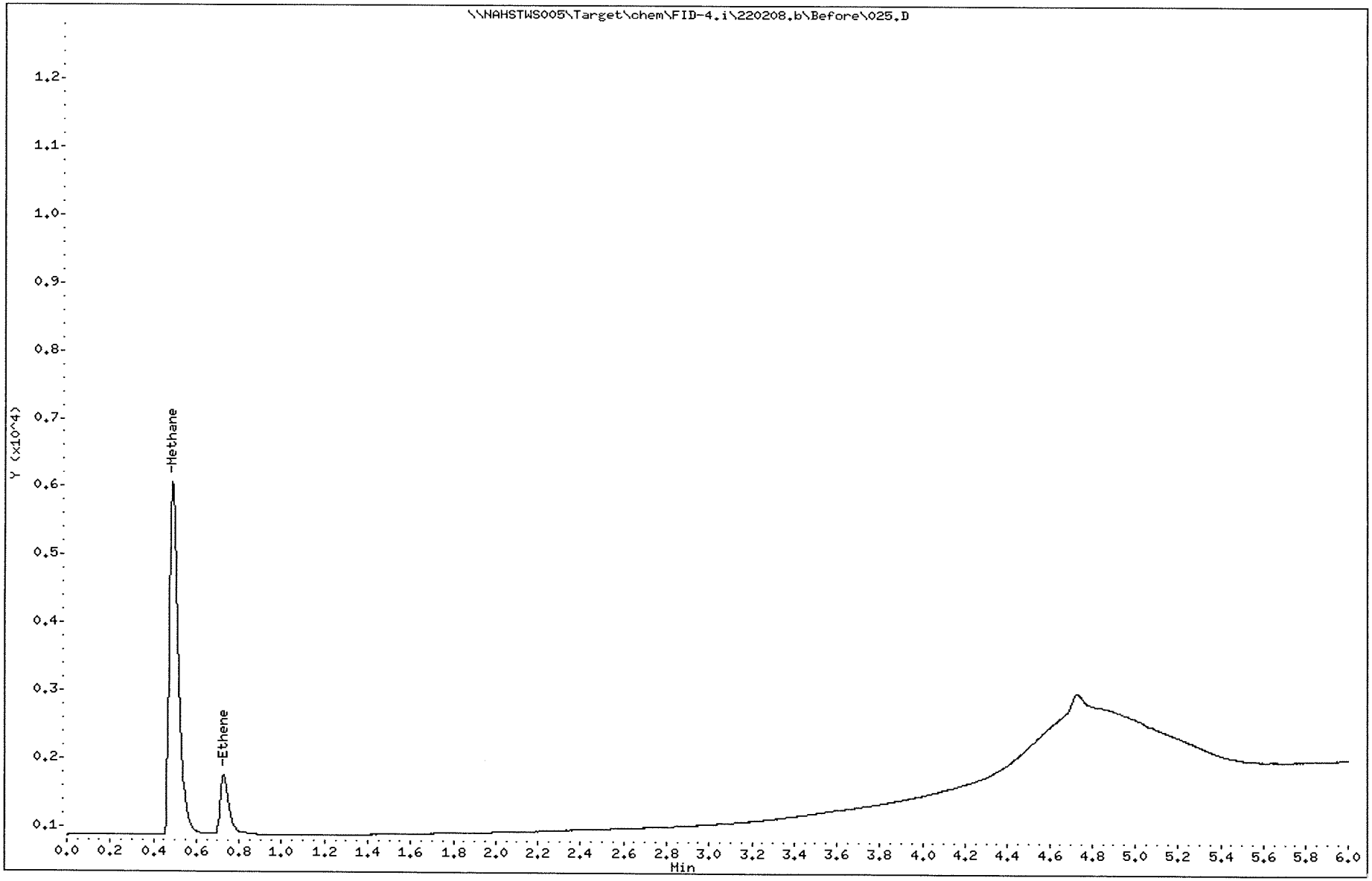
Instrument: FID-4.i

Sample Info: HS22011279-09;HS22011279-09

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



ALS Laboratory Group

Dissolved Gases Analysis

Data file : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\033.D
Lab Smp Id: RSK-CCV Client Smp ID: RSK-CCV
Inj Date : 08-FEB-2022 17:27
Operator : PL Inst ID: FID-4.i
Smp Info : RSK-CCV;RSK-CCV;2;4
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS005\Target\chem\FID-4.i\220208.b\RSKNI3.m
Meth Date : 14-Feb-2022 10:56 Linh.Pham Quant Type: ESTD
Cal Date : 24-JAN-2017 10:15 Cal File: 004.D
Als bottle: 22 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: Falcon Compound Sublist: RSK175.sub
Target Version: 4.14
Processing Host: ALSHSW7104

Concentration Formula: Amt * DF * CpndVariable
Cpnd Variable Local Compound Variable

					AMOUNTS	
					CAL-AMT	ON-COL
Compounds	RT	EXP RT	DLT RT	RESPONSE	(ug/L)	(ug/L)
1 Methane	0.466	0.463	0.003	9889	9.64700	10.142
2 Ethene	0.710	0.703	0.007	10112	16.8500	17.263
3 Ethane	0.786	0.783	0.003	13820	18.0430	19.208

Data File: \\NAHSTWS005\Target\chem\FID-4.i\220208.b\033.D

Date : 08-FEB-2022 17:27

Client ID: RSK-CCV

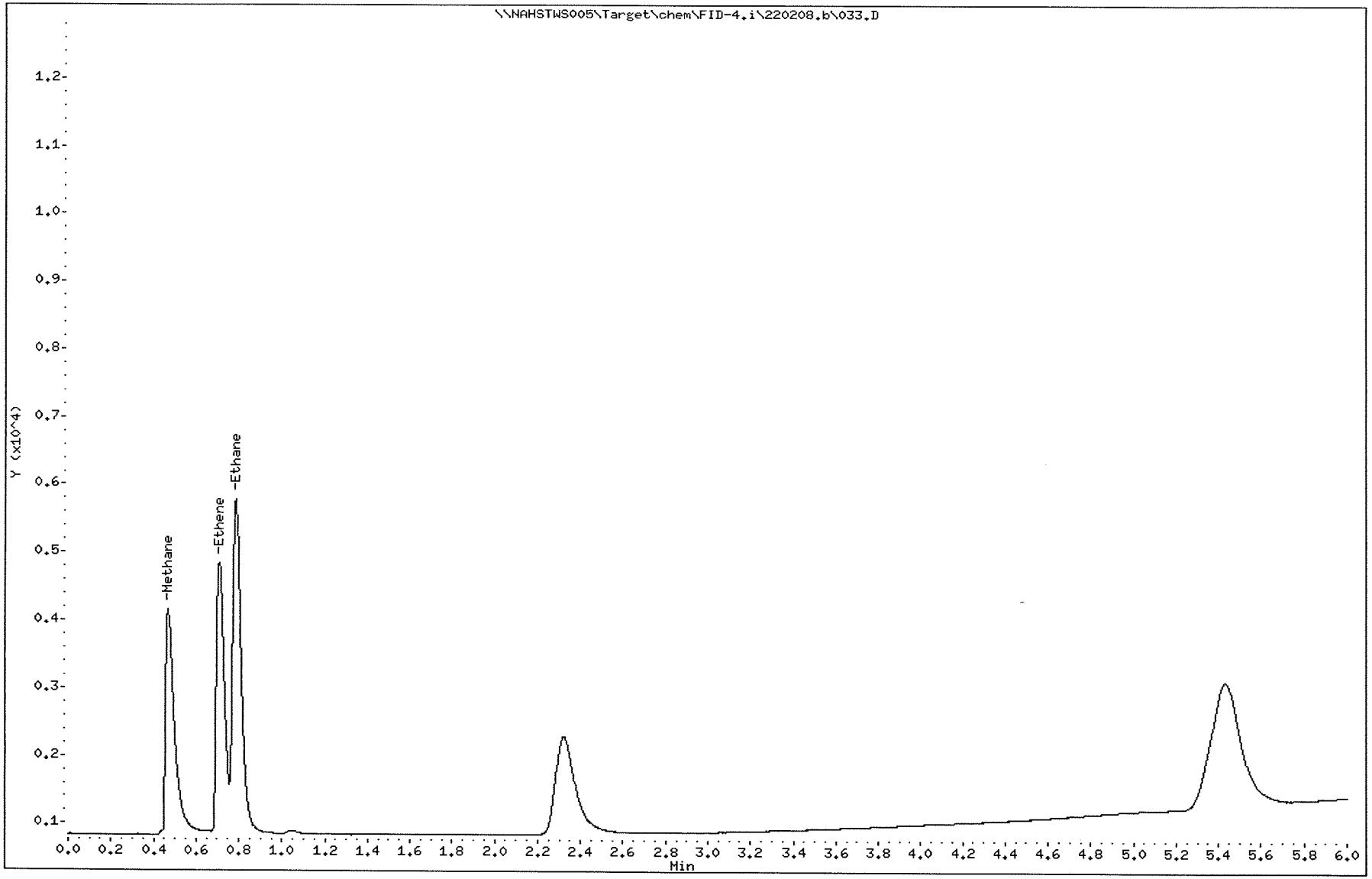
Instrument: FID-4.i

Sample Info: RSK-CCV;RSK-CCV;2;4

Operator: PL

Column phase: Rtx-PLOT

Column diameter: 0.53



HS22011279 Wet Chemistry

ALS WO# HS22011279

R1S 22011279 AIK-W

Report Date: 02/02/2022 : 5:16

PC-TitratION PLUS
Calibration Report

Calibration Record # 2448

Calibration Settings

Calibration ID	PH CAL 4-7-10	Date	02/02/2022
Channel	1	Time	5:16 PM
Probe Type	pH	Temperature	298.07 K 24.92 C
Probe ID	PH ELECTRODE	Analysis Type	Single Line Fit

Calibration Results

Slope	-58.267	CorrCoeff	0.9998
Intercept	1.097	Equation:	Y = (-58.267) X + (1.097)

Calibration Validity True Operator

	Result	Minimum	Maximum
Slope	-58.267	-65.00	-53.00
Intercept	1.097	-100.00	100.00
Correlation Coefficient	0.9998	0.99	1.00

Note: "True" means the calibration was within the specified ranges
"False" means the calibration was NOT within the specified ranges

Calibration Data	Standard	Reading
	4.00	177.97
	7.00	-3.05
	10.00	-171.63

#401499 (A)

#401501 (B)

RPN
2/3/2022

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Report Date: 2/3/2022 : 1:20 AM

PC-TitratION PLUS
Water Analysis Report

Run Number 4274 **Order Number** 20220202-2

SampleID	RunDate	RunTime	Temp	cond (uS)	pH	palk-ppm	talk-ppm	bcarb-ppm	carb-ppm	hydr-ppm	mLs @ 8.3	mLs @ 4.5	mLs @ 4.2
ICV-PH	2/2/2022	5:52 PM	25.23	-1.00	6.07	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
TAP WATER	2/2/2022	5:58 PM	25.11	-1.00	7.72	.00	256.86	256.86	.00	.00	.00	2.45	2.45
WBLKW1-220202	2/2/2022	6:03 PM	25.14	-1.00	5.73	.00	.75	.75	.00	.00	.00	.02	.02
LCS1-220202	2/2/2022	6:11 PM	25.30	-1.00	10.84	520.20	1,025.63	.00	1,010.85	14.78	4.95	9.77	9.77
LCSD1-220202	2/2/2022	6:20 PM	25.32	-1.00	10.84	516.22	1,018.16	.00	1,003.88	14.28	4.92	9.70	9.70
HS22011151-12	2/2/2022	6:30 PM	25.02	-1.00	6.34	.00	1,128.97	1,128.97	.00	.00	.00	10.75	10.75
HS22011151-12DUP	2/2/2022	6:38 PM	24.97	-1.00	6.33	.00	1,104.85	1,104.85	.00	.00	.00	10.52	10.52
HS22011151-11	2/2/2022	6:47 PM	25.00	-1.00	6.43	.00	781.71	781.71	.00	.00	.00	7.44	7.44
HS22011151-13	2/2/2022	6:53 PM	25.02	-1.00	6.28	.00	360.71	360.71	.00	.00	.00	3.44	3.44
HS22011140-03	2/2/2022	6:59 PM	25.00	-1.00	7.51	.00	348.62	348.62	.00	.00	.00	3.32	3.32
HS22011187-01	2/2/2022	7:06 PM	24.92	-1.00	8.48	10.85	311.91	290.21	21.71	.00	.10	2.97	2.97
CCV-PH	2/2/2022	7:09 PM	25.37	-1.00	7.08	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/2/2022	7:17 PM	25.11	-1.00	10.80	513.07	1,020.36	.00	1,014.59	5.77	4.89	9.72	9.72
DI RINSE	2/2/2022	7:22 PM	25.16	-1.00	5.86	.00	.58	.58	.00	.00	.00	.02	.02
HS22020006-01	2/2/2022	7:26 PM	25.00	-1.00	5.52	.00	.30	.30	.00	.00	.00	.02	.02
HS22020086-01	2/2/2022	7:41 PM	24.92	-1.00	7.81	.00	.00	.00	.00	.00	.00	.00	.00
HS22020086-01DF5	2/2/2022	7:51 PM	25.13	-1.00	7.98	.00	1,031.90	1,031.90	.00	.00	.00	9.83	9.83
HS22020086-02	2/2/2022	8:06 PM	25.02	-1.00	7.77	.00	.00	.00	.00	.00	.00	.00	.00
HS22020086-02DF5	2/2/2022	8:14 PM	25.09	-1.00	7.84	.00	997.11	997.11	.00	.00	.00	9.50	9.50
HS22011049-01DF10	2/2/2022	8:22 PM	24.80	-1.00	6.87	.00	14.38	14.38	.00	.00	.00	.16	.16
HS22011050-01DF10	2/2/2022	8:28 PM	24.57	-1.00	7.13	.00	28.88	28.88	.00	.00	.00	.28	.28
HS22011050-02DF10	2/2/2022	8:35 PM	24.34	-1.00	7.06	.00	17.87	17.87	.00	.00	.00	.19	.19
HS22011241-01	2/2/2022	8:42 PM	24.09	-1.00	7.76	.00	276.50	276.50	.00	.00	.00	2.63	2.63
CCV-PH	2/2/2022	8:45 PM	23.92	-1.00	7.09	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/2/2022	8:54 PM	23.72	-1.00	10.84	533.97	1,038.46	.00	1,008.98	29.47	5.09	9.89	9.89
DI RINSE	2/2/2022	8:59 PM	23.73	-1.00	5.93	.00	.62	.62	.00	.00	.00	.02	.02
HS22011275-01	2/2/2022	9:06 PM	23.62	-1.00	8.03	.00	198.75	198.75	.00	.00	.00	1.89	1.89

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Run Number 4274 **Order Number** 20220202-2

SampleID	RunDate	RunTime	Temp	cond (uS)	pH	palk-ppm	talk-ppm	bcarb-ppm	carb-ppm	hydr-ppm	mLs @ 8.3	mLs @ 4.5	mLs @ 4.2
HS22011279-05	2/2/2022	9:15 PM	23.68	-1.00	6.50	.00	1,161.74	1,161.74	.00	.00	.00	11.06	11.06
HS22011279-07	2/2/2022	9:20 PM	25.50	-1.00	4.98	.00	345.79	345.79	.00	.00	.00	3.29	3.29
HS22011279-08	2/2/2022	9:27 PM	23.67	-1.00	5.23	.00	500.81	500.81	.00	.00	.00	4.77	4.77
HS22011279-09	2/2/2022	9:37 PM	23.39	-1.00	5.24	.00	1,319.76	1,319.76	.00	.00	.00	12.57	12.57
HS22011287-02	2/2/2022	9:44 PM	23.20	-1.00	7.26	.00	190.22	190.22	.00	.00	.00	1.81	1.81
LCS2-220202	2/2/2022	9:53 PM	23.15	-1.00	10.82	515.08	1,013.85	.00	997.55	16.30	4.91	9.66	9.66
LCSD2-220202	2/2/2022	10:01 PM	23.06	-1.00	10.82	518.88	1,014.44	.00	991.14	23.31	4.94	9.66	9.66
HS22011074-04	2/2/2022	10:08 PM	23.12	-1.00	7.99	.00	321.36	321.36	.00	.00	.00	3.06	3.06
CCV-PH	2/2/2022	10:11 PM	23.09	-1.00	7.08	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/2/2022	10:20 PM	22.98	-1.00	10.79	529.20	1,038.25	.00	1,018.10	20.15	5.04	9.89	9.89
DI RINSE	2/2/2022	10:25 PM	23.33	-1.00	5.76	.00	.84	.84	.00	.00	.00	.02	.02
WBLKW2-220202	2/2/2022	10:31 PM	23.33	-1.00	5.50	.00	.65	.65	.00	.00	.00	.02	.02
HS22011074-04DUP	2/2/2022	10:37 PM	23.30	-1.00	7.98	.00	326.11	326.11	.00	.00	.00	3.11	3.11
HS22011074-01	2/2/2022	10:44 PM	23.23	-1.00	6.94	.00	591.96	591.96	.00	.00	.00	5.64	5.64
HS22011074-02	2/2/2022	10:51 PM	23.14	-1.00	7.01	.00	588.78	588.78	.00	.00	.00	5.61	5.61
HS22011196-01	2/2/2022	10:59 PM	23.01	-1.00	7.24	.00	565.62	565.62	.00	.00	.00	5.39	5.39
HS22011196-02	2/2/2022	11:05 PM	22.86	-1.00	6.87	.00	492.68	492.68	.00	.00	.00	4.69	4.69
HS22011196-03	2/2/2022	11:11 PM	22.70	-1.00	6.95	.00	367.47	367.47	.00	.00	.00	3.50	3.50
HS22011200-01	2/2/2022	11:18 PM	22.74	-1.00	6.79	.00	370.76	370.76	.00	.00	.00	3.53	3.53
HS22011281-01	2/2/2022	11:23 PM	22.58	-1.00	6.67	.00	199.40	199.40	.00	.00	.00	1.90	1.90
HS22011281-02	2/2/2022	11:30 PM	22.43	-1.00	7.10	.00	345.54	345.54	.00	.00	.00	3.29	3.29
CCV-PH	2/2/2022	11:33 PM	22.31	-1.00	7.08	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/2/2022	11:42 PM	22.22	-1.00	10.77	527.57	1,043.49	.00	1,031.84	11.65	5.02	9.94	9.94
DI RINSE	2/2/2022	11:47 PM	22.22	-1.00	5.80	.00	.93	.93	.00	.00	.00	.02	.02
HS22011281-03	2/2/2022	11:53 PM	22.20	-1.00	7.27	.00	347.67	347.67	.00	.00	.00	3.31	3.31
HS22011281-04	2/2/2022	11:59 PM	22.20	-1.00	6.98	.00	482.06	482.06	.00	.00	.00	4.59	4.59
HS22011326-01	2/3/2022	12:06 AM	22.14	-1.00	7.30	.00	539.40	539.40	.00	.00	.00	5.14	5.14
HS22011326-02	2/3/2022	12:13 AM	22.31	-1.00	7.12	.00	494.75	494.75	.00	.00	.00	4.71	4.71
HS22011326-03	2/3/2022	12:20 AM	22.25	-1.00	6.89	.00	232.13	232.13	.00	.00	.00	2.21	2.21
HS22011326-04	2/3/2022	12:26 AM	22.20	-1.00	7.19	.00	456.15	456.15	.00	.00	.00	4.34	4.34

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Run Number 4274 **Order Number** 20220202-2

SampleID	RunDate	RunTime	Temp	cond (uS)	pH	palk-ppm	talk-ppm	bcarb-ppm	carb-ppm	hydr-ppm	mLs @ 8.3	mLs @ 4.5	mLs @ 4.2
HS22011202-07	2/3/2022	12:34 AM	22.17	-1.00	8.62	1.49	26.26	23.28	2.97	.00	.01	.25	.25
HS22011202-08	2/3/2022	12:41 AM	22.19	-1.00	7.76	.00	445.26	445.26	.00	.00	.00	4.24	4.24
HS22011202-09	2/3/2022	12:47 AM	22.14	-1.00	7.49	.00	464.08	464.08	.00	.00	.00	4.42	4.42
HS22011202-10	2/3/2022	12:54 AM	22.13	-1.00	7.63	.00	366.45	366.45	.00	.00	.00	3.49	3.49
HS22011202-11	2/3/2022	1:01 AM	22.10	-1.00	7.78	.00	522.18	522.18	.00	.00	.00	4.97	4.97
CCV-PH	2/3/2022	1:04 AM	22.20	-1.00	7.08	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/3/2022	1:13 AM	22.14	-1.00	10.76	523.75	1,038.48	.00	1,029.46	9.02	4.99	9.89	9.89
DI RINSE	2/3/2022	1:18 AM	22.11	-1.00	5.67	.00	.72	.72	.00	.00	.00	.02	.02

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HS2201279

Report Date: 02/09/2022 : 4:49

PC-TitratION PLUS
Calibration Report

Calibration Record # 2449

Calibration Settings

Calibration ID	PH CAL 4-7-10	Date	02/09/2022
Channel	1	Time	4:49 PM
Probe Type	pH	Temperature	297.24 K 24.09 C
Probe ID	PH ELECTRODE	Analysis Type	Single Line Fit

Calibration Results

Slope	-58.207	CorrCoeff	0.9998
Intercept	0.937	Equation:	Y = (-58.207) X + (0.937)

Calibration Validity True Operator

	Result	Minimum	Maximum
Slope	-58.207	-65.00	-53.00
Intercept	0.937	-100.00	100.00
Correlation Coefficient	0.9998	0.99	1.00

Note: "True" means the calibration was within the specified ranges
"False" means the calibration was NOT within the specified ranges

Calibration Data	Standard	Reading
	4.00	177.61
	7.00	-3.17
	10.00	-171.63

#401948 (A)

#401949 (B)

#401950 (SOIL)

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Report Date: 2/10/2022 : 12:10 AM

PC-TitratION PLUS
Water Analysis Report

Run Number 4276 **Order Number** 20220209-2

SampleID	RunDate	RunTime	Temp	cond (uS)	pH	palk-ppm	talk-ppm	bcarb-ppm	carb-ppm	hydr-ppm	mLs @ 8.3	mLs @ 4.5	mLs @ 4.2
ICV-PH	2/9/2022	5:18 PM	24.72	-1.00	6.07	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
TAP WATER	2/9/2022	5:24 PM	24.67	-1.00	7.72	.00	265.54	265.54	.00	.00	.00	2.53	2.53
WBLKW1-220209	2/9/2022	5:29 PM	24.52	-1.00	5.71	.00	.81	.81	.00	.00	.00	.02	.02
LCS1-220209	2/9/2022	5:38 PM	24.59	-1.00	10.86	521.08	1,023.36	.00	1,004.57	18.79	4.96	9.75	9.75
LCSD1-220209	2/9/2022	5:47 PM	24.79	-1.00	10.82	533.50	1,049.97	.00	1,032.94	17.03	5.08	10.00	10.00
HS22011198-01DF5	2/9/2022	5:53 PM	24.75	-1.00	6.71	.00	31.52	31.52	.00	.00	.00	.30	.30
HS22011206-01DF5	2/9/2022	5:59 PM	24.67	-1.00	7.51	.00	66.85	66.85	.00	.00	.00	.64	.64
HS22011215-01DF5	2/9/2022	6:05 PM	24.65	-1.00	7.40	.00	66.94	66.94	.00	.00	.00	.64	.64
HS22011218-01DF5	2/9/2022	6:13 PM	24.64	-1.00	7.22	.00	54.46	54.46	.00	.00	.00	.52	.52
HS22011222-01DF5	2/9/2022	6:19 PM	24.62	-1.00	7.18	.00	67.39	67.39	.00	.00	.00	.64	.64
HS22020344-02	2/9/2022	6:26 PM	24.59	-1.00	7.59	.00	276.05	276.05	.00	.00	.00	2.63	2.63
CCV-PH	2/9/2022	6:29 PM	24.70	-1.00	7.10	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/9/2022	6:38 PM	24.47	-1.00	10.88	520.86	1,025.24	.00	1,008.75	16.49	4.96	9.76	9.76
DI RINSE	2/9/2022	6:43 PM	24.59	-1.00	5.82	.00	.83	.83	.00	.00	.00	.03	.03
HS22020348-01	2/9/2022	6:48 PM	24.49	-1.00	5.52	.00	.60	.60	.00	.00	.00	.02	.02
HS22011274-02	2/9/2022	6:55 PM	24.47	-1.00	7.98	.00	461.94	461.94	.00	.00	.00	4.40	4.40
HS22011274-02DUP	2/9/2022	7:02 PM	24.50	-1.00	8.00	.00	461.43	461.43	.00	.00	.00	4.39	4.39
HS22011274-03	2/9/2022	7:09 PM	24.50	-1.00	7.74	.00	462.77	462.77	.00	.00	.00	4.41	4.41
HS22011274-04	2/9/2022	7:16 PM	24.54	-1.00	7.64	.00	534.99	534.99	.00	.00	.00	5.10	5.10
HS22011274-05	2/9/2022	7:24 PM	24.50	-1.00	8.05	.00	585.18	585.18	.00	.00	.00	5.57	5.57
HS22011307-01	2/9/2022	7:30 PM	24.40	-1.00	7.70	.00	483.21	483.21	.00	.00	.00	4.60	4.60
HS22011307-02	2/9/2022	7:37 PM	24.25	-1.00	7.86	.00	407.60	407.60	.00	.00	.00	3.88	3.88
HS22020233-01	2/9/2022	7:44 PM	24.15	-1.00	7.76	.00	187.97	187.97	.00	.00	.00	1.79	1.79
CCV-PH	2/9/2022	7:47 PM	24.10	-1.00	7.09	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/9/2022	7:56 PM	23.91	-1.00	10.82	532.48	1,042.79	.00	1,020.61	22.18	5.07	9.93	9.93
DI RINSE	2/9/2022	8:01 PM	24.07	-1.00	5.66	.00	.72	.72	.00	.00	.00	.02	.02
HS22010449-06DF2	2/9/2022	8:08 PM	23.88	-1.00	8.48	2.78	137.60	132.04	5.57	.00	.03	1.31	1.31

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Run Number 4276 **Order Number** 20220209-2

SampleID	RunDate	RunTime	Temp	cond (uS)	pH	palk-ppm	talk-ppm	bcarb-ppm	carb-ppm	hydr-ppm	mLs @ 8.3	mLs @ 4.5	mLs @ 4.2
HS22010449-06	2/9/2022	8:14 PM	23.88	-1.00	8.59	8.58	274.29	257.13	17.16	.00	.08	2.61	2.61
HS22020085-01	2/9/2022	8:20 PM	23.94	-1.00	8.60	10.03	281.29	261.23	20.05	.00	.10	2.68	2.68
HS22020085-02	2/9/2022	8:27 PM	23.78	-1.00	8.59	10.08	288.55	268.40	20.15	.00	.10	2.75	2.75
HS22020085-03	2/9/2022	8:34 PM	23.76	-1.00	8.48	7.07	268.28	254.14	14.14	.00	.07	2.56	2.56
HS22020085-04	2/9/2022	8:41 PM	23.72	-1.00	8.28	.00	240.44	240.44	.00	.00	.00	2.29	2.29
LCS2-220209	2/9/2022	8:50 PM	23.59	-1.00	10.83	527.70	1,033.31	.00	1,011.21	22.09	5.03	9.84	9.84
LCSD2-220209	2/9/2022	8:59 PM	23.47	-1.00	10.84	514.10	1,020.51	.00	1,012.83	7.68	4.90	9.72	9.72
HS22020394-02	2/9/2022	9:05 PM	23.47	-1.00	7.13	.00	198.77	198.77	.00	.00	.00	1.89	1.89
CCV-PH	2/9/2022	9:08 PM	23.35	-1.00	7.08	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/9/2022	9:17 PM	23.22	-1.00	10.80	506.70	1,039.97	26.56	1,013.41	.00	4.83	9.90	9.90
DI RINSE	2/9/2022	9:22 PM	23.44	-1.00	5.75	.00	.80	.80	.00	.00	.00	.02	.02
WBLKW2-220209	2/9/2022	9:27 PM	23.31	-1.00	5.46	.00	.60	.60	.00	.00	.00	.02	.02
HS22020394-02DUP	2/9/2022	9:33 PM	23.25	-1.00	7.12	.00	198.32	198.32	.00	.00	.00	1.89	1.89
HS22020394-01	2/9/2022	9:39 PM	23.20	-1.00	7.29	.00	128.30	128.30	.00	.00	.00	1.22	1.22
HS22020394-03	2/9/2022	9:45 PM	23.14	-1.00	7.37	.00	290.97	290.97	.00	.00	.00	2.77	2.77
HS22020394-04	2/9/2022	9:52 PM	23.12	-1.00	7.19	.00	479.13	479.13	.00	.00	.00	4.56	4.56
HS22020394-05	2/9/2022	9:58 PM	23.06	-1.00	7.32	.00	413.33	413.33	.00	.00	.00	3.94	3.94
HS22020394-06	2/9/2022	10:04 PM	22.99	-1.00	7.15	.00	342.18	342.18	.00	.00	.00	3.26	3.26
HS22020394-07	2/9/2022	10:12 PM	23.11	-1.00	7.22	.00	494.58	494.58	.00	.00	.00	4.71	4.71
HS22020394-08	2/9/2022	10:18 PM	23.04	-1.00	7.17	.00	476.27	476.27	.00	.00	.00	4.54	4.54
HS22020211-01	2/9/2022	10:26 PM	22.96	-1.00	11.35	125.00	142.54	.00	35.07	107.47	1.19	1.36	1.36
CCV-PH	2/9/2022	10:29 PM	22.90	-1.00	7.08	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/9/2022	10:37 PM	22.78	-1.00	10.77	507.85	1,024.57	8.87	1,015.70	.00	4.84	9.76	9.76
DI RINSE	2/9/2022	10:43 PM	22.81	-1.00	5.82	.00	.71	.71	.00	.00	.00	.02	.02
HS22020211-02	2/9/2022	10:52 PM	22.70	-1.00	11.66	261.03	282.85	.00	43.63	239.22	2.49	2.69	2.69
HS22020211-03	2/9/2022	10:59 PM	22.63	-1.00	8.16	.00	143.32	143.32	.00	.00	.00	1.36	1.36
HS22020284-01	2/9/2022	11:08 PM	22.52	-1.00	8.66	28.81	716.97	659.35	57.62	.00	.27	6.83	6.83
HS22020284-02	2/9/2022	11:17 PM	22.51	-1.00	9.40	241.73	1,390.10	906.65	483.45	.00	2.30	13.24	13.24
LCS-175217	2/9/2022	11:26 PM	22.32	-1.00	10.79	500.95	1,034.31	32.41	1,001.89	.00	4.77	9.85	9.85
LCSD-175217	2/9/2022	11:35 PM	22.19	-1.00	10.79	509.26	1,024.05	5.53	1,018.52	.00	4.85	9.75	9.75

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Run Number 4276 **Order Number** 20220209-2

SampleID	RunDate	RunTime	Temp	cond (uS)	pH	palk-ppm	talk-ppm	bcarb-ppm	carb-ppm	hydr-ppm	mLs @ 8.3	mLs @ 4.5	mLs @ 4.2
MBLK-175217	2/9/2022	11:40 PM	22.10	-1.00	5.57	.00	.69	.69	.00	.00	.00	.02	.02 NR TH
MBLK-175217	2/9/2022	11:45 PM	22.02	-1.00	5.39	.00	.56	.56	.00	.00	.00	.02	.02
HS22011279-06	2/9/2022	11:48 PM	21.87	-1.00	4.29	.00	-1.78	-1.78	.00	.00	.00	.00	.00
HS22011279-06DUP	2/9/2022	11:52 PM	21.93	-1.00	4.28	.00	-1.71	-1.71	.00	.00	.00	.00	.00
CCV-PH	2/9/2022	11:55 PM	22.00	-1.00	7.07	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
CCV-ALK	2/10/2022	12:03 AM	22.16	-1.00	10.75	505.96	1,024.14	12.21	1,011.92	.00	4.82	9.75	9.75
DI RINSE	2/10/2022	12:08 AM	22.22	-1.00	5.93	.00	.82	.82	.00	.00	.00	.02	.02

PC-TitratION PLUS by Man-Tech Associates, Inc.

GENERAL RESULTS REPORT.SRW

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C:\TOC-L\Data\2022_01_07_004_CAL.tlx HS 2201279

	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result	Notes
1	Standard	NPOC	CAL	3100605108	01_07_2022	1.000		
2	Unknown	NPOC	ICV	3100605001	01_07_2022	1.000	NPOC:10.48mg/L	
3	Unknown	NPOC	ICB		01_07_2022	1.000	NPOC:0.2145mg/L	

C:\TOC-L\Data\2022_01_07_004_CAL.tlx

	Status	Date / Time	Vial
1	Completed	1/7/2022 3:14:17 P	1, 2, 3, 4, 5,
2	Completed	1/7/2022 3:49:44 P	8
3	Completed	1/7/2022 4:05:17 P	1

TOC-Control L Report

2022_01_07_004_CAL.tlx

Instr.Information

Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Cal. Curve

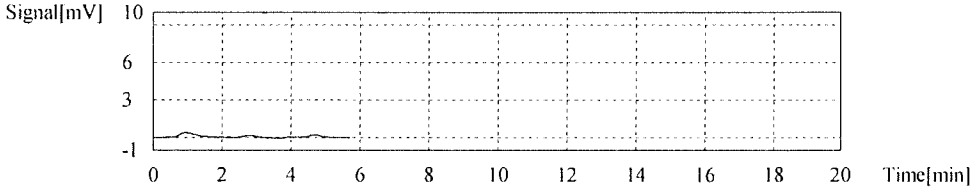
Sample Name:	CAL
Sample ID:	3100605108
Cal. Curve:	01_07_2022_CAL.2022_01_07_13_39_18.cal
Status	Completed

Type	Anal.
Standard	NPOC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1.141	50uL	1.000	*******		1/7/2022 1:47:14 PM
2	0.3472	50uL	1.000	*******		1/7/2022 1:49:21 PM
3	0.3203	50uL	1.000	*******		1/7/2022 1:51:31 PM

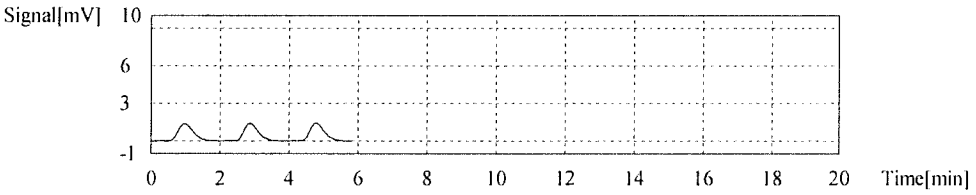
Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	0.6028



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	4.210	50uL	1.000	*******		1/7/2022 1:59:36 PM
2	4.020	50uL	1.000	*******		1/7/2022 2:01:43 PM
3	4.103	50uL	1.000	*******		1/7/2022 2:03:53 PM

Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	4.111



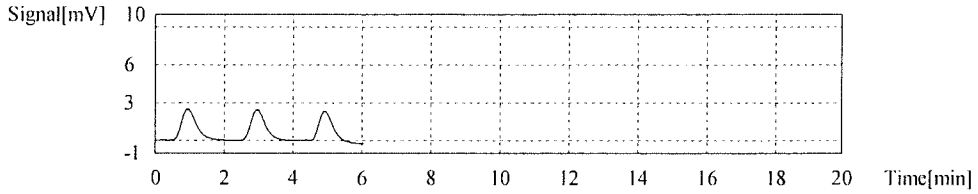
Conc: 2.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	7.265	50uL	1.000	*******		1/7/2022 2:12:01 PM
2	7.202	50uL	1.000	*******		1/7/2022 2:14:17 PM
3	6.721	50uL	1.000	*******		1/7/2022 2:16:35 PM

TOC-Control L Report

2022_01_07_004_CAL.tlx

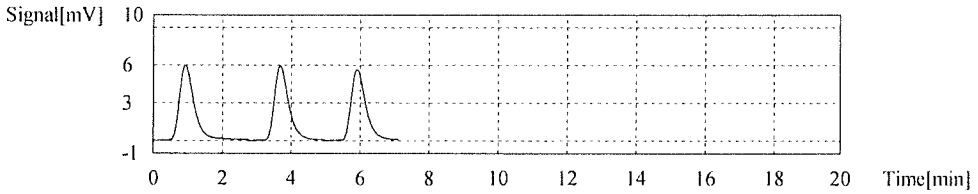
Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	7.063



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	17.57	50uL	1.000	*******		1/7/2022 2:25:30 PM
2	17.17	50uL	1.000	*******		1/7/2022 2:27:59 PM
3	16.55	50uL	1.000	*******		1/7/2022 2:30:23 PM

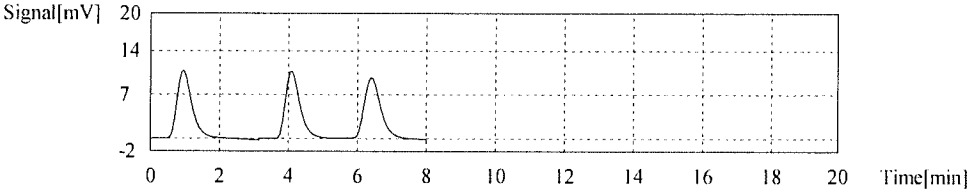
Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	17.10



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	33.96	50uL	1.000	*******		1/7/2022 2:39:42 PM
2	31.65	50uL	1.000	*******		1/7/2022 2:42:13 PM
3	32.92	50uL	1.000	*******		1/7/2022 2:45:02 PM

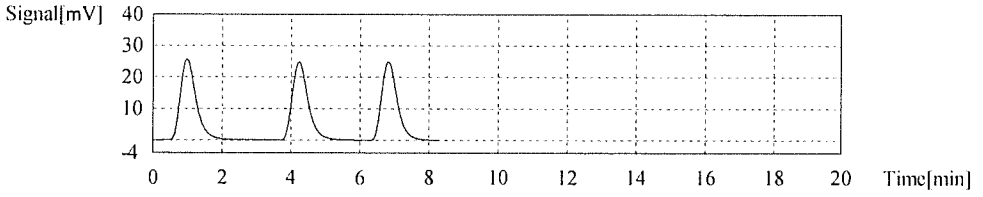
Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	32.84



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	82.21	50uL	1.000	*******		1/7/2022 2:54:26 PM
2	79.52	50uL	1.000	*******		1/7/2022 2:57:17 PM
3	79.28	50uL	1.000	*******		1/7/2022 3:00:00 PM

Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	80.34



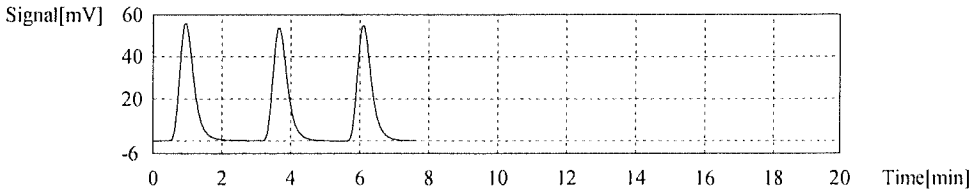
Conc: 50.00mg/L

TOC-Control L Report

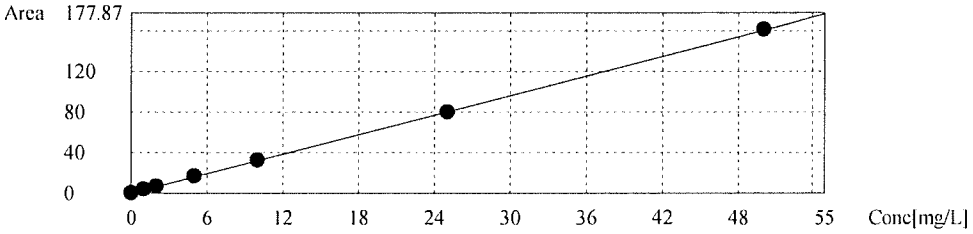
2022_01_07_004_CAL.tlx

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	164.7	50uL	1.000	*******		1/7/2022 3:08:52 PM
2	160.4	50uL	1.000	*******		1/7/2022 3:11:34 PM
3	160.0	50uL	1.000	*******		1/7/2022 3:14:17 PM

Acid Add. 1.500%
Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 161.7



Slope: 3.214
Intercept 0.000
r^2 1.0000
r 1.0000
RSE(%) N/A
Zero Shift Yes



Sample

Sample Name: ICV
Sample ID: 3100605001
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

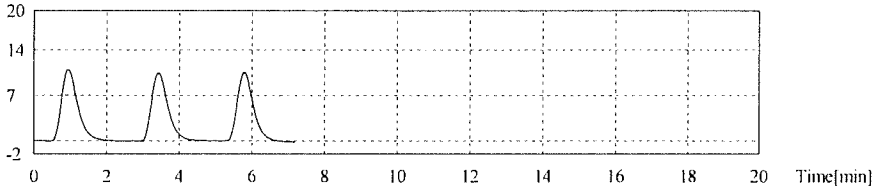
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.48mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	34.59	10.76mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 3:44:32 PM
2	33.20	10.33mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 3:47:08 PM
3	33.24	10.34mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 3:49:44 PM

Mean Area 33.68
Mean Conc. 10.48mg/L



Sample

TOC-Control L Report

2022_01_07_004_CAL.tlx

Sample Name: ICB
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

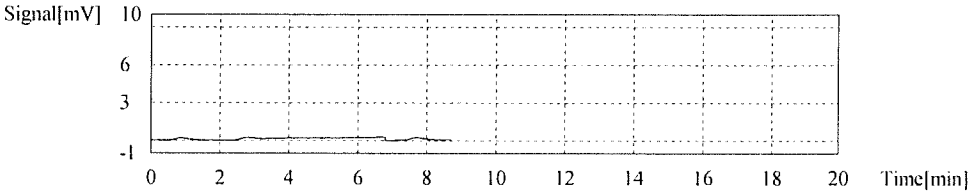
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 0.2145mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.4378	0.1362mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 3:58:00 PM
2	1.183	0.3681mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 4:03:08 PM
3	0.4476	0.1393mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	1/7/2022 4:05:17 PM

Mean Area 0.6895
Mean Conc. 0.2145mg/L



C:\TOC-L\Data\2022_02_10_002.tlx

	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result	Notes
1	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:25.05mg/L	
2	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.1648mg/L	
3	Unknown	NPOC	MBLK-02102022		01_07_2022	1.000	NPOC:0.1493mg/L	
4	Unknown	NPOC	LCS-02102022	3100605001	01_07_2022	1.000	NPOC:10.56mg/L	
5	Unknown	NPOC	LCSD-02102022	3100605001	01_07_2022	1.000	NPOC:10.69mg/L	
6	Unknown	NPOC	HS22011279-02		01_07_2022	1.000	NPOC:6.932mg/L	
7	Unknown	NPOC	HS22011279-02MS		01_07_2022	1.000	NPOC:28.10mg/L	
8	Unknown	NPOC	HS22011279-05		01_07_2022	1.000	NPOC:20.87mg/L	
9	Unknown	NPOC	HS22011279-07DF100		01_07_2022	1.000	NPOC:1467mg/L	
10	Unknown	NPOC	HS22011279-08DF100		01_07_2022	1.000	NPOC:1435mg/L	
11	Unknown	NPOC	HS22011279-09DF100		01_07_2022	1.000	NPOC:26.27mg/L	
12	Unknown	NPOC	HS22020224-01		01_07_2022	1.000	NPOC:10.66mg/L	
13	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:24.59mg/L	
14	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.3096mg/L	
15	Unknown	NPOC	HS22020346-01		01_07_2022	1.000	NPOC:0.2258mg/L	
16	Unknown	NPOC	HS22020349-01		01_07_2022	1.000	NPOC:0.2231mg/L	
17	Unknown	NPOC	HS22020262-01		01_07_2022	1.000	NPOC:9.338mg/L	
18	Unknown	NPOC	HS22020270-01		01_07_2022	1.000	NPOC:13.43mg/L	
19	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:25.20mg/L	
20	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.3099mg/L	
21	Unknown	NPOC	MBLK-02102022		01_07_2022	1.000	NPOC:0.2206mg/L	
22	Unknown	NPOC	LCS-02102022	3100605001	01_07_2022	1.000	NPOC:10.21mg/L	
23	Unknown	NPOC	LCSD-02102022	3100605001	01_07_2022	1.000	NPOC:10.24mg/L	
24	Unknown	NPOC	HS22020375-01		01_07_2022	1.000	NPOC:18.74mg/L	
25	Unknown	NPOC	HS22020080-01		01_07_2022	1.000	NPOC:3.418mg/L	
26	Unknown	NPOC	HS22020112-01		01_07_2022	1.000	NPOC:4.842mg/L	
27	Unknown	NPOC	HS22020119-01		01_07_2022	1.000	NPOC:1.360mg/L	
28	Unknown	NPOC	HS22020119-02		01_07_2022	1.000	NPOC:1.514mg/L	
29	Unknown	NPOC	HS22020119-02MS		01_07_2022	1.000	NPOC:19.02mg/L	
30	Unknown	NPOC	HS22020119-03		01_07_2022	1.000	NPOC:1.397mg/L	
31	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:25.01mg/L	
32	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.2974mg/L	
33	Unknown	NPOC	HS22020119-04		01_07_2022	1.000	NPOC:1.371mg/L	
34	Unknown	NPOC	HS22020119-05		01_07_2022	1.000	NPOC:1.836mg/L	
35	Unknown	NPOC	HS22020119-06		01_07_2022	1.000	NPOC:2.052mg/L	
36	Unknown	NPOC	HS22020119-07		01_07_2022	1.000	NPOC:2.863mg/L	
37	Unknown	NPOC	CCV	318173804	TOC_W 906	1.000	NPOC:24.82mg/L	
38	Unknown	NPOC	CCB		TOC_W 906	1.000	NPOC:0.2469mg/L	
39	Unknown	NPOC	MBLK-02102022		TOC_W 906	1.000	NPOC:0.1361mg/L	
40	Unknown	NPOC	LCS-02102022		TOC_W 906	1.000	NPOC:10.06mg/L	
41	Unknown	NPOC	LCSD-02102022		TOC_W 906	1.000	NPOC:10.24mg/L	
42	Unknown	NPOC	HS22011287-02		TOC_W 906	1.000	NPOC:12.28mg/L	
43	Unknown	NPOC	HS22011287-02MS		TOC_W 906	1.000	NPOC:30.61mg/L	
44	Unknown	NPOC	HS22020413-02		TOC_W 906	1.000	NPOC:0.8310mg/L	
45	Unknown	NPOC	HS22020413-04		TOC_W 906	1.000	NPOC:1.043mg/L	
46	Unknown	NPOC	HS22020413-05		TOC_W 906	1.000	NPOC:6.212mg/L	
47	Unknown	NPOC	HS22020413-06		TOC_W 906	1.000	NPOC:1.481mg/L	
48	Unknown	NPOC	HS22020413-07		TOC_W 906	1.000	NPOC:3.632mg/L	
49	Unknown	NPOC	CCV	318173804	TOC_W 906	1.000	NPOC:25.23mg/L	
50	Unknown	NPOC	CCB		TOC_W 906	1.000	NPOC:0.3404mg/L	
51	Unknown	NPOC	HS22020472-01		TOC_W 906	1.000	NPOC:6.973mg/L	

C:\TOC-L\Data\2022_02_10_002.tlx

	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result	Notes
52	Unknown	NPOC	HS22020477-01		TOC_W 906	1.000	NPOC:7.168mg/L	
53	Unknown	NPOC	HS22020233-01		TOC_W 906	1.000	NPOC:16.92mg/L	
54	Unknown	NPOC	HS22020237-01		TOC_W 906	1.000	NPOC:33.57mg/L	
55	Unknown	NPOC	CCV	318173804	TOC_W 906	1.000	NPOC:24.55mg/L	
56	Unknown	NPOC	CCB		TOC_W 906	1.000	NPOC:0.2115mg/L	

C:\TOC-L\Data\2022_02_10_002.tlx

	Status	Date / Time	Vial
1	Completed	2/10/2022 4:33:15 P	1
2	Completed	2/10/2022 4:45:34 P	2
3	Completed	2/10/2022 4:57:53 P	3
4	Completed	2/10/2022 5:48:01 P	4
5	Completed	2/10/2022 6:01:25 P	5
6	Completed	2/10/2022 6:14:51 P	6
7	Completed	2/10/2022 6:29:04 P	7
8	Completed	2/10/2022 6:42:42 P	8
9	Completed	2/10/2022 7:01:11 P	9
10	Completed	2/10/2022 7:19:28 P	10
11	Completed	2/10/2022 7:33:34 P	11
12	Completed	2/10/2022 7:46:54 P	12
13	Completed	2/10/2022 8:00:58 P	1
14	Completed	2/10/2022 8:13:18 P	2
15	Completed	2/10/2022 8:25:44 P	13
16	Completed	2/10/2022 8:38:04 P	14
17	Completed	2/10/2022 8:51:38 P	15
18	Completed	2/10/2022 9:05:29 P	16
19	Completed	2/10/2022 9:20:07 P	1
20	Completed	2/10/2022 9:32:28 P	2
21	Completed	2/10/2022 9:44:48 P	3
22	Completed	2/10/2022 9:58:11 P	4
23	Completed	2/10/2022 10:11:27	5
24	Completed	2/10/2022 10:25:46	17
25	Completed	2/10/2022 10:38:40	18
26	Completed	2/10/2022 10:51:33	19
27	Completed	2/10/2022 11:03:57	20
28	Completed	2/10/2022 11:16:19	21
29	Completed	2/10/2022 11:30:05	22
30	Completed	2/10/2022 11:42:25	23
31	Completed	2/10/2022 11:56:58	24
32	Completed	2/11/2022 12:09:18	25
33	Completed	2/11/2022 12:21:45	26
34	Completed	2/11/2022 12:34:08	27
35	Completed	2/11/2022 12:46:38	28
36	Completed	2/11/2022 12:59:03	29
37	Completed	2/11/2022 1:16:11 A	24
38	Completed	2/11/2022 1:30:37 A	25
39	Completed	2/11/2022 1:45:05 A	3
40	Completed	2/11/2022 2:00:57 A	4
41	Completed	2/11/2022 2:16:51 A	5
42	Completed	2/11/2022 2:33:00 A	30
43	Completed	2/11/2022 2:49:32 A	31
44	Completed	2/11/2022 3:04:00 A	32
45	Completed	2/11/2022 3:18:28 A	33
46	Completed	2/11/2022 3:34:02 A	34
47	Completed	2/11/2022 3:48:31 A	35
48	Completed	2/11/2022 4:03:29 A	36
49	Completed	2/11/2022 4:20:26 A	24
50	Completed	2/11/2022 4:34:52 A	25
51	Completed	2/11/2022 4:50:32 A	37

C:\TOC-L\Data\2022_02_10_002.tlx

	Status	Date / Time	Vial
52	Completed	2/11/2022 5:06:14 A	38
53	Completed	2/11/2022 5:22:37 A	39
54	Completed	2/11/2022 5:39:15 A	40
55	Completed	2/11/2022 5:56:14 A	24
56	Completed	2/11/2022 6:10:40 A	25

TOC-Control L Report

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Instr.Information

Instrument Options: TOC/ASI/IC Unit/
Catalyst: Regular Sensitivity

Sample

Sample Name: CCV
Sample ID: 318173804
Origin: 01_07_2022_CAL.cal
Status: Completed
Chk. Result

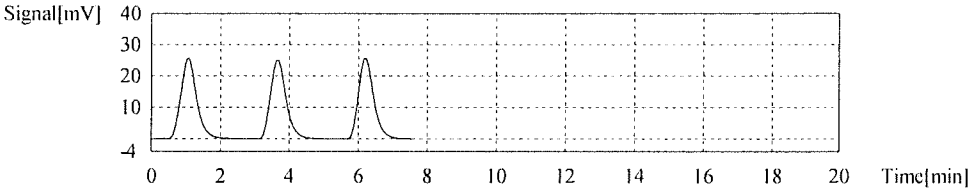
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:25.05mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	81.78	25.45mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 4:27:47 PM
2	79.76	24.82mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 4:30:34 PM
3	79.95	24.88mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 4:33:15 PM

Mean Area: 80.50
Mean Conc.: 25.05mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 01_07_2022_CAL.cal
Status: Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1648mg/L

1. Det

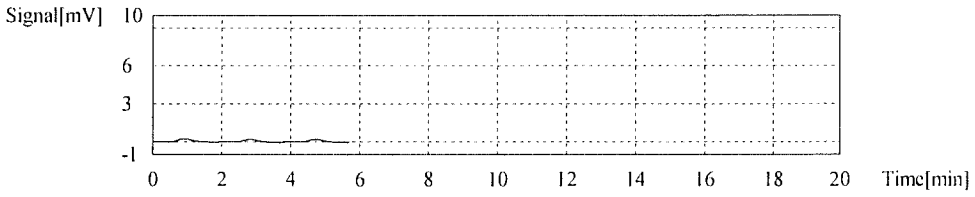
Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.6180	0.1923mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 4:41:18 PM
2	0.4650	0.1447mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 4:43:25 PM
3	0.5056	0.1573mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 4:45:34 PM

TOC-Control L Report

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Mean Area 0.5295
Mean Conc. 0.1648mg/L



Sample

Sample Name: MBLK-02102022
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

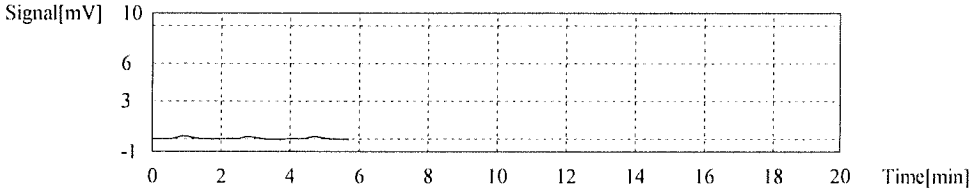
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1493mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.6137	0.1910mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 4:53:37 PM
2	0.4492	0.1398mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 4:55:44 PM
3	0.3767	0.1172mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 4:57:53 PM

Mean Area 0.4799
Mean Conc. 0.1493mg/L



Sample

Sample Name: LCS-02102022
Sample ID: 3100605001
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.56mg/L

1. Det

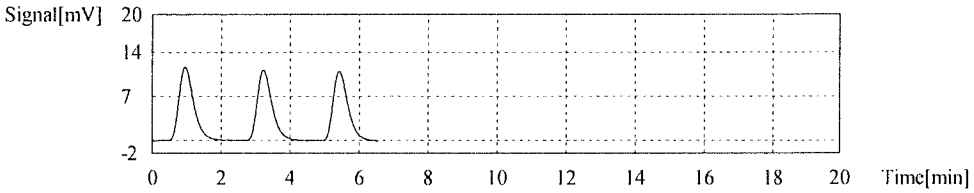
Anal.: NPOC

TOC-Control L Report

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No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	35.05	10.91mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 5:43:17 PM
2	33.56	10.44mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 5:45:42 PM
3	33.18	10.32mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 5:48:01 PM

Mean Area 33.93
Mean Conc. 10.56mg/L



Sample

Sample Name: LCSD-02102022
Sample ID: 3100605001
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

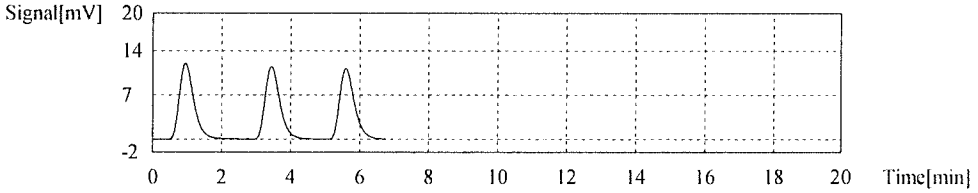
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.69mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	35.44	11.03mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 5:56:38 PM
2	34.20	10.64mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 5:59:05 PM
3	33.43	10.40mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 6:01:25 PM

Mean Area 34.36
Mean Conc. 10.69mg/L



Sample

Sample Name: HS22011279-02
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:6.932mg/L

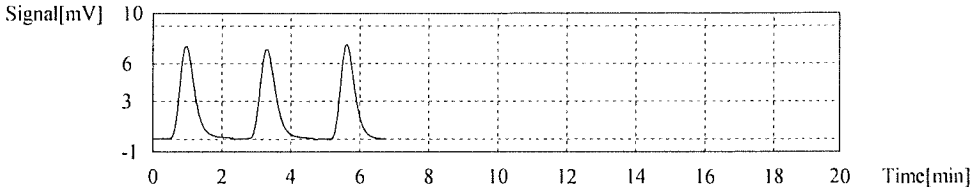
1. Det

TOC-Control L Report

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	22.29	6.936mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 6:09:53 PM
2	22.57	7.023mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 6:12:29 PM
3	21.97	6.836mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 6:14:51 PM

Mean Area 22.28
Mean Conc. 6.932mg/L



Sample

Sample Name: HS22011279-02MS
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

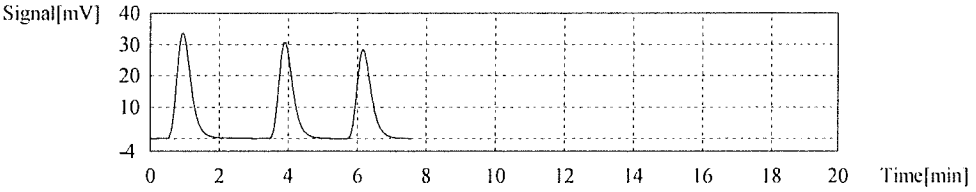
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 28.10mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	98.85	30.76mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 6:23:57 PM
2	88.16	27.43mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 6:26:28 PM
3	83.89	26.10mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 6:29:04 PM

Mean Area 90.30
Mean Conc. 28.10mg/L



Sample

Sample Name: HS22011279-05
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 20.87mg/L

TOC-Control L Report

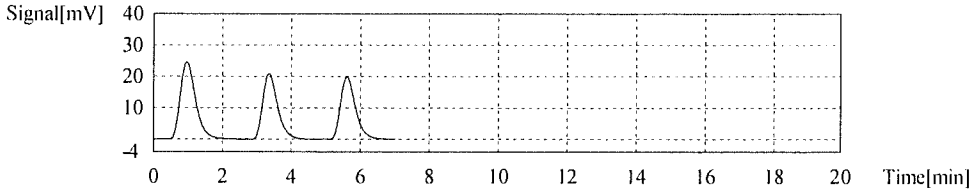
2022_02_10_002.tlx

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	76.75	23.88mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 6:37:37 PM
2	63.89	19.88mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 6:40:07 PM
3	60.56	18.84mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 6:42:42 PM

Mean Area 67.07
Mean Conc. 20.87mg/L



Sample

Sample Name: HS22011279-07DF100
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

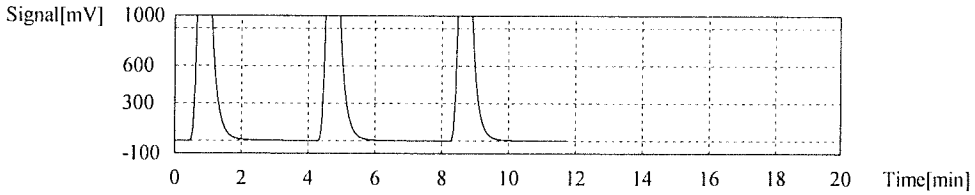
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:1467mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4796	1492mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 6:52:42 PM
2	4698	1462mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 6:56:55 PM
3	4651	1447mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 7:01:11 PM

Mean Area 4715
Mean Conc. 1467mg/L



Sample

Sample Name: HS22011279-08DF100
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

TOC-Control L Report

2022_02_10_002.tlx

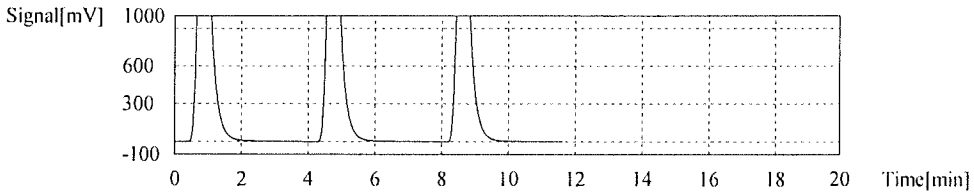
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 1435mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4691	1460mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 7:11:12 PM
2	4592	1429mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 7:15:21 PM
3	4556	1418mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 7:19:28 PM

Mean Area 4613
Mean Conc. 1435mg/L



Sample

Sample Name: HS22011279-09DF100
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

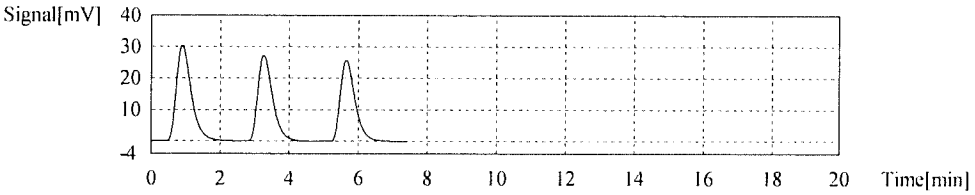
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 26.27mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	93.04	28.95mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 7:28:00 PM
2	82.57	25.69mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 7:30:39 PM
3	77.63	24.16mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 7:33:34 PM

Mean Area 84.41
Mean Conc. 26.27mg/L



Sample

TOC-Control L Report

Sample Name: HS22020224-01
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

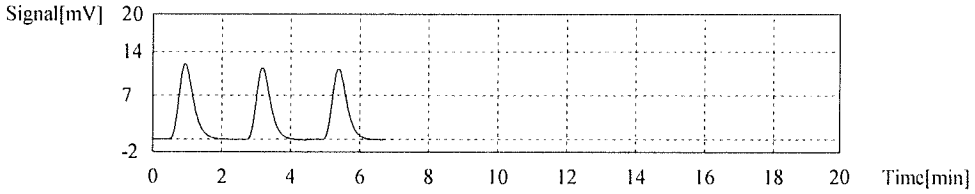
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.66mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	35.72	11.11mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 7:41:58 PM
2	33.55	10.44mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 7:44:24 PM
3	33.53	10.43mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 7:46:54 PM

Mean Area 34.27
Mean Conc. 10.66mg/L



Sample

Sample Name: CCV
Sample ID: 318173804
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

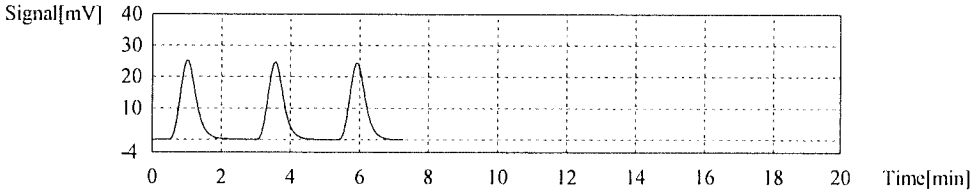
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:24.59mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	81.62	25.40mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 7:55:45 PM
2	77.85	24.22mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 7:58:22 PM
3	77.62	24.15mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 8:00:58 PM

Mean Area 79.03
Mean Conc. 24.59mg/L



TOC-Control L Report

2022_02_10_002.tlx

Sample

Sample Name: CCB
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

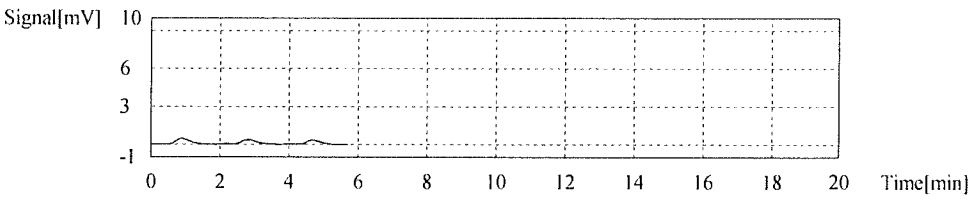
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.3096mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1.239	0.3855mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 8:09:02 PM
2	0.9253	0.2879mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 8:11:10 PM
3	0.8206	0.2553mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/10/2022 8:13:18 PM

Mean Area 0.9950
Mean Conc. 0.3096mg/L



C:\TOC-L\Data\2022_02_11_001.tlx

	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result	Notes
1	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:25.17mg/L	
2	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.1992mg/L	
3	Unknown	NPOC	MBLK-02112022		01_07_2022	1.000	NPOC:0.1691mg/L	
4	Unknown	NPOC	LCS-02112022	3100605001	01_07_2022	1.000	NPOC:10.29mg/L	
5	Unknown	NPOC	LCSD-02112022	3100605001	01_07_2022	1.000	NPOC:10.36mg/L	
6	Unknown	NPOC	HS22020268-01		01_07_2022	1.000	NPOC:0.2824mg/L	
7	Unknown	NPOC	HS22020271-01		01_07_2022	1.000	NPOC:0.1959mg/L	
8	Unknown	NPOC	HS22020406-01		01_07_2022	1.000	NPOC:31.21mg/L	
9	Unknown	NPOC	HS22020406-01MS		01_07_2022	1.000	NPOC:42.70mg/L	
10	Unknown	NPOC	HS22011279-07DF4000		01_07_2022	1.000	NPOC:40.25mg/L	
11	Unknown	NPOC	HS22011279-08DF4000		01_07_2022	1.000	NPOC:41.14mg/L	
12	Unknown	NPOC	CCV	318173804	01_07_2022	1.000	NPOC:24.37mg/L	
13	Unknown	NPOC	CCB		01_07_2022	1.000	NPOC:0.1988mg/L	

C:\TOC-L\Data\2022_02_11_001.tlx

	Status	Date / Time	Vial
1	Completed	2/11/2022 11:41:17	1
2	Completed	2/11/2022 11:53:38	2
3	Completed	2/11/2022 12:05:59	3
4	Completed	2/11/2022 12:19:16	4
5	Completed	2/11/2022 12:32:46	5
6	Completed	2/11/2022 12:45:06	6
7	Completed	2/11/2022 12:57:30	7
8	Completed	2/11/2022 1:18:52 P	8
9	Completed	2/11/2022 1:35:12 P	9
10	Completed	2/11/2022 2:25:58 P	10
11	Completed	2/11/2022 2:39:31 P	11
12	Completed	2/11/2022 3:05:54 P	1
13	Completed	2/11/2022 3:18:17 P	2

TOC-Control L Report

2022_02_11_001.tlx

Instr.Information

Instrument Options: TOC/ASI/IC Unit/
Catalyst: Regular Sensitivity

Sample

Sample Name: CCV
Sample ID: 318173804
Origin: 01_07_2022_CAL.cal
Status: Completed
Chk. Result

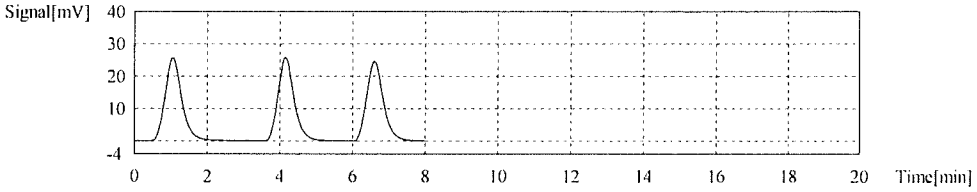
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:25.17mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	82.79	25.76mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 11:35:54 AM
2	80.33	25.00mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 11:38:36 AM
3	79.53	24.75mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 11:41:17 AM

Mean Area: 80.88
Mean Conc.: 25.17mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 01_07_2022_CAL.cal
Status: Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 0.1992mg/L

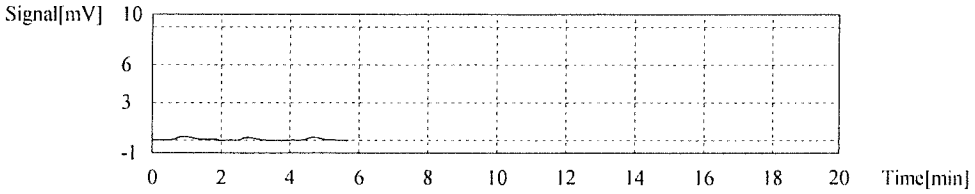
1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.8050	0.2505mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 11:49:21 AM
2	0.5992	0.1864mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 11:51:30 AM
3	0.5162	0.1606mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 11:53:38 AM

TOC-Control L Report

Mean Area 0.6401
Mean Conc. 0.1992mg/L



Sample

Sample Name: MBLK-02112022
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

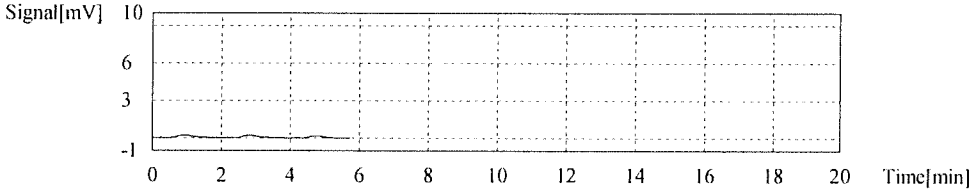
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 0.1691mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.6366	0.1981mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 12:01:43 PM
2	0.5416	0.1685mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 12:03:51 PM
3	0.4524	0.1408mg/L	50uL	1.000		01_07_2022_CAL 2022_01_07_13_39_18.cal	2/11/2022 12:05:59 PM

Mean Area 0.5435
Mean Conc. 0.1691mg/L



Sample

Sample Name: LCS-02112022
Sample ID: 3100605001
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 10.29mg/L

1. Det

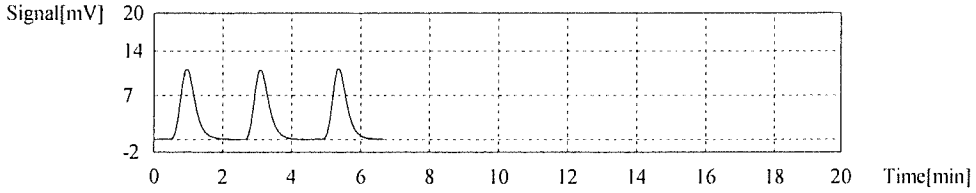
Anal.: NPOC

TOC-Control L Report

2022_02_11_001.tlx

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.09	10.30mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 12:14:18 PM
2	33.28	10.36mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 12:16:49 PM
3	32.80	10.21mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 12:19:16 PM

Mean Area 33.06
Mean Conc. 10.29mg/L



Sample

Sample Name: LCSD-02112022
Sample ID: 3100605001
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

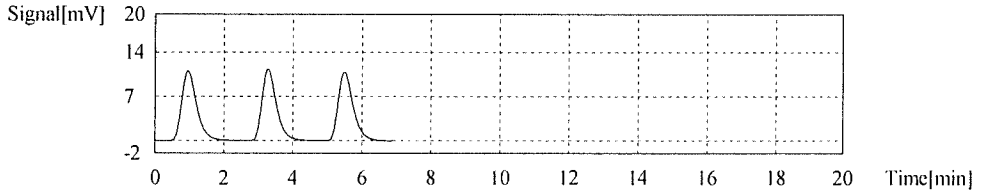
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.36mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	33.57	10.45mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 12:27:46 PM
2	33.09	10.30mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 12:30:14 PM
3	33.24	10.34mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 12:32:46 PM

Mean Area 33.30
Mean Conc. 10.36mg/L



Sample

Sample Name: HS22020406-01
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:31.21mg/L

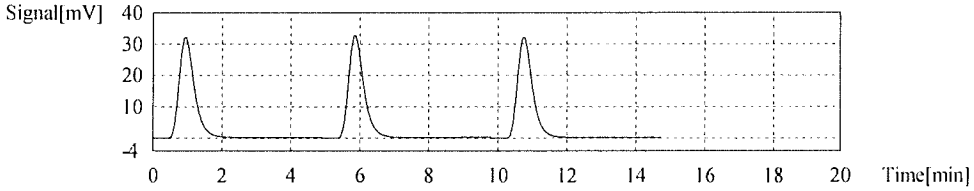
1. Det

TOC-Control L Report

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	100.2	31.18mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 1:08:34 PM
2	101.8	31.68mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 1:13:43 PM
3	98.95	30.79mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 1:18:52 PM

Mean Area 100.3
Mean Conc. 31.21mg/L



Sample

Sample Name: HS22020406-01MS
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

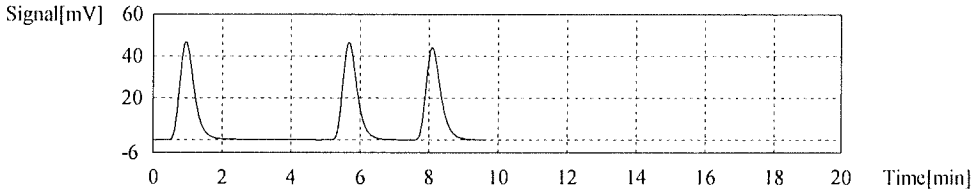
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 42.70mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	141.4	44.00mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 1:29:45 PM
2	136.5	42.47mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 1:32:25 PM
3	133.8	41.63mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 1:35:12 PM

Mean Area 137.2
Mean Conc. 42.70mg/L



Sample

Sample Name: HS22011279-07DF4000
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 40.25mg/L

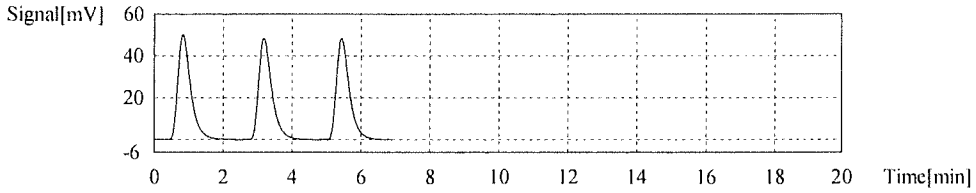
TOC-Control L Report

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	131.9	41.04mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 2:20:56 PM
2	129.0	40.14mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 2:23:27 PM
3	127.2	39.58mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 2:25:58 PM

Mean Area 129.4
Mean Conc. 40.25mg/L



Sample

Sample Name: HS22011279-08DF4000
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

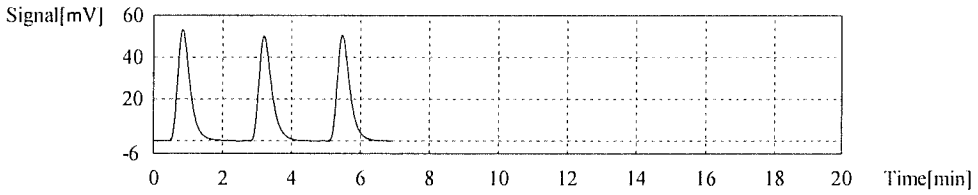
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:41.14mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	134.7	41.91mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 2:34:30 PM
2	132.1	41.10mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 2:37:02 PM
3	129.8	40.39mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 2:39:31 PM

Mean Area 132.2
Mean Conc. 41.14mg/L



Sample

Sample Name: CCV
Sample ID: 318173804
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

TOC-Control L Report

2022_02_11_001.tlx

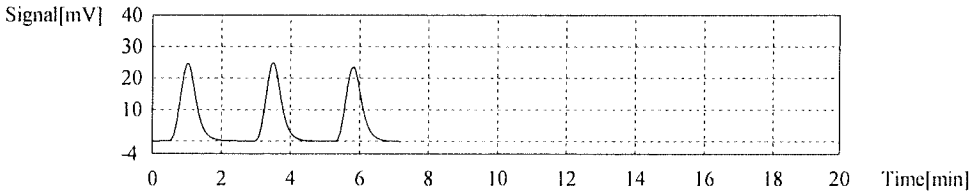
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:24.37mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	79.19	24.64mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 3:00:40 PM
2	78.70	24.49mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 3:03:16 PM
3	77.10	23.99mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 3:05:54 PM

Mean Area 78.33
Mean Conc. 24.37mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 01_07_2022_CAL.cal
Status Completed
Chk. Result

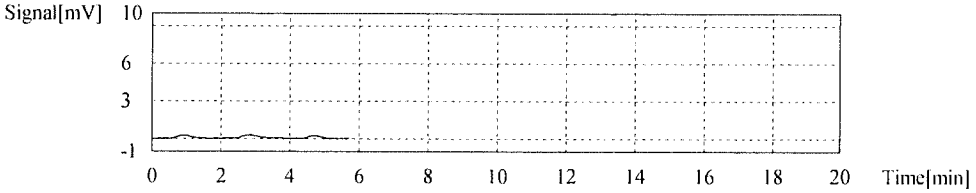
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.1988mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	0.6131	0.1908mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 3:13:58 PM
2	0.7306	0.2273mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 3:16:07 PM
3	0.5733	0.1784mg/L	50uL	1.000		01_07_2022_CAL.2022_01_07_13_39_18.cal	2/11/2022 3:18:17 PM

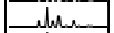
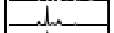
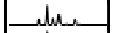
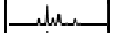
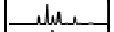
Mean Area 0.6390
Mean Conc. 0.1988mg/L



HS22011279 9056_S IC

ALS WO# HS22011279

Sequence: 020722
Last Update Operator: alshs.nouser

CD	Name	Comment	Type	Position	Dilution	Level	Instrument Method	Processing Method	Volume	Status	Inject Time
	STD1		Calibratio	GA1	1.00	1	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 4:54:48 PM -06:00
	STD2		Calibratio	GA2	1.00	2	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:00:07 PM -06:00
	STD3		Calibratio	GA3	1.00	3	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:05:25 PM -06:00
	STD4		Calibratio	GA4	1.00	4	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:10:43 PM -06:00
	STD5		Calibratio	GA5	1.00	5	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:16:02 PM -06:00
	STD6		Calibratio	GA6	1.00	6	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:21:20 PM -06:00
	ICV		Unknown	GA7	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:26:39 PM -06:00
	ICB		Unknown	GA8	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:31:57 PM -06:00
	CCV1		Unknown	R3	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 9:01:13 PM -06:00
	CCB		Unknown	R6	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 9:06:31 PM -06:00
	MBLK-175115		Unknown	R5	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 9:11:50 PM -06:00
	LCS-175115		Unknown	R2	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 9:17:08 PM -06:00
	HS22011180-09		Unknown	RD8	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 9:54:39 PM -06:00
	HS22011180-09MS		Unknown	RE1	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 9:59:57 PM -06:00
	HS22011180-09MSD		Unknown	RE2	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 10:05:15 PM -06:00
	CCV		Unknown	R1	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 10:10:34 PM -06:00
	CCB		Unknown	R4	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 10:15:52 PM -06:00

Sequence: 020722
Injection #6: STD6

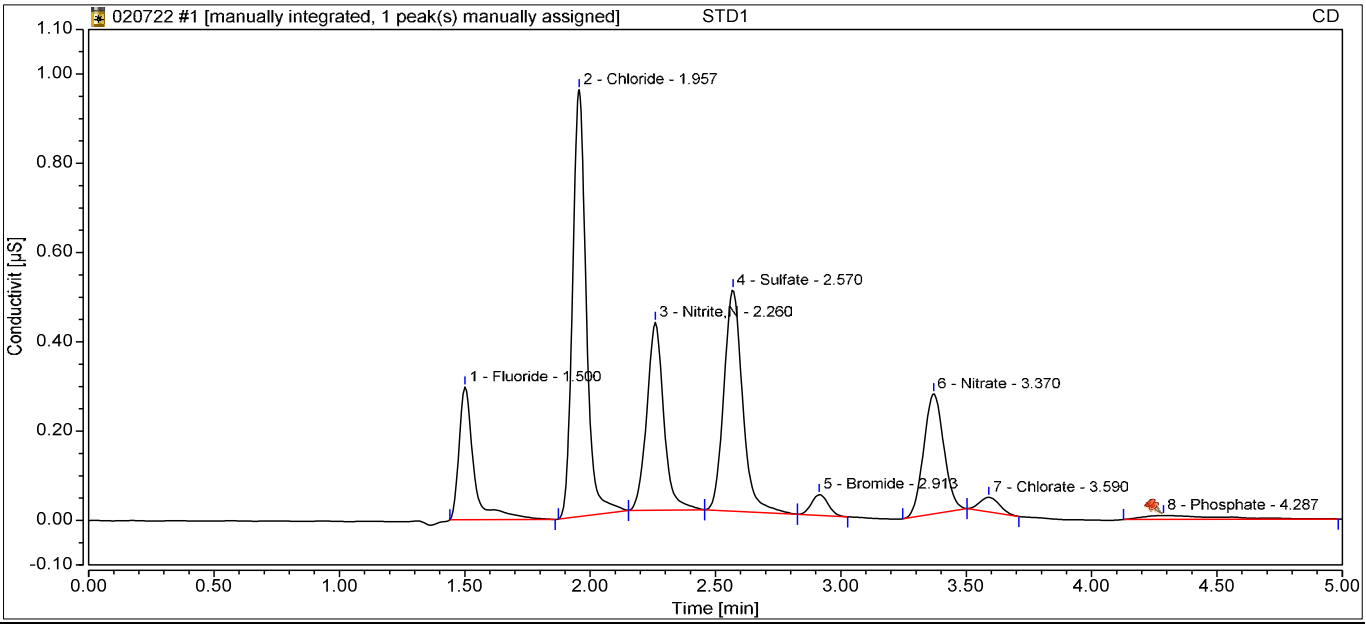
Calibration

Peak No.	Peak Name	Cal.Type	Eval.Type	Number of Points	Rel.Std.Dev. %	Coeff.of Determination	C0 (Offset)	C1 (Slope)	C2 (Curve)
1	*Fluoride*	*Lin, WithOffset, 1/*	*Area*	*6*	*21.3828*	*0.99737*	*0.0042*	*0.2155*	*0.0000*
2	Chloride	Lin, WithOffset, 1/	Area	6	3.6944	0.99993	-0.0077	0.1388	0.0000
3	Nitrite,N	Quad, WithOffset,	Area	6	7.6810	0.99970	0.0036	0.3122	-0.0032
4	Sulfate	Lin, WithOffset, 1/	Area	6	3.1476	0.99995	-0.0062	0.1028	0.0000
5	Bromide	Lin, WithOffset, 1/	Area	6	10.2940	0.99957	-0.0035	0.0615	0.0000
6	Nitrate	Lin, WithOffset, 1/	Area	6	2.5692	0.99997	-0.0098	0.3417	0.0000
7	Chlorate	Lin, WithOffset, 1/	Area	6	10.6539	0.99953	-0.0025	0.0468	0.0000
8	Phosphate	Quad, WithOffset,	Area	6	26.8509	0.99849	-0.0116	0.1136	0.0011
Maximum					**26.8509**	0.99997			
Minimum					2.5692	**0.99737**			

1 STD1

Sample Name:	**STD1**	*Injection Volume:*	**5.00**
Vial Number:	**GA1**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 16:54**	*Sample Weight:*	**1.0000**

Run Time:

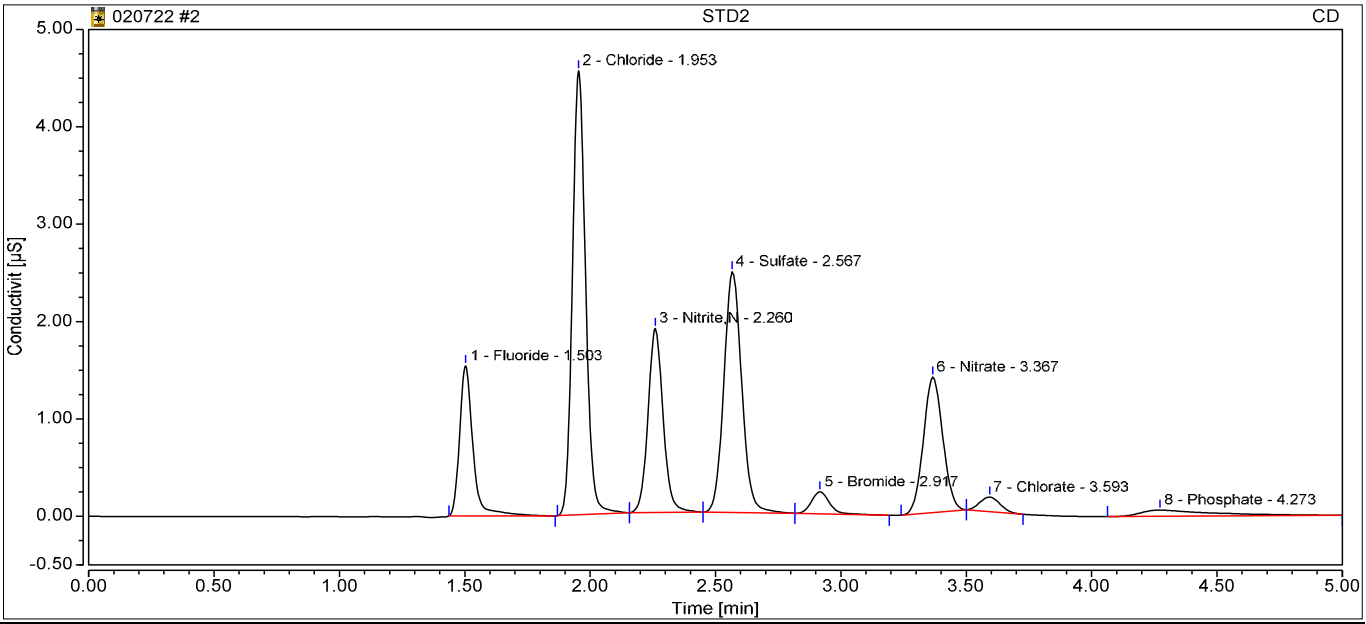


Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.021	0.0765	0.0765	1.0000
2	1.96	Chloride	BMB	0.060	0.4903	0.4903	1.0000
3	2.26	Nitrite,N	BMB	0.033	0.0941	0.0941	1.0000
4	2.57	Sulfate	BMB	0.043	0.4779	0.4779	1.0000
5	2.91	Bromide	BMB	0.004	0.1143	0.1143	1.0000
6	3.37	Nitrate	BMB	0.025	0.1021	0.1021	1.0000
7	3.59	Chlorate	BMB	0.003	0.1167	0.1167	1.0000
8	4.29	Phosphate	BMB*^	0.003	0.1302	0.1302	1.0000
Total:			**0.000**	**0.192**		**1.60**	

2 STD2			
Sample Name:	**STD2**	*Injection Volume:*	**5.00**
Vial Number:	**GA2**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:00**	*Sample Weight:*	**1.0000**

Run Time:



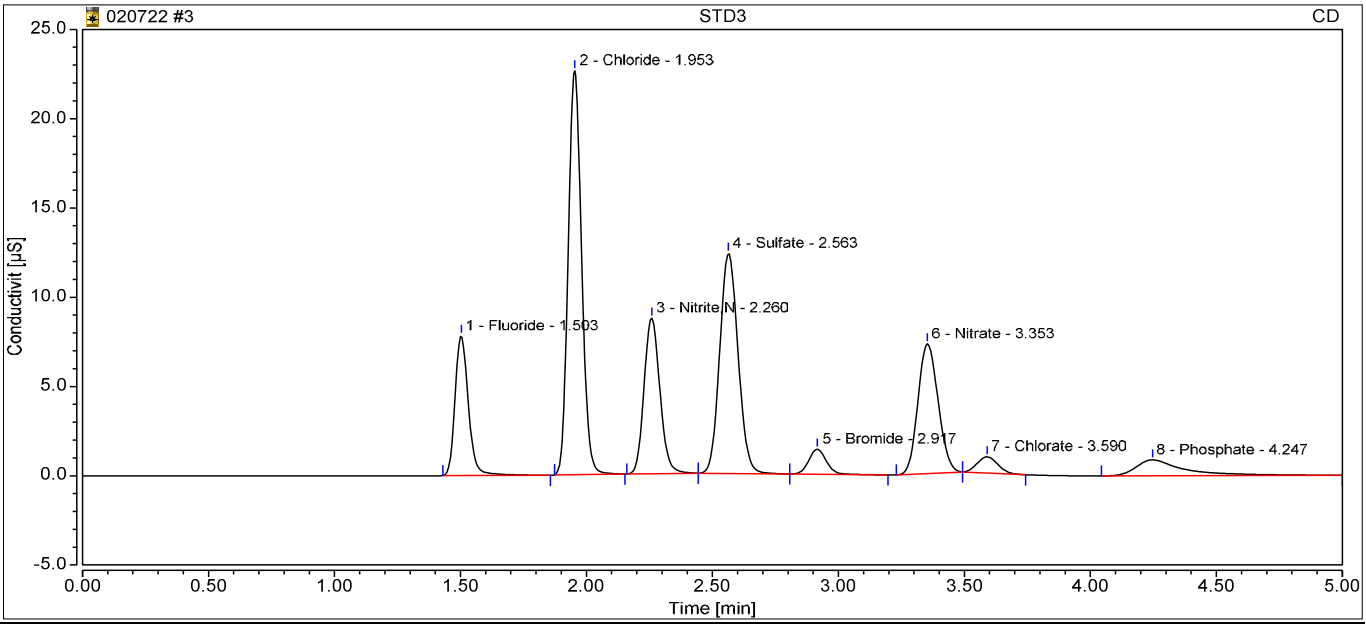
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.096	0.4244	0.4244	1.0000
2	1.95	Chloride	BMB	0.277	2.0467	2.0467	1.0000
3	2.26	Nitrite,N	BMB	0.132	0.4123	0.4123	1.0000
4	2.57	Sulfate	BMB	0.204	2.0474	2.0474	1.0000
5	2.92	Bromide	BMB	0.019	0.3656	0.3656	1.0000
6	3.37	Nitrate	BMB	0.125	0.3941	0.3941	1.0000
7	3.59	Chlorate	BMB	0.014	0.3528	0.3528	1.0000
8	4.27	Phosphate	BMB	0.022	0.2979	0.2979	1.0000
Total:			**0.000**	**0.888**		**6.34**	

3 STD3

Sample Name:	**STD3**	*Injection Volume:*	**5.00**
Vial Number:	**GA3**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:05**	*Sample Weight:*	**1.0000**

Run Time:



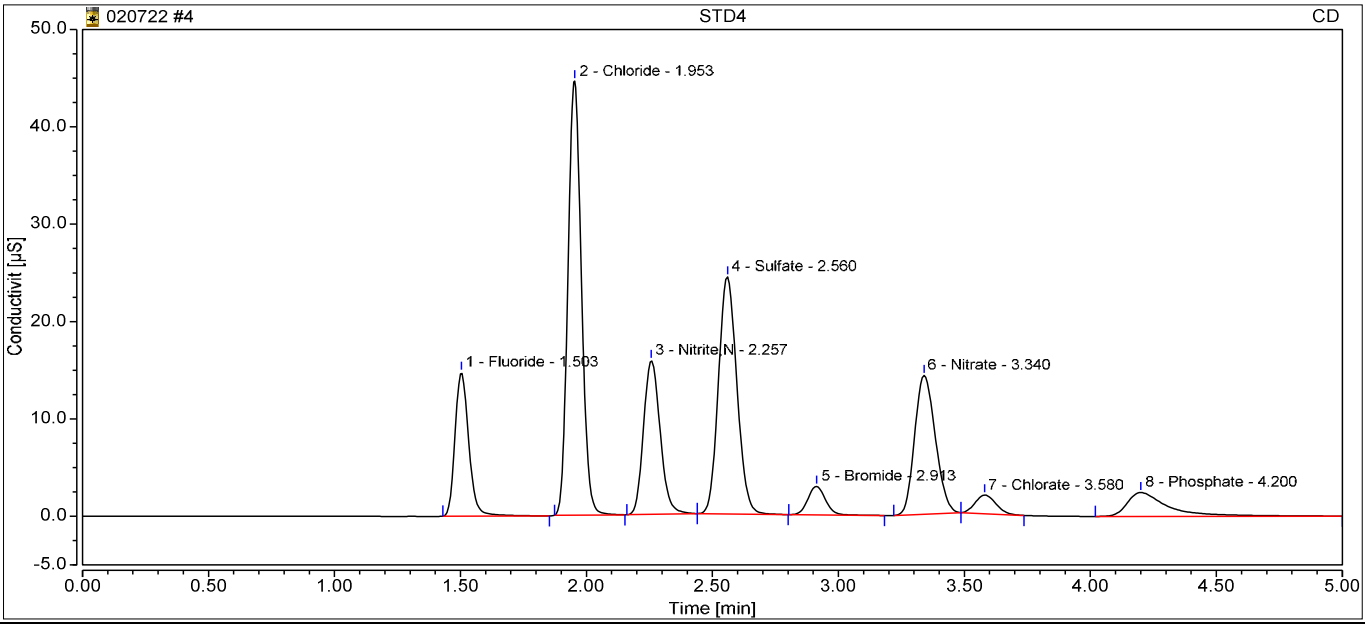
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.483	2.2207	2.2207	1.0000
2	1.95	Chloride	BMB	1.390	10.0653	10.0653	1.0000
3	2.26	Nitrite,N	BMB	0.637	2.0733	2.0733	1.0000
4	2.56	Sulfate	BMB	1.041	10.1897	10.1897	1.0000
5	2.92	Bromide	BMB	0.114	1.9189	1.9189	1.0000
6	3.35	Nitrate	BMB	0.673	1.9996	1.9996	1.0000
7	3.59	Chlorate	BMB	0.086	1.8976	1.8976	1.0000
8	4.25	Phosphate	BMB	0.201	1.8374	1.8374	1.0000
Total:			**0.000**	**4.625**		**32.20**	

4 STD4

Sample Name:	**STD4**	*Injection Volume:*	**5.00**
Vial Number:	**GA4**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:10**	*Sample Weight:*	**1.0000**

Run Time:



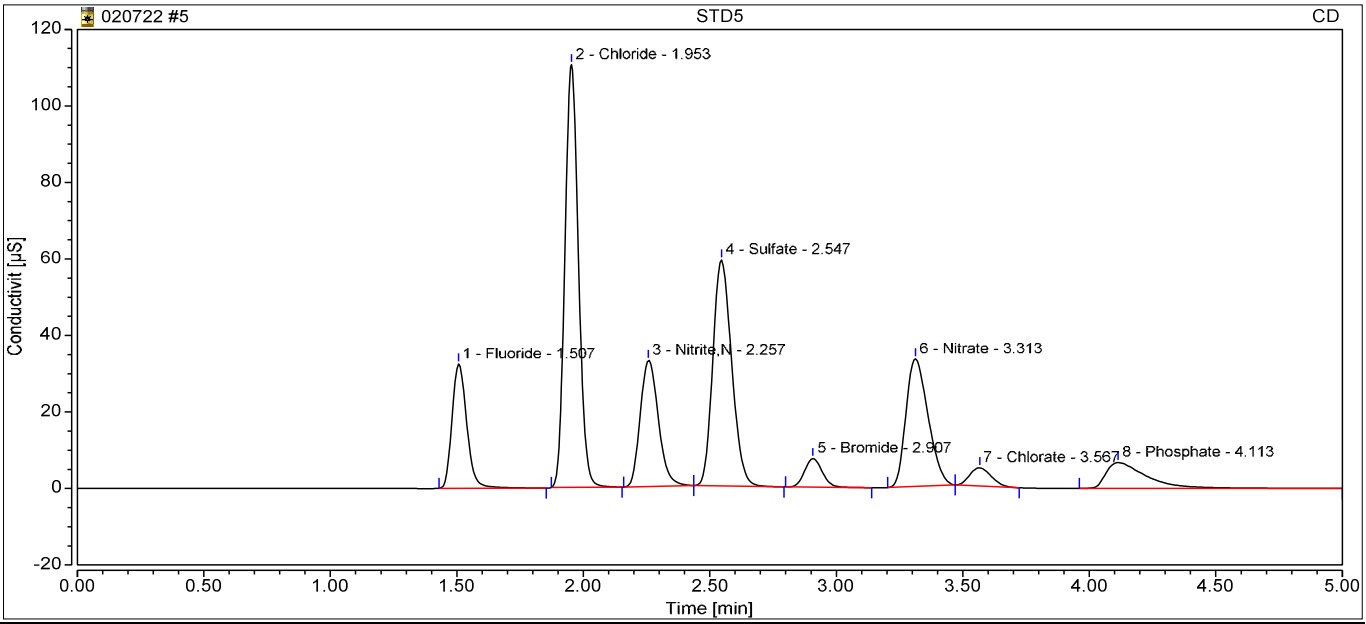
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.936	4.3225	4.3225	1.0000
2	1.95	Chloride	BMB	2.756	19.9028	19.9028	1.0000
3	2.26	Nitrite,N	BMB	1.211	4.0347	4.0347	1.0000
4	2.56	Sulfate	BMB	2.065	20.1557	20.1557	1.0000
5	2.91	Bromide	BMB	0.237	3.9133	3.9133	1.0000
6	3.34	Nitrate	BMB	1.353	3.9875	3.9875	1.0000
7	3.58	Chlorate	BMB	0.182	3.9485	3.9485	1.0000
8	4.20	Phosphate	BMB	0.464	4.0338	4.0338	1.0000
Total:			**0.000**	**9.203**		**64.30**	

5 STD5

Sample Name:	**STD5**	*Injection Volume:*	**5.00**
Vial Number:	**GA5**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:16**	*Sample Weight:*	**1.0000**

Run Time:



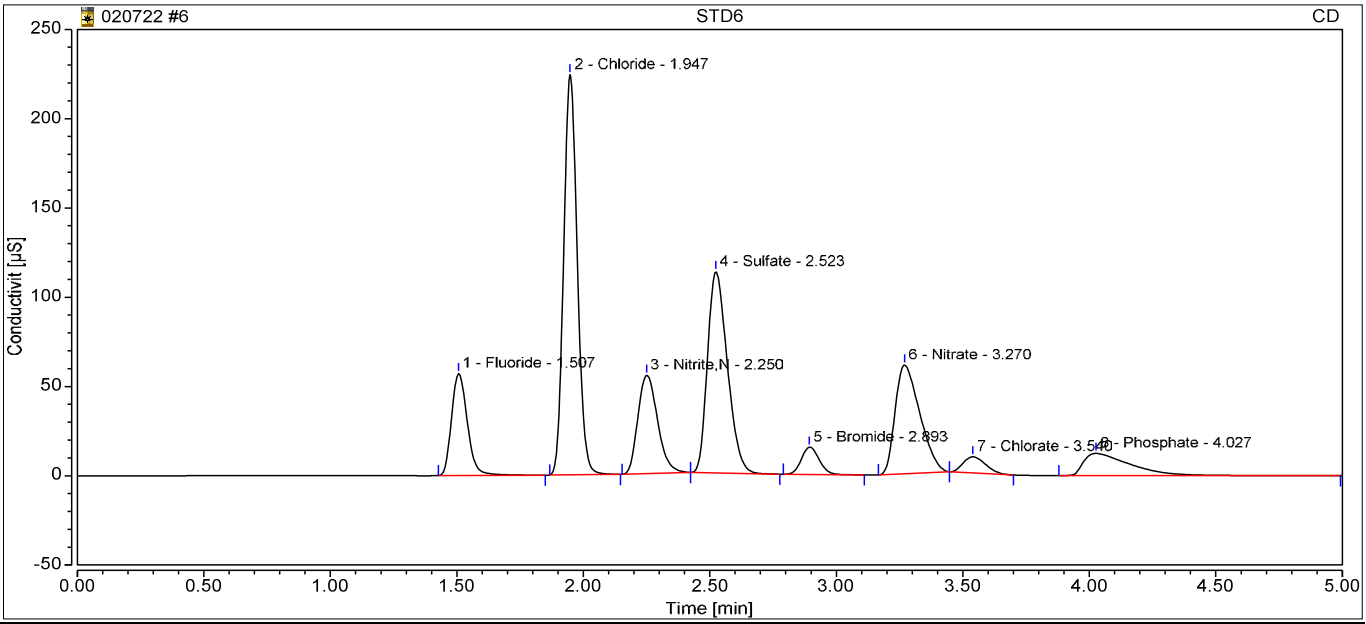
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	2.202	10.2004	10.2004	1.0000
2	1.95	Chloride	BMB	6.857	49.4370	49.4370	1.0000
3	2.26	Nitrite,N	BMB	2.744	9.7621	9.7621	1.0000
4	2.55	Sulfate	BMB	5.105	49.7378	49.7378	1.0000
5	2.91	Bromide	BMB	0.606	9.9171	9.9171	1.0000
6	3.31	Nitrate	BMB	3.383	9.9299	9.9299	1.0000
7	3.57	Chlorate	BMB	0.470	10.1129	10.1129	1.0000
8	4.11	Phosphate	BMB	1.275	10.3243	10.3243	1.0000
Total:			**0.000**	**22.642**		**159.42**	

6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**5.00**
Vial Number:	**GA6**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:21**	*Sample Weight:*	**1.0000**

Run Time:



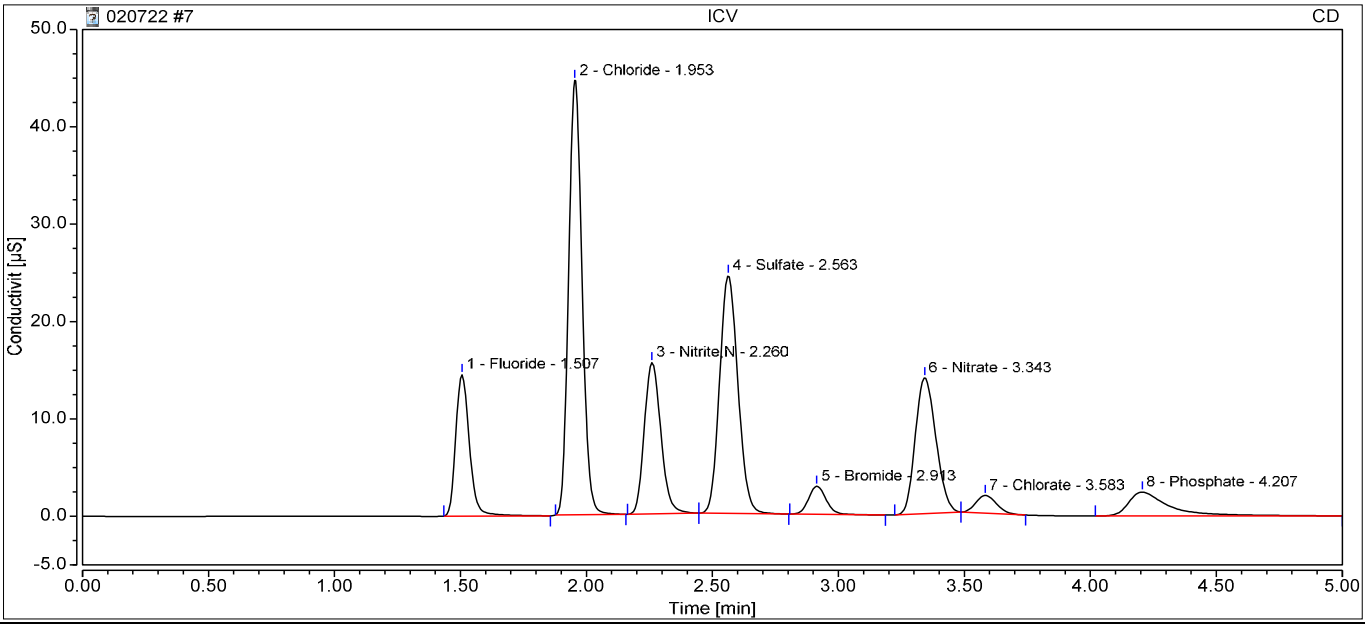
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	4.154	19.2555	19.2555	1.0000
2	1.95	Chloride	BMB	13.955	100.5578	100.5578	1.0000
3	2.25	Nitrite,N	BMB	4.985	20.1384	20.1384	1.0000
4	2.52	Sulfate	BMB	10.258	99.8915	99.8915	1.0000
5	2.89	Bromide	BMB	1.242	20.2707	20.2707	1.0000
6	3.27	Nitrate	BMB	6.854	20.0867	20.0867	1.0000
7	3.54	Chlorate	BMB	0.936	20.0714	20.0714	1.0000
8	4.03	Phosphate	BMB	2.666	19.8678	19.8678	1.0000
Total:			**0.000**	**45.050**		**320.14**	

7 ICV

Sample Name:	**ICV**	*Injection Volume:*	**5.00**
Vial Number:	**GA7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:26**	*Sample Weight:*	**1.0000**

Run Time:



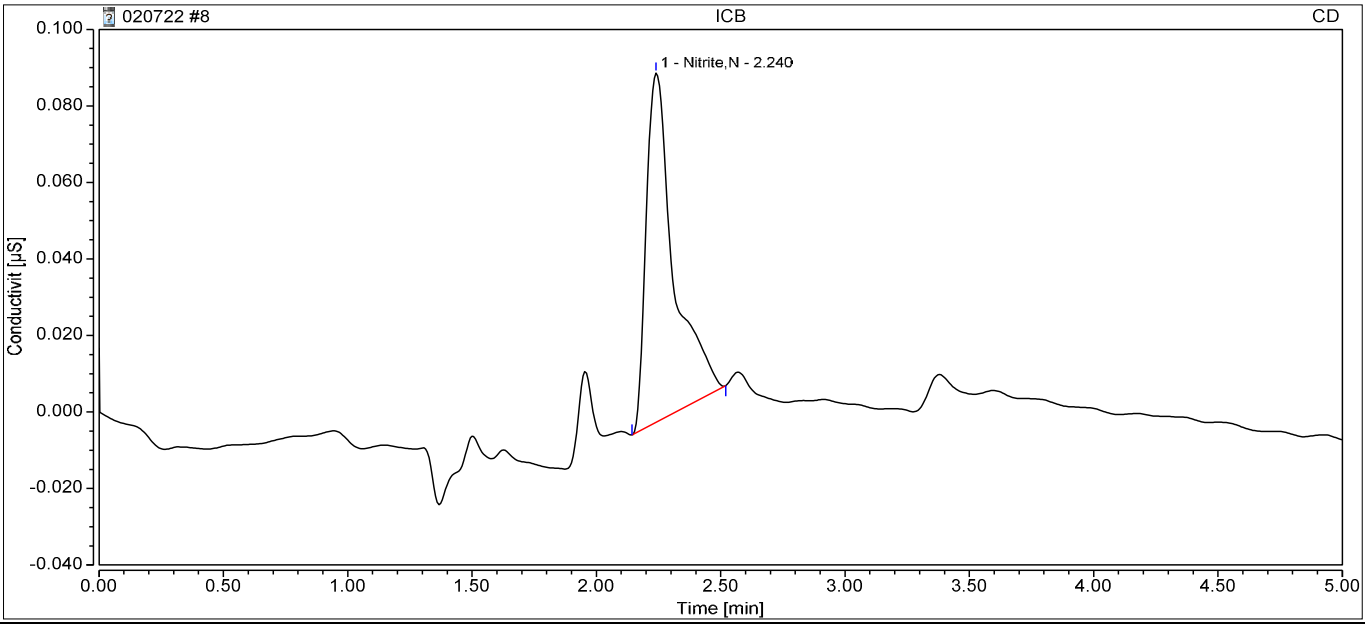
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.918	4.2393	4.2393	1.0000
2	1.95	Chloride	BMB	2.757	19.9118	19.9118	1.0000
3	2.26	Nitrite,N	BMB	1.187	3.9514	3.9514	1.0000
4	2.56	Sulfate	BMB	2.061	20.1215	20.1215	1.0000
5	2.91	Bromide	BMB	0.234	3.8709	3.8709	1.0000
6	3.34	Nitrate	BMB	1.322	3.8966	3.8966	1.0000
7	3.58	Chlorate	BMB	0.173	3.7489	3.7489	1.0000
8	4.21	Phosphate	BMB	0.463	4.0300	4.0300	1.0000
Total:			**0.000**	**9.115**		**63.77**	

8 ICB

Sample Name:	**ICB**	*Injection Volume:*	**5.00**
Vial Number:	**GA8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:31**	*Sample Weight:*	**1.0000**

Run Time:



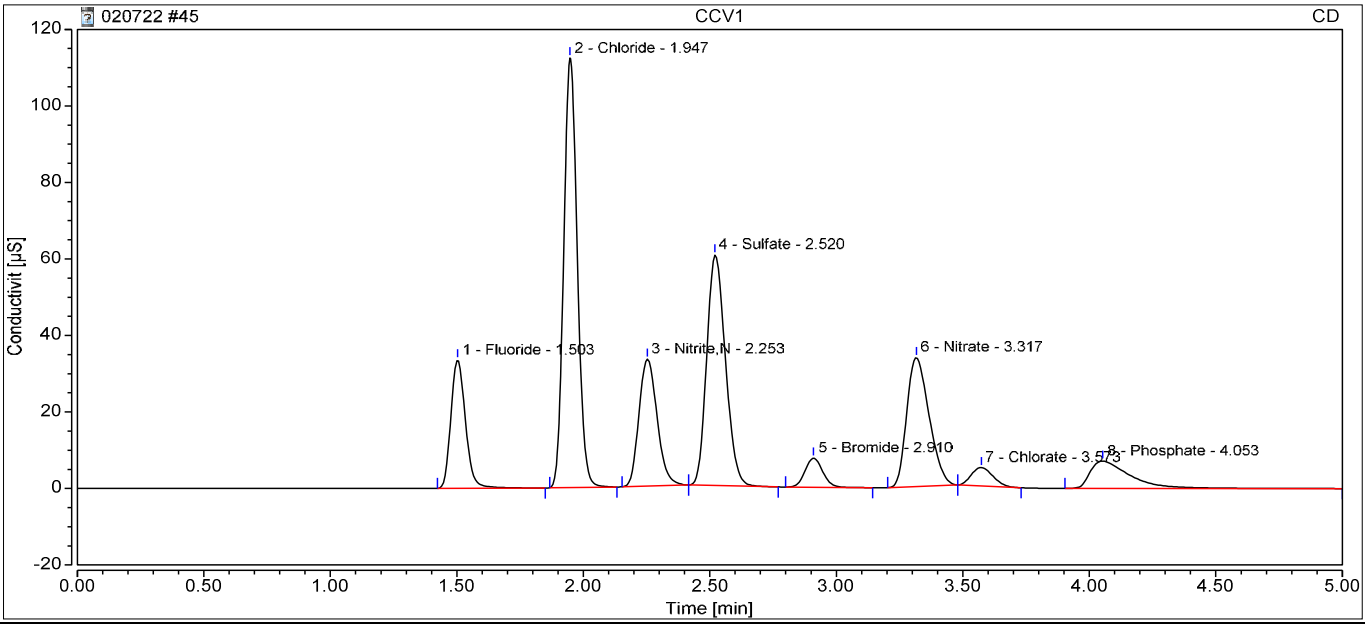
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.24	Nitrite,N	BMB	0.012	0.0259	0.0259	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.012**		**0.03**	

45 CCV1

Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**R3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 21:01**	*Sample Weight:*	**1.0000**

Run Time:



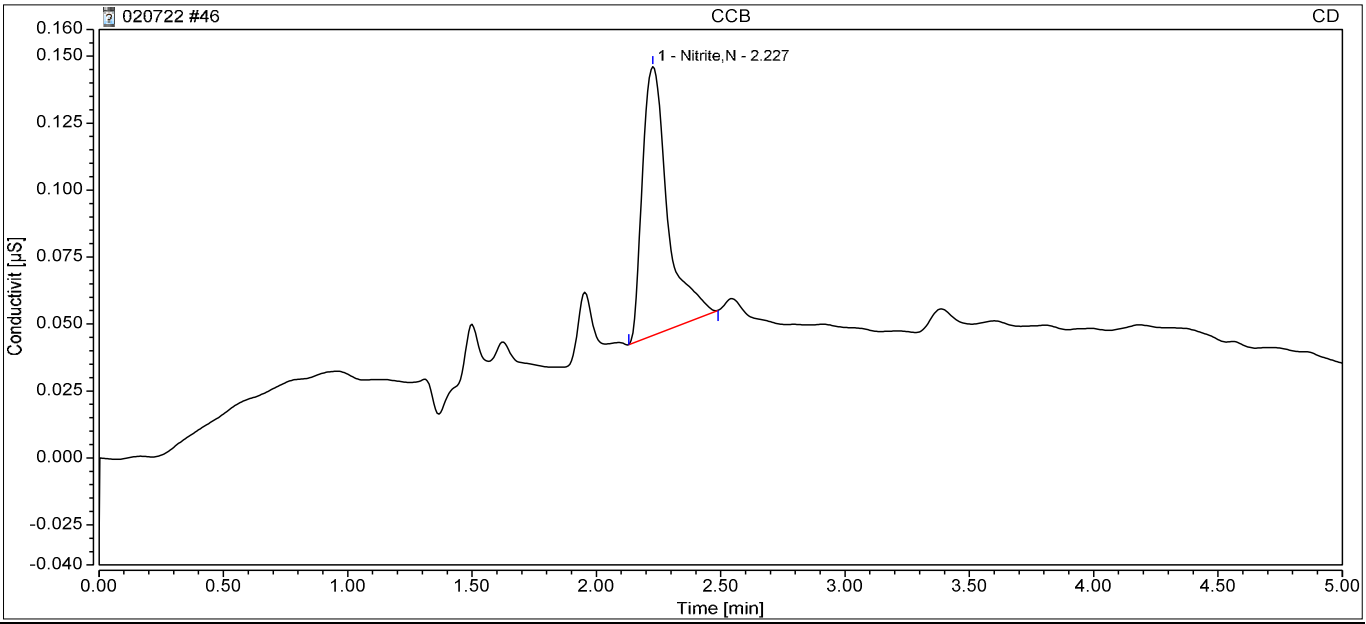
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	2.250	10.4207	10.4207	1.0000
2	1.95	Chloride	BMB	6.963	50.2054	50.2054	1.0000
3	2.25	Nitrite,N	BMB	2.758	9.8173	9.8173	1.0000
4	2.52	Sulfate	BMB	5.167	50.3434	50.3434	1.0000
5	2.91	Bromide	BMB	0.617	10.1047	10.1047	1.0000
6	3.32	Nitrate	BMB	3.444	10.1072	10.1072	1.0000
7	3.57	Chlorate	BMB	0.478	10.2849	10.2849	1.0000
8	4.05	Phosphate	BMB	1.316	10.6260	10.6260	1.0000
Total:			**0.000**	**22.994**		**161.91**	

46 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R6**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 21:06**	*Sample Weight:*	**1.0000**

Run Time:



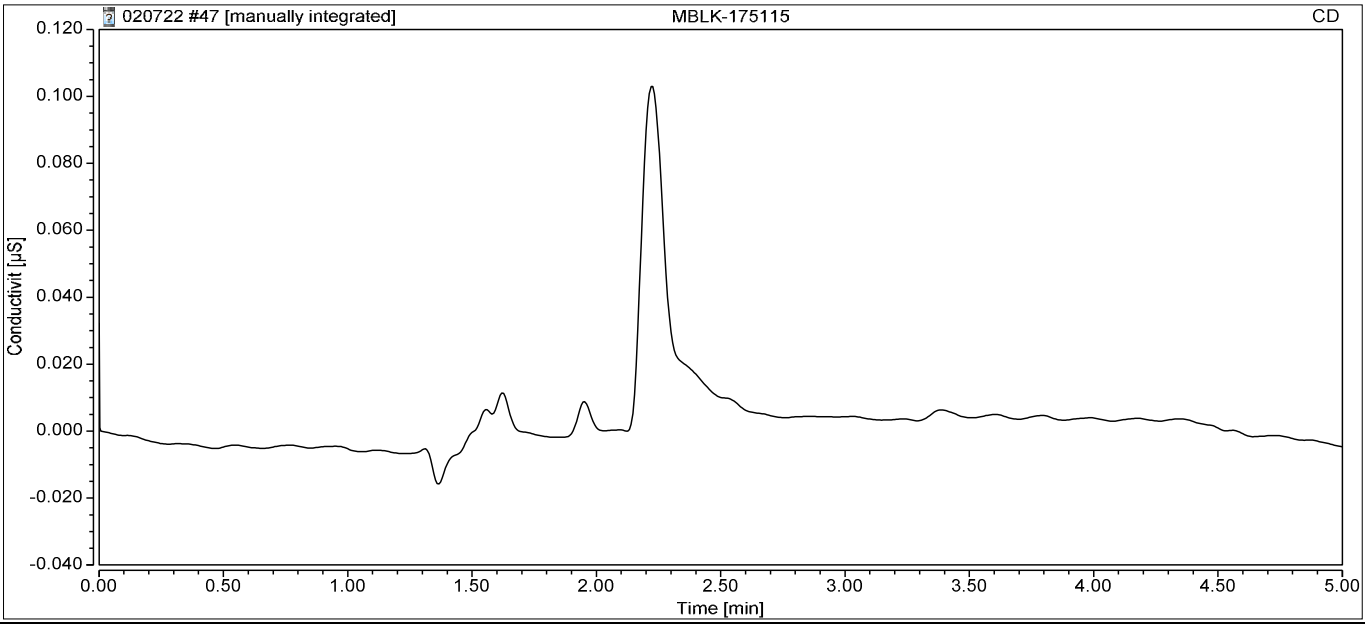
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.23	Nitrite,N	BMB	0.012	0.0264	0.0264	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.012**		**0.03**	

47 MBLK-175115

Sample Name:	**MBLK-175115**	*Injection Volume:*	**5.00**
Vial Number:	**R5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 21:11**	*Sample Weight:*	**1.0000**

Run Time:



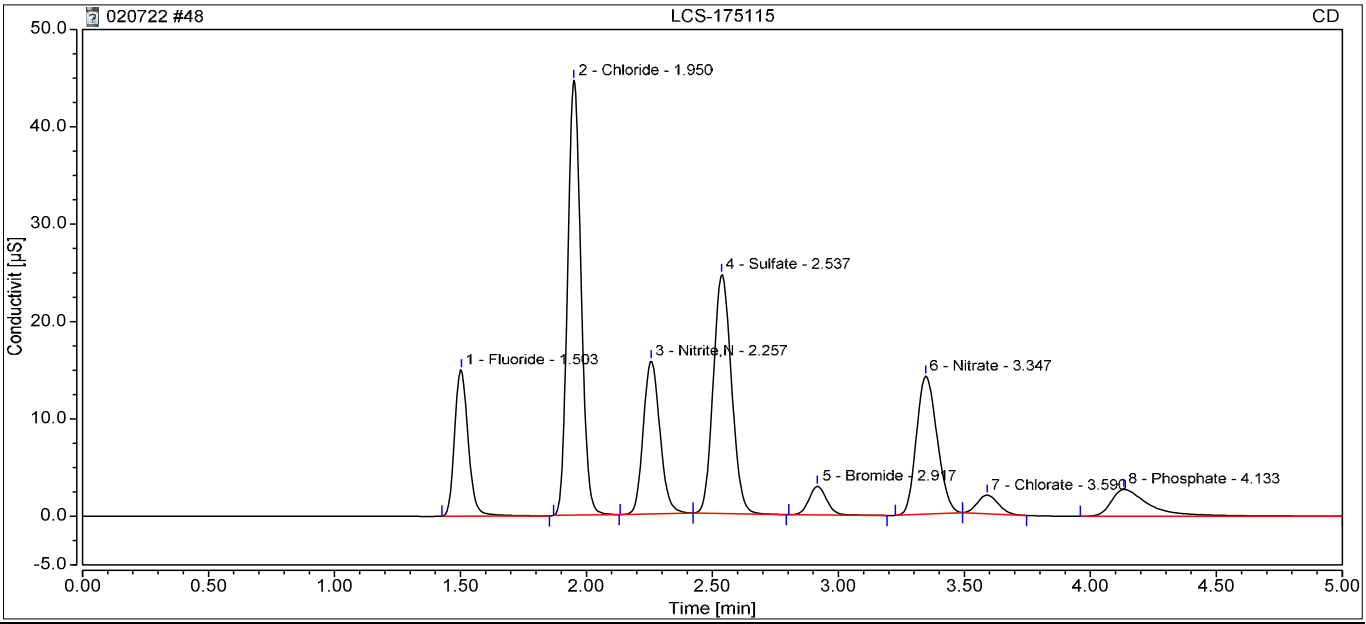
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.000**		**0.00**	

48 LCS-175115

Sample Name:	**LCS-175115**	*Injection Volume:*	**5.00**
Vial Number:	**R2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 21:17**	*Sample Weight:*	**1.0000**

Run Time:



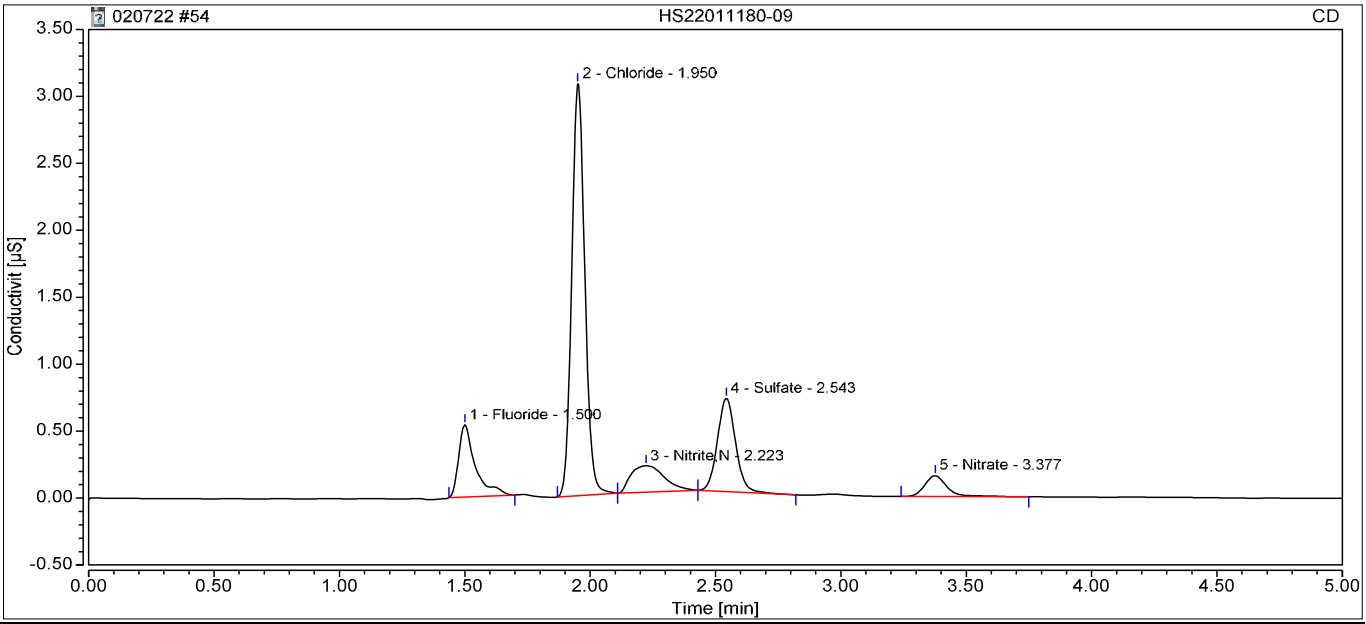
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.945	4.3654	4.3654	1.0000
2	1.95	Chloride	BMB	2.756	19.9025	19.9025	1.0000
3	2.26	Nitrite,N	BMB	1.205	4.0149	4.0149	1.0000
4	2.54	Sulfate	BMB	2.059	20.1030	20.1030	1.0000
5	2.92	Bromide	BMB	0.238	3.9323	3.9323	1.0000
6	3.35	Nitrate	BMB	1.351	3.9833	3.9833	1.0000
7	3.59	Chlorate	BMB	0.184	3.9795	3.9795	1.0000
8	4.13	Phosphate	BMB	0.490	4.2468	4.2468	1.0000
Total:			**0.000**	**9.228**		**64.53**	

54 HS22011180-09

Sample Name:	**HS22011180-09**	*Injection Volume:*	**5.00**
Vial Number:	**RD8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 21:54**	*Sample Weight:*	**1.0000**

Run Time:



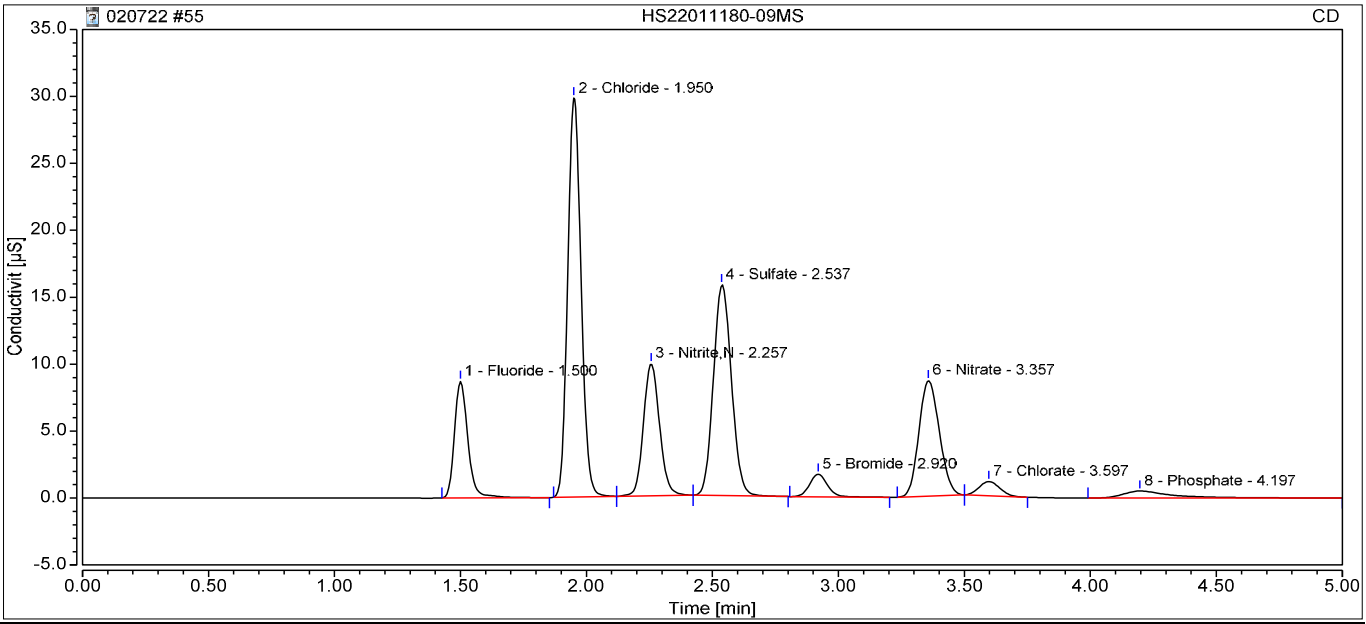
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.042	0.1747	0.1747	1.0000
2	1.95	Chloride	BMB	0.186	1.3965	1.3965	1.0000
3	2.22	Nitrite,N	BMB	0.030	0.0859	0.0859	1.0000
4	2.54	Sulfate	BMB	0.059	0.6310	0.6310	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
5	3.38	Nitrate	BMB	0.016	0.0763	0.0763	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.333**		**2.36**	

55 HS22011180-09MS

Sample Name:	**HS22011180-09MS**	*Injection Volume:*	**5.00**
Vial Number:	**RE1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 21:59**	*Sample Weight:*	**1.0000**

Run Time:



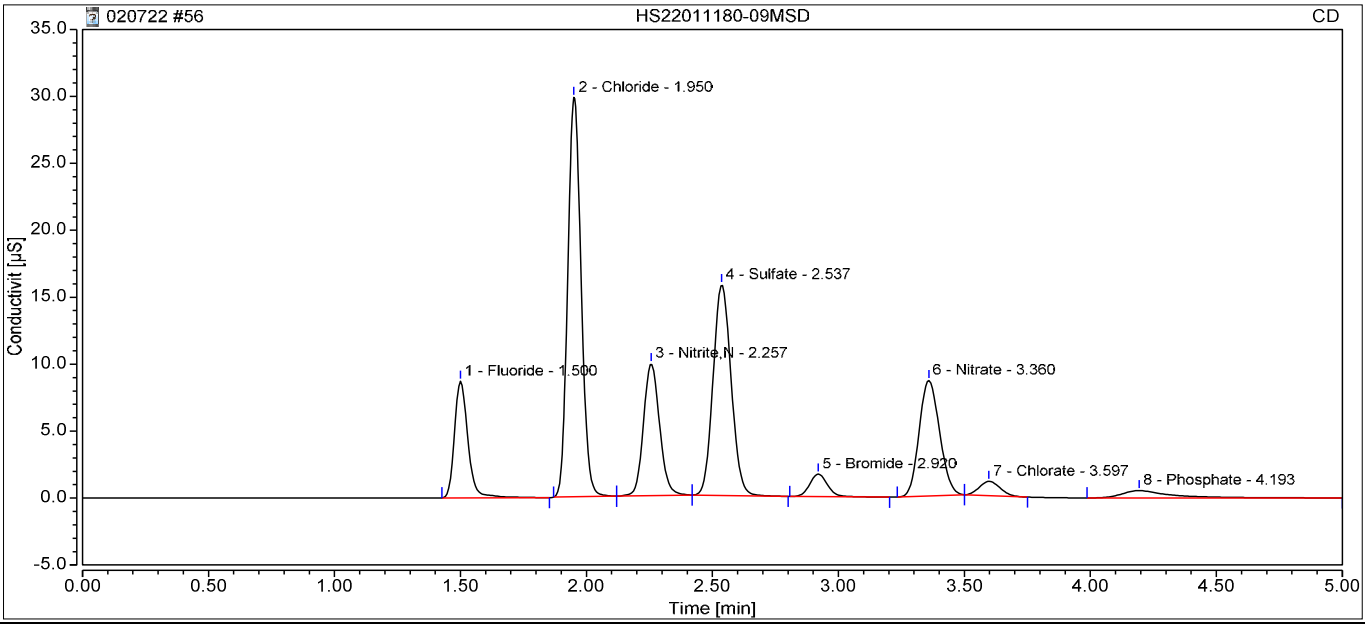
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.540	2.4863	2.4863	1.0000
2	1.95	Chloride	BMB	1.833	13.2545	13.2545	1.0000
3	2.26	Nitrite,N	BMB	0.732	2.3933	2.3933	1.0000
4	2.54	Sulfate	BMB	1.310	12.8050	12.8050	1.0000
5	2.92	Bromide	BMB	0.138	2.3010	2.3010	1.0000
6	3.36	Nitrate	BMB	0.810	2.3981	2.3981	1.0000
7	3.60	Chlorate	BMB	0.102	2.2400	2.2400	1.0000
8	4.20	Phosphate	BMB	0.120	1.1501	1.1501	1.0000
Total:			**0.000**	**5.585**		**39.03**	

56 HS22011180-09MSD

Sample Name:	**HS22011180-09MSD**	*Injection Volume:*	**5.00**
Vial Number:	**RE2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 22:05**	*Sample Weight:*	**1.0000**

Run Time:



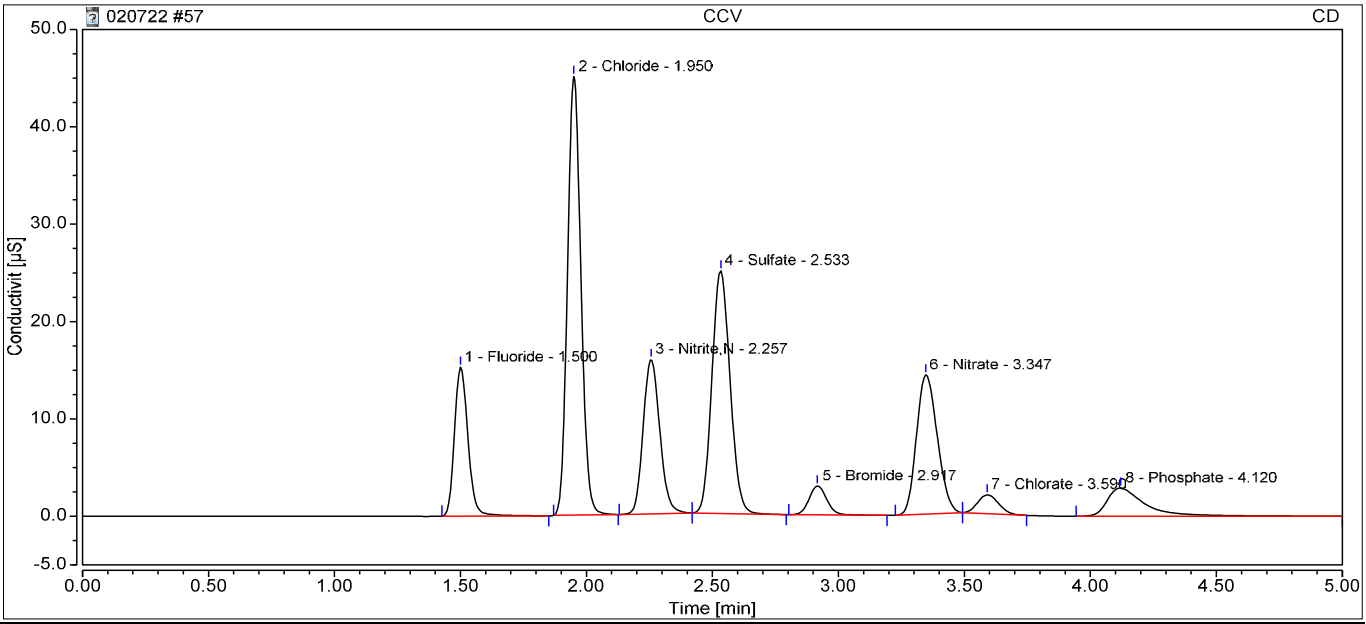
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.541	2.4901	2.4901	1.0000
2	1.95	Chloride	BMB	1.835	13.2703	13.2703	1.0000
3	2.26	Nitrite,N	BMB	0.731	2.3894	2.3894	1.0000
4	2.54	Sulfate	BMB	1.308	12.7850	12.7850	1.0000
5	2.92	Bromide	BMB	0.138	2.3005	2.3005	1.0000
6	3.36	Nitrate	BMB	0.810	2.3987	2.3987	1.0000
7	3.60	Chlorate	BMB	0.102	2.2374	2.2374	1.0000
8	4.19	Phosphate	BMB	0.124	1.1777	1.1777	1.0000
Total:			**0.000**	**5.588**		**39.05**	

57 CCV

Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 22:10**	*Sample Weight:*	**1.0000**

Run Time:



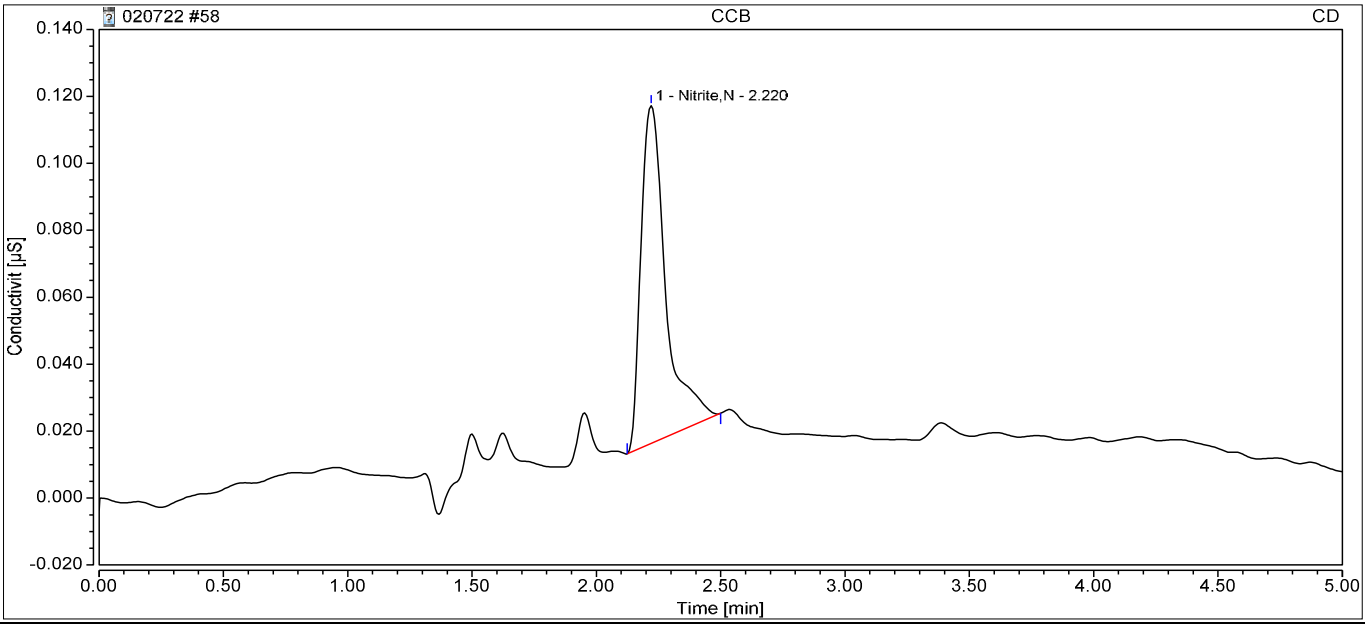
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.954	4.4071	4.4071	1.0000
2	1.95	Chloride	BMB	2.775	20.0418	20.0418	1.0000
3	2.26	Nitrite,N	BMB	1.214	4.0449	4.0449	1.0000
4	2.53	Sulfate	BMB	2.078	20.2787	20.2787	1.0000
5	2.92	Bromide	BMB	0.241	3.9741	3.9741	1.0000
6	3.35	Nitrate	BMB	1.366	4.0271	4.0271	1.0000
7	3.59	Chlorate	BMB	0.186	4.0341	4.0341	1.0000
8	4.12	Phosphate	BMB	0.508	4.3910	4.3910	1.0000
Total:			**0.000**	**9.321**		**65.20**	

58 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 22:15**	*Sample Weight:*	**1.0000**

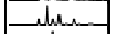
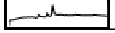
Run Time:



Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.22	Nitrite,N	BMB	0.012	0.0259	0.0259	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.012**		**0.03**	

Sequence: 020922
Last Update Operator: alshs.nouser

CD	Name	Comment	Type	Position	Dilution	Level	Instrument Method	Processing Method	Volume	Status	Inject Time
	STD1		Calibratic	GA1	1.00	1	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 4:54:48 PM -06:00
	STD2		Calibratic	GA2	1.00	2	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:00:07 PM -06:00
	STD3		Calibratic	GA3	1.00	3	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:05:25 PM -06:00
	STD4		Calibratic	GA4	1.00	4	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:10:43 PM -06:00
	STD5		Calibratic	GA5	1.00	5	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:16:02 PM -06:00
	STD6		Calibratic	GA6	1.00	6	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:21:20 PM -06:00
	ICV		Unknown	GA7	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:26:39 PM -06:00
	ICB		Unknown	GA8	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:31:57 PM -06:00
	CCV		Unknown	R1	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/9/2022 3:02:26 PM -06:00
	CCB		Unknown	R8	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/9/2022 3:07:45 PM -06:00
	HS22011279-06		Unknown	RD4	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/9/2022 4:18:08 PM -06:00
	CCV1		Unknown	R3	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/9/2022 4:44:54 PM -06:00
	CCB		Unknown	R6	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/9/2022 4:50:12 PM -06:00

Sequence: 020922
Injection #6: STD6

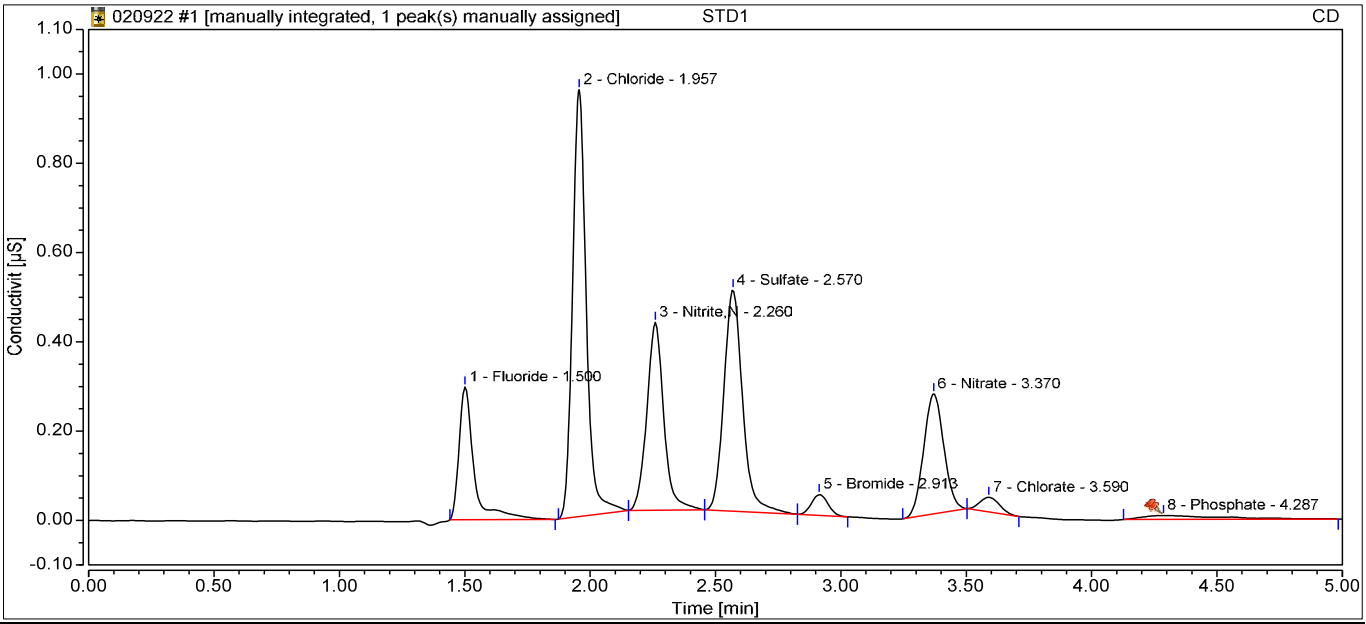
Calibration

Peak No.	Peak Name	Cal.Type	Eval.Type	Number of Points	Rel.Std.Dev. %	Coeff.of Determination	C0 (Offset)	C1 (Slope)	C2 (Curve)
1	*Fluoride*	*Lin, WithOffset, 1/*	*Area*	*6*	*21.3828*	*0.99737*	*0.0042*	*0.2155*	*0.0000*
2	Chloride	Lin, WithOffset, 1/	Area	6	3.6944	0.99993	-0.0077	0.1388	0.0000
3	Nitrite,N	Quad, WithOffset,	Area	6	7.6810	0.99970	0.0036	0.3122	-0.0032
4	Sulfate	Lin, WithOffset, 1/	Area	6	3.1476	0.99995	-0.0062	0.1028	0.0000
5	Bromide	Lin, WithOffset, 1/	Area	6	10.2940	0.99957	-0.0035	0.0615	0.0000
6	Nitrate	Lin, WithOffset, 1/	Area	6	2.5692	0.99997	-0.0098	0.3417	0.0000
7	Chlorate	Lin, WithOffset, 1/	Area	6	10.6539	0.99953	-0.0025	0.0468	0.0000
8	Phosphate	Quad, WithOffset,	Area	6	26.8509	0.99849	-0.0116	0.1136	0.0011
Maximum					**26.8509**	0.99997			
Minimum					2.5692	**0.99737**			

1 STD1

Sample Name:	**STD1**	*Injection Volume:*	**5.00**
Vial Number:	**GA1**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 16:54**	*Sample Weight:*	**1.0000**

Run Time:

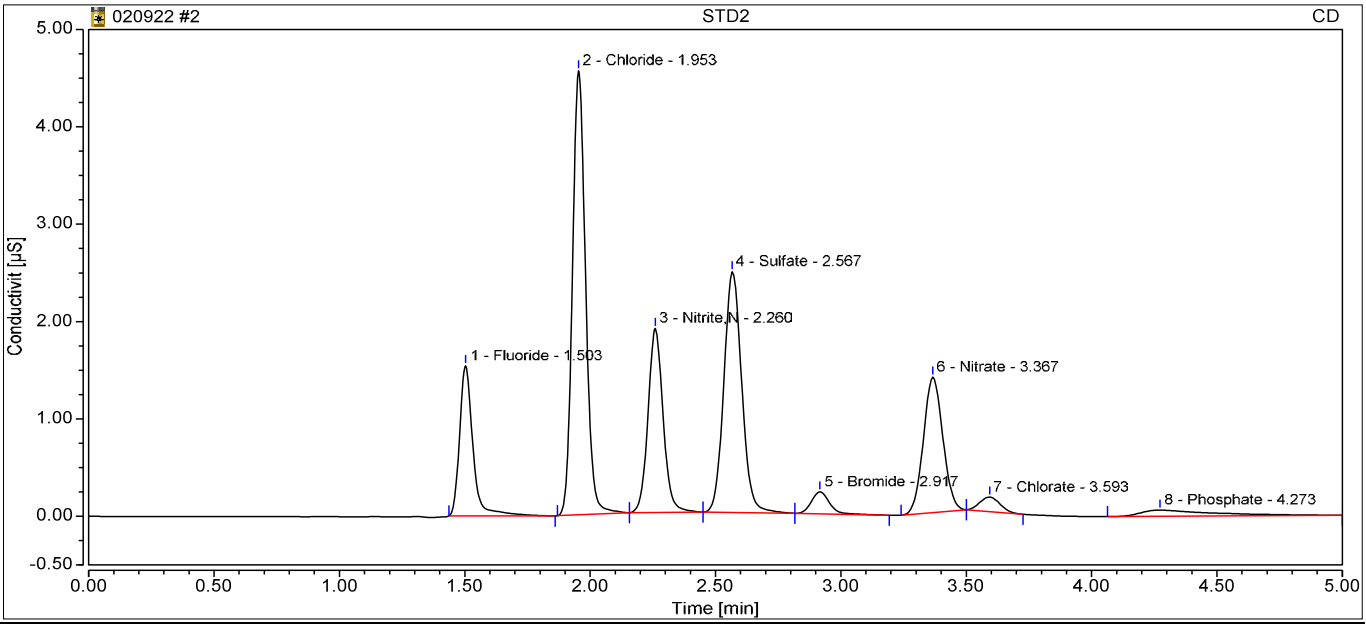


Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.021	0.0765	0.0765	1.0000
2	1.96	Chloride	BMB	0.060	0.4903	0.4903	1.0000
3	2.26	Nitrite,N	BMB	0.033	0.0941	0.0941	1.0000
4	2.57	Sulfate	BMB	0.043	0.4779	0.4779	1.0000
5	2.91	Bromide	BMB	0.004	0.1143	0.1143	1.0000
6	3.37	Nitrate	BMB	0.025	0.1021	0.1021	1.0000
7	3.59	Chlorate	BMB	0.003	0.1167	0.1167	1.0000
8	4.29	Phosphate	BMB*^	0.003	0.1302	0.1302	1.0000
Total:			**0.000**	**0.192**		**1.60**	

2 STD2			
Sample Name:	**STD2**	*Injection Volume:*	**5.00**
Vial Number:	**GA2**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:00**	*Sample Weight:*	**1.0000**

Run Time:



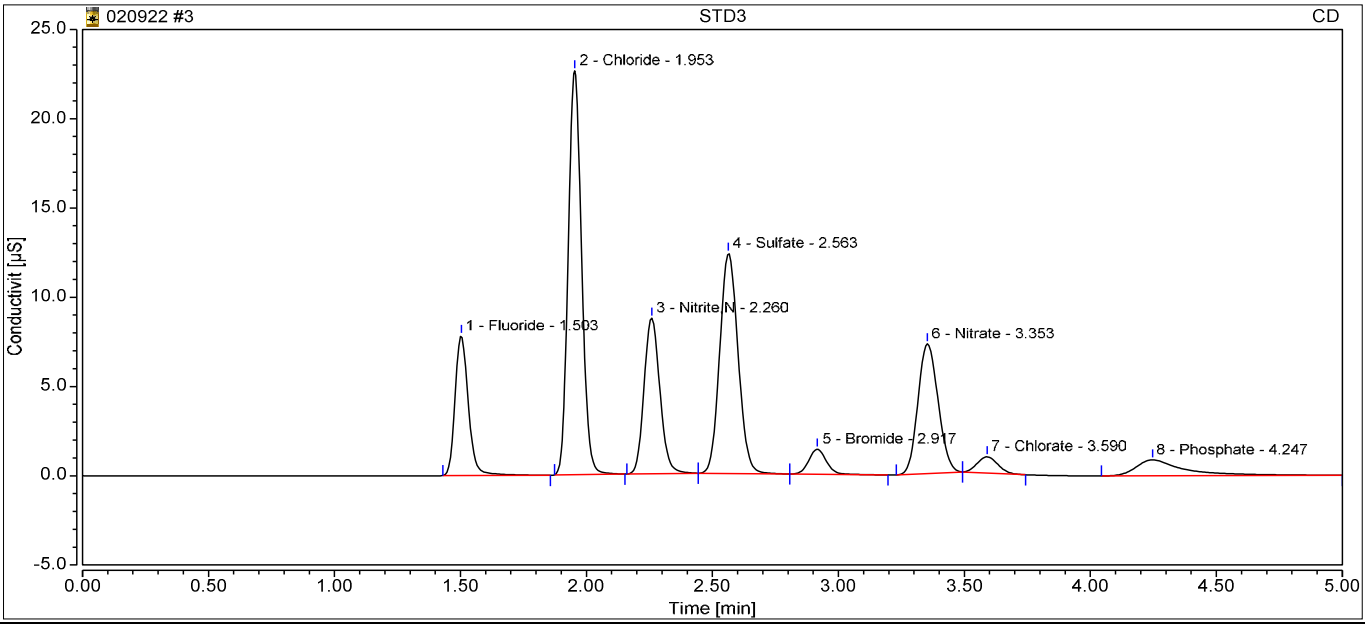
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.096	0.4244	0.4244	1.0000
2	1.95	Chloride	BMB	0.277	2.0467	2.0467	1.0000
3	2.26	Nitrite,N	BMB	0.132	0.4123	0.4123	1.0000
4	2.57	Sulfate	BMB	0.204	2.0474	2.0474	1.0000
5	2.92	Bromide	BMB	0.019	0.3656	0.3656	1.0000
6	3.37	Nitrate	BMB	0.125	0.3941	0.3941	1.0000
7	3.59	Chlorate	BMB	0.014	0.3528	0.3528	1.0000
8	4.27	Phosphate	BMB	0.022	0.2979	0.2979	1.0000
Total:			**0.000**	**0.888**		**6.34**	

3 STD3

Sample Name:	**STD3**	*Injection Volume:*	**5.00**
Vial Number:	**GA3**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:05**	*Sample Weight:*	**1.0000**

Run Time:



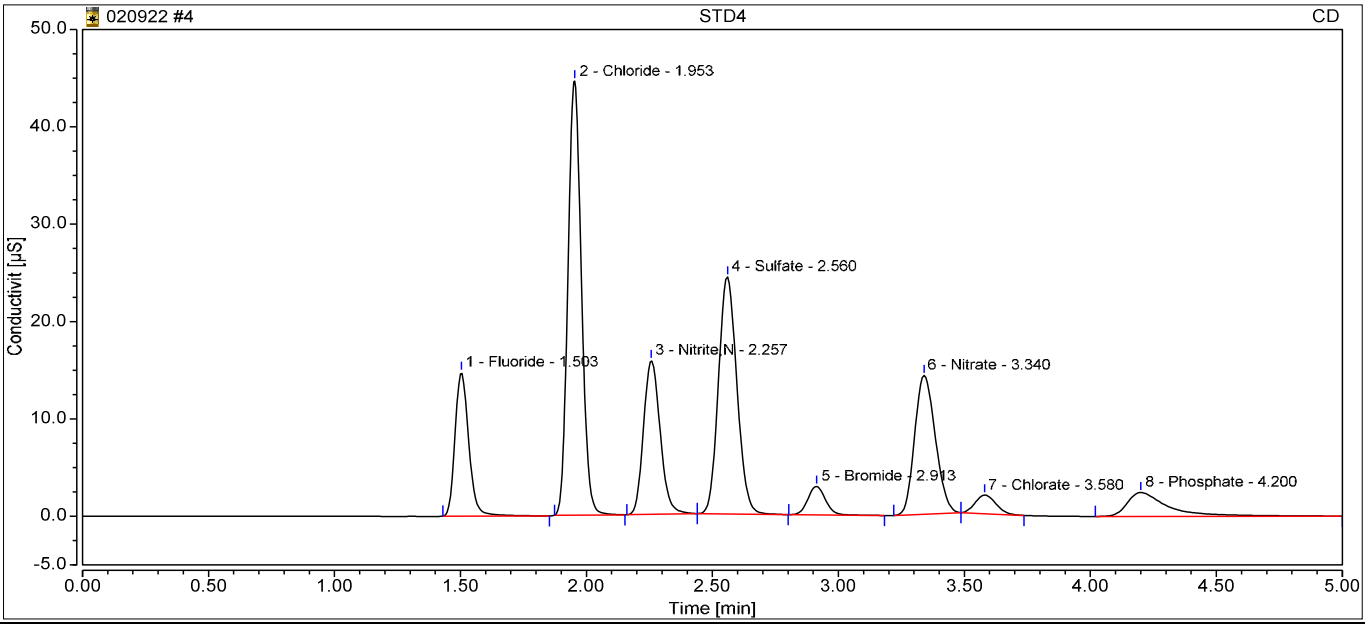
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.483	2.2207	2.2207	1.0000
2	1.95	Chloride	BMB	1.390	10.0653	10.0653	1.0000
3	2.26	Nitrite,N	BMB	0.637	2.0733	2.0733	1.0000
4	2.56	Sulfate	BMB	1.041	10.1897	10.1897	1.0000
5	2.92	Bromide	BMB	0.114	1.9189	1.9189	1.0000
6	3.35	Nitrate	BMB	0.673	1.9996	1.9996	1.0000
7	3.59	Chlorate	BMB	0.086	1.8976	1.8976	1.0000
8	4.25	Phosphate	BMB	0.201	1.8374	1.8374	1.0000
Total:			**0.000**	**4.625**		**32.20**	

4 STD4

Sample Name:	**STD4**	*Injection Volume:*	**5.00**
Vial Number:	**GA4**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:10**	*Sample Weight:*	**1.0000**

Run Time:



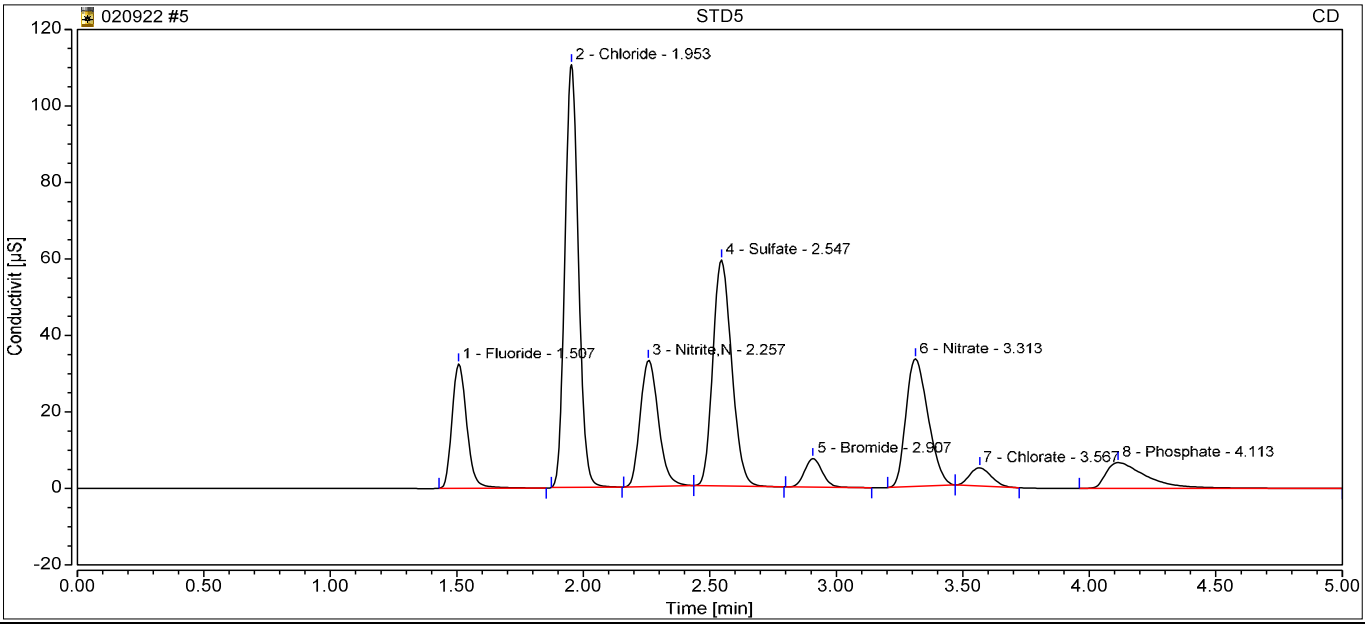
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.936	4.3225	4.3225	1.0000
2	1.95	Chloride	BMB	2.756	19.9028	19.9028	1.0000
3	2.26	Nitrite,N	BMB	1.211	4.0347	4.0347	1.0000
4	2.56	Sulfate	BMB	2.065	20.1557	20.1557	1.0000
5	2.91	Bromide	BMB	0.237	3.9133	3.9133	1.0000
6	3.34	Nitrate	BMB	1.353	3.9875	3.9875	1.0000
7	3.58	Chlorate	BMB	0.182	3.9485	3.9485	1.0000
8	4.20	Phosphate	BMB	0.464	4.0338	4.0338	1.0000
Total:			**0.000**	**9.203**		**64.30**	

5 STD5

Sample Name:	**STD5**	*Injection Volume:*	**5.00**
Vial Number:	**GA5**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:16**	*Sample Weight:*	**1.0000**

Run Time:



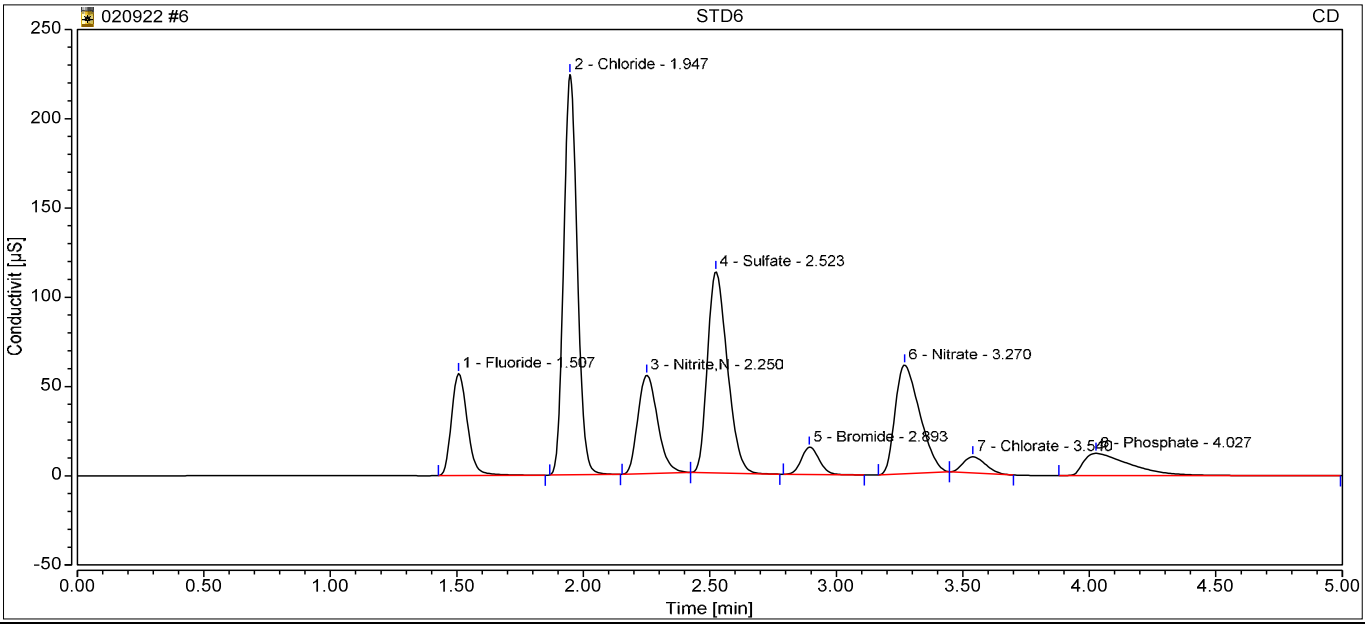
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	2.202	10.2004	10.2004	1.0000
2	1.95	Chloride	BMB	6.857	49.4370	49.4370	1.0000
3	2.26	Nitrite,N	BMB	2.744	9.7621	9.7621	1.0000
4	2.55	Sulfate	BMB	5.105	49.7378	49.7378	1.0000
5	2.91	Bromide	BMB	0.606	9.9171	9.9171	1.0000
6	3.31	Nitrate	BMB	3.383	9.9299	9.9299	1.0000
7	3.57	Chlorate	BMB	0.470	10.1129	10.1129	1.0000
8	4.11	Phosphate	BMB	1.275	10.3243	10.3243	1.0000
Total:			**0.000**	**22.642**		**159.42**	

6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**5.00**
Vial Number:	**GA6**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:21**	*Sample Weight:*	**1.0000**

Run Time:



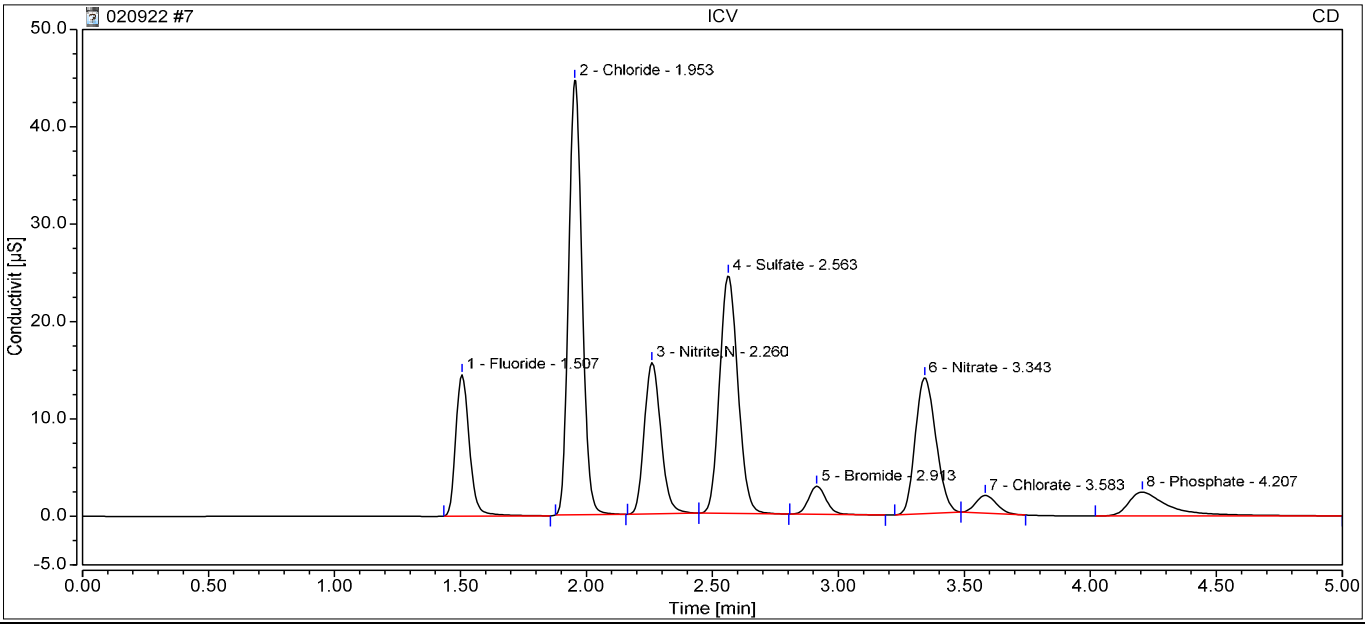
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	4.154	19.2555	19.2555	1.0000
2	1.95	Chloride	BMB	13.955	100.5578	100.5578	1.0000
3	2.25	Nitrite,N	BMB	4.985	20.1384	20.1384	1.0000
4	2.52	Sulfate	BMB	10.258	99.8915	99.8915	1.0000
5	2.89	Bromide	BMB	1.242	20.2707	20.2707	1.0000
6	3.27	Nitrate	BMB	6.854	20.0867	20.0867	1.0000
7	3.54	Chlorate	BMB	0.936	20.0714	20.0714	1.0000
8	4.03	Phosphate	BMB	2.666	19.8678	19.8678	1.0000
Total:			**0.000**	**45.050**		**320.14**	

7 ICV

Sample Name:	**ICV**	*Injection Volume:*	**5.00**
Vial Number:	**GA7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:26**	*Sample Weight:*	**1.0000**

Run Time:



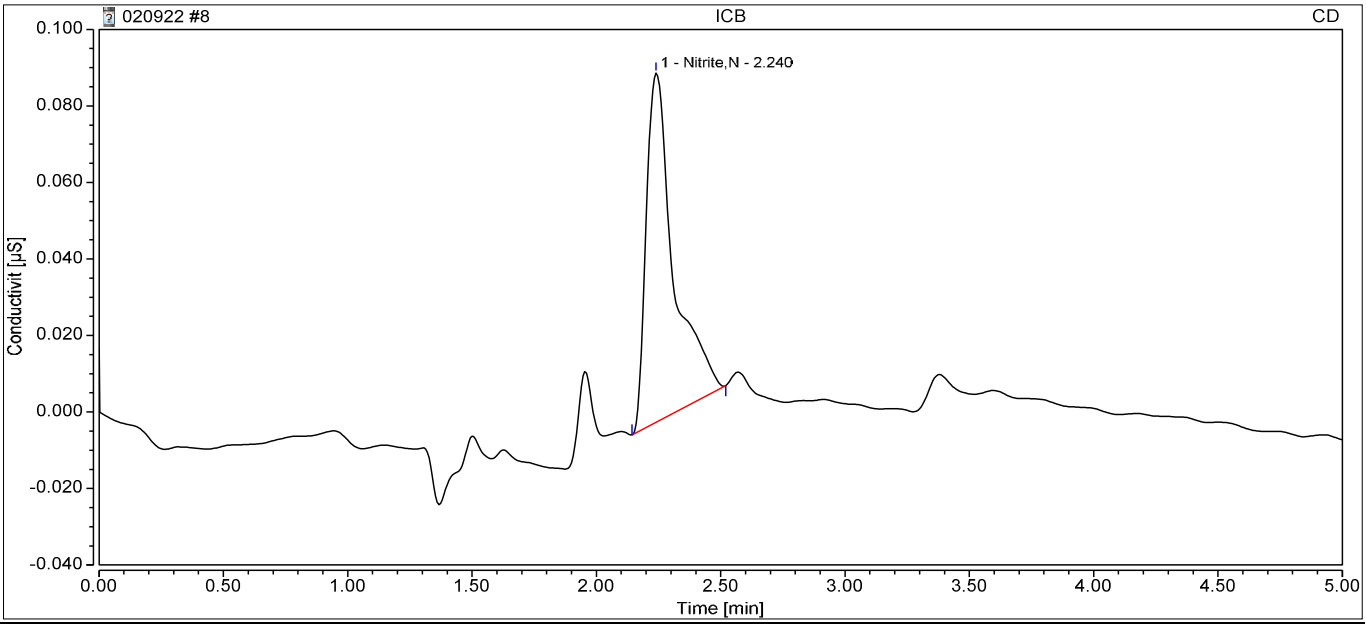
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.918	4.2393	4.2393	1.0000
2	1.95	Chloride	BMB	2.757	19.9118	19.9118	1.0000
3	2.26	Nitrite,N	BMB	1.187	3.9514	3.9514	1.0000
4	2.56	Sulfate	BMB	2.061	20.1215	20.1215	1.0000
5	2.91	Bromide	BMB	0.234	3.8709	3.8709	1.0000
6	3.34	Nitrate	BMB	1.322	3.8966	3.8966	1.0000
7	3.58	Chlorate	BMB	0.173	3.7489	3.7489	1.0000
8	4.21	Phosphate	BMB	0.463	4.0300	4.0300	1.0000
Total:			**0.000**	**9.115**		**63.77**	

8 ICB

Sample Name:	**ICB**	*Injection Volume:*	**5.00**
Vial Number:	**GA8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:31**	*Sample Weight:*	**1.0000**

Run Time:



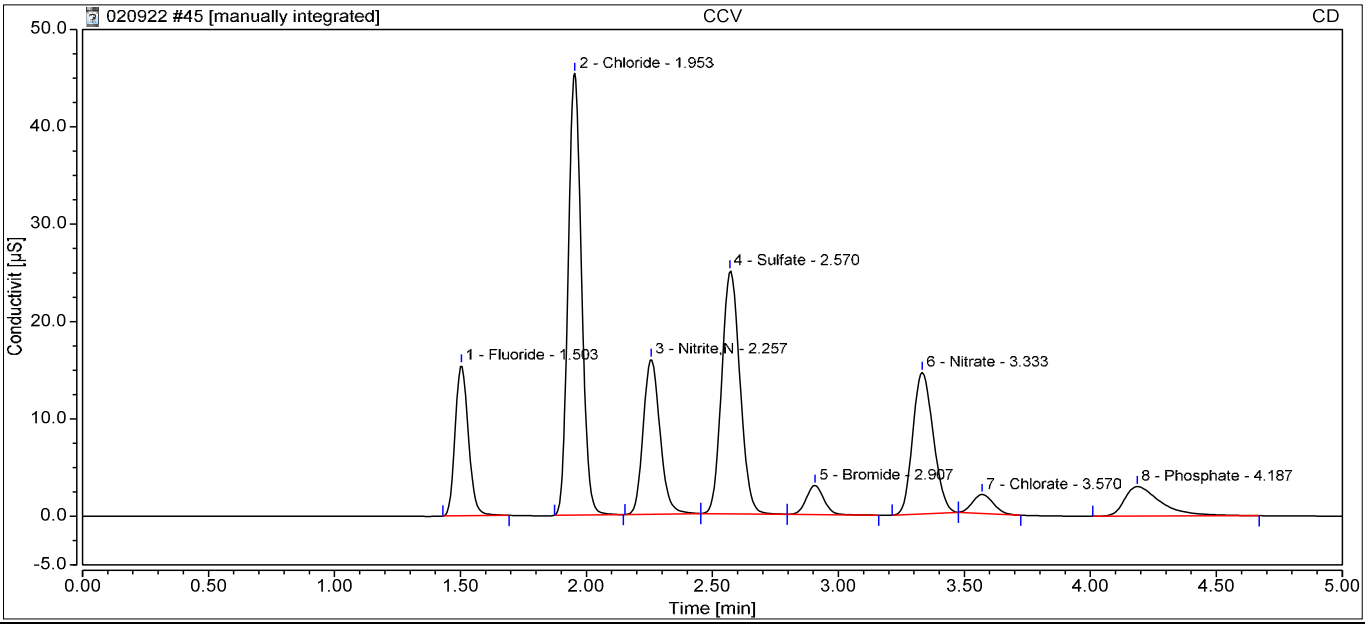
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.24	Nitrite,N	BMB	0.012	0.0259	0.0259	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.012**		**0.03**	

45 CCV

Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/09/2022 15:02**	*Sample Weight:*	**1.0000**

Run Time:



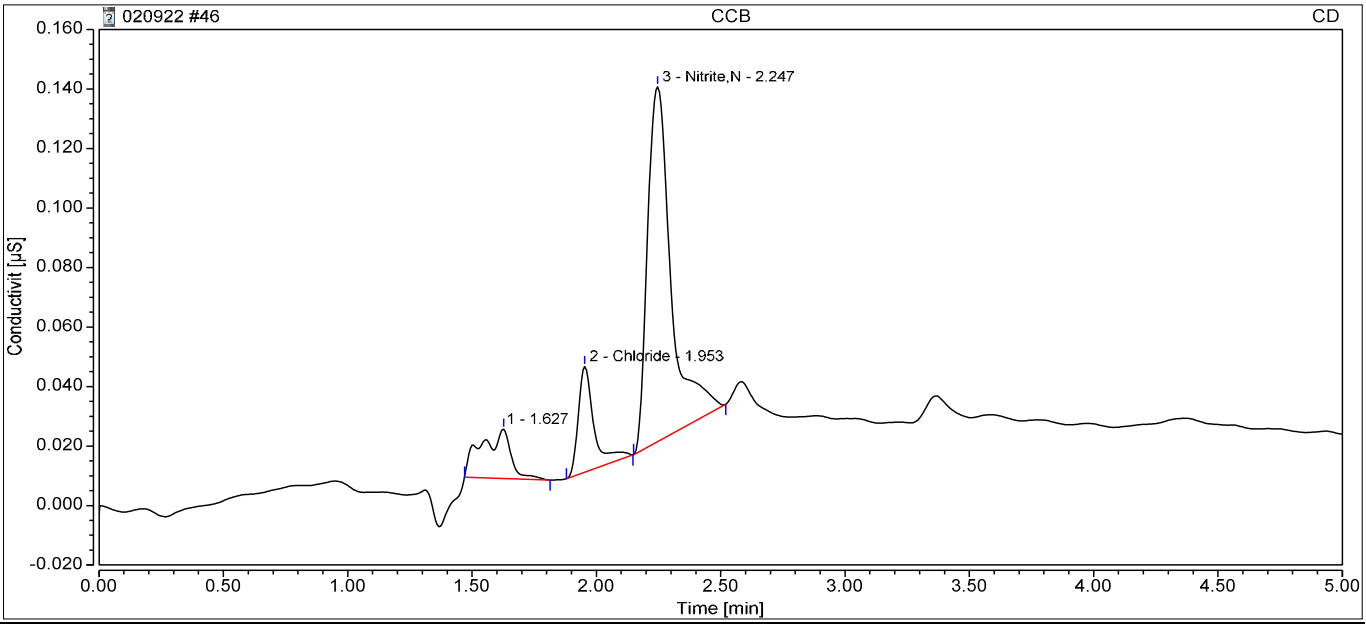
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB*	0.947	4.3745	4.3745	1.0000
2	1.95	Chloride	BMB	2.790	20.1520	20.1520	1.0000
3	2.26	Nitrite,N	BMB	1.229	4.0981	4.0981	1.0000
4	2.57	Sulfate	BMB	2.094	20.4363	20.4363	1.0000
5	2.91	Bromide	BMB	0.240	3.9549	3.9549	1.0000
6	3.33	Nitrate	BMB	1.370	4.0392	4.0392	1.0000
7	3.57	Chlorate	BMB	0.185	4.0035	4.0035	1.0000
8	4.19	Phosphate	BMB*	0.506	4.3761	4.3761	1.0000
Total:			**0.000**	**9.361**		**65.43**	

46 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/09/2022 15:07**	*Sample Weight:*	**1.0000**

Run Time:



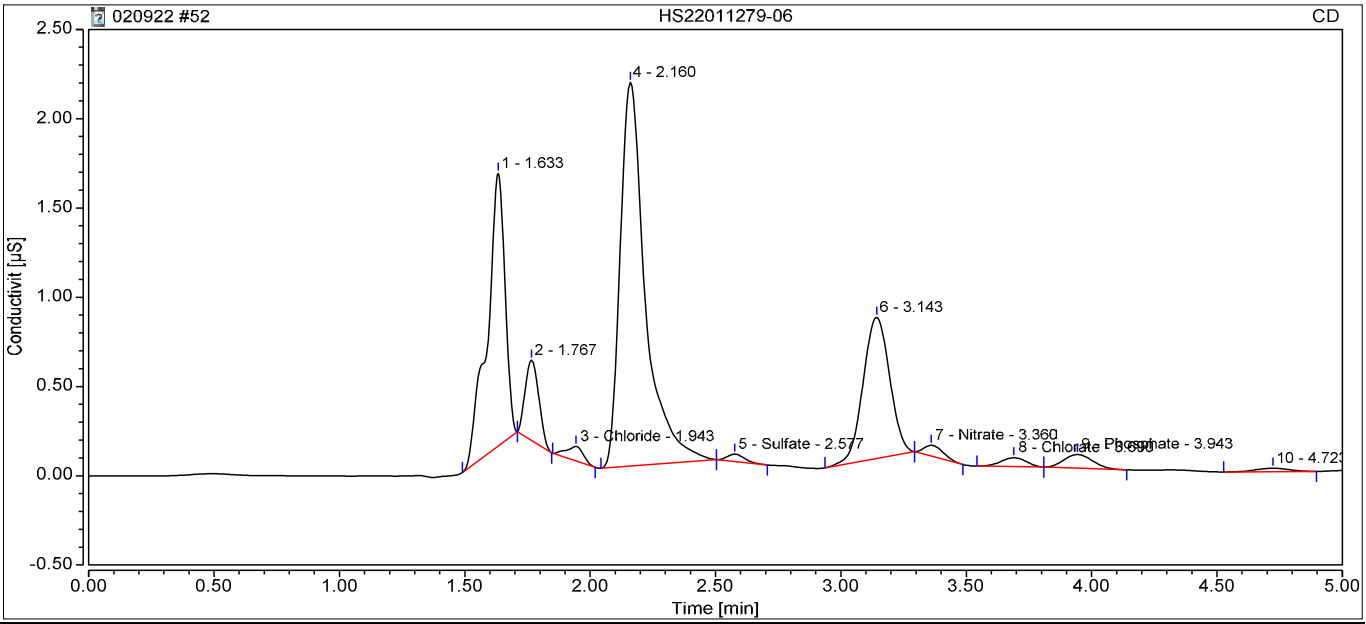
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
2	1.95	Chloride	BMB	0.003	0.0739	0.0739	1.0000
3	2.25	Nitrite,N	BMB	0.013	0.0305	0.0305	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.016**		**0.10**	

52 HS22011279-06

Sample Name:	**HS22011279-06**	*Injection Volume:*	**5.00**
Vial Number:	**RD4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/09/2022 16:18**	*Sample Weight:*	**1.0000**

Run Time:



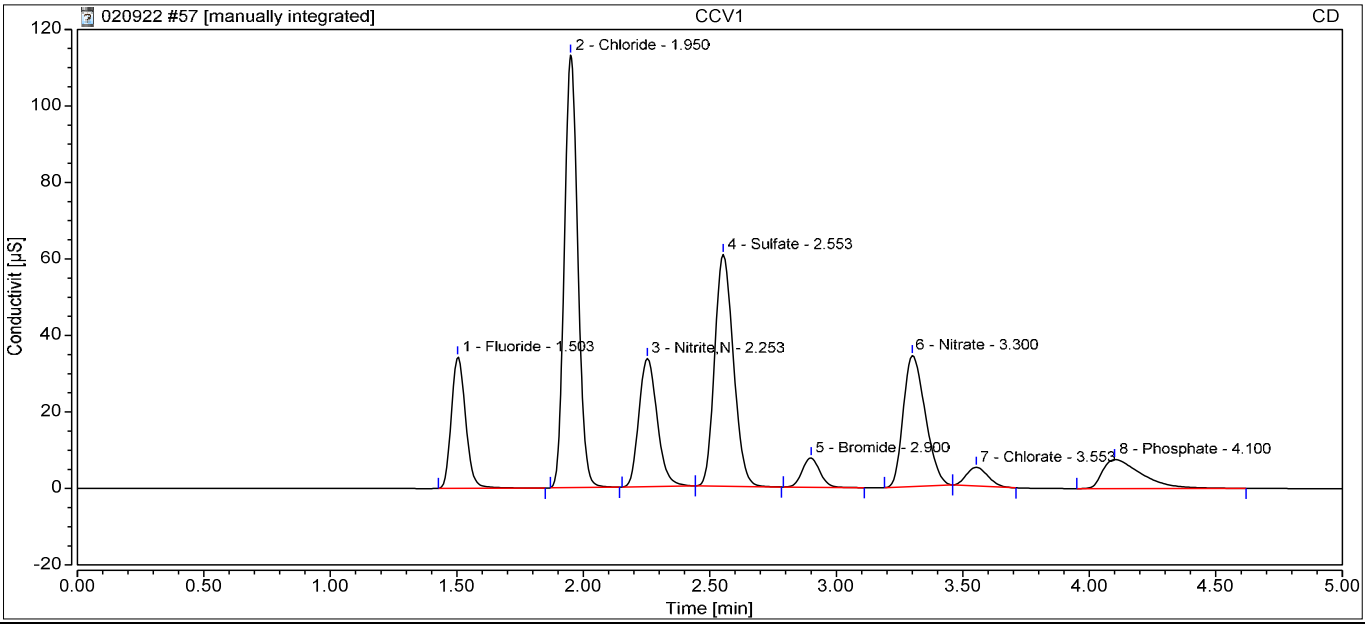
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
3	1.94	Chloride	BMB	0.006	0.1016	0.1016	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
5	2.58	Sulfate	BMB	0.003	0.0924	0.0924	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
7	3.36	Nitrate	BMB	0.006	0.0451	0.0451	1.0000
8	3.69	Chlorate	BMB	0.006	0.1775	0.1775	1.0000
9	3.94	Phosphate	BMB	0.010	0.1910	0.1910	1.0000
Total:			**0.000**	**0.031**		**0.61**	

57 CCV1

Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**R3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/09/2022 16:44**	*Sample Weight:*	**1.0000**

Run Time:



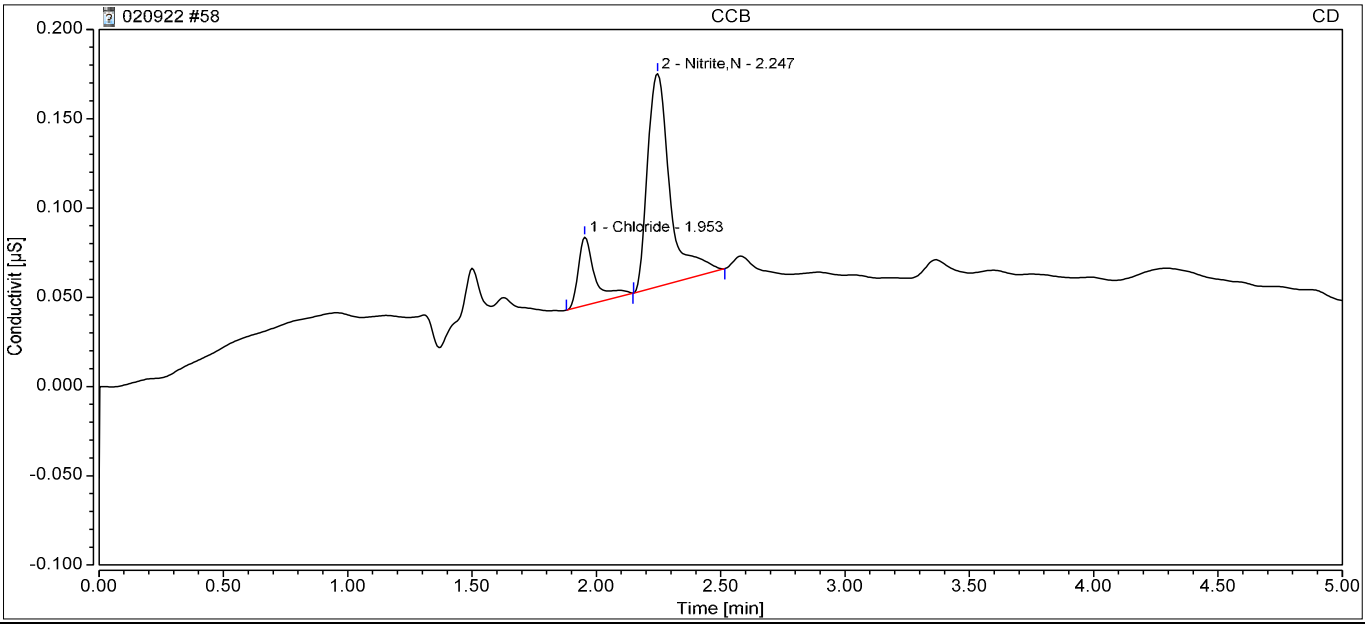
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	2.257	10.4564	10.4564	1.0000
2	1.95	Chloride	BMB	6.989	50.3895	50.3895	1.0000
3	2.25	Nitrite,N	BMB	2.809	10.0209	10.0209	1.0000
4	2.55	Sulfate	BMB	5.205	50.7128	50.7128	1.0000
5	2.90	Bromide	BMB	0.617	10.0929	10.0929	1.0000
6	3.30	Nitrate	BMB	3.454	10.1368	10.1368	1.0000
7	3.55	Chlorate	BMB	0.479	10.2956	10.2956	1.0000
8	4.10	Phosphate	BMB*	1.350	10.8756	10.8756	1.0000
Total:			**0.000**	**23.159**		**162.98**	

58 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R6**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/09/2022 16:50**	*Sample Weight:*	**1.0000**

Run Time:



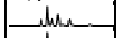
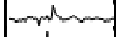
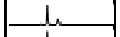
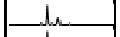
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
1	1.95	Chloride	BMB	0.003	0.0766	0.0766	1.0000
2	2.25	Nitrite,N	BMB	0.013	0.0287	0.0287	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.016**		**0.11**	

HS22011279 9056_W IC

ALS WO# HS22011279

Sequence: 012822
Last Update Operator: alshs.nouser

ECD_1	Name	Comment	Type	Position	Dilution	Level	Instrument Method	Processing Method	ume	Status	Inject Time
	STD1		Calibration	11	1.00	01	ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/27/2022 4:19:26 PM -06:
	STD2		Calibration	12	1.00	02	ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/27/2022 4:27:15 PM -06:
	STD3		Calibration	13	1.00	03	ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/27/2022 4:35:00 PM -06:
	STD4		Calibration	14	1.00	04	ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/27/2022 4:42:46 PM -06:
	STD5		Calibration	15	1.00	05	ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/27/2022 4:50:32 PM -06:
	STD6		Calibration	16	1.00	06	ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/27/2022 4:58:19 PM -06:
	ICV		Unknown	17	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/27/2022 5:06:05 PM -06:
	ICB		Unknown	18	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/27/2022 5:13:52 PM -06:
	CCV		Unknown	24	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 2:03:38 PM -06:
	CCB		Unknown	25	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 2:11:15 PM -06:
	MBLK		Unknown	1	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 3:48:51 PM -06:
	LCS		Unknown	2	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 3:56:41 PM -06:
	CCV1		Unknown	3	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 4:04:37 PM -06:
	CCB		Unknown	4	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 4:24:12 PM -06:
	HS22011274-02		Unknown	10	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 5:30:04 PM -06:
	HS22011274-02MS		Unknown	11	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 5:37:40 PM -06:
	HS22011274-02MSD		Unknown	12	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 5:45:15 PM -06:
	CCV		Unknown	16	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 6:15:42 PM -06:
	CCB		Unknown	17	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 6:30:56 PM -06:
	HS22011279-05		Unknown	18	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 6:37:27 PM -06:
	HS22011279-07		Unknown	19	2.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 6:45:08 PM -06:
	HS22011279-08		Unknown	20	2.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 6:52:44 PM -06:
	HS22011279-09		Unknown	21	2.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 7:00:20 PM -06:
	CCV1		Unknown	3	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 7:38:23 PM -06:
	CCB		Unknown	4	1.00		ICS2100 ASDV 30-	Anion Processing M	10	Finishe	1/28/2022 7:54:33 PM -06:

Sequence: 012822
Last Update Operator: alshs.nouser

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Sequence: 012822
Injection #3: STD3

Calibration

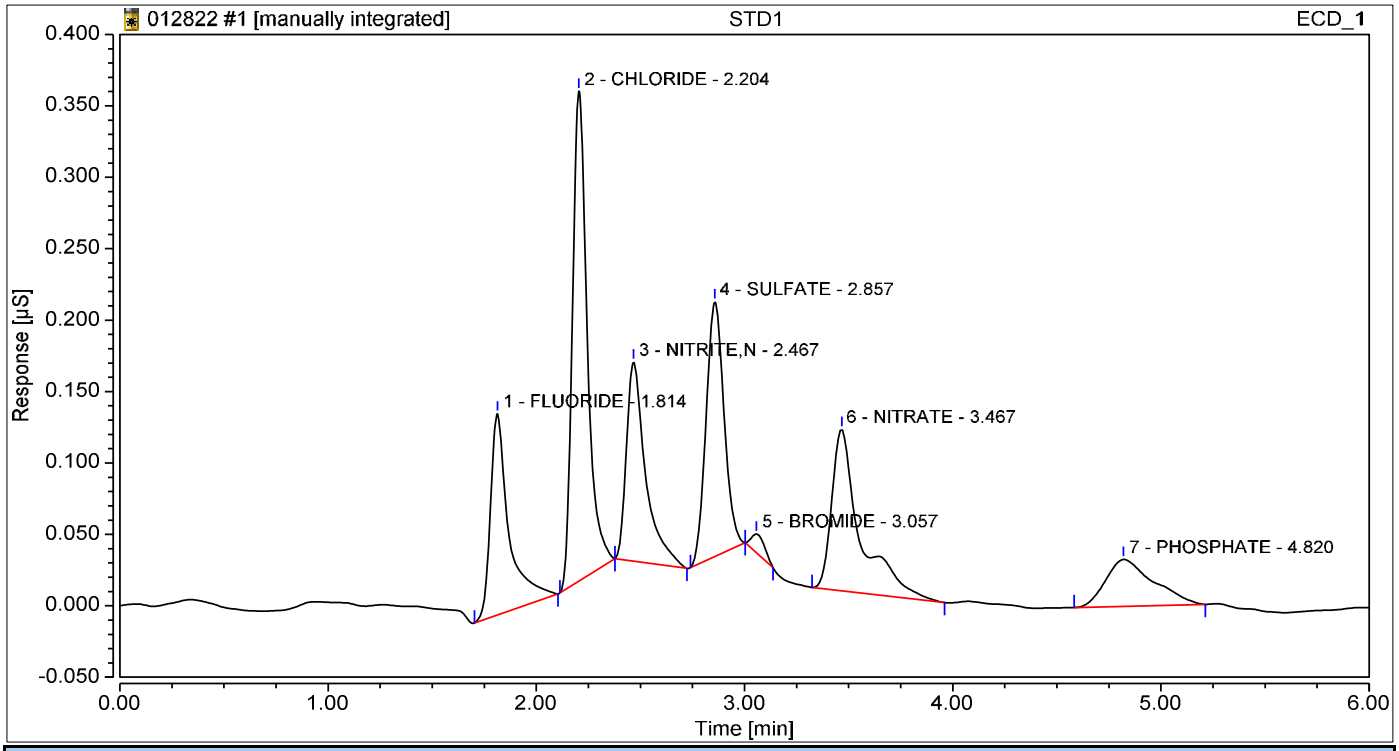
Peak No.	Peak Name	Cal.Type	Eval.Type	Number of Points	Rel.Std.Dev. %	Coeff.of Determination	C0 (Offset)	C1 (Slope)	C2 (Curve)
1	*FLUORIDE*	*Lin, WithOffset, 1/*	*Area*	*6*	*7.9648*	*0.99969*	*-0.0027*	*0.1554*	*0.0000*
2	CHLORIDE	Lin, WithOffset, 1/	Area	6	8.5844	0.99970	-0.0258	0.0952	0.0000
3	NITRITE,N	Lin, WithOffset, 1/	Area	6	27.4492	0.99612	-0.0010	0.1863	0.0000
4	SULFATE	Lin, WithOffset, 1/	Area	6	9.4608	0.99965	-0.0215	0.0685	0.0000
5	BROMIDE	Lin, WithOffset, 1/	Area	6	36.0072	0.99613	-0.0034	0.0307	0.0000
6	NITRATE	Lin, WithOffset, 1/	Area	6	17.3334	0.99872	-0.0098	0.2126	0.0000
7	CHLORATE	Lin, WithOffset, 1/	Area	5	16.3514	0.99685	-0.0026	0.0153	0.0000
8	PHOSPHATE	Quad, WithOffset,	Area	6	12.3847	0.99949	-0.0014	0.0904	0.0006
Maximum					**36.0072**	0.99970			
Minimum					7.9648	**0.99612**			

Chromatogram and Results

Injection Details

Injection Name:	**STD1**	*Run Time (min):*	**6.00**
Vial Number:	**11**	*Injection Volume:*	**10.00**
Injection Type:	**Calibration Standard**	*Channel:*	**ECD_1**
Calibration Level:	**01**	*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**27/Jan/22 16:19**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

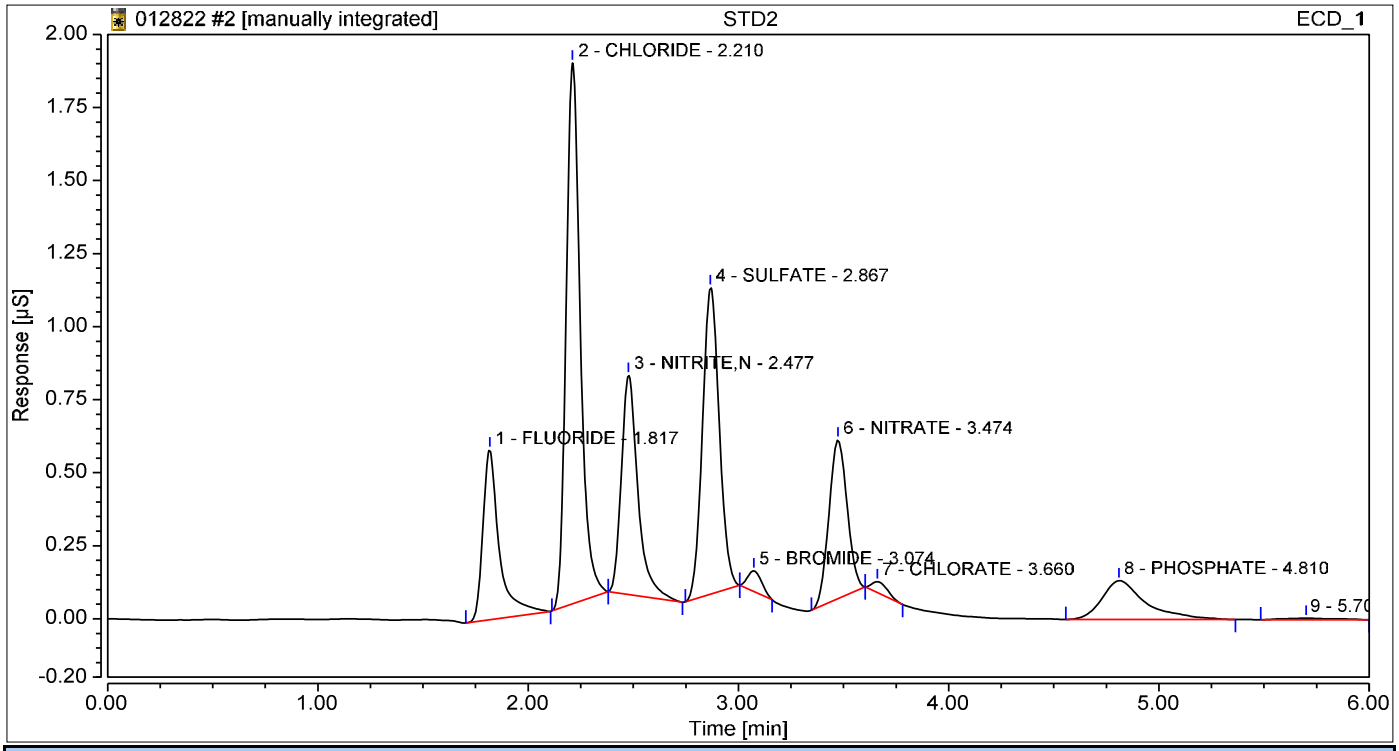
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	1.814	0.015	0.141	14.12	14.66	0.1109
2	CHLORIDE	2.204	0.028	0.343	27.42	35.70	0.5688
3	NITRITE,N	2.467	0.015	0.139	14.41	14.52	0.0854
4	SULFATE	2.857	0.018	0.178	17.33	18.58	0.5756
5	BROMIDE	3.057	0.001	0.013	0.97	1.36	0.1437
6	NITRATE	3.467	0.018	0.113	17.33	11.77	0.1303
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7	PHOSPHATE	4.820	0.009	0.033	8.42	3.42	0.1118
Total:			**0.103**	**0.961**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD2**	*Run Time (min):*	**6.00**
Vial Number:	**12**	*Injection Volume:*	**10.00**
Injection Type:	**Calibration Standard**	*Channel:*	**ECD_1**
Calibration Level:	**02**	*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**27/Jan/22 16:27**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

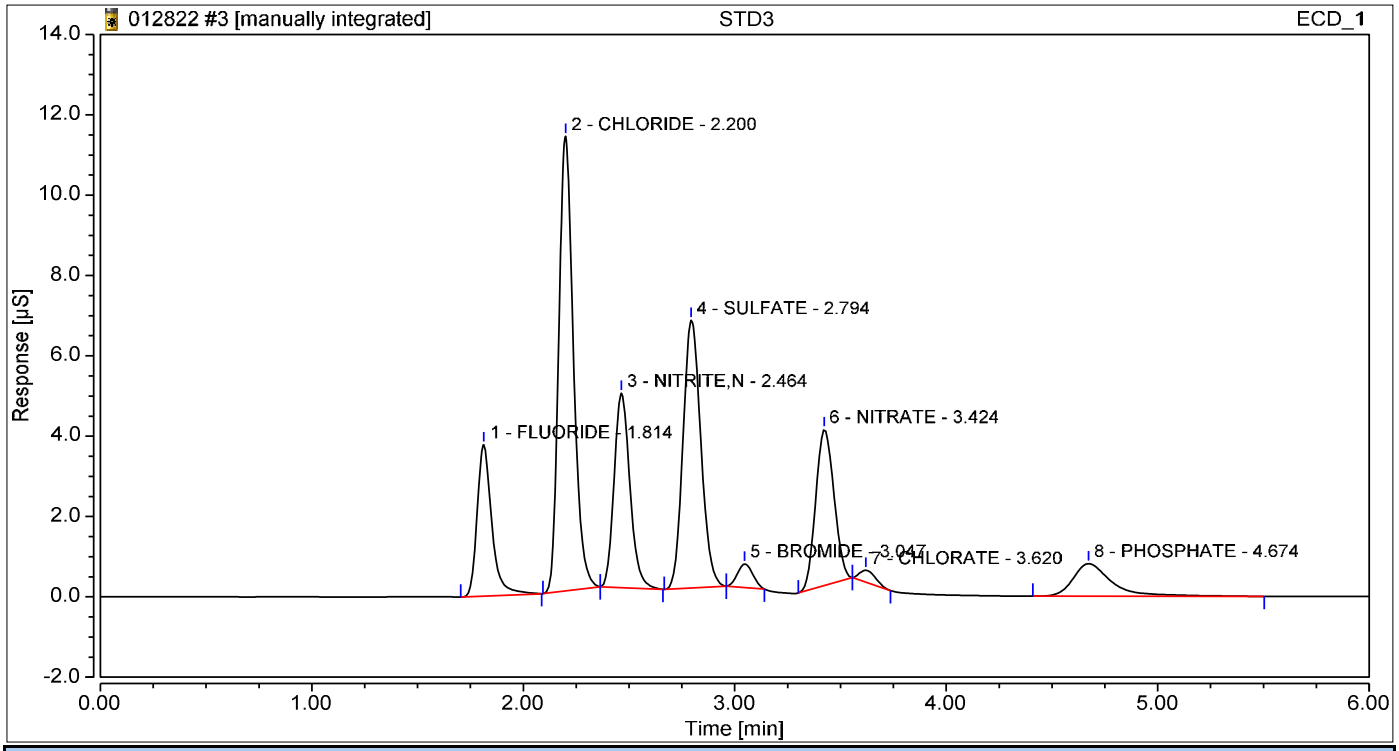
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	1.817	0.053	0.581	11.42	11.57	0.3550
2	CHLORIDE	2.210	0.145	1.852	31.44	36.87	1.7902
3	NITRITE,N	2.477	0.068	0.750	14.85	14.94	0.3720
4	SULFATE	2.867	0.097	1.049	21.16	20.89	1.7356
5	BROMIDE	3.074	0.006	0.070	1.20	1.40	0.2911
6	NITRATE	3.474	0.055	0.544	11.90	10.83	0.3035
7	CHLORATE	3.660	0.003	0.037	0.73	0.75	0.3927
8	PHOSPHATE	4.810	0.032	0.133	6.96	2.65	0.3688
9		5.700	0.002	0.005	0.34	0.10	n.a.
Total:			**0.460**	**5.022**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD3**	*Run Time (min):*	**6.00**
Vial Number:	**13**	*Injection Volume:*	**10.00**
Injection Type:	**Calibration Standard**	*Channel:*	**ECD_1**
Calibration Level:	**03**	*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**27/Jan/22 16:35**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

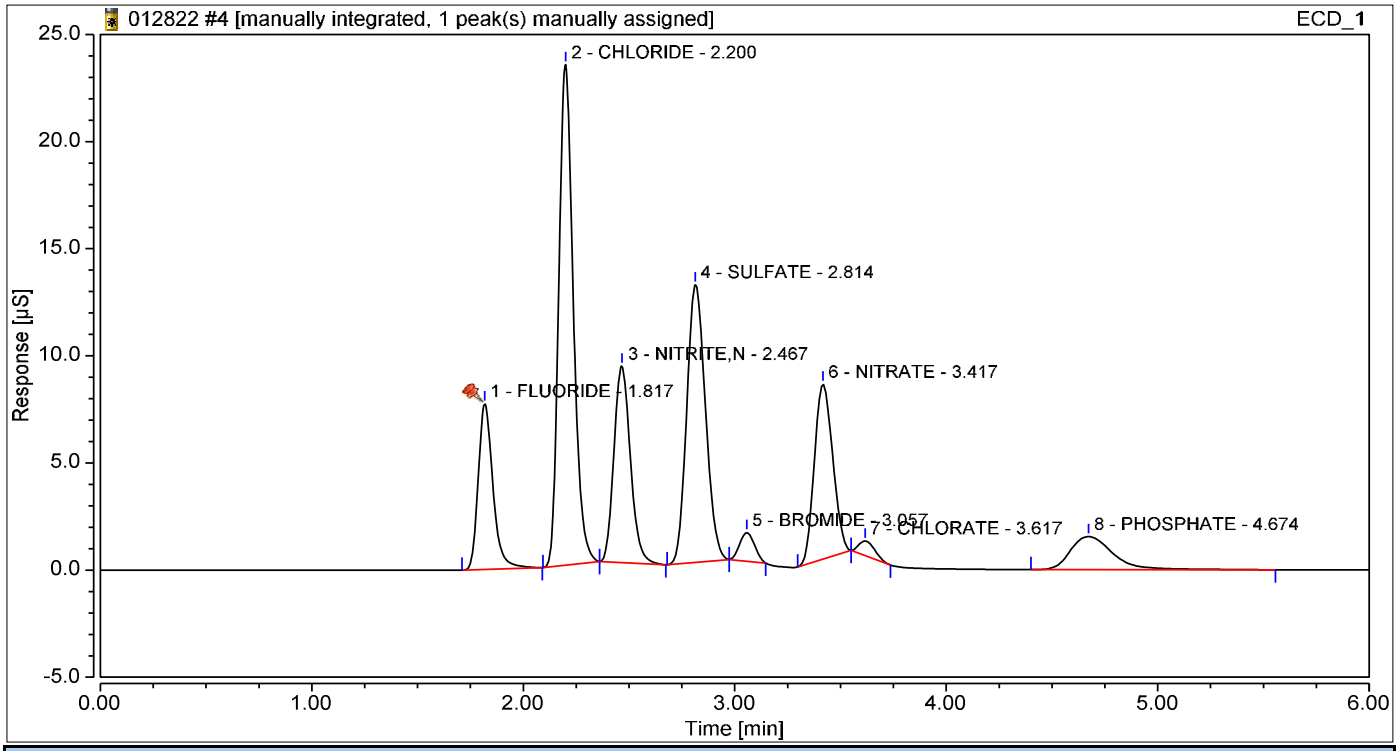
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	1.814	0.303	3.764	10.40	11.70	1.9678
2	CHLORIDE	2.200	0.904	11.315	31.01	35.18	9.7722
3	NITRITE,N	2.464	0.418	4.839	14.35	15.05	2.2513
4	SULFATE	2.794	0.651	6.662	22.34	20.72	9.8304
5	BROMIDE	3.047	0.049	0.587	1.70	1.82	1.7216
6	NITRATE	3.424	0.390	3.885	13.38	12.08	1.8808
7	CHLORATE	3.620	0.026	0.297	0.90	0.92	1.8870
8	PHOSPHATE	4.674	0.173	0.811	5.93	2.52	1.9053
Total:			**2.916**	**32.158**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD4**	*Run Time (min):*	**6.00**
Vial Number:	**14**	*Injection Volume:*	**10.00**
Injection Type:	**Calibration Standard**	*Channel:*	**ECD_1**
Calibration Level:	**04**	*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**27/Jan/22 16:42**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

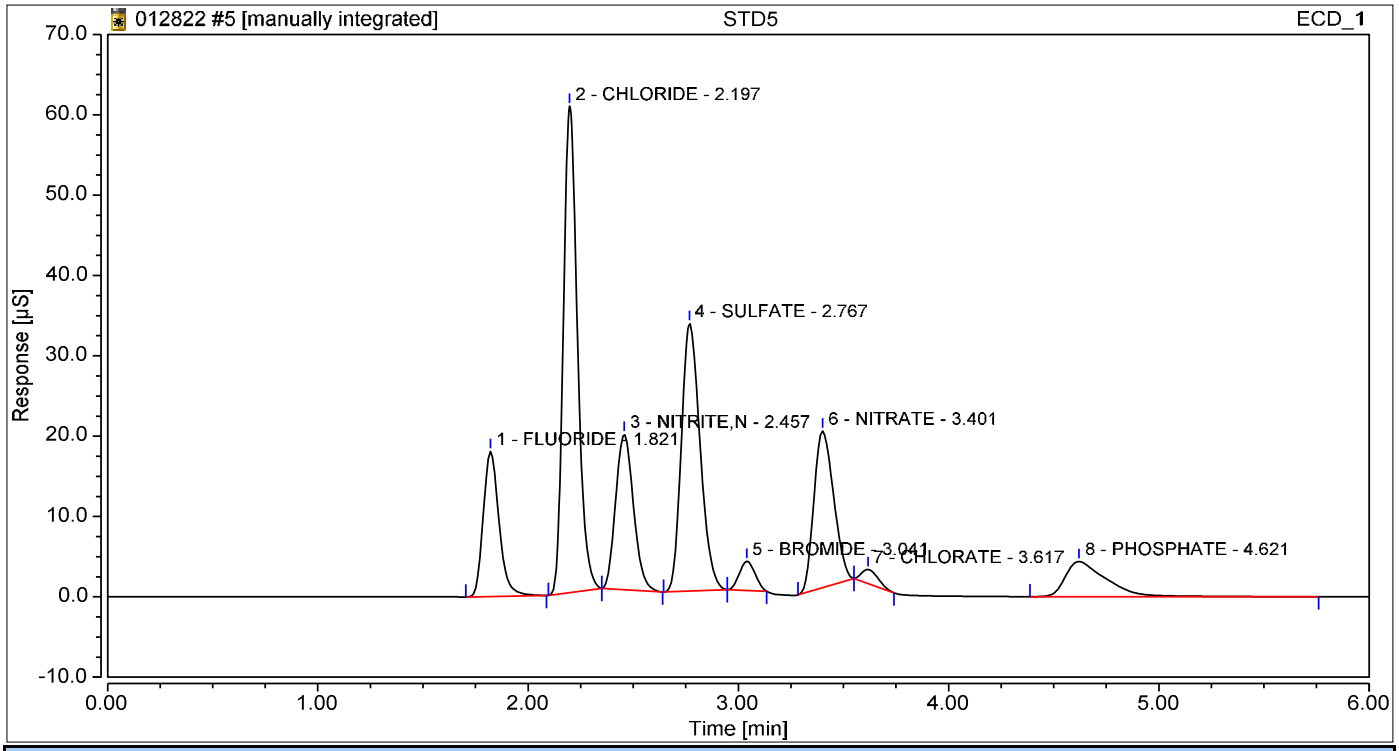
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	1.817	0.626	7.738	10.44	11.90	4.0431
2	CHLORIDE	2.200	1.852	23.362	30.91	35.94	19.7388
3	NITRITE,N	2.467	0.827	9.186	13.80	14.13	4.4448
4	SULFATE	2.814	1.329	12.964	22.17	19.94	19.7219
5	BROMIDE	3.057	0.110	1.341	1.83	2.06	3.6874
6	NITRATE	3.417	0.825	8.178	13.77	12.58	3.9277
7	CHLORATE	3.617	0.061	0.686	1.02	1.06	4.1675
8	PHOSPHATE	4.674	0.363	1.548	6.06	2.38	3.9369
Total:			**5.994**	**65.003**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD5**	*Run Time (min):*	**6.00**
Vial Number:	**15**	*Injection Volume:*	**10.00**
Injection Type:	**Calibration Standard**	*Channel:*	**ECD_1**
Calibration Level:	**05**	*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**27/Jan/22 16:50**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

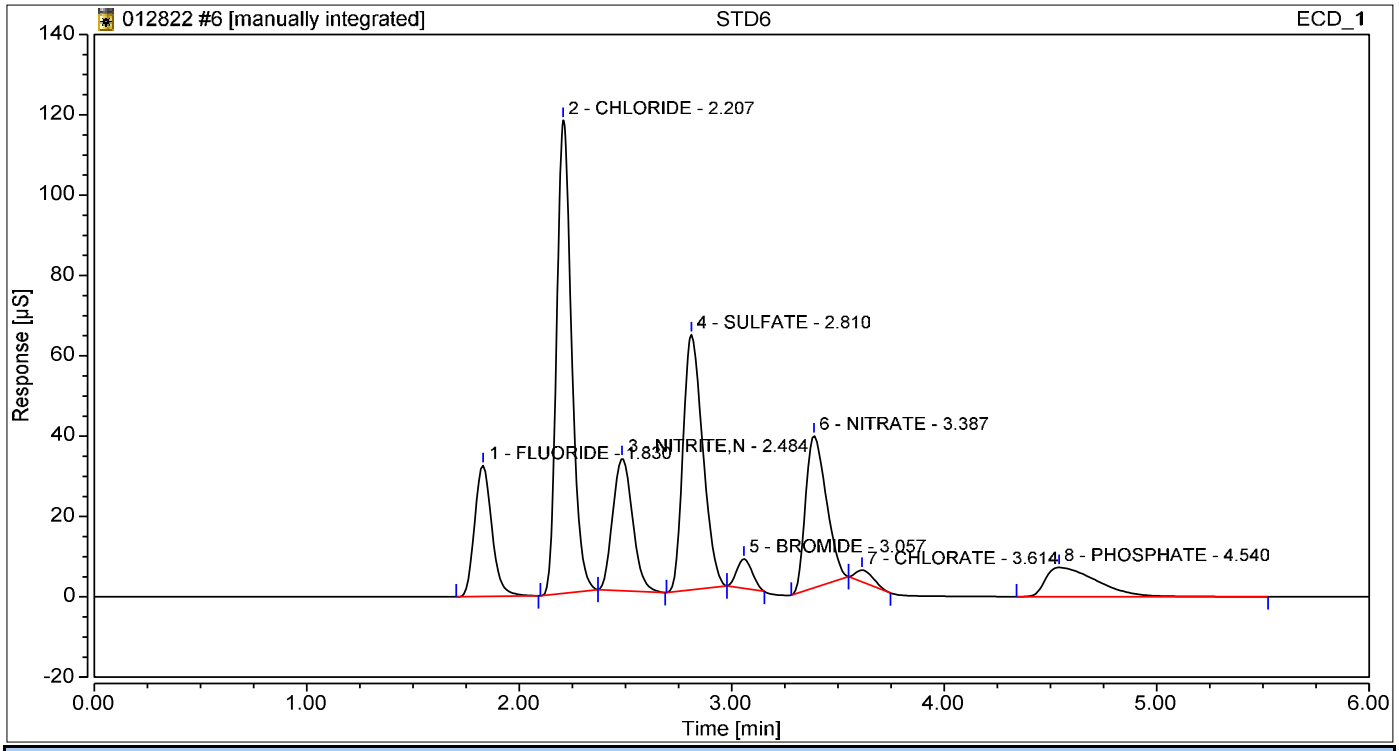
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	1.821	1.576	18.045	10.36	11.24	10.1552
2	CHLORIDE	2.197	4.702	60.549	30.90	37.72	49.6856
3	NITRITE,N	2.457	1.908	19.357	12.54	12.06	10.2458
4	SULFATE	2.767	3.439	33.313	22.60	20.75	50.5481
5	BROMIDE	3.041	0.316	3.638	2.08	2.27	10.4035
6	NITRATE	3.401	2.127	19.498	13.98	12.15	10.0515
7	CHLORATE	3.617	0.161	1.738	1.06	1.08	10.7063
8	PHOSPHATE	4.621	0.989	4.382	6.50	2.73	10.2821
Total:			**15.219**	**160.519**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD6**	*Run Time (min):*	**6.00**
Vial Number:	**16**	*Injection Volume:*	**10.00**
Injection Type:	**Calibration Standard**	*Channel:*	**ECD_1**
Calibration Level:	**06**	*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**27/Jan/22 16:58**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

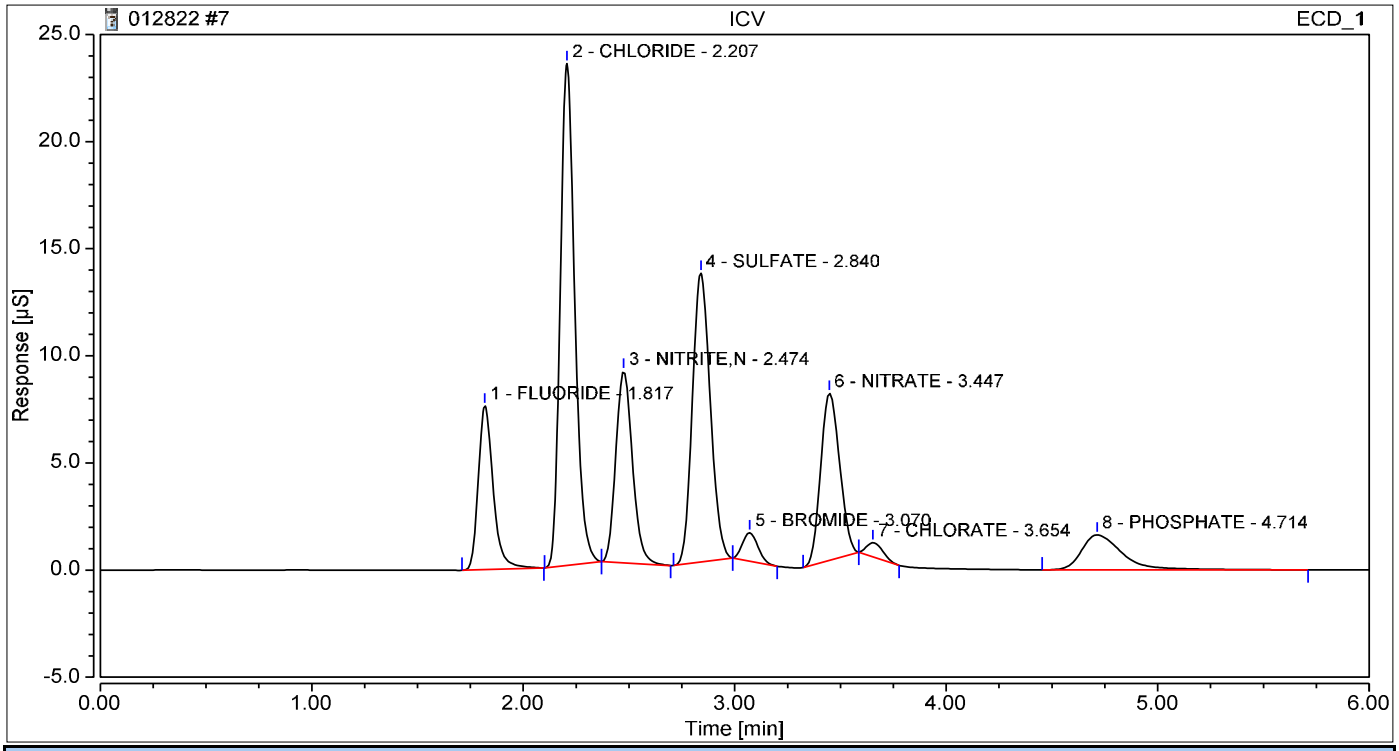
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	1.830	3.086	32.622	10.19	10.80	19.8681
2	CHLORIDE	2.207	9.580	117.737	31.64	38.96	100.9444
3	NITRITE,N	2.484	3.558	32.940	11.75	10.90	19.1008
4	SULFATE	2.810	6.830	63.487	22.56	21.01	100.0883
5	BROMIDE	3.057	0.619	7.347	2.04	2.43	20.2527
6	NITRATE	3.387	4.286	37.824	14.16	12.52	20.2061
7	CHLORATE	3.614	0.292	2.939	0.96	0.97	19.2465
8	PHOSPHATE	4.540	2.026	7.278	6.69	2.41	19.8918
Total:			**30.276**	**302.173**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**ICV**	*Run Time (min):*	**6.00**
Vial Number:	**17**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**27/Jan/22 17:06**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

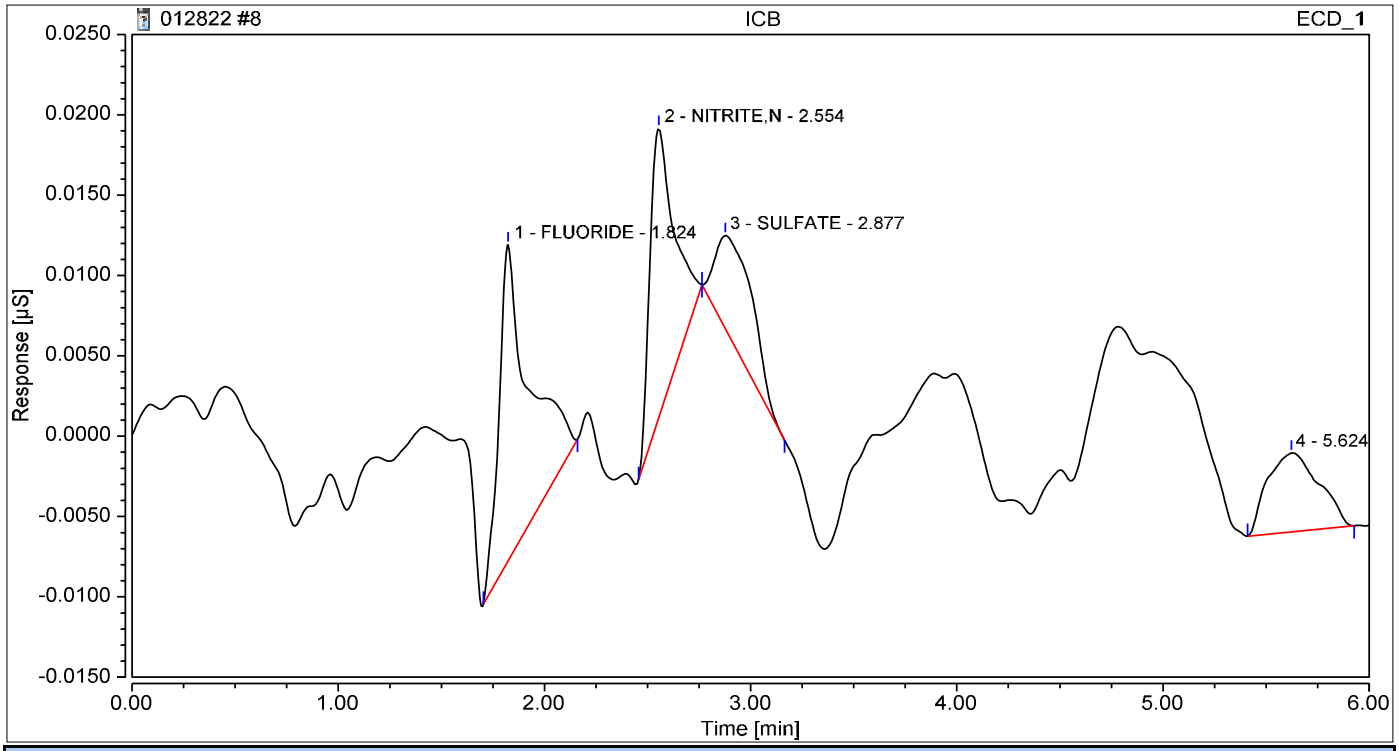
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	1.817	0.626	7.638	10.47	11.77	4.0430
2	CHLORIDE	2.207	1.862	23.419	31.15	36.09	19.8386
3	NITRITE,N	2.474	0.816	8.954	13.66	13.80	4.3869
4	SULFATE	2.840	1.324	13.485	22.16	20.78	19.6615
5	BROMIDE	3.070	0.112	1.325	1.87	2.04	3.7546
6	NITRATE	3.447	0.813	7.794	13.59	12.01	3.8678
7	CHLORATE	3.654	0.060	0.656	1.00	1.01	4.0669
8	PHOSPHATE	4.714	0.365	1.628	6.11	2.51	3.9548
Total:			**5.978**	**64.899**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**ICB**	*Run Time (min):*	**6.00**
Vial Number:	**18**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**27/Jan/22 17:13**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

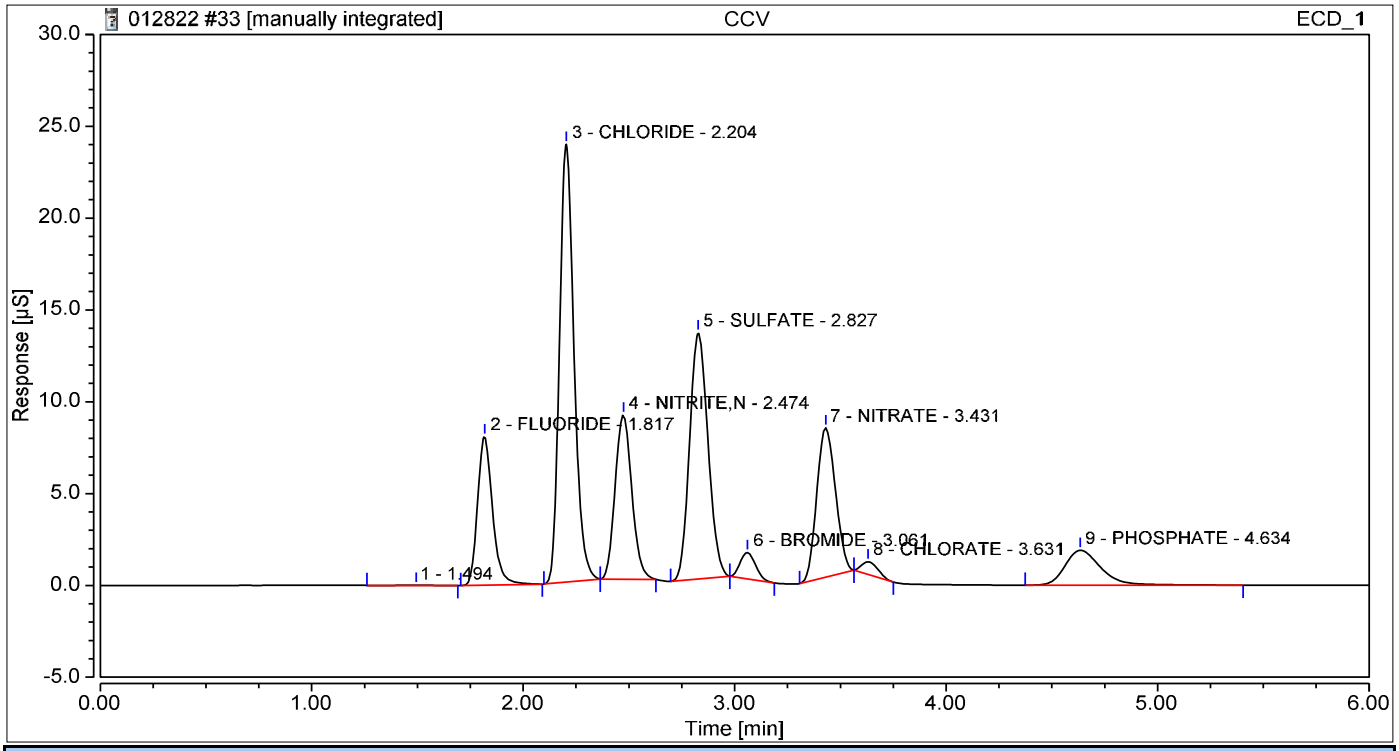
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	1.824	0.003	0.020	39.13	40.59	0.0388
n.a.	CHLORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	NITRITE,N	2.554	0.002	0.018	28.47	37.25	0.0186
3	SULFATE	2.877	0.001	0.006	15.87	12.01	0.3343
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	PHOSPHATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.624	0.001	0.005	16.53	10.14	n.a.
Total:			**0.009**	**0.048**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV**	*Run Time (min):*	**6.00**
Vial Number:	**24**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 14:03**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

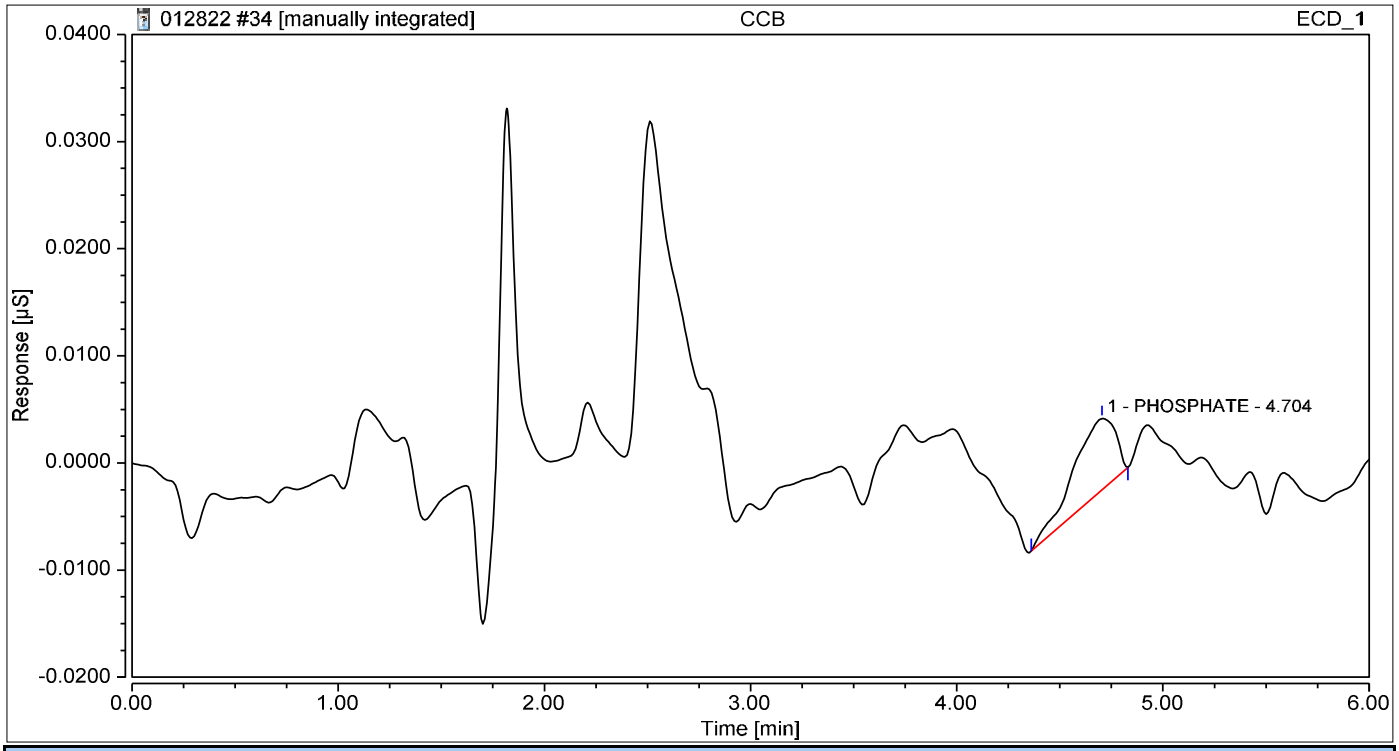
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1		1.494	0.002	0.009	0.04	0.01	n.a.
2	FLUORIDE	1.817	0.663	8.084	10.83	12.17	4.2815
3	CHLORIDE	2.204	1.892	23.842	30.92	35.90	20.1579
4	NITRITE,N	2.474	0.816	8.937	13.32	13.46	4.3824
5	SULFATE	2.827	1.352	13.401	22.09	20.18	20.0636
6	BROMIDE	3.061	0.121	1.437	1.98	2.16	4.0631
7	NITRATE	3.431	0.835	8.129	13.64	12.24	3.9717
8	CHLORATE	3.631	0.063	0.684	1.02	1.03	4.2604
9	PHOSPHATE	4.634	0.377	1.895	6.16	2.85	4.0823
Total:			**6.121**	**66.417**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB**	*Run Time (min):*	**6.00**
Vial Number:	**25**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 14:11**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

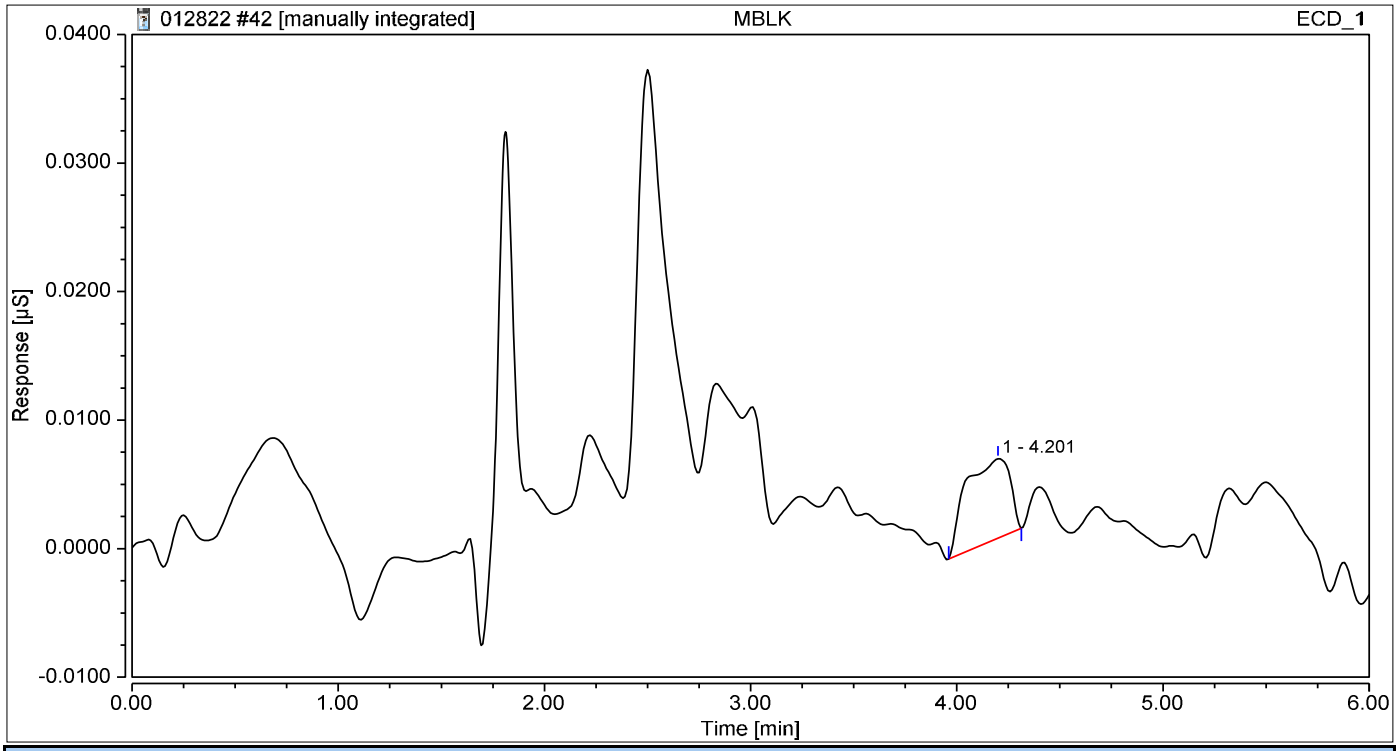
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
n.a.	FLUORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	SULFATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1	PHOSPHATE	4.704	0.002	0.007	100.00	100.00	0.0340
Total:			**0.002**	**0.007**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**MBLK**	*Run Time (min):*	**6.00**
Vial Number:	**1**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 15:48**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

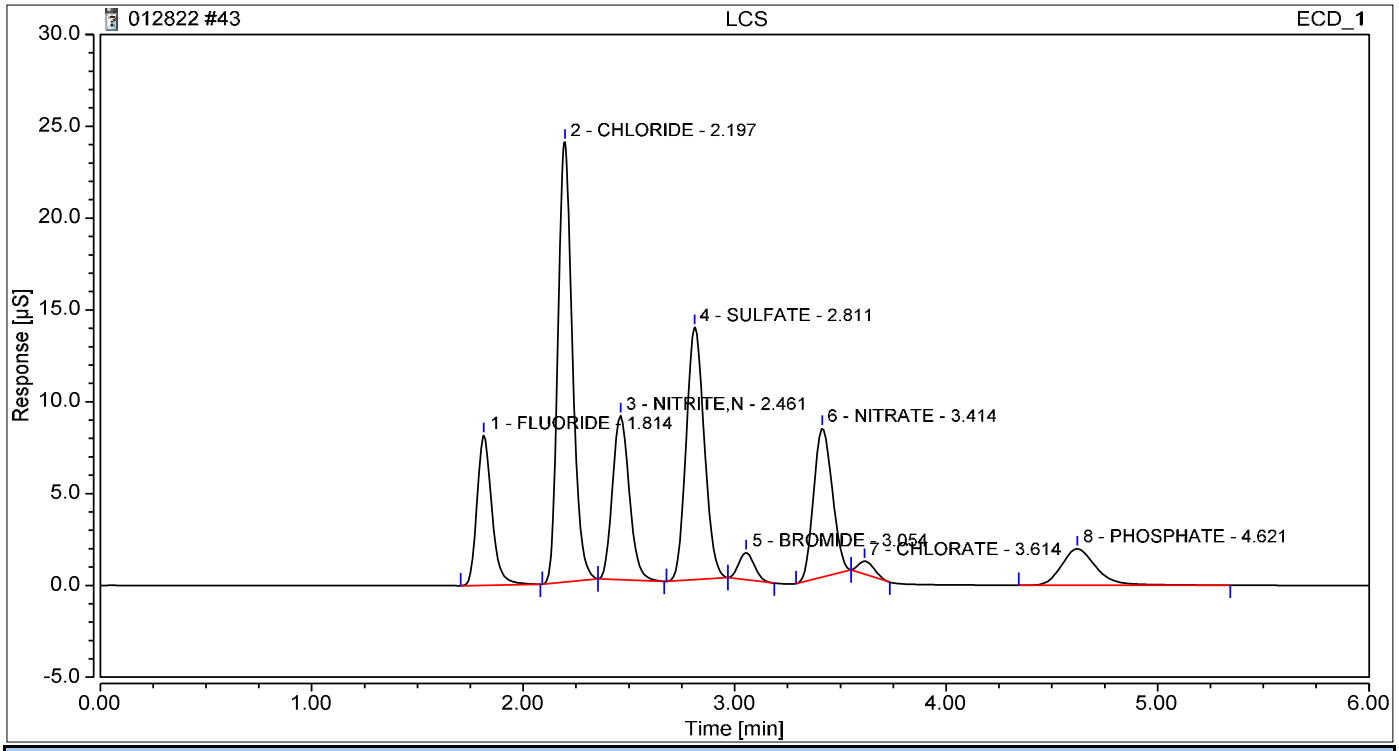
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
n.a.	FLUORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	SULFATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		4.201	0.002	0.006	100.00	100.00	n.a.
n.a.	PHOSPHATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.002**	**0.006**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**LCS**	*Run Time (min):*	**6.00**
Vial Number:	**2**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 15:56**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

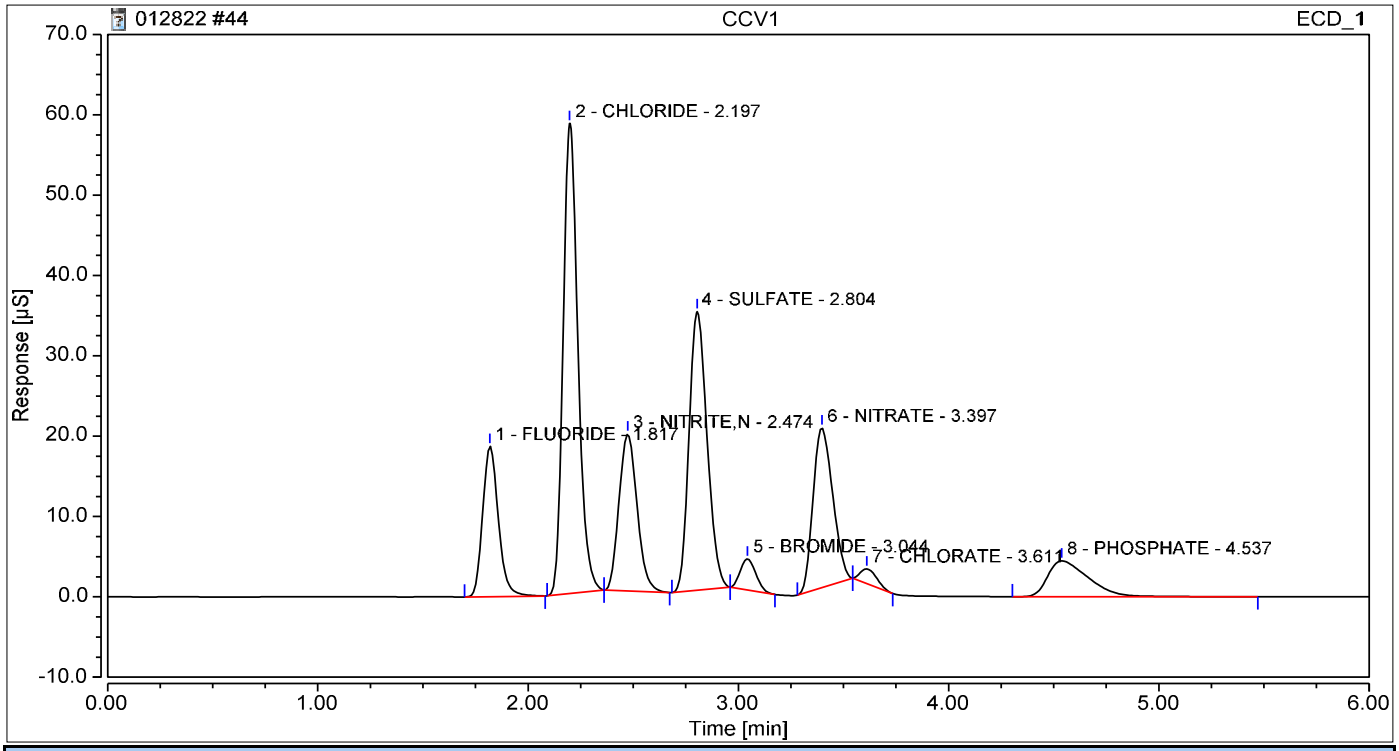
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	1.814	0.665	8.153	10.82	12.16	4.2946
2	CHLORIDE	2.197	1.892	23.953	30.78	35.72	20.1499
3	NITRITE,N	2.461	0.823	8.934	13.40	13.32	4.4250
4	SULFATE	2.811	1.363	13.741	22.19	20.49	20.2308
5	BROMIDE	3.054	0.127	1.479	2.07	2.21	4.2487
6	NITRATE	3.414	0.832	8.110	13.54	12.09	3.9583
7	CHLORATE	3.614	0.062	0.703	1.01	1.05	4.2481
8	PHOSPHATE	4.621	0.380	1.988	6.19	2.96	4.1147
Total:			**6.145**	**67.062**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV1**	*Run Time (min):*	**6.00**
Vial Number:	**3**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 16:04**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

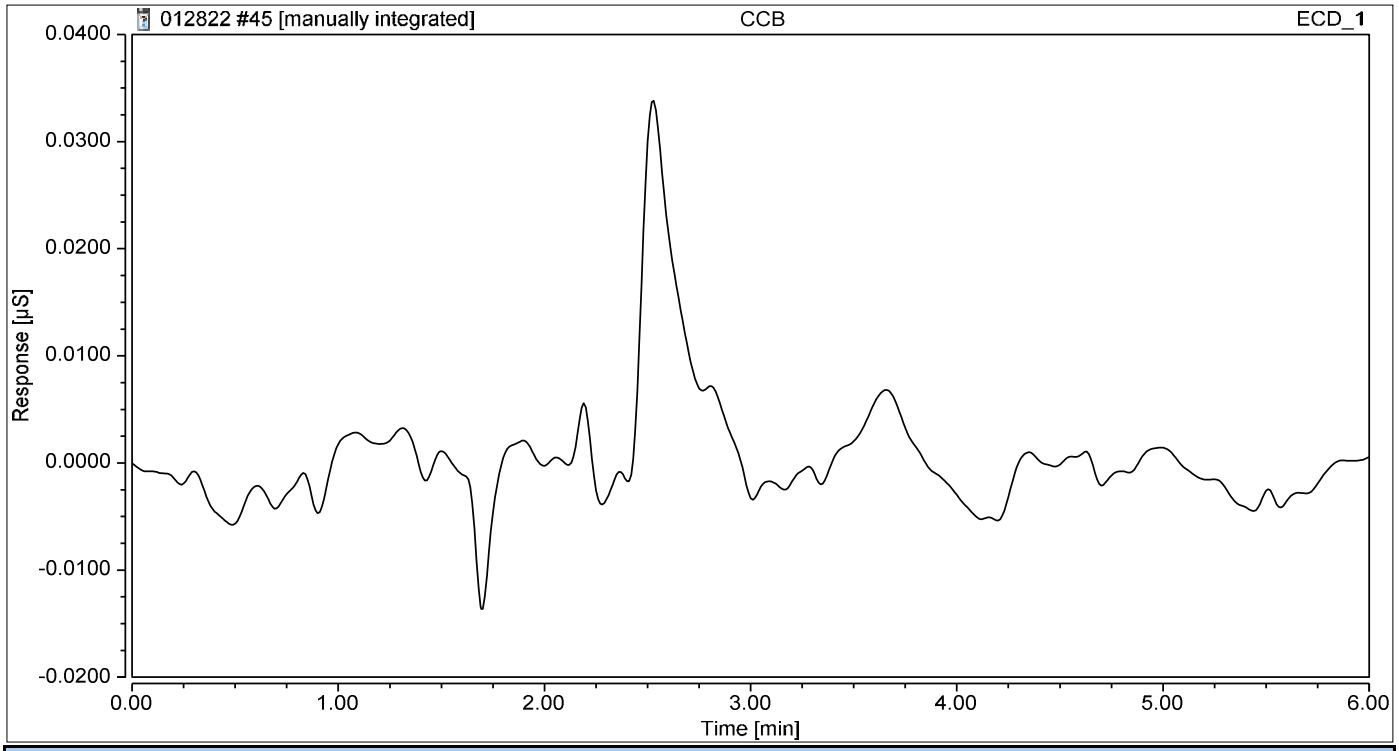
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	1.817	1.620	18.721	10.49	11.59	10.4377
2	CHLORIDE	2.197	4.771	58.505	30.90	36.22	50.4052
3	NITRITE,N	2.474	1.951	19.549	12.63	12.10	10.4735
4	SULFATE	2.804	3.441	34.691	22.29	21.47	50.5804
5	BROMIDE	3.044	0.334	3.879	2.16	2.40	10.9905
6	NITRATE	3.397	2.156	19.885	13.96	12.31	10.1866
7	CHLORATE	3.611	0.169	1.836	1.09	1.14	11.1982
8	PHOSPHATE	4.537	0.998	4.479	6.47	2.77	10.3697
Total:			**15.439**	**161.545**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB**	*Run Time (min):*	**6.00**
Vial Number:	**4**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 16:24**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

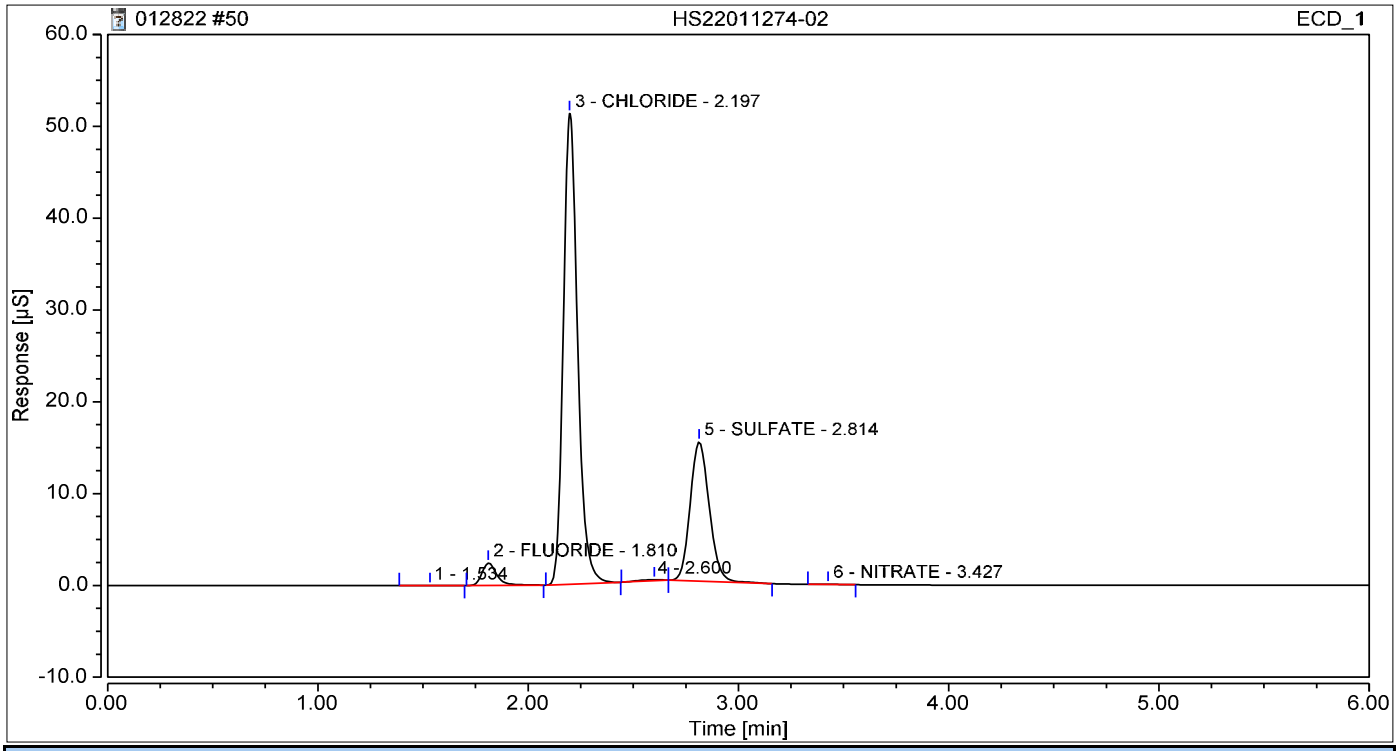
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
n.a.	FLUORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	SULFATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	PHOSPHATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS22011274-02**	*Run Time (min):*	**6.00**
Vial Number:	**10**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 17:30**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

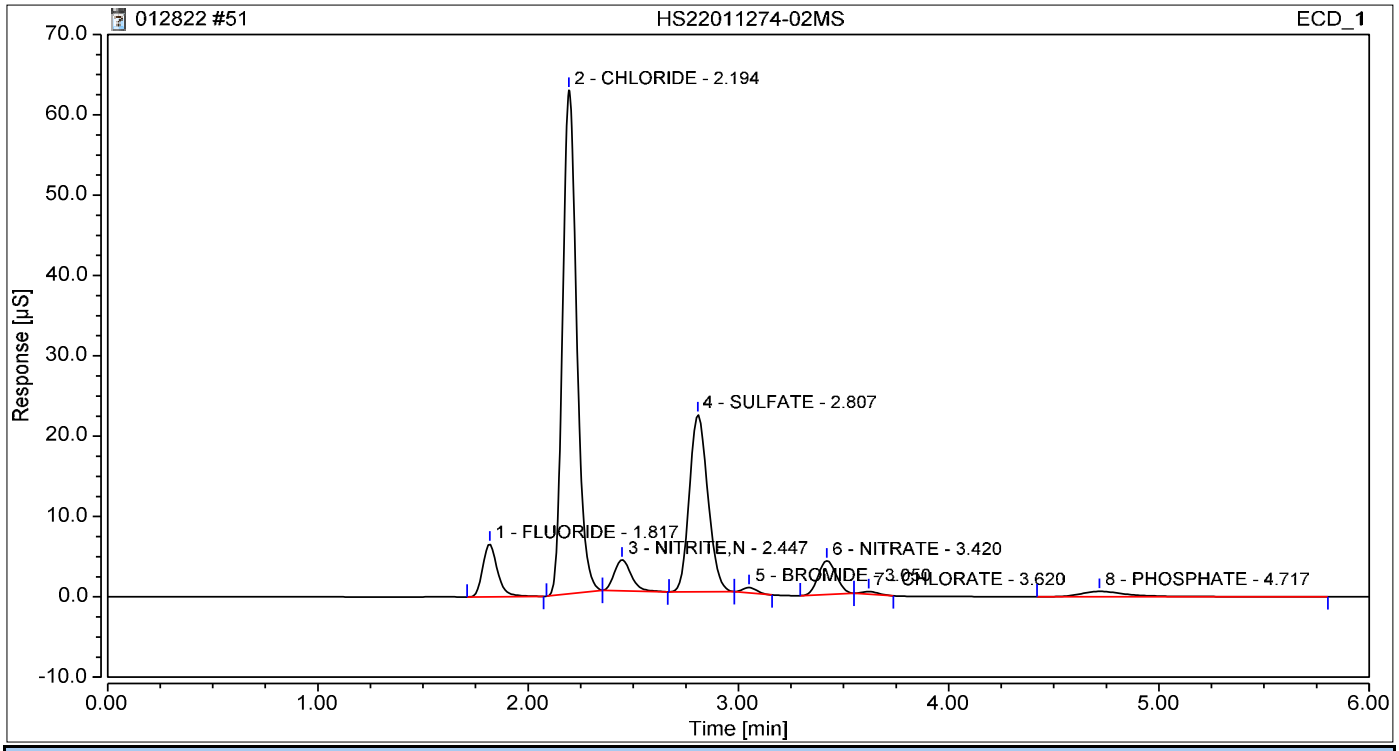
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1		1.534	0.002	0.010	0.04	0.01	n.a.
2	FLUORIDE	1.810	0.198	2.437	3.39	3.53	1.2933
3	CHLORIDE	2.197	4.034	51.241	68.96	74.27	42.6607
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		2.600	0.016	0.108	0.27	0.16	n.a.
5	SULFATE	2.814	1.597	15.168	27.30	21.99	23.6422
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	NITRATE	3.427	0.003	0.028	0.05	0.04	0.0589
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	PHOSPHATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**5.850**	**68.991**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS22011274-02MS**	*Run Time (min):*	**6.00**
Vial Number:	**11**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 17:37**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

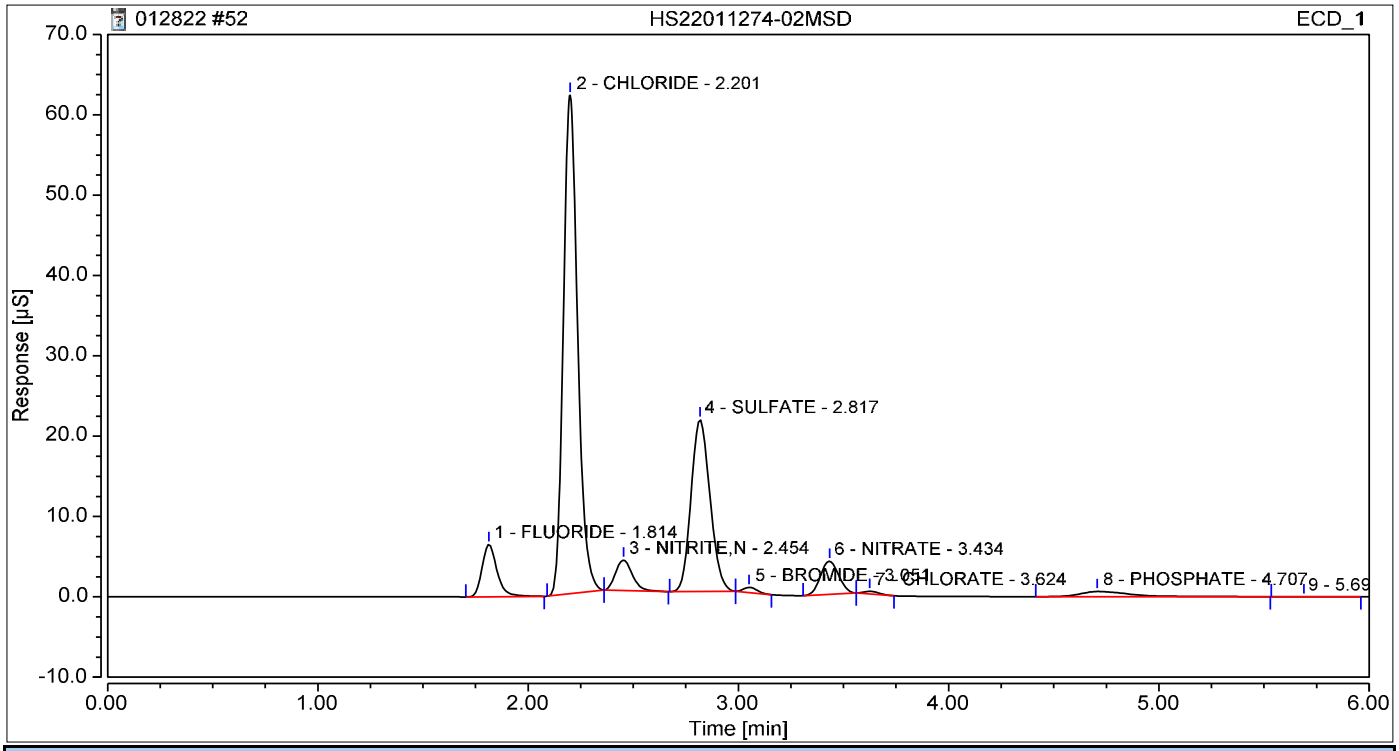
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	1.817	0.534	6.564	6.14	6.50	3.4522
2	CHLORIDE	2.194	4.878	62.704	56.08	62.06	51.5332
3	NITRITE,N	2.447	0.357	3.842	4.10	3.80	1.9196
4	SULFATE	2.807	2.253	22.049	25.90	21.82	33.2221
5	BROMIDE	3.050	0.052	0.669	0.60	0.66	1.8077
6	NITRATE	3.420	0.419	4.204	4.82	4.16	2.0185
7	CHLORATE	3.620	0.030	0.334	0.34	0.33	2.1053
8	PHOSPHATE	4.717	0.176	0.665	2.02	0.66	1.9335
Total:			**8.698**	**101.031**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS22011274-02MSD**	*Run Time (min):*	**6.00**
Vial Number:	**12**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 17:45**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

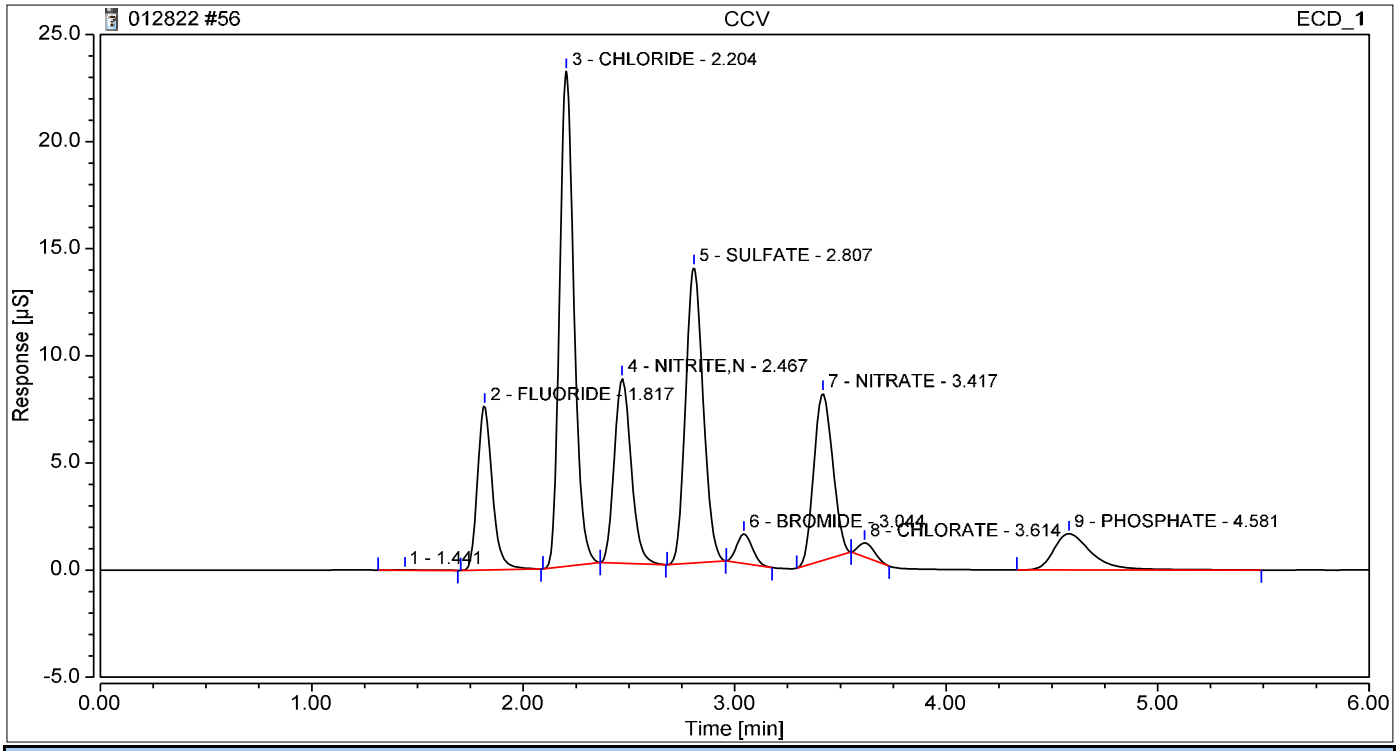
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	1.814	0.537	6.508	6.19	6.54	3.4694
2	CHLORIDE	2.201	4.879	62.046	56.26	62.37	51.5499
3	NITRITE,N	2.454	0.354	3.799	4.08	3.82	1.9034
4	SULFATE	2.817	2.234	21.385	25.76	21.50	32.9541
5	BROMIDE	3.051	0.049	0.629	0.56	0.63	1.6931
6	NITRATE	3.434	0.414	4.136	4.77	4.16	1.9935
7	CHLORATE	3.624	0.029	0.332	0.33	0.33	2.0362
8	PHOSPHATE	4.707	0.176	0.645	2.03	0.65	1.9376
9		5.691	0.001	0.006	0.02	0.01	n.a.
Total:			**8.672**	**99.485**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV**	*Run Time (min):*	**6.00**
Vial Number:	**16**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 18:15**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

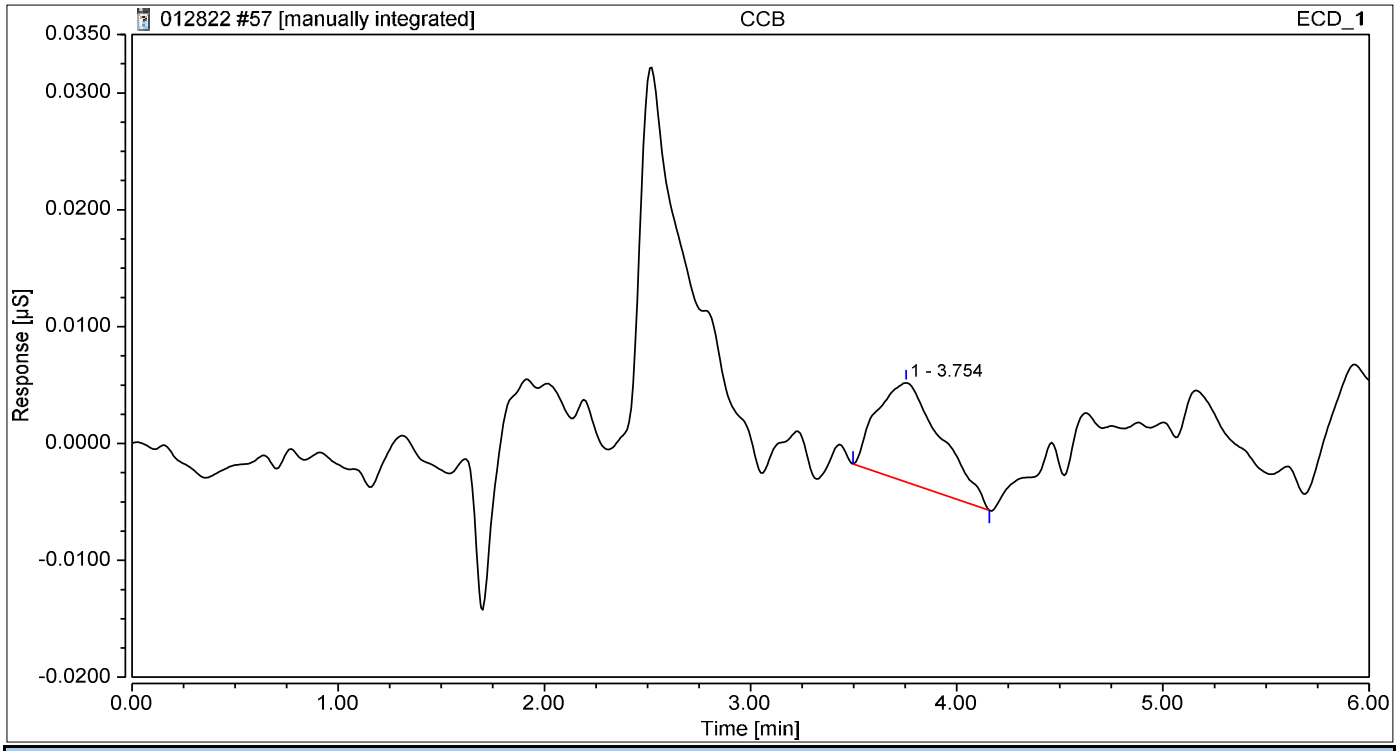
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1		1.441	0.003	0.008	0.04	0.01	n.a.
2	FLUORIDE	1.817	0.623	7.647	10.51	11.82	4.0245
3	CHLORIDE	2.204	1.831	23.106	30.91	35.71	19.5147
4	NITRITE,N	2.467	0.800	8.634	13.50	13.34	4.2974
5	SULFATE	2.807	1.330	13.786	22.45	21.31	19.7470
6	BROMIDE	3.044	0.118	1.375	2.00	2.13	3.9650
7	NITRATE	3.417	0.809	7.796	13.66	12.05	3.8517
8	CHLORATE	3.614	0.058	0.656	0.99	1.01	3.9940
9	PHOSPHATE	4.581	0.352	1.693	5.94	2.62	3.8139
Total:			**5.924**	**64.702**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB**	*Run Time (min):*	**6.00**
Vial Number:	**17**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 18:30**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

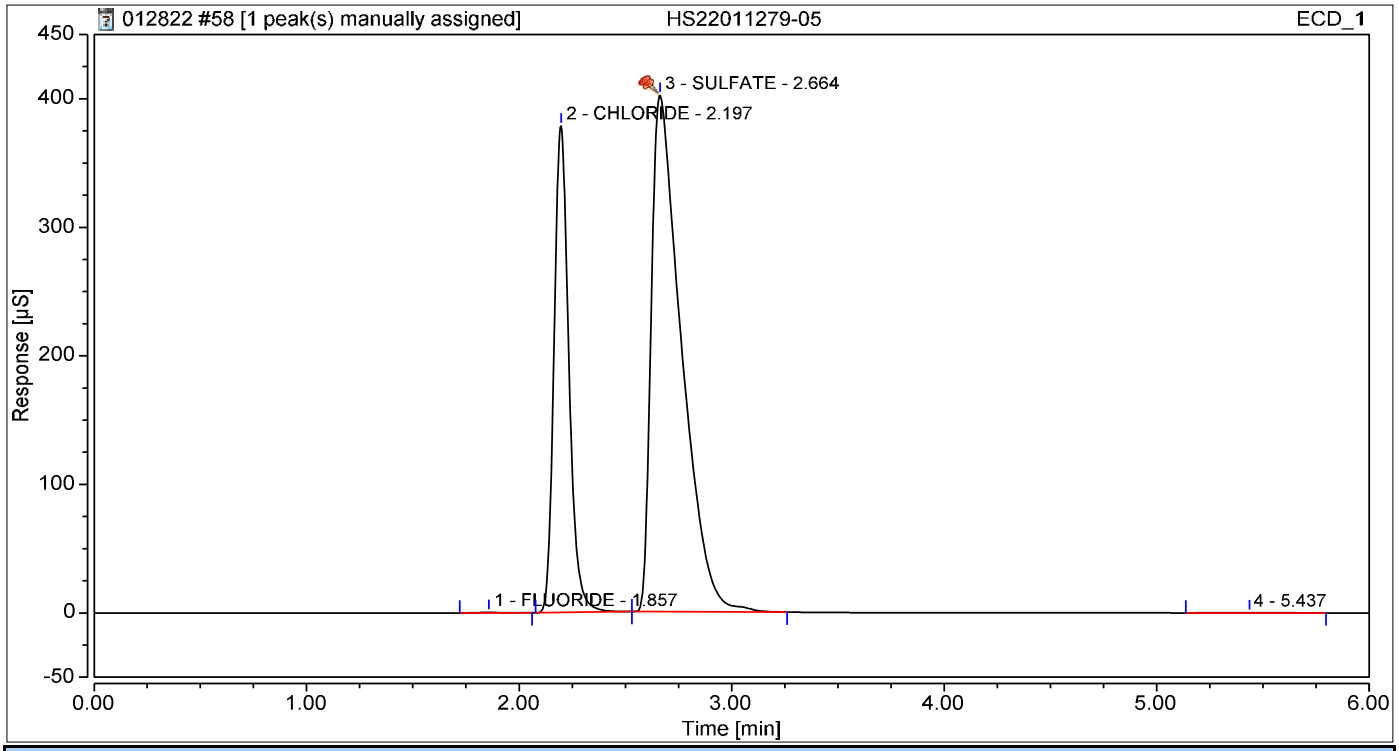
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
n.a.	FLUORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	SULFATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		3.754	0.003	0.008	100.00	100.00	n.a.
n.a.	PHOSPHATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.003**	**0.008**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS22011279-05**	*Run Time (min):*	**6.00**
Vial Number:	**18**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 18:37**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

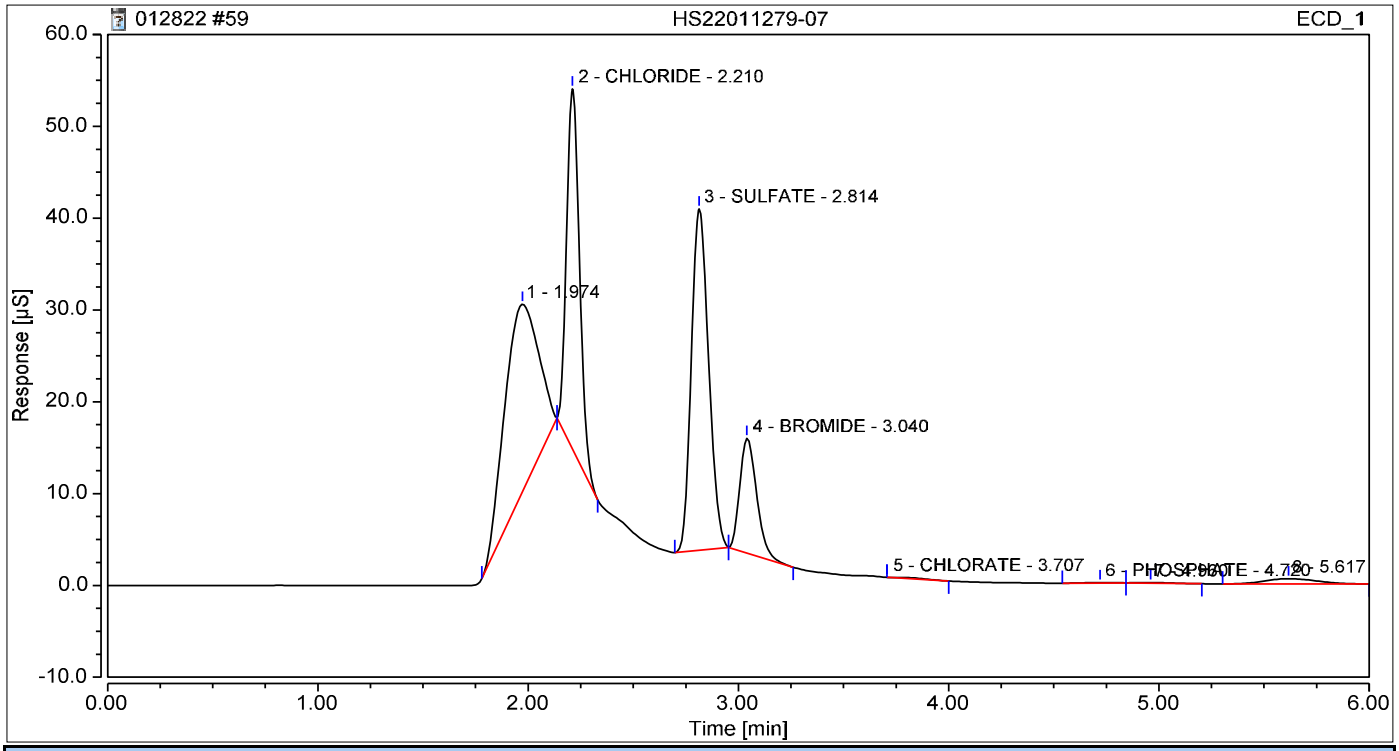
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1	FLUORIDE	1.857	0.050	0.374	0.05	0.05	0.3363
2	CHLORIDE	2.197	30.609	378.467	31.68	48.48	321.9445
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	SULFATE	2.664	65.939	401.727	68.24	51.46	963.5721
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	PHOSPHATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.437	0.028	0.136	0.03	0.02	n.a.
Total:			**96.626**	**780.704**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS22011279-07**	*Run Time (min):*	**6.00**
Vial Number:	**19**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**2.0000**
Injection Date/Time:	**28/Jan/22 18:45**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

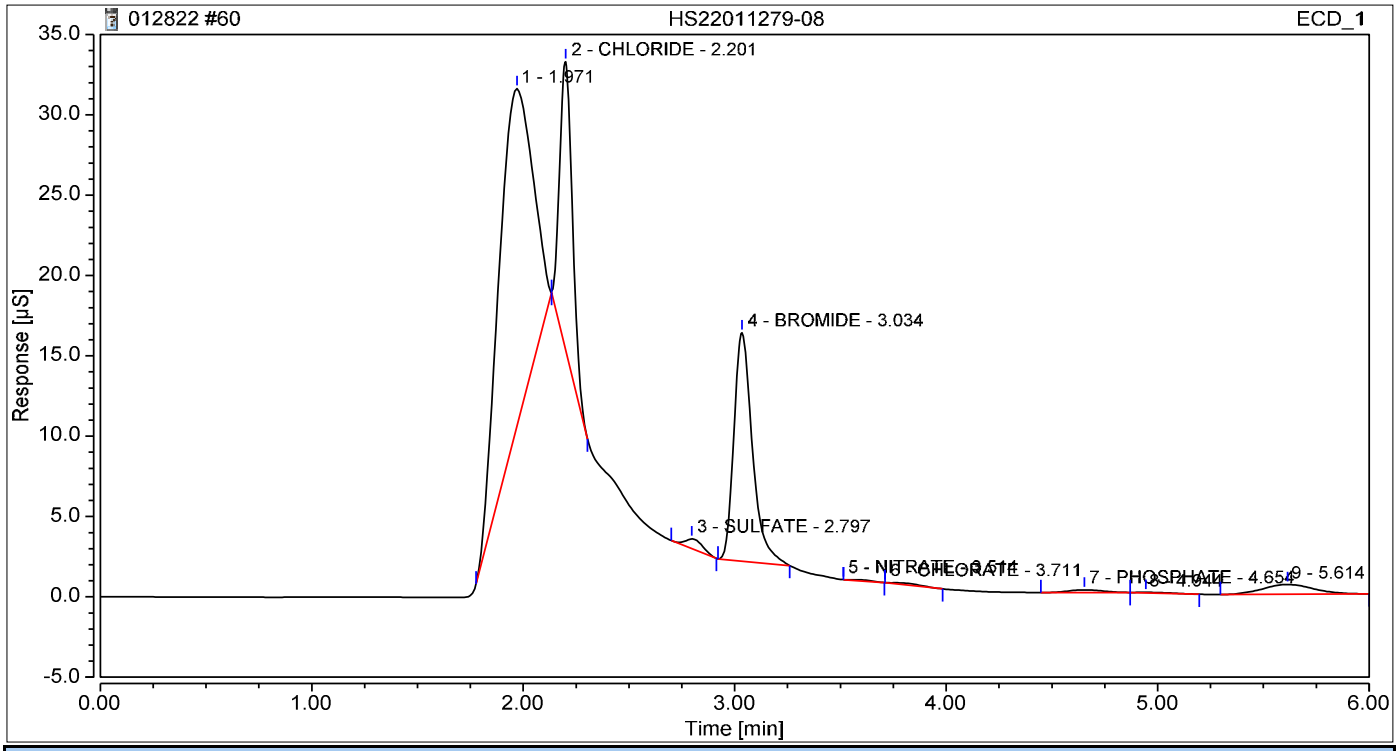
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
n.a.	FLUORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		1.974	3.816	20.396	33.14	18.55	n.a.
2	CHLORIDE	2.210	2.803	39.210	24.34	35.66	59.4507
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	SULFATE	2.814	3.532	37.179	30.67	33.82	103.8156
4	BROMIDE	3.040	1.167	12.491	10.13	11.36	76.2091
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	CHLORATE	3.707	0.016	0.000	0.14	0.00	2.4254
6	PHOSPHATE	4.720	0.007	0.046	0.06	0.04	0.1901
7		4.960	0.010	0.051	0.09	0.05	n.a.
8		5.617	0.165	0.573	1.43	0.52	n.a.
Total:			**11.515**	**109.945**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS22011279-08**	*Run Time (min):*	**6.00**
Vial Number:	**20**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**2.0000**
Injection Date/Time:	**28/Jan/22 18:52**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

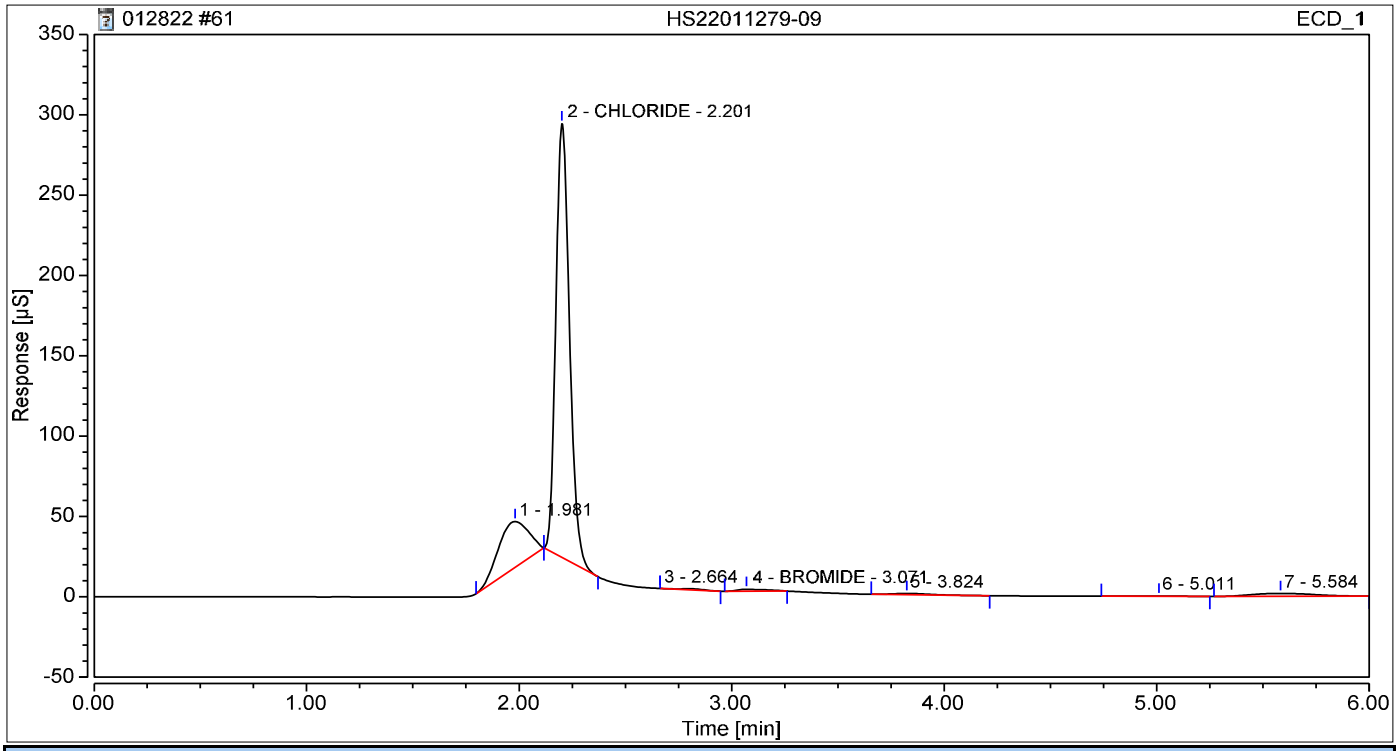
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
n.a.	FLUORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		1.971	3.936	20.987	56.94	38.49	n.a.
2	CHLORIDE	2.201	1.243	17.935	17.98	32.89	26.6654
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	SULFATE	2.797	0.061	0.604	0.88	1.11	2.4028
4	BROMIDE	3.034	1.446	14.205	20.92	26.05	94.4313
5	NITRATE	3.514	0.007	0.000	0.10	0.00	0.1556
6	CHLORATE	3.711	0.015	0.000	0.22	0.00	2.2920
7	PHOSPHATE	4.654	0.030	0.164	0.43	0.30	0.6948
8		4.944	0.007	0.031	0.10	0.06	n.a.
9		5.614	0.168	0.604	2.43	1.11	n.a.
Total:			**6.913**	**54.531**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**HS22011279-09**	*Run Time (min):*	**6.00**
Vial Number:	**21**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**2.0000**
Injection Date/Time:	**28/Jan/22 19:00**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

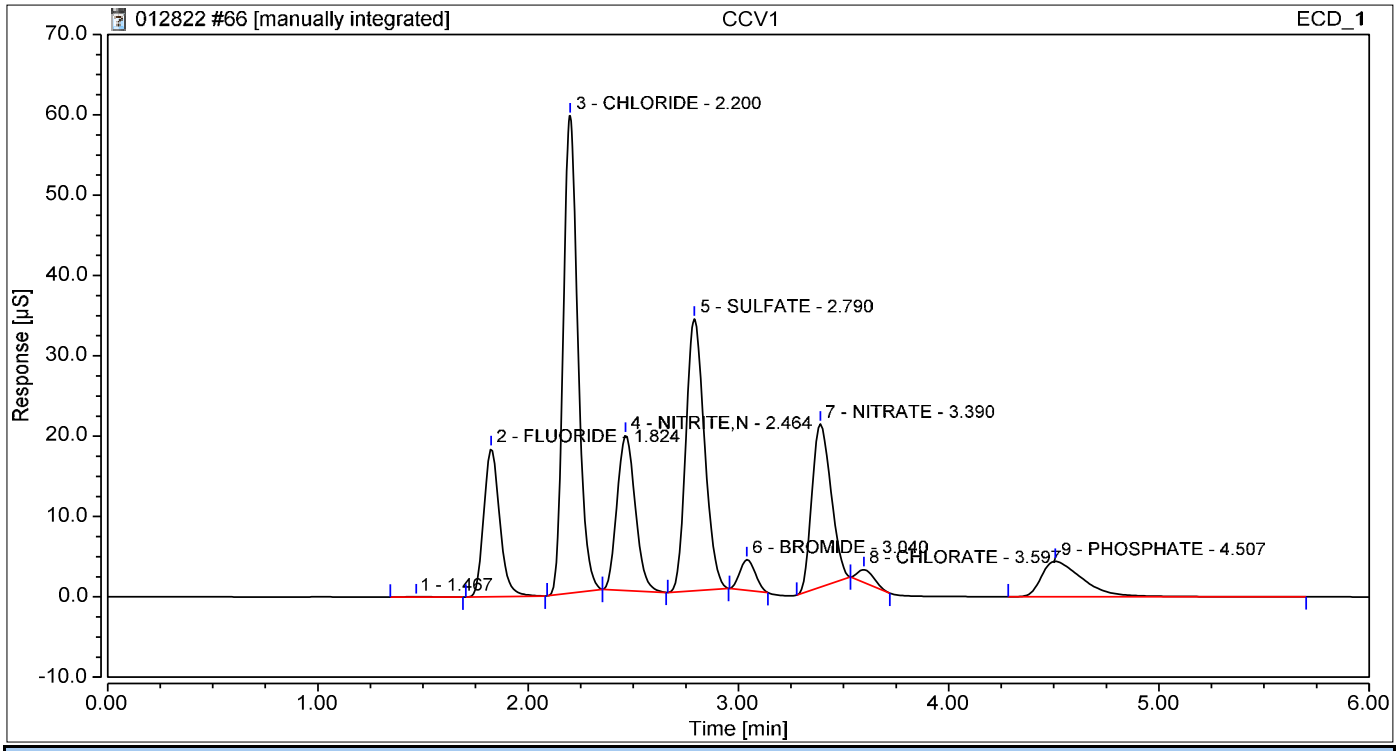
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
n.a.	FLUORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		1.981	4.778	28.531	18.40	9.44	n.a.
2	CHLORIDE	2.201	20.112	269.850	77.46	89.28	423.2572
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		2.664	0.079	0.000	0.30	0.00	n.a.
n.a.	SULFATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	BROMIDE	3.071	0.190	1.132	0.73	0.37	12.6186
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		3.824	0.161	0.808	0.62	0.27	n.a.
n.a.	PHOSPHATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		5.011	0.033	0.138	0.13	0.05	n.a.
7		5.584	0.610	1.806	2.35	0.60	n.a.
Total:			**25.964**	**302.265**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV1**	*Run Time (min):*	**6.00**
Vial Number:	**3**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 19:38**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

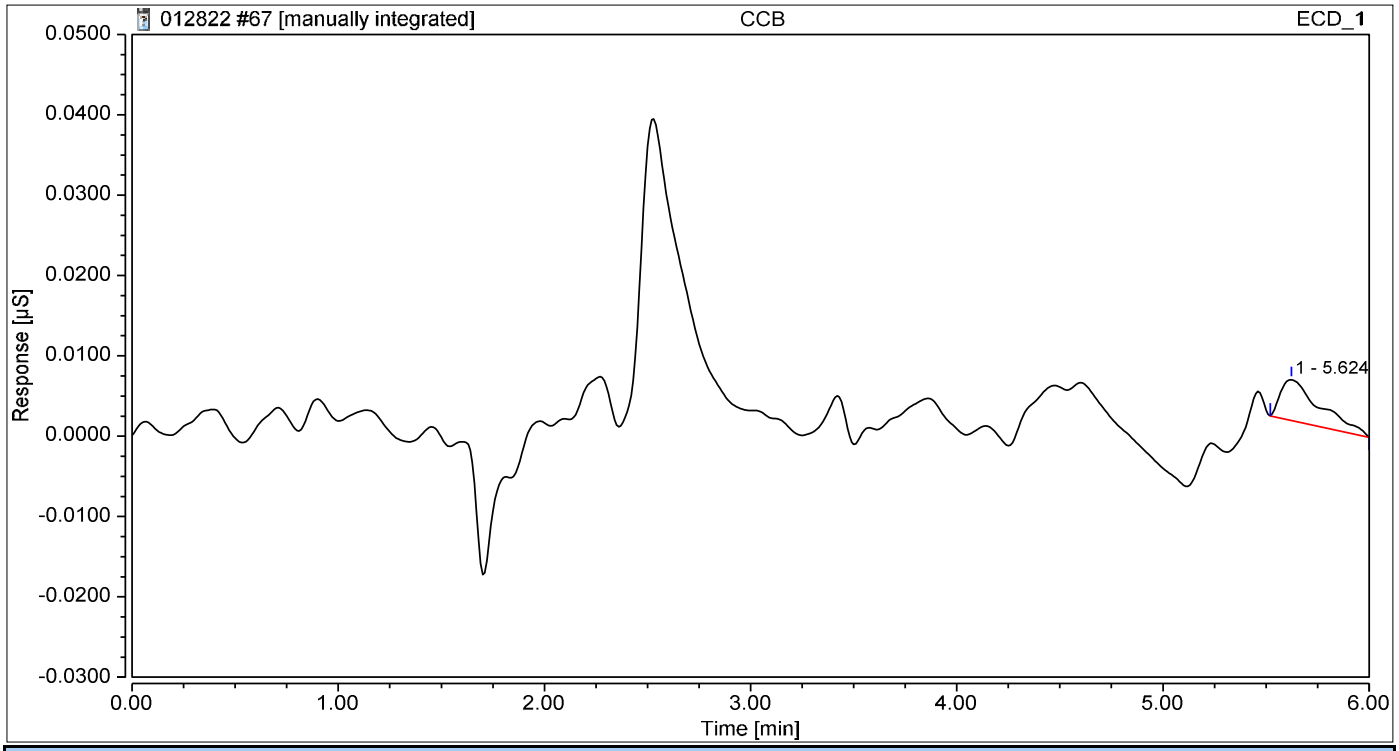
No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
1		1.467	0.003	0.014	0.02	0.01	n.a.
2	FLUORIDE	1.824	1.625	18.435	10.51	11.43	10.4732
3	CHLORIDE	2.200	4.792	59.437	31.00	36.86	50.6280
4	NITRITE,N	2.464	1.945	19.348	12.58	12.00	10.4448
5	SULFATE	2.790	3.465	33.836	22.42	20.99	50.9384
6	BROMIDE	3.040	0.327	3.828	2.12	2.37	10.7760
7	NITRATE	3.390	2.151	20.311	13.91	12.60	10.1622
8	CHLORATE	3.597	0.148	1.605	0.96	1.00	9.8458
9	PHOSPHATE	4.507	1.002	4.420	6.48	2.74	10.4096
Total:			**15.459**	**161.235**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB**	*Run Time (min):*	**6.00**
Vial Number:	**4**	*Injection Volume:*	**10.00**
Injection Type:	**Unknown**	*Channel:*	**ECD_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**ICS2100 ASDV 30-1.2**	*Bandwidth:*	**n.a.**
Processing Method:	**Anion Processing Method ISO35**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**28/Jan/22 19:54**	*Sample Weight:*	**1.0000**

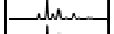
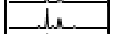
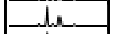
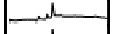
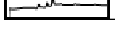
Chromatogram



Integration Results

No.	Peak Name	Retention Time min	Area µS*min	Height µS	Relative Area %	Relative Height %	Amount
n.a.	FLUORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRITE,N	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	SULFATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	BROMIDE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	NITRATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	CHLORATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	PHOSPHATE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		5.624	0.001	0.005	100.00	100.00	n.a.
Total:			**0.001**	**0.005**	**100.00**	**100.00**	

Sequence: 021022
Last Update Operator: alshs.nouser

CD	Name	Comment	Type	Position	Dilution	Level	Instrument Method	Processing Method	Volume	Status	Inject Time
	STD1		Calibratic	GA1	1.00	1	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 4:54:48 PM -06:00
	STD2		Calibratic	GA2	1.00	2	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:00:07 PM -06:00
	STD3		Calibratic	GA3	1.00	3	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:05:25 PM -06:00
	STD4		Calibratic	GA4	1.00	4	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:10:43 PM -06:00
	STD5		Calibratic	GA5	1.00	5	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:16:02 PM -06:00
	STD6		Calibratic	GA6	1.00	6	Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:21:20 PM -06:00
	ICV		Unknown	GA7	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:26:39 PM -06:00
	ICB		Unknown	GA8	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/7/2022 5:31:57 PM -06:00
	CCV1		Unknown	R3	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 8:51:28 PM -06:00
	CCB		Unknown	R7	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 8:56:47 PM -06:00
	HS22011279-05		Unknown	GB8	5.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 9:12:42 PM -06:00
	HS22011279-05		Unknown	GC1	50.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 9:18:01 PM -06:00
	HS22011279-07		Unknown	GC2	10.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 9:23:19 PM -06:00
	HS22011279-08		Unknown	GC3	10.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 9:28:38 PM -06:00
	HS22011326-03		Unknown	GC5	10.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 9:39:26 PM -06:00
	HS22011326-03MS		Unknown	GC6	10.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 9:44:44 PM -06:00
	HS22011326-03MSD		Unknown	GC7	10.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 9:50:02 PM -06:00
	CCV		Unknown	R1	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 9:55:21 PM -06:00
	CCB		Unknown	R4	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 10:00:39 PM -06:00
	MBLK		Unknown	R5	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 10:05:58 PM -06:00
	LCS		Unknown	R2	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 10:11:16 PM -06:00
	CCV1		Unknown	R3	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 10:59:13 PM -06:00
	CCB		Unknown	R7	1.00		Anions Program IS	Anions Processing M	5.0	Finished	2/10/2022 11:04:32 PM -06:00

Sequence: 021022
Injection #6: STD6

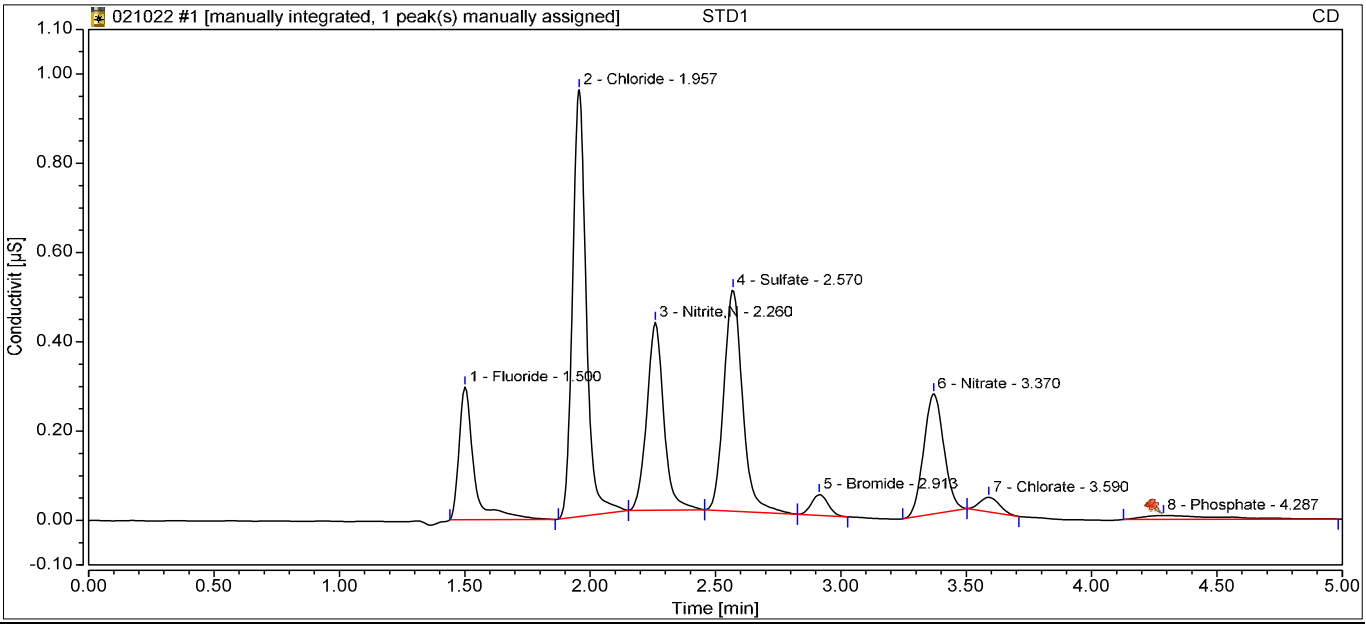
Calibration

Peak No.	Peak Name	Cal.Type	Eval.Type	Number of Points	Rel.Std.Dev. %	Coeff.of Determination	C0 (Offset)	C1 (Slope)	C2 (Curve)
1	*Fluoride*	*Lin, WithOffset, 1/*	*Area*	*6*	*21.3828*	*0.99737*	*0.0042*	*0.2155*	*0.0000*
2	Chloride	Lin, WithOffset, 1/	Area	6	3.6944	0.99993	-0.0077	0.1388	0.0000
3	Nitrite,N	Quad, WithOffset,	Area	6	7.6810	0.99970	0.0036	0.3122	-0.0032
4	Sulfate	Lin, WithOffset, 1/	Area	6	3.1476	0.99995	-0.0062	0.1028	0.0000
5	Bromide	Lin, WithOffset, 1/	Area	6	10.2940	0.99957	-0.0035	0.0615	0.0000
6	Nitrate	Lin, WithOffset, 1/	Area	6	2.5692	0.99997	-0.0098	0.3417	0.0000
7	Chlorate	Lin, WithOffset, 1/	Area	6	10.6539	0.99953	-0.0025	0.0468	0.0000
8	Phosphate	Quad, WithOffset,	Area	6	26.8509	0.99849	-0.0116	0.1136	0.0011
Maximum					**26.8509**	0.99997			
Minimum					2.5692	**0.99737**			

1 STD1

Sample Name:	**STD1**	*Injection Volume:*	**5.00**
Vial Number:	**GA1**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 16:54**	*Sample Weight:*	**1.0000**

Run Time:



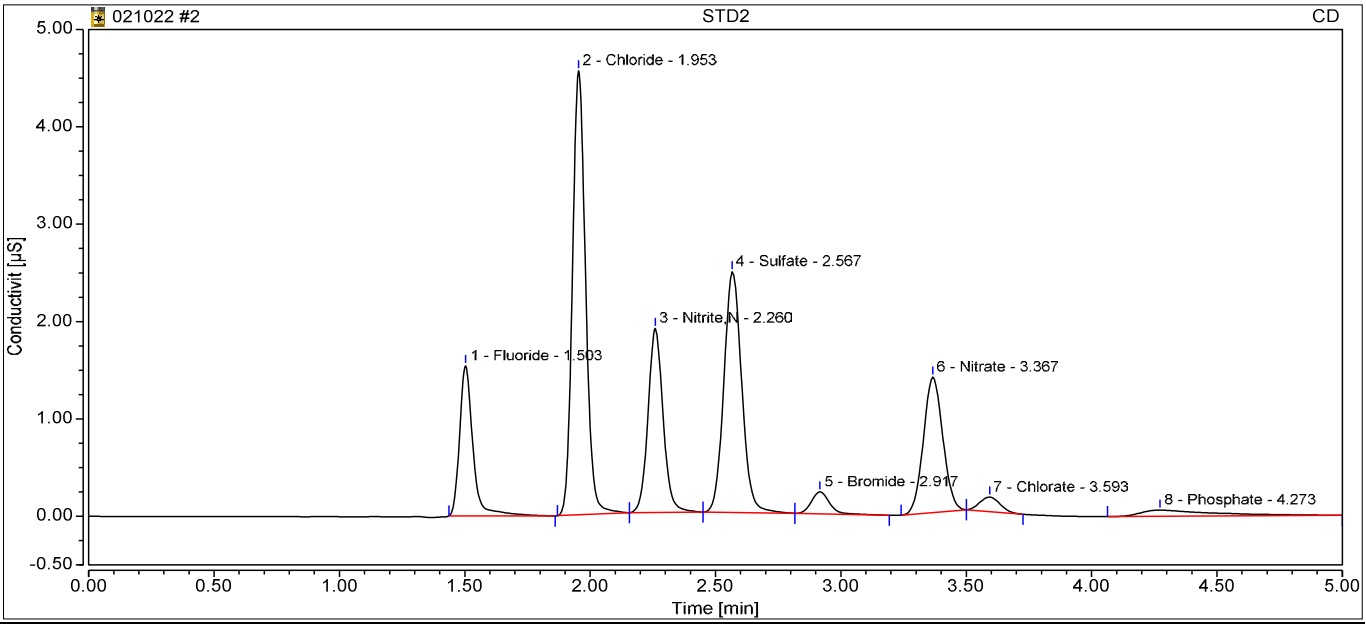
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.021	0.0765	0.0765	1.0000
2	1.96	Chloride	BMB	0.060	0.4903	0.4903	1.0000
3	2.26	Nitrite,N	BMB	0.033	0.0941	0.0941	1.0000
4	2.57	Sulfate	BMB	0.043	0.4779	0.4779	1.0000
5	2.91	Bromide	BMB	0.004	0.1143	0.1143	1.0000
6	3.37	Nitrate	BMB	0.025	0.1021	0.1021	1.0000
7	3.59	Chlorate	BMB	0.003	0.1167	0.1167	1.0000
8	4.29	Phosphate	BMB*^	0.003	0.1302	0.1302	1.0000
Total:			**0.000**	**0.192**		**1.60**	

2 STD2

Sample Name:	**STD2**	*Injection Volume:*	**5.00**
Vial Number:	**GA2**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:00**	*Sample Weight:*	**1.0000**

Run Time:

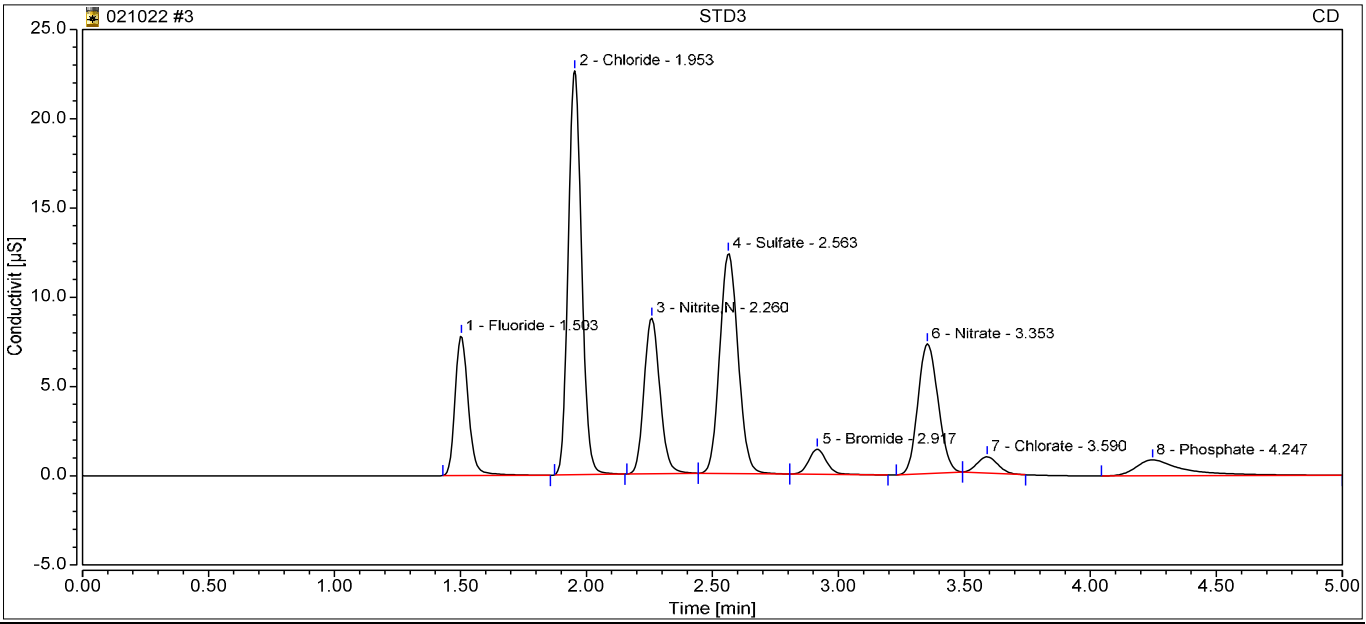


Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.096	0.4244	0.4244	1.0000
2	1.95	Chloride	BMB	0.277	2.0467	2.0467	1.0000
3	2.26	Nitrite,N	BMB	0.132	0.4123	0.4123	1.0000
4	2.57	Sulfate	BMB	0.204	2.0474	2.0474	1.0000
5	2.92	Bromide	BMB	0.019	0.3656	0.3656	1.0000
6	3.37	Nitrate	BMB	0.125	0.3941	0.3941	1.0000
7	3.59	Chlorate	BMB	0.014	0.3528	0.3528	1.0000
8	4.27	Phosphate	BMB	0.022	0.2979	0.2979	1.0000
Total:			**0.000**	**0.888**		**6.34**	

3 STD3			
Sample Name:	**STD3**	*Injection Volume:*	**5.00**
Vial Number:	**GA3**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:05**	*Sample Weight:*	**1.0000**

Run Time:



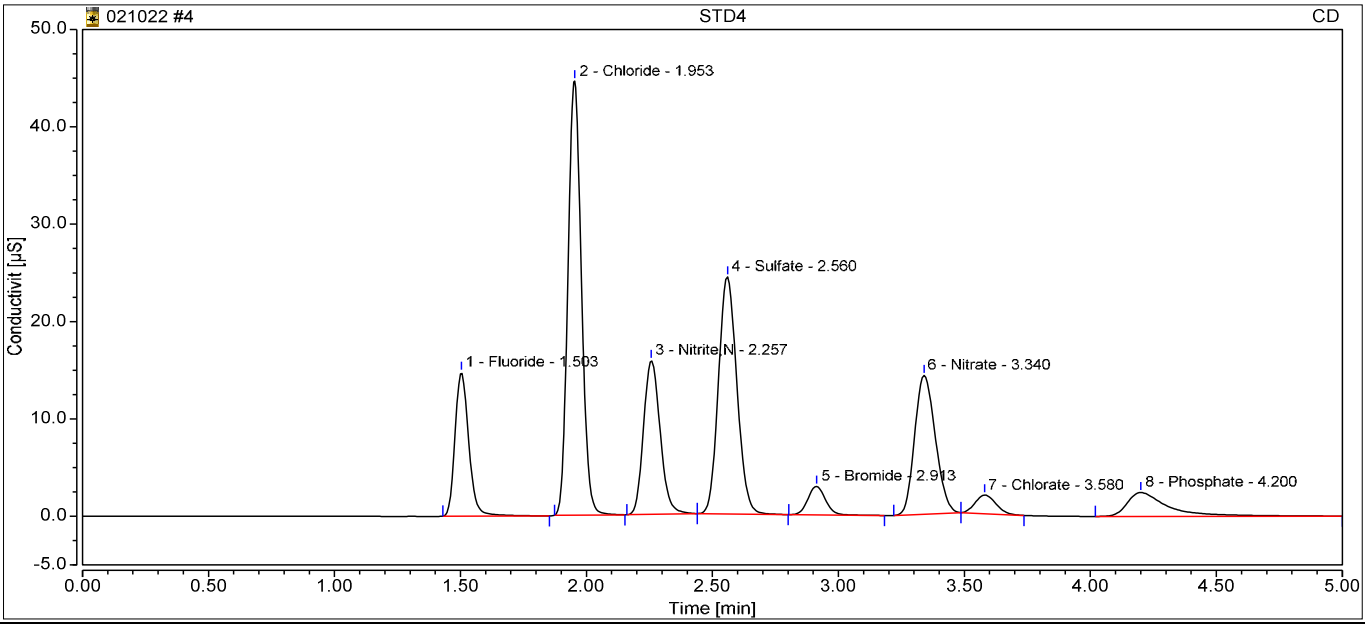
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.483	2.2207	2.2207	1.0000
2	1.95	Chloride	BMB	1.390	10.0653	10.0653	1.0000
3	2.26	Nitrite,N	BMB	0.637	2.0733	2.0733	1.0000
4	2.56	Sulfate	BMB	1.041	10.1897	10.1897	1.0000
5	2.92	Bromide	BMB	0.114	1.9189	1.9189	1.0000
6	3.35	Nitrate	BMB	0.673	1.9996	1.9996	1.0000
7	3.59	Chlorate	BMB	0.086	1.8976	1.8976	1.0000
8	4.25	Phosphate	BMB	0.201	1.8374	1.8374	1.0000
Total:			**0.000**	**4.625**		**32.20**	

4 STD4

Sample Name:	**STD4**	*Injection Volume:*	**5.00**
Vial Number:	**GA4**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:10**	*Sample Weight:*	**1.0000**

Run Time:



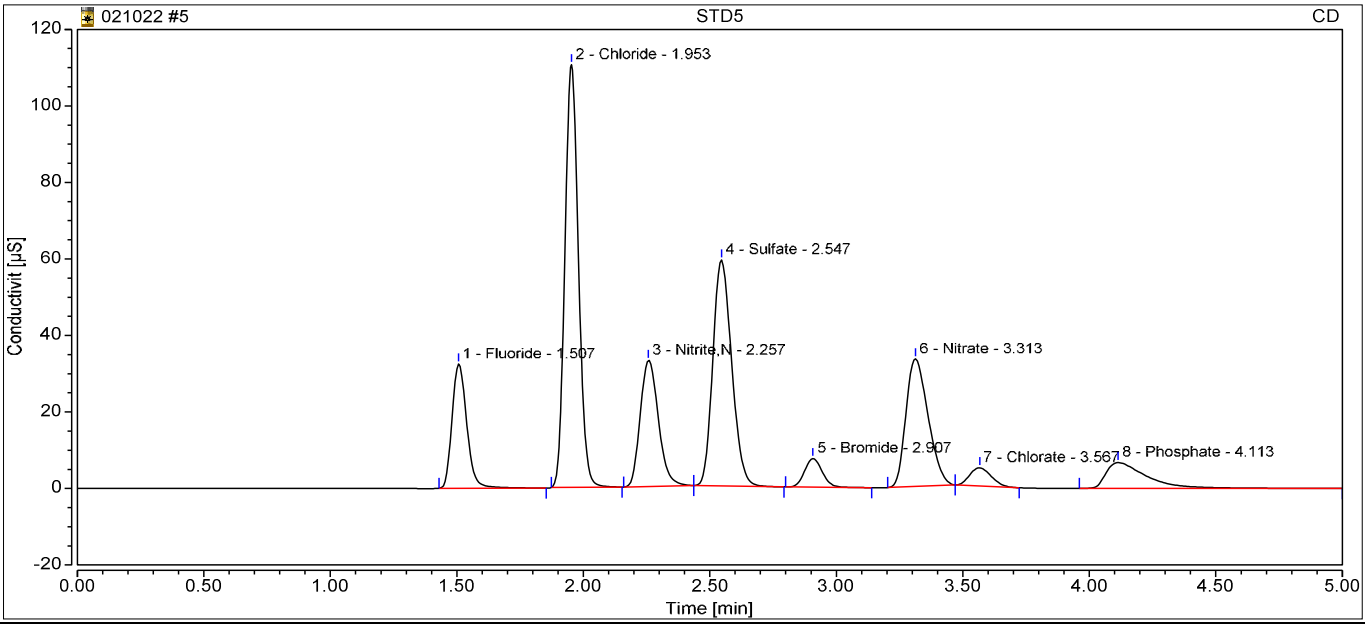
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.936	4.3225	4.3225	1.0000
2	1.95	Chloride	BMB	2.756	19.9028	19.9028	1.0000
3	2.26	Nitrite,N	BMB	1.211	4.0347	4.0347	1.0000
4	2.56	Sulfate	BMB	2.065	20.1557	20.1557	1.0000
5	2.91	Bromide	BMB	0.237	3.9133	3.9133	1.0000
6	3.34	Nitrate	BMB	1.353	3.9875	3.9875	1.0000
7	3.58	Chlorate	BMB	0.182	3.9485	3.9485	1.0000
8	4.20	Phosphate	BMB	0.464	4.0338	4.0338	1.0000
Total:			**0.000**	**9.203**		**64.30**	

5 STD5

Sample Name:	**STD5**	*Injection Volume:*	**5.00**
Vial Number:	**GA5**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:16**	*Sample Weight:*	**1.0000**

Run Time:



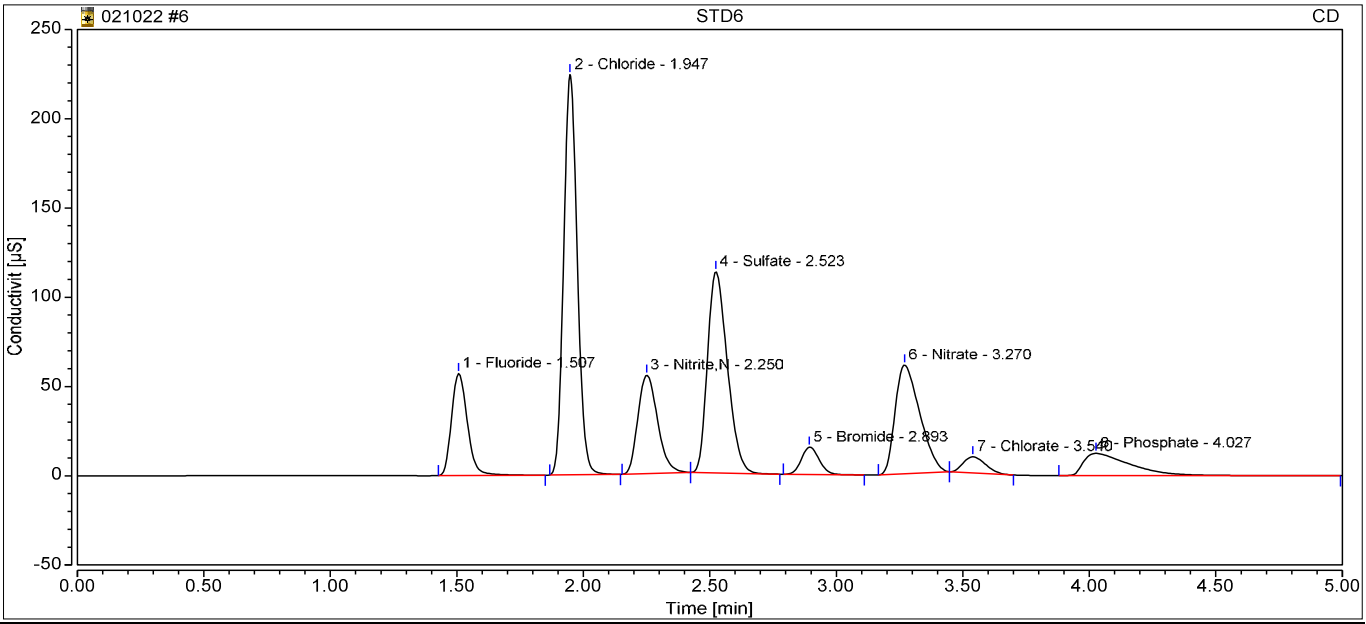
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	2.202	10.2004	10.2004	1.0000
2	1.95	Chloride	BMB	6.857	49.4370	49.4370	1.0000
3	2.26	Nitrite,N	BMB	2.744	9.7621	9.7621	1.0000
4	2.55	Sulfate	BMB	5.105	49.7378	49.7378	1.0000
5	2.91	Bromide	BMB	0.606	9.9171	9.9171	1.0000
6	3.31	Nitrate	BMB	3.383	9.9299	9.9299	1.0000
7	3.57	Chlorate	BMB	0.470	10.1129	10.1129	1.0000
8	4.11	Phosphate	BMB	1.275	10.3243	10.3243	1.0000
Total:			**0.000**	**22.642**		**159.42**	

6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**5.00**
Vial Number:	**GA6**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:21**	*Sample Weight:*	**1.0000**

Run Time:



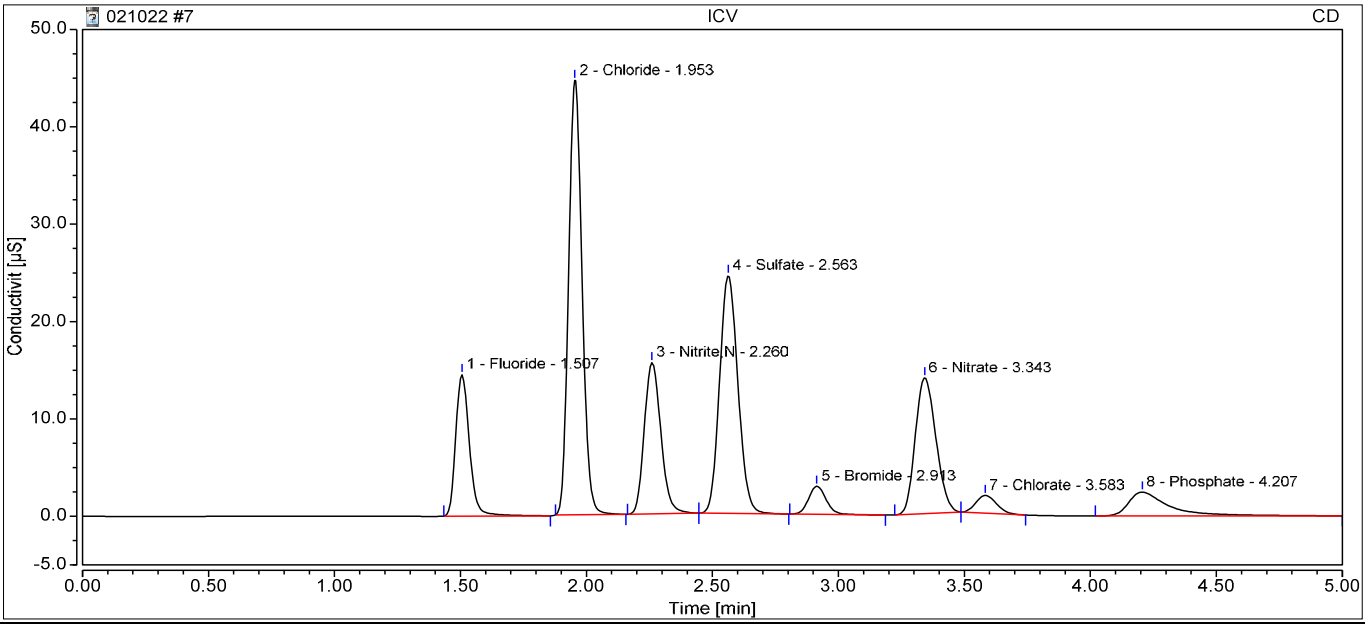
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	4.154	19.2555	19.2555	1.0000
2	1.95	Chloride	BMB	13.955	100.5578	100.5578	1.0000
3	2.25	Nitrite,N	BMB	4.985	20.1384	20.1384	1.0000
4	2.52	Sulfate	BMB	10.258	99.8915	99.8915	1.0000
5	2.89	Bromide	BMB	1.242	20.2707	20.2707	1.0000
6	3.27	Nitrate	BMB	6.854	20.0867	20.0867	1.0000
7	3.54	Chlorate	BMB	0.936	20.0714	20.0714	1.0000
8	4.03	Phosphate	BMB	2.666	19.8678	19.8678	1.0000
Total:			**0.000**	**45.050**		**320.14**	

7 ICV

Sample Name:	**ICV**	*Injection Volume:*	**5.00**
Vial Number:	**GA7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:26**	*Sample Weight:*	**1.0000**

Run Time:



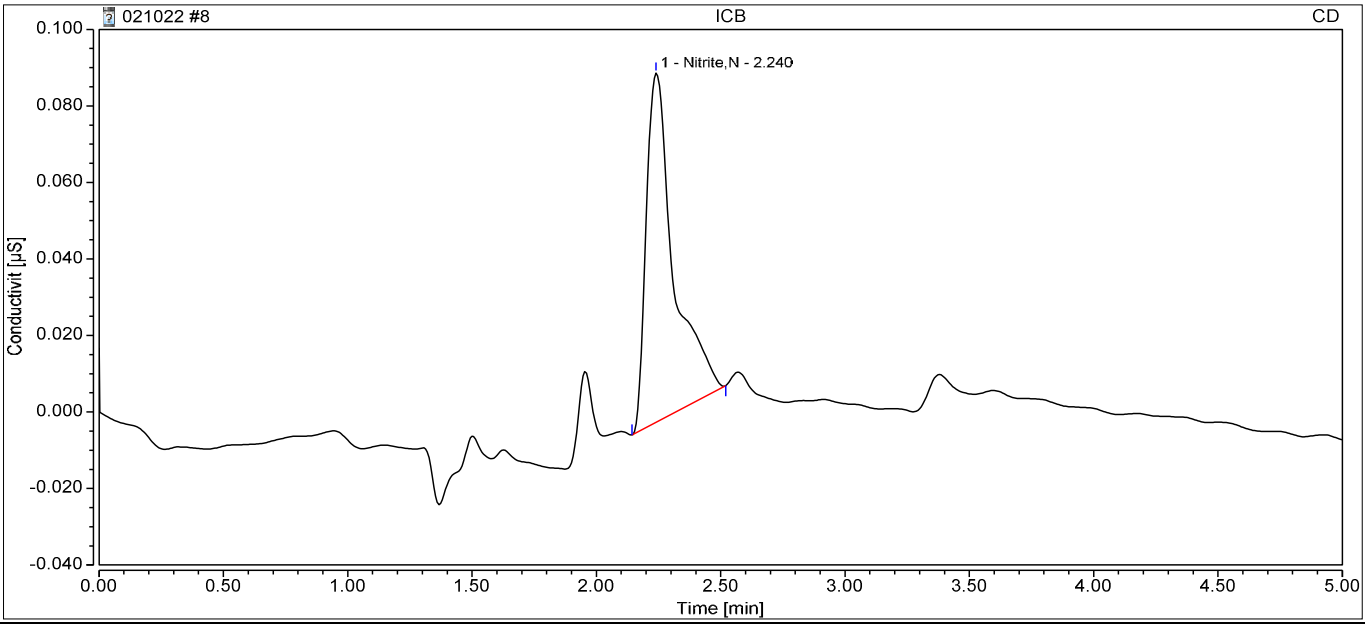
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.918	4.2393	4.2393	1.0000
2	1.95	Chloride	BMB	2.757	19.9118	19.9118	1.0000
3	2.26	Nitrite,N	BMB	1.187	3.9514	3.9514	1.0000
4	2.56	Sulfate	BMB	2.061	20.1215	20.1215	1.0000
5	2.91	Bromide	BMB	0.234	3.8709	3.8709	1.0000
6	3.34	Nitrate	BMB	1.322	3.8966	3.8966	1.0000
7	3.58	Chlorate	BMB	0.173	3.7489	3.7489	1.0000
8	4.21	Phosphate	BMB	0.463	4.0300	4.0300	1.0000
Total:			**0.000**	**9.115**		**63.77**	

8 ICB

Sample Name:	**ICB**	*Injection Volume:*	**5.00**
Vial Number:	**GA8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/07/2022 17:31**	*Sample Weight:*	**1.0000**

Run Time:



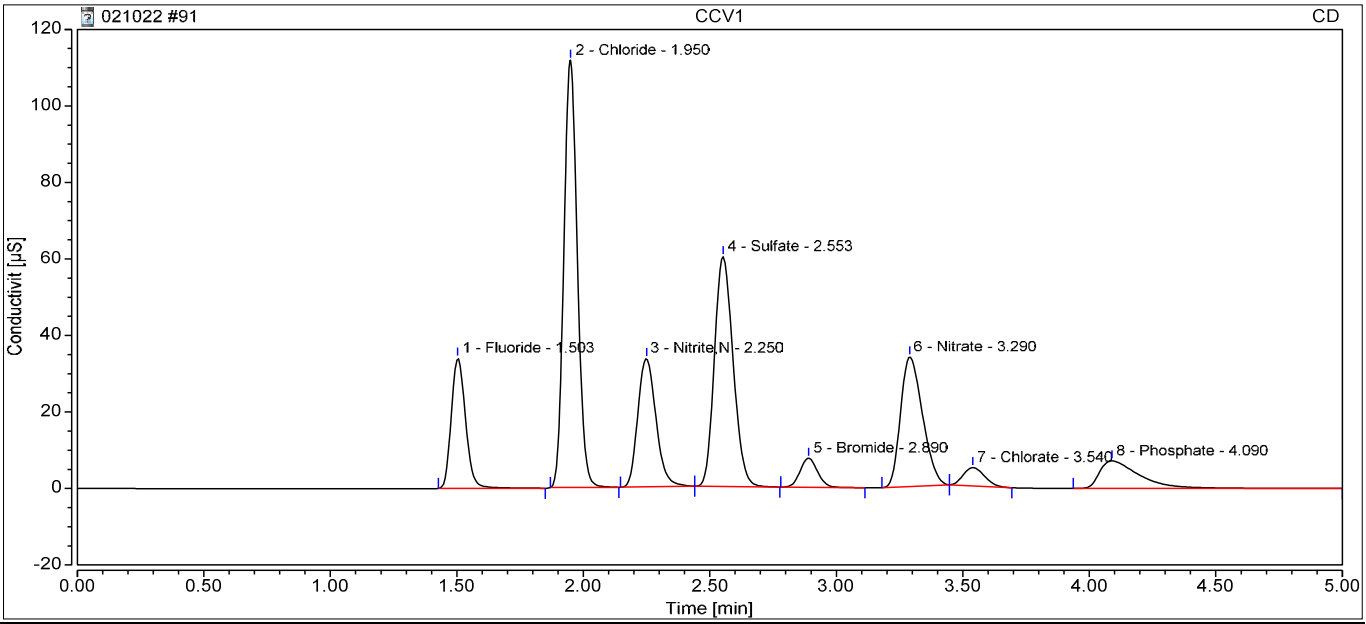
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.24	Nitrite,N	BMB	0.012	0.0259	0.0259	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.012**		**0.03**	

91 CCV1

Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**R3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/10/2022 20:51**	*Sample Weight:*	**1.0000**

Run Time:



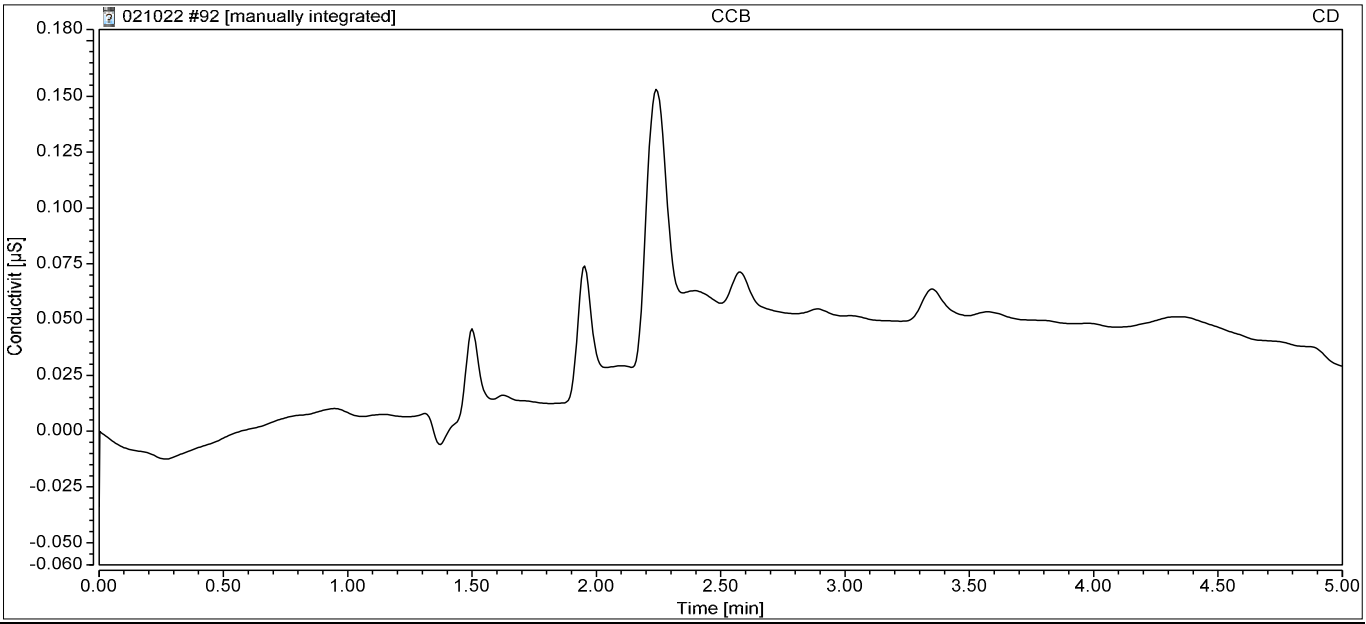
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	2.229	10.3266	10.3266	1.0000
2	1.95	Chloride	BMB	6.889	49.6698	49.6698	1.0000
3	2.25	Nitrite,N	BMB	2.794	9.9627	9.9627	1.0000
4	2.55	Sulfate	BMB	5.146	50.1360	50.1360	1.0000
5	2.89	Bromide	BMB	0.606	9.9120	9.9120	1.0000
6	3.29	Nitrate	BMB	3.400	9.9793	9.9793	1.0000
7	3.54	Chlorate	BMB	0.465	10.0017	10.0017	1.0000
8	4.09	Phosphate	BMB	1.331	10.7341	10.7341	1.0000
Total:			**0.000**	**22.860**		**160.72**	

92 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/10/2022 20:56**	*Sample Weight:*	**1.0000**

Run Time:



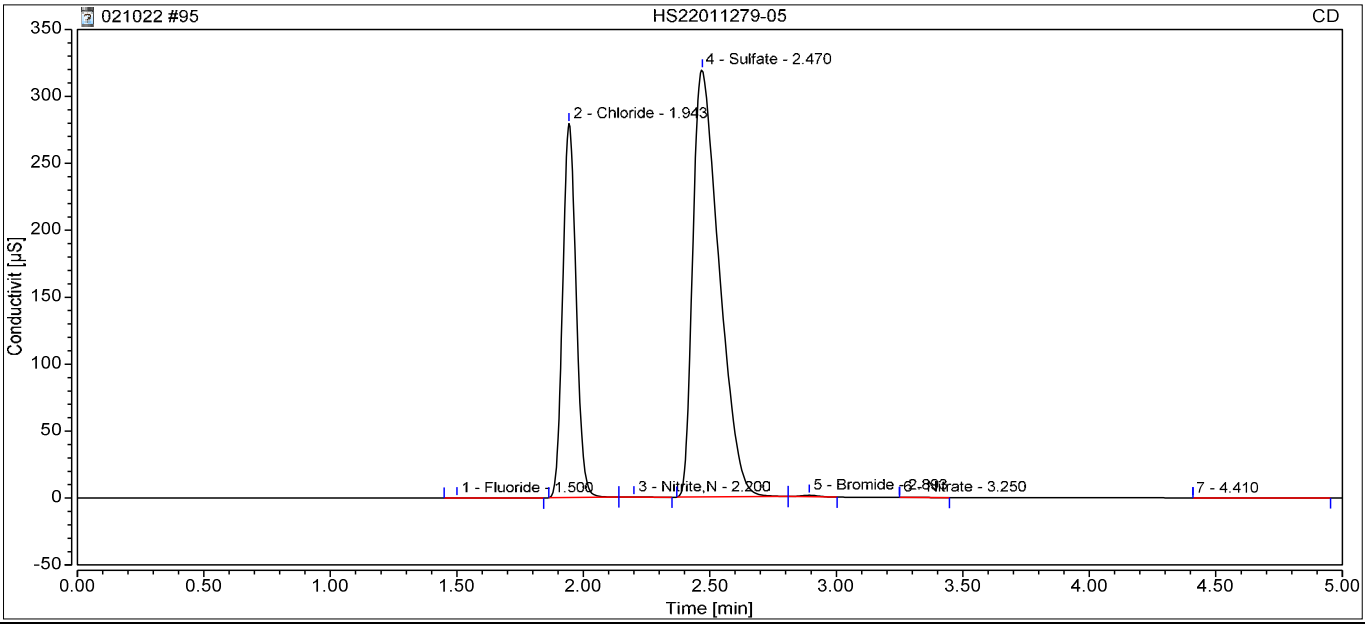
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.000**		**0.00**	

95 HS22011279-05

Sample Name:	**HS22011279-05**	*Injection Volume:*	**5.00**
Vial Number:	**GB8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**5.0000**
Recording Time:	**02/10/2022 21:12**	*Sample Weight:*	**1.0000**

Run Time:



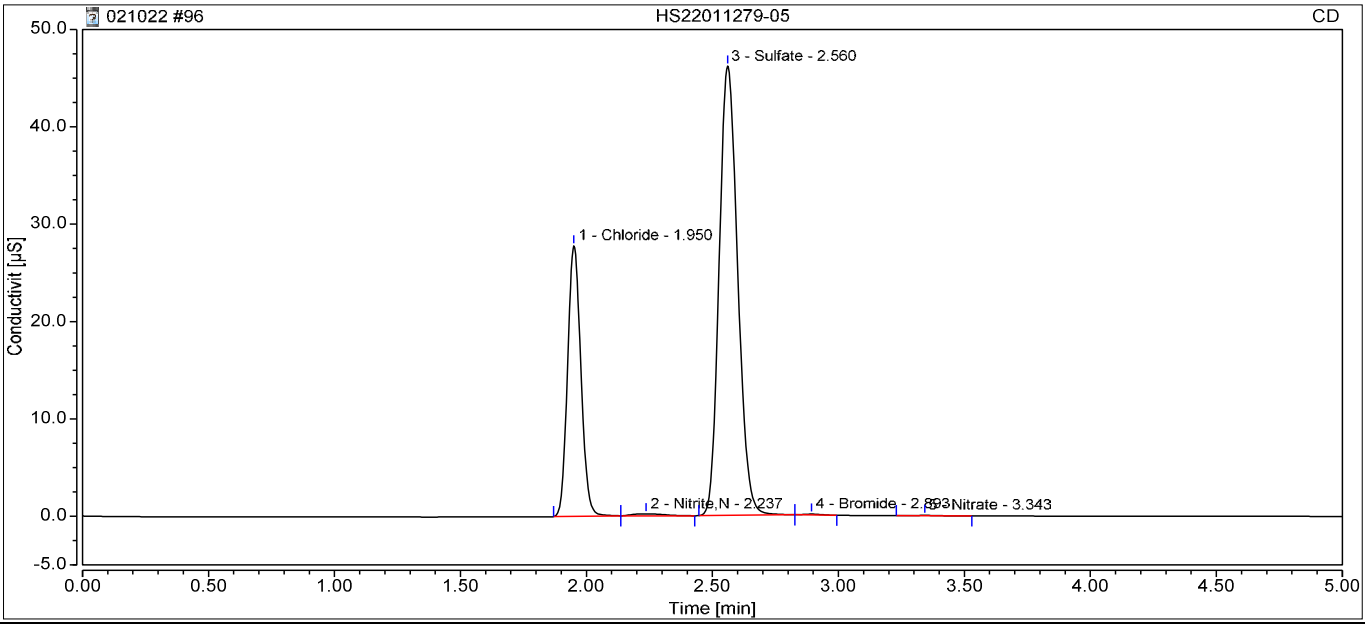
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.016	0.0568	0.2839	5.0000
2	1.94	Chloride	BMB	17.219	124.0688	620.3440	5.0000
3	2.20	Nitrite,N	BMB	0.010	0.0198	0.0989	5.0000
4	2.47	Sulfate	BMB	38.362	373.3947	1866.9737	5.0000
5	2.89	Bromide	BMB	0.087	1.4744	7.3721	5.0000
6	3.25	Nitrate	BMB	0.003	0.0387	0.1933	5.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	5.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	5.0000
Total:			**0.000**	**55.698**		**2495.27**	

96 HS22011279-05

Sample Name:	**HS22011279-05**	*Injection Volume:*	**5.00**
Vial Number:	**GC1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**50.0000**
Recording Time:	**02/10/2022 21:18**	*Sample Weight:*	**1.0000**

Run Time:



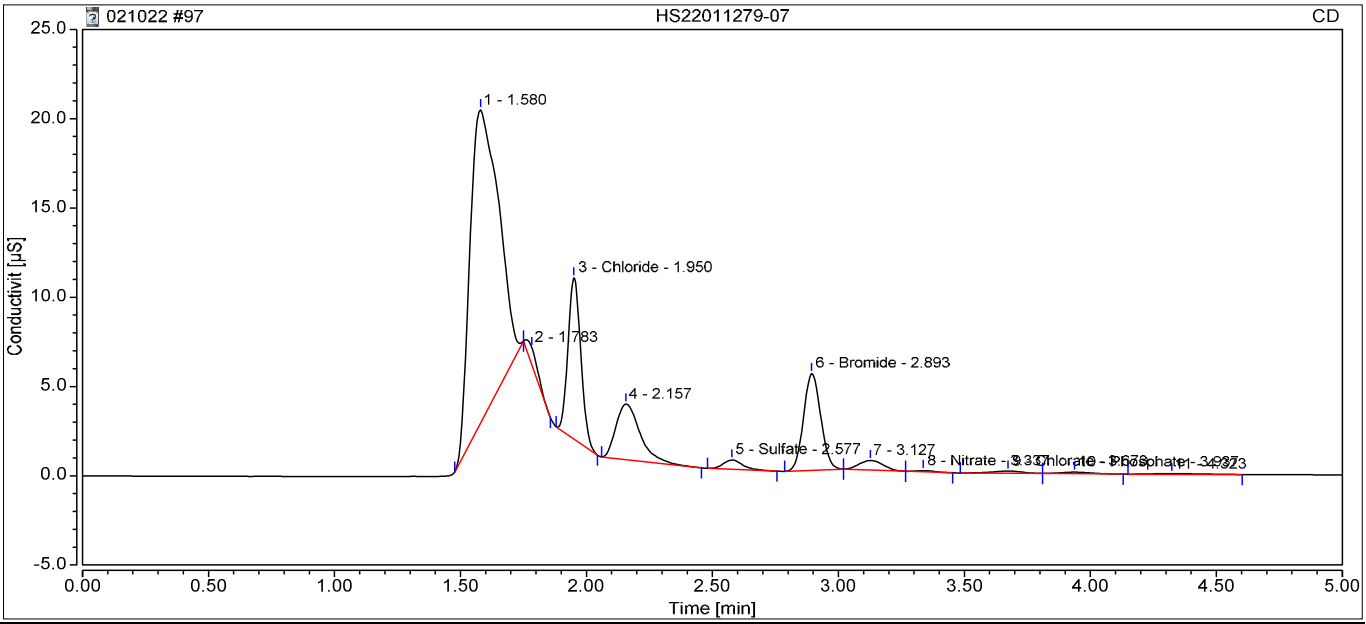
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	50.0000
1	1.95	Chloride	BMB	1.698	12.2877	614.3827	50.0000
2	2.24	Nitrite,N	BMB	0.028	0.0776	3.8823	50.0000
3	2.56	Sulfate	BMB	3.935	38.3524	1917.6197	50.0000
4	2.89	Bromide	BMB	0.007	0.1627	8.1362	50.0000
5	3.34	Nitrate	BMB	0.004	0.0404	2.0217	50.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	50.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	50.0000
Total:			**0.000**	**5.672**		**2546.04**	

97 HS22011279-07

Sample Name:	**HS22011279-07**	*Injection Volume:*	**5.00**
Vial Number:	**GC2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**10.0000**
Recording Time:	**02/10/2022 21:23**	*Sample Weight:*	**1.0000**

Run Time:



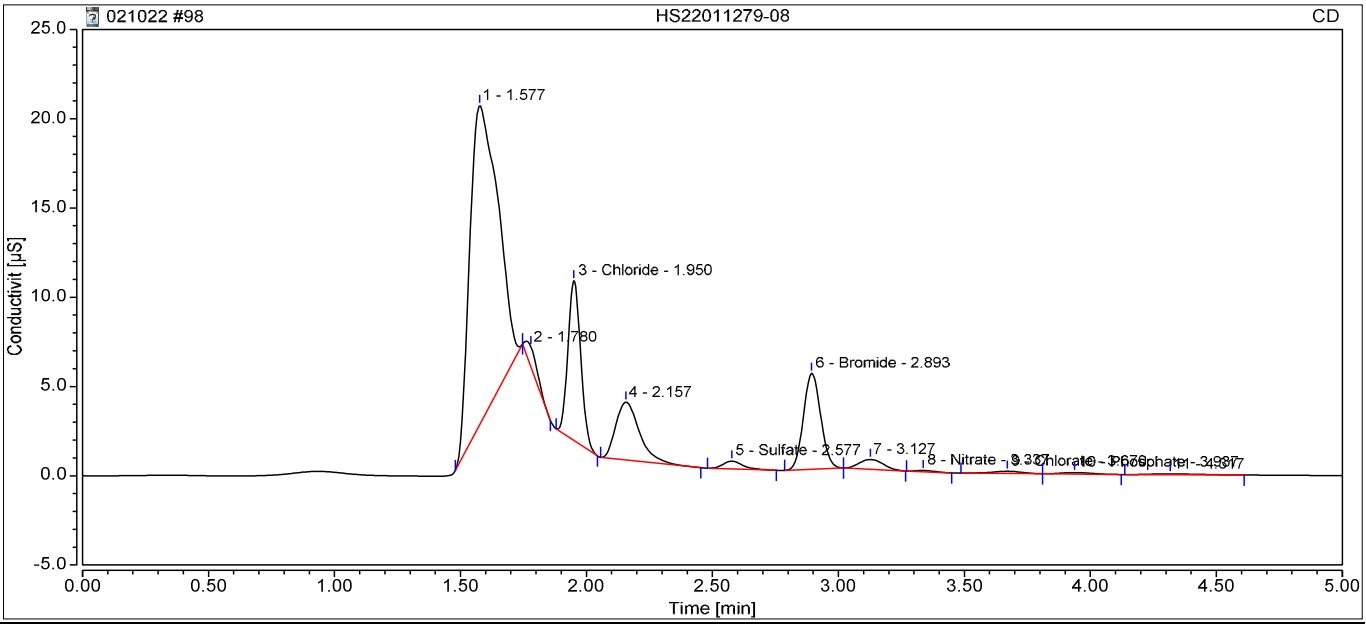
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	10.0000
3	1.95	Chloride	BMB	0.532	3.8831	38.8311	10.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	10.0000
5	2.58	Sulfate	BMB	0.047	0.5203	5.2028	10.0000
6	2.89	Bromide	BMB	0.428	7.0225	70.2246	10.0000
8	3.34	Nitrate	BMB	0.006	0.0453	0.4530	10.0000
9	3.67	Chlorate	BMB	0.016	0.4053	4.0531	10.0000
10	3.94	Phosphate	BMB	0.012	0.2057	2.0567	10.0000
Total:			**0.000**	**1.041**		**120.82**	

98 HS22011279-08

Sample Name:	**HS22011279-08**	*Injection Volume:*	**5.00**
Vial Number:	**GC3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**10.0000**
Recording Time:	**02/10/2022 21:28**	*Sample Weight:*	**1.0000**

Run Time:



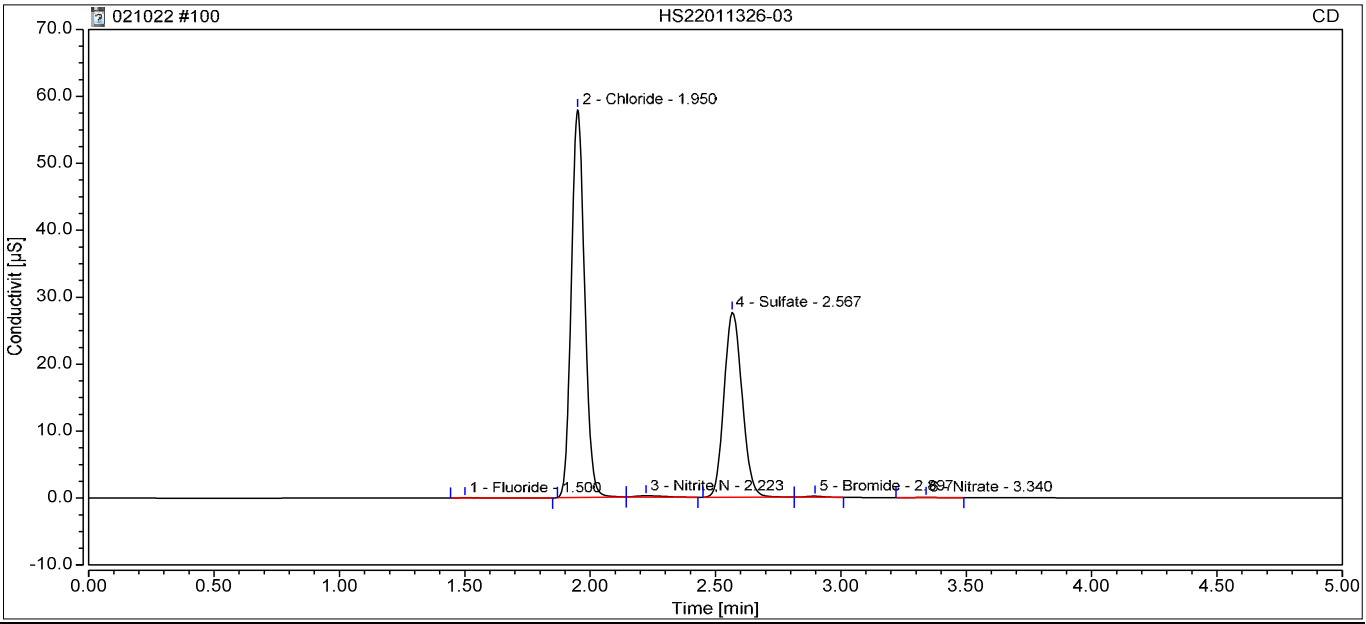
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	10.0000
3	1.95	Chloride	BMB	0.527	3.8487	38.4867	10.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	10.0000
5	2.58	Sulfate	BMB	0.040	0.4506	4.5062	10.0000
6	2.89	Bromide	BMB	0.427	7.0062	70.0616	10.0000
8	3.34	Nitrate	BMB	0.006	0.0452	0.4519	10.0000
9	3.67	Chlorate	BMB	0.017	0.4114	4.1141	10.0000
10	3.94	Phosphate	BMB	0.012	0.2044	2.0437	10.0000
Total:			**0.000**	**1.028**		**119.66**	

100 HS22011326-03

Sample Name:	**HS22011326-03**	*Injection Volume:*	**5.00**
Vial Number:	**GC5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**10.0000**
Recording Time:	**02/10/2022 21:39**	*Sample Weight:*	**1.0000**

Run Time:



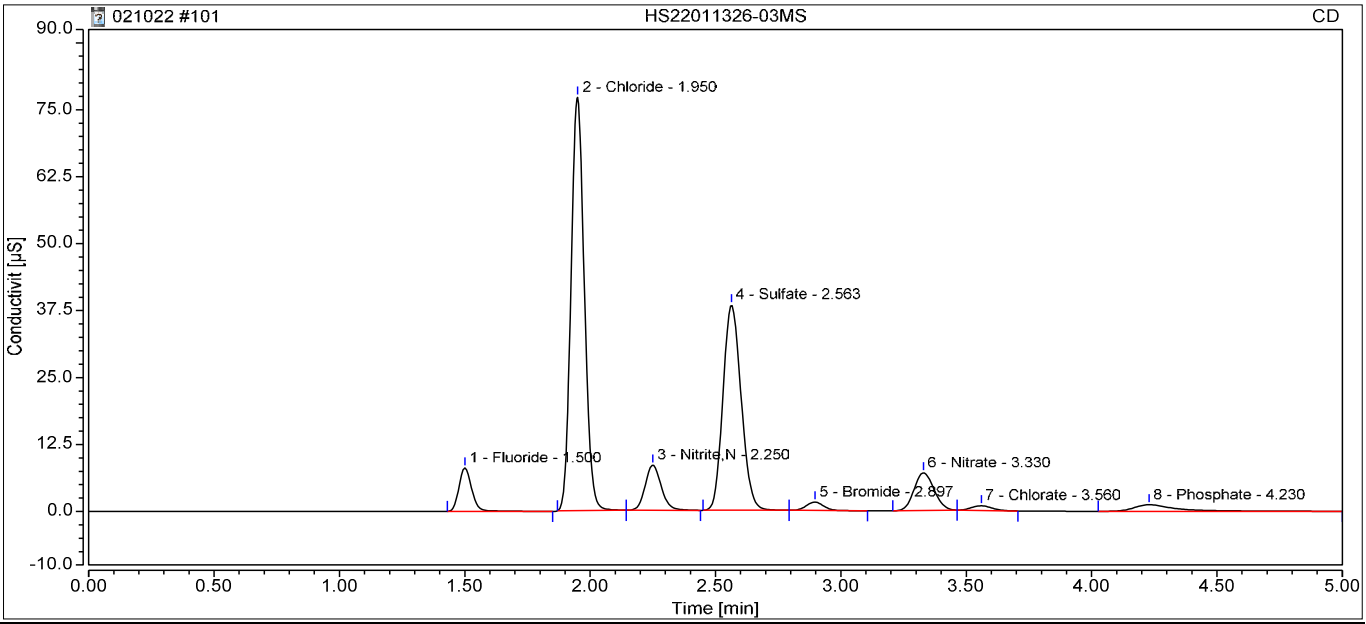
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.008	0.0168	0.1683	10.0000
2	1.95	Chloride	BMB	3.560	25.6979	256.9792	10.0000
3	2.22	Nitrite,N	BMB	0.024	0.0644	0.6436	10.0000
4	2.57	Sulfate	BMB	2.311	22.5479	225.4786	10.0000
5	2.90	Bromide	BMB	0.012	0.2529	2.5291	10.0000
6	3.34	Nitrate	BMB	0.004	0.0405	0.4049	10.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	10.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	10.0000
Total:			**0.000**	**5.919**		**486.20**	

101 HS22011326-03MS

Sample Name:	**HS22011326-03MS**	*Injection Volume:*	**5.00**
Vial Number:	**GC6**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**10.0000**
Recording Time:	**02/10/2022 21:44**	*Sample Weight:*	**1.0000**

Run Time:



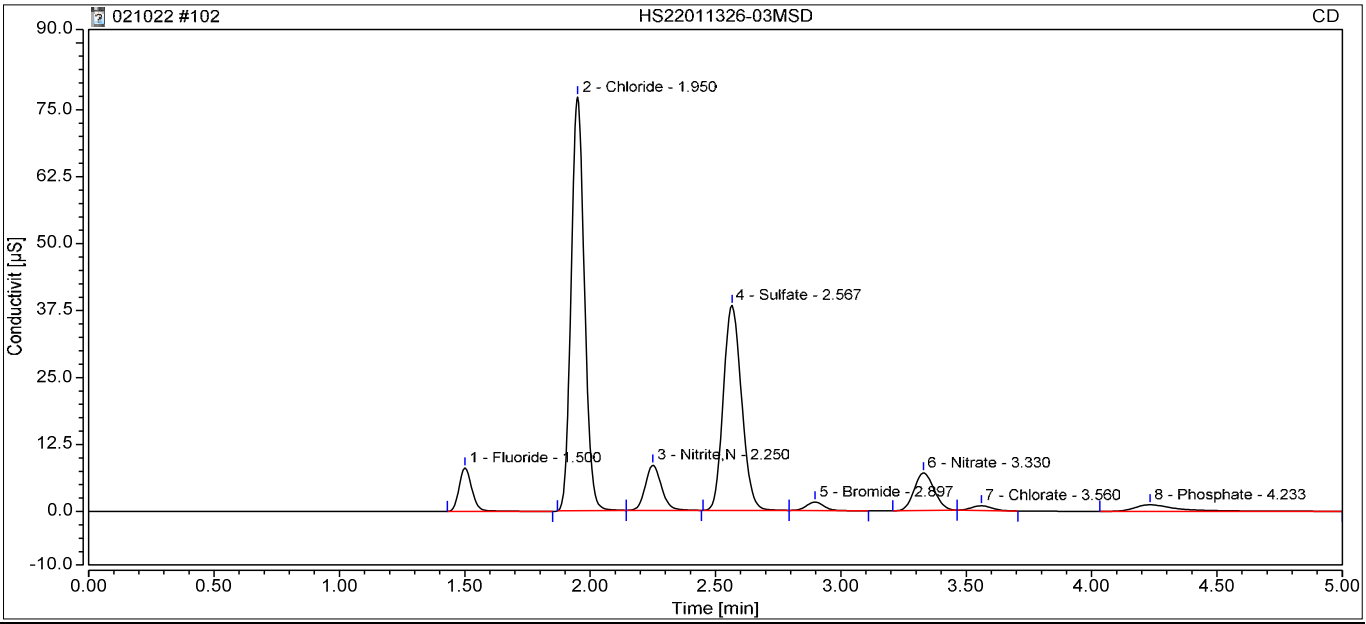
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.482	2.2156	22.1563	10.0000
2	1.95	Chloride	BMB	4.756	34.3090	343.0903	10.0000
3	2.25	Nitrite,N	BMB	0.628	2.0420	20.4204	10.0000
4	2.56	Sulfate	BMB	3.231	31.5007	315.0072	10.0000
5	2.90	Bromide	BMB	0.126	2.1028	21.0277	10.0000
6	3.33	Nitrate	BMB	0.649	1.9276	19.2757	10.0000
7	3.56	Chlorate	BMB	0.082	1.8066	18.0663	10.0000
8	4.23	Phosphate	BMB	0.245	2.2160	22.1595	10.0000
Total:			**0.000**	**10.198**		**781.20**	

102 HS22011326-03MSD

Sample Name:	**HS22011326-03MSD**	*Injection Volume:*	**5.00**
Vial Number:	**GC7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**10.0000**
Recording Time:	**02/10/2022 21:50**	*Sample Weight:*	**1.0000**

Run Time:



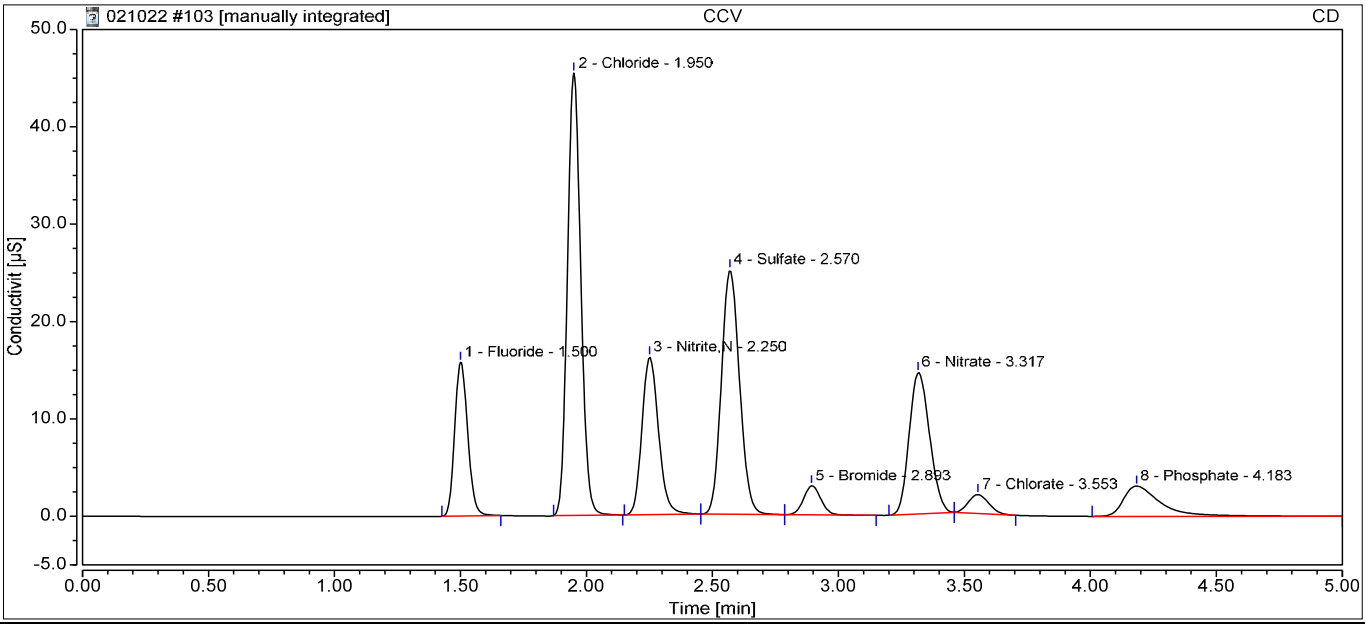
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.482	2.2170	22.1699	10.0000
2	1.95	Chloride	BMB	4.755	34.2998	342.9977	10.0000
3	2.25	Nitrite,N	BMB	0.628	2.0447	20.4473	10.0000
4	2.57	Sulfate	BMB	3.229	31.4851	314.8510	10.0000
5	2.90	Bromide	BMB	0.126	2.0993	20.9926	10.0000
6	3.33	Nitrate	BMB	0.645	1.9171	19.1712	10.0000
7	3.56	Chlorate	BMB	0.082	1.8095	18.0952	10.0000
8	4.23	Phosphate	BMB	0.248	2.2351	22.3508	10.0000
Total:			**0.000**	**10.195**		**781.08**	

103 CCV

Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/10/2022 21:55**	*Sample Weight:*	**1.0000**

Run Time:



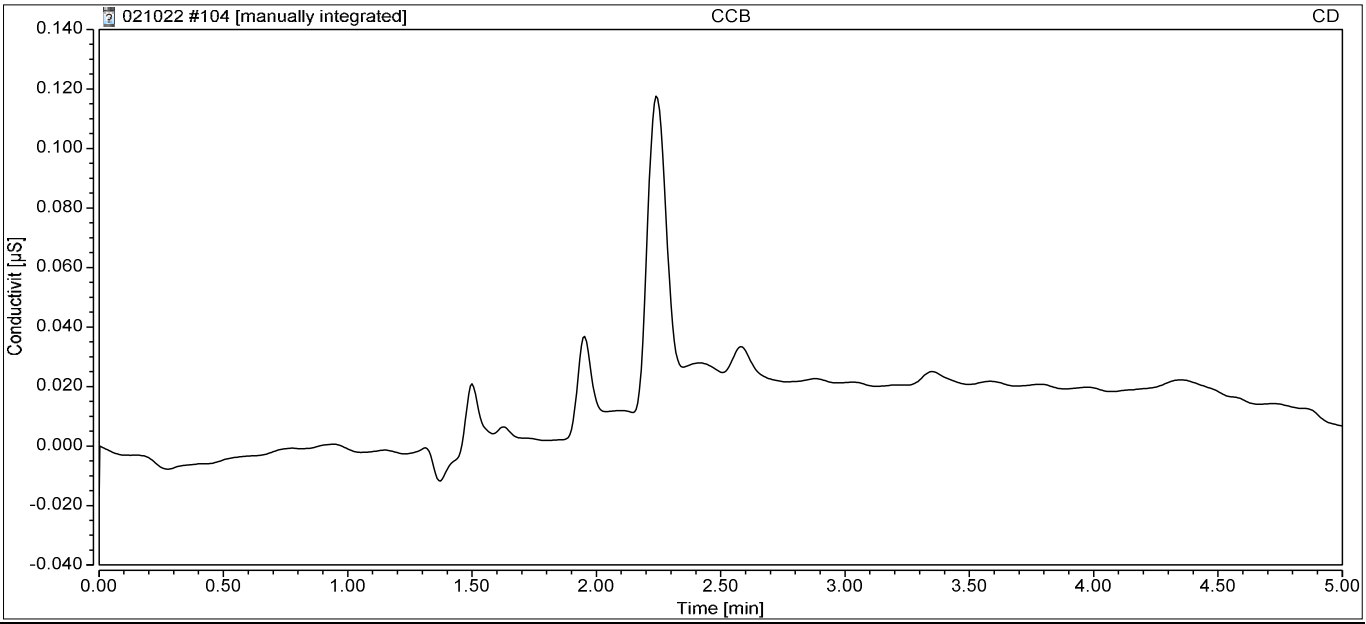
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB*	0.950	4.3907	4.3907	1.0000
2	1.95	Chloride	BMB	2.788	20.1352	20.1352	1.0000
3	2.25	Nitrite,N	BMB	1.236	4.1218	4.1218	1.0000
4	2.57	Sulfate	BMB	2.086	20.3603	20.3603	1.0000
5	2.89	Bromide	BMB	0.238	3.9347	3.9347	1.0000
6	3.32	Nitrate	BMB	1.364	4.0213	4.0213	1.0000
7	3.55	Chlorate	BMB	0.183	3.9641	3.9641	1.0000
8	4.18	Phosphate	BMB	0.536	4.6184	4.6184	1.0000
Total:			**0.000**	**9.381**		**65.55**	

104 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/10/2022 22:00**	*Sample Weight:*	**1.0000**

Run Time:



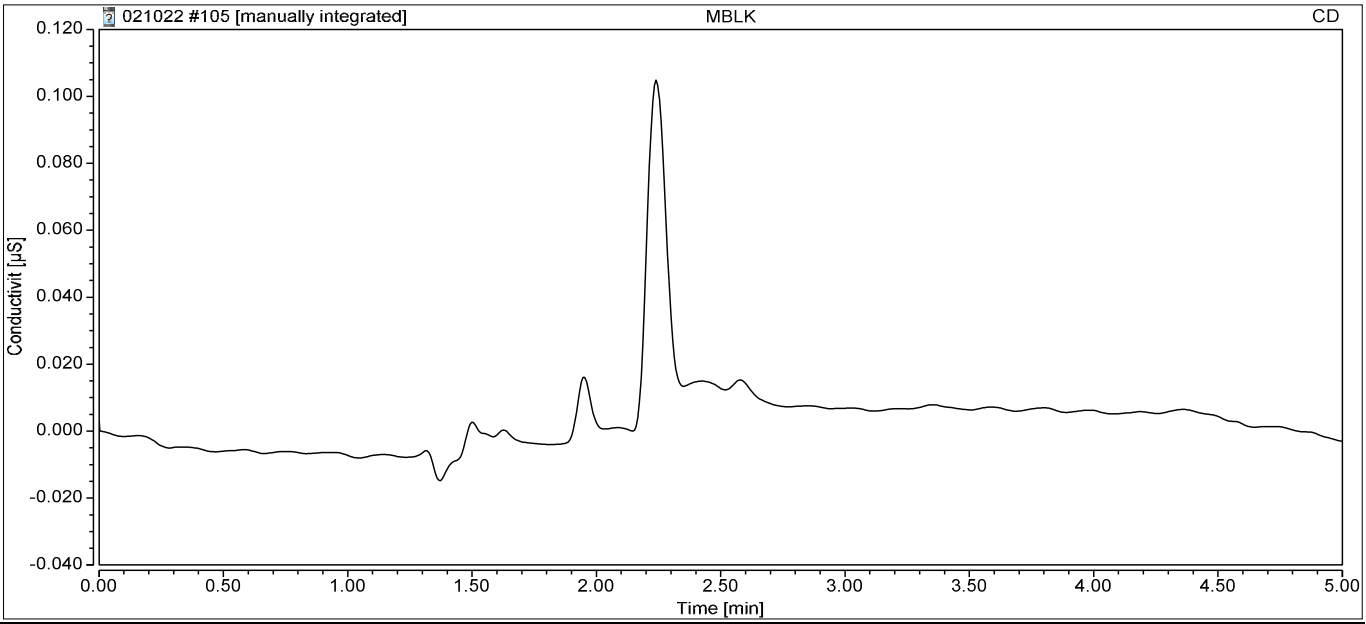
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.000**		**0.00**	

105 MBLK

Sample Name:	**MBLK**	*Injection Volume:*	**5.00**
Vial Number:	**R5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/10/2022 22:05**	*Sample Weight:*	**1.0000**

Run Time:



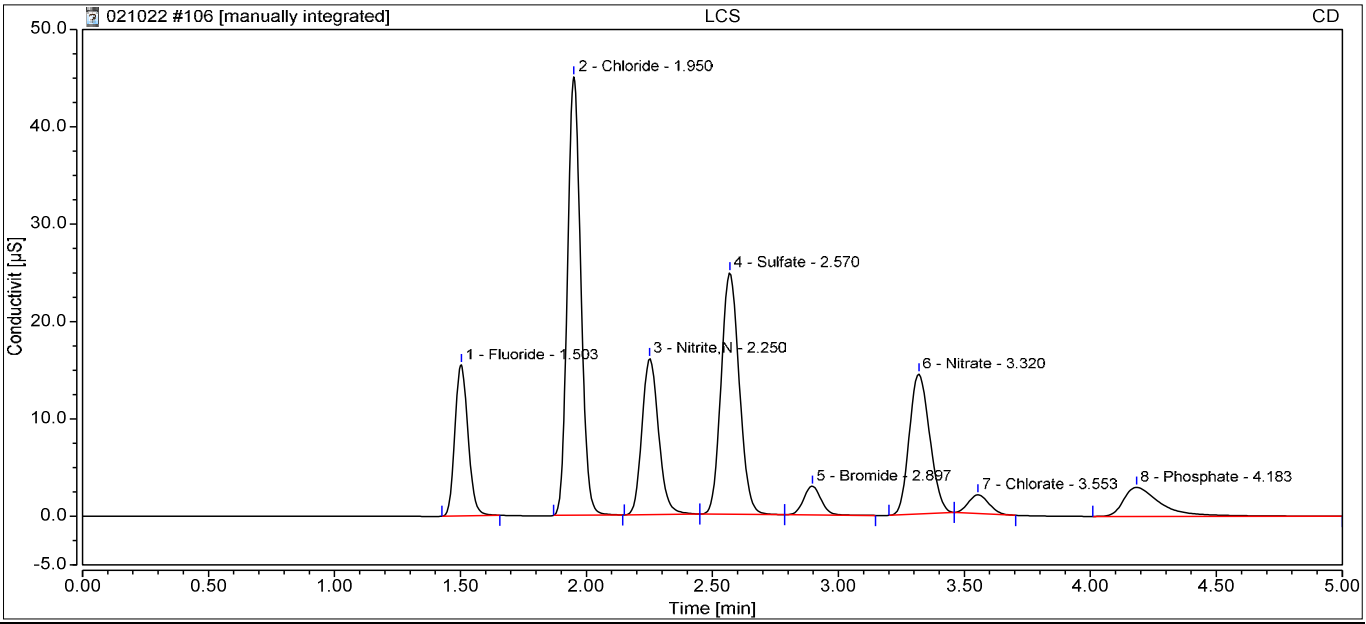
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.000**		**0.00**	

106 LCS

Sample Name:	**LCS**	*Injection Volume:*	**5.00**
Vial Number:	**R2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/10/2022 22:11**	*Sample Weight:*	**1.0000**

Run Time:



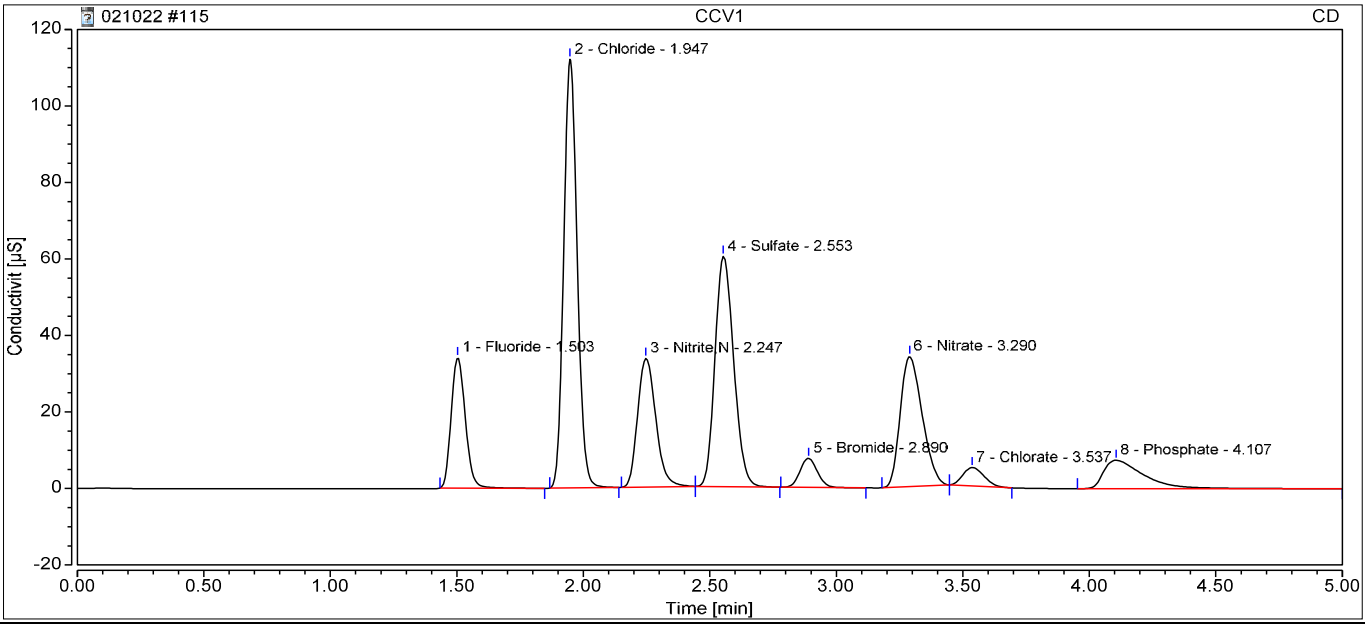
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB*	0.940	4.3409	4.3409	1.0000
2	1.95	Chloride	BMB	2.760	19.9351	19.9351	1.0000
3	2.25	Nitrite,N	BMB	1.227	4.0911	4.0911	1.0000
4	2.57	Sulfate	BMB	2.067	20.1770	20.1770	1.0000
5	2.90	Bromide	BMB	0.236	3.8938	3.8938	1.0000
6	3.32	Nitrate	BMB	1.351	3.9828	3.9828	1.0000
7	3.55	Chlorate	BMB	0.181	3.9256	3.9256	1.0000
8	4.18	Phosphate	BMB	0.514	4.4449	4.4449	1.0000
Total:			**0.000**	**9.276**		**64.79**	

115 CCV1

Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**R3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/10/2022 22:59**	*Sample Weight:*	**1.0000**

Run Time:



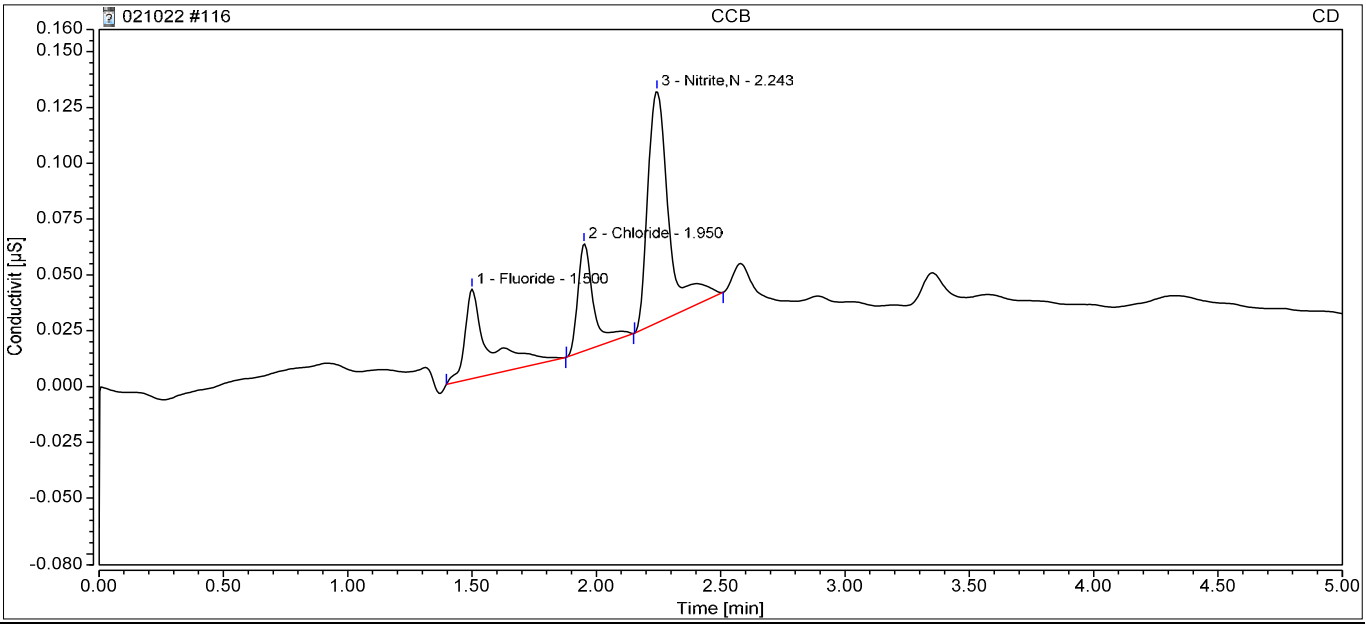
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	2.215	10.2573	10.2573	1.0000
2	1.95	Chloride	BMB	6.916	49.8655	49.8655	1.0000
3	2.25	Nitrite,N	BMB	2.801	9.9911	9.9911	1.0000
4	2.55	Sulfate	BMB	5.163	50.3085	50.3085	1.0000
5	2.89	Bromide	BMB	0.609	9.9613	9.9613	1.0000
6	3.29	Nitrate	BMB	3.412	10.0130	10.0130	1.0000
7	3.54	Chlorate	BMB	0.467	10.0428	10.0428	1.0000
8	4.11	Phosphate	BMB	1.366	10.9935	10.9935	1.0000
Total:			**0.000**	**22.949**		**161.43**	

116 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**02/10/2022 23:04**	*Sample Weight:*	**1.0000**

Run Time:



Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.005	0.0018	0.0018	1.0000
2	1.95	Chloride	BMB	0.004	0.0805	0.0805	1.0000
3	2.24	Nitrite,N	BMB	0.010	0.0214	0.0214	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.018**		**0.10**	

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

April 4, 2023

SUBJECT: Draft Final Pre-Design Investigation Work Plan, LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production, Longhorn Army Ammunition Plant, Karnack, Texas

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Dear Ms. Palmie,

The above-referenced document is being transmitted to you for review. The document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the draft version received on March 10, 2023, and the Texas Commission on Environmental Quality's (TCEQ) comments received on March 1, 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 HDR Environmental, Operations and Construction, Inc. (HDR) on behalf of the Army as part of HDR's contract for the facility. I ask that Greg Kelly, HDR'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

cc:
B. Follin, 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
M. Bowlby, USAEC, San Antonio, TX

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
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2455 REYNOLDS ROAD
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April 4, 2023

SUBJECT: Draft Final Pre-Design Investigation Work Plan, LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production, Longhorn Army Ammunition Plant, Karnack, Texas

Mr. Brian Follin
U.S. Environmental Protection Agency
1201 Elm Street, Suite 500
Dallas, TX 75270-2002

Dear Mr. Follin,

The above-referenced document is being transmitted to you for review. The document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the draft version received on March 10, 2023, and the Texas Commission on Environmental Quality's (TCEQ) comments received on March 1, 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 HDR Environmental, Operations and Construction, Inc. (HDR) on behalf of the Army as part of HDR's contract for the facility. I ask that Greg Kelly, HDR'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

cc:
A. Palmie, TCEQ, Austin, 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
M. Bowlby, USAEC, San Antonio, TX

Comments Response Matrix
Draft Pre-Design Investigation Work Plan, LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production, Longhorn Army Ammunition Plant, Karnack, Texas
Submitted: February 10, 2023

Submitted by: TCEQ
Responded by: HDR
Date Responded: 3.20.2023

1. **Respondent concurs (C) or does not concur (D)**
2. **Commenter agrees (A) or does not agree (D) with response.**

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
Reviewer #1: April Palmie TCEQ						
1.	1.1/1-1	1	2nd sentence beginning with "The United States Fish and Wildlife Service (USFWS) requested…" – Replace 2nd sentence with this sentence from the ROD "The majority of LHAAP, not including LHAAP-47, has been transferred by the U.S. Army to the U.S. Fish and Wildlife Service (USFWS) for management as the Caddo Lake National Wildlife Refuge."	C	Concur. The sentence has been deleted and replaced with the following text: "The majority of LHAAP, not including LHAAP-47, has been transferred by the U.S. Army to the U.S. Fish and Wildlife Service (USFWS) for management as the Caddo Lake National Wildlife Refuge."	
2.	1.1/1-2	GW COC list	Please replace this list with Table 2-8 from the ROD (Cleanup Levels for Target COCs in Groundwater).	C	Concur. Bullet list has been replaced with a modified version of Table 2-8 from the LHAAP-47 Final Record of Decision. For this PDI, perchlorate, VOCs, and metals are being investigated. Explosives and PAHs are excluded.	
3.	1.2/1-3	1.2	2nd bullet – Does this mean updated groundwater contaminant concentration figures and tables will be provided as part of the RDI Report? 3rd bullet – Does this mean cross-sections and a revised hydrogeologic conceptual model will be provided as part of the RDI Report?	C	Correct, updated groundwater contaminant concentration figures and tables, cross-sections, and a revised hydrogeologic conceptual model will be provided as part of the PDI Report.	

Comments Response Matrix
Draft Pre-Design Investigation Work Plan, LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production, Longhorn Army Ammunition Plant, Karnack, Texas
Submitted: February 10, 2023

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
4.	1.3/1-3	1.3	1st bullet – Please revise to "Collect water level elevations of wells located within the historical and current extent of groundwater contamination;" 2nd and 3rd bullets –When discussing completion of the Shallow and Upper Intermediate zone wells, indicate the completion interval, not just the depth. A good example is in 2.2	C	Concur. The 1st bullet has been revised to state: "Collect water level elevations of wells located within the historical and current extent of groundwater contamination;" The 2nd and 3rd bullets have been revised as follows: "Installation and development of four Shallow Zone wells to a depth between 25 feet below ground surface (ft bgs) and 32 ft bgs; Installation and development of two Upper Intermediate/Intermediate Zone wells to a depth between 35 ft bgs and 55 ft bgs;"	

5.	2/2-1		Please add a brief explanation for each new well location. Why did you select those locations?	C	Concur. The following text has been added after the bullet list to explain the selection of the new well locations, "Shallow, intermediate, and deep groundwater zones were initially defined during the RI. The shallow (10 - 35 ft bgs, intermediate (35 - 60 ft bgs), and deep (70-95 ft bgs) saturated zones are in the Wilcox Group and are separated by clay layers that extend across the site (Jacobs, 2002). The Shallow Zone is typically clay to silty clay at the surface underlain by a relatively thin (approximately 3-foot-thick) layer of silty to poorly sorted sand that is present across the site. In the east-central portion of the site, the Shallow Zone is underlain by thick, silty clay that separates the Shallow Zone from the underlying Intermediate Zone (Jacobs, 2002). During the PSI, the Shallow and Intermediate groundwater zones were refined to reflect current conditions. The Shallow Zone was found to be present at depths between approximately 25 ft bgs and 32 ft bgs within the laminated clay/sand unit overlying the clay unit separating the Shallow Zone from the Upper Intermediate Zone. Upper Intermediate/Intermediate Zone wells described in the PSI have completion depths that generally range between 35 and 55 ft bgs. The Upper Intermediate/Intermediate Zone is the sandy unit underlying the sand laminated clay Shallow Zone and overlying the clay unit separating the deeper zone. Inevitably, depth to these groundwater zones varied in depth across the site.	

Comments Response Matrix
Draft Pre-Design Investigation Work Plan, LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production, Longhorn Army Ammunition Plant, Karnack, Texas
Submitted: February 10, 2023

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
					New monitoring well locations were selected to provide updated information on extent of contaminant plumes. Shallow Zone (47WW56, 47WW57, 47WW58, and 47WW59) and Upper Intermediate/Intermediate Zone (47WW60 and 47WW61) well locations have been placed downgradient of known contaminant plumes to assess further migration, if any. Further, new Shallow Zone wells 47WW57, 47WW58, and 47WW59 have been located near proposed conceptual bio-barrier locations to assess contaminant concentrations to support the development of the remedial design. ”	
6.	2.1/2-1	2.1	Please revise sentence to “At the commencement of field activities, collect water level elevations for all wells listed on **Table 2** and shown on **Figure 3**.”	C	Concur. The sentence has been revised as follows: “At the commencement of field activities, water levels will be measured in all wells listed in Table 3 and shown on Figure 3.”	

Comments Response Matrix
Draft Pre-Design Investigation Work Plan, LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production, Longhorn Army Ammunition Plant, Karnack, Texas
Submitted: February 10, 2023

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
7.	2.2/2-2		Shallow, Upper Intermediate, and Intermediate Zones are the terms used at this and other LHAAP sites consistently for several years. 2nd bullet in sonic drilling – revise "Intermediate (Upper) Zone" to "Upper Intermediate Zone". 3rd bullet – revise "Intermediate (Upper Zone)" to "Upper Intermediate Zone" – 2nd occurrence "intermediate (upper) zone" to "upper intermediate zone". Last sentence – clarify why no soil samples. Note the recent assessment work to support the ROD.	C	Concur. Aquifer nomenclatures have been revised as follows: • Wells installed in the Shallow Zone and Upper Intermediate/Intermediate Zones will target the following completion depths: ➢ Shallow Zone – wells will target a completion depth between 25 ft bgs and 32 ft bgs, terminating at the laminated clay/sand unit. ➢ Upper Intermediate/Intermediate Zone – wells will target a completion depth between 35 ft bgs and 55 ft bgs, terminating at the bottom of the sand underlying the base of the Shallow Zone. Soil sample collection for analyses has not been included in this scope of work.	

8.	2.3/2-2	1st Paragraph	Clarify "Upper Intermediate/Intermediate Zone": Between the previous section (bullets 2 and 3) and here, it isn't clear the objective with these two wells. Is the objective to install 2 upper intermediate wells? If the upper intermediate zone is not distinctly identifiable, then will the well be completed as intermediate just under the shallow? Perhaps you could clarify the intermediate zone bullet in previous section.	C	Concur. In addition to the revised text noted in Comment #7, the following text has been added after the bullet list in Section 2.0 to further clarify the Shallow Zone and Upper Intermediate Zone as follows: "Shallow, intermediate, and deep groundwater zones were initially defined during the RI. The shallow (10 - 35 ft bgs, intermediate (35 - 60 ft bgs), and deep (70-95 ft bgs) saturated zones are in the Wilcox Group and are separated by clay layers that extend across the site (Jacobs, 2002). The Shallow Zone is typically clay to silty clay at the surface underlain by a relatively thin (approximately 3-foot-thick) layer of silty to poorly sorted sand that is present across the site. In the east-central portion of the site, the Shallow Zone is underlain by thick, silty clay that separates the Shallow Zone from the underlying Intermediate Zone (Jacobs, 2002). During the PSI, the Shallow and Intermediate groundwater zones were refined to reflect current conditions. The Shallow Zone was found to be present at depths between approximately 25 ft bgs and 32 ft bgs within the laminated clay/sand unit overlying the clay unit separating the Shallow Zone from the Upper Intermediate Zone. Upper Intermediate/Intermediate Zone wells described in the PSI have completion depths that generally range between 35 and 55 ft bgs. The Upper Intermediate/Intermediate Zone is the sandy unit underlying the sand laminated clay Shallow Zone and overlying the clay unit separating the deeper zone. Inevitably, depth to these groundwater zones varied in depth across the site.	

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
					New monitoring well locations were selected to provide updated information on extent of contaminant plumes. Shallow Zone (47WW56, 47WW57, 47WW58, and 47WW59) and Upper Intermediate/Intermediate Zone (47WW60 and 47WW61) well locations have been placed downgradient of known contaminant plumes to assess further migration, if any. Further, new Shallow Zone wells 47WW57, 47WW58, and 47WW59 have been located near proposed conceptual bio-barrier locations to assess contaminant concentrations to support the development of the remedial design."	
9.	2.4/2-4		Include the criteria you will use to determine if existing wells require redevelopment.	C	Concur. The following text has been added to the document, "Redevelopment would occur if purge water is extremely turbid (turbidity greater than 500 Nephelometric Turbidity Units [NTU]) and/or the well is slow to recharge indicating clogged well screens/filter packs."	
10.	2.5/2-4	2nd Paragraph	Please revise 2nd sentence to add highlighted text: "The areas with direct remediation efforts (e.g., excavation, ISB, ERH) will be surveyed using a tight control grid (~50 ft),"	C	Concur. Sentence has been revised as follows: "The areas with direct remediation efforts (e.g., excavation, ISB, ERH) will be surveyed using a tight control grid (~50 ft), while the remaining portion of the site would be surveyed using a less rigid control grid (~200 ft)."	
11.	2.7/2-5	1st Paragraph	Please revise last sentence to add highlighted text: "Environmental and QC samples will be submitted to EMT."	C	Concur. The sentence has been revised to state, "QC samples will be submitted to EMT, along with the environmental samples."	
12.	Figures		Please revise and replace the figures with searchable higher resolution images that take up more of the space on the pages.	C	Concur. The figures in the pdf document have been search enabled and sized to fill more of the page at a higher resolution.	

Comments Response Matrix
Draft Pre-Design Investigation Work Plan, LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production, Longhorn Army Ammunition Plant, Karnack, Texas
Submitted: February 10, 2023

Submitted by: U.S. Environmental Protection Agency
Responded by: HDR
Date Responded: 3.20.2023

3. Respondent concurs (C) or does not concur (D)
4. Commenter agrees (A) or does not agree (D) with response.

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
Reviewer #1:						
1	Acronyms and Abbreviations	N/A	5 abbreviations are missing from Acronyms and Abbreviations section: DQO, MEC, RI, USFWS, UXO	C	Concur. Abbreviations have been defined in the text and added to the Acronym List.	
2	Acronyms and abbreviations	N/A	"micro Siemens" should be "microsiemens" to match 1st usage in document where abbreviation is introduced.	C	Concur. Spelling has been revised in text to "micro siemens".	
3	1.1, p. 1-1	2nd paragraph, 2nd to last sentence on page	"VOCs" abbreviation does not need reintroduced here. It was originally introduced in the 1st sentence on page. Consequently, can illuminate "volatile organic compounds" before "(VOCs)" and delete parentheses.	C	Concur. "Volatile organic compounds" has been removed from sentence.	
4	1.1, p. 1-2	2nd paragraph, 1st sentence	1st occurrence of "DNAPL" — needs spelled out and "DNAPL" should be placed in parentheses	C	Concur. "DNAPL" has been spelled out in text.	
5	1.2, p. 1-3	1st bullet	The word "zone" should be added after both "Shallow" and "Upper Intermediate/Intermediate"	C	Concur. "Zone" has been added after both "Shallow" and "Upper Intermediate/Intermediate" in the text throughout the document.	
6	1.3, p. 1-3	1st bullet	Many readers may not know what a "water elevation sweep of wells" is referring to — recommend replacing the beginning of the sentence with "Measurement of water levels in wells located…" or something similar.	C	Concur. The text has been revised to state: "Collect water level elevations of wells located within the historical and current extent of groundwater contamination;"	
7	2.1, p. 2-1	1st paragraph, 1st sentence	Sentence refers to "water level sweep" — should replace with wording similar to what was recommended in comment 6 (previous comment).	C	Concur. The sentence has been revised to state: "At the commencement of field activities, water levels will be measured in all wells listed in Table 3 and shown in Figure 3."	

8	2, p. 2-1	2nd solid bullet (comment also applies to the entire document)	Document refers to Upper Intermediate and Intermediate Zones—are these "zones" within the upper part of the Wilcox Formation? Some recent LHAAP reports have transitioned from identifying the "zones" below the shallow zone to simply as various parts of the underlying Wilcox Formation. If that approach cannot be adopted in this document, it would be helpful to at least equate the upper intermediate and intermediate zones with the upper part of the Wilcox Formation, if that is the case at this site.	C	The following text will be added to the document: "Shallow, intermediate, and deep groundwater zones were initially defined during the RI. The shallow (10 - 35 ft bgs, intermediate (35 - 60 ft bgs), and deep (70-95 ft bgs) saturated zones are in the Wilcox Group and are separated by clay layers that extend across the site (Jacobs, 2002). The Shallow Zone is typically clay to silty clay at the surface underlain by a relatively thin (approximately 3-foot-thick) layer of silty to poorly sorted sand that is present across the site. In the east-central portion of the site, the Shallow Zone is underlain by thick, silty clay that separates the Shallow Zone from the underlying Intermediate Zone (Jacobs, 2002). During the PSI, the Shallow and Intermediate groundwater zones were refined to reflect current conditions. The Shallow Zone was found to be present at depths between approximately 25 ft bgs and 32 ft bgs within the laminated clay/sand unit overlying the clay unit separating the Shallow Zone from the Upper Intermediate Zone. Upper Intermediate/Intermediate Zone wells described in the PSI have completion depths that generally range between 35 and 55 ft bgs. The Upper Intermediate/Intermediate Zone is the sandy unit underlying the sand laminated clay Shallow Zone and overlying the clay unit separating the deeper zone. Inevitably, depth to these groundwater zones varied in depth across the site. New monitoring well locations were selected to provide updated information on extent of contaminant plumes. Shallow	

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
					Zone (47WW56, 47WW57, 47WW58, and 47WW59) and Upper Intermediate/Intermediate Zone (47WW60 and 47WW61) well locations have been placed downgradient of known contaminant plumes to assess further migration, if any. Further, new Shallow Zone wells 47WW57, 47WW58, and 47WW59 have been located near proposed conceptual bio-barrier locations to assess contaminant concentrations to support the development of the remedial design."	
9	2.2, p. 2-2	Open bullet below the 1st solid bullet, 3 triangular entries	Shallow zone description refers to a clay or laminated/clay unit below the zone— is this referring to the fine-grained clay layer below the shallow zone present throughout most of the LHAAP and also commonly identified as the Wilcox clay in other LHAAP documents. Can it be identified here and elsewhere in this PDI as such (or at least equated?)	C	See response to comment #8. Additionally, the text has been revised to identify the target depths and lithology of the Shallow Zone and Upper Intermediate/Intermediate Zone wells to be installed.	
10	2.2, p. 2-2	Open bullet below the 1st solid bullet, 3rd triangular entry, 2nd sentence	Sentence indicates the intermediate zone is "quite thin" and is present less than 40 ft BGS. However, if the shallow zone is indicated to be as deep as 35 ft BGS, and the upper part of the intermediate zone is a 10-ft thick sand layer, the depth would already be at 45 ft BGS before encountering the top of the intermediate zone below the upper part of the intermediate zone. Additionally, 1st paragraph of next section (2.3) indicates the upper intermediate/intermediate zone wells will be installed to a maximum depth of 50–60 ft BGS, which is greater than the 40 ft BGS maximum depth of the intermediate zone indicated here. Consequently, need to revise description/discussion of 3 zones and associated thicknesses and depths BGS at this site to clarify.	C	See response to comment #8. The text in Section 2.2 has been revised to indicate depths and lithology where wells will be completed.	

11	2.3, p. 2-2	2nd paragraph, 1st sentence.	Sentence indicates proposed new well locations were determined, in part, based on water-level data, but it is not indicated specifically how these data will be used to identify/select new well locations. Perhaps groundwater-flow direction(s) inferred from previously constructed potentiometric-surface maps for each zone (see comment #15 below) and/or something else? Additional detail should be provided. Note: comments 11-13 are interrelated. Collectively, the 3 comments are essentially requesting additional information explaining how the locations for the 6 proposed new wells were selected.	C	Concur. The 1st and 2nd paragraphs have been revised as follows: "A total of six new monitoring wells are planned for installation: four Shallow Zone wells will be installed to a maximum depth of 35 ft bgs (or depth to the laminated clay/sand unit); and two Upper Intermediate/Intermediate Zone wells will be installed to a maximum depth of 55ft bgs (or to the bottom depth of the sand unit). In general, new well locations will be determined based on water level data, historical analytical results that define the extent of TCE and perchlorate concentrations in groundwater, and the proximity to planned ISB bio-barriers. During the PSI field work (HDR, 2019a and 2019b), multiple Shallow Zone wells were found to be dry due to the ongoing drought. New water level elevation data will be collected during the PDI field work in existing Shallow Zone and Upper Intermediate/Intermediate Zone wells to update potentiometric maps and to determine where data gaps exist. Where data gaps exist, new Shallow Zone wells will be proposed for installation. For new Upper Intermediate/Intermediate Zone wells, historical analytical results will be used to place wells where data gaps exist. New Upper Intermediate/Intermediate Zone well locations are expected to be placed downgradient of the known extent of the TCE and perchlorate plumes. Contaminant concentrations will be assessed by comparing to screening values provided in Table 1. To support development of the remedial design, an attempt will be made to install a limited number of new wells	

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
					downgradient of planned bio-barriers to evaluate contaminant concentrations, as well as use to monitor the long-term effectiveness of the bio-barrier. The proposed Shallow Zone and Upper Intermediate/Intermediate Zone wells are shown of Figure 4."	
12	2.3, p. 2-2	2nd paragraph, 1st sentence.	Sentence indicates proposed new well locations were determined, in part, based on historical analytical results that define the extent of TCE and perchlorate concentrations—how so? Placement of wells where plume extents are not adequately defined, including horizontal and vertical extent of elevated (greater than MCLs/PCLs) contaminant concentrations, and/or some other criteria? Does this apply to locations of both shallow zone and intermediate zone wells? Additional detail should be provided.	C	Concur. See response to Comment #11.	
13	2.3, p. 2-2	2nd paragraph, 1st sentence.	Sentence indicates proposed new well locations were, in part, based on proximity to planned ISB biobarriers. However, no explanation is provided to indicate why the wells will be placed near the biobarriers or how the well locations near the biobarriers were determined (e.g., were the wells located a specific distance from the biobarriers or to determine contaminant concentrations upgradient/downgradient of the biobarriers), and/or some other criteria? Additional detail should be provided. Additionally, note that the word, "bio-barrier", is spelled with a hyphen in this sentence but not elsewhere in this document.	C	Concur. See response to Comment #11. A search and replace of "biobarrier" with "bio-barrier" has been completed for the entire document.	

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
14	2.3, p. 2-2	Section	Although it is indicated monitoring wells will be constructed with a 10-ft well screen interval, minimal information/rationale is provided to indicate how the depth intervals for the wells will be selected in relation to potential subsurface conditions at a given proposed well location. For example: 1) when installing a monitoring well in the saturated portion of the shallow zone, will the well always be installed at the water table, regardless of lithology (fine-grained sediments vs coarse-grained sediments such as a sandy interval), or will some other criteria be used such as installing the well in the 1st sandy interval encountered **or** at some depth below the water table?; 2) if not installed at the water table and the location has more than one sand bed/layer in the shallow zone, how will it be determined which sand bed the well will be completed in? Similarly, what criteria will be used to select intermediate zone depth intervals. For example, will the well always be installed in the upper intermediate zone if present or in the 1st sandy interval in the intermediate zone if not present, or will some other approach we used? Thus, additional discussion of well screen placement criteria should be provided because of the highly variable subsurface lithology (e.g., lithology commonly changes over relatively short horizontal/vertical distances at the LHAAP).	C	Concur. The following text has been added to the end of the 4th paragraph: "The depth of Shallow Zone well screens will be based on lithology; specifically targeting the laminated clay/sand unit. Precautions will be taken to not penetrate the underlying clay of this unit. The depth to the underlying clay varies across the site but generally is between 25 and 32 ft bgs. Upper Intermediate/Intermediate Zone well screen depths will also be based on lithology targeting the first 10 ft of sand underlying the base of the Shallow Zone. The depth of this sand unit varies between 35 and 55 ft bgs across the site. Precautions will be taken not to penetrate the underlying clay that separate this unit from the deeper Wilcox aquifer."	
15	2.3, p. 2-2	Section and fig. 2	Would be very helpful to add most recent potentiometric-surface contours and/or groundwater-flow arrows to fig. 2 so proposed monitoring well locations can be shown in relation to groundwater-flow direction(s) at the site (in addition to extent of plumes shown on fig.).	C	Concur. Please note, currently, a potentiometric map does not exist for the Shallow Zone. Figure 4 has been revised to show the shallow zone groundwater flow direction and dry zone areas (source from 2019 PSI report).	
16	2.3, p. 2-2	4th paragraph, 2nd sentence	Will a 10 ft well screen always be used for monitoring wells? For example, if the selected well screen depth consists of a sandy zone less than 10 ft thick, will a 10 ft well screen still be used, even if it will result in a well open to the fine-grained lithology in addition to the sand?	C	Well screens of 10 ft in length provide a complete picture of contaminant source, regardless of whether it crosses separate lithologies. The intent of this investigation is not to identify point source(s) within a water bearing zone, but rather total COC concentrations present.	

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
17	2.3, p. 2-3	3rd paragraph, 2nd and 3rd sentence,	Sentence indicates a minimum of 3 borehole volumes of water will be removed, but as written it is unclear if this is referring exclusively to well development or if this is referring to both development **and** sampling of low-yield wells because there is no description below of how low-yield wells will be sampled differently than other wells. Should revise text in appropriate places to clarify, including description of procedures for low-yield well sampling.	E/C	The intent of the paragraph is to describe development of new monitoring wells; not purging and sampling of existing and new wells. However, the following text has been revised/added to the document as follows: "Development of new wells will be performed by pumping and gentle surging of the screened interval using a surge block. A minimum of three well borehole volumes of water will be removed during new well development. The volume of groundwater removed from each well will be calculated from the static water level measurement referenced from the top-of-casing. An electronic interface probe will be used to measure the water levels. For new wells with low yields, a bottom-filling bailer may be used to remove groundwater. Under this method, a bailer will be used to repeatedly surge and bail the well to remove sediment that may have accumulated in the well screen. Following surging and bailing, the well will be allowed to recover, and purging for sample collection will proceed utilizing the methods described below." And, "The wells will be purged using low flow techniques where flow rates will be equal to or below 200 milliliters (mL) per minute based on well recharge. Prior to purging the monitoring wells, water level measurements will be collected and recorded, and then continuously recorded during purging."	

Comments Response Matrix
Draft Pre-Design Investigation Work Plan, LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production, Longhorn Army Ammunition Plant, Karnack, Texas
Submitted: February 10, 2023

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
18	2.3, p. 2-3	Last paragraph	Are groundwater levels also measured during purging and after sampling is completed?	C	Correct. Water level elevations are continuously monitored during well purging to maintain equilibrium between pumping rate and drawdown. The sentence has been revised to state: "Prior to purging the monitoring wells, water level measurements will be collected and recorded, and then continuously recorded during purging."	
19	2.7, p. 2.7	4th paragraph, 2nd sentence	Need to insert "VOC" between "document" and "contamination" (i.e., "Trip blanks are used to document *VOC* contamination attributable…").	C	Concur. "VOC" has been added to the sentence between "document" and "contamination".	
20	2.7, p. 2.7	3rd paragraph	The constituents/constituent group(s) associated with the matrix bike/matrix spike duplicates are not specified.	C	Concur. The following text has been added, "All target analytes in each constituent group will be spiked for analysis in the MS/MSD samples."	
21	2.7, p. 2.7	6th paragraph	Should indicate constituents/constituent groups to be analyzed in the field equipment blanks.	C	Concur. The following sentence has been added, "Field blanks will be analyzed for the full suite of constituents as the environmental samples collected (i.e., VOCs, perchlorate and metals)."	
22	fig. 1	N/A	Karnack should be added to fig. 1.	C	Concur. Karnack, TX has been added to Figure 1.	

Draft Final
Pre-Design Investigation Work Plan

LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production
Longhorn Army Ammunition Plant
Karnack, Texas

April 2023

Prepared For:

U.S. Army Corps of Engineers – Tulsa District

Prepared By:

HDR Environmental, Operations and Construction, Inc.
369 Inverness Parkway, Suite 325
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Contract No. W912BV19D0016
Task Order No. W912BV22F0113

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Draft Final
Pre-Design Investigation
Work Plan
for
LHAAP-47, PLANT 3 AREA,
SOLID ROCKET MOTOR FUEL PRODUCTION
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

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Acronyms and Abbreviations

1,1-DCE	1,1-dichloroethene
1,2-DCA	1,2-dichloroethane
3Rs	Recognize / Retreat / Report
bgs	below ground surface
cis-1,2-DCE	cis-1,2-dichloroethene
cm	centimeter
CLP	Contract Laboratory Program
COC	Contaminant of Concern
°C	degrees Celsius
DNAPL	Dense Non-aqueous Phase Liquid
DOT	Department of Transportation
DQO	Data Quality Objectives
ft	feet
GWP-Ind	medium-specific concentration for industrial use based on groundwater protection
GWTP	groundwater treatment plant
HDR	HDR Environmental, Operations and Construction, Inc.
HSA	hollow stem auger
IDW	investigative derived waste
IWWP	Installation Wide Work Plan
LHAAP	Longhorn Army Ammunition Plant
MCL	Maximum Contaminant Level
MEC	Munitions and Explosives of Concern
MS/MSD	matrix spike/matrix spike duplicate
MSC	medium-specific concentrations
µS	micro siemens
NTU	nephelometric turbidity units
%	percent
PCE	tetrachloroethene
PCL	Protective Concentration Level
PDI	Pre-Design Investigation
PPE	personnel protective equipment
PSI	Post-Screening Investigation
PVC	polyvinyl chloride
QA	Quality Assurance
QC	Quality Control
RD	remedial design
RI	Remedial Investigation
ROD	Record of Decision
SVOC	semi-volatile organic compounds

TAC	Texas Administrative Code
TCE	trichloroethylene
TCEQ	Texas Commission on Environmental Quality
trans-1,2-DCE	trans-1,2-dichloroethene
TRRP	Texas Risk Reduction Program
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VC	vinyl chloride
VOC	volatile organic compound
WP	Work Plan
UXO	Unexploded Ordnance

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1 Introduction

This Pre-Design Investigation (PDI) Work Plan (WP) has been prepared to update the potentiometric conditions and extent of contaminants of concern (COCs) including volatile organic compounds (VOCs), perchlorate, and metals in groundwater at the former Longhorn Army Ammunition Plant (LHAAP) site LHAAP-47, Plant 3 Area, Solid Rocket Motor Fuel Production located in Karnack, Texas. The purpose of this PDI Work Plan is to support development of the Remedial Design (RD) by better defining the current extent of groundwater contamination through the installation of additional monitoring wells, collecting samples from new and existing groundwater monitoring wells located near and within the historic extent of the plumes, and updating the hydrogeologic conceptual site model accordingly. This work is being conducted under the U.S. Army Corps of Engineers (USACE) - Tulsa District Unrestricted Environmental Remediation Services MEGA Multiple Award Task Order Contract Number W912BV19D0016; Task Order No. W912BV22F0113.

This document describes the PDI activities to be completed at LHAAP-47. The PDI field effort will be conducted in accordance with procedures outlined in relevant sections of the Installation Wide Work Plan (IWWP) (Bhate, 2018); specifically, those procedures for the installation, development, and sampling of permanent and existing groundwater monitoring wells, sample handling and laboratory analyses, decontamination, handling and disposal of investigative derived waste (IDW), and new well surveying. The IWWP was reviewed and received concurrence from the Texas Commission on Environmental Quality (TCEQ) and the U.S. Environmental Protection Agency (USEPA). The results of this investigation will be presented in a PDI Report, which will support development of the RD specification package and cost estimates.

1.1 Background

LHAAP is in central-east Texas, in the northeast corner of Harrison County (**Figure 1**). The former installation occupied 8,416 acres between State Highway 43 at Karnack, Texas, and the western shore of Caddo Lake. The majority of LHAAP, not including LHAAP-47, has been transferred by the U.S. Army to the U.S. Fish and Wildlife Service (USFWS) for management as the Caddo Lake National Wildlife Refuge.

Site LHAAP-47 was identified through historical records as Plant 3, producing rocket motors and later pyrotechnic and illumination devices. LHAAP-47 is in the north-central portion of the former plant, covering an area of approximately 275 acres (**Figure 2**). Construction of Plant 3 began in July 1953 and production of rocket motors began in December 1954. Rocket motor production continued until the early 1980s. Some of the rocket motor production facilities were converted to produce pyrotechnic and illumination devices and were active until approximately 1997. Industrial solid wastes and possibly hazardous wastes, such as parts cleaners and spent solvents, may have been generated by these activities. Fifty waste process sumps and three waste rack sumps were located within the site (Shaw, 2011). Soil and groundwater samples collected prior to and during the Remedial Investigation (RI) in proximity to these process sumps found elevated concentrations of trichloroethene (TCE) and tetrachloroethylene (PCE), along with other VOCs, exceeding screening levels (Jacobs, 2002). The RI reported that TCE and PCE groundwater contamination is widespread across the site, which may have resulted from releases from the former sumps or spills during site operations.

The surface features at LHAAP-47 are a mixture of asphalt-paved roads, parking areas, building foundation remnants, old buildings, and overgrown wooded and grassy vegetation-covered areas. The topography in this area is relatively flat with the surface drainage flowing into tributaries of Goose Prairie Creek. Runoff from the site enters Caddo Lake via Goose Prairie Creek.

There are areas of highly contaminated groundwater at the site, including residual TCE dense non-aqueous phase liquid (DNAPL) near Building 46A, which may have resulted from releases from the former sumps or spills during site operations. All sumps at LHAAP-47 have been either removed or taken out of service and are no longer a potential source of groundwater contamination. The leaching of soil contaminants into groundwater is a potential pathway. Perchlorate concentrations in the soil near Building 25C exceed the groundwater protection standard, and soil leaching may have contributed to the perchlorate contamination in the groundwater. The identification of TCE in soil near Building 46A indicates a potential source that may leach to the groundwater and may require remedial action. TCE and perchlorate are contaminants of concern in soil.

Metals, semi-volatile organic compounds (SVOCs), perchlorate and VOCs have been detected in the groundwater at concentrations exceeding their respective USEPA maximum contaminant levels (MCLs) or Texas Risk Reduction Program (TRRP) Tier 1 Residential Groundwater protective concentration levels (PCLs) for chemicals that do not have USEPA MCLs. However, available data for metals, SVOCs, and VOCs other than TCE do not indicate the presence of associated soil contamination that may leach to the groundwater. Residual groundwater contamination from former sources, the residual TCE DNAPL near Building 46A, and the perchlorate-contaminated soil near Building 25C will be addressed as part of the RD. The LHAAP-47 groundwater COCs for this PDI are provided in **Table 1**.

Table 1. LHAAP-47 Groundwater COCs

COCs Targeted for Remediation	MCL (µg/L)	TRRP Tier 1 Residential Groundwater PCLs (µg/L)	Background (µg/L)	Cleanup Level (µg/L)
Perchlorate	--	17	--	17
1,1-Dichloroethene	7	--	--	7
1,2-Dichloroethane	5	--	--	5
Acetone	--	22,000	--	22,000
Chloroform	80	--	--	80
cis-1,2-Dichloroethene (cis-1,2-DCE)	70	--	--	70
Tetrachloroethene (PCE)	5	--	--	5
trans-1,2-Dichloroethene (trans-1,2- DCE) (daughter product)	100	--	--	100
Trichloroethene (TCE)	5	--	--	5
Vinyl Chloride (VC)	2	--	--	2

COCs Targeted for Remediation	MCL (µg/L)	TRRP Tier 1 Residential Groundwater PCLs (µg/L)	Background (µg/L)	Cleanup Level (µg/L)
Aluminum*	--	24,000	2,680	24,000
Antimony	6	--	12.2	12.2
Arsenic	10	--	34.2	34.2
Cadmium	5	--	5.1	5.1
Chromium	100	--	15.8	100
Cobalt*	--	240	187	240
Manganese	--	1,100	7,820	7,820
Nickel	--	490	229	490
Silver	--	120	1.92	120
Strontium	--	15,000	7,330	15,000
Thallium	2	--	--	2
Tin	--	15,000	--	15,000
Vanadium	--	44	3.99	44

Notes and Abbreviations

Source: The source of this table is the Final Feasibility Study, LHAAP-47, Plant 3, Group 4 (Shaw, 2011) *Background concentration from Final Evaluation of Perimeter Well Data for Use as Groundwater Background* (Shaw, 2007c)

µg/L - micrograms per liter

COCs - Contaminants of Concern

MCL - Safe Drinking Water Act maximum contaminant level

TRRP - Texas Risk Reduction Program

PCL - Protective Concentration Level TRRP Tier 1 Residential Groundwater PCL

Evaluation of soil COCs are not part of this PDI.

1.2 Objective

The primary objectives of the PDI field effort are as follows:

- Update current Shallow Zone and Upper Intermediate/Intermediate Zone potentiometric surface conditions;
- Update current groundwater contaminant concentrations across the site; and
- Develop cross-sections (combined with updated potentiometric surface conditions) to enhance understanding to prepare a revised hydrogeologic conceptual model.

Data collected for the PDI will be used in the RD to support development of specifications for cleanup remedies and technologies prescribed in the Revised Final Record of Decision (ROD) (HDR, 2022) and informed by the Final RI (Jacobs, 2002), Final Feasibility Study (Shaw, 2011), Post-Screening Investigation (PSI) Report (HDR, 2019a), Addendum PSI Report (HDR, 2019b),

Draft Final PSI Addendum No. 2 Report (HDR, 2021a) and the Draft Final Feasibility Study (FS) Addendum for Site LHAAP-47 (HDR, 2021b).

1.3 Scope

The scope of the field work will include the following activities:

- Collect water level elevations of wells located within the historical and current extent of groundwater contamination;
- Installation and development of four Shallow Zone wells to a depth between 25 feet below ground surface (ft bgs) and 32 ft bgs;
- Installation and development of two Upper Intermediate/Intermediate Zone wells to a depth between 35 ft bgs and 55 ft bgs;
- Purging and collection of one groundwater sample for the following COCs: metals (SW 6010C/6020A), perchlorate (SW 6850), and VOCs (SW 8260B) analysis from existing and planned new monitoring wells near the historical plume boundaries and within the current extent of groundwater contamination (total of 70 wells);
- Survey of all newly installed well locations by a licensed Texas land surveyor;
- Perform a topographic survey by a licensed Texas land surveyor of the LHAAP-47 areas that will require direct remediation efforts depicted at no more than a 2-foot contour interval. The topographic survey will be performed to a lesser control outside of the remediation area and will include the Refuge boundary; and
- Handling and disposal of IDW development/purge water and soil cuttings.

2 Field Investigation Approach and Methods

This section presents the methods to perform the PDI field activities at the site. General field procedures will be conducted in accordance with the procedures specified in the IWWP (Bhate, 2018). Munitions and explosives of concern (MEC) are not anticipated to be encountered during the field investigation; however, in the event MEC is suspected or encountered during field activities, the Recognize / Retreat / Report (3Rs) procedure shall be implemented by field personnel. The 3Rs procedure is presented in **Table 2**.

The field investigation will consist of the following activities:

- Measure groundwater elevations from groundwater monitoring wells within historical and current extent of groundwater contamination.
- Install six permanent groundwater monitoring wells to include:
  - Four wells in the Shallow Zone; and
  - Two wells in the Upper Intermediate/Intermediate Zone.
- Development of new groundwater monitoring wells.
- Purge / re-develop existing groundwater monitoring wells until water quality parameters are stabilized.
- Survey new groundwater monitoring wells by a licensed Texas surveyor.
- Collect groundwater samples from monitoring wells within historical and current extent of groundwater contamination, including analysis for COCs.
- Perform topographic survey of Site LHAAP-47 remediation area with a maximum 2-foot contour interval by a licensed Texas surveyor. The survey will also include the area outside of the remediation area and Refuge boundary to a lesser control.
- Submit Well Reports for each new well installed to the Texas Department of Licensing and Regulation.

Shallow, intermediate, and deep groundwater zones were initially defined during the RI. The shallow (10 - 35 ft bgs), intermediate (35 - 60 ft bgs), and deep (70-95 ft bgs) saturated zones are in the Wilcox Group and are separated by clay layers that extend across the site (Jacobs, 2002). The Shallow Zone is typically clay to silty clay at the surface underlain by a relatively thin (approximately 3-foot-thick) layer of silty to poorly sorted sand that is present across the site. In the east-central portion of the site, the Shallow Zone is underlain by thick, silty clay that separates the Shallow Zone from the underlying Intermediate Zone (Jacobs, 2002).

During the PSI, the Shallow and Intermediate groundwater zones were refined to reflect current conditions. The Shallow Zone was found to be present at depths between approximately 25 ft bgs and 32 ft bgs within the laminated clay/sand unit overlying the clay unit separating the Shallow Zone from the Upper Intermediate Zone. Upper Intermediate/Intermediate Zone wells described in the PSI have completion depths that generally range between 35 ft bgs and 55 ft bgs. The Upper Intermediate/Intermediate Zone is the sandy unit underlying the sand laminated clay Shallow Zone

and overlying the clay unit separating the deeper zone. Inevitably, depth to these groundwater zones varied in depth across the site.

New monitoring well locations were selected to provide updated information on extent of contaminant plumes. Shallow Zone (47WW56, 47WW57, 47WW58, and 47WW59) and Upper Intermediate/Intermediate Zone (47WW60 and 47WW61) well locations have been placed downgradient of known contaminant plumes to assess further migration, if any. Further, new Shallow Zone wells 47WW57, 47WW58, and 47WW59 have been located near proposed conceptual bio-barrier locations to assess contaminant concentrations to support the development of the remedial design.

Following approval of the PDI WP, the proposed dates for the fieldwork will be announced at least two weeks prior to commencing fieldwork.

2.1 Water Level Measurements

At the commencement of field activities, water levels will be measured in all wells listed in **Table 3** and shown on **Figure 3**.

2.2 Drilling

- Two drilling methods will be employed to install groundwater monitoring wells including:
- Hollow-stem auger (HSA) methods will be utilized to complete borings and install groundwater monitoring wells in the Shallow Zone.
- Sonic drilling will be utilized for deeper borings in the Upper Intermediate/Intermediate Zone requiring casing to isolate water bearing zones and prevent potential cross contamination issues.
    - Wells installed in the Shallow Zone and Upper Intermediate/Intermediate Zones will target the following completion depths:
        - Shallow Zone – wells will target a completion depth between 25 ft bgs and 32 ft bgs, terminating at the laminated clay/sand unit.
        - Upper Intermediate/Intermediate Zone – wells will target a completion depth between 35 ft bgs and 55 ft bgs, terminating at the bottom of the sand underlying the base of the Shallow Zone.
- Soil samples for lithological logging will be collected with a split-spoon sampler at 5-foot intervals when utilizing the HSA drilling method. Continuous soil samples for lithological logging will be collected when utilizing the sonic drilling method. Laboratory analysis of soil will not be performed since sufficient supplemental soil data was collected during the PSI to re-assess TCE and other VOCs in Upper Intermediate Zone groundwater and to support finalization of the ROD.

2.3 Well Installation, Development, and Groundwater Sampling and Analysis

A total of six new monitoring wells are planned for installation: four Shallow Zone wells will be installed to a maximum depth of 32 ft bgs (or depth to the laminated clay/sand unit); and two Upper Intermediate/Intermediate Zone wells will be installed to a maximum depth of 55 ft bgs (or to the bottom depth of the sand unit). In general, new well locations will be determined based on water level data, historical analytical results that define the extent of TCE and perchlorate concentrations in groundwater, and the proximity to planned ISB bio-barriers.

During the PSI field work (HDR, 2019a and 2019b), multiple Shallow Zone wells were found to be dry due to the ongoing drought. New water level elevation data will be collected during the PDI field work in existing Shallow Zone and Upper Intermediate/Intermediate Zone wells to update potentiometric maps and to determine where data gaps exist. Where data gaps exist, new Shallow Zone wells will be proposed for installation. For new Upper Intermediate/Intermediate Zone wells, historical analytical results will be used to place wells where data gaps exist. New Upper Intermediate/Intermediate Zone well locations are expected to be placed downgradient of the known extent of the TCE and perchlorate plumes. Contaminant concentrations will be assessed by comparing to screening values provided in **Table 1**. To support development of the remedial design, an attempt will be made to install a limited number of new wells downgradient of planned bio-barriers to evaluate contaminant concentrations, as well as use to monitor the long-term effectiveness of the bio-barrier. The proposed Shallow Zone and Upper Intermediate/Intermediate Zone wells are shown of **Figure 4**.

Monitoring wells will be installed in the annulus of the HSA augers or inside the telescoping drill stem of the sonic rig. Upon drilling to the planned well depth, if saturated soil / adequate groundwater is not apparent, the borehole shall remain open for 24 hours prior to a decision to install the monitoring well or abandon the borehole. Well installation and development will follow the procedures specified in the IWWP (Bhate, 2018).

Each well will be constructed with flush-joint threaded, schedule 40 polyvinyl chloride (PVC) pipe. The PVC well screen will be constructed with 0.01-inch slots and be 10 feet in length. A threaded PVC bottom cap will be secured to the bottom of the screen interval. Solid PVC casing will be installed from the top of the screen interval to approximately three feet above surface grade. A filter pack consisting of clean silica sand (20 to 40 size) will be placed in the auger or drill stem annulus from the well bottom to approximately two feet above the screen interval. A three-foot-thick bentonite seal (pellets or chips) will be placed above the sand filter pack and hydrated with potable water. The annular space from the top of the bentonite seal to the surface will be filled with a bentonite-cement grout. The depth of Shallow Zone well screens will be based on lithology; specifically targeting the laminated clay/sand unit. Precautions will be taken to not penetrate the underlying clay of this unit. The depth to the underlying clay varies across the site but generally is between 25 and 32 ft bgs. Upper Intermediate/Intermediate Zone well screen depths will also be based on lithology targeting the first 10 ft of sand underlying the base of the Shallow Zone. The depth of this sand unit varies between 35 and 55 ft bgs across the site. Precautions will be taken not to penetrate the underlying clay that separate this unit from the deeper Wilcox aquifer.

The drilling equipment will be decontaminated prior to the arrival at the site and between wells. Upon completion of drilling activities, the drilling equipment will be decontaminated prior to demobilizing and leaving the installation. Core samplers will be decontaminated between sampling intervals with a detergent/water solution and multiple rinse stages in clean buckets. Decontamination water will be containerized and disposed at the groundwater treatment plant (GWTP). Soil cuttings will be containerized in Department of Transportation (DOT) approved 55-gallon open top drums and left adjacent to the borehole until categorized as either hazardous or non-hazardous.

Well surface completions will be constructed for each monitoring well installed. Surface completion will consist of an above-ground protective steel casing (approximately 4 ft), with a hinged, lockable lid set in a concrete pad. Concrete-filled steel bollards will be installed at the corners of the concrete pad. The monitoring wells and surface completions will be installed in general accordance with State of Texas requirements by a drilling subcontractor (Walker-Hill) licensed in the State of Texas. Monitoring wells will comply with applicable technical requirements of 30 Texas Administrative Code (TAC) Chapter 76. State of Texas Well Reports will be submitted to the Texas Department of Licensing and Regulation for each well installed.

Development of new wells will be performed by pumping and gentle surging of the screened interval using a surge block. A minimum of three well borehole volumes of water will be removed during new well development. The volume of groundwater removed from each well will be calculated from the static water level measurement referenced from the top-of-casing. An electronic interface probe will be used to measure the water levels. For new wells with low yields, a bottom-filling bailer may be used to remove groundwater. Under this method, a bailer will be used to repeatedly surge and bail the well to remove sediment that may have accumulated in the well screen. Following surging and bailing, the well will be allowed to recover, and purging for sample collection will proceed utilizing the methods described below.

Water quality parameters (temperature, pH, electrical conductivity, and turbidity) will be monitored during development. Development will continue until the water quality parameters have stabilized and the water is visually clear. Development water will be containerized and disposed at the GWTP.

The need for re-development of existing wells will be determined during groundwater sampling activities. If groundwater quality parameters do not stabilize during purging for sampling, and / or if turbidity does not stabilize to an acceptable level (20 nephelometric turbidity units [NTU]), then an attempt will be made to re-develop the well. Re-development will be performed with a bailer by repeatedly surging and bailing the well to remove sediment that may have accumulated in the well screen. Following surging and bailing, the well will be allowed to recover, and purging will proceed utilizing the methods described below.

One groundwater sample will be collected from each monitoring well and sent to a stationary laboratory for COCs analysis. The wells will be purged using low flow techniques where flow rates will be equal to or below 200 milliliters (mL) per minute based on well recharge. Prior to purging the monitoring wells, water level measurements will be collected and recorded, and then continuously recorded during purging. Purging will be considered complete when measurements of temperature, pH, electrical conductivity, and turbidity have stabilized. Stabilization will be defined as follows:

1) temperature ±10 percent (%) degrees Celsius (°C);
2) pH ±0.1 units;

3) electrical conductivity ±3% micro siemens (µS)/centimeter (cm); and
4) turbidity ±10% NTU.

Measurements will be collected using an inline flow cell and water quality meter. Purge volumes from each well will be recorded. Groundwater samples will be collected following completion of well purging.

2.4 Groundwater Sampling and Analysis

Groundwater samples will be collected and sent to Environmental Monitoring and Technologies, Inc. (EMT) for analysis and reporting of the COCs utilizing the following:

- USEPA Method SW8260B (VOCs),
- USEPA Method SW 6850 (Perchlorate), and
- USEPA Method SW 6010B (Metals).

Sample collection and handling will be conducted following methodologies and procedures described in the IWWP (Bhate, 2018). Groundwater results will be compared to the TRRP PCLs or MCLs. During groundwater sampling activities, existing groundwater monitoring wells may be redeveloped prior to sampling, if necessary. Redevelopment would occur if purge water is extremely turbid (turbidity greater than 500 Nephelometric Turbidity Units [NTU]) and/or the well is slow to recharge indicating clogged well screens/filter packs. **Table 3** provides the list of well information for the groundwater monitoring wells to be sampled during this PDI.

2.5 Surveying

A professional land surveyor licensed in the State of Texas (MTX Surveying) will survey the locations and elevations of the newly installed monitoring wells. The horizontal coordinates (northing and easting) of the wells will be surveyed to the nearest foot and will be based on the North American Datum of 1983. The vertical elevations of the top of the wells (top-of-casing) will be based on the North American Vertical Datum of 1988 and will be surveyed to the nearest 0.01 feet at a reference point (i.e., groove or marking on the north side of the well casing) used to collect water level measurements. The ground surface elevation at each well location will be surveyed to the nearest 0.1 feet. The data will be used to develop geospatially referenced site maps, figures, and to update pertinent existing cross-sections.

A topographic survey of LHAAP-47 site will also be conducted and will include the Refuge boundary. The areas with direct remediation efforts (e.g., excavation, ISB, ERH) will be surveyed using a tight control grid (~50 feet), while the remaining portion of the site would be surveyed using a less rigid control grid (~200 feet). The topographic survey would be performed to collect 2-foot contours in the remedial areas with tighter control and 3-foot contours across the rest of the site. Note, in the less controlled grid the degree of accuracy would not be as precise.

The horizontal coordinates (northing and easting) will be based on the North American Datum of 1983. The vertical elevations will be based on the North American Vertical Datum of 1988. The topographic survey will be incorporated and support development of the RD.

2.6 Investigative Derived Waste Handling and Disposal

IDW generated during the investigation will include soil cuttings, disposable sampling equipment, development and purge water, equipment decontamination fluids, and personal protection equipment (PPE). IDW (except PPE, disposable sampling equipment, and decontamination fluids/development/purge water) will be containerized pending analytical results and waste profiling. Development and purge water will be containerized and disposed at the GWTP. The IDW management storage and disposal will be performed in accordance with the IWWP (Bhate, 2018).

2.7 Quality Assurance/Quality Control and Data Validation

To ensure defensible data, the project-specific Data Quality Objectives (DQOs) for sampling, analysis, and Quality Assurance/Quality Control (QA/QC) will be met by collecting the proper quantities and types of samples, using the correct analytical methodologies, implementing field and laboratory QA/QC procedures, and using various data validation and evaluation processes. QC samples will be submitted to EMT, along with the environmental samples.

Field QC will be performed during sample collection, shipping, and handling. Sample QC for the analytical samples will be assessed using duplicate samples. Duplicate samples, which are used to evaluate field and laboratory precision, will be collected at a rate of 10%.

A matrix spike/matrix spike duplicate (MS/MSD) sample pair, which is used by the laboratory to measure matrix interference, will be collected at a rate of 5% for each analysis. The MS/MSD and QC sample locations will be selected in the field from each of the areas being investigated. All target analytes in each constituent group will be spiked for analysis in the MS/MSD samples.

Trip blanks are analyte-free water (typically deionized water) shipped from the laboratory with the sample jars and subsequently submitted with the samples collected for VOC analyses. Trip blanks are used to document VOC contamination attributable to shipping and field-handling procedures, as well as contamination associated with the containers. A trip blank will be placed in each cooler containing samples to be analyzed for VOCs.

A temperature blank provided by the laboratory will be included in each sample cooler. A temperature blank is a sample of laboratory-grade distilled water that travels with the project cooler from the laboratory to the sampling site and back to the laboratory without being opened. The temperature of the blank is obtained by the laboratory when samples are received to verify that the temperature of the samples during transportation did not exceed 4°C.

An equipment rinsate blank (equipment blank) sample consists of a sample of analyte free source water poured/pumped over or through decontaminated field sampling equipment. Equipment blanks will be collected from decontaminated dedicated sampling equipment (e.g., split-spoon samplers) to assess the adequacy of the decontamination process. Field blanks will be analyzed for the full suite of constituents as the environmental samples collected (i.e., VOCs, perchlorate and metals [See **Table 1**]).

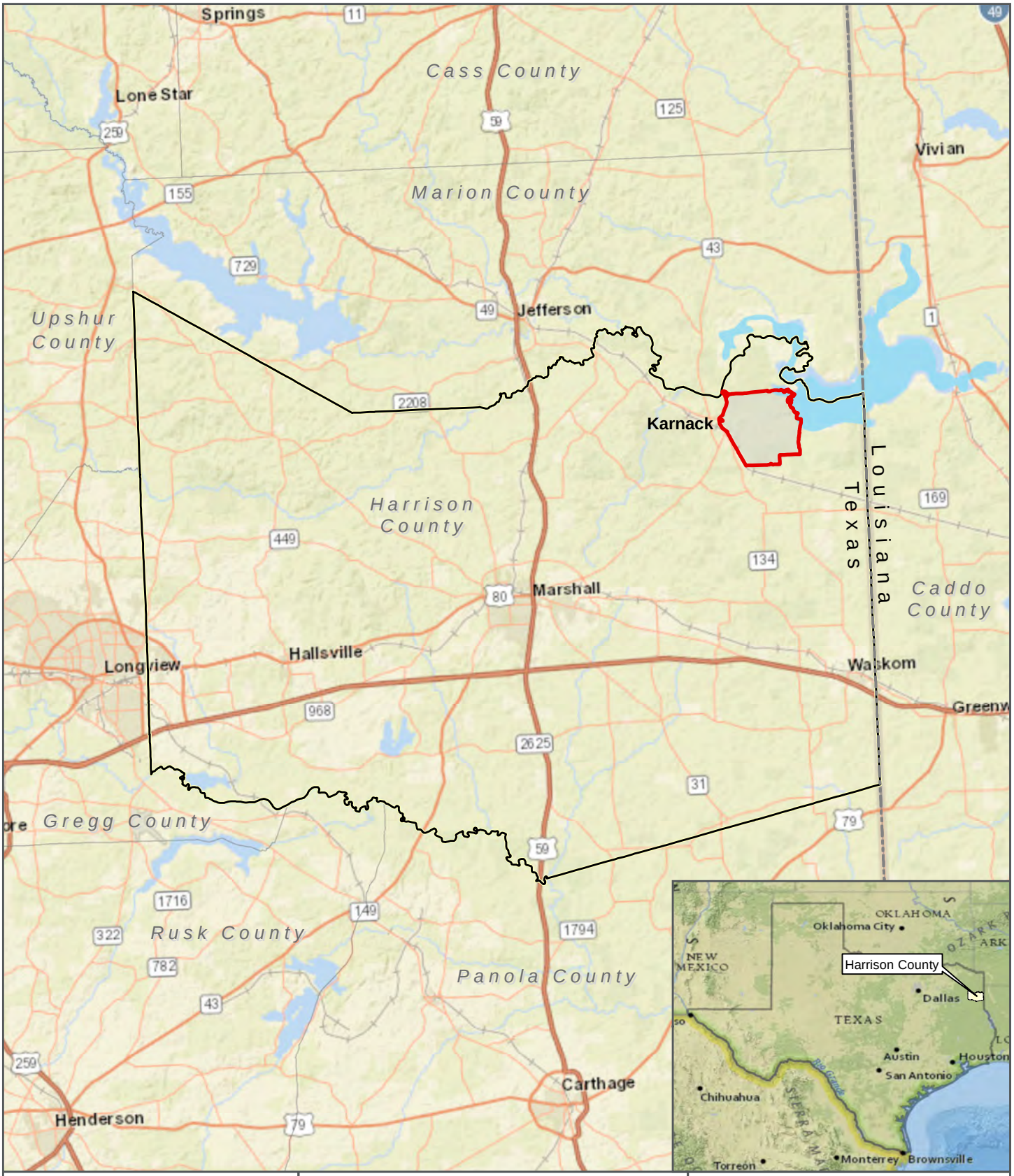
A data quality review of all analytical results will be completed following methodologies and procedures described in the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Superfund Organic Methods Data Review (USEPA, 2017).

Review of the analytical data will be completed as a Stage 2AVM Validation as described in the USEPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (USEPA, 2009), while 10% will be completed as a Stage 3VM Validation. Upon completion of the data validation, a validated data package will be submitted prior to submittal of the PDI Report.

2.8 Reporting

Once the PDI field work has been completed and the analytical data received and validated, a validated data package will be provided for review prior to preparing the PDI Report.

The PDI report will contain an introduction, sampling approach, sample results and evaluation, revised hydrogeologic conceptual site model, cross sections, and a conclusions section. Figures will be prepared presenting VOCs and perchlorate groundwater concentration maps based on comparison to TRRP PCLs or MCLs. The figures will be prepared to be consistent in content and format with the figures presented in the ROD. Results and conclusions from the report will be used to support development of the RD.



N

0 5 10
MILES

LEGEND

- LHAAP Installation Boundary
- Harrison County
- State Boundary

SITE LOCATION
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DATA SOURCES: USACE 2011, LHAAP-16 Record of Decision

DISCLAIMER: Map information was compiled from the best available sources.
No warranty is made for its accuracy or completeness.

FIGURE 1

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP47\PDI WORKPLAN_2023\FIGURES\LHAAP47_PDI_WP2023_LHAAP_SITE_LOCATION.MXD - USER: WRITTER - DATE: 3/16/2023

CLWSC #1
CLWSC #2
CLWSC #3
CLSP
KWSC
Former Fire Station and Fire House Well
Building 46-A
USFWS Administrative Office
LHAAP-47
Broadway St
Caddo Lake State Park
HARRISON
Longhorn Army Ammunition Plant
Goose Prairie Creek
Central Creek Tributary
Substation Rd
Fason St
Moore St
Fish Market Rd
TJ Taylor Ave
Jay St
Karnack
449



LEGEND

- Public Water Supply Well Locations
- Potable Water Wells
- Stream
- Roads
- USFWS Refuge Boundary
- Former Building or Concrete Slab
- LHAAP-47
- LHAAP Installation Boundary

DATA SOURCES:July 2011 Final Feasability Study Report for LHAAP-47, Plant 3 Area, Group 4, Longhorn Army Ammunition Plant, Karnack, Harrison County, Texas (Shaw, 2011)

DISCLAIMER: Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.

SITE VICINITY

LHAAP-47
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N

0 1,000 2,000
FEET

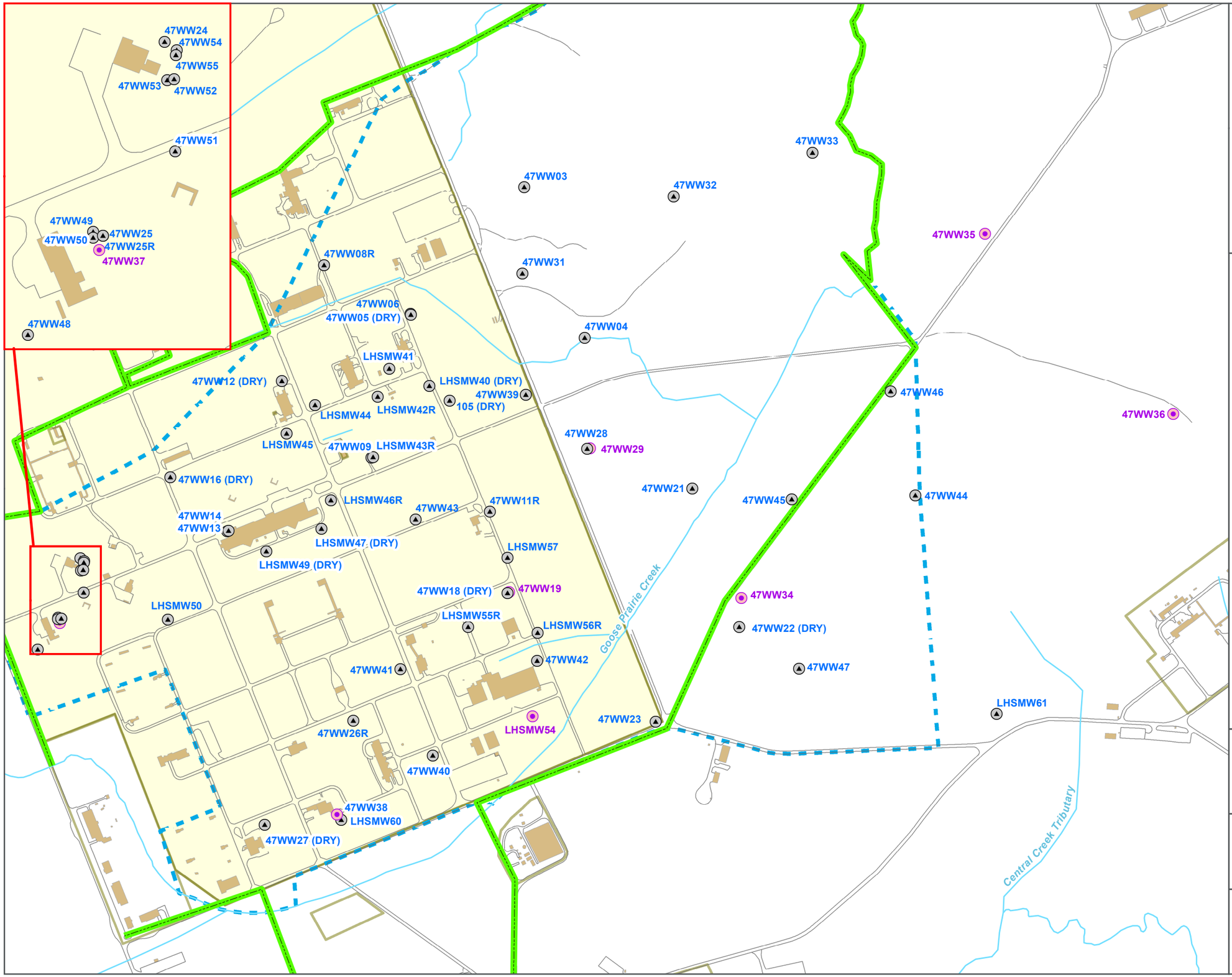
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FIGURE 2

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01175304



LEGEND

- Shallow/Shallow Intermediate Monitoring Well
- Intermediate Monitoring Well
- Stream
- Roads
- USFWS Refuge Boundary
- Land Use Control Boundary
- Former Building or Concrete Slab
- LHAAP-47

DISCLAIMER: Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.

MONITORING WELL LOCATIONS

LHAAP-47
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N

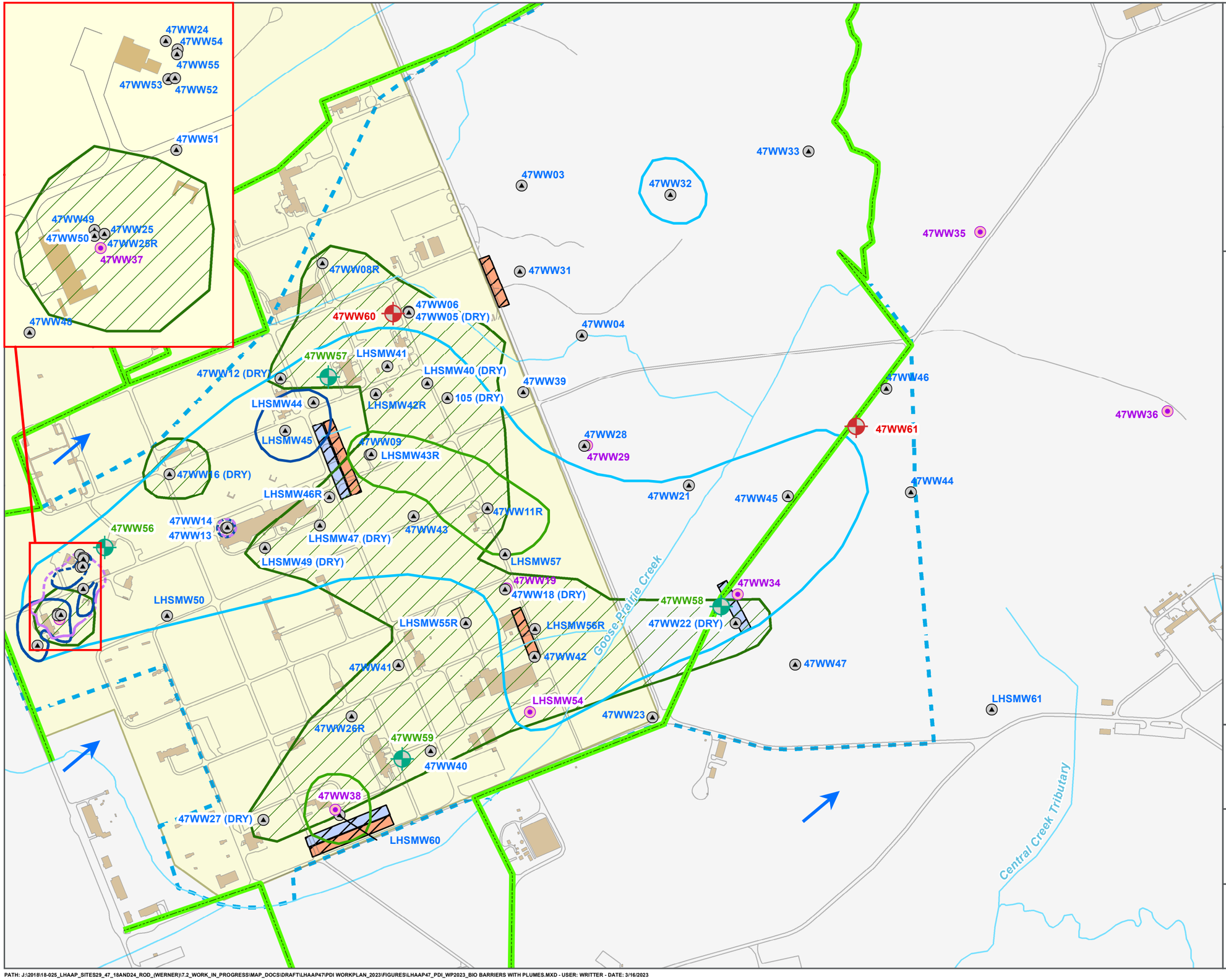
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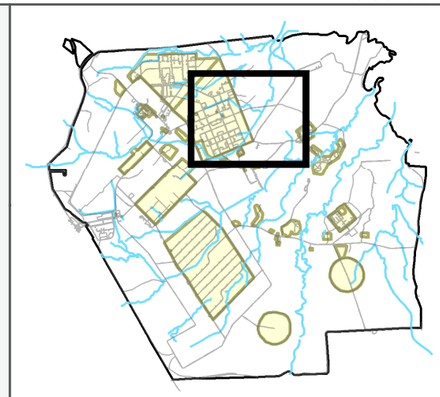
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FIGURE 3

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LEGEND

- Proposed Shallow Zone PDI Monitoring Well
- Proposed Upper Intermediate/Intermediate Zone PDI Monitoring Well
- Existing Shallow/Shallow Intermediate Monitoring Well
- Existing Intermediate Monitoring Well
- Intermediate Zone Perchlorate Exceeding TRRP PCL (17µg/L), July 2018
- Intermediate Zone Trichloroethene Exceeding USEPA MCL (5 µg/L), July 2018
- Shallow Zone Trichloroethene Exceeding USEPA MCL (5 µg/L), July 2018 and 2020
- Upper Intermediate Groundwater Zone Trichloroethene Exceeding USEPA MCL (5 µg/L), 2020
- Stream
- USFWS Refuge Boundary
- Land Use Control Boundary
- Former Buildings or Concrete Slab
- LHAAP-47
- ISB Biobarrier Intermediate
- ISB Biobarrier Shallow
- Dry Zone
- Groundwater Flow Direction

PROPOSED PDI NEW MONITORING WELL LOCATIONS
LHAAP-47
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

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FEET

ON THE LINE

HDR

FIGURE 4

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Table 2. Recognize / Retreat / Report Procedure

Activity	Potential Hazards	Recommended Controls
Excavation, as needed	Unexploded ordnance (UXO) or Munitions and Explosives of Concern (MEC)	Although not anticipated, as with any military base, the potential exists to encounter UXO; all employees will be instructed on safe procedures to be followed including the following: ➢ Under no circumstances will any employee or subcontractor employee (other than a UXO Technician) attempt to move or otherwise handle any UXO/MEC or suspected UXO/MEC item. ➢ Collection of "souvenirs" is prohibited, whether rendered safe or not. ➢ If you did not put it there, don't pick it up! If you cannot recognize the item as a tool, don't pick it up! Notify a Base UXO technician to inspect the item. ➢ If UXO/MEC items are encountered during heavy equipment operations, work shall be stopped and the item(s) investigated by a Base UXO technician. Work shall not resume until the item has been secured or deemed not an UXO/MEC item. ➢ After the potential encounter with UXO/MEC, the heavy equipment used will be inspected to determine if any UXO/MEC materials had lodged in the tracks, tires, bucket, and other extensions of the equipment. **Three R's: Recognize, Retreat and Report** ➢ Recognize: Don't touch it. ➢ Retreat: 300 feet ➢ Report to Site Supervisor or UXO Safety Supervisor UXO or MEC

Source: Bhate, 2018

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Table 3. LHAAP-47 Groundwater Monitoring Wells Summary

Well ID	Zone	2018 Static Water Level (btoc)	Type	Analyses			Well Completion Details				
				Metals	Perchlorate	VOCs	Total Depth (ft)	Screen Interval (ft)	Filter Pack (ft)	Screen Diameter (in)	Borehole Diameter (in)
105	Shallow	Dry	Existing	X	X	X	28	10-25	N/A	2	N/A
47WW03	Shallow	<2 ft water	Existing	X	X	X	26	14-24	12-24	4	11
47WW04	Shallow	<2 ft water	Existing	X	X	X	20	9-19	7-19	4	11
47WW05	Shallow	Dry	Existing	X	X	X	19	9-19	8-19	4	11
47WW06	Shallow/Intermediate	27.70	Existing	X	X	X	41	30-40	N/A	4	6
47WW08R	Shallow/Intermediate	28.00	Replacement	X	X	X	39.5	28.8-38.8	26.8-38.8	4	10.25
47WW09	Shallow/Intermediate	27.55	Existing	X	X	X	39	28-38	26-39	4	8
47WW11R	Shallow/Intermediate	26.00	Replacement	X	X	X	35	25-35	23-35	4	10.25
47WW12	Shallow	Dry	Existing	X	X	X	20	9-19	8-20	4	11
47WW13	Shallow	9.90	Existing	X	X	X	18	8-18	7-18	4	11
47WW14	Shallow/Intermediate	29.50	Existing	X	X	X	50	39-49	34-49	4	8
47WW16	Shallow	Dry	Existing	X	X	X	19	9-19	8-19	4	11
47WW18	Shallow	Dry	Existing	X	X	X	21	11-21	10-21	4	11
47WW19	Intermediate	25.05	Existing	X	X	X	62	51.7-61.7	48.7-61.7	4	8
47WW21	Shallow	17.20	Existing	X	X	X	22	11-21	9-21	4	11
47WW22	Shallow	Dry	Existing	X	X	X	20	9.5-19.5	7.5-19.5	4	11
47WW23	Shallow/Intermediate	25.05	Existing	X	X	X	34	22-32	18-32	4	11
47WW24	Shallow	N/A	Existing	X	X	X	21	N/A	N/A	N/A	N/A
47WW25	Shallow	Dry	Existing	X	X	X	25	N/A	N/A	N/A	N/A
47WW26R	Shallow/Intermediate	29.52	Replacement	X	X	X	40	29.3-39.3	26.5-39.3	4	10.25
47WW27	Shallow	Dry	Existing	X	X	X	19	9-19	7-19	4	11
47WW28	Shallow	<2 ft water	Existing	X	X	X	23	12-22	10.5-22	4	10
47WW29	Intermediate	27.80	Existing	X	X	X	63	52.5-62.5	49-62.5	4	10
47WW31	Shallow/Intermediate	26.55	Existing	X	X	X	53	42.5-52.5	39-52.5	4	10
47WW32	Shallow/Intermediate	24.00	Existing	X	X	X	30	19-29	17-29	2	6
47WW33	Shallow/Intermediate	12.30	Existing	X	X	X	35	25-35	23-35	4	8
47WW34	Intermediate	30.40	Existing	X	X	X	43	33-43	31-43	4	12
47WW35	Intermediate	21.00	Existing	X	X	X	47	37-47	35-47	4	10
47WW36	Intermediate	NA	Existing	X	X	X	49	39-49	37-49	4	10
47WW37	Intermediate	32.70	Existing	X	X	X	66	56-66	54-66	2	6
47WW38	Intermediate	22.30	Existing	X	X	X	57	47-57	45-57	2	6
47WW39	Shallow/Intermediate	23.70	New 2018	X	X	X	40	29-39	27-39	4	8.25
47WW40	Shallow/Intermediate	10.11	New 2018	X	X	X	40	29-39	39-27	4	10.25

Well ID	Zone	2018 Static Water Level (btoc)	Type	Analyses			Well Completion Details				
				Metals	Perchlorate	VOCs	Total Depth (ft)	Screen Interval (ft)	Filter Pack (ft)	Screen Diameter (in)	Borehole Diameter (in)
47WW41	Shallow/Intermediate	27.83	New 2018	X	X	X	36.5	26-36	24-36	4	10.25
47WW42	Shallow/Intermediate	21.81	New 2018	X	X	X	40.5	30-40	28-40	4	10.25
47WW43	Shallow/Intermediate	25.42	New 2018	X	X	X	33	23-33	21-33	4	10.25
47WW44	Shallow/Intermediate	25.97	New 2018	X	X	X	60	49-59	45.5-59	4	8
47WW45	Shallow/Intermediate	19.22	New 2018	X	X	X	48	38-48	30-48	4	8
47WW46	Shallow/Intermediate	27.64	New 2018	X	X	X	55	45-55	42-55	4	8
47WW47	Shallow/Intermediate	25.09	New 2018	X	X	X	53	42-52	39-52	4	8
47WW48	Shallow	30.47 [1]	New 2020	X	X	X	32	22-32	20-32	4	8
47WW49	Shallow	30.10 [1]	New 2020	X	X	X	29.3	19-29.3	17-29.3	4	8
47WW50	Shallow/Intermediate	30.24 [1]	New 2020	X	X	X	50	45-50	43-50	4	8
47WW51	Shallow/Intermediate	29.68 [1]	New 2020	X	X	X	47	42-47	40-47	4	8
47WW52	Shallow	30.98 [1]	New 2020	X	X	X	33	23-33	21-33	4	8
47WW53	Shallow/Intermediate	31.00 [1]	New 2020	X	X	X	47	42-47	40-47	4	8
47WW54	Shallow/Intermediate	30.73 [1]	New 2020	X	X	X	51	46-51	44-51	4	8
47WW55	Shallow	30.98 [1]	New 2020	X	X	X	33	23-33	21-33	4	8
LHSMW40	Shallow	Dry	Existing	X	X	X	14	3.5-13.5	3.5-13.5	4	8
LHSMW41	Shallow/Intermediate	27.10	Existing	X	X	X	38	26-36	10.4-36	4	8
LHSMW42R	Shallow/Intermediate	27.93	Replacement	X	X	X	39.5	28-38	26.2-38	4	10.25
LHSMW43R	Shallow/Intermediate	26.22	Replacement	X	X	X	35	24-34	21.9-34	4	10.25
LHSMW44	Shallow	26.90	Existing	X	X	X	38	15.5-35.5	14-35.5	4	8
LHSMW45	Shallow	27.64	Existing	X	X	X	36	25.5-35.5	15-35.5	4	8
LHSMW46R	Shallow/Intermediate	27.51	Replacement	X	X	X	40	29-39	27.1-39	4	10.25
LHSMW47	Shallow	Dry	Existing	X	X	X	16	5.4-15.4	3.5-15.4	4	8
LHSMW49	Shallow	Dry	Existing	X	X	X	16	5.5-15.5	4.6-15.5	4	8
LHSMW50	Shallow	<2 ft water	Existing	X	X	X	28.5	16.7-26.7	14-26.7	4	8
LHSMW54	Intermediate	19.50	Existing	X	X	X	44	32.2-42.2	6.2-42.2	4	10
LHSMW55R	Shallow/Intermediate	24.55	Replacement	X	X	X	35.5	25-35	23-35	4	10.25
LHSMW56R	Shallow/Intermediate	24.40	Replacement	X	X	X	35	24.5-34.5	22.5-34.5	4	10.25
LHSMW57	Shallow	17.45	Existing	X	X	X	14.5	3.9-13.9	2.9-13.9	4	8
LHSMW60	Shallow/Intermediate	22.30	Existing	X	X	X	27	15.8-25.8	14.5-25.8	4	8
LHSMW61	Shallow	NA	Existing	X	X	X	26.5	14.9-24.9	12.5-24.9	4	8
47WW56	Shallow		New PDI well	X	X	X					
47WW57	Shallow		New PDI well	X	X	X					
47WW58	Shallow		New PDI well	X	X	X					

Well ID	Zone	2018 Static Water Level (btoc)	Type	Analyses			Well Completion Details				
				Metals	Perchlorate	VOCs	Total Depth (ft)	Screen Interval (ft)	Filter Pack (ft)	Screen Diameter (in)	Borehole Diameter (in)
47WW59	Shallow		New PDI well	X	X	X					
47WW60	Int upper/intermediate		New PDI well	X	X	X					
47WW61	Int upper/intermediate		New PDI well	X	X	X					

Notes:
1 = measured 2020
ft = foot/feet
N/A = Not Available
in = inches
VOCs = volatile organic compounds

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FINAL

COMMUNITY INVOLVEMENT PLAN

LONGHORN ARMY AMMUNITION PLANT

HARRISON COUNTY, TEXAS

Contract No. W912PL21D0024, Task Order No. W912PL21F0092

Prepared for:

U.S. Army Environmental Command **Longhorn Army Ammunition Plant**

Prepared by:

Ho'olaulima Government Solutions, LLC
20079 Stone Oak Pkwy #1215
San Antonio, TX 78258

May 2023

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LIST OF ACRONYMS/ABBREVIATIONS

§	Section
AAP	Army Ammunition Plant
ARAR	Applicable or Relevant and Appropriate Requirement
Army	U.S. Department of Army
AST	Aboveground Storage Tank
BD/DR	Building Demolition/Debris Removal
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIP	Community Involvement Plan
COC	Contaminant of Concern
COPC	Contaminant of Potential Concern
CRP	Compliance Restoration Program
DD	Decision Document
DERP	Defense Environmental Restoration Program
DMM	Discarded Military Munitions
DoD	Department of Defense
EE/CA	Engineering Evaluation/Cost Analysis
EOD	Explosive Ordnance Division
FFA	Federal Facility Agreement
FS	Feasibility Study
ft	Feet
GWTP	Groundwater Treatment Plant
IRA	Interim Remedial Action
IRP	Installation Restoration Program
LTM	Long-Term Management
LUC	Land Use Control
MC	Munitions Constituents
MEC	Munitions and Explosives of Concern
mm	Millimeter
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
MRSPP	Munitions Response Site Prioritization Protocol
MSC	Medium-Specific Concentration
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
NPL	National Priorities List
OWS	Oil/Water Separator
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyl
PCL	Protective Concentration Level
POC	Point of Contact

POL	Petroleum, Oil, and Lubricants
PP	Proposed Plan
PSI	Preliminary Site Investigation
RA	Remedial Action
RAB	Restoration Advisory Board
RA-C	Remedial Action—Construction
RA-O	Remedial Action—Operation
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial Investigation
RIP	Remedy-in-Place
ROD	Record of Decision
SI	Site Inspection
SWMU	Solid Waste Management Unit
TAPP	Technical Assistance for Public Participation
TASC	Technical Assistance Services for Communities
TCE	Trichloroethylene
TCEQ	Texas Commission on Environmental Quality
TNT	Trinitrotoluene
TRC	Technical Review Committee
UEP	Unlined Evaporation Pond
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound
WWII	World War II
WWTP	Wastewater Treatment Plant

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1.0 INTRODUCTION

This Community Involvement Plan (CIP) update has been prepared for the Defense Environmental Restoration Program (DERP) at Longhorn Army Ammunition Plant (AAP). The CIP provides guidance for public involvement associated with the Installation Restoration Program (IRP), Military Munitions Response Program (MMRP), and Compliance Restoration Program (CRP) cleanup sites at Longhorn AAP. Active sites within the program are currently in various phases of remedial action (RA) activities.

The Longhorn AAP CIP has been prepared in accordance with current U.S. Environmental Protection Agency (USEPA) guidance and the Resource Conservation and Recovery Act (RCRA). The community involvement requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, and the 1976 RCRA, as amended by the Hazardous and Solid Waste Act of 1984, are outlined within this CIP.

1.1 PURPOSE

This CIP identifies and encourages effective communication and the timely exchange of information from Longhorn AAP to the community. The CIP also ensures the success of community involvement by providing the community with the opportunity to learn and comment on the installation and progress of the site. The purpose of the community involvement process is to:

- Establish effective and comprehensive methods for informing the community of installation cleanup program actions.
- Solicit input and identify concerns that the local community may have regarding current and future cleanup program activities.
- Maintain a strategy that supports proactive, two-way communication between the U.S. Department of Army (Army) and the local community.

This CIP has been developed to provide a line of communication for sharing public information. The target audiences are local citizens and neighbors; installation residents and tenants; federal, state, and local officials and agencies; and local businesses and civic interest groups.

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2.0 INSTALLATION SITE DESCRIPTION

2.1 SITE LOCATION AND DESCRIPTION

Longhorn AAP is located in Karnack, Harrison County, Texas. The installation is located in east-central Texas, 14 miles northeast of Marshall, Texas, and 40 miles west of Shreveport, Louisiana. Longhorn AAP is bounded by Caddo Lake to the east and State Highway 43 to the west. The shores of Caddo Lake have wetland areas and streams that fall within the boundary of the installation. The remaining area is primarily rural and forested lands. The closed installation covers 1,100 acres of the original 8,416-acre installation.

2.2 HISTORY OF INSTALLATION OPERATIONS

Longhorn AAP was established in 1942 to produce 2,4,6-trinitrotoluene (TNT) flake and production continued through World War II (WWII) until 1945. Monsanto Chemical Company was the first contract operator at the installation. At the end of WWII, the installation was placed on standby status from August 1945 until February 1952. The start of 1952 brought pyrotechnic ammunition production to the installation, which included photoflash bombs, simulators, hand signals, and tracers for 40-millimeter (mm) ammunition, produced under the contracting operation Universal Match Corporation. Production continued until 1956. From 1956 until 1965, the contracting company Thiokol continued to produce pyrotechnic ammunition, in addition to rocket motor.

Prior to 1994, operations at the installation consisted of compounding pyrotechnic and propellant mixtures; load, assembly, and pack activities; receipt and shipment of containerized cargo; maintenance and/or layaway of standby facilities and equipment; and static firing and elimination of Pershing I and II rocket motors.

In August 1990, the installation was placed on the National Priorities List (NPL). Subsequent to the RCRA Hazardous and Solid Waste Amendments of 1984, Longhorn AAP applied for a RCRA Part B permit. The permit was signed in February 1992.

The Army declared the installation was excess to its needs in July 1997. A Memorandum of Agreement between the Army and the U.S. Fish and Wildlife Service (USFWS) designated 7,200 acres of the installation as a wildlife refuge on October 21, 2000. The Base Realignment and Closure (BRAC) office was tasked with the disposal of installation property in 2002. Since May 2004, a total of 7,300 acres have been transferred to USFWS as the Caddo Lake National Wildlife Refuge. The remaining acreage at the installation will be transferred to USFWS when restoration activities are completed.

2.3 CLEANUP PROGRAM AT LONGHORN ARMY AMMUNITION PLANT

2.3.1 Program Overview

The DERP was formally established by Congress in 1986 and provides guidance for the cleanup of Department of Defense (DoD) sites under the jurisdiction of the Secretary of Defense. The key objective of the cleanup program is to reduce or, when possible, eliminate threats to human

health and the environment that result from historical use or disposal practices. There are four categories included in the DoD environmental restoration program—the IRP category, the MMRP category, the CRP category, and the Building Demolition/Debris Removal (BD/DR) program category. These program categories address the types of releases that are covered under the DERP.

2.3.1.1 Installation Restoration Program

The IRP is a comprehensive program to address required response actions for releases of hazardous substances and pollutants or contaminants; petroleum, oil, and lubricants (POL); hazardous wastes or hazardous waste constituents; and explosive compounds released to the soil, surface water, sediment, or groundwater because of ammunition or explosive production or manufacturing at ammunition plants. The IRP also includes response activities to address unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC) posing an explosive, human health, or environmental hazard that is incidental to an existing IRP site. The DERP requires sites in an IRP to be prioritized for cleanup based primarily on relative risk by grouping sites or areas of concern by high, medium, and low priority categories. Relative risk is evaluated by using three factors.

- Contaminant Hazard factor: Types of contaminants present and how hazardous they are.
- Migration Pathway factor: Likelihood and extent of contaminant migration.
- Receptor factor: What is the potential of humans, plants, or animals to be exposed to the contaminants.

The IRP was initiated at Longhorn AAP in June 1979, and identified 38 sites with confirmed or suspected contaminants. Currently, primary contaminants of concern (COCs) at these sites include explosives, MC, volatile organic compounds (VOCs), metals, and perchlorate in soil, sediment, groundwater, and surface water. Active sites are listed in **Section 2.3.4**.

2.3.1.2 Military Munitions Response Program

The MMRP addresses non-operational range lands that are suspected or known to contain UXO, DMM, or MC. Relative cleanup priorities are assigned using DoD munitions response site prioritization protocol (MRSPP) (32 Code of Federal Regulations [CFR] Part 179). Data is gathered during a comprehensive site evaluation to identify munitions contaminant types, sources, transport processes, receptors, and exposure pathways. The data is evaluated to determine if a munitions response area requires further investigation, and to assign a priority for subsequent action.

The MMRP was initiated at Longhorn AAP in February 2002, and includes three active sites.

2.3.1.3 Building Demolition/Debris Removal Program

The BD/DR program lies under the DERP and focuses on the demolition and removal of unsafe buildings and structures at facilities or sites that are or were owned by, leased to, or otherwise possessed by the DoD.

Longhorn AAP does not have any sites in the BD/DR program.

2.3.1.4 Compliance Restoration Program

The CRP, formerly known as the Compliance Cleanup program, includes sites that fall under remediation of contamination at Army overseas facilities; cleanup of contamination resulting from operations that have occurred since October 1986 (non-DERP) at Active Army, Army Reserve, and Army National Guard federally owned facilities; and cleanup at non-federally owned, federally supported Army Nation Guard facilities. CRP sites include releases from hazardous waste treatment, storage, and disposal facilities, or solid waste landfills undergoing RCRA closure, and releases from RCRA underground storage tanks (USTs) in service prior to 1986.

Longhorn AAP does not have any sites in the CRP.

2.3.2 Cleanup Process Phases

CERCLA established the federal Superfund program in 1980 to identify sites where hazardous materials threatened the environment and/or public health and identified responsible parties to clean up those sites. The DERP was established in 1986 by Congress to clean up the DoD sites to reduce and/or eliminate threats to human health and the environment from historical use or disposal practices, managed under CERCLA.

CERCLA addresses two categories of contamination to the environment—removal actions and RAs. Removal actions provide quick, short-term measures to stabilize or clean up contaminants or pollutants that pose an imminent threat to human health or the environment. Removal actions can be of three types—emergency, time-critical, and non-time critical.

An RA provides long-term action that eliminates or reduces releases of contaminants or pollutants that pose a threat to human health or the environment and are completed if the removal action does not or cannot present a complete solution. RAs take place after the final environmental remedy has been identified in a record of decision (ROD) or decision document (DD).

CERCLA involves a series of steps that are required to be performed to ensure the cleanup processes is concluded. CERCLA is responsible for actions taken at the installation to identify where hazards are present, assess the potential threat the hazard possesses, and take appropriate steps for cleanup. CERCLA also requires that the public be informed and involved in the decision-making process. The main steps, or phases, in the CERCLA process are briefly described in the following paragraphs, and **Appendix A** presents a crosswalk of the environmental cleanup phases.

The CERCLA Remediation Process consists of the following:

- Preliminary Assessment (PA)/Site Inspection (SI).
- Remedial Investigation (RI).
- Feasibility Study (FS)/Proposed Plan (PP).
- ROD or DD.
- Remedial Design (RD).
- Interim Remedial Action (IRA).
- Remedial Action—Construction (RA-C).
- Remedial Action—Operation (RA-O).
- Long-Term Management (LTM).
- Closeout and/or Five-Year Review.

The **PA**/**SI** are the first steps in the process and provide an initial review and analysis of historical records and review of activities at the site. The **PA** determines the location of hazardous waste disposal areas, establishes the nature (type) and extent of the contamination, and determines relative cleanup priorities characterized by the presence or absence of contamination. The **SI** includes a physical inspection to verify information during the preliminary assessment and often involves soil and water sampling. A decision to close out a site may be made at the end of the PA/SI phase if data supports that decision.

The **RI** identifies contaminants present and assesses the degree and extent of contamination. An RI characterizes potential risk to public health and the environment. This step in the CERCLA process also determines where contaminants are located. Human health and/or ecological risk assessments are conducted during this phase.

The **FS** is utilized to develop and analyze cleanup alternatives. An FS allows for the best applicable, relevant, and appropriate requirements to mitigate threats to human health and the environment. This step also includes the **PP**, which is a summary of the RI/FS that details for the public what the remedial alternatives are, how they were evaluated, how they compared to one another, and which alternative the Army identified as the preferred remedy. The PP is distributed to the public and to the regulatory community for review and comment before a final remedy is selected. A summary fact sheet is also made available to the public at this point in the process. After the public and relevant regulators' review and comment on the PP, the selected remedy is revised as needed and documented in a ROD or a DD.

A **ROD** or a **DD** is a legal document that specifies the selected remedy, its objectives, and its endpoint. During this step, the ROD or DD identifies a remedial action plan for the site and certifies a remedy selection process. The ROD or DD describes technical components of the remedy and provides consolidated sources of information about the site to the public. The Army is always a signatory to a ROD or DD, and federal or state regulatory signatures may be required based on a site's NPL and/or RCRA status. Further information on this process is available in USEPA's *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents* (USEPA, July 1999).

The **RD** phase takes place after the final remedy has been selected in a ROD/DD. This phase establishes performance objectives and includes preparing technical drawings and engineering specifications for the remedial action.

An **IRA** can be used as a partial solution to a complex (e.g., multi-media) contaminant problem or as an RA at one site included within a group of sites. IRA decisions are documented in interim DDs. The final PP and DD for those sites shall include a summary of all IRAs conducted. An IRA is not a final RA for a site and implementing an IRA does not meet the remedy-in-place (RIP) or response complete (RC) milestones. Should an IRA become the final action, then the IRA is considered the final RA and meets DoD metrics for achieving RIP, and upon completion of the final action, it is considered RC.

RA-C is the construction of and/or implemented cleanup remedy outlined in the ROD and designed in the RD phase. The ROD will include remedial action objectives (RAOs); at the end of the RA-C phase, a site is considered RIP if the RAOs will be met at some time in the future, or the site is considered RC when the RA-C phase meets the RAOs outlined in the ROD.

The **RA-O** phase takes place while the remedy is operating or in progress and the performance of the remedy is monitored to measure progress toward meeting the RAO goals. Once the remedy achieves the RAOs, the remedy is considered RC. Five-Year Reviews are conducted during the RA-O phase to demonstrate that the remedy continues to be effective and operating as intended.

Lastly, the **LTM** phase consists of post-project activities, such as long-term monitoring or management to document effectiveness of the selected remedy. At this point in the process, when all remediation goals have been met and no further action (NFA) is required, site close out occurs. For sites that are not restored to a condition that allow for unlimited use and unrestricted exposure, the protectiveness of the remedy is reviewed during the Five-Year Review process.

The Five-Year Review evaluates the implementation and performance of a remedy in order to determine if the remedy is protective of human health and the environment. Five-Year Reviews also identify issues found during the review, if any, and provide recommendations to address them

2.3.2.1 Regulatory & Policy Drivers

The DERP statutory authority is defined in 10 United States Code (USC) Section (§) 2701-2710. The program goals are included in 10 USC § 2701(b), which states:

> *"Goals of the program shall include the following: (1) identification, investigation, research and development, and cleanup of contamination from a hazardous substance, or pollutant or contaminate; (2) correction of other environmental damage (such as a detection and disposal of exploded ordnance), which created an imminent and substantial endangerment to the public health or welfare or to the environment; (3) demolition and removal of unsafe buildings and structures, including buildings and structures of the DoD at sites formerly used by or under the jurisdiction of the Secretary."*

When Congress established the DERP, they directed that DoD cleanup efforts be consistent with CERCLA. CERCLA requires that cleanup efforts at federal facilities be conducted in accordance with the requirements in Section 120, 42 USC § 9620 of CERCLA. Executive Order 12580 delegates authority for implementing CERCLA to various federal officials, including the DoD. The Army uses CERCLA as the primary legislative authority for managing environmental cleanup. Where the Army's military mission requires an RCRA permit, RCRA Corrective Action may be an appropriate legislative authority for managing DERP cleanup.

Due to concerns identified during environmental investigations in the early 1980s, Longhorn AAP was placed on the NPL on August 9, 1990, with a Hazard Ranking Score of 40. The NPL is a list of national priorities among the known and threatened releases of hazardous substances throughout the United States. Sites that score higher than a 28.5 on the Hazardous Ranking System (a screening device to evaluate a site's relative threat to human health and the environment) are eligible for inclusion on the NPL. Installations on the NPL are tracked under USEPA's Superfund Program and may require additional investigation by USEPA. A site can be deleted from the NPL if it is determined that no further cleanup response is required. Longhorn AAP, USEPA, and the Texas Commission on Environmental Quality (TCEQ) entered into a Federal Facility Agreement (FFA) for remedial activities at Longhorn AAP, which became effective on December 30, 1999. The general purpose of an FFA is to ensure that environmental impacts are thoroughly investigated, and necessary RA is taken to protect public health, welfare, and the environment; to establish a framework and schedule for response actions; and to facilitate involvement of all parties in those actions.

The following sites are part of the FFA: Longhorn AAP-001, -011, -012, -013, -014, -016, -017, -018, -024, -027. -029, and -032. Other sites were later added to the NPL; however, the FFA was not revised to include these sites: Longhorn AAP-003, -004, -037, -046, -047, -049, -050, -058, -067, -001-R-01, -003-R-01, and -004-R-01.

The Army is the lead agency at Longhorn AAP and documentation pertaining to NPL sites listed in the FFA are submitted to USEPA and TCEQ for review and concurrence. Non-NPL sites are addressed under CERCLA with TCEQ as the lead regulator. Longhorn AAP is obligated to conduct RAs in accordance with CERCLA, RCRA, and the policy and procedures documented in the DERP Manual (March 2012).

2.3.2.2 Responsibilities

The Army is the lead agency at Longhorn AAP in coordination with USEPA Region 6 and TCEQ. The U.S. Army Environmental Command oversees the environmental cleanup of contamination at the site that resulted from the production of various defensive items (http://www.longhornaap.com/).

2.3.3 Cleanup Program History

Longhorn AAP began environmental investigations in June 1979. Initially, a large number of potential cleanup sites were identified at Longhorn AAP; however, since the 1980s, multiple investigations and sampling events have been conducted by the Army and currently there are 41

designated restorations sites at the installation. Restoration sites include areas impacted by ammunition production, burning, and storage activities; storage and disposal of wastes and hazardous materials; leaks and spills from aboveground storage tanks (ASTs) and USTs; and historic installation activities and operations. COCs include VOCs, perchlorate, heavy metals, explosives, and POL.

2.3.4 Current Site Status

Active cleanup sites at Longhorn AAP may be identified by different site identification (ID) numbers and nomenclature, including the installation nomenclature, the Headquarters Army Environmental System (HQAES) site ID, and the Army Environmental Database - Restoration site ID and name ID. **Table 1** is a reference table for site IDs and nomenclature.

Table 1 – Longhorn Army Ammunition Plant Active Cleanup Site IDs and Nomenclature

HQAES Site ID	Site ID	Site Name	Applicable Regulatory Program
48315.1001	LHAAP-001	Inert Burning Grounds (SWMU 1)	IRP
48315.1003	LHAAP-003	Building 722—Paint Shop	IRP
48315.1010	LHAAP-011	SUS TNT Burial Site at AVE P&Q (SWMU 11)	IRP
48315.1032	LHAAP-052	Magazine Area Washout	IRP
48315.1040	LHAAP-063	Burial Pits	IRP
48315.1046	LHAAP-070	Oil Spill, Building 813	IRP
48315.1002	LHAAP-002	Vacuum Truck Overnite Parking Lot	IRP
48315.1006	LHAAP-006	Building 54F Solvent	IRP
48315.1007	LHAAP-007	Building 50G Drum Processing	IRP
48315.1008	LHAAP-008	Sewage Treatment Plant	IRP
48315.1018	LHAAP-019	Construction Materials Landfill	IRP
48315.1025	LHAAP-035	Sumps (145) Various	IRP
48315.1026	LHAAP-036	Explosive Waste Pads (27)	IRP
48315.1029	LHAAP-045	Magazine Area	IRP
48315.1056	LHAAP-049	Former Acid Storage Area	IRP
48315.1031	LHAAP-051	Photographic Laboratory/Building #60B	IRP
48315.1035	LHAAP-055	Septic Tank (10)	IRP
48315.1055	LHAAP-056	Vehicle Wash Rack and Oil/Water Separator	IRP
48315.1057	LHAAP-059	Building 725	IRP
48315.1038	LHAAP-060	Former Storage Building #411 and #714	IRP
48315.1041	LHAAP-064	Transformer Storage	IRP
48315.1058	LHAAP-065	Building 209	IRP
48315.1042	LHAAP-066	Transformer at Building 401	IRP

HQAES Site ID	Site ID	Site Name	Applicable Regulatory Program
48315.1044	LHAAP-068	Mobile Storage Tank Parking Area	IRP
48315.1045	LHAAP-069	Service Station USTs	IRP
48315.1047	LHAAP-071	Building 813	IRP
48315.1011	LHAAP-012	Active Landfill 9 (SWMU 12)	IRP
48315.1027	LHAAP-037	Chemical Laboratory Waste Pad	IRP
48315.1053	LHAAP-046	Plant 2 Area	IRP
48315.1030	LHAAP-050	Former Waste Disposal Facility	IRP
48315.1037	LHAAP-058	Maintenance Complex	IRP
48315.1043	LHAAP-067	Above Ground Storage Tank	IRP
48315.1004	LHAAP-004	Longhorn AAP Pilot Wastewater Treatment Plant	IRP
48315.1015	LHAAP-016	Old Landfill (SWMU 16)	IRP
48315.1016	LHAAP-017	No. 2 Flashing Area Burning Ground (SWMU 17)	IRP
48315.1017	LHAAP-018	Burning Ground/Washout Pond (SWMU 18)	IRP
48315.1020	LHAAP-024	Former Unlined Evaporation Pond (SWMU 24)	
48315.1022	LHAAP-029	Former TNT Production Area (SWMU 29)	IRP
48315.1054	LHAAP-047	Plant 3 Area	IRP
48315.1048	LHAAP-001-R-01	South Test Area/Bomb Test Area	MMRP
48315.1050	LHAAP-003-R-01	Ground Signal Test Area	MMRP
48315.1052	LHAAP-004-R-01	Pistol Range	MMRP

AAP – Army Ammunition Plant
HQAES – Headquarters Army Environmental System
ID – Identification
IRP – Installation Restoration Program
MMRP – Military Munitions Response Program
SWMU – Solid Waste Management Unit
TNT – Trinitrotoluene
UST – Underground Storage Unit

2.3.4.1 Installation Restoration Program Sites

Closed Sites Under Long-Term Management with Land Use Restrictions

Investigations have been completed for the following sites. These sites are in the LTM phase with land use restrictions. The LTM phase includes Five-Year Review reports in the form of a memorandum report or a letter certifying proper land use. LTM is expected to continue indefinitely.

LHAAP-001 (Inert Burning Grounds [SWMU 1])
LHAAP-001, also known as Solid Waste Management Unit (SWMU) 1, is closed and the land is suitable for non-residential use. A no action ROD was signed by the Army and co-signed by USEPA with concurrence from TCEQ in February 1998.

LHAAP-003 (Building 722—Paint Shop)
LHAAP-003, also known as Building 722—Paint Shop, was an open-sided waste collection shed with a gravel pad floor outside of the Paint Shop (Building 711-P). The site is located within the LHAAP-058 LUC boundary. The groundwater for LHAAP-003 is addressed as part of the remedy for LHAAP-058. The ROD was completed in 2018, and the RD was completed in 2019. Soil removal and backfill was completed in 2020, and the Remedial Action Completion Report documented completion of the remedy in 2021.

LHAAP-011 (SUS TNT Burial Site at AVE P&Q [SWMU 11])
LHAAP-011, also known as the SUS TNT Burial Site at AVE P&Q (SWMU 11), is closed and the land is suitable for non-residential use. A NFA ROD was signed by the Army and co-signed by USEPA with concurrence from TCEQ in February 1998.

LHAAP-052 (Magazine Area Washout)
LHAAP-052, also known as the Magazine Area Washout, consists of a standpipe near the intersection of Avenue E and 19th St. that was used to wash out trucks used for transport of TNT. An NFA DD was finalized in September 2015.

LHAAP-063 (Burial Pits)
LHAAP-063 was utilized in the late 1950s for the detonation of Plant 3 reject material of unknown composition. An NFA DD was finalized in September 2015.

LHAAP-070 (Oil Spill, Building 813)
LHAAP-070 had an oil tank spill occur in 1978; the spill was contained prior to reaching Central Creek. An NFA DD was finalized in September 2015.

Sites with Notifications for Land Use Filed with Harrison County

Investigations have been completed for the following sites and no remedies nor land use controls (LUCs) were identified. Notifications have been filed with Harrison County, Texas, stating that these sites are suitable for non-residential use in accordance with Texas Administrative Code Title 30 § 335.566. The sites are currently in the LTM phase, which includes Five-Year Review reports in the form of a letter stating the use of the site remains non-residential. LTM is expected to continue indefinitely at these sites.

LHAAP-002 (Vacuum Truck Overnite Parking Lot)
LHAAP-002, also known as the Vacuum Truck Overnite Parking Lot, is located within the LHAAP-058 boundary.

LHAAP-006 (Building 54F Solvent)
LHAAP-006, also known as Building 54F Solvent, had an NFA DD signed in December 2008.

LHAAP-007 (Building 50G Drum Processing)
LHAAP-007, also known as Building 50G Drum Processing, was originally closed under RCRA in 1987. An NFA DD under CERCLA was signed in December 2008.

LHAAP-008 (Sewage Treatment Plant)
LHAAP-008, also known as the Sewage Treatment Plant, was originally closed under RCRA in 1987. An NFA DD under CERCLA was signed in December 2008.

LHAAP-019 (Construction Materials Landfill)
LHAAP-019, also known as the Construction Materials Landfill, has an NFA DD under CERCLA, which was signed in early 2014.

LHAAP-035 (Sumps [145] Various)
LHAAP-035 includes sumps located in different production areas throughout Longhorn AAP and remediation activities for the sumps were consolidated into site LHAAP-035. Many of the sumps were removed or closed in 1996. Several buildings where the sumps were located had historical perchlorate use. The sites associated with LHAAP-035 include: LHAAP-002, -003, -004, -006, -007, -008, -036, -037, -058, -060, -065, and -068. The RA-C phase consisted of soil removal around the sumps. An NFA DD was signed in 2010.

LHAAP-036 (Explosive Waste Pads [27])
LHAAP-036, also known as the Explosive Waste Pads, consisted of 20 waste pads made of 4 feet (ft)-by-8 ft concrete pads with metal roofs. An NFA DD was signed in November 2010.

LHAAP-045 (Magazine Area)
LHAAP-045, also known as the Magazine Area, consisted of 58 bunkers and two munitions storage buildings. The site received USEPA concurrence for no further environmental investigation necessary.

LHAAP-049 (Former Acid Storage Area)
LHAAP-049, also known as the Former Acid Storage Area, was used from 1942 to 1945 for the storage and formulation of acids and acid mixtures to support TNT production during WWII. LHAAP-049 was originally grouped under LHAAP-029 due to the associated plant functions (the acid plant was where acids were received and prepared for use in TNT manufacturing). In 2009, the final site evaluation was completed and the NFA ROD was finalized in 2010.

LHAAP-051 (Photographic Laboratory/Building #60B)
LHAAP-051, also known as the Photographic Laboratory or Building #60B, was used to process X-ray film and was closed under RCRA. An NFA DD was signed in December 2008.

LHAAP-055 (Septic Tank [10])
LHAAP-055, also known as Septic Tank (10), was closed under RCRA guidelines. An NFA DD under CERCLA was signed in December 2008.

LHAAP-056 (Vehicle Wash Rack and Oil/Water Separator)
LHAAP-056, also known as the Vehicle Wash Rack and Oil/Water Separator (OWS), consisted of a wash rack that sloped to a drain that was connected to an OWS. Discharge to an on-site drainage ditch was permitted. The sump on the site was investigated under LHAAP-035. An NFA DD was signed in early 2014 and the site is in LTM. The site is located within the LHAAP-058 LUC boundary.

LHAAP-059 (Building 725)

LHAAP-059, also known as Building 725, was constructed as a pesticide storage building in 1984 to support maintenance activities at the installation. Site inspections determined that there had been no significant releases of contamination at the site. An NFA DD was finalized in August 2008. The site is located within the LHAAP-058 LUC boundary.

LHAAP-060 (Former Storage Building #411 and #714)

LHAAP-060, also known as Former Storage Building #411 and #714, consists of two buildings that were formerly used to store pesticides and herbicides. An NFA DD was signed in December 2008. This site is located within the LHAAP-058 LUC boundary.

LHAAP-064 (Transformer Storage)

LHAAP-064, also known as Transformer Storage, was used for the storage of non-polychlorinated biphenyl (PCB) transformers. An NFA DD was signed in December 2008.

LHAAP-065 (Building 209)

LHAAP-065, also known as Building 209, was utilized for chemical storage of items, such as paints and solvents. The building has a concrete floor with floor drains connected to sumps. A DD was finalized for the site in early 2014 and is in LTM. The site is located within the LHAAP-058 LUC boundary.

LHAAP-066 (Transformer at Building 401)

LHAAP-006, also known as the Transformer at Building 401, dripped oil for approximately one year; however, the transformer did not contain PCBs, so NFA was required. An NFA DD was signed in December 2008. The site is located within the LHAAP-058 LUC boundary.

LHAAP-068 (Mobile Storage Tank Parking Area)

LHAAP-068, also known as the Mobile Storage Tank Parking Area, was corrected under RCRA guidelines in 1993. An NFA DD was signed in December 2008. The site is located within the LHAAP-058 LUC boundary.

LHAAP-069 (Service Station USTs)

LHAAP-069, also known as the Service Station USTs, was corrected under RCRA guidelines in 1993. An NFA DD was finalized in early 2014 and the site is in LTM. The site is located within the LHAAP-058 LUC boundary.**LHAAP-071 (Building 813)**

LHAAP-071, also known as Building 813, incurred an oil spill in 1978. The spill was contained before it was able to reach Central Creek. An NFA DD was finalized in September 2015.

Sites in the RA-O Phase

The following sites have completed investigations and are in the RA-O phase with Five-Year Reviews. RA-O is expected to continue indefinitely.

LHAAP-012 (Active Landfill [SWMU 12])

LHAAP-012, also known as Landfill 12, was previously referred to as the Active Landfill. The site includes 7 acres that were used to dispose of non-hazardous industrial waste. The landfill was used intermittently from 1963 through 1978, and continuously until March 1994. The rear portion of the landfill was closed before 1994. COCs at the site are VOCs in groundwater. Site inspections were conducted in 1993 and identified the need for an early IRA in the form

of a landfill cap to reduce further contamination of the site's groundwater. Installation of the cap was completed in 1997; treated soil from Site LHAAP-18 was utilized as subgrade fill. Cap maintenance was initiated in 1998. An RI was completed in 2002, which identified the presence of COCs and contaminants of potential concern (COPCs). The FS was finalized in 2005 and the recommended final remedy included monitored natural attenuation (MNA) with LUCs (cap protective provisions and groundwater restrictions). In August 2006, sampling for MNA was initiated. The PP addressing human and ecological risk was completed. The ROD was signed in July 2006, followed by the RD in June 2007. An installation-wide ecological risk assessment did not identify COCs in the surrounding sediment or surface water. RA-O involves continued groundwater monitoring and LUC maintenance.

LHAAP-037 (Chemical Laboratory Waste Pad)

LHAAP-037, also known as the Chemical Laboratory Waste Pad, is the collection point for spent solvents from the quality assurance lab and consists of one 55-gallon drum on a concrete pad. COCs are VOCs in groundwater. The ROD was finalized in August 2010, and included MNA and LUCs. The RD was finalized in August 2011. The Remedial Action Work Plan (RAWP) was finalized in 2013, and RIP was achieved in September 2013. The RA-O phase was placed on hold in 2012 while a two-year aerobic bioplug demonstration was implemented at the site. The study was completed in 2014, and the aquifer was monitored for return to pre-study conditions before proceeding to RA-O. RA-O involves continued groundwater monitoring and LUC maintenance.

LHAAP-046 (Plant 2 Area)

LHAAP-046, also known as Plant 2 Area, was utilized for production of JB-2 propellant fuel between 1944 and 1945. Between 1952 and 1956, the facilities were used to produce pyrotechnic ammunition, including photoflash bombs, simulators, and tracers for 40mm ammunition. Between 1964 and 1997, pyrotechnic and illuminating devices were produced. COCs at the site are VOCs in groundwater. The ROD was finalized in September 2010, and included MNA for groundwater and LUCs. The RD was finalized in 2011. The RAWP was finalized in 2013, and RIP was achieved in April 2013. The site is in the RA-O phase, which will continue indefinitely and includes MNA and LUCs.

LHAAP-050 (Former Waste Disposal Facility)

LHAAP-050, also known as the Former Waste Disposal Facility, covers 1 acre. The site received wastewater from the sumps of Plants 2 and 3 from 1955 to the early 1970s. The site also performed washout of ammonium perchlorate. COCs are metals, perchlorate, and VOCs in soil and groundwater. An RI was completed in 2002. The FS and ROD were finalized in 2010. The ROD includes soil removal, MNA for groundwater, and LUCs, including groundwater restrictions. An additional data gap sampling was completed in 2004. In February 2008, an additional shallow well was installed downgradient of the site. The RD was finalized in 2011. The RAWP was finalized in 2013, and the RIP was achieved in 2020. A contingency remedy of enhanced MNA was implemented in 2020, and the RA-C was completed. The site is in the RA-O phase, which will continue indefinitely and includes MNA and LUCs.

LHAAP-058 (Maintenance Complex)

LHAAP-058, also known as the Maintenance Complex, or the shops area, provided plant-operated laundry, automotive, woodworking, metalworking, painting, refrigeration, and electrical services. COCs at the site are VOCs in groundwater. The ROD was finalized in 2010 and includes in-situ bioremediation for the eastern groundwater contamination plume, and MNA and LUCs, including groundwater use restriction for the eastern and western groundwater plumes. The site is in the RA-O phase. Five-Year Reviews for LHAAP-002, -003, -056, -059, -060, -065, -068, and -069 are captured under LHAAP-058; these sites are located within the shops area. The RD was finalized in 2011. The RAWP was finalized in 2013 and RIP was achieved. In 2018, a contingency remedy of in-situ bioremediation in the western plume was completed. The site is in the RA-O phase, which will continue indefinitely and includes MNA and LUCs.

LHAAP-067 (Above Ground Storage Tank)

LHAAP-067 consists of seven ASTs containing No. 2 fuel oil, kerosene, or solvents; each AST had earthen dikes sufficient to contain a potential spill. The motor fuel tanks registered to the state have been removed from the site. Central Creek runs to the south of the site. COCs are VOCs in groundwater. VOCs were detected in groundwater at the site in 2001. An RI was completed in 2002. Additional sampling was conducted in 2004 and the final FS was completed in August 2005. The ROD was finalized in August 2010 and includes MNA and LUCs, including groundwater use restrictions. The site is in the RA-O phase. The RD was finalized in 2011 and the RAWP was completed in 2013. RIP was achieved in April 2013. It is expected to be in the RA-O phase indefinitely, which will include MNA and LUCs.

Additional Sites

LHAAP-004 (Longhorn AAP Pilot Wastewater Treatment Plant)

LHAAP-004, also known as the Longhorn AAP Pilot Wastewater Treatment Plant, was closed under RCRA guidelines in November 1997. A 2007 Installation-Wide Baseline Ecological Risk Assessment did not identify any potential risk to ecological receptors. After the risk assessment, additional investigations identified the presence of unacceptable levels of mercury and perchlorate in soil, with the potential to migrate into groundwater. An Engineering Evaluation/Cost Analysis (EE/CA) completed in 2009 recommended soil removal from the site. Soil removal was completed and documented in the Non-Time Critical Removal Action Report. During soil removal, a small plume of groundwater contaminated with perchlorate was identified. COC at the site includes perchlorate in groundwater.

A groundwater FS evaluating alternatives was conducted in August 2012. The ROD was finalized in 2017, and the RD was completed in 2019. The RA-C was completed in April 2021. During the first quarterly RA-O sampling event, two wells contained perchlorate concentrations exceeding the protective concentration level (PCL). All wells were below the PCL for perchlorate in the following three quarterly sampling events. RA-O continues to evaluate the potential for any rebound in perchlorate concentrations. The site is in the RA-O phase, which will continue indefinitely and includes MNA and LUCs.

LHAAP-016 (Old Landfill [SWMU 16])

LHAAP-016 is an inactive landfill that covers 22 acres. The site was used for the disposal of products generated from the TNT wastewater treatment plant (WWTP) and potentially included burned rocket motor casings; substandard TNT; barrels of chemicals, oils, and paint; scrap iron; and wood. COCs include perchlorate and VOCs in groundwater, soil, and surface water.

Samples collected at the site identified VOCs and metals exceeding action levels in soil, surface water, and groundwater, as well as low levels of explosive compounds in groundwater. Site inspections conducted in 1993 identified the need for an early IRA in the form of a landfill cap to reduce further contamination of groundwater at the site. Installation of the cap was completed in 1998 by utilizing treated soils from LHAAP-18/24 as subgrade fill. As part of the treatability study in late 1997, eight extraction wells were installed to prevent contaminated groundwater from impacting Harrison Bayou. The extracted water is piped to the LHAAP-18 groundwater treatment plant (GWTP). The system is still in operation; however, extracted water volume is low. An RI and Five-Year Review was completed in 2002. The FS and PP were finalized in 2010. Quarterly samples collected from the surface water of Harrison Bayou have not detected significant contamination. The ROD was signed in 2016. RA-C was completed in 2021.

The cleanup/exit strategy for the site involves implementation of RA-O. The remedy includes maintenance of the existing cap, enhanced LUCs, in-situ bioremediation in a target area, biobarriers, and MNA. The site is in the RA-O phase, which will continue indefinitely and includes MNA, maintenance of the cap, and LUCs.

LHAAP-017 (No. 2 Flashing Area Burning Ground [SWMU 17])

LHAAP-017, also known as the No. 2 Flashing Area Burning Ground (SWMU 17), is located 400–500 ft southwest of Burning Ground No. 3 (LHAAP-018). The site was used in 1959 to burn demolished buildings from the former LHAAP-029 site, which was utilized for the production of TNT. Between 1959 to 1980, approximately 500 ft-by-500 ft of the site was used to burn bulk TNT, photoflash powder, and rejected material from Universal Match Corporation's production processes. Current COCs at the site include explosives, perchlorate, and VOCs in groundwater and soil.

In 1984, waste residues were removed, and the area was vegetated with grass. Samples were collected at the site and identified VOCs and explosive compounds in groundwater, and explosive compounds in soil. In 2002, the RI was completed, and perchlorate was detected in the soil. A FS and PP were finalized in 2010. The ROD was signed in 2016. A pre-design investigation was completed in 2018. The RD was completed in 2019 and RA-C in the form of soil removal was initiated in 2019. During soil-removal activities, munitions and explosives of concern (MEC) were encountered. A Time Critical Removal Action memorandum was signed, and a Uniform Federal Policy for Quality Assurance Project Plan was approved in 2021 to address MEC in soil as a primary source for groundwater contamination of perchlorate and to include LUCs. The groundwater remedy implementation was completed in 2022. The site is in the RA-O phase, which will continue indefinitely and includes MNA and LUCs.

LHAAP-018 (Burning Ground/Washout Pond [SWMU 18]) & LHAAP-024 (Former Unlined Evaporation Pond [SWMU 24])

LHAAP-018, also known as Burning Ground No. 3, covers 34.5 acres of land and includes a 3-acre unlined evaporation pond (UEP) known as site LHAAP-024. Operations at site LHAAP-018 were initiated in 1955 and included treatment, storage, and disposal of solid and liquid explosives, pyrotechnics, and combustible solvent wastes by open burning, open detonation, and burial. In 1963, the UEP was constructed within the site. COCs include metals, perchlorate, and VOCs in groundwater, soil, and surface water.

Samples collected from the site identified explosive compounds, VOCs, and metals in soil and groundwater. In 1986, sludge from the UEP was removed and the area was capped. Quarterly monitoring has been conducted since the closure of the UEP. In May 1995, an IRA ROD was signed, which addressed soil and groundwater contamination. In 1997, 30,000 cubic yards of soil was excavated, treated, and used for fill in LHAAP-012 and -016. A GWTP with approximately 5,000 ft of interception collection trenches were installed to control migration of contaminated groundwater. After treatment, the extracted groundwater was discharged into Harrison Bayou. Perchlorate was detected at the site in 1998 and 1999, and a fluidized bed reactor treatment system was installed in 1999.

In 2002, the RI and a draft FS were completed. An optimization pilot study was initiated for the groundwater extraction system, completed in September 2007, and the final report was completed in February 2009. A Post-Screening Investigation Work Plan was finalized to address site data gaps and to support completion of the RI/FS in 2013. The post-screening investigation work continued until 2016, and a revised FS was completed in 2017. The ROD was signed in February 2020, with the selected remedy of enhanced groundwater extraction and treatment, LUCs, enhanced in-situ bioremediation for shallow zone and Wilcox formation groundwater, thermal dense non-aqueous phase liquid removal, maintenance of existing cap over UEP, unsaturated soil excavation and off-site disposal, MNA, long-term monitoring, and Five-Year Reviews. The site is currently in IRA, consisting of groundwater treatment plant monitoring, maintenance, and operation. RD is underway.

The cleanup/exit strategy for the site involves completion of the RA-C, at which point RIP will be accomplished. RA-O will continue indefinitely, which will include groundwater extraction, MNA, and Five-Year Reviews.

LHAAP-029 (Former TNT Production Area [SWMU 29])

LHAAP-029, also known as the Former TNT Production Area (SWMU 29), includes 85 acres of land. The site was in operation from April 1943 to August 1945, and operated as a six-line plant with a supporting acid plant. While in operation, the plant produced 180 million kilograms of TNT. A bulk toluene storage area was located adjacent to the production area. The TNT wastewater, known as red water, was sent through wooden pipelines to a storage tank and pump house, and then to the TNT WWTP (LHAAP-03). Cooling water, or blue water, ran through main lines into an open ditch. The structure, except for the foundations, were demolished and removed in 1959. During the late 1980s, approximately two acres of the northeastern portion of the site were used for the washout of Pershing 1 and 2 rocket motor

casings using trichloroethylene (TCE) and methylene chloride. COCs at the site include MC, perchlorate, and VOCs in groundwater, sediment, soil, and surface water.

Samples collected at the site identified explosive compounds in soil, surface water, sediment, and groundwater. High levels of VOCs have been identified in groundwater. Dense, non-aqueous phase liquids are also suspected of being present. Perchlorate was detected in the soil in 2000. An RI and FS were completed in 2002. Additional soil and groundwater data were collected from 2005 to 2006. A revised FS was finalized in 2010. Fieldwork to support an addendum to the RI/FS was completed in 2013; the RI Addendum was completed in 2016, and the FS Addendum was finalized in 2017. The final ROD was signed in 2019. The remedy selected for this site is in-situ thermal desorption followed by MNA/LUCs, and excavation and disposal for soil and sediments and flushing and plugging lines. The RD is underway; RA-C will be completed in 2024 with RA-O beginning in 2024.

The cleanup/exit strategy for the site involves completion of the RD and RA-C, at which point RIP will be accomplished. The remedy selected is in-situ thermal desorption followed by MNA/LUCs, excavation and disposal for soil and sediments, and flushing and plugging lines. It is expected that RA-O will continue indefinitely, which will include MNA and LUCs.

LHAAP-047 (Plant 3 Area)

LHAAP-047, also known as Plant 3 Area, was utilized from 1954 to the early 1980s to produce rocket motors. Some of the rocket motor facilities were converted to produce pyrotechnic and illumination devices until 1997. COCs at the site are metals, perchlorate, and VOCs in the soil and groundwater. Site investigations determined the COCs for the site and determined a soil source for perchlorate contamination. The FS was finalized in July 2011.The final ROD was delayed until a Preliminary Site Investigation (PSI) Addendum 2 and the FS revision was completed. The PSI Addendum 2 was completed in 2020, and the FS Addendum and revised PP were finalized in 2021. The ROD was finalized in 2022. RD is underway.

The cleanup/exit strategy for the site involves a pre-design investigation to inform the RD and RA at which point RIP will be accomplished. The remedy includes in-situ bioremediation, biobarriers, in-situ thermal desorption, soil excavation, LUCs, and MNA. It is expected that RA-O will continue indefinitely following RA-C, which will include MNA and Five-Year Reviews.

2.3.4.2 Military Munitions Response Program Sites

LHAAP-001-R-01 (South Test Area/Bomb Test Area)

LHAAP-001-R-01, also known as South Test Area/Bomb Test Area, covers approximately 79 acres. The site is also known as environmental site LHAAP-027. Located near the southern boundary of Longhorn AAP, the site is located southeast of Avenue P and the magazine area, at the end of 70th Street. The site was constructed in 1954 and used by the Universal Match Corporation to test 150-pound M120/M120A photoflash bombs filled with photoflash powder and black powder booster charge. Operations at the site continued until 1956. The bombs were tested by exploding them in the air over an elevated, semi-earthen test pad. Bombs waiting to be tested were stored in three earthen-covered bunkers. Due to the site's proximity to Longhorn AAP's southern site boundary, fragments from testing landed beyond the installation boundary. During the late

1950s, illumination signal devices were demilitarized in pits at the site. During the early 1960s, leaking production items were demilitarized at the site. COPCs are explosives in groundwater and soil.

The site began investigations in 1982, which included soil and groundwater sample collection. Results from the samples identified explosives, metals, chloride, and sulfate above background levels in the soil. The May 1997 final RI Report for Group I Sites determined that approximately 52,000 one-half pound and one-pound photoflash cartridges were demilitarized at the site. An NFA RO was signed by USEPA in January 1998, based on the site-specific risk analysis for human and ecological exposure to the COPCs for the site.

An Explosive Ordnance Division (EOD) unit at Fork Polk blew in place one 155-mm white phosphorous round in 2004. A 2005 Environmental Baseline Survey identified that white phosphorus operations at Longhorn AAP were assembly and packout operations only, and that no loading of materials was conducted at the site. The identification of the round as being live is therefore suspect. A reported demolition site identified on the northwest perimeter of the site and was added to the investigation. In 2008, an EE/CA was approved and signed. A final Explosive Safety Submission was completed in March 2008, and a MEC/UXO removal action was completed in 2008. The ROD was signed in December 2016, and included limited groundwater monitoring for perchlorate and LUCs, including restrictions against digging and residential use, and signage maintenance. In accordance with the ROD, limited groundwater monitoring concluded in 2019 after three rounds of confirmation sampling.

The cleanup/exit strategy for the site is LTM. It is expected that LTM will continue indefinitely and will include LUC maintenance and Five-Year Reviews.

LHAAP-003-R-01 (Ground Signal Test Area)

LHAAP-003-R-01, also known as the Ground Signal Test Area, is an 80-acre site located in the southeastern portion of Longhorn AAP. This site is also known as environmental site Longhorn AAP-54. Beginning in 1963, the site was intermittently used for aerial and on-ground testing; as well as the destruction of a variety of devices, such as red phosphorous smoke wedges, infrared flares, illuminating 60mm and 81mm shells, illuminating 40 mm and 155mm cartridges, button bombs, and various types of explosive simulators.

The site was also used intermittently during a two-year period for testing and burnout of rocket motors. Around 1970, one of the rocket motors exploded in an excavated pit near the center of the site and debris was reportedly placed in the resulting crater and backfilled. From late 1988 to 1991, the site was used for the burnout of rocket motors in missiles destroyed in accordance with the Intermediate-Range Nuclear Force Treaty between the United States and the former Soviet Union. The site is currently undeveloped. COPCs include explosives in soil and groundwater.

An NFA ROD was signed in January 1998, for hazardous, toxic, and radioactive waste under CERCLA. In 2008, an EE/CA was approved and signed. In 2008, both the final Explosive Safety Submission and an MEC/UXO removal action was completed. The ROD was signed in December 2016, and included limited groundwater monitoring for perchlorate and LUCs, including restrictions against digging and residential use, and signage maintenance. No exceedances of groundwater standards have been detected and no further groundwater monitoring is required.

The cleanup/exit strategy for the site is LTM. LTM will continue indefinitely and will include LUC maintenance and Five-Year Reviews.

LHAAP-004-R-01 (Pistol Range)

LHAAP-004-R-01, also known as the Pistol Range, was established in the 1950s and was used intermittently by Longhorn AAP security personnel for small arms target qualification and recertification until 2004. COPCs at the site include metals in the soil.

Site investigation results identified areas where the surface and near-surface soil was contaminated with lead levels that exceeded the TCEQ MSC for industrial use. A non-time critical removal action was completed, and the IRA became the final RA. An NFA ROD was finalized in August 2010. A notification, not a remedy or LUC, has been filed in Harrison County, Texas, stating that the site is suitable for non-residential use in accordance with Texas Administrative Code Title 30 §335.566. The site is in the LTM phase, which includes Five-Year Review reports in the form of a letter stating use of the site remains non-residential. LTM is expected to continue indefinitely.

The cleanup/exit strategy for the site is continued LTM in the form of Five-Year Reviews.

3.0 COMMUNITY BACKGROUND

3.1 COMMUNITY SOCIOECONOMIC PROFILE

The following subsections present an overview of the surrounding community and a general chronology of the community participation and communications to date.

Longhorn AAP is located in the east-central area of Texas, composed of one county and surrounded by two cities.

3.1.1 COUNTY

3.1.1.1 Harrison County

Harrison County is located in northeastern Texas, along the Louisiana border. The county was officially established in 1839.

Census data from 2020 for Harrison County showed the following:

- 68,839 people.
  - 49.0% male.
  - 51.0% female.
- 29,438 housing units.

Harrison County Population by Race:

- 75.0% Caucasian.
- 21.1% African American.
- 1.2% American Indian/Alaska Native.
- 0.8% Asian.
- 3.1% Other.

Harrison County Population by Age:

- 6.1% 0–5 years.
- 24.9% 6–18 years.
- 51.6% 19–64 years.
- 17.4% 65+ years.

3.1.2 CITY

Cities of interest that surround Longhorn AAP include the city of Uncertain and Karnack.

3.1.2.1 Uncertain

The city of Uncertain is located within Harrison County, on the north side of the former Longhorn AAP. The city is located along the shores of Caddo Lake.

Census data from 2020 for Uncertain showed the following:

- 72 people.
  - 61.1% male.
  - 38.9% female.

City of Uncertain Population by Race:

- 80.9% Caucasian.
- 16.7% African American.
- 1.2% American Indian/Alaska Native.
- 0.0% Asian.
- 1.2% Other.

City of Uncertain Population by Age:

- 0.0% 0–5 years.
- 12.5% 6–18 years.
- 44.4% 19–64 years.
- 50.0% 65+ years.

3.1.2.2 Karnack

Karnack is a rural unincorporated community on the northeastern portion of Harrison County. No census data is available for Karnack.

3.2 HISTORY OF COMMUNITY INVOLVEMENT

A Technical Review Committee (TRC) was established for Longhorn AAP in March 1992. The TRC was established for Longhorn AAP in order to provide a close working relationship between the Army, the regulatory community, and the local public community. The formation of a Restoration Advisory Board (RAB) was attempted in 1996 and 1998; however, the community involvement in the TRC was deemed sufficient for community needs for this period.

A RAB is a partnership between the surrounding community, the installation, the State, and USEPA that provides a forum for discussions to increase community understanding and support for cleanup efforts. It helps with improving the soundness of government decisions and ensuring cleanups are responsive to community needs. The TRC was dissolved by BRAC officials in 2004 when control of Longhorn AAP was transferred to the BRAC division.

A RAB interest meeting was held in September 2004, in response to public notices and private mailings. The first RAB meeting was held in December 2004. The RAB meets three times annually, and public meetings are held for each PP. The RAB consists of community members, Army representatives, and federal, state, and local regulators.

The Longhorn AAP Environmental Restoration Program also maintains a website, available at: www.longhornaap.com.

3.3 COMMUNITY FEEDBACK

The primary purpose of collecting input from the community is to identify issues and concerns that the Army can address via community involvement efforts. To obtain information regarding specific community concerns, outreach fliers with the option to scan a quick response code to email the point of contact (POC) to schedule an interview, were posted in the surrounding community to garner interest. There was no community feedback received during this CIP update process. The flyer posted in the surrounding communities is presented in **Appendix B**.

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4.0 COMMUNITY INVOLVEMENT

4.1 COMMUNITY INVOLVEMENT ACTIVITIES

The community involvement activities presented in this section are based on regulatory guidance outlined in USEPA's *Superfund Community Involvement Handbook* (USEPA, 2016). The activities are presented in the order of those required to occur at particular milestones throughout the program, followed by those that are appropriate for the program based on community interest or project circumstances.

4.1.1 Point of Contact

For questions related to the environmental cleanup actions at Longhorn AAP, community members should contact the following representative:

- **Lena Sierocinski**
  Environmental Support Manager
  U.S. Army Environmental Command
  Midwest & Central America Division
  2455 Reynolds Road
  Fort Sam Houston, TX 78234-7588
  (726) 999-0505
  lena.j.sierocinski.civ@army.mil

  Additional information is available at: http://www.longhornaap.com.

4.1.2 Information Repository

An Information Repository for Longhorn AAP is established and maintained at the Marshall Texas Library. A public Information Repository is required under CERCLA to provide interested parties with background and technical information about the environmental cleanup program at Longhorn AAP.

Examples of items currently contained in the Information Repository include:

- The Installation Action Plan.
- Facility Assessment.
- Facility Investigation Reports.
- Cleanup Work Plans and Reports.
- Site Closure Documentation.
- Correspondence with the regulatory community.
- Collections of press releases, community notices, public meeting minutes, and fact sheets.

4.1.3 Administrative Record

The Administrative Record for Longhorn AAP is located and maintained at Marshall Texas Library, at the Longhorn Army Trailer Groundwater Treatment Compound, and is included online at www.longhornaap.com/admin-record.

For sites undergoing CERCLA investigations, the NCP requires that an Administrative Record be established at or near the facility under investigation. The Administrative Record includes information that may form the basis for selecting a response or remedial action. It includes all documents leading to the selection of any response action at the installation and contains documents similar to those located in the Information Repository.

4.1.4 Fact Sheets

Fact sheets will be prepared as part of Longhorn AAP's community outreach program. Fact sheets provide detailed information about site history, planned technical activities, schedule updates, and special interest items. Fact sheets will be distributed by e-mail and will be maintained in the Information Repository.

4.1.5 Public Notices

CERCLA requires notice and a brief description for remediation of sites to be published in a major local newspaper of general circulation. Public notices will be published for plans of environmental activities, upcoming public involvement opportunities, and the availability of documents at the Information Repository.

4.1.6 Public Comment Periods

The purpose of the comment period is to provide all interested parties, including local, state, and federal officials; residents; and interested groups, an opportunity to express their opinions at specific phases or milestones in the cleanup process, depending on the regulation that is guiding the cleanup at the particular site. The comment period lasts for at least 30 calendar days under CERCLA guidance, allowing time for review and comment on the proposed action. Public comments will be recorded at these meetings and during the comment period, and will be responded to through a responsiveness summary. **Appendices C, D, and E** present the local, state, and federal officials for Longhorn AAP. **Appendix F** presents the Longhorn AAP interest groups.

4.1.7 Public Meetings

Public meetings, both informal and formal, are intended to inform the community about ongoing site activities and for the installation to discuss and receive feedback from the public on proposed courses of action. All meetings will be announced through public notices, news releases, direct mailings, or a combination of the three. Media contacts are presented in **Appendix G**. Meetings will be held at a location that is easily accessible to the general public. Fact sheets will be prepared

as handouts to support the presentation and provide contact information for additional information. Suggested meeting locations are presented in **Appendix H**.

4.1.8 Responsiveness Summaries

A Responsiveness Summary will be prepared and issued to address comments received from the public and includes documentation of significant comments, criticisms, and new relevant information submitted during the public comment period and the lead agency's response to each issue. The Responsiveness Summary is issued as part of the document under comment and made available in the Information Repository listed in **Section 4.1.2**.

4.1.9 Mailing List Update

Mailing lists are an important component of effective community outreach that ensures that interested community members, as well as other stakeholders and communities impacted by or interested in response activities, are kept informed of activities and opportunities for community involvement. A mailing list is used to distribute news releases, fact sheets, and other types of pertinent information for project activities.

The installation will update this mailing list as necessary and appropriate and will provide information during all community participation activities as to how individuals and groups can be added to the mailing list. Additionally, an email mailing list can be developed for those community members and stakeholders who prefer to receive information in an electronic format.

4.1.10 Speakers' Bureaus

As program milestones are achieved, project representatives notify and meet with stakeholders (including regulatory agency representatives and the public, as needed) to discuss project status and field questions about proposed restoration actions. Additionally, speakers from the installation may be available upon request to meet with and discuss restoration program activities with civic and/or environmental organizations. Interested organizations should contact the POC listed in **Section 4.1.1**.

4.1.11 Restoration Advisory Board

Longhorn AAP formed a TRC in March 1992, to keep employees, local citizens, and elected officials updated on ongoing cleanup program activities. A RAB was officially established in December 2004, and continues to meet three times a year. The Army continues to work with the RAB and community members to ensure they have the information they need regarding remediation activities at Longhorn AAP.

4.1.12 Update Community Involvement

This CIP will be updated at least every five years or earlier if there are significant program changes. This CIP is a working document to guide the project staff. All or part of this plan may

require revision due to added information or changes in community concerns and needs. The plan will be reevaluated at these times to ensure that the schedule of community participation activities is appropriate.

4.1.13 Open House

As program milestones are achieved, project representatives notify and meet with stakeholders (including regulatory agency representatives and the public, as needed) to discuss project status and to field questions about proposed restoration actions. Additionally, speakers from the installation may be available upon request to meet with and discuss restoration program activities with civic and/or environmental organizations. Interested organizations should contact the POC listed in **Section 4.1.1**.

4.2 ACTIVITY SCHEDULE

The public will be notified of any PPs, public meetings, and comment periods. Exact dates of the cleanup activities are not provided for two reasons. First, the exact date that each phase in the Army cleanup process will be completed is not known. Second, different sites can be in separate phases in the process depending on when each site was discovered, the relative risk or cleanup priority of the site, and funding availability for cleanup.

4.3 COMMUNITY GRANT OPPORTUNITIES

The Technical Assistance Services for Communities (TASC) program, which is partially funded by grants from USEPA, helps communities understand the environmental cleanup and site reuse process. This program provides communities with independent educational and technical information needed to actively participate in solving environmental problems. While TASC primarily supports the Superfund program, support may also be provided to communities impacted by the RCRA or federal facilities, or dealing with air or water environmental problems.

Specific information regarding the TASC program is available at the following website: https://www.epa.gov/superfund/technical-assistance-services-communities-tasc-program.

4.3.1 TECHNICAL OUTREACH SERVICES FOR COMMUNITIES

The Technical Assistance for Public Participation (TAPP) is a funding opportunity available only to community members of an established RAB who need technical assistance in interpreting scientific or engineering issues connected with proposed cleanup activities. If an Army installation does not have an established RAB, community members are not eligible for TAPP. Two TAPPs were previously established at Longhorn AAP—September 1999 and March 2003. Community members of an established RAB who are interested in applying for TAPP must contact their applicable Army POC to confirm eligibility and request Army funding.

5.0 REFERENCES

http://www.longhornaap.com/

https://data.census.gov/cedsci/

https://www.census.gov/quickfacts/fact/table/US/PST045221

Department of Defense (DoD), 2012. Manual 4715.20, *Defense Environmental Restoration Program Management*. March.

U. S. Environmental Protection Agency (USEPA), 1999. *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*. July.

USEPA, 2016. RCRA Public Participation Manual.

USEPA, 2020. Superfund Community Involvement Handbook. March.

USEPA, 2002. Superfund Community Involvement Toolkit.

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FIGURE

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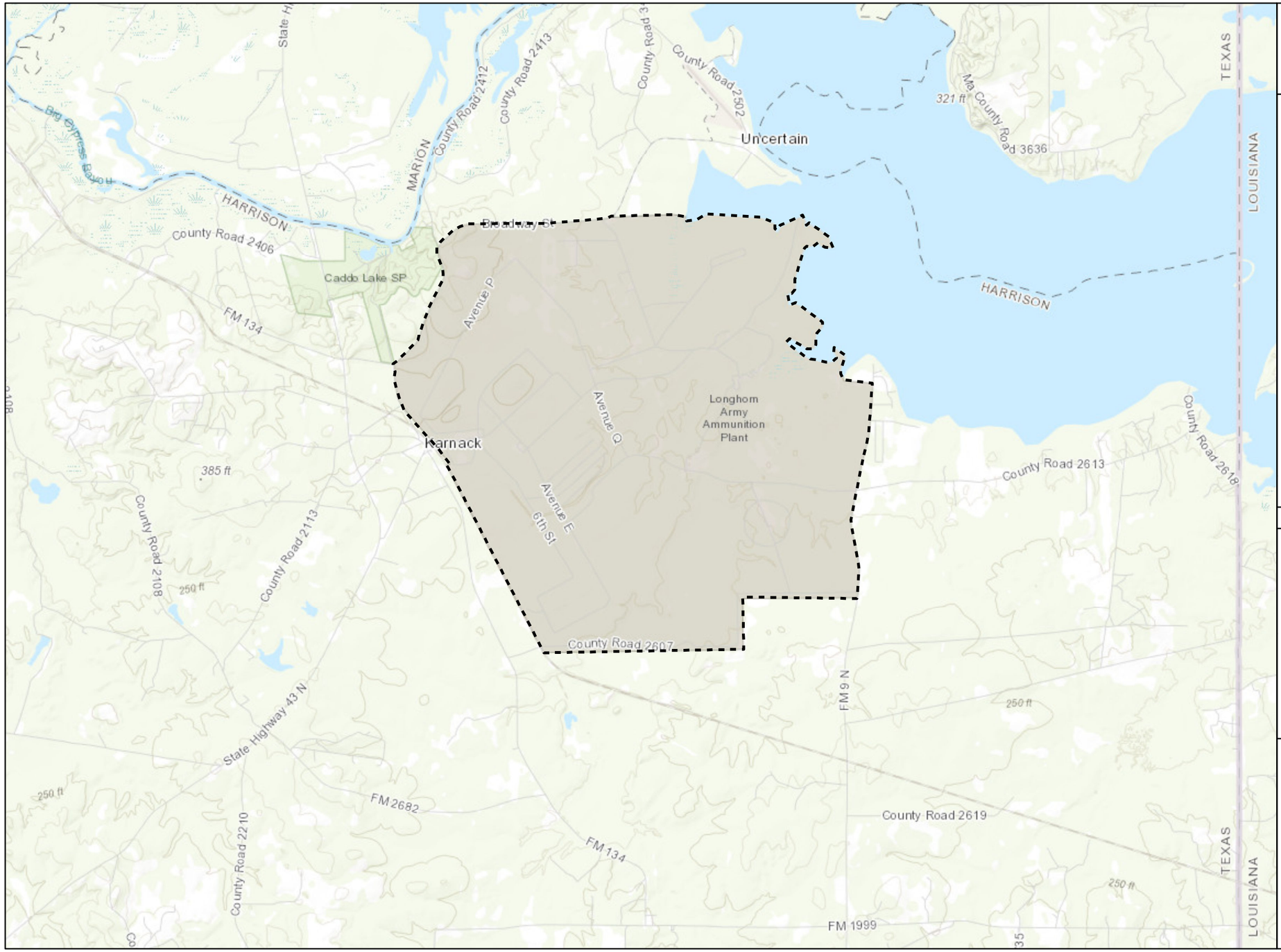
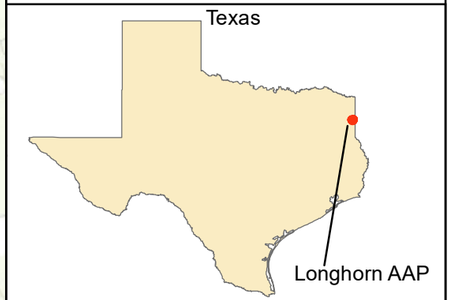


FIGURE 1
INSTALLATION LOCATION MAP
LONGHORN ARMY AMMUNITION PLANT, TEXAS

Installation Boundary

Installation Location



Feet
0 3,000 6,000

1 inch = 6,000 feet

N

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap,

HGS
HO'OLAULIMA GOVERNMENT SOLUTIONS

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APPENDIX A
RCRA AND CERCLA PHASE CROSSWALK

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CERCLA Phases/Milestones	RCRA Phases/Milestones	RCRA UST Phases/Milestones
Preliminary Assessment (PA)	RCRA Facility Assessment (RFA)	Initial Site Characterization (ISC)
Site Inspection (SI)	Confirmation Sampling (CS)	Investigation (INV)
Remedial Investigation/ Feasibility Study (RI/FS)	RCRA Facility Investigation/Corrective Measures Study (RFI/CMS)	Corrective Action Plan (CAP)
Remedial Design (RD)	Design (DES)	Design (DES)
Interim Remedial Action (IRA)	Interim Measure (IM)	Interim Remedial Action (IRA)
Remedial Action (Construction) (RA(C))	Corrective Measures Implementation (Construction) (CMI(C))	Implementation (Construction) (IMP(C))
Remedial Action (Operations) (RA(O))	Corrective Measures Implementation (Operations) (CMI(O))	Implementation (Operations) (IMP(O))
Long-Term Management (LTM)	Long-Term Management (LTM)	Long-Term Management (LTM)

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APPENDIX B
FLYER

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Your Input is Requested!

The Former Longhorn Army Ammunition Plant would like **your** ideas on ways to involve you and others in the Longhorn AAP environmental restoration program.

Virtual Interviews

Will be held:
Jan. 16 - Feb. 3, 2023

Scan this code to request an interview!

Your input is requested as part of the update of the Community Involvement Plan.

To participate, please contact rhertzler@kinaole.com, 757-408-5429, or scan the QR code above

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APPENDIX C
LOCAL OFFICIALS

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LOCAL OFFICIALS
(By County)

Harrison County

- County Commissioner—Precinct 2
  Zephaniah Timmens
  #1 Peter Whetstone Square, Room 307
  Marshall, TX 75670
  903-935-8402 ext. 1012
  zephaniaht@co.harrison.tx.us

Mayors / City Council

Harrison County

- **Uncertain—Mayor**
  Judye Patterson
  P.O. Box 277
  Uncertain, TX 75661
  214-763-0986

- **Marshall—Mayor**
  Amy Ware
  401 South Alamo Boulevard
  Marshall, TX 75670
  903-935-4421

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APPENDIX D
STATE ELECTED OFFICIALS

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STATE OFFICIALS

- Governor—Greg Abbott
  P.O. Box 12428
  Austin, TX 78711
  512-463-2000

- Lieutenant Governor—Dan Patrick
  P.O. Box 12068,
  Austin, TX 78711
  512-463-0001

Texas State Senate

- Senator—Bryan Hughes (R, District 1)
  110 North College Avenue, Suite 207
  Tyler, Texas 75702
  903-581-1776

Texas House of Representatives

- Representative—Al Green (D, District 9)
  303 South Loop West, Suite 460,
  Houston, TX 77054
  713-383-9234

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APPENDIX E
FEDERAL ELECTED OFFICIALS

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FEDERAL ELECTED OFFICIALS

- Senator—Ted Cruz (R-TX)
  - Washington, DC Office
    127A Russell
    Washington, DC 20510
    202-224-5922
  - East Texas Office
    305 South Broadway, Suite 501
    Tyler, TX 75702
    903-593-5130

- Senator—John Cornyn (R-TX)
  - Washington, DC Office
    517 Hart Senate Office Building
    Washington, DC 20510
    202-224-2934
  - East Texas Office
    100 East Ferguson Street, Suite 1004
    Tyler, TX 75702
    903-561-0902

- Representative—Louie Gohmert (R-TX, 1st District)
  - Washington, DC Office
    2269 Rayburn House Office Building
    Washington, DC 20515
    202-225-3035
  - Tyler, Texas Office
    1121 ESE Loop 323, Suite 206
    Tyler, TX 75701
    903-561-6349

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APPENDIX F
ENVIRONMENTAL AND ACTIVE CITIZENS GROUPS

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Environmental and Active Citizens Groups:

- Caddo Lake Area Chamber of Commerce and Tourism
  P.O. Box 228
  Karnack, Texas 75661
  info@caddolake.org
- Caddo Lake Institute
  400 Edwards St.
  Shreveport, Louisiana 71101
  318-677-2516
  info@caddolakeinstitute.org
- Marshall Texas Chamber of Commerce
  208 East Burleson Street
  Marshall, Texas 75670
  903-935-7868
  contactus@mashalltexas.com

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APPENDIX G
MEDIA CONTACTS

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Media Contacts:

Newspapers:

- The Marshall News Messenger
  100 North Bolivar Street, Suite 301
  Marshall, Texas 75670
  903-925-7914
  news@marshallnewsmessenger.com
  www.marshallnewsmessenger.com

Television:

- ABC Channel 3-1 KTBS-TV
  www.ktbs.com

- NBC Channel 6-1 KTAL-TV
  www.ktalnews.com

- KSLA News 12 Shreveport
  www.ksla.com

Radio:

- KMHT Radio 103.9FM
  2323 Jefferson
  Marshall, Texas 75670
  903-923-8000
  info@kmhtradio.com

- KISS Country 93.7FM
  6342 Westport Avenue
  Shreveport, LA 71129
  318-320-5477
  mykisscountry937.com

- Alpha Media Shreveport/98.1FM
  208 North Thomas Drive
  Shreveport, Louisiana 71107
  318-223-3122
  www.98rocks.fm/

- Townsquare Media Shreveport/98.9FM
  6341 Westport Avenue
  Shreveport, Louisiana 71129
  318-688-1130
  highway989.com

APPENDIX H
MEETING LOCATIONS

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Meeting Location:

- Karnack Community Center
  Kay Street and Highway 134
  Karnack, Texas 75661

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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

May 22, 2023

SUBJECT: Draft Final Third Annual Remedial Action Operation Report, LHAAP-04 Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, May 2023

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://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email. The Draft Final document includes revisions based upon the Environmental Protection Agency (EPA) comments on the Draft version received on April 14, 2023, and the Texas Commission on Environmental Quality (TCEQ) no comment response received on April 3, 2023. Tables of responses to the EPA comments on the Draft version are included with this Draft Final document. In accordance with Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment.

The document was prepared by the Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at (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
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
M. Bowlby, USAEC, San Antonio, TX
K. Russell, BRAC, Huntsville, AL
K. Nemmers, 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

May 22, 2023

SUBJECT: Draft Final Third Annual Remedial Action Operation Report, LHAAP-04 Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, May 2023

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://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email. The Draft Final document includes revisions based upon the Environmental Protection Agency (EPA) comments on the Draft version received on April 14, 2023, and the Texas Commission on Environmental Quality (TCEQ) no comment response received on April 3, 2023. Tables of responses to the EPA comments on the Draft version are included with this Draft Final document. In accordance with Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment.

The document was prepared by the Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at (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
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
M. Bowlby, USAEC, San Antonio, TX
K. Russell, BRAC, Huntsville, AL
K. Nemmers, Bhate, Lakewood, CO
P. Srivastav, APTIM, Houston, TX

Response to USEPA Comments on
Draft Third Annual Remedial Action Operation Report, LHAAP-04

Document Date: February 27, 2023
Comment Date: April 14, 2023

Reviewer: 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	Comment	C, D, E, or X[1]	Response	A or D[2]
Specific Comments					
1	Section 2.2.1, page 2-2, 1st paragraph, 2nd sentence	Sentence references amount of siltation in wells, but source of information is not provided — should cite table 2-5 at end of sentence because it includes the siltation information for all wells.	E	The percent siltation in each well is shown in the far right-hand column of Table 2-2, which is called out immediately prior to the sentence. The information is also included on Table 2-5 which summarizes the inspection forms filled out in the field, but the calculations used to decide whether redevelopment is necessary are on Table 2-2.	
2	Section 2.2.2, page 2-2, 2nd paragraph, 2nd sentence	1). Should add "zone" before "monitoring wells,". 2) Should replace the comma before "were detected" with "in the 3 wells" (i.e., "… perchlorate concentrations were less than 1 ug/L in the 3 wells where detected.").	C/E	Text has been revised slightly differently than suggested to read "During the February 2022 sampling, the perchlorate concentrations were less than 1 µg/L at the three shallow zone monitoring wells where the compound was detected."	
3	Section 2.3, page 2-3, 1st paragraph, last sentence	Part of sentence is incorrect and misses one well that was relabeled in April 2022: 1) Assuming table 2-5 is correct, well 04WW09 was painted in April 2022, not relabeled as sentence indicates. Perhaps it was relabeled, but that is not indicated in the table.	C	Any well that was painted was also relabeled. Referenced text has been revised to "The stickup boxes for wells 04WW06, 04WW07, 04WW08, 04WW09, 04WW10, 04WW11, and LHSMW02 were painted, and the labels were replaced in April 2022." Table 2-5 has also been revised.	

Comment #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
		2) Sentence should also indicate that well LHSMW02 also was relabeled in April 2022 (per page 2 of table 2-5).			
4	Table 2-3, Bottom of table in notes section (all 3 pages of table)	When printed out, the black text highlighted in blue (for the text, "Perchlorate concentrations highlighted in blue exceed the PCL" is almost unreadable. Suggest lightening the blue or enlarging font size (or both).	C	The table note regarding the blue highlighting was removed from Table 2-3 because there are no highlighted concentrations on the table.	
5	Figure 1-1	"Karnack" is missing from map.	C	Figure has been revised accordingly.	
6	Figures 2-1 to 2-4	Would be helpful to enlarge the well symbols so that reader could more easily differentiate the shallow zone wells from the intermediate zone well. Could also use a different color for the intermediate zone well to help it stand out.	C	Figures have been revised to show the intermediate zone well symbol using a different color to aid in distinguishing it from the shallow zone well symbol.	
7	Figures 1-3 and 2-1	The "Former Fire Station" identifier is missing on figs. 1-3 and 2-1 (but identifier is included in figs. 2-2 to 2-4).	C	Figures 1-3 and 2-1 have been revised to include the "Former Fire Station" label.	

Draft Final
Third Annual Remedial Action Operation Report, LHAAP-04 Former Pilot Wastewater Treatment Plant
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for

U.S. Army Corps of Engineers, Tulsa District
Contracting Division
2488 East 81st Street
Tulsa, Oklahoma 74137–4290

Prepared by

bhate

1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
1-800-806-4001 • www.bhate.com

Prepared by

APTIM

Aptim Federal Services, LLC
10333 Richmond, Suite 1030
Houston, Texas 77042

Contract No. W9128F-13-D-0012
Task Order No. W9128BV17F0150
Project No. 501032
Rev 0
May 2023

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Acronyms and Abbreviations

AECOM	AECOM Technical Services, Inc.
Bhate	Bhate Environmental Associates, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	contaminant of concern
CSM	Conceptual Site Model
DO	dissolved oxygen
ISB	in situ bioremediation
LHAAP	Longhorn Army Ammunition Plant
LTM	long-term monitoring
LUC	land use control
mg/L	milligram per liter
MSC	medium-specific concentration
ORP	oxidation-reduction potential
PCL	Protective Concentration Level
RACR	Remedial Action Completion Report
RA-O	remedial action operation
RAWP	Remedial Action Work Plan
RD	Remedial Design
ROD	Record of Decision
Shaw	Shaw Environmental & Infrastructure, Inc.
TCEQ	Texas Commission on Environmental Quality
TOC	total organic carbon
U.S. Army	U.S. Department of the Army
USEPA	U.S. Environmental Protection Agency
µg/L	micrograms per liter

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1.0 INTRODUCTION

The U.S. Army Corps of Engineers, Tulsa District, contracted Bhate Environmental Associates, Inc. (Bhate), under the Omaha Multiple Environmental Government Acquisition National Small Business Multiple Award Task Order Contract Environmental Remediation Services with Military Munitions Response Program, Task Order No. W9128BV17F0150, to conduct environmental restoration at Longhorn Army Ammunition Plant (LHAAP). The Bhate Team consists of Bhate, as the prime contractor, and Aptim Federal Services, LLC, as a subcontractor responsible for remedial activities at several sites including LHAAP-04. LHAAP is an inactive, government-owned, formerly contractor-operated and maintained Department of Defense facility located in east Texas (**Figure 1-1**).

LHAAP is approximately 14 miles northeast of Marshall, Texas, and approximately 40 miles west of Shreveport, Louisiana. The installation occupies approximately 1,100 acres of its former 8,416 acres between State Highway 43 at Karnack, Texas, and the western shore of Caddo Lake. The facility can be accessed via State Highways 43 and 134.

LHAAP-04, known as Site 04 or the former pilot wastewater treatment plant, is approximately 0.5 acres located in the central portion of LHAAP at the northwest corner of 6th and 60th Streets, near the former fire station (**Figure 1-2**). LHAAP-04 is surrounded by light-duty roads. Wastewater treatment operations began at LHAAP-04 in 1984. The demolition of the former pilot wastewater treatment facility structures, tanks, and piping and the disposal of the associated wastes were completed in the summer of 1997 as part of the Resource Conservation and Recovery Act closure of the plant. The final remedy for soil was conducted in 2009 as a Non-Time-Critical Removal Action under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) program (Shaw 2011). Soil along the southern edge of the slab that formerly housed storage tanks for the former pilot wastewater treatment facility that was impacted with mercury and perchlorate at the LHAAP-04 site was removed to meet the soil medium-specific concentrations (MSCs). The soil was removed to the soil/air and ingestion MSCs for industrial use for mercury and the groundwater protective MSC for industrial use for perchlorate.

The U.S. Department of the Army (U.S. Army) issued the Final Record of Decision (ROD) for LHAAP-04 (AECOM 2016) in October 2016. The ROD was signed by the Army on December 15, 2016, and the U.S. Environmental Protection Agency (USEPA) on March 30, 2017. The Texas Commission on Environmental Quality (TCEQ) issued a letter concurring with the ROD on February 7, 2017. The ROD identified perchlorate as the only contaminant of concern (COC) in groundwater for LHAAP-04. The remedy selected in the ROD included in situ bioremediation (ISB) for perchlorate concentrations in groundwater,

long-term monitoring (LTM) of groundwater, and land use controls (LUC) to maintain the remedy and prohibit groundwater use until COC concentrations are reduced to levels supportive of unlimited use and unrestricted exposure. The ISB remedy was implemented in November 2019 in accordance with the *Final Remedial Design* (RD) *and Remedial Action Work Plan* (RAWP) *for LHAAP-04* (Bhate 2019).

This Remedial Action Operation (RA-O) Report represents the third year of RA-O implementation and summarizes the results of monitoring network inspections, LUC inspections, and sampling activities. Baseline sampling was conducted in January and November 2019 and is summarized in the *Final Remedial Action Completion Report* (RACR) (Bhate 2021a). The first and second annual RA-O quarterly monitoring was conducted in February, May, August, and November of 2020 and 2021. The first and second years of RA-O are summarized in the *Draft First Annual Remedial Action Operation Report* and the *Draft Final Second Annual Remedial Action Operation Report*, respectively (Bhate 2021b, Bhate 2022a). The third year RA-O semiannual sampling events were conducted in February and August 2022 and is presented within this report. In accordance with the RD/RAWP (Bhate 2019), a remedy evaluation is also included in this report. However, a statistical analysis of perchlorate concentration trends is unnecessary because the perchlorate concentrations have remained below the Texas Risk Reduction Program Tier 1 Groundwater Residential Protective Concentration Level (PCL) of 17 micrograms per liter (µg/L) that was established as the cleanup level for the RA-O sampling locations since the February 2020 sampling event.

1.1 Remedial Action Objectives

The following Remedial Action Objectives were developed for LHAAP-04 and are outlined in the Final ROD (AECOM 2016):

- Protect human health by preventing ingestion of groundwater contaminated with perchlorate.
- Return groundwater to its potential beneficial use, wherever practicable, within a reasonable time period given the particular site circumstances.
- Prevent groundwater contaminated with perchlorate from migrating into nearby surface water.

1.2 Performance Objectives

The remedy selected for groundwater at LHAAP-04 includes ISB, LUCs, RA-O, and LTM. The remedy includes the following components:

- ISB of perchlorate-contaminated groundwater in an area in the vicinity of monitoring well 04WW04.
- LUCs in the impacted area to ensure protection of human health by restricting the use of groundwater exceeding the applicable cleanup levels, restricting land use to non-residential, and maintaining the integrity of any current or future remedial or monitoring system. The LUCs will remain in effect until such time as the U.S. Army, USEPA, and TCEQ agree that COC concentrations have met cleanup levels. As a component of the LUC implementation, the civil survey of the LUC boundary was conducted in January 2021 and recorded in the Harrison County Courthouse on March 22, 2021.
- RA-O performance monitoring of perchlorate concentrations in groundwater to evaluate the ISB remedy for two years following implementation. The performance monitoring program includes two years of quarterly groundwater monitoring to verify that reducing conditions conducive to degradation of perchlorate are present and that plume concentrations are declining fast enough to achieve the PCL within six years as required by the ROD. RA-O performance monitoring will continue semiannually for an additional three years, and then annually thereafter, if necessary.
- LTM of groundwater beyond the first five years of RA-O will be performed annually, until the next CERCLA Five-Year Review, if concentrations remain above the PCL. RA-O associated with this remedy will be used to track the continued effectiveness of the remedy. Further reductions in sampling will depend on the Five-Year Reviews, but sampling will be conducted at least once every five years until the PCL is achieved.

According to the RACR (Bhate 2021a), RA-O performance monitoring is being performed to evaluate remedy effectiveness. The groundwater monitoring program for RA-O is designed to evaluate and monitor the degradation of perchlorate in the shallow and intermediate groundwater zones. In accordance with the RD/RAWP, the remedy performance will be evaluated using two lines of evidence (Bhate 2019):

- Plume stability (i.e., plume concentrations are declining in the performance wells, and the plume is not expanding in area as demonstrated by downgradient monitoring wells).
- Reducing conditions conducive for the degradation of perchlorate are present within the treatment area.

Work completed as part of the Year 3 RA-O in 2022 consisted of the following:

- February 2022 groundwater monitoring event consisting of 12 monitoring wells.
- Revision of the RA-O groundwater monitoring network in the *Draft Final Technical Memorandum, Proposed Revisions to LHAAP-04 and LHAAP-16 Remedial Action Operation Groundwater Monitoring Programs* (Bhate 2022b).
- August 2022 groundwater monitoring event consisting of seven monitoring wells.
- LUC inspection (October 26, 2022).
- Mowing (August 1, 2022).
- Well inspections (February and August 2022).

This report summarizes the LUC compliance inspection, the results of groundwater sampling, and an evaluation of the performance of the ISB remedy.

1.3 Conceptual Site Model

A detailed Conceptual Site Model (CSM) of LHAAP-04 was presented in the ROD (AECOM 2016) and has been updated to incorporate more recent investigation results from 2017 through 2019, summarized in Section 2.2.2 of the RD/RAWP (Bhate 2019).

The former pilot wastewater treatment plant was the source for the perchlorate released into the environment. Prior to the plant's removal, the conceptual model assumes perchlorate was released via overflows, spills, and leaks to the soil. After the pilot wastewater treatment plant was removed, there was no longer a release mechanism for overflows, spills, and leaks. Perchlorate was released to the soil. Prior to the soil removal action in 2009, sufficient perchlorate levels existed in the soil to act as a source of groundwater contamination or to be potentially released into surface water during storm events (Shaw 2011). Because the perchlorate-contaminated vadose zone soil above cleanup levels was removed in 2009, it is not expected that LHAAP-04 will contribute to surface water contamination (Shaw 2011). Soil-to-groundwater and soil-to-surface water pathways have, therefore, been eliminated from consideration in the current CSM.

Surface water samples collected in 2010 and 2011 were below the perchlorate PCL. Therefore, the CSM does not include any impact to surface water from groundwater, and the groundwater-to-surface water migration pathway is incomplete. Protection of surface water will continue to be confirmed via groundwater monitoring and evaluation of the groundwater ISB remedy.

Groundwater at monitoring well 04WW04 (**Figure 1-3**) was the only location that exceeded the perchlorate PCL in the sampling events leading up to the development of the ROD.

However, additional sampling conducted in 2017 through 2019 indicated that the perchlorate plume had migrated westward, impacting the previously clean downgradient well 04WW05, and wells 04WW07, 04WW09, and 04WW10 (installed as part of an effort to delineate the extent of the plume) (**Figure 1-3**) at concentrations exceeding the PCL, while the perchlorate concentration at 04WW04 had dropped below the PCL. One well has been completed in the intermediate zone (04WW08) and low perchlorate concentrations have been detected in groundwater analyzed from the intermediate zone; however, the detected perchlorate concentrations are below the PCL. The only potentially complete exposure pathway considered for remediation is the hypothetical future non-residential groundwater use.

Based on groundwater elevation data from 2017 to 2022, the dominant shallow zone groundwater gradient has generally been somewhat radially outward from the northeastern corner of the site. However, in the area impacted by perchlorate concentrations above the PCL, the groundwater flow direction is generally to the southwest and south-southwest.

Perchlorate concentrations at the RA-O performance groundwater monitoring locations at LHAAP-04 have been below the PCL for nine consecutive sampling events during the period from February 2020 to August 2022. Field parameters were measured to evaluate the continued effectiveness of the ISB remedy. The evaluation of the ISB remedy indicates that reductive degradation processes stimulated by the injections have eliminated the perchlorate plume. Reducing conditions in the shallow groundwater that were generated by the ISB remedy are slowly returning to an aerobic state, with some parameters showing lingering effects from the residual carbon present in the groundwater.

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2.0 SITE ACTIVITIES AT LHAAP-04

This section describes the results of the third annual RA-O activities, including the annual LUC compliance inspection, semiannual groundwater performance monitoring, and monitoring system inspections performed at LHAAP-04.

2.1 Annual Land Use Control Compliance Inspection

The annual LUC compliance inspection for LHAAP-04 was performed on October 26, 2022. The LUCs for this site restrict groundwater use and prohibit water well installation for any purpose other than environmental monitoring and testing, as well as requiring the integrity of any current or future remedial or monitoring systems to be maintained. Also, the LUCs prohibit residential land use until the levels of COCs in the groundwater and soil allow unlimited use and unrestricted exposure. The restriction applies to groundwater underlying an approximately 1.885-acre area defined by the surveyed LUC boundary (Bhate 2021a). The Annual LUC Compliance Certification Documentation Form for the third annual RA-O monitoring period is included in **Appendix A**. No noncompliance issues or concerns were noted during the annual inspection. No damage to bollards, well pads, or protective casings was observed during the 2022 well inspections, and minimal encroachment of weeds or brush on the well pads was observed. Area mowing and clearing around the wells is conducted on an as-needed basis, but typically before sampling events. Well Inspection Forms for each of the sampling events are included in **Appendix B**.

2.2 Groundwater Monitoring

The third annual RA-O reporting period includes the period from January 2022 to December 2022 and encompasses the third year of post-injection semiannual monitoring. Semi-annual groundwater sampling events were completed in February and August 2022. As per the recommendations in the Year 2 RA-O report, the first semiannual event in February 2022 continued the monitoring network and analytical program used for the first and second annual RA-O groundwater performance sampling. The monitoring network for the second semiannual event in August 2022 was revised by discontinuing monitoring at wells upgradient and outside of the historical plume area, which reduced the number of wells being sampled to seven. Revisions to the analytical program included discontinuing monitoring for total organic carbon (TOC) at the performance monitoring locations. The RA-O performance monitoring network and the analytes for each well are summarized in **Table 2-1**. The RA-O performance monitoring network locations are shown on **Figure 2-1**. Revisions to the LHAAP-04 RA-O monitoring network and analytes were proposed in the *Draft Final Technical Memorandum—Proposed Revisions to LHAAP-04 and -16 Remedial Action*

Operation Monitoring (Bhate 2022a) and were approved by the TCEQ in an email dated July 22, 2022, and by the USEPA in an email dated July 25, 2022.

Prior to collecting groundwater samples, monitoring wells were gauged using a water level probe and the depth to water was recorded to the nearest 0.01 feet from the top of casing. Depth-to-water measurements were used to calculate the groundwater elevations presented in **Table 2-2**. Water samples were collected using low-flow sampling methods in accordance with the groundwater sampling procedures found in the *Final Installation-Wide Work Plan* (Bhate 2018).

2.2.1 Groundwater Elevations and Flow Direction

During the third year RA-O semiannual groundwater performance sampling events, groundwater elevations in the shallow wells varied by 1.84 to 2.73 feet throughout the year (**Table 2-2**). Measured total depths in monitoring wells indicated that wells with measured siltation have less than 10% of the screened interval blocked by silt accumulation and well redevelopment is not required at this time. The highest groundwater elevations generally occurred during the February 2022 event, and the lowest elevations generally occurred during the August 2022 event, reflecting the relatively dry summer that occurred in 2022. The groundwater flow gradient was interpreted to be generally to the southwest or south-southwest based on the potentiometric surface maps for each event (**Figures 2-2** and **2-3**).

2.2.2 Groundwater Analytical Results

Semiannual groundwater performance samples were collected and analyzed for perchlorate according to USEPA Method 6850, for TOC by USEPA Method 9060 (February 2022 only), and for geochemical field parameters as shown in **Table 2-1**. The samples from the February 2022 sampling event were analyzed for perchlorate by SGS North America, and the TOC analysis was performed by ALS Laboratories. The perchlorate analysis for the August 2022 sampling event was performed by ALS.

Over the course of the third annual RA-O groundwater performance sampling events, perchlorate concentrations remained below the PCL in the sampled wells. During the February 2022 sampling, the perchlorate concentrations were less than 1 µg/L in the three shallow zone monitoring wells where the compound was detected. During the August event, perchlorate was nondetect at the sampled wells. As of the August 2022 sampling event, perchlorate concentrations at the monitoring locations have been below the PCL for seven consecutive quarterly sampling events and the past two semiannual groundwater performance monitoring events. **Table 2-3** presents the perchlorate and geochemical data from the 2022 quarterly RA-O events. Historical perchlorate results from 2000 to 2022 are presented in **Table 2-4**. **Figure 2-4** shows the perchlorate concentrations in groundwater from the February and August 2022 groundwater performance sampling events.

Groundwater monitoring well sampling collection logs were completed for each monitoring well sampled and are included in **Appendix C**. Laboratory analytical results are included in **Appendix D**.

2.3 Groundwater Monitoring System Maintenance

Inspections of the conditions/integrity of monitoring wells were conducted during each sampling event, and the information was recorded on the well inspection forms (**Appendix B**). **Appendix B** also includes a photo log, which shows the condition of the wells for each quarter. Maintenance or repairs were performed, as needed, based on observed conditions. During the third annual reporting period, no damage to well bollards, pads, or protective well casings was observed. Also, only minimal encroachment of weeds or brush on the well pads was observed. Mowing the area to control brush and weeds is conducted on a routine basis, and as needed, to allow access to the wells and was conducted at LHAAP-04 on August 1, 2022. **Table 2-5** provides a summary of the maintenance activities that were performed at the site. The stickup boxes for wells 04WW06, 04WW07, 04WW08, 04WW09, 04WW10, 04WW11, and LHSMW02 were painted and the labels were replaced in April 2022.

2.4 Year 4 Groundwater Monitoring Network

No changes to the monitoring network are planned for the semiannual sampling events for the Year 4 RA-O as shown in **Table 2-1** and on **Figure 2-1**.

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3.0 REMEDY EVALUATION

Remedy evaluation for the site is no longer applicable because the perchlorate concentrations at the performance groundwater monitoring locations have been below the PCL for nine consecutive sampling events since February 2020. The highest concentration detected during the third annual RA-O monitoring (0.28 µg/L) was in shallow zone well 04WW05, during the February 2022 sampling event. The perchlorate concentration at 04WW05 was below the detection limit in the August 2022 sampling event.

The perchlorate concentrations are showing no signs of rebound as the field-measured parameters continue to indicate a return from strong anaerobic conditions towards normal aerobic conditions. During the August 2022 sampling event, the dissolved oxygen (DO) and oxidation-reduction potential (ORP) declined at the sampled monitoring well locations, reversing the previously increasing trends. The ORP turned from positive back to negative at the seven locations where it was measured during both sampling events, declining by an average of 188 millivolts between February 2022 and August 2022. The DO was above 0.5 milligram per liter (mg/L) in six of the seven locations during the February 2022 sampling event, while the seven monitoring locations were below 0.5 mg/L in August 2022, with an average decline of 0.45 mg/L between the two events. The return to anaerobic conditions is likely related to the dry conditions during the summer of 2022 and the lack of oxygenated recharge from infiltrating rainfall, combined with continuing reductive influence from the residual carbon present in the groundwater. Based on the August 2022 geochemical indicators, the site has not returned to aerobic conditions and semiannual monitoring will continue during the fourth annual RA-O event.

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4.0 SUMMARY AND CONCLUSIONS

The LUCs for LHAAP-04 include a land use restriction prohibiting residential use and a groundwater use restriction, which prohibits water well installation for any purpose other than environmental monitoring and testing until COCs in the groundwater and soil allow unrestricted use and unlimited exposure. The annual LUC compliance inspection for the third annual RA-O was conducted on October 26, 2022. Noncompliance issues or concerns were not identified during the annual inspection, and site monitoring wells were in good condition. Painting of wells 04WW06, 04WW07, 04WW08, and LHSMW02, and relabeling of 04WW09, 04WW10, and 04WW11 was performed in April 2022. No change in land or groundwater use occurred at the site during the third annual RA-O monitoring period.

Perchlorate data and field parameters were collected over the course of the two semiannual groundwater performance monitoring periods to evaluate the continued effectiveness of the ISB remedy. Perchlorate concentrations at the RA-O performance groundwater monitoring locations have been below the PCL for nine consecutive sampling events since February 2020. While the perchlorate concentrations in groundwater have achieved the performance objective for over two years, groundwater monitoring will continue until aerobic conditions are present at the site to demonstrate no post-remedy rebound.

The evaluation of the ISB remedy at LHAAP-04 indicates that reductive degradation processes stimulated by the ISB injections have eliminated the perchlorate plume and that reducing conditions are returning towards aerobic conditions in shallow groundwater. The August 2022 ORP and DO measurements indicate that the site conditions are still anaerobic, likely due to the dry conditions during the summer of 2022 and the lingering effects from the residual carbon present in the groundwater. Semiannual groundwater performance monitoring using the approved well network and analytical parameters will occur for the fourth annual RA-O in accordance with the approved July 2022 RA-O Monitoring Technical Memorandum (Bhate 2022b).

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Tables

Table 2-1
Current Remedial Action Operation Monitoring Plan

Monitoring Location	Primary Rationale for Well Selection	Performance – Years 1 and 2 (Quarterly)								LTM – Year 3 First Semiannual					LTM – Year 3 Second Semiannual and Beyond				
		Perchlorate (314.0)	Dissolved Oxygen (field)	Oxidation-Reduction Potential (field)	pH (field)	Ferrous Iron (field reading)	Alkalinity (2320B)	Anions [a] (E300.0)	Total Organic Carbon (SW9060)	Perchlorate (314.0)	Dissolved Oxygen (field)	Oxidation-Reduction Potential (field)	pH (field reading)	Total Organic Carbon (SW9060)	Perchlorate (314.0)	Dissolved Oxygen (field)	Oxidation-Reduction Potential (field)	pH (field reading)	Total Organic Carbon (SW9060)
04WW01	Well downgradient of pre-treatment plume area	✓	✓	✓	✓					✓	✓	✓	✓		✓	✓	✓	✓	
04WW04	Upgradient well in original source area	✓	✓	✓	✓					✓	✓	✓	✓		✓	✓	✓	✓	
04WW05	Well located within pre-treatment plume area	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
04WW07	Well located within pre-treatment plume area	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
04WW09	Well located within pre-treatment plume area	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
04WW10	Well located within pre-treatment plume area	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
04WW06	Upgradient well for measuring plume stability	✓	✓	✓	✓					✓	✓	✓	✓						
04WW11	Well downgradient of pre-treatment plume area	✓	✓	✓	✓					✓	✓	✓	✓		✓	✓	✓	✓	
LHSMW01	Crossgradient well for measuring plume stability	✓	✓	✓	✓					✓	✓	✓	✓						
LHSMW02	Crossgradient well	✓	✓	✓	✓					✓	✓	✓	✓						
04WW08	Intermediate Zone well	✓	✓	✓	✓					✓	✓	✓	✓						
04WW02	Upgradient well	✓	✓	✓	✓														

Notes:

[a] Anions include nitrate, nitrites, and sulfate.

✓ Indicates sample will be collected and analyzed for the listed analyte.

LTM - long-term monitoring

Table 2-2
Groundwater Elevation Data, Year 3

Monitoring Well	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 toc)	Depth to Water (ft toc)	Groundwater Elevation (ft msl)	Screened Interval Siltation (%)
04WW01	2/4/2020	208.78	212.51	16.73	26.73	26.73	27.23	8.43	204.08	None
	5/4/2020	208.78	212.51	16.73	26.73	26.73	27.23	6.25	206.26	None
	11/4/2020	208.78	212.51	16.73	26.73	26.73	27.72	10.10	202.41	None
	3/10/2021	208.78	212.51	16.73	26.73	26.73	27.21	7.10	205.41	None
	5/24/2021	208.78	212.51	16.73	26.73	26.73	27.22	6.63	205.88	None
	8/4/2021	208.78	212.51	16.73	26.73	26.73	27.22	8.98	203.53	None
	11/4/2021	208.78	212.51	16.73	26.73	26.73	27.21	11.77	200.74	None
	2/1/2022	208.78	212.51	16.73	26.73	26.73	27.21	10.55	201.96	None
	8/2/2022	208.78	212.51	16.73	26.73	26.73	27.22	12.72	199.79	None
04WW02	2/3/2020	212.80	216.70	16.90	26.90	26.90	26.70	21.00	195.70	2.0
	5/4/2020	212.80	216.70	16.90	26.90	26.90	26.70	9.35	207.35	2.0
	11/4/2020	212.80	216.70	16.90	26.90	26.90	26.67	7.82	208.88	2.3
	3/10/2021	212.80	216.70	16.90	26.90	26.90	26.68	6.31	210.39	2.2
	5/24/2021	212.80	216.70	16.90	26.90	26.90	26.66	5.92	210.78	2.4
	8/4/2021	212.80	216.70	16.90	26.90	26.90	26.70	7.52	209.18	2.0
	11/4/2021	212.80	216.70	16.90	26.90	26.90	26.63	10.27	206.43	2.7
	2/1/2022	212.80	216.70	16.90	26.90	26.90	26.67	8.93	207.77	2.3
04WW04	2/3/2020	211.3	214.10	10.80	20.80	20.80	21.55	4.11	209.99	None
	5/4/2020	211.3	214.10	10.80	20.80	20.80	21.55	4.95	209.15	None
	11/4/2020	211.3	214.10	10.80	20.80	20.80	21.55	7.05	207.05	None
	3/10/2021	211.3	214.10	10.80	20.80	20.80	21.42	4.93	209.17	None
	5/24/2021	211.3	214.10	10.80	20.80	20.80	21.55	4.15	209.95	None
	8/4/2021	211.3	214.10	10.80	20.80	20.80	21.56	6.65	207.45	None
	11/4/2021	211.3	214.10	10.80	20.80	20.80	21.40	8.73	205.37	None
	2/1/2022	211.3	214.10	10.80	20.80	20.80	21.42	7.13	206.97	None
	8/2/2022	211.3	214.10	10.80	20.80	20.80	21.41	9.38	204.72	None

Table 2-2
Groundwater Elevation Data, Year 3

Monitoring Well	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 toc)	Depth to Water (ft toc)	Groundwater Elevation (ft msl)	Screened Interval Siltation (%)
04WW05	2/4/2020	211	213.70	18.70	28.70	28.70	29.61	7.25	206.45	None
	5/4/2020	211	213.70	18.70	28.70	28.70	29.62	6.55	207.15	None
	11/5/2020	211	213.70	18.70	28.70	28.70	29.57	9.66	204.04	None
	3/10/2021	211	213.70	18.70	28.70	28.70	29.62	6.41	207.29	None
	5/25/2021	211	213.70	18.70	28.70	28.70	29.60	6.12	207.58	None
	8/5/2021	211	213.70	18.70	28.70	28.70	29.61	8.15	205.55	None
	11/9/2021	211	213.70	18.70	28.70	28.70	29.60	11.05	202.65	None
	2/2/2022	211	213.70	18.70	28.70	28.70	29.60	10.09	203.61	None
	8/2/2022	211	213.70	18.70	28.70	28.70	29.60	11.93	201.77	None
04WW06	2/3/2020	212.52	215.63	18.11	28.11	28.11	28.07	4.97	210.66	0.4
	5/4/2020	212.52	215.63	18.11	28.11	28.11	28.11	5.34	210.29	0.0
	11/4/2020	212.52	215.63	18.11	28.11	28.11	28.05	7.84	207.79	0.6
	3/10/2021	212.52	215.63	18.11	28.11	28.11	28.06	5.03	210.60	0.5
	5/24/2021	212.52	215.63	18.11	28.11	28.11	28.07	4.60	211.03	0.4
	8/4/2021	212.52	215.63	18.11	28.11	28.11	28.08	7.08	208.55	0.3
	11/4/2021	212.52	215.63	18.11	28.11	28.11	28.05	10.87	204.76	0.6
	2/1/2022	212.52	215.63	18.11	28.11	28.11	28.08	8.63	207.00	0.3
04WW07	2/4/2020	211.66	214.64	12.98	22.98	22.98	22.61	5.27	209.37	3.7
	5/5/2020	211.66	214.64	12.98	22.98	22.98	22.98	6.30	208.34	0.0
	11/5/2020	211.66	214.64	12.98	22.98	22.98	22.63	8.39	206.25	3.5
	3/11/2021	211.66	214.64	12.98	22.98	22.98	22.60	6.20	208.44	3.8
	5/25/2021	211.66	214.64	12.98	22.98	22.98	22.25	5.52	209.12	7.3
	8/5/2021	211.66	214.64	12.98	22.98	22.98	22.28	7.82	206.82	7.0
	11/9/2021	211.66	214.64	12.98	22.98	22.98	22.61	10.53	204.11	3.7
	2/2/2022	211.66	214.64	12.98	22.98	22.98	22.27	8.22	206.42	7.1
	8/2/2022	211.66	214.64	12.98	22.98	22.98	22.58	10.63	204.01	4.0

Table 2-2
Groundwater Elevation Data, Year 3

Monitoring Well	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 toc)	Depth to Water (ft toc)	Groundwater Elevation (ft msl)	Screened Interval Siltation (%)
04WW08	2/3/2020	212.07	214.82	33.75	43.75	43.75	43.82	15.92	198.90	None
	5/4/2020	212.07	214.82	33.75	43.75	43.75	43.90	16.23	198.59	None
	11/4/2020	212.07	214.82	33.75	43.75	43.75	43.65	16.63	198.19	1.0
	3/10/2021	212.07	214.82	33.75	43.75	43.75	43.65	16.33	198.49	1.0
	5/24/2021	212.07	214.82	33.75	43.75	43.75	43.63	16.90	197.92	1.2
	8/4/2021	212.07	214.82	33.75	43.75	43.75	43.65	17.37	197.45	1.0
04WW08	11/4/2021	212.07	214.82	33.75	43.75	43.75	43.81	18.22	196.60	None
	2/1/2022	212.07	214.82	33.75	43.75	43.75	43.65	18.70	196.12	1.0
04WW09	2/4/2020	211.47	214.61	13.14	23.14	23.14	23.45	5.62	208.99	None
	5/5/2020	211.47	214.61	13.14	23.14	23.14	23.47	4.43	210.18	None
	11/5/2020	211.47	214.61	13.14	23.14	23.14	23.47	7.95	206.66	None
	3/11/2021	211.47	214.61	13.14	23.14	23.14	23.45	5.43	209.18	None
	5/25/2021	211.47	214.61	13.14	23.14	23.14	23.49	4.87	209.74	None
	8/5/2021	211.47	214.61	13.14	23.14	23.14	23.45	7.50	207.11	None
	11/9/2021	211.47	214.61	13.14	23.14	23.14	23.45	9.68	204.93	None
	2/2/2022	211.47	214.61	13.14	23.14	23.14	23.45	8.28	206.33	None
	8/2/2022	211.47	214.61	13.14	23.14	23.14	23.45	10.55	204.06	None
04WW10	2/4/2020	210.40	213.67	12.27	22.27	22.27	22.52	6.91	206.76	None
	5/5/2020	210.40	213.67	12.27	22.27	22.27	22.53	6.65	207.02	None
	11/5/2020	210.40	213.67	12.27	22.27	22.27	22.52	7.72	205.95	None
	3/11/2021	210.40	213.67	12.27	22.27	22.27	22.54	6.35	207.32	None
	5/25/2021	210.40	213.67	12.27	22.27	22.27	22.55	6.09	207.58	None
	8/5/2021	210.40	213.67	12.27	22.27	22.27	22.53	7.66	206.01	None
	11/9/2021	210.40	213.67	12.27	22.27	22.27	22.52	9.53	204.14	None
	2/2/2022	210.40	213.67	12.27	22.27	22.27	22.53	7.90	205.77	None
	8/2/2022	210.40	213.67	12.27	22.27	22.27	22.53	10.63	203.04	None

Table 2-2
Groundwater Elevation Data, Year 3

Monitoring Well	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 toc)	Depth to Water (ft toc)	Groundwater Elevation (ft msl)	Screened Interval Siltation (%)
04WW11	2/4/2020	209.31	212.01	8.20	18.20	18.20	18.50	5.40	206.61	None
	5/4/2020	209.31	212.01	8.20	18.20	18.20	18.45	5.29	206.72	None
	11/4/2020	209.31	212.01	8.20	18.20	18.20	18.49	9.32	202.69	None
	3/10/2021	209.31	212.01	8.20	18.20	18.20	18.44	4.77	207.24	None
	5/24/2021	209.31	212.01	8.20	18.20	18.20	18.50	4.45	207.56	None
	8/4/2021	209.31	212.01	8.20	18.20	18.20	18.51	8.10	203.91	None
	11/4/2021	209.31	212.01	8.20	18.20	18.20	18.47	10.18	201.83	None
	2/1/2022	209.31	212.01	8.20	18.20	18.20	18.45	9.11	202.90	None
	8/2/2022	209.31	212.01	8.20	18.20	18.20	18.45	11.43	200.58	None
LHSMW01	2/3/2020	211.19	214.43	7.74	17.74	18.24	17.95	3.90	210.53	None
	5/4/2020	211.19	214.43	7.74	17.74	18.24	17.95	4.86	209.57	None
	11/4/2020	211.19	214.43	7.74	17.74	18.24	17.95	7.32	207.11	None
LHSMW01	3/10/2021	211.19	214.43	7.74	17.74	18.24	17.95	4.25	210.18	None
	5/24/2021	211.19	214.43	7.74	17.74	18.24	17.95	4.11	210.32	None
	8/4/2021	211.19	214.43	7.74	17.74	18.24	17.95	10.52	203.91	None
	11/4/2021	211.19	214.43	7.74	17.74	18.24	17.90	9.20	205.23	None
	2/1/2022	211.19	214.43	7.74	17.74	18.24	17.96	7.44	206.99	None
LHSMW02	2/3/2020	213.75	215.43	7.18	17.18	17.68	19.00	13.53	201.90	None
	5/4/2020	213.75	215.43	7.18	17.18	17.68	18.98	8.64	206.79	None
	11/4/2020	213.75	215.43	7.18	17.18	17.68	19.10	13.90	201.53	None
	3/10/2021	213.75	215.43	7.18	17.18	17.68	19.04	7.66	207.77	None
	5/24/2021	213.75	215.43	7.18	17.18	17.68	19.03	6.34	209.09	None
	8/4/2021	213.75	215.43	7.18	17.18	17.68	19.06	10.85	204.58	None
	11/4/2021	213.75	215.43	7.18	17.18	17.68	19.05	14.90	200.53	None
	2/1/2022	213.75	215.43	7.18	17.18	17.68	18.98	15.48	199.95	None

Table 2-2
Groundwater Elevation Data, Year 3

Notes:

[a] The percent siltation of the screened interval is calculated as the length of silted screened interval divided by the total screened interval length, times 100. Wells will be redeveloped if the siltation reaches or exceeds 10%.

% - percent

ft msl - feet above mean sea level

ft btoc - feet below top of casing

toc - top of casing

Table 2-3
Year 3 RA-O Analytical Results

			Location Code	04WW01				04WW02		04WW04				04WW05					
			Sample ID	04WW01-220201		04WW01-220802		04WW02-220201		04WW04-220201		04WW04-220802		04WW05-220202		04WW05-220802		04WW05-220802-FD	
			Sample Date	2/1/2022		8/2/2022		2/1/2022		2/1/2022		8/2/2022		2/2/2022		8/2/2022		8/2/2022	
			Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG	
			Location Description	Shallow Zone, Downgradient of Plume		Shallow Zone, Downgradient of Plume		Shallow Zone, Upgradient of Plume		Shallow Zone, Within Plume Area		Shallow Zone, Within Plume Area		Shallow Zone, Within Plume Area		Shallow Zone, Within Plume Area		Shallow Zone, Within Plume Area	
Parameter		Units	MCL / PCL / UTL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
FIELD TESTS																			
	Dissolved Oxygen	mg/L	NV	0.65		0.03		0.66		0.49		0.03		0.76		0.1		0.1	
	Ferrous Iron	mg/L	NV	NM		NM		NM		NM		NM		3.02		NM		NM	
	Oxidation-Reduction Potential	mV	NV	52		-104		118		151		-101		127		-70		-70	
	pH	SU	NV	6.34		6.78		5.36		4.87		6.69		5.85		6.86		6.86	
	Specific conductivity	µmhos/cm	NV	3.19		3.23		0.51		0.51		0.36		1.57		1.46		1.46	
	Temperature	C	NV	18.23		25.42		19.42		16.91		24.59		18.01		25.01		25.01	
	Turbidity	NTU	NV	27.3		2.8		7.4		746		360		586		174		174	
GEN CHEMISTRY																			
	Total Organic Carbon	mg/L	NV	NA		NA		NA		NA		NA		4.61		NA		NA	
PERCHLORATE																			
	Perchlorate	µg/L	17	< 0.2	U	< 0.05	U	< 0.2	U	0.055	J	< 0.05	U	0.28		< 0.05	U	< 0.05	U

Notes:

< The analyte was not detected above the concentration shown.

µg/L - micrograms per Liter

µmhos/cm - micromhos per centimeter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

C - degrees Celsius

FD - field duplicate

ID - Identifier

MCL - Maximum Contaminant Level

mg/L - milligrams per Liter

mV - millivolt

NA - not analyzed

NM - not measured

NTU - nephelometric turbidity unit

NV - No value, PCL values are only shown for constituents of concern.

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level.

RA-O - Remedial Action Operation

REG - regular sample

SU - standard unit

UTL - Upper Tolerance Limit

Val Qual - validation qualifier

Table 2-3
Year 3 RA-O Analytical Results

			Location Code	04WW06		04WW07						04WW08		04WW09			
			Sample ID	04WW06-220201		04WW07-220202		04WW07-220202-FD		04WW07-220802		04WW08-220201		04WW09-220202		04WW09-220802	
			Sample Date	2/1/2022		2/2/2022		2/2/2022		8/2/2022		2/1/2022		2/2/2022		8/2/2022	
			Sample Purpose	REG		REG		FD		REG		REG		REG		REG	
			Location Description	Shallow Zone, Cross-Gradient to Plume Area		Shallow Zone, Downgradient of Plume Area		Shallow Zone, Downgradient of Plume Area		Shallow Zone, Downgradient of Plume Area		Intermediate Zone, Slightly Upgradient of Plume Area		Shallow Zone, Within Treatment Area		Shallow Zone, Within Treatment Area	
Parameter		Units	MCL / PCL / UTL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
FIELD TESTS																	
	Dissolved Oxygen	mg/L	NV	1.74		0.85		0.85		0.31		0.73		0.43		0.13	
	Ferrous Iron	mg/L	NV	NM		NM		NM		NM		NM		2.77		NM	
	Oxidation-Reduction Potential	mV	NV	98		124		124		-148		60		23		-134	
	pH	SU	NV	5.91		5.75		5.75		6.84		5.99		6		6.74	
	Specific conductivity	µmhos/cm	NV	1.6		1.77		1.77		2.58		3.84		1.31		1.31	
	Temperature	C	NV	19.36		17.31		17.31		24.54		18.97		18.65		24.88	
	Turbidity	NTU	NV	3.4		20.5		20.5		15.3		49.2		64.1		7.5	
GEN CHEMISTRY																	
	Total Organic Carbon	mg/L	NV	NA		10		12.6		NA		NA		16.3		NA	
PERCHLORATE																	
	Perchlorate	µg/L	17	< 0.2	U	< 0.2	U	< 0.2	U	< 0.05	U	< 1	U	< 1	U	< 0.05	U

Notes:

< The analyte was not detected above the concentration shown.

µg/L - micrograms per Liter

µmhos/cm - micromhos per centimeter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

C - degrees Celsius

FD - field duplicate

ID - Identifier

MCL - Maximum Contaminant Level

mg/L - milligrams per Liter

mV - millivolt

NA - not analyzed

NM - not measured

NTU - nephelometric turbidity unit

NV - No value, PCL values are only shown for constituents of concern.

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level.

RA-O - Remedial Action Operation

REG - regular sample

SU - standard unit

UTL - Upper Tolerance Limit

Val Qual - validation qualifier

Table 2-3
Year 3 RA-O Analytical Results

			Location Code	04WW10				04WW11				LHSMW01		LHSMW02			
			Sample ID	04WW10-220202		04WW10-220802		04WW11-220201		04WW11-220802		LHSMW01-220201		LHSMW02-220201		LHSMW02-220201-FD	
			Sample Date	2/2/2022		8/2/2022		2/1/2022		8/2/2022		2/1/2022		2/1/2022		2/1/2022	
			Sample Purpose	REG		REG		REG		REG		REG		REG		FD	
			Location Description	Shallow Zone, Within Treatment Area		Shallow Zone, Within Treatment Area		Shallow Zone, Downgradient of Plume		Shallow Zone, Downgradient of Plume		Shallow Zone, Cross-Gradient to Plume Area		Shallow Zone, Downgradient to Plume Area		Shallow Zone, Downgradient to Plume Area	
Parameter		Units	MCL / PCL / UTL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
FIELD TESTS																	
	Dissolved Oxygen	mg/L	NV	0.63		0.47		0.63		0.21		0.65		0.85		0.85	
	Ferrous Iron	mg/L	NV	0.14		NM		NM		NM		NM		NM		NM	
	Oxidation-Reduction Potential	mV	NV	68		-24		158		-33		263		124		124	
	pH	SU	NV	5.8		6.71		5.42		7.37		4.89		5.75		5.75	
	Specific conductivity	µmhos/cm	NV	1.25		2.17		0.734		0.553		0.976		1.77		1.77	
	Temperature	C	NV	17.2		25.48		17.12		26.74		14.53		17.31		17.31	
	Turbidity	NTU	NV	17.2		37.2		29		17.1		4.4		20.5		20.5	
GEN CHEMISTRY																	
	Total Organic Carbon	mg/L	NV	5.63		NA		NA		NA		NA		NA		NA	
PERCHLORATE																	
	Perchlorate	µg/L	17	< 0.2	U	< 0.05	U	< 0.2	U	< 0.05	U	0.078	J	< 0.2	U	< 0.2	U

Notes:

< The analyte was not detected above the concentration shown.

µg/L - micrograms per Liter

µmhos/cm - micromhos per centimeter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

C - degrees Celsius

FD - field duplicate

ID - Identifier

MCL - Maximum Contaminant Level

mg/L - milligrams per Liter

mV - millivolt

NA - not analyzed

NM - not measured

NTU - nephelometric turbidity unit

NV - No value, PCL values are only shown for constituents of concern.

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level.

RA-O - Remedial Action Operation

REG - regular sample

SU - standard unit

UTL - Upper Tolerance Limit

Val Qual - validation qualifier

Table 2-4
Historical Perchlorate Concentrations (2000–2022)

Monitoring Well	Date	Perchlorate Concentration (µg/L)
04WW01	12-19-2000	< 0.3
	3-17-2002	3.98
	9-18-2002	< 4
	9-9-2004	< 1
	9-3-2010	< 0.1
	2-23-2011	0.114
	1-10-2018	< 4
	1-22-2019	< 2
	2-4-2020	**19**
	5-4-2020	< 0.05
	8-10-2020	0.561 J
	11-4-2020	0.246 J
	3-10-2021	< 0.05
	5-24-2021	< 0.05
	8-4-2021	< 0.5
	11-4-2021	< 0.2
	2-1-2022	< 0.2
	8-2-2022	< 0.05
04WW02	12-19-2000	< 0.3
	3-10-2002	< 4
	9-18-2002	< 4
	9-9-2004	< 1
	9-3-2010	< 0.1
	1-9-2018	< 4
	1-21-2019	< 4
	11-5-2019	< 2
	2-3-2020	< 2
	5-4-2020	< 0.05
	8-10-2020	0.0477 J
	11-4-2020	0.0693 J
	3-10-2021	< 0.05
	5-24-2021	0.54
	8-4-2021	< 0.25
	11-4-2021	< 0.2
	2-1-2022	< 0.2
04WW03	12-19-2000	< 0.3
	9-9-2004	< 1
	8-20-2010	< 0.1
	1-9-2018	< 4
	1-21-2019	< 4
	11-6-2019	< 2
04WW04	9-3-2010	**4,590**
	10-13-2010	**2,920**
	11-10-2010	**5,410**
	2-23-2011	**1,580**
	1-9-2018	**31 J**
	1-21-2019	< 2
	11-6-2019	< 2

Table 2-4
Historical Perchlorate Concentrations (2000–2022)

Monitoring Well	Date	Perchlorate Concentration (µg/L)
04WW04 (cont.)	2-3-2020	< 2
	5-4-2020	< 0.05
	8-10-2020	< 0.1
	11-4-2020	0.158
	3-10-2021	0.139
	5-24-2021	< 0.05
	8-4-2021	< 0.25
	11-4-2021	< 0.2
	2-1-2022	0.055 J
	8-2-2022	< 0.05
04WW05	9-3-2010	0.9
	11-10-2010	6.58
	2-23-2011	0.326
	2-23-2011	0.327
	1-9-2018	**78**
	1-21-2019	**78**
	11-6-2019	< 2
	2-4-2020	< 2
	5-5-2020	< 0.05
	8-11-2020	0.399 J
	11-4-2020	< 0.05
	3-11-2021	< 0.05
	5-25-2021	< 0.05
	8-5-2021	< 0.5
	11-9-2021	< 0.2
	2-2-2022	0.28
	8-2-2022	< 0.05
04WW06	1-9-2018	3.1 J
	1-21-2019	< 2
	11-6-2019	< 2
	2-3-2020	< 2
	5-4-2020	< 0.05
	8-10-2020	0.567 J
	11-4-2020	< 0.05
	3-10-2021	< 0.05
	5-24-2021	0.0272 J
	8-4-2021	< 0.1
	11-4-2021	< 0.2
	2-1-2022	< 0.2
04WW07	1-9-2018	13
	1-22-2019	**110**
	2-4-2020	**86**
	5-5-2020	3.51
	8-11-2020	0.557 J
	11-4-2020	0.19 J
	3-11-2021	0.169
	5-25-2021	< 0.05
	8-5-2021	< 0.5

Table 2-4
Historical Perchlorate Concentrations (2000–2022)

Monitoring Well	Date	Perchlorate Concentration (µg/L)
04WW07 (cont.)	11-9-2021	< 0.2
	2-2-2022	< 0.2
	8-2-2022	< 0.05
04WW08	1-9-2018	1.5 J
	11-6-2019	13
	2-3-2020	< 2
	5-4-2020	9.29
	8-10-2020	1.66
	11-4-2020	4.65
	3-10-2021	4
	5-24-2021	0.0359 J
	8-4-2021	< 0.5
	11-4-2021	< 0.2
	2-1-2022	< 1
04WW09	1-22-2019	**2,100**
	2-4-2020	**18**
	5-5-2020	11.1
	8-11-2020	3.92
	11-4-2020	2.02
	3-11-2021	< 0.05
	5-25-2021	< 0.5
	8-5-2021	< 0.5
	11-9-2021	< 0.2
	2-2-2022	< 1
	8-2-2022	< 0.05
04WW10	1-22-2019	**10,000**
	2-4-2020	< 2
	5-5-2020	< 0.05
	8-11-2020	0.339 J+
	11-4-2020	0.0888 J
	3-11-2021	< 0.05
	5-25-2021	< 0.05
	8-5-2021	< 0.05
	11-9-2021	< 0.2
	2-2-2022	< 0.2
	8-2-2022	< 0.05
04WW11	1-22-2019	< 4
	11-6-2019	< 2
	2-4-2020	< 2
	5-4-2020	< 0.05
	8-10-2020	0.0435 J
	11-4-2020	< 0.05
	3-10-2021	< 0.05
	5-24-2021	0.0627 J
	8-4-2021	< 0.25
	11-4-2021	< 0.2
	2-1-2022	< 0.2
	8-2-2022	< 0.05

Table 2-4
Historical Perchlorate Concentrations (2000–2022)

Monitoring Well	Date	Perchlorate Concentration (µg/L)
LHSMW01	5-24-2000	**36.9**
	10-3-2000	< 16
	2-8-2001	**81**
	9-18-2002	< 4
	9-3-2010	0.676
	2-23-2011	0.208
	1-9-2018	< 4
	1-22-2019	< 4
	11-6-2019	< 2
	2-3-2020	< 2
	5-4-2020	< 0.05
	8-10-2020	0.179 J
	11-4-2020	< 0.05
	3-10-2021	< 0.05
	5-24-2021	< 0.05
	8-4-2021	< 0.1
	11-4-2021	< 0.2
	2-1-2022	0.078 J
LHSMW02	8-20-2010	< 0.1
	2-23-2011	1.3
	2-15-2018	< 4
	1-21-2019	< 2
	11-5-2019	< 2
	2-3-2020	< 2
	5-4-2020	< 0.05
	8-10-2020	0.121
	11-4-2020	0.169
	3-10-2021	0.082 J
	5-24-2021	0.0392 J
	8-4-2021	< 0.25
	11-4-2021	< 0.2
	2-1-2022	< 0.2

Notes:

Bolded and blue highlighted concentrations exceed the PCL (17 µg/L).

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

< Perchlorate was not detected above the detection limit shown.

µg/L - micrograms per Liter

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 with a high bias in the sample.

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level.

Table 2-5
Year 3 RA-O Well Maintenance Summary

Well ID	Date Inspected	Pads	Bollards	Protective Casings	Locks	Photos	Comments From Well Inspection Form
04WW01	3/10/2021	Good	Good	Good	In Place	Yes	
	5/24/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/4/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	11/4/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/1/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/2/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
04WW02	3/10/2021	Good	Good	Good	In Place	Yes	
	5/24/2021	Good	Good	Good	In Place	Yes	
	8/4/2021	Good	Good	Good	In Place	Yes	
	11/4/2021	Good	Good	Good	In Place	Yes	
	2/1/2022	Good	Good	Good	In Place	Yes	
04WW04	3/10/2021	Good	Good	Good	In Place	Yes	
	5/24/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/4/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	11/4/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/1/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/2/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
04WW05	3/11/2021	Good	Good	Good	In Place	Yes	
	5/25/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/5/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	11/9/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/2/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/2/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
04WW06	3/10/2021	Good	Good	Good	In Place	Yes	Needs paint
	5/24/2021	Good	Good	Good	In Place	Yes	Needs paint
	8/4/2021	Good	Good	Good	In Place	Yes	Needs paint
	11/4/2021	Good	Good	Good	In Place	Yes	Needs paint
	2/1/2022	Good	Good	Good	In Place	Yes	Painted and label replaced 04/2022
04WW07	3/11/2021	Good	Good	Good	In Place	Yes	Needs paint
	5/25/2021	Good	Good	Good	In Place	Yes	Needs paint
	8/5/2021	Good	Good	Good	In Place	Yes	Needs paint
	11/9/2021	Good	Good	Good	In Place	Yes	Needs paint
	2/2/2022	Good	Good	Good	In Place	Yes	Painted and label replaced 04/2022
	8/2/2022	Good	Good	Good	In Place	Yes	
04WW08	3/10/2021	Good	Good	Good	In Place	Yes	Needs paint
	5/24/2021	Good	Good	Good	In Place	Yes	Needs paint; Silt present at <10% of well screen
	8/4/2021	Good	Good	Good	In Place	Yes	Needs paint; Silt present at <10% of well screen
	11/4/2021	Good	Good	Good	In Place	Yes	Needs paint; Silt present at <10% of well screen
	2/1/2022	Good	Good	Good	In Place	Yes	Painted and label replaced 04/2022; Silt present at <10% of well screen
04WW09	3/11/2021	Good	Good	Good	In Place	Yes	Label partially missing; Silt present at <10% of well screen
	5/25/2021	Good	Good	Good	In Place	Yes	Label partially missing; Silt present at <10% of well screen
	8/5/2021	Good	Good	Good	In Place	Yes	Label partially missing
	11/9/2021	Good	Good	Good	In Place	Yes	Label partially missing; Silt present at <10% of well screen
	2/2/2022	Good	Good	Good	In Place	Yes	Painted and label replaced 04/2022; Silt present at <10% of well screen
	8/2/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen

Table 2-5
Year 3 RA-O Well Maintenance Summary

Well ID	Date Inspected	Pads	Bollards	Protective Casings	Locks	Photos	Comments From Well Inspection Form
04WW10	3/11/2021	Good	Good	Good	In Place	Yes	Label partially missing
	5/25/2021	Good	Good	Good	In Place	Yes	Label partially missing
	8/5/2021	Good	Good	Good	In Place	Yes	Label partially missing
	11/9/2021	Good	Good	Good	In Place	Yes	Label partially missing
	2/2/2022	Good	Good	Good	In Place	Yes	Painted and label replaced 04/2022
	8/2/2022	Good	Good	Good	In Place	Yes	
04WW11	3/10/2021	Good	Good	Good	In Place	Yes	Label partially missing
	5/24/2021	Good	Good	Good	In Place	Yes	Label partially missing
	8/4/2021	Good	Good	Good	In Place	Yes	Label partially missing
	11/4/2021	Good	Good	Good	In Place	Yes	Label partially missing
	2/1/2022	Good	Good	Good	In Place	Yes	Painted and label replaced 04/2022
	8/2/2022	Good	Good	Good	In Place	Yes	
LHSMW01	3/10/2021	Good	Good	Good	In Place	Yes	
	5/24/2021	Good	Good	Good	In Place	Yes	
	8/4/2021	Good	Good	Good	In Place	Yes	
	11/4/2021	Good	Good	Good	In Place	Yes	
	2/1/2022	Good	Good	Good	In Place	Yes	
LHSMW02	3/10/2021	Good	Good	Good	In Place	Yes	Needs paint
	5/24/2021	Good	Good	Good	In Place	Yes	Needs paint
	8/4/2021	Good	Good	Good	In Place	Yes	Needs Paint
	11/4/2021	Good	Good	Good	In Place	Yes	Needs Paint; Silt present at <10% of well screen
	2/1/2022	Good	Good	Good	In Place	Yes	Label replaced 4/2022; Silt present at <10% of well screen

Notes:

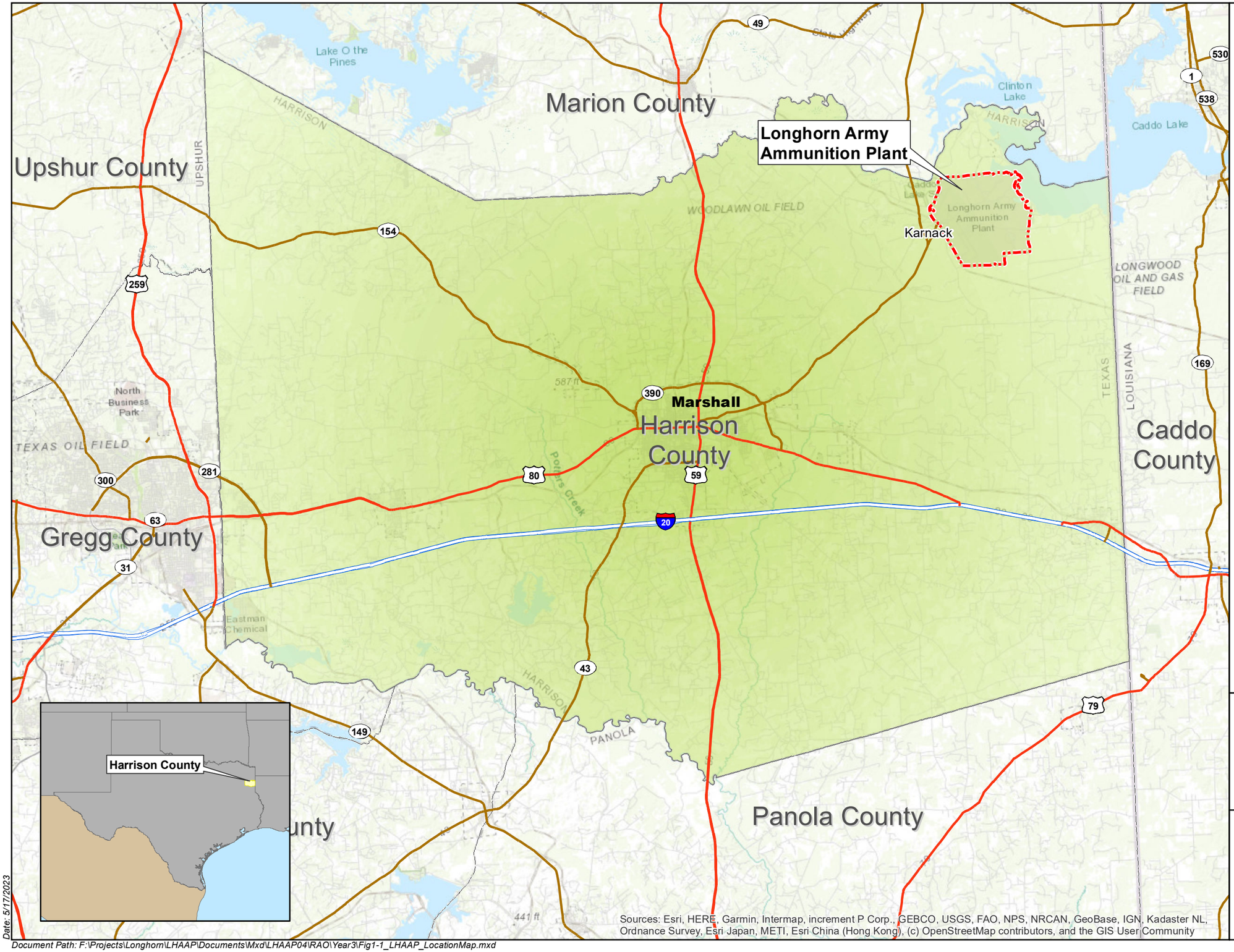
< less than

% - percent

ID - identifier

RA-O - Remedial Action Operation

Figures



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Notes:
1. LHAAP = Longhorn Army Ammunition Plant
2. RA-O = Remedial Action Operations

N

0 2 4 Miles

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bhate APTIM

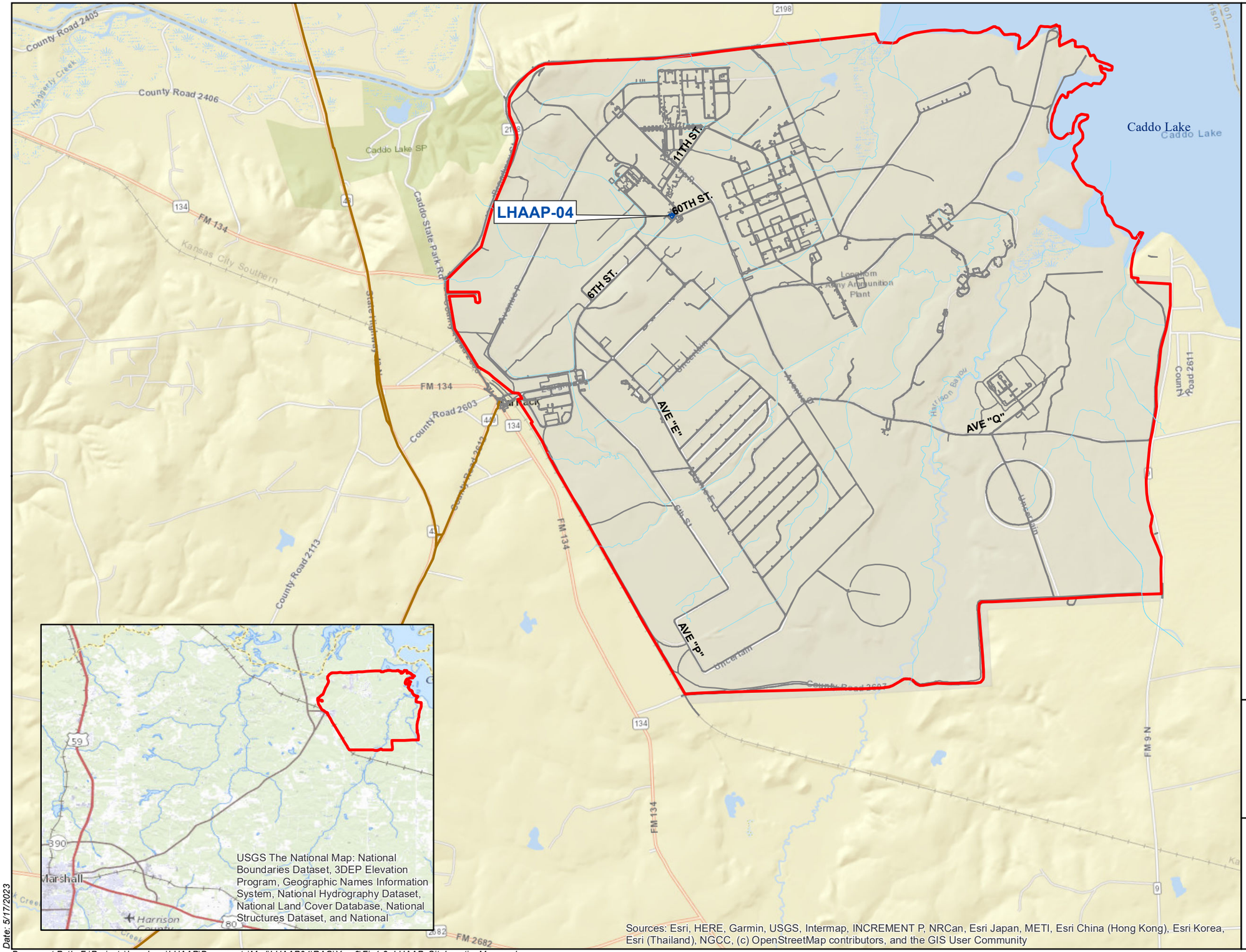
Figure 1-1

LHAAP Location Map
Third Annual RA-O Report
LHAAP-04

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/17/2023

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RAO\Year3\Fig1-1_LHAAP_LocationMap.mxd



Stream
Road
LHAAP Boundary
LHAAP-04 Site Boundary

Notes:
1. LHAAP = Longhorn Army Ammunition Plant
2. RA-O = Remedial Action Operations

N
0 1,500 3,000
Feet

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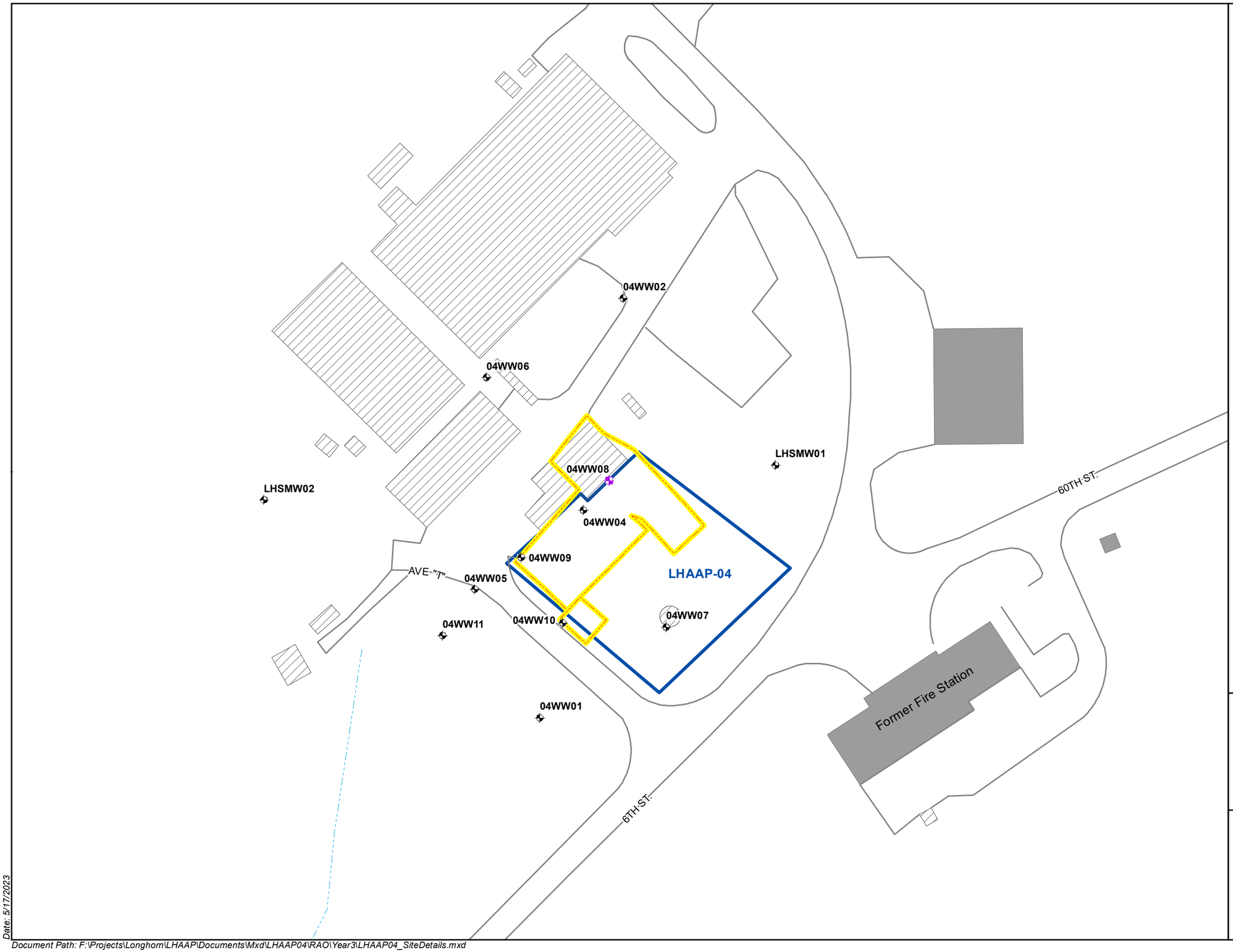
bhate APTIM

Figure 1-2
LHAAP-04 Site Location Map
Third Annual RA-O Report
LHAAP-04

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/17/2023

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RAO\Year3\Fig1-2_LHAAP_SiteLocationMap.mxd



Shallow Monitoring Well

Intermediate Monitoring Well

Limits of Excavation at Surface (*Source: LHAAP-04 Final Completion Report, Shaw, 2011*)

Stream

Road

Building (Existing)

Buidling (Not Existing)

Site Boundary

Notes:
1. LHAAP = Longhorn Army Ammunition Plant
2. RA-O = Remedial Action Operations

N

0 35 70 Feet

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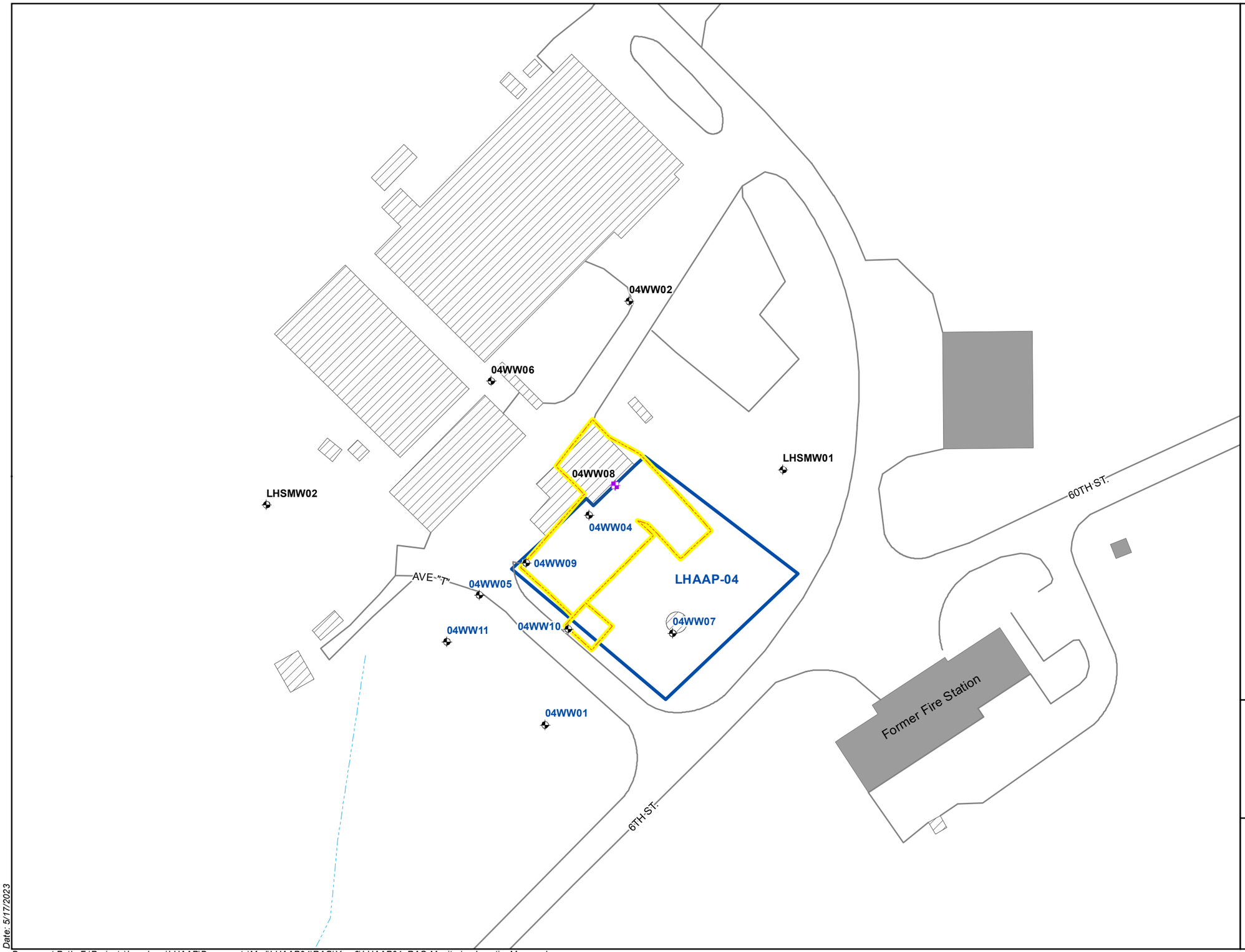
Figure 1-3

Site Details
Third Annual RA-O Report
LHAAP-04

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/17/2023

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RAO\Year3\LHAAP04_SiteDetails.mxd



- Shallow Monitoring Well
- Intermediate Monitoring Well
- Limits of Excavation at Surface (*Source: LHAAP-04 Final Completion Report, Shaw, 2011*)
- Stream
- Road
- Building (Existing)
- Buidling (Not Existing)
- Site Boundary

Notes:
1.**Blue** = Monitoring well will be analyzed for perchlorate and field parameters defined on Table 2-1.
2. LHAAP = Longhorn Army Ammunition Plant
3. RA-O = Remedial Action Operations

N

0 35 70 Feet

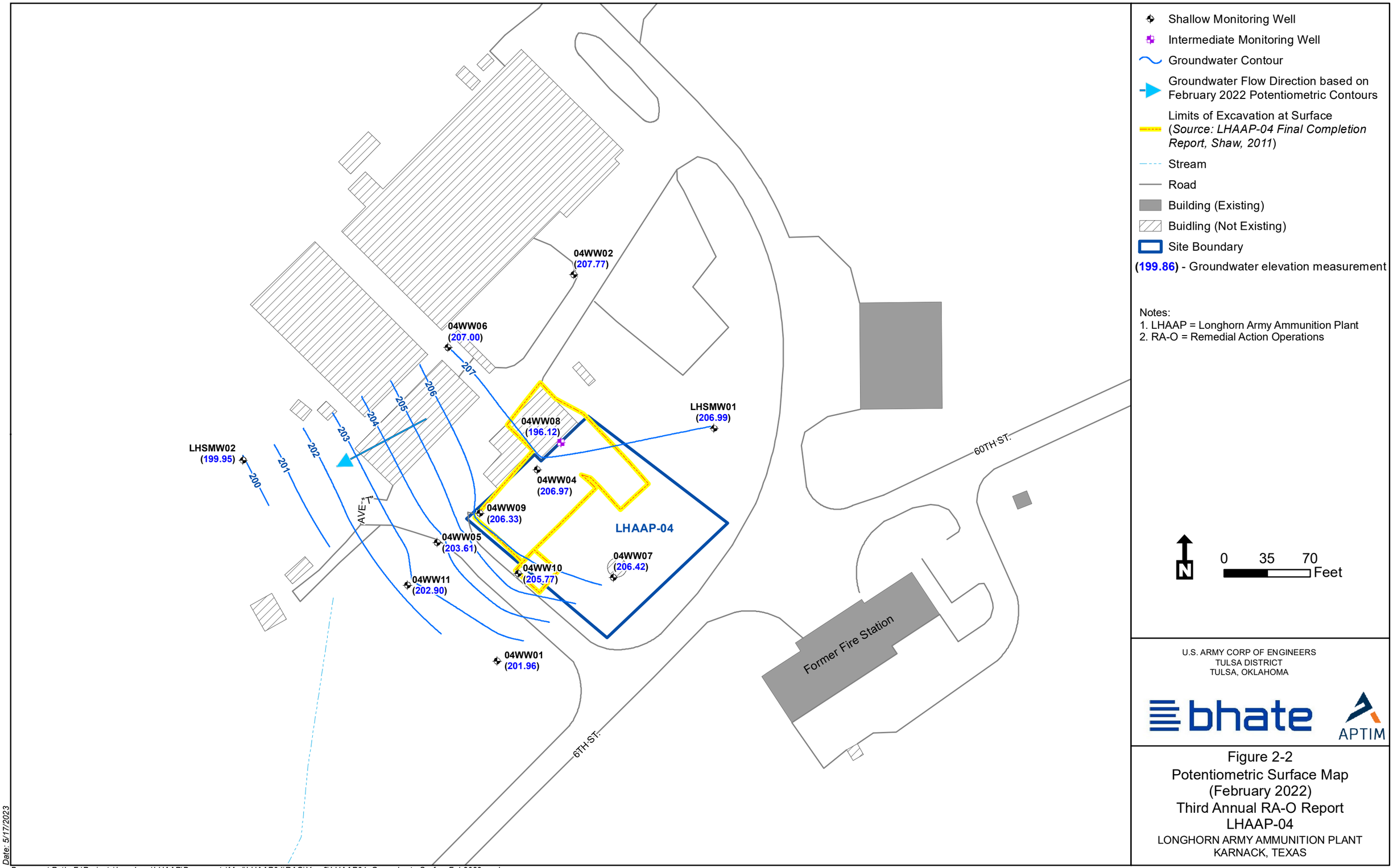
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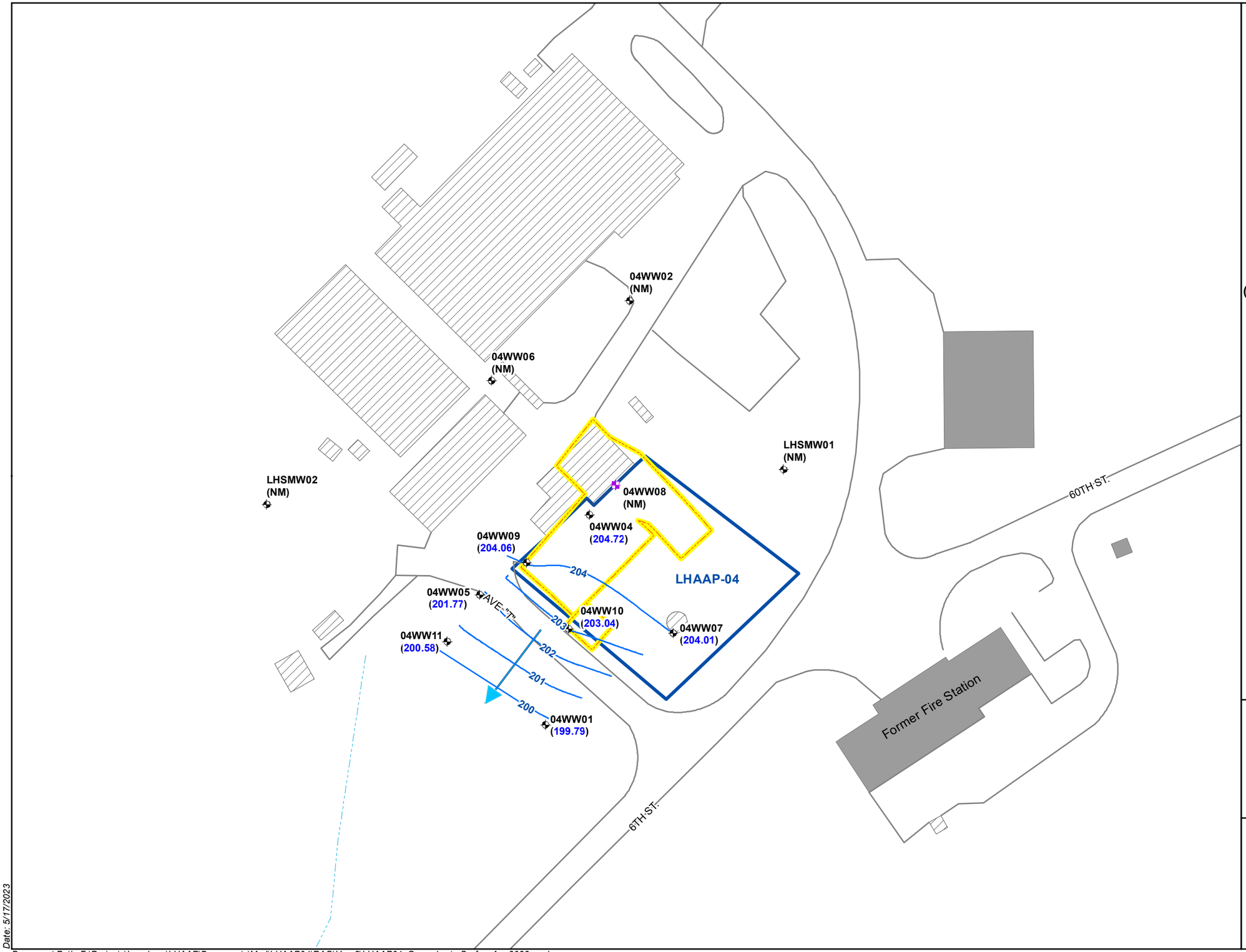
bhate APTIM

Figure 2-1
Current RA-O Monitoring
Well Location Map
Third Annual RA-O Report
LHAAP-04
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/17/2023

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RAO\Year3\LHAAP04_RAO Monitoring LocationMap.mxd


04WW02
(207.77)
04WW06
(207.00)
LHSMW01
(206.99)
04WW08
(196.12)
LHSMW02
(199.95)
04WW04
(206.97)
04WW09
(206.33)
LHAAP-04
04WW05
(203.61)
04WW07
(206.42)
04WW10
(205.77)
04WW11
(202.90)
04WW01
(201.96)
200
201
202
203
204
205
206
207
AVE "T"
60TH ST.
6TH ST.
Former Fire Station
Shallow Monitoring Well
Intermediate Monitoring Well
Groundwater Contour
Groundwater Flow Direction based on February 2022 Potentiometric Contours
Limits of Excavation at Surface (Source: LHAAP-04 Final Completion Report, Shaw, 2011)
Stream
Road
Building (Existing)
Buidling (Not Existing)
Site Boundary
(199.86) - Groundwater elevation measurement
Notes:
1. LHAAP = Longhorn Army Ammunition Plant
2. RA-O = Remedial Action Operations
N
0
35
70
Feet
U.S. ARMY CORP OF ENGINEERS
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Figure 2-2
Potentiometric Surface Map
(February 2022)
Third Annual RA-O Report
LHAAP-04
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
Date: 5/17/2023
Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RAO\Year3\LHAAP04_GroundwaterSurfaceFeb2022.mxd



- Shallow Monitoring Well
- Intermediate Monitoring Well
- Groundwater Contour
- Groundwater Flow Direction based on August 2022 Potentiometric Contours
- Limits of Excavation at Surface (*Source: LHAAP-04 Final Completion Report, Shaw, 2011*)
- Stream
- Road
- Building (Existing)
- Buidling (Not Existing)
- Site Boundary

(204.86) - Groundwater elevation measurement

Notes:
1. LHAAP = Longhorn Army Ammunition Plant
2. RA-O = Remedial Action Operations

N

0 35 70 Feet

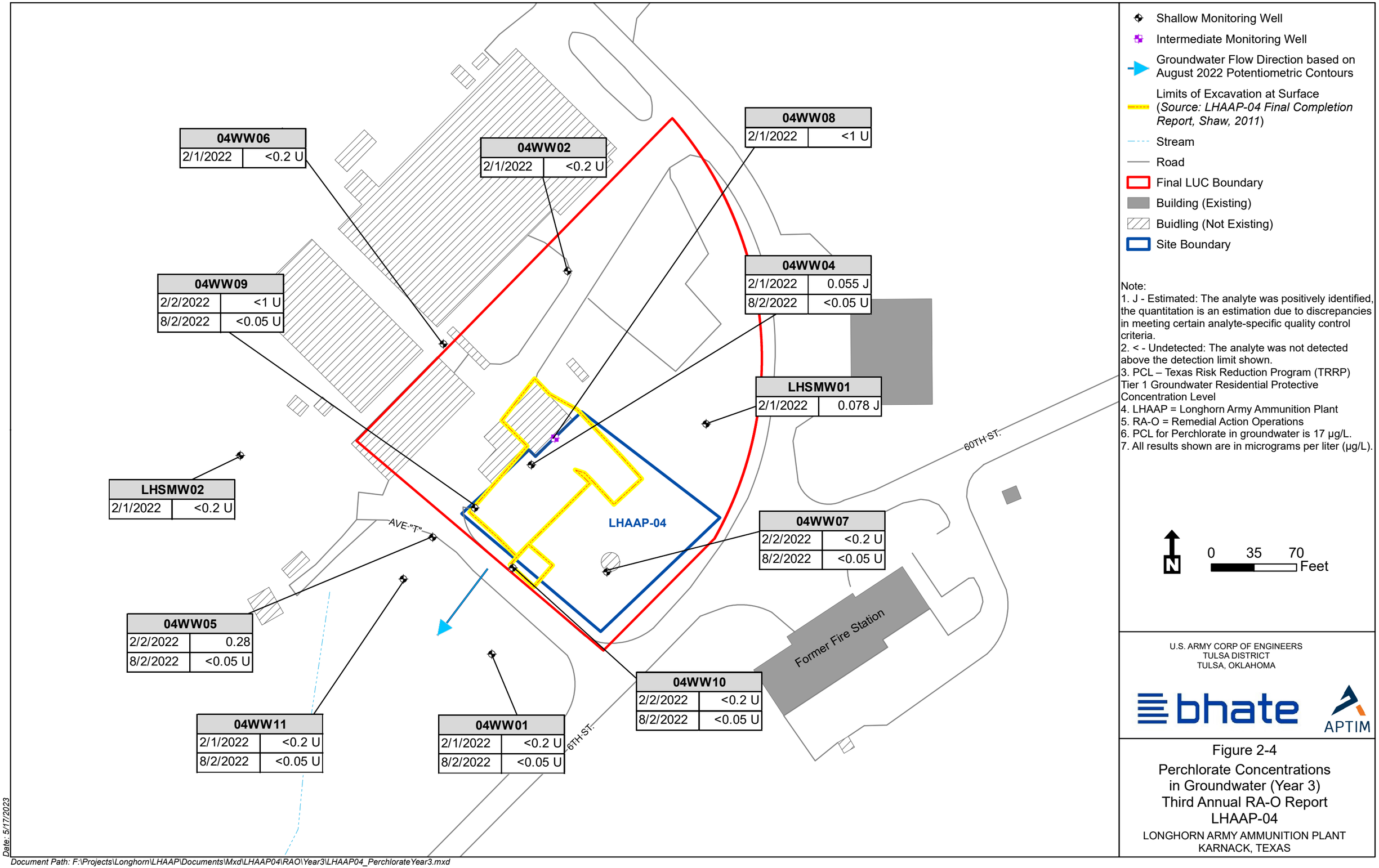
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Figure 2-3
Potentiometric Surface Map
(August 2022)
Third Annual RA-O Report
LHAAP-04
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/17/2023

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RAO\Year3\LHAAP04_GroundwaterSurfaceAug2022.mxd



Shallow Monitoring Well
Intermediate Monitoring Well
Groundwater Flow Direction based on August 2022 Potentiometric Contours
Limits of Excavation at Surface (*Source: LHAAP-04 Final Completion Report, Shaw, 2011*)
Stream
Road
Final LUC Boundary
Building (Existing)
Buidling (Not Existing)
Site Boundary

Note:
1. J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
2. < - Undetected: The analyte was not detected above the detection limit shown.
3. PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level
4. LHAAP = Longhorn Army Ammunition Plant
5. RA-O = Remedial Action Operations
6. PCL for Perchlorate in groundwater is 17 µg/L.
7. All results shown are in micrograms per liter (µg/L).

N
0 35 70
Feet

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Figure 2-4
Perchlorate Concentrations in Groundwater (Year 3)
Third Annual RA-O Report
LHAAP-04
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/17/2023

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RAO\Year3\LHAAP04_PerchlorateYear3.mxd

Appendix A

Annual Land Use Control Compliance Certification and Documentation

Annual Land Use Control Compliance Certification Form

In accordance with the Remedial Design dated April 3, 2019 for LHAAP-04 an inspection of the site was conducted by Aptim [indicate transferee] on 10/26/22.

The land use control mechanisms are:

- Groundwater restrictions - The groundwater underlying LHAAP-04 within the LUC boundary shall not be accessed or used for any purpose (except for environmental monitoring and testing) without the prior written approval of U.S. Army, the USEPA and the TCEQ. The LUC to prohibiting groundwater use shall be implemented and shall remain in place at the site until the levels of contaminants of concern (COCs) in soil and groundwater allow for unlimited use and unrestricted exposure.;
- Land use restrictions - restrict land use within the LUC boundary to nonresidential;
- Integrity of remedial and monitoring systems - maintain the integrity of any current or future remedial or monitoring systems until cleanup goals are met.

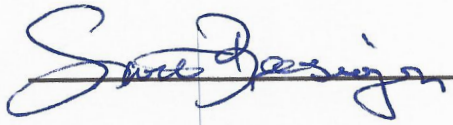
No unauthorized activities or uses have occurred. Compliance with land use controls and restrictions is as follows:

- No use of groundwater (other than environmental testing and monitoring), installation of new groundwater wells, or tampering with existing monitoring wells;
- No land use other than nonresidential; and
- No activities that would compromise the integrity of the remedial or monitoring systems.

I, the undersigned, do document that the inspection was conducted as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: OCTOBER 26, 2022

Name/Title: Scott Beesinger / Senior Field Tech

Signature: 

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year, retained in the file and provided to Army, EPA and TCEQ upon request.

Appendix B

Well Inspection Forms and Well Photographs

PHOTO LOG

February 2022

Photo No.	Date	Task and Description
1	2-1-2022	Monitoring Well 04WW01
2	2-1-2022	Monitoring Well 04WW02
3	2-1-2022	Monitoring Well 04WW04
4	2-2-2022	Monitoring Well 04WW05
5	2-1-2022	Monitoring Well 04WW06
6	2-2-2022	Monitoring Well 04WW07



PHOTO 1: Monitoring Well 04WW01
DATE: February 1, 2022



PHOTO 2: Monitoring Well 04WW02
DATE: February 1, 2022



PHOTO 3: Monitoring Well 04WW04
DATE: February 1, 2022



PHOTO 4: Monitoring Well 04WW05
DATE: February 2, 2022



PHOTO 5: Monitoring Well 04WW06
DATE: February 1, 2022



PHOTO 6: Monitoring Well 04WW07
DATE: February 2, 2022

PHOTO LOG

March 2022

Photo No.	Date	Task and Description
1	March 2022	Monitoring Well 04WW06
2	March 2022	Monitoring Well 04WW07
3	March 2022	Monitoring Well 04WW08
4	March 2022	Monitoring Well 04WW09
5	March 2022	Monitoring Well 04WW10
6	March 2022	Monitoring Well 04WW11
7	March 2022	Monitoring Well LHSMW02



PHOTO 1: Monitoring Well 04WW06
DATE: March 2022



PHOTO 2: Monitoring Well 04WW07
DATE: March 2022



PHOTO 3: Monitoring Well 04WW08
DATE: March 2022



PHOTO 4: Monitoring Well 04WW09
DATE: March 2022



PHOTO 5: Monitoring Well 04WW10
DATE: March 2022



PHOTO 6: Monitoring Well 04WW11
DATE: March 2022



PHOTO 7: Monitoring Well LHSMW02
DATE: March 2022

PHOTO LOG

August 2022

Photo No.	Date	Task and Description
1	8-2-2022	Monitoring Well 04WW01
2	8-2-2022	Monitoring Well 04WW04
3	8-2-2022	Monitoring Well 04WW05
4	8-2-2022	Monitoring Well 04WW07
5	8-2-2022	Monitoring Well 04WW09
6	8-2-2022	Monitoring Well 04WW10
7	8-2-2022	Monitoring Well 04WW11



PHOTO 1: Monitoring Well 04WW01
DATE: August 2, 2022



PHOTO 2: Monitoring Well 04WW04
DATE: August 2, 2022



PHOTO 3: Monitoring Well 04WW05
DATE: August 2, 2022



PHOTO 4: Monitoring Well 04WW07
DATE: August 2, 2022



PHOTO 5: Monitoring Well 04WW09
DATE: August 2, 2022



PHOTO 6: Monitoring Well 04WW10
DATE: August 2, 2022



PHOTO 7: Monitoring Well 04WW11
DATE: August 2, 2022

01175456

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 04
Well ID: 04MW01
Inspection Date: 2/1/22
Well Completion Depth/ Measured Depth: 27.21
Inspector: Scott Bassinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01175457

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 04
Well ID: 04WW02
Inspection Date: 2/1/22
Well Completion Depth/ Measured Depth: 26.67
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:

01175458

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 04
Well ID: 04MW04
Inspection Date: 2/1/22
Well Completion Depth/Measured Depth: 21.42
Inspector: Scott Baesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED 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:

01175459

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 04

Well ID: 04MW05
Inspection Date: 7/2/22
Well Completion Depth/ Measured Depth: 29.60
Inspector: Scott Baggenger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01175460

WELL INSPECTION FORM

Job Name: LITAAP
Job No.: 501032
Client: ARMY
Site Name: 04
Well ID: 04WW06
Inspection Date: 2/1/22
Well Completion Depth/ Measured Depth: 28.08
Inspector: Scott Beesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: metal
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED
Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 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:

01175461

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 04
Well ID: 04WW07
Inspection Date: 2/2/22
Well Completion Depth/ Measured Depth: 22.27
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:

01175462

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 04
Well ID: 04MW08
Inspection Date: 2/1/22
Well Completion Depth/ Measured Depth: 43.65
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED 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:

01175463

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 04
Well ID: 04WW09
Inspection Date: 2/2/22
Well Completion Depth/ Measured Depth: 23.45
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01175464

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARmy
Site Name: D4
Well ID: D4WW10
Inspection Date: 2/2/22
Well Completion Depth/ Measured Depth: 22.53
Inspector: Scott Baesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED 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:

01175465

WELL INSPECTION FORM

Job Name: LTMRP
Job No.: 501032
Client: Army
Site Name: 04
Well ID: 04MW11
Inspection Date: 7/1/22
Well Completion Depth/ Measured Depth: 18.45
Inspector: Scott Buesinger

~~☑~~ 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:

01175466

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 04
Well ID: LHSmw01
Inspection Date: 2/1/22
Well Completion Depth/ Measured Depth: 17.96
Inspector: Scott Beggs, 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 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 11
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01175467

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 04
Well ID: LHSMW02
Inspection Date: 2/1/22
Well Completion Depth/ Measured Depth: 18.98
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): 4/11
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01175468

WELL INSPECTION FORM

Job Name: CHAAP
Job No.: 501032
Client: Army
Site Name: 04
Well ID: 04WW01
Inspection Date: 8/2/22
Well Completion Depth/ Measured Depth: 27.22
Inspector: Scott Baesinger

ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED 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:

01175469

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 04
Well ID: 04MW04
Inspection Date: 8/2/22
Well Completion Depth/ Measured Depth: 21.41
Inspector: Scott Baesinger

ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED 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:

01175470

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 04
Well ID: 04MW05
Inspection Date: 8/2/22
Well Completion Depth/Measured Depth: 29.60
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:

01175471

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 04
Well ID: 04WW07
Inspection Date: 8/2/22
Well Completion Depth/ Measured Depth: 22.58
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:

01175472

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 04
Well ID: 04WW09
Inspection Date: 8/2/22
Well Completion Depth/ Measured Depth: 23.45
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

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:

01175473

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 04
Well ID: 04WW10
Inspection Date: 8/2/22
Well Completion Depth/ Measured Depth: 22.53
Inspector: Scott Baesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging)
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 04
Well ID: 04WW11
Inspection Date: 8/2/22
Well Completion Depth/ Measured Depth: 18.45
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

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:

Appendix C

Sample Collection Logs

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**
Project No: **501032**

Location ID: **04WW01**
Sampler(s): Scott Bassinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: 04WW01-220201 **DATE/TIME:** 2/1/22 1136 **Pump Inlet Depth:** 21.73

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
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing
Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4"
Purge Start Date/Time: 2/1/22 1140

Depth to Water - Initial (DTWi) (ft) 10.55
Purge End Date/Time: 2/1/22 1210

Depth to Well Bottom (ft) 27.21
Discharge Tube Length: NA
PID Reading: NA

Screen Interval (ft): 16.73 - 26.73
Discharge Tube Diameter: 1/4"
Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 21.73
Pump Start Time: 1140

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW- 10.55

APTIM

Sample Collection Log

Location ID: 04WW01		Sample No: 04WW01-220201								
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
2/1/22	1145	100	.5	10.62	3.05	18.16	6.20	37.7	118	0.88
	1150	100	1.0	10.68	3.15	18.09	6.45	30.5	90	0.75
	1155	100	1.5	10.72	3.18	18.13	6.35	29.0	54	0.67
	1200	100	2.0	10.75	3.19	18.17	6.34	28.6	54	0.66
	1205	100	2.5	10.77	3.19	18.20	6.34	27.7	53	0.65
↓	1210	100	3.0	10.79	3.19	18.23	6.34	27.3	52	0.65

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW02**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: 04WW02-220201 **DATE/TIME:** 2/1/22 0856 **Pump Inlet Depth:** 21.90

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
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 2/1/22 0900

Depth to Water - Initial (DTWi) (ft) 8.93

Purge End Date/Time: 2/1/22 0930

Depth to Well Bottom (ft) 26.67

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 16.90 - 26.90

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 21.90

Pump Start Time: 0900

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW- 8.93

APTIM

Sample Collection Log

Location ID: 04WW02		Sample No: 04WW02-220201								
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
2/1/22	0905	100	.5	9.00	0.648	17.73	6.94	15.8	63	0.90
	0910	100	1.0	9.06	0.522	19.05	5.73	12.2	101	0.79
	0915	100	1.5	9.10	0.511	19.29	5.39	9.8	116	0.68
	0920	100	2.0	9.13	0.511	19.34	5.38	9.1	117	0.67
	0925	100	2.5	9.16	0.510	19.38	5.37	8.2	118	0.67
↓	0930	100	3.0	9.18	0.510	19.42	5.36	7.4	118	0.66

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW04**

Sampler(s): Scott Bessinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: 04WW04-220201 **DATE/TIME:** 2/1/22 0736 **Pump Inlet Depth:** 15.80

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
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2"

Depth to Water - Initial (DTWi) (ft) 7.13

Depth to Well Bottom (ft) 21.42

Screen Interval (ft): 10.80 - 20.80

Approximate depth of pump inlet*(ft): 15.80

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 2/1/22 0740

Purge End Date/Time: 2/1/22 0810

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 0740

2ND DTW- 7.13

APTIM

Sample Collection Log

Location ID: 04WW04				Sample No: 04WW04-220201						
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
2/1/22	0745	100	.5	7.20	0.538	14.14	5.13	843	190	0.88
	0750	100	1.0	7.26	0.517	16.12	4.85	778	167	0.68
	0755	100	1.5	7.30	0.510	16.75	4.86	751	153	0.51
	0800	100	2.0	7.32	0.510	16.82	4.87	749	152	0.51
	0805	100	2.5	7.34	0.510	16.86	4.87	748	152	0.50
↓	0810	100	3.0	7.35	0.510	16.91	4.87	746	151	0.49

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: ~~45~~ 04WW05

Sampler(s): Scott Baesinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: ~~45~~ 04WW05-220202 **DATE/TIME:** 2/2/22 0737 **Pump Inlet Depth:** 23.70

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	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2"

Purge Start Date/Time: 2/2/22 0740

Depth to Water - Initial (DTWi) (ft) 10.09

Purge End Date/Time: 2/2/22 0810

Depth to Well Bottom (ft) 29.60

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 18.70 - 28.70

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 23.70

Pump Start Time: 0740

Ferrous Iron (Required (Y) or N) 3.02 mg/L

2ND DTW- 10.09

APTIM

Sample Collection Log

Location ID: 04 ~~46~~WW05 Sample No: 04 ~~46~~WW05-220202

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
2/2/22	0745	100	.5	10.16	1.63	16.83	6.86	635	90	1.05
	0750	100	1.0	10.21	1.60	17.59	6.05	607	117	0.89
	0755	100	1.5	10.25	1.58	17.88	5.87	591	126	0.79
	0800	100	2.0	10.27	1.57	17.93	5.86	589	126	0.78
	0805	100	2.5	10.29	1.57	17.97	5.86	588	127	0.77
↓	0810	100	3.0	10.30	1.57	18.01	5.85	586	127	0.76

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW06**

Sampler(s): Scott Bassinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: 04WW06-220201 **DATE/TIME:** 2/1/22 **Pump Inlet Depth:** 23.11

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
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 2/1/22 0940

Depth to Water - Initial (DTWi) (ft) 8.63

Purge End Date/Time: 2/1/22 1010

Depth to Well Bottom (ft) 28.08

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 18.11-28.11

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 23.11

Pump Start Time: 0940

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW- 8.63

APTIM

Sample Collection Log

Location ID: 04WW06		Sample No: 04WW06-220201								
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
2/1/22	0945	100	.5	8.71	1.54	18.02	6.17	6.6	72	2.17
	0950	100	1.0	8.77	1.57	19.15	6.04	6.3	84	1.90
	0955	100	1.5	8.81	1.59	19.22	5.93	5.5	95	1.77
	1000	100	2.0	8.83	1.60	19.26	5.92	4.8	96	1.75
	1005	100	2.5	8.85	1.60	19.32	5.92	4.2	97	1.74
↓	1010	100	3.0	8.86	1.60	19.36	5.91	3.4	98	1.74

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: 04 ~~46~~WW07

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: 04 ~~46~~WW07-220202 **DATE/TIME:** 2/2/22 0650 **Pump Inlet Depth:** 17.98

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	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4"

Depth to Water - Initial (DTWi) (ft) 8.22

Depth to Well Bottom (ft) 22.27

Screen Interval (ft): 12.98 - 22.98

Approximate depth of pump inlet*(ft): 17.98

Ferrous Iron (Required (Y) or N) 0.83 mg/L

Purging Method/Equipment: Low Flow/Bladder Pump

Purge Start Date/Time: 2/2/22 0700

Purge End Date/Time: 2/2/22 0730

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 0700

2ND DTW - 8.22

APTIM

Sample Collection Log

Location ID: ~~46~~WW07 Sample No: ~~46~~WW07-220202

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
2/2/22	0705	100	.5	8.30	2.74	16.93	6.76	10.4	165	0.92
	0710	100	1.0	8.36	2.73	16.80	6.42	10.9	162	0.79
	0715	100	1.5	8.40	2.70	16.84	6.13	11.3	152	0.69
	0720	100	2.0	8.42	2.70	16.88	6.12	11.7	152	0.68
	0725	100	2.5	8.44	2.69	16.92	6.12	12.0	151	0.67
↓	0730	100	3.0	8.45	2.69	16.95	6.11	12.2	150	0.67

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: 04SWW07

Sampler(s): Scott Baesinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: 04SWW07-220202-FD **DATE/TIME:** 2/2/22 0650 **Pump Inlet Depth:** 17.98

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	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 2/2/22 0700

Depth to Water - Initial (DTWi) (ft) 8.22

Purge End Date/Time: 2/2/22 0730

Depth to Well Bottom (ft) 22.27

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 12.98 - 22.98

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 17.98

Pump Start Time: 0700

Ferrous Iron (Required (Y) or N) 0.83 mg/L

2ND DTW - 8.22

APTIM

Sample Collection Log

Location ID: ~~46~~WW07 Sample No: ~~46~~WW07-220202-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
2/2/22	0705	100	.5	8.30	2.74	16.93	6.76	10.4	165	0.92
	0710	100	1.0	8.36	2.73	16.80	6.42	10.9	162	0.79
	0715	100	1.5	8.40	2.70	16.84	6.13	11.3	152	0.69
	0720	100	2.0	8.42	2.70	16.88	6.12	11.7	152	0.68
	0725	100	2.5	8.44	2.69	16.92	6.12	12.0	151	0.67
	0730	100	3.0	8.45	2.69	16.95	6.11	12.2	150	0.67

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW08**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: 04WW08-220201 **DATE/TIME:** 2/1/22 0816 **Pump Inlet Depth:** 38.75

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
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 2/1/22 0820

Depth to Water - Initial (DTWi) (ft) 18.70

Purge End Date/Time: 2/1/22 0850

Depth to Well Bottom (ft) 43.65

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 33.75 - 43.75

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 38.75

Pump Start Time: 0820

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW - 18.70

APTIM

Sample Collection Log

Location ID: 04WW08		Sample No: 04WW08-220201								
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
2/1/22	0825	100	.5	18.77	3.70	16.71	5.76	59.7	63	1.03
	0830	100	1.0	18.82	3.79	18.31	5.93	54.0	60	0.85
	0835	100	1.5	18.85	3.82	18.81	5.98	51.1	60	0.74
	0840	100	2.0	18.87	3.83	18.86	5.99	50.6	61	0.74
	0845	100	2.5	18.88	3.84	18.92	5.99	49.8	60	0.73
↓	0850	100	3.0	18.89	3.84	18.97	5.99	49.2	60	0.73

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: ~~45~~ 64WW09

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: ~~45~~ 64WW09-220202 **DATE/TIME:** 2/2/22 0819 **Pump Inlet Depth:** 18.14

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	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4"

Depth to Water - Initial (DTWi) (ft) 8.28

Depth to Well Bottom (ft) 23.45

Screen Interval (ft): 13.14 - 23.14

Approximate depth of pump inlet*(ft): 18.14

Ferrous Iron (Required (Y) or N) 2.77 mg/L

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 2/2/22 0825

Purge End Date/Time: 2/2/22 0855

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 0825

2ND DTW- 8.28

APTIM

Sample Collection Log

Location ID: 4SWW09 Sample No: 4SWW09-220202

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
2/2/22	0830	100	.5	8.35	1.30	17.48	6.50	76.7	85	0.80
	0835	100	1.0	8.41	1.31	18.29	6.33	68.8	34	0.58
	0840	100	1.5	8.45	1.31	18.49	6.02	66.0	25	0.44
	0845	100	2.0	8.48	1.31	18.55	6.01	65.4	24	0.44
	0850	100	2.5	8.50	1.31	18.60	6.01	64.7	23	0.43
↓	0855	100	3.0	8.52	1.31	18.65	6.00	64.1	23	0.43

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: 04WW10

Sampler(s): Scott Baggingbar

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: 04WW10-220202 **DATE/TIME:** 2/2/22 0905 **Pump Inlet Depth:** 17.27

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	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 2/2/22 0910

Depth to Water - Initial (DTWi) (ft) 7.90

Purge End Date/Time: 2/2/22 0940

Depth to Well Bottom (ft) 22.53

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 12.27 - 22.27

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 17.27

Pump Start Time: 0910

Ferrous Iron (Required (Y) or N) 0.14 mg/L

2ND DTW - 7.90

APTIM

Sample Collection Log

Location ID: ~~46~~WW10 Sample No: ~~46~~WW10-220202

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
2/2/22	0915	100	.5	7.97	1.23	17.18	6.67	22.7	21	0.88
↓	0920	100	1.0	8.03	1.24	17.12	6.05	19.8	46	0.74
↓	0925	100	1.5	8.07	1.24	17.14	5.81	18.8	65	0.65
↓	0930	100	2.0	8.10	1.24	17.16	5.81	18.4	66	0.64
↓	0935	100	2.5	8.12	1.25	17.18	5.80	17.6	67	0.64
↓	0940	100	3.0	8.14	1.25	17.20	5.80	17.2	68	0.63

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: ~~46~~ 64WW10

Sampler(s): Scott Baggingar

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: ~~46~~ 64WW10-220202-MS **DATE/TIME:** 2/2/22 0905 **Pump Inlet Depth:** 17.27

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	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 2/2/22 0910

Depth to Water - Initial (DTWi) (ft) 7.90

Purge End Date/Time: 2/2/22 0940

Depth to Well Bottom (ft) 22.53

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 12.27-22.27

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): 17.27

Pump Start Time: 0910

Ferrous Iron (Required Y or N) 0.14 mg/L

2ND DTW - 7.90

APTIM

Sample Collection Log

Location ID: ~~46~~WW10 Sample No: ~~46~~WW10-220202-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
2/2/22	0915	100	.5	7.97	1.23	17.18	6.67	22.7	21	0.88
	0920	100	1.0	8.03	1.24	17.12	6.05	19.8	46	0.74
	0925	100	1.5	8.07	1.24	17.14	5.81	18.8	65	0.65
	0930	100	2.0	8.10	1.24	17.16	5.81	18.4	66	0.64
	0935	100	2.5	8.12	1.25	17.18	5.80	17.6	67	0.64
↓	0940	100	3.0	8.14	1.25	17.20	5.80	17.2	68	0.63

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: ~~46~~ 04WW10

Sampler(s): Scott Baessinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: ~~46~~ 04WW10-220202-MSD **DATE/TIME:** 2/2/22 0905 **Pump Inlet Depth:** 17.27

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	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 2/2/22 0910

Depth to Water - Initial (DTWi) (ft) 7.90

Purge End Date/Time: 2/2/22 0940

Depth to Well Bottom (ft) 22.53

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 12.27 - 22.27

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 17.27

Pump Start Time: 0910

Ferrous Iron (Required (Y) or N) 0.14 mg/L

2ND DTW - 7.90

APTIM

Sample Collection Log

Location ID: ~~46~~04WW10 Sample No: ~~46~~04WW10-220202-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
2/2/22	0915	100	.5	7.97	1.23	17.18	6.67	22.7	21	0.88
	0920	100	1.0	8.03	1.24	17.12	6.05	19.8	46	0.74
	0925	100	1.5	8.07	1.24	17.14	5.81	18.8	65	0.65
	0930	100	2.0	8.10	1.24	17.16	5.81	18.4	66	0.64
	0935	100	2.5	8.12	1.25	17.18	5.80	17.6	67	0.64
↓	0940	100	3.0	8.14	1.25	17.20	5.80	17.2	68	0.63

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW11**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: 04WW11-220201 **DATE/TIME:** 2/1/22 1056 **Pump Inlet Depth:** 13.20

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
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4"

Depth to Water - Initial (DTWi) (ft) 9.11

Depth to Well Bottom (ft) 18.45

Screen Interval (ft): 8.20 - 18.20

Approximate depth of pump inlet*(ft): 13.20

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: Low flow/Bladder Pump

Purge Start Date/Time: 2/1/22 1100

Purge End Date/Time: 2/1/22 1130

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y /(N)

Pump Start Time: 1100

2ND DTW- 9.11

APTIM

Sample Collection Log

Location ID: 04WW11					Sample No: 04WW11-220201					
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
2/1/28	1105	100	.5	9.18	0.793	17.24	6.60	26.1	87	0.93
	1110	100	1.0	9.24	0.744	16.99	5.79	27.4	141	0.77
	1115	100	1.5	9.28	0.735	17.02	5.44	27.8	155	0.66
	1120	100	2.0	9.31	0.734	17.05	5.43	28.3	157	0.66
	1125	100	2.5	9.33	0.734	17.09	5.42	28.8	158	0.64
↓	1130	100	3.0	9.35	0.734	17.12	5.42	29.0	158	0.63

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW01**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: LHSMW01-220201 **DATE/TIME:** 2/1/22 0653 **Pump Inlet Depth:** 12.74

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
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2"

Purge Start Date/Time: 2/1/22 0700

Depth to Water - Initial (DTWi) (ft) 7.44

Purge End Date/Time: 2/1/22 0730

Depth to Well Bottom (ft) 17.96

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 7.74 - 17.74

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 12.74

Pump Start Time: 0700

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND Depth To Water - 7.44

APTIM

Sample Collection Log

Location ID: LHSMW01		Sample No: LHSMW01-220201								
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
2/1/22	0705	100	.5	7.51	1.11	13.83	5.43	4.4	248	0.96
	0710	100	1.0	7.57	1.05	14.20	5.28	2.1	251	0.78
	0715	100	1.5	7.61	0.977	14.37	4.92	2.8	262	0.67
	0720	100	2.0	7.64	0.976	14.44	4.91	3.3	262	0.66
	0725	100	2.5	7.66	0.976	14.48	4.90	3.9	263	0.65
	0730	100	3.0	7.68	0.976	14.53	4.89	4.4	263	0.65

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW02**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: LHSMW02-220201 **DATE/TIME:** 2/1/22 1016 **Pump Inlet Depth:** 16.25

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
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 2/1/22 1020

Depth to Water - Initial (DTWi) (ft) 15.48

Purge End Date/Time: 2/1/22 1050

Depth to Well Bottom (ft) 18.98

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 7.18 - 17.18

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 16.25

Pump Start Time: 1020

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW - 15.48

APTIM

Sample Collection Log

Location ID: LHSMW02		Sample No: LHSMW02-220201								
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
2/1/22	1025	100	.5	15.55	1.71	17.40	6.47	12.0	77	1.21
	1030	100	1.0	15.61	1.73	17.13	6.01	19.3	108	0.97
	1035	100	1.5	15.65	1.75	17.18	5.77	19.6	122	0.88
	1040	100	2.0	15.68	1.76	17.24	5.76	19.9	123	0.86
	1045	100	2.5	15.71	1.77	17.28	5.76	20.2	124	0.85
↓	1050	100	3.0	15.73	1.77	17.31	5.75	20.5	124	0.85

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW02**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Cloudy

SAMPLING INFORMATION

Sample No: LHSMW02-220201-FD **DATE/TIME:** 2/1/22 1016 **Pump Inlet Depth:** 16.25

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
		SGSO	Perchlorate by 6850 (W)	1 x 125 mL HPDE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 2/1/22 1020

Depth to Water - Initial (DTWi) (ft) 15.48

Purge End Date/Time: 2/1/22 1050

Depth to Well Bottom (ft) 18.98

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 7.18 - 17.18

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 16.25

Pump Start Time: 1020

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW - 15.48

APTIM

Sample Collection Log

Location ID: LHSMW02 Sample No: LHSMW02-220201-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
2/1/22	1025	100	.5	15.55	1.71	17.40	6.47	12.0	77	1.21
↓	1030	100	1.0	15.61	1.73	17.13	6.01	19.3	108	0.97
	1035	100	1.5	15.65	1.75	17.18	5.77	19.6	122	0.88
	1040	100	2.0	15.68	1.76	17.24	5.76	19.9	123	0.86
	1045	100	2.5	15.71	1.77	17.28	5.76	20.2	124	0.85
✓	1050	100	3.0	15.73	1.77	17.31	5.77	20.5	124	0.85

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**
Project No: **501032**

Location ID: **04WW01**
Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 04WW01-220802 **DATE/TIME:** 8/2/22 1046 **Pump Inlet Depth:** 21.73

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

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing
Casing ID (in.): 4
Depth to Water - Initial (DTWi) (ft) 12.72
Depth to Well Bottom (ft) 27.22
Screen Interval (ft): 16.73 - 26.73
Approximate depth of pump inlet*(ft): 21.73
Ferrous Iron (Required Y or N) _____ mg/L

Purging Method/Equipment: Low flow/BLADDER Pump
Purge Start Date/Time: 8/2/22 1055
Purge End Date/Time: 8/2/22 1125
Discharge Tube Length: NA PID Reading: NA
Discharge Tube Diameter: 1/4" Immersible Layer: Y / N
Pump Start Time: 1055

2ND DTW - 12.72

APTIM

Sample Collection Log

Location ID: 04WW01					Sample No: 04WW01-220802					
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
8/2/22	1100	100	.5	12.80	2.94	27.29	7.04	4.5	-106	0.59
	1105	100	1.0	12.86	3.17	25.93	6.87	2.0	-103	0.14
	1110	100	1.5	12.90	3.22	25.61	6.79	2.2	-103	0.04
	1115	100	2.0	12.92	3.23	25.54	6.78	2.4	-104	0.04
	1120	100	2.5	12.94	3.23	25.47	6.78	2.6	-104	0.03
↓	1125	100	3.0	12.95	3.23	25.42	6.78	2.8	-104	0.03

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW04**

Sampler(s): Scott Beasinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 04WW04-220802 **DATE/TIME:** 8/2/22 0840 **Pump Inlet Depth:** 15.80

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	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/2/22 0850

Depth to Water - Initial (DTWi) (ft) 9.38

Purge End Date/Time: 8/2/22 0920

Depth to Well Bottom (ft) 21.41

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 10.80 - 20.80

Discharge Tube Diameter: 1/4"

Immersible Layer: Y (N)

Approximate depth of pump inlet*(ft): 15.80

Pump Start Time: 0850

Ferrous Iron (Required Y or N) _____ mg/L

2ND DTW - 9.38

APTIM

Sample Collection Log

Location ID: 04WW04		Sample No: 04WW04-220802								
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
8/2/22	0855	100	.5	9.45	0.429	25.89	7.29	403	-92	0.61
	0900	100	1.0	9.51	0.359	24.87	6.88	379	-98	0.21
	0905	100	1.5	9.55	0.359	24.71	6.71	364	-100	0.04
	0910	100	2.0	9.57	0.360	24.66	6.70	363	-101	0.03
	0915	100	2.5	9.58	0.360	24.62	6.70	361	-101	0.03
↓	0920	100	3.0	9.59	0.360	24.59	6.69	360	-101	0.03

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW05**

Sampler(s): Scott Baggenstoss

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 04WW05-220802 **DATE/TIME:** 8/2/22 0925 **Pump Inlet Depth:** 23.70

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

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 11.93

Depth to Well Bottom (ft) 29.60

Screen Interval (ft): 18.70 - 28.70

Approximate depth of pump inlet*(ft): 23.70

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: Low flow/Bladder Pump

Purge Start Date/Time: 8/2/22 0930

Purge End Date/Time: 8/2/22 1000

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 0930

2ND DTW - 11.93

APTIM

Sample Collection Log

Location ID: 04WW05		Sample No: 04WW05-220802								
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
8/2/22	0935	100	.5	12.00	1.20	25.51	6.67	207	-97	0.63
	0940	100	1.0	12.06	1.41	25.13	6.79	188	-75	0.22
	0945	100	1.5	12.10	1.45	25.10	6.85	178	-71	0.11
	0950	100	2.0	12.13	1.45	25.07	6.86	176	-71	0.11
	0955	100	2.5	12.15	1.46	25.04	6.86	175	-70	0.10
	1000	100	3.0	12.17	1.46	25.01	6.86	174	-70	0.10

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW05**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 04WW05-220802-FD **DATE/TIME:** 8/2/22 0925 **Pump Inlet Depth:** 23.70

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

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/2/22 0930

Depth to Water - Initial (DTWi) (ft) 11.93

Purge End Date/Time: 8/2/22 1000

Depth to Well Bottom (ft) 29.60

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 18.70 - 28.70

Discharge Tube Diameter: 1/4" Immersible Layer: Y (N)

Approximate depth of pump inlet*(ft): 23.70

Pump Start Time: 0930

Ferrous Iron (Required Y or (N) _____ mg/L

2nd DTW - 11.93

APTIM

Sample Collection Log

Location ID: 04WW05				Sample No: 04WW05-220802-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
8/2/22	0935	100	.5	12.00	1.20	25.51	6.67	207	-97	0.63
	0940	100	1.0	12.06	1.41	25.13	6.79	188	-75	0.22
	0945	100	1.5	12.10	1.45	25.10	6.85	178	-71	0.11
	0950	100	2.0	12.13	1.45	25.07	6.86	176	-71	0.11
	0955	100	2.5	12.15	1.46	25.04	6.86	175	-70	0.10
↓	1000	100	3.0	12.17	1.46	25.01	6.86	174	-70	0.10

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW07**

Sampler(s): Scott Beginger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 04WW07-2208 02 **DATE/TIME:** 8/2/22 0633 **Pump Inlet Depth:** 17.98

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

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/2/22 0640

Depth to Water - Initial (DTWi) (ft) 10.63

Purge End Date/Time: 8/2/22 0710

Depth to Well Bottom (ft) 22.58

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 12.98-22.98

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): 17.98

Pump Start Time: 0640

Ferrous Iron (Required Y or N) _____ mg/L

2ND DTW - 10.63

APTIM

Sample Collection Log

Location ID: 04WW07		Sample No: 04WW07-220802								
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
8/2/22	0645	100	.5	10.70	2.45	28.22	7.72	11.6	-143	0.88
	0650	100	1.0	10.76	2.81	25.17	6.97	17.3	-141	0.49
	0655	100	1.5	10.80	2.60	24.73	6.86	16.8	-146	0.33
	0700	100	2.0	10.82	2.59	24.67	6.85	16.4	-147	0.32
	0705	100	2.5	10.84	2.59	24.60	6.84	15.7	-147	0.31
	0710	100	3.0	10.85	2.58	24.54	6.84	15.3	-148	0.31

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW09**

Sampler(s): Scott Beasinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 04WW09-220802 **DATE/TIME:** 8/2/22 0715 **Pump Inlet Depth:** 18.14

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

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/2/22 0720

Depth to Water - Initial (DTWi) (ft) 10.55

Purge End Date/Time: 8/2/22 0750

Depth to Well Bottom (ft) ~~20~~ 23.45

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 13.14 - 23.14

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~18~~ 18.14

Pump Start Time: 0720

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW- 10.55

APTIM

Sample Collection Log

Location ID: 04WW09 **Sample No: 04WW09-2208 02**

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
8/2/22	0725	100	.5	10.62	1.33	25.32	7.36	11.0	-116	0.72
	0730	100	1.0	10.68	1.35	25.08	6.90	9.9	-122	0.34
	0735	100	1.5	10.72	1.32	24.97	6.76	9.0	-132	0.14
	0740	100	2.0	10.75	1.32	24.93	6.75	8.2	-132	0.14
	0745	100	2.5	10.78	1.31	24.90	6.74	7.9	-133	0.13
↓	0750	100	3.0	10.80	1.31	24.88	6.74	7.5	-134	0.13

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW10**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 04WW10-220802 **DATE/TIME:** 8/2/22 0756 **Pump Inlet Depth:** 17.27

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

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/2/22 0805

Depth to Water - Initial (DTWi) (ft) 10.63

Purge End Date/Time: 8/2/22 0835

Depth to Well Bottom (ft) 22.53

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 12.27-22.27

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 17.27

Pump Start Time: 0805

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW- 10.63

APTIM

Sample Collection Log

Location ID: 04WW10		Sample No: 04WW10-220802								
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
8/2/22	0810	100	.5	10.70	2.31	25.82	7.11	43.2	-70	0.87
	0815	100	1.0	10.76	2.25	25.62	6.95	40.5	-47	0.58
	0820	100	1.5	10.80	2.18	25.58	6.74	38.7	-26	0.48
	0825	100	2.0	10.82	2.17	25.55	6.73	38.3	-25	0.48
	0830	100	2.5	10.83	2.17	25.52	6.72	37.6	-24	0.47
↓	0835	100	3.0	10.84	2.17	25.48	6.71	37.2	-24	0.47

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW11**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 04WW11-220802 **DATE/TIME:** 8/2/22 1006 **Pump Inlet Depth:** 13.20

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

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/2/22 1010

Depth to Water - Initial (DTWi) (ft) 11.43

Purge End Date/Time: 8/2/22 1040

Depth to Well Bottom (ft) ~~18.5~~ 18.45

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 8.20 - 18.20

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~18.5~~ 13.20

Pump Start Time: 1010

Ferrous Iron (Required Y or (N) _____ mg/L

2nd DTW - 11.43

APTIM

Sample Collection Log

Location ID: 04WW11		Sample No: 04WW11-2208_02								
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
8/2/22	1015	100	.5	11.50	0.606	27.10	7.60	28.2	-20	~~0.00~~ 0.70
	1020	100	1.0	11.56	0.577	26.91	7.44	21.7	-28	0.26
	1025	100	1.5	11.60	0.554	26.87	7.38	18.5	-31	0.22
	1030	100	2.0	11.63	0.554	26.83	7.38	18.0	-32	0.21
	1035	100	2.5	11.66	0.553	26.79	7.37	17.6	-33	0.21
↓	1040	100	3.0	11.68	0.553	26.74	7.37	17.1	-33	0.21

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW11**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 04WW11-220802-MS **DATE/TIME:** 8/2/22 1006 **Pump Inlet Depth:** 13.20

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	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/2/22 1010

Depth to Water - Initial (DTWi) (ft) 11.43

Purge End Date/Time: 8/2/22 1040

Depth to Well Bottom (ft) ~~18.5~~ 18.45

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 8.20 - 18.20

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~18.5~~ 13.20

Pump Start Time: 1010

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW - 11.43

APTIM

Sample Collection Log

Location ID: 04WW11		Sample No: 04WW11-220802-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
8/2/22	1015	100	.5	11.50	0.606	27.10	7.60	28.2	-20	0.70
	1020	100	1.0	11.56	0.577	26.91	7.44	21.7	-28	0.26
	1025	100	1.5	11.60	0.554	26.87	7.38	18.5	-31	0.22
	1030	100	2.0	11.63	0.554	26.83	7.38	18.0	-32	0.21
	1035	100	2.5	11.66	0.553	26.79	7.37	17.6	-33	0.21
↓	1040	100	3.0	11.68	0.553	26.74	7.37	17.1	-33	0.21

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **04WW11**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 04WW11-220802-MSD **DATE/TIME:** 8/2/22 1006 **Pump Inlet Depth:** 13.20

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	Perchlorate in Water by 6850	1 x 125 mL HDPE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/2/22 1010

Depth to Water - Initial (DTWi) (ft) 11.43

Purge End Date/Time: 8/2/22 1040

Depth to Well Bottom (ft) 18.45

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 8.20 - 18.20

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): 13.20

Pump Start Time: 1010

Ferrous Iron (Required Y or N) _____ mg/L

2ND DTW- 11.43

APTIM

Sample Collection Log

Location ID: 04WW11		Sample No: 04WW11-220802-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
8/2/22	1015	100	0.5	11.50	0.606	27.10	7.60	28.2	-20	0.80
	1020	100	1.0	11.56	0.577	26.91	7.44	21.7	-28	0.26
	1025	100	1.5	11.60	0.554	26.87	7.38	18.5	-31	0.22
	1030	100	2.0	11.63	0.554	26.83	7.38	18.0	-32	0.21
	1035	100	2.5	11.66	0.553	26.79	7.37	17.6	-33	0.21
	1040	100	3.0	11.68	0.553	26.74	7.37	17.1	-33	0.21

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

01175528

EQUIPMENT CALIBRATION DAILY LOG

Date: 2/1/22

Project Number: 501032

Project Name: LHAAP-07

Recorded By: Scott Bassinger

PID

Model:

Equipment ID #:

Bulb: 10.6 meV

	Parameter	Standard	Exp. Date	Lot#	Morning Calibration	Evening Check	Additional Calib./Check (if necessary)
					Time:	Time:	Time:
					Initials:	Initials:	Initials:
First Point Calibration	Vapor conc. (ppm)	0.0 (ambient air)	NA	NA	Value:	Value:	Value:
Second Point Calibration	Vapor conc. (ppm)	(isobutylene)			Value:	Value:	Value:

COMB. GAS/O_2 METER

Model:

Equipment ID #:

	Parameter	Standard	Exp. Date	Lot#	Morning Calibration	Evening Check	Additional Calib./Check (if necessary)
					Time:	Time:	Time:
					Initials:	Initials:	Initials:
First Point Calibration	O2 (%)				Value:	Value:	Value:
	% LEL Pentane				Value:	Value:	Value:

WATER QUALITY METER

Model: U-52 Horiba

Equipment ID #:

	Parameter	Standard	Exp. Date	Lot#	Morning Calibration/Check	Evening Check (one point only)	Additional Calib./Check (if necessary)
					Time: 0630	Time:	Time:
					Initials: SB	Initials:	Initials:
First Point Calibration (Auto)	pH	4.00	5/22	IG9579	Value: 4.00	Value:	Value:
	Conductivity (mS/cm)	4.49			Value: 4.49	Value:	Value:
	Turbidity (NTU)	0			Value: 0.0	Value:	Value:
	DO (mg/L)	8.9-9.1 (ambient air)	NA	NA	Value: 9.01	Value:	Value:
Second Point Calibration	pH	6.86			Value:	Value:	Value:
	Conductivity (mS/cm)	53.7			Value:	Value:	Value:
	Turbidity (NTU)	100			Value:	Value:	Value:
Third Point Calibration	pH	9.18			Value:	Value:	Value:
	Conductivity (mS/cm)	53.7			Value:	Value:	Value:
	Turbidity (NTU)	100			Value:	Value:	Value:

Additional Remarks:

01175529

EQUIPMENT CALIBRATION DAILY LOG

Date: 2/2/22

Project Number: 501032

Project Name: LHAAP-04

Recorded By: Scott Baesinger

PID

Model:

Equipment ID #:

Bulb: 10.6 meV

	Parameter	Standard	Exp. Date	Lot#	Morning Calibration	Evening Check	Additional Calib./Check (if necessary)
First Point Calibration					Time:	Time:	Time:
					Initials:	Initials:	Initials:
	Vapor conc. (ppm)	0.0 (ambient air)	NA	NA	Value:	Value:	Value:
Second Point Calibration	Vapor conc. (ppm)	(isobutylene)			Value:	Value:	Value:

COMB. GAS/O_2 METER

Model:

Equipment ID #:

	Parameter	Standard	Exp. Date	Lot#	Morning Calibration	Evening Check	Additional Calib./Check (if necessary)
First Point Calibration					Time:	Time:	Time:
					Initials:	Initials:	Initials:
	O2 (%)				Value:	Value:	Value:
	% LEL Pentane				Value:	Value:	Value:

WATER QUALITY METER

Model: U-52 HORIBA

Equipment ID #:

	Parameter	Standard	Exp. Date	Lot#	Morning Calibration/Check	Evening Check (one point only)	Additional Calib./Check (if necessary)
					Time: 0625	Time:	Time:
					Initials: SB	Initials:	Initials:
First Point Calibration (Auto)	pH	4.00	5/22	1GE579	Value: 4.00	Value:	Value:
	Conductivity (mS/cm)	4.49			Value: 4.49	Value:	Value:
	Turbidity (NTU)	0			Value: 0.0	Value:	Value:
	DO (mg/L)	8.9-9.1 (ambient air)	NA	NA	Value: 8.99	Value:	Value:
Second Point Calibration	pH	6.86			Value:	Value:	Value:
	Conductivity (mS/cm)	53.7			Value:	Value:	Value:
	Turbidity (NTU)	100			Value:	Value:	Value:
Third Point Calibration	pH	9.18			Value:	Value:	Value:
	Conductivity (mS/cm)	53.7			Value:	Value:	Value:
	Turbidity (NTU)	100			Value:	Value:	Value:

Additional Remarks:

01175530

EQUIPMENT CALIBRATION DAILY LOG

Date: 8/2/22

Project Number: 501032

Project Name: LHAAP-04

Recorded By: Scott Beesinger

PID

Model:

Equipment ID #:

Bulb: 10.6 meV

	Parameter	Standard	Exp. Date	Lot#	Morning Calibration	Evening Check	Additional Calib./Check (if necessary)
First Point Calibration					Time:	Time:	Time:
					Initials:	Initials:	Initials:
	Vapor conc. (ppm)	0.0 (ambient air)	NA	NA	Value:	Value:	Value:
Second Point Calibration	Vapor conc. (ppm)	(isobutylene)			Value:	Value:	Value:

COMB. GAS/O_2 METER

Model:

Equipment ID #:

	Parameter	Standard	Exp. Date	Lot#	Morning Calibration	Evening Check	Additional Calib./Check (if necessary)
First Point Calibration					Time:	Time:	Time:
					Initials:	Initials:	Initials:
	O2 (%)				Value:	Value:	Value:
	% LEL Pentane				Value:	Value:	Value:

WATER QUALITY METER

Model: U-52 HORIBA

Equipment ID #:

	Parameter	Standard	Exp. Date	Lot#	Morning Calibration/Check	Evening Check (one point only)	Additional Calib./Check (if necessary)
First Point Calibration (Auto)					Time: 0610	Time:	Time:
					Initials: SB	Initials:	Initials:
	pH	4.00	10/22	IGS414	Value: 4.00	Value:	Value:
	Conductivity (mS/cm)	4.49			Value: 4.49	Value:	Value:
	Turbidity (NTU)	0			Value: 0.0	Value:	Value:
	DO (mg/L)	8.9-9.1 (ambient air)	NA	NA	Value: 8.98	Value:	Value:
Second Point Calibration	pH	6.86			Value:	Value:	Value:
	Conductivity (mS/cm)	58.7			Value:	Value:	Value:
	Turbidity (NTU)	100			Value:	Value:	Value:
Third Point Calibration	pH	9.18			Value:	Value:	Value:
	Conductivity (mS/cm)	58.7			Value:	Value:	Value:
	Turbidity (NTU)	100			Value:	Value:	Value:

Additional Remarks:

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • May 2023

Appendix D

Laboratory Analytical Data Packages

(Provided electronically on CD and the Portal)

August 10, 2022 Service Request No:E2200753

Ms. Vicki Graves
Shaw Environment & Infrastructure, Inc.
312 Directors Drive
Knoxville, TN 37923

Laboratory Results for: LHAAP 04 August 2022

Dear Ms.Graves,

Enclosed are the results of the sample(s) submitted to our laboratory August 03, 2022
For your reference, these analyses have been assigned our service request number **E2200753.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Corey Grandits
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

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

ALS Environmental

Client:	APTIM, Inc	**Service Request No.:**	E2200753
Project:	LHAAP 04 August 2022	**Date Received:**	08/03/22
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

Eight samples were received for analysis at ALS Environmental in Houston on 08/03/22.

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:

EQ2200338-02: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of/in addition to a MS/MSD for this extraction batch.

The batch precision (MS/DMS) measurements were determined sample E2200753-007. The MS/DMS results are 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: APTIM, Inc
Project: LHAAP 04 August 2022

Service Request:E2200753

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2200753-001	04WW07-220802	8/2/2022	0710
E2200753-002	04WW09-220802	8/2/2022	0750
E2200753-003	04WW10-220802	8/2/2022	0835
E2200753-004	04WW04-220802	8/2/2022	0920
E2200753-005	04WW05-220802	8/2/2022	1000
E2200753-006	04WW05-220802-FD	8/2/2022	1000
E2200753-007	04WW11-220802	8/2/2022	1040
E2200753-008	04WW01-220802	8/2/2022	1125

Service Request Summary

Folder #: **E2200753**
Client Name: APTIM, Inc
Project Name: LHAAP 04 August 2022
Project Number:

Report To: Vicki Graves
Shaw Environment & Infrastructure, Inc.
312 Directors Drive
Knoxville, TN 37923
USA
Phone Number: 865-694-7311
Cell Number:
Fax Number: 865-694-9573
E-mail: vicki.graves@shawgrp.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 08/03/22
Internal Due Date: 8/17/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 204760
EDD: EQUIS
EFWEDD_LHAAP

10 120 mL-Plastic Bottle Natural WM Unpreserved
Location: SMO
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2200753-001	04WW07-220802	Water	08/02/22 0710	**IV**
E2200753-002	04WW09-220802	Water	08/02/22 0750	**IV**
E2200753-003	04WW10-220802	Water	08/02/22 0835	**IV**
E2200753-004	04WW04-220802	Water	08/02/22 0920	**IV**
E2200753-005	04WW05-220802	Water	08/02/22 1000	**IV**
E2200753-006	04WW05-220802-FD	Water	08/02/22 1000	**IV**
E2200753-007	04WW11-220802	Water	08/02/22 1040	**IV**
E2200753-008	04WW01-220802	Water	08/02/22 1125	**IV**

Service Request Summary

Folder #: **E2200753**
Client Name: APTIM, Inc
Project Name: LHAAP 04 August 2022
Project Number:

Report To: Vicki Graves
Shaw Environment & Infrastructure, Inc.
312 Directors Drive
Knoxville, TN 37923
USA
Phone Number: 865-694-7311
Cell Number:
Fax Number: 865-694-9573
E-mail: vicki.graves@shawgrp.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 08/03/22
Internal Due Date: 8/17/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 204760
EDD: EQUIS
EFWEDD_LHAAP

10 120 mL-Plastic Bottle Natural WM Unpreserved
Location: SMO
Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	7	IV Due 8/24
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	Internal standard not within the specified limits. See case narrative.
J	Estimated Value. Concentration found below MRL.
K	(Auto) The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
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.
M1	Matrix interference due to coelution with a non-target compound; results may be biased high.

Data Qualifiers

Lab Standard

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	2021-080	8/31/2022
Oregon Environmental Laboratory Accreditation Program	TX200002	5/15/2023
Pennsylvania Department of Environmental Protection	68-03441-016	6/30/2023
Perry Johnson Laboratory Accreditation	L22-91	3/31/2024
Tennessee Department of Environment and Concervation	04016-2022	4/30/2023
Texas Commision on Environmental Quality	T104704231-22-29	4/30/2023
United States Department of Agriculture	P330-19-00299	10/10/2022
Washington Department of Health	C819-2022	11/14/2022

Chain of Custody

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

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 575-2190 ATTN: Dane Wacasey

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 04 August 2022**

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: Perchlorate by SW6850	Remarks (Preservatives, etc.)	Lab I.D.#
04WW07-220802	WG	8/2/22 0710		1	X		
04WW09-220802	WG	8/2/22 0750		1	X		
04WW10-220802	WG	8/2/22 0835		1	X		
04WW04-220802	WG	8/2/22 0920		1	X		
04WW05-220802	WG	8/2/22 1000		1	X		
04WW05-220802-FD	WG	8/2/22 1000		1	X		
04WW11-220802	WG	8/2/22 1040		1	X		
04WW11-220802-MS	WG	8/2/22 1040		1	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	8/2/22	1330	Dane Wacasey	8/3/22	9:35						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

94174 0.EC 08R31 LP1205

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 575-2190 ATTN: Dane Wacasey

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 04 August 2022**

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D. / Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	Analyses: Perchlorate by SW6850	Remarks (Preservatives, etc.)	Lab I.D.#
04WW11-220802-MSD	WG	8/2/22 1040		1	X		
04WW01-220802	WG	8/2/22 1125		1	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	8/2/22	13:30		8/3/22	9:35						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

94179 OEC 1A 31 UP2.5

ALS Environmental

Cooler Receipt Form

Project Chemist CG

Client/Project ARTEM

Thermometer ID IR31

Date/Time Received: 8-3-22 Initials: PM

Date/Time Logged in: 8-3-22 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?

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 1991 1147		8-3-22	0935	PM	1.3	☑
						☐
						☐
						☐

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#: 404146 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** **Prep Date/Time:** 8/8/22 10:08

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2200753-001	04WW07-220802	.01	6850/ClO4 DOD			Water	10mL	
2	E2200753-002	04WW09-220802	.01	6850/ClO4 DOD			Water	10mL	
3	E2200753-003	04WW10-220802	.01	6850/ClO4 DOD			Water	10mL	
4	E2200753-004	04WW04-220802	.01	6850/ClO4 DOD			Water	10mL	
5	E2200753-005	04WW05-220802	.01	6850/ClO4 DOD			Water	10mL	
6	E2200753-006	04WW05-220802-FD	.01	6850/ClO4 DOD			Water	10mL	
7	E2200753-007	04WW11-220802	.01	6850/ClO4 DOD			Water	10mL	
8	E2200753-008	04WW01-220802	.01	6850/ClO4 DOD			Water	10mL	
9	E2200756-001	LH18/24-SP650_080222_AIX	.01	6850/ClO4 DOD			Water	10mL	
10	E2200756-002	LH18/24-SP650_080222_BIX	.01	6850/ClO4 DOD			Water	10mL	
11	EQ2200338-01	MB		6850/ClO4 DOD			Liquid	10mL	
12	EQ2200338-02	LCS		6850/ClO4 DOD			Liquid	10mL	
13	EQ2200338-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
14	EQ2200338-04	04WW11-220802 MS	.01	6850/ClO4 DOD			Liquid	10mL	
15	EQ2200338-05	04WW11-220802 DMS	.01	6850/ClO4 DOD			Liquid	10mL	
16	EQ2200338-06	MTW-31-220729 MS	.01	6850/ClO4 DOD			Liquid	10mL	
17	EQ2200338-07	MTW-31-220729 DMS	.01	6850/ClO4 DOD			Liquid	10mL	
18	K2208630-001	MTW-31-220729	.01	6850/ClO4 DOD			Ground Water	10mL	
19	K2208630-002	SB-220729-01	.01	6850/ClO4 DOD			Ground Water	10mL	
20	K2208630-003	EB-220729-01	.01	6850/ClO4 DOD			Ground Water	10mL	
21	K2208630-004	FD-220729-01	.01	6850/ClO4 DOD			Ground Water	10mL	
22	K2208654-001	MTW-26-220725	.02	6850/ClO4 DOD			Ground Water	10mL	
23	K2208654-002	MTW-30-220726	.02	6850/ClO4 DOD			Ground Water	10mL	
24	K2208654-003	MTW-21-220726	.02	6850/ClO4 DOD			Ground Water	10mL	
25	K2208654-004	MTW-27-220728	.02	6850/ClO4 DOD			Ground Water	10mL	
26	K2208654-005	MTW-33-220728	.02	6850/ClO4 DOD			Ground Water	10mL	
27	K2208660-001	LGAC-INF-080122	.01	6850/ClO4			Water	10mL	

Spiking Solutions

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

EQ2200338-02 1.00µL EQ2200338-02 1.00µL EQ2200338-03 1.00µL EQ2200338-03 1.00µL EQ2200338-04 1.00µL EQ2200338-05 1.00µL
EQ2200338-06 1.00µL EQ2200338-07 1.00µL

Preparation Information Benchsheet

Prep Run#: 404146 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** **Prep Date/Time:** 8/8/22 10:08

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 223118 Logbook Ref: Perchlorate Internal Standard Expires On: 10/31/2022

E2200753-001	100.00µL	E2200753-002	100.00µL	E2200753-003	100.00µL	E2200753-004	100.00µL	E2200753-005	100.00µL	E2200753-006	100.00µL
E2200753-007	100.00µL	E2200753-008	100.00µL	E2200756-001	100.00µL	E2200756-002	100.00µL	EQ2200338-01	100.00µL	EQ2200338-01	100.00µL
EQ2200338-02	100.00µL	EQ2200338-02	100.00µL	EQ2200338-03	100.00µL	EQ2200338-03	100.00µL	EQ2200338-04	100.00µL	EQ2200338-05	100.00µL
EQ2200338-06	100.00µL	EQ2200338-07	100.00µL	K2208630-001	100.00µL	K2208630-002	100.00µL	K2208630-003	100.00µL	K2208630-004	100.00µL
K2208654-001	100.00µL	K2208654-002	100.00µL	K2208654-003	100.00µL	K2208654-004	100.00µL	K2208654-005	100.00µL	K2208660-001	100.00µL

Preparation Materials

Water HPLC Grade	5/12/2022 Water (223056)	6850 Amber Glass screw vial	2mL Screw Top Vial (221894)	6850 0.45um syringe filters	6850 Syringe Filters (222410)
6850 Luer-Lok Syringes	Luer-Lok Syringes (221305)	6850 Pipette Tips 50-1000 uL	6850 Pipette Tips (221929)		

Preparation Steps

Step: Preparation
Started: 8/8/22 10:08
Finished: 8/8/22 11:00
By: GRIVERA
Comments

Comments: _____

Reviewed By: GR Date: 08/08/22

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:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	8/ 2/22 0710
Sample Matrix:	Water	**Date Received:**	8/ 3/22
Sample Name:	04WW07-220802	**Units:**	µg/L
Lab Code:	E2200753-001	**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	ND	U	0.100	0.0500	0.0250	1	8/ 8/22	8/8/22 15:03	404146	773191	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	8/ 2/22 0750
Sample Matrix:	Water	**Date Received:**	8/ 3/22
Sample Name:	04WW09-220802	**Units:**	µg/L
Lab Code:	E2200753-002	**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	ND	U	0.100	0.0500	0.0250	1	8/ 8/22	8/8/22 15:12	404146	773191	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	8/ 2/22 0835
Sample Matrix:	Water	**Date Received:**	8/ 3/22
Sample Name:	04WW10-220802	**Units:**	µg/L
Lab Code:	E2200753-003	**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	8/ 8/22	8/8/22 16:05	404146	773191	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	8/ 2/22 0920
Sample Matrix:	Water	**Date Received:**	8/ 3/22
Sample Name:	04WW04-220802	**Units:**	µg/L
Lab Code:	E2200753-004	**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	8/ 8/22	8/8/22 15:56	404146	773191	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	8/ 2/22 1000
Sample Matrix:	Water	**Date Received:**	8/ 3/22
Sample Name:	04WW05-220802	**Units:**	µg/L
Lab Code:	E2200753-005	**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	ND	U	0.100	0.0500	0.0250	1	8/ 8/22	8/8/22 16:23	404146	773191	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	8/ 2/22 1000
Sample Matrix:	Water	**Date Received:**	8/ 3/22
Sample Name:	04WW05-220802-FD	**Units:**	µg/L
Lab Code:	E2200753-006	**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	ND	U	0.100	0.0500	0.0250	1	8/ 8/22	8/8/22 16:32	404146	773191	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	8/ 2/22 1040
Sample Matrix:	Water	**Date Received:**	8/ 3/22
Sample Name:	04WW11-220802	**Units:**	µg/L
Lab Code:	E2200753-007	**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	8/ 8/22	8/8/22 16:41	404146	773191	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	8/ 2/22 1125
Sample Matrix:	Water	**Date Received:**	8/ 3/22
Sample Name:	04WW01-220802	**Units:**	µg/L
Lab Code:	E2200753-008	**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	8/ 8/22	8/8/22 16:49	404146	773191	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2200338-01	**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	8/ 8/22	8/8/22 12:47	404146	773191	

Accuracy & Precision

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10450 Stancliff Rd., Suite 210, Houston TX 77099
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www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: APTIM, Inc
Project: LHAAP 04 August 2022
Sample Matrix: Water

Service Request: E2200753
Date Analyzed: 8/ 8/22

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: 404146

	Lab Control Sample EQ2200338-02			Duplicate Lab Control Sample EQ2200338-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.0964	0.100	96	0.102	0.100	102	84 - 119	6	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:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200338-02	**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	**0.0964**	J	0.100	0.0500	0.0250	1	8/ 8/22	8/8/22 12:55	404146	773191	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200338-03	**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	**0.102**		0.100	0.0500	0.0250	1	8/ 8/22	8/8/22 13:16	404146	773191	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	8/2/22
Sample Matrix:	Water	**Date Received:**	8/3/22
		Date Analyzed:	8/ 8/22

Matrix Spike Summary

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

Sample Name:	04WW11-220802	**Units:**	µg/L
Lab Code:	E2200753-007	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		04WW11-220802MS			04WW11-220802DMS					
		Matrix Spike			**Duplicate Matrix Spike**					
		EQ2200338-04			EQ2200338-05					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	ND	0.108	0.100	108	0.119	0.100	119	84 - 119	10	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:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	8/ 2/22 1040
Sample Matrix:	Water	**Date Received:**	8/ 3/22
Sample Name:	04WW11-220802	**Units:**	µg/L
Lab Code:	EQ2200338-04	**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	**0.108**		0.100	0.0500	0.0250	1	8/ 8/22	8/8/22 14:00	404146	773191	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Collected:**	8/ 2/22 1040
Sample Matrix:	Water	**Date Received:**	8/ 3/22
Sample Name:	04WW11-220802	**Units:**	µg/L
Lab Code:	EQ2200338-05	**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	**0.119**		0.100	0.0500	0.0250	1	8/ 8/22	8/8/22 14:09	404146	773191	

Initial Calibration

ALS Environmental - Houston HRMS
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Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20220726

1st Review: GRivera
2nd Review: Kneir

ALS Environmental

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/26/2022
Cal. Std. xp: 9/4/2022
ICAL ID: **EC2200011**

Mobile Phases **A:** 0.10% Formic Acid/Water 3100820-04 **B:** MeOH 218535

			File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	PERCHLORATE1		20220726_026	Perchlorate6850c.lcm	1x	☒	222805	7/26/2022 18:15
2	PERCHLORATE2		20220726_027	Perchlorate6850c.lcm	1x	☒	222804	7/26/2022 18:24
3	PERCHLORATE3		20220726_028	Perchlorate6850c.lcm	1x	☒	222806	7/26/2022 18:33
4	PERCHLORATE4		20220726_029	Perchlorate6850c.lcm	1x	☒	222807	7/26/2022 18:41
5	PERCHLORATE5		20220726_030	Perchlorate6850c.lcm	1x	☒	222808	7/26/2022 18:50
6	PERCHLORATE6		20220726_031	Perchlorate6850c.lcm	1x	☒	222809	7/26/2022 18:59
7	PERCHLORATE7		20220726_032	Perchlorate6850c.lcm	1x	☒	222810	7/26/2022 19:08
8	PERCHLORATE8		20220726_033	Perchlorate6850c.lcm	1x	☒	222811	7/26/2022 19:17
9	PERCHLORATE9		20220726_034	Perchlorate6850c.lcm	1x	☒	222812	7/26/2022 19:26
10	PERCHLORATE10		20220726_035	Perchlorate6850c.lcm	1x	☒	222813	7/26/2022 19:35
11	PERCHLORATEICV		20220726_037	Perchlorate6850c.lcm	1x	☒	222814	7/26/2022 19:53
12								
13								
14								
15								

Initial Calibration - Detailed Report

Calibration ID: EC2200011 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2200011-01	PERCHLORATE1	20220726_026	07/26/2022 18:15
02	EC2200011-02	PERCHLORATE2	20220726_027	07/26/2022 18:24
03	EC2200011-03	PERCHLORATE3	20220726_028	07/26/2022 18:33
04	EC2200011-04	PERCHLORATE4	20220726_029	07/26/2022 18:41
05	EC2200011-05	PERCHLORATE5	20220726_030	07/26/2022 18:50
06	EC2200011-06	PERCHLORATE6	20220726_031	07/26/2022 18:59
07	EC2200011-07	PERCHLORATE7	20220726_032	07/26/2022 19:08
08	EC2200011-08	PERCHLORATE8	20220726_033	07/26/2022 19:17
09	EC2200011-09	PERCHLORATE9	20220726_034	07/26/2022 19:26
10	EC2200011-10	PERCHLORATE10	20220726_035	07/26/2022 19:35

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

Perchlorate **Average RF** **RSD = 9.337** **Average RF = 0.1967**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.245	02	0.5000	0.2054	03	0.7000	0.1877	04	1.0000	0.1968
05	2.0000	0.1936	06	5.0000	0.1914	07	10.0000	0.1952	08	20.0000	0.1829
09	30.0000	0.1877	10	50.0000	0.1813						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.125	24.6	02	0.5000	0.522	4.4	03	0.7000	0.668	-4.6
04	1.0000	1.00	0.0	05	2.0000	1.97	-1.6	06	5.0000	4.87	-2.7
07	10.0000	9.92	-0.8	08	20.0000	18.6	-7.0	09	30.0000	28.6	-4.6
10	50.0000	46.1	-7.8								

Initial Calibration Verification Summary Report

Calibration ID:	EC2200011	**Instrument ID:**	E-LCMS-01
Datafile ID:	20220726_037	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2200011-11	T	Average RF	10	10.647	ng/mL	6.5	<= 15

Insight Report

Printed at 7/29/2022 10:25:10 AM

Method File: I:\LCMS01\DATA\20220726\20220726.lcm
Project File: I:\LCMS01\DATA\20220726\20220726-ICAL.damlp

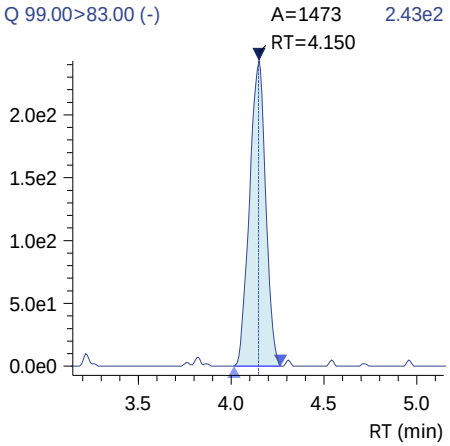
PERCHLORATE1

Sample ID: PERCHLORATE1
Date Acquired: 7/26/2022 6:15:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220726\20220726_026.lcd
Vial: 20 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	4.150	1473	60124	0.1246	ng/mL	30.01	22.36-41.53
Perchlorate 2	Auto	4.140	442	60124	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.141	60124	60124	1.0000	ng/mL	----	

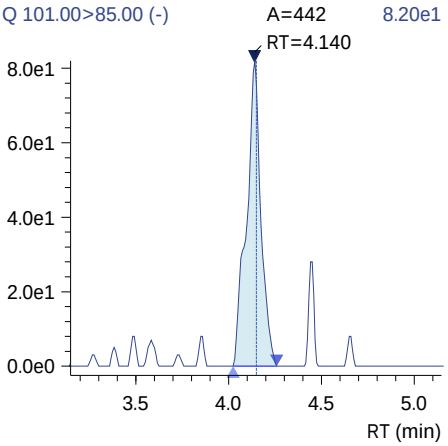
Perchlorate

Conc 0.1246



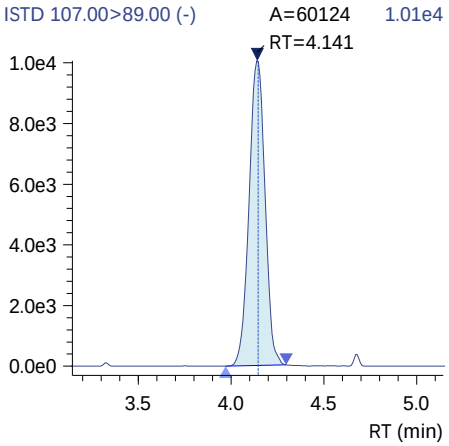
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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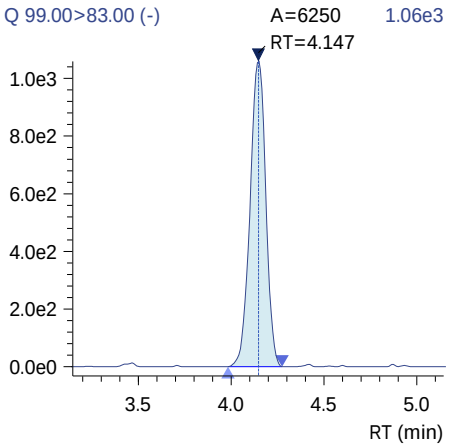
PERCHLORATE2

Sample ID: PERCHLORATE2
Date Acquired: 7/26/2022 6:24:08 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220726\20220726_027.lcd
Vial: 21 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	4.147	6250	60867	0.5220	ng/mL	27.81	22.36-41.53
Perchlorate 2	Auto	4.157	1738	60867	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.143	60867	60867	1.0000	ng/mL	----	

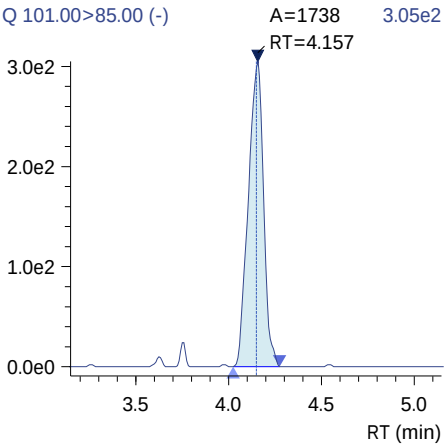
Perchlorate

Conc 0.5220



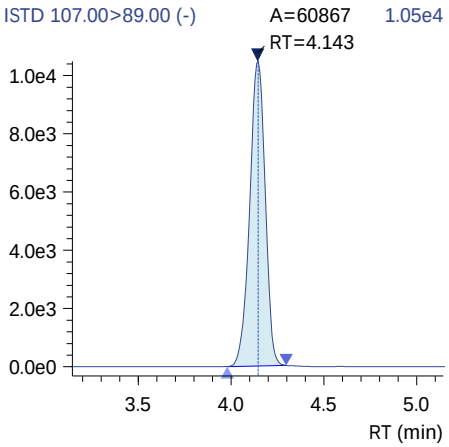
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/29/2022 10:25:10 AM

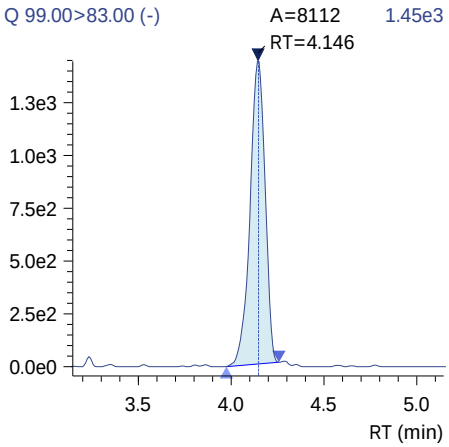
PERCHLORATE3

Sample ID: PERCHLORATE3
Date Acquired: 7/26/2022 6:33:02 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220726\20220726_028.lcd
Vial: 22 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	4.146	8112	61728	0.6681	ng/mL	37.44	22.36-41.53
Perchlorate 2	Auto	4.140	3037	61728	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.142	61728	61728	1.0000	ng/mL	----	

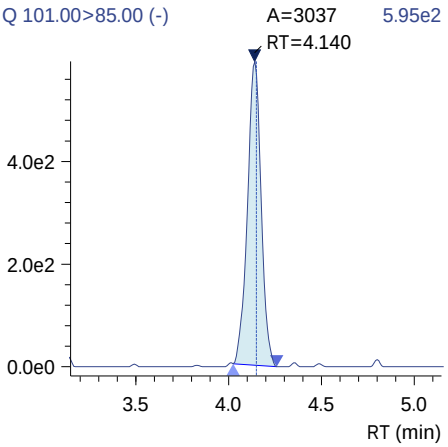
Perchlorate

Conc 0.6681



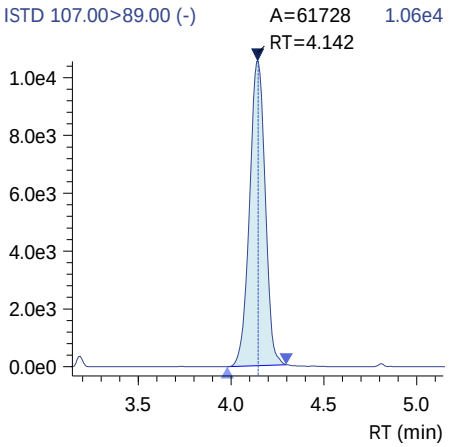
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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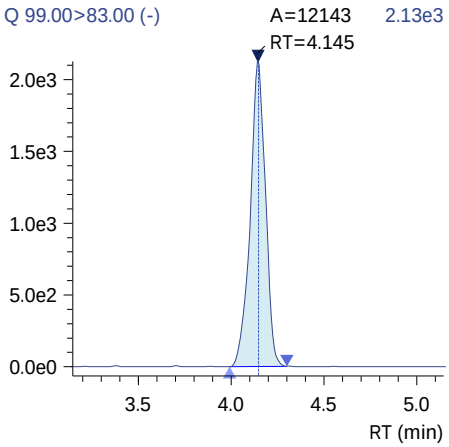
PERCHLORATE4

Sample ID: PERCHLORATE4
Date Acquired: 7/26/2022 6:41:55 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220726\20220726_029.lcd
Vial: 23 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	4.145	12143	61702	1.0005	ng/mL	30.52	22.36-41.53
Perchlorate 2	Auto	4.142	3706	61702	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.141	61702	61702	1.0000	ng/mL	----	

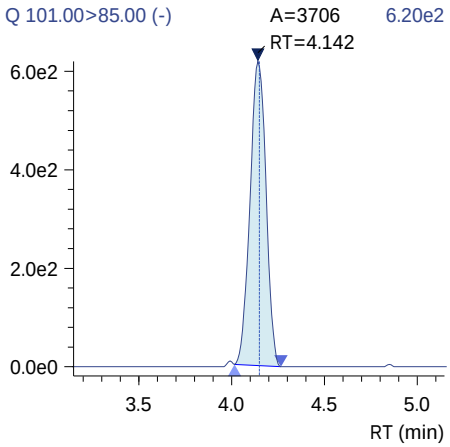
Perchlorate

Conc 1.0005



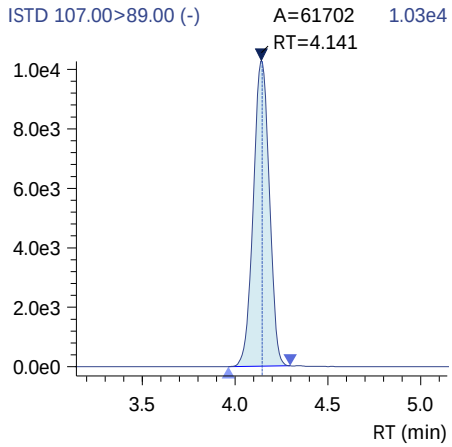
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/29/2022 10:25:10 AM

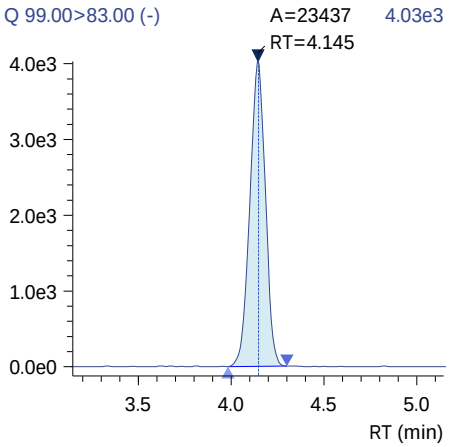
PERCHLORATE5

Sample ID: PERCHLORATE5
Date Acquired: 7/26/2022 6:50:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220726\20220726_030.lcd
Vial: 24 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	4.145	23437	60515	1.9689	ng/mL	33.93	22.36-41.53
Perchlorate 2	Auto	4.140	7953	60515	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.143	60515	60515	1.0000	ng/mL	----	

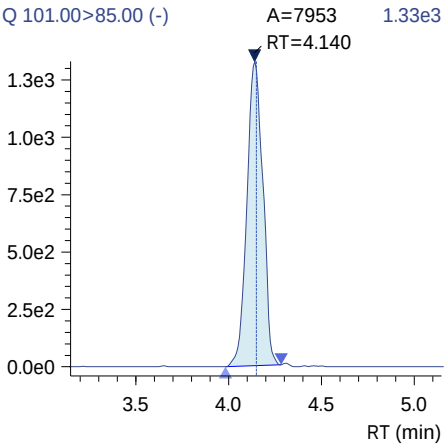
Perchlorate

Conc 1.9689



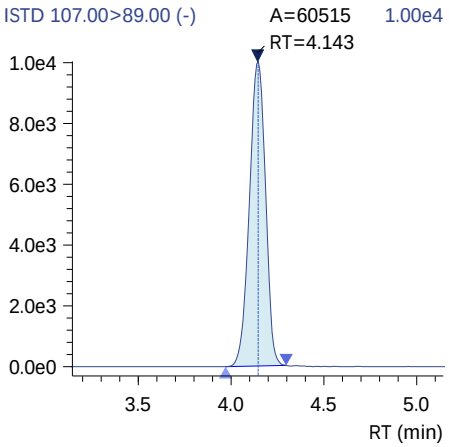
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/29/2022 10:25:10 AM

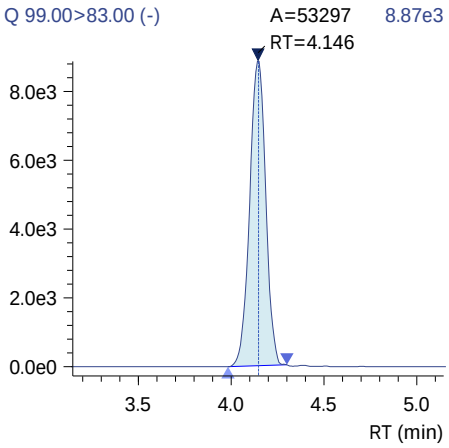
PERCHLORATE6

Sample ID: PERCHLORATE6
Date Acquired: 7/26/2022 6:59:43 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220726\20220726_031.lcd
Vial: 25 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	4.146	53297	55686	4.8657	ng/mL	32.97	22.36-41.53
Perchlorate 2	Auto	4.146	17574	55686	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.140	55686	55686	1.0000	ng/mL	----	

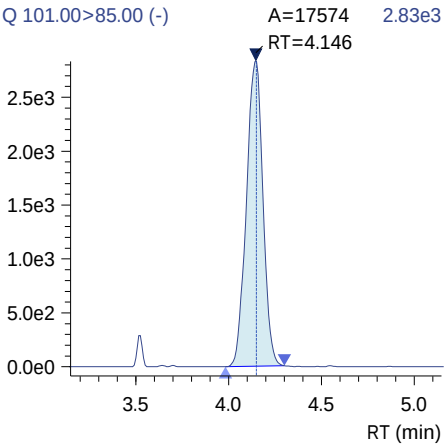
Perchlorate

Conc 4.8657



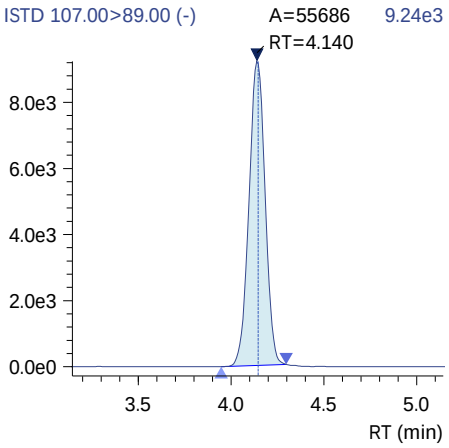
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/29/2022 10:25:10 AM

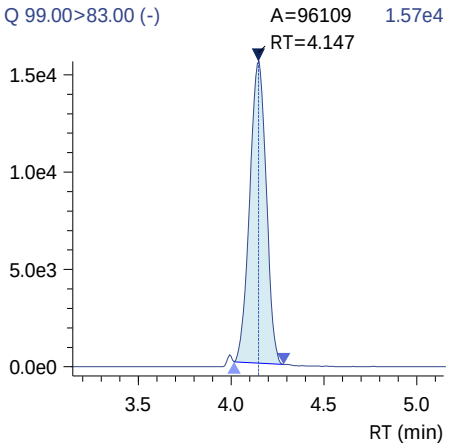
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 7/26/2022 7:08:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220726\20220726_032.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	4.147	96109	49245	9.9218	ng/mL	33.86	22.36-41.53
Perchlorate 2	Auto	4.149	32542	49245	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.144	49245	49245	1.0000	ng/mL	----	

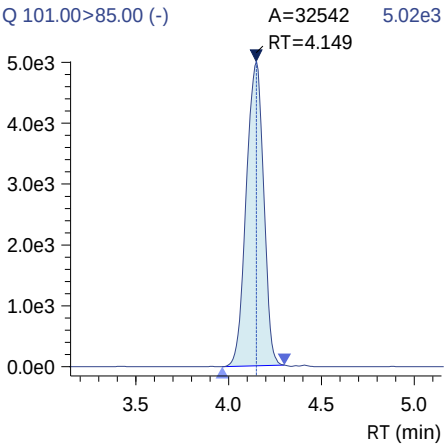
Perchlorate

Conc 9.9218



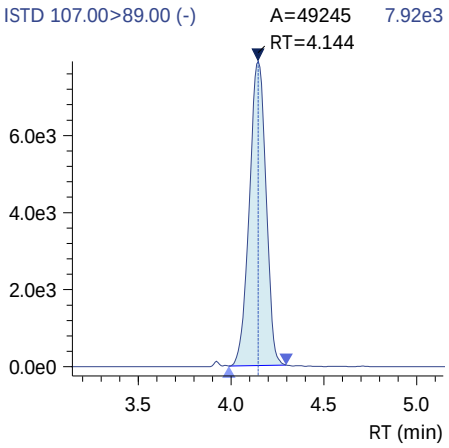
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/29/2022 10:25:10 AM

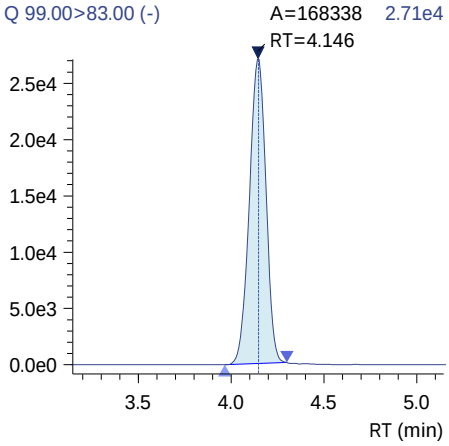
PERCHLORATE8

Sample ID: PERCHLORATE8
Date Acquired: 7/26/2022 7:17:36 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220726\20220726_033.lcd
Vial: 27 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	4.146	168338	46030	18.5922	ng/mL	32.56	22.36-41.53
Perchlorate 2	Auto	4.142	54810	46030	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.143	46030	46030	1.0000	ng/mL	----	

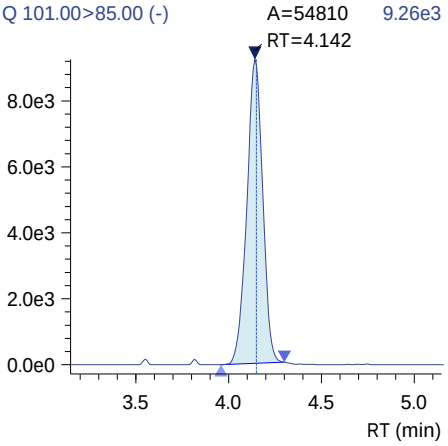
Perchlorate

Conc 18.5922



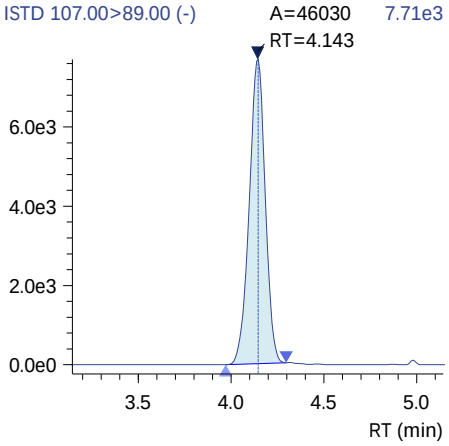
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/29/2022 10:25:10 AM

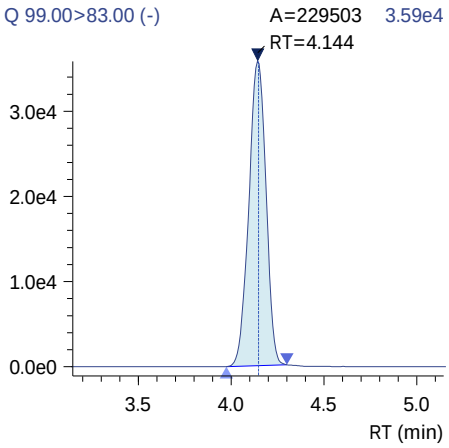
PERCHLORATE9

Sample ID: PERCHLORATE9
Date Acquired: 7/26/2022 7:26:30 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220726\20220726_034.lcd
Vial: 28 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	4.144	229503	40751	28.6312	ng/mL	31.57	22.36-41.53
Perchlorate 2	Auto	4.141	72452	40751	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.139	40751	40751	1.0000	ng/mL	----	

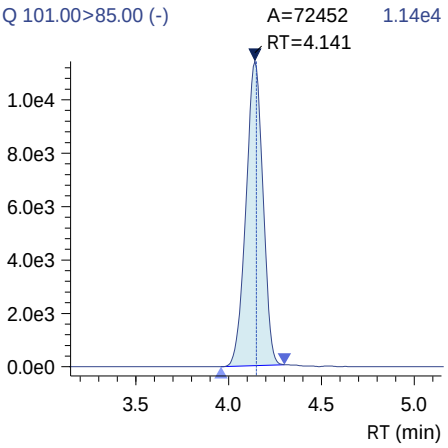
Perchlorate

Conc 28.6312



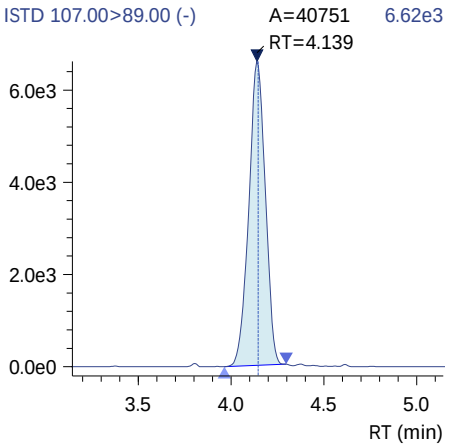
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/29/2022 10:25:10 AM

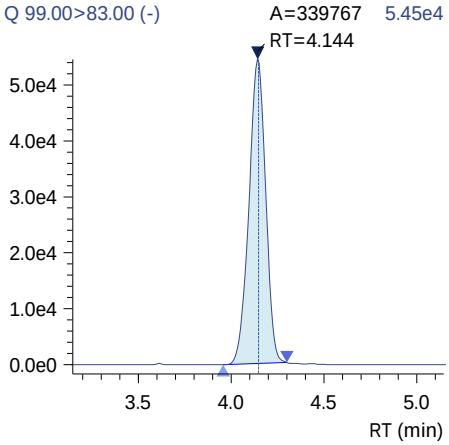
PERCHLORATE10

Sample ID: PERCHLORATE10
Date Acquired: 7/26/2022 7:35:23 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220726\20220726_035.lcd
Vial: 29 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	4.144	339767	37478	46.0887	ng/mL	32.10	22.36-41.53
Perchlorate 2	Auto	4.139	109076	37478	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.141	37478	37478	1.0000	ng/mL	----	

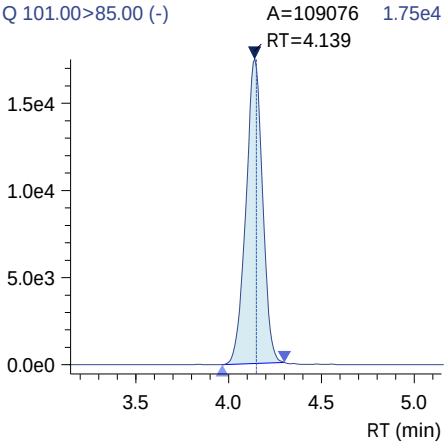
Perchlorate

Conc 46.0887



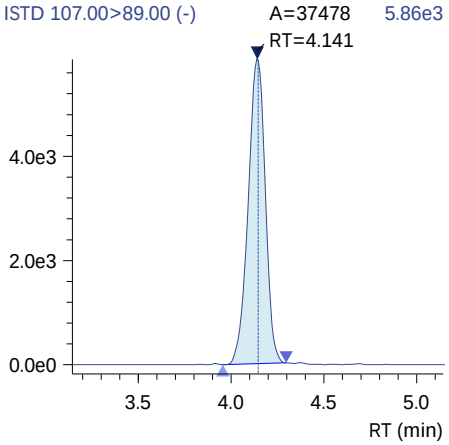
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/29/2022 10:25:10 AM

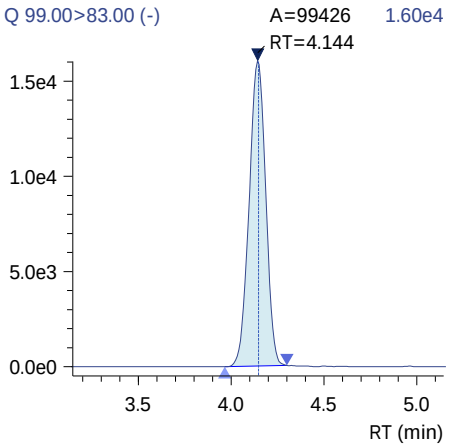
PERCHLORATEICV

Sample ID: PERCHLORATEICV
Date Acquired: 7/26/2022 7:53:11 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220726\20220726_037.lcd
Vial: 30 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	4.144	99426	47473	10.6474	ng/mL	33.79	22.36-41.53
Perchlorate 2	Auto	4.145	33595	47473	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.140	47473	47473	1.0000	ng/mL	----	

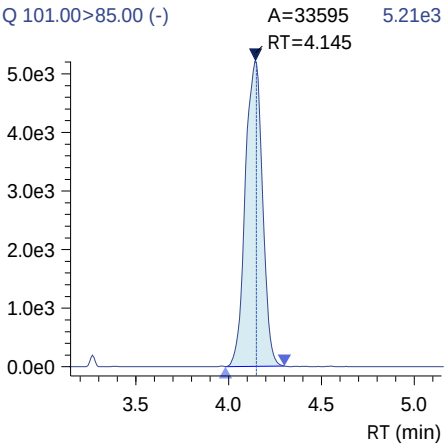
Perchlorate

Conc 10.6474



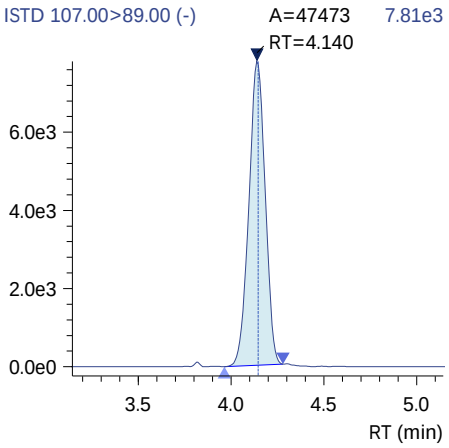
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 320, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20220808

ALS Environmental

1st Review: GRivera
2nd Review: Kneir

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/26/2022
Cal. Std. xp: 9/4/2022
ICAL ID: **EC2200011**

Mobile Phases **A:** 0.10% Formic Acid/Water 3100820-04 **B:** MeOH 218535

			File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	null		20220808_001	Perchlorate6850c.lcm	1x	☒		8/8/2022 11:31
2	null		20220808_002	Perchlorate6850c.lcm	1x	☒		8/8/2022 11:37
3	IB		20220808_003	Perchlorate6850c.lcm	1x	☒		8/8/2022 11:44
4	IB		20220808_004	Perchlorate6850c.lcm	1x	☒		8/8/2022 11:52
5	IB		20220808_005	Perchlorate6850c.lcm	1x	☒		8/8/2022 12:01
6	ICS		20220808_006	Perchlorate6850c.lcm	1x	☒		8/8/2022 12:10
7	LODV		20220808_007	Perchlorate6850c.lcm	1x	☒	222817	8/8/2022 12:28
8	PERCHLORATE7		20220808_008	Perchlorate6850c.lcm	1x	☒	222810	8/8/2022 12:38
9	EQ2200338-01		20220808_009	Perchlorate6850c.lcm	1x	☒		8/8/2022 12:47
10	EQ2200338-02		20220808_010	Perchlorate6850c.lcm	1x	☒		8/8/2022 12:55
11	EQ2200338-03		20220808_011	Perchlorate6850c.lcm	1x	☒		8/8/2022 13:16
12	K2208660-001		20220808_012	Perchlorate6850c.lcm	1x	☒		8/8/2022 13:25
13	PERCHLORATE7		20220808_013	Perchlorate6850c.lcm	1x	☒	222810	8/8/2022 13:34
14	E2200756-001		20220808_014	Perchlorate6850c.lcm	1x	☒	DNU-IR	8/8/2022 13:43
15	E2200756-002		20220808_015	Perchlorate6850c.lcm	1x	☒		8/8/2022 13:51
16	EQ2200338-04		20220808_016	Perchlorate6850c.lcm	1x	☒		8/8/2022 14:00
17	EQ2200338-05		20220808_017	Perchlorate6850c.lcm	1x	☒		8/8/2022 14:09
18	EQ2200338-06		20220808_018	Perchlorate6850c.lcm	1x	☒	Over ICAL range	8/8/2022 14:18
19	EQ2200338-07		20220808_019	Perchlorate6850c.lcm	1x	☒	Over ICAL range	8/8/2022 14:27
20	IB		20220808_020	Perchlorate6850c.lcm	1x	☒		8/8/2022 14:36
21	PERCHLORATE7		20220808_021	Perchlorate6850c.lcm	1x	☒	222810	8/8/2022 14:45
22	IB		20220808_022	Perchlorate6850c.lcm	1x	☒		8/8/2022 14:54
23	E2200753-001		20220808_023	Perchlorate6850c.lcm	1x	☒		8/8/2022 15:03
24	E2200753-002		20220808_024	Perchlorate6850c.lcm	1x	☒		8/8/2022 15:12
25	E2200756-001		20220808_025	Perchlorate6850c.lcm	1x	☒		8/8/2022 15:38
26	E2200753-003		20220808_026	Perchlorate6850c.lcm	1x	☒	DNU-IR	8/8/2022 15:47
27	E2200753-004		20220808_027	Perchlorate6850c.lcm	1x	☒		8/8/2022 15:56
28	E2200753-003		20220808_028	Perchlorate6850c.lcm	1x	☒		8/8/2022 16:05
29	PERCHLORATE7		20220808_029	Perchlorate6850c.lcm	1x	☒	222810	8/8/2022 16:14
30	E2200753-005		20220808_030	Perchlorate6850c.lcm	1x	☒		8/8/2022 16:23
31	E2200753-006		20220808_031	Perchlorate6850c.lcm	1x	☒		8/8/2022 16:32
32	E2200753-007		20220808_032	Perchlorate6850c.lcm	1x	☒		8/8/2022 16:41
33	E2200753-008		20220808_033	Perchlorate6850c.lcm	1x	☒		8/8/2022 16:49
34	PERCHLORATE7		20220808_034	Perchlorate6850c.lcm	1x	☒	222810	8/8/2022 16:58
35	K2208630-001		20220808_035	Perchlorate6850c.lcm	10x	☒		8/8/2022 17:07
36	K2208630-002		20220808_036	Perchlorate6850c.lcm	1x	☒		8/8/2022 17:16
37	K2208630-003		20220808_037	Perchlorate6850c.lcm	1x	☒		8/8/2022 17:25
38	K2208630-004DNU-E		20220808_038	Perchlorate6850c.lcm	1x	☒	DNU-Over ICAL range	8/8/2022 17:34
39	PERCHLORATE7		20220808_039	Perchlorate6850c.lcm	1x	☒	222810	8/8/2022 18:10
40	K2208630-004		20220808_040	Perchlorate6850c.lcm	10x	☒	Reanalyze- CCV failed high	8/8/2022 18:19
41	K2208654-001DNU-E		20220808_041	Perchlorate6850c.lcm	1x	☒	DNU-Over ICAL range	8/8/2022 18:28
42	K2208654-002DNU-E		20220808_042	Perchlorate6850c.lcm	1x	☒	DNU-Over ICAL range	8/8/2022 18:37
43	K2208654-003DNU-E		20220808_043	Perchlorate6850c.lcm	1x	☒	DNU-Over ICAL range	8/8/2022 18:45
44	K2208654-004DNU-E		20220808_044	Perchlorate6850c.lcm	1x	☒	DNU-Over ICAL range	8/8/2022 18:54
45	K2208654-005DNU-E		20220808_045	Perchlorate6850c.lcm	1x	☒	DNU-Over ICAL range	8/8/2022 19:03
46	PERCHLORATE7-Failed High		20220808_046	Perchlorate6850c.lcm	1x	☒	222810	8/8/2022 19:12
47	IB		20220808_047	Perchlorate6850c.lcm	1x	☒		8/8/2022 19:21
48	IB		20220808_048	Perchlorate6850c.lcm	1x	☒		8/8/2022 19:30
49	null		20220808_049	Perchlorate6850c.lcm	1x	☒		8/8/2022 19:36

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: APTIM, Inc
Project: LHAAP 04 August 2022

Service Request: E2200753
Date Analyzed: 8/ 8/22

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\20220808\20220808_008

Calibration Date: 7/26/22
Calibration ID: EC2200011
Analysis Lot: 773191
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.3	0.1967	0.2018	2.6	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: APTIM, Inc
Project: LHAAP 04 August 2022

Service Request: E2200753
Date Analyzed: 8/ 8/22

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\20220808\20220808_013

Calibration Date: 7/26/22
Calibration ID: EC2200011
Analysis Lot: 773191
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.8	0.1967	0.2126	8.1	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: APTIM, Inc
Project: LHAAP 04 August 2022

Service Request: E2200753
Date Analyzed: 8/ 8/22

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\20220808\20220808_021

Calibration Date: 7/26/22
Calibration ID: EC2200011
Analysis Lot: 773191
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1967	0.1987	1.0	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: APTIM, Inc
Project: LHAAP 04 August 2022

Service Request: E2200753
Date Analyzed: 8/ 8/22

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\20220808\20220808_029

Calibration Date: 7/26/22
Calibration ID: EC2200011
Analysis Lot: 773191
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.7	0.1967	0.2099	6.7	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: APTIM, Inc
Project: LHAAP 04 August 2022

Service Request: E2200753
Date Analyzed: 8/ 8/22

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\20220808\20220808_034

Calibration Date: 7/26/22
Calibration ID: EC2200011
Analysis Lot: 773191
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.8	0.1967	0.2128	8.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: APTIM, Inc
Project: LHAAP 04 August 2022

Service Request: E2200753
Date Analyzed: 8/ 8/22

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\20220808\20220808_039

Calibration Date: 7/26/22
Calibration ID: EC2200011
Analysis Lot: 773191
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	11.4	0.1967	0.2248	14.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Analyzed:**	8/8/22 12:38

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

File ID:	I:\LCMS01\DATA\20220808\20220808_008	**Lab Code:**	EQ2200339-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	773191
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	53,413	4.14
	Upper Limit ==>	80,120	6.14
	Lower Limit ==>	26,707	2.14
Associated Analyses			
Continuing Calibration Verification	EQ2200339-01	43,710	4.10
Method Blank	EQ2200338-01	50,019	4.11
Lab Control Sample	EQ2200338-02	51,206	4.11
Duplicate Lab Control Sample	EQ2200338-03	51,916	4.10

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

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Analyzed:**	8/8/22 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\20220808\20220808_013	**Lab Code:**	EQ2200339-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	773191
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	53,413	4.14
	Upper Limit ==>	80,120	6.14
	Lower Limit ==>	26,707	2.14
Associated Analyses			
Continuing Calibration Verification	EQ2200339-02	40,296	4.11
04WW11-220802MS	EQ2200338-04	79,332	4.06
04WW11-220802DMS	EQ2200338-05	76,689	4.06

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

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Analyzed:**	8/8/22 14:45

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

File ID:	I:\LCMS01\DATA\20220808\20220808_021	**Lab Code:**	EQ2200339-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	773191
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	53,413	4.14
	Upper Limit ==>	80,120	6.14
	Lower Limit ==>	26,707	2.14
Associated Analyses			
Continuing Calibration Verification	EQ2200339-03	39,653	4.11
04WW07-220802	E2200753-001	61,058	3.97
04WW09-220802	E2200753-002	73,697	4.05
04WW04-220802	E2200753-004	40,939	4.10
04WW10-220802	E2200753-003	58,746	3.96

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

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Analyzed:**	8/8/22 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\20220808\20220808_029	**Lab Code:**	EQ2200339-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	773191
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	53,413	4.14
	Upper Limit ==>	80,120	6.14
	Lower Limit ==>	26,707	2.14
Associated Analyses			
Continuing Calibration Verification	EQ2200339-04	30,876	4.11
04WW05-220802	E2200753-005	67,388	4.03
04WW05-220802-FD	E2200753-006	66,317	4.03
04WW11-220802	E2200753-007	70,939	4.06
04WW01-220802	E2200753-008	52,463	3.97

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

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Analyzed:**	8/8/22 16:58

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

File ID:	I:\LCMS01\DATA\20220808\20220808_034	**Lab Code:**	EQ2200339-05
Instrument ID:	E-LCMS-01	**Analysis Lot:**	773191
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	53,413	4.14
	Upper Limit ==>	80,120	6.14
	Lower Limit ==>	26,707	2.14
Associated Analyses			
Continuing Calibration Verification	EQ2200339-05	36,344	4.11

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

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	APTIM, Inc	**Service Request:**	E2200753
Project:	LHAAP 04 August 2022	**Date Analyzed:**	8/8/22 18:10

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

File ID:	I:\LCMS01\DATA\20220808\20220808_039	**Lab Code:**	EQ2200339-06
Instrument ID:	E-LCMS-01	**Analysis Lot:**	773191
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	53,413	4.14
	Upper Limit ==>	80,120	6.14
	Lower Limit ==>	26,707	2.14
Associated Analyses			
Continuing Calibration Verification	EQ2200339-06	28,416	4.06

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

Insight Report

Printed at 8/9/2022 11:47:18 AM

Method File: I:\LCMS01\DATA\20220808\20220726.lcm
Project File: I:\LCMS01\DATA\20220808\20220808.damlp

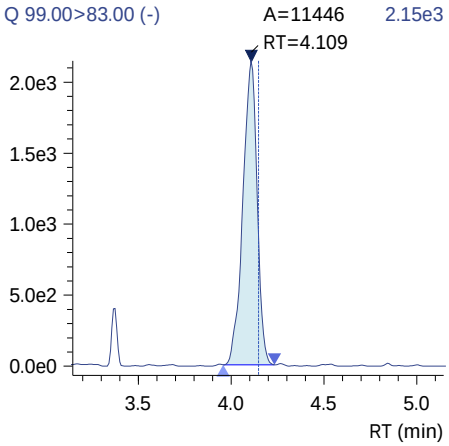
ICS

Sample ID: ICS
Date Acquired: 8/8/2022 12:10:46 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_006.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	4.109	11446	56934	1.0220	ng/mL	29.04	21.63-40.16
Perchlorate 2	Auto	4.098	3324	56934	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.103	56934	56934	1.0000	ng/mL	----	

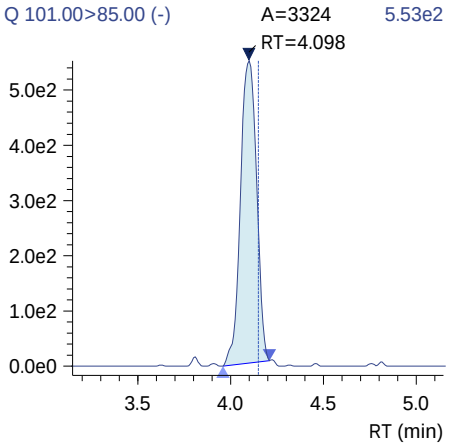
Perchlorate

Conc 1.0220



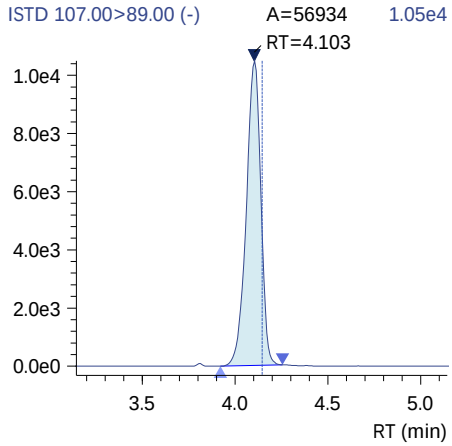
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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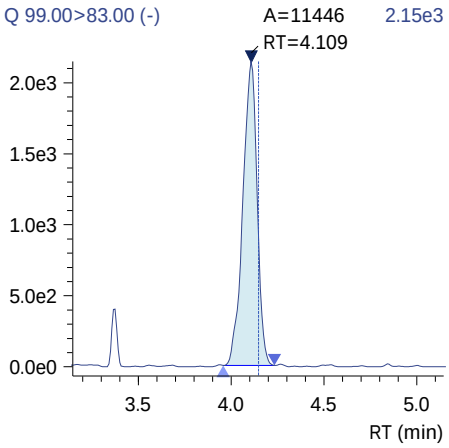
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Project File: I:\LCMS01\DATA\20220808\20220808.damlp

ICS

Sample ID: ICS
Date Acquired: 8/8/2022 12:10:46 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_006.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 1

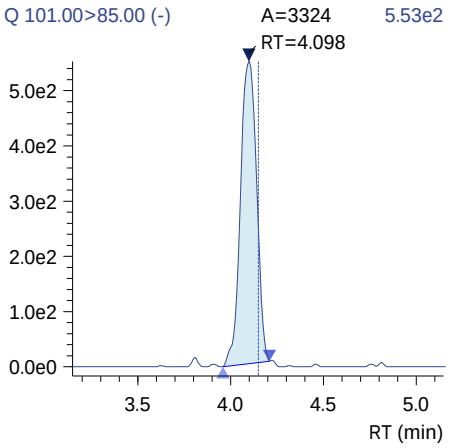
Perchlorate

Conc 1.0220



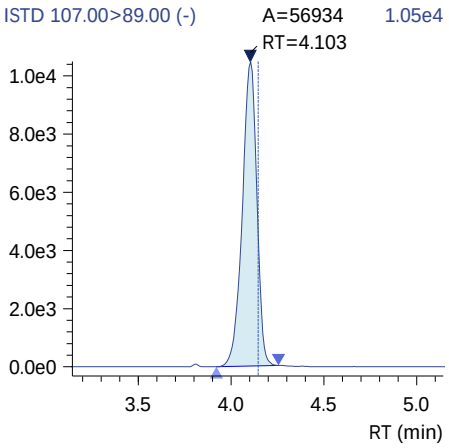
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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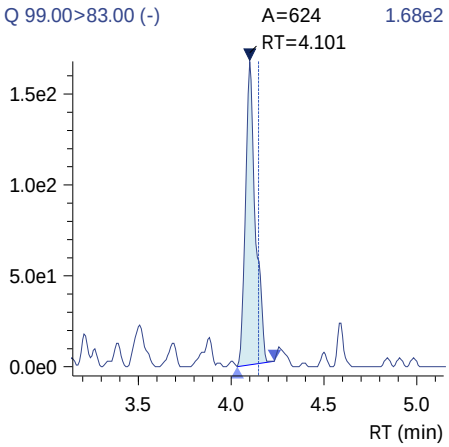
LODV

Sample ID: LODV
Date Acquired: 8/8/2022 12:28:34 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_007.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	4.101	624	54261	0.0585	ng/mL	25.80	21.63-40.16
Perchlorate 2	M	4.093	161	54261	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.101	54261	54261	1.0000	ng/mL	----	

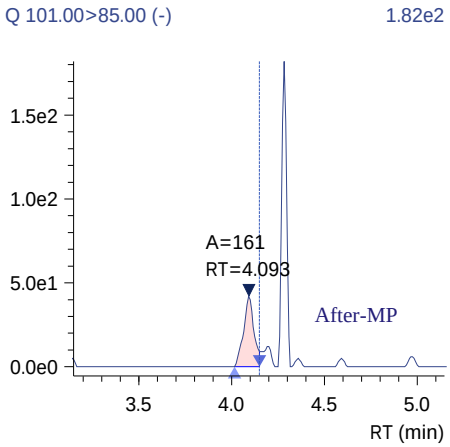
Perchlorate

Conc 0.0585



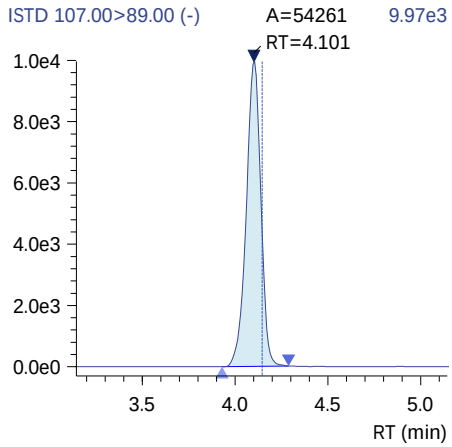
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

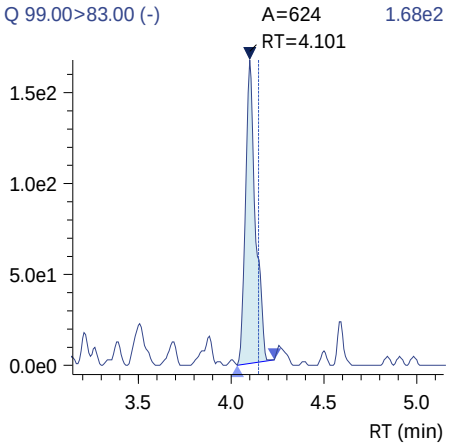
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LODV

Sample ID: LODV
Date Acquired: 8/8/2022 12:28:34 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_007.lcd
Vial: 33 | Inj. Volume: 25.0000uL | Tray: 1

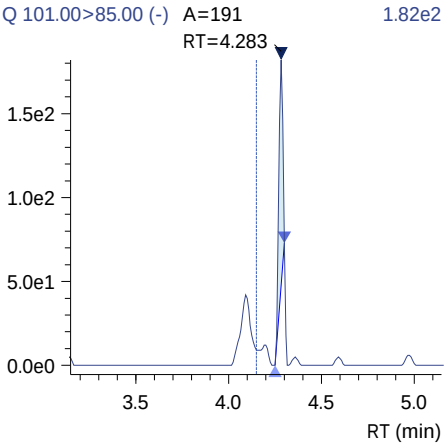
Perchlorate

Conc 0.0585



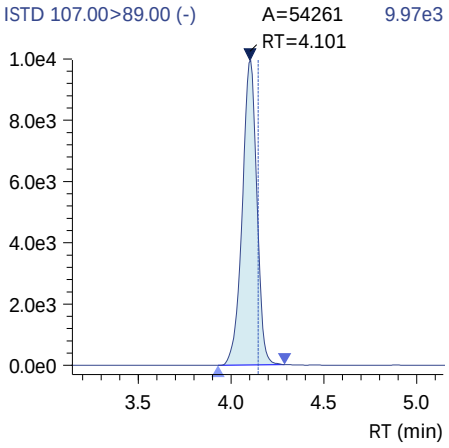
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:47:18 AM

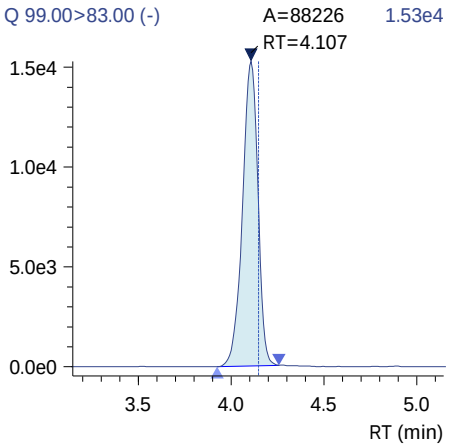
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 8/8/2022 12:38:10 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_008.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	4.107	88226	43710	10.2614	ng/mL	30.35	21.63-40.16
Perchlorate 2	Auto	4.103	26772	43710	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.102	43710	43710	1.0000	ng/mL	----	

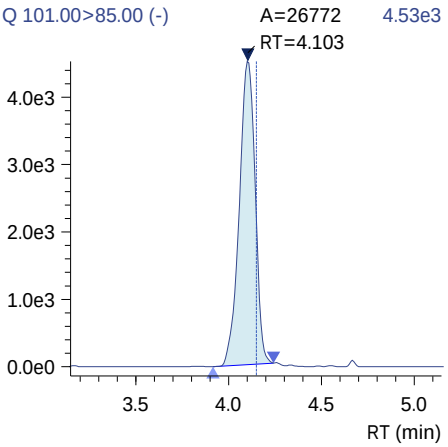
Perchlorate

Conc 10.2614



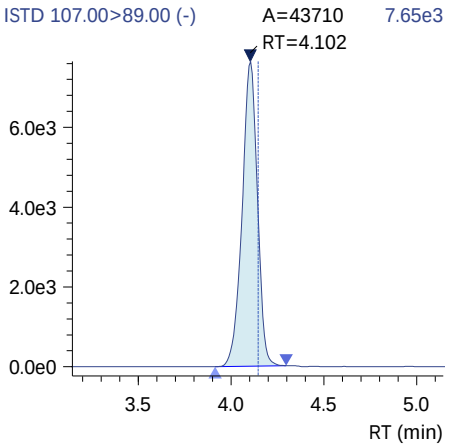
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

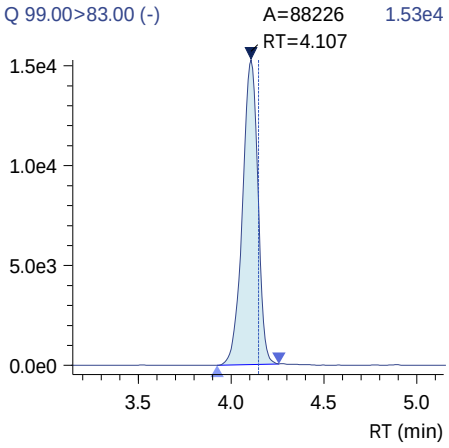
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PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 8/8/2022 12:38:10 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_008.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

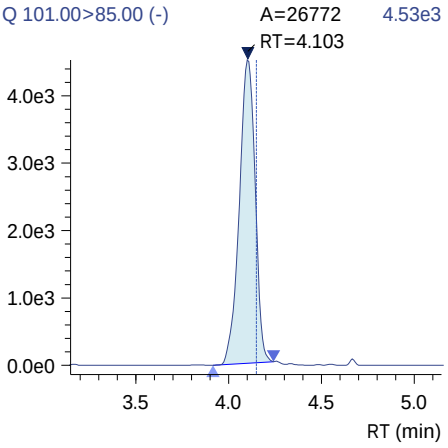
Perchlorate

Conc 10.2614



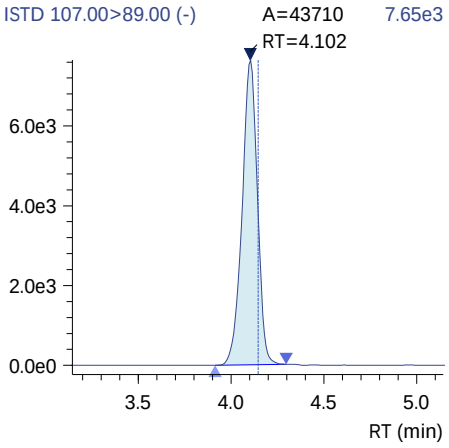
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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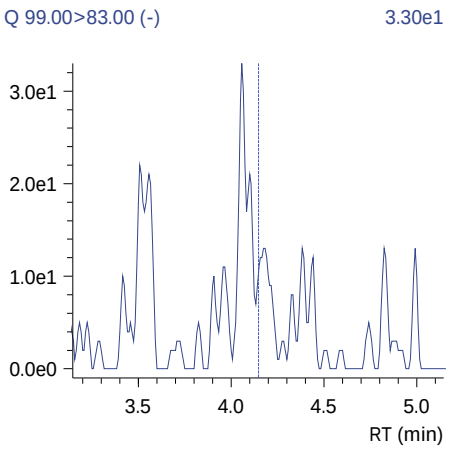
EQ2200338-01

Sample ID: EQ2200338-01
Date Acquired: 8/8/2022 12:47:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_009.lcd
Vial: 24 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	50019	----	ng/mL	0.00	21.63-40.16
Perchlorate 2	Auto	4.113	73	50019	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.105	50019	50019	1.0000	ng/mL	----	

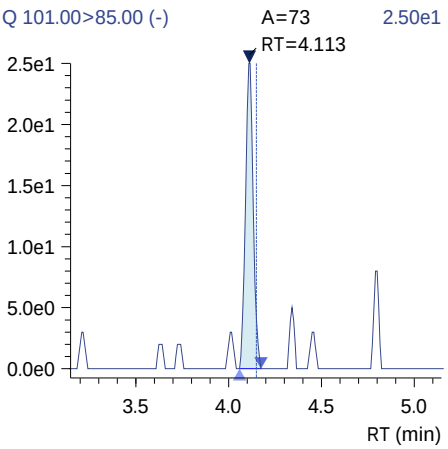
Perchlorate

Conc ----



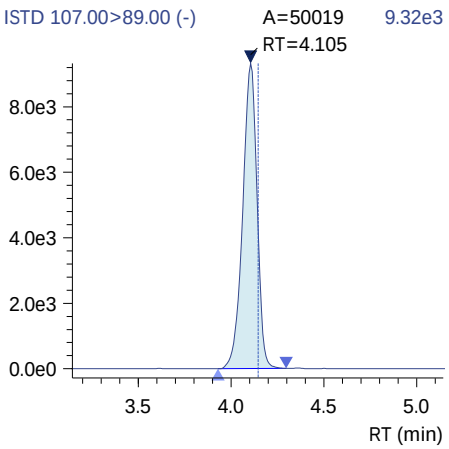
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

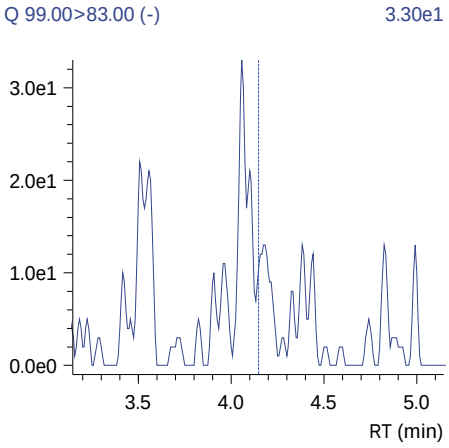
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EQ2200338-01

Sample ID: EQ2200338-01
Date Acquired: 8/8/2022 12:47:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_009.lcd
Vial: 24 | Inj. Volume: 25.0000uL | Tray: 4

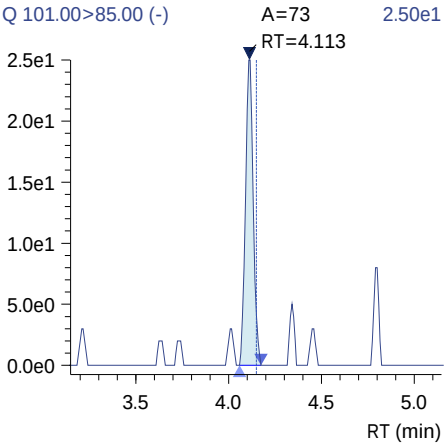
Perchlorate

Conc ----



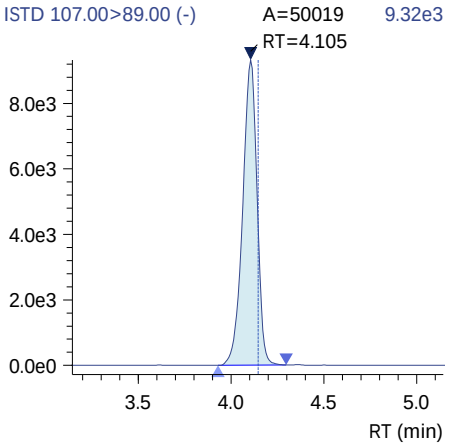
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:47:18 AM

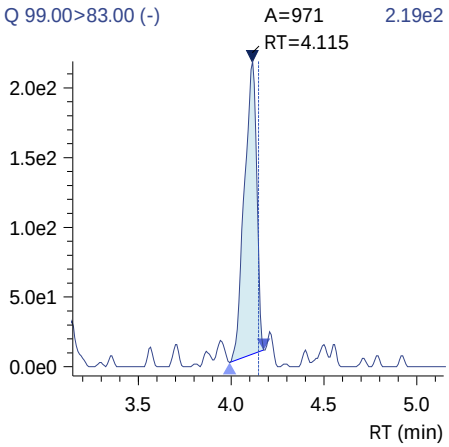
EQ2200338-02

Sample ID: EQ2200338-02
Date Acquired: 8/8/2022 12:55:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_010.lcd
Vial: 25 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	4.115	971	51206	0.0964	ng/mL	36.46	21.63-40.16
Perchlorate 2	Auto	4.108	354	51206	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.105	51206	51206	1.0000	ng/mL	----	

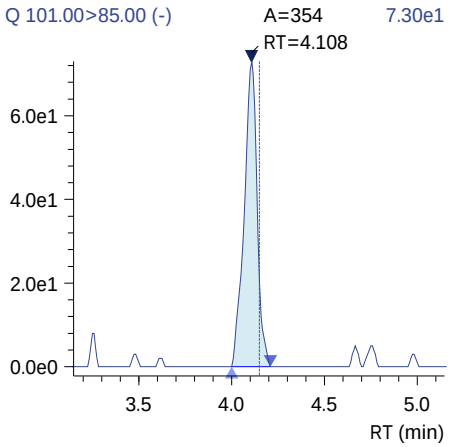
Perchlorate

Conc 0.0964



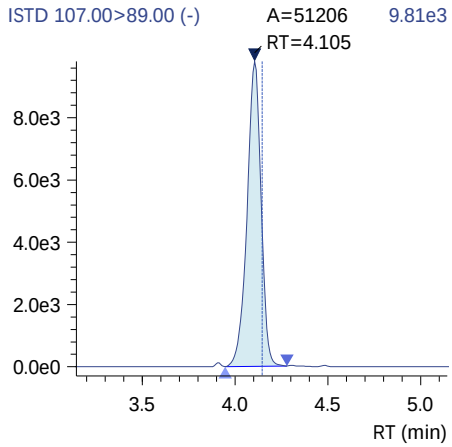
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

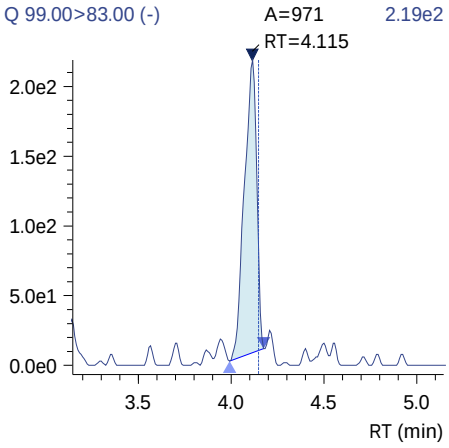
Printed at 8/9/2022 11:50:08 AM

EQ2200338-02

Sample ID: EQ2200338-02
Date Acquired: 8/8/2022 12:55:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_010.lcd
Vial: 25 | Inj. Volume: 25.0000uL | Tray: 4

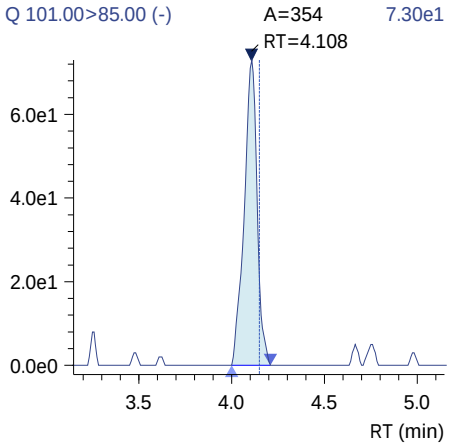
Perchlorate

Conc 0.0964



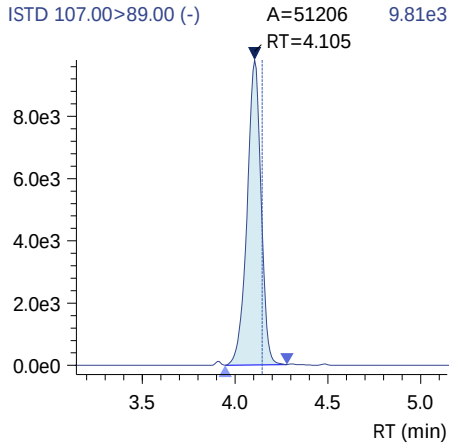
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:47:18 AM

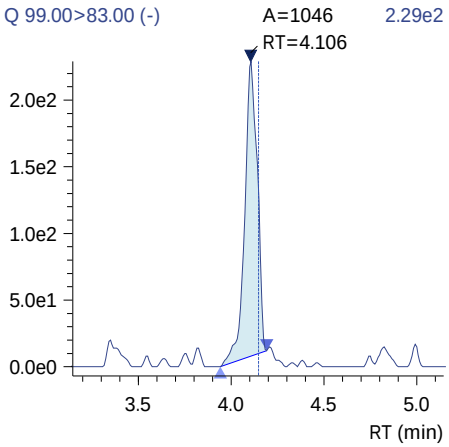
EQ2200338-03

Sample ID: EQ2200338-03
Date Acquired: 8/8/2022 1:16:24 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_011.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	4.106	1046	51916	0.1024	ng/mL	23.04	21.63-40.16
Perchlorate 2	M	4.096	241	51916	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.104	51916	51916	1.0000	ng/mL	----	

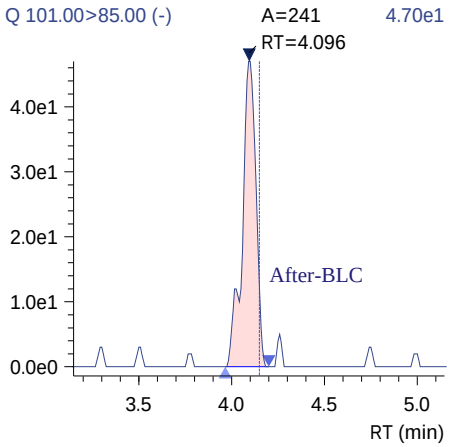
Perchlorate

Conc 0.1024



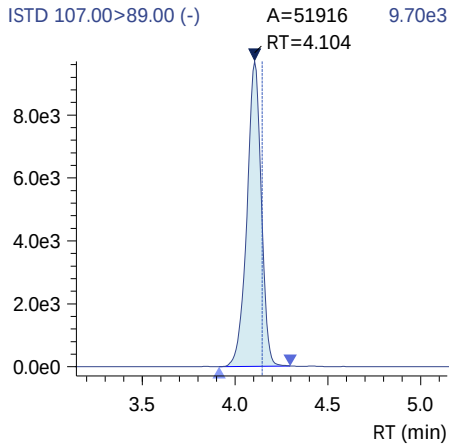
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

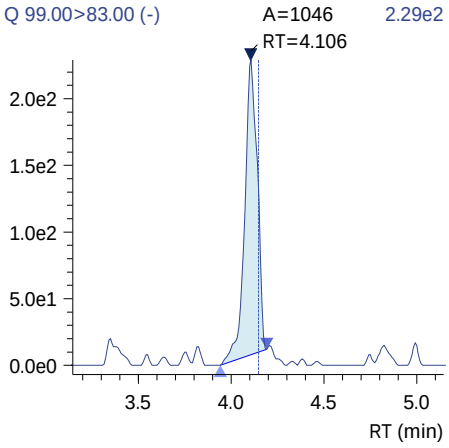
Printed at 8/9/2022 11:50:08 AM

EQ2200338-03

Sample ID: EQ2200338-03
Date Acquired: 8/8/2022 1:16:24 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_011.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 4

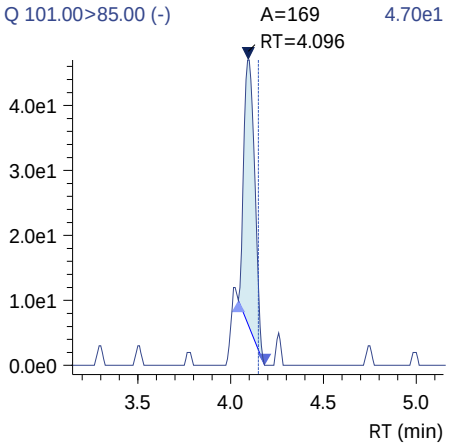
Perchlorate

Conc 0.1024



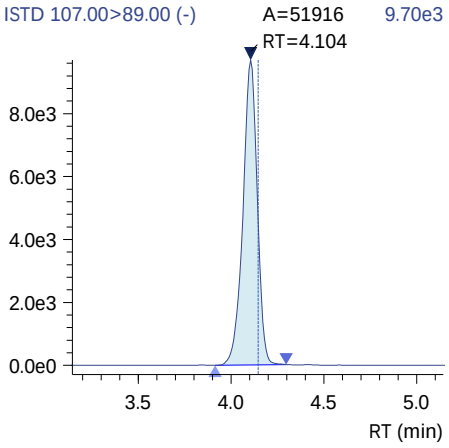
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:47:18 AM

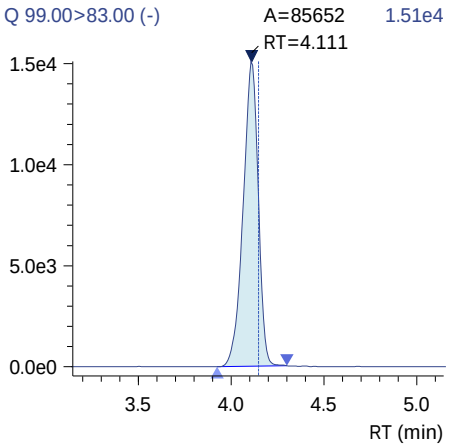
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 8/8/2022 1:34:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_013.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	4.111	85652	40296	10.8060	ng/mL	31.11	21.63-40.16
Perchlorate 2	Auto	4.105	26650	40296	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.105	40296	40296	1.0000	ng/mL	----	

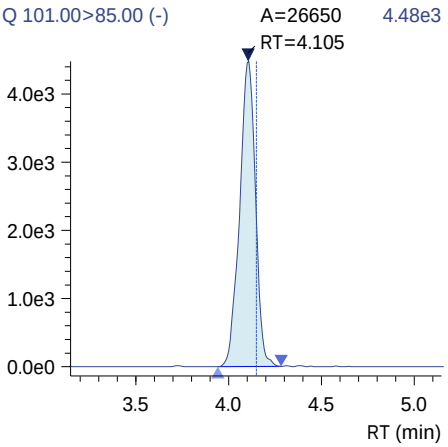
Perchlorate

Conc 10.8060



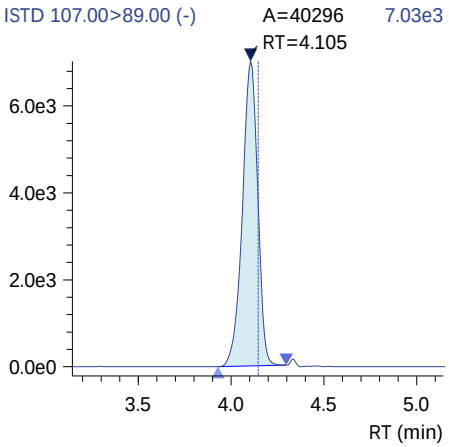
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

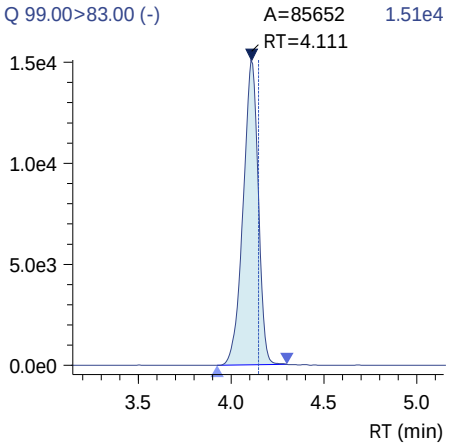
Printed at 8/9/2022 11:50:08 AM

PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 8/8/2022 1:34:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_013.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

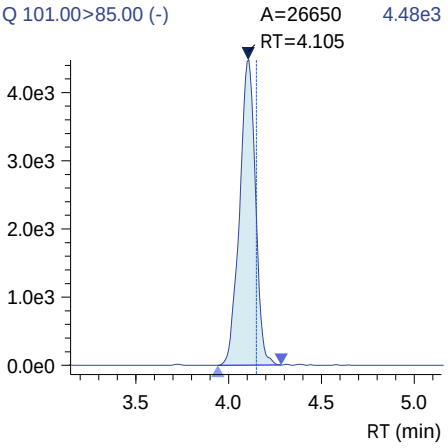
Perchlorate

Conc 10.8060



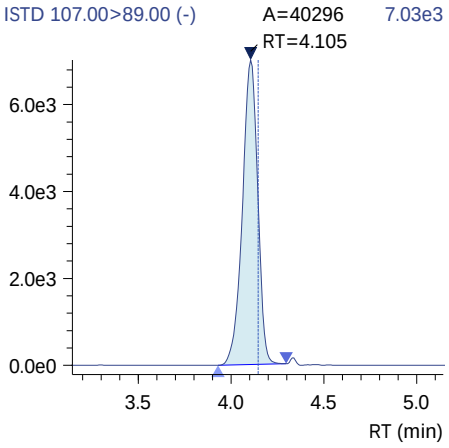
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:47:18 AM

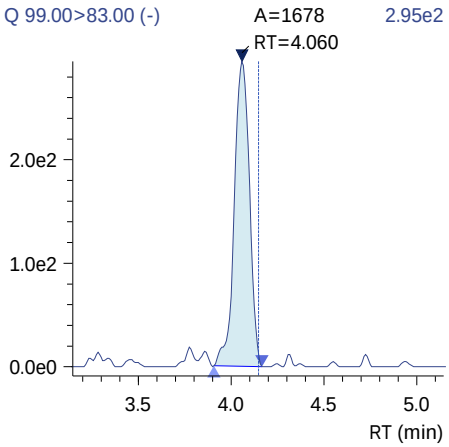
EQ2200338-04

Sample ID: EQ2200338-04
Date Acquired: 8/8/2022 2:00:52 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_016.lcd
Vial: 28 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	4.060	1678	79332	0.1075	ng/mL	29.02	21.63-40.16
Perchlorate 2	Auto	4.061	487	79332	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.061	79332	79332	1.0000	ng/mL	----	

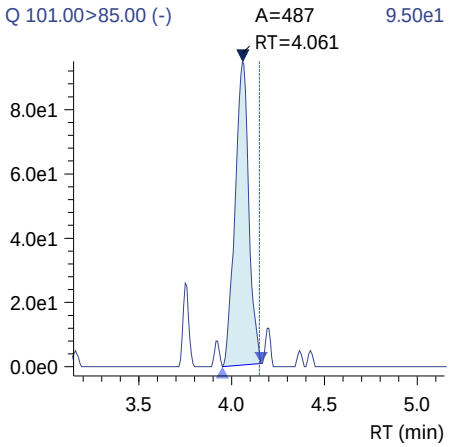
Perchlorate

Conc 0.1075



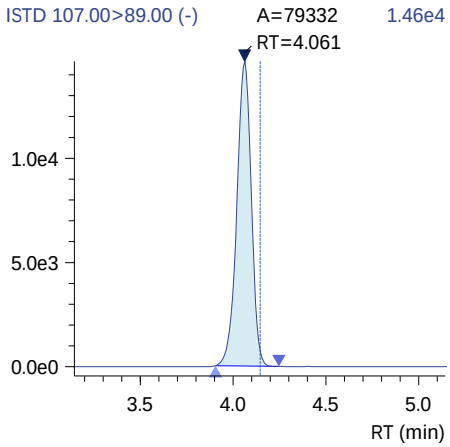
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

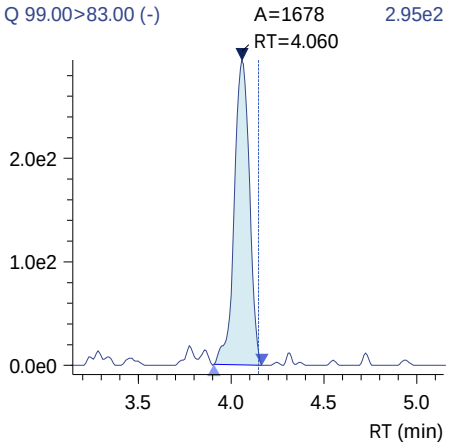
Printed at 8/9/2022 11:50:08 AM

EQ2200338-04

Sample ID: EQ2200338-04
Date Acquired: 8/8/2022 2:00:52 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_016.lcd
Vial: 28 | Inj. Volume: 25.0000uL | Tray: 4

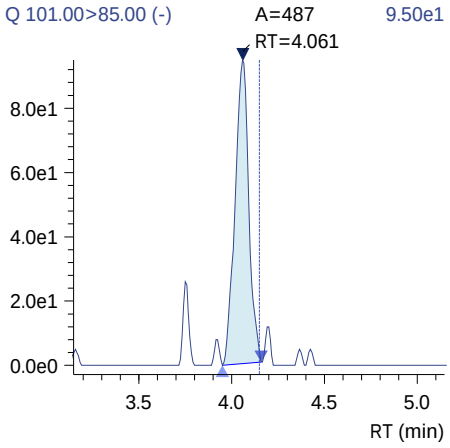
Perchlorate

Conc 0.1075



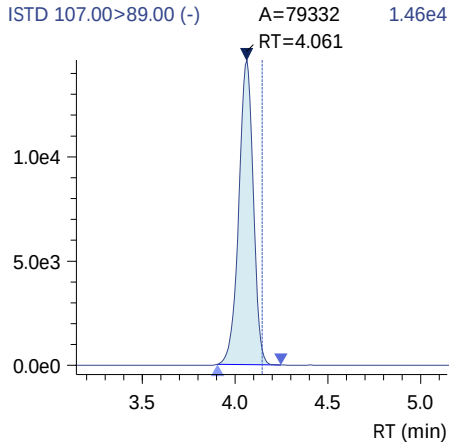
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:47:18 AM

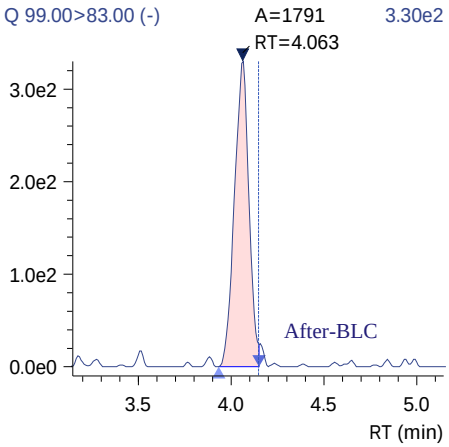
EQ2200338-05

Sample ID: EQ2200338-05
Date Acquired: 8/8/2022 2:09:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_017.lcd
Vial: 29 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	4.063	1791	76689	0.1187	ng/mL	25.13	21.63-40.16
Perchlorate 2	Auto	4.082	450	76689	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.062	76689	76689	1.0000	ng/mL	----	

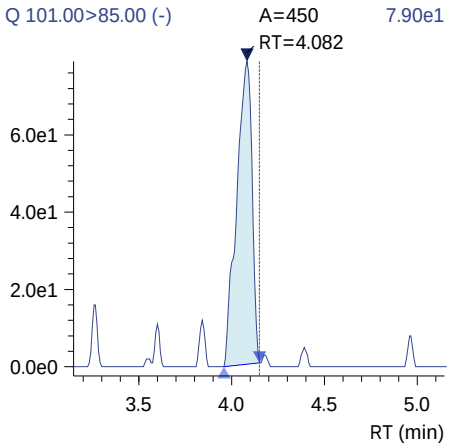
Perchlorate

Conc 0.1187



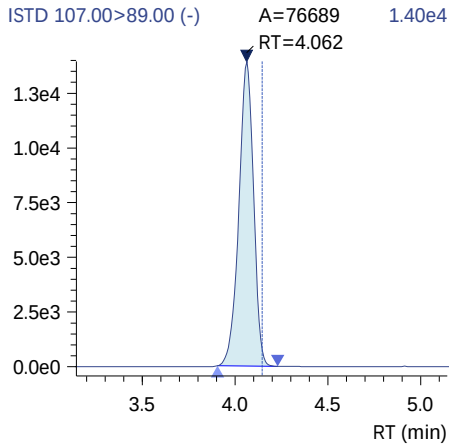
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

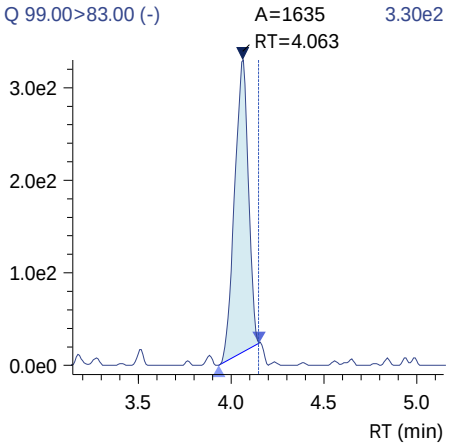
Printed at 8/9/2022 11:50:08 AM

EQ2200338-05

Sample ID: EQ2200338-05
Date Acquired: 8/8/2022 2:09:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_017.lcd
Vial: 29 | Inj. Volume: 25.0000uL | Tray: 4

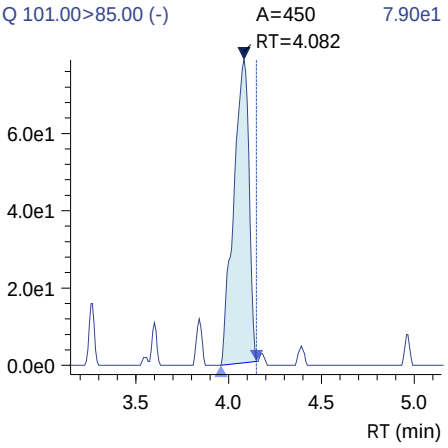
Perchlorate

Conc 0.1084



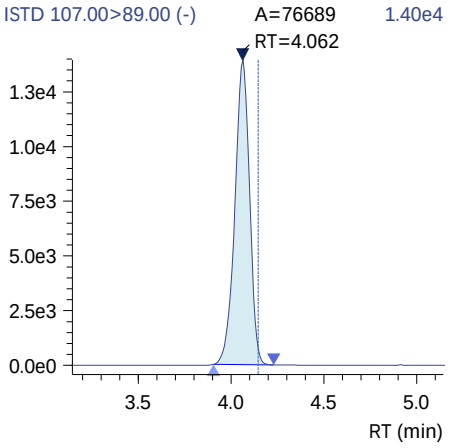
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:47:18 AM

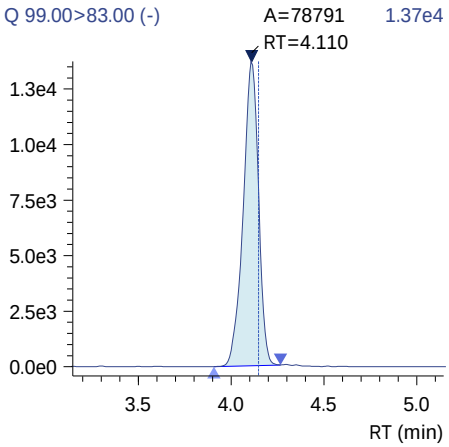
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 8/8/2022 2:45:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_021.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	4.110	78791	39653	10.1016	ng/mL	30.58	21.63-40.16
Perchlorate 2	Auto	4.109	24092	39653	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.108	39653	39653	1.0000	ng/mL	----	

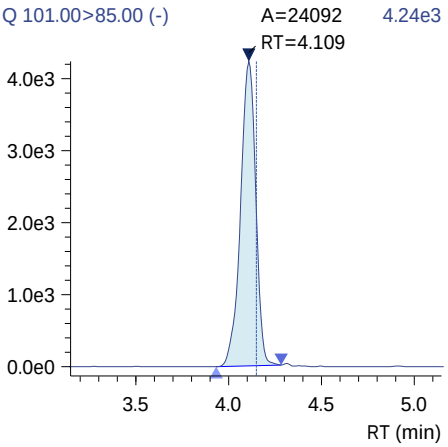
Perchlorate

Conc 10.1016



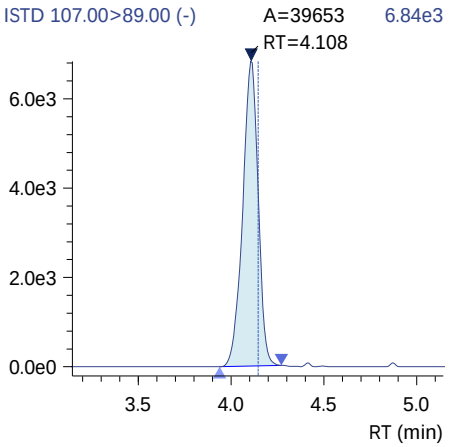
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:50:08 AM

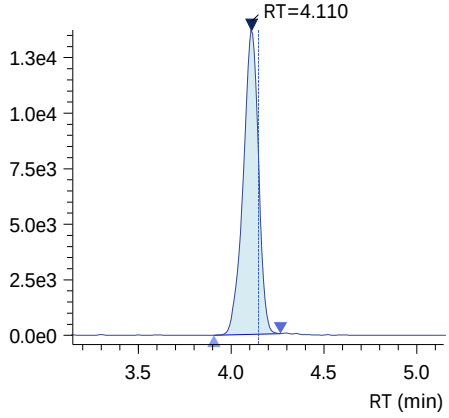
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 8/8/2022 2:45:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_021.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Perchlorate

Conc 10.1016

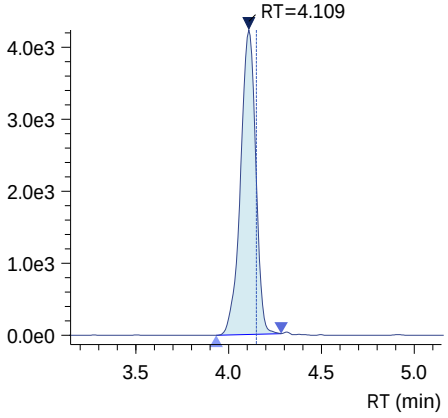
Q 99.00>83.00 (-) A=78791 1.37e4 RT=4.110



Perchlorate 2

Conc 0.0000

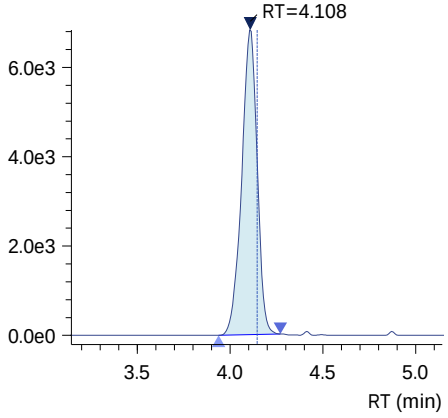
Q 101.00>85.00 (-) A=24092 4.24e3 RT=4.109



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=39653 6.84e3 RT=4.108



Insight Report

Printed at 8/9/2022 11:47:18 AM

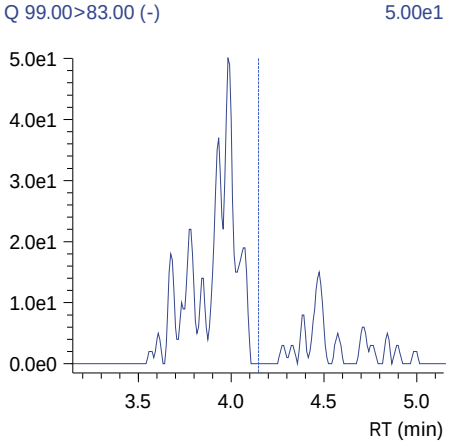
E2200753-001

Sample ID: E2200753-001
Date Acquired: 8/8/2022 3:03:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_023.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	61058	----	ng/mL	0.00	21.63-40.16
Perchlorate 2	ND(W/B)	----	----	61058	----	ng/mL	----	
Sodium Perchlorate-18O4_IS	M	3.972	61058	61058	1.0000	ng/mL	----	

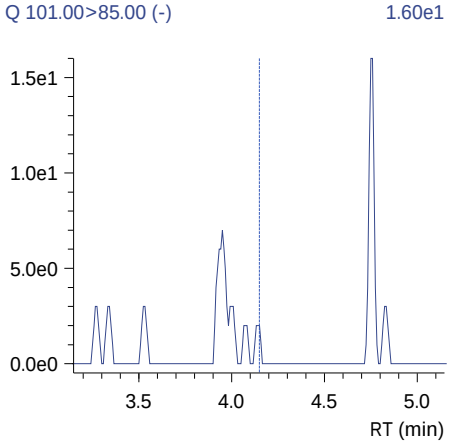
Perchlorate

Conc ----



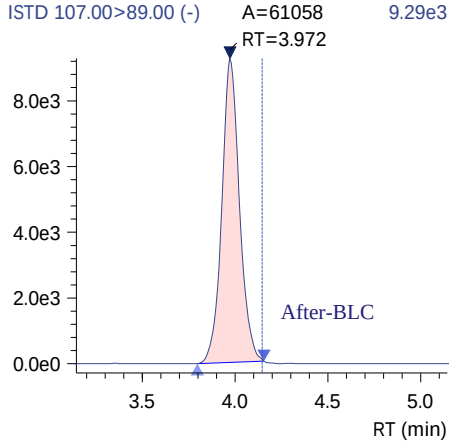
Perchlorate 2

Conc ----



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

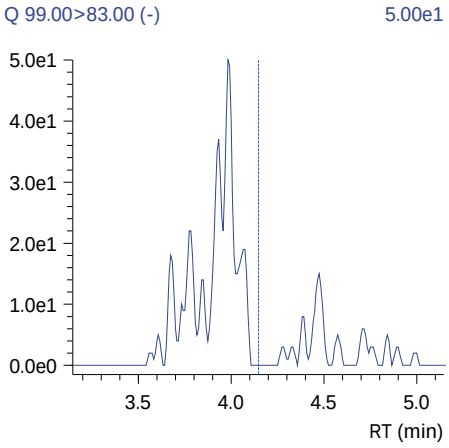
Printed at 8/9/2022 11:50:08 AM

E2200753-001

Sample ID: E2200753-001
Date Acquired: 8/8/2022 3:03:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_023.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 4

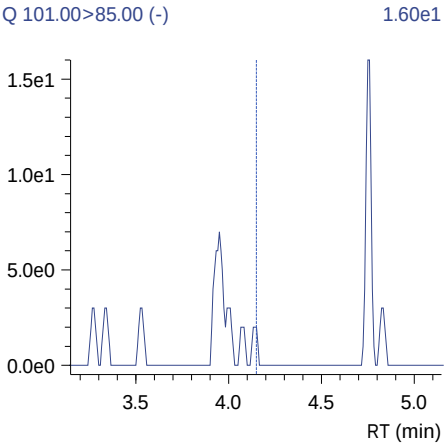
Perchlorate

Conc ----



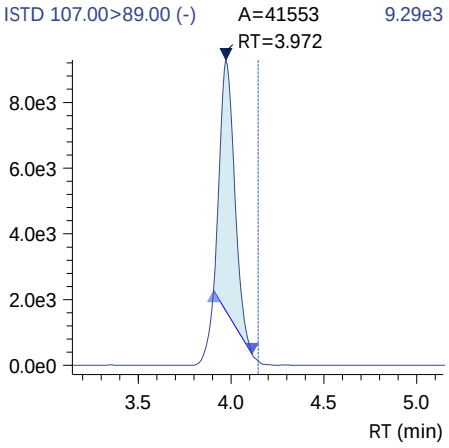
Perchlorate 2

Conc ----



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:47:18 AM

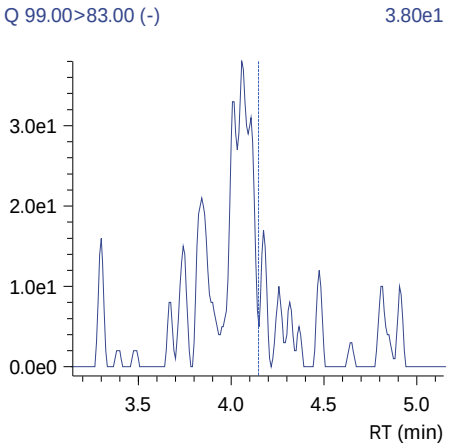
E2200753-002

Sample ID: E2200753-002
Date Acquired: 8/8/2022 3:12:08 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_024.lcd
Vial: 33 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	73697	----	ng/mL	0.00	21.63-40.16
Perchlorate 2	Auto	4.056	63	73697	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.054	73697	73697	1.0000	ng/mL	----	

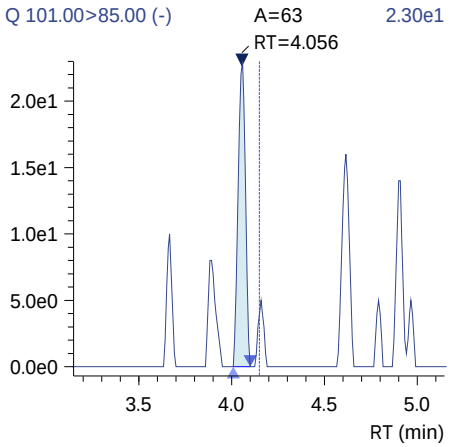
Perchlorate

Conc ----



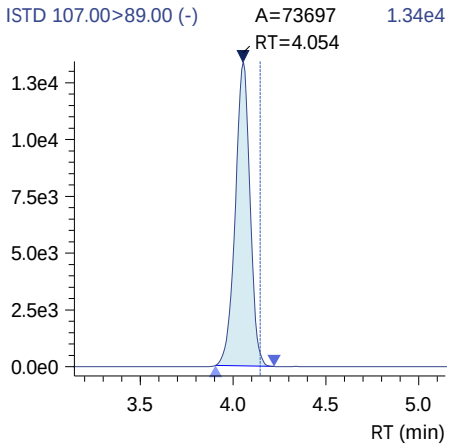
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

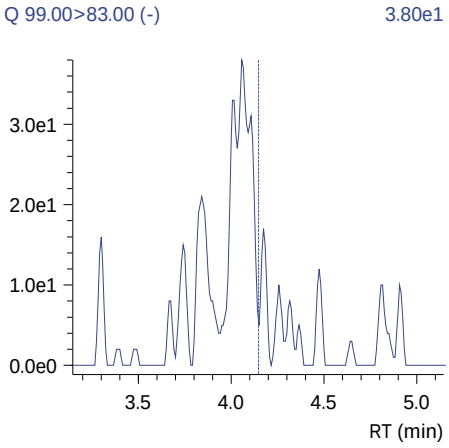
Printed at 8/9/2022 11:50:08 AM

E2200753-002

Sample ID: E2200753-002
Date Acquired: 8/8/2022 3:12:08 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_024.lcd
Vial: 33 | Inj. Volume: 25.0000uL | Tray: 4

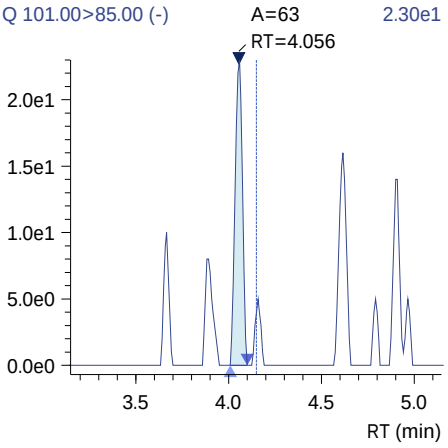
Perchlorate

Conc ----



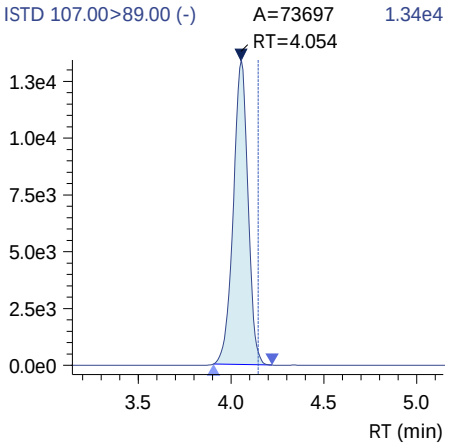
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:47:18 AM

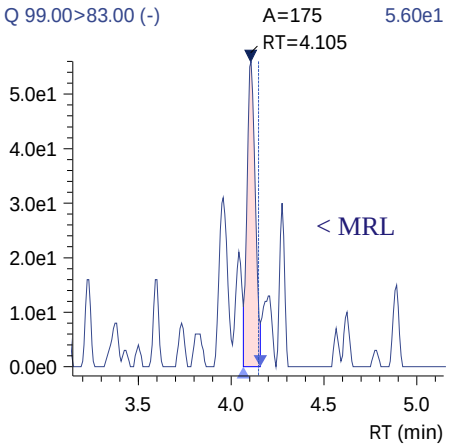
E2200753-004

Sample ID: E2200753-004
Date Acquired: 8/8/2022 3:56:35 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_027.lcd
Vial: 35 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	4.105	175	40939	0.0217	ng/mL	36.57	21.63-40.16
Perchlorate 2	Auto	4.124	64	40939	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.101	40939	40939	1.0000	ng/mL	----	

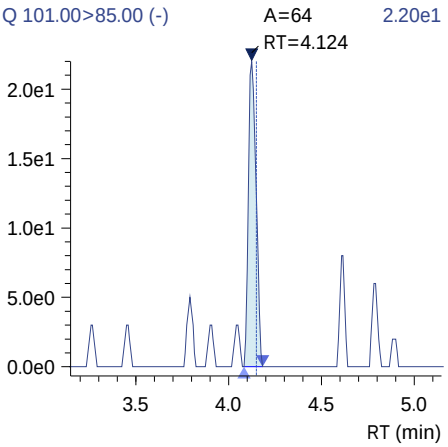
Perchlorate

Conc 0.0217



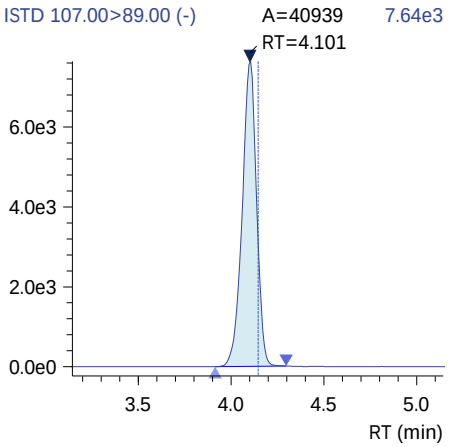
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

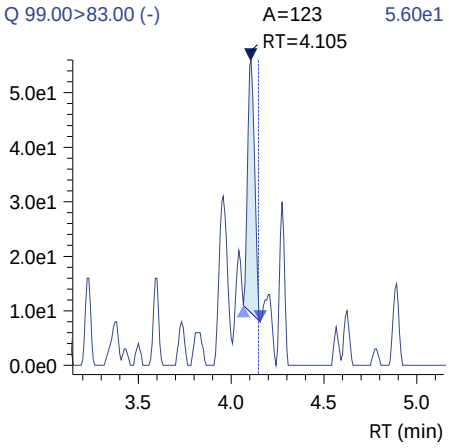
Printed at 8/9/2022 11:50:08 AM

E2200753-004

Sample ID: E2200753-004
Date Acquired: 8/8/2022 3:56:35 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_027.lcd
Vial: 35 | Inj. Volume: 25.0000uL | Tray: 4

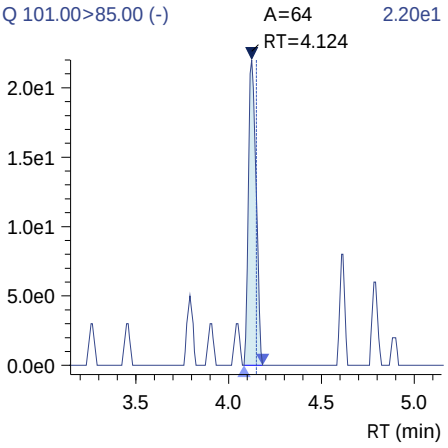
Perchlorate

Conc 0.0153



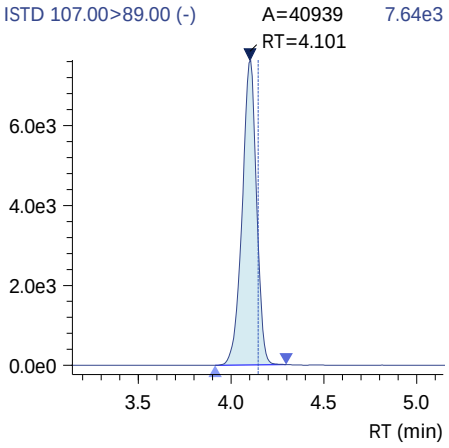
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

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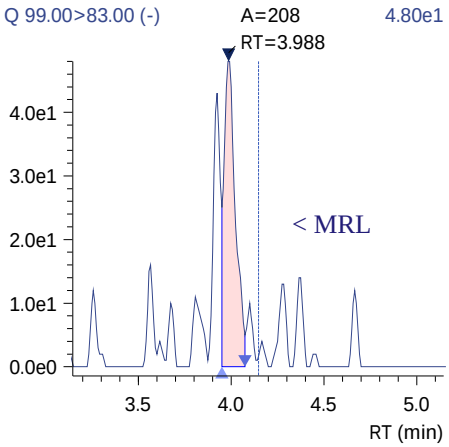
E2200753-003

Sample ID: E2200753-003
Date Acquired: 8/8/2022 4:05:30 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_028.lcd
Vial: 34 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.988	208	58746	0.0180	ng/mL	21.64	21.63-40.16
Perchlorate 2	Auto	4.021	45	58746	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	M	3.964	58746	58746	1.0000	ng/mL	----	

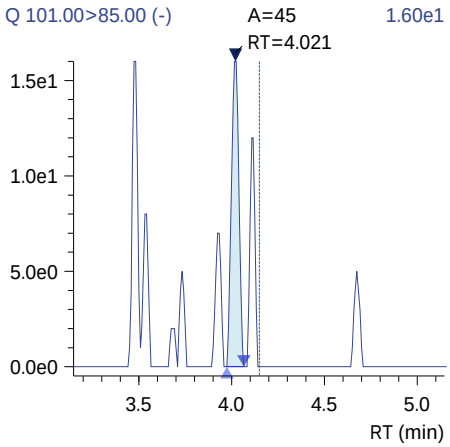
Perchlorate

Conc 0.0180



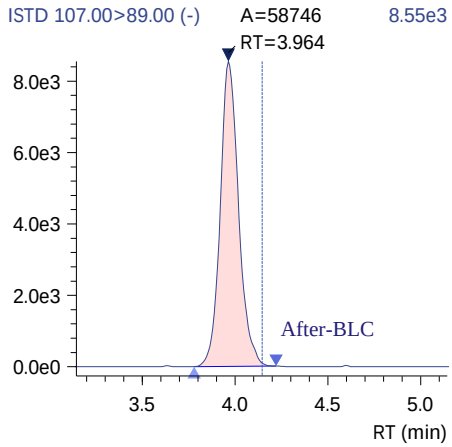
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

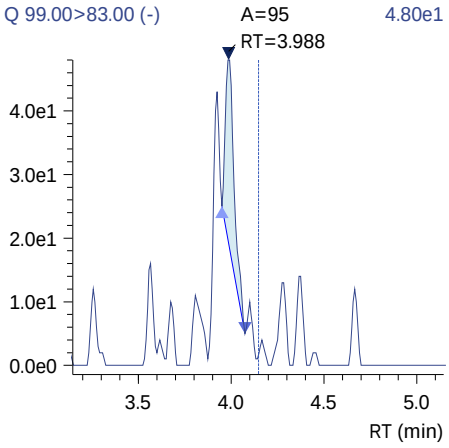
Printed at 8/9/2022 11:50:08 AM

E2200753-003

Sample ID: E2200753-003
Date Acquired: 8/8/2022 4:05:30 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_028.lcd
Vial: 34 | Inj. Volume: 25.0000uL | Tray: 4

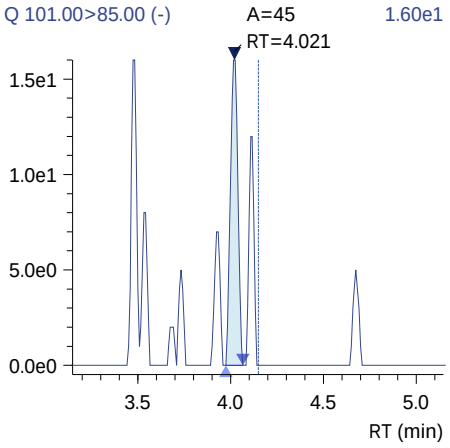
Perchlorate

Conc 0.0141



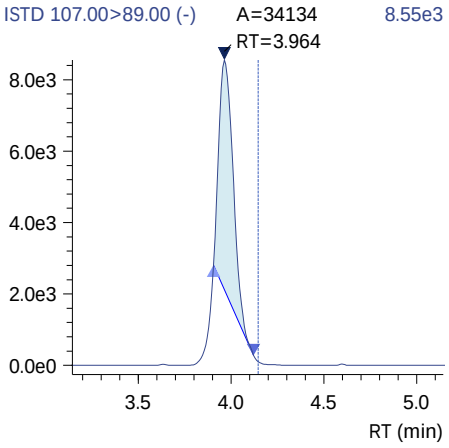
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:47:18 AM

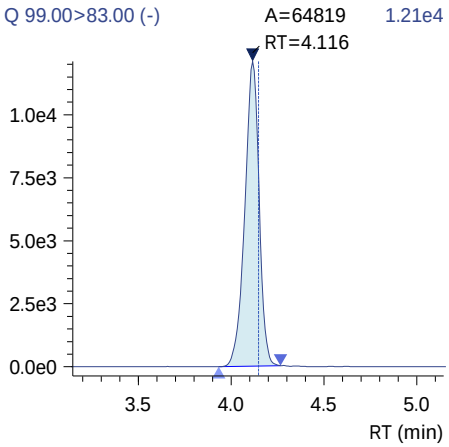
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 8/8/2022 4:14:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_029.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	4.116	64819	30876	10.6726	ng/mL	30.03	21.63-40.16
Perchlorate 2	Auto	4.116	19464	30876	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.112	30876	30876	1.0000	ng/mL	----	

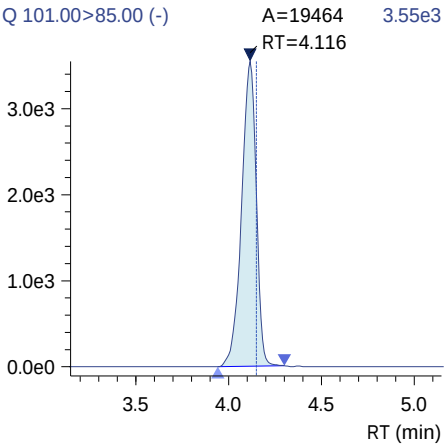
Perchlorate

Conc 10.6726



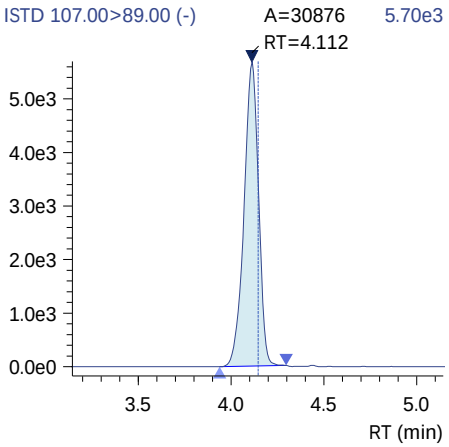
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:50:08 AM

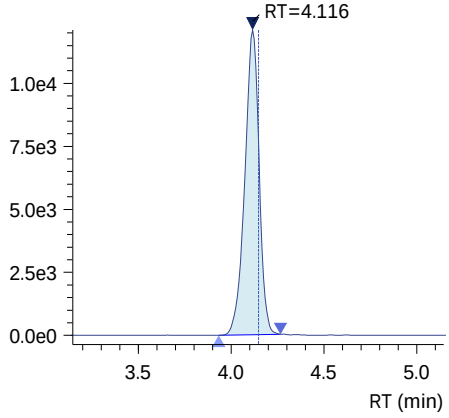
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 8/8/2022 4:14:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_029.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Perchlorate

Conc 10.6726

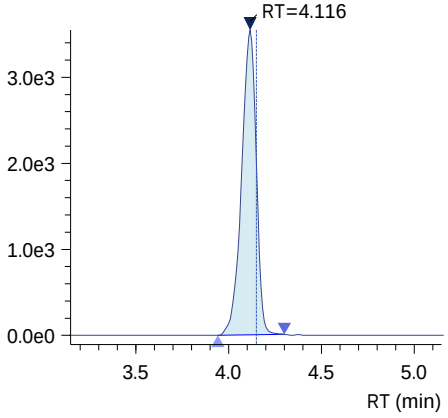
Q 99.00>83.00 (-) A=64819 1.21e4 RT=4.116



Perchlorate 2

Conc 0.0000

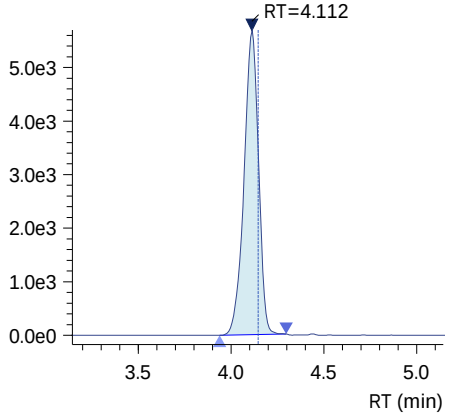
Q 101.00>85.00 (-) A=19464 3.55e3 RT=4.116



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=30876 5.70e3 RT=4.112



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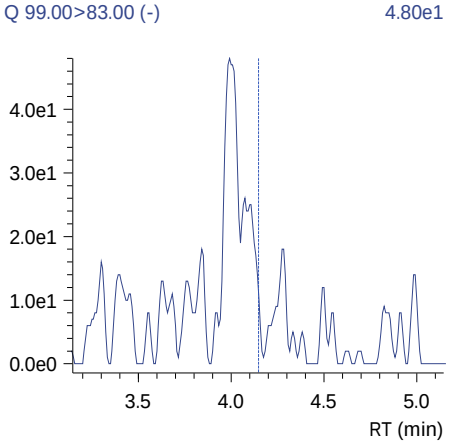
E2200753-005

Sample ID: E2200753-005
Date Acquired: 8/8/2022 4:23:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_030.lcd
Vial: 36 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	67388	----	ng/mL	0.00	21.63-40.16
Perchlorate 2	ND(W/B)	----	----	67388	----	ng/mL	----	
Sodium Perchlorate-18O4_IS	M	4.026	67388	67388	1.0000	ng/mL	----	

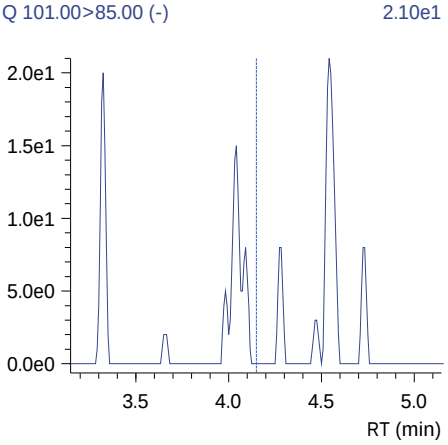
Perchlorate

Conc ----



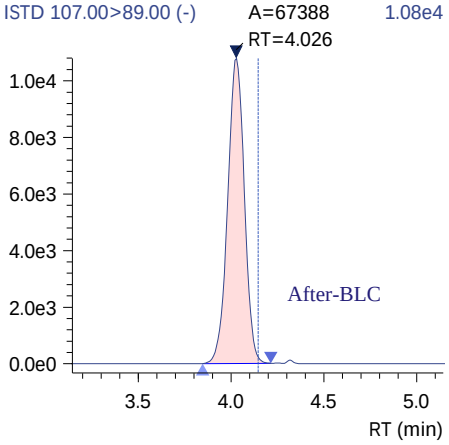
Perchlorate 2

Conc ----



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:50:08 AM

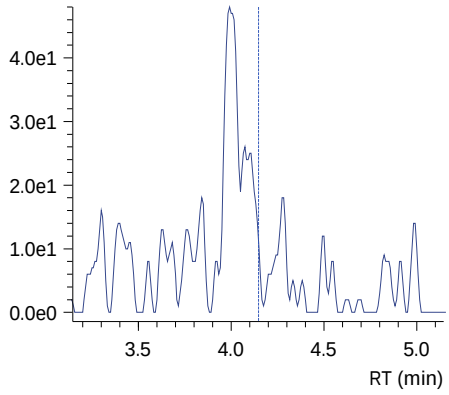
E2200753-005

Sample ID: E2200753-005
Date Acquired: 8/8/2022 4:23:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_030.lcd
Vial: 36 | Inj. Volume: 25.0000uL | Tray: 4

Perchlorate

Conc ----

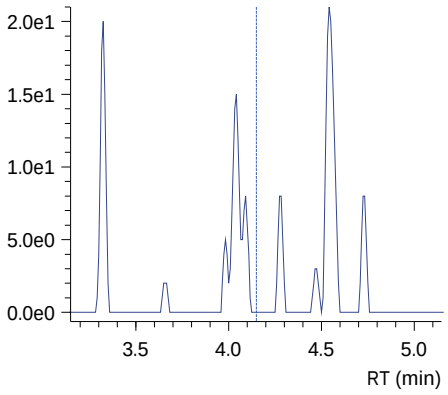
Q 99.00>83.00 (-) 4.80e1



Perchlorate 2

Conc ----

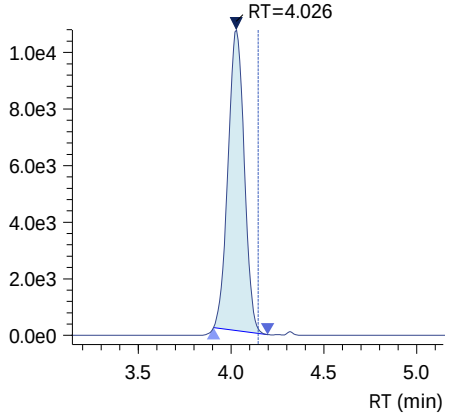
Q 101.00>85.00 (-) 2.10e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=64723 1.08e4



Insight Report

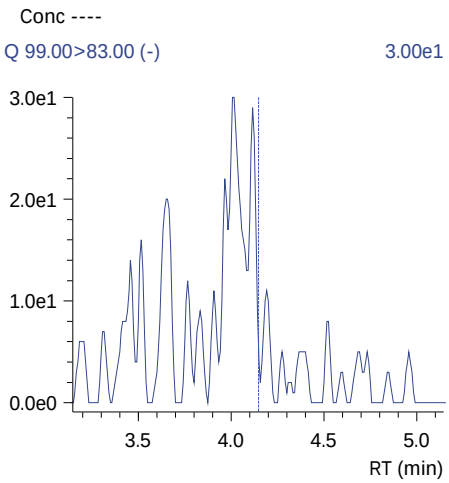
Printed at 8/9/2022 11:47:18 AM

E2200753-006

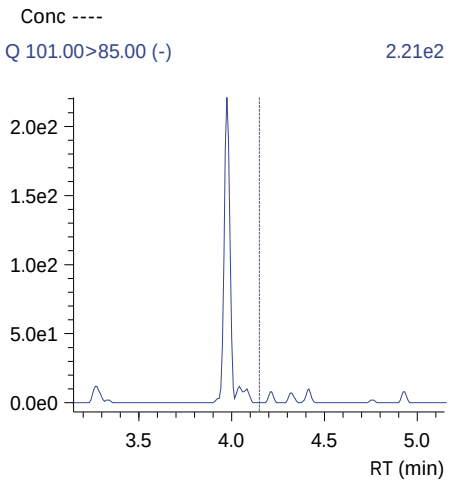
Sample ID: E2200753-006
Date Acquired: 8/8/2022 4:32:12 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_031.lcd
Vial: 37 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	66317	----	ng/mL	0.00	21.63-40.16
Perchlorate 2	ND(W/B)	----	----	66317	----	ng/mL	----	
Sodium Perchlorate-18O4_IS	M	4.027	66317	66317	1.0000	ng/mL	----	

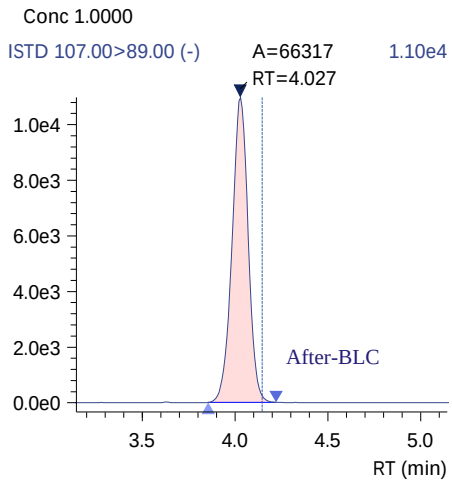
Perchlorate



Perchlorate 2



Sodium Perchlorate-18O4_IS



Insight Report

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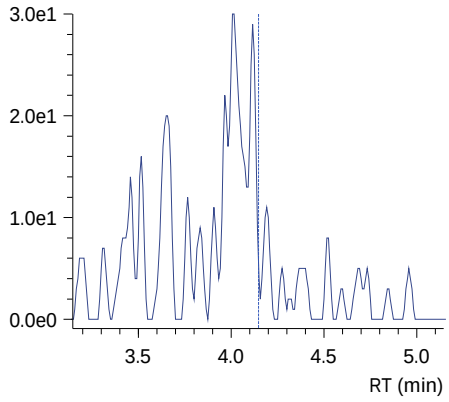
E2200753-006

Sample ID: E2200753-006
Date Acquired: 8/8/2022 4:32:12 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_031.lcd
Vial: 37 | Inj. Volume: 25.0000uL | Tray: 4

Perchlorate

Conc ----

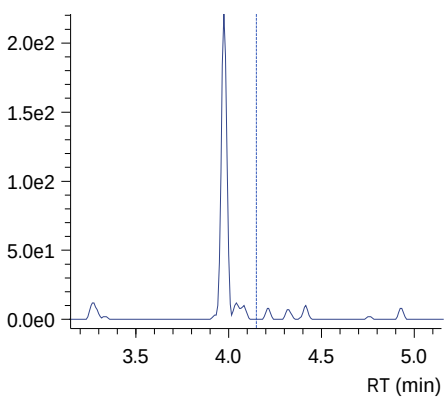
Q 99.00>83.00 (-) 3.00e1



Perchlorate 2

Conc ----

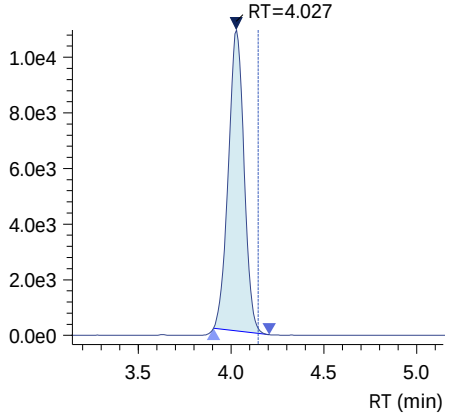
Q 101.00>85.00 (-) 2.21e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=63801 1.10e4



Insight Report

Printed at 8/9/2022 11:47:18 AM

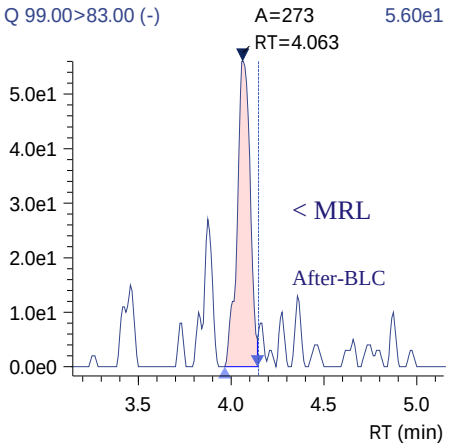
E2200753-007

Sample ID: E2200753-007
Date Acquired: 8/8/2022 4:41:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_032.lcd
Vial: 38 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	4.063	273	70939	0.0196	ng/mL	25.64	21.63-40.16
Perchlorate 2	ND(W/B)	----	----	70939	----	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	4.063	70939	70939	1.0000	ng/mL	----	

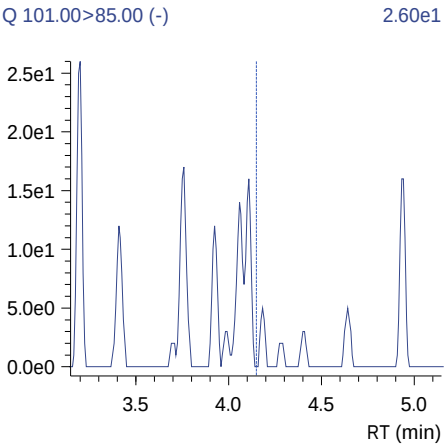
Perchlorate

Conc 0.0196



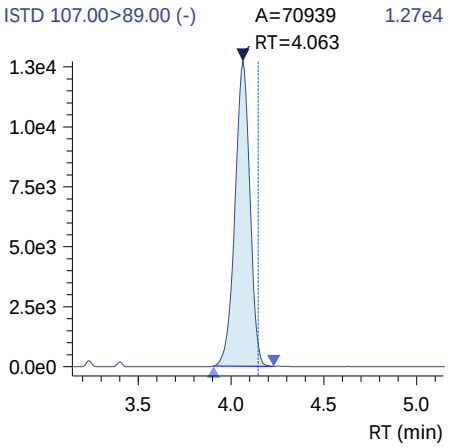
Perchlorate 2

Conc ----



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

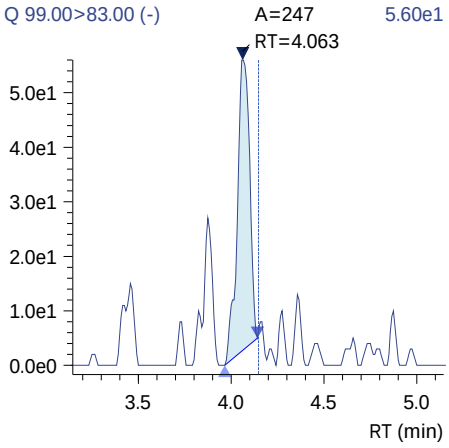
Printed at 8/9/2022 11:50:08 AM

E2200753-007

Sample ID: E2200753-007
Date Acquired: 8/8/2022 4:41:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_032.lcd
Vial: 38 | Inj. Volume: 25.0000uL | Tray: 4

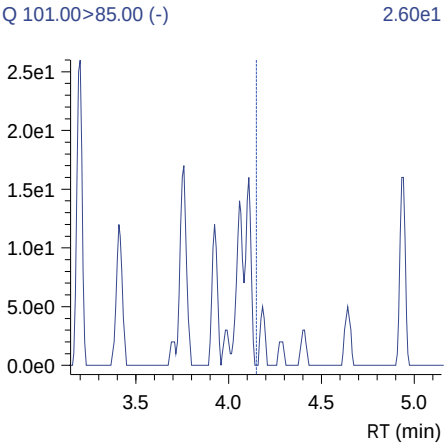
Perchlorate

Conc 0.0177



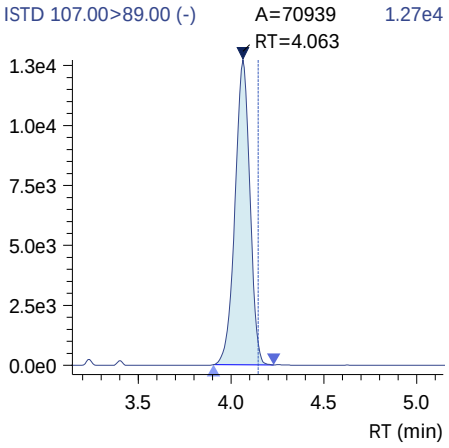
Perchlorate 2

Conc ----



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:47:18 AM

E2200753-008

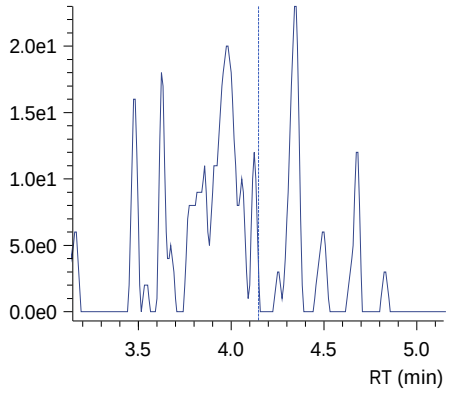
Sample ID: E2200753-008
Date Acquired: 8/8/2022 4:49:59 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_033.lcd
Vial: 39 | Inj. Volume: 25.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	52463	----	ng/mL	0.00	21.63-40.16
Perchlorate 2	ND(W/B)	----	----	52463	----	ng/mL	----	
Sodium Perchlorate-18O4_IS	M	3.968	52463	52463	1.0000	ng/mL	----	

Perchlorate

Conc ----

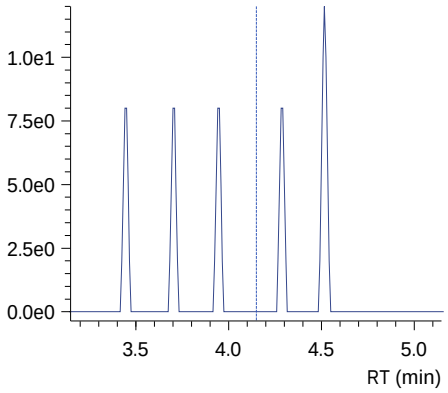
Q 99.00>83.00 (-) 2.30e1



Perchlorate 2

Conc ----

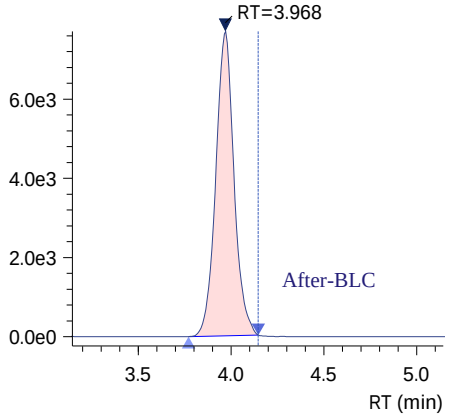
Q 101.00>85.00 (-) 1.20e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=52463 7.71e3



Insight Report

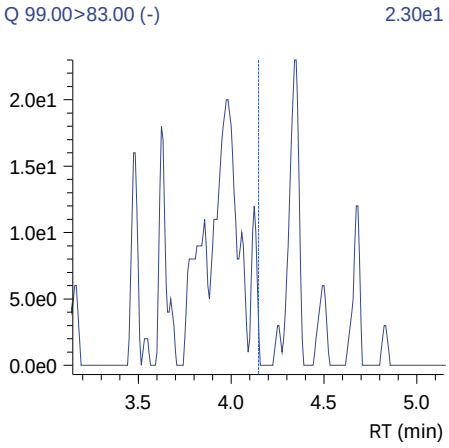
Printed at 8/9/2022 11:50:08 AM

E2200753-008

Sample ID: E2200753-008
Date Acquired: 8/8/2022 4:49:59 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_033.lcd
Vial: 39 | Inj. Volume: 25.0000uL | Tray: 4

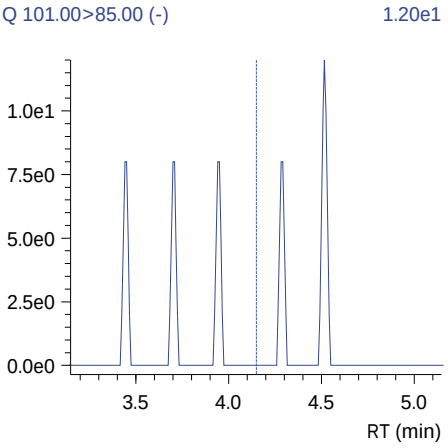
Perchlorate

Conc ----



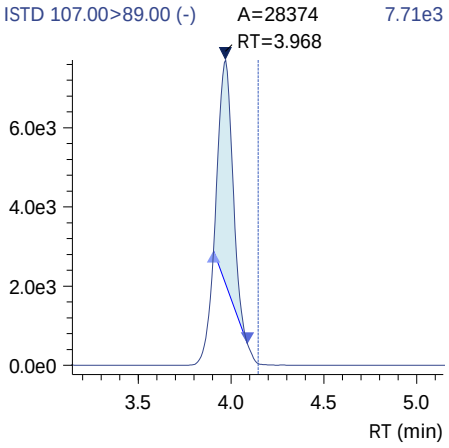
Perchlorate 2

Conc ----



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/9/2022 11:47:18 AM

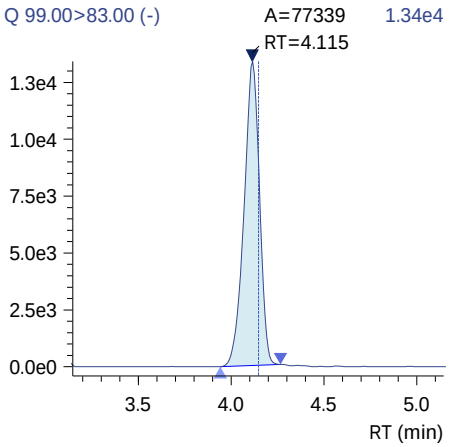
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 8/8/2022 4:58:55 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_034.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	4.115	77339	36344	10.8182	ng/mL	30.44	21.63-40.16
Perchlorate 2	Auto	4.113	23539	36344	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	M	4.112	36344	36344	1.0000	ng/mL	----	

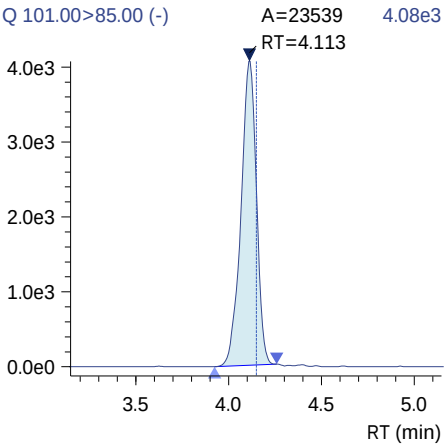
Perchlorate

Conc 10.8182



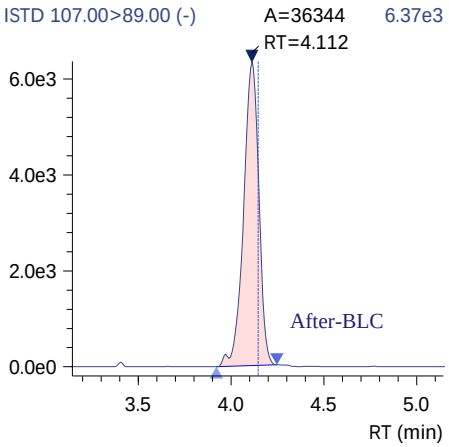
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

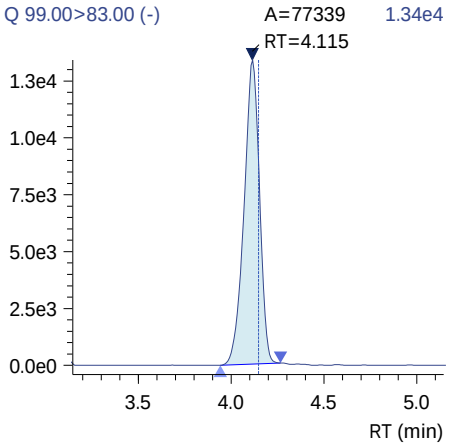
Printed at 8/9/2022 11:50:08 AM

PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 8/8/2022 4:58:55 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220808\20220808_034.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

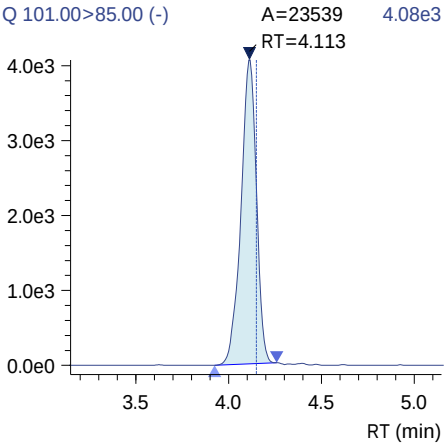
Perchlorate

Conc 11.3783



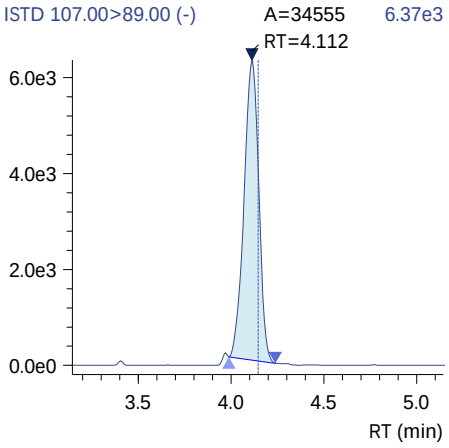
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



SGS

Orlando, FL

Reissue #1
04/06/22

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report



Technical Report for

APTIM

Longhorn Army Ammunition Plant (GWTP); Karnack, TX

501032

SGS Job Number: FA92918

Sampling Date: 02/01/22

Report to:

APTIM

vicki.graves@aptim.com

ATTN: Vicki Graves

Total number of pages in report: **166**

NELAP ACCREDITED TNI LABORATORY

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

Client Service contact: Kelly Blanchard 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Test results relate only to samples analyzed.

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Please share your ideas about
how we can serve you better at:
EHS.US.CustomerCare@sgs.com

March 21, 2022

Ms. Vicki Graves
APTIM
11400 Parkside Dr
Suite 400
Knoxville, TN 37934

RE: SGS North America Inc. - Orlando job FA92918 Reissue

Dear Ms. Graves,

The final report for job number FA92918 has been edited to reflect requested corrections. These edits have been incorporated into the revised report.

The sample IDs have been corrected.

SGS North America Inc. - Orlando apologies for any inconvenience this may have caused. Please feel free to contact us if we can be of further assistance.

Sincerely,

SGS North America, Inc. - Orlando

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SGS North America Inc.

Sample Summary

APTIM

Job No: FA92918

Longhorn Army Ammunition Plant (GWTP); Karnack, TX
Project No: 501032

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA92918-1	02/01/22	07:30	SB	02/07/22	AQ	Ground Water	LHSMW01-220201
FA92918-2	02/01/22	08:10	SB	02/07/22	AQ	Ground Water	04WW04-220201
FA92918-3	02/01/22	08:50	SB	02/07/22	AQ	Ground Water	04WW08-220201
FA92918-4	02/01/22	09:30	SB	02/07/22	AQ	Ground Water	04WW02-220201
FA92918-5	02/01/22	10:10	SB	02/07/22	AQ	Ground Water	04WW06-220201
FA92918-6	02/01/22	10:50	SB	02/07/22	AQ	Ground Water	LHSMW02-220201
FA92918-7	02/01/22	10:50	SB	02/07/22	AQ	Ground Water	LHSMW02-220201-FD
FA92918-8	02/01/22	11:30	SB	02/07/22	AQ	Ground Water	04WW11-220201

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	APTIM	**Job No:**	FA92918
Site:	Longhorn Army Ammunition Plant (GWTP); Karnack, TX	**Report Date**	2/21/2022 11:51:25

On 02/07/2022, 8 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA92918 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method SW846 6850

Matrix: AQ **Batch ID:** OP89689

Sample(s) FA92919-6MS, FA92919-6MSD were used as the QC samples indicated.

FA92918-3: Dilution required due to matrix interference (internal standard failure).

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA92918
Account: APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX
Collected: 02/01/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA92918-1	**LHSMW01-220201**					
Perchlorate		0.078 J	0.20	0.10	ug/l	SW846 6850
FA92918-2	**04WW04-220201**					
Perchlorate		0.055 J	0.20	0.10	ug/l	SW846 6850
FA92918-3	**04WW08-220201**					
No hits reported in this sample.						
FA92918-4	**04WW02-220201**					
No hits reported in this sample.						
FA92918-5	**04WW06-220201**					
No hits reported in this sample.						
FA92918-6	**LHSMW02-220201**					
No hits reported in this sample.						
FA92918-7	**LHSMW02-220201-FD**					
No hits reported in this sample.						
FA92918-8	**04WW11-220201**					
No hits reported in this sample.						

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Client Sample ID: LHSMW01-220201
Lab Sample ID: FA92918-1 **Date Sampled:** 02/01/22
Matrix: AQ - Ground Water **Date Received:** 02/07/22
Method: SW846 6850 IN HOUSE **Percent Solids:** n/a
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q88974.D	1	02/11/22 23:51	JB	02/10/22 10:41	OP89689	SQ1924
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.078	0.20	0.10	0.050	ug/l	J

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: 04WW04-220201
Lab Sample ID: FA92918-2 **Date Sampled:** 02/01/22
Matrix: AQ - Ground Water **Date Received:** 02/07/22
Method: SW846 6850 IN HOUSE **Percent Solids:** n/a
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q88976.D	1	02/12/22 00:07	JB	02/10/22 10:41	OP89689	SQ1924
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.055	0.20	0.10	0.050	ug/l	J

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: 04WW08-220201
Lab Sample ID: FA92918-3 **Date Sampled:** 02/01/22
Matrix: AQ - Ground Water **Date Received:** 02/07/22
Method: SW846 6850 IN HOUSE **Percent Solids:** n/a
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q88979.D	5	02/12/22 00:33	JB	02/10/22 10:41	OP89689	SQ1924
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.50 U	1.0	0.50	0.25	ug/l	

(a) Dilution required due to matrix interference (internal standard failure).

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	04WW02-220201		
Lab Sample ID:	FA92918-4	**Date Sampled:**	02/01/22
Matrix:	AQ - Ground Water	**Date Received:**	02/07/22
Method:	SW846 6850 IN HOUSE	**Percent Solids:**	n/a
Project:	Longhorn Army Ammunition Plant (GWTP); Karnack, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q88980.D	1	02/12/22 00:41	JB	02/10/22 10:41	OP89689	SQ1924
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.10 U	0.20	0.10	0.050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: 04WW06-220201
Lab Sample ID: FA92918-5 **Date Sampled:** 02/01/22
Matrix: AQ - Ground Water **Date Received:** 02/07/22
Method: SW846 6850 IN HOUSE **Percent Solids:** n/a
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q88885.D	1	02/11/22 01:56	JB	02/10/22 10:41	OP89689	SQ1923
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.10 U	0.20	0.10	0.050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: LHSMW02-220201
Lab Sample ID: FA92918-6 **Date Sampled:** 02/01/22
Matrix: AQ - Ground Water **Date Received:** 02/07/22
Method: SW846 6850 IN HOUSE **Percent Solids:** n/a
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q88886.D	1	02/11/22 02:04	JB	02/10/22 10:41	OP89689	SQ1923
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.10 U	0.20	0.10	0.050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	LHSMW02-220201-FD		
Lab Sample ID:	FA92918-7	**Date Sampled:**	02/01/22
Matrix:	AQ - Ground Water	**Date Received:**	02/07/22
Method:	SW846 6850 IN HOUSE	**Percent Solids:**	n/a
Project:	Longhorn Army Ammunition Plant (GWTP); Karnack, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q88887.D	1	02/11/22 02:13	JB	02/10/22 10:41	OP89689	SQ1923
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.10 U	0.20	0.10	0.050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value

LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: 04WW11-220201
Lab Sample ID: FA92918-8 **Date Sampled:** 02/01/22
Matrix: AQ - Ground Water **Date Received:** 02/07/22
Method: SW846 6850 IN HOUSE **Percent Solids:** n/a
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q88985.D	1	02/12/22 01:23	JB	02/10/22 10:41	OP89689	SQ1924
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.10 U	0.20	0.10	0.050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

5

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

FA 92918

CHAIN OF CUSTODY

Name Of Lab Shipping To: SGS 4405 Vineland Orlando, FL 32811 (407) 615-0447 Cell (407)-425-6700 Office ATTN: Jean Dent-Smith

Page 1 of 1

Project: APTIM LONGHORN ARMY AMMN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS	Project No. 501032
Job: **LHAAP 04 February 2022**	
Prepared By: Scott Beesinger	P.O. Number

	Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: Perchlorate by SW6850	Remarks (Preservatives, etc.)	Lab I.D.#
1	LHSmw01-220201	wG	2/1/22 0730		1	X		
2	04ww04-220201	wG	2/1/22 0810		1	X		
3	04ww08-220201	wG	2/1/22 0850		1	X		
4	04ww02-220201	wG	2/1/22 0930		1	X		
5	04ww06-220201	wG	2/1/22 1010		1	X		
6	LHSmw02-220201	wG	2/1/22 1050		1	X		
7	LHSmw02-220201-FD	wG	2/1/22 1050		1	X		
8	04ww11-220201	wG	2/1/22 1130		1	X		

FINAL ASSESSMENT

LABEL VERIFICATION

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	2/2/22	1430		2/7/22	9:15						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

2.2 IR#1

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

5.1 5

FA92918: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA92918 **Client:** APTIM **Project:** 501032

Date / Time Received: 2/7/2022 9:15:00 AM **Delivery Method:** FEDEX **Airbill #'s:** 506145154070

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.2);

Cooler Temps (Corrected) °C: Cooler 1: (2.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: DEVANO Date: 2/7/2022 9:15:00 AM Reviewer: _____ Date: _____

FA92918: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FA92918
Account: APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX
Collected: 02/01/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89689	SW846 6850						
OP89689-BS	14797-73-0	Perchlorate	BSP	REC	80	%	84-119
OP89689-BS	14797-73-0	Perchlorate	BSP	REC	80	%	84-119
OP89689-MS*	14797-73-0	Perchlorate	MS	REC	90	%	84-119
OP89689-MSD*	14797-73-0	Perchlorate	MSD	REC	85	%	84-119
OP89689-MSD*	14797-73-0	Perchlorate	MSD	RPD	6	%	15

* Sample used for QC is not from job FA92918

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Initial and Continuing Calibration Summaries
- Run Sequence Reports

Instrument Blank

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ1923-IBLK	Q88903.D	1	02/11/22	JB	n/a	n/a	SQ1923

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92918-5, FA92918-6, FA92918-7

CAS No.	Compound	Result	RL	MDL	Units	Q
14797-73-0	Perchlorate	ND	0.20	0.050	ug/l	

Instrument Blank

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ1924-IBLK	Q89009.D	1	02/12/22	JB	n/a	n/a	SQ1924

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92918-1, FA92918-2, FA92918-3, FA92918-4, FA92918-8

CAS No.	Compound	Result	RL	MDL	Units	Q
14797-73-0	Perchlorate	ND	0.20	0.050	ug/l	

Method Blank Summary

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89689-MB	Q88877.D	1	02/11/22	JB	02/10/22	OP89689	SQ1923

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92918-1, FA92918-2, FA92918-3, FA92918-4, FA92918-5, FA92918-6, FA92918-7, FA92918-8

CAS No.	Compound	Result	RL	MDL	Units	Q
14797-73-0	Perchlorate	ND	0.20	0.050	ug/l	

Method Blank Summary

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89689-MB	Q88973.D	1	02/11/22	JB	02/10/22	OP89689	SQ1924

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92918-1, FA92918-2, FA92918-3, FA92918-4, FA92918-5, FA92918-6, FA92918-7, FA92918-8

CAS No.	Compound	Result	RL	MDL	Units	Q
14797-73-0	Perchlorate	ND	0.20	0.050	ug/l	

Blank Spike Summary

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89689-BS	Q88876.D	1	02/11/22	JB	02/10/22	OP89689	SQ1923

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92918-1, FA92918-2, FA92918-3, FA92918-4, FA92918-5, FA92918-6, FA92918-7, FA92918-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
14797-73-0	Perchlorate	0.2	0.16	80	80-120

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89689-BS	Q88972.D	1	02/11/22	JB	02/10/22	OP89689	SQ1924

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92918-1, FA92918-2, FA92918-3, FA92918-4, FA92918-5, FA92918-6, FA92918-7, FA92918-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
14797-73-0	Perchlorate	0.2	0.16	80	80-120

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89689-MS	Q88898.D	1	02/11/22	JB	02/10/22	OP89689	SQ1923
OP89689-MSD	Q88899.D	1	02/11/22	JB	02/10/22	OP89689	SQ1923
FA92919-6	Q88991.D	1	02/12/22	JB	02/10/22	OP89689	SQ1924

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92918-1, FA92918-2, FA92918-3, FA92918-4, FA92918-5, FA92918-6, FA92918-7, FA92918-8

CAS No.	Compound	FA92919-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
14797-73-0	Perchlorate	0.20	U	0.2	0.18	90	0.2	0.17	85	6	80-120/15

* = Outside of Control Limits.

Internal Standard Area Summary

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Check Std:	SQ1923-CC1923	**Injection Date:**	02/11/22
Lab File ID:	Q88882.D	**Injection Time:**	01:30
Instrument ID:	GCMSQ	**Method:**	SW846 6850

	IS 1 AREA	RT
Initial Cal [a]	324012	5.51
Check Std [b]	146815*	5.20
Upper Limit [c]	486018	7.20
Lower Limit [d]	162006	3.20

Lab Sample ID	IS 1 AREA	RT
FA92918-5	266925	4.78
FA92918-6	282357	4.77
FA92918-7	315566	4.77
ZZZZZZ	177273	4.30
ZZZZZZ	206379	4.49
ZZZZZZ	170054	4.50

IS 1 = Cl18O4 (ISTD)

(a) Initial Cal is: SQ1923-ICC1923 Q88811.D 02/10/22 15:34. Area is AVERAGE of initial cal points.
(b) Check Std Limit = -50 to + 50% of initial cal area.
(c) Upper Limit = + 50% of initial standard area; Retention time + 2 minutes of check standard.
(d) Lower Limit = -50% of initial standard area; Retention time -2 minutes of check standard.

Internal Standard Area Summary

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Check Std:	SQ1923-CC1923	**Injection Date:**	02/11/22
Lab File ID:	Q88895.D	**Injection Time:**	03:20
Instrument ID:	GCMSQ	**Method:**	SW846 6850

	IS 1 AREA	RT
Initial Cal [a]	324012	5.51
Check Std [b]	370699	5.26
Upper Limit [c]	486018	7.26
Lower Limit [d]	162006	3.26

Lab Sample ID	IS 1 AREA	RT
OP89689-MS	298758	4.82
OP89689-MSD	300180	4.83
ZZZZZZ	288087	4.82

IS 1 = Cl18O4 (ISTD)

(a) Initial Cal is: SQ1923-ICC1923 Q88811.D 02/10/22 15:34. Area is AVERAGE of initial cal points.
(b) Check Std Limit = -50 to + 50% of initial cal area.
(c) Upper Limit = + 50% of initial standard area; Retention time + 2 minutes of check standard.
(d) Lower Limit = -50% of initial standard area; Retention time -2 minutes of check standard.

Internal Standard Area Summary

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Check Std:	SQ1924-CC1924	**Injection Date:**	02/11/22
Lab File ID:	Q88968.D	**Injection Time:**	23:00
Instrument ID:	GCMSQ	**Method:**	SW846 6850

	IS 1 AREA	RT
Initial Cal [a]	296571	5.38
Check Std [b]	280937	5.12
Upper Limit [c]	444857	7.12
Lower Limit [d]	148286	3.12

Lab Sample ID	IS 1 AREA	RT
ZZZZZZ	332175	5.13
OP89689-BS	353482	5.14
OP89689-MB	330907	5.15
FA92918-1	249306	4.75
FA92918-2	319787	5.06
FA92918-3 [e]	194464	4.96
FA92918-4	211292	4.91

IS 1 = Cl18O4 (ISTD)

(a) Initial Cal is: SQ1924-ICC1924 Q88924.D 02/11/22 16:50. Area is AVERAGE of initial cal points.
(b) Check Std Limit = -50 to + 50% of initial cal area.
(c) Upper Limit = + 50% of initial standard area; Retention time + 2 minutes of check standard.
(d) Lower Limit = -50% of initial standard area; Retention time -2 minutes of check standard.
(e) Dilution required due to matrix interference (internal standard failure).

Internal Standard Area Summary

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Check Std:	SQ1924-CC1924	**Injection Date:**	02/12/22
Lab File ID:	Q88981.D	**Injection Time:**	00:49
Instrument ID:	GCMSQ	**Method:**	SW846 6850

	IS 1 AREA	RT
Initial Cal [a]	296571	5.38
Check Std [b]	239787	5.16
Upper Limit [c]	444857	7.16
Lower Limit [d]	148286	3.16

Lab Sample ID	IS 1 AREA	RT
FA92918-8	331437	5.01
ZZZZZZ	163372	4.62
ZZZZZZ	266799	5.10
FA92919-6	257804	4.74
ZZZZZZ	253186	5.12

IS 1 = Cl18O4 (ISTD)

(a) Initial Cal is: SQ1924-ICC1924 Q88924.D 02/11/22 16:50. Area is AVERAGE of initial cal points.
(b) Check Std Limit = -50 to + 50% of initial cal area.
(c) Upper Limit = + 50% of initial standard area; Retention time + 2 minutes of check standard.
(d) Lower Limit = -50% of initial standard area; Retention time -2 minutes of check standard.

Initial Calibration Summary

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample: SQ1923-ICC1923
Lab FileID: Q88811.D

Initial Calibration Report

Method Path	D:\MassHunter\Methods
Method File	6850_021022_SQ1923.quantmethod.xml
Batch Name	D:\MassHunter\Data\021022_6850_SQ1923\QuantResults\sq1923.batch.bin
Last Calib Update	2/11/2022 10:01:41 AM

Level Name	Calibration Files	Acq. Date-Time	Level Last Update Time
1	D:\MassHunter\Data\021022_6850_SQ1923\Q88808.d	2/10/2022 3:09:21 PM	2/11/2022 10:01:41 AM
2	D:\MassHunter\Data\021022_6850_SQ1923\Q88809.d	2/10/2022 3:17:45 PM	2/11/2022 10:01:41 AM
3	D:\MassHunter\Data\021022_6850_SQ1923\Q88810.d	2/10/2022 3:26:09 PM	2/11/2022 10:01:41 AM
4	D:\MassHunter\Data\021022_6850_SQ1923\Q88811.d	2/10/2022 3:34:33 PM	2/11/2022 10:01:41 AM
5	D:\MassHunter\Data\021022_6850_SQ1923\Q88812.d	2/10/2022 3:42:57 PM	2/11/2022 10:01:41 AM
6	D:\MassHunter\Data\021022_6850_SQ1923\Q88813.d	2/10/2022 3:51:21 PM	2/11/2022 10:01:41 AM
7	D:\MassHunter\Data\021022_6850_SQ1923\Q88814.d	2/10/2022 3:59:45 PM	2/11/2022 10:01:41 AM
8	D:\MassHunter\Data\021022_6850_SQ1923\Q88815.d	2/10/2022 4:08:09 PM	2/11/2022 10:01:41 AM

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I Cl18O4				---------- ISTD ----------							
T Perchlorate	Avg RF	1.0951	1.1109	1.1580	1.2019	1.2834	1.3291	1.3787	1.3971	1.2443	9.578

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Generated at 10:03 AM on 2/11/2022

Initial Calibration Verification

Job Number: FA92918 **Sample:** SQ1923-ICV1923
Account: ITTNKNOX APTIM **Lab FileID:** Q88816.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021022_6850_SQ1923\sq1923.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021022_6850_SQ1923\Q88808.d
2:D:\MassHunter\Data\021022_6850_SQ1923\Q88809.d
3:D:\MassHunter\Data\021022_6850_SQ1923\Q88810.d
4:D:\MassHunter\Data\021022_6850_SQ1923\Q88811.d
5:D:\MassHunter\Data\021022_6850_SQ1923\Q88812.d
6:D:\MassHunter\Data\021022_6850_SQ1923\Q88813.d
7:D:\MassHunter\Data\021022_6850_SQ1923\Q88814.d
8:D:\MassHunter\Data\021022_6850_SQ1923\Q88815.d

Data File: Q88816
Type : QC
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	2.000	1.842	-7.9	92.1

CC Criteria: +/- 15%

Continuing Calibration Summary

Job Number: FA92918 **Sample:** SQ1923-CC1923
Account: ITTNKNOX APTIM **Lab FileID:** Q88869.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021022_6850_SQ1923\sq1923.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021022_6850_SQ1923\Q88808.d
2:D:\MassHunter\Data\021022_6850_SQ1923\Q88809.d
3:D:\MassHunter\Data\021022_6850_SQ1923\Q88810.d
4:D:\MassHunter\Data\021022_6850_SQ1923\Q88811.d
5:D:\MassHunter\Data\021022_6850_SQ1923\Q88812.d
6:D:\MassHunter\Data\021022_6850_SQ1923\Q88813.d
7:D:\MassHunter\Data\021022_6850_SQ1923\Q88814.d
8:D:\MassHunter\Data\021022_6850_SQ1923\Q88815.d

Data File: Q88869
Type : QC
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	2.000	1.851	-7.5	92.5

CC Criteria: +/- 15%

Continuing Calibration Summary

Job Number: FA92918 **Sample:** SQ1923-CC1923
Account: ITTNKNOX APTIM **Lab FileID:** Q88870.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021022_6850_SQ1923\sq1923.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021022_6850_SQ1923\Q88808.d
2:D:\MassHunter\Data\021022_6850_SQ1923\Q88809.d
3:D:\MassHunter\Data\021022_6850_SQ1923\Q88810.d
4:D:\MassHunter\Data\021022_6850_SQ1923\Q88811.d
5:D:\MassHunter\Data\021022_6850_SQ1923\Q88812.d
6:D:\MassHunter\Data\021022_6850_SQ1923\Q88813.d
7:D:\MassHunter\Data\021022_6850_SQ1923\Q88814.d
8:D:\MassHunter\Data\021022_6850_SQ1923\Q88815.d

Data File: Q88870
Type : QC
Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	0.200	0.173	-13.5	86.5

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA92918 **Sample:** SQ1923-CC1923
Account: ITTNKNOX APTIM **Lab FileID:** Q88882.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021022_6850_SQ1923\sq1923.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021022_6850_SQ1923\Q88808.d
2:D:\MassHunter\Data\021022_6850_SQ1923\Q88809.d
3:D:\MassHunter\Data\021022_6850_SQ1923\Q88810.d
4:D:\MassHunter\Data\021022_6850_SQ1923\Q88811.d
5:D:\MassHunter\Data\021022_6850_SQ1923\Q88812.d
6:D:\MassHunter\Data\021022_6850_SQ1923\Q88813.d
7:D:\MassHunter\Data\021022_6850_SQ1923\Q88814.d
8:D:\MassHunter\Data\021022_6850_SQ1923\Q88815.d

Data File: Q88882
Type : QC
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	2.000	1.950	-2.5	97.5

CC Criteria: +/- 15%

Continuing Calibration Summary

Job Number: FA92918 **Sample:** SQ1923-CC1923
Account: ITTNKNOX APTIM **Lab FileID:** Q88883.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021022_6850_SQ1923\sq1923.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021022_6850_SQ1923\Q88808.d
2:D:\MassHunter\Data\021022_6850_SQ1923\Q88809.d
3:D:\MassHunter\Data\021022_6850_SQ1923\Q88810.d
4:D:\MassHunter\Data\021022_6850_SQ1923\Q88811.d
5:D:\MassHunter\Data\021022_6850_SQ1923\Q88812.d
6:D:\MassHunter\Data\021022_6850_SQ1923\Q88813.d
7:D:\MassHunter\Data\021022_6850_SQ1923\Q88814.d
8:D:\MassHunter\Data\021022_6850_SQ1923\Q88815.d

Data File: Q88883
Type : QC
Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	0.200	0.169	-15.4	84.6

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA92918 **Sample:** SQ1923-CC1923
Account: ITTNKNOX APTIM **Lab FileID:** Q88895.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021022_6850_SQ1923\sq1923.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021022_6850_SQ1923\Q88808.d
2:D:\MassHunter\Data\021022_6850_SQ1923\Q88809.d
3:D:\MassHunter\Data\021022_6850_SQ1923\Q88810.d
4:D:\MassHunter\Data\021022_6850_SQ1923\Q88811.d
5:D:\MassHunter\Data\021022_6850_SQ1923\Q88812.d
6:D:\MassHunter\Data\021022_6850_SQ1923\Q88813.d
7:D:\MassHunter\Data\021022_6850_SQ1923\Q88814.d
8:D:\MassHunter\Data\021022_6850_SQ1923\Q88815.d

Data File: Q88895
Type : QC
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	2.000	1.913	-4.4	95.6

CC Criteria: +/- 15%

Continuing Calibration Summary

Job Number: FA92918 **Sample:** SQ1923-CC1923
Account: ITTNKNOX APTIM **Lab FileID:** Q88896.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021022_6850_SQ1923\sq1923.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021022_6850_SQ1923\Q88808.d
2:D:\MassHunter\Data\021022_6850_SQ1923\Q88809.d
3:D:\MassHunter\Data\021022_6850_SQ1923\Q88810.d
4:D:\MassHunter\Data\021022_6850_SQ1923\Q88811.d
5:D:\MassHunter\Data\021022_6850_SQ1923\Q88812.d
6:D:\MassHunter\Data\021022_6850_SQ1923\Q88813.d
7:D:\MassHunter\Data\021022_6850_SQ1923\Q88814.d
8:D:\MassHunter\Data\021022_6850_SQ1923\Q88815.d

Data File: Q88896
Type : QC
Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	0.200	0.175	-12.5	87.5

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA92918 **Sample:** SQ1923-CC1923
Account: ITTNKNOX APTIM **Lab FileID:** Q88901.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021022_6850_SQ1923\sq1923.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021022_6850_SQ1923\Q88808.d
2:D:\MassHunter\Data\021022_6850_SQ1923\Q88809.d
3:D:\MassHunter\Data\021022_6850_SQ1923\Q88810.d
4:D:\MassHunter\Data\021022_6850_SQ1923\Q88811.d
5:D:\MassHunter\Data\021022_6850_SQ1923\Q88812.d
6:D:\MassHunter\Data\021022_6850_SQ1923\Q88813.d
7:D:\MassHunter\Data\021022_6850_SQ1923\Q88814.d
8:D:\MassHunter\Data\021022_6850_SQ1923\Q88815.d

Data File: Q88901
Type : QC
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	2.000	1.913	-4.4	95.6

CC Criteria: +/- 15%

Initial Calibration Summary

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample: SQ1924-ICC1924
Lab FileID: Q88924.D

Initial Calibration Report

Method Path	D:\MassHunter\Methods
Method File	6850_021122_SQ1924.quantmethod.xml
Batch Name	D:\MassHunter\Data\021122_6850_SQ1924\QuantResults\SQ1924.batch.bin
Last Calib Update	2/15/2022 9:38:51 AM

Level Name	Calibration Files	Acq. Date-Time	Level Last Update Time
1	D:\MassHunter\Data\021122_6850_SQ1924\Q88921.d	2/11/2022 4:25:28 PM	2/15/2022 9:38:51 AM
2	D:\MassHunter\Data\021122_6850_SQ1924\Q88922.d	2/11/2022 4:33:53 PM	2/15/2022 9:38:51 AM
3	D:\MassHunter\Data\021122_6850_SQ1924\Q88923.d	2/11/2022 4:42:18 PM	2/15/2022 9:38:51 AM
4	D:\MassHunter\Data\021122_6850_SQ1924\Q88924.d	2/11/2022 4:50:42 PM	2/15/2022 9:38:51 AM
5	D:\MassHunter\Data\021122_6850_SQ1924\Q88925.d	2/11/2022 4:59:06 PM	2/15/2022 9:38:51 AM
6	D:\MassHunter\Data\021122_6850_SQ1924\Q88926.d	2/11/2022 5:07:31 PM	2/15/2022 9:38:51 AM
7	D:\MassHunter\Data\021122_6850_SQ1924\Q88927.d	2/11/2022 5:15:56 PM	2/15/2022 9:38:51 AM
8	D:\MassHunter\Data\021122_6850_SQ1924\Q88928.d	2/11/2022 5:24:20 PM	2/15/2022 9:38:51 AM

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I Cl18O4				---------- ISTD ----------							
T Perchlorate	Avg RF	1.0590	1.0947	1.1371	1.2051	1.2753	1.3218	1.3633	1.3890	1.2306	10.202

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Generated at 9:39 AM on 2/15/2022

Initial Calibration Verification

Job Number: FA92918 **Sample:** SQ1924-ICV1924
Account: ITTNKNOX APTIM **Lab FileID:** Q88929.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021122_6850_SQ1924\SQ1924.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021122_6850_SQ1924\Q88921.d
2:D:\MassHunter\Data\021122_6850_SQ1924\Q88922.d
3:D:\MassHunter\Data\021122_6850_SQ1924\Q88923.d
4:D:\MassHunter\Data\021122_6850_SQ1924\Q88924.d
5:D:\MassHunter\Data\021122_6850_SQ1924\Q88925.d
6:D:\MassHunter\Data\021122_6850_SQ1924\Q88926.d
7:D:\MassHunter\Data\021122_6850_SQ1924\Q88927.d
8:D:\MassHunter\Data\021122_6850_SQ1924\Q88928.d

Data File: Q88929
Type : QC
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	2.000	1.862	-6.9	93.1

CC Criteria: +/- 15%

Continuing Calibration Summary

Job Number: FA92918 **Sample:** SQ1924-CC1924
Account: ITTNKNOX APTIM **Lab FileID:** Q88968.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021122_6850_SQ1924\SQ1924.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021122_6850_SQ1924\Q88921.d
2:D:\MassHunter\Data\021122_6850_SQ1924\Q88922.d
3:D:\MassHunter\Data\021122_6850_SQ1924\Q88923.d
4:D:\MassHunter\Data\021122_6850_SQ1924\Q88924.d
5:D:\MassHunter\Data\021122_6850_SQ1924\Q88925.d
6:D:\MassHunter\Data\021122_6850_SQ1924\Q88926.d
7:D:\MassHunter\Data\021122_6850_SQ1924\Q88927.d
8:D:\MassHunter\Data\021122_6850_SQ1924\Q88928.d

Data File: Q88968
Type : QC
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	2.000	1.895	-5.3	94.7

CC Criteria: +/- 15%

Continuing Calibration Summary

Job Number: FA92918 **Sample:** SQ1924-CC1924
Account: ITTNKNOX APTIM **Lab FileID:** Q88969.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021122_6850_SQ1924\SQ1924.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021122_6850_SQ1924\Q88921.d
2:D:\MassHunter\Data\021122_6850_SQ1924\Q88922.d
3:D:\MassHunter\Data\021122_6850_SQ1924\Q88923.d
4:D:\MassHunter\Data\021122_6850_SQ1924\Q88924.d
5:D:\MassHunter\Data\021122_6850_SQ1924\Q88925.d
6:D:\MassHunter\Data\021122_6850_SQ1924\Q88926.d
7:D:\MassHunter\Data\021122_6850_SQ1924\Q88927.d
8:D:\MassHunter\Data\021122_6850_SQ1924\Q88928.d

Data File: Q88969
Type : QC
Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	0.200	0.173	-13.4	86.6

CC Criteria: +/- 15%

Continuing Calibration Summary

Job Number: FA92918 **Sample:** SQ1924-CC1924
Account: ITTNKNOX APTIM **Lab FileID:** Q88981.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021122_6850_SQ1924\SQ1924.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021122_6850_SQ1924\Q88921.d
2:D:\MassHunter\Data\021122_6850_SQ1924\Q88922.d
3:D:\MassHunter\Data\021122_6850_SQ1924\Q88923.d
4:D:\MassHunter\Data\021122_6850_SQ1924\Q88924.d
5:D:\MassHunter\Data\021122_6850_SQ1924\Q88925.d
6:D:\MassHunter\Data\021122_6850_SQ1924\Q88926.d
7:D:\MassHunter\Data\021122_6850_SQ1924\Q88927.d
8:D:\MassHunter\Data\021122_6850_SQ1924\Q88928.d

Data File: Q88981
Type : QC
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	2.000	1.909	-4.5	95.5

CC Criteria: +/- 15%

Continuing Calibration Summary

Job Number: FA92918 **Sample:** SQ1924-CC1924
Account: ITTNKNOX APTIM **Lab FileID:** Q88982.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021122_6850_SQ1924\SQ1924.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021122_6850_SQ1924\Q88921.d
2:D:\MassHunter\Data\021122_6850_SQ1924\Q88922.d
3:D:\MassHunter\Data\021122_6850_SQ1924\Q88923.d
4:D:\MassHunter\Data\021122_6850_SQ1924\Q88924.d
5:D:\MassHunter\Data\021122_6850_SQ1924\Q88925.d
6:D:\MassHunter\Data\021122_6850_SQ1924\Q88926.d
7:D:\MassHunter\Data\021122_6850_SQ1924\Q88927.d
8:D:\MassHunter\Data\021122_6850_SQ1924\Q88928.d

Data File: Q88982
Type : QC
Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	0.200	0.173	-13.4	86.6

CC Criteria: +/- 15%

Continuing Calibration Summary

Job Number: FA92918 **Sample:** SQ1924-CC1924
Account: ITTNKNOX APTIM **Lab FileID:** Q88994.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021122_6850_SQ1924\SQ1924.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021122_6850_SQ1924\Q88921.d
2:D:\MassHunter\Data\021122_6850_SQ1924\Q88922.d
3:D:\MassHunter\Data\021122_6850_SQ1924\Q88923.d
4:D:\MassHunter\Data\021122_6850_SQ1924\Q88924.d
5:D:\MassHunter\Data\021122_6850_SQ1924\Q88925.d
6:D:\MassHunter\Data\021122_6850_SQ1924\Q88926.d
7:D:\MassHunter\Data\021122_6850_SQ1924\Q88927.d
8:D:\MassHunter\Data\021122_6850_SQ1924\Q88928.d

Data File: Q88994
Type : QC
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	2.000	1.946	-2.7	97.3

CC Criteria: +/- 15%

Continuing Calibration Summary

Job Number: FA92918 **Sample:** SQ1924-CC1924
Account: ITTNKNOX APTIM **Lab FileID:** Q88995.D
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Continuing Calibration Report

Batch: D:\MassHunter\Data\021122_6850_SQ1924\SQ1924.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\021122_6850_SQ1924\Q88921.d
2:D:\MassHunter\Data\021122_6850_SQ1924\Q88922.d
3:D:\MassHunter\Data\021122_6850_SQ1924\Q88923.d
4:D:\MassHunter\Data\021122_6850_SQ1924\Q88924.d
5:D:\MassHunter\Data\021122_6850_SQ1924\Q88925.d
6:D:\MassHunter\Data\021122_6850_SQ1924\Q88926.d
7:D:\MassHunter\Data\021122_6850_SQ1924\Q88927.d
8:D:\MassHunter\Data\021122_6850_SQ1924\Q88928.d

Data File: Q88995
Type : QC
Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
Cl18O4	---	--ISTD--		
Perchlorate	0.200	0.173	-13.7	86.3

CC Criteria: +/- 15%

Run Sequence Report

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Run ID: SQ1923 **Method:** SW846 6850 **Instrument ID:** GCMSQ

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
SQ1923-IC1923	Q88807.D	02/10/22 15:00	n/a	Mass Calibration Verification
SQ1923-IC1923	Q88808.D	02/10/22 15:09	n/a	Initial cal 0.2
SQ1923-IC1923	Q88809.D	02/10/22 15:17	n/a	Initial cal 0.5
SQ1923-IC1923	Q88810.D	02/10/22 15:26	n/a	Initial cal 1.0
SQ1923-ICC1923	Q88811.D	02/10/22 15:34	n/a	Initial cal 2.0
SQ1923-IC1923	Q88812.D	02/10/22 15:42	n/a	Initial cal 5.0
SQ1923-IC1923	Q88813.D	02/10/22 15:51	n/a	Initial cal 10
SQ1923-IC1923	Q88814.D	02/10/22 15:59	n/a	Initial cal 25
SQ1923-IC1923	Q88815.D	02/10/22 16:08	n/a	Initial cal 50
SQ1923-ICV1923	Q88816.D	02/10/22 16:16	n/a	Initial cal verification 2
OP89657-BS	Q88818.D	02/10/22 16:33	OP89657	Blank Spike
OP89657-MB	Q88819.D	02/10/22 16:41	OP89657	Method Blank
ZZZZZZ	Q88820.D	02/10/22 16:50	OP89657	(unrelated sample)
ZZZZZZ	Q88822.D	02/10/22 17:06	OP89657	(unrelated sample)
ZZZZZZ	Q88824.D	02/10/22 17:23	OP89657	(unrelated sample)
ZZZZZZ	Q88825.D	02/10/22 17:32	OP89657	(unrelated sample)
ZZZZZZ	Q88826.D	02/10/22 17:40	OP89657	(unrelated sample)
ZZZZZZ	Q88827.D	02/10/22 17:49	OP89657	(unrelated sample)
SQ1923-CC1923	Q88828.D	02/10/22 17:57	n/a	Continuing cal 2.0
SQ1923-CC1923	Q88829.D	02/10/22 18:05	n/a	Continuing cal 0.2
ZZZZZZ	Q88831.D	02/10/22 18:22	OP89657	(unrelated sample)
ZZZZZZ	Q88833.D	02/10/22 18:39	OP89657	(unrelated sample)
FA92745-12	Q88834.D	02/10/22 18:47	OP89657	(used for QC only; not part of job FA92918)
OP89657-MSD	Q88836.D	02/10/22 19:04	OP89657	Matrix Spike Duplicate
ZZZZZZ	Q88837.D	02/10/22 19:13	OP89657	(unrelated sample)
ZZZZZZ	Q88838.D	02/10/22 19:21	OP89657	(unrelated sample)
SQ1923-CC1923	Q88841.D	02/10/22 19:46	n/a	Continuing cal 2.0
SQ1923-CC1923	Q88842.D	02/10/22 19:55	n/a	Continuing cal 0.2
ZZZZZZ	Q88844.D	02/10/22 20:11	OP89657	(unrelated sample)
ZZZZZZ	Q88846.D	02/10/22 20:28	OP89657	(unrelated sample)
SQ1923-CC1923	Q88854.D	02/10/22 21:35	n/a	Continuing cal 2.0
SQ1923-CC1923	Q88855.D	02/10/22 21:44	n/a	Continuing cal 0.2
SQ1923-CC1923	Q88869.D	02/10/22 23:41	n/a	Continuing cal 2.0
SQ1923-CC1923	Q88870.D	02/10/22 23:50	n/a	Continuing cal 0.2
OP89689-BS	Q88876.D	02/11/22 00:40	OP89689	Blank Spike
OP89689-MB	Q88877.D	02/11/22 00:48	OP89689	Method Blank
SQ1923-CC1923	Q88882.D	02/11/22 01:30	n/a	Continuing cal 2.0
SQ1923-CC1923	Q88883.D	02/11/22 01:39	n/a	Continuing cal 0.2
FA92918-5	Q88885.D	02/11/22 01:56	OP89689	04WW06-220201
FA92918-6	Q88886.D	02/11/22 02:04	OP89689	LHSMW02-220201
FA92918-7	Q88887.D	02/11/22 02:13	OP89689	LHSMW02-220201-FD
ZZZZZZ	Q88889.D	02/11/22 02:29	OP89689	(unrelated sample)
ZZZZZZ	Q88890.D	02/11/22 02:38	OP89689	(unrelated sample)
ZZZZZZ	Q88891.D	02/11/22 02:46	OP89689	(unrelated sample)
SQ1923-CC1923	Q88895.D	02/11/22 03:20	n/a	Continuing cal 2.0
SQ1923-CC1923	Q88896.D	02/11/22 03:28	n/a	Continuing cal 0.2

Run Sequence Report

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Run ID: SQ1923	**Method:** SW846 6850	**Instrument ID:** GCMSQ

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
OP89689-MS	Q88898.D	02/11/22 03:45	OP89689	Matrix Spike
OP89689-MSD	Q88899.D	02/11/22 03:53	OP89689	Matrix Spike Duplicate
ZZZZZZ	Q88900.D	02/11/22 04:02	OP89657	(unrelated sample)
SQ1923-CC1923	Q88901.D	02/11/22 04:10	n/a	Continuing cal 2.0
SQ1923-ECC1923	Q88902.D	02/11/22 04:19	n/a	Ending cal 0.2
SQ1923-IBLK	Q88903.D	02/11/22 04:27	n/a	Instrument Blank

Run Sequence Report

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Run ID: SQ1924 **Method:** SW846 6850 **Instrument ID:** GCMSQ

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
SQ1924-IC1924	Q88920.D	02/11/22 16:17	n/a	Mass Calibration Verification
SQ1924-IC1924	Q88921.D	02/11/22 16:25	n/a	Initial cal 0.2
SQ1924-IC1924	Q88922.D	02/11/22 16:33	n/a	Initial cal 0.5
SQ1924-IC1924	Q88923.D	02/11/22 16:42	n/a	Initial cal 1.0
SQ1924-ICC1924	Q88924.D	02/11/22 16:50	n/a	Initial cal 2.0
SQ1924-IC1924	Q88925.D	02/11/22 16:59	n/a	Initial cal 5.0
SQ1924-IC1924	Q88926.D	02/11/22 17:07	n/a	Initial cal 10
SQ1924-IC1924	Q88927.D	02/11/22 17:15	n/a	Initial cal 25
SQ1924-IC1924	Q88928.D	02/11/22 17:24	n/a	Initial cal 50
SQ1924-ICV1924	Q88929.D	02/11/22 17:32	n/a	Initial cal verification 2
OP89660-BS	Q88932.D	02/11/22 17:57	OP89660	Blank Spike
OP89660-MB	Q88933.D	02/11/22 18:06	OP89660	Method Blank
ZZZZZZ	Q88934.D	02/11/22 18:14	OP89660	(unrelated sample)
ZZZZZZ	Q88935.D	02/11/22 18:23	OP89660	(unrelated sample)
ZZZZZZ	Q88937.D	02/11/22 18:40	OP89660	(unrelated sample)
ZZZZZZ	Q88939.D	02/11/22 18:56	OP89660	(unrelated sample)
ZZZZZZ	Q88941.D	02/11/22 19:13	OP89660	(unrelated sample)
SQ1924-CC1924	Q88942.D	02/11/22 19:22	n/a	Continuing cal 2.0
SQ1924-CC1924	Q88943.D	02/11/22 19:30	n/a	Continuing cal 0.2
ZZZZZZ	Q88945.D	02/11/22 19:47	OP89660	(unrelated sample)
FA92745-27	Q88946.D	02/11/22 19:55	OP89660	(used for QC only; not part of job FA92918)
OP89660-MS	Q88947.D	02/11/22 20:04	OP89660	Matrix Spike
OP89660-MSD	Q88948.D	02/11/22 20:12	OP89660	Matrix Spike Duplicate
ZZZZZZ	Q88949.D	02/11/22 20:20	OP89660	(unrelated sample)
ZZZZZZ	Q88951.D	02/11/22 20:37	OP89660	(unrelated sample)
ZZZZZZ	Q88953.D	02/11/22 20:54	OP89660	(unrelated sample)
SQ1924-CC1924	Q88955.D	02/11/22 21:11	n/a	Continuing cal 2.0
SQ1924-CC1924	Q88956.D	02/11/22 21:19	n/a	Continuing cal 0.2
ZZZZZZ	Q88958.D	02/11/22 21:36	OP89660	(unrelated sample)
ZZZZZZ	Q88959.D	02/11/22 21:45	OP89660	(unrelated sample)
ZZZZZZ	Q88960.D	02/11/22 21:53	OP89660	(unrelated sample)
ZZZZZZ	Q88963.D	02/11/22 22:18	OP89660	(unrelated sample)
ZZZZZZ	Q88964.D	02/11/22 22:27	OP89660	(unrelated sample)
ZZZZZZ	Q88965.D	02/11/22 22:35	OP89660	(unrelated sample)
ZZZZZZ	Q88967.D	02/11/22 22:52	OP89660	(unrelated sample)
SQ1924-CC1924	Q88968.D	02/11/22 23:00	n/a	Continuing cal 2.0
SQ1924-CC1924	Q88969.D	02/11/22 23:09	n/a	Continuing cal 0.2
ZZZZZZ	Q88971.D	02/11/22 23:25	OP89660	(unrelated sample)
OP89689-BS	Q88972.D	02/11/22 23:34	OP89689	Blank Spike
OP89689-MB	Q88973.D	02/11/22 23:42	OP89689	Method Blank
FA92918-1	Q88974.D	02/11/22 23:51	OP89689	LHSMW01-220201
FA92918-2	Q88976.D	02/12/22 00:07	OP89689	04WW04-220201
FA92918-3	Q88979.D	02/12/22 00:33	OP89689	04WW08-220201
FA92918-4	Q88980.D	02/12/22 00:41	OP89689	04WW02-220201
SQ1924-CC1924	Q88981.D	02/12/22 00:49	n/a	Continuing cal 2.0
SQ1924-CC1924	Q88982.D	02/12/22 00:58	n/a	Continuing cal 0.2

Run Sequence Report

Job Number: FA92918
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Run ID: SQ1924	**Method:** SW846 6850	**Instrument ID:** GCMSQ

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
FA92918-8	Q88985.D	02/12/22 01:23	OP89689	04WW11-220201
ZZZZZZ	Q88987.D	02/12/22 01:40	OP89689	(unrelated sample)
ZZZZZZ	Q88990.D	02/12/22 02:05	OP89689	(unrelated sample)
FA92919-6	Q88991.D	02/12/22 02:14	OP89689	(used for QC only; not part of job FA92918)
ZZZZZZ	Q88993.D	02/12/22 02:30	OP89657	(unrelated sample)
SQ1924-CC1924	Q88994.D	02/12/22 02:39	n/a	Continuing cal 2.0
SQ1924-CC1924	Q88995.D	02/12/22 02:47	n/a	Continuing cal 0.2
ZZZZZZ	Q88997.D	02/12/22 03:04	OP89657	(unrelated sample)
ZZZZZZ	Q88999.D	02/12/22 03:21	OP89657	(unrelated sample)
ZZZZZZ	Q89001.D	02/12/22 03:38	OP89657	(unrelated sample)
ZZZZZZ	Q89002.D	02/12/22 03:46	OP89657	(unrelated sample)
OP89657-MS	Q89006.D	02/12/22 04:20	OP89657	Matrix Spike
SQ1924-CC1924	Q89007.D	02/12/22 04:28	n/a	Continuing cal 2.0
SQ1924-ECC1924	Q89008.D	02/12/22 04:36	n/a	Ending cal 0.2
SQ1924-IBLK	Q89009.D	02/12/22 04:45	n/a	Instrument Blank

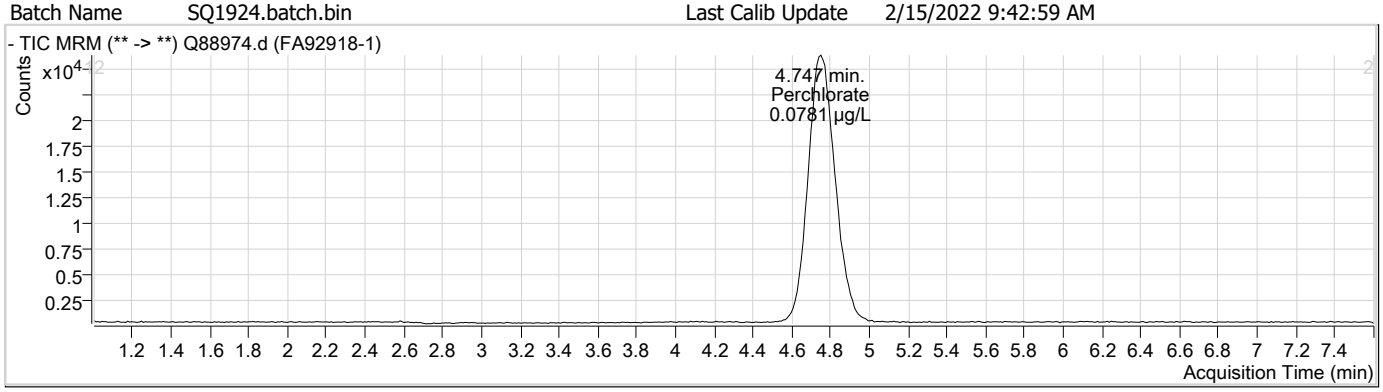
MS Semi-volatiles

Raw Data

01175689

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88974.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 11:51:07 PM
Sample Name	FA92918-1	Instrument	Instrument 1
Vial	P1-E2	Sample Information	OP89689,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM



Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units		Dev(Min)
Internal Standards								
Cl18O4	4.750	107.0 -> 89.0	249306	NoQ	5.00	µg/L		-0.632
System Monitoring Compounds								
Target Compounds								QValue
Perchlorate	4.747	99.0 -> 83.0	4791	3.4	0.08	µg/L	m	98

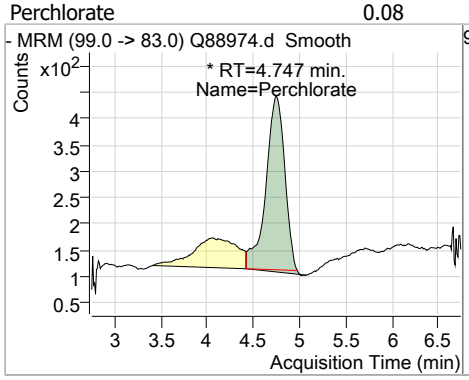
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

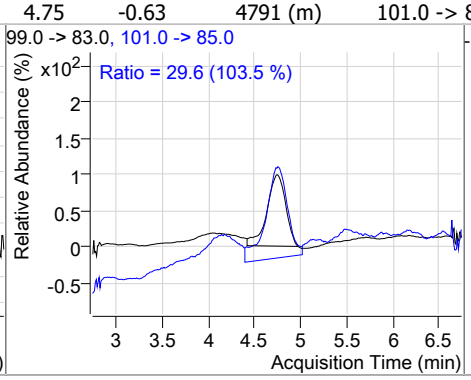
Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
02/16/22 12:16

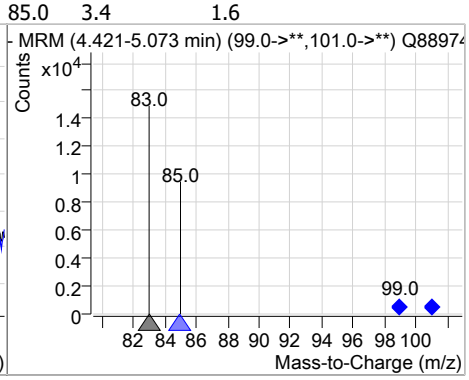
7.1.1
7

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.08	4.75	-0.63	4791 (m)	101.0 -> 85.0	3.4	1.6	







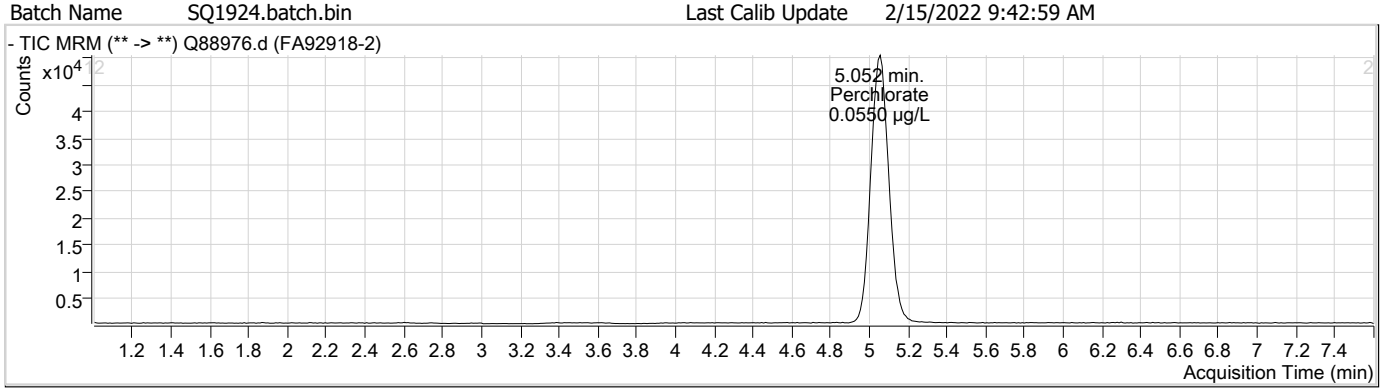
Manual Integration Approval Summary

Sample Number: FA92918-1
Lab FileID: Q88974.D
Injection Time: 02/11/22 23:51
Method: SW846 6850
Analyst approved: 02/15/22 11:18 James Boone
Supervisor approved: 02/16/22 12:16 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perchlorate	14797-73-0		4.75	Poor instrument integration

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88976.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/12/2022 12:07:56 AM
Sample Name	FA92918-2	Instrument	Instrument 1
Vial	P1-E4	Sample Information	OP89689,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM



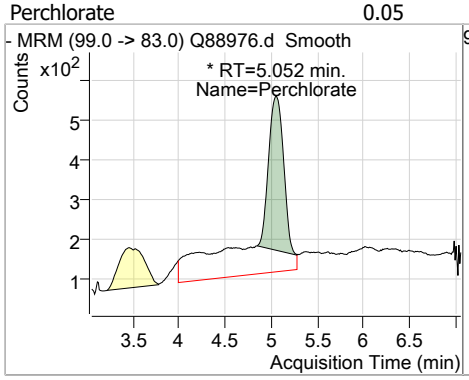
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units		Dev(Min)
Internal Standards								
Cl18O4	5.056	107.0 -> 89.0	319787	NoQ	5.00	µg/L		-0.326
System Monitoring Compounds								
Target Compounds								QValue
Perchlorate	5.052	99.0 -> 83.0	4326	3.3	0.05	µg/L	m	97

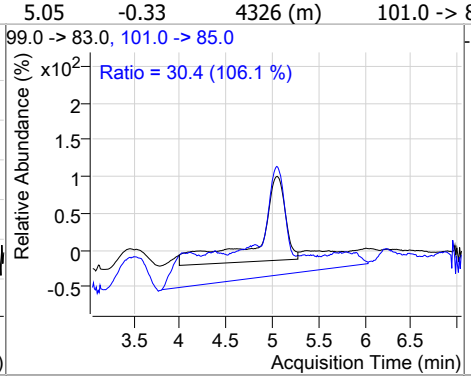
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

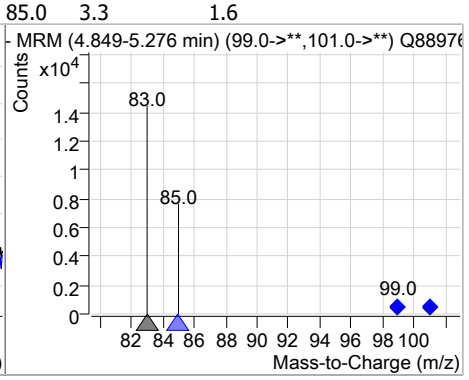
Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
02/16/22 12:16

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.05	5.05	-0.33	4326 (m)	101.0 -> 85.0	3.3	1.6	







7.1.2

7

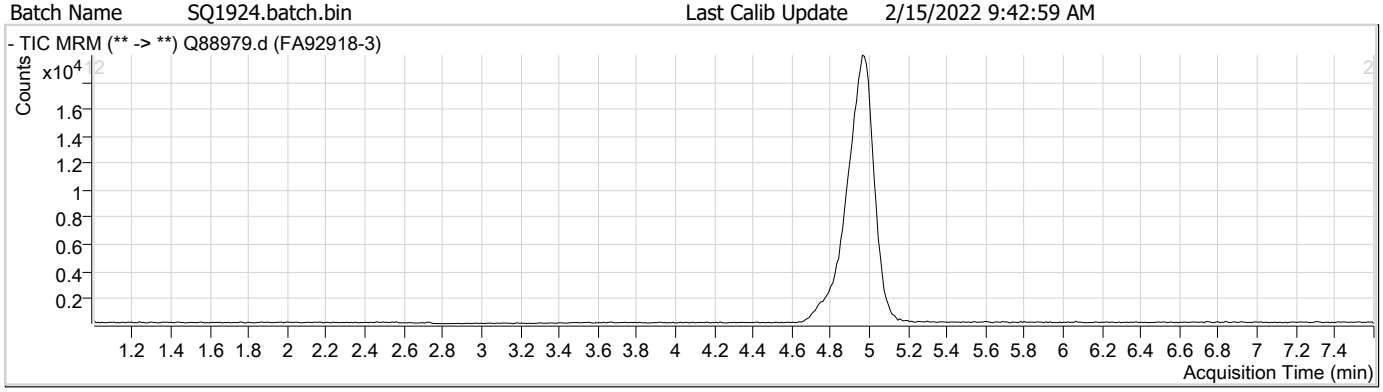
Manual Integration Approval Summary

Sample Number: FA92918-2
Lab FileID: Q88976.D
Injection Time: 02/12/22 00:07
Method: SW846 6850
Analyst approved: 02/15/22 11:18 James Boone
Supervisor approved: 02/16/22 12:16 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perchlorate	14797-73-0		5.05	Poor instrument integration

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88979.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/12/2022 12:33:10 AM
Sample Name	FA92918-3	Instrument	Instrument 1
Vial	P1-E7	Sample Information	OP89689,SQ1924,10,,,10,5,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	5x
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

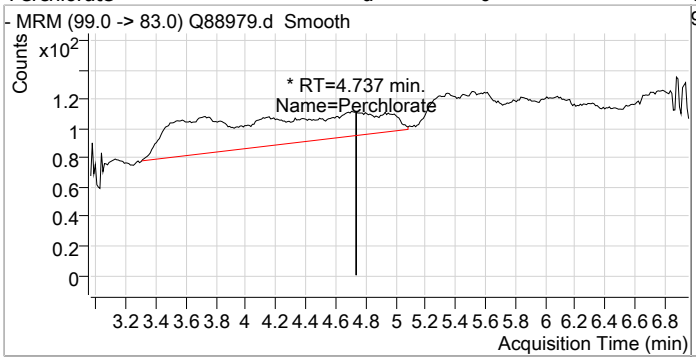


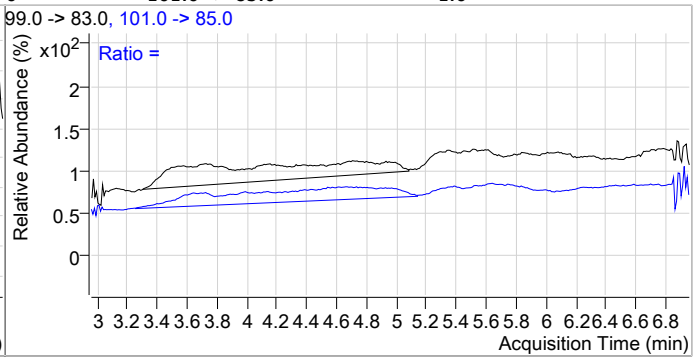
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units		Dev(Min)
Internal Standards								
Cl18O4	4.964	107.0 -> 89.0	194464	NoQ	5.00	µg/L		-0.418
System Monitoring Compounds								
Target Compounds								QValue
Perchlorate	4.737	99.0 -> 83.0	0		0.00	µg/L	md	1

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

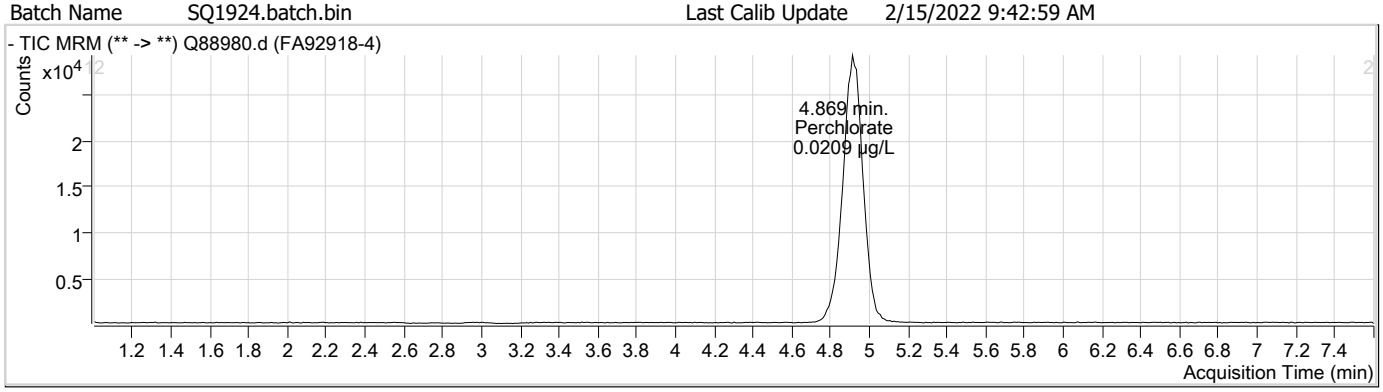
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	d	0		0	101.0 -> 85.0		1.6	





Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88980.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/12/2022 12:41:34 AM
Sample Name	FA92918-4	Instrument	Instrument 1
Vial	P1-E8	Sample Information	OP89689,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM



Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units		Dev(Min)
Internal Standards								
Cl18O4	4.913	107.0 -> 89.0	211292	NoQ	5.00	µg/L		-0.469
System Monitoring Compounds								
Target Compounds								QValue
Perchlorate	4.869	99.0 -> 83.0	1087	2.3	0.02	µg/L	m	71

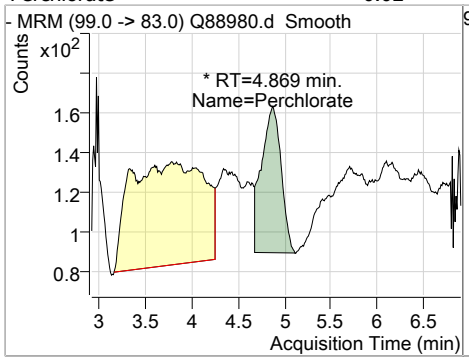
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

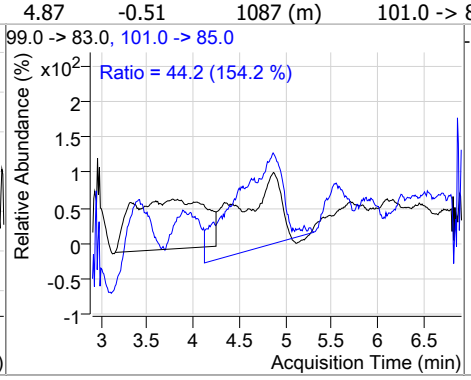
Manual Integrations APPROVED (compounds with "m" flag)

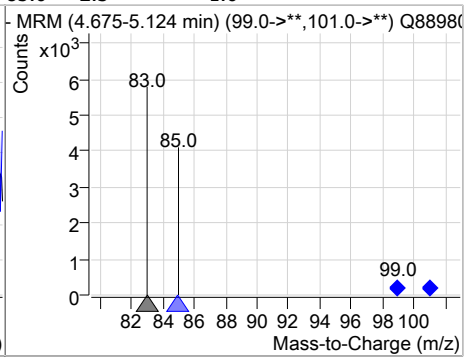
Mike Eger 02/16/22 12:16

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.02	4.87	-0.51	1087 (m)	101.0 -> 85.0	2.3	1.6	







7.1.4

7

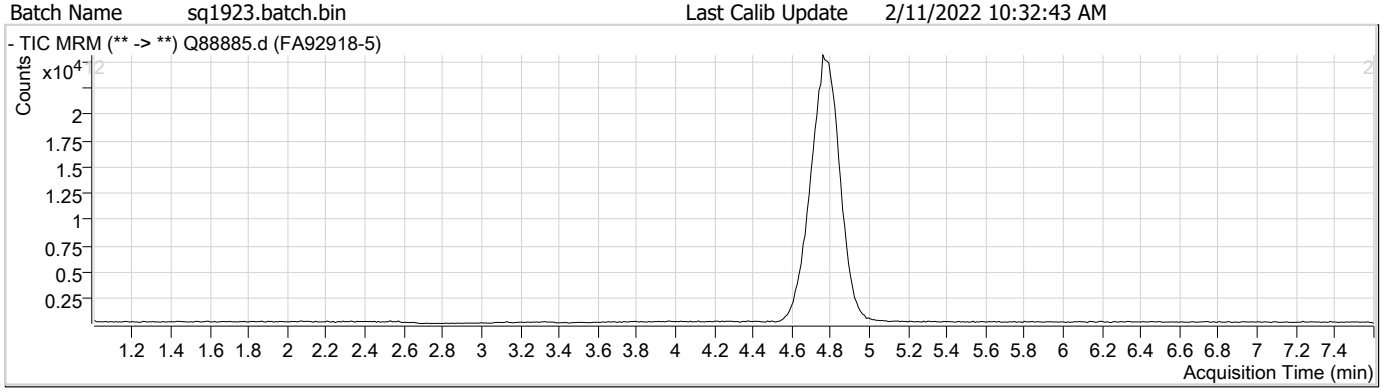
Manual Integration Approval Summary

Sample Number: FA92918-4
Lab FileID: Q88980.D
Injection Time: 02/12/22 00:41
Method: SW846 6850
Analyst approved: 02/15/22 11:18 James Boone
Supervisor approved: 02/16/22 12:16 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perchlorate	14797-73-0		4.87	Poor instrument integration

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88885.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 1:56:13 AM
Sample Name	FA92918-5	Instrument	Instrument 1
Vial	P2-A8	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

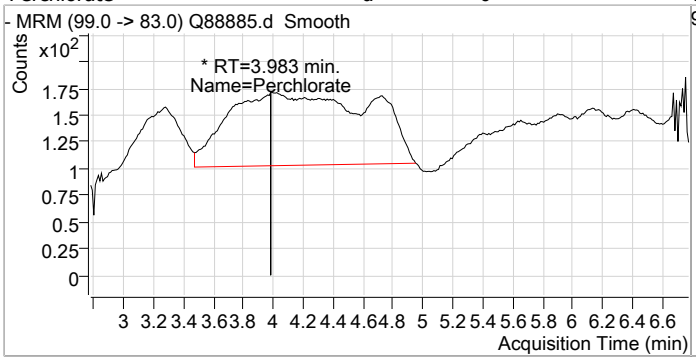


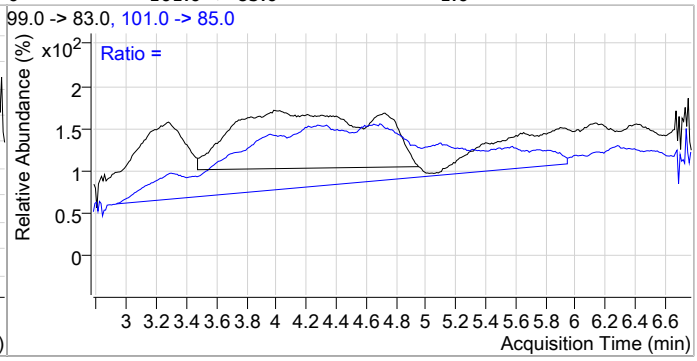
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units		Dev(Min)
Internal Standards								
Cl18O4	4.781	107.0 -> 89.0	266925	NoQ	5.00	µg/L		-0.733
System Monitoring Compounds								
Target Compounds								**QValue**
Perchlorate	3.983	99.0 -> 83.0	0		0.00	µg/L	md	1

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

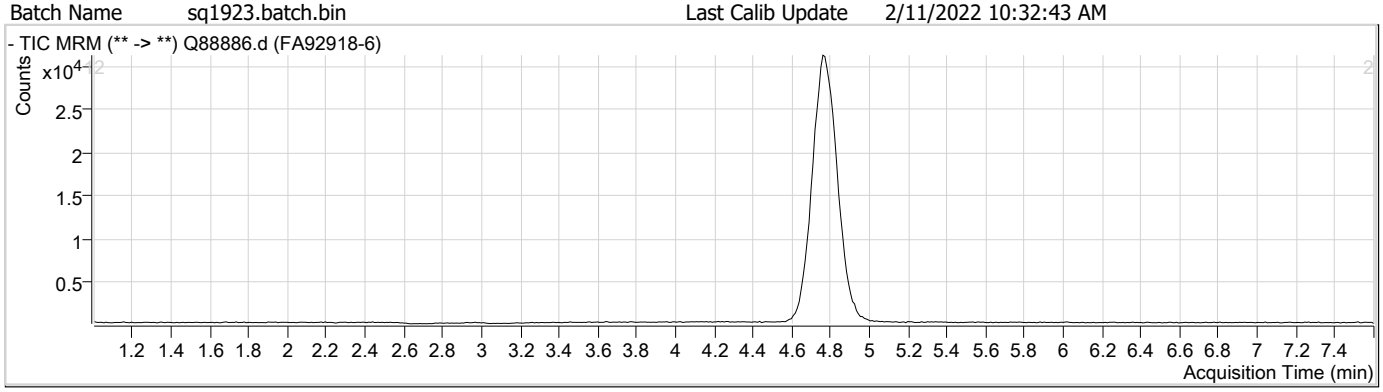
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	d	0		0	101.0 -> 85.0		1.6	





Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88886.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 2:04:35 AM
Sample Name	FA92918-6	Instrument	Instrument 1
Vial	P2-A9	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

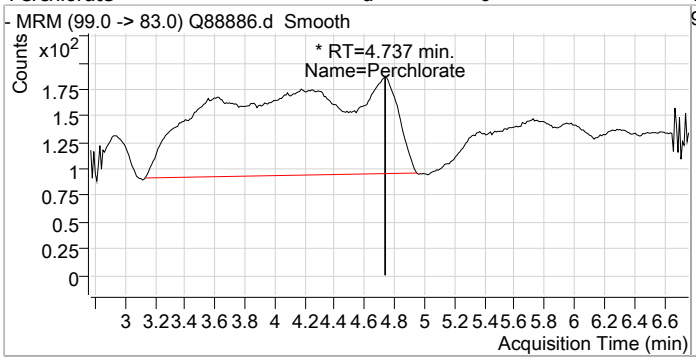


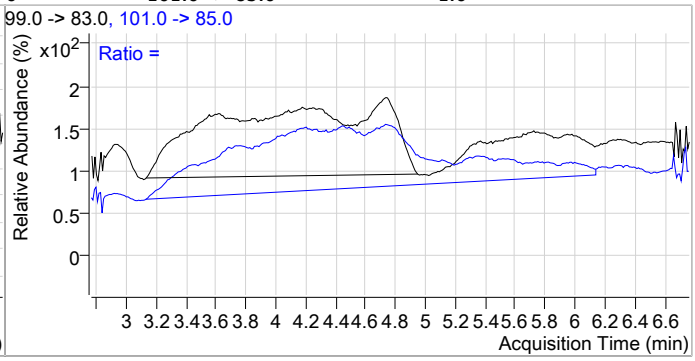
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units		Dev(Min)
Internal Standards								
Cl18O4	4.771	107.0 -> 89.0	282357	NoQ	5.00	µg/L		-0.744
System Monitoring Compounds								
Target Compounds								**QValue**
Perchlorate	4.737	99.0 -> 83.0	0		0.00	µg/L	md	1

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

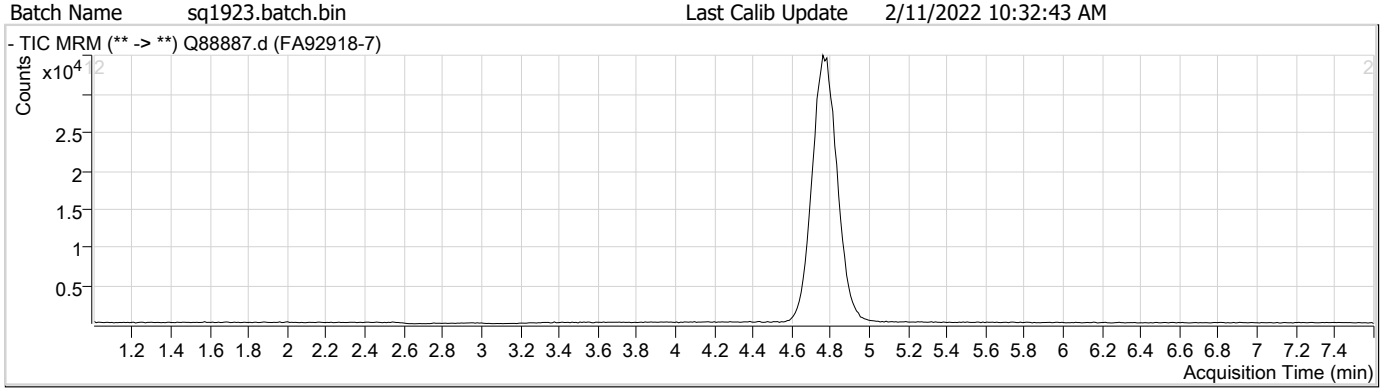
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	d	0		0	101.0 -> 85.0		1.6	





Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88887.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 2:13:01 AM
Sample Name	FA92918-7	Instrument	Instrument 1
Vial	P2-B1	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

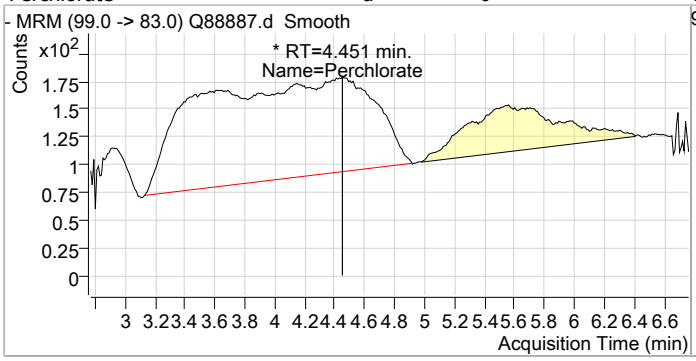


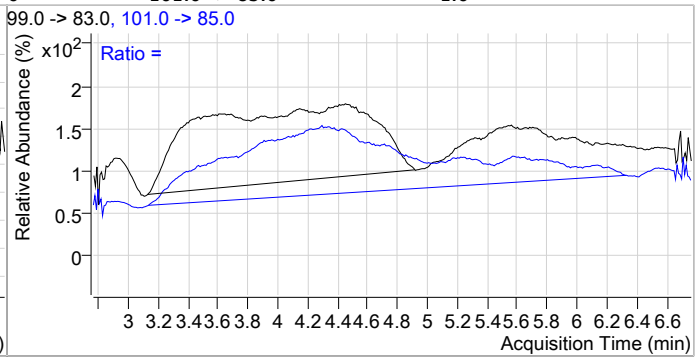
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units		Dev(Min)
Internal Standards								
Cl18O4	4.771	107.0 -> 89.0	315566	NoQ	5.00	µg/L		-0.744
System Monitoring Compounds								
Target Compounds								**QValue**
Perchlorate	4.451	99.0 -> 83.0	0		0.00	µg/L	md	1

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

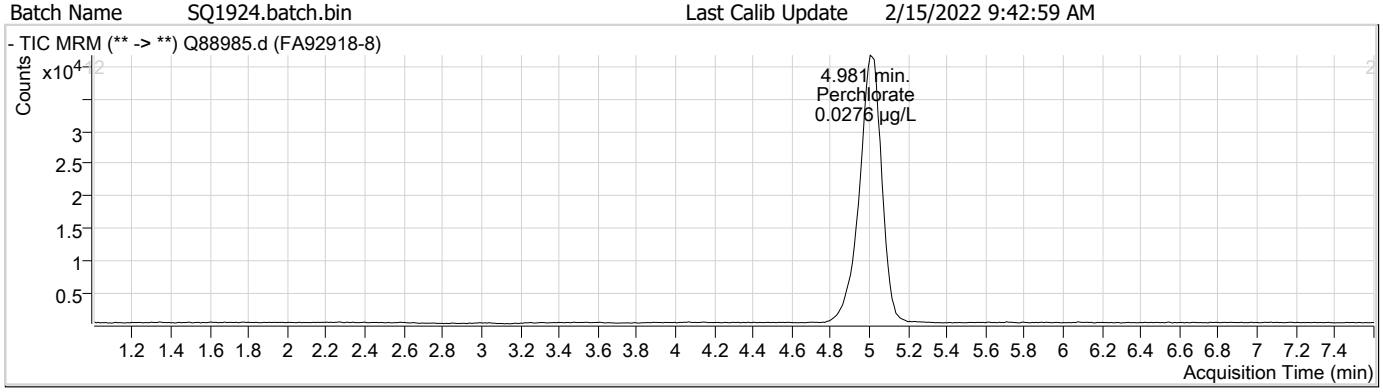
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	d	0		0	101.0 -> 85.0		1.6	





Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88985.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/12/2022 1:23:34 AM
Sample Name	FA92918-8	Instrument	Instrument 1
Vial	P1-F1	Sample Information	OP89689,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM



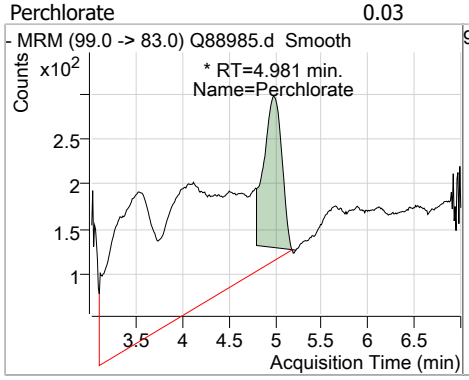
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units		Dev(Min)
Internal Standards								
Cl18O4	5.015	107.0 -> 89.0	331437	NoQ	5.00	µg/L		-0.367
System Monitoring Compounds								
Target Compounds								QValue
Perchlorate	4.981	99.0 -> 83.0	2247	4.1	0.03	µg/L	m	92

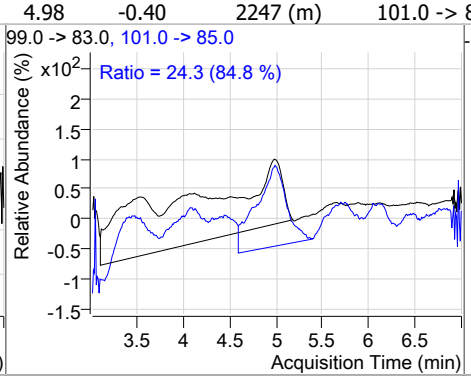
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

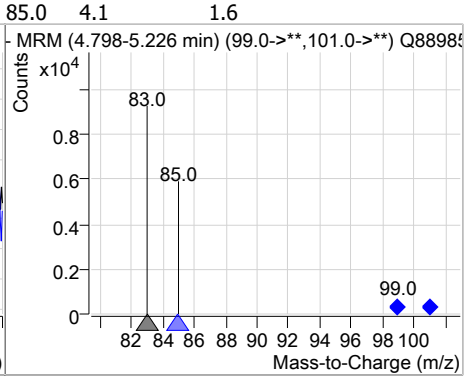
Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
02/16/22 12:16

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.03	4.98	-0.40	2247 (m)	101.0 -> 85.0	4.1	1.6	







Manual Integration Approval Summary

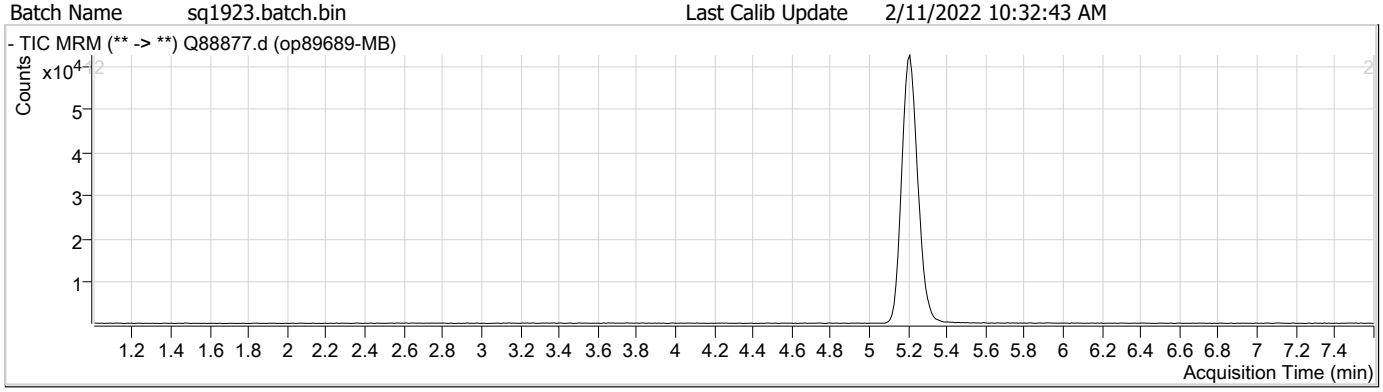
Sample Number: FA92918-8
Lab FileID: Q88985.D
Injection Time: 02/12/22 01:23
Method: SW846 6850
Analyst approved: 02/15/22 11:18 James Boone
Supervisor approved: 02/16/22 12:16 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perchlorate	14797-73-0		4.98	Poor instrument integration

01175709

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88877.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 12:48:57 AM
Sample Name	op89689-MB	Instrument	Instrument 1
Vial	P2-A3	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

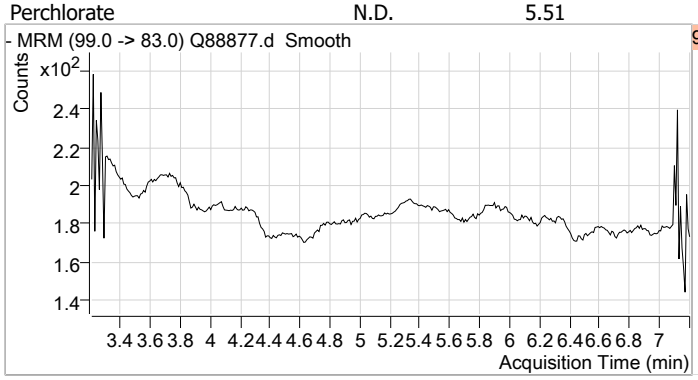


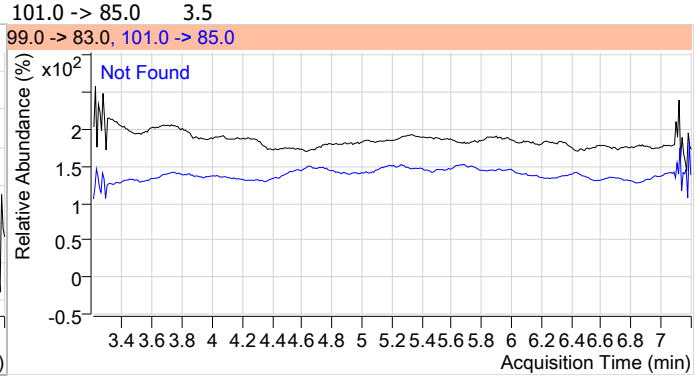
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.209	107.0 -> 89.0	360056	NoQ	5.00 µg/L	-0.306
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	-	99.0 -> 83.0		-	N.D.	

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	Exp RT	QIon	Exp Ratio
Perchlorate	N.D.	5.51	101.0 -> 85.0	3.5



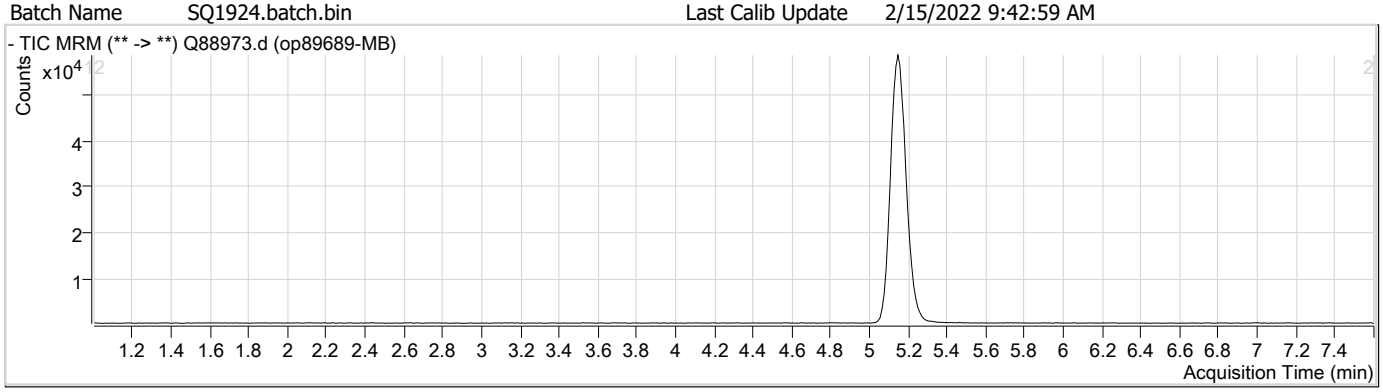


7.2.1

7

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88973.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 11:42:43 PM
Sample Name	op89689-MB	Instrument	Instrument 1
Vial	P1-E1	Sample Information	OP89689,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

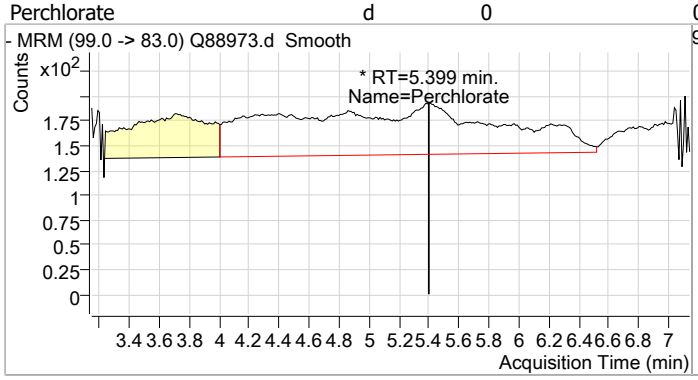


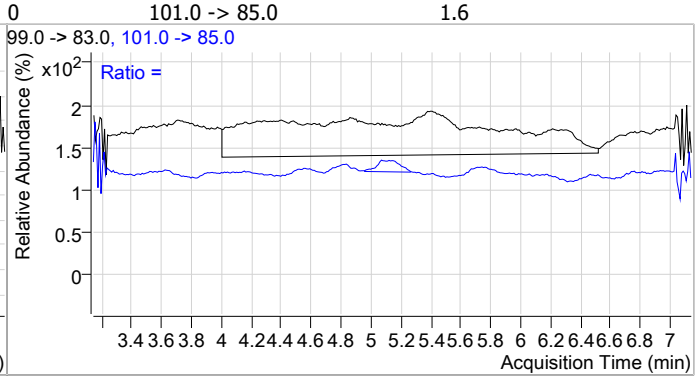
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units		Dev(Min)
Internal Standards								
Cl18O4	5.147	107.0 -> 89.0	330907	NoQ	5.00	µg/L		-0.234
System Monitoring Compounds								
Target Compounds								**QValue**
Perchlorate	5.399	99.0 -> 83.0	0		0.00	µg/L	md	1

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	d	0		0	101.0 -> 85.0		1.6	

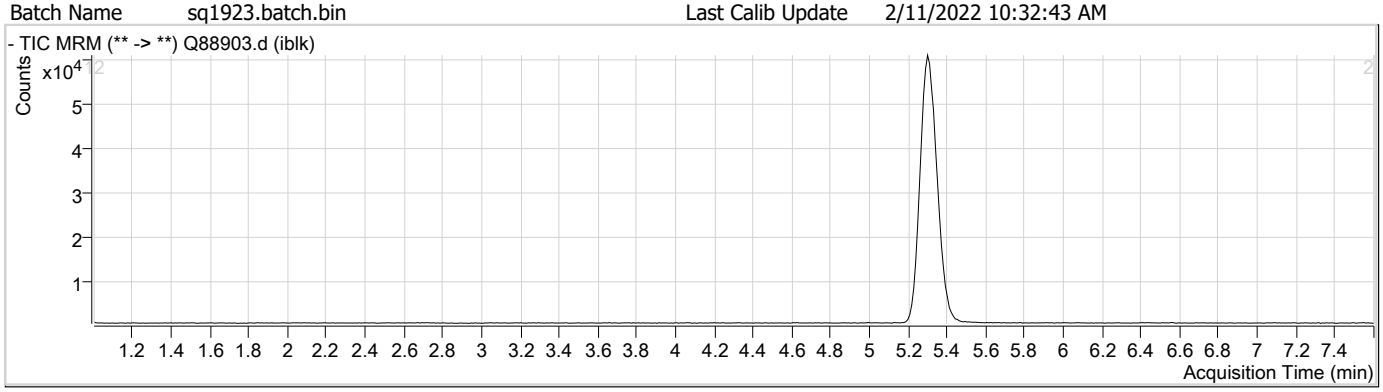




01175713

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88903.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 4:27:27 AM
Sample Name	iblk	Instrument	Instrument 1
Vial	P2-F2	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

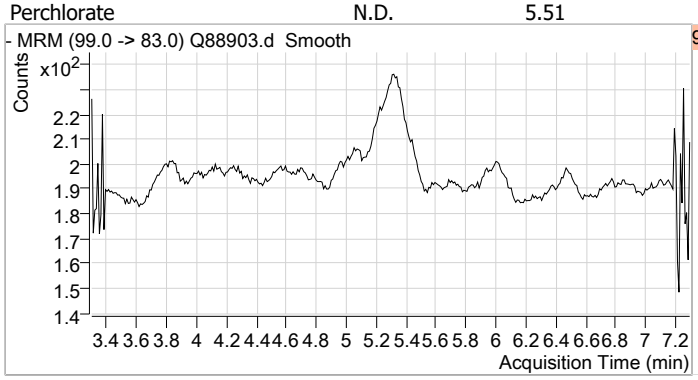


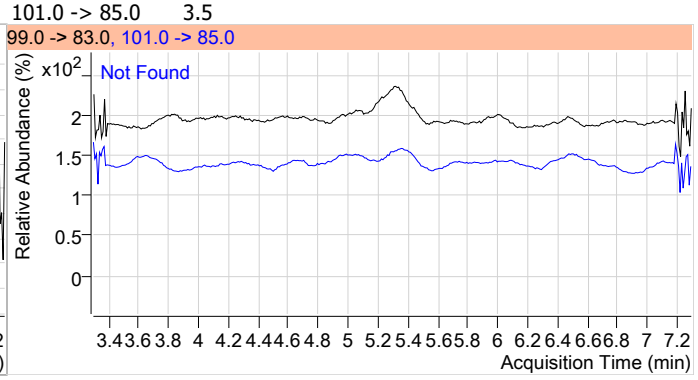
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.300	107.0 -> 89.0	373823	NoQ	5.00 µg/L	-0.214
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	-	99.0 -> 83.0		-	N.D.	

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	Exp RT	QIon	Exp Ratio
Perchlorate	N.D.	5.51	101.0 -> 85.0	3.5

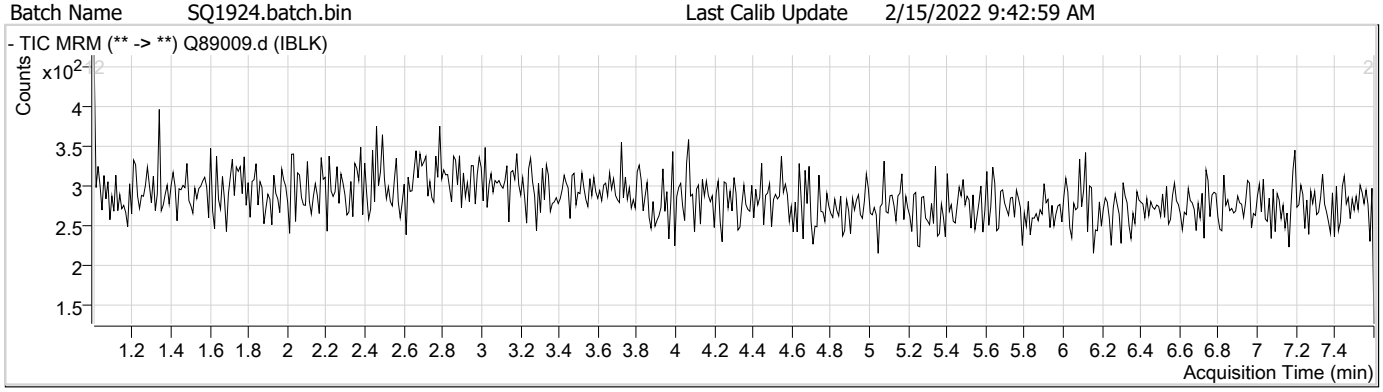




01175715

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q89009.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/12/2022 4:45:23 AM
Sample Name	IBLK	Instrument	Instrument 1
Vial	P1-A1	Sample Information	OP89689,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM



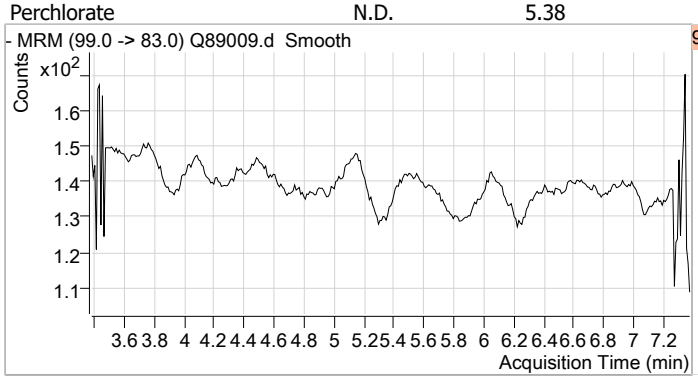
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	-	107.0 -> 89.0		-	N.D.	
System Monitoring Compounds						
Target Compounds						QValue
Perchlorate	-	99.0 -> 83.0		-	N.D.	

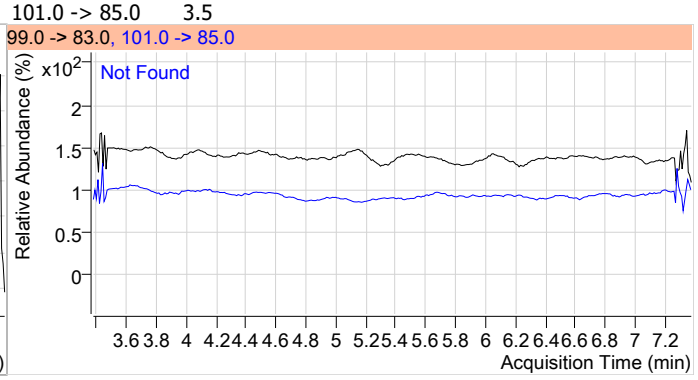
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

01175716

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	Exp RT	QIon	Exp Ratio
Perchlorate	N.D.	5.38	101.0 -> 85.0	3.5



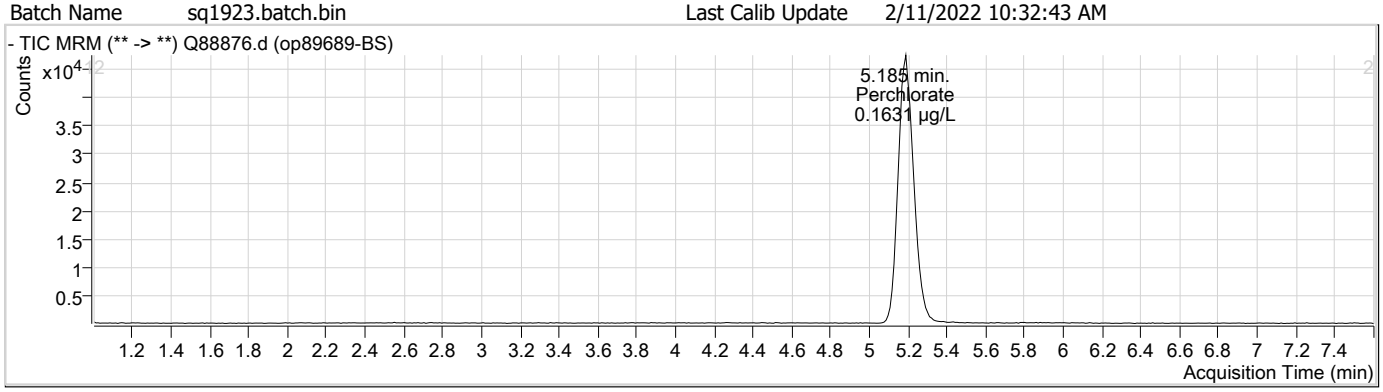


7.2.4

7

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88876.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 12:40:33 AM
Sample Name	op89689-BS	Instrument	Instrument 1
Vial	P2-A2	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

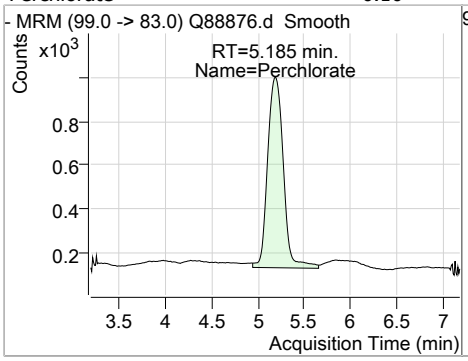


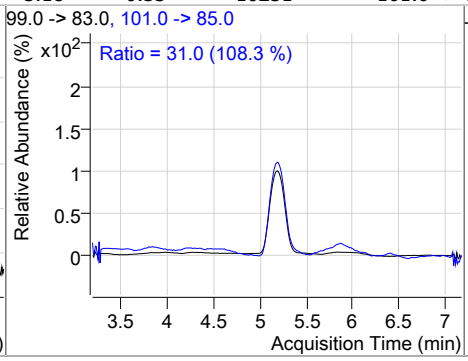
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.188	107.0 -> 89.0	252539	NoQ	5.00 µg/L	-0.326
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.185	99.0 -> 83.0	10251	3.2	0.16 µg/L	95

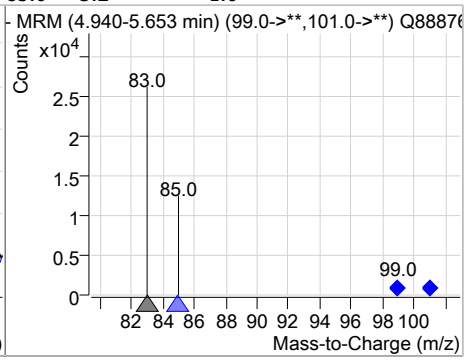
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.16	5.18	-0.33	10251	101.0 -> 85.0	3.2	1.6	



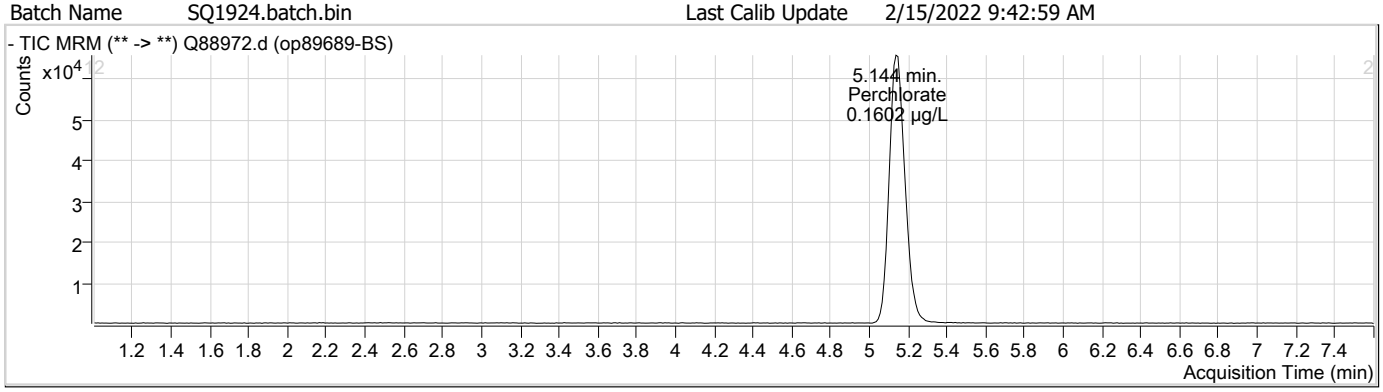




01175719

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88972.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 11:34:18 PM
Sample Name	op89689-BS	Instrument	Instrument 1
Vial	P1-D9	Sample Information	OP89689,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM



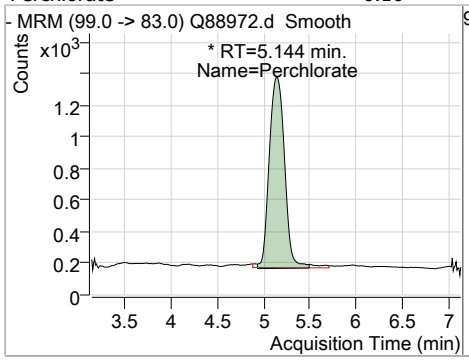
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units		Dev(Min)
Internal Standards								
Cl18O4	5.137	107.0 -> 89.0	353482	NoQ	5.00	µg/L		-0.244
System Monitoring Compounds								
Target Compounds								QValue
Perchlorate	5.144	99.0 -> 83.0	13937	3.3	0.16	µg/L	m	97

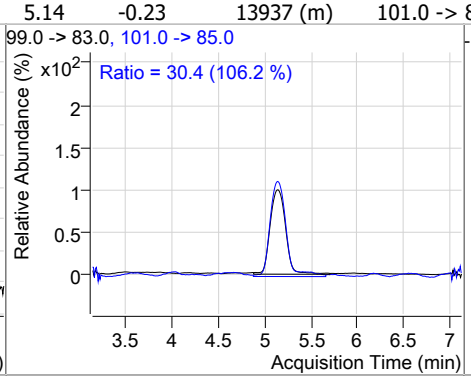
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

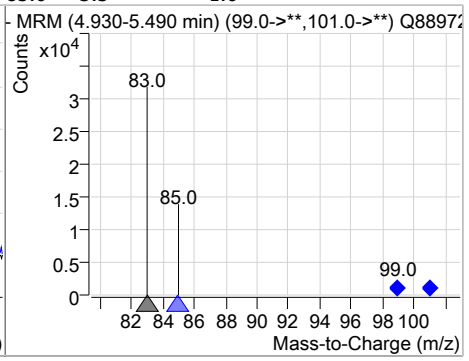
Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
02/16/22 12:16

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.16	5.14	-0.23	13937 (m)	101.0 -> 85.0	3.3	1.6	







Manual Integration Approval Summary

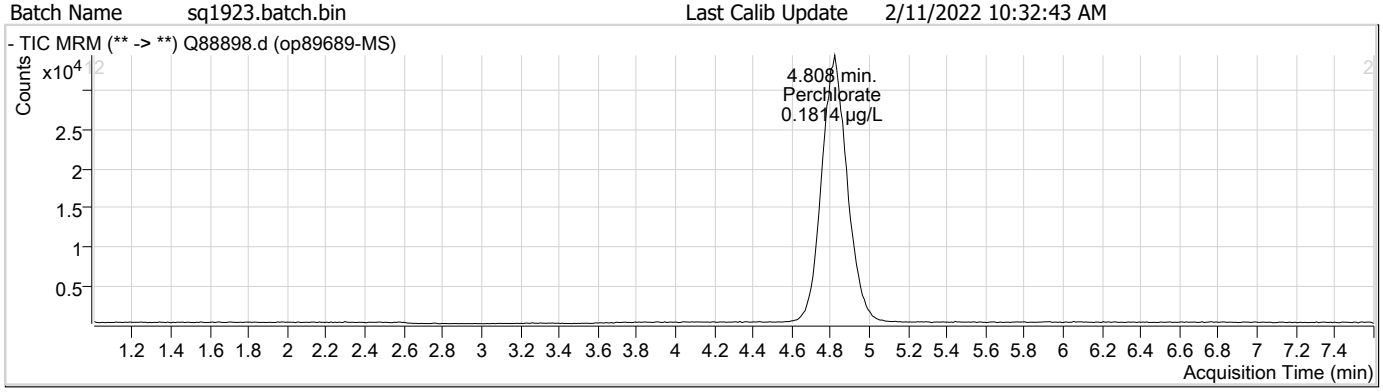
Sample Number: OP89689-BS
Lab FileID: Q88972.D
Injection Time: 02/11/22 23:34
Method: SW846 6850
Analyst approved: 02/15/22 11:12 James Boone
Supervisor approved: 02/16/22 12:16 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perchlorate	14797-73-0		5.14	Poor instrument integration

01175722

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88898.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 3:45:27 AM
Sample Name	op89689-MS	Instrument	Instrument 1
Vial	P2-B9	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM



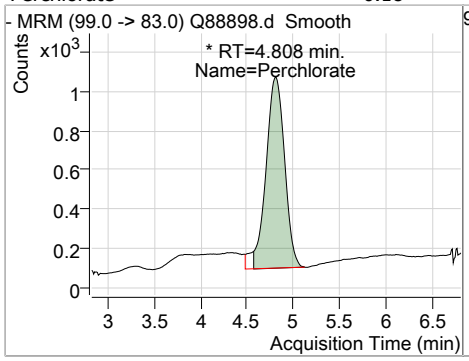
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units		Dev(Min)
Internal Standards								
Cl18O4	4.821	107.0 -> 89.0	298758	NoQ	5.00	µg/L		-0.693
System Monitoring Compounds								
Target Compounds								QValue
Perchlorate	4.808	99.0 -> 83.0	13486	2.8	0.18	µg/L	m	88

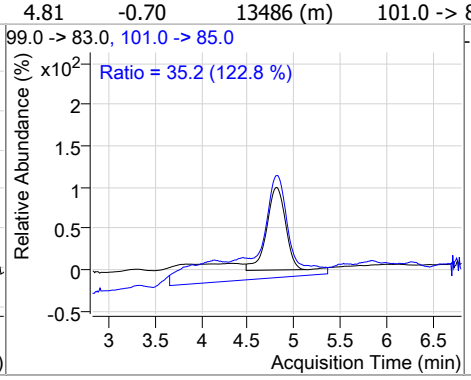
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

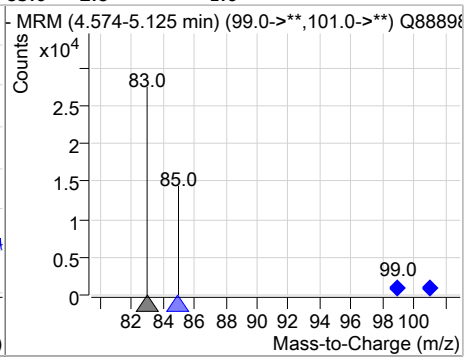
Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
02/16/22 11:54

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.18	4.81	-0.70	13486 (m)	101.0 -> 85.0	2.8	1.6	







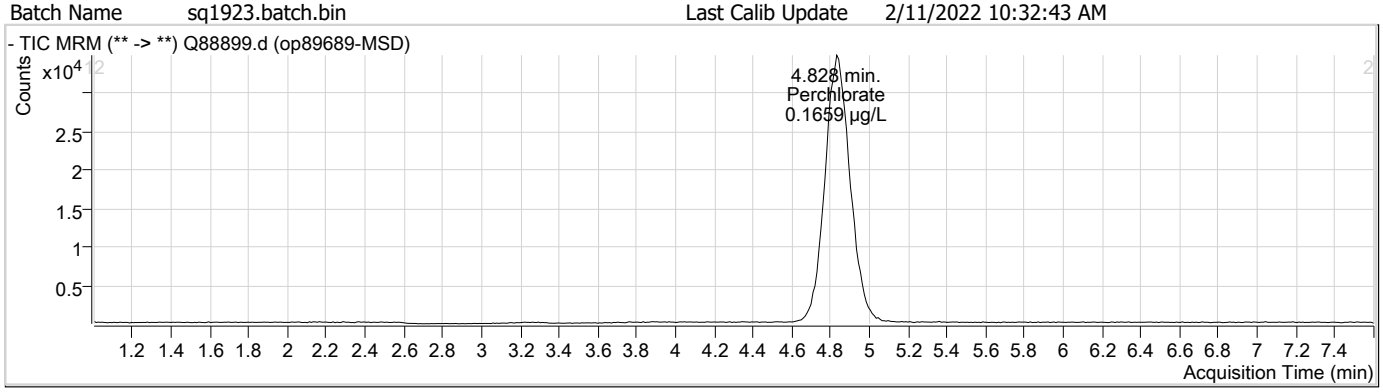
Manual Integration Approval Summary

Sample Number:	OP89689-MS	**Method:**	SW846 6850
Lab FileID:	Q88898.D	**Analyst approved:**	02/15/22 11:18 James Boone
Injection Time:	02/11/22 03:45	**Supervisor approved:**	02/16/22 11:54 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perchlorate	14797-73-0		4.81	Poor instrument integration

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88899.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 3:53:52 AM
Sample Name	op89689-MSD	Instrument	Instrument 1
Vial	P2-C1	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM



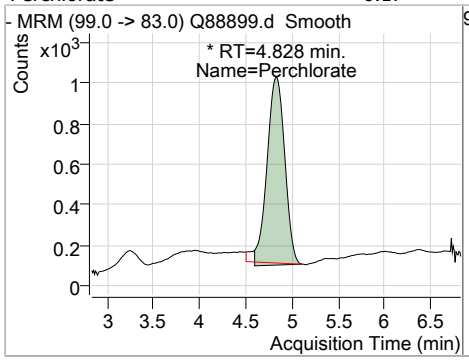
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units		Dev(Min)
Internal Standards								
Cl18O4	4.832	107.0 -> 89.0	300180	NoQ	5.00	µg/L		-0.682
System Monitoring Compounds								
Target Compounds								QValue
Perchlorate	4.828	99.0 -> 83.0	12395	2.8	0.17	µg/L	m	87

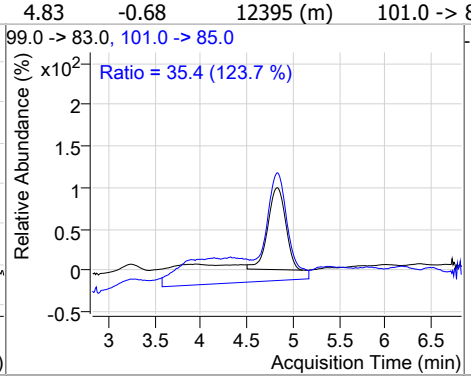
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

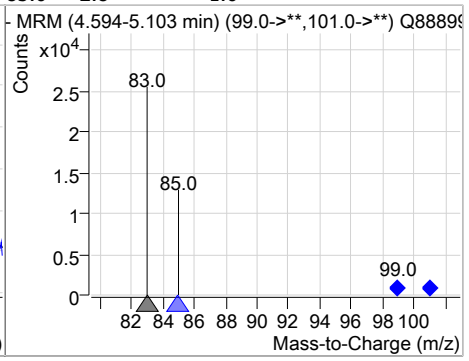
Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
02/16/22 11:54

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.17	4.83	-0.68	12395 (m)	101.0 -> 85.0	2.8	1.6	







Manual Integration Approval Summary

Sample Number: OP89689-MSD
Lab FileID: Q88899.D
Injection Time: 02/11/22 03:53
Method: SW846 6850
Analyst approved: 02/15/22 11:18 James Boone
Supervisor approved: 02/16/22 11:54 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perchlorate	14797-73-0		4.83	Poor instrument integration

01175728

QQQ Check Tune Report

Agilent Technologies

Instrument Name	Instrument 1
MS Model	G6460A
MS Instrument Serial	SG10447001
Software_Firmware Version	B.08.02.B8260.0, FW: A.00.08.62
Tune Date & Time	08 February 2022 10:14:38
Data Path	D:\MassHunter\Tune\QQQ\G6460A\atunes.TUNE.XML
Ion Source	AJS ESI
Ionization Mode	AJS ESI
Tuned Resolution	All
Vacuum Pressure	1.59E+0[R]; 2.46E-5[H]

Source Parameters

Parameter	Value
Gas Temp	300
Gas Flow	10
Nebulizer	15
Capillary	4000
Nozzle Voltage	1500
Sheath Gas Temp	250
Sheath Gas Flow	7

QQQ Check Tune Report

Agilent Technologies

Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.02	0.03	Pass	0.70	0.69	-0.01	Pass	138179
302.00	302.09	0.09	Pass	0.70	0.68	-0.02	Pass	41371
601.98	602.06	0.08	Pass	0.70	0.67	-0.03	Pass	50871
1033.99	1034.11	0.12	Pass	0.70	0.63	-0.07	Pass	249801
1633.95	1634.09	0.14	Pass	0.70	0.65	-0.05	Pass	377392
2233.91	2233.99	0.08	Pass	0.70	0.70	0.00	Pass	257413

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.03	0.03	Pass	0.70	0.73	0.03	Pass	42258
112.99	113.00	0.01	Pass	0.70	0.74	0.04	Pass	271133
302.00	302.01	0.01	Pass	0.70	0.71	0.01	Pass	60984
601.98	601.99	0.01	Pass	0.70	0.69	-0.01	Pass	74421
1033.99	1034.01	0.02	Pass	0.70	0.69	-0.01	Pass	303245
1633.95	1633.99	0.04	Pass	0.70	0.70	0.00	Pass	483823
2233.91	2233.98	0.07	Pass	0.70	0.63	-0.07	Pass	103357

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.89	-0.10	Pass	1.20	1.10	-0.10	Pass	182798
302.00	301.99	-0.01	Pass	1.20	1.38	0.18	Pass	59506
601.98	601.98	0.00	Pass	1.20	1.41	0.21	Pass	80747
1033.99	1033.85	-0.14	Pass	1.20	1.53	0.33	Pass	470714
1633.95	1633.72	-0.23	Pass	1.20	1.46	0.26	Pass	1031774
2233.91	2233.58	-0.33	Pass	1.20	1.35	0.15	Pass	747479

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	68.99	-0.01	Pass	1.20	1.24	0.04	Pass	55089
112.99	112.91	-0.08	Pass	1.20	1.31	0.11	Pass	309341
302.00	301.84	-0.16	Pass	1.20	1.41	0.21	Pass	84007
601.98	601.77	-0.21	Pass	1.20	1.35	0.15	Pass	112954
1033.99	1033.72	-0.27	Pass	1.20	1.15	-0.05	Pass	536141
1633.95	1633.66	-0.29	Pass	1.20	1.14	-0.06	Pass	1389274
2233.91	2233.63	-0.28	Pass	1.20	1.28	0.08	Pass	1373030

Analyzer: MS1 Polarity: Negative Width: Widest

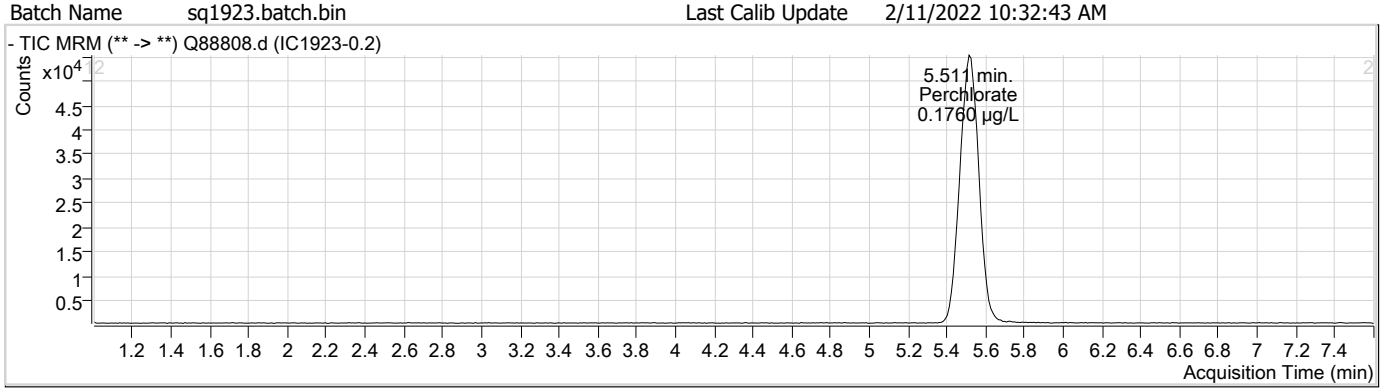
m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.65	-0.34	Pass	2.50	2.58	0.08	Pass	279959
302.00	301.98	-0.02	Pass	2.50	2.88	0.38	Pass	69863
601.98	601.98	0.00	Pass	2.50	2.89	0.39	Pass	97979
1033.99	1033.83	-0.16	Pass	2.50	2.94	0.44	Pass	694759
1633.95	1633.63	-0.32	Pass	2.50	2.78	0.28	Pass	1729637
2233.91	2233.45	-0.46	Pass	2.50	2.58	0.08	Pass	1379413

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.01	0.01	Pass	2.50	2.53	0.03	Pass	65891
112.99	112.94	-0.05	Pass	2.50	2.58	0.08	Pass	369725
302.00	301.83	-0.17	Pass	2.50	2.68	0.18	Pass	99235
601.98	601.74	-0.24	Pass	2.50	2.63	0.13	Pass	147993
1033.99	1033.71	-0.28	Pass	2.50	2.41	-0.09	Pass	966637
1633.95	1633.66	-0.29	Pass	2.50	2.33	-0.17	Pass	3160120
2233.91	2233.55	-0.36	Pass	2.50	2.57	0.07	Pass	3431543

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88808.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/10/2022 3:09:21 PM
Sample Name	IC1923-0.2	Instrument	Instrument 1
Vial	P1-C1	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

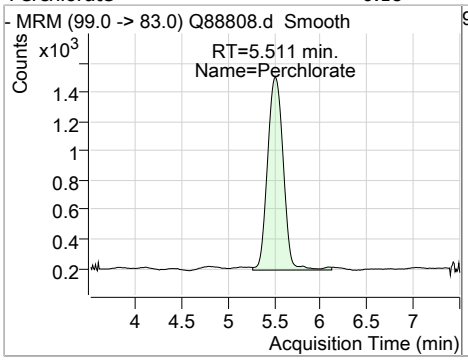


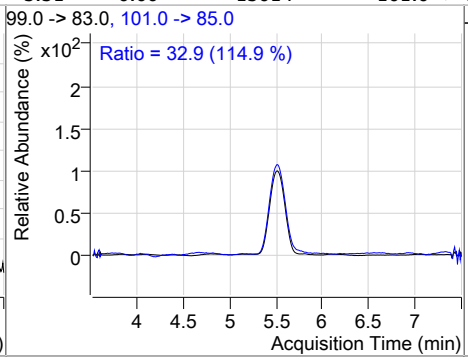
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.514	107.0 -> 89.0	356436	NoQ	5.00 µg/L	0.000
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.511	99.0 -> 83.0	15614	3.0	0.18 µg/L	92

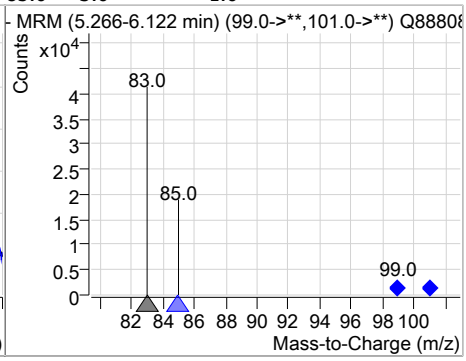
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.18	5.51	0.00	15614	101.0 -> 85.0	3.0	1.6	

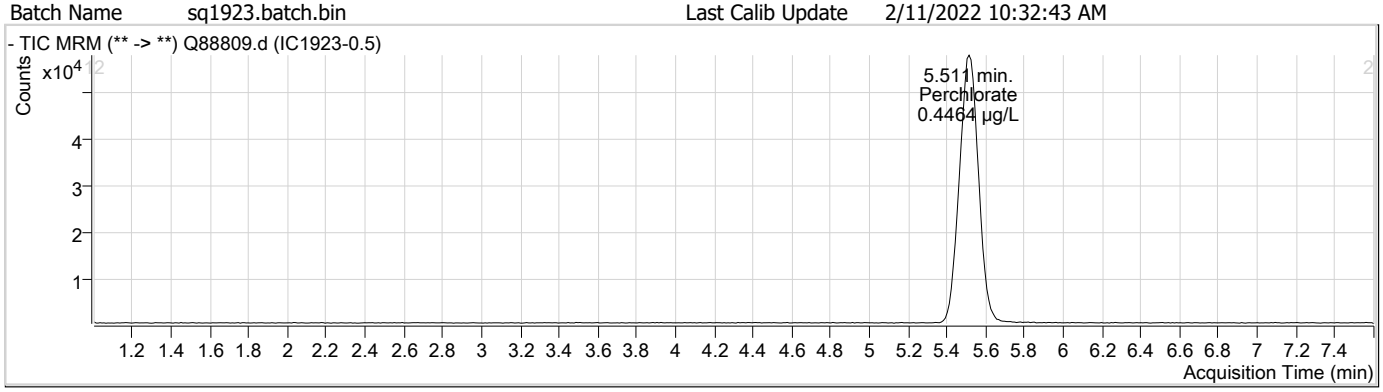






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88809.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/10/2022 3:17:45 PM
Sample Name	IC1923-0.5	Instrument	Instrument 1
Vial	P1-C2	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

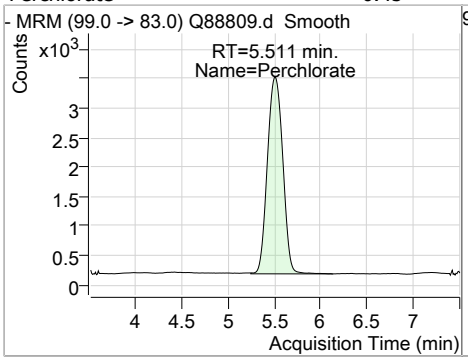


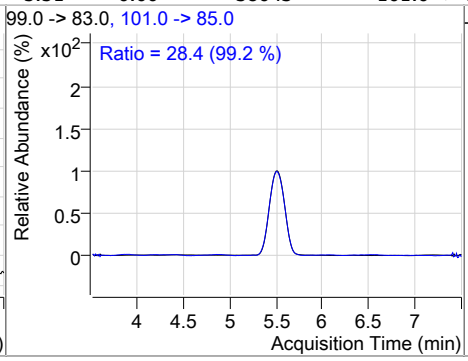
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.514	107.0 -> 89.0	347858	NoQ	5.00 µg/L	0.000
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.511	99.0 -> 83.0	38643	3.5	0.45 µg/L	100

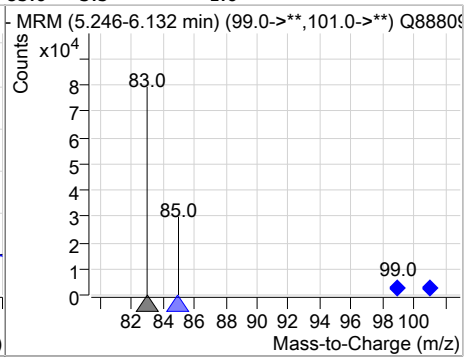
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.45	5.51	0.00	38643	101.0 -> 85.0	3.5	1.6	

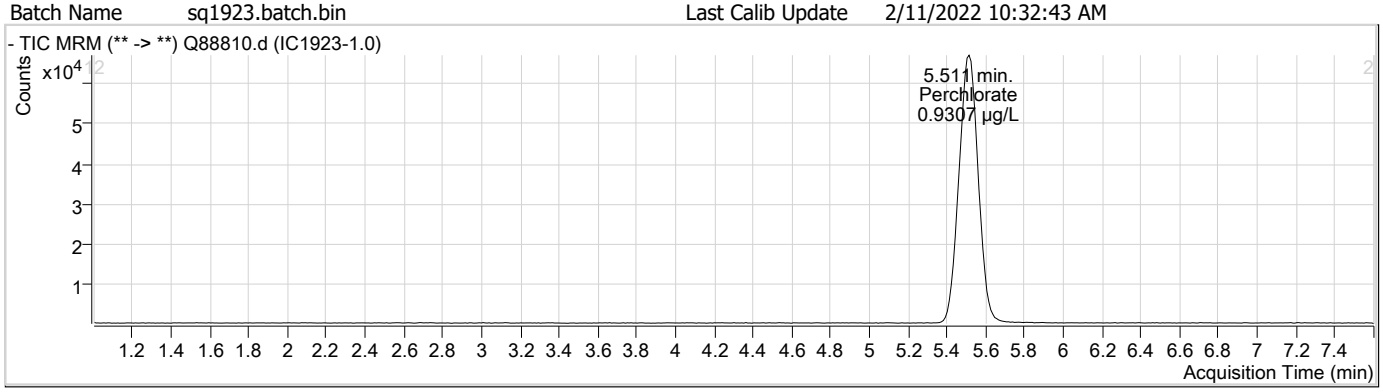






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88810.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/10/2022 3:26:09 PM
Sample Name	IC1923-1.0	Instrument	Instrument 1
Vial	P1-C3	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

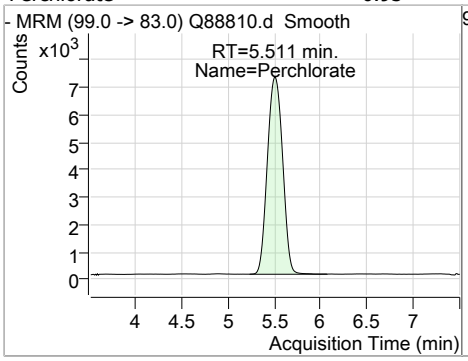


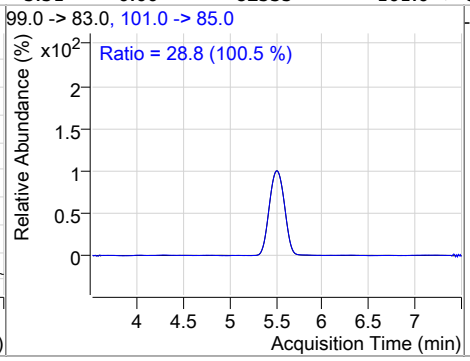
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.514	107.0 -> 89.0	356358	NoQ	5.00 µg/L	0.000
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.511	99.0 -> 83.0	82535	3.5	0.93 µg/L	100

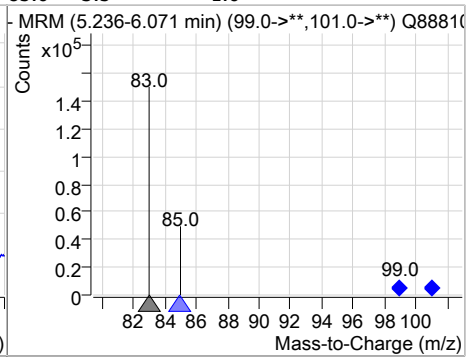
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.93	5.51	0.00	82535	101.0 -> 85.0	3.5	1.6	

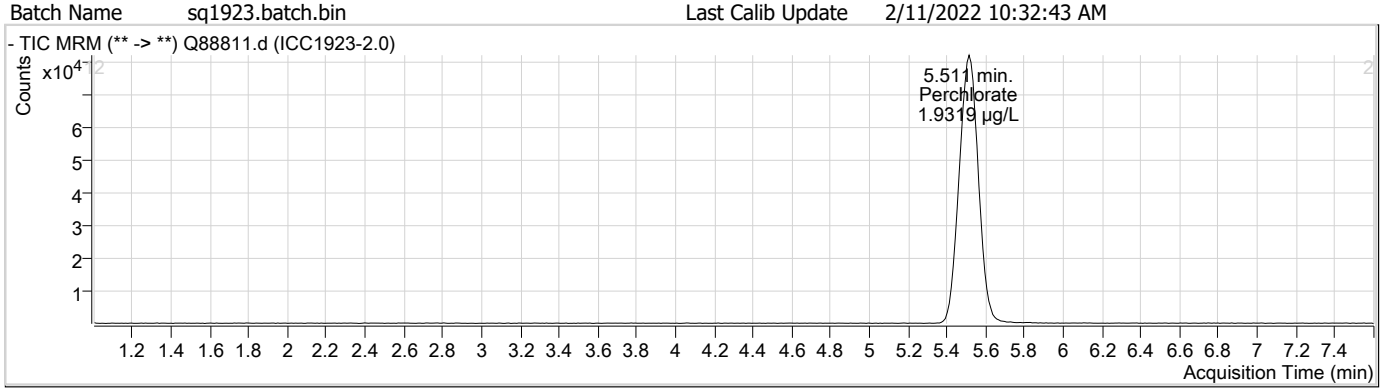






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88811.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/10/2022 3:34:33 PM
Sample Name	ICC1923-2.0	Instrument	Instrument 1
Vial	P1-C4	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

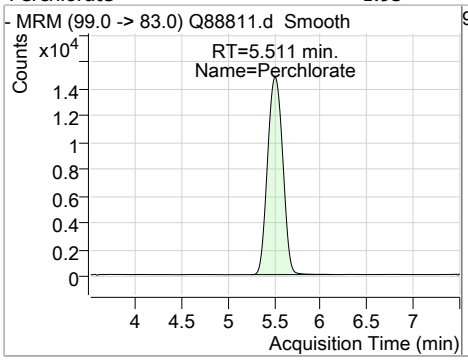


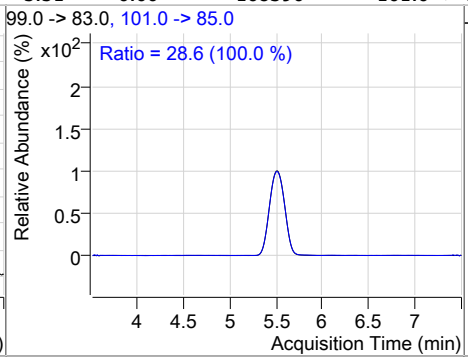
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.514	107.0 -> 89.0	350255	NoQ	5.00 µg/L	0.000
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.511	99.0 -> 83.0	168390	3.5	1.93 µg/L	100

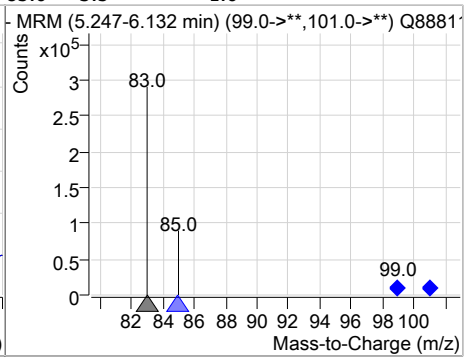
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	1.93	5.51	0.00	168390	101.0 -> 85.0	3.5	1.6	

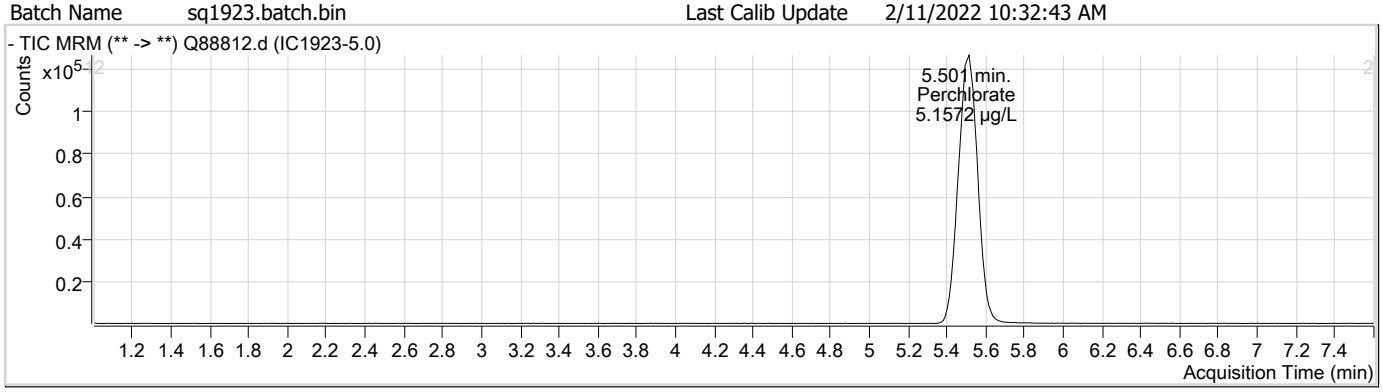






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88812.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/10/2022 3:42:57 PM
Sample Name	IC1923-5.0	Instrument	Instrument 1
Vial	P1-C5	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

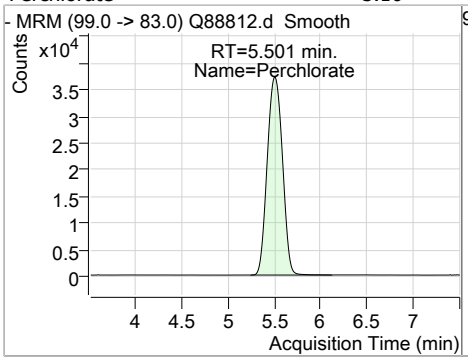


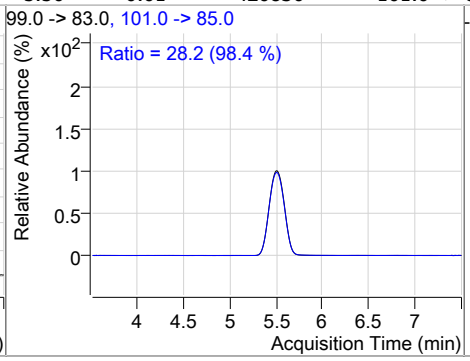
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units	Dev(Min)
Internal Standards							
Cl18O4	5.514	107.0 -> 89.0	332576	NoQ	5.00	µg/L	0.000
System Monitoring Compounds							
Target Compounds							**QValue**
Perchlorate	5.501	99.0 -> 83.0	426830	3.5	5.16	µg/L	99

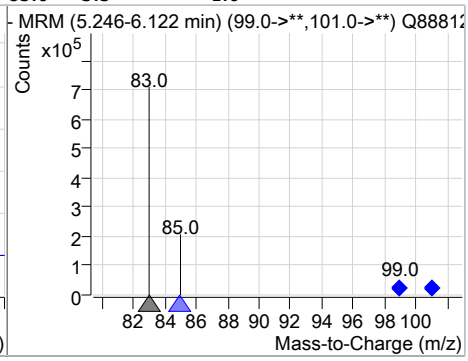
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	5.16	5.50	-0.01	426830	101.0 -> 85.0	3.5	1.6	

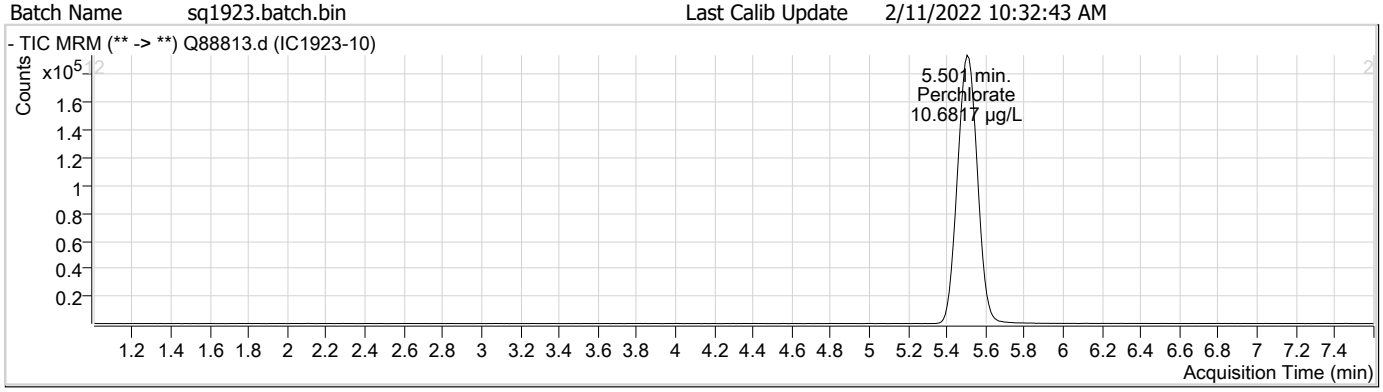






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88813.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/10/2022 3:51:21 PM
Sample Name	IC1923-10	Instrument	Instrument 1
Vial	P1-C6	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

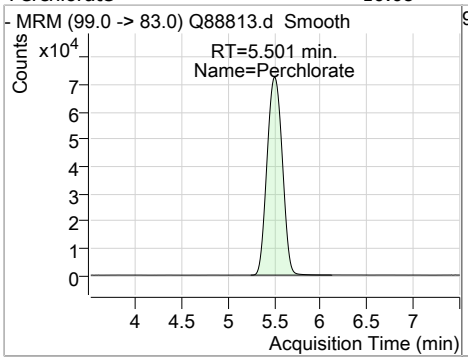


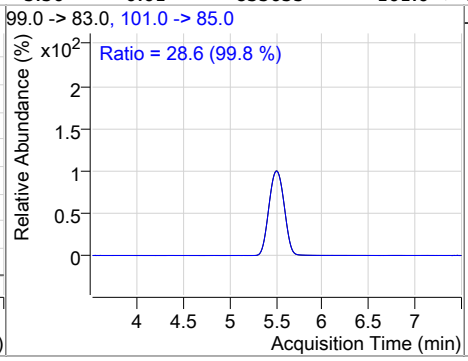
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units	Dev(Min)
Internal Standards							
Cl18O4	5.514	107.0 -> 89.0	314367	NoQ	5.00	µg/L	0.000
System Monitoring Compounds							
Target Compounds							**QValue**
Perchlorate	5.501	99.0 -> 83.0	835655	3.5	10.68	µg/L	100

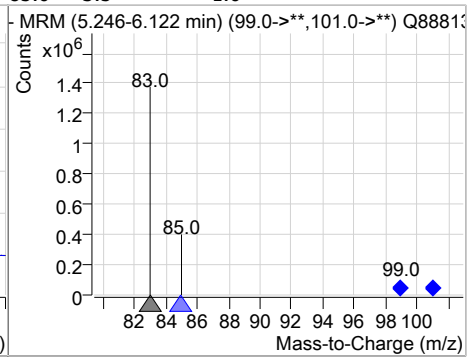
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	10.68	5.50	-0.01	835655	101.0 -> 85.0	3.5	1.6	

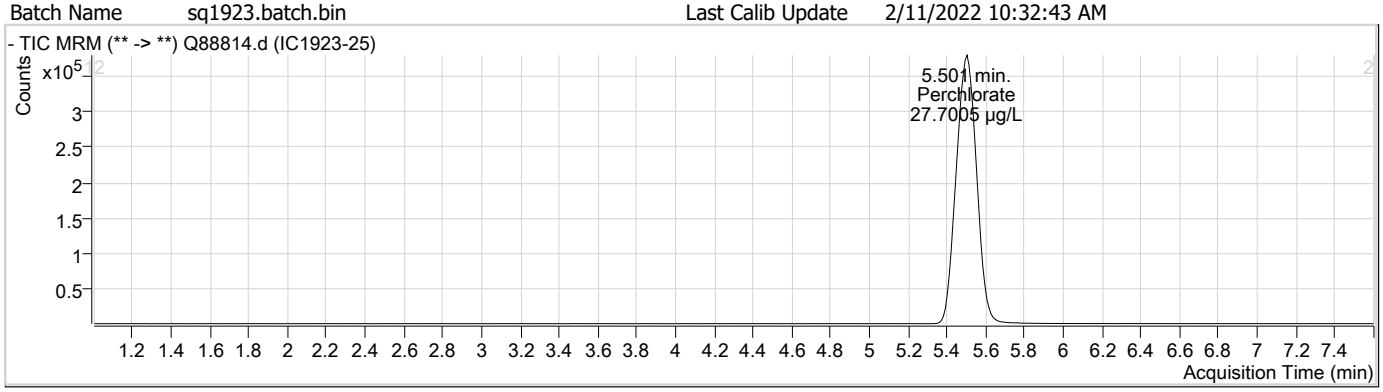






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88814.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/10/2022 3:59:45 PM
Sample Name	IC1923-25	Instrument	Instrument 1
Vial	P1-C7	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

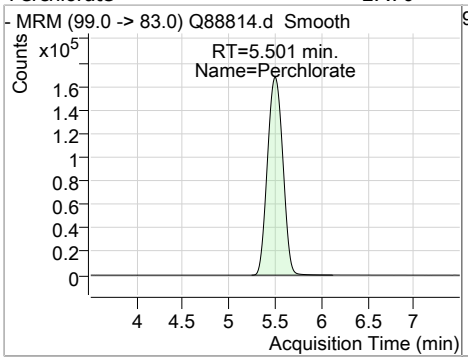


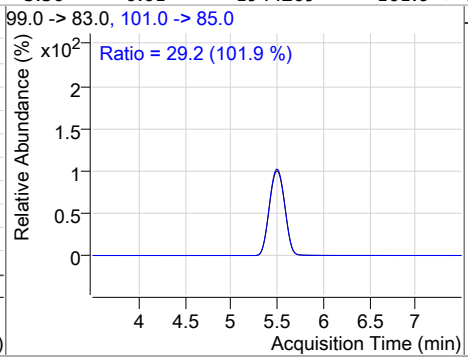
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units	Dev(Min)
Internal Standards							
Cl18O4	5.504	107.0 -> 89.0	282046	NoQ	5.00	µg/L	-0.010
System Monitoring Compounds							
Target Compounds							**QValue**
Perchlorate	5.501	99.0 -> 83.0	1944269	3.4	27.70	µg/L	99

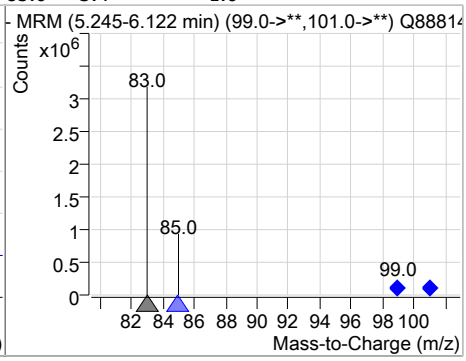
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	27.70	5.50	-0.01	1944269	101.0 -> 85.0	3.4	1.6	



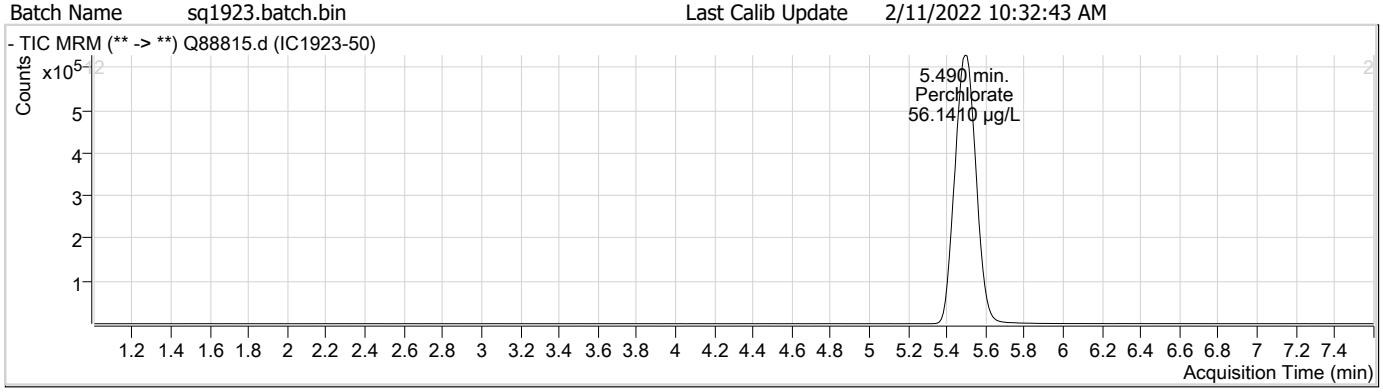




01175744

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88815.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/10/2022 4:08:09 PM
Sample Name	IC1923-50	Instrument	Instrument 1
Vial	P1-C8	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

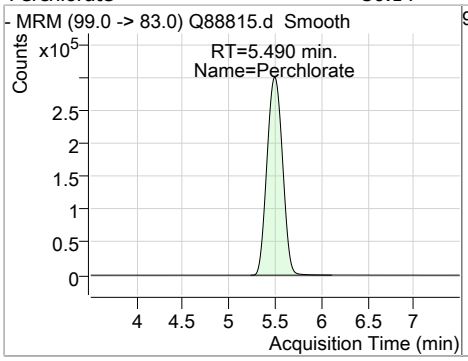


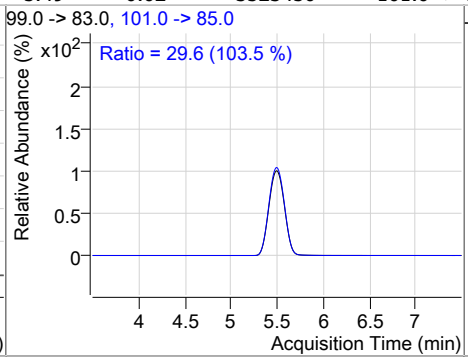
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.504	107.0 -> 89.0	252196	NoQ	5.00 µg/L	-0.010
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.490	99.0 -> 83.0	3523450	3.4	56.14 µg/L	98

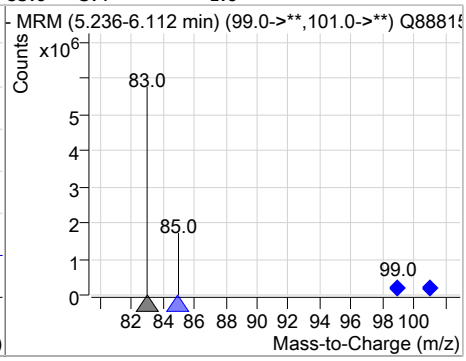
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	56.14	5.49	-0.02	3523450	101.0 -> 85.0	3.4	1.6	



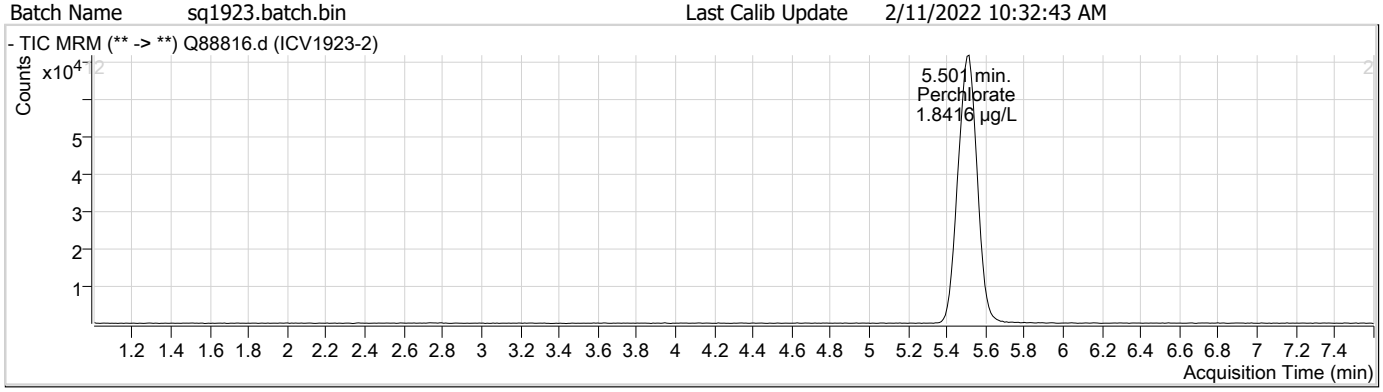




01175746

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88816.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/10/2022 4:16:33 PM
Sample Name	ICV1923-2	Instrument	Instrument 1
Vial	P1-C9	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM



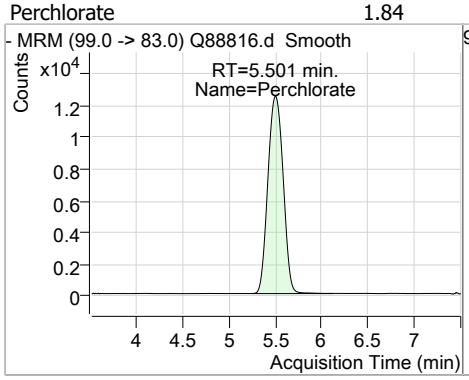
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.514	107.0 -> 89.0	311734	NoQ	5.00 µg/L	0.000
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.501	99.0 -> 83.0	142868	3.5	1.84 µg/L	100

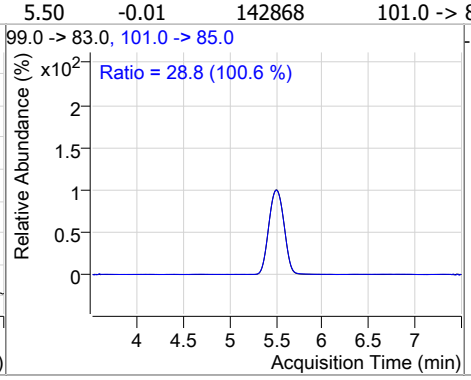
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

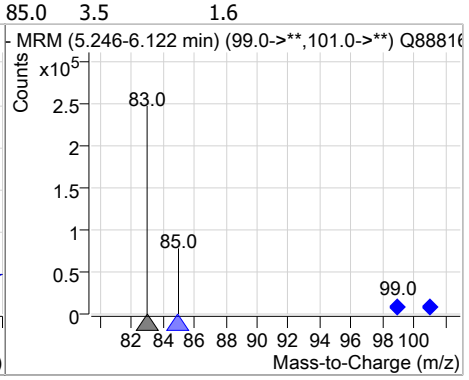
01175747

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	1.84	5.50	-0.01	142868	101.0 -> 85.0	3.5	1.6	







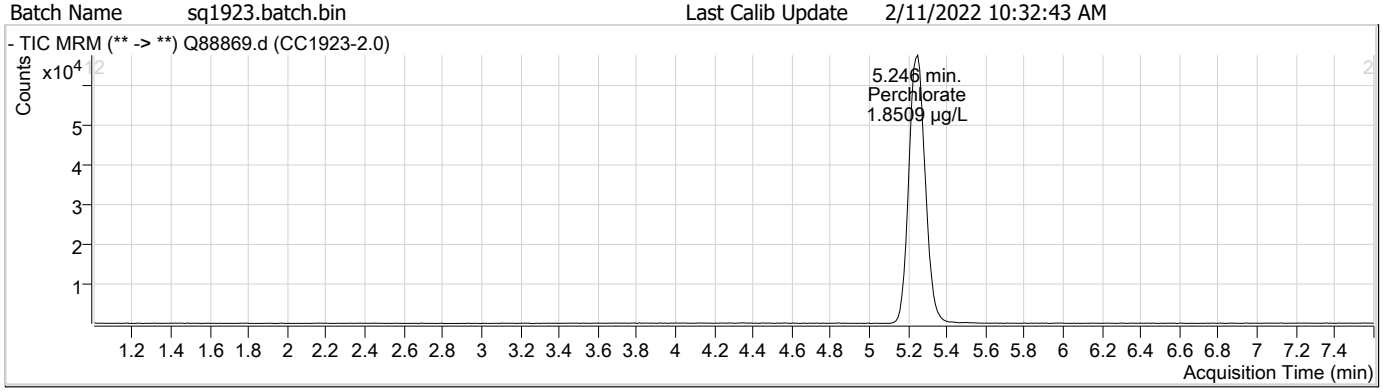
7.5.10

7

01175748

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88869.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/10/2022 11:41:46 PM
Sample Name	CC1923-2.0	Instrument	Instrument 1
Vial	P1-C4	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

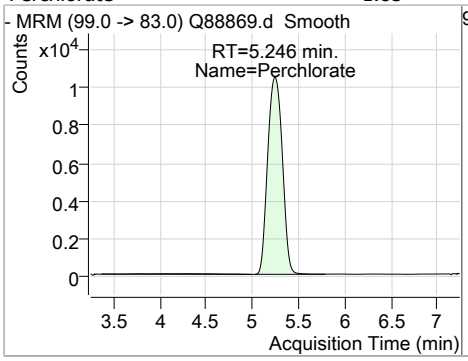


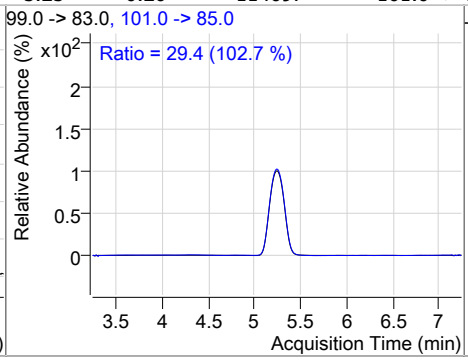
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units	Dev(Min)
Internal Standards							
Cl18O4	5.249	107.0 -> 89.0	249014	NoQ	5.00	µg/L	-0.265
System Monitoring Compounds							
Target Compounds							QValue
Perchlorate	5.246	99.0 -> 83.0	114697	3.4	1.85	µg/L	98

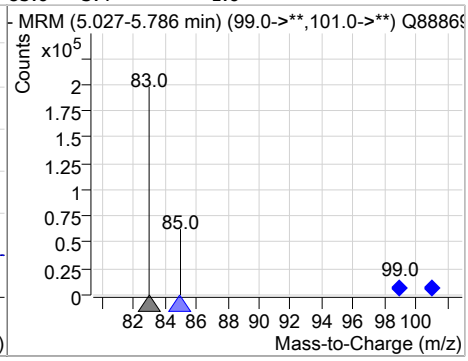
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	1.85	5.25	-0.26	114697	101.0 -> 85.0	3.4	1.6	

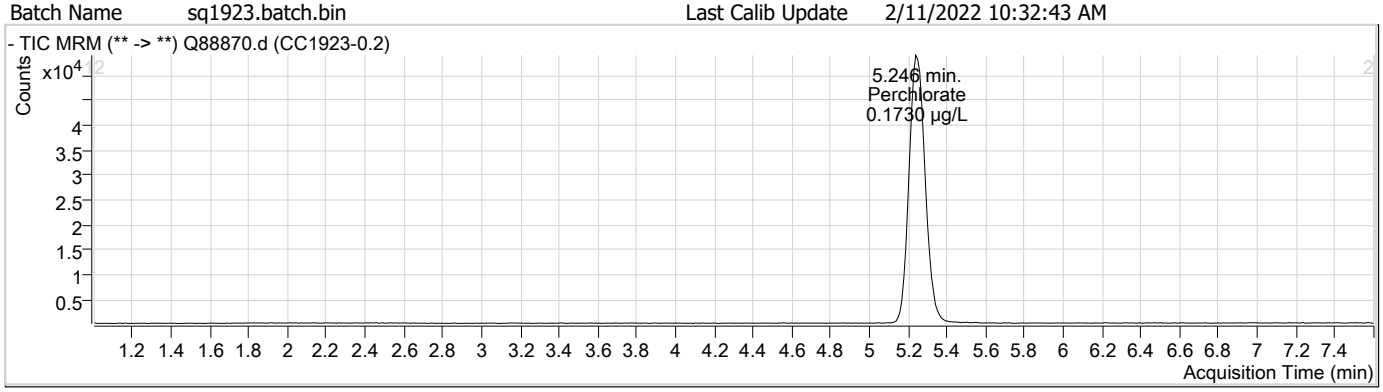






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88870.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/10/2022 11:50:09 PM
Sample Name	CC1923-0.2	Instrument	Instrument 1
Vial	P1-C1	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

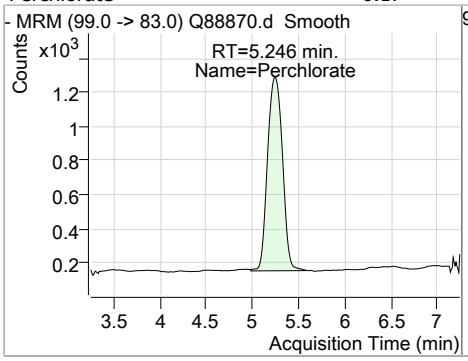


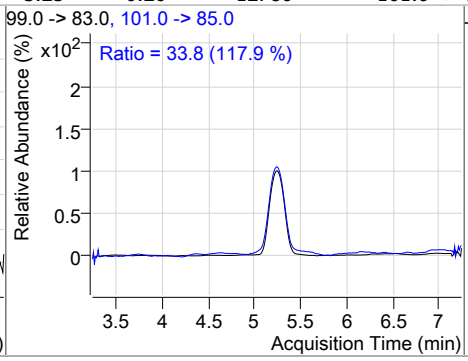
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.249	107.0 -> 89.0	296786	NoQ	5.00 µg/L	-0.265
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.246	99.0 -> 83.0	12780	3.0	0.17 µg/L	90

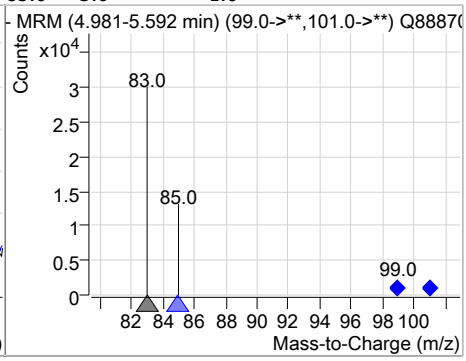
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.17	5.25	-0.26	12780	101.0 -> 85.0	3.0	1.6	



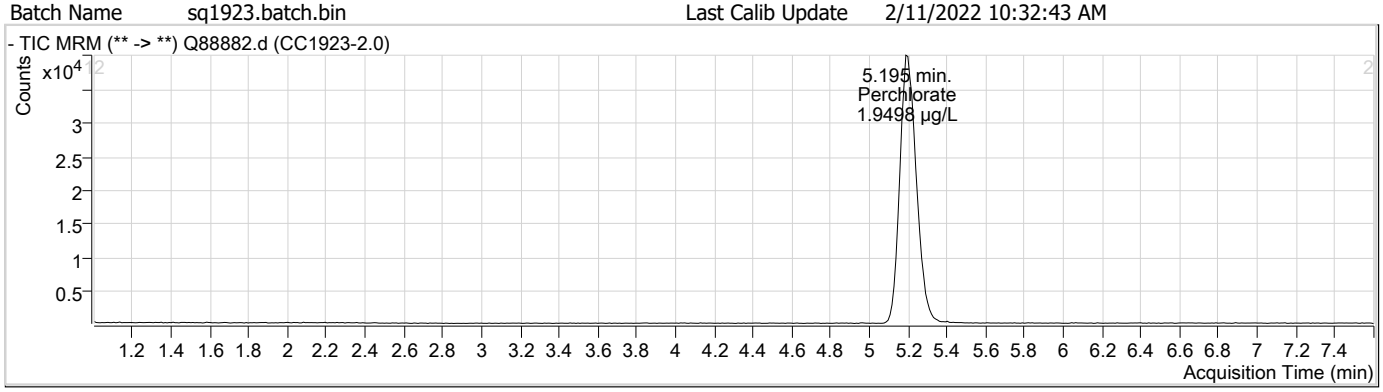




01175752

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88882.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 1:30:58 AM
Sample Name	CC1923-2.0	Instrument	Instrument 1
Vial	P1-C4	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

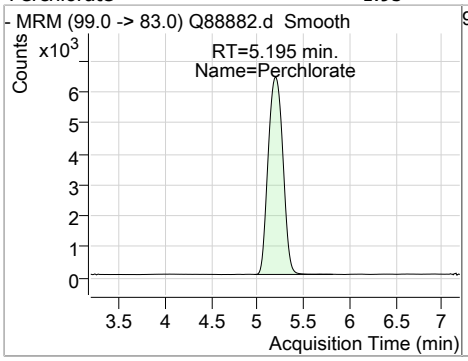


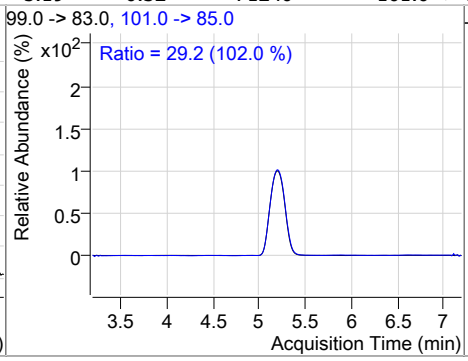
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.198	107.0 -> 89.0	146815	NoQ	5.00 µg/L	-0.316
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.195	99.0 -> 83.0	71240	3.4	1.95 µg/L	99

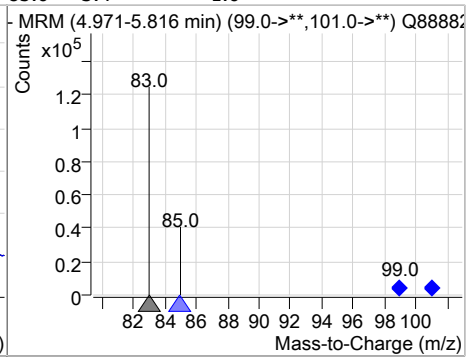
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	1.95	5.19	-0.32	71240	101.0 -> 85.0	3.4	1.6	



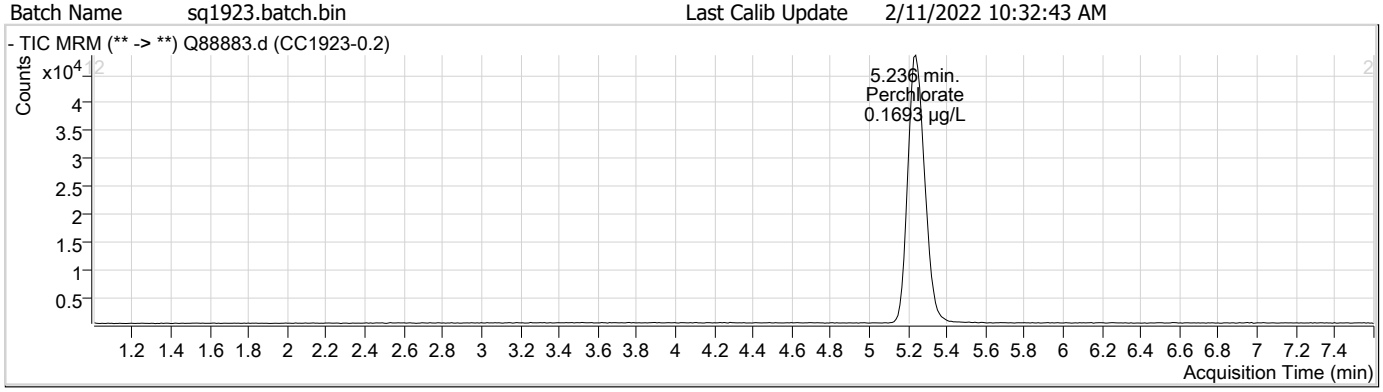




01175754

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88883.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 1:39:26 AM
Sample Name	CC1923-0.2	Instrument	Instrument 1
Vial	P1-C1	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

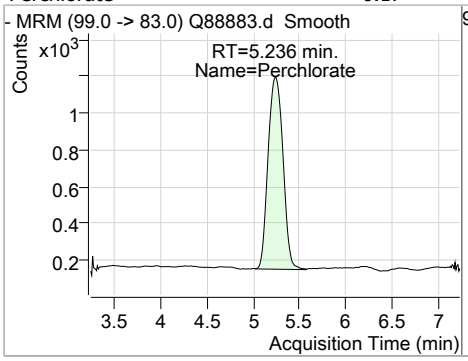


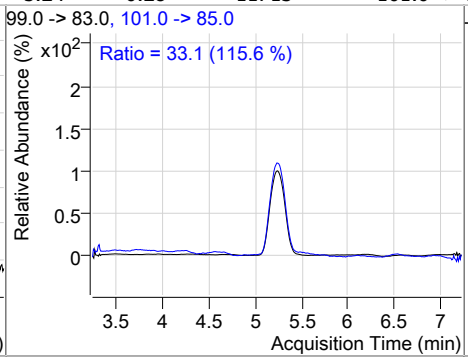
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.239	107.0 -> 89.0	278069	NoQ	5.00 µg/L	-0.275
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.236	99.0 -> 83.0	11713	3.0	0.17 µg/L	91

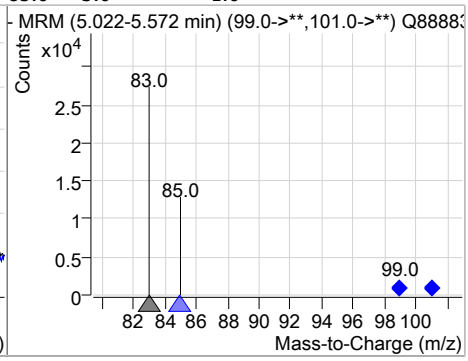
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.17	5.24	-0.28	11713	101.0 -> 85.0	3.0	1.6	

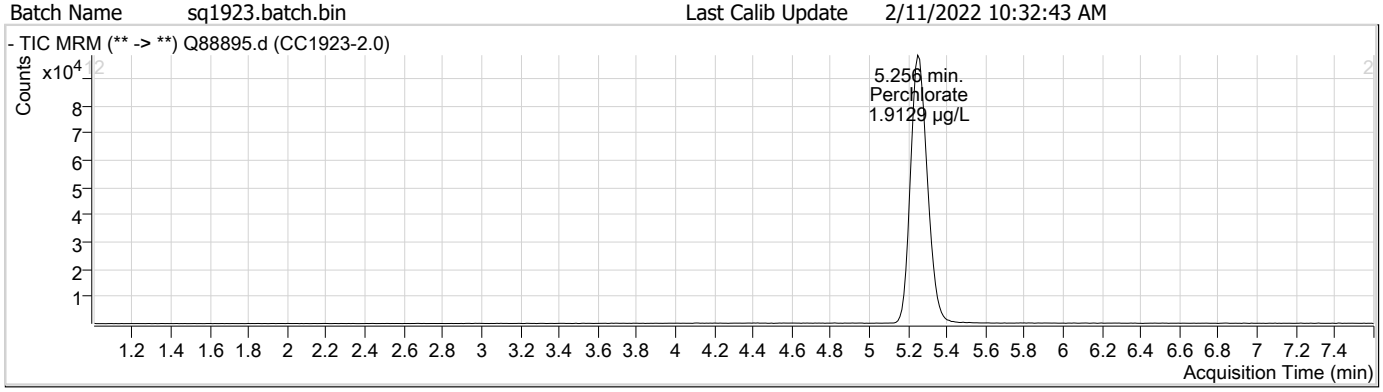






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88895.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 3:20:16 AM
Sample Name	CC1923-2.0	Instrument	Instrument 1
Vial	P1-C4	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

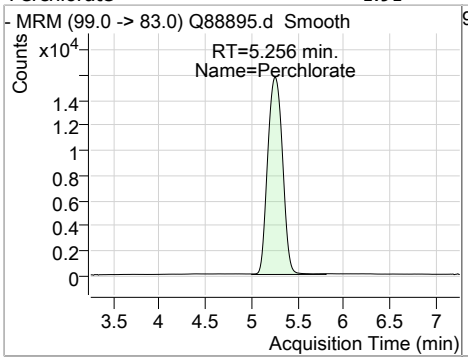


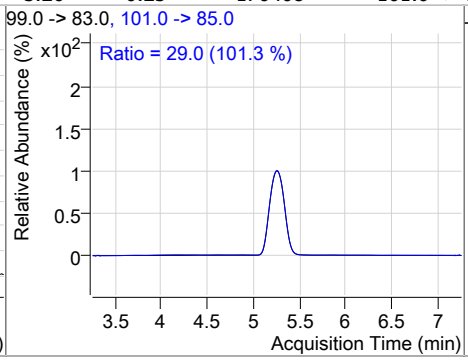
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.259	107.0 -> 89.0	370699	NoQ	5.00 µg/L	-0.255
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.256	99.0 -> 83.0	176468	3.4	1.91 µg/L	99

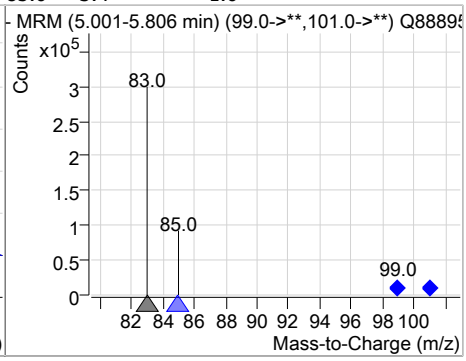
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	1.91	5.26	-0.25	176468	101.0 -> 85.0	3.4	1.6	

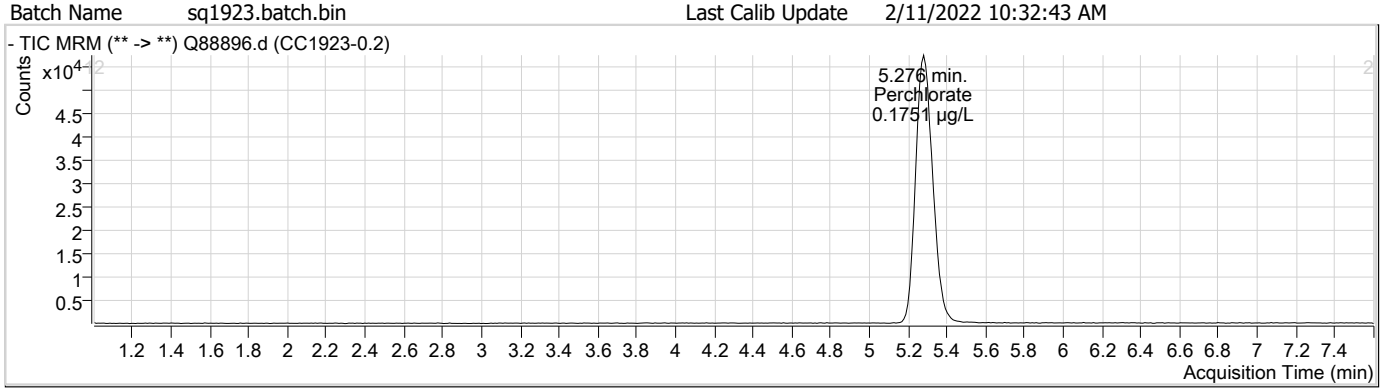






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88896.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 3:28:40 AM
Sample Name	CC1923-0.2	Instrument	Instrument 1
Vial	P1-C1	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM



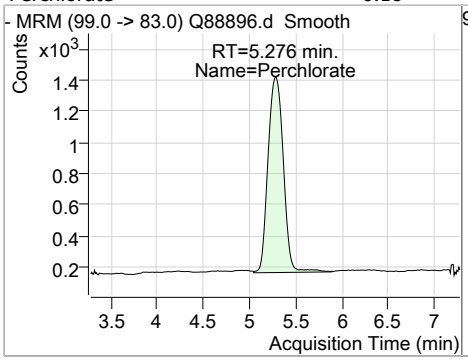
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.280	107.0 -> 89.0	332886	NoQ	5.00 µg/L	-0.234
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.276	99.0 -> 83.0	14505	3.2	0.18 µg/L	94

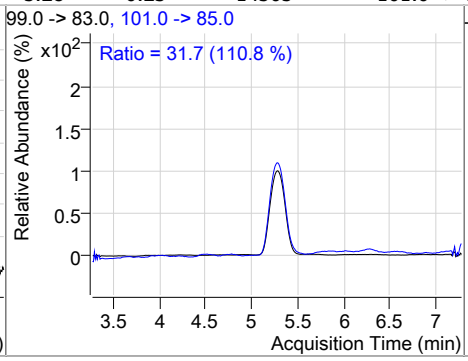
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

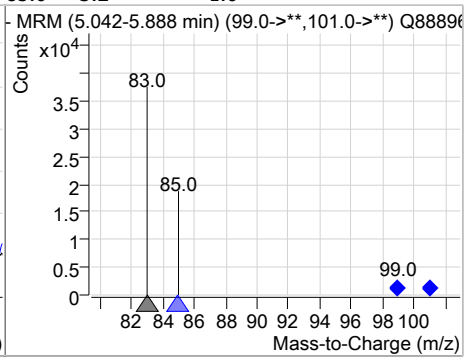
01175759

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.18	5.28	-0.23	14505	101.0 -> 85.0	3.2	1.6	



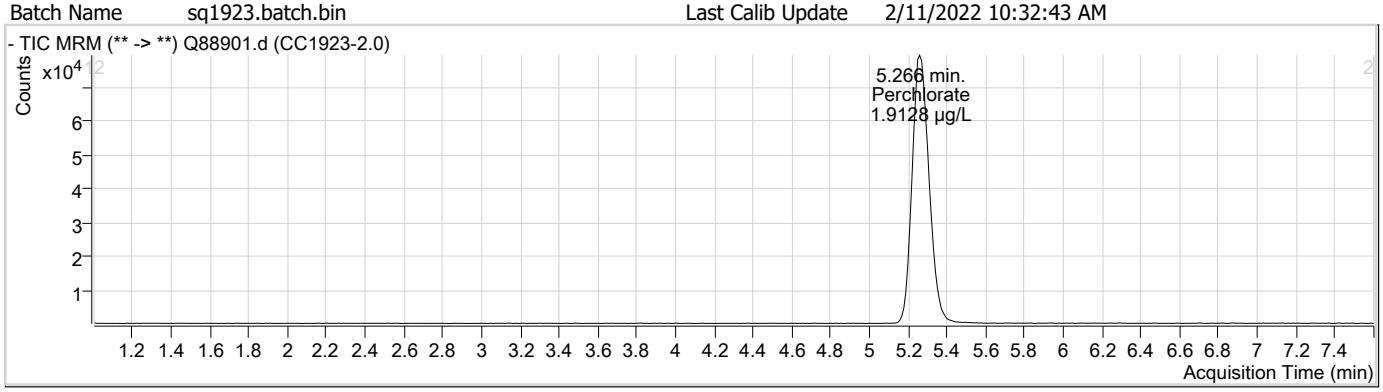




01175760

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88901.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 4:10:39 AM
Sample Name	CC1923-2.0	Instrument	Instrument 1
Vial	P1-C4	Sample Information	OP89689,SQ1923,10,,,10,1,water
DA Method File	6850_021022_SQ1923.quantmethod.xml	Comment	
Batch Name	sq1923.batch.bin	Last Calib Update	2/11/2022 10:32:43 AM

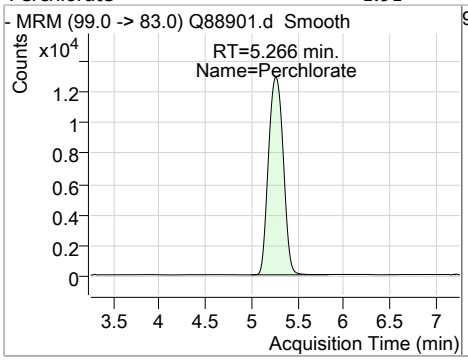


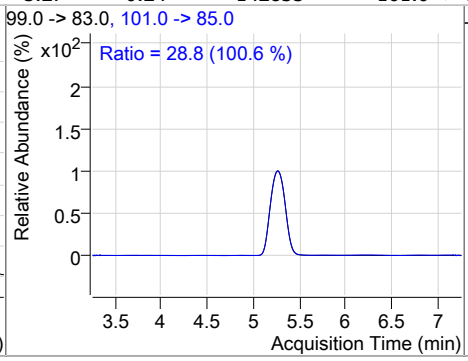
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.259	107.0 -> 89.0	300055	NoQ	5.00 µg/L	-0.255
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.266	99.0 -> 83.0	142833	3.5	1.91 µg/L	100

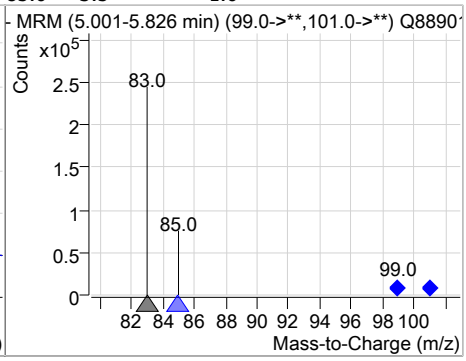
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	1.91	5.27	-0.24	142833	101.0 -> 85.0	3.5	1.6	



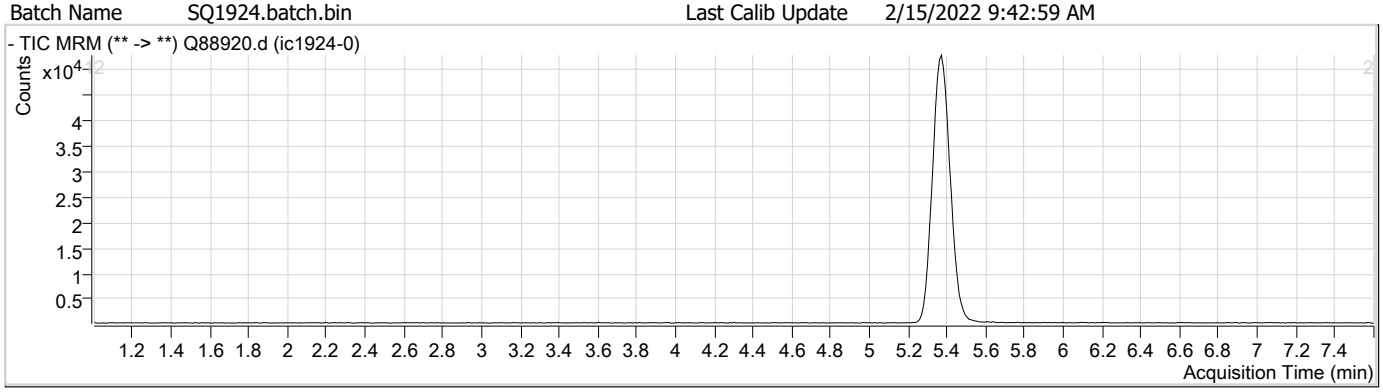




01175762

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88920.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 4:17:03 PM
Sample Name	ic1924-0	Instrument	Instrument 1
Vial	P1-A1	Sample Information	OP89660,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM



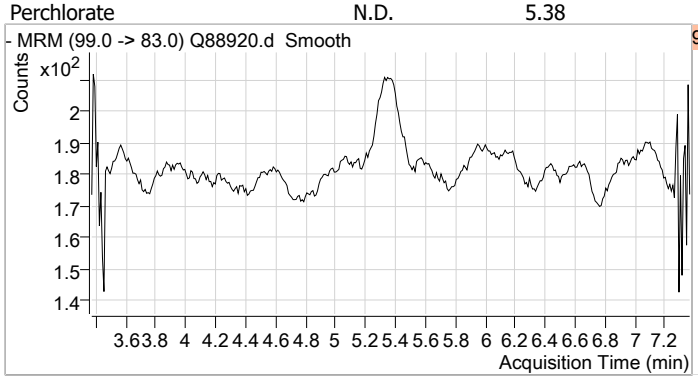
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.372	107.0 -> 89.0	335622	NoQ	5.00 µg/L	-0.010
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	-	99.0 -> 83.0		-	N.D.	

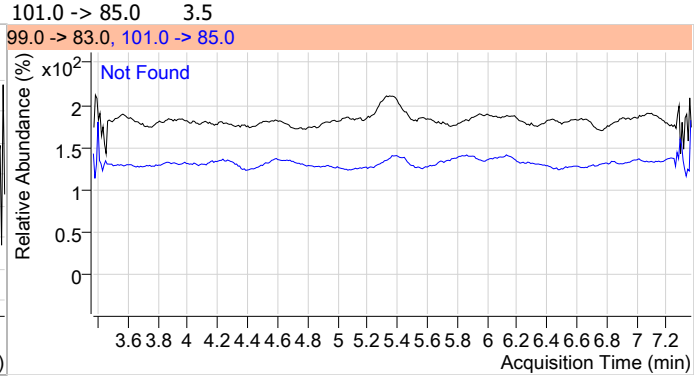
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

01175763

Quantitative Analysis Report for Perchlorate by 6850

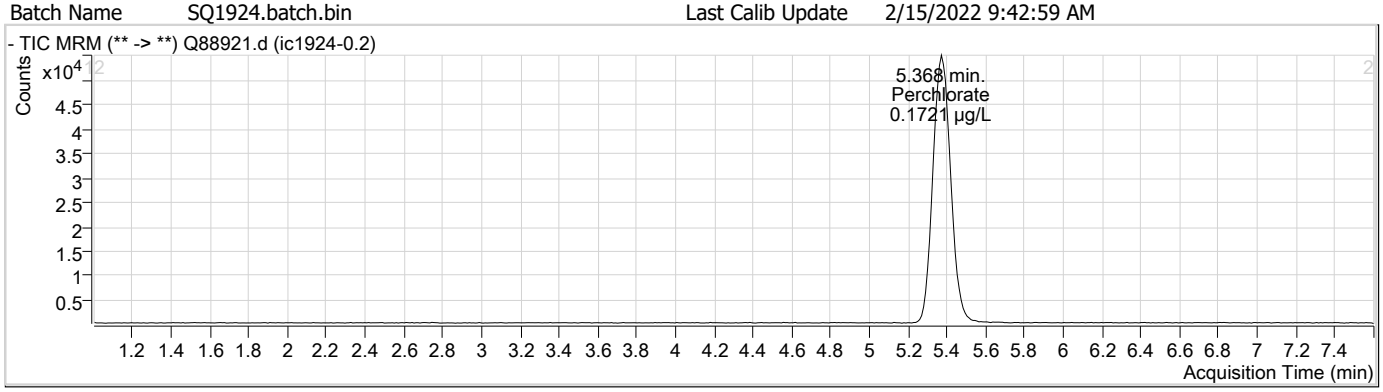
Compound	Conc.	Exp RT	QIon	Exp Ratio
Perchlorate	N.D.	5.38	101.0 -> 85.0	3.5





Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88921.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 4:25:28 PM
Sample Name	ic1924-0.2	Instrument	Instrument 1
Vial	P1-A4	Sample Information	OP89660,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

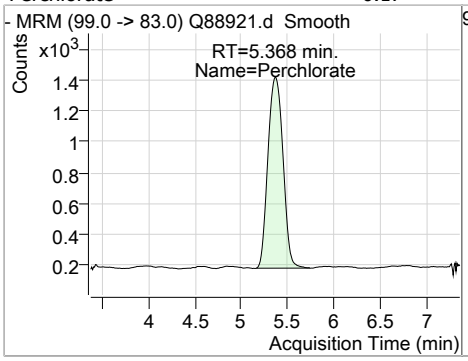


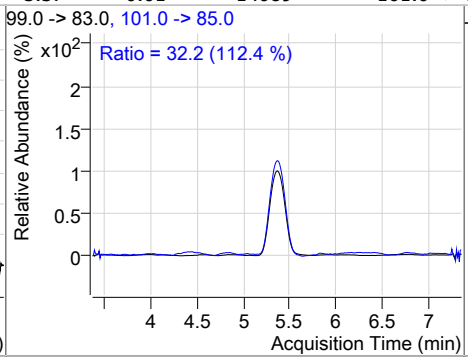
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.372	107.0 -> 89.0	332616	NoQ	5.00 µg/L	-0.010
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.368	99.0 -> 83.0	14089	3.1	0.17 µg/L	93

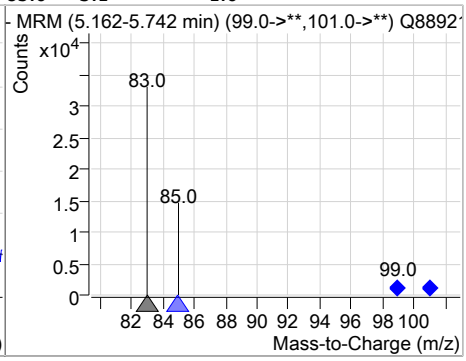
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.17	5.37	-0.01	14089	101.0 -> 85.0	3.1	1.6	

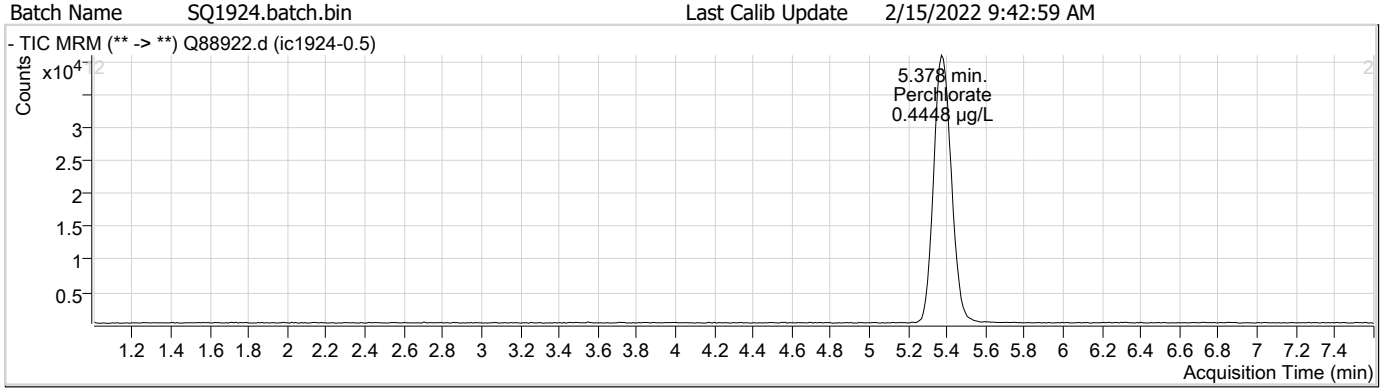






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88922.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 4:33:53 PM
Sample Name	ic1924-0.5	Instrument	Instrument 1
Vial	P2-E3	Sample Information	OP89660,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

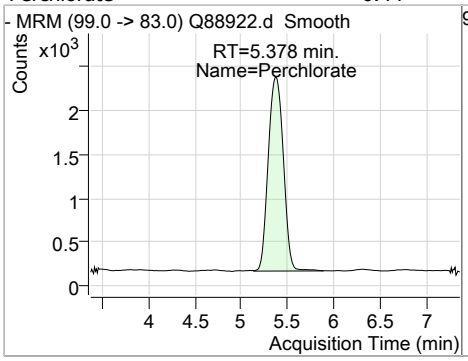


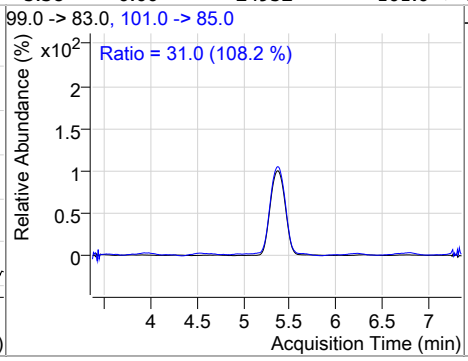
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.372	107.0 -> 89.0	227945	NoQ	5.00 µg/L	-0.010
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.378	99.0 -> 83.0	24952	3.2	0.44 µg/L	95

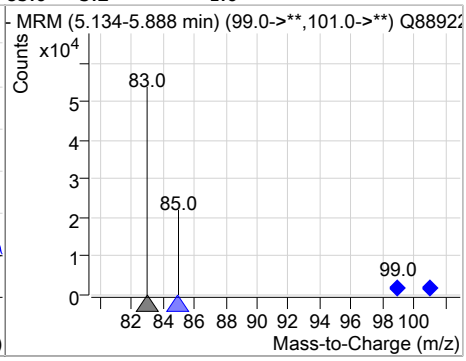
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.44	5.38	0.00	24952	101.0 -> 85.0	3.2	1.6	

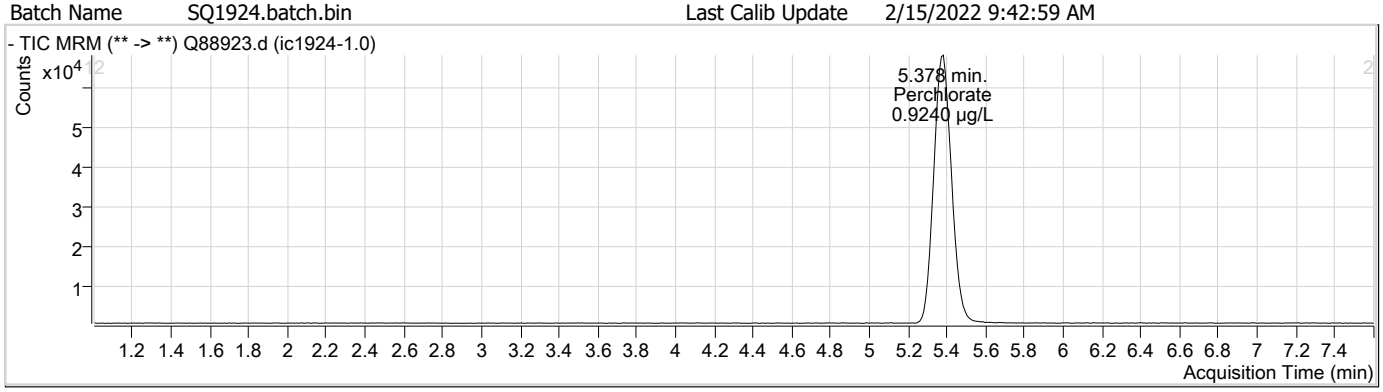






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88923.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 4:42:18 PM
Sample Name	ic1924-1.0	Instrument	Instrument 1
Vial	P2-E4	Sample Information	OP89660,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

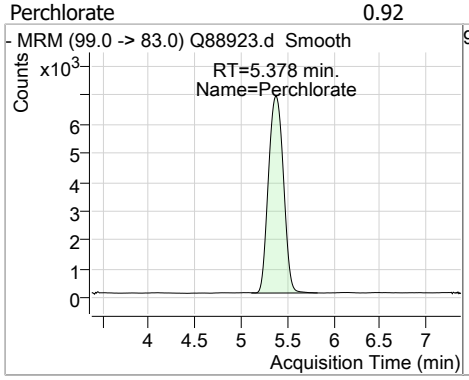


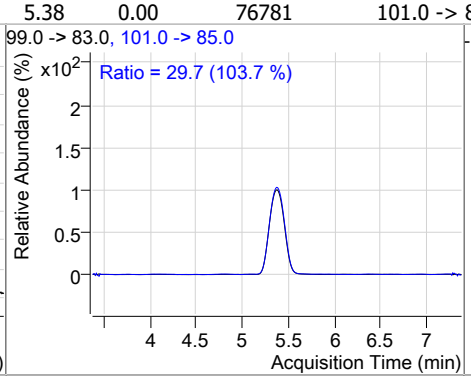
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.382	107.0 -> 89.0	337630	NoQ	5.00 µg/L	0.000
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.378	99.0 -> 83.0	76781	3.4	0.92 µg/L	98

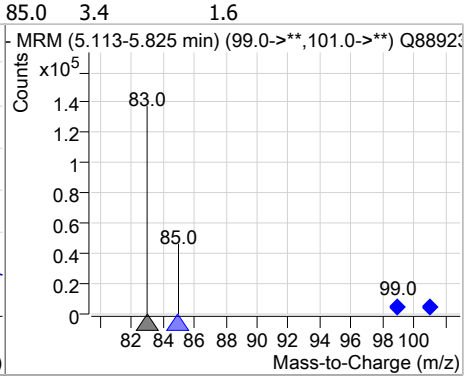
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.92	5.38	0.00	76781	101.0 -> 85.0	3.4	1.6	

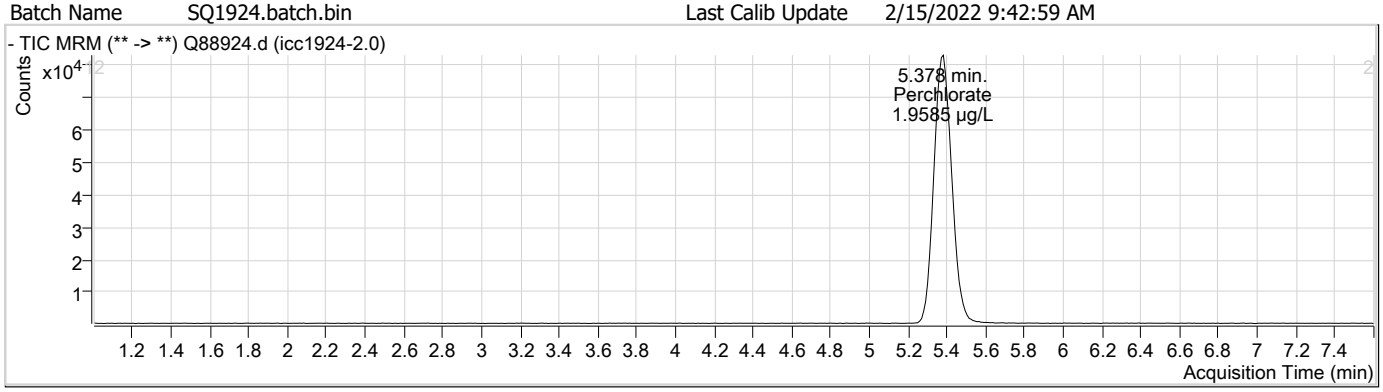






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88924.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 4:50:42 PM
Sample Name	icc1924-2.0	Instrument	Instrument 1
Vial	P1-A3	Sample Information	OP89660,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

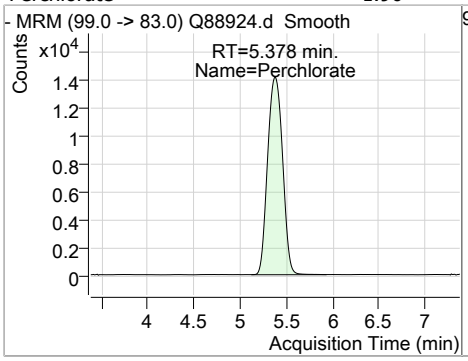


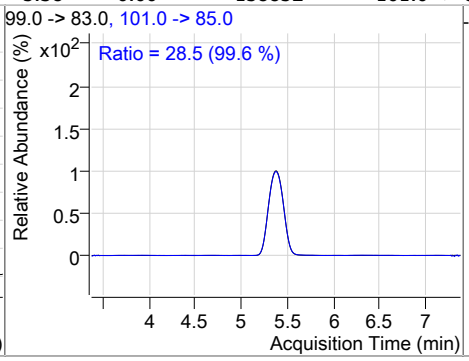
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.382	107.0 -> 89.0	329542	NoQ	5.00 µg/L	0.000
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.378	99.0 -> 83.0	158852	3.5	1.96 µg/L	100

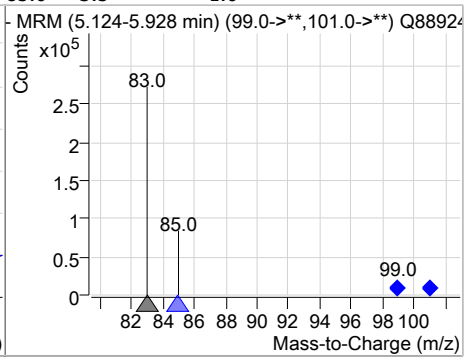
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	1.96	5.38	0.00	158852	101.0 -> 85.0	3.5	1.6	

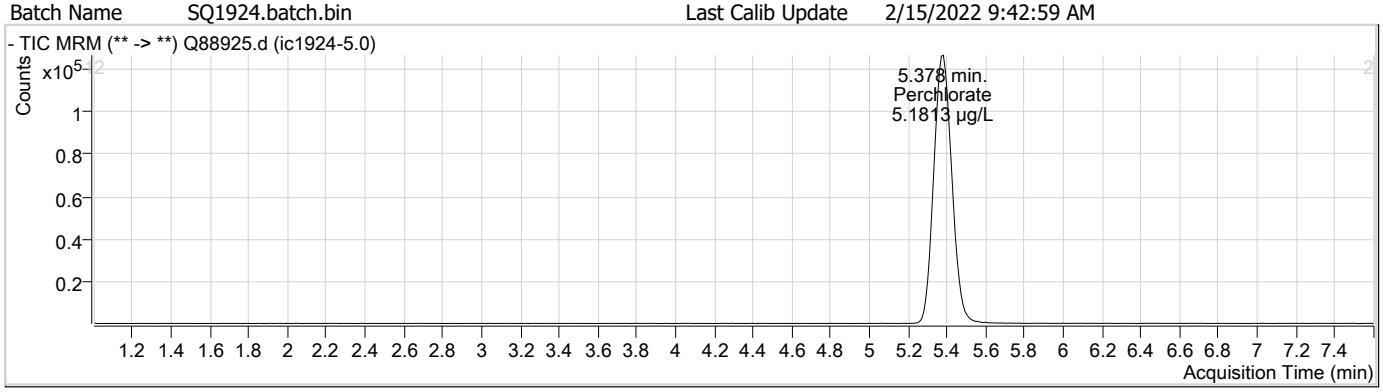






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88925.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 4:59:06 PM
Sample Name	ic1924-5.0	Instrument	Instrument 1
Vial	P2-E6	Sample Information	OP89660,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

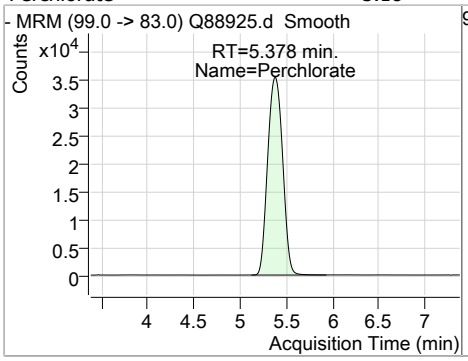


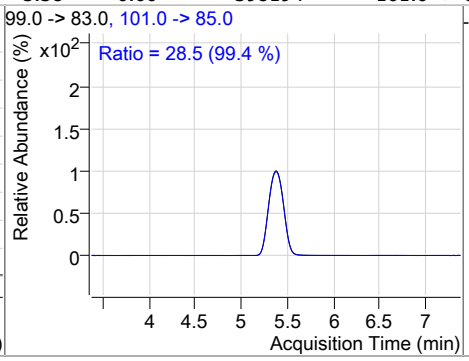
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.382	107.0 -> 89.0	312243	NoQ	5.00 µg/L	0.000
System Monitoring Compounds						
Target Compounds						QValue
Perchlorate	5.378	99.0 -> 83.0	398194	3.5	5.18 µg/L	100

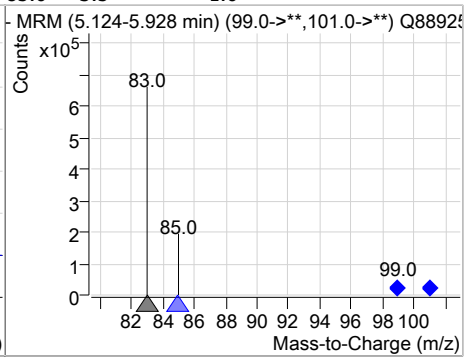
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	5.18	5.38	0.00	398194	101.0 -> 85.0	3.5	1.6	

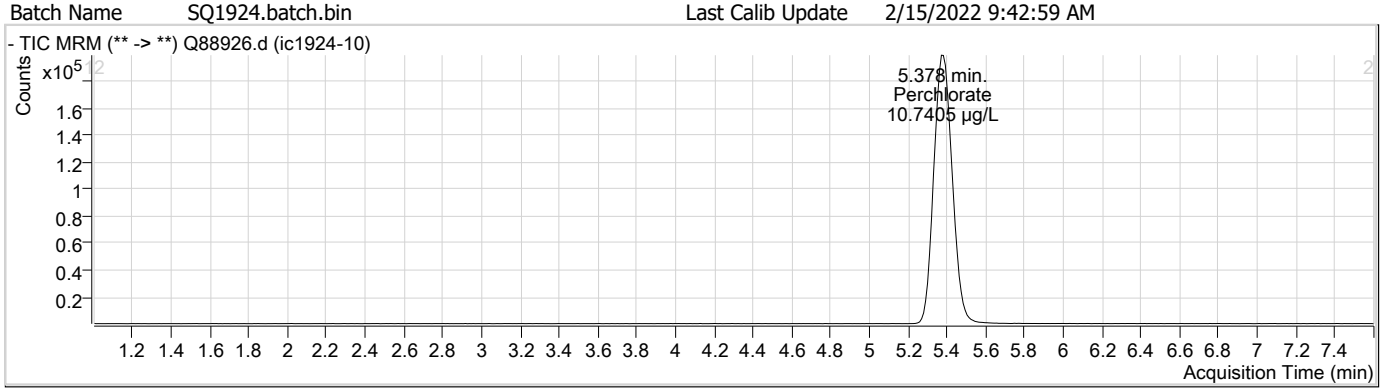






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88926.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 5:07:31 PM
Sample Name	ic1924-10	Instrument	Instrument 1
Vial	P2-E7	Sample Information	OP89660,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

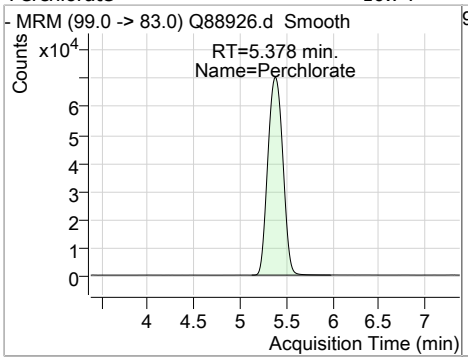


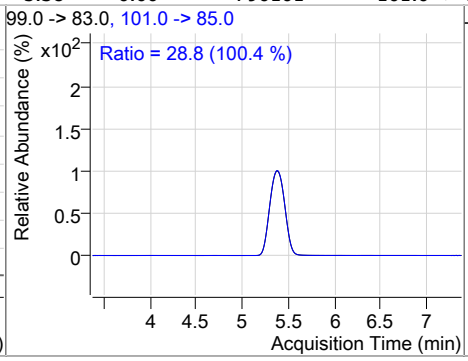
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units	Dev(Min)
Internal Standards							
Cl18O4	5.382	107.0 -> 89.0	301174	NoQ	5.00	µg/L	0.000
System Monitoring Compounds							
Target Compounds							QValue
Perchlorate	5.378	99.0 -> 83.0	796161	3.5	10.74	µg/L	100

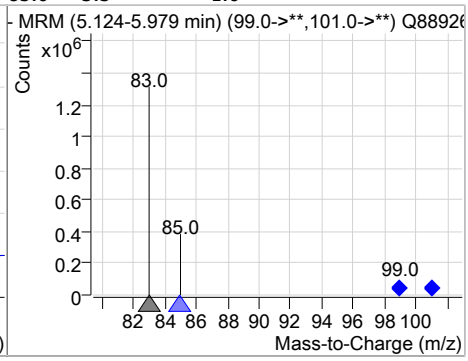
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	10.74	5.38	0.00	796161	101.0 -> 85.0	3.5	1.6	

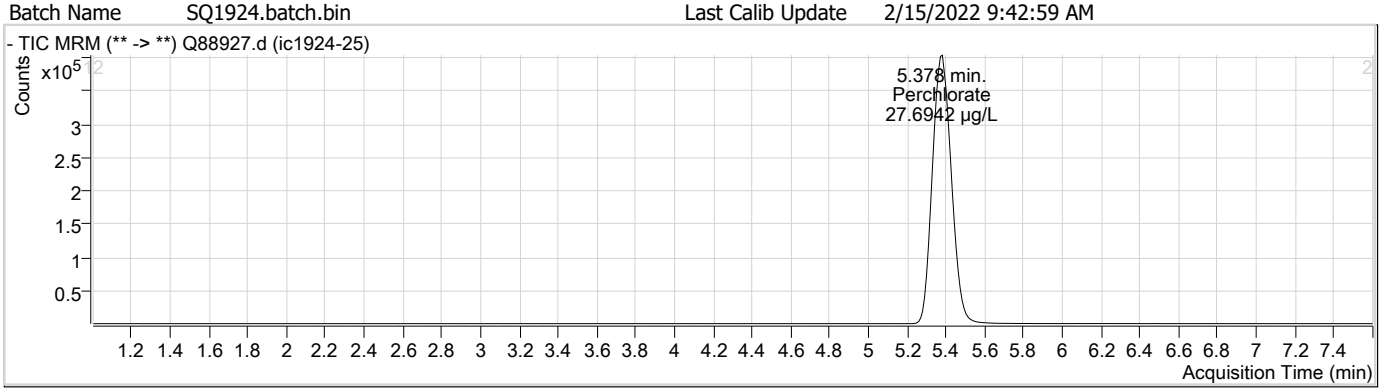






Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88927.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 5:15:56 PM
Sample Name	ic1924-25	Instrument	Instrument 1
Vial	P2-E8	Sample Information	OP89660,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

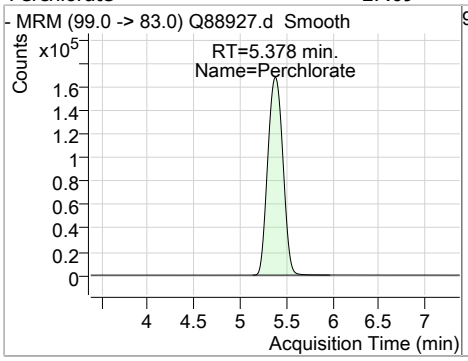


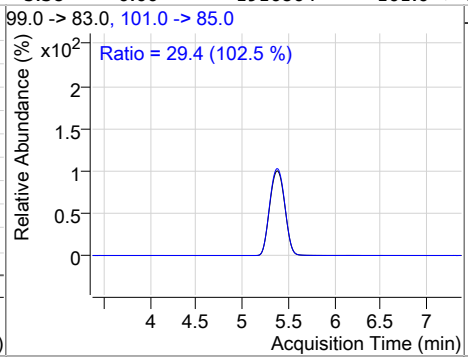
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units	Dev(Min)
Internal Standards							
Cl18O4	5.382	107.0 -> 89.0	281217	NoQ	5.00	µg/L	0.000
System Monitoring Compounds							
Target Compounds							**QValue**
Perchlorate	5.378	99.0 -> 83.0	1916864	3.4	27.69	µg/L	99

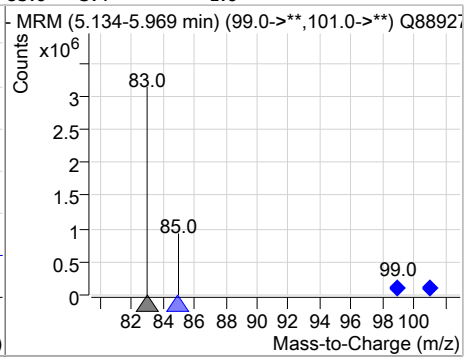
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	27.69	5.38	0.00	1916864	101.0 -> 85.0	3.4	1.6	



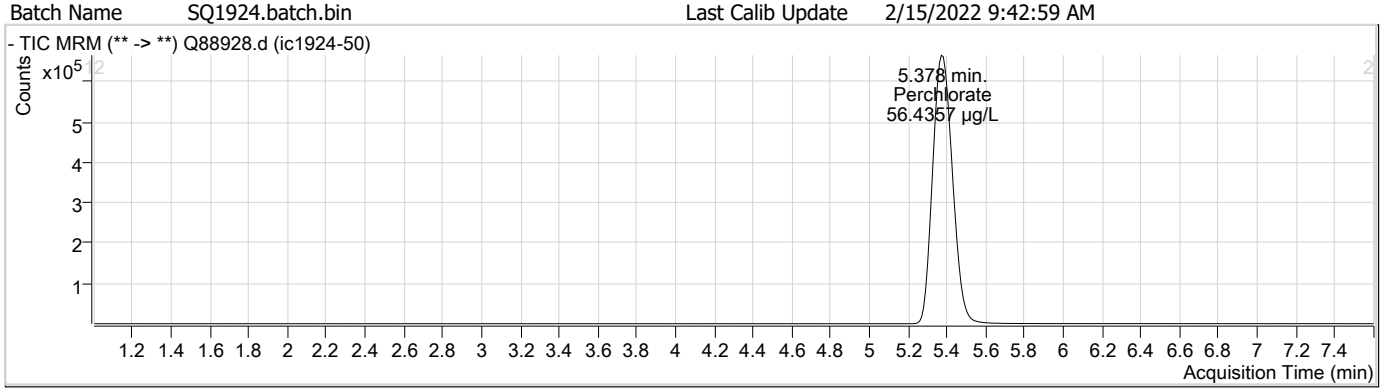




01175778

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88928.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 5:24:20 PM
Sample Name	ic1924-50	Instrument	Instrument 1
Vial	P2-E9	Sample Information	OP89660,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

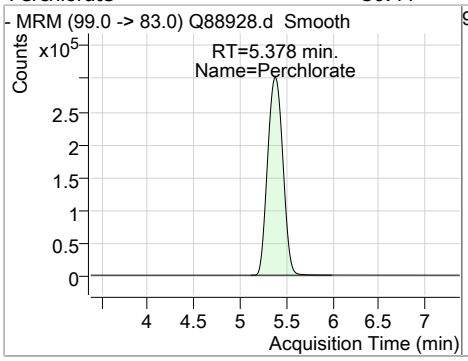


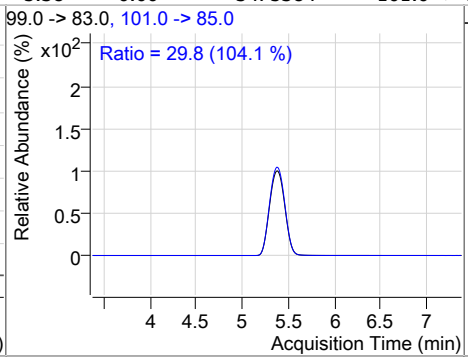
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.382	107.0 -> 89.0	250201	NoQ	5.00 µg/L	0.000
System Monitoring Compounds						
Target Compounds						QValue
Perchlorate	5.378	99.0 -> 83.0	3475384	3.4	56.44 µg/L	98

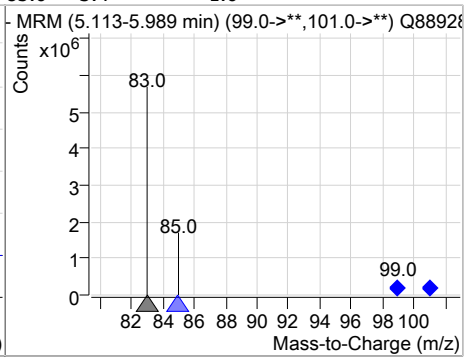
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	56.44	5.38	0.00	3475384	101.0 -> 85.0	3.4	1.6	



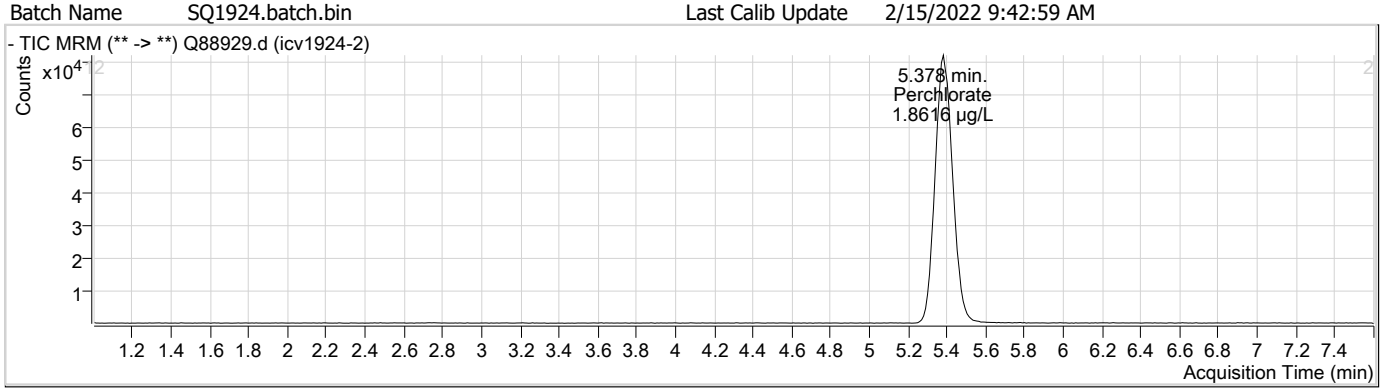




01175780

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88929.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 5:32:45 PM
Sample Name	icv1924-2	Instrument	Instrument 1
Vial	P2-F1	Sample Information	OP89660,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM



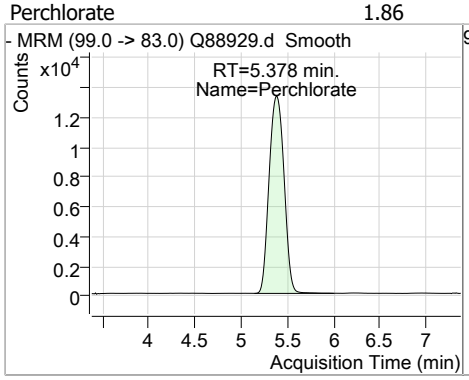
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.382	107.0 -> 89.0	325506	NoQ	5.00 µg/L	0.000
System Monitoring Compounds						
Target Compounds						QValue
Perchlorate	5.378	99.0 -> 83.0	149146	3.5	1.86 µg/L	99

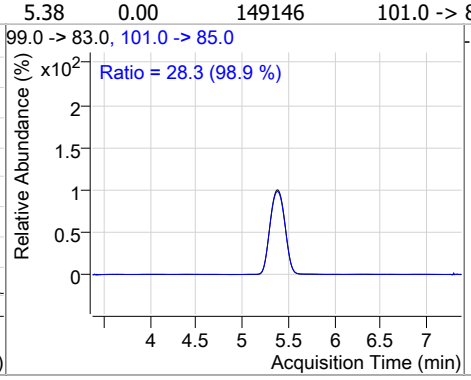
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

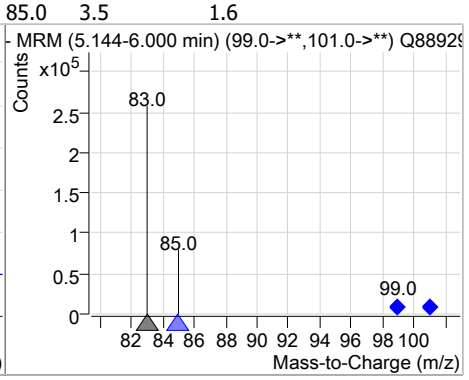
01175781

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	1.86	5.38	0.00	149146	101.0 -> 85.0	3.5	1.6	







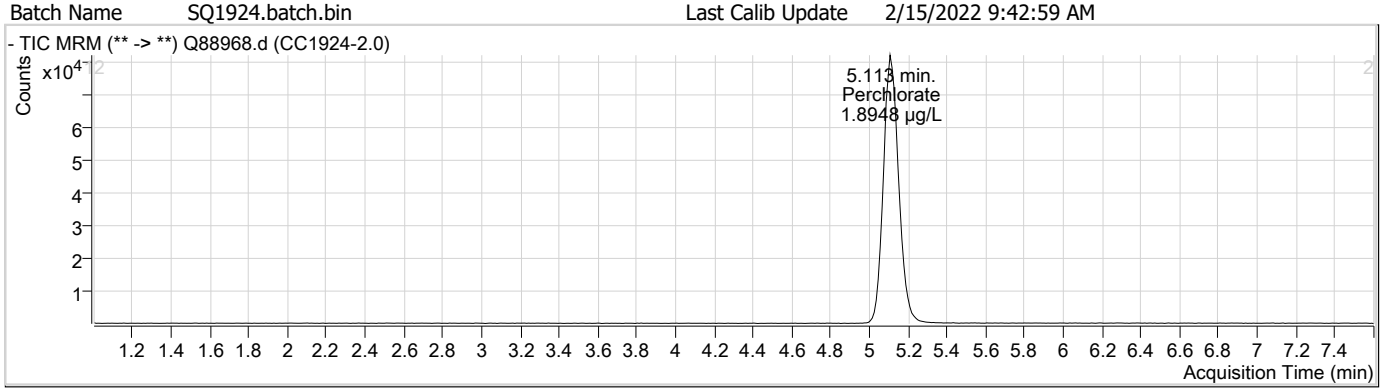
7.5.27

7

01175782

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88968.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 11:00:40 PM
Sample Name	CC1924-2.0	Instrument	Instrument 1
Vial	P1-A3	Sample Information	OP89689,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

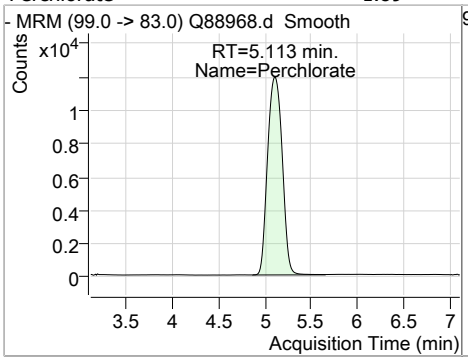


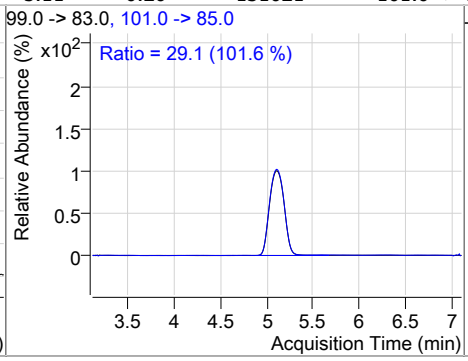
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.117	107.0 -> 89.0	280937	NoQ	5.00 µg/L	-0.265
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.113	99.0 -> 83.0	131021	3.4	1.89 µg/L	99

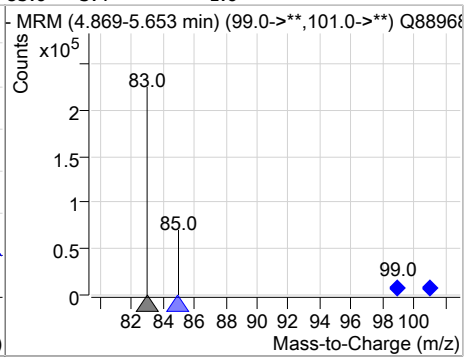
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	1.89	5.11	-0.26	131021	101.0 -> 85.0	3.4	1.6	



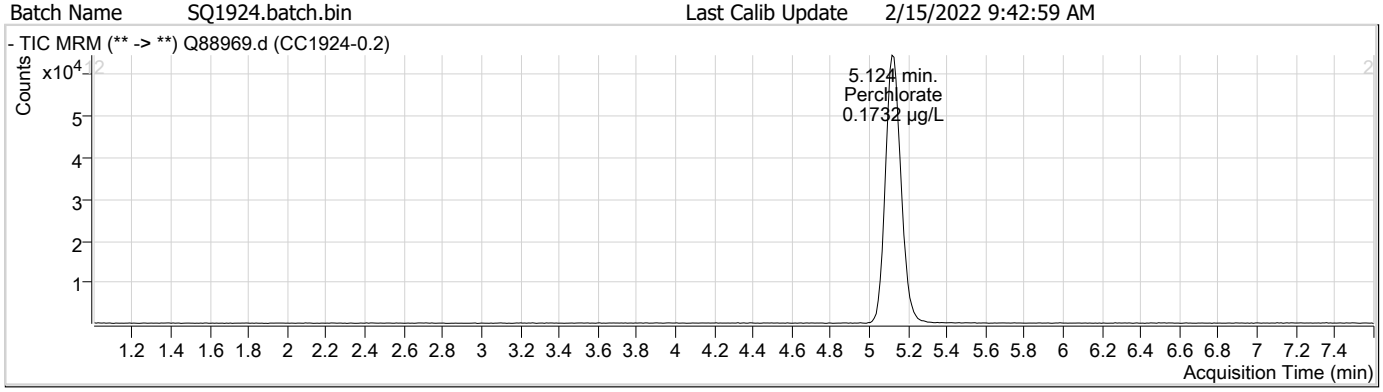




01175784

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88969.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/11/2022 11:09:04 PM
Sample Name	CC1924-0.2	Instrument	Instrument 1
Vial	P1-A4	Sample Information	OP89689,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM



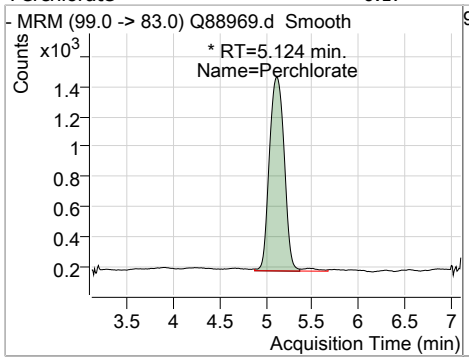
Compound	RT	QIon	Resp.	Q-ratio	Conc.	Units		Dev(Min)
Internal Standards								
Cl18O4	5.117	107.0 -> 89.0	340765	NoQ	5.00	µg/L		-0.265
System Monitoring Compounds								
Target Compounds								QValue
Perchlorate	5.124	99.0 -> 83.0	14525	3.2	0.17	µg/L	m	94

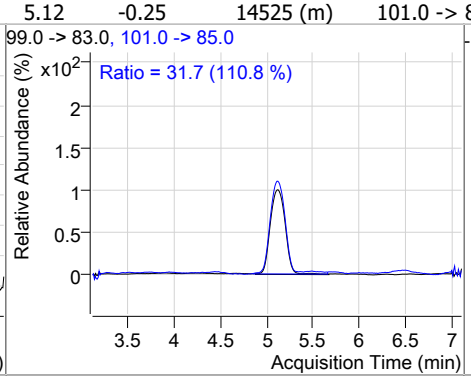
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

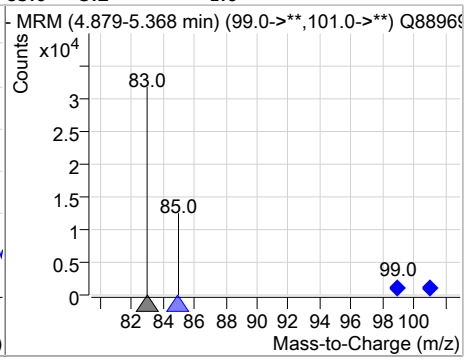
Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
02/16/22 12:16

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.17	5.12	-0.25	14525 (m)	101.0 -> 85.0	3.2	1.6	







Manual Integration Approval Summary

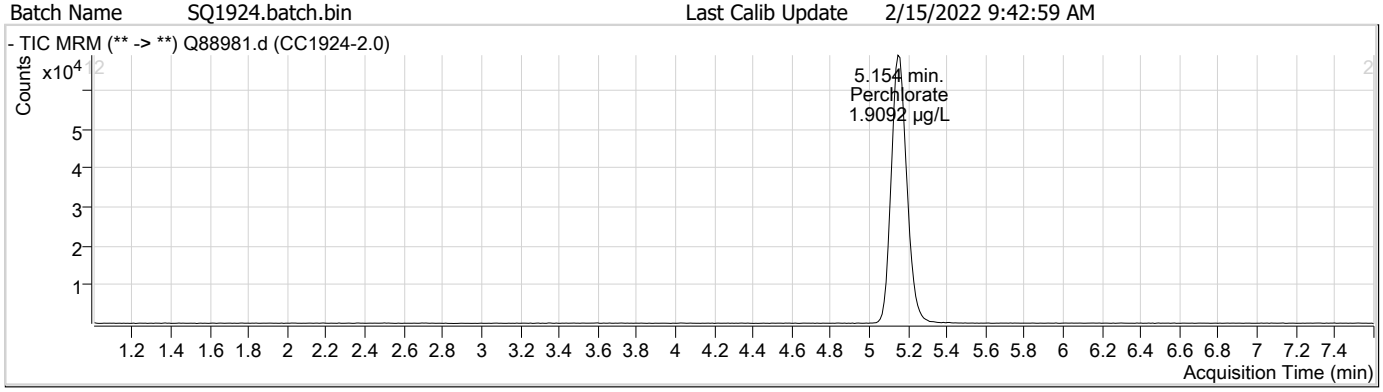
Sample Number: SQ1924-CC1924
Lab FileID: Q88969.D
Injection Time: 02/11/22 23:09
Method: SW846 6850
Analyst approved: 02/15/22 10:57 James Boone
Supervisor approved: 02/16/22 12:16 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perchlorate	14797-73-0		5.12	Poor instrument integration

01175787

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88981.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/12/2022 12:49:59 AM
Sample Name	CC1924-2.0	Instrument	Instrument 1
Vial	P1-A3	Sample Information	OP89689,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

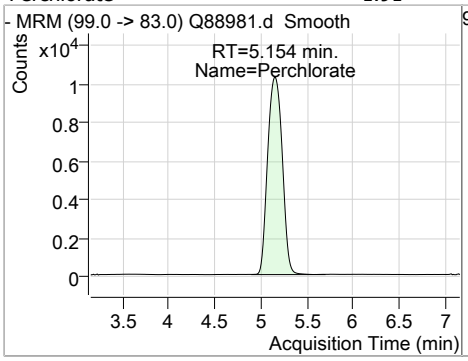


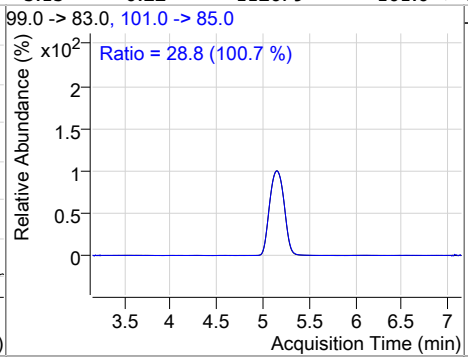
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.158	107.0 -> 89.0	239787	NoQ	5.00 µg/L	-0.224
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.154	99.0 -> 83.0	112679	3.5	1.91 µg/L	100

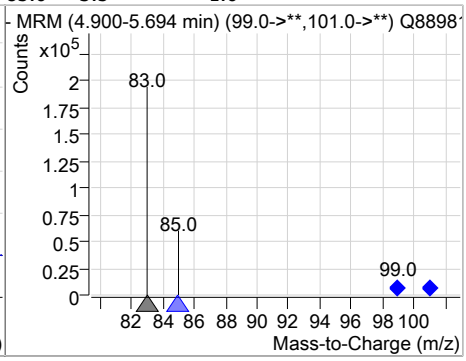
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	1.91	5.15	-0.22	112679	101.0 -> 85.0	3.5	1.6	



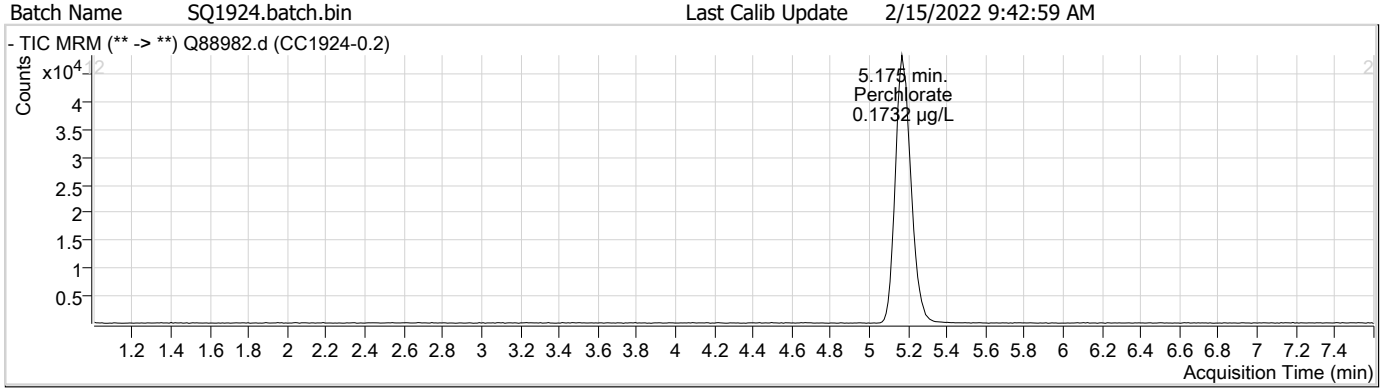




01175789

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88982.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/12/2022 12:58:24 AM
Sample Name	CC1924-0.2	Instrument	Instrument 1
Vial	P1-A4	Sample Information	OP89689,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM



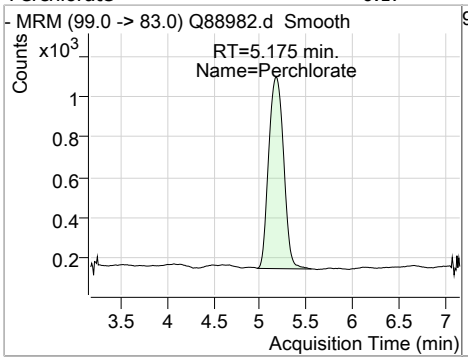
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.168	107.0 -> 89.0	254601	NoQ	5.00 µg/L	-0.214
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.175	99.0 -> 83.0	10851	3.4	0.17 µg/L	99

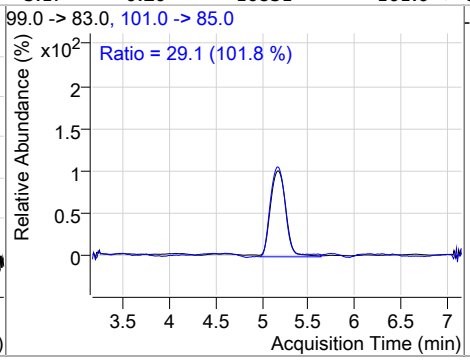
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

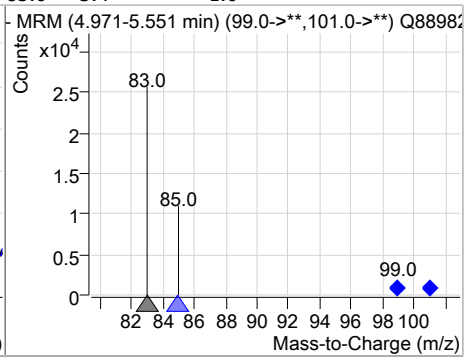
01175790

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.17	5.17	-0.20	10851	101.0 -> 85.0	3.4	1.6	



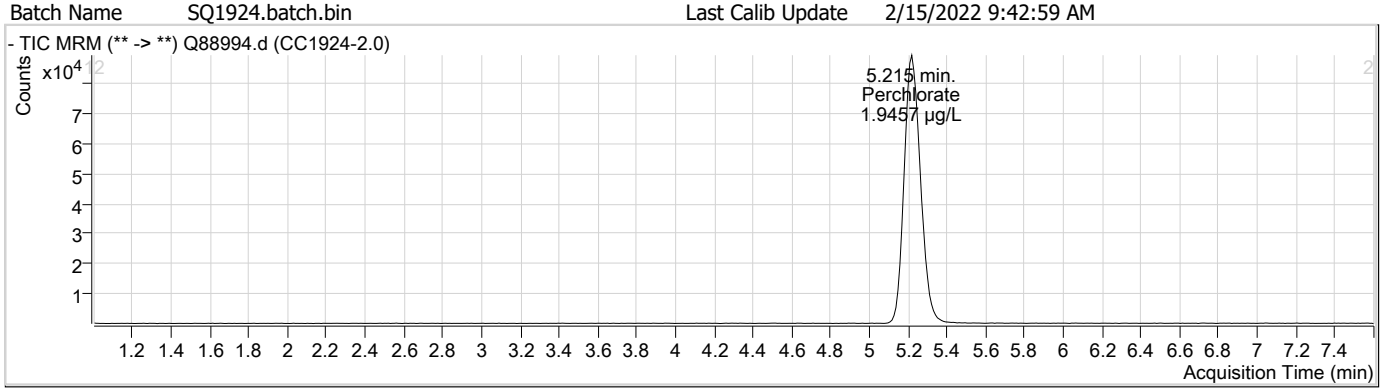




01175791

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88994.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/12/2022 2:39:15 AM
Sample Name	CC1924-2.0	Instrument	Instrument 1
Vial	P1-A3	Sample Information	OP89689,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

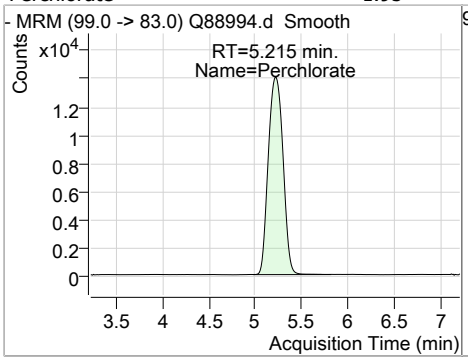


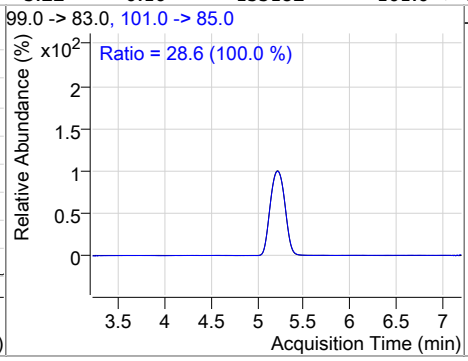
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.219	107.0 -> 89.0	324051	NoQ	5.00 µg/L	-0.163
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.215	99.0 -> 83.0	155182	3.5	1.95 µg/L	100

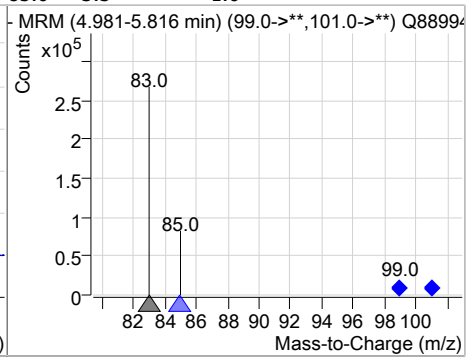
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	1.95	5.22	-0.16	155182	101.0 -> 85.0	3.5	1.6	



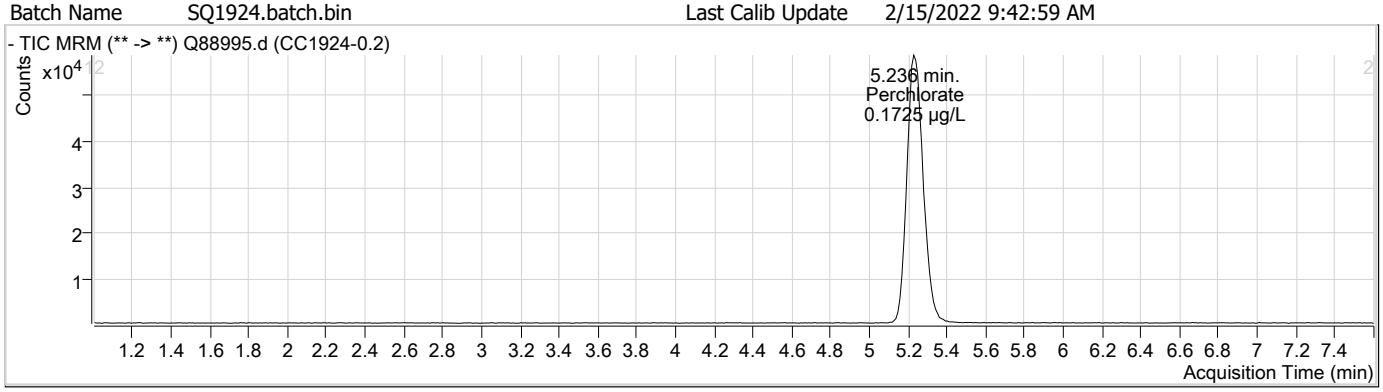




01175793

Quantitative Analysis Report for Perchlorate by 6850

Data File	: Q88995.d	Operator	jamesb
Acq. Method	Perchlorate2.m	Acq. Date-Time	2/12/2022 2:47:39 AM
Sample Name	CC1924-0.2	Instrument	Instrument 1
Vial	P1-A4	Sample Information	OP89689,SQ1924,10,,,10,1,water
DA Method File	6850_021122_SQ1924.quantmethod.xml	Comment	
Batch Name	SQ1924.batch.bin	Last Calib Update	2/15/2022 9:42:59 AM

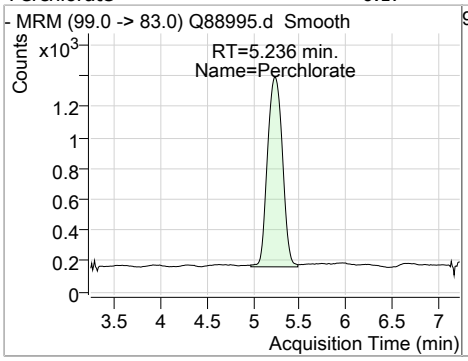


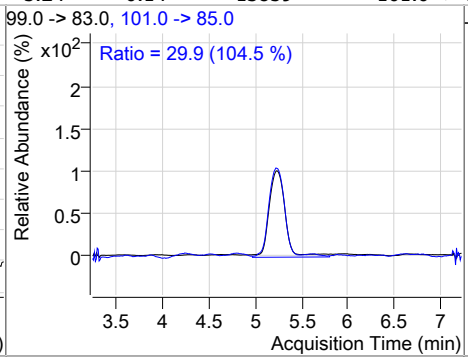
Compound	RT	QIon	Resp.	Q-ratio	Conc. Units	Dev(Min)
Internal Standards						
Cl18O4	5.239	107.0 -> 89.0	326388	NoQ	5.00 µg/L	-0.143
System Monitoring Compounds						
Target Compounds						**QValue**
Perchlorate	5.236	99.0 -> 83.0	13859	3.3	0.17 µg/L	98

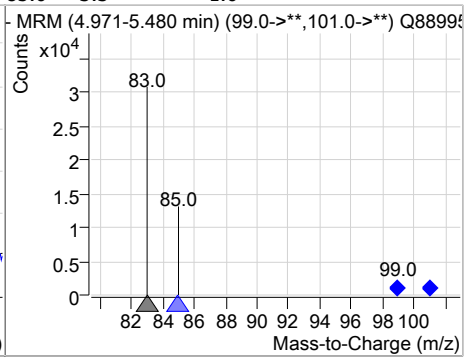
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak

Quantitative Analysis Report for Perchlorate by 6850

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
Perchlorate	0.17	5.24	-0.14	13859	101.0 -> 85.0	3.3	1.6	







SGS ORLANDO

LCMS1-Q ANALYSIS LOG

DATE:	02/10/22
COLUMN TYPE:	K PRIME
AMOUNT INJ:	7.5 ul
INSTRUMENT:	LCMS1-Q

METHODS:	SW846 6850
PROC. METH:	6850_021022_SQ1923
CAL DATE:	01/12/22
ANALYST:	NG/JB
RUN BATCH:	SQ1923

ELUENT A LOT #:	216038 W/0.1% AA 194003
ELUENT B LOT #:	214785 W/0.1% AA 194003
IC/CC STD LOT #:	LCMS1736
ICV STD LOT #:	LCMS1751
ISTD/ID STD LOT #:	10954A

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	Q88803.d	P2-F2	ccb	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	/
2	Q88804.d	P2-F2	ccb	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	/
3	Q88805.d	P2-F2	ccb	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	/
4	Q88806.d	P2-F2	ccb	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	/
5	Q88807.d	P2-F2	IC1923-0	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	Checktune File
6	Q88808.d	P1-C1	IC1923-0.2	Perchlorate2.m	Calibration	500x	OP89689,SQ1923,10,,,10,1,water	/
7	Q88809.d	P1-C2	IC1923-0.5	Perchlorate2.m	Calibration	200x	OP89689,SQ1923,10,,,10,1,water	/
8	Q88810.d	P1-C3	IC1923-1.0	Perchlorate2.m	Calibration	100x	OP89689,SQ1923,10,,,10,1,water	/
9	Q88811.d	P1-C4	ICC1923-2.0	Perchlorate2.m	Calibration	50x	OP89689,SQ1923,10,,,10,1,water	/
10	Q88812.d	P1-C5	IC1923-5.0	Perchlorate2.m	Calibration	20x	OP89689,SQ1923,10,,,10,1,water	/
11	Q88813.d	P1-C6	IC1923-10	Perchlorate2.m	Calibration	10x	OP89689,SQ1923,10,,,10,1,water	/
12	Q88814.d	P1-C7	IC1923-25	Perchlorate2.m	Calibration	4x	OP89689,SQ1923,10,,,10,1,water	/
13	Q88815.d	P1-C8	IC1923-50	Perchlorate2.m	Calibration	2x	OP89689,SQ1923,10,,,10,1,water	/
14	Q88816.d	P1-C9	ICV1923-2	Perchlorate2.m	QC	50x	OP89689,SQ1923,10,,,10,1,water	Pass
15	Q88817.d	P2-F1	ICS	Perchlorate2.m	Sample	500x	OP89689,SQ1923,10,,,10,1,water	Pass
16	Q88818.d	P1-A1	op89657-BS	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	Pass
17	Q88819.d	P1-A2	op89657-MB	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	nd
18	Q88820.d	P1-A3	FA92745-1	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
19	Q88821.d	P1-A4	FA92745-2	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	20x
20	Q88822.d	P1-A5	FA92745-3	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
21	Q88823.d	P1-A6	FA92745-4	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	1x 5x
22	Q88824.d	P1-A7	FA92745-5	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
23	Q88825.d	P1-A8	FA92745-6	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
24	Q88826.d	P1-A9	FA92745-7	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
25	Q88827.d	P1-B1	FA92745-8	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
26	Q88828.d	P1-C4	CC1923-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1923,10,,,10,1,water	Pass
27	Q88829.d	P1-C1	CC1923-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1923,10,,,10,1,water	Pass
28	Q88830.d	P2-F2	ccb	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	/
29	Q88831.d	P1-B2	FA92745-9	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
30	Q88832.d	P1-B3	FA92745-10	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	1x 5x
31	Q88833.d	P1-B4	FA92745-11	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
32	Q88834.d	P1-B5	FA92745-12	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
33	Q88835.d	P1-B6	op89657-MS	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	1x
34	Q88836.d	P1-B7	op89657-MSD	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
35	Q88837.d	P1-B8	FA92745-14	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑

SGS ORLANDO LCMS1-Q ANALYSIS LOG

36	Q88838.d	P1-B9	FA92745-15	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
37	Q88839.d	P1-D1	FA92745-16	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,100,water	100 rr 10x
38	Q88840.d	P1-D2	FA92745-17	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	1x 5x
39	Q88841.d	P1-C4	CC1923-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1923,10,,,10,1,water	Pass
40	Q88842.d	P1-C1	CC1923-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1923,10,,,10,1,water	Pass
41	Q88843.d	P2-F2	ccb	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	/
42	Q88844.d	P1-D3	FA92745-18	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
43	Q88845.d	P1-D4	FA92745-19	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	1x 5x
44	Q88846.d	P1-D5	FA92745-20	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
45	Q88847.d	P1-D6	op89660-BS	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	Batch rr for low BS
46	Q88848.d	P1-D7	op89660-MB	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	nd
47	Q88849.d	P1-D8	FA92745-21	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	☑
48	Q88850.d	P1-D9	FA92745-22	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	1x 5x
49	Q88851.d	P1-E1	FA92745-23	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	1x 5x
50	Q88852.d	P1-E2	FA92745-24	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	1x 5x
51	Q88853.d	P1-E3	FA92745-25	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	☑
52	Q88854.d	P1-C4	CC1923-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1923,10,,,10,1,water	Pass
53	Q88855.d	P1-C1	CC1923-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1923,10,,,10,1,water	Pass
54	Q88856.d	P2-F2	ccb	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	/
55	Q88857.d	P1-E4	FA92745-26	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	☑
56	Q88858.d	P1-E5	FA92745-27	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	☑
57	Q88859.d	P1-E6	op89660-MS	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	☑
58	Q88860.d	P1-E7	op89660-MSD	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	☑
59	Q88861.d	P1-E8	FA92745-28	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	☑
60	Q88862.d	P1-E9	FA92745-29	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	1x 5x
61	Q88863.d	P1-F1	FA92745-30	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	1x 5x
62	Q88864.d	P1-F2	FA92745-31	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	1x 5x
63	Q88865.d	P1-F3	FA92745-32	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	☑
64	Q88866.d	P1-F4	FA92745-33	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	1x 5x
65	Q88867.d	P1-F5	FA92745-34	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	1x 5x
66	Q88868.d	P1-E6	FA92745-35	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	☑
67	Q88869.d	P1-C4	CC1923-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1923,10,,,10,1,water	Pass
68	Q88870.d	P1-C1	CC1923-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1923,10,,,10,1,water	Pass
69	Q88871.d	P2-F2	ccb	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	/
70	Q88872.d	P1-E7	FA92745-36	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	1x
71	Q88873.d	P1-E8	FA92745-37	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	1x
72	Q88874.d	P1-E9	FA92777-2	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	1x
73	Q88875.d	P2-A1	FA92777-3	Perchlorate2.m	Sample		OP89660,SQ1923,10,,,10,1,water	1x
74	Q88876.d	P2-A2	op89689-BS	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	Pass
75	Q88877.d	P2-A3	op89689-MB	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	ND
76	Q88878.d	P2-A4	FA92918-1	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	1x
77	Q88879.d	P2-A5	FA92918-2	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	1x
78	Q88880.d	P2-A6	FA92918-3	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	1x

SGS ORLANDO LCMS1-Q ANALYSIS LOG

79	Q88881.d	P2-A7	FA92918-4	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	1x
80	Q88882.d	P1-C4	CC1923-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1923,10,,,10,1,water	Fail
81	Q88883.d	P1-C1	CC1923-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1923,10,,,10,1,water	Pass
82	Q88884.d	P2-F2	ccb	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	/
83	Q88885.d	P2-A8	FA92918-5	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	☑
84	Q88886.d	P2-A9	FA92918-6	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	☑
85	Q88887.d	P2-B1	FA92918-7	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	☑
86	Q88888.d	P2-B2	FA92918-8	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	1x 5x
87	Q88889.d	P2-B3	FA92919-1	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	☑
88	Q88890.d	P2-B4	FA92919-2	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	☑
89	Q88891.d	P2-B5	FA92919-3	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	☑
90	Q88892.d	P2-B6	FA92919-4	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	1x 5x
91	Q88893.d	P2-B7	FA92919-5	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	1x 5x
92	Q88894.d	P2-B8	FA92919-6	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	1x 5x
93	Q88895.d	P1-C4	CC1923-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1923,10,,,10,1,water	Pass
94	Q88896.d	P1-C1	CC1923-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1923,10,,,10,1,water	Pass
95	Q88897.d	P2-F2	ccb	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	/
96	Q88898.d	P2-B9	op89689-MS	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	☑
97	Q88899.d	P2-C1	op89689-MSD	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	☑
98	Q88900.d	P2-C2	FA92745-13	Perchlorate2.m	Sample		OP89657,SQ1923,10,,,10,1,water	☑
99	Q88901.d	P1-C4	CC1923-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1923,10,,,10,1,water	Pass
100	Q88902.d	P1-C1	ECC1923-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1923,10,,,10,1,water	Pass
101	Q88903.d	P2-F2	iblk	Perchlorate2.m	Sample		OP89689,SQ1923,10,,,10,1,water	ND

SGS ORLANDO

LCMS1-Q ANALYSIS LOG

DATE:	02/10/22
COLUMN TYPE:	K PRIME
AMOUNT INJ:	7.5 ul
INSTRUMENT:	LCMS1-Q

METHODS:	SW846 6850
PROC. METH:	6850_021022_SQ1923
CAL DATE:	01/12/22
ANALYST:	NG/JB
RUN BATCH:	SQ1924

ELUENT A LOT #:	216038 W/0.1% AA 194003
ELUENT B LOT #:	214785 W/0.1% AA 194003
IC/CC STD LOT #:	LCMS1736
ICV STD LOT #:	LCMS1751
ISTD/ID STD LOT #:	10954A

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	Q88904.d	P1-A1	ccb	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	RR
2	Q88905.d	P1-A1	ccb	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	RR
3	Q88906.d	P1-A1	ccb	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	RR
4	Q88907.d	P1-A2	ICS	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	RR
5	Q88908.d	P1-A3	CC1923-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1924,10,,,10,1,water	RR
6	Q88909.d	P1-A4	CC1923-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1924,10,,,10,1,water	RR
7	Q88910.d	P1-A1	ccb	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	RR
8	Q88911.d	P1-A2	ICS	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	RR
9	Q88912.d	P1-A3	CC1923-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1924,10,,,10,1,water	RR
10	Q88913.d	P1-A4	CC1923-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1924,10,,,10,1,water	RR
11	Q88914.d	P1-A5	op89660-BS	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	RR
12	Q88915.d	P1-A6	op89660-MB	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	RR
13	Q88916.d	P1-A7	FA92745-21	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	RR
14	Q88917.d	P1-A1	ccb	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	RR
15	Q88918.d	P1-A1	ccb	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	RR
16	Q88919.d	P1-A1	ccb	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	RR
17	Q88920.d	P1-A1	ic1924-0	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	Pass
18	Q88921.d	P1-A4	ic1924-0.2	Perchlorate2.m	Calibration	1	OP89660,SQ1924,10,,,10,1,water	Pass
19	Q88922.d	P2-E3	ic1924-0.5	Perchlorate2.m	Calibration	2	OP89660,SQ1924,10,,,10,1,water	Pass
20	Q88923.d	P2-E4	ic1924-1.0	Perchlorate2.m	Calibration	3	OP89660,SQ1924,10,,,10,1,water	Pass
21	Q88924.d	P1-A3	icc1924-2.0	Perchlorate2.m	Calibration	4	OP89660,SQ1924,10,,,10,1,water	Pass
22	Q88925.d	P2-E6	ic1924-5.0	Perchlorate2.m	Calibration	5	OP89660,SQ1924,10,,,10,1,water	Pass
23	Q88926.d	P2-E7	ic1924-10	Perchlorate2.m	Calibration	6	OP89660,SQ1924,10,,,10,1,water	Pass
24	Q88927.d	P2-E8	ic1924-25	Perchlorate2.m	Calibration	7	OP89660,SQ1924,10,,,10,1,water	Pass
25	Q88928.d	P2-E9	ic1924-50	Perchlorate2.m	Calibration	8	OP89660,SQ1924,10,,,10,1,water	Pass
26	Q88929.d	P2-F1	icv1924-2	Perchlorate2.m	QC		OP89660,SQ1924,10,,,10,1,water	Pass
27	Q88930.d	P1-A2	ICS	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	Pass
28	Q88931.d	P1-A1	ccb	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	ND
29	Q88932.d	P1-A5	op89660-BS	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	Pass
30	Q88933.d	P1-A6	op89660-MB	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	ND
31	Q88934.d	P1-A7	FA92745-21	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
32	Q88935.d	P1-A8	FA92745-22	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
33	Q88936.d	P1-A9	FA92745-22	Perchlorate2.m	Sample	2/10ml	OP89660,SQ1924,10,,,10,5,water	5x
34	Q88937.d	P1-B1	FA92745-23	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
35	Q88938.d	P1-B2	FA92745-23	Perchlorate2.m	Sample	2/10ml	OP89660,SQ1924,10,,,10,5,water	5x

SGS ORLANDO LCMS1-Q ANALYSIS LOG

36	Q88939.d	P1-B3	FA92745-24	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
37	Q88940.d	P1-B4	FA92745-24	Perchlorate2.m	Sample	2/10ml	OP89660,SQ1924,10,,,10,5,water	5x
38	Q88941.d	P1-B5	FA92745-25	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
39	Q88942.d	P1-A3	CC1924-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1924,10,,,10,1,water	Pass
40	Q88943.d	P1-A4	CC1924-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1924,10,,,10,1,water	Pass
41	Q88944.d	P1-A1	ccb	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	ND
42	Q88945.d	P1-B6	FA92745-26	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
43	Q88946.d	P1-B7	FA92745-27	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
44	Q88947.d	P1-B8	op89660-MS	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
45	Q88948.d	P1-B9	op89660-MSD	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
46	Q88949.d	P1-C1	FA92745-28	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
47	Q88950.d	P1-C2	FA92745-29	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
48	Q88951.d	P1-C3	FA92745-29	Perchlorate2.m	Sample	2/10ml	OP89660,SQ1924,10,,,10,5,water	5x
49	Q88952.d	P1-C4	FA92745-30	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
50	Q88953.d	P1-C5	FA92745-30	Perchlorate2.m	Sample	2/10ml	OP89660,SQ1924,10,,,10,5,water	5x
51	Q88954.d	P1-C6	FA92745-31	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
52	Q88955.d	P1-A3	CC1924-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1924,10,,,10,1,water	Pass
53	Q88956.d	P1-A4	CC1924-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1924,10,,,10,1,water	Pass
54	Q88957.d	P1-A1	ccb	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	ND
55	Q88958.d	P1-C7	FA92745-31	Perchlorate2.m	Sample	2/10ml	OP89660,SQ1924,10,,,10,5,water	5x
56	Q88959.d	P1-C8	FA92745-32	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
57	Q88960.d	P1-C9	FA92745-33	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	
58	Q88961.d	P1-D1	FA92745-33	Perchlorate2.m	Sample	2/10ml	OP89660,SQ1924,10,,,10,5,water	5x
59	Q88962.d	P1-D2	FA92745-34	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
60	Q88963.d	P1-D3	FA92745-34	Perchlorate2.m	Sample	2/10ml	OP89660,SQ1924,10,,,10,5,water	5x
61	Q88964.d	P1-D4	FA92745-35	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
62	Q88965.d	P1-D5	FA92745-36	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
63	Q88966.d	P1-D6	FA92745-37	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	RR 5x
64	Q88967.d	P1-D7	FA92777-2	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
65	Q88968.d	P1-A3	CC1924-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1924,10,,,10,1,water	Pass
66	Q88969.d	P1-A4	CC1924-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1924,10,,,10,1,water	Pass
67	Q88970.d	P1-A1	ccb	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	ND
68	Q88971.d	P1-D8	FA92777-3	Perchlorate2.m	Sample		OP89660,SQ1924,10,,,10,1,water	✓
69	Q88972.d	P1-D9	op89689-BS	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	✓
70	Q88973.d	P1-E1	op89689-MB	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	✓
71	Q88974.d	P1-E2	FA92918-1	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	✓
72	Q88975.d	P1-E3	FA92918-1	Perchlorate2.m	Sample	2/10ml	OP89689,SQ1924,10,,,10,5,water	5x
73	Q88976.d	P1-E4	FA92918-2	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	✓
74	Q88977.d	P1-E5	FA92918-2	Perchlorate2.m	Sample	2/10ml	OP89689,SQ1924,10,,,10,5,water	5x
75	Q88978.d	P1-E6	FA92918-3	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	✓
76	Q88979.d	P1-E7	FA92918-3	Perchlorate2.m	Sample	2/10ml	OP89689,SQ1924,10,,,10,5,water	5x
77	Q88980.d	P1-E8	FA92918-4	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	✓
78	Q88981.d	P1-A3	CC1924-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1924,10,,,10,1,water	Pass

SGS ORLANDO LCMS1-Q ANALYSIS LOG

79	Q88982.d	P1-A4	CC1924-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1924,10,,,10,1,water	Pass
80	Q88983.d	P1-A1	ccb	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	ND
81	Q88984.d	P1-E9	FA92918-4	Perchlorate2.m	Sample	2/10ml	OP89689,SQ1924,10,,,10,5,water	5x
82	Q88985.d	P1-F1	FA92918-8	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	✓
83	Q88986.d	P1-F2	FA92918-8	Perchlorate2.m	Sample	2/10ml	OP89689,SQ1924,10,,,10,5,water	5x
84	Q88987.d	P1-F3	FA92919-4	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	✓
85	Q88988.d	P1-F4	FA92919-4	Perchlorate2.m	Sample	2/10ml	OP89689,SQ1924,10,,,10,5,water	5x
86	Q88989.d	P1-F5	FA92919-5	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	✓
87	Q88990.d	P1-F6	FA92919-5	Perchlorate2.m	Sample	2/10ml	OP89689,SQ1924,10,,,10,5,water	5x
88	Q88991.d	P1-F7	FA92919-6	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	✓
89	Q88992.d	P1-F8	FA92919-6	Perchlorate2.m	Sample	2/10ml	OP89689,SQ1924,10,,,10,5,water	5x
90	Q88993.d	P1-F9	FA92745-2	Perchlorate2.m	Sample	0.5/10ml	OP89657,SQ1924,10,,,10,20,water	20x
91	Q88994.d	P1-A3	CC1924-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1924,10,,,10,1,water	Pass
92	Q88995.d	P1-A4	CC1924-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1924,10,,,10,1,water	Pass
93	Q88996.d	P1-A1	ccb	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	ND
94	Q88997.d	P2-A1	FA92745-4	Perchlorate2.m	Sample		OP89657,SQ1924,10,,,10,1,water	✓
95	Q88998.d	P2-A2	FA92745-4	Perchlorate2.m	Sample	2/10ml	OP89657,SQ1924,10,,,10,5,water	5x
96	Q88999.d	P2-A3	FA92745-10	Perchlorate2.m	Sample		OP89657,SQ1924,10,,,10,1,water	✓
97	Q89000.d	P2-A4	FA92745-10	Perchlorate2.m	Sample	2/10ml	OP89657,SQ1924,10,,,10,5,water	5x
98	Q89001.d	P2-A5	FA92745-16	Perchlorate2.m	Sample	1/10ml	OP89657,SQ1924,10,,,10,10,water	10x
99	Q89002.d	P2-A6	FA92745-17	Perchlorate2.m	Sample		OP89657,SQ1924,10,,,10,1,water	✓
100	Q89003.d	P2-A7	FA92745-17	Perchlorate2.m	Sample	2/10ml	OP89657,SQ1924,10,,,10,5,water	5x
101	Q89004.d	P2-A8	FA92745-19	Perchlorate2.m	Sample		OP89657,SQ1924,10,,,10,1,water	RR 1x
	Q89005.d	P2-A9	FA92745-19	Perchlorate2.m	Sample	2/10ml	OP89657,SQ1924,10,,,10,5,water	RR 1x
	Q89006.d	P2-B1	op89657-MS	Perchlorate2.m	Sample		OP89657,SQ1924,10,,,10,1,water	✓
	Q89007.d	P1-A3	CC1924-2.0	Perchlorate2.m	QC	50x	OP89689,SQ1924,10,,,10,1,water	Pass
	Q89008.d	P1-A4	ECC1924-0.2	Perchlorate2.m	QC	500x	OP89689,SQ1924,10,,,10,1,water	Pass
	Q89009.d	P1-A1	IBLK	Perchlorate2.m	Sample		OP89689,SQ1924,10,,,10,1,water	ND

SGS - ORLANDO

LIQUID SAMPLE PREP REPORT

Date/Time: 02/10/22 1041
Started {mm/dd/yy 24:00}

Date/Time: 02/10/22 1131
Finished {mm/dd/yy 24:00}

Prep Method: 3510C 3580A or Method (circle)

Analytical Method: 6850

Batch#: OP89689 Ext. By: JB Conc. By: — Vialed By: JB

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount	Spike Amount	Final Volume (ml)	Comments
OP89689 MB	—	10.0					10.0	
OP89689 BS	—					200µL		JB 2/10/22
FA92918 -1	1							
-2	1							
-3	1							
-4	1							
-5	1							
-6	1							
-7	1							
-8	1							
FA92919 -1	1							
-2	1							
-3	1							
-4	1							
-5	1							
-6	1	↓					↓	
								MS/MSD
OP89689 MS	2	10.0				20.0µL	10.0	FA92919-6
OP89689 MSD	3	↓				20.0µL	↓	
DUP								

Comments: 10934B (FSLD) Exp: 01/20/23 10mg/L (50 mL)

Surr. ID: —	Conc: —	Exp. Date: —	Inj. By: —	Ver. By —
Spk. ID: LCMS 1751	Conc: 100 ppb	Exp. Date: 3/23/22	Inj. By: JB	Ver. By NG

Initial Bath Temp (Therm ID): —	Exchange Bath/N-Evap Temp (Therm ID): —
Observed Temp °C: — Corr. Temp °C: —	Observed Temp °C: — Corr. Temp °C: —

CH2CL2 Lot # —	Hexane Lot # —	Na2SO4 Lot# —
Acetonitrile Lot # —	Methanol Lot # —	Acetone Lot# —
Syringe Filter Lot# Y25230-0927	pH Paper # —	Reagent # HPLCWater 214038

Copper Lot # Y25230-0927 If Sulfur Cleaning is performed in Extractions (3660B)

JB 2/10/22

Relinquished By: JB Date: 2/10/22

Accepted By: JB Date: 2/10/22

ORLD-EXT-0001-1-06-FORM-extwaterxls 032718

SGS

Orlando, FL

02/22/22

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

APTIM

Longhorn Army Ammunition Plant (GWTP); Karnack, TX

501032

SGS Job Number: FA92919



Sampling Date: 02/02/22

Report to:

APTIM
11400 Parkside Dr Suite 400
Knoxville, TN 37934
vicki.graves@aptim.com

ATTN: Vicki Graves

Total number of pages in report: 24

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Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Norm Farmer
Technical Director

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SGS North America Inc.

Sample Summary

APTIM

Job No: FA92919

Longhorn Army Ammunition Plant (GWTP); Karnack, TX
Project No: 501032

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA92919-1	02/02/22	12:10	SB	02/07/22	AQ	Ground Water	04WW01-220201
FA92919-2	02/02/22	07:30	SB	02/07/22	AQ	Ground Water	04WW07-220201
FA92919-3	02/02/22	07:30	SB	02/07/22	AQ	Ground Water	04WW07-220202-FD
FA92919-4	02/02/22	08:10	SB	02/07/22	AQ	Ground Water	04WW05-220202
FA92919-5	02/02/22	08:55	SB	02/07/22	AQ	Ground Water	04WW09-220202
FA92919-6	02/02/22	09:40	SB	02/07/22	AQ	Ground Water	04WW10-220202
FA92919-6D	02/02/22	09:40	SB	02/07/22	AQ	Water Dup/MSD	04WW10-220202
FA92919-6S	02/02/22	09:40	SB	02/07/22	AQ	Water Matrix Spike	04WW10-220202

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: APTIM **Job No:** FA92919

Site: Longhorn Army Ammunition Plant (GWTP); Karnack, TX **Report Date** 2/22/2022 12:02:51

On 02/07/2022, 6 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FA92919 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method SW846 6850

Matrix: AQ **Batch ID:** OP89689

Sample(s) FA92919-6MS, FA92919-6MSD were used as the QC samples indicated.

FA92919-5: Dilution required due to matrix interference (internal standard failure).

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Ariel Hartney, Client Services (signature on file)

Summary of Hits

Job Number: FA92919
Account: APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX
Collected: 02/02/22

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA92919-1	**04WW01-220201**					
No hits reported in this sample.						
FA92919-2	**04WW07-220201**					
No hits reported in this sample.						
FA92919-3	**04WW07-220202-FD**					
No hits reported in this sample.						
FA92919-4	**04WW05-220202**					
Perchlorate		0.28	0.20	0.10	ug/l	SW846 6850
FA92919-5	**04WW09-220202**					
No hits reported in this sample.						
FA92919-6	**04WW10-220202**					
No hits reported in this sample.						

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Client Sample ID: 04WW01-220201
Lab Sample ID: FA92919-1 **Date Sampled:** 02/02/22
Matrix: AQ - Ground Water **Date Received:** 02/07/22
Method: SW846 6850 IN HOUSE **Percent Solids:** n/a
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q88889.D	1	02/11/22 02:29	JB	02/10/22 10:41	OP89689	SQ1923
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.10 U	0.20	0.10	0.050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: 04WW07-220201
Lab Sample ID: FA92919-2 **Date Sampled:** 02/02/22
Matrix: AQ - Ground Water **Date Received:** 02/07/22
Method: SW846 6850 IN HOUSE **Percent Solids:** n/a
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q88890.D	1	02/11/22 02:38	JB	02/10/22 10:41	OP89689	SQ1923
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.10 U	0.20	0.10	0.050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: 04WW07-220202-FD
Lab Sample ID: FA92919-3 **Date Sampled:** 02/02/22
Matrix: AQ - Ground Water **Date Received:** 02/07/22
Method: SW846 6850 IN HOUSE **Percent Solids:** n/a
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q88891.D	1	02/11/22 02:46	JB	02/10/22 10:41	OP89689	SQ1923
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.10 U	0.20	0.10	0.050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: 04WW05-220202
Lab Sample ID: FA92919-4 **Date Sampled:** 02/02/22
Matrix: AQ - Ground Water **Date Received:** 02/07/22
Method: SW846 6850 IN HOUSE **Percent Solids:** n/a
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q88987.D	1	02/12/22 01:40	JB	02/10/22 10:41	OP89689	SQ1924
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.28	0.20	0.10	0.050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	04WW09-220202		
Lab Sample ID:	FA92919-5	**Date Sampled:**	02/02/22
Matrix:	AQ - Ground Water	**Date Received:**	02/07/22
Method:	SW846 6850 IN HOUSE	**Percent Solids:**	n/a
Project:	Longhorn Army Ammunition Plant (GWTP); Karnack, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Q88990.D	5	02/12/22 02:05	JB	02/10/22 10:41	OP89689	SQ1924
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.50 U	1.0	0.50	0.25	ug/l	

(a) Dilution required due to matrix interference (internal standard failure).

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	04WW10-220202		
Lab Sample ID:	FA92919-6	**Date Sampled:**	02/02/22
Matrix:	AQ - Ground Water	**Date Received:**	02/07/22
Method:	SW846 6850 IN HOUSE	**Percent Solids:**	n/a
Project:	Longhorn Army Ammunition Plant (GWTP); Karnack, TX		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q88991.D	1	02/12/22 02:14	JB	02/10/22 10:41	OP89689	SQ1924
Run #2							

	Initial Volume	Final Volume
Run #1	10.0 ml	10.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
14797-73-0	Perchlorate	0.10 U	0.20	0.10	0.050	ug/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

5

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

FA 92919

CHAIN OF CUSTODY

Name Of Lab Shipping To: SGS 4405 Vineland Orlando, FL 32811 (407) 615-0447 Cell (407)-425-6700 Office ATTN: Jean Dent-Smith

Project: APTIM LONGHORN ARMY AMMN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS	Project No. 501032
Job: **LHAAP 04 February 2022**	
Prepared By: Scott Beesinger	P.O. Number

	Field Sample I.D. / Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	Analyses: Perchlorate by SW6850	Remarks (Preservatives, etc.)	Lab I.D.#
1	04WW01-220201	WG	2/1/22 1210		1	X		
2	04WW07-220202	WG	2/2/22 0730		1	X		
3	04WW07-220202-FD	WG	2/2/22 0730		1	X		
4	04WW05-220202	WG	2/2/22 0810		1	X	INITIAL ASSESSMENT	
5	04WW09-220202	WG	2/2/22 0855		1	X		
6	04WW10-220202	WG	2/2/22 0940		1	X	LABEL VERIFICATION SM	
6	04WW10-220202-MS	WG	2/2/22 0940		1	X		
6	04WW10-220202-MSD	WG	2/2/22 0940		1	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	2/2/22	1430		2/7/22	9:15						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

2.2 IR# 1

(Word) S:\I-ces\Forms\Chain of Custody - BiWeekly

5.1 5

FA92919: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: FA92919 **Client:** APTIM **Project:** 501032

Date / Time Received: 2/7/2022 9:15:00 AM **Delivery Method:** FEDEX **Airbill #'s:** 506145154070

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.2);

Cooler Temps (Corrected) °C: Cooler 1: (2.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑

	W	or	S	N/A
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: DEVANO Date: 2/7/2022 9:15:00 AM Reviewer: _____ Date: _____

FA92919: Chain of Custody
Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FA92919
Account: APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX
Collected: 02/02/22

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP89689	SW846 6850						
OP89689-BS	14797-73-0	Perchlorate	BSP	REC	80	%	84-119
OP89689-BS	14797-73-0	Perchlorate	BSP	REC	80	%	84-119
OP89689-MS	14797-73-0	Perchlorate	MS	REC	90	%	84-119
OP89689-MSD	14797-73-0	Perchlorate	MSD	REC	85	%	84-119
OP89689-MSD	14797-73-0	Perchlorate	MSD	RPD	6	%	15

* Sample used for QC is not from job FA92919

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FA92919
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ1923-IBLK	Q88903.D	1	02/11/22	JB	n/a	n/a	SQ1923

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92919-1, FA92919-2, FA92919-3

CAS No.	Compound	Result	RL	MDL	Units	Q
14797-73-0	Perchlorate	ND	0.20	0.050	ug/l	

Instrument Blank

Job Number: FA92919
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
SQ1924-IBLK	Q89009.D	1	02/12/22	JB	n/a	n/a	SQ1924

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92919-4, FA92919-5, FA92919-6

CAS No.	Compound	Result	RL	MDL	Units	Q
14797-73-0	Perchlorate	ND	0.20	0.050	ug/l	

Method Blank Summary

Job Number: FA92919
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89689-MB	Q88877.D	1	02/11/22	JB	02/10/22	OP89689	SQ1923

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92919-1, FA92919-2, FA92919-3, FA92919-4, FA92919-5, FA92919-6

CAS No.	Compound	Result	RL	MDL	Units	Q
14797-73-0	Perchlorate	ND	0.20	0.050	ug/l	

Method Blank Summary

Job Number: FA92919
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89689-MB	Q88973.D	1	02/11/22	JB	02/10/22	OP89689	SQ1924

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92919-1, FA92919-2, FA92919-3, FA92919-4, FA92919-5, FA92919-6

CAS No.	Compound	Result	RL	MDL	Units	Q
14797-73-0	Perchlorate	ND	0.20	0.050	ug/l	

Blank Spike Summary

Job Number: FA92919
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89689-BS	Q88876.D	1	02/11/22	JB	02/10/22	OP89689	SQ1923

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92919-1, FA92919-2, FA92919-3, FA92919-4, FA92919-5, FA92919-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
14797-73-0	Perchlorate	0.2	0.16	80	80-120

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA92919
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89689-BS	Q88972.D	1	02/11/22	JB	02/10/22	OP89689	SQ1924

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92919-1, FA92919-2, FA92919-3, FA92919-4, FA92919-5, FA92919-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
14797-73-0	Perchlorate	0.2	0.16	80	80-120

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA92919
Account: ITTNKNOX APTIM
Project: Longhorn Army Ammunition Plant (GWTP); Karnack, TX

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89689-MS	Q88898.D	1	02/11/22	JB	02/10/22	OP89689	SQ1923
OP89689-MSD	Q88899.D	1	02/11/22	JB	02/10/22	OP89689	SQ1923
FA92919-6	Q88991.D	1	02/12/22	JB	02/10/22	OP89689	SQ1924

The QC reported here applies to the following samples: **Method:** SW846 6850

FA92919-1, FA92919-2, FA92919-3, FA92919-4, FA92919-5, FA92919-6

CAS No.	Compound	FA92919-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
14797-73-0	Perchlorate	0.20	U	0.2	0.18	90	0.2	0.17	85	6	80-120/15

* = Outside of Control Limits.

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 21, 2022

Vicki Graves
Aptim Environmental & Infrastucture, Inc.
10333 Richmond Ave
Ste 1030
Houston, TX 77042

Work Order: **HS22020294**

Laboratory Results for: **LHAAP04 February 2022**

Dear Vicki Graves ,

ALS Environmental received 5 sample(s) on Feb 07, 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
Ragen Giga
Project Manager

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
Work Order: HS22020294

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22020294-01	04WW07-220202	Groundwater		02-Feb-2022 07:30	07-Feb-2022 09:20	☐
HS22020294-02	04WW07-220202-FD	Groundwater		02-Feb-2022 07:30	07-Feb-2022 09:20	☐
HS22020294-03	04WW05-220202	Groundwater		02-Feb-2022 08:10	07-Feb-2022 09:20	☐
HS22020294-04	04WW09-220202	Groundwater		02-Feb-2022 08:55	07-Feb-2022 09:20	☐
HS22020294-05	04WW10-220202	Groundwater		02-Feb-2022 09:40	07-Feb-2022 09:20	☐

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
Work Order: HS22020294

CASE NARRATIVE

WetChemistry by Method SM5310B

Batch ID: R402593

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

ALS Houston, US

Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.

ANALYTICAL REPORT

Project: LHAAP04 February 2022

WorkOrder:HS22020294

Sample ID: 04WW07-220202

Lab ID:HS22020294-01

Collection Date: 02-Feb-2022 07:30

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**10.0**		**0.500**	**1.00**	**1.00**	**mg/L**	1	19-Feb-2022 01:53

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

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
Sample ID: 04WW07-220202-FD
Collection Date: 02-Feb-2022 07:30

ANALYTICAL REPORT
WorkOrder:HS22020294
Lab ID:HS22020294-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**12.6**		**0.500**	**1.00**	**1.00**	**mg/L**	1	19-Feb-2022 02:06

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

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
Sample ID: 04WW05-220202
Collection Date: 02-Feb-2022 08:10

ANALYTICAL REPORT
WorkOrder:HS22020294
Lab ID:HS22020294-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**4.61**		**0.500**	**1.00**	**1.00**	**mg/L**	1	19-Feb-2022 02:22

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

ALS Houston, US

Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.

ANALYTICAL REPORT

Project: LHAAP04 February 2022

WorkOrder:HS22020294

Sample ID: 04WW09-220202

Lab ID:HS22020294-04

Collection Date: 02-Feb-2022 08:55

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**16.3**		**0.500**	**1.00**	**1.00**	**mg/L**	1	19-Feb-2022 02:36

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

ALS Houston, US

Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.

ANALYTICAL REPORT

Project: LHAAP04 February 2022

WorkOrder:HS22020294

Sample ID: 04WW10-220202

Lab ID:HS22020294-05

Collection Date: 02-Feb-2022 09:40

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**5.63**		**0.500**	**1.00**	**1.00**	**mg/L**	1	19-Feb-2022 02:50

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

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
WorkOrder: HS22020294

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R402593 (0)	**Test Name :** TOTAL ORGANIC CARBON - SM5310B-2011				**Matrix:** Groundwater	
HS22020294-01	04WW07-220202	02 Feb 2022 07:30			19 Feb 2022 01:53	1
HS22020294-02	04WW07-220202-FD	02 Feb 2022 07:30			19 Feb 2022 02:06	1
HS22020294-03	04WW05-220202	02 Feb 2022 08:10			19 Feb 2022 02:22	1
HS22020294-04	04WW09-220202	02 Feb 2022 08:55			19 Feb 2022 02:36	1
HS22020294-05	04WW10-220202	02 Feb 2022 09:40			19 Feb 2022 02:50	1

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
WorkOrder: HS22020294

QC BATCH REPORT

Batch ID: R402593 (0) **Instrument:** TOC_04 **Method:** TOTAL ORGANIC CARBON - SM5310B-2011

MBLK Sample ID: **MBLK-02182022** Units: **mg/L** Analysis Date: **19-Feb-2022 01:12**
Client ID: Run ID: **TOC_04_402593** SeqNo: **6510525** 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-02182022** Units: **mg/L** Analysis Date: **19-Feb-2022 01:25**
Client ID: Run ID: **TOC_04_402593** SeqNo: **6510526** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.13	1.00	10	0	101	85 - 115				

LCSD Sample ID: **LCSD-02182022** Units: **mg/L** Analysis Date: **19-Feb-2022 01:39**
Client ID: Run ID: **TOC_04_402593** SeqNo: **6510527** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.12	1.00	10	0	101	85 - 115	10.13	0.0988	20	

MS Sample ID: **HS22020294-05MS** Units: **mg/L** Analysis Date: **19-Feb-2022 03:06**
Client ID: **04WW10-220202** Run ID: **TOC_04_402593** SeqNo: **6510533** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	15.68	1.00	10	5.634	100	80 - 120				

The following samples were analyzed in this batch: HS22020294-01 HS22020294-02 HS22020294-03 HS22020294-04 HS22020294-05

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
WorkOrder: **HS22020294**

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	21-022-0	26-Mar-2022
Florida	E87611-34	30-Jun-2022
Illinois	2000322021-7	09-May-2022
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2021-2022	30-Jun-2022
Texas	T104704231-21-28	30-Apr-2022

ALS Houston, US Date: 21-Feb-22

Sample Receipt Checklist

Work Order ID: HS22020294 **Date/Time Received:** **07-Feb-2022 09:20**

Client Name: CBI-Houston **Received by:** **Nilesh D. Ranchod**

Completed By: */S/ Nilesh D. Ranchod* (eSignature) 07-Feb-2022 14:50 (Date/Time) **Reviewed by:** */S/ Ragen Giga* (eSignature) 08-Feb-2022 17:52 (Date/Time)

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

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
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):	0.5c/1.0c UC/C	IR #31
Cooler(s)/Kit(s):	47409	
Date/Time sample(s) sent to storage:	02/07/2022 14:00	

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 (((281) 530-5656 ATTN: Ragen Giga

Project: APTIM LONGHORN
ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: LHAAP04 February 2022

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: TOC by SM5310C	Remarks (Preservatives, etc.)
04WW07-220202	WG	2/2/22 0730		2	X	
04WW07-220202-FD	WG	2/2/22 0730		2	X	
04WW05-220202	WG	2/2/22 0810		2	X	
04WW09-220202	WG	2/2/22 0855		2	X	
04WW10-220202	WG	2/2/22 0940		2	X	
04WW10-220202-MS	WG	2/2/22 0940		2	X	
04WW10-220202-MSD	WG	2/2/22 0940		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
Scott Beesinger	2/2/22	1430	NL	2/3/22	09.20						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

47409 - Tan lic 0.5
12 Ea 31
Cld +05.

Aptim Environmental & Infrastucture, Inc.
LHAAP February 2022
HS2202294

(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

47409

CUSTODY SEAL

Date: 2/2/22 Time: 1430
Name: Scott Beesinger
Company: BTTA-TX

Seal Broken By: SM
Date: 02107/22

47409 FEB 07 2022

ALS 47409

Part # 156469-4934 MTW EXP 08/23

ORIGIN ID:SGRA (903) 930-6193
ATT: SCOTT BEESINGER
APTIM
1203-B EAST GRAND AVE PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 26JAN22
ACTWGT: 1.00 LB MAN
CAD: 0221247/CAFE3509
DIMS: 14x11x10 IN

TO SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-4-BO 83271-RG

RMA:

FedEx Express

FedEx
TRK# 0221 5300 5227 3840

THU - 03 FEB AA
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

4230674 02Feb2022 GGGA 56DG2/027C/1B23

FedEx label/THU-03 FEB
Received 02107/22

HS22020294 LHAAP04 February 2022 Cover Page

ALS WO# HS22020294

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

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  - Acronyms
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  - SampleReceiptCheckList
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10450 Stancliff Rd. Suite 210
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T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

WorkOrder: HS22020294

LHAAP04 February 2022

Aptim Environmental & Infrastucture, Inc.

Vicki Graves
10333 Richmond Ave Ste 1030
Houston TX 77042

23-Feb-2022

HS22020294 LHAAP04 February 2022 Final

ALS WO# HS22020294

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 21, 2022

Vicki Graves
Aptim Environmental & Infrastucture, Inc.
10333 Richmond Ave
Ste 1030
Houston, TX 77042

Work Order: **HS22020294**

Laboratory Results for: **LHAAP04 February 2022**

Dear Vicki Graves ,

ALS Environmental received 5 sample(s) on Feb 07, 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
Ragen Giga
Project Manager

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
Work Order: HS22020294

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22020294-01	04WW07-220202	Groundwater		02-Feb-2022 07:30	07-Feb-2022 09:20	☐
HS22020294-02	04WW07-220202-FD	Groundwater		02-Feb-2022 07:30	07-Feb-2022 09:20	☐
HS22020294-03	04WW05-220202	Groundwater		02-Feb-2022 08:10	07-Feb-2022 09:20	☐
HS22020294-04	04WW09-220202	Groundwater		02-Feb-2022 08:55	07-Feb-2022 09:20	☐
HS22020294-05	04WW10-220202	Groundwater		02-Feb-2022 09:40	07-Feb-2022 09:20	☐

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
Work Order: HS22020294

CASE NARRATIVE

WetChemistry by Method SM5310B

Batch ID: R402593

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

ALS Houston, US

Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.

ANALYTICAL REPORT

Project: LHAAP04 February 2022

WorkOrder:HS22020294

Sample ID: 04WW07-220202

Lab ID:HS22020294-01

Collection Date: 02-Feb-2022 07:30

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**10.0**		**0.500**	**1.00**	**1.00**	**mg/L**	1	19-Feb-2022 01:53

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

ALS Houston, US

Date: 21-Feb-22

Client:	Aptim Environmental & Infrastucture, Inc.	**ANALYTICAL REPORT**
Project:	LHAAP04 February 2022	WorkOrder:HS22020294
Sample ID:	04WW07-220202-FD	Lab ID:HS22020294-02
Collection Date:	02-Feb-2022 07:30	Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**12.6**		**0.500**	**1.00**	**1.00**	**mg/L**	1	19-Feb-2022 02:06

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

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
Sample ID: 04WW05-220202
Collection Date: 02-Feb-2022 08:10

ANALYTICAL REPORT
WorkOrder:HS22020294
Lab ID:HS22020294-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**4.61**		**0.500**	**1.00**	**1.00**	**mg/L**	1	19-Feb-2022 02:22

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

ALS Houston, US

Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.

ANALYTICAL REPORT

Project: LHAAP04 February 2022

WorkOrder:HS22020294

Sample ID: 04WW09-220202

Lab ID:HS22020294-04

Collection Date: 02-Feb-2022 08:55

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**16.3**		**0.500**	**1.00**	**1.00**	**mg/L**	1	19-Feb-2022 02:36

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

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
Sample ID: 04WW10-220202
Collection Date: 02-Feb-2022 09:40

ANALYTICAL REPORT
WorkOrder:HS22020294
Lab ID:HS22020294-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL ORGANIC CARBON - SM5310B-2011		**Method:SM5310B**						Analyst: JAC
Organic Carbon, Total	**5.63**		**0.500**	**1.00**	**1.00**	**mg/L**	1	19-Feb-2022 02:50

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

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
WorkOrder: HS22020294

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R402593 (0)	**Test Name :** TOTAL ORGANIC CARBON - SM5310B-2011				**Matrix:** Groundwater	
HS22020294-01	04WW07-220202	02 Feb 2022 07:30			19 Feb 2022 01:53	1
HS22020294-02	04WW07-220202-FD	02 Feb 2022 07:30			19 Feb 2022 02:06	1
HS22020294-03	04WW05-220202	02 Feb 2022 08:10			19 Feb 2022 02:22	1
HS22020294-04	04WW09-220202	02 Feb 2022 08:55			19 Feb 2022 02:36	1
HS22020294-05	04WW10-220202	02 Feb 2022 09:40			19 Feb 2022 02:50	1

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
WorkOrder: HS22020294

QC BATCH REPORT

Batch ID: R402593 (0) **Instrument:** TOC_04 **Method:** TOTAL ORGANIC CARBON - SM5310B-2011

MBLK Sample ID: **MBLK-02182022** Units: **mg/L** Analysis Date: **19-Feb-2022 01:12**
Client ID: Run ID: **TOC_04_402593** SeqNo: **6510525** 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-02182022** Units: **mg/L** Analysis Date: **19-Feb-2022 01:25**
Client ID: Run ID: **TOC_04_402593** SeqNo: **6510526** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.13	1.00	10	0	101	85 - 115				

LCSD Sample ID: **LCSD-02182022** Units: **mg/L** Analysis Date: **19-Feb-2022 01:39**
Client ID: Run ID: **TOC_04_402593** SeqNo: **6510527** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.12	1.00	10	0	101	85 - 115	10.13	0.0988	20	

MS Sample ID: **HS22020294-05MS** Units: **mg/L** Analysis Date: **19-Feb-2022 03:06**
Client ID: **04WW10-220202** Run ID: **TOC_04_402593** SeqNo: **6510533** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	15.68	1.00	10	5.634	100	80 - 120				

The following samples were analyzed in this batch: HS22020294-01 HS22020294-02 HS22020294-03 HS22020294-04 HS22020294-05

ALS Houston, US Date: 21-Feb-22

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP04 February 2022
WorkOrder: **HS22020294**

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	21-022-0	26-Mar-2022
Florida	E87611-34	30-Jun-2022
Illinois	2000322021-7	09-May-2022
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2021-2022	30-Jun-2022
Texas	T104704231-21-28	30-Apr-2022

ALS Houston, US Date: 21-Feb-22

Sample Receipt Checklist

Work Order ID: HS22020294 **Date/Time Received:** 07-Feb-2022 09:20

Client Name: CBI-Houston **Received by:** Nilesh D. Ranchod

Completed By: /S/ Nilesh D. Ranchod (eSignature) 07-Feb-2022 14:50 (Date/Time) **Reviewed by:** /S/ Ragen Giga (eSignature) 08-Feb-2022 17:52 (Date/Time)

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

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
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):	0.5c/1.0c UC/C	IR #31
Cooler(s)/Kit(s):	47409	
Date/Time sample(s) sent to storage:	02/07/2022 14:00	

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 (((281) 530-5656 ATTN: Ragen Giga

Page 1 of 1

Project: APTIM LONGHORN ARMY AMMN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS	**Project No.** 501032
Job: **LHAAP04 February 2022**	
Prepared By: Scott Beesinger	**P.O. Number**

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: TOC by SM5310C	Remarks (Preservatives, etc.)
04WW07-220202	WG	2/2/22 0730		2	X	
04WW07-220202-FD	WG	2/2/22 0730		2	X	
04WW05-220202	WG	2/2/22 0810		2	X	
04WW09-220202	WG	2/2/22 0855		2	X	
04WW10-220202	WG	2/2/22 0940		2	X	
04WW10-220202-MS	WG	2/2/22 0940		2	X	
04WW10-220202-MSD	WG	2/2/22 0940		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
Scott Beesinger	2/2/22	1430	NL	2/3/22	09.20						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

47409 - Tan HC 0.5
12Aa31
Cld +0.5.

HS2202294

Aptim Environmental & Infrastucture, Inc.
LHAAP February 2022

(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

47409

CUSTODY SEAL

Date: 2/2/22 Time: 1430
Name: Scott Beesinger
Company: BTHA

Seal Broken By: SM
Date: 02/07/22

47409 FEB 07 2022

Part # 158469-494 MTW EXP 0822

47409

ORIGIN ID:SGRA (903) 930-6193
ATT: SCOTT BEESINGER
APTIM
1203-B EAST GRAND AVE PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 26JAN22
ACTWGT: 1.00 LB MAN
CAD: 0221247/CAFE3509
DIMS: 14x11x10 IN

570C4/F2B9/6F4D

TO SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-4-BO 83271-RG

RMA:

FedEx Express

FedEx
TRK# 0221 5300 5227 3840

THU - 03 FEB AA
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

4230674 02Feb2022 GGGA 56DG2/027C/1D23

FedEx label/THU-03 FEB
Received 02/07/22

HS22020294 Wet Chemistry

ALS WO# HS22020294

C:\TOC-L\Data\2022_02_18_CAL001.tlx

H5220202 94

	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result
1	Standard	NPOC	CAL	3100605108	02_18_2022_CA	1.000	
2	Unknown	NPOC	ICV	3100605001	02_18_2022_CA	1.000	NPOC:10.74mg/L
3	Unknown	NPOC	ICB		02_18_2022_CA	1.000	NPOC:-0.09584mg/L

C:\TOC-L\Data\2022_02_18_CAL001.tlx

	Notes	Status	Date / Time	Vial
1		Completed	2/18/2022 2:59:12 P	1, 2, 3, 4, 5,
2		Completed	2/18/2022 3:13:15 P	8
3		Completed	2/18/2022 3:25:54 P	9

TOC-Control L Report

2022_02_18_CAL001.tlx

Instr.Information

Instrument Options	TOC/ASI/IC Unit/
Catalyst	Regular Sensitivity

Cal. Curve

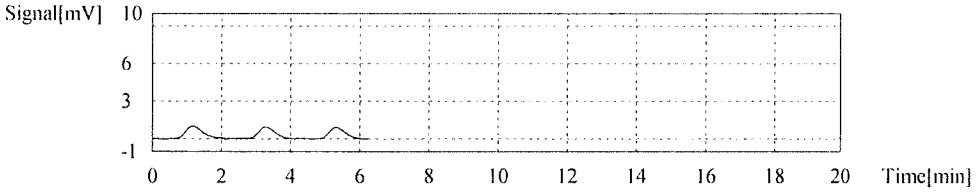
Sample Name:	CAL
Sample ID:	3100605108
Cal. Curve:	02_18_2022_CAL.2022_02_18_13_22_06.cal
Status	Completed

Type	Anal.
Standard	NPOC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	3.194	50uL	1.000	*******		2/18/2022 1:30:15 PM
2	3.051	50uL	1.000	*******		2/18/2022 1:32:32 PM
3	2.992	50uL	1.000	*******		2/18/2022 1:34:51 PM

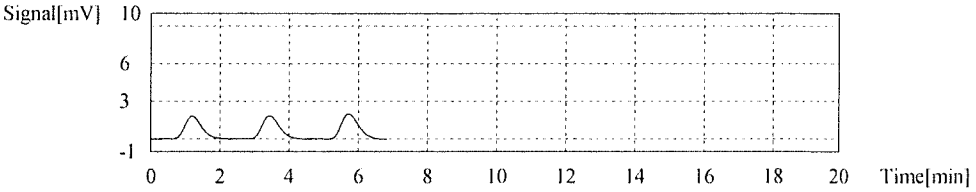
Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	3.079



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	6.125	50uL	1.000	*******		2/18/2022 1:43:15 PM
2	6.308	50uL	1.000	*******		2/18/2022 1:45:47 PM
3	7.179	50uL	1.000	*******		2/18/2022 1:48:19 PM

Acid Add.	1.500%
Sparge Gas Flow	80mL/min
Sp. Time	120.0sec
Mean Area	6.537



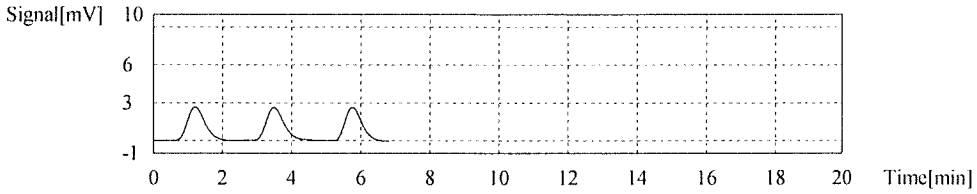
Conc: 2.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	9.399	50uL	1.000	*******		2/18/2022 1:56:46 PM
2	9.115	50uL	1.000	*******		2/18/2022 1:59:18 PM
3	8.923	50uL	1.000	*******		2/18/2022 2:01:47 PM

TOC-Control L Report

2022_02_18_CAL001.tlx

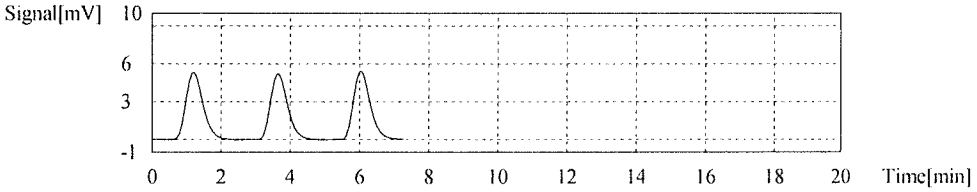
Acid Add. 1.500%
Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 9.146



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	18.62	50uL	1.000	*******		2/18/2022 2:10:24 PM
2	18.01	50uL	1.000	*******		2/18/2022 2:13:03 PM
3	18.26	50uL	1.000	*******		2/18/2022 2:15:41 PM

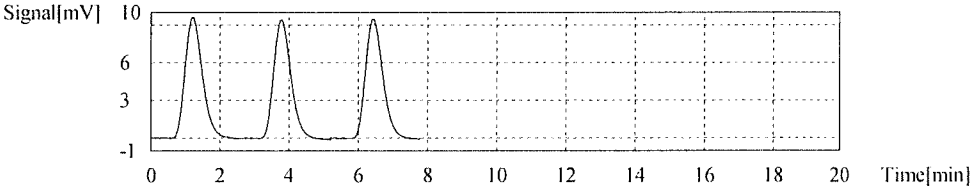
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Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 18.30



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	34.13	50uL	1.000	*******		2/18/2022 2:24:25 PM
2	33.37	50uL	1.000	*******		2/18/2022 2:27:18 PM
3	33.27	50uL	1.000	*******		2/18/2022 2:30:06 PM

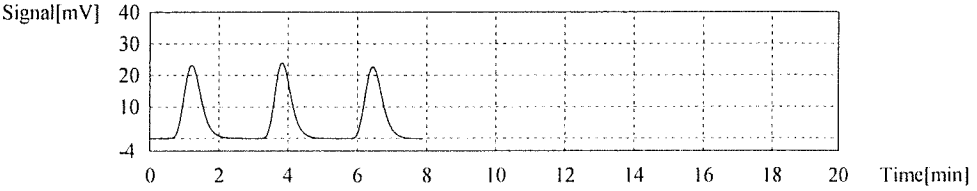
Acid Add. 1.500%
Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 33.59



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	83.07	50uL	1.000	*******		2/18/2022 2:38:55 PM
2	81.38	50uL	1.000	*******		2/18/2022 2:41:45 PM
3	81.25	50uL	1.000	*******		2/18/2022 2:44:39 PM

Acid Add. 1.500%
Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 81.90



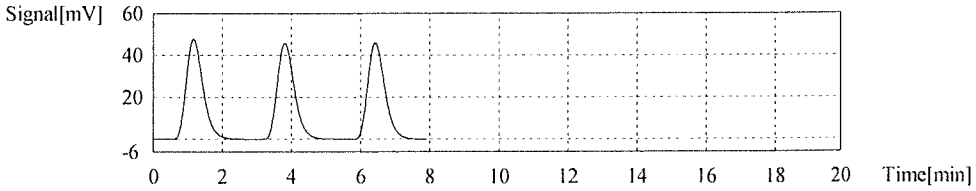
Conc: 50.00mg/L

TOC-Control L Report

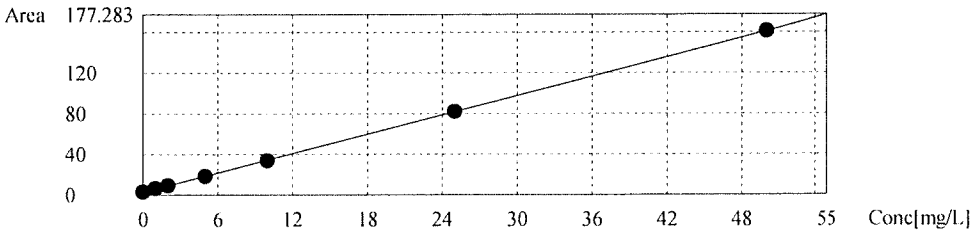
2022_02_18_CAL001.tlx

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	164.0	50uL	1.000	*******		2/18/2022 2:53:26 PM
2	160.1	50uL	1.000	*******		2/18/2022 2:56:18 PM
3	159.4	50uL	1.000	*******		2/18/2022 2:59:12 PM

Acid Add. 1.500%
Sparge Gas Flow 80mL/min
Sp. Time 120.0sec
Mean Area 161.2



Slope: 3.164
Intercept 2.776
r^2 0.9999
r 1.0000
RSE(%) N/A
Zero Shift No



Sample

Sample Name: ICV
Sample ID: 3100605001
Origin: 02_18_2022_CAL.cal
Status Completed
Chk. Result

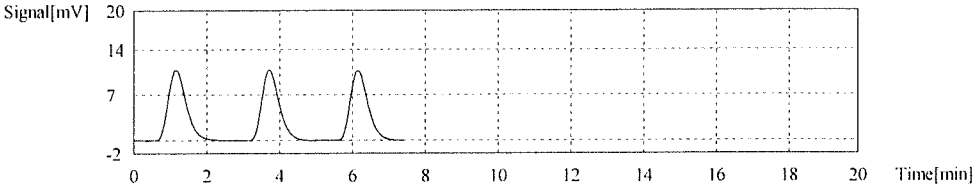
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:10.74mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	37.39	10.94mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/18/2022 3:07:56 PM
2	36.49	10.65mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/18/2022 3:10:36 PM
3	36.44	10.64mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/18/2022 3:13:15 PM

Mean Area 36.77
Mean Conc. 10.74mg/L



Sample

TOC-Control L Report

2022_02_18_CAL001.tlx

Sample Name: ICB
Sample ID:
Origin: 02_18_2022_CAL.cal
Status Completed
Chk. Result

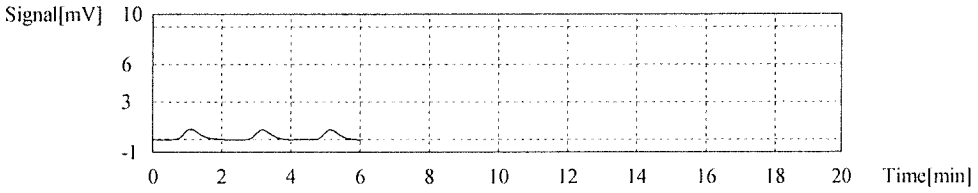
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC -0.09584mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2.684	-0.02916mg/L	50uL	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/18/2022 3:21:29 PM
2	2.396	-0.1202mg/L	50uL	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/18/2022 3:23:41 PM
3	2.339	-0.1382mg/L	50uL	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/18/2022 3:25:54 PM

Mean Area 2.473
Mean Conc. -0.09584mg/L



C:\TOC-L\Data\2022_02_18_001.tlx

	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result
1	Unknown	NPOC	CCV		02_18_2022_CA	1.000	NPOC:24.84mg/L
2	Unknown	NPOC	CCB		02_18_2022_CA	1.000	NPOC:0.1269mg/L
3	Unknown	NPOC	MBLK-02182022		02_18_2022_CA	1.000	NPOC:0.06597mg/L
4	Unknown	NPOC	LCS-02182022		02_18_2022_CA	1.000	NPOC:10.26mg/L
5	Unknown	NPOC	LCSD-02182022		02_18_2022_CA	1.000	NPOC:10.38mg/L
6	Unknown	NPOC	HS22020158-01		02_18_2022_CA	1.000	NPOC:3.969mg/L
7	Unknown	NPOC	HS22020158-01MS		02_18_2022_CA	1.000	NPOC:15.01mg/L
8	Unknown	NPOC	HS22020282-01		02_18_2022_CA	1.000	NPOC:22.60mg/L
9	Unknown	NPOC	HS22020715-01		02_18_2022_CA	1.000	NPOC:16.21mg/L
10	Unknown	NPOC	HS22020487-06		02_18_2022_CA	1.000	NPOC:1.256mg/L
11	Unknown	NPOC	HS22020494-03DF10		02_18_2022_CA	1.000	NPOC:8.374mg/L
12	Unknown	NPOC	HS22020494-06DF10		02_18_2022_CA	1.000	NPOC:2.768mg/L
13	Unknown	NPOC	CCV		02_18_2022_CA	1.000	NPOC:24.41mg/L
14	Unknown	NPOC	CCB		02_18_2022_CA	1.000	NPOC:0.2049mg/L
15	Unknown	NPOC	HS22020494-09DF10		02_18_2022_CA	1.000	NPOC:3.213mg/L
16	Unknown	NPOC	HS22020538-01		02_18_2022_CA	1.000	NPOC:4.052mg/L
17	Unknown	NPOC	HS22020583-01DF200		02_18_2022_CA	1.000	NPOC:23.15mg/L
18	Unknown	NPOC	HS22020770-01		02_18_2022_CA	1.000	NPOC:0.1486mg/L
19	Unknown	NPOC	CCV		02_18_2022_CA	1.000	NPOC:24.26mg/L
20	Unknown	NPOC	CCB		02_18_2022_CA	1.000	NPOC:0.02994mg/L
21	Unknown	NPOC	MBLK-02182022		02_18_2022_CA	1.000	NPOC:0.05069mg/L
22	Unknown	NPOC	LCS-02182022		02_18_2022_CA	1.000	NPOC:10.13mg/L
23	Unknown	NPOC	LCSD-02182022		02_18_2022_CA	1.000	NPOC:10.12mg/L
24	Unknown	NPOC	HS22020294-01		02_18_2022_CA	1.000	NPOC:10.04mg/L
25	Unknown	NPOC	HS22020294-02		02_18_2022_CA	1.000	NPOC:12.62mg/L
26	Unknown	NPOC	HS22020294-03		02_18_2022_CA	1.000	NPOC:4.607mg/L
27	Unknown	NPOC	HS22020294-04		02_18_2022_CA	1.000	NPOC:16.27mg/L
28	Unknown	NPOC	HS22020294-05		02_18_2022_CA	1.000	NPOC:5.634mg/L
29	Unknown	NPOC	HS22020294-05MS		02_18_2022_CA	1.000	NPOC:15.68mg/L
30	Unknown	NPOC	HS22020585-01		02_18_2022_CA	1.000	NPOC:9.825mg/L
31	Unknown	NPOC	CCV		02_18_2022_CA	1.000	NPOC:24.24mg/L
32	Unknown	NPOC	CCB		02_18_2022_CA	1.000	NPOC:0.1033mg/L
33	Unknown	NPOC	HS22020709-01		02_18_2022_CA	1.000	NPOC:8.957mg/L
34	Unknown	NPOC	HS22020710-01		02_18_2022_CA	1.000	NPOC:7.377mg/L
35	Unknown	NPOC	HS22020773-01		02_18_2022_CA	1.000	NPOC:0.9261mg/L
36	Unknown	NPOC	HS22020394-01		02_18_2022_CA	1.000	NPOC:0.5968mg/L
37	Unknown	NPOC	CCV		02_18_2022_CA	1.000	NPOC:24.18mg/L
38	Unknown	NPOC	CCB		02_18_2022_CA	1.000	NPOC:0.01593mg/L
39	Unknown	NPOC	MBLK-02182022		02_18_2022_CA	1.000	NPOC:-0.01989mg/L
40	Unknown	NPOC	LCS-02182022		02_18_2022_CA	1.000	NPOC:9.890mg/L
41	Unknown	NPOC	LCSD-02182022		02_18_2022_CA	1.000	NPOC:9.807mg/L
42	Unknown	NPOC	HS22020394-02		02_18_2022_CA	1.000	NPOC:4.086mg/L
43	Unknown	NPOC	HS22020394-02MS		02_18_2022_CA	1.000	NPOC:14.86mg/L
44	Unknown	NPOC	HS22020394-03		02_18_2022_CA	1.000	NPOC:5.502mg/L
45	Unknown	NPOC	HS22020394-04		02_18_2022_CA	1.000	NPOC:7.715mg/L
46	Unknown	NPOC	HS22020394-05		02_18_2022_CA	1.000	NPOC:6.070mg/L
47	Unknown	NPOC	HS22020394-06		02_18_2022_CA	1.000	NPOC:9.509mg/L
48	Unknown	NPOC	HS22020394-07		02_18_2022_CA	1.000	NPOC:10.33mg/L
49	Unknown	NPOC	CCV		02_18_2022_CA	1.000	NPOC:24.31mg/L
50	Unknown	NPOC	CCB		02_18_2022_CA	1.000	NPOC:-0.07382mg/L
51	Unknown	NPOC	HS22020394-08		02_18_2022_CA	1.000	NPOC:8.810mg/L

C:\TOC-L\Data\2022_02_18_001.tlx

	Type	Analysis	Sample Name	Sample ID	Origin	Manual Diluti	Result
52	Unknown	NPOC	HS11010419-01		02_18_2022_CA	1.000	NPOC:4.964mg/L
53	Unknown	NPOC	HS22020802-01		02_18_2022_CA	1.000	NPOC:9.738mg/L
54	Unknown	NPOC	HS22020810-01		02_18_2022_CA	1.000	NPOC:5.686mg/L
55	Unknown	NPOC	CCV		02_18_2022_CA	1.000	NPOC:24.13mg/L
56	Unknown	NPOC	CCB		02_18_2022_CA	1.000	NPOC:-0.1070mg/L

C:\TOC-L\Data\2022_02_18_001.tlx

	Notes	Status	Date / Time	Vial
1		Completed	2/18/2022 8:14:57 P	1
2		Completed	2/18/2022 8:27:19 P	2
3		Completed	2/18/2022 8:39:40 P	3
4		Completed	2/18/2022 8:53:36 P	4
5		Completed	2/18/2022 9:09:37 P	5
6		Completed	2/18/2022 9:22:56 P	6
7		Completed	2/18/2022 9:37:00 P	7
8		Completed	2/18/2022 9:51:21 P	8
9		Completed	2/18/2022 10:05:29	9
10		Completed	2/18/2022 10:18:11	10
11		Completed	2/18/2022 10:33:02	11
12		Completed	2/18/2022 10:46:11	12
13		Completed	2/18/2022 11:13:01	1
14		Completed	2/18/2022 11:25:37	2
15		Completed	2/18/2022 11:38:55	13
16		Completed	2/18/2022 11:51:57	14
17		Completed	2/19/2022 12:05:28	15
18		Completed	2/19/2022 12:20:47	16
19		Completed	2/19/2022 12:47:14	1
20		Completed	2/19/2022 12:59:34	2
21		Completed	2/19/2022 1:12:05 A	3
22		Completed	2/19/2022 1:25:53 A	4
23		Completed	2/19/2022 1:39:41 A	5
24		Completed	2/19/2022 1:53:13 A	17
25		Completed	2/19/2022 2:06:53 A	18
26		Completed	2/19/2022 2:22:07 A	19
27		Completed	2/19/2022 2:36:11 A	20
28		Completed	2/19/2022 2:50:16 A	21
29		Completed	2/19/2022 3:06:35 A	22
30		Completed	2/19/2022 3:20:14 A	23
31		Completed	2/19/2022 3:52:02 A	24
32		Completed	2/19/2022 4:04:25 A	25
33		Completed	2/19/2022 4:17:45 A	26
34		Completed	2/19/2022 4:31:08 A	27
35		Completed	2/19/2022 4:45:05 A	28
36		Completed	2/19/2022 4:57:26 A	29
37		Completed	2/19/2022 5:23:57 A	24
38		Completed	2/19/2022 5:36:35 A	25
39		Completed	2/19/2022 5:48:59 A	3
40		Completed	2/19/2022 6:02:30 A	4
41		Completed	2/19/2022 6:16:03 A	5
42		Completed	2/19/2022 6:29:08 A	30
43		Completed	2/19/2022 6:43:03 A	31
44		Completed	2/19/2022 6:55:58 A	32
45		Completed	2/19/2022 7:09:23 A	33
46		Completed	2/19/2022 7:22:39 A	34
47		Completed	2/19/2022 7:36:06 A	35
48		Completed	2/19/2022 7:49:31 A	36
49		Completed	2/19/2022 8:16:13 A	24
50		Completed	2/19/2022 8:28:34 A	25
51		Completed	2/19/2022 8:42:08 A	37

C:\TOC-L\Data\2022_02_18_001.tlx

	Notes	Status	Date / Time	Vial
52		Completed	2/19/2022 8:55:16 A	38
53		Completed	2/19/2022 9:08:49 A	39
54		Completed	2/19/2022 9:22:02 A	40
55		Completed	2/19/2022 9:48:48 A	24
56		Completed	2/19/2022 10:01:07	25

TOC-Control L Report

2022_02_18_001.tlx

Instr.Information

Instrument Options: TOC/ASI/IC Unit/
Catalyst: Regular Sensitivity

Sample

Sample Name: CCV
Sample ID:
Origin: 02_18_2022_CAL.cal
Status: Completed
Chk. Result:

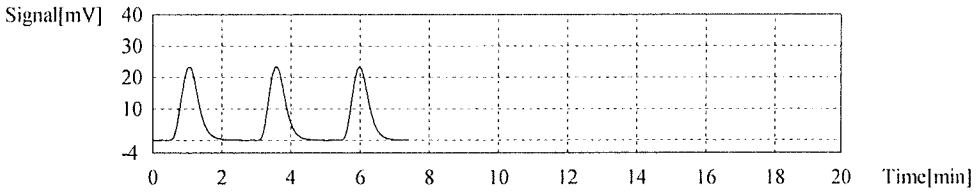
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:24.26mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	81.13	24.76mg/L	50ul	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 12:41:56 AM
2	79.12	24.13mg/L	50ul	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 12:44:35 AM
3	78.37	23.89mg/L	50ul	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 12:47:14 AM

Mean Area: 79.54
Mean Conc.: 24.26mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 02_18_2022_CAL.cal
Status: Completed
Chk. Result:

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC:0.02994mg/L

1. Det

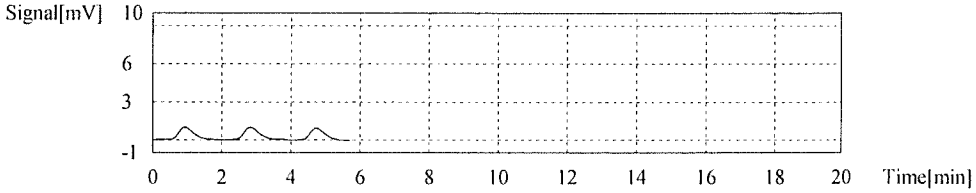
Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2.802	0.00813mg/L	50ul	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 12:55:18 AM
2	2.916	0.04416mg/L	50ul	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 12:57:26 AM
3	2.895	0.03753mg/L	50ul	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 12:59:34 AM

TOC-Control L Report

2022_02_18_001.tlx

Mean Area 2.871
Mean Conc. 0.02994mg/L



Sample

Sample Name: MBLK-02182022
Sample ID:
Origin: 02_18_2022_CAL.cal
Status Completed
Chk. Result

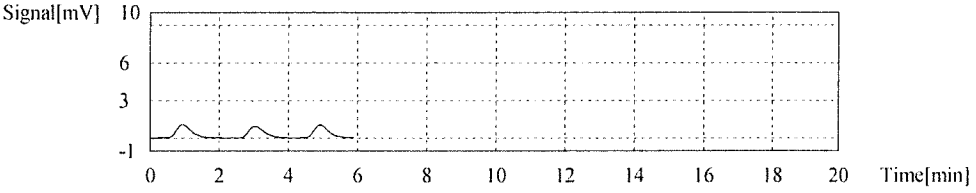
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 0.05069mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2.988	0.06692mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 1:07:49 AM
2	2.869	0.02931mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 1:09:58 AM
3	2.953	0.05585mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 1:12:05 AM

Mean Area 2.937
Mean Conc. 0.05069mg/L



Sample

Sample Name: LCS-02182022
Sample ID:
Origin: 02_18_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 10.13mg/L

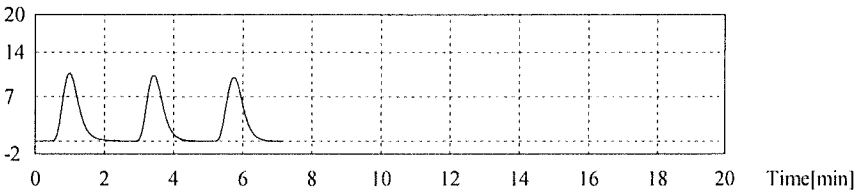
1. Det

Anal.: NPOC

TOC-Control L Report

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	35.47	10.33mg/L	50uL	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 1:20:40 AM
2	34.47	10.02mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 1:23:13 AM
3	34.54	10.04mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 1:25:53 AM

Mean Area 34.83
Mean Conc. 10.13mg/L



Sample

Sample Name: LCSD-02182022
Sample ID:
Origin: 02_18_2022_CAL.cal
Status Completed
Chk. Result

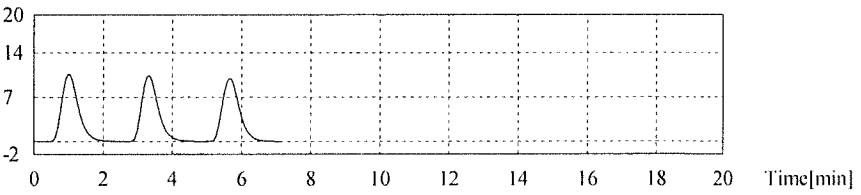
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 10.12mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	35.37	10.30mg/L	50uL	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 1:34:22 AM
2	34.51	10.03mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 1:36:56 AM
3	34.55	10.04mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 1:39:41 AM

Mean Area 34.81
Mean Conc. 10.12mg/L



Sample

Sample Name: HS22020294-01
Sample ID:
Origin: 02_18_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 10.04mg/L

1. Det

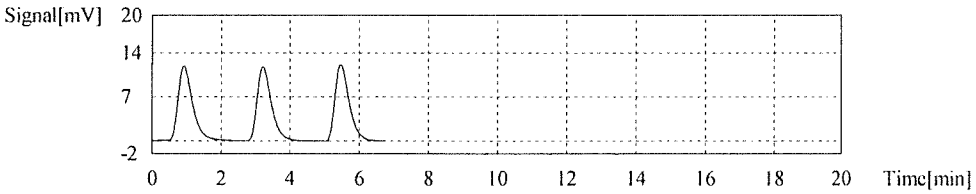
TOC-Control L Report

2022_02_18_001.tlx

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	34.48	10.02mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 1:48:15 AM
2	34.21	9.934mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 1:50:47 AM
3	34.92	10.16mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 1:53:13 AM

Mean Area 34.54
Mean Conc. 10.04mg/L



Sample

Sample Name: HS22020294-02
Sample ID:
Origin: 02_18_2022_CAL.cal
Status Completed
Chk. Result

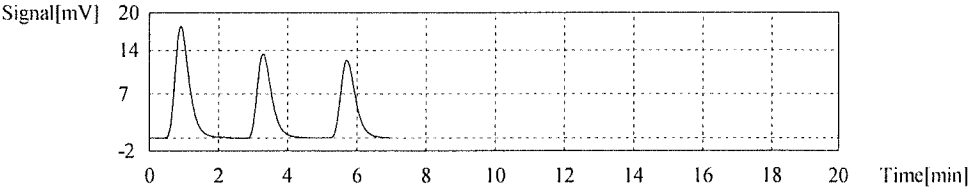
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 12.62mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	50.95	15.22mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 2:01:44 AM
2	40.03	11.77mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 2:04:25 AM
3	37.11	10.85mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 2:06:53 AM

Mean Area 42.70
Mean Conc. 12.62mg/L



Sample

Sample Name: HS22020294-03
Sample ID:
Origin: 02_18_2022_CAL.cal
Status Completed
Chk. Result

Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 4.607mg/L

TOC-Control L Report

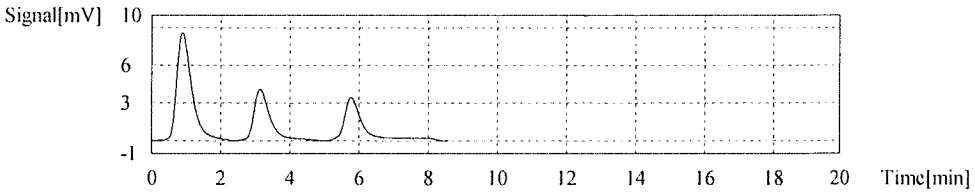
2022_02_18_001.tlx

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	25.98	7.333mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 2:15:17 AM
2	13.13	3.272mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 2:18:10 AM
3	12.95	3.215mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 2:22:07 AM

Mean Area 17.35
Mean Conc. 4.607mg/L



Sample

Sample Name: HS22020294-04
Sample ID:
Origin: 02_18_2022_CAL.cal
Status Completed
Chk. Result

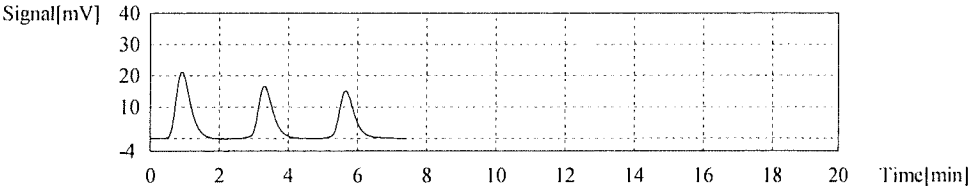
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 16.27mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	63.86	19.30mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 2:30:41 AM
2	50.50	15.08mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 2:33:15 AM
3	48.42	14.42mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 2:36:11 AM

Mean Area 54.26
Mean Conc. 16.27mg/L



Sample

Sample Name: HS22020294-05
Sample ID:
Origin: 02_18_2022_CAL.cal
Status Completed
Chk. Result

TOC-Control L Report

2022_02_18_001.tlx

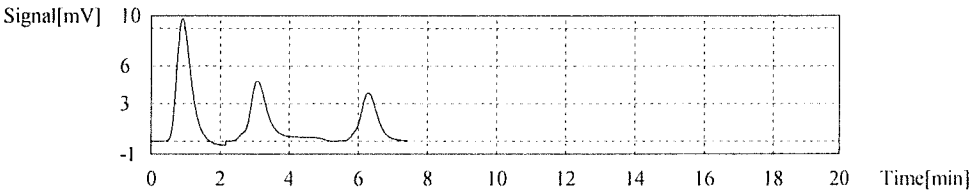
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC,5.634mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	29.51	8.449mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 2:44:32 AM
2	19.30	5.222mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 2:48:00 AM
3	13.00	3.231mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 2:50:16 AM

Mean Area 20.60
Mean Conc. 5.634mg/L



Sample

Sample Name: HS22020294-05MS
Sample ID:
Origin: 02_18_2022_CAL.cal
Status Completed
Chk. Result

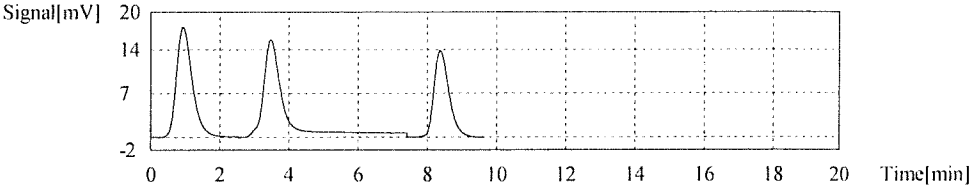
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC,15.68mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	56.66	17.03mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 2:58:57 AM
2	58.45	17.59mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 3:04:06 AM
3	42.04	12.41mg/L	50uL	1.000		02_18_2022_CAL.2022_02_18_13_22_06.cal	2/19/2022 3:06:35 AM

Mean Area 52.38
Mean Conc. 15.68mg/L



Sample

TOC-Control L Report

2022_02_18_001.tlx

Sample Name: CCV
Sample ID:
Origin: 02_18_2022_CAL.cal
Status Completed
Chk. Result

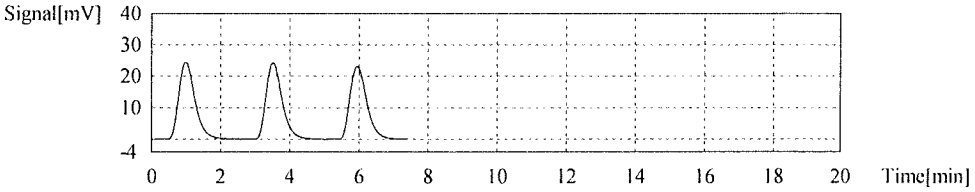
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 24.24mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	80.76	24.64mg/L	50uL	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 3:46:38 AM
2	78.86	24.04mg/L	50uL	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 3:49:19 AM
3	78.86	24.04mg/L	50uL	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 3:52:02 AM

Mean Area 79.49
Mean Conc. 24.24mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: 02_18_2022_CAL.cal
Status Completed
Chk. Result

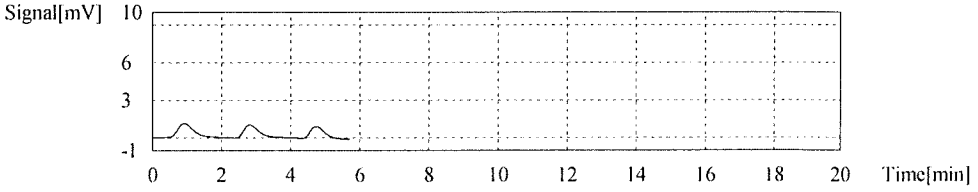
Type	Anal.	Manual Dilution	Result
Unknown	NPOC	1.000	NPOC 0.1033mg/L

1. Det

Anal.: NPOC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	3.314	0.1699mg/L	50uL	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 4:00:06 AM
2	3.099	0.1020mg/L	50uL	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 4:02:17 AM
3	2.896	0.03784mg/L	50uL	1.000		02_18_2022_CAL 2022_02_18_13_22_06.cal	2/19/2022 4:04:25 AM

Mean Area 3.103
Mean Conc. 0.1033mg/L



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

June 6, 2023

SUBJECT: Draft Final 2022 Remedial Action Operation Report, Landfill 12 (LHAAP-12), Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, June 2023

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://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email. The Draft Final document includes revisions based upon the Environmental Protection Agency (EPA) comments on the Draft version received on April 27, 2023. The Texas Commission on Environmental Quality (TCEQ) indicated that they had no comments on the document via email on May 4, 2023. A table of responses to the EPA comments on the Draft version is included with this Draft Final document. In accordance with Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment.

The document was prepared by the Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at (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
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M. Bowlby, USAEC, San Antonio, TX
K. Russell, BRAC, Huntsville, AL
K. Nemmers, 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

June 6, 2023

SUBJECT: Draft Final 2022 Remedial Action Operation Report, Landfill 12 (LHAAP-12), Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, June 2023

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://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email. The Draft Final document includes revisions based upon the Environmental Protection Agency (EPA) comments on the Draft version received on April 27, 2023. The Texas Commission on Environmental Quality (TCEQ) indicated that they had no comments on the document via email on May 4, 2023. A table of responses to the EPA comments on the Draft version is included with this Draft Final document. In accordance with Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment.

The document was prepared by the Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at (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

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M. Bowlby, USAEC, San Antonio, TX
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K. Nemmers, Bhate, Lakewood, CO
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Response to USEPA Comments on
Draft 2022 Remedial Action Operation Report
Landfill 12 (LHAAP-12)
Longhorn Army Ammunition Plant, Karnack, Texas

Document Date: 3 April 2023
Comment Date: 27 April 2023

Reviewer: 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 Number	Section/ Page	Paragraph/Line	USEPA Comment	C, D, E, or X	Response	A,D
1	2.2, p. 2-2	1st paragraph below black bullets, 3rd sentence (begins with "Discontinuation …")	Sentence indicates well 12WW21 is directly downgradient from the plume (presumably centered on well 12WW24?). While that may be true based solely on groundwater elevations between the 2 wells, the water-table contour map constructed using groundwater elevations throughout the site presented in the next report section (fig. 2-2) indicates groundwater flowing through the well 12WW24 location may flow northeastward from/through the well only for a very short distance before the flow direction transitions to an eastward direction and then to a southeastward direction north of well 12WW10R. Thus, there may not be a direct groundwater flowpath between well 12WW24 and the intended downgradient monitoring well (12WW21), at least for the time period represented by the map. Of course, if flow directions change seasonally or for other reasons, this would not be the case all the time.	E	The sentence in question is describing the rationale for a decision made in the 2014 Annual RA-O Report and the potentiometric conditions present in 2022 may differ from those reported in the 2014 report. However, while there are slight groundwater flow direction fluctuations from year to year, groundwater in the vicinity of 12WW24, is likely to flow towards either 12WW21 or 12WW10R and monitoring of 12WW23 remains unnecessary.	

Comment Number	Section/ Page	Paragraph/Line	USEPA Comment	C, D, E, or X	Response	A,D
2	Fig. 2-2	Map portion of fig.	1) Does the surface-water body between wells 12WW22 and 12WW21 interact with (i.e., is in hydraulic connection with or loses water to) the water table/shallow zone? Because it is so close to the site, the water body's potential/actual hydraulic connection with the water table/shallow zone, or lack thereof, should be discussed.	C	1) There has not been a detailed study of the hydraulic interaction between the surface water body and the groundwater, but there is no reason to expect there to not be a connection with the shallow groundwater zone. The following text will be added to Section 2.2.1: "There is a small pond located to the north of the landfill that is likely to interact with the shallow groundwater zone and recharge from the pond may influence the turning of the groundwater flow direction from the northeast to the east in the vicinity of well 12WW21."	
			2) Unless the surface-water body elevation is at the same elevation as the water table (and thus, is in hydraulic connection), probably should dash a substantial portion of the 181 ft contour (and because of lack of sufficiently close nearby wells to provide "control" for 181 ft contour placement).	C	2) Since the precise elevation of the surface water body is unknown, the 181 feet AMSL contour line on Figure 2-2 will be dashed to indicate that the location of the contour is estimated.	
3	2.2.1, p. 2-3	1st paragraph, 2nd sentence	Sentence indicates groundwater flows to the east and northeast in fig. 2-2. While that is true, there are substantial portions of the site where groundwater flows in other directions, as was indicated in comment # 1. Assuming the contours are representative of the water table at the site, there are substantial portions of the site downgradient of the capped portion of LHAAP-12 where groundwater flows southeastward in addition to northeastward and eastward directions, depending upon which flowpath/flowline is followed for a given portion of the map/site. Consequently, in light of the this and comment # 1, should revise description of groundwater flow at the site.	C	Text will be revised to "The groundwater elevation measurements collected in January 2023 indicate that groundwater flows to the east and northeast in the immediate vicinity of 12WW01, 12WW24, and 12WW10R and then trending to the southeast in the vicinity of 12WW21 and 12WW23 as shown on **Figure 2-2**."	

Comment Number	Section/ Page	Paragraph/Line	USEPA Comment	C, D, E, or X	Response	A,D
4	2.2.1, p. 2-3	1st paragraph, 6th sentence	The wording describing the units for the horizontal hydraulic gradient in the sentence, "feet vertical per foot horizontal" is unusual. Suggest using more typical wording to describe the horizontal hydraulic gradient units and making several other revisions to the sentence. Suggested alternative sentence wording for consideration: "The horizontal hydraulic gradient determined using groundwater-level elevations measured in January 2023 was 0.003 foot per foot (ft/ft) in the northern portion of the site and 0.02 ft/ft in the eastern portion of the site."	C	Text will be revised to "The horizontal hydraulic gradient calculated using groundwater elevations measured in January 2023 was 0.003 foot per foot (ft/ft) in the northern portion of the site and 0.02 ft/ft in the eastern portion of the site."	
5	2.2.1, p. 2-3	1st paragraph, 8th sentence	Appendix A indicates siltation was 18 percent in monitoring well 12WW22 and 17.5 percent in well 12WW23.	C	Text will be revised to "Based on these observations, monitoring wells 12WW23, and 12WW22 show screen siltation of 17.5 and 18 percent, respectively."	
6	2.2.2 and 2.3, and Conclusions and Recommend ations	Various sentences in parts of all 3 sections	Editorial note: In some sentences, a space is used between the constituent concentration and the "J" qualifier, whereas in others, no space is used. Suggest standardizing throughout document.	C	A space will be applied uniformly between the concentration and the qualifier.	
7	Conclusions and Recommend ations, p. 3-2	2nd (last) paragraph, 1st sentence,	Suggest adding the word "the" between "although" and "TCE concentration" and adding the phrase "in well 12WW24" between "TCE concentration" and "slightly increased."	C	Text will be revised as suggested.	
8	Fig. 2-2	Legend portion of fig.	Suggest adding the word "Elevation" between "Groundwater" and "Contour" (i.e., "Groundwater Elevation Contour").	C	Figure will be revised as suggested.	

Comment Number	Section/ Page	Paragraph/Line	USEPA Comment	C, D, E, or X	Response	A,D
9	Fig. 2-3	X-axis labels	Dates on x-axis are not placed in the proper locations — makes it difficult to examine concentrations in relation to sampling events/time. For example, the x-axis label for the TCE concentration of about 350 ug/L for the 1/1/15 sample lines up with an X-axis label of 12/1/14. Some of this may be attributable, in part, to the "sloped" date labels, so recommend a different approach so that the reader can more easily examine plotted concentrations in relation to the appropriate sampling dates/events.	C	Axis labels will be relocated for clarity and revised to better indicate date.	
10	Fig. 2-4	Map portion of fig.	Less than symbols ("<") are missing before non-detect concentration values.	C	Figure will be revised to add the less than symbols to non-detect concentration values.	
11	Appendix F	X-axis labels	There is a problem with the x-axis labels on both figs. Both have the TCE identifier for the black diamonds misplaced — it overlaps other text in both figs.	C	Axis labels will be revised to better display the date.	

Draft Final
2022 Remedial Action Operation Report, Landfill 12 (LHAAP-12)
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for:

U.S. Army Corps of Engineers, Tulsa District
Contracting Division
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Contract No. W9128F-13-D-0012
Task Order No. W9128BV17F0150
Project No. 501032
Rev 0
June 2023

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • June 2023

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Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • June 2023

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Acronyms and Abbreviations

µg/L	micrograms per liter
AECOM	AECOM Technical Services, Inc.
APTIM	Aptim Federal Services, LLC
Bhate	Bhate Environmental Associates, Inc.
COC	contaminant of concern
DCE	dichloroethene
ft/ft	foot vertical per foot horizontal
J	estimated result
LHAAP	Longhorn Army Ammunition Plant
LUC	land use control
MCL	maximum contaminant level
MNA	monitored natural attenuation
No.	number
RA-O	remedial action operation
RD	Remedial Design
ROD	Record of Decision
Shaw	Shaw Environmental, Inc.
TCE	trichloroethene
U.S.	United States
VC	vinyl chloride
VOC	volatile organic compound

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • June 2023

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Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • June 2023

1.0 INTRODUCTION

The United States (U.S.) Army Corps of Engineers, Tulsa District, on behalf of the U.S. Army Base Realignment and Closure Division, contracted Bhate Environmental Associates, Inc. (Bhate) under the Omaha Multiple Environmental Government Acquisition National Small Business Multiple Award Task Order Contract, Environmental Remediation Services with Military Munitions Response Program, Task Order Number (No.) W9128BV17F0150, to conduct environmental restoration at multiple sites at the former Longhorn Army Ammunition Plant (LHAAP). The Bhate Team consists of Bhate as the prime contractor and Aptim Federal Services, LLC (APTIM) as a subcontractor responsible for remedial activities at several sites, including LHAAP-12. The groundwater monitoring and site inspection activities have been conducted as described in the *Final Remedial Design Addendum Landfill 12 (LHAAP-12)* (Shaw Environmental, Inc. [Shaw] 2007). LHAAP-12 was transferred to the U.S. Fish and Wildlife Service as part of the Caddo Lake National Wildlife Refuge in 2014. This Remedial Action Operation (RA-O) Report represents the fifteenth year of RA-O implementation and summarizes the results of the sampling activities and site inspections completed in 2022 and early 2023.

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 1-1**). 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.

1.1 Remedial Action Objectives

Work completed in 2022 and January 2023 as part of the remedial action objectives at LHAAP-12 consisted of the following components: physical inspections, mowing, groundwater monitoring, and concentration trend analysis. Damage to the LHAAP-18/24 groundwater treatment plant caused by a hard freeze resulted in a delay of the scheduled December 2022 groundwater monitoring event until January 2023. Physical inspections are conducted annually, at a minimum, to confirm compliance with land use control (LUC) objectives, which consist of ensuring the integrity of the existing landfill cover and ensuring no exposure to trichloroethene (TCE)-contaminated groundwater.

The objectives for groundwater monitoring at LHAAP-12 are to:

- Determine the effectiveness of natural attenuation in reducing contaminant concentrations over time.

- Evaluate plume migration to ensure that TCE-contaminated groundwater does not impact nearby surface water.
- Perform trend analysis of groundwater contaminants of concern (COCs): TCE, cis-1,2-dichloroethene (DCE), and vinyl chloride (VC).
- Perform a comparison of the COC concentration trends relative to the maximum contaminant levels (MCLs).

The remedy at LHAAP-12 is functioning as intended, and all human risks are currently under control. This report summarizes the results of groundwater monitoring and the landfill integrity inspections.

1.2 Site Description

LHAAP-12, established in 1963, covers approximately seven acres and is 500 feet southeast of Central Creek, which eventually drains into Caddo Lake. LHAAP-12 was used for the disposal of industrial solid wastes, possibly containing small quantities of hazardous constituents generated at LHAAP (**Figure 1-2**). From 1978 until its closure in April 1994, the landfill was used continuously for the disposal of nonhazardous (as defined by the Resource Conservation and Recovery Act) industrial solid waste, including cafeteria waste, chemical waste, petroleum-contaminated soil, and asbestos. The construction of a landfill cap over the site was completed in 1998 as part of an interim remedial action. The interim remedial action is consistent with U.S. Environmental Protection Agency presumptive remedy guidance. The final remedy for LHAAP-12 is protective of human health and the environment and consists of LUCs in conjunction with monitored natural attenuation (MNA) as described in the *Final Record of Decision, Landfill 12 (LHAAP-12)* (Shaw 2006). The LUCs are discussed in more detail in **Section 2.0**.

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2.0 OPERATIONS AND MAINTENANCE ACTIVITIES AT LHAAP-12

Operation, maintenance, and physical inspection activities at LHAAP-12 consist of the following:

- Maintenance of the integrity of the landfill cap and repairs to desiccation cracks, erosion, or gullying upon observance.
- Maintenance of the vegetative cover on the landfill cap, including periodic mowing.
- Maintenance of the signage around the landfill cap.
- Prohibition of any activities that would affect the integrity of the cap.
- Prohibition of any activities that would cause exposure to contaminated groundwater.

Inspections of the well field are conducted annually, and the information is recorded on well inspection forms and associated photographs (**Appendix A**). Maintenance or repairs are then conducted, as needed, based on observed conditions.

Mowing the sampling area for brush and weeds is conducted on a routine basis and as needed to access the well field. Tree removal and mowing were performed on May 11 to 12, 2022.

The Remedial Design (RD) Addendum (Shaw 2007) stipulated annual physical inspections and annual groundwater sampling to monitor the effectiveness of natural attenuation in reducing contaminant concentrations over time. The annual landfill cap inspection for LHAAP-12 was conducted on May 13, 2022 (**Appendix B**). Informal inspections are conducted more frequently, with periodic drive-by oversight to ensure compliance with the above requirements. The effectiveness of MNA was initially evaluated quarterly in the *Draft Annual Remedial Action Operation Report, Years 1 and 2, Landfill 12 (LHAAP-12)* (Shaw 2011) and has been evaluated annually beginning in the third year of RA-O. Groundwater monitoring was included as a component of the remedy for LHAAP-12 identified in the Record of Decision (ROD) (Shaw 2006).

2.1 Physical Inspection Summary

The LUC Inspection and Maintenance Log and pictures from the landfill inspection are included in **Appendix B**. The landfill cover was observed to be in good condition and well maintained with no excessive cracking or desiccation cracks. The landfill cover was mowed May 11 to 12, 2022, and the small trees that were observed growing on the landfill in January 2022 were pulled and removed. No change in land or groundwater use was observed

at the site, and the use of the site is consistent with the LUCs mandated by the ROD (Shaw 2006). Signs were all visible around the landfill. No damage to bollards, pads, or protective casings was observed, and minimal encroachment of weeds or brush on the well pads was observed. Wellhead locks continue to be in good condition. The January 2023 well inspection forms and associated well photographs are provided in **Appendix A**.

2.2 Groundwater Monitoring

The purpose of sampling is to provide data to support evaluating whether the RAOs are being met. The RAOs include:

- Determine the effectiveness of natural attenuation in reducing contaminant concentrations over time.
- Evaluate plume migration to ensure that TCE-contaminated groundwater does not impact nearby surface water.
- Perform trend analysis of groundwater COCs: TCE, cis-1,2-DCE, and VC.
- Perform a comparison of the COC concentration trends relative to the MCLs.

As described by the Groundwater Sampling Plan included in the RD Addendum (Shaw 2007), annual groundwater sampling of three on-site monitoring wells (12WW20, 12WW21, and 12WW24) and two downgradient compliance monitoring wells (12WW22 and 12WW23) was to be conducted annually beginning in the third year of the RA-O (i.e., 2010). As recommended in the *Draft Final 2014 Remedial Action Operation Report* (AECOM Technical Services, Inc. [AECOM] 2015), the sampling frequency of monitoring well 12WW22 was changed to once every five years and this well will be sampled as part of the RA-O event in December 2024. Discontinuation of sampling at well 12WW23 was also recommended in the 2014 RAO Report (AECOM 2015) due to the distance of the well downgradient from the plume and the presence of 12WW21 between the plume and 12WW23. Monitoring well 12WW23 was last sampled during the 2016 annual sampling event. Monitoring well 12WW10R, installed in August 2019, was also added to the list of monitoring wells to be sampled annually (Bhate 2020). The locations of these groundwater monitoring wells are shown on **Figure 2-1**.

Four wells (12WW10R, 12WW20, 12WW21, and 12WW24) will continue to be sampled annually for volatile organic compounds (VOCs). Well 12WW22 will be sampled every five years to support the five-year reviews. Any change in this frequency will be evaluated in the next five-year review currently being conducted in 2023.

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2.2.1 Groundwater Elevation Measurements

The groundwater elevations from nine wells, 12WW01, 12WW02, 12WW05, 12WW10R, 12WW20, 12WW21, 12WW22, 12WW23, and 12WW24, were gauged and recorded in December 2021 and are included in **Table 2-1**. The groundwater elevation measurements collected in January 2023 indicate that groundwater flows to the east and northeast in the immediate vicinity of 12WW01, 12WW24, and 12WW10R and then trending to the southeast in the vicinity of 12WW21 and 12WW23 as shown on **Figure 2-2**. There is a small pond located to the north of the landfill that is likely to interact with the shallow groundwater zone and recharge from the pond may influence the turning of the groundwater flow direction from the northeast to the east in the vicinity of well 12WW21. The groundwater elevation in eight of the nine measured wells was approximately 0.69 to 1.76 feet lower in January 2023 than in the previous gauging event that occurred in December 2021 (Bhate 2022). The groundwater elevation was slightly higher (0.19 feet) in well 12WW01. The groundwater elevations in January 2023 are generally within the range of historical values. The horizontal hydraulic gradient calculated using groundwater elevations measured in January 2023 was 0.003 foot per foot (ft/ft) in the northern portion of the site and 0.02 ft/ft in the eastern portion of the site. The well siltation measurements from the January 2023 gauging event have been included in **Appendix A**. Based on these observations, monitoring wells 12WW23, and 12WW22 show screen siltation of 17.5 and 18 percent, respectively. Monitoring wells 12WW22 and 12WW23 were only used for groundwater gauging during the January 2023 sampling event, and the level of siltation observed is unlikely to have impacted the groundwater elevation measurements. Monitoring well 12WW21 had been recommended for redevelopment to address a siltation level of 12.7 percent. However, during the January 2023 sampling event, siltation was measured during the gauging at 2.9 percent, indicating that redevelopment is not currently needed. The remaining wells were in good condition, and no evidence of turbidity or silt accumulation was identified during the sampling and gauging event. Monitoring well 12WW22 will be redeveloped prior to the sampling event in December 2023. If the level of siltation in 12WW23 increases in the future, additional redevelopment may be prudent to maintain its usefulness as a groundwater gauging location.

2.2.2 Groundwater Sampling and Analytical Results

Groundwater samples were collected in January 2023 using low-flow methodology, in accordance with Bhate's *Standard Operating Procedures, Groundwater Sampling Procedures* presented in the *Final Installation Wide Work Plan* (Bhate 2018). The objective of using low-flow sampling methods is to reduce turbidity in the samples. After the water quality parameters stabilized and were within acceptable ranges, samples were collected at the same low flow rate. Groundwater monitoring well sampling forms were completed for each monitoring well sampled and are included in **Appendix C**. Laboratory analytical results are included in **Appendix D**. Analytical results for the January 2023 samples are shown in **Table 2-2**.

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Groundwater TCE concentrations for all wells can be found in **Table 2-3**. The January 2023 concentrations are shown on **Figure 2-4**. Historical TCE concentrations for LHAAP-12 wells are shown in **Table 2-3**. Historical COC concentrations for monitoring well 12WW24 are shown in **Table 2-4**. Historical COC trends and groundwater elevations for 12WW24 are shown on **Figure 2-3**. The 2023 COC concentrations are shown on **Figure 2-4**.

Groundwater samples were collected on January 17, 2023, from 12WW10R, 12WW20, 12WW21, and 12WW24. The samples were analyzed for VOCs according to U.S. Environmental Protection Agency Method 8260 (SW-846). TCE was detected in 12WW10R at an estimated (J) concentration of 0.93 J micrograms per liter (µg/L), below the MCL. In monitoring well 12WW24, TCE was detected at a concentration of 8.3 J µg/L and was the only VOC that slightly exceeded its MCL (5 µg/L).

The TCE concentration at monitoring well 12WW24 decreased from 19 µg/L in December 2019 to 15 µg/L in December 2020, and 5.5 µg/L in December 2021, but has slightly increased to 8.3 J µg/L in January 2023. Cis-1,2-DCE was detected at 11 µg/L in December 2020 and decreased to 7.7 µg/L in December 2021 and 7.4 J µg/L in January 2023, below its MCL of 70 µg/L. Historical COC trends are discussed further in the MNA evaluation in **Section 2.3**.

2.3 Monitored Natural Attenuation Evaluation

The MNA evaluation, completed as part of the *Final 2013 Five-Year Review Report* (AECOM 2014), concluded that TCE degradation was occurring via anaerobic reductive dechlorination. Although an increasing trend in TCE concentration was detected in well 12WW24 between June 2010 and January 2015, concentrations have decreased over the past seven sampling events from December 2015 to December 2021 (**Figure 2-3**). Historically, TCE concentrations appear to inversely correlate with fluctuating water levels, as shown on **Figure 2-3**. For the January 2023 event, the groundwater elevation decreased by approximately 1.5 feet from the December 2021 event, accompanied by a slight increase of TCE to 8.3 J µg/L in 12WW24 and the detection of 0.93 J µg/L of TCE in monitoring well 12WW10R. The presence of cis-1,2-DCE indicates that degradation by anaerobic reductive dechlorination is likely still occurring (**Table 2-4** and **Figure 2-3**), and the oxidation-reduction potential value for 12WW24 has decreased to below the 50-millivolt threshold conducive to reductive dechlorination. However, abiotic processes are likely to continue to be the dominant pathway for TCE concentration reduction.

Statistical analysis of the concentration profile for TCE in 12WW24 was completed using Mann-Kendall trend analysis for the data collected from 2006 to 2023. The results are shown in **Appendix E**. The Mann-Kendall trend test indicates a statistically significant decreasing trend at the 99.9 percent confidence level for TCE concentrations in monitoring well 12WW24,

despite the minor increase in 2023. A drought persisted between 2011 and 2012. This resulted in decreased groundwater levels and well 12WW24 being dry and not sampled in 2012. After the groundwater level in 12WW24 recovered, TCE concentrations increased during the December 2013 and January 2015 sampling events, and then declined during the December sampling events from 2015 through 2021. TCE has now increased slightly in 12WW24 for 2023, likely influenced by a decline in the groundwater elevation. The 2023 five-year review is ongoing and will evaluate trends for statistical significance and potentially further decreases of sampling frequency. The overall decreasing contaminant concentration trend provides evidence that the plume is stable and natural attenuation is occurring, resulting in an overall decrease in TCE concentration in groundwater over time. The presence of cis-1,2-DCE in 12WW24 since 2013 also indicates that biodegradation has been occurring.

The TCE trend in 12WW24 shown on **Figure 2-3** was used to calculate a first order decay rate (**Appendix F**). Two calculations have been made: 1) the first for the data set through June 2011, and 2) the second for the data set that includes all results through January 2023. Two calculations were made because the recovery from drought conditions evidenced by the dry well in December 2012 appears to have generated a temporary increase in TCE concentration in this well in the December 2013 and January 2015 sampling events. This increase temporarily disrupted the overall trend in the data set. However, the groundwater elevations have been increasing since the well was dry in December 2012, and an overall decrease in TCE concentration has also been detected after the concentrations peaked in January 2015.

The first order rate constant for the period from December 2006 through June 2011 was 6.0 E-04 per day, and the first order rate constant for the entire data set from December 2006 to January 2023 is the same. Based on these rate constants, the estimated duration to achieve the MCL for TCE in 12WW24 is 15 years from June 2011 using the rate constant for the pre-drought data set from December 2006 through June 2011 and approximately 5 years from January 2023 using the rate constant for the entire data set. However, given the lithologic variability at the site, the potential for plume migration, the concentrations approaching the laboratory detection limit, concentrations within the limits of analytical precision relative to the MCL, and other factors affecting the concentration trends, the time to achieve MCLs at LHAAP-12 may vary by an order of magnitude or more. Additionally, the rate of reduction could diminish over time as the residual concentrations decrease, and the time frames to achieve the MCL might be longer than estimated.

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3.0 CONCLUSIONS AND RECOMMENDATIONS

Physical inspections and groundwater monitoring continue at LHAAP-12 in compliance with the ROD for LHAAP-12 (Shaw 2006). Monitoring well 12WW23 was redeveloped in October 2021 and continues to show excess siltation since redevelopment of the well. Monitoring well 12WW22 will be redeveloped prior to the next sampling in 2023 if siltation continues to exceed 10 percent. No damage to bollards, pads, or protective casings was observed, and limited encroachment of weeds or brush on the well pads was observed. No change in land or groundwater use has occurred at the site. LUCs were verified, and the use of the site is still consistent with that mandated by the ROD. Annual LUC inspections will continue to be conducted.

In accordance with the Groundwater Sampling Plan, found in Appendix A of the RD Addendum for LHAAP-12 (Shaw 2007), annual sampling of wells will continue until the next five-year review (currently being conducted in 2023).

The groundwater gauging event from January 2023 indicates an easterly to northeasterly gradient. Based on historical gradient maps, the direction of groundwater flow varies. The monitoring wells will continue to be gauged and inspected as part of future sampling events.

Monitoring wells 12WW10R, 12WW20, 12WW21, and 12WW24 were sampled on January 17, 2023, for VOCs. No VOCs were detected in 12WW20. TCE was detected in monitoring well 12WW10R at a concentration below MCL. At 12WW24, TCE was detected slightly above its MCL of 5 µg/L at a concentration of 8.3 J µg/L. This was an increase from the December 2021 TCE concentration of 5.5 µg/L, likely due to a decrease in groundwater elevation. None of the other detected compounds exceeded their respective MCLs. TCE concentrations in 12WW24 show a statistically significant decreasing trend since 2006 based on Mann-Kendall analysis (**Appendix E**). Monitoring well 12WW10R, installed to delineate the plume more tightly in the downgradient direction, did contain a detectable TCE concentration and will continue to be monitored annually to determine if this detection is indicative of plume movement.

As evidenced by **Figure 2-3**, the groundwater elevation data exhibit an inverse correlation with VOC concentrations in 12WW24. The increase in TCE in the December 2013 and January 2015 sampling events in 12WW24 is thought to be associated with lower water levels and sampling following drought conditions, as these were the first samples collected since the well was dry due to drought conditions in 2012. Water levels have continued to increase since 2012, and TCE concentrations have been decreasing since January 2015 through

December 2021, although with decreasing groundwater elevations observed in January 2023, a slight increase in TCE concentration was detected in 12WW24.

Overall, the MNA remedy at LHAAP-12 is working as planned, although the TCE concentration in well 12WW24 slightly increased in 2023 with a decreasing groundwater elevation, indicating that dilution and dispersion do appear to be a dominant natural attenuation pathway. The presence of daughter product cis-1,2-DCE indicates that reductive dechlorination is also occurring. The degradation rate analysis for the entire data set estimates that TCE may decrease to below the MCL at LHAAP-12 within six months. However, the time to attain MCL may vary depending on the lithologic variability at the site, the potential for plume migration, and other factors affecting the concentration trends, such as the inverse correlation between the TCE concentration and the groundwater elevation.

4.0 REFERENCES

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Tables

Table 2-1
Groundwater Elevation Data, LHAAP-12

Well ID	Sampling Date	Top of Casing Elevation (ft)	Depth to Water from TOC (ft)	Groundwater Elevation (ft amsl)	Total Depth (ft bgs)	Screen Interval (ft bgs)
12WW01	12/1/2016	204.19	23.60	180.59	26.5	14.50 - 26.50
	3/27/2018	204.19	23.55	180.64		
	1/29/2019	204.19	22.99	181.20		
	12/3/2019	204.19	22.10	182.09		
	12/21/2020	204.19	21.57	182.62		
	12/28/2021	204.19	21.24	182.95		
	1/17/2023	204.19	21.05	183.14		
12WW02	12/1/2016	202.45	22.07	180.38	28.50	13.50 - 28.50
	3/27/2018	202.45	21.82	180.63		
	1/29/2019	202.45	20.93	181.52		
	12/3/2019	202.45	20.5	181.95		
	12/21/2020	202.45	20	182.45		
	12/28/2021	202.45	19.81	182.64		
	1/17/2023	202.45	21.2	181.25		
12WW05	12/1/2016	190.52	9.88	180.64	35.50	15.50 - 35.50
	3/27/2018	190.52	8.05	182.47		
	1/29/2019	190.52	6.95	183.57		
	12/3/2019	190.52	8.52	182		
	12/21/2020	190.52	6.8	183.72		
	12/28/2021	190.52	7.96	182.56		
	1/17/2023	190.52	8.65	181.87		
12WW10R	12/3/2019	202.59	22	180.59	28	18-28
	12/21/2020	202.59	21.38	181.21		
	12/28/2021	202.59	21.04	181.55		
	1/17/2023	202.59	22.8	179.79		
12WW20	6/15/2010	199.15	17.98	181.17	38	28 - 38
	6/7/2011	199.15	19.78	179.37		
	12/3/2012	199.15	22.03	177.12		
	1/8/2014	199.15	20.71	178.44		
	1/9/2015	199.15	19.34	179.81		
	12/19/2015	199.15	19.00	180.15		
	12/1/2016	199.15	18.69	180.46		
	12/4/2017	199.15	18.8	180.35		
	3/27/2018	199.15	17.6	181.55		
	12/4/2018	199.15	18.35	180.8		
	1/29/2019	199.15	16.81	182.34		
	12/3/2019	199.15	17.23	181.92		
	12/21/2020	199.15	16	183.15		
	12/28/2021	199.15	16.51	182.64		
	1/17/2023	199.15	17.65	181.5		
12WW21	6/15/2010	202.07	21.85	180.22	41.00	31 - 41
	6/7/2011	202.07	23.35	178.72		
	12/3/2012	202.07	24.21	177.86		
	1/8/2014	202.07	24.56	177.51		
	1/9/2015	202.07	24.35	177.72		
	12/19/2015	202.07	22.95	179.12		
	12/1/2016	202.07	21.97	180.10		

Table 2-1
Groundwater Elevation Data, LHAAP-12

Well ID	Sampling Date	Top of Casing Elevation (ft)	Depth to Water from TOC (ft)	Groundwater Elevation (ft amsl)	Total Depth (ft bgs)	Screen Interval (ft bgs)
12WW21 (cont.)	12/4/2017	202.07	21.92	180.15	41	31 - 41
	3/27/2018	202.07	21.42	180.65		
	12/4/2018	202.07	22.2	179.87		
	1/29/2019	202.07	21.00	181.07		
	12/3/2019	202.07	20.45	181.62		
	12/21/2020	202.07	19.57	182.5		
	12/28/2021	202.07	19.55	182.52		
	1/17/2023	202.07	21.25	180.82		
12WW22	6/15/2010	190.20	7.93	182.27	38	28 - 38
	6/7/2011	190.20	9.72	180.48		
	12/3/2012	190.20	13.46	176.74		
	1/8/2014	190.20	10.57	179.63		
	1/9/2015	190.20	9.60	180.60		
	12/1/2016	190.20	10.32	179.88		
	3/27/2018	190.20	7.81	182.39		
	1/29/2019	190.20	6.93	183.27		
	12/3/2019	190.20	9.3	180.90		
	12/21/2020	190.20	7.61	182.59		
	12/28/2021	190.20	8.85	181.35		
	1/17/2023	190.20	9.58	180.62		
12WW23	6/16/2010	196.97	18.28	178.69	25	15 - 25
	6/7/2011	196.97	19.40	177.57		
	12/3/2012	196.97	20.38	176.59		
	1/8/2014	196.97	20.80	176.17		
	1/9/2015	196.97	19.34	177.63		
	12/1/2016	196.97	17.23	179.74		
	3/27/2018	196.97	16.88	180.09		
	1/29/2019	196.97	16.02	180.95		
	12/3/2019	196.97	15.48	181.49		
	12/21/2020	196.97	15.63	181.34		
	12/28/2021	196.97	14.82	182.15		
	1/17/2023	196.97	16.41	180.56		
12WW24	6/16/2010	203.17	22.50	180.67	25.50	15.50 - 25.50
	6/7/2011	203.17	24.15	179.02		
	12/3/2012	203.17	Dry	Dry		
	12/9/2013	203.17	26.00	177.17		
	1/9/2015	203.17	24.22	178.95		
	12/18/2015	203.17	23.50	179.67		
	11/30/2016	203.17	22.53	180.64		
	12/4/2017	203.17	22.61	180.56		
	3/27/2018	203.17	22.35	180.82		
	12/4/2018	203.17	22.87	180.30		
	1/29/2019	203.17	21.61	181.56		
	12/3/2019	203.17	21.1	182.07		
	12/21/2020	203.17	20.45	182.72		
	12/28/2021	203.17	20.25	182.92		
	1/17/2023	203.17	21.79	181.38		

Table 2-1
Groundwater Elevation Data, LHAAP-12

Notes:

amsl - above mean sea level
bgs - below ground surface
ft - feet
ID - identifier
TOC - top of casing

Table 2-2
2023 Sample Results, LHAAP-12

			Location Code	12WW10R		12WW20		12WW21				12WW24	
			Sample ID	12WW10R-230117		12WW20-230117		12WW21-230117		12WW21-230117-FD		12WW24-230117	
			Sample Date	1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023	
			Sample Purpose	REG		REG		REG		FD		REG	
			Location Description										
Parameter		Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
FIELD TESTS													
	Dissolved Oxygen	mg/L	NV	0.25		0.26		0.05		0.05		0.15	
	Oxidation Reduction Potential	mV	NV	108		156		121		121		12	
	pH	SU	NV	5.94		5.39		5.97		5.97		5.61	
	Specific conductivity	µS/cm	NV	3.3		1.21		5.39		5.39		1.1	
	Temperature	C	NV	19.72		21.7		19.22		19.22		20.64	
	Turbidity	NTU	NV	12.2		0		8.5		8.5		0	
VOLATILES													
	1,1,1,2-Tetrachloroethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,1,1-Trichloroethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,1,2,2-Tetrachloroethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,1,2-Trichloroethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,1-Dichloroethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,1-Dichloroethene	µg/L	7	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,1-Dichloropropene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,2,3-Trichlorobenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,2,3-Trichloropropane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,2,4-Trichlorobenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,2,4-Trimethylbenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,2-Dibromo-3-Chloropropane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,2-Dibromoethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,2-Dichlorobenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,2-Dichloroethane	µg/L	5	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,2-Dichloropropane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,3,5-Trimethylbenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,3-Dichlorobenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,3-Dichloropropane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	1,4-Dichlorobenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	2,2-Dichloropropane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	2-Butanone	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	2-Chlorotoluene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	2-Hexanone	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U

Table 2-2
2023 Sample Results, LHAAP-12

			Location Code	12WW10R		12WW20		12WW21				12WW24	
			Sample ID	12WW10R-230117		12WW20-230117		12WW21-230117		12WW21-230117-FD		12WW24-230117	
			Sample Date	1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023	
			Sample Purpose	REG		REG		REG		FD		REG	
			Location Description										
Parameter		Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
	4-Chlorotoluene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Acetone	µg/L	18,000	2.8		< 1	U	2.4	J	< 1	UJ	2.9	
	Benzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Bromobenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Bromochloromethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Bromodichloromethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Bromoform	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Bromomethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Carbon Disulfide	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Carbon Tetrachloride	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Chlorobenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Chloroethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Chloroform	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Chloromethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	cis-1,2-Dichloroethene	µg/L	70	< 1	U	< 1	U	< 1	U	< 1	U	7.4	J
	cis-1,3-Dichloropropene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Dibromochloromethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Dibromomethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Dichlorodifluoromethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Ethylbenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Hexachlorobutadiene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Isopropylbenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	m,p-Xylene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Methyl Isobutyl Ketone	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Methylene Chloride	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Naphthalene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	n-Butylbenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	n-Propylbenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	o-Xylene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	p-Isopropyltoluene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	sec-Butylbenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Styrene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	tert-Butylbenzene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U

Table 2-2
2023 Sample Results, LHAAP-12

				Location Code	12WW10R		12WW20		12WW21				12WW24	
				Sample ID	12WW10R-230117		12WW20-230117		12WW21-230117		12WW21-230117-FD		12WW24-230117	
				Sample Date	1/17/2023		1/17/2023		1/17/2023		1/17/2023		1/17/2023	
				Sample Purpose	REG		REG		REG		FD		REG	
				Location Description										
	Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
	Tetrachloroethene	µg/L	5	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Toluene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	trans-1,2-Dichloroethene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	trans-1,3-Dichloropropene	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Trichloroethene	µg/L	5	0.93	J	< 1	U	< 1	U	< 1	U	**8.3**	J
	Trichlorofluoromethane	µg/L	NV	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U
	Vinyl Chloride	µg/L	2	< 1	U	< 1	U	< 1	U	< 1	U	< 1	U

Table 2-2
2023 Sample Results, LHAAP-12

Notes:

Bolded and highlighted results indicate concentration above the MCL.

µg/L - micrograms per liter

µS/cm - microsiemens per centimeter

C - degrees Celsius

FD - field duplicate

ID - identifier

J - estimated result

MCL - maximum contaminant level

mg/L - milligrams per liter

mV - millivolts

NTU - nephelometric turbidity unit

NV - no value

REG - regular sample

SU - standard unit

U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.

UJ - The analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data have indicated that the “non-detect” may be inaccurate or imprecise. The non-detect result should be estimated.

Val Qual - validation qualifier

Table 2-3
Historical TCE Concentrations at LHAAP-12 Monitoring Wells

	Monitoring Wells						
Sampling Date	12WW10R (µg/L)	12WW20 (µg/L)	12WW21 (µg/L)	12WW22 (µg/L)	12WW23 (µg/L)	12WW24 (µg/L)	12WW25(30) [a] (µg/L)
19 Dec 2006	NA	0.713	1 U	1 U	1 U	396	NS
5 Sep 2007	NA	1.34	1 U	1 U	1 U	272	NS
19 Dec 2007	NA	1.19	1 U	1 U	1 U	313	NS
5 Mar 2008	NA	0.999 J	0.25 U	0.25 U	0.25 U	301	NS
4 Jun 2008	NA	1.04	0.25 U	0.25 U	0.25 U	237	NS
11 Sep 2008	NA	0.985	0.25 U	0.25 U	0.25 U	185	NS
4 Mar 2009	NA	1.18	0.25 U	0.25 U	0.25 U	334	NS
29 Apr 2009	NA	0.997	0.25 U	0.25 U	0.25 U	197	NS
14 Jul 2009	NA	0.931	0.25 U	0.25 U	0.25 U	204	NS
16 Jun 2010	NA	0.353 J	0.25 U	0.25 U	0.25 U	145	NS
7 Jun 2011	NA	0.263 J	0.25 U	0.25 U	0.25 U	147	NS
3 Dec 2012	NA	0.5 J	0.582 J	0.5 U	0.5 U	Dry Well	NS
11 Dec 2013	NA	5	0.721 J	0.5 U	0.5 U	259 [b]	NS
1 Aug 2014	NA	NS	NS	NS	NS	NS	0.317 J
1 Jan 2015	NA	0.293 J	0.25 U	0.25 U	0.25 U	353	NS
15 Dec 2015	NA	0.5 U	0.5 U	NS	NS	278	NS
16 Dec 2016	NA	0.5 U	0.5 U	0.5 U	0.5 U	151	NS
4 Dec 2017	NA	1 U	1 U	NS	NS	83	NS
4 Dec 2018	NA	0.5 U	0.5 U	NS	NS	48	NS
3 Dec 2019	0.5 U	0.5 U	0.5 U	0.5 U	NS	19	NS
21 Dec 2020	0.5 U	0.5 U	0.5 U	0.5 U	NS	15	NS
28 Dec 2021	0.5 U	0.5 U	0.5 U	0.5 U	NS	5.5	NS
17 Jan 2023	0.93 J	<1 U	<1 U	NS	NS	8.3 J	NS

Notes:

[a] This was a 2014 DPT boring grab groundwater sample; no well was subsequently installed.

[b] Analyte diluted 5X.

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 associated limit of detection.

DPT - direct-push technology

NA - not available

NS - not sampled

TCE - trichloroethene

Table 2-4
Historical COC Concentrations at Monitoring Well 12WW24

Sampling Date	COCs		
	Trichloroethene (µg/L)	cis-1,2-DCE (µg/L)	Vinyl Chloride (µg/L)
12/19/2006	396	1 U	1 U
9/5/2007	272	1 U	1 U
12/19/2007	313	1 U	1 U
3/5/2008	301	0.25 U	0.25 U
6/4/2008	237	0.25 U	0.25 U
9/11/2008	185	0.25 U	0.25 U
3/4/2009	334	0.25 U	0.25 U
4/29/2009	197	0.25 U	0.25 U
7/14/2009	204	0.25 U	0.25 U
6/16/2010	145	0.25 U	0.25 U
6/7/2011	147	0.25 U	0.25 U
12/11/2013	259 [a]	66.1	0.873 J
1/1/2015	353	70.8	1.25
12/15/2015	278	58.5	0.786
12/16/2016	151	36.7	0.51
12/4/2017	83	26	1 U
12/4/2018	48	22	0.5 U
12/3/2019	19	12	0.5 U
12/21/2020	15	11	0.5 U
12/28/2021	5.5	7.7	0.5 U
1/17/2023	8.3 J	7.4 J	<1 U

Notes:

[a] Analyte diluted 5X.

µg/L - micrograms per liter

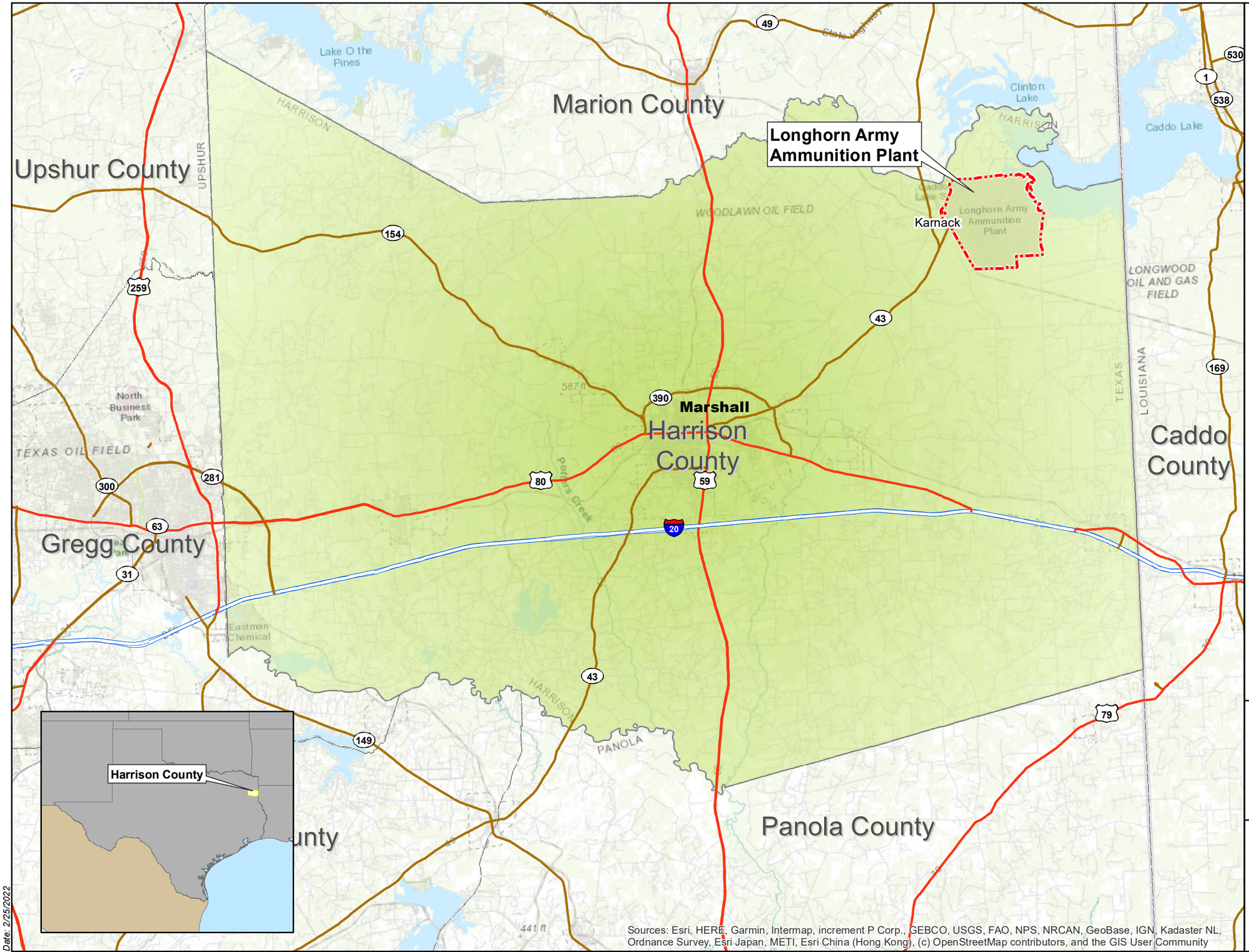
J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the associated limit of detection.

COC - contaminant of concern

DCE - dichloroethene

Figures



Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant

N

0 2 4 Miles

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TULSA, OKLAHOMA

bhate APTIM

Figure 1-1

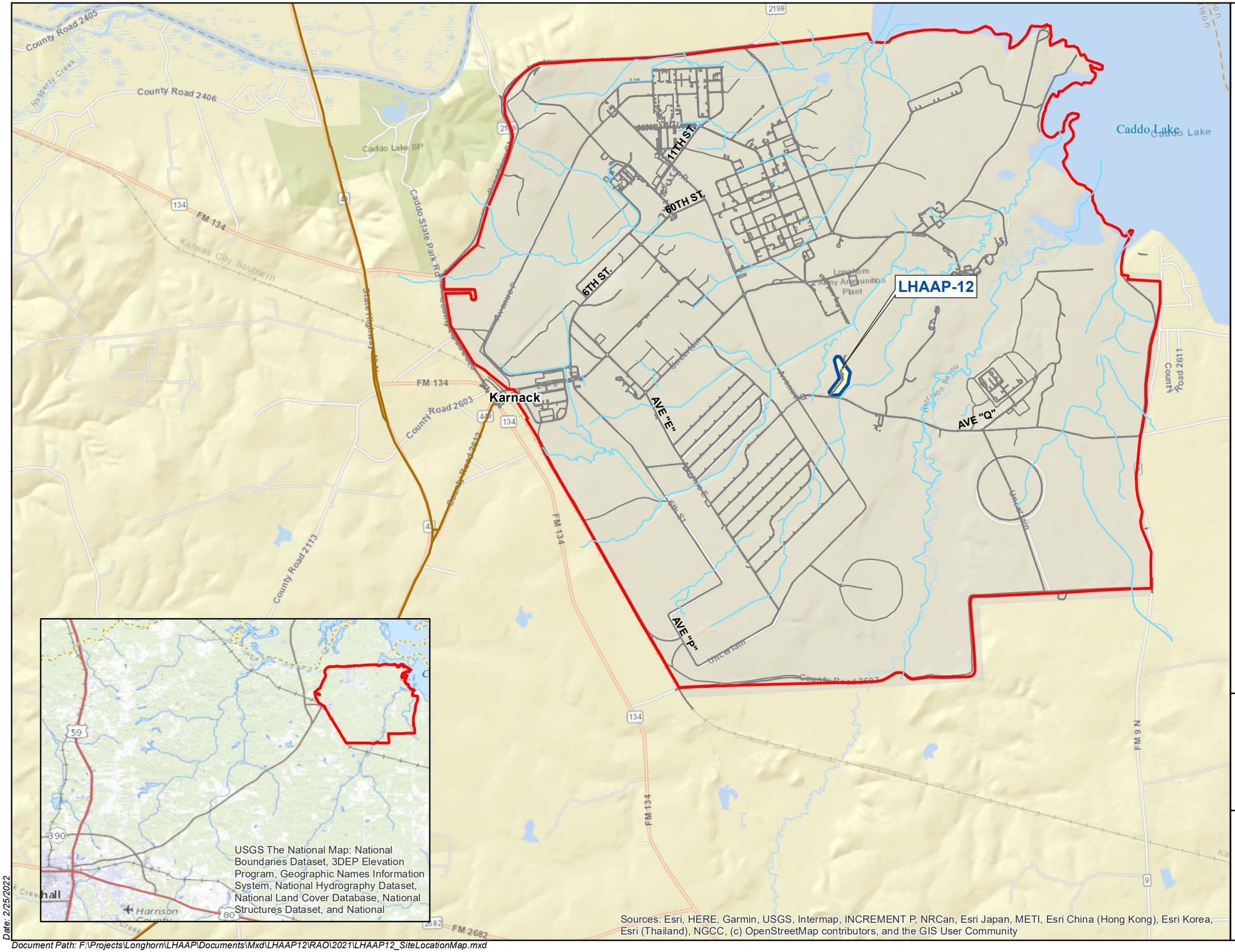
LHAAP Location Map
LHAAP-12
2022 Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Date: 2/25/2022

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP12\RAO\2021\LHAAP_LocationMap.mxd



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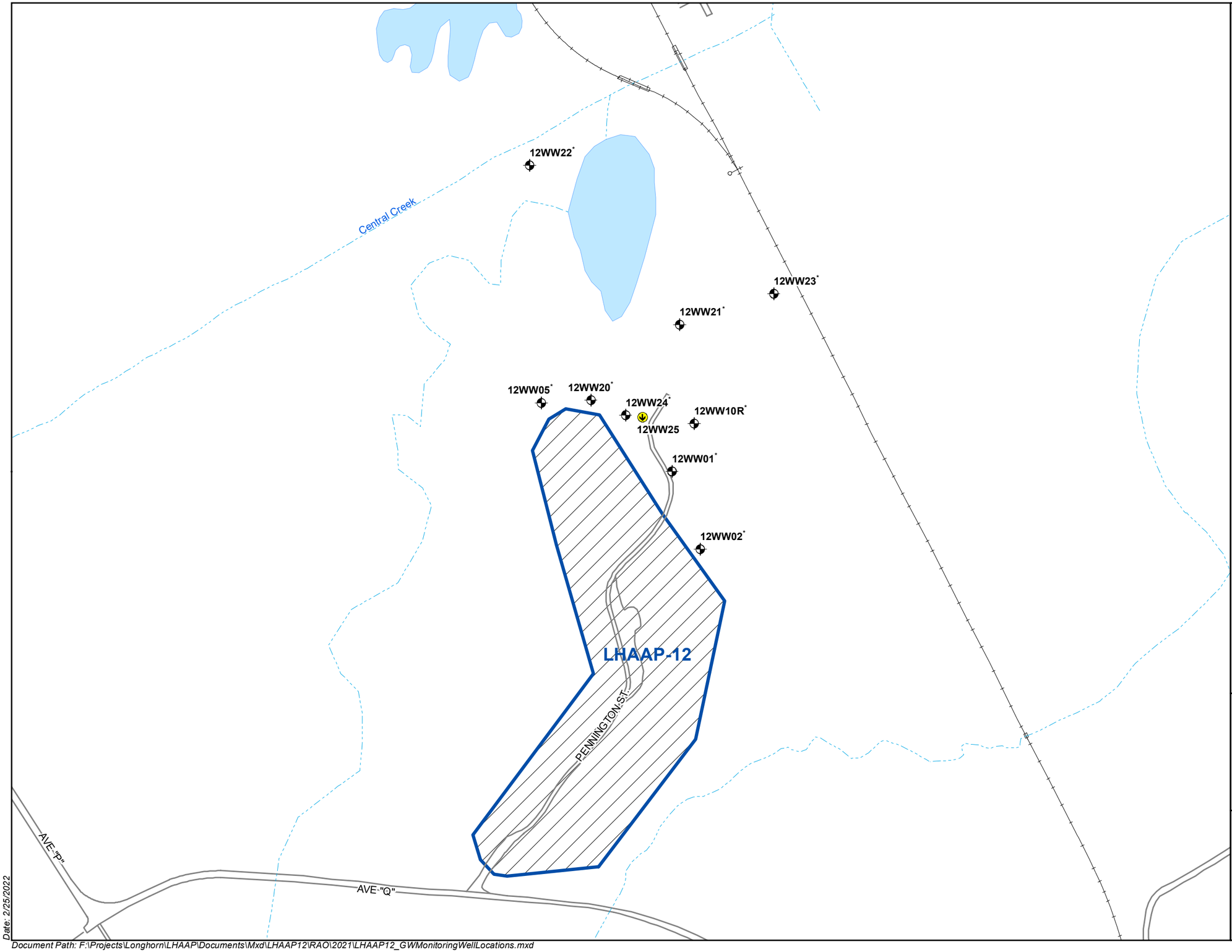
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Figure 1-2
LHAAP Site Vicinity Map
LHAAP-12
2022 Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 2/25/2022

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP12\RAO\2021\LHAAP12_SiteLocationMap.mxd





- Monitoring Well
- 2014 direct push technology (DPT) Location (This was a DPT boring grab groundwater sample, no well was subsequently installed)
- Stream
- Road
- Site Boundary
- Landfill Cap Area
- Railroad

Note:
1. Each well has 5'x5' concrete surface monument surrounded by bollards. Each well has a polyvinyl chloride riser.
2. * Gauged for water levels.

N

0 125 250 Feet

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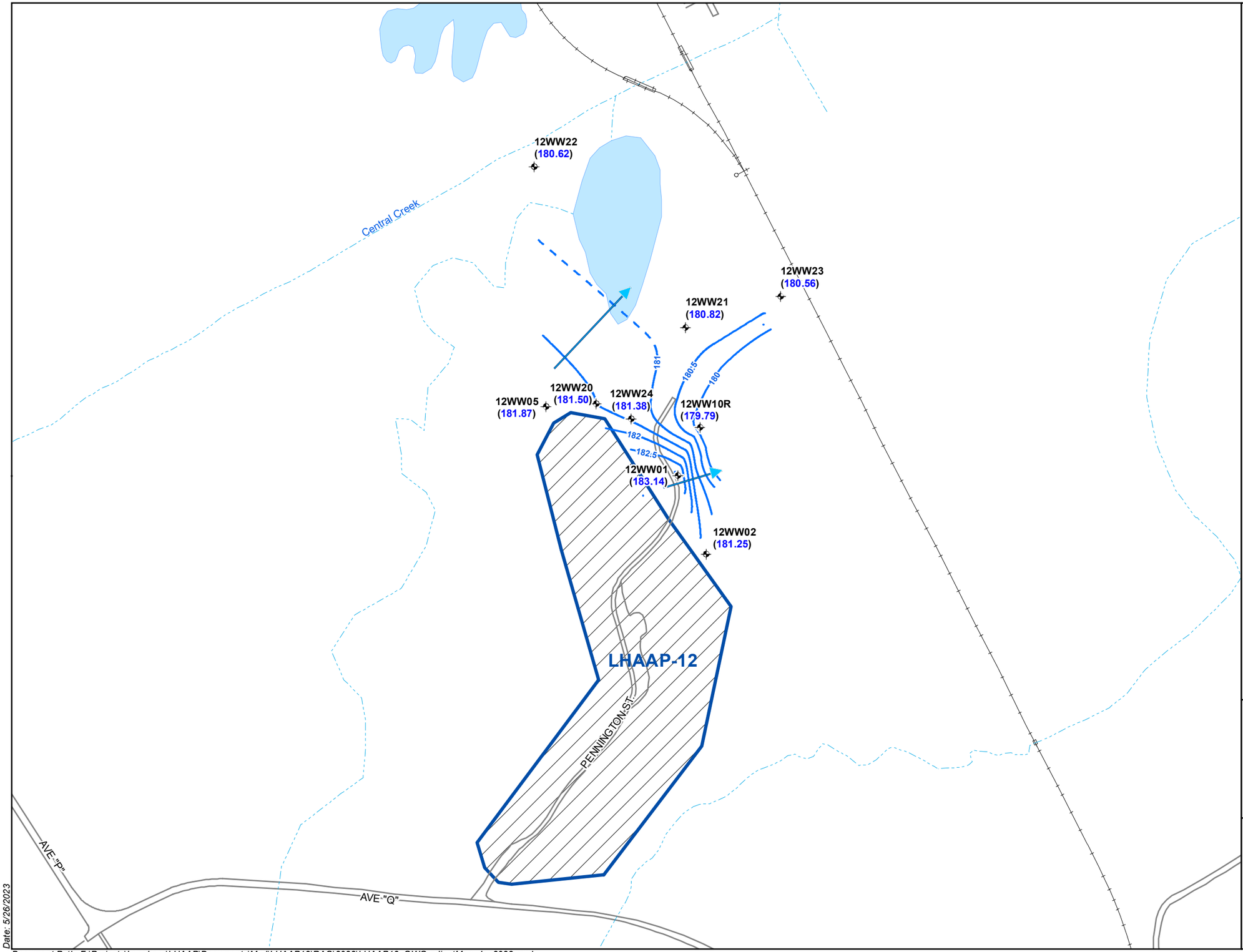
Figure 2-1

Groundwater Monitoring Well Locations
LHAAP-12
2022 Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 2/25/2022

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP12\RAO\2021\LHAAP12_GWMonitoringWellLocations.mxd



Legend

- Shallow Monitoring Well
- Groundwater Flow Direction
- Groundwater Elevation Contour (*Dashed where inferred*)
- Fence_Line
- Stream
- Road
- Railroad
- Site Boundary
- Landfill Cap Area
- Lakes

Note:
1. Numbers shown next to well IDs are elevations in feet above mean sea level.

N

0 125 250
Feet

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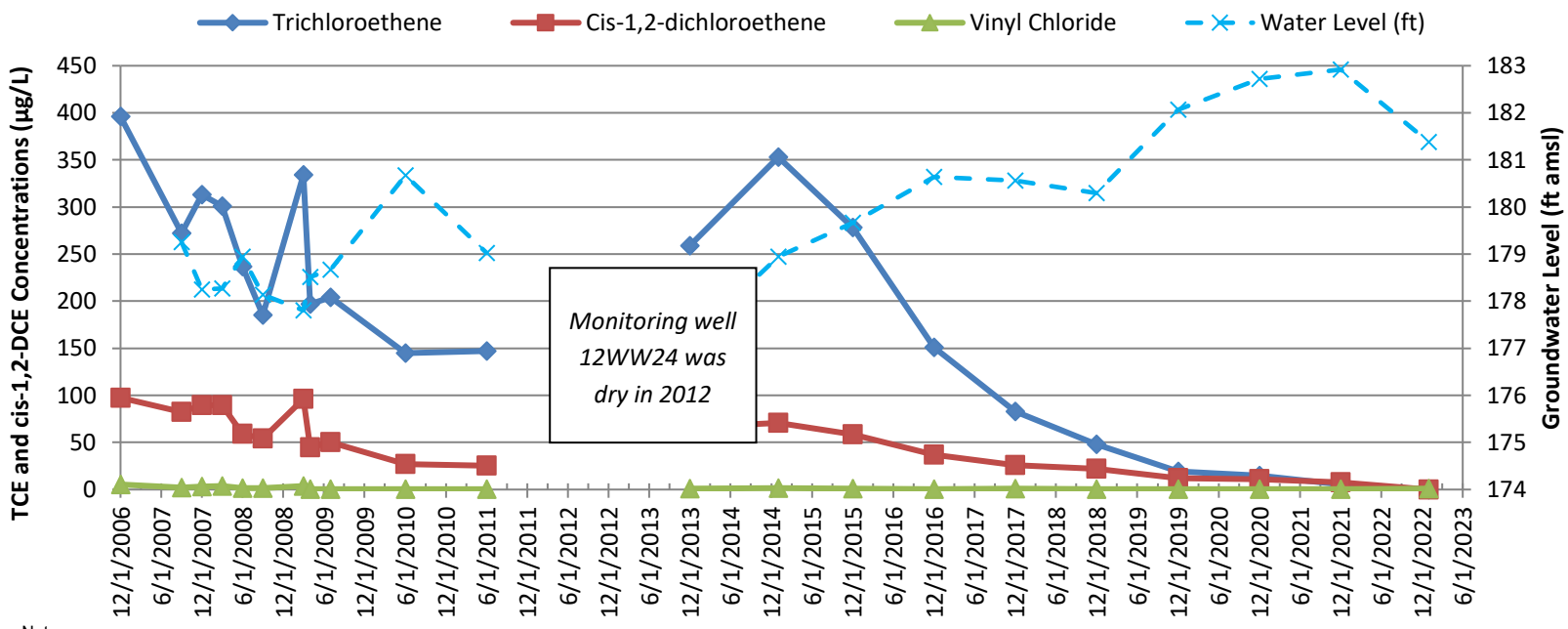
Figure 2-2

Shallow Groundwater Gradient Map
January 2023
LHAAP-12
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

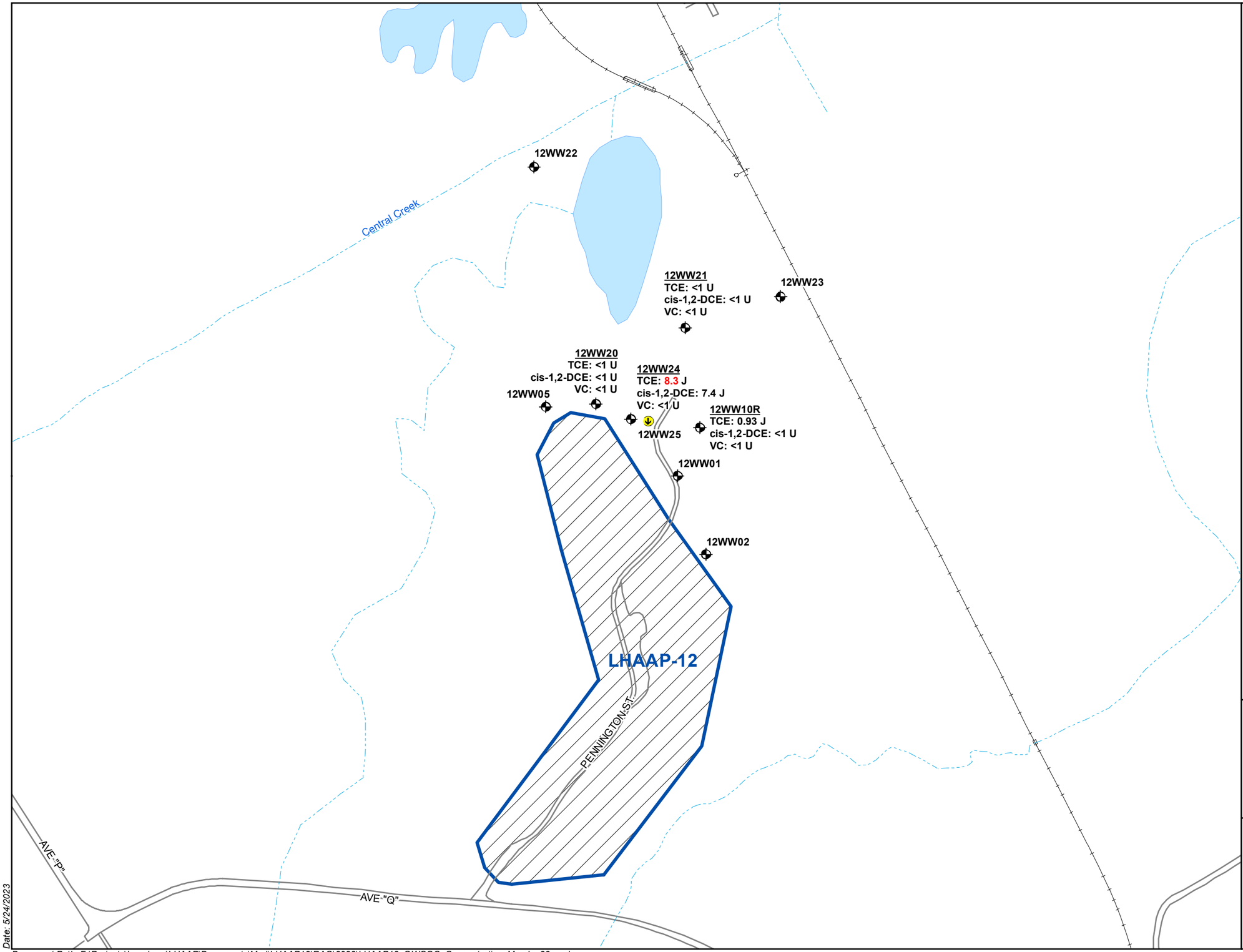
Date: 5/26/2023

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP12\RAO\2022\LHAAP12_GWGradientMap_Jan2023.mxd

Figure 2-3
TCE, cis-1,2-DCE, and VC Concentrations in 12WW24
LHAAP-12



Notes:
Maximum Contaminant Levels: TCE = 5 µg/L; cis-1,2-DCE = 70 µg/L; VC = 2 µg/L
µg/L - micrograms per liter
DCE - dichloroethene
ft amsl - feet above mean sea level
TCE - trichloroethene
VC - vinyl chloride



Monitoring Well

2014 DPT Location (This was a DPT boring grab groundwater sample, no well was subsequently installed)

Stream

Road

Site Boundary

Landfill Cap Area

Railroad

Note:
1. Results are in micrograms per liter (µg/L)
J - estimated result
U - Not detected. The analyte was analyzed for, but not detected above the associated limit of detection
TCE - trichloroethene
DCE - dichloroethene
VC - Vinyl Chloride
DPT - direct push technology
2. Concentrations in red are above the Maximum Contaminant Limit (MCL)

N

0 125 250 Feet

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Figure 2-4

Groundwater COC Concentrations
January 2023
LHAAP-12
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/24/2023

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP12\RAO\2022\LHAAP12_GWCOC_ConcentrationsMapJan23.mxd

Appendix A

Photo Log and Well Inspection Forms

APPENDIX A

Photo Log

Photo No.	Date	Task and Description
1	1-17-2023	View of Monitoring Well 12WW01
2	1-17-2023	View of Monitoring Well 12WW02
3	1-17-2023	View of Monitoring Well 12WW05
4	1-17-2023	View of Monitoring Well 12WW10R
5	1-17-2023	View of Monitoring Well 12WW20
6	1-17-2023	View of Monitoring Well 12WW21
7	1-17-2023	View of Monitoring Well 12WW22
8	1-17-2023	View of Monitoring Well 12WW23
9	1-17-2023	View of Monitoring Well 12WW24



PHOTO 1: View of Monitoring Well 12WW01
DATE: January 17, 2023



PHOTO 2: View of Monitoring Well 12WW02
DATE: January 17, 2023



PHOTO 3: **View of Monitoring Well 12WW05**
DATE: **January 17, 2023**



PHOTO 4: **View of Monitoring Well 12WW10R**
DATE: **January 17, 2023**



PHOTO 5: **View of Monitoring Well 12WW20**
DATE: **January 17, 2023**



PHOTO 6: **View of Monitoring Well 12WW21**
DATE: **January 17, 2023**



PHOTO 7: **View of Monitoring Well 12WW22**
DATE: **January 17, 2023**



PHOTO 8: **View of Monitoring Well 12WW23**
DATE: **January 17, 2023**



PHOTO 9: **View of Monitoring Well 12WW24**
DATE: **January 17, 2023**

01175927

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 12
Well ID: 12NW01
Inspection Date: 1/17/23
Well Completion Depth/ Measured Depth: 29.88
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:

01175928

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARmy
Site Name: 12

Well ID: 12WW02
Inspection Date: 11/17/23
Well Completion Depth/ Measured Depth: 31.62
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

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:

01175929

WELL INSPECTION FORM

Job Name: LHAAP | Well ID: 12WW05

Job No.: 501032 | Inspection Date: 1/17/23

Client: Army | Well Completion Depth/ Measured Depth: 38.57

Site Name: 12 | Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No

Protective casing? ☒ Yes ☐ No

Material: METAL

Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint

Lid Condition: ☒ Good ☐ Broken ☐ Cracked

Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No

Condition: ☐ Good ☐ Broken ☐ Cracked

Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No

Pad Area Cleared of Vegetation? ☒ Yes ☐ No

Check any of the following features that apply:

☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 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:

01175930

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 12
Well ID: [redacted] 12WW10R
Inspection Date: 1/17/23
Well Completion Depth/ Measured Depth: 31.57
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:

01175931

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARmy
Site Name: 12
Well ID: 12MW20
Inspection Date: 1/17/23
Well Completion Depth/ Measured Depth: 39.16
Inspector: Scott Bassinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01175932

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 12
Well ID: 12MW21
Inspection Date: 1/17/23
Well Completion Depth/ Measured Depth: 42.68
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible?				☒ Yes	☐ No
Protective casing?				☒ Yes	☐ No
Material: METAL					
Condition:	☒ Good	☐ Broken	☐ Cracked	☐ Need Paint	
Lid Condition:	☒ Good	☐ Broken	☐ Cracked		
Hinge Condition:	☒ Good	☐ Less than 50% rusted	☐ More than 50% rusted		

☐ FLUSH MOUNTED

Well cover present? NA				☐ Yes	☐ No
Condition:	☐ Good	☐ Broken	☐ Cracked		
Condition of Sump:	☐ Clean	☐ Dry	☐ Standing Water		

CONCRETE PAD:

Sloped away from casing?	☒ Yes	☐ No
Pad Area Cleared of Vegetation?	☒ Yes	☐ No

Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 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:

01175933

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 12
Well ID: 12WW22
Inspection Date: 1/17/23
Well Completion Depth/ Measured Depth: 38.62
Inspector: Scott Beegle 6412

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:

01175934

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 12

Well ID: 12MW23
Inspection Date: 1/17/23
Well Completion Depth/ Measured Depth: 25, 35
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 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:

01175935

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 12
Well ID: 12WW24
Inspection Date: 1/17/23
Well Completion Depth/ Measured Depth: 27.82
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:

Well Construction Information

Well Identification	Log Date	Depth to Water (ft btoc)	Total Measured Well Depth (ft btoc)	Total Measured Well Depth (ft bgs)	Dry?	Water Column (ft)	Survey Data		Well Construction Data				Percent Siltation
							Top of Casing Elevation (ft amsl)	Ground Surface Elevation (ft amsl)	Constructed Well Depth (ft bgs)	Well Screen Beginning Depth (ft bgs)	Well Screen Ending Depth (ft bgs)	Screen Length (ft)	
12WW01	1/17/2023	21.05	29.88	27.26	No	8.83	204.19	201.57	26.5	14.50	26.50	12.00	0.0%
12WW02	1/17/2023	21.2	31.62	29.43	No	10.42	202.45	200.26	28.5	13.50	28.50	15.00	0.0%
12WW05	1/17/2023	8.65	38.57	36.42	No	29.92	190.52	188.37	35.5	15.50	35.50	20.00	0.0%
12WW10R	1/17/2023	22.8	31.57	29.14	No	8.77	202.59	200.16	28	18.00	28.00	10.00	0.0%
12WW20	1/17/2023	17.65	39.16	37.09	No	21.51	199.15	197.08	38	28.00	38.00	10.00	9.1%
12WW21	1/17/2023	21.25	42.68	40.71	No	21.43	202.07	200.10	41	31.00	41.00	10.00	2.9%
12WW22	1/17/2023	9.58	38.62	36.20	No	29.04	190.20	187.78	38	28.00	38.00	10.00	18.0%
12WW23	1/17/2023	16.41	25.35	23.25	No	8.94	196.97	194.87	25	15.00	25.00	10.00	17.5%
12WW24	1/17/2023	21.79	27.82	25.52	No	6.03	203.17	200.87	25.5	15.50	25.50	10.00	0.0%

Notes:

ft - feet

ft amsl - feet above mean sea level

ft bgs - feet below ground surface

ft btoc - feet below top of casing

Appendix B

Land Use Controls and Maintenance Log

LUC Inspection and Maintenance Log - LHAAP 12

Date	Inspected By	Inspection / Maintenance Activities (yearly, at a minimum)					Corrective Action or Repairs Required?	Repairs / Action Taken
		Protect Landfill Integrity				Prevent Human Exposure to Groundwater		
		Vegetative Cover Maintained (i.e., grass mowed at least annually)	Fence and Signage Maintained	Observance of Landfill Cover Degradation (e.g., desiccation cracks, erosion, or gullying)	Continued Compliance Verified for No Digging or Disturbance of Landfill Cover or Contents	Verified No Withdrawal of Use of Groundwater (other than environmental testing)		
5/13/2022	Beesinger, S.	Maintained. Vegetative cover is in good condition.	Fence and signage in good repair.	Cover observed for evidence of subsidence and found to be in good condition. No erosion, cracks, or gullying was found.	No evidence of animal burrowing in the cap.	Completed and verified.		Pulled and removed approximately 50 small trees (0.5-1 inch in diameter).

Notes:
e.g. - for example
i.e. - that is
LUC - land use control

APPENDIX B

Photo Log

Photo No.	Date	Task and Description
1	5/13/2022	Landfill cover condition observed on May 13, 2022
2	5/13/2022	Landfill cover condition observed on May 13, 2022
3	5/13/2022	Landfill cover condition observed on May 13, 2022
4	5/13/2022	Landfill cover condition observed on May 13, 2022
5	5/13/2022	Landfill cover condition observed on May 13, 2022
6	5/13/2022	Landfill cover condition observed on May 13, 2022
7	5/13/2022	Landfill cover condition observed on May 13, 2022



PHOTO 1: Landfill cover condition observed on May 13, 2022
DATE: May 13, 2022



PHOTO 2: Landfill cover condition observed on May 13, 2022
DATE: May 13, 2022



PHOTO 3: **Landfill cover condition observed on May 13, 2022**
DATE: **May 13, 2022**



PHOTO 4: **Landfill cover condition observed on May 13, 2022**
DATE: **May 13, 2022**



PHOTO 5: Landfill cover condition observed on May 13, 2022
DATE: May 13, 2022



PHOTO 6: Landfill cover condition observed on May 13, 2022
DATE: May 13, 2022



PHOTO 7: Landfill cover condition observed on May 13, 2022
DATE: May 13, 2022

Appendix C

Groundwater Sample Collection Logs

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **12WW10R**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 12WW10R-~~2302~~ 2301 17 **DATE/TIME:** 1/17/23 0957 **Pump Inlet Depth:** 25.53

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	VOCs in Water by 8260C	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"

Depth to Water - Initial (DTWi) (ft) ~~22.80~~ 22.80

Purge Start Date/Time: 1/17/23 1005

Purge End Date/Time: 1/17/23 1035

Depth to Well Bottom (ft) ~~28~~ 31.57

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 20.53 - ~~30~~ 30.53

Discharge Tube Diameter: 1/4"

Immiscible Layer: Y (N)

Approximate depth of pump inlet*(ft): ~~29~~ 25.53

Pump Start Time: 1005

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW - 22.80

APTIM

Sample Collection Log

Location ID: 12WW10R Sample No: 12WW10R-2301 17

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
1/17/23	1010	100	.5	22.88	3.38	19.97	6.45	25.1	84	0.91
↓	1015	100	1.0	22.94	3.35	19.52	6.12	18.3	95	0.58
	1020	100	1.5	22.98	3.30	19.62	5.98	14.2	103	0.27
	1025	100	2.0	23.01	3.30	19.65	5.96	13.6	105	0.27
	1030	100	2.5	23.03	3.30	19.69	5.59	12.9	107	0.26
↓	1035	100	3.0	23.05	3.30	19.72	5.94	12.2	108	0.25

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **12WW20**

Sampler(s): Scott Buesinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 12WW20-23017 **DATE/TIME:** 1/17/23 1213 **Pump Inlet Depth:** 35.07

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	VOCs in Water by 8260C	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: 1/17/23 1215

Depth to Water - Initial (DTWi) (ft) 17.65

Purge End Date/Time: 1/17/23 1245

Depth to Well Bottom (ft) 39.16

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 30.07 - 40.07

Discharge Tube Diameter: 1/4" Immiscible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 35.07

Pump Start Time: 1215

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW- 17.65

APTIM

Sample Collection Log

Location ID: 12WW20 Sample No: 12WW20-~~2302~~2301 17

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
11/17/23	1220	100	.5	17.72	1.16	22.28	6.49	11.4	88	0.91
	1225	100	1.0	17.77	1.19	22.00	5.51	6.6	127	0.50
	1230	100	1.5	17.80	1.20	21.88	5.41	2.1	152	0.28
	1235	100	2.0	17.82	1.21	21.83	5.40	0.9	153	0.27
	1240	100	2.5	17.84	1.21	21.76	5.40	0.0	155	0.27
↓	1245	100	3.0	17.85	1.21	21.70	5.39	0.0	156	0.26

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **12WW21**

Sampler(s): Scott Beringer

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 12WW21-~~2402~~ 2301 17 **DATE/TIME:** 1/17/23 1042 **Pump Inlet Depth:** 37.97

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	VOCs in Water by 8260C	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: 1/17/23 1050

Depth to Water - Initial (DTWi) (ft) 21.25

Purge End Date/Time: 1/17/23 1120

Depth to Well Bottom (ft) ~~49~~ 42.68

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): ~~32~~ 32.97 - 42.97

Discharge Tube Diameter: 1/4" Immiscible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~38~~ 37.97

Pump Start Time: 1050

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW - 21.25

APTIM

Sample Collection Log

Location ID: 12WW21 Sample No: 12WW21-~~2302~~ 2301 17

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
1/17/23	1055	100	.5	21.32	5.08	21.43	6.27	12.3	95	0.70
	1100	100	1.0	21.37	5.31	19.89	6.09	7.4	110	0.30
	1105	100	1.5	21.40	5.37	19.37	5.98	7.2	119	0.06
	1110	100	2.0	21.42	5.38	19.32	5.97	7.7	120	0.06
	1115	100	2.5	21.43	5.39	19.27	5.97	8.1	120	0.05
	1120	100	3.0	21.44	5.39	19.22	5.97	8.5	121	0.05

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **12WW21**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR

SAMPLING INFORMATION

Sample No: 12WW21-~~2302~~ 2301 17-FD **DATE/TIME:** 1/17/23 1042 **Pump Inlet Depth:** 37.97

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	VOCs in Water by 8260C	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: 1/17/23 1050

Depth to Water - Initial (DTWi) (ft) 21.25

Purge End Date/Time: 1/17/23 1120

Depth to Well Bottom (ft) ~~42~~ 42.68

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 32.97 - 42.97

Discharge Tube Diameter: 1/4" Immiscible Layer: Y (N)

Approximate depth of pump inlet*(ft): ~~38~~ 37.97

Pump Start Time: 1050

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW - 21.25

APTIM

Sample Collection Log

Location ID: 12WW21 Sample No: 12WW21-2301[illegible]17-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
1/17/23	1055	100	.5	21.32	5.08	21.43	6.27	12.3	95	0.70
	1100	100	1.0	21.37	5.31	19.89	6.09	7.4	110	0.30
	1105	100	1.5	21.40	5.37	19.37	5.98	7.2	119	0.06
	1110	100	2.0	21.42	5.38	19.32	5.97	7.7	120	0.06
	1115	100	2.5	21.43	5.39	19.27	5.97	8.1	120	0.05
↓	1120	100	3.0	21.44	5.39	19.22	5.97	8.5	121	0.05

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **12WW24**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 12WW24-[redacted]2301 17 **DATE/TIME:** 1/17/23 1128 **Pump Inlet Depth:** 22.80

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	VOCs in Water by 8260C	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: 1/17/23 1135

Depth to Water - Initial (DTWi) (ft) 21.79

Purge End Date/Time: 1/17/23 1205

Depth to Well Bottom (ft) [redacted]27.82

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 17.80-27.80

Discharge Tube Diameter: 1/4" Immiscible Layer: Y / (N)

Approximate depth of pump inlet*(ft): [redacted]22.80

Pump Start Time: 1135

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW- 21.79

APTIM

Sample Collection Log

Location ID: 12WW24 Sample No: 12WW24-2301[illegible]17

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
1/17/23	1140	100	.5	21.86	1.25	20.83	6.78	2.2	-10	0.71
	1145	100	1.0	21.92	1.17	20.55	5.79	1.0	11	0.31
	1150	100	1.5	21.96	1.12	20.57	5.65	0.5	11	0.16
	1155	100	2.0	21.99	1.11	20.60	5.63	0.0	12	0.16
	1200	100	2.5	22.02	1.10	20.62	5.62	0.0	12	0.15
↓	1205	100	3.0	22.04	1.10	20.64	5.61	0.0	12	0.15

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **12WW24**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 12WW24-2301 17-MS **DATE/TIME:** 1/17/23 1128 **Pump Inlet Depth:** 22.80

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	VOCs in Water by 8260C	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: 1/17/23 1135

Depth to Water - Initial (DTWi) (ft) 21.79

Purge End Date/Time: 1/17/23 1205

Depth to Well Bottom (ft) 27.82

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 17.80 - 27.80

Discharge Tube Diameter: 1/4" Immiscible Layer: Y (N)

Approximate depth of pump inlet*(ft): 22.80 Pump Start Time: 1135

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW - 21.79

APTIM

Sample Collection Log

Location ID: 12WW24 Sample No: 12WW24-2301[illegible]17-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
1/17/23	1140	100	.5	21.86	1.25	20.83	6.78	2.2	-10	0.71
	1145	100	1.0	21.92	1.17	20.55	5.79	1.0	11	0.31
	1150	100	1.5	21.96	1.12	20.57	5.65	0.5	11	0.16
	1155	100	2.0	21.99	1.11	20.60	5.63	0.0	12	0.16
	1200	100	2.5	22.02	1.10	20.62	5.62	0.0	12	0.15
↓	1205	100	3.0	22.04	1.10	20.64	5.61	0.0	12	0.15

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **12WW24**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear

SAMPLING INFORMATION

Sample No: 12WW24-~~2~~2301-MSD **DATE/TIME:** 1/17/23 1128 **Pump Inlet Depth:** 22.80

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	VOCs in Water by 8260C	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: 1/17/23 1135

Depth to Water - Initial (DTWi) (ft) 21.79

Purge End Date/Time: 1/17/23 1205

Depth to Well Bottom (ft) ~~25~~ 27.82

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 17.80-27.80

Discharge Tube Diameter: 1/4" Immiscible Layer: Y (N)

Approximate depth of pump inlet*(ft): ~~25~~ 22.80 Pump Start Time: 1135

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW- 21.79

APTIM

Sample Collection Log

Location ID: 12WW24										Sample No: 12WW24-~~2202~~2301-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
1/17/23	1140	100	.5	21.86	1.25	20.83	6.78	2.2	-10	0.71
	1145	100	1.0	21.92	1.17	20.55	5.79	1.0	11	0.31
	1150	100	1.5	21.96	1.12	20.57	5.65	0.5	11	0.16
	1155	100	2.0	21.99	1.11	20.60	5.63	0.0	12	0.16
	1200	100	2.5	22.02	1.10	20.62	5.62	0.0	12	0.15
↓	1205	100	3.0	22.04	1.10	20.64	5.61	0.0	12	0.15

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Appendix D

Laboratory Analytical Data Package

(Provided electronically on CD and the Portal)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

January 20, 2023

Vicki Graves
Aptim Environmental & Infrastucture, Inc.
10333 Richmond Ave
Ste 1030
Houston, TX 77042

Work Order: **HS23010858**

Laboratory Results for: **LHAAP 12**

Dear Vicki Graves ,

ALS Environmental received 6 sample(s) on Jan 18, 2023 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: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Work Order: HS23010858

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS23010858-01	12WW10R-230117	Groundwater		17-Jan-2023 10:35	18-Jan-2023 09:15	☐
HS23010858-02	12WW21-230117	Groundwater		17-Jan-2023 11:20	18-Jan-2023 09:15	☐
HS23010858-03	12WW21-230117-FD	Groundwater		17-Jan-2023 11:20	18-Jan-2023 09:15	☐
HS23010858-04	12WW24-230117	Groundwater		17-Jan-2023 12:05	18-Jan-2023 09:15	☐
HS23010858-05	12WW20-230117	Groundwater		17-Jan-2023 12:45	18-Jan-2023 09:15	☐
HS23010858-06	Trip Blank-230117	Water	CG-090622-894	17-Jan-2023 00:00	18-Jan-2023 09:15	☐

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP 12
Work Order: HS23010858

GCMS Volatiles by Method SW8260

Batch ID: R426140

Sample ID: CCV

- 2_Hexanone exceeded %D recovery limits for CCV .Samples are ND for this compound.

Sample ID: 12WW24-230117 (HS23010858-04MS)

- MS/MSD failed QC limits for some compounds

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW10R-230117
Collection Date: 17-Jan-2023 10:35

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 17:38
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jan-2023 17:38
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jan-2023 17:38
Acetone	**2.8**		**0.40**	**1.0**	**2.0**	**ug/L**	1	19-Jan-2023 17:38
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jan-2023 17:38
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW10R-230117
Collection Date: 17-Jan-2023 10:35

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 17:38
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 17:38
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Trichloroethene	**0.93**	J	**0.20**	**1.0**	**1.0**	**ug/L**	1	19-Jan-2023 17:38
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Surr: 1,2-Dichloroethane-d4	*96.3*			**0**	*81-118*	*%REC*	*1*	*19-Jan-2023 17:38*
Surr: 4-Bromofluorobenzene	*96.8*			**0**	*85-114*	*%REC*	*1*	*19-Jan-2023 17:38*
Surr: Dibromofluoromethane	*90.7*			**0**	*80-119*	*%REC*	*1*	*19-Jan-2023 17:38*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*19-Jan-2023 17:38*

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW21-230117
Collection Date: 17-Jan-2023 11:20

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 17:59
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jan-2023 17:59
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jan-2023 17:59
Acetone	**2.4**		**0.40**	**1.0**	**2.0**	**ug/L**	1	19-Jan-2023 17:59
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jan-2023 17:59
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW21-230117
Collection Date: 17-Jan-2023 11:20

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 17:59
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 17:59
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Surr: 1,2-Dichloroethane-d4	*96.5*			**0**	*81-118*	*%REC*	*1*	*19-Jan-2023 17:59*
Surr: 4-Bromofluorobenzene	*96.5*			**0**	*85-114*	*%REC*	*1*	*19-Jan-2023 17:59*
Surr: Dibromofluoromethane	*90.9*			**0**	*80-119*	*%REC*	*1*	*19-Jan-2023 17:59*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*19-Jan-2023 17:59*

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 12 WorkOrder:HS23010858
Sample ID: 12WW21-230117-FD Lab ID:HS23010858-03
Collection Date: 17-Jan-2023 11:20 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 18:20
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jan-2023 18:20
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jan-2023 18:20
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 18:20
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jan-2023 18:20
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW21-230117-FD
Collection Date: 17-Jan-2023 11:20

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 18:20
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 18:20
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Surr: 1,2-Dichloroethane-d4	*96.1*			**0**	*81-118*	*%REC*	*1*	*19-Jan-2023 18:20*
Surr: 4-Bromofluorobenzene	*97.2*			**0**	*85-114*	*%REC*	*1*	*19-Jan-2023 18:20*
Surr: Dibromofluoromethane	*91.4*			**0**	*80-119*	*%REC*	*1*	*19-Jan-2023 18:20*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*19-Jan-2023 18:20*

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 12 WorkOrder:HS23010858
Sample ID: 12WW24-230117 Lab ID:HS23010858-04
Collection Date: 17-Jan-2023 12:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 14:28
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jan-2023 14:28
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jan-2023 14:28
Acetone	**2.9**		**0.40**	**1.0**	**2.0**	**ug/L**	1	19-Jan-2023 14:28
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jan-2023 14:28
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 12 WorkOrder:HS23010858
Sample ID: 12WW24-230117 Lab ID:HS23010858-04
Collection Date: 17-Jan-2023 12:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
cis-1,2-Dichloroethene	**7.4**		**0.20**	**1.0**	**1.0**	**ug/L**	1	19-Jan-2023 14:28
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 14:28
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 14:28
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Trichloroethene	**8.3**		**0.20**	**1.0**	**1.0**	**ug/L**	1	19-Jan-2023 14:28
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Surr: 1,2-Dichloroethane-d4	*98.7*			**0**	*81-118*	*%REC*	*1*	*19-Jan-2023 14:28*
Surr: 4-Bromofluorobenzene	*96.1*			**0**	*85-114*	*%REC*	*1*	*19-Jan-2023 14:28*
Surr: Dibromofluoromethane	*94.3*			**0**	*80-119*	*%REC*	*1*	*19-Jan-2023 14:28*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*19-Jan-2023 14:28*

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 12 WorkOrder:HS23010858
Sample ID: 12WW20-230117 Lab ID:HS23010858-05
Collection Date: 17-Jan-2023 12:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 18:41
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jan-2023 18:41
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jan-2023 18:41
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 18:41
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jan-2023 18:41
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP 12 WorkOrder:HS23010858
Sample ID: 12WW20-230117 Lab ID:HS23010858-05
Collection Date: 17-Jan-2023 12:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 18:41
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 18:41
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Surr: 1,2-Dichloroethane-d4	*95.5*			**0**	*81-118*	*%REC*	*1*	*19-Jan-2023 18:41*
Surr: 4-Bromofluorobenzene	*97.5*			**0**	*85-114*	*%REC*	*1*	*19-Jan-2023 18:41*
Surr: Dibromofluoromethane	*90.6*			**0**	*80-119*	*%REC*	*1*	*19-Jan-2023 18:41*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*19-Jan-2023 18:41*

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: Trip Blank-230117
Collection Date: 17-Jan-2023 00:00

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 14:07
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jan-2023 14:07
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jan-2023 14:07
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 14:07
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jan-2023 14:07
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: Trip Blank-230117
Collection Date: 17-Jan-2023 00:00

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 14:07
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 14:07
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Surr: 1,2-Dichloroethane-d4	*96.3*			**0**	*81-118*	*%REC*	*1*	*19-Jan-2023 14:07*
Surr: 4-Bromofluorobenzene	*96.1*			**0**	*85-114*	*%REC*	*1*	*19-Jan-2023 14:07*
Surr: Dibromofluoromethane	*93.3*			**0**	*80-119*	*%REC*	*1*	*19-Jan-2023 14:07*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*19-Jan-2023 14:07*

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R426140 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS23010858-06	Trip Blank-230117	17 Jan 2023 00:00			19 Jan 2023 14:07	1
Batch ID: R426140 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS23010858-01	12WW10R-230117	17 Jan 2023 10:35			19 Jan 2023 17:38	1
HS23010858-02	12WW21-230117	17 Jan 2023 11:20			19 Jan 2023 17:59	1
HS23010858-03	12WW21-230117-FD	17 Jan 2023 11:20			19 Jan 2023 18:20	1
HS23010858-04	12WW24-230117	17 Jan 2023 12:05			19 Jan 2023 14:28	1
HS23010858-05	12WW20-230117	17 Jan 2023 12:45			19 Jan 2023 18:41	1

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-230119** Units: **ug/L** Analysis Date: **19-Jan-2023 13:04**
Client ID: Run ID: **VOA6_426140** SeqNo: **7080114** PrepDate: DF: **1**

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-230119** Units: **ug/L** Analysis Date: **19-Jan-2023 13:04**
Client ID: Run ID: **VOA6_426140** SeqNo: **7080114** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	1.0	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	1.0	1.0								U
Chlorobenzene	1.0	1.0								U
Chloroethane	1.0	1.0								U
Chloroform	1.0	1.0								U
Chloromethane	1.0	1.0								U
cis-1,2-Dichloroethene	1.0	1.0								U
cis-1,3-Dichloropropene	1.0	1.0								U
Dibromochloromethane	1.0	1.0								U
Dibromomethane	1.0	1.0								U
Dichlorodifluoromethane	1.0	1.0								U
Ethylbenzene	1.0	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	1.0	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	1.0	1.0								U
n-Butylbenzene	1.0	1.0								U
n-Propylbenzene	1.0	1.0								U
o-Xylene	1.0	1.0								U
sec-Butylbenzene	1.0	1.0								U
Styrene	1.0	1.0								U
tert-Butylbenzene	1.0	1.0								U
Tetrachloroethene	1.0	1.0								U
Toluene	1.0	1.0								U
trans-1,2-Dichloroethene	1.0	1.0								U
trans-1,3-Dichloropropene	1.0	1.0								U
Trichloroethene	1.0	1.0								U
Trichlorofluoromethane	1.0	1.0								U
Vinyl chloride	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*47.92*	*1.0*	*50*	*0*	*95.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.9*	*1.0*	*50*	*0*	*97.8*	*85 - 114*				
Surr: Dibromofluoromethane	*45.85*	*1.0*	*50*	*0*	*91.7*	*80 - 119*				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-230119** Units: **ug/L** Analysis Date: **19-Jan-2023 13:04**
Client ID: Run ID: **VOA6_426140** SeqNo: **7080114** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.89*	*1.0*	*50*	*0*	*108*	*89 - 112*				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-230119** Units: **ug/L** Analysis Date: **19-Jan-2023 12:01**
Client ID: Run ID: **VOA6_426140** SeqNo: **7080113** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.05	1.0	20	0	100	78 - 124				
1,1,1-Trichloroethane	21.47	1.0	20	0	107	74 - 131				
1,1,2,2-Tetrachloroethane	19.94	1.0	20	0	99.7	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	22.54	1.0	20	0	113	70 - 136				
1,1,2-Trichloroethane	19.75	1.0	20	0	98.8	80 - 119				
1,1-Dichloroethane	20.35	1.0	20	0	102	77 - 125				
1,1-Dichloroethene	21.17	1.0	20	0	106	71 - 131				
1,1-Dichloropropene	22.5	1.0	20	0	112	78 - 125				
1,2,3-Trichlorobenzene	21.75	1.0	20	0	109	69 - 129				
1,2,3-Trichloropropane	22.44	1.0	20	0	112	73 - 122				
1,2,4-Trichlorobenzene	22.69	1.0	20	0	113	69 - 130				
1,2,4-Trimethylbenzene	21.86	1.0	20	0	109	76 - 124				
1,2-Dibromo-3-chloropropane	20.5	1.0	20	0	103	62 - 128				
1,2-Dibromoethane	20.69	1.0	20	0	103	77 - 121				
1,2-Dichlorobenzene	20.33	1.0	20	0	102	80 - 119				
1,2-Dichloroethane	21.97	1.0	20	0	110	73 - 128				
1,2-Dichloropropane	20.19	1.0	20	0	101	78 - 122				
1,3,5-Trimethylbenzene	22.26	1.0	20	0	111	75 - 124				
1,3-Dichlorobenzene	21.15	1.0	20	0	106	80 - 119				
1,3-Dichloropropane	20.35	1.0	20	0	102	80 - 119				
1,4-Dichlorobenzene	20.91	1.0	20	0	105	79 - 118				
2,2-Dichloropropane	22.37	1.0	20	0	112	60 - 139				
2-Butanone	43.34	2.0	40	0	108	56 - 143				
2-Chlorotoluene	21.33	1.0	20	0	107	79 - 122				
2-Hexanone	46.32	2.0	40	0	116	57 - 139				
4-Chlorotoluene	22	1.0	20	0	110	78 - 122				
4-Isopropyltoluene	23.85	1.0	20	0	119	77 - 127				
4-Methyl-2-pentanone	43.32	2.0	40	0	108	67 - 130				
Acetone	47.94	2.0	40	0	120	39 - 160				
Benzene	20.59	1.0	20	0	103	79 - 120				
Bromobenzene	19.95	1.0	20	0	99.8	80 - 120				
Bromochloromethane	18.65	1.0	20	0	93.2	78 - 123				
Bromodichloromethane	20.3	1.0	20	0	101	79 - 125				
Bromoform	19.82	1.0	20	0	99.1	66 - 130				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-230119** Units: **ug/L** Analysis Date: **19-Jan-2023 12:01**
Client ID: Run ID: **VOA6_426140** SeqNo: **7080113** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	21.46	1.0	20	0	107	53 - 141				
Carbon disulfide	41.08	2.0	40	0	103	64 - 133				
Carbon tetrachloride	21.01	1.0	20	0	105	72 - 136				
Chlorobenzene	20.33	1.0	20	0	102	82 - 118				
Chloroethane	19.09	1.0	20	0	95.4	60 - 138				
Chloroform	20.19	1.0	20	0	101	79 - 124				
Chloromethane	20.92	1.0	20	0	105	50 - 139				
cis-1,2-Dichloroethene	19.48	1.0	20	0	97.4	78 - 123				
cis-1,3-Dichloropropene	20.7	1.0	20	0	104	75 - 124				
Dibromochloromethane	20.1	1.0	20	0	100	74 - 126				
Dibromomethane	20.21	1.0	20	0	101	79 - 123				
Dichlorodifluoromethane	18.21	1.0	20	0	91.0	32 - 152				
Ethylbenzene	21.6	1.0	20	0	108	79 - 121				
Hexachlorobutadiene	23.45	1.0	20	0	117	66 - 134				
Isopropylbenzene	22.23	1.0	20	0	111	72 - 131				
m,p-Xylene	42.29	2.0	40	0	106	80 - 121				
Methylene chloride	19.61	2.0	20	0	98.1	74 - 124				
Naphthalene	22.16	1.0	20	0	111	61 - 128				
n-Butylbenzene	23.25	1.0	20	0	116	75 - 128				
n-Propylbenzene	22.66	1.0	20	0	113	76 - 126				
o-Xylene	20.77	1.0	20	0	104	78 - 122				
sec-Butylbenzene	23.95	1.0	20	0	120	77 - 126				
Styrene	20.88	1.0	20	0	104	78 - 123				
tert-Butylbenzene	22.73	1.0	20	0	114	78 - 124				
Tetrachloroethene	21.49	1.0	20	0	107	74 - 129				
Toluene	20.68	1.0	20	0	103	80 - 121				
trans-1,2-Dichloroethene	20.12	1.0	20	0	101	75 - 124				
trans-1,3-Dichloropropene	21.57	1.0	20	0	108	73 - 127				
Trichloroethene	20.79	1.0	20	0	104	79 - 123				
Trichlorofluoromethane	21.98	1.0	20	0	110	65 - 141				
Vinyl chloride	20.37	1.0	20	0	102	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.09*	*1.0*	*50*	*0*	*104*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.39*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*48.88*	*1.0*	*50*	*0*	*97.8*	*80 - 119*				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-230119** Units: **ug/L** Analysis Date: **19-Jan-2023 12:01**
Client ID: Run ID: **VOA6_426140** SeqNo: **7080113** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.7*	*1.0*	*50*	*0*	*99.4*	*89 - 112*				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS23010858-04MS** Units: **ug/L** Analysis Date: **19-Jan-2023 15:32**
Client ID: **12WW24-230117** Run ID: **VOA6_426140** SeqNo: **7080842** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.19	1.0	20	0	101	78 - 124				
1,1,1-Trichloroethane	20.34	1.0	20	0	102	74 - 131				
1,1,2,2-Tetrachloroethane	19.54	1.0	20	0	97.7	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	22.92	1.0	20	0	115	70 - 136				
1,1,2-Trichloroethane	19.64	1.0	20	0	98.2	80 - 119				
1,1-Dichloroethane	18.64	1.0	20	0	93.2	77 - 125				
1,1-Dichloroethene	20.1	1.0	20	0	100	71 - 131				
1,1-Dichloropropene	23.75	1.0	20	0	119	78 - 125				
1,2,3-Trichlorobenzene	22.58	1.0	20	0	113	69 - 129				
1,2,3-Trichloropropane	20.98	1.0	20	0	105	73 - 122				
1,2,4-Trichlorobenzene	23.85	1.0	20	0	119	69 - 130				
1,2,4-Trimethylbenzene	26.41	1.0	20	0	132	76 - 124				S
1,2-Dibromo-3-chloropropane	21.5	1.0	20	0	108	62 - 128				
1,2-Dibromoethane	20.31	1.0	20	0	102	77 - 121				
1,2-Dichlorobenzene	22.04	1.0	20	0	110	80 - 119				
1,2-Dichloroethane	20.74	1.0	20	0	104	73 - 128				
1,2-Dichloropropane	19	1.0	20	0	95.0	78 - 122				
1,3,5-Trimethylbenzene	34.47	1.0	20	0	172	75 - 124				S
1,3-Dichlorobenzene	21.92	1.0	20	0	110	80 - 119				
1,3-Dichloropropane	20.07	1.0	20	0	100	80 - 119				
1,4-Dichlorobenzene	21.07	1.0	20	0	105	79 - 118				
2,2-Dichloropropane	19.93	1.0	20	0	99.7	60 - 139				
2-Butanone	36.44	2.0	40	0	91.1	56 - 143				
2-Chlorotoluene	23.07	1.0	20	0	115	79 - 122				
2-Hexanone	45.77	2.0	40	0	114	57 - 139				
4-Chlorotoluene	23.91	1.0	20	0	120	78 - 122				
4-Isopropyltoluene	26.54	1.0	20	0	133	77 - 127				S
4-Methyl-2-pentanone	47.24	2.0	40	0	118	67 - 130				
Acetone	31.18	2.0	40	2.909	70.7	39 - 160				
Benzene	21.34	1.0	20	0	107	79 - 120				
Bromobenzene	20.07	1.0	20	0	100	80 - 120				
Bromochloromethane	16.74	1.0	20	0	83.7	78 - 123				
Bromodichloromethane	19.11	1.0	20	0	95.6	79 - 125				
Bromoform	19.05	1.0	20	0	95.3	66 - 130				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS23010858-04MS** Units: **ug/L** Analysis Date: **19-Jan-2023 15:32**
Client ID: **12WW24-230117** Run ID: **VOA6_426140** SeqNo: **7080842** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	19.32	1.0	20	0	96.6	53 - 141				
Carbon disulfide	40.1	2.0	40	0	100	64 - 133				
Carbon tetrachloride	22.3	1.0	20	0	112	72 - 136				
Chlorobenzene	20.53	1.0	20	0	103	82 - 118				
Chloroethane	18.58	1.0	20	0	92.9	60 - 138				
Chloroform	18.32	1.0	20	0	91.6	79 - 124				
Chloromethane	17.96	1.0	20	0	89.8	50 - 139				
cis-1,2-Dichloroethene	17.76	1.0	20	7.393	51.8	78 - 123				S
cis-1,3-Dichloropropene	19.2	1.0	20	0	96.0	75 - 124				
Dibromochloromethane	19.69	1.0	20	0	98.4	74 - 126				
Dibromomethane	18.74	1.0	20	0	93.7	79 - 123				
Dichlorodifluoromethane	17.02	1.0	20	0	85.1	32 - 152				
Ethylbenzene	23.43	1.0	20	0	117	79 - 121				
Hexachlorobutadiene	25.56	1.0	20	0	128	66 - 134				
Isopropylbenzene	48.99	1.0	20	0	245	72 - 131				S
m,p-Xylene	70.73	2.0	40	0	177	80 - 121				S
Methylene chloride	16.37	2.0	20	0	81.9	74 - 124				
Naphthalene	57.08	1.0	20	0	285	61 - 128				S
n-Butylbenzene	35.21	1.0	20	0	176	75 - 128				S
n-Propylbenzene	58.99	1.0	20	0	295	76 - 126				S
o-Xylene	23.31	1.0	20	0	117	78 - 122				
sec-Butylbenzene	31.15	1.0	20	0	156	77 - 126				S
Styrene	21.48	1.0	20	0	107	78 - 123				
tert-Butylbenzene	26.04	1.0	20	0	130	78 - 124				S
Tetrachloroethene	23.95	1.0	20	0	120	74 - 129				
Toluene	21.96	1.0	20	0	110	80 - 121				
trans-1,2-Dichloroethene	19.44	1.0	20	0	97.2	75 - 124				
trans-1,3-Dichloropropene	19.81	1.0	20	0	99.0	73 - 127				
Trichloroethene	21.23	1.0	20	8.292	64.7	79 - 123				S
Trichlorofluoromethane	22.26	1.0	20	0	111	65 - 141				
Vinyl chloride	19.77	1.0	20	0	98.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.74*	*1.0*	*50*	*0*	*93.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.08*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*44.86*	*1.0*	*50*	*0*	*89.7*	*80 - 119*				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS23010858-04MS** Units: **ug/L** Analysis Date: **19-Jan-2023 15:32**
Client ID: **12WW24-230117** Run ID: **VOA6_426140** SeqNo: **7080842** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.18*	*1.0*	*50*	*0*	*104*	*89 - 112*				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS23010858-04MSD** Units: **ug/L** Analysis Date: **19-Jan-2023 15:53**
Client ID: **12WW24-230117** Run ID: **VOA6_426140** SeqNo: **7080843** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.07	1.0	20	0	100	78 - 124	20.19	0.585	20	
1,1,1-Trichloroethane	20.88	1.0	20	0	104	74 - 131	20.34	2.62	20	
1,1,2,2-Tetrachloroethane	20.01	1.0	20	0	100	71 - 121	19.54	2.38	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	22.62	1.0	20	0	113	70 - 136	22.92	1.33	20	
1,1,2-Trichloroethane	19.53	1.0	20	0	97.7	80 - 119	19.64	0.568	20	
1,1-Dichloroethane	18.15	1.0	20	0	90.8	77 - 125	18.64	2.67	20	
1,1-Dichloroethene	19.72	1.0	20	0	98.6	71 - 131	20.1	1.89	20	
1,1-Dichloropropene	23.08	1.0	20	0	115	78 - 125	23.75	2.87	20	
1,2,3-Trichlorobenzene	22.79	1.0	20	0	114	69 - 129	22.58	0.901	20	
1,2,3-Trichloropropane	20.43	1.0	20	0	102	73 - 122	20.98	2.62	20	
1,2,4-Trichlorobenzene	24.42	1.0	20	0	122	69 - 130	23.85	2.38	20	
1,2,4-Trimethylbenzene	26.25	1.0	20	0	131	76 - 124	26.41	0.617	20	S
1,2-Dibromo-3-chloropropane	21.18	1.0	20	0	106	62 - 128	21.5	1.52	20	
1,2-Dibromoethane	19.85	1.0	20	0	99.3	77 - 121	20.31	2.28	20	
1,2-Dichlorobenzene	21.7	1.0	20	0	108	80 - 119	22.04	1.58	20	
1,2-Dichloroethane	20.62	1.0	20	0	103	73 - 128	20.74	0.588	20	
1,2-Dichloropropane	18.77	1.0	20	0	93.8	78 - 122	19	1.2	20	
1,3,5-Trimethylbenzene	34.44	1.0	20	0	172	75 - 124	34.47	0.0912	20	S
1,3-Dichlorobenzene	21.8	1.0	20	0	109	80 - 119	21.92	0.51	20	
1,3-Dichloropropane	19.91	1.0	20	0	99.5	80 - 119	20.07	0.815	20	
1,4-Dichlorobenzene	21.57	1.0	20	0	108	79 - 118	21.07	2.33	20	
2,2-Dichloropropane	20.13	1.0	20	0	101	60 - 139	19.93	0.964	20	
2-Butanone	36.47	2.0	40	0	91.2	56 - 143	36.44	0.103	20	
2-Chlorotoluene	22.9	1.0	20	0	114	79 - 122	23.07	0.742	20	
2-Hexanone	47.2	2.0	40	0	118	57 - 139	45.77	3.06	20	
4-Chlorotoluene	24.07	1.0	20	0	120	78 - 122	23.91	0.665	20	
4-Isopropyltoluene	26.56	1.0	20	0	133	77 - 127	26.54	0.061	20	S
4-Methyl-2-pentanone	47.73	2.0	40	0	119	67 - 130	47.24	1.03	20	
Acetone	32.5	2.0	40	2.909	74.0	39 - 160	31.18	4.15	20	
Benzene	21.1	1.0	20	0	105	79 - 120	21.34	1.14	20	
Bromobenzene	20.26	1.0	20	0	101	80 - 120	20.07	0.95	20	
Bromochloromethane	17	1.0	20	0	85.0	78 - 123	16.74	1.51	20	
Bromodichloromethane	18.67	1.0	20	0	93.3	79 - 125	19.11	2.34	20	
Bromoform	18.78	1.0	20	0	93.9	66 - 130	19.05	1.44	20	

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS23010858-04MSD** Units: **ug/L** Analysis Date: **19-Jan-2023 15:53**
Client ID: **12WW24-230117** Run ID: **VOA6_426140** SeqNo: **7080843** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	18.89	1.0	20	0	94.4	53 - 141	19.32	2.26	20	
Carbon disulfide	39.57	2.0	40	0	98.9	64 - 133	40.1	1.34	20	
Carbon tetrachloride	21.84	1.0	20	0	109	72 - 136	22.3	2.11	20	
Chlorobenzene	19.91	1.0	20	0	99.6	82 - 118	20.53	3.07	20	
Chloroethane	18.56	1.0	20	0	92.8	60 - 138	18.58	0.108	20	
Chloroform	18.31	1.0	20	0	91.6	79 - 124	18.32	0.0198	20	
Chloromethane	18.59	1.0	20	0	92.9	50 - 139	17.96	3.43	20	
cis-1,2-Dichloroethene	17.76	1.0	20	7.393	51.8	78 - 123	17.76	0.0279	20	S
cis-1,3-Dichloropropene	19.01	1.0	20	0	95.1	75 - 124	19.2	0.971	20	
Dibromochloromethane	19.41	1.0	20	0	97.1	74 - 126	19.69	1.4	20	
Dibromomethane	18.43	1.0	20	0	92.2	79 - 123	18.74	1.63	20	
Dichlorodifluoromethane	16.91	1.0	20	0	84.5	32 - 152	17.02	0.654	20	
Ethylbenzene	22.78	1.0	20	0	114	79 - 121	23.43	2.82	20	
Hexachlorobutadiene	25.75	1.0	20	0	129	66 - 134	25.56	0.714	20	
Isopropylbenzene	48	1.0	20	0	240	72 - 131	48.99	2.04	20	S
m,p-Xylene	69	2.0	40	0	173	80 - 121	70.73	2.48	20	S
Methylene chloride	16.67	2.0	20	0	83.3	74 - 124	16.37	1.76	20	
Naphthalene	58.09	1.0	20	0	290	61 - 128	57.08	1.74	20	S
n-Butylbenzene	35.05	1.0	20	0	175	75 - 128	35.21	0.451	20	S
n-Propylbenzene	58.94	1.0	20	0	295	76 - 126	58.99	0.0783	20	S
o-Xylene	22.96	1.0	20	0	115	78 - 122	23.31	1.52	20	
sec-Butylbenzene	31.04	1.0	20	0	155	77 - 126	31.15	0.366	20	S
Styrene	21.36	1.0	20	0	107	78 - 123	21.48	0.554	20	
tert-Butylbenzene	26.05	1.0	20	0	130	78 - 124	26.04	0.0281	20	S
Tetrachloroethene	23.31	1.0	20	0	117	74 - 129	23.95	2.7	20	
Toluene	21.51	1.0	20	0	108	80 - 121	21.96	2.04	20	
trans-1,2-Dichloroethene	19.02	1.0	20	0	95.1	75 - 124	19.44	2.19	20	
trans-1,3-Dichloropropene	19.71	1.0	20	0	98.6	73 - 127	19.81	0.475	20	
Trichloroethene	20.68	1.0	20	8.292	61.9	79 - 123	21.23	2.66	20	S
Trichlorofluoromethane	21.95	1.0	20	0	110	65 - 141	22.26	1.37	20	
Vinyl chloride	19.11	1.0	20	0	95.6	58 - 137	19.77	3.4	20	
Surr: 1,2-Dichloroethane-d4	*46.81*	*1.0*	*50*	*0*	*93.6*	*81 - 118*	*46.74*	*0.144*	*20*	
Surr: 4-Bromofluorobenzene	*51.67*	*1.0*	*50*	*0*	*103*	*85 - 114*	*52.08*	*0.786*	*20*	
Surr: Dibromofluoromethane	*45.81*	*1.0*	*50*	*0*	*91.6*	*80 - 119*	*44.86*	*2.09*	*20*	

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS23010858-04MSD** Units: **ug/L** Analysis Date: **19-Jan-2023 15:53**
Client ID: **12WW24-230117** Run ID: **VOA6_426140** SeqNo: **7080843** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.59*	*1.0*	*50*	*0*	*103*	*89 - 112*	*52.18*	*1.15*	*20*	

The following samples were analyzed in this batch: HS23010858-01 HS23010858-02 HS23010858-03 HS23010858-04 HS23010858-05 HS23010858-06

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: **HS23010858**

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	624-2023	31-Dec-2023
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: 20-Jan-23

Sample Receipt Checklist

Work Order ID: HS23010858 **Date/Time Received:** **18-Jan-2023 09:15**

Client Name: CBI-Houston **Received by:** **Corey Grandits**

Completed By:	/S/ Corey Grandits	18-Jan-2023 15:12	**Reviewed by:**	/S/ Dane J. Wacasey	19-Jan-2023 21:55
	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 ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
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):	2.0UC/1.5C	IR31
Cooler(s)/Kit(s):	49738	
Date/Time sample(s) sent to storage:	1/18/2023	

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 (281) 575-2190 ATTN: Dane Wacasey

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 12 December 2022**

Prepared By: Scott Beesinger

P.O. Number

HS23010858
Aptim Environmental & Infrastucture, Inc.
LHAAP 12

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	Remarks (Preservatives, etc.)	Lab I.D.#
12WW10R-230117	WG	1/17/23 1035		3	X		
12WW21-230117	WG	1/17/23 1120		3	X		
12WW21-230117-FD	WG	1/17/23 1120		3	X		
12WW24-230117	WG	1/17/23 1205		3	X		
12WW24-230117-MS	WG	1/17/23 1205		3	X		
12WW24-230117-MSD	WG	1/17/23 1205		3	X		
12WW20-230117	WG	1/17/23 1245		3	X		
TRIP BLANK-230117	W	1/17/23		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
Scott Beesinger	1/17/23	14:30	FEDEX	1-18-23	0915						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks: 1231 4938 2.0°

FedEx
TRK# 0221 5300 5226 0678

WED - 18 JAN AA
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Seal Broken By:

Date: 1/17/23 Time: 14:30

Name: Scott Beeson

Company: BETA TS

Date:

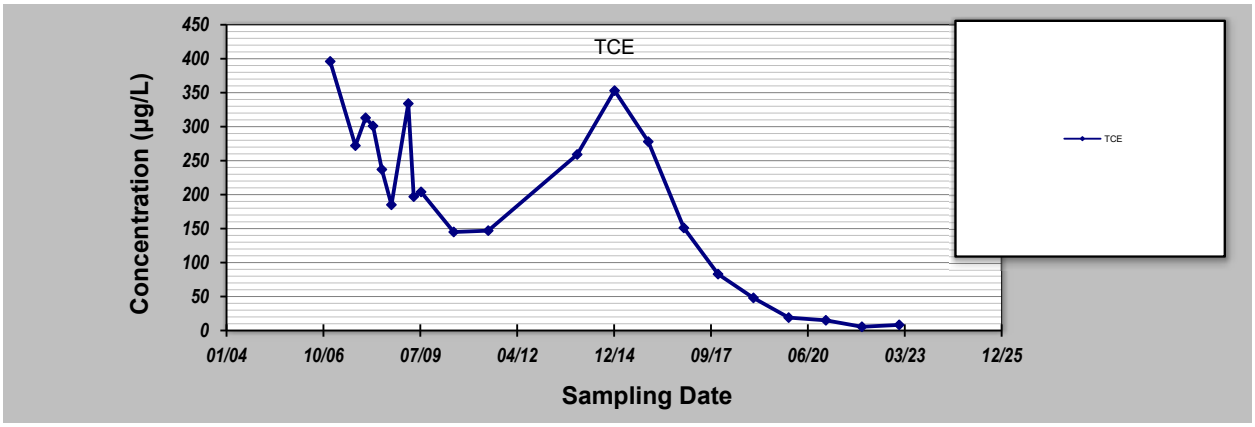
Appendix E

Mann-Kendall Trend Analysis Test Results

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	22-Feb-22	Job ID:	501032
Facility Name:	LHAAP-12	Constituent:	12WW24
Conducted By:	Chris Long	Concentration Units:	µg/L
Sampling Point ID:	TCE		

Sampling Event	Sampling Date	12WW24 CONCENTRATION (µg/L)
1	19-Dec-06	396
2	5-Sep-07	272
3	19-Dec-07	313
4	5-Mar-08	301
5	4-Jun-08	237
6	11-Sep-08	185
7	4-Mar-09	334
8	29-Apr-09	197
9	14-Jul-09	204
10	16-Jun-10	145
11	7-Jun-11	147
12	11-Dec-13	259
13	1-Jan-15	353
14	15-Dec-15	278
15	16-Dec-16	151
16	4-Dec-17	83
17	4-Dec-18	48
18	3-Dec-19	19
19	21-Dec-20	15
20	28-Dec-21	5.5
21	17-Jan-23	8.3
22		
23		
24		
25		
Coefficient of Variation:		0.65
Mann-Kendall Statistic (S):		-132
Confidence Factor:		>99.9%
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

DISCLAIMER: *The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.*

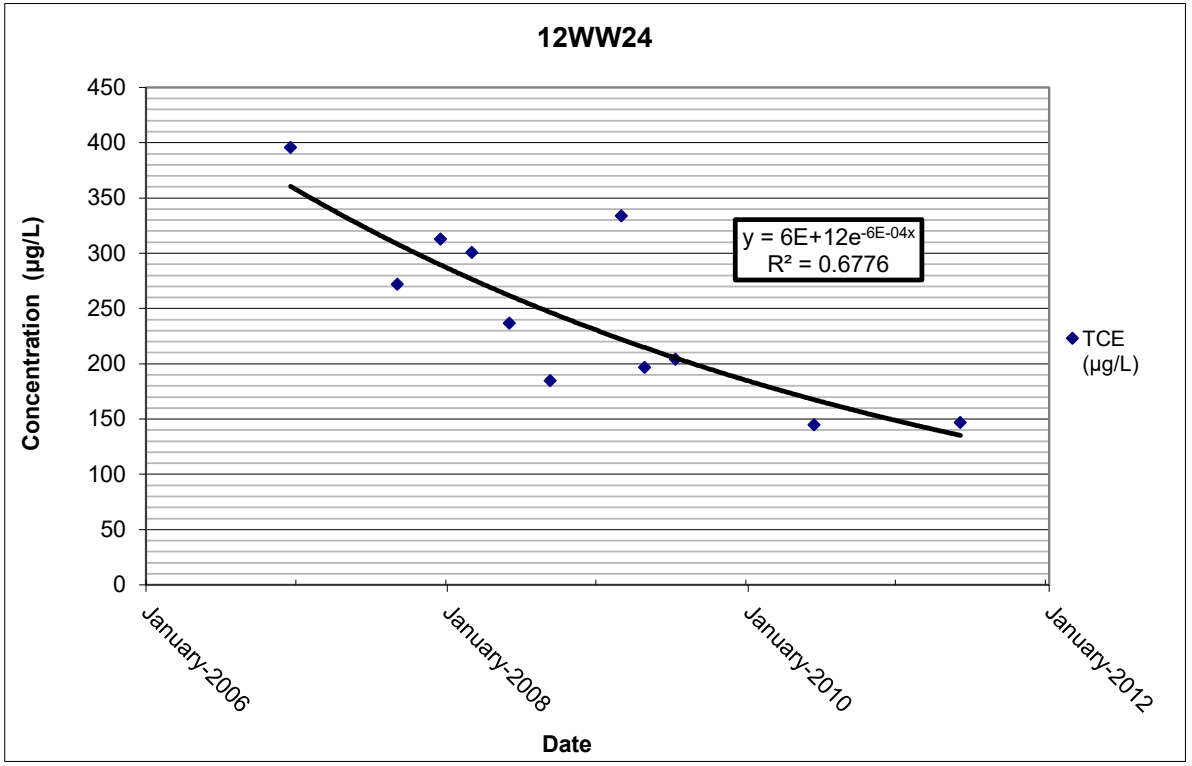
GSI Environmental Inc., www.gsi-net.com

Appendix F

Degradation Rates

Time-Dependent Attenuation Rate Constant and Estimated Cleanup Time
12WW24

Date	TCE (µg/L)
19-Dec-06	396
5-Sep-07	272
19-Dec-07	313
5-Mar-08	301
4-Jun-08	237
11-Sep-08	185
4-Mar-09	334
29-Apr-09	197
14-Jul-09	204
16-Jun-10	145
7-Jun-11	147
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1-Jan-15	353
15-Dec-15	278
16-Dec-16	151
4-Dec-17	83
4-Dec-18	48
3-Dec-19	19
21-Dec-20	15
28-Dec-21	5.5
17-Jan-23	8.3



Chemical: TCE Well ID	Attenuation Rate Constant (day^{-1})	Attenuation Half-life (days)	Attenuation Half-life (years)	Current Conc. (µg/L)	Target Concentration for TCE (µg/L)	Estimated Cleanup Time (years)
12WW24	0.0006	1155.2	3.2	147	5	15.4

Notes:

The estimated cleanup time was calculated as the time it would take the most recent detected TCE concentration to reach the MCL using the site-specific attenuation rate, and assuming first order degradation kinetics.

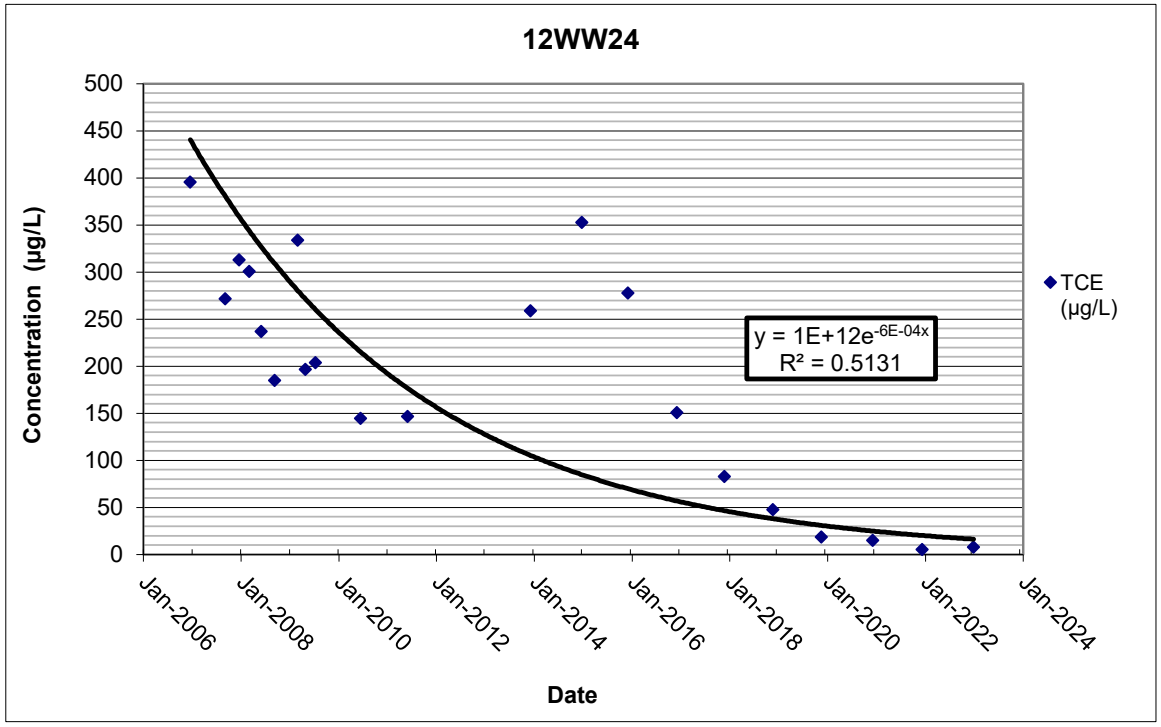
µg/L - micrograms per liter

MCL - maximum contaminant level

TCE - trichloroethene

Time-Dependent Attenuation Rate Constant and Estimated Cleanup Time
12WW24

Date	TCE (µg/L)
19-Dec-06	396
5-Sep-07	272
19-Dec-07	313
5-Mar-08	301
4-Jun-08	237
11-Sep-08	185
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11-Dec-13	259
1-Jan-15	353
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4-Dec-18	48
3-Dec-19	19
21-Dec-20	15



Chemical: TCE Well ID	Attenuation Rate Constant (day^{-1})	Attenuation Half-life (days)	Attenuation Half-life (years)	Current Conc. (µg/L)	Target Concentration for TCE (µg/L)	Estimated Cleanup Time (years)
12WW24	0.0006	1155.2	3.2	15	5	5.0

Notes:
The estimated cleanup time was calculated as the time it would take the most recent detected TCE concentration to reach the MCL using the site-specific attenuation rate, and assuming first order degradation kinetics.
µg/L - micrograms per liter
MCL - maximum contaminant level
TCE - trichloroethene

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F: +1 281 530 5887
alsglobal.com

right solutions.
right partner.

WorkOrder: HS23010858

LHAAP 12

Aptim Environmental & Infrastucture, Inc.

Vicki Graves
10333 Richmond Ave Ste 1030
Houston TX 77042

25-Jan-2023

ALS Environmental
ALS Group USA, Corp
10450 Stancliff Road, Suite 210
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HS23010858 LHAAP 12 Final

ALS WO# HS23010858

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January 20, 2023

Vicki Graves
Aptim Environmental & Infrastucture, Inc.
10333 Richmond Ave
Ste 1030
Houston, TX 77042

Work Order: **HS23010858**

Laboratory Results for: **LHAAP 12**

Dear Vicki Graves ,

ALS Environmental received 6 sample(s) on Jan 18, 2023 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: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Work Order: HS23010858

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS23010858-01	12WW10R-230117	Groundwater		17-Jan-2023 10:35	18-Jan-2023 09:15	☐
HS23010858-02	12WW21-230117	Groundwater		17-Jan-2023 11:20	18-Jan-2023 09:15	☐
HS23010858-03	12WW21-230117-FD	Groundwater		17-Jan-2023 11:20	18-Jan-2023 09:15	☐
HS23010858-04	12WW24-230117	Groundwater		17-Jan-2023 12:05	18-Jan-2023 09:15	☐
HS23010858-05	12WW20-230117	Groundwater		17-Jan-2023 12:45	18-Jan-2023 09:15	☐
HS23010858-06	Trip Blank-230117	Water	CG-090622-894	17-Jan-2023 00:00	18-Jan-2023 09:15	☐

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP 12
Work Order: HS23010858

GCMS Volatiles by Method SW8260

Batch ID: R426140

Sample ID: CCV

- 2_Hexanone exceeded %D recovery limits for CCV .Samples are ND for this compound.

Sample ID: 12WW24-230117 (HS23010858-04MS)

- MS/MSD failed QC limits for some compounds

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW10R-230117
Collection Date: 17-Jan-2023 10:35

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 17:38
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jan-2023 17:38
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jan-2023 17:38
Acetone	**2.8**		**0.40**	**1.0**	**2.0**	**ug/L**	1	19-Jan-2023 17:38
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jan-2023 17:38
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW10R-230117
Collection Date: 17-Jan-2023 10:35

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 17:38
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 17:38
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:38
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Trichloroethene	**0.93**	J	**0.20**	**1.0**	**1.0**	**ug/L**	1	19-Jan-2023 17:38
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:38
Surr: 1,2-Dichloroethane-d4	*96.3*			**0**	*81-118*	*%REC*	*1*	*19-Jan-2023 17:38*
Surr: 4-Bromofluorobenzene	*96.8*			**0**	*85-114*	*%REC*	*1*	*19-Jan-2023 17:38*
Surr: Dibromofluoromethane	*90.7*			**0**	*80-119*	*%REC*	*1*	*19-Jan-2023 17:38*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*19-Jan-2023 17:38*

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW21-230117
Collection Date: 17-Jan-2023 11:20

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 17:59
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jan-2023 17:59
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jan-2023 17:59
Acetone	**2.4**		**0.40**	**1.0**	**2.0**	**ug/L**	1	19-Jan-2023 17:59
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jan-2023 17:59
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW21-230117
Collection Date: 17-Jan-2023 11:20

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 17:59
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 17:59
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 17:59
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 17:59
Surr: 1,2-Dichloroethane-d4	*96.5*			**0**	*81-118*	*%REC*	*1*	*19-Jan-2023 17:59*
Surr: 4-Bromofluorobenzene	*96.5*			**0**	*85-114*	*%REC*	*1*	*19-Jan-2023 17:59*
Surr: Dibromofluoromethane	*90.9*			**0**	*80-119*	*%REC*	*1*	*19-Jan-2023 17:59*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*19-Jan-2023 17:59*

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW21-230117-FD
Collection Date: 17-Jan-2023 11:20

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 18:20
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jan-2023 18:20
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jan-2023 18:20
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 18:20
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jan-2023 18:20
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW21-230117-FD
Collection Date: 17-Jan-2023 11:20

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 18:20
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 18:20
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:20
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:20
Surr: 1,2-Dichloroethane-d4	*96.1*			**0**	*81-118*	*%REC*	*1*	*19-Jan-2023 18:20*
Surr: 4-Bromofluorobenzene	*97.2*			**0**	*85-114*	*%REC*	*1*	*19-Jan-2023 18:20*
Surr: Dibromofluoromethane	*91.4*			**0**	*80-119*	*%REC*	*1*	*19-Jan-2023 18:20*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*19-Jan-2023 18:20*

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW24-230117
Collection Date: 17-Jan-2023 12:05

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 14:28
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jan-2023 14:28
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jan-2023 14:28
Acetone	**2.9**		**0.40**	**1.0**	**2.0**	**ug/L**	1	19-Jan-2023 14:28
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jan-2023 14:28
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW24-230117
Collection Date: 17-Jan-2023 12:05

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
cis-1,2-Dichloroethene	**7.4**		**0.20**	**1.0**	**1.0**	**ug/L**	1	19-Jan-2023 14:28
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 14:28
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 14:28
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:28
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Trichloroethene	**8.3**		**0.20**	**1.0**	**1.0**	**ug/L**	1	19-Jan-2023 14:28
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:28
Surr: 1,2-Dichloroethane-d4	*98.7*			**0**	*81-118*	*%REC*	*1*	*19-Jan-2023 14:28*
Surr: 4-Bromofluorobenzene	*96.1*			**0**	*85-114*	*%REC*	*1*	*19-Jan-2023 14:28*
Surr: Dibromofluoromethane	*94.3*			**0**	*80-119*	*%REC*	*1*	*19-Jan-2023 14:28*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*19-Jan-2023 14:28*

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW20-230117
Collection Date: 17-Jan-2023 12:45

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 18:41
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jan-2023 18:41
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jan-2023 18:41
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 18:41
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jan-2023 18:41
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: 12WW20-230117
Collection Date: 17-Jan-2023 12:45

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 18:41
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 18:41
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 18:41
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 18:41
Surr: 1,2-Dichloroethane-d4	*95.5*			**0**	*81-118*	*%REC*	*1*	*19-Jan-2023 18:41*
Surr: 4-Bromofluorobenzene	*97.5*			**0**	*85-114*	*%REC*	*1*	*19-Jan-2023 18:41*
Surr: Dibromofluoromethane	*90.6*			**0**	*80-119*	*%REC*	*1*	*19-Jan-2023 18:41*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*19-Jan-2023 18:41*

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: Trip Blank-230117
Collection Date: 17-Jan-2023 00:00

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1,2-Trichlor-1,2,2-trifluoroethane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 14:07
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	19-Jan-2023 14:07
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	19-Jan-2023 14:07
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 14:07
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	19-Jan-2023 14:07
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
Sample ID: Trip Blank-230117
Collection Date: 17-Jan-2023 00:00

ANALYTICAL REPORT
WorkOrder:HS23010858
Lab ID:HS23010858-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	19-Jan-2023 14:07
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	19-Jan-2023 14:07
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	19-Jan-2023 14:07
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	19-Jan-2023 14:07
Surr: 1,2-Dichloroethane-d4	*96.3*			**0**	*81-118*	*%REC*	*1*	*19-Jan-2023 14:07*
Surr: 4-Bromofluorobenzene	*96.1*			**0**	*85-114*	*%REC*	*1*	*19-Jan-2023 14:07*
Surr: Dibromofluoromethane	*93.3*			**0**	*80-119*	*%REC*	*1*	*19-Jan-2023 14:07*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*19-Jan-2023 14:07*

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R426140 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS23010858-06	Trip Blank-230117	17 Jan 2023 00:00			19 Jan 2023 14:07	1
Batch ID: R426140 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS23010858-01	12WW10R-230117	17 Jan 2023 10:35			19 Jan 2023 17:38	1
HS23010858-02	12WW21-230117	17 Jan 2023 11:20			19 Jan 2023 17:59	1
HS23010858-03	12WW21-230117-FD	17 Jan 2023 11:20			19 Jan 2023 18:20	1
HS23010858-04	12WW24-230117	17 Jan 2023 12:05			19 Jan 2023 14:28	1
HS23010858-05	12WW20-230117	17 Jan 2023 12:45			19 Jan 2023 18:41	1

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-230119** Units: **ug/L** Analysis Date: **19-Jan-2023 13:04**
Client ID: Run ID: **VOA6_426140** SeqNo: **7080114** PrepDate: DF: **1**

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

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-230119** Units: **ug/L** Analysis Date: **19-Jan-2023 13:04**
Client ID: Run ID: **VOA6_426140** SeqNo: **7080114** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	1.0	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	1.0	1.0								U
Chlorobenzene	1.0	1.0								U
Chloroethane	1.0	1.0								U
Chloroform	1.0	1.0								U
Chloromethane	1.0	1.0								U
cis-1,2-Dichloroethene	1.0	1.0								U
cis-1,3-Dichloropropene	1.0	1.0								U
Dibromochloromethane	1.0	1.0								U
Dibromomethane	1.0	1.0								U
Dichlorodifluoromethane	1.0	1.0								U
Ethylbenzene	1.0	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	1.0	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	1.0	1.0								U
n-Butylbenzene	1.0	1.0								U
n-Propylbenzene	1.0	1.0								U
o-Xylene	1.0	1.0								U
sec-Butylbenzene	1.0	1.0								U
Styrene	1.0	1.0								U
tert-Butylbenzene	1.0	1.0								U
Tetrachloroethene	1.0	1.0								U
Toluene	1.0	1.0								U
trans-1,2-Dichloroethene	1.0	1.0								U
trans-1,3-Dichloropropene	1.0	1.0								U
Trichloroethene	1.0	1.0								U
Trichlorofluoromethane	1.0	1.0								U
Vinyl chloride	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*47.92*	*1.0*	*50*	*0*	*95.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.9*	*1.0*	*50*	*0*	*97.8*	*85 - 114*				
Surr: Dibromofluoromethane	*45.85*	*1.0*	*50*	*0*	*91.7*	*80 - 119*				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-230119** Units: **ug/L** Analysis Date: **19-Jan-2023 13:04**
Client ID: Run ID: **VOA6_426140** SeqNo: **7080114** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.89*	*1.0*	*50*	*0*	*108*	*89 - 112*				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-230119** Units: **ug/L** Analysis Date: **19-Jan-2023 12:01**
Client ID: Run ID: **VOA6_426140** SeqNo: **7080113** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.05	1.0	20	0	100	78 - 124				
1,1,1-Trichloroethane	21.47	1.0	20	0	107	74 - 131				
1,1,2,2-Tetrachloroethane	19.94	1.0	20	0	99.7	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	22.54	1.0	20	0	113	70 - 136				
1,1,2-Trichloroethane	19.75	1.0	20	0	98.8	80 - 119				
1,1-Dichloroethane	20.35	1.0	20	0	102	77 - 125				
1,1-Dichloroethene	21.17	1.0	20	0	106	71 - 131				
1,1-Dichloropropene	22.5	1.0	20	0	112	78 - 125				
1,2,3-Trichlorobenzene	21.75	1.0	20	0	109	69 - 129				
1,2,3-Trichloropropane	22.44	1.0	20	0	112	73 - 122				
1,2,4-Trichlorobenzene	22.69	1.0	20	0	113	69 - 130				
1,2,4-Trimethylbenzene	21.86	1.0	20	0	109	76 - 124				
1,2-Dibromo-3-chloropropane	20.5	1.0	20	0	103	62 - 128				
1,2-Dibromoethane	20.69	1.0	20	0	103	77 - 121				
1,2-Dichlorobenzene	20.33	1.0	20	0	102	80 - 119				
1,2-Dichloroethane	21.97	1.0	20	0	110	73 - 128				
1,2-Dichloropropane	20.19	1.0	20	0	101	78 - 122				
1,3,5-Trimethylbenzene	22.26	1.0	20	0	111	75 - 124				
1,3-Dichlorobenzene	21.15	1.0	20	0	106	80 - 119				
1,3-Dichloropropane	20.35	1.0	20	0	102	80 - 119				
1,4-Dichlorobenzene	20.91	1.0	20	0	105	79 - 118				
2,2-Dichloropropane	22.37	1.0	20	0	112	60 - 139				
2-Butanone	43.34	2.0	40	0	108	56 - 143				
2-Chlorotoluene	21.33	1.0	20	0	107	79 - 122				
2-Hexanone	46.32	2.0	40	0	116	57 - 139				
4-Chlorotoluene	22	1.0	20	0	110	78 - 122				
4-Isopropyltoluene	23.85	1.0	20	0	119	77 - 127				
4-Methyl-2-pentanone	43.32	2.0	40	0	108	67 - 130				
Acetone	47.94	2.0	40	0	120	39 - 160				
Benzene	20.59	1.0	20	0	103	79 - 120				
Bromobenzene	19.95	1.0	20	0	99.8	80 - 120				
Bromochloromethane	18.65	1.0	20	0	93.2	78 - 123				
Bromodichloromethane	20.3	1.0	20	0	101	79 - 125				
Bromoform	19.82	1.0	20	0	99.1	66 - 130				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-230119** Units: **ug/L** Analysis Date: **19-Jan-2023 12:01**
Client ID: Run ID: **VOA6_426140** SeqNo: **7080113** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	21.46	1.0	20	0	107	53 - 141				
Carbon disulfide	41.08	2.0	40	0	103	64 - 133				
Carbon tetrachloride	21.01	1.0	20	0	105	72 - 136				
Chlorobenzene	20.33	1.0	20	0	102	82 - 118				
Chloroethane	19.09	1.0	20	0	95.4	60 - 138				
Chloroform	20.19	1.0	20	0	101	79 - 124				
Chloromethane	20.92	1.0	20	0	105	50 - 139				
cis-1,2-Dichloroethene	19.48	1.0	20	0	97.4	78 - 123				
cis-1,3-Dichloropropene	20.7	1.0	20	0	104	75 - 124				
Dibromochloromethane	20.1	1.0	20	0	100	74 - 126				
Dibromomethane	20.21	1.0	20	0	101	79 - 123				
Dichlorodifluoromethane	18.21	1.0	20	0	91.0	32 - 152				
Ethylbenzene	21.6	1.0	20	0	108	79 - 121				
Hexachlorobutadiene	23.45	1.0	20	0	117	66 - 134				
Isopropylbenzene	22.23	1.0	20	0	111	72 - 131				
m,p-Xylene	42.29	2.0	40	0	106	80 - 121				
Methylene chloride	19.61	2.0	20	0	98.1	74 - 124				
Naphthalene	22.16	1.0	20	0	111	61 - 128				
n-Butylbenzene	23.25	1.0	20	0	116	75 - 128				
n-Propylbenzene	22.66	1.0	20	0	113	76 - 126				
o-Xylene	20.77	1.0	20	0	104	78 - 122				
sec-Butylbenzene	23.95	1.0	20	0	120	77 - 126				
Styrene	20.88	1.0	20	0	104	78 - 123				
tert-Butylbenzene	22.73	1.0	20	0	114	78 - 124				
Tetrachloroethene	21.49	1.0	20	0	107	74 - 129				
Toluene	20.68	1.0	20	0	103	80 - 121				
trans-1,2-Dichloroethene	20.12	1.0	20	0	101	75 - 124				
trans-1,3-Dichloropropene	21.57	1.0	20	0	108	73 - 127				
Trichloroethene	20.79	1.0	20	0	104	79 - 123				
Trichlorofluoromethane	21.98	1.0	20	0	110	65 - 141				
Vinyl chloride	20.37	1.0	20	0	102	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.09*	*1.0*	*50*	*0*	*104*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.39*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*48.88*	*1.0*	*50*	*0*	*97.8*	*80 - 119*				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-230119** Units: **ug/L** Analysis Date: **19-Jan-2023 12:01**
Client ID: Run ID: **VOA6_426140** SeqNo: **7080113** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.7*	*1.0*	*50*	*0*	*99.4*	*89 - 112*				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS23010858-04MS** Units: **ug/L** Analysis Date: **19-Jan-2023 15:32**
Client ID: **12WW24-230117** Run ID: **VOA6_426140** SeqNo: **7080842** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.19	1.0	20	0	101	78 - 124				
1,1,1-Trichloroethane	20.34	1.0	20	0	102	74 - 131				
1,1,2,2-Tetrachloroethane	19.54	1.0	20	0	97.7	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	22.92	1.0	20	0	115	70 - 136				
1,1,2-Trichloroethane	19.64	1.0	20	0	98.2	80 - 119				
1,1-Dichloroethane	18.64	1.0	20	0	93.2	77 - 125				
1,1-Dichloroethene	20.1	1.0	20	0	100	71 - 131				
1,1-Dichloropropene	23.75	1.0	20	0	119	78 - 125				
1,2,3-Trichlorobenzene	22.58	1.0	20	0	113	69 - 129				
1,2,3-Trichloropropane	20.98	1.0	20	0	105	73 - 122				
1,2,4-Trichlorobenzene	23.85	1.0	20	0	119	69 - 130				
1,2,4-Trimethylbenzene	26.41	1.0	20	0	132	76 - 124				S
1,2-Dibromo-3-chloropropane	21.5	1.0	20	0	108	62 - 128				
1,2-Dibromoethane	20.31	1.0	20	0	102	77 - 121				
1,2-Dichlorobenzene	22.04	1.0	20	0	110	80 - 119				
1,2-Dichloroethane	20.74	1.0	20	0	104	73 - 128				
1,2-Dichloropropane	19	1.0	20	0	95.0	78 - 122				
1,3,5-Trimethylbenzene	34.47	1.0	20	0	172	75 - 124				S
1,3-Dichlorobenzene	21.92	1.0	20	0	110	80 - 119				
1,3-Dichloropropane	20.07	1.0	20	0	100	80 - 119				
1,4-Dichlorobenzene	21.07	1.0	20	0	105	79 - 118				
2,2-Dichloropropane	19.93	1.0	20	0	99.7	60 - 139				
2-Butanone	36.44	2.0	40	0	91.1	56 - 143				
2-Chlorotoluene	23.07	1.0	20	0	115	79 - 122				
2-Hexanone	45.77	2.0	40	0	114	57 - 139				
4-Chlorotoluene	23.91	1.0	20	0	120	78 - 122				
4-Isopropyltoluene	26.54	1.0	20	0	133	77 - 127				S
4-Methyl-2-pentanone	47.24	2.0	40	0	118	67 - 130				
Acetone	31.18	2.0	40	2.909	70.7	39 - 160				
Benzene	21.34	1.0	20	0	107	79 - 120				
Bromobenzene	20.07	1.0	20	0	100	80 - 120				
Bromochloromethane	16.74	1.0	20	0	83.7	78 - 123				
Bromodichloromethane	19.11	1.0	20	0	95.6	79 - 125				
Bromoform	19.05	1.0	20	0	95.3	66 - 130				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS23010858-04MS** Units: **ug/L** Analysis Date: **19-Jan-2023 15:32**
Client ID: **12WW24-230117** Run ID: **VOA6_426140** SeqNo: **7080842** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	19.32	1.0	20	0	96.6	53 - 141				
Carbon disulfide	40.1	2.0	40	0	100	64 - 133				
Carbon tetrachloride	22.3	1.0	20	0	112	72 - 136				
Chlorobenzene	20.53	1.0	20	0	103	82 - 118				
Chloroethane	18.58	1.0	20	0	92.9	60 - 138				
Chloroform	18.32	1.0	20	0	91.6	79 - 124				
Chloromethane	17.96	1.0	20	0	89.8	50 - 139				
cis-1,2-Dichloroethene	17.76	1.0	20	7.393	51.8	78 - 123				S
cis-1,3-Dichloropropene	19.2	1.0	20	0	96.0	75 - 124				
Dibromochloromethane	19.69	1.0	20	0	98.4	74 - 126				
Dibromomethane	18.74	1.0	20	0	93.7	79 - 123				
Dichlorodifluoromethane	17.02	1.0	20	0	85.1	32 - 152				
Ethylbenzene	23.43	1.0	20	0	117	79 - 121				
Hexachlorobutadiene	25.56	1.0	20	0	128	66 - 134				
Isopropylbenzene	48.99	1.0	20	0	245	72 - 131				S
m,p-Xylene	70.73	2.0	40	0	177	80 - 121				S
Methylene chloride	16.37	2.0	20	0	81.9	74 - 124				
Naphthalene	57.08	1.0	20	0	285	61 - 128				S
n-Butylbenzene	35.21	1.0	20	0	176	75 - 128				S
n-Propylbenzene	58.99	1.0	20	0	295	76 - 126				S
o-Xylene	23.31	1.0	20	0	117	78 - 122				
sec-Butylbenzene	31.15	1.0	20	0	156	77 - 126				S
Styrene	21.48	1.0	20	0	107	78 - 123				
tert-Butylbenzene	26.04	1.0	20	0	130	78 - 124				S
Tetrachloroethene	23.95	1.0	20	0	120	74 - 129				
Toluene	21.96	1.0	20	0	110	80 - 121				
trans-1,2-Dichloroethene	19.44	1.0	20	0	97.2	75 - 124				
trans-1,3-Dichloropropene	19.81	1.0	20	0	99.0	73 - 127				
Trichloroethene	21.23	1.0	20	8.292	64.7	79 - 123				S
Trichlorofluoromethane	22.26	1.0	20	0	111	65 - 141				
Vinyl chloride	19.77	1.0	20	0	98.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.74*	*1.0*	*50*	*0*	*93.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.08*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*44.86*	*1.0*	*50*	*0*	*89.7*	*80 - 119*				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS23010858-04MS** Units: **ug/L** Analysis Date: **19-Jan-2023 15:32**
Client ID: **12WW24-230117** Run ID: **VOA6_426140** SeqNo: **7080842** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.18*	*1.0*	*50*	*0*	*104*	*89 - 112*				

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS23010858-04MSD** Units: **ug/L** Analysis Date: **19-Jan-2023 15:53**
Client ID: **12WW24-230117** Run ID: **VOA6_426140** SeqNo: **7080843** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.07	1.0	20	0	100	78 - 124	20.19	0.585	20	
1,1,1-Trichloroethane	20.88	1.0	20	0	104	74 - 131	20.34	2.62	20	
1,1,2,2-Tetrachloroethane	20.01	1.0	20	0	100	71 - 121	19.54	2.38	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	22.62	1.0	20	0	113	70 - 136	22.92	1.33	20	
1,1,2-Trichloroethane	19.53	1.0	20	0	97.7	80 - 119	19.64	0.568	20	
1,1-Dichloroethane	18.15	1.0	20	0	90.8	77 - 125	18.64	2.67	20	
1,1-Dichloroethene	19.72	1.0	20	0	98.6	71 - 131	20.1	1.89	20	
1,1-Dichloropropene	23.08	1.0	20	0	115	78 - 125	23.75	2.87	20	
1,2,3-Trichlorobenzene	22.79	1.0	20	0	114	69 - 129	22.58	0.901	20	
1,2,3-Trichloropropane	20.43	1.0	20	0	102	73 - 122	20.98	2.62	20	
1,2,4-Trichlorobenzene	24.42	1.0	20	0	122	69 - 130	23.85	2.38	20	
1,2,4-Trimethylbenzene	26.25	1.0	20	0	131	76 - 124	26.41	0.617	20	S
1,2-Dibromo-3-chloropropane	21.18	1.0	20	0	106	62 - 128	21.5	1.52	20	
1,2-Dibromoethane	19.85	1.0	20	0	99.3	77 - 121	20.31	2.28	20	
1,2-Dichlorobenzene	21.7	1.0	20	0	108	80 - 119	22.04	1.58	20	
1,2-Dichloroethane	20.62	1.0	20	0	103	73 - 128	20.74	0.588	20	
1,2-Dichloropropane	18.77	1.0	20	0	93.8	78 - 122	19	1.2	20	
1,3,5-Trimethylbenzene	34.44	1.0	20	0	172	75 - 124	34.47	0.0912	20	S
1,3-Dichlorobenzene	21.8	1.0	20	0	109	80 - 119	21.92	0.51	20	
1,3-Dichloropropane	19.91	1.0	20	0	99.5	80 - 119	20.07	0.815	20	
1,4-Dichlorobenzene	21.57	1.0	20	0	108	79 - 118	21.07	2.33	20	
2,2-Dichloropropane	20.13	1.0	20	0	101	60 - 139	19.93	0.964	20	
2-Butanone	36.47	2.0	40	0	91.2	56 - 143	36.44	0.103	20	
2-Chlorotoluene	22.9	1.0	20	0	114	79 - 122	23.07	0.742	20	
2-Hexanone	47.2	2.0	40	0	118	57 - 139	45.77	3.06	20	
4-Chlorotoluene	24.07	1.0	20	0	120	78 - 122	23.91	0.665	20	
4-Isopropyltoluene	26.56	1.0	20	0	133	77 - 127	26.54	0.061	20	S
4-Methyl-2-pentanone	47.73	2.0	40	0	119	67 - 130	47.24	1.03	20	
Acetone	32.5	2.0	40	2.909	74.0	39 - 160	31.18	4.15	20	
Benzene	21.1	1.0	20	0	105	79 - 120	21.34	1.14	20	
Bromobenzene	20.26	1.0	20	0	101	80 - 120	20.07	0.95	20	
Bromochloromethane	17	1.0	20	0	85.0	78 - 123	16.74	1.51	20	
Bromodichloromethane	18.67	1.0	20	0	93.3	79 - 125	19.11	2.34	20	
Bromoform	18.78	1.0	20	0	93.9	66 - 130	19.05	1.44	20	

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS23010858-04MSD** Units: **ug/L** Analysis Date: **19-Jan-2023 15:53**
Client ID: **12WW24-230117** Run ID: **VOA6_426140** SeqNo: **7080843** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	18.89	1.0	20	0	94.4	53 - 141	19.32	2.26	20	
Carbon disulfide	39.57	2.0	40	0	98.9	64 - 133	40.1	1.34	20	
Carbon tetrachloride	21.84	1.0	20	0	109	72 - 136	22.3	2.11	20	
Chlorobenzene	19.91	1.0	20	0	99.6	82 - 118	20.53	3.07	20	
Chloroethane	18.56	1.0	20	0	92.8	60 - 138	18.58	0.108	20	
Chloroform	18.31	1.0	20	0	91.6	79 - 124	18.32	0.0198	20	
Chloromethane	18.59	1.0	20	0	92.9	50 - 139	17.96	3.43	20	
cis-1,2-Dichloroethene	17.76	1.0	20	7.393	51.8	78 - 123	17.76	0.0279	20	S
cis-1,3-Dichloropropene	19.01	1.0	20	0	95.1	75 - 124	19.2	0.971	20	
Dibromochloromethane	19.41	1.0	20	0	97.1	74 - 126	19.69	1.4	20	
Dibromomethane	18.43	1.0	20	0	92.2	79 - 123	18.74	1.63	20	
Dichlorodifluoromethane	16.91	1.0	20	0	84.5	32 - 152	17.02	0.654	20	
Ethylbenzene	22.78	1.0	20	0	114	79 - 121	23.43	2.82	20	
Hexachlorobutadiene	25.75	1.0	20	0	129	66 - 134	25.56	0.714	20	
Isopropylbenzene	48	1.0	20	0	240	72 - 131	48.99	2.04	20	S
m,p-Xylene	69	2.0	40	0	173	80 - 121	70.73	2.48	20	S
Methylene chloride	16.67	2.0	20	0	83.3	74 - 124	16.37	1.76	20	
Naphthalene	58.09	1.0	20	0	290	61 - 128	57.08	1.74	20	S
n-Butylbenzene	35.05	1.0	20	0	175	75 - 128	35.21	0.451	20	S
n-Propylbenzene	58.94	1.0	20	0	295	76 - 126	58.99	0.0783	20	S
o-Xylene	22.96	1.0	20	0	115	78 - 122	23.31	1.52	20	
sec-Butylbenzene	31.04	1.0	20	0	155	77 - 126	31.15	0.366	20	S
Styrene	21.36	1.0	20	0	107	78 - 123	21.48	0.554	20	
tert-Butylbenzene	26.05	1.0	20	0	130	78 - 124	26.04	0.0281	20	S
Tetrachloroethene	23.31	1.0	20	0	117	74 - 129	23.95	2.7	20	
Toluene	21.51	1.0	20	0	108	80 - 121	21.96	2.04	20	
trans-1,2-Dichloroethene	19.02	1.0	20	0	95.1	75 - 124	19.44	2.19	20	
trans-1,3-Dichloropropene	19.71	1.0	20	0	98.6	73 - 127	19.81	0.475	20	
Trichloroethene	20.68	1.0	20	8.292	61.9	79 - 123	21.23	2.66	20	S
Trichlorofluoromethane	21.95	1.0	20	0	110	65 - 141	22.26	1.37	20	
Vinyl chloride	19.11	1.0	20	0	95.6	58 - 137	19.77	3.4	20	
Surr: 1,2-Dichloroethane-d4	*46.81*	*1.0*	*50*	*0*	*93.6*	*81 - 118*	*46.74*	*0.144*	*20*	
Surr: 4-Bromofluorobenzene	*51.67*	*1.0*	*50*	*0*	*103*	*85 - 114*	*52.08*	*0.786*	*20*	
Surr: Dibromofluoromethane	*45.81*	*1.0*	*50*	*0*	*91.6*	*80 - 119*	*44.86*	*2.09*	*20*	

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: HS23010858

QC BATCH REPORT

Batch ID: R426140 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS23010858-04MSD** Units: **ug/L** Analysis Date: **19-Jan-2023 15:53**
Client ID: **12WW24-230117** Run ID: **VOA6_426140** SeqNo: **7080843** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.59*	*1.0*	*50*	*0*	*103*	*89 - 112*	*52.18*	*1.15*	*20*	

The following samples were analyzed in this batch: HS23010858-01 HS23010858-02 HS23010858-03 HS23010858-04 HS23010858-05 HS23010858-06

ALS Houston, US Date: 20-Jan-23

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP 12
WorkOrder: **HS23010858**

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	624-2023	31-Dec-2023
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: 20-Jan-23

Sample Receipt Checklist

Work Order ID: HS23010858 **Date/Time Received:** 18-Jan-2023 09:15

Client Name: CBI-Houston **Received by:** Corey Grandits

Completed By:	/S/ Corey Grandits	18-Jan-2023 15:12	**Reviewed by:**	/S/ Dane J. Wacasey	19-Jan-2023 21:55
	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 ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
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):	2.0UC/1.5C	IR31
Cooler(s)/Kit(s):	49738	
Date/Time sample(s) sent to storage:	1/18/2023	

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 (281) 575-2190 ATTN: Dane Wacasey

Page 1 of 1

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 12 December 2022**

Prepared By: Scott Beesinger

P.O. Number

HS23010858

Aptim Environmental & Infrastucture, Inc.
LHAAP 12

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	Remarks (Preservatives, etc.)	Lab I.D.#
12WW10R-230117	WG	1/17/23 1035		3	X		
12WW21-230117	WG	1/17/23 1120		3	X		
12WW21-230117-FD	WG	1/17/23 1120		3	X		
12WW24-230117	WG	1/17/23 1205		3	X		
12WW24-230117-MS	WG	1/17/23 1205		3	X		
12WW24-230117-MSD	WG	1/17/23 1205		3	X		
12WW20-230117	WG	1/17/23 1245		3	X		
TRIP BLANK-230117	W	1/17/23		2	X		

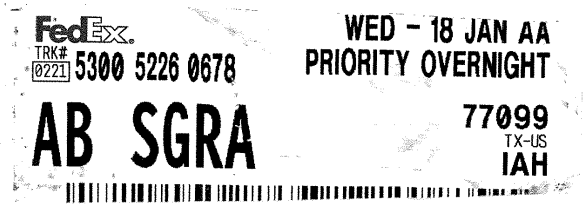
Additional Remarks: Standard TAT on all parameters. Please email results to Vicki.Graves@aptim.com and invoices to fedinvoices@aptim.com

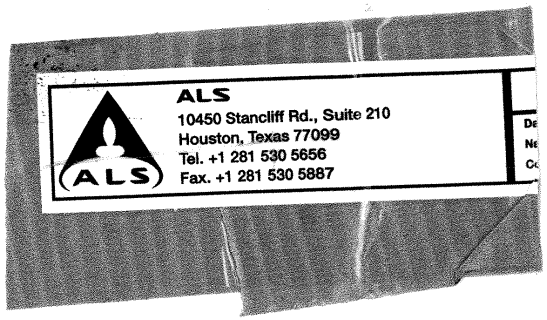
Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	1/17/23	14:30	FEDEX	1-18-23	0915						

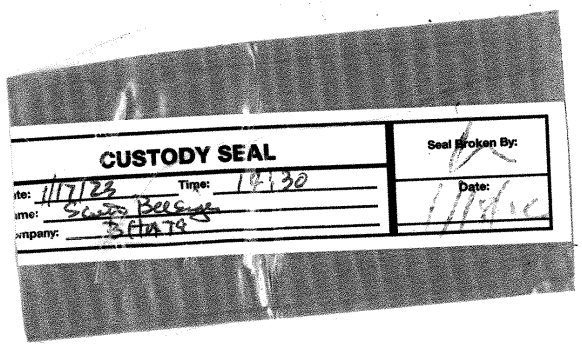
For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks: 1231 4978 2.0°


FedEx
TRK#
0221 5300 5226 0678
WED - 18 JAN AA
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US
IAH


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887


CUSTODY SEAL
Seal Broken By:
Time: 14:30
Date:

HS23010858-MSVOA-SW8260

ALS WO# HS23010858

right solutions.
right partner.

Form 1

Organic Analysis Data Sheet

Volatiles by by EPA 8260

Workorder

HS23010858

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 12

01/23/2023

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder **HS23010858**

Volatiles by by EPA 8260

HS23010858-01	Collected	Received	Matrix	Basis
12WW10R-230117	01/17/23 10:35	01/18/23 09:15	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1,1,2-Tetrachloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,1,1-Trichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,1,2,2-Tetrachloroethane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,1,2-Trichlor-1,2,2-	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,1,2-Trichloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,1-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,1-Dichloropropene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,2,3-Trichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,2,3-Trichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,2,4-Trichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,2,4-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,2-Dibromo-3-	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,2-Dibromoethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,2-Dichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,2-Dichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,3,5-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,3-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,3-Dichloropropane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
1,4-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
2,2-Dichloropropane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
2-Butanone	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 17:38	VOA6_426140	X011921
2-Chlorotoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
2-Hexanone	ug/L	2.0	U	1.0	2.0	2.0	1	01/19/23 17:38	VOA6_426140	X011921
4-Chlorotoluene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
4-Isopropyltoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
4-Methyl-2-pentanone	ug/L	2.0	U	0.70	2.0	2.0	1	01/19/23 17:38	VOA6_426140	X011921
Acetone	ug/L	2.8		0.40	2.0	2.0	1	01/19/23 17:38	VOA6_426140	X011921
Benzene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Bromobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Bromochloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Bromodichloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

HS23010858-01	Collected	Received	Matrix	Basis
12WW10R-230117	01/17/23 10:35	01/18/23 09:15	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
Bromoform	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Bromomethane	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Carbon disulfide	ug/L	2.0	U	0.60	2.0	2.0	1	01/19/23 17:38	VOA6_426140	X011921
Carbon tetrachloride	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Chlorobenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Chloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Chloroform	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Chloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
cis-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Dibromochloromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Dibromomethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Dichlorodifluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Ethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Hexachlorobutadiene	ug/L	1.0	U	1.0	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Isopropylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
m,p-Xylene	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 17:38	VOA6_426140	X011921
Methylene chloride	ug/L	2.0	U	0.40	2.0	2.0	1	01/19/23 17:38	VOA6_426140	X011921
Naphthalene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
n-Butylbenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
n-Propylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
o-Xylene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
sec-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Styrene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
tert-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Toluene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
trans-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
trans-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Trichloroethene	ug/L	0.93	J	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Trichlorofluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:38	VOA6_426140	X011921

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

HS23010858-02	Collected	Received	Matrix	Basis
12WW21-230117	01/17/23 11:20	01/18/23 09:15	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1,1,2-Tetrachloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,1,1-Trichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,1,2,2-Tetrachloroethane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,1,2-Trichlor-1,2,2-	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,1,2-Trichloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,1-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,1-Dichloropropene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,2,3-Trichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,2,3-Trichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,2,4-Trichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,2,4-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,2-Dibromo-3-	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,2-Dibromoethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,2-Dichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,2-Dichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,3,5-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,3-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,3-Dichloropropane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
1,4-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
2,2-Dichloropropane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
2-Butanone	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 17:59	VOA6_426140	X011922
2-Chlorotoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
2-Hexanone	ug/L	2.0	U	1.0	2.0	2.0	1	01/19/23 17:59	VOA6_426140	X011922
4-Chlorotoluene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
4-Isopropyltoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
4-Methyl-2-pentanone	ug/L	2.0	U	0.70	2.0	2.0	1	01/19/23 17:59	VOA6_426140	X011922
Acetone	ug/L	2.4		0.40	2.0	2.0	1	01/19/23 17:59	VOA6_426140	X011922
Benzene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Bromobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Bromochloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Bromodichloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder **HS23010858**

Volatiles by by EPA 8260

HS23010858-02	Collected	Received	Matrix	Basis
12WW21-230117	01/17/23 11:20	01/18/23 09:15	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
Bromoform	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Bromomethane	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Carbon disulfide	ug/L	2.0	U	0.60	2.0	2.0	1	01/19/23 17:59	VOA6_426140	X011922
Carbon tetrachloride	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Chlorobenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Chloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Chloroform	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Chloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
cis-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Dibromochloromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Dibromomethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Dichlorodifluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Ethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Hexachlorobutadiene	ug/L	1.0	U	1.0	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Isopropylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
m,p-Xylene	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 17:59	VOA6_426140	X011922
Methylene chloride	ug/L	2.0	U	0.40	2.0	2.0	1	01/19/23 17:59	VOA6_426140	X011922
Naphthalene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
n-Butylbenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
n-Propylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
o-Xylene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
sec-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Styrene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
tert-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Toluene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
trans-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
trans-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Trichlorofluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 17:59	VOA6_426140	X011922

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

HS23010858-03	Collected	Received	Matrix	Basis
12WW21-230117-FD	01/17/23 11:20	01/18/23 09:15	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1,1,2-Tetrachloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,1,1-Trichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,1,2,2-Tetrachloroethane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,1,2-Trichlor-1,2,2-	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,1,2-Trichloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,1-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,1-Dichloropropene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,2,3-Trichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,2,3-Trichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,2,4-Trichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,2,4-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,2-Dibromo-3-	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,2-Dibromoethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,2-Dichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,2-Dichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,3,5-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,3-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,3-Dichloropropane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
1,4-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
2,2-Dichloropropane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
2-Butanone	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 18:20	VOA6_426140	X011923
2-Chlorotoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
2-Hexanone	ug/L	2.0	U	1.0	2.0	2.0	1	01/19/23 18:20	VOA6_426140	X011923
4-Chlorotoluene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
4-Isopropyltoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
4-Methyl-2-pentanone	ug/L	2.0	U	0.70	2.0	2.0	1	01/19/23 18:20	VOA6_426140	X011923
Acetone	ug/L	2.0	U	0.40	2.0	2.0	1	01/19/23 18:20	VOA6_426140	X011923
Benzene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Bromobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Bromochloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Bromodichloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

HS23010858-03	Collected	Received	Matrix	Basis
12WW21-230117-FD	01/17/23 11:20	01/18/23 09:15	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
Bromoform	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Bromomethane	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Carbon disulfide	ug/L	2.0	U	0.60	2.0	2.0	1	01/19/23 18:20	VOA6_426140	X011923
Carbon tetrachloride	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Chlorobenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Chloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Chloroform	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Chloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
cis-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Dibromochloromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Dibromomethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Dichlorodifluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Ethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Hexachlorobutadiene	ug/L	1.0	U	1.0	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Isopropylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
m,p-Xylene	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 18:20	VOA6_426140	X011923
Methylene chloride	ug/L	2.0	U	0.40	2.0	2.0	1	01/19/23 18:20	VOA6_426140	X011923
Naphthalene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
n-Butylbenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
n-Propylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
o-Xylene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
sec-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Styrene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
tert-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Toluene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
trans-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
trans-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Trichlorofluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:20	VOA6_426140	X011923

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

HS23010858-04	Collected	Received	Matrix	Basis
12WW24-230117	01/17/23 12:05	01/18/23 09:15	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1,1,2-Tetrachloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,1,1-Trichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,1,2,2-Tetrachloroethane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,1,2-Trichlor-1,2,2-	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,1,2-Trichloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,1-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,1-Dichloropropene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,2,3-Trichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,2,3-Trichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,2,4-Trichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,2,4-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,2-Dibromo-3-	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,2-Dibromoethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,2-Dichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,2-Dichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,3,5-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,3-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,3-Dichloropropane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
1,4-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
2,2-Dichloropropane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
2-Butanone	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 14:28	VOA6_426140	X011912
2-Chlorotoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
2-Hexanone	ug/L	2.0	U	1.0	2.0	2.0	1	01/19/23 14:28	VOA6_426140	X011912
4-Chlorotoluene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
4-Isopropyltoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
4-Methyl-2-pentanone	ug/L	2.0	U	0.70	2.0	2.0	1	01/19/23 14:28	VOA6_426140	X011912
Acetone	ug/L	2.9		0.40	2.0	2.0	1	01/19/23 14:28	VOA6_426140	X011912
Benzene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Bromobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Bromochloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Bromodichloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

HS23010858-04	Collected	Received	Matrix	Basis
12WW24-230117	01/17/23 12:05	01/18/23 09:15	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
Bromoform	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Bromomethane	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Carbon disulfide	ug/L	2.0	U	0.60	2.0	2.0	1	01/19/23 14:28	VOA6_426140	X011912
Carbon tetrachloride	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Chlorobenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Chloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Chloroform	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Chloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
cis-1,2-Dichloroethene	ug/L	7.4		0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
cis-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Dibromochloromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Dibromomethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Dichlorodifluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Ethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Hexachlorobutadiene	ug/L	1.0	U	1.0	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Isopropylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
m,p-Xylene	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 14:28	VOA6_426140	X011912
Methylene chloride	ug/L	2.0	U	0.40	2.0	2.0	1	01/19/23 14:28	VOA6_426140	X011912
Naphthalene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
n-Butylbenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
n-Propylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
o-Xylene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
sec-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Styrene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
tert-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Toluene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
trans-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
trans-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Trichloroethene	ug/L	8.3		0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Trichlorofluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:28	VOA6_426140	X011912

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

HS23010858-05	Collected	Received	Matrix	Basis
12WW20-230117	01/17/23 12:45	01/18/23 09:15	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1,1,2-Tetrachloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,1,1-Trichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,1,2,2-Tetrachloroethane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,1,2-Trichlor-1,2,2-	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,1,2-Trichloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,1-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,1-Dichloropropene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,2,3-Trichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,2,3-Trichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,2,4-Trichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,2,4-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,2-Dibromo-3-	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,2-Dibromoethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,2-Dichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,2-Dichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,3,5-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,3-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,3-Dichloropropane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
1,4-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
2,2-Dichloropropane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
2-Butanone	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 18:41	VOA6_426140	X011924
2-Chlorotoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
2-Hexanone	ug/L	2.0	U	1.0	2.0	2.0	1	01/19/23 18:41	VOA6_426140	X011924
4-Chlorotoluene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
4-Isopropyltoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
4-Methyl-2-pentanone	ug/L	2.0	U	0.70	2.0	2.0	1	01/19/23 18:41	VOA6_426140	X011924
Acetone	ug/L	2.0	U	0.40	2.0	2.0	1	01/19/23 18:41	VOA6_426140	X011924
Benzene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Bromobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Bromochloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Bromodichloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

HS23010858-05	Collected	Received	Matrix	Basis
12WW20-230117	01/17/23 12:45	01/18/23 09:15	Groundwater	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
Bromoform	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Bromomethane	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Carbon disulfide	ug/L	2.0	U	0.60	2.0	2.0	1	01/19/23 18:41	VOA6_426140	X011924
Carbon tetrachloride	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Chlorobenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Chloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Chloroform	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Chloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
cis-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Dibromochloromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Dibromomethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Dichlorodifluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Ethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Hexachlorobutadiene	ug/L	1.0	U	1.0	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Isopropylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
m,p-Xylene	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 18:41	VOA6_426140	X011924
Methylene chloride	ug/L	2.0	U	0.40	2.0	2.0	1	01/19/23 18:41	VOA6_426140	X011924
Naphthalene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
n-Butylbenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
n-Propylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
o-Xylene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
sec-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Styrene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
tert-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Toluene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
trans-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
trans-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Trichlorofluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 18:41	VOA6_426140	X011924

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

HS23010858-06	Collected	Received	Matrix	Basis
Trip Blank-230117	01/17/23 00:00	01/18/23 09:15	Water	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1,1,2-Tetrachloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,1,1-Trichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,1,2,2-Tetrachloroethane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,1,2-Trichlor-1,2,2-	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,1,2-Trichloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,1-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,1-Dichloropropene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,2,3-Trichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,2,3-Trichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,2,4-Trichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,2,4-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,2-Dibromo-3-	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,2-Dibromoethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,2-Dichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,2-Dichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,3,5-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,3-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,3-Dichloropropane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
1,4-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
2,2-Dichloropropane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
2-Butanone	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 14:07	VOA6_426140	X011911
2-Chlorotoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
2-Hexanone	ug/L	2.0	U	1.0	2.0	2.0	1	01/19/23 14:07	VOA6_426140	X011911
4-Chlorotoluene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
4-Isopropyltoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
4-Methyl-2-pentanone	ug/L	2.0	U	0.70	2.0	2.0	1	01/19/23 14:07	VOA6_426140	X011911
Acetone	ug/L	2.0	U	0.40	2.0	2.0	1	01/19/23 14:07	VOA6_426140	X011911
Benzene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Bromobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Bromochloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Bromodichloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

HS23010858-06	Collected	Received	Matrix	Basis
Trip Blank-230117	01/17/23 00:00	01/18/23 09:15	Water	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
Bromoform	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Bromomethane	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Carbon disulfide	ug/L	2.0	U	0.60	2.0	2.0	1	01/19/23 14:07	VOA6_426140	X011911
Carbon tetrachloride	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Chlorobenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Chloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Chloroform	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Chloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
cis-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Dibromochloromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Dibromomethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Dichlorodifluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Ethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Hexachlorobutadiene	ug/L	1.0	U	1.0	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Isopropylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
m,p-Xylene	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 14:07	VOA6_426140	X011911
Methylene chloride	ug/L	2.0	U	0.40	2.0	2.0	1	01/19/23 14:07	VOA6_426140	X011911
Naphthalene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
n-Butylbenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
n-Propylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
o-Xylene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
sec-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Styrene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
tert-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Toluene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
trans-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
trans-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Trichlorofluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 14:07	VOA6_426140	X011911

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

VBLKW-230119	Collected	Received	Matrix	Basis
VBLKW-230119	NA	NA	Aqueous	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
1,1,1,2-Tetrachloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,1,1-Trichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,1,2,2-Tetrachloroethane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,1,2-Trichlor-1,2,2-	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,1,2-Trichloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,1-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,1-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,1-Dichloropropene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,2,3-Trichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,2,3-Trichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,2,4-Trichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,2,4-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,2-Dibromo-3-	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,2-Dibromoethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,2-Dichlorobenzene	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,2-Dichloroethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,2-Dichloropropane	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,3,5-Trimethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,3-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,3-Dichloropropane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
1,4-Dichlorobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
2,2-Dichloropropane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
2-Butanone	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 13:04	VOA6_426140	X011908
2-Chlorotoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
2-Hexanone	ug/L	2.0	U	1.0	2.0	2.0	1	01/19/23 13:04	VOA6_426140	X011908
4-Chlorotoluene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
4-Isopropyltoluene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
4-Methyl-2-pentanone	ug/L	2.0	U	0.70	2.0	2.0	1	01/19/23 13:04	VOA6_426140	X011908
Acetone	ug/L	2.0	U	0.40	2.0	2.0	1	01/19/23 13:04	VOA6_426140	X011908
Benzene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Bromobenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Bromochloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Bromodichloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908

Form 1 - Organic Analysis Data Sheet

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

VBLKW-230119	Collected	Received	Matrix	Basis
VBLKW-230119	NA	NA	Aqueous	Wet

Analyte	Units	Result	Q	DL	LOD	LOQ	DF	Analysis Date	Run ID	DataFile
Bromoform	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Bromomethane	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Carbon disulfide	ug/L	2.0	U	0.60	2.0	2.0	1	01/19/23 13:04	VOA6_426140	X011908
Carbon tetrachloride	ug/L	1.0	U	0.50	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Chlorobenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Chloroethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Chloroform	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Chloromethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
cis-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
cis-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Dibromochloromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Dibromomethane	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Dichlorodifluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Ethylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Hexachlorobutadiene	ug/L	1.0	U	1.0	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Isopropylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
m,p-Xylene	ug/L	2.0	U	0.50	2.0	2.0	1	01/19/23 13:04	VOA6_426140	X011908
Methylene chloride	ug/L	2.0	U	0.40	2.0	2.0	1	01/19/23 13:04	VOA6_426140	X011908
Naphthalene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
n-Butylbenzene	ug/L	1.0	U	0.40	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
n-Propylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
o-Xylene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
sec-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Styrene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
tert-Butylbenzene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Tetrachloroethene	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Toluene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
trans-1,2-Dichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
trans-1,3-Dichloropropene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Trichloroethene	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Trichlorofluoromethane	ug/L	1.0	U	0.30	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908
Vinyl chloride	ug/L	1.0	U	0.20	1.0	1.0	1	01/19/23 13:04	VOA6_426140	X011908

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Form 2

System Monitoring Compound Recovery

Volatiles by by EPA 8260

Workorder

HS23010858

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 12

01/23/2023

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
Phone (281) 530-5656 Fax (281) 530-5887
www.alsglobal.com

Form 2 - System Monitoring Compound Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

RunID
VOA6_426140

Volatiles by by EPA 8260

CCV	Analyzed 01/19/23		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	52.24	50	104	80-120	
4-Bromofluorobenzene	51.97	50	104	80-120	
Dibromofluoromethane	48.97	50	97.9	80-120	
Toluene-d8	48.79	50	97.6	80-120	

CCB	Analyzed 01/19/23		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	48.69	50	97.4	80-120	
4-Bromofluorobenzene	48.08	50	96.2	80-120	
Dibromofluoromethane	46.33	50	92.7	80-120	
Toluene-d8	52.39	50	105	80-120	

VLCSW-230119	Analyzed 01/19/23		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	52.09	50	104	81-118	
4-Bromofluorobenzene	50.39	50	101	85-114	
Dibromofluoromethane	48.88	50	97.8	80-119	
Toluene-d8	49.7	50	99.4	89-112	

VBLKW-230119	Analyzed 01/19/23		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	47.92	50	95.8	81-118	
4-Bromofluorobenzene	48.9	50	97.8	85-114	
Dibromofluoromethane	45.85	50	91.7	80-119	
Toluene-d8	53.89	50	108	89-112	

Q - Surrogate %Recovery Flag * - %Recovery / RPD Outside Limits

Form 2 - System Monitoring Compound Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

RunID
VOA6_426140

Volatiles by by EPA 8260

HS23010858-06	Analyzed 01/19/23		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	48	50	96.3	81-118	
4-Bromofluorobenzene	48	50	96.1	85-114	
Dibromofluoromethane	47	50	93.3	80-119	
Toluene-d8	53	50	106	89-112	

HS23010858-04	Analyzed 01/19/23		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	49	50	98.7	81-118	
4-Bromofluorobenzene	48	50	96.1	85-114	
Dibromofluoromethane	47	50	94.3	80-119	
Toluene-d8	52	50	104	89-112	

HS23010858-04MS	Analyzed 01/19/23		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	46.74	50	93.5	81-118	
4-Bromofluorobenzene	52.08	50	104	85-114	
Dibromofluoromethane	44.86	50	89.7	80-119	
Toluene-d8	52.18	50	104	89-112	

HS23010858-04MSD	Analyzed 01/19/23		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	46.81	50	93.6	81-118	
4-Bromofluorobenzene	51.67	50	103	85-114	
Dibromofluoromethane	45.81	50	91.6	80-119	
Toluene-d8	51.59	50	103	89-112	

Q - Surrogate %Recovery Flag * - %Recovery / RPD Outside Limits

Form 2 - System Monitoring Compound Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

RunID
VOA6_426140

Volatiles by by EPA 8260

HS23010858-01	Analyzed 01/19/23		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	48	50	96.3	81-118	
4-Bromofluorobenzene	48	50	96.8	85-114	
Dibromofluoromethane	45	50	90.7	80-119	
Toluene-d8	53	50	105	89-112	

HS23010858-02	Analyzed 01/19/23		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	48	50	96.5	81-118	
4-Bromofluorobenzene	48	50	96.5	85-114	
Dibromofluoromethane	45	50	90.9	80-119	
Toluene-d8	53	50	107	89-112	

HS23010858-03	Analyzed 01/19/23		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	48	50	96.1	81-118	
4-Bromofluorobenzene	49	50	97.2	85-114	
Dibromofluoromethane	46	50	91.4	80-119	
Toluene-d8	53	50	107	89-112	

HS23010858-05	Analyzed 01/19/23		Conc Units µg/L		DF 1
Surrogate	Result Conc	Spike Conc	%Recovery	%Recovery Limits	Q
1,2-Dichloroethane-d4	48	50	95.5	81-118	
4-Bromofluorobenzene	49	50	97.5	85-114	
Dibromofluoromethane	45	50	90.6	80-119	
Toluene-d8	53	50	106	89-112	

Q - Surrogate %Recovery Flag * - %Recovery / RPD Outside Limits

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Form 3A

Matrix Spike/Spike Duplicate Recovery

Workorder

HS23010858

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 12

01/23/2023

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 12

Workorder
HS23010858

12WW24-230117			HS23010858-04	HS23010858-04MS				HS23010858-04MSD						
Sample Matrix	Aqueous	Run Date	01/19/23	01/19/23				01/19/23						
Units	µg/L	Run Time	14:28	15:32				15:53						
		Data File	X011912.D	X011915.D				X011916.D						
Analyte	%R Limits	DF	Result	MS Result	Spike Added	%R	Q	MSD Result	Spike Added	%R	Q	RPD Limit	RPD	Q
1,1,1,2-Tetrachloroethane	78-124	1	0	20.19	20.00	101		20.07	20.00	100		20	0.600	
1,1,1-Trichloroethane	74-131	1	0	20.34	20.00	102		20.88	20.00	104		20	2.60	
1,1,2,2-Tetrachloroethane	71-121	1	0	19.54	20.00	98		20.01	20.00	100		20	2.40	
1,1,2-Trichlor-1,2,2-	70-136	1	0	22.92	20.00	115		22.62	20.00	113		20	1.30	
1,1,2-Trichloroethane	80-119	1	0	19.64	20.00	98		19.53	20.00	98		20	0.600	
1,1-Dichloroethane	77-125	1	0	18.64	20.00	93		18.15	20.00	91		20	2.70	
1,1-Dichloroethene	71-131	1	0	20.10	20.00	100		19.72	20.00	99		20	1.90	
1,1-Dichloropropene	78-125	1	0	23.75	20.00	119		23.08	20.00	115		20	2.90	
1,2,3-Trichlorobenzene	69-129	1	0	22.58	20.00	113		22.79	20.00	114		20	0.900	
1,2,3-Trichloropropane	73-122	1	0	20.98	20.00	105		20.43	20.00	102		20	2.60	
1,2,4-Trichlorobenzene	69-130	1	0	23.85	20.00	119		24.42	20.00	122		20	2.40	
1,2,4-Trimethylbenzene	76-124	1	0	26.41	20.00	132	*	26.25	20.00	131	*	20	0.600	
1,2-Dibromo-3-	62-128	1	0	21.50	20.00	108		21.18	20.00	106		20	1.50	
1,2-Dibromoethane	77-121	1	0	20.31	20.00	102		19.85	20.00	99		20	2.30	
1,2-Dichlorobenzene	80-119	1	0	22.04	20.00	110		21.7	20.00	108		20	1.60	
1,2-Dichloroethane	73-128	1	0	20.74	20.00	104		20.62	20.00	103		20	0.600	
1,2-Dichloropropane	78-122	1	0	19.00	20.00	95		18.77	20.00	94		20	1.20	
1,3,5-Trimethylbenzene	75-124	1	0	34.47	20.00	172	*	34.44	20.00	172	*	20	0.100	
1,3-Dichlorobenzene	80-119	1	0	21.92	20.00	110		21.8	20.00	109		20	0.500	
1,3-Dichloropropane	80-119	1	0	20.07	20.00	100		19.91	20.00	100		20	0.800	
1,4-Dichlorobenzene	79-118	1	0	21.07	20.00	105		21.57	20.00	108		20	2.30	
2,2-Dichloropropane	60-139	1	0	19.93	20.00	100		20.13	20.00	101		20	1.00	
2-Butanone	56-143	1	0	36.44	40.00	91		36.47	40.00	91		20	0.100	
2-Chlorotoluene	79-122	1	0	23.07	20.00	115		22.9	20.00	114		20	0.700	
2-Hexanone	57-139	1	0	45.77	40.00	114		47.2	40.00	118		20	3.10	
4-Chlorotoluene	78-122	1	0	23.91	20.00	120		24.07	20.00	120		20	0.700	
4-Isopropyltoluene	77-127	1	0	26.54	20.00	133	*	26.56	20.00	133	*	20	0.100	
4-Methyl-2-pentanone	67-130	1	0	47.24	40.00	118		47.73	40.00	119		20	1.00	
Acetone	39-160	1	2.909	31.18	40.00	71		32.5	40.00	74		20	4.10	
Benzene	79-120	1	0	21.34	20.00	107		21.1	20.00	105		20	1.10	
Bromobenzene	80-120	1	0	20.07	20.00	100		20.26	20.00	101		20	1.00	
Bromochloromethane	78-123	1	0	16.74	20.00	84		17	20.00	85		20	1.50	
Bromodichloromethane	79-125	1	0	19.11	20.00	96		18.67	20.00	93		20	2.30	
Bromoform	66-130	1	0	19.05	20.00	95		18.78	20.00	94		20	1.40	

- %Recovery / RPD Flag * - %Recovery / RPD Outside Limits OL - Outside Limits

Form 3A - Matrix Spike/Spike Duplicate Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

12WW24-230117		HS23010858-04		HS23010858-04MS				HS23010858-04MSD						
Sample Matrix Aqueous		**Run Date**	01/19/23	01/19/23				01/19/23						
Units µg/L		**Run Time**	14:28	15:32				15:53						
		Data File	X011912.D	X011915.D				X011916.D						
Analyte	%R Limits	DF	Result	MS Result	Spike Added	%R	Q	MSD Result	Spike Added	%R	Q	RPD Limit	RPD	Q
Bromomethane	53-141	1	0	19.32	20.00	97		18.89	20.00	94		20	2.30	
Carbon disulfide	64-133	1	0	40.10	40.00	100		39.57	40.00	99		20	1.30	
Carbon tetrachloride	72-136	1	0	22.30	20.00	112		21.84	20.00	109		20	2.10	
Chlorobenzene	82-118	1	0	20.53	20.00	103		19.91	20.00	100		20	3.10	
Chloroethane	60-138	1	0	18.58	20.00	93		18.56	20.00	93		20	0.100	
Chloroform	79-124	1	0	18.32	20.00	92		18.31	20.00	92		20	0	
Chloromethane	50-139	1	0	17.96	20.00	90		18.59	20.00	93		20	3.40	
cis-1,2-Dichloroethene	78-123	1	7.393	17.76	20.00	52	*	17.76	20.00	52	*	20	0	
cis-1,3-Dichloropropene	75-124	1	0	19.20	20.00	96		19.01	20.00	95		20	1.00	
Dibromochloromethane	74-126	1	0	19.69	20.00	98		19.41	20.00	97		20	1.40	
Dibromomethane	79-123	1	0	18.74	20.00	94		18.43	20.00	92		20	1.60	
Dichlorodifluoromethane	32-152	1	0	17.02	20.00	85		16.91	20.00	85		20	0.700	
Ethylbenzene	79-121	1	0	23.43	20.00	117		22.78	20.00	114		20	2.80	
Hexachlorobutadiene	66-134	1	0	25.56	20.00	128		25.75	20.00	129		20	0.700	
Isopropylbenzene	72-131	1	0	48.99	20.00	245	*	48	20.00	240	*	20	2.00	
m,p-Xylene	80-121	1	0	70.73	40.00	177	*	69	40.00	173	*	20	2.50	
Methylene chloride	74-124	1	0	16.37	20.00	82		16.67	20.00	83		20	1.80	
n-Butylbenzene	75-128	1	0	35.21	20.00	176	*	35.05	20.00	175	*	20	0.500	
n-Propylbenzene	76-126	1	0	58.99	20.00	295	*	58.94	20.00	295	*	20	0.100	
Naphthalene	61-128	1	0	57.08	20.00	285	*	58.09	20.00	290	*	20	1.70	
o-Xylene	78-122	1	0	23.31	20.00	117		22.96	20.00	115		20	1.50	
sec-Butylbenzene	77-126	1	0	31.15	20.00	156	*	31.04	20.00	155	*	20	0.400	
Styrene	78-123	1	0	21.48	20.00	107		21.36	20.00	107		20	0.600	
tert-Butylbenzene	78-124	1	0	26.04	20.00	130	*	26.05	20.00	130	*	20	0	
Tetrachloroethene	74-129	1	0	23.95	20.00	120		23.31	20.00	117		20	2.70	
Toluene	80-121	1	0	21.96	20.00	110		21.51	20.00	108		20	2.00	
trans-1,2-Dichloroethene	75-124	1	0	19.44	20.00	97		19.02	20.00	95		20	2.20	
trans-1,3-Dichloropropene	73-127	1	0	19.81	20.00	99		19.71	20.00	99		20	0.500	
Trichloroethene	79-123	1	8.292	21.23	20.00	65	*	20.68	20.00	62	*	20	2.70	
Trichlorofluoromethane	65-141	1	0	22.26	20.00	111		21.95	20.00	110		20	1.40	
Vinyl chloride	58-137	1	0	19.77	20.00	99		19.11	20.00	96		20	3.40	

- %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

HS23010858

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 12

01/23/2023

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 LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

VOA6_426140		QC ID	VLCSW-230119			
QC Matrix Aqueous	Units	Run Date	01/19/23			
	ug/L	Run Time	12:01			
Analyte	%R Limits	Spike Added	LCS Result	%R	Q	
1,1,1,2-Tetrachloroethane	78-124	20	20.05	100		
1,1,1-Trichloroethane	74-131	20	21.47	107		
1,1,2,2-Tetrachloroethane	71-121	20	19.94	100		
1,1,2-Trichlor-1,2,2-trifluoroethane	70-136	20	22.54	113		
1,1,2-Trichloroethane	80-119	20	19.75	99		
1,1-Dichloroethane	77-125	20	20.35	102		
1,1-Dichloroethene	71-131	20	21.17	106		
1,1-Dichloropropene	78-125	20	22.5	112		
1,2,3-Trichlorobenzene	69-129	20	21.75	109		
1,2,3-Trichloropropane	73-122	20	22.44	112		
1,2,4-Trichlorobenzene	69-130	20	22.69	113		
1,2,4-Trimethylbenzene	76-124	20	21.86	109		
1,2-Dibromo-3-chloropropane	62-128	20	20.5	103		
1,2-Dibromoethane	77-121	20	20.69	103		
1,2-Dichlorobenzene	80-119	20	20.33	102		
1,2-Dichloroethane	73-128	20	21.97	110		
1,2-Dichloroethane-d4	81-118	50	52.09	104		
1,2-Dichloropropane	78-122	20	20.19	101		
1,3,5-Trimethylbenzene	75-124	20	22.26	111		
1,3-Dichlorobenzene	80-119	20	21.15	106		
1,3-Dichloropropane	80-119	20	20.35	102		
1,4-Dichlorobenzene	79-118	20	20.91	105		
2,2-Dichloropropane	60-139	20	22.37	112		
2-Butanone	56-143	40	43.34	108		
2-Chlorotoluene	79-122	20	21.33	107		
2-Hexanone	57-139	40	46.32	116		
4-Bromofluorobenzene	85-114	50	50.39	101		
4-Chlorotoluene	78-122	20	22	110		
4-Isopropyltoluene	77-127	20	23.85	119		
4-Methyl-2-pentanone	67-130	40	43.32	108		
Acetone	39-160	40	47.94	120		
Benzene	79-120	20	20.59	103		
Bromobenzene	80-120	20	19.95	100		
Bromochloromethane	78-123	20	18.65	93		
Bromodichloromethane	79-125	20	20.3	101		
Bromoform	66-130	20	19.82	99		

- %Recovery / RPD Flag * - %Recovery / RPD Outside Limits

Form 3B - Laboratory Control Sample Recovery

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

VOA6_426140		QC ID	VLCSW-230119			
QC Matrix Aqueous	Units ug/L	Run Date Run Time	01/19/23 12:01			
Analyte	%R Limits	Spike Added	LCS Result	%R	Q	
Bromomethane	53-141	20	21.46	107		
Carbon disulfide	64-133	40	41.08	103		
Carbon tetrachloride	72-136	20	21.01	105		
Chlorobenzene	82-118	20	20.33	102		
Chloroethane	60-138	20	19.09	95		
Chloroform	79-124	20	20.19	101		
Chloromethane	50-139	20	20.92	105		
cis-1,2-Dichloroethene	78-123	20	19.48	97		
cis-1,3-Dichloropropene	75-124	20	20.7	104		
Dibromochloromethane	74-126	20	20.1	100		
Dibromofluoromethane	80-119	50	48.88	98		
Dibromomethane	79-123	20	20.21	101		
Dichlorodifluoromethane	32-152	20	18.21	91		
Ethylbenzene	79-121	20	21.6	108		
Hexachlorobutadiene	66-134	20	23.45	117		
Isopropylbenzene	72-131	20	22.23	111		
m,p-Xylene	80-121	40	42.29	106		
Methylene chloride	74-124	20	19.61	98		
Naphthalene	61-128	20	22.16	111		
n-Butylbenzene	75-128	20	23.25	116		
n-Propylbenzene	76-126	20	22.66	113		
o-Xylene	78-122	20	20.77	104		
sec-Butylbenzene	77-126	20	23.95	120		
Styrene	78-123	20	20.88	104		
tert-Butylbenzene	78-124	20	22.73	114		
Tetrachloroethene	74-129	20	21.49	107		
Toluene	80-121	20	20.68	103		
Toluene-d8	89-112	50	49.7	99		
trans-1,2-Dichloroethene	75-124	20	20.12	101		
trans-1,3-Dichloropropene	73-127	20	21.57	108		
Trichloroethene	79-123	20	20.79	104		
Trichlorofluoromethane	65-141	20	21.98	110		
Vinyl chloride	58-137	20	20.37	102		

- %Recovery / RPD Flag * - %Recovery / RPD Outside Limits

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Form 4

Method Blank Summary

Volatiles by by EPA 8260

Workorder

HS23010858

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 12

01/23/2023

ALS Environmental–Houston Laboratory
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www.alsglobal.com

Form 4 - Method Blank Summary

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

Volatiles by by EPA 8260

Client Sample ID	Type	Lab Sample ID	File ID	Date Analyzed	Run ID
METHOD BLANK	MBLK	VBLKW-230119	X011908.D	01/19/23 13:04	VOA6_426140
VLCSW-230119	LCS	VLCSW-230119	X011905.D	01/19/23 12:01	VOA6_426140
Trip Blank-230117	SAMP	HS23010858-06	X011911.D	01/19/23 14:07	VOA6_426140
12WW24-230117	SAMP	HS23010858-04	X011912.D	01/19/23 14:28	VOA6_426140
12WW24-230117	MS	HS23010858-04MS	X011915.D	01/19/23 15:32	VOA6_426140
12WW24-230117	MSD	HS23010858-04MSD	X011916.D	01/19/23 15:53	VOA6_426140
12WW10R-230117	SAMP	HS23010858-01	X011921.D	01/19/23 17:38	VOA6_426140
12WW21-230117	SAMP	HS23010858-02	X011922.D	01/19/23 17:59	VOA6_426140
12WW21-230117-FD	SAMP	HS23010858-03	X011923.D	01/19/23 18:20	VOA6_426140
12WW20-230117	SAMP	HS23010858-05	X011924.D	01/19/23 18:41	VOA6_426140

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Form 5

Instrument Performance Check

Workorder

HS23010858

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 12

01/23/2023

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
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Form 5 - Instrument Performance Check

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

RunID
VOA6_424237

Tune File X121601.D 12/16/22 11:17

m / e	Ion Abundance Criterion	%RA
50	15.0 - 40.0% of mass 95	18.3 (18.4)
75	30.0 - 60.0% of mass 95	46.1 (46.1)
95	Base peak, 100% RA	100 (100)
96	5.0 - 9.0% of mass 95	7.2 (7.16)
173	Less than 2.0% of mass 174	0.8 (0.897) 1
174	50.0 - 120.0% of mass 95	89 (89)
175	4.0 - 9.0% of mass 174	7 (7.82) 1
176	93.0 - 101.0% of mass 174	87.4 (98.2) 1
177	5.0 - 9.0% of mass 176	5.8 (6.59) 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	12/16/22 11:38	X121602	VSTD000.25
2	ICAL2	12/16/22 12:20	X121603	VSTD000.5
3	ICAL3	12/16/22 12:41	X121604	VSTD001
4	ICAL4	12/16/22 13:02	X121605	VSTD002
5	ICAL5	12/16/22 13:23	X121606	VSTD005
6	ICAL6	12/16/22 13:43	X121607	VSTD020
7	ICAL7	12/16/22 14:04	X121608	VSTD050
8	ICAL8	12/16/22 14:25	X121609	VSTD100
9	ICAL9	12/16/22 14:46	X121610	VSTD150
10	ICAL	12/16/22 15:07	X121611	VSTD200
11	ICV	12/16/22 15:49	X121613	CCV

Form 5 - Instrument Performance Check

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

RunID
VOA6_426140

Tune File X011901.D 01/19/23 10:37

m / e	Ion Abundance Criterion	%RA
50	15.0 - 40.0% of mass 95	21.9 (21.9)
75	30.0 - 60.0% of mass 95	52.9 (52.9)
95	Base peak, 100% RA	100 (100)
96	5.0 - 9.0% of mass 95	6.6 (6.64)
173	Less than 2.0% of mass 174	0.6 (0.757) 1
174	50.0 - 120.0% of mass 95	85.7 (85.7)
175	4.0 - 9.0% of mass 174	6.5 (7.58) 1
176	93.0 - 101.0% of mass 174	82.9 (96.6) 1
177	5.0 - 9.0% of mass 176	6 (7.29) 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	01/19/23 11:19	X011903	CCV
2	CCB	01/19/23 11:40	X011904	CCB
3	LCS	01/19/23 12:01	X011905	VLCSW-230119
4	MBLK	01/19/23 13:04	X011908	VBLKW-230119
5	SAMP	01/19/23 14:07	X011911	Trip Blank-230117
6	SAMP	01/19/23 14:28	X011912	12WW24-230117
7	MS	01/19/23 15:32	X011915	HS23010858-04MS
8	MSD	01/19/23 15:53	X011916	HS23010858-04MSD
9	SAMP	01/19/23 17:38	X011921	12WW10R-230117
10	SAMP	01/19/23 17:59	X011922	12WW21-230117
11	SAMP	01/19/23 18:20	X011923	12WW21-230117-FD
12	SAMP	01/19/23 18:41	X011924	12WW20-230117
13	CCV_EN	01/19/23 19:44	X011927	CCV-END

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Form 6

Initial Calibration Data

Workorder

HS23010858

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 12

01/23/2023

ALS Environmental–Houston Laboratory
10450 Stancliff Road, Suite 210, Houston, TX 77099
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www.alsglobal.com

Initial Calibration Data

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 12

Workorder HS23010858

RunID VOA6_424237

Volatiles Organics by Method 8260C

ICAL Start Date 16-DEC-2022 1138
ICAL End Date 16-DEC-2022 1507

Calibration Files

Level 1 ..voa6.i\X221216.b\X121602.D
Level 2 ..voa6.i\X221216.b\X121603.D
Level 3 ..voa6.i\X221216.b\X121604.D
Level 4 ..voa6.i\X221216.b\X121605.D
Level 5 ..voa6.i\X221216.b\X121606.D
Level 6 ..voa6.i\X221216.b\X121607.D
Level 7 ..voa6.i\X221216.b\X121608.D
Level 8 ..voa6.i\X221216.b\X121609.D
Level 9 ..voa6.i\X221216.b\X121610.D
Level 10 ..voa6.i\X221216.b\X121611.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 160392	1990 309019	2911 476130	6239 635808	15008	63382	LINR	0.00786	0.35247		0.99971	
Chloromethane	NE 192710	2466 388163	3670 621048	8057 865151	19623	72324	LINR	0.04423	0.47332		0.99747	
Propionitrile	NE 0.04851	0.06018 0.04917	0.05265 0.05178	0.04739 0.05178	0.05114	0.04656	AVRG		0.05102		7.91502	
Vinyl Chloride	NE 0.44103	0.52268 0.42953	0.40472 0.44923	0.39786 0.45909	0.42164	0.40520	AVRG		0.43678		8.81916	
Bromomethane	NE 139689	1893 284165	3293 470318	5996 NE	15112	52034	LINR	0.03529	0.34244		0.99519	
Chloroethane	NE 0.29447	0.35820 0.28714	0.27936 0.30494	0.31044 0.30410	0.31436	0.28309	AVRG		0.30401		7.80750	
Trichlorofluoromethane	NE 0.60756	0.71207 0.59817	0.54474 0.64605	0.57316 0.65074	0.59068	0.57785	AVRG		0.61122		8.28859	
Acrolein	NE 27445	440 60756	761 96139	1317 125874	2699	12279	LINR	0.05644	0.03519		0.99833	
Acetone	NE 124798	2669 243517	4787 373504	7041 514105	17632	50987	LINR	-0.00069	0.14025		0.99910	
1,1-Dichloroethene	NE 0.36912	0.44142 0.36226	0.35953 0.38517	0.37590 0.39076	0.37389	0.35725	AVRG		0.37948		6.80558	

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 LHAAP 12

Workorder HS23010858

RunID VOA6_424237

Volatiles Organics by Method 8260C

ICAL Start Date 16-DEC-2022 1138 **ICAL End Date** 16-DEC-2022 1507

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 0.05462	0.05610 0.05559	0.05239 0.05946	0.05650 0.05952	0.05728	0.05469	AVRG		0.05624		4.10209	
Acetonitrile	NE 0.04430	0.04776 0.04552	0.04645 0.04791	0.04253 0.04736	0.04357	0.04417	AVRG		0.04551		4.32823	
Allyl Chloride	NE 0.81324	0.99118 0.83169	0.95202 0.86799	0.81682 0.86396	0.84304	0.82034	AVRG		0.86670		7.30464	
Iodomethane	NE 455792	2397 958603	3865 1554547	8702 2193685	26708	143457	QUAD	0.06641	2.01333	-0.08031	0.99956	
Acrylonitrile	NE 0.12970	0.12113 0.12956	0.12536 0.13857	0.12482 0.13997	0.12256	0.12666	AVRG		0.12870		5.15060	
Methylene Chloride	NE 0.49311	0.63666 0.46611	0.59459 0.48892	0.50364 0.47907	0.50885	0.51372	AVRG		0.52052		10.92514	
Methyl tert-butyl ether	NE 1.16844	1.26574 1.18584	1.39027 1.23813	1.27259 1.24075	1.24993	1.16729	AVRG		1.24211		5.52745	
Carbon Disulfide	NE 0.97542	1.07494 0.97088	1.00609 1.02392	0.95722 1.06178	0.94769	0.91773	AVRG		0.99285		5.32584	
trans-1,2-Dichloroethene	NE 0.41851	0.48064 0.41454	0.42427 0.43221	0.38965 0.43554	0.42173	0.40526	AVRG		0.42470		5.92187	
Vinyl Acetate	NE 1.07506	1.09845 1.07519	0.99054 1.16529	1.06368 1.16741	1.12321	1.05445	AVRG		1.09037		5.13969	
1,1-Dichloroethane	NE 0.72125	0.83949 0.70504	0.80145 0.74074	0.69997 0.74459	0.75023	0.70550	AVRG		0.74536		6.34771	
Chloroprene	NE 0.16145	0.19503 0.16116	0.18721 0.16823	0.17124 0.17481	0.15874	0.15219	AVRG		0.17001		8.17551	

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 LHAAP 12

Workorder HS23010858

RunID VOA6_424237

Volatiles Organics by Method 8260C

ICAL Start Date 16-DEC-2022 1138 **ICAL End Date** 16-DEC-2022 1507

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 130179	1292 264221	2498 407629	5418 555896	11771	47830	LINR	0.06050	0.15346		0.99924	
Methacrylonitrile	NE 0.32328	0.44770 0.32565	0.36475 0.34081	0.34993 0.34351	0.34840	0.34235	AVRG		0.35404		10.52608	
2,2-Dichloropropane	NE 0.62063	0.70167 0.61027	0.65466 0.64008	0.60521 0.65162	0.61866	0.59289	AVRG		0.63286		5.25207	
cis-1,2-Dichloroethene	NE 0.49985	0.61803 0.48778	0.49622 0.51710	0.52999 0.51455	0.50446	0.48374	AVRG		0.51686		7.86616	
Chloroform	NE 0.81023	0.87547 0.78725	0.86252 0.84612	0.85352 0.84457	0.84666	0.79238	AVRG		0.83541		3.73708	
Bromochloromethane	NE 0.26364	0.32093 0.26287	0.29857 0.28290	0.28124 0.28282	0.29319	0.26077	AVRG		0.28299		6.91423	
1,1,1-Trichloroethane	NE 0.65703	0.76105 0.64156	0.65666 0.67604	0.60049 0.69720	0.64387	0.63152	AVRG		0.66283		6.90392	
1,1-Dichloropropene	NE 0.37084	0.35889 0.35979	0.34245 0.36734	0.33027 0.37324	0.34789	0.34406	AVRG		0.35497		4.12237	
1,2-Dichloroethane	NE 0.39909	0.45501 0.40154	0.40587 0.41082	0.39492 0.41030	0.41104	0.39842	AVRG		0.40967		4.39762	
Carbon Tetrachloride	NE 0.36348	0.40179 0.35355	0.45347 0.36349	0.40515 0.37429	0.35265	0.34370	AVRG		0.37906		9.25223	
Benzene	NE 1.17241	1.34410 1.15323	1.19304 1.17461	1.18322 1.18197	1.19608	1.14722	AVRG		1.19399		4.90945	
Trichloroethene	NE 0.33750	0.37562 0.33140	0.31723 0.33891	0.33885 0.34649	0.33109	0.33079	AVRG		0.33865		4.73809	

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Initial Calibration Data

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 12

Workorder HS23010858

RunID VOA6_424237

Volatiles Organics by Method 8260C

ICAL Start Date 16-DEC-2022 1138 **ICAL End Date** 16-DEC-2022 1507

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 0.42913	0.53078 0.42602	0.45893 0.44706	0.43689 0.45009	0.42833	0.42563	AVRG		0.44810		7.41292	
Methyl Methacrylate	NE 0.32238	0.38746 0.32465	0.34921 0.34726	0.33881 0.35704	0.33548	0.30606	AVRG		0.34093		6.87301	
2-Chloroethylvinyl ether	NE 0.13057	0.13531 0.12541	0.11670 0.12799	0.12141 0.12973	0.12912	0.13108	AVRG		0.12748		4.37734	
1,2-Dichloropropane	NE 0.31044	0.35613 0.30521	0.33560 0.31542	0.29692 0.31856	0.31629	0.30391	AVRG		0.31761		5.71516	
2-Nitropropane	NE 0.73644	1.05598 0.73807	0.76159 0.78445	0.80915 0.80253	0.77468	0.75211	AVRG		0.80167		12.32619	
Dibromomethane	NE 0.20672	0.25085 0.20317	0.21183 0.21324	0.22317 0.21357	0.21081	0.20954	AVRG		0.21588		6.58330	
4-Methyl-2-Pentanone	NE 0.25814	0.28987 0.25156	0.26418 0.26114	0.28502 0.26166	0.26684	0.26684	AVRG		0.26725		4.64865	
cis-1,3-Dichloropropene	NE 0.52860	0.53732 0.53368	0.47650 0.55605	0.50179 0.56353	0.51804	0.52075	AVRG		0.52625		5.04185	
Ethyl Methacrylate	NE 0.20804	0.28138 0.22619	0.24077 0.24786	0.23910 0.26163	0.20135	0.21276	AVRG		0.23545		11.14205	
Toluene	NE 1.36202	1.60765 1.32088	1.37997 1.35198	1.37463 1.35870	1.36957	1.31273	AVRG		1.38201		6.34459	
trans-1,3-Dichloropropene	NE 0.44682	0.44236 0.44877	0.39493 0.47075	0.40065 0.48573	0.41433	0.42619	AVRG		0.43673		7.01005	
2-Hexanone	NE 0.17839	0.19991 0.17192	0.17409 0.18312	0.17972 0.18566	0.18386	0.17978	AVRG		0.18183		4.45920	

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1,1,2-Trichloroethane	NE	0.32419	0.26954	0.29087	0.28491	0.26973						
	0.26479	0.25654	0.26825	0.26649			AVRG		0.27726		7.37510	
1,3-Dichloropropane	NE	0.62065	0.55587	0.54217	0.54663	0.53274						
	0.53007	0.51166	0.53587	0.53590			AVRG		0.54573		5.60982	
Dibromochloromethane	NE	0.43810	0.38701	0.39402	0.38762	0.38903						
	0.39906	0.39075	0.40792	0.40793			AVRG		0.40016		4.08851	
Tetrachloroethene	NE	0.33024	0.25660	0.28292	0.26322	0.28810						
	0.29836	0.28012	0.28506	0.28889			AVRG		0.28594		7.36821	
1,2-Dibromoethane	NE	0.36263	0.33509	0.32714	0.35422	0.34322						
	0.35151	0.33998	0.35512	0.35096			AVRG		0.34665		3.22017	
1-Chlorohexane	NE	0.26597	0.22998	0.21386	0.22191	0.24457						
	0.24556	0.23682	0.25047	0.26558			AVRG		0.24163		7.44215	
Chlorobenzene	NE	1.20054	0.96715	0.94773	0.95913	0.93014						
	0.95622	0.92158	0.96470	0.97511			AVRG		0.98026		8.61127	
1,1,1,2-Tetrachloroethane	NE	0.42477	0.34549	0.36191	0.34596	0.34861						
	0.36060	0.35457	0.36940	0.37188			AVRG		0.36480		6.70616	
Ethylbenzene	NE	0.47482	0.43893	0.45503	0.45171	0.45394						
	0.47797	0.45902	0.46986	0.47447			AVRG		0.46175		2.86128	
m,p-Xylenes	NE	0.69860	0.55710	0.56286	0.56012	0.57743						
	0.60205	0.58346	0.60071	0.61493			AVRG		0.59525		7.35638	
o-Xylene	NE	0.68372	0.51381	0.56977	0.56849	0.56994						
	0.59049	0.57562	0.60058	0.61516			AVRG		0.58751		7.79066	
Styrene	NE	1.02806	0.79991	0.88633	0.95404	0.97800						
	1.03116	1.01266	1.07651	1.09594			AVRG		0.98473		9.52837	

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Bromoform	NE 0.27805	0.31195 0.27584	0.25221 0.29222	0.26817 0.29278	0.25683	0.26696	AVRG		0.27722		6.87336	
Isopropylbenzene	NE 1.41077	1.35706 1.36357	1.16805 1.42773	1.25967 1.45784	1.30607	1.32939	AVRG		1.34224		6.69875	
1,1,2,2-Tetrachloroethane	NE 0.74007	0.91828 0.71754	0.84470 0.75363	0.83187 0.73962	0.83648	0.79018	AVRG		0.79693		8.24435	
1,2,3-Trichloropropane	NE 0.53505	0.58047 0.52761	0.56626 0.60583	0.53238 0.53897	0.58048	0.54015	AVRG		0.55636		4.97536	
trans-1,4-Dichloro-2-butene	NE 0.10800	0.12274 0.10845	0.09213 0.11623	0.10381 0.11751	0.10162	0.10094	AVRG		0.10794		8.88299	
n-Propylbenzene	NE 2.90611	3.20938 2.78733	2.13608 2.90643	2.47845 2.92515	2.73904	2.83806	AVRG		2.76956		11.03336	
Bromobenzene	NE 0.80056	0.90477 0.78064	0.79060 0.82147	0.83045 0.81857	0.81066	0.82521	AVRG		0.82033		4.35370	
1,3,5-Trimethylbenzene	NE 2.12398	2.06484 2.07652	1.68256 2.18148	1.97796 2.20122	2.03460	2.07048	AVRG		2.04596		7.47801	
2-Chlorotoluene	NE 1.79455	1.93144 1.71779	1.77508 1.79669	1.90257 1.78644	1.85141	1.80074	AVRG		1.81741		3.65582	
4-Chlorotoluene	NE 2.09570	2.19766 2.05624	1.72811 2.19099	1.99610 2.20989	2.10678	2.06499	AVRG		2.07183		7.13984	
tert-Butylbenzene	NE 1.74647	1.83685 1.66742	1.33195 1.77236	1.56610 1.78580	1.66625	1.69957	AVRG		1.67475		9.03914	
1,2,4-Trimethylbenzene	NE 2.18278	2.44261 2.12445	1.84882 2.25368	2.01055 2.24326	2.12502	2.14371	AVRG		2.15277		7.66012	

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sec-Butylbenzene	NE 2.38144	2.28219 2.30322	1.76441 2.43114	1.95855 2.46321	2.17705	2.29365	AVRG		2.22832		10.32115	
p-Isopropyltoluene	NE 2.16946	2.11113 2.07989	1.42476 2.19272	1.76888 2.20460	1.95504	2.06459	AVRG		1.99679		12.72950	
1,3-Dichlorobenzene	NE 1.39279	1.34465 1.34586	1.21323 1.42324	1.32549 1.42237	1.40186	1.38449	AVRG		1.36155		4.82043	
1,4-Dichlorobenzene	NE 1.45712	1.63128 1.44362	1.40441 1.52301	1.45614 1.52190	1.47766	1.45673	AVRG		1.48576		4.44368	
Benzyl Chloride	NE 472387	3642 1009234	4632 1650494	12783 2286488	35254	163895	LINR	0.05387	0.82700		0.99832	
n-Butylbenzene	NE 696355	5149 1425779	8459 2293126	19853 3216534	54831	248190	LINR	0.03551	1.99525		0.99890	
1,2-Dichlorobenzene	NE 1.39065	1.58241 1.36532	1.22790 1.44207	1.34058 1.43128	1.42827	1.41177	AVRG		1.40225		6.73504	
1,2-Dibromo-3-Chloropropane	NE 48660	441 94321	778 149691	1619 205063	4911	18635	LINR	0.00184	0.12764		0.99948	
1,2,4-Trichlorobenzene	NE 0.95146	0.91627 0.90293	0.65608 0.94400	0.83350 0.95022	0.89445	0.91558	AVRG		0.88494		10.53488	
Hexachlorobutadiene	NE 155390	1477 299042	1928 466452	3970 654615	13454	55912	QUAD	-0.00107	2.58308	-0.07816	0.99966	
Naphthalene	NE 2.14094	2.01970 2.06230	1.60683 2.15450	1.85985 2.12714	2.04153	2.10842	AVRG		2.01347		8.78393	
1,2,3-Trichlorobenzene	NE 0.85880	1.02696 0.83163	0.68341 0.85478	0.79977 0.84995	0.84958	0.87304	AVRG		0.84755		10.42886	

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Volatiles Organics by Method 8260C

ICAL Start Date 16-DEC-2022 1138 **ICAL End Date** 16-DEC-2022 1507

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 0.37280	0.44748 0.34980	0.34909 0.38488	0.40657 0.39192	0.39985	0.40902	AVRG		0.39016		7.92750	
Methyl Acrylate	NE 0.33014	0.38247 0.33914	0.34243 0.35741	0.29817 0.35867	0.33173	0.31494	AVRG		0.33946		7.36740	
n-Butanol	NE 54418	622 124057	1171 210842	2004 297334	4891	15012	QUAD	0.80435	158	-58.97368	0.99813	*
Ethyl Acrylate	NE 420886	NE 862071	NE 1358300	9825 1836030	26414	172044	LINR	0.05859	1.02468		0.99901	*
Cyclohexanone	NE 0.01934	0.07093 0.01945	0.03374 0.01993	0.02556 0.01966	0.01884	0.01912	AVRG		0.02740		62.21369	*
1,4-Dioxane	0.00463 0.00443	0.00501 0.00442	0.00455 0.00480	0.00386 0.00497	0.00466	0.00438	AVRG		0.00457		7.29408	
n-Hexane	NE 0.39852	0.41368 0.36338	0.26016 0.39788	0.32309 0.40267	0.32437	0.35631	AVRG		0.36001		13.97418	
Freon TF	NE 0.37622	0.40111 0.36030	0.37263 0.38547	0.33005 0.39624	0.32940	0.35185	AVRG		0.36703		7.16337	
Methyl Acetate	NE 0.21071	0.27499 0.21615	0.23617 0.22455	0.22728 0.22667	0.19900	0.20937	AVRG		0.22499		9.73149	
Methylcyclohexane	NE 0.60749	0.69525 0.62521	0.49917 0.65111	0.58500 0.65095	0.56389	0.63030	AVRG		0.61204		9.36456	
Isopropyl alcohol	NE 0.01716	0.02240 0.01767	0.01652 0.01919	0.01536 0.01934	0.01833	0.01677	AVRG		0.01808		11.41496	
Amyl alcohol	NE 0.00433	NE 0.00498	NE 0.00582	NE 0.00605	0.00196	0.00315	AVRG		0.00438		36.19033	*

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Allyl alcohol	NE 0.01993	0.03347 0.01817	0.01301 0.01989	0.01615 0.02013	0.01622	0.01782	AVRG		0.01942		29.60962	*
4-Methyl-2-pentanol	NE 0.04191	0.13977 0.04448	0.06768 0.05120	0.05740 0.05444	0.04467	0.04137	AVRG		0.06032		51.38639	*
Tert-butyl alcohol	NE 0.03307	0.04145 0.03257	0.03359 0.03586	0.03291 0.03628	0.03387	0.03199	AVRG		0.03462		8.48705	
Diethyl ether	NE 0.30968	0.40393 0.31674	0.33122 0.33062	0.34807 0.33029	0.33548	0.30080	AVRG		0.33409		8.92652	
1,3-Butadiene	NE 0.33288	0.38854 0.32994	0.38107 0.34951	0.31405 0.35836	0.31693	0.31715	AVRG		0.34316		8.15203	
Cyclohexane	NE 237699	2803 432198	4003 682728	7375 943314	19859	84355	LINR	0.02522	0.51703		0.99847	
Tetrahydrofuran	NE 58181	900 109518	1361 162133	2867 219995	7598	28221	LINR	-0.06333	0.06025		0.99942	
alpha-Methylstyrene	NE 1.13399	1.35155 1.10993	0.85865 1.16502	1.02359 1.17184	1.06165	1.09458	AVRG		1.10787		11.89593	
Diisopropyl ether	NE 1.21127	1.41201 1.25239	1.35074 1.32366	1.30436 1.33324	1.25459	1.23114	AVRG		1.29704		5.00179	
Dichlorofluoromethane	NE 0.05734	NE 0.05842	NE 0.06234	NE 0.06214	0.06484	0.06089	AVRG		0.06099		4.51209	*
Propylene oxide	NE 0.03071	NE 0.03174	0.05613 0.03407	0.03062 0.03228	0.03687	0.02961	AVRG		0.03525		24.79698	*
3-Methyl-1-butanol	NE 0.00489	NE 0.00483	NE 0.00601	NE 0.00612	0.00211	0.00438	AVRG		0.00472		30.80128	*

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Butyl acrylate	NE 0.63698	0.73114 0.67566	0.58907 0.72950	0.57945 0.74630	0.58578	0.60437	AVRG		0.65314		10.52624	
1,2,3-Trimethylbenzene	NE 2.21302	2.76749 2.29498	2.61167 2.36627	2.52848 2.30685	2.25428	2.32678	AVRG		2.40776		7.74526	
Ethanol	NE 29714	458 56794	787 87890	1703 117751	3072	12594	LINR	-0.06594	0.00325		0.99956	
1-Propanol	NE 0.00727	0.00862 0.00784	0.00964 0.00802	0.00852 0.00816	0.00825	0.00721	AVRG		0.00817		9.04495	
tert-Butyl formate	NE 0.24908	NE 0.25521	NE 0.29218	0.25634 0.29283	0.33766	0.24706	AVRG		0.27577		12.14219	*
3,3-Dimethyl-1-butanol	NE 0.02235	NE 0.02388	NE 0.02628	NE 0.02679	0.01912	0.02169	AVRG		0.02335		12.46791	*
tert-Amyl methyl ether	NE 1.32775	2.53777 1.35994	1.82297 1.44272	1.67155 1.43312	1.55575	1.35887	AVRG		1.61227		23.79383	*
tert-Butyl ethyl ether	NE 1.27589	1.81984 1.30743	1.44501 1.37993	1.35004 1.39745	1.35223	1.28319	AVRG		1.40122		11.86386	
tert-Amyl alcohol	NE 0.02491	0.03129 0.02552	0.02457 0.02922	0.02972 0.02928	0.03377	0.02471	AVRG		0.02811		11.82574	
Epichlorohydrin	NE 58515	926 126478	1242 183469	2483 257397	5941	23842	LINR	0.04999	0.02268		0.99921	
Isoprene	NE 0.13550	0.20890 0.13652	0.10782 0.14294	0.12769 0.14612	0.14811	0.13210	AVRG		0.14286		19.27805	*
n-Amyl acetate	NE 0.52035	NE 0.54240	NE 0.59479	NE 0.61078	NE	0.53118	AVRG		0.55990		7.20069	*

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Isopropyl acetate	NE 0.72227	1.34716 0.73275	0.78367 0.76494	0.79130 0.76466	0.77391	0.74796	AVRG		0.82540		23.86221	*
n-Butyl acetate	NE 0.19856	0.47947 0.20815	0.28533 0.21762	0.15799 0.22438	0.22627	0.22783	AVRG		0.24729		37.68114	*
Acetaldehyde	NE 67188	NE 107798	3384 161053	5661 205547	6161	32393	LINR	-0.46573	0.02837		0.99553	
Methyl Amyl Ketone	NE 0.62641	1.24254 0.65992	0.68451 0.69377	0.63815 0.71197	0.57607	0.60726	AVRG		0.71562		28.26825	*
Dimethyl Disulfide	NE 0.67210	0.79855 0.68414	0.63899 0.70500	0.61608 0.69777	0.61366	0.66406	AVRG		0.67671		8.32695	
1,2-Dichloroethylene (total)	NE 0.45918	0.54933 0.45116	0.46024 0.47466	0.45982 0.47504	0.46309	0.44450	AVRG		0.47078		6.59168	
Xylenes (total)	NE 0.56357	0.65089 0.56191	0.51351 0.58028	0.53491 0.60523	0.53725	0.54549	AVRG		0.56589		7.37687	
Dibromofluoromethane	NE 211939	2321 438954	4769 652724	9050 856027	24255	90108	LINR	-0.00333	0.47851		0.99972	
1,2-Dichloroethane-d4	NE 222293	2849 455890	5559 686218	9783 919752	24938	92990	LINR	0.00543	0.50950		0.99982	
Toluene-d8	NE 1.18347	1.47608 1.20166	1.31472 1.16429	1.20749 1.10711	1.24798	1.21701	AVRG		1.23554		8.62469	
4-Bromofluorobenzene	NE 292753	3870 615584	7790 936681	13631 1277239	32501	116878	LINR	0.00128	0.46242		0.99992	

NE - Not Evaluated, AVRG - Averaged, LINR - Linear Regression, WLIN - Weighted Linear, QUAD - Quadratic, * - Curve Fit Outside Limits

right solutions.
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Form 6I

Initial Calibration Verification (ICV)

Workorder

HS23010858

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 12

01/23/2023

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 12

Workorder HS23010858

RunID VOA6_424237

Volatiles Organics by Method 8260C

Instrument ID voa6.i ICAL Date 16-DEC-2022
Lab File ID X121613.D ICAL Time 1404
?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	48.61	97.24	80-120	
1,1,1-Trichloroeth	50.00	50.16	100.33	80-120	
1,1,2,2-Tetrachlor	50.00	46.75	93.50	80-120	
Freon TF	50.00	52.90	105.81	80-120	
Methyl Acetate	50.00	48.17	96.35	80-120	
Cyclohexane	50.00	51.73	103.47	80-120	
Methylcyclohexane	50.00	50.89	101.79	80-120	
Carbon Disulfide	100.00	98.50	98.50	80-120	
2-Hexanone	100.00	96.73	96.74	80-120	
1,1,2-Trichloroeth	50.00	47.91	95.83	80-120	
1,1-Dichloroethane	50.00	48.19	96.39	80-120	
1,1-Dichloroethene	50.00	49.34	98.68	80-120	
1,1-Dichloropropen	50.00	52.11	104.24	80-120	
1,2,3-Trichloroben	50.00	52.79	105.58	80-120	
1,2,3-Trichloropro	50.00	48.07	96.16	80-120	
1,2,4-Trichloroben	50.00	54.66	109.32	80-120	
1,2,4-Trimethylben	50.00	51.32	102.65	80-120	
1,2-Dibromo-3-Chlo	50.00	50.53	101.07	80-120	
1,2-Dibromoethane	50.00	50.24	100.49	80-120	
Acrolein	100.00	95.06	95.07	80-120	
Acrylonitrile	100.00	101.42	101.43	80-120	
1,2-Dichlorobenzen	50.00	49.52	99.05	80-120	
1,2-Dichloroethane	50.00	49.52	99.05	80-120	
1,2-Dichloropropan	50.00	49.60	99.22	80-120	
1,3,5-Trimethylben	50.00	52.30	104.61	80-120	
1,3-Dichlorobenzen	50.00	51.21	102.43	80-120	
1,3-Dichloropropan	50.00	47.82	95.66	80-120	
1,4-Dichlorobenzen	50.00	49.71	99.44	80-120	
1-Chlorohexane	50.00	51.98	103.97	80-120	
2,2-Dichloropropan	50.00	50.98	101.98	80-120	
2-Butanone	100.00	97.74	97.74	80-120	
2-Chlorotoluene	50.00	49.94	99.89	80-120	
4-Chlorotoluene	50.00	51.25	102.51	80-120	
p-Isopropyltoluene	50.00	54.75	109.51	80-120	

Initial Calibration Verification (ICV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 12

Workorder
HS23010858

RunID
VOA6_424237

Volatiles Organics by Method 8260C

Instrument ID voa6.i ICAL Date 16-DEC-2022
Lab File ID X121613.D ICAL Time 1404
?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	94.03	94.03	80-120	
Acetone	100.00	101.89	101.90	80-120	
Benzene	50.00	50.29	100.58	80-120	
Bromobenzene	50.00	49.62	99.25	80-120	
Bromochloromethane	50.00	47.25	94.51	80-120	
Bromodichlorometha	50.00	49.22	98.45	80-120	
Bromoform	50.00	49.33	98.66	80-120	
Bromomethane	50.00	50.78	101.58	80-120	
Carbon Tetrachlori	50.00	49.06	98.12	80-120	
Chlorobenzene	50.00	48.34	96.68	80-120	
Chloroethane	50.00	48.32	96.64	80-120	
Chloroform	50.00	48.45	96.91	80-120	
Chloromethane	50.00	50.17	100.35	80-120	
cis-1,2-Dichloroet	50.00	48.25	96.51	80-120	
cis-1,3-Dichloropr	50.00	52.11	104.22	80-120	
Dibromochlorometha	50.00	49.50	99.02	80-120	
Dibromomethane	50.00	49.19	98.38	80-120	
Dichlorodifluorome	50.00	52.19	104.38	80-120	
Ethylbenzene	50.00	51.31	102.63	80-120	
Hexachlorobutadien	50.00	57.73	115.48	80-120	
Isopropylbenzene	50.00	52.09	104.19	80-120	
m,p-Xylenes	100.00	100.17	100.17	80-120	
Methyl tert-butyl	50.00	48.12	96.25	80-120	
Methylene Chloride	50.00	47.56	95.14	80-120	
n-Butylbenzene	50.00	50.66	101.33	80-120	
n-Propylbenzene	50.00	52.67	105.35	80-120	
Naphthalene	50.00	52.67	105.35	80-120	
o-Xylene	50.00	49.75	99.51	80-120	
sec-Butylbenzene	50.00	54.16	108.34	80-120	
Styrene	50.00	52.09	104.20	80-120	
tert-Butylbenzene	50.00	52.83	105.67	80-120	
Tetrachloroethene	50.00	50.99	101.99	80-120	
Toluene	50.00	49.20	98.42	80-120	
trans-1,2-Dichloro	50.00	49.99	99.98	80-120	

Initial Calibration Verification (ICV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 12

Workorder HS23010858

RunID VOA6_424237

Volatiles Organics by Method 8260C

Instrument ID voa6.i ICAL Date 16-DEC-2022
Lab File ID X121613.D ICAL Time 1404
?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	52.50	105.01	80-120	
Trichloroethene	50.00	51.28	102.56	80-120	
Trichlorofluoromet	50.00	51.00	102.02	80-120	
Vinyl Chloride	50.00	50.57	101.15	80-120	
1,2-Dichloroethyle	100.00	98.24	98.25	80-120	
Xylenes (total)	150.00	149.92	99.95	80-120	
1,4-Dioxane	1000.00	1021.76	102.18	80-120	
Dibromofluorometha	50.00	50.91	101.84	71-125	
1,2-Dichloroethane	50.00	50.36	100.73	70-125	
Toluene-d8	50.00	49.50	99.00	75-125	
4-Bromofluorobenze	50.00	49.98	99.97	72-125	

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Form 7

Continuing Calibration Verification (CCV)

Workorder

HS23010858

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 12

01/23/2023

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 12

Workorder HS23010858

RunID VOA6_426140

Volatiles Organics by Method 8260C

Instrument ID voa6.i Injection Date 19-JAN-2023 1119
Lab File ID X011903.D ICAL Date(s) 16-DEC-2022 16-DEC-2022
Analysis Type WATER ICAL Times 1138 1507
Lab Sample ID CCV Quant Type ISTD

Compound	$\overline{RRF}$ / Amount	RF50	CCV RRF50	Min RRF	%D / %Drift	Max %D / %Drift	Curve Type	Q
1,4-Dioxane	0.00457	0.00489	0.00489	0.001	-6.97494	20.0	Averaged	
1,3-Butadiene	0.34316	0.34798	0.34798	0.100	-1.40467	20.0	Averaged	
Methacrylonitrile	0.35404	0.37956	0.37956	0.100	-7.20894	20.0	Averaged	
Isobutyl Alcohol	0.05624	0.06482	0.06482	0.005	-15.25911	20.0	Averaged	
Acetonitrile	0.04551	0.05097	0.05097	0.005	-11.99994	20.0	Averaged	
Allyl Chloride	0.86670	0.92235	0.92235	0.100	-6.42081	20.0	Averaged	
Propionitrile	0.05102	0.05417	0.05417	0.010	-6.16968	20.0	Averaged	
trans-1,4-Dichloro-2-butene	0.10794	0.12558	0.12558	0.050	-16.34162	20.0	Averaged	
Chloroprene	0.17001	0.16666	0.16666	0.100	1.96776	20.0	Averaged	
Ethyl Acetate	0.39016	0.44439	0.44439	0.100	-13.89910	20.0	Averaged	
Methyl Methacrylate	0.34093	0.38671	0.38671	0.100	-13.43028	20.0	Averaged	
Ethyl Methacrylate	0.23545	0.26211	0.26211	0.100	-11.32175	20.0	Averaged	
Dichlorodifluoromethane	50.0	54.26043	0.37974	0.100	-8.52087	20.0	Linear	
Chloromethane	50.0	51.42758	0.46589	0.100	-2.85517	20.0	Linear	
Vinyl Chloride	0.43678	0.45347	0.45347	0.100	-3.82068	20.0	Averaged	
Bromomethane	50.0	49.60857	0.32768	0.100	0.78287	20.0	Linear	
Chloroethane	0.30401	0.29321	0.29321	0.100	3.55324	20.0	Averaged	
Trichlorofluoromethane	0.61122	0.65207	0.65207	0.100	-6.68218	20.0	Averaged	
Acrolein	100	107	0.03664	0.010	-6.95499	20.0	Linear	
Acetone	100	113	0.15880	0.100	-13.19173	20.0	Linear	
1,1-Dichloroethene	0.37948	0.38735	0.38735	0.100	-2.07431	20.0	Averaged	
Iodomethane	100	103	0.51719	0.100	-3.15164	20.0	Quadratic	
Acrylonitrile	0.12870	0.14381	0.14381	0.050	-11.73805	20.0	Averaged	
Methylene Chloride	0.52052	0.48357	0.48357	0.100	7.09854	20.0	Averaged	
Methyl tert-butyl ether	1.24211	1.28846	1.28846	0.100	-3.73157	20.0	Averaged	
Carbon Disulfide	0.99285	1.01483	1.01483	0.100	-2.21342	20.0	Averaged	
trans-1,2-Dichloroethene	0.42470	0.42963	0.42963	0.100	-1.15884	20.0	Averaged	
Vinyl Acetate	1.09037	1.27010	1.27010	0.010	-16.48405	20.0	Averaged	
1,1-Dichloroethane	0.74536	0.75340	0.75340	0.200	-1.07763	20.0	Averaged	
2-Butanone	100	116	0.17327	0.100	-15.93928	20.0	Linear	
2,2-Dichloropropane	0.63286	0.68879	0.68879	0.100	-8.83854	20.0	Averaged	
cis-1,2-Dichloroethene	0.51686	0.49888	0.49888	0.100	3.47866	20.0	Averaged	
Chloroform	0.83541	0.84153	0.84153	0.200	-0.73220	20.0	Averaged	
Bromochloromethane	0.28299	0.26795	0.26795	0.100	5.31461	20.0	Averaged	

Continuing Calibration Verification (CCV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 12

Workorder HS23010858

RunID VOA6_426140

Volatiles Organics by Method 8260C

Instrument ID voa6.i Injection Date 19-JAN-2023 1119
Lab File ID X011903.D ICAL Date(s) 16-DEC-2022 16-DEC-2022
Analysis Type WATER ICAL Times 1138 1507
Lab Sample ID CCV Quant Type ISTD

Compound	RRF / Amount	RF50	CCV RRF50	Min RRF	%D / %Drift	Max %D / %Drift	Curve Type	Q
Dibromofluoromethane	50.0	48.97375	0.47028	0.100	2.05251	20.0	Linear	
1,1,1-Trichloroethane	0.66283	0.70720	0.70720	0.100	-6.69416	20.0	Averaged	
1,1-Dichloropropene	0.35497	0.39562	0.39562	0.100	-11.45043	20.0	Averaged	
1,2-Dichloroethane	0.40967	0.43266	0.43266	0.100	-5.61150	20.0	Averaged	
Carbon Tetrachloride	0.37906	0.39006	0.39006	0.100	-2.90218	20.0	Averaged	
1,2-Dichloroethane-d4	50.0	52.23539	0.52952	0.100	-4.47079	20.0	Linear	
Benzene	1.19399	1.21592	1.21592	0.500	-1.83718	20.0	Averaged	
Trichloroethene	0.33865	0.34536	0.34536	0.200	-1.97976	20.0	Averaged	
Bromodichloromethane	0.44810	0.45803	0.45803	0.200	-2.21607	20.0	Averaged	
2-Chloroethylvinyl ether	0.12748	0.17282	0.17282	0.001	-35.56467	20.0	Averaged	<-
1,2-Dichloropropane	0.31761	0.32246	0.32246	0.100	-1.52905	20.0	Averaged	
Dibromomethane	0.21588	0.21732	0.21732	0.100	-0.66742	20.0	Averaged	
4-Methyl-2-Pentanone	0.26725	0.30454	0.30454	0.100	-13.95445	20.0	Averaged	
cis-1,3-Dichloropropene	0.52625	0.55996	0.55996	0.200	-6.40473	20.0	Averaged	
Toluene-d8	1.23554	1.20558	1.20558	0.100	2.42470	20.0	Averaged	
Toluene	1.38201	1.40081	1.40081	0.400	-1.36006	20.0	Averaged	
trans-1,3-Dichloropropene	0.43673	0.49557	0.49557	0.100	-13.47336	20.0	Averaged	
2-Hexanone	0.18183	0.22273	0.22273	0.100	-22.49357	20.0	Averaged	<-
1,1,2-Trichloroethane	0.27726	0.27915	0.27915	0.100	-0.68410	20.0	Averaged	
1,3-Dichloropropane	0.54573	0.55866	0.55866	0.100	-2.36868	20.0	Averaged	
Dibromochloromethane	0.40016	0.41195	0.41195	0.100	-2.94786	20.0	Averaged	
Tetrachloroethene	0.28594	0.29250	0.29250	0.200	-2.29140	20.0	Averaged	
1,2-Dibromoethane	0.34665	0.36538	0.36538	0.100	-5.40290	20.0	Averaged	
1-Chlorohexane	0.24163	0.27250	0.27250	0.100	-12.77311	20.0	Averaged	
Chlorobenzene	0.98026	0.97914	0.97914	0.500	0.11370	20.0	Averaged	
1,1,1,2-Tetrachloroethane	0.36480	0.37780	0.37780	0.100	-3.56287	20.0	Averaged	
Ethylbenzene	0.46175	0.48719	0.48719	0.100	-5.50939	20.0	Averaged	
m,p-Xylenes	0.59525	0.62505	0.62505	0.100	-5.00626	20.0	Averaged	
o-Xylene	0.58751	0.60685	0.60685	0.300	-3.29311	20.0	Averaged	
Styrene	0.98473	1.07770	1.07770	0.300	-9.44092	20.0	Averaged	
Bromoform	0.27722	0.29654	0.29654	0.100	-6.96900	20.0	Averaged	
Isopropylbenzene	1.34224	1.50055	1.50055	0.100	-11.79457	20.0	Averaged	
1,1,2,2-Tetrachloroethane	0.79693	0.78428	0.78428	0.300	1.58695	20.0	Averaged	
4-Bromofluorobenzene	50.0	51.97451	0.48009	0.100	-3.94902	20.0	Linear	

Continuing Calibration Verification (CCV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 12

Workorder HS23010858

RunID VOA6_426140

Volatiles Organics by Method 8260C

Instrument ID voa6.i Injection Date 19-JAN-2023 1119
Lab File ID X011903.D ICAL Date(s) 16-DEC-2022 16-DEC-2022
Analysis Type WATER ICAL Times 1138 1507
Lab Sample ID CCV Quant Type ISTD

Compound	$\overline{RRF}$ / Amount	RF50	CCV RRF50	Min RRF	%D / %Drift	Max %D / %Drift	Curve Type	Q
1,2,3-Trichloropropane	0.55636	0.64580	0.64580	0.100	-16.07728	20.0	Averaged	
n-Propylbenzene	2.76956	3.05026	3.05026	0.100	-10.13536	20.0	Averaged	
Bromobenzene	0.82033	0.80105	0.80105	0.100	2.34961	20.0	Averaged	
1,3,5-Trimethylbenzene	2.04596	2.23867	2.23867	0.100	-9.41927	20.0	Averaged	
2-Chlorotoluene	1.81741	1.88203	1.88203	0.100	-3.55555	20.0	Averaged	
4-Chlorotoluene	2.07183	2.25132	2.25132	0.100	-8.66329	20.0	Averaged	
tert-Butylbenzene	1.67475	1.83809	1.83809	0.100	-9.75290	20.0	Averaged	
1,2,4-Trimethylbenzene	2.15277	2.31451	2.31451	0.100	-7.51336	20.0	Averaged	
sec-Butylbenzene	2.22832	2.54445	2.54445	0.100	-14.18723	20.0	Averaged	
p-Isopropyltoluene	1.99679	2.30299	2.30299	0.100	-15.33486	20.0	Averaged	
1,3-Dichlorobenzene	1.36155	1.42238	1.42238	0.600	-4.46776	20.0	Averaged	
1,4-Dichlorobenzene	1.48576	1.53355	1.53355	0.400	-3.21657	20.0	Averaged	
n-Butylbenzene	50.0	53.80127	2.07609	0.500	-7.60254	20.0	Linear	
1,2-Dichlorobenzene	1.40225	1.44642	1.44642	0.400	-3.14975	20.0	Averaged	
1,2-Dibromo-3-Chloropropane	50.0	53.69597	0.13684	0.040	-7.39195	20.0	Linear	
1,2,4-Trichlorobenzene	0.88494	0.99937	0.99937	0.100	-12.93011	20.0	Averaged	
Hexachlorobutadiene	50.0	52.07413	0.40866	0.100	-4.14825	20.0	Quadratic	
Naphthalene	2.01347	2.26970	2.26970	0.200	-12.72584	20.0	Averaged	
1,2,3-Trichlorobenzene	0.84755	0.90733	0.90733	0.010	-7.05396	20.0	Averaged	
1,2-Dichloroethylene (total	0.47078	0.46425	0.46425	0.200	1.38685	20.0	Averaged	
Xylenes (total)	0.56589	0.60177	0.60177	0.100	-6.33997	20.0	Averaged	
Cyclohexane	50.0	53.78459	0.54313	0.100	-7.56917	20.0	Linear	
Freon TF	0.36703	0.37719	0.37719	0.100	-2.76908	20.0	Averaged	
Methylcyclohexane	0.61204	0.73530	0.73530	0.100	-20.13918	20.0	Averaged	<-
Methyl Acetate	0.22499	0.24389	0.24389	0.100	-8.39991	20.0	Averaged	
Tert-butyl alcohol	0.03462	0.04015	0.04015	0.005	-15.96295	20.0	Averaged	
Isopropyl alcohol	0.01808	0.02153	0.02153	0.005	-19.08418	20.0	Averaged	

Continuing Calibration Verification (CCV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 12

Workorder HS23010858

RunID VOA6_426140

Volatiles Organics by Method 8260C

Instrument ID voa6.i Injection Date 19-JAN-2023 1944
Lab File ID X011927.D ICAL Date(s) 16-DEC-2022 16-DEC-2022
Analysis Type WATER ICAL Times 1138 1507
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
1,4-Dioxane	0.00457	0.00504	0.00504	0.001	-10.33076	50.0	Averaged	
1,3-Butadiene	0.34316	0.33603	0.33603	0.100	2.07804	50.0	Averaged	
Methacrylonitrile	0.35404	0.37650	0.37650	0.100	-6.34346	50.0	Averaged	
Isobutyl Alcohol	0.05624	0.06505	0.06505	0.005	-15.66439	50.0	Averaged	
Acetonitrile	0.04551	0.04966	0.04966	0.005	-9.13145	50.0	Averaged	
Allyl Chloride	0.86670	0.88982	0.88982	0.100	-2.66809	50.0	Averaged	
Propionitrile	0.05102	0.05513	0.05513	0.010	-8.06831	50.0	Averaged	
trans-1,4-Dichloro-2-butene	0.10794	0.11619	0.11619	0.050	-7.64359	50.0	Averaged	
Chloroprene	0.17001	0.16958	0.16958	0.100	0.24919	50.0	Averaged	
Ethyl Acetate	0.39016	0.44545	0.44545	0.100	-14.17119	50.0	Averaged	
Methyl Methacrylate	0.34093	0.38998	0.38998	0.100	-14.38713	50.0	Averaged	
Ethyl Methacrylate	0.23545	0.25303	0.25303	0.100	-7.46646	50.0	Averaged	
Dichlorodifluoromethane	50.0	43.74171	0.30559	0.100	12.51659	50.0	Linear	
Chloromethane	50.0	46.72893	0.42142	0.100	6.54215	50.0	Linear	
Vinyl Chloride	0.43678	0.44184	0.44184	0.100	-1.15940	50.0	Averaged	
Bromomethane	50.0	50.25681	0.33212	0.100	-0.51361	50.0	Linear	
Chloroethane	0.30401	0.29765	0.29765	0.100	2.09086	50.0	Averaged	
Trichlorofluoromethane	0.61122	0.66831	0.66831	0.100	-9.33942	50.0	Averaged	
Acrolein	100	94.57904	0.03229	0.010	5.42096	50.0	Linear	
Acetone	100	112	0.15732	0.100	-12.13583	50.0	Linear	
1,1-Dichloroethene	0.37948	0.40388	0.40388	0.100	-6.43114	50.0	Averaged	
Iodomethane	100	99	0.49557	0.100	0.84871	50.0	Quadratic	
Acrylonitrile	0.12870	0.14645	0.14645	0.050	-13.79040	50.0	Averaged	
Methylene Chloride	0.52052	0.49735	0.49735	0.100	4.45052	50.0	Averaged	
Methyl tert-butyl ether	1.24211	1.26236	1.26236	0.100	-1.63038	50.0	Averaged	
Carbon Disulfide	0.99285	1.02730	1.02730	0.100	-3.46986	50.0	Averaged	
trans-1,2-Dichloroethene	0.42470	0.43896	0.43896	0.100	-3.35695	50.0	Averaged	
Vinyl Acetate	1.09037	0.95791	0.95791	0.010	12.14760	50.0	Averaged	
1,1-Dichloroethane	0.74536	0.76394	0.76394	0.200	-2.49295	50.0	Averaged	
2-Butanone	100	107	0.15965	0.100	-7.06309	50.0	Linear	
2,2-Dichloropropane	0.63286	0.60914	0.60914	0.100	3.74739	50.0	Averaged	
cis-1,2-Dichloroethene	0.51686	0.51481	0.51481	0.100	0.39690	50.0	Averaged	
Chloroform	0.83541	0.85965	0.85965	0.200	-2.90120	50.0	Averaged	
Bromochloromethane	0.28299	0.26948	0.26948	0.100	4.77600	50.0	Averaged	

Continuing Calibration Verification (CCV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 12

Workorder HS23010858

RunID VOA6_426140

Volatiles Organics by Method 8260C

Instrument ID voa6.i Injection Date 19-JAN-2023 1944
Lab File ID X011927.D ICAL Date(s) 16-DEC-2022 16-DEC-2022
Analysis Type WATER ICAL Times 1138 1507
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	51.24264	0.49199	0.100	-2.48528	50.0	Linear	
1,1,1-Trichloroethane	0.66283	0.71673	0.71673	0.100	-8.13315	50.0	Averaged	
1,1-Dichloropropene	0.35497	0.38850	0.38850	0.100	-9.44378	50.0	Averaged	
1,2-Dichloroethane	0.40967	0.43138	0.43138	0.100	-5.30087	50.0	Averaged	
Carbon Tetrachloride	0.37906	0.38471	0.38471	0.100	-1.48928	50.0	Averaged	
1,2-Dichloroethane-d4	50.0	55.06060	0.55830	0.100	-10.12120	50.0	Linear	
Benzene	1.19399	1.21273	1.21273	0.500	-1.56958	50.0	Averaged	
Trichloroethene	0.33865	0.37197	0.37197	0.200	-9.83781	50.0	Averaged	
Bromodichloromethane	0.44810	0.44453	0.44453	0.200	0.79513	50.0	Averaged	
2-Chloroethylvinyl ether	0.12748	0.14751	0.14751	0.001	-15.71169	50.0	Averaged	
1,2-Dichloropropane	0.31761	0.31654	0.31654	0.100	0.33610	50.0	Averaged	
Dibromomethane	0.21588	0.21405	0.21405	0.100	0.84724	50.0	Averaged	
4-Methyl-2-Pentanone	0.26725	0.28743	0.28743	0.100	-7.54955	50.0	Averaged	
cis-1,3-Dichloropropene	0.52625	0.53045	0.53045	0.200	-0.79691	50.0	Averaged	
Toluene-d8	1.23554	1.22673	1.22673	0.100	0.71229	50.0	Averaged	
Toluene	1.38201	1.38625	1.38625	0.400	-0.30630	50.0	Averaged	
trans-1,3-Dichloropropene	0.43673	0.45954	0.45954	0.100	-5.22344	50.0	Averaged	
2-Hexanone	0.18183	0.20628	0.20628	0.100	-13.44659	50.0	Averaged	
1,1,2-Trichloroethane	0.27726	0.26604	0.26604	0.100	4.04423	50.0	Averaged	
1,3-Dichloropropane	0.54573	0.53876	0.53876	0.100	1.27752	50.0	Averaged	
Dibromochloromethane	0.40016	0.38950	0.38950	0.100	2.66437	50.0	Averaged	
Tetrachloroethene	0.28594	0.29627	0.29627	0.200	-3.61062	50.0	Averaged	
1,2-Dibromoethane	0.34665	0.34952	0.34952	0.100	-0.82831	50.0	Averaged	
1-Chlorohexane	0.24163	0.26665	0.26665	0.100	-10.35266	50.0	Averaged	
Chlorobenzene	0.98026	0.95585	0.95585	0.500	2.49021	50.0	Averaged	
1,1,1,2-Tetrachloroethane	0.36480	0.36285	0.36285	0.100	0.53445	50.0	Averaged	
Ethylbenzene	0.46175	0.48696	0.48696	0.100	-5.46004	50.0	Averaged	
m,p-Xylenes	0.59525	0.61701	0.61701	0.100	-3.65516	50.0	Averaged	
o-Xylene	0.58751	0.59728	0.59728	0.300	-1.66360	50.0	Averaged	
Styrene	0.98473	1.05022	1.05022	0.300	-6.65030	50.0	Averaged	
Bromoform	0.27722	0.27697	0.27697	0.100	0.08987	50.0	Averaged	
Isopropylbenzene	1.34224	1.51267	1.51267	0.100	-12.69789	50.0	Averaged	
1,1,2,2-Tetrachloroethane	0.79693	0.71916	0.71916	0.300	9.75899	50.0	Averaged	
4-Bromofluorobenzene	50.0	52.36800	0.48373	0.100	-4.73601	50.0	Linear	

Continuing Calibration Verification (CCV)

Client Aptim Environmental & Infrastucture, Inc.
Project LHAAP 12

Workorder HS23010858

RunID VOA6_426140

Volatiles Organics by Method 8260C

Instrument ID voa6.i Injection Date 19-JAN-2023 1944
Lab File ID X011927.D ICAL Date(s) 16-DEC-2022 16-DEC-2022
Analysis Type WATER ICAL Times 1138 1507
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
1,2,3-Trichloropropane	0.55636	0.56966	0.56966	0.100	-2.39225	50.0	Averaged	
n-Propylbenzene	2.76956	3.02978	3.02978	0.100	-9.39569	50.0	Averaged	
Bromobenzene	0.82033	0.78675	0.78675	0.100	4.09250	50.0	Averaged	
1,3,5-Trimethylbenzene	2.04596	2.24295	2.24295	0.100	-9.62814	50.0	Averaged	
2-Chlorotoluene	1.81741	1.86732	1.86732	0.100	-2.74590	50.0	Averaged	
4-Chlorotoluene	2.07183	2.20393	2.20393	0.100	-6.37619	50.0	Averaged	
tert-Butylbenzene	1.67475	1.87487	1.87487	0.100	-11.94896	50.0	Averaged	
1,2,4-Trimethylbenzene	2.15277	2.30824	2.30824	0.100	-7.22229	50.0	Averaged	
sec-Butylbenzene	2.22832	2.57930	2.57930	0.100	-15.75096	50.0	Averaged	
p-Isopropyltoluene	1.99679	2.32451	2.32451	0.100	-16.41283	50.0	Averaged	
1,3-Dichlorobenzene	1.36155	1.41232	1.41232	0.600	-3.72849	50.0	Averaged	
1,4-Dichlorobenzene	1.48576	1.52128	1.52128	0.400	-2.39027	50.0	Averaged	
n-Butylbenzene	50.0	53.21799	2.05281	0.500	-6.43597	50.0	Linear	
1,2-Dichlorobenzene	1.40225	1.42881	1.42881	0.400	-1.89376	50.0	Averaged	
1,2-Dibromo-3-Chloropropane	50.0	49.08212	0.12507	0.040	1.83576	50.0	Linear	
1,2,4-Trichlorobenzene	0.88494	0.95847	0.95847	0.100	-8.30901	50.0	Averaged	
Hexachlorobutadiene	50.0	50.55802	0.39663	0.100	-1.11603	50.0	Quadratic	
Naphthalene	2.01347	2.17931	2.17931	0.200	-8.23690	50.0	Averaged	
1,2,3-Trichlorobenzene	0.84755	0.89491	0.89491	0.010	-5.58793	50.0	Averaged	
1,2-Dichloroethylene (total	0.47078	0.47688	0.47688	0.200	-1.29633	50.0	Averaged	
Xylenes (total)	0.56589	0.59746	0.59746	0.100	-5.57829	50.0	Averaged	
Cyclohexane	50.0	55.29902	0.55879	0.100	-10.59805	50.0	Linear	
Freon TF	0.36703	0.39105	0.39105	0.100	-6.54427	50.0	Averaged	
Methylcyclohexane	0.61204	0.67951	0.67951	0.100	-11.02310	50.0	Averaged	
Methyl Acetate	0.22499	0.25631	0.25631	0.100	-13.92114	50.0	Averaged	
Tert-butyl alcohol	0.03462	0.03929	0.03929	0.005	-13.47303	50.0	Averaged	
Isopropyl alcohol	0.01808	0.02147	0.02147	0.005	-18.73490	50.0	Averaged	

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Form 8

Internal Standard Area and RT Summary

Workorder

HS23010858

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 12

01/23/2023

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 12

Workorder
HS23010858

RunID
VOA6_426140

		IS1				IS2				IS3				IS4			
Sample ID	File ID	Area		RT		Area		RT		Area		RT		Area		RT	
12-HOUR STD (CCV)	X011903	486868	#	4.18	#	731855	#	4.96	#	711503	#	7.67	#	421595	#	9.66	#
CCB	X011904	573999		4.18		819230		4.97		737686		7.67		366663		9.66	
VLCSW-230119	X011905	492152		4.18		732170		4.96		696729		7.67		394131		9.66	
VBLKW-230119	X011908	554265		4.18		781130		4.97		688166		7.67		344741		9.66	
HS23010858-06	X011911	551727		4.18		780640		4.97		693673		7.67		346219		9.66	
HS23010858-01	X011921	549830		4.18		780707		4.96		693405		7.67		348235		9.66	
HS23010858-02	X011922	545158		4.18		771867		4.96		684414		7.67		342109		9.66	
HS23010858-03	X011923	548512		4.18		772840		4.96		686495		7.67		351515		9.66	
HS23010858-05	X011924	547759		4.17		774844		4.96		688295		7.67		354711		9.66	
CCV-END	X011927	451614		4.17		700568		4.96		685682		7.67		403683		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 12

Workorder
HS23010858

RunID
VOA6_426141

		IS1		IS2		IS3		IS4	
Sample ID	File ID	Area	RT	Area	RT	Area	RT	Area	RT
VBLKM-230119	X011907	557919	4.17	791794	4.96	706674	7.67	363186	9.66
HS23010858-04	X011912	540564	4.18	768756	4.96	686660	7.67	348232	9.66
HS23010858-04MS	X011915	553535	4.17	775009	4.96	703696	7.67	399987	9.66
HS23010858-04MSD	X011916	556419	4.17	782399	4.96	713879	7.67	400090	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

HS23010858

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 12

01/23/2023

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: 52417 **Analyst:** Presenta Cabascango

Date: 12-16-2022 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	12-16-2022 11:17 am	1.00	50 mL	50 mL	X121601.D	Liquid	Y	NA
2	VSTD000.25	ICAL1	12-16-2022 11:38 am	1.00	50 mL	50 mL	X121602.D	Liquid	Y	NA
3	VSTD000.5	ICAL2	12-16-2022 12:20 pm	1.00	50 mL	50 mL	X121603.D	Liquid	Y	NA
4	VSTD001	ICAL3	12-16-2022 12:41 pm	1.00	50 mL	50 mL	X121604.D	Liquid	Y	NA
5	VSTD002	ICAL4	12-16-2022 01:02 pm	1.00	50 mL	50 mL	X121605.D	Liquid	Y	NA
6	VSTD005	ICAL5	12-16-2022 01:23 pm	1.00	50 mL	50 mL	X121606.D	Liquid	Y	NA
7	VSTD020	ICAL6	12-16-2022 01:43 pm	1.00	50 mL	50 mL	X121607.D	Liquid	Y	NA
8	VSTD050	ICAL7	12-16-2022 02:04 pm	1.00	50 mL	50 mL	X121608.D	Liquid	Y	NA
9	VSTD100	ICAL8	12-16-2022 02:25 pm	1.00	50 mL	50 mL	X121609.D	Liquid	Y	NA
10	VSTD150	ICAL9	12-16-2022 02:46 pm	1.00	50 mL	50 mL	X121610.D	Liquid	Y	NA
11	VSTD200	ICAL	12-16-2022 03:07 pm	1.00	50 mL	50 mL	X121611.D	Liquid	Y	NA
12	BLANK	SAMP	12-16-2022 03:28 pm	1.00	50 mL	50 mL	X121612.D	Liquid	Y	NA
13	CCV	CCV	12-16-2022 03:49 pm	1.00	50 mL	50 mL	X121613.D	Liquid	Y	NA
14	BLANK	SAMP	12-16-2022 04:10 pm	1.00	50 mL	50 mL	X121614.D	Liquid	Y	NA
15	CCB	SAMP	12-16-2022 04:31 pm	1.00	50 mL	50 mL	X121615.D	Liquid	Y	NA
16	VLCSW-221216	LCS	12-16-2022 04:52 pm	1.00	50 mL	50 mL	X121616.D	Liquid	Y	NA
17	BLANK	SAMP	12-16-2022 05:13 pm	1.00	50 mL	50 mL	X121617.D	Liquid	Y	NA
18	VBLKW-221216	MBLK	12-16-2022 05:34 pm	1.00	50 mL	50 mL	X121618.D	Liquid	Y	NA
19	HS22120648-05	SAMP	12-16-2022 05:55 pm	1.00	50 mL	50 mL	X121619.D	Liquid	Y	NA
20	HS22120648-09	SAMP	12-16-2022 06:16 pm	1.00	50 mL	50 mL	X121620.D	Liquid	Y	NA
21	HS22120648-01	SAMP	12-16-2022 06:37 pm	1.00	50 mL	50 mL	X121621.D	Liquid	Y	NA
22	HS22120648-02	SAMP	12-16-2022 06:58 pm	1.00	50 mL	50 mL	X121622.D	Liquid	Y	NA
23	HS22120648-03	SAMP	12-16-2022 07:19 pm	1.00	50 mL	50 mL	X121623.D	Liquid	Y	NA
24	HS22120648-04	SAMP	12-16-2022 07:40 pm	1.00	50 mL	50 mL	X121624.D	Liquid	Y	NA
25	HS22120648-06	SAMP	12-16-2022 08:01 pm	1.00	50 mL	50 mL	X121625.D	Liquid	Y	NA
26	HS22120648-07	SAMP	12-16-2022 08:22 pm	1.00	50 mL	50 mL	X121626.D	Liquid	Y	NA
27	HS22120648-08	SAMP	12-16-2022 08:43 pm	1.00	50 mL	50 mL	X121627.D	Liquid	Y	NA
28	HS22120648-06MS	MS	12-16-2022 09:04 pm	1.00	50 mL	50 mL	X121628.D	Liquid	Y	NA
29	HS22120648-06MSD	MSD	12-16-2022 09:25 pm	1.00	50 mL	50 mL	X121629.D	Liquid	Y	NA
30	CCV-END	CCV	12-16-2022 09:46 pm	1.00	50 mL	50 mL	X121630.D	Liquid	Y	NA
31	BFB	TUNE	12-16-2022 10:07 pm	1.00	50 mL	50 mL	Y121601.D	Liquid	Y	NA
32	CCV	CCV	12-16-2022 10:28 pm	1.00	50 mL	50 mL	Y121602a.D	Liquid	Y	NA
33	CCV	CCV	12-16-2022 10:49 pm	1.00	50 mL	50 mL	Y121603.D	Liquid	Y	NA
34	CCB	SAMP	12-16-2022 11:10 pm	1.00	50 mL	50 mL	Y121604.D	Liquid	Y	NA
35	VLCSW-221215	LCS	12-16-2022 11:31 pm	1.00	50 mL	50 mL	Y121605.D	Liquid	Y	NA
36	BLANK	SAMP	12-16-2022 11:52 pm	1.00	50 mL	50 mL	Y121606.D	Liquid	Y	NA
37	VBLKW-221215	MBLK	12-17-2022 12:13 am	1.00	50 mL	50 mL	Y121607.D	Liquid	Y	NA
38	HS22120974-13	SAMP	12-17-2022 12:34 am	1.00	50 mL	50 mL	Y121608.D	Liquid	Y	NA
39	HS22120974-01	SAMP	12-17-2022 12:55 am	1.00	50 mL	50 mL	Y121609.D	Liquid	Y	NA
40	HS22120974-01MS	MS	12-17-2022 01:16 am	1.00	50 mL	50 mL	Y121610.D	Liquid	Y	NA
41	HS22120974-01MSD	MSD	12-17-2022 01:38 am	1.00	50 mL	50 mL	Y121611.D	Liquid	Y	NA

MSVOA06 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
42	BLANK	SAMP	12-17-2022 01:59 am	1.00	50 mL	50 mL	Y121612.D	Liquid	Y	NA
43	HS22120974-02	SAMP	12-17-2022 02:20 am	1.00	50 mL	50 mL	Y121613.D	Liquid	Y	NA
44	HS22120974-03	SAMP	12-17-2022 02:41 am	1.00	50 mL	50 mL	Y121614.D	Liquid	Y	NA
45	HS22120974-04	SAMP	12-17-2022 03:02 am	1.00	50 mL	50 mL	Y121615.D	Liquid	Y	NA
46	HS22120974-05	SAMP	12-17-2022 03:23 am	1.00	50 mL	50 mL	Y121616.D	Liquid	Y	NA
47	HS22120974-06	SAMP	12-17-2022 03:44 am	1.00	50 mL	50 mL	Y121617.D	Liquid	Y	NA
48	HS22120974-07	SAMP	12-17-2022 04:05 am	1.00	50 mL	50 mL	Y121618.D	Liquid	Y	NA
49	HS22120974-08	SAMP	12-17-2022 04:26 am	1.00	50 mL	50 mL	Y121619.D	Liquid	Y	NA
50	HS22120974-09	SAMP	12-17-2022 04:47 am	1.00	50 mL	50 mL	Y121620.D	Liquid	Y	NA
51	HS22120974-10	SAMP	12-17-2022 05:08 am	1.00	50 mL	50 mL	Y121621.D	Liquid	Y	NA
52	HS22120974-11	SAMP	12-17-2022 05:29 am	1.00	50 mL	50 mL	Y121622.D	Liquid	Y	NA
53	HS22120974-12	SAMP	12-17-2022 05:50 am	1.00	50 mL	50 mL	Y121623.D	Liquid	Y	NA
54	HS22120974-14	SAMP	12-17-2022 06:11 am	1.00	50 mL	50 mL	Y121624.D	Liquid	Y	NA
55	HS22120974-15	SAMP	12-17-2022 06:32 am	1.00	50 mL	50 mL	Y121625.D	Liquid	Y	NA
56	HS22120574-15	SAMP	12-17-2022 06:53 am	5.00	10 mL	50 mL	Y121626.D	Liquid	Y	NA
57	HS22120574-17	SAMP	12-17-2022 07:14 am	5.00	10 mL	50 mL	Y121627.D	Liquid	Y	NA
58	HS22120770-07	SAMP	12-17-2022 07:36 am	10.00	5 mL	50 mL	Y121628.D	Liquid	Y	NA
59	HS22120770-07	SAMP	12-17-2022 07:57 am	100.0(	500 µL	50 mL	Y121629.D	Liquid	Y	NA
60	HS22120770-10	SAMP	12-17-2022 08:18 am	5.00	10 mL	50 mL	Y121630.D	Liquid	Y	NA
61	BLANK	SAMP	12-17-2022 08:39 am	1.00	50 mL	50 mL	Y121631.D	Liquid	Y	NA

Form 13 - Analysis Run Log

Client Aptim Environmental & Infrastucture, Inc.

Project LHAAP 12

Workorder
HS23010858

RUNID
VOA6_426140

Volatiles by by EPA 8260

Run ID VOA6_426140 **Start Date** 01/19/23 **EndDate** 01/19/23 **Matrix** Aqueous

Client Sample ID	Type	Lab Sample ID	File ID	Analysis Date	DF
CCV	CCV	CCV	X011903.D	01/19/23 11:19	1
CCB	CCB	CCB	X011904.D	01/19/23 11:40	1
VLCSW-230119	LCS	VLCSW-230119	X011905.D	01/19/23 12:01	1
VBLKW-230119	MBLK	VBLKW-230119	X011908.D	01/19/23 13:04	1
Trip Blank-230117	SAMP	HS23010858-06	X011911.D	01/19/23 14:07	1
12WW24-230117	SAMP	HS23010858-04	X011912.D	01/19/23 14:28	1
12WW24-230117	MS	HS23010858-04MS	X011915.D	01/19/23 15:32	1
12WW24-230117	MSD	HS23010858-04MSD	X011916.D	01/19/23 15:53	1
12WW10R-230117	SAMP	HS23010858-01	X011921.D	01/19/23 17:38	1
12WW21-230117	SAMP	HS23010858-02	X011922.D	01/19/23 17:59	1
12WW21-230117-FD	SAMP	HS23010858-03	X011923.D	01/19/23 18:20	1
12WW20-230117	SAMP	HS23010858-05	X011924.D	01/19/23 18:41	1

right solutions.
right partner.

Raw Data VOA6 424237

Volatiles by by EPA 8260

Workorder

HS23010858

Client

Aptim Environmental & Infrastucture, Inc.

Project

LHAAP 12

01/23/2023

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\x221216.b\X121601.D Page 1
Report Date: 16-Dec-2022 12:08

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\x221216.b\X121601.D
Lab Smp Id: BFB Client Smp ID: BFB
Inj Date : 16-DEC-2022 11:17
Operator : PC Inst ID: voa6.i
Smp Info : BFB;BFB;3;;BFB
Misc Info : V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\x221216.b\bfb.m
Meth Date : 01-Dec-2022 12:59 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
1 bfb							CAS #: 460-00-4	
8.691	8.889	(0.000)	95	72328			0.00- 100.00	100.00
8.691	8.889	(0.000)	50	13272			15.00- 40.00	18.35
8.691	8.889	(0.000)	75	33368			30.00- 60.00	46.13
8.691	8.889	(0.000)	96	5178			5.00- 9.00	7.16
8.691	8.889	(0.000)	173	577			0.00- 2.00	0.90
8.691	8.889	(0.000)	174	64360			50.00- 0.00	88.98
8.691	8.889	(0.000)	175	5033			5.00- 9.00	7.82
8.691	8.889	(0.000)	176	63184			95.00- 101.00	98.17
8.691	8.889	(0.000)	177	4164			5.00- 9.00	6.59

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	18.35
75	30.00 - 60.00% of mass 95	46.13
96	5.00 - 9.00% of mass 95	7.16
173	Less than 2.00% of mass 174	0.80 (0.90)
174	Greater than 50.00% of mass 95	88.98
175	5.00 - 9.00% of mass 174	6.96 (7.82)
176	95.00 - 101.00% of mass 174	87.36 (98.17)
177	5.00 - 9.00% of mass 176	5.76 (6.59)

Data File: X121601.D
Spectrum: Scan 2160 (8.68)
Location of Maximum: 95.00
Number of points: 84

m/z	Y	m/z	Y	m/z	Y	m/z	Y
35.90	686	63.00	2521	93.00	2705	136.90	215
37.00	3051	64.10	316	94.00	9587	140.90	735
38.00	2957	66.90	155	95.00	72328	141.70	91
39.00	1321	67.90	6274	96.00	5178	142.80	683
39.90	1146	69.00	6990	96.90	213	145.60	119
42.00	114	69.90	604	103.00	58	148.00	107
42.90	301	71.80	385	104.00	313	149.80	105
44.00	1509	72.90	2986	104.70	125	153.80	54
45.00	716	74.00	11163	105.10	132	154.80	169
46.80	723	75.00	33368	105.90	451	156.80	155
48.00	503	76.00	3228	110.60	54	160.80	71
49.00	3278	76.90	395	113.00	74	171.60	83
50.00	13272	77.80	187	114.80	159	172.80	577
51.00	3648	78.90	2224	115.80	342	173.90	64360
52.10	365	79.80	718	116.90	386	174.90	5033
54.00	52	80.90	2158	117.90	425	175.90	63184
54.90	278	81.80	420	118.80	260	176.90	4164
56.00	1513	83.00	51	127.90	191	178.00	133
57.00	1763	86.90	2878	128.90	172		
59.90	665	87.80	2342	129.80	237		
61.00	3173	91.00	516	130.80	156		
62.00	3572	92.00	2006	134.70	222		

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121601.D Page 1

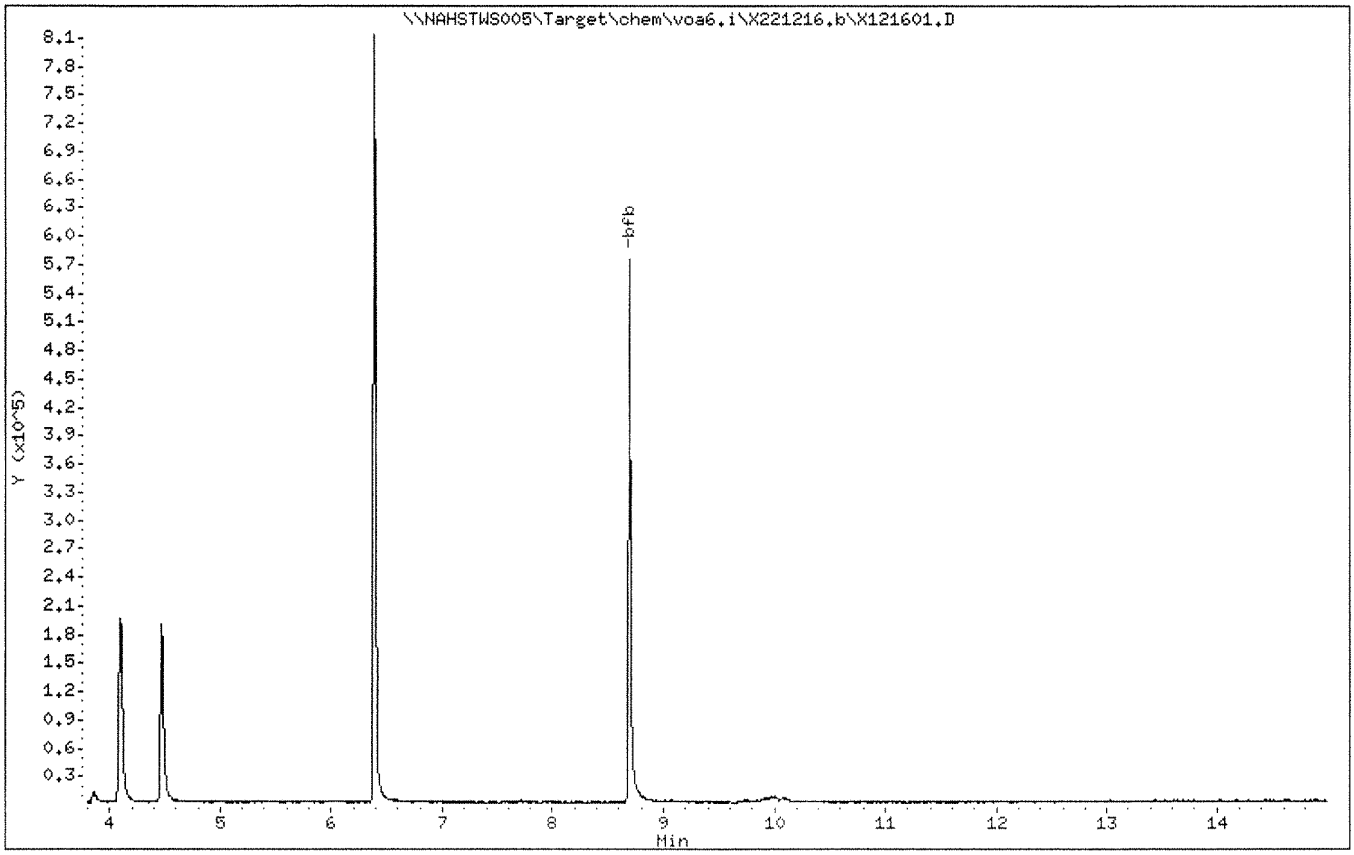
Date : 16-DEC-2022 11:17

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\X221216.b\X121601.D Page 2

Date : 16-DEC-2022 11:17

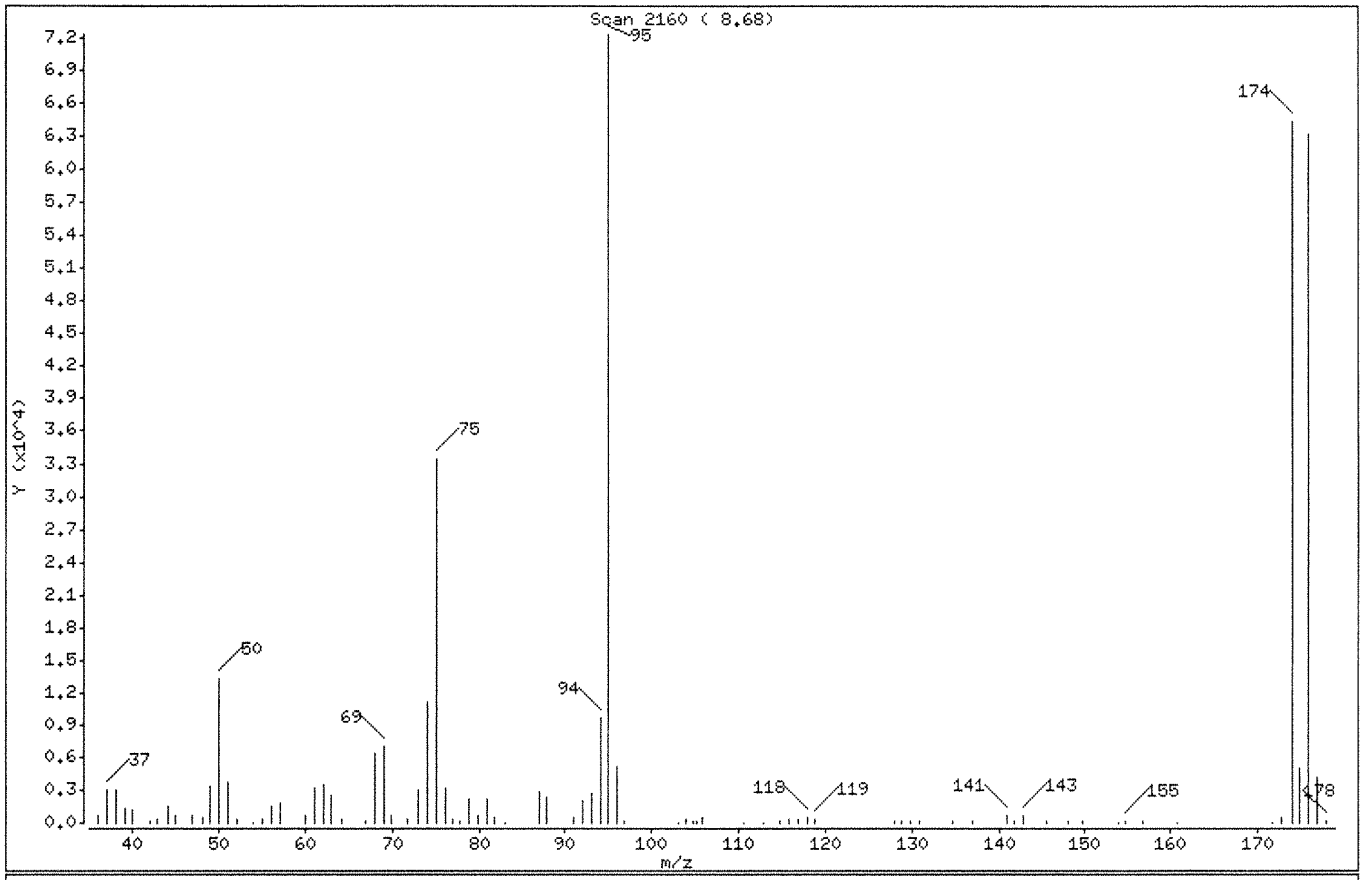
Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	18.35
75	30.00 - 60.00% of mass 95	46.13
96	5.00 - 9.00% of mass 95	7.16
173	Less than 2.00% of mass 174	0.80 (0.90)
174	Greater than 50.00% of mass 95	88.98
175	5.00 - 9.00% of mass 174	6.96 (7.82)
176	95.00 - 101.00% of mass 174	87.36 (98.17)
177	5.00 - 9.00% of mass 176	5.76 (6.59)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121601.D

Date : 16-DEC-2022 11:17

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: X121601.D
Spectrum: Scan 2160 (8.68)
Location of Maximum: 95.00
Number of points: 84

m/z	Y	m/z	Y	m/z	Y	m/z	Y
35.90	686	63.00	2521	93.00	2705	136.90	215
37.00	3051	64.10	316	94.00	9587	140.90	735
38.00	2957	66.90	155	95.00	72328	141.70	91
39.00	1321	67.90	6274	96.00	5178	142.80	683
39.90	1146	69.00	6990	96.90	213	145.60	119
42.00	114	69.90	604	103.00	58	148.00	107
42.90	301	71.80	385	104.00	313	149.80	105
44.00	1509	72.90	2986	104.70	125	153.80	54
45.00	716	74.00	11163	105.10	132	154.80	169
46.80	723	75.00	33368	105.90	451	156.80	155
48.00	503	76.00	3228	110.60	54	160.80	71
49.00	3278	76.90	395	113.00	74	171.60	83
50.00	13272	77.80	187	114.80	159	172.80	577
51.00	3648	78.90	2224	115.80	342	173.90	64360
52.10	365	79.80	718	116.90	386	174.90	5033
54.00	52	80.90	2158	117.90	425	175.90	63184
54.90	278	81.80	420	118.80	260	176.90	4164
56.00	1513	83.00	51	127.90	191	178.00	133
57.00	1763	86.90	2878	128.90	172		
59.90	665	87.80	2342	129.80	237		
61.00	3173	91.00	516	130.80	156		
62.00	3572	92.00	2006	134.70	222		

Data File : \\NAHSTWS005\Target\chem\voa6.i\x221216.b\X121601.D
Inj Date : 16-DEC-2022 11:17
InstruID : voa6.i
LabSampID : BFB

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121602.D Page 1
Report Date: 27-Dec-2022 16:07

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121602.D
Lab Smp Id: VSTD000.25 Client Smp ID: VSTD000.25
Inj Date : 16-DEC-2022 11:38
Operator : PC Inst ID: voa6.i
Smp Info : VSTD000.25;VSTD000.25;1;1;
Misc Info : V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\8260W.m
Meth Date : 27-Dec-2022 16:07 voa6.i Quant Type: ISTD
Cal Date : 16-DEC-2022 14:04 Cal File: X121608.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: 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	4.178	4.178	(1.000)	461807	50.0000	
135	1,4-Dioxane	88	5.625	5.625	(1.346)	214	5.00000	5.06(M)
140	1,3-Butadiene	54	1.164	1.164	(0.279)	1172	0.25000	0.36
25	Methacrylonitrile	41	3.855	3.855	(0.923)	5876	0.25000	1.79
12	Isobutyl Alcohol	43	4.687	4.687	(1.122)	2537	5.00000	4.88(TM)
13	Acetonitrile	39	2.202	2.202	(0.527)	730	2.50000	1.73
14	Allyl Chloride	41	2.206	2.206	(0.528)	1591	0.25000	0.19
4	Propionitrile	54	3.702	3.702	(0.886)	1165	2.50000	2.47(M)
72	trans-1,4-Dichloro-2-butene	53	8.931	8.931	(1.164)	280	0.25000	0.19(M)
145	alpha-Methylstyrene	118	9.268	9.268	(0.959)	2322	0.25000	0.30
200	Dimethyl Disulfide	94	6.213	6.213	(0.810)	1870	0.25000	0.21
139	Diethyl ether	59	1.760	1.760	(0.421)	687	0.25000	0.22
49	Ethyl Methacrylate	69	6.738	6.738	(1.357)	625	0.25000	0.19
142	Tetrahydrofuran	42	3.836	3.836	(0.918)	358	0.50000	(M)
166	1,2,3-Trimethylbenzene	105	9.737	9.737	(1.008)	4360	0.25000	0.25
2	Dichlorodifluoromethane	85	0.969	0.969	(0.232)	801	0.25000	0.63(M)
3	Chloromethane	50	1.077	1.077	(0.258)	1420	0.25000	2.53
5	Vinyl Chloride	62	1.141	1.141	(0.273)	1134	0.25000	0.28(M)
6	Bromomethane	94	1.340	1.340	(0.321)	1009	0.25000	2.08(M)
8	Trichlorofluoromethane	101	1.561	1.561	(0.374)	1468	0.25000	0.26

10 Acetone	43	1.977	1.977 (0.473)	2727	0.50000	2.07
11 1,1-Dichloroethene	96	1.910	1.910 (0.457)	1010	0.25000	0.28(M)

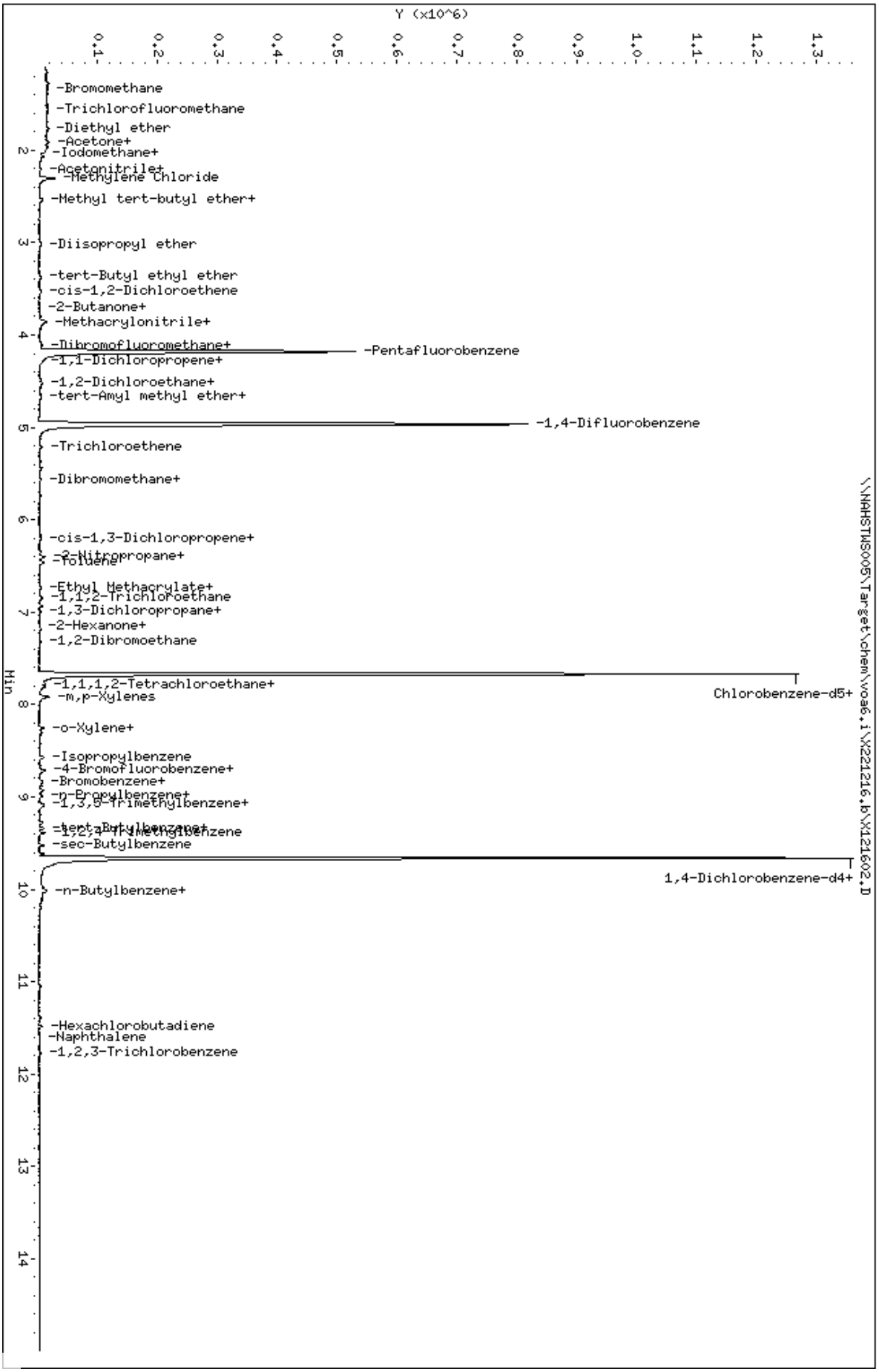
			QUANT SIG					AMOUNTS	
								CAL-AMT	ON-COL
	Compounds		MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
	15	Iodomethane	142	2.026	2.026	(0.485)	1106	0.50000	3.56(T)
	17	Methylene Chloride	84	2.292	2.292	(0.549)	1436	0.25000	0.29(M)
	18	Methyl tert-butyl ether	73	2.536	2.536	(0.607)	2787	0.25000	0.24
	19	Carbon Disulfide	76	2.071	2.071	(0.496)	5999	0.50000	0.65
	20	trans-1,2-Dichloroethene	96	2.539	2.539	(0.608)	1302	0.25000	0.33
	24	2-Butanone	43	3.698	3.698	(0.885)	1014	0.50000	3.74
	27	cis-1,2-Dichloroethene	96	3.533	3.533	(0.846)	1402	0.25000	0.29
	28	Chloroform	83	3.908	3.908	(0.935)	2553	0.25000	0.33
	29	Bromochloromethane	128	3.799	3.799	(0.909)	802	0.25000	0.30(M)
$	30	Dibromofluoromethane	113	4.103	4.103	(0.982)	1706	0.25000	0.21
	31	1,1,1-Trichloroethane	97	4.076	4.076	(0.976)	1648	0.25000	0.26
	32	1,1-Dichloropropene	75	4.286	4.286	(0.863)	2114	0.25000	0.43
	33	1,2-Dichloroethane	62	4.571	4.571	(0.921)	2167	0.25000	0.38
	34	Carbon Tetrachloride	117	4.256	4.256	(0.857)	1685	0.25000	0.32(M)
$	35	1,2-Dichloroethane-d4	65	4.481	4.481	(1.073)	2260	0.25000	0.75(T)
*	36	1,4-Difluorobenzene	114	4.965	4.965	(1.000)	690224	50.0000	
	37	Benzene	78	4.522	4.522	(0.911)	5768	0.25000	0.34
	38	Trichloroethene	130	5.212	5.212	(1.050)	1544	0.25000	0.33
	44	Dibromomethane	93	5.565	5.565	(1.121)	1046	0.25000	0.35
	45	4-Methyl-2-Pentanone	43	6.352	6.352	(0.828)	2297	0.50000	0.65
	46	cis-1,3-Dichloropropene	75	6.168	6.168	(1.242)	1839	0.25000	0.25
*	47	Chlorobenzene-d5	117	7.671	7.671	(1.000)	653787	50.0000	
$	48	Toluene-d8	98	6.401	6.401	(0.834)	6828	0.25000	0.42(T)
	50	Toluene	91	6.457	6.457	(0.842)	6778	0.25000	0.37
	52	2-Hexanone	43	7.150	7.150	(0.932)	974	0.50000	0.40(T)
	53	1,1,2-Trichloroethane	83	6.847	6.847	(0.893)	1098	0.25000	0.30
	54	1,3-Dichloropropane	76	6.993	6.993	(0.912)	2278	0.25000	0.31
	55	Dibromochloromethane	129	7.184	7.184	(0.936)	1732	0.25000	0.33
	56	Tetrachloroethene	164	6.933	6.933	(0.904)	1051	0.25000	0.28
	57	1,2-Dibromoethane	107	7.278	7.278	(0.949)	1100	0.25000	0.24
	58	1-Chlorohexane	55	7.668	7.668	(1.544)	6570	0.25000	1.96
	59	Chlorobenzene	112	7.694	7.694	(1.003)	3981	0.25000	0.31
	60	1,1,1,2-Tetrachloroethane	131	7.780	7.780	(1.014)	1245	0.25000	0.26
	61	Ethylbenzene	106	7.810	7.810	(1.018)	1854	0.25000	0.30
	62	m,p-Xylenes	106	7.915	7.915	(1.032)	5083	0.50000	0.65
	63	o-Xylene	106	8.252	8.252	(1.076)	2471	0.25000	0.32
	64	Styrene	104	8.297	8.297	(1.082)	3214	0.25000	0.24
	67	Isopropylbenzene	105	8.575	8.575	(1.118)	5495	0.25000	0.31
$	69	4-Bromofluorobenzene	95	8.706	8.706	(1.135)	4271	0.25000	0.77
*	70	1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	348702	50.0000	
	71	1,2,3-Trichloropropane	75	8.875	8.875	(0.919)	766	0.25000	0.19(M)
	73	n-Propylbenzene	91	8.931	8.931	(0.924)	5570	0.25000	0.28
	74	Bromobenzene	156	8.826	8.826	(0.913)	1517	0.25000	0.26
	75	1,3,5-Trimethylbenzene	105	9.081	9.081	(0.940)	4893	0.25000	0.34
	76	2-Chlorotoluene	91	8.991	8.991	(0.931)	4890	0.25000	0.38
	77	4-Chlorotoluene	91	9.107	9.107	(0.943)	3881	0.25000	0.26
	78	tert-Butylbenzene	119	9.343	9.343	(0.967)	4059	0.25000	0.34
	79	1,2,4-Trimethylbenzene	105	9.392	9.392	(0.972)	5202	0.25000	0.34
	81	sec-Butylbenzene	105	9.523	9.523	(0.986)	4818	0.25000	0.31
	82	p-Isopropyltoluene	119	9.662	9.662	(1.000)	4406	0.25000	0.31
	83	1,3-Dichlorobenzene	146	9.621	9.621	(0.996)	3005	0.25000	0.31
	84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	3674	0.25000	0.35

87	n-Butylbenzene	91	10.033	10.033 (1.038)	1595	0.25000	1.89
88	1,2-Dichlorobenzene	146	10.010	10.010 (1.036)	2937	0.25000	0.30

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	91 Hexachlorobutadiene	225	11.484	11.484	(1.189)	726	0.25000	0.21(M)
	92 Naphthalene	128	11.607	11.607	(1.201)	1969	0.25000	0.14
	93 1,2,3-Trichlorobenzene	180	11.769	11.769	(1.218)	1816	0.25000	0.30(M)
M	94 1,2-Dichloroethylene (total)	96				2704	0.50000	
M	95 Xylenes (total)	106				7554	0.75000	
	141 Cyclohexane	56	4.125	4.125	(0.987)	1235	0.25000	1.51(M)
	138 Freon TF	101	1.917	1.917	(0.459)	765	0.25000	0.22(M)

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121602.D
Date : 16-DEC-2022 11:38
Client ID: VSTD000.25
Sample Info: VSTD000.25;VSTD000.25;1;1;
Purge Volume: 5.0
Column phase: DB624

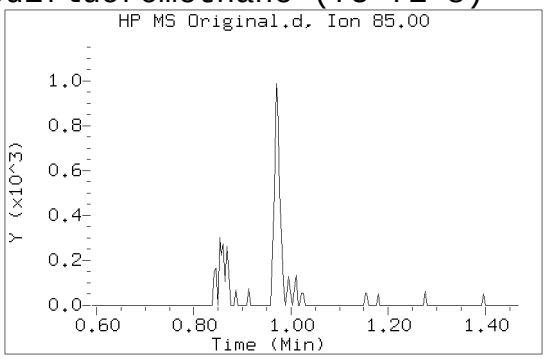
Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121602.D
Inj Date : 16-DEC-2022 11:38
InstruID : voa6.i
LabSampID : VSTD000.25

Dichlorodifluoromethane (75-71-8)

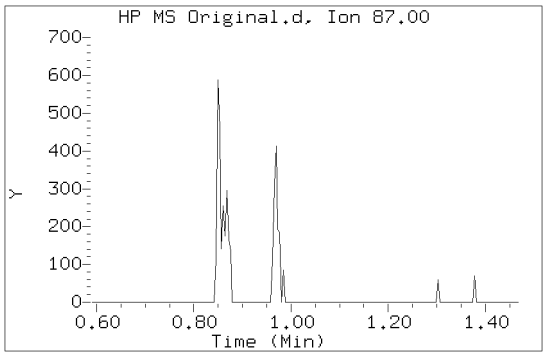
BEFORE

MASS
50
AREA
1420
HEIGHT
1809
16-Dec-2022
11:54
ALSHS
Server



BEFORE

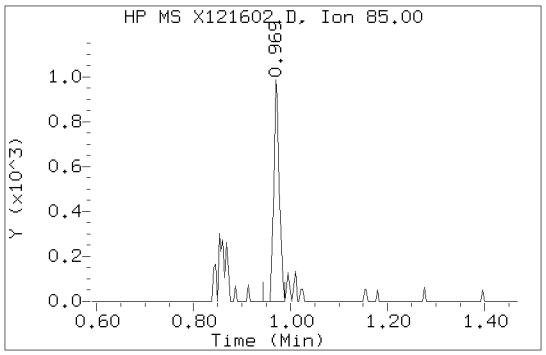
MASS
52
AREA
731
HEIGHT
740
16-Dec-2022
11:54
ALSHS
Server



Reason Code:

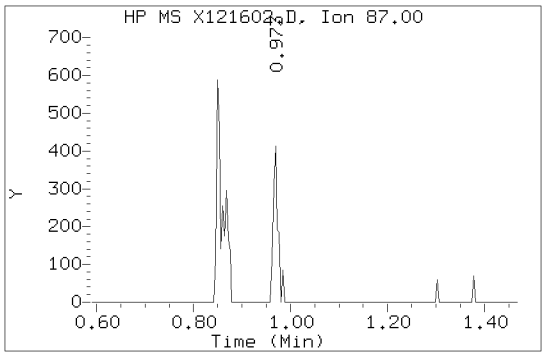
AFTER

MASS
85
AREA
801
HEIGHT
987
27-Dec-2022
16:07
ALSHS
Ser



AFTER

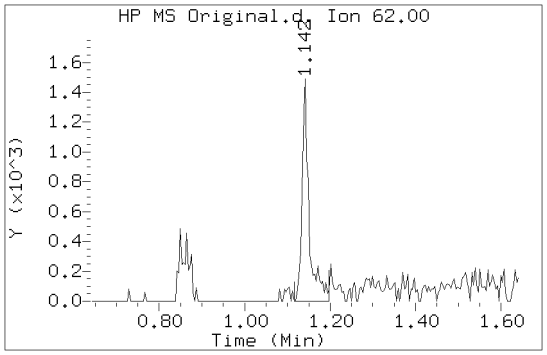
MASS
87
AREA
0
HEIGHT
0
27-Dec-2022
16:07
ALSHS
Ser



Vinyl Chloride (75-01-4)

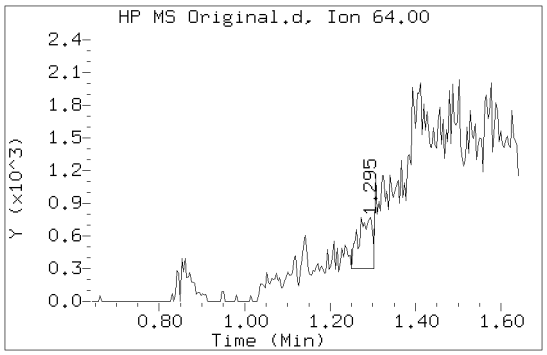
BEFORE

MASS
94
AREA
1572
HEIGHT
983
16-Dec-2022
11:54
ALSHS
Server



BEFORE

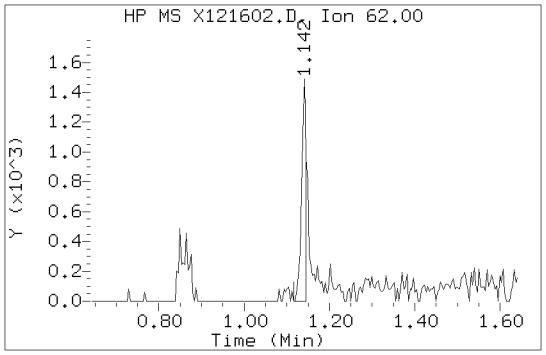
MASS
96
AREA
1330
HEIGHT
961
16-Dec-2022
11:54
ALSHS
Server



Reason Code:

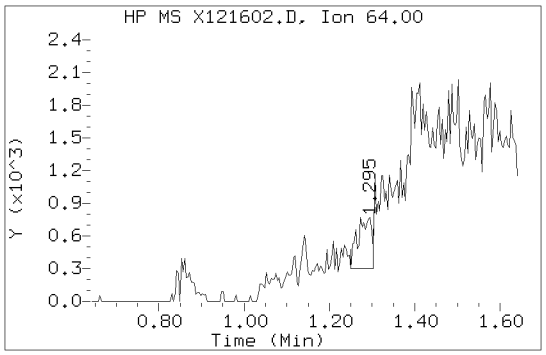
AFTER

MASS
62
AREA
1134
HEIGHT
1490
27-Dec-2022
16:07
ALSHS
Ser



AFTER

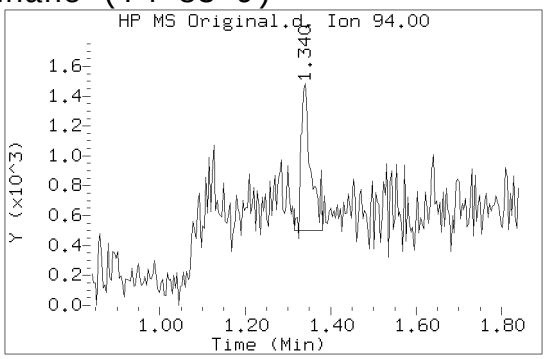
MASS
64
AREA
1053
HEIGHT
470
27-Dec-2022
16:07
ALSHS
Ser



Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121602.D
Inj Date : 16-DEC-2022 11:38
InstruID : voa6.i
LabSampID : VSTD000.25

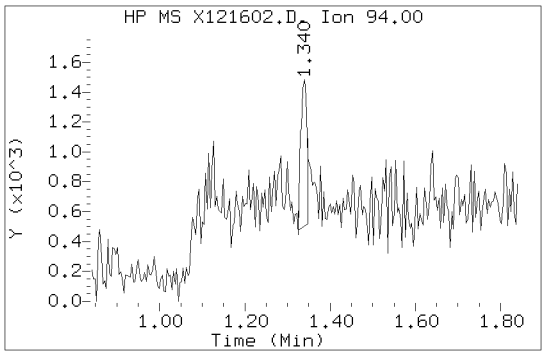
Bromomethane (74-83-9)

BEFORE
MASS
64
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server

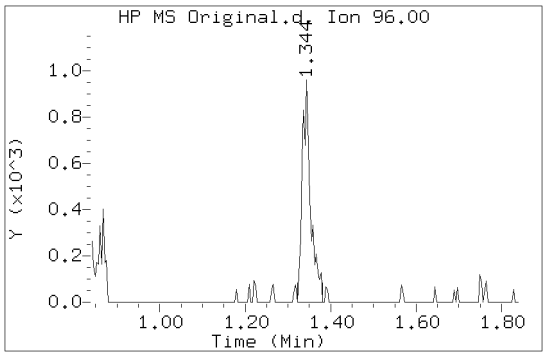


Reason Code:

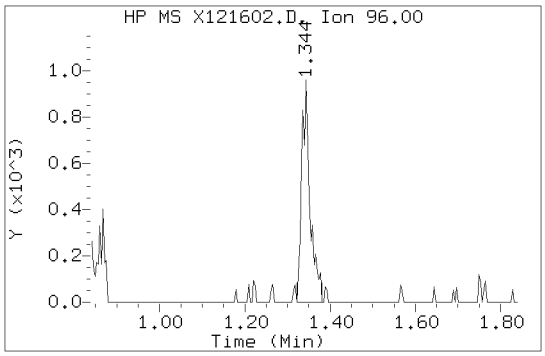
AFTER
MASS
94
AREA
1009
HEIGHT
977
27-Dec-2022
16:07
ALSHS
Ser



BEFORE
MASS
66
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



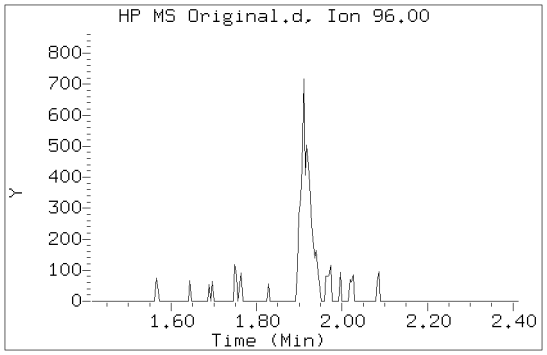
AFTER
MASS
96
AREA
1330
HEIGHT
961
27-Dec-2022
16:07
ALSHS
Ser



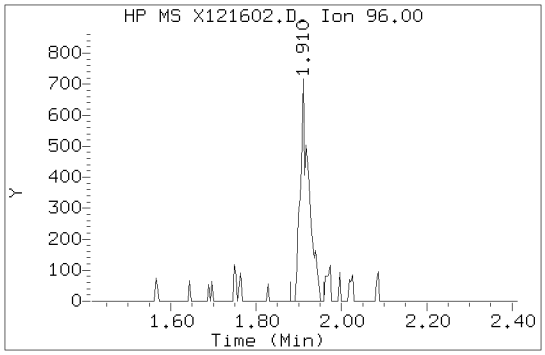
1,1-Dichloroethene (75-35-4)

Reason Code:

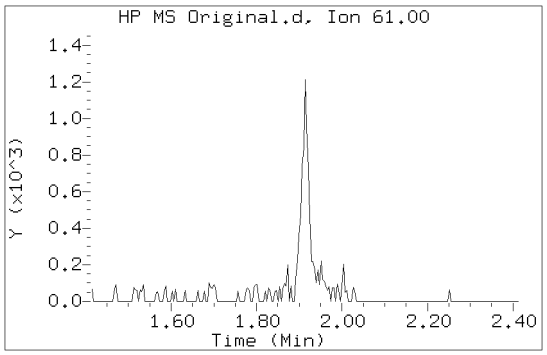
BEFORE
MASS
142
AREA
1106
HEIGHT
699
16-Dec-2022
11:54
ALSHS
Server



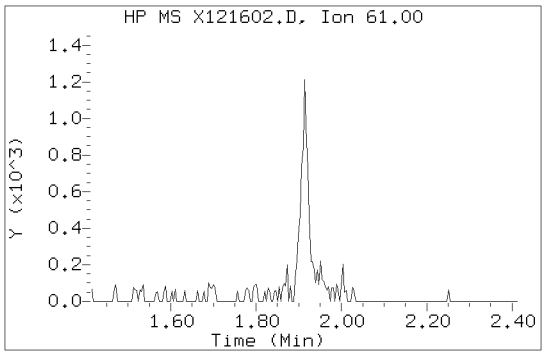
AFTER
MASS
96
AREA
1010
HEIGHT
717
27-Dec-2022
16:07
ALSHS
Ser



BEFORE
MASS
127
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



AFTER
MASS
61
AREA
0
HEIGHT
0
27-Dec-2022
16:07
ALSHS
Ser



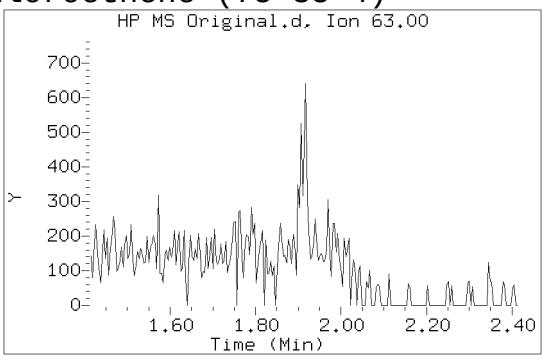
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121602.D
Inj Date : 16-DEC-2022 11:38
InstruID : voa6.i
LabSampID : VSTD000.25

1,1-Dichloroethene (75-35-4)

Reason Code:

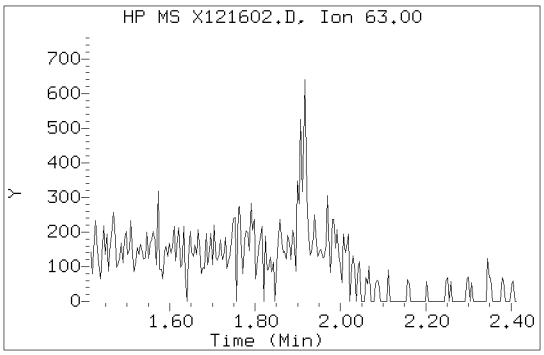
BEFORE

MASS
141
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
63
AREA
0
HEIGHT
0
27-Dec-2022
16:07
ALSHS
Ser

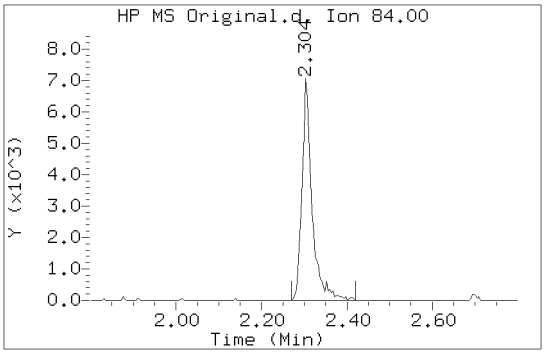


Methylene Chloride (75-09-2)

Reason Code:

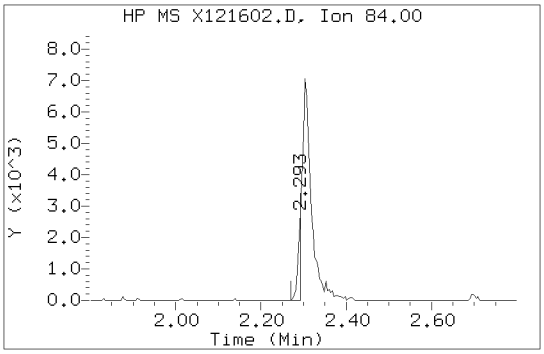
BEFORE

MASS
84
AREA
11777
HEIGHT
7057
16-Dec-2022
11:54
ALSHS
Server



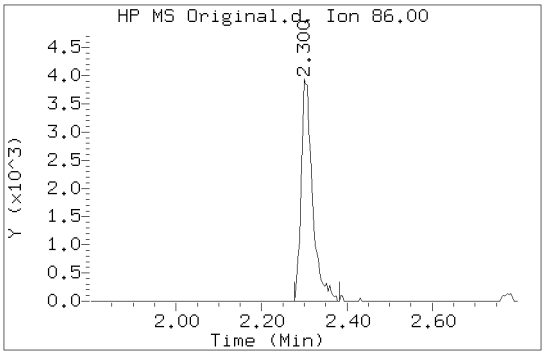
AFTER

MASS
84
AREA
1436
HEIGHT
2786
27-Dec-2022
16:07
ALSHS
Ser



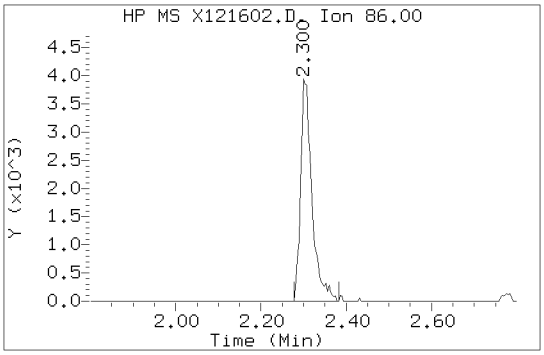
BEFORE

MASS
86
AREA
7453
HEIGHT
3944
16-Dec-2022
11:54
ALSHS
Server



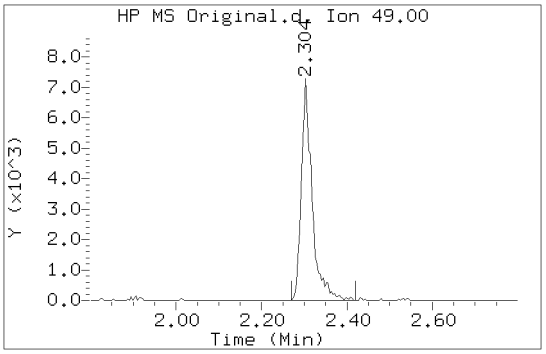
AFTER

MASS
86
AREA
7453
HEIGHT
3944
27-Dec-2022
16:07
ALSHS
Ser



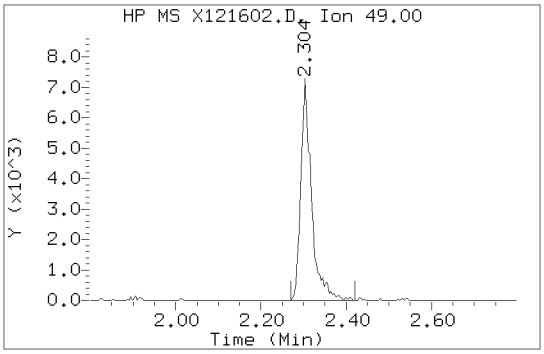
BEFORE

MASS
49
AREA
12974
HEIGHT
7289
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
49
AREA
12974
HEIGHT
7289
27-Dec-2022
16:07
ALSHS
Ser



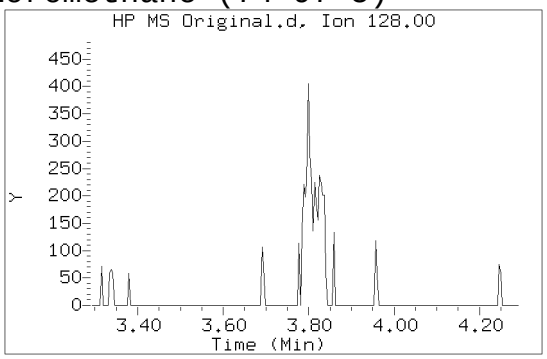
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121602.D
Inj Date : 16-DEC-2022 11:38
InstruID : voa6.i
LabSampID : VSTD000.25

Bromochloromethane (74-97-5)

Reason Code:

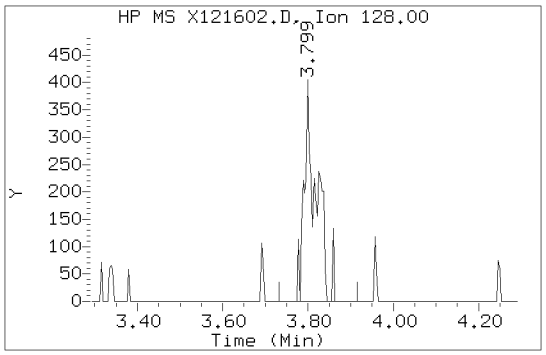
BEFORE

MASS
96
AREA
1402
HEIGHT
854
16-Dec-2022
11:54
ALSHS
Server



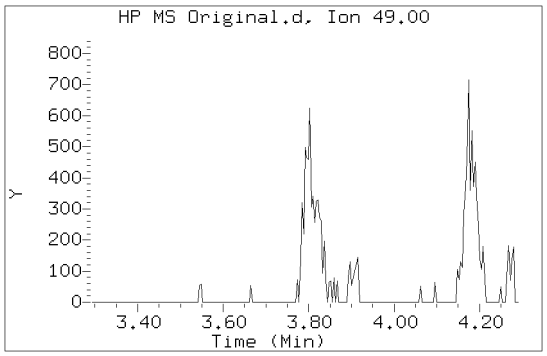
AFTER

MASS
128
AREA
802
HEIGHT
405
27-Dec-2022
16:07
ALSHS
Ser



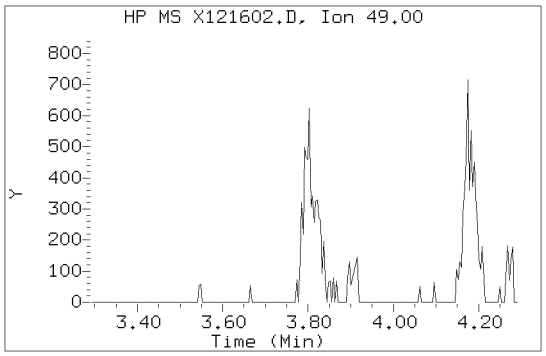
BEFORE

MASS
61
AREA
1975
HEIGHT
828
16-Dec-2022
11:54
ALSHS
Server



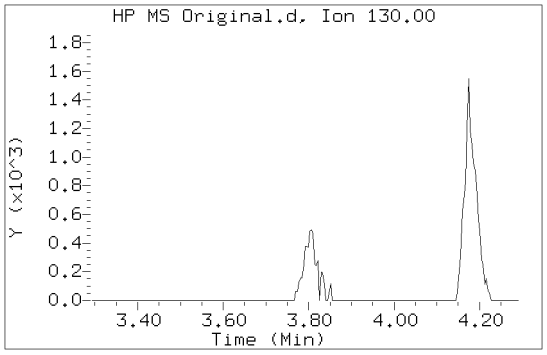
AFTER

MASS
49
AREA
0
HEIGHT
0
27-Dec-2022
16:07
ALSHS
Ser



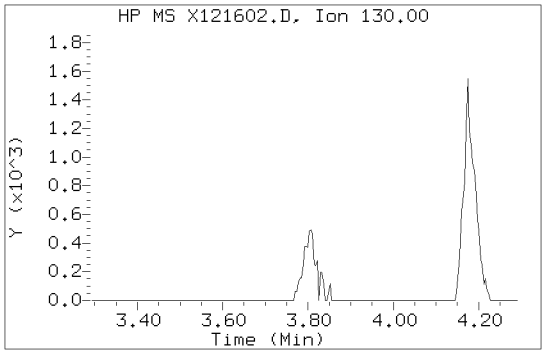
BEFORE

MASS
98
AREA
1027
HEIGHT
608
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
130
AREA
0
HEIGHT
0
27-Dec-2022
16:07
ALSHS
Ser

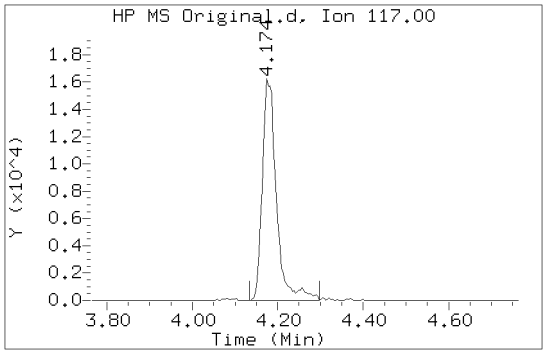


Carbon Tetrachloride (56-23-5)

Reason Code:

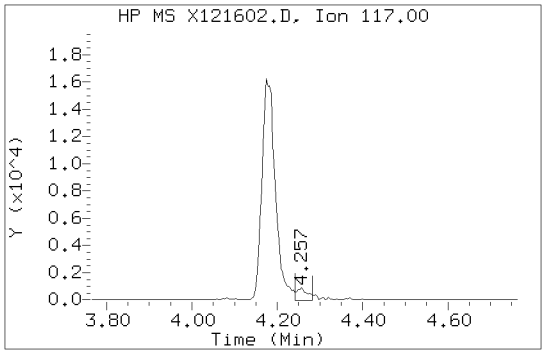
BEFORE

MASS
97
AREA
1700
HEIGHT
1016
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
117
AREA
1685
HEIGHT
944
27-Dec-2022
16:07
ALSHS
Ser



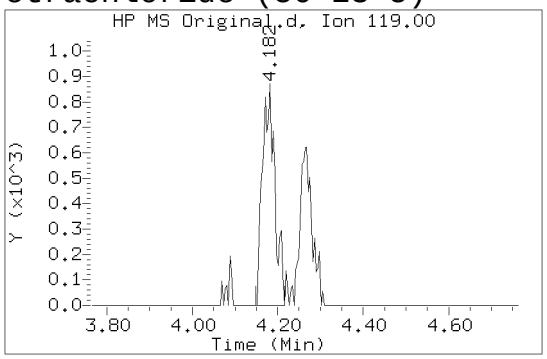
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121602.D
Inj Date : 16-DEC-2022 11:38
InstruID : voa6.i
LabSampID : VSTD000.25

Carbon Tetrachloride (56-23-5)

Reason Code:

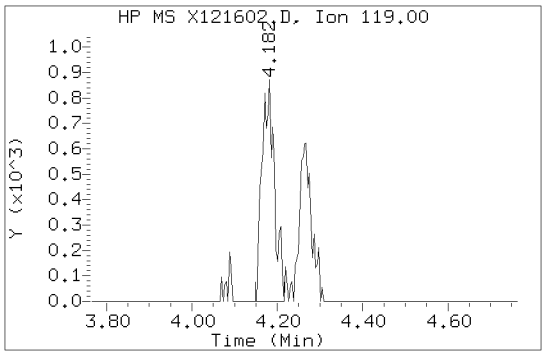
BEFORE

MASS
99
AREA
207130
HEIGHT
91368
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
119
AREA
1748
HEIGHT
872
27-Dec-2022
16:07
ALSHS
Ser

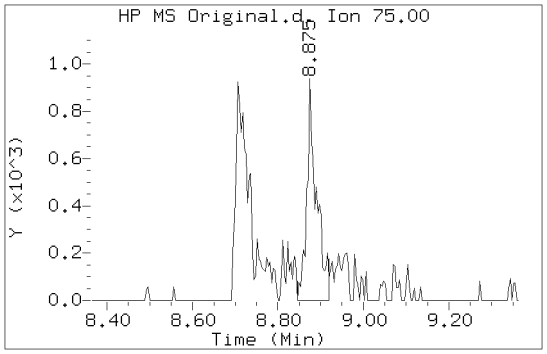


1,2,3-Trichloropropane (96-18-4)

Reason Code:

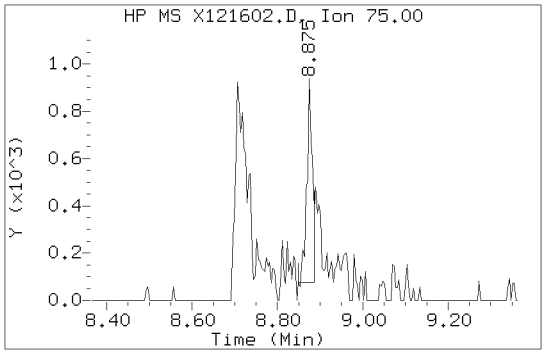
BEFORE

MASS
152
AREA
348702
HEIGHT
242350
16-Dec-2022
11:54
ALSHS
Server



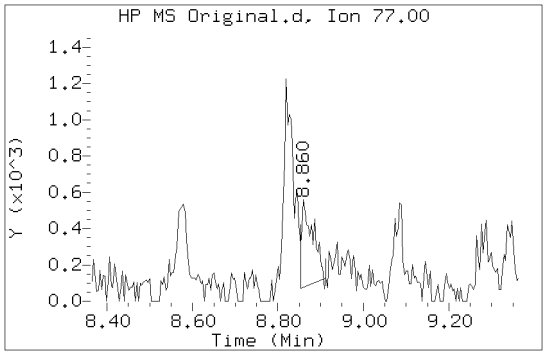
AFTER

MASS
75
AREA
766
HEIGHT
862
27-Dec-2022
16:07
ALSHS
Ser



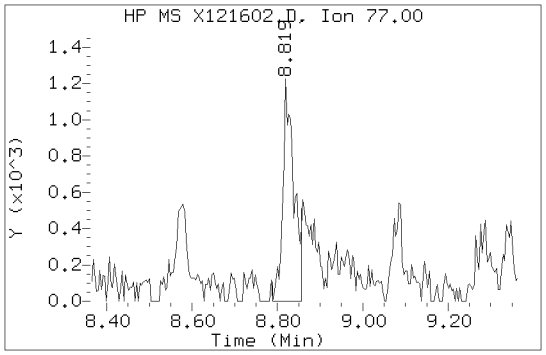
BEFORE

MASS
115
AREA
184413
HEIGHT
133835
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
77
AREA
2223
HEIGHT
1225
27-Dec-2022
16:07
ALSHS
Ser

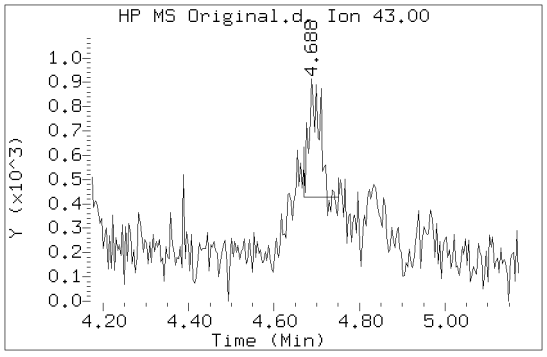


Isobutyl Alcohol (78-83-1)

Reason Code:

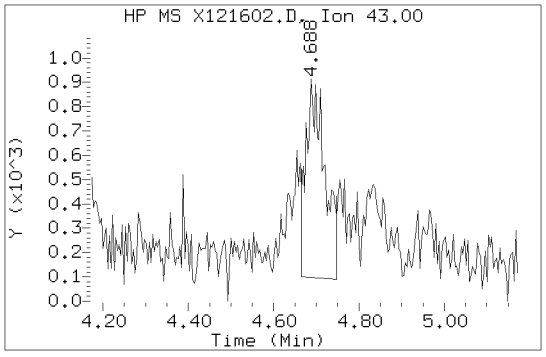
BEFORE

MASS
75
AREA
1475
HEIGHT
938
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
43
AREA
2537
HEIGHT
816
27-Dec-2022
16:07
ALSHS
Ser

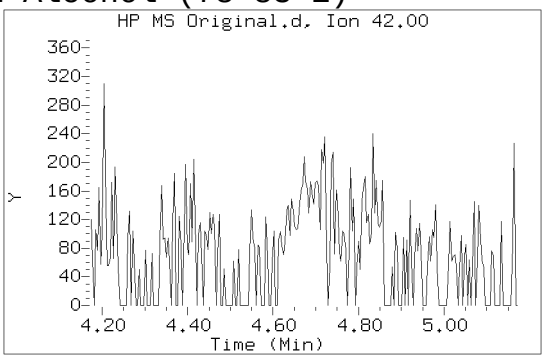


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121602.D
Inj Date : 16-DEC-2022 11:38
InstruID : voa6.i
LabSampID : VSTD000.25

Isobutyl Alcohol (78-83-1)

BEFORE

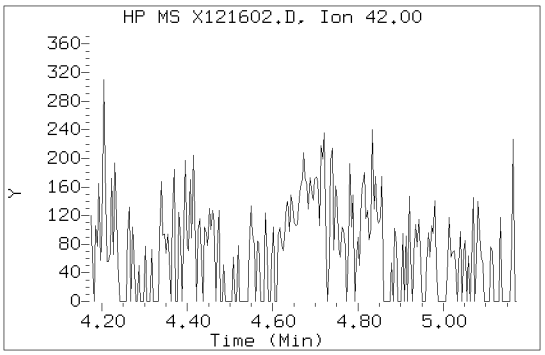
MASS
77
AREA
888
HEIGHT
483
16-Dec-2022
11:54
ALSHS
Server



Reason Code:

AFTER

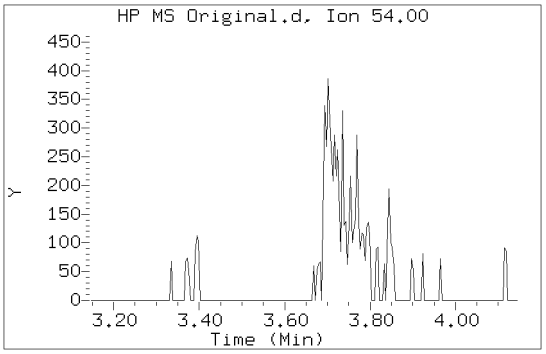
MASS
42
AREA
0
HEIGHT
0
27-Dec-2022
16:07
ALSHS
Ser



Propionitrile (107-12-0)

BEFORE

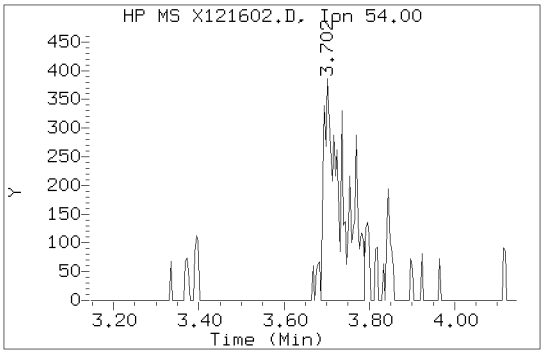
MASS
91
AREA
3881
HEIGHT
1822
16-Dec-2022
11:54
ALSHS
Server



Reason Code:

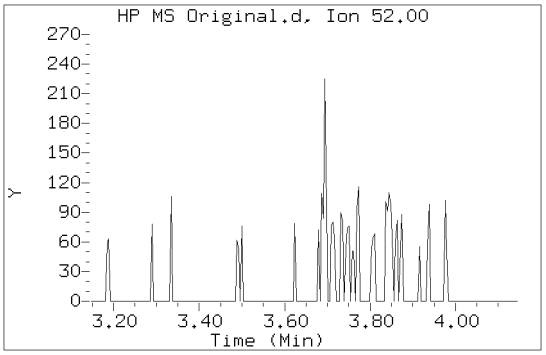
AFTER

MASS
54
AREA
1165
HEIGHT
386
27-Dec-2022
16:07
ALSHS
Ser



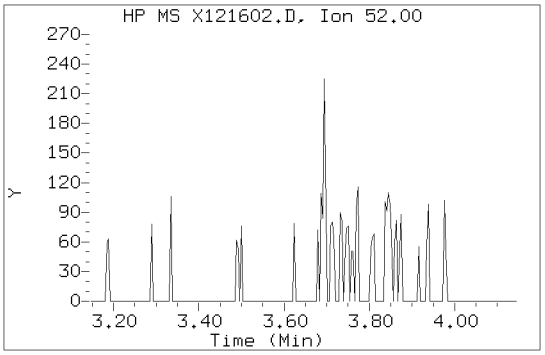
BEFORE

MASS
126
AREA
1511
HEIGHT
914
16-Dec-2022
11:54
ALSHS
Server



AFTER

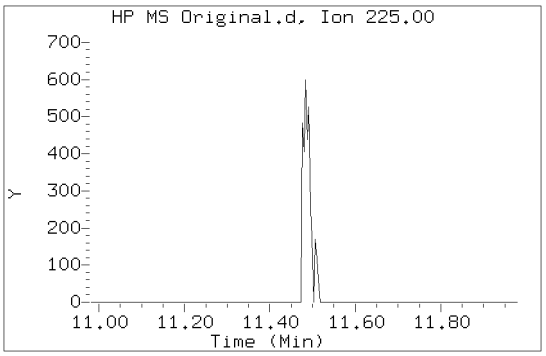
MASS
52
AREA
0
HEIGHT
0
27-Dec-2022
16:07
ALSHS
Ser



Hexachlorobutadiene (87-68-3)

BEFORE

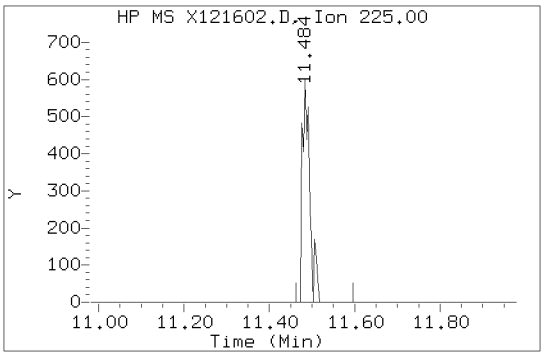
MASS
155
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



Reason Code:

AFTER

MASS
225
AREA
726
HEIGHT
599
27-Dec-2022
16:07
ALSHS
Ser



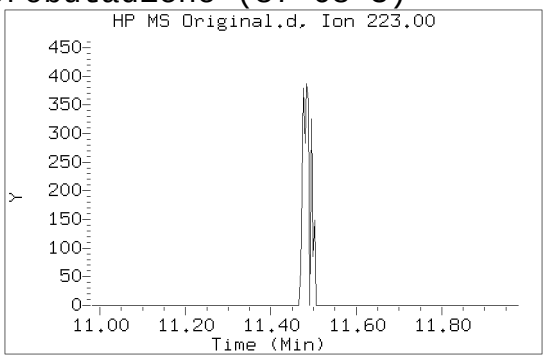
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121602.D
Inj Date : 16-DEC-2022 11:38
InstruID : voa6.i
LabSampID : VSTD000.25

Hexachlorobutadiene (87-68-3)

Reason Code:

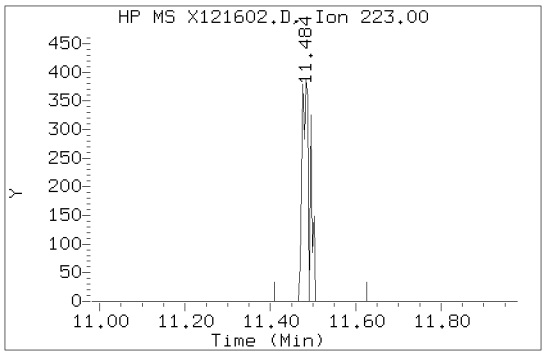
BEFORE

MASS
157
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



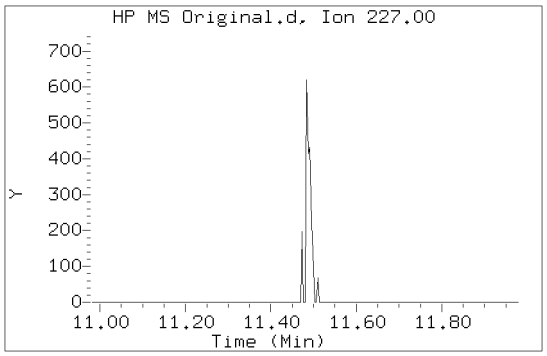
AFTER

MASS
223
AREA
502
HEIGHT
387
27-Dec-2022
16:07
ALSHS
Ser



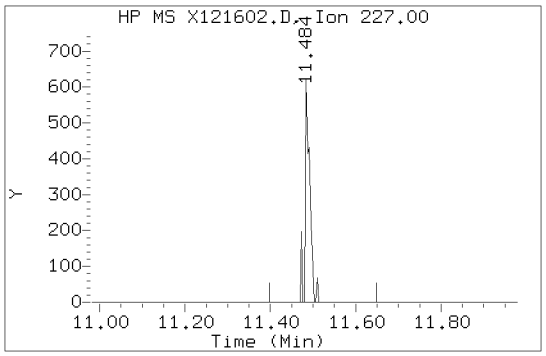
BEFORE

MASS
75
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
227
AREA
469
HEIGHT
620
27-Dec-2022
16:07
ALSHS
Ser

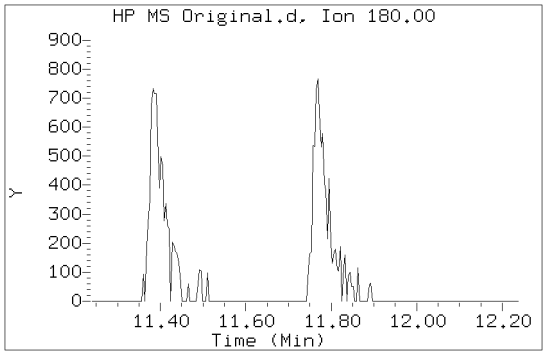


1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

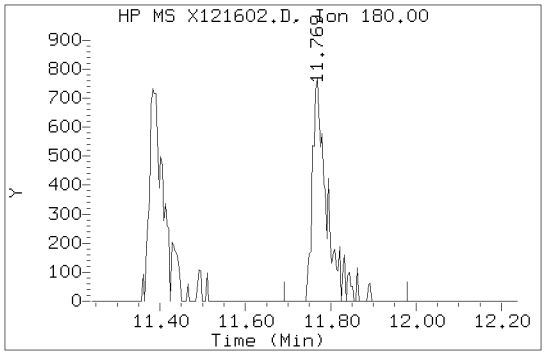
BEFORE

MASS
225
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



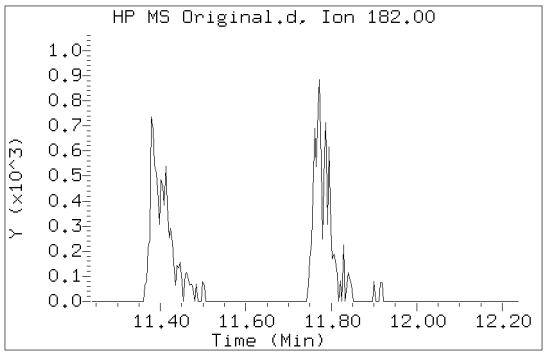
AFTER

MASS
180
AREA
1816
HEIGHT
766
27-Dec-2022
16:07
ALSHS
Ser



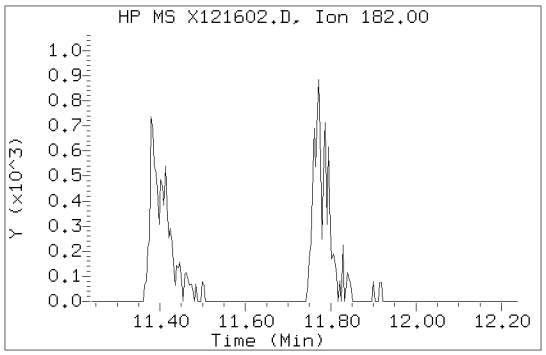
BEFORE

MASS
223
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
182
AREA
0
HEIGHT
0
27-Dec-2022
16:07
ALSHS
Ser



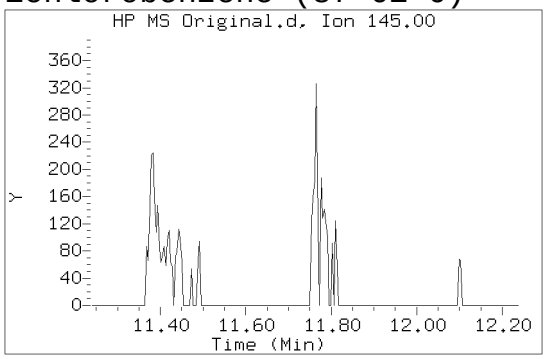
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121602.D
Inj Date : 16-DEC-2022 11:38
InstruID : voa6.i
LabSampID : VSTD000.25

1,2,3-Trichlorobenzene (87-61-6)

Reason Code:

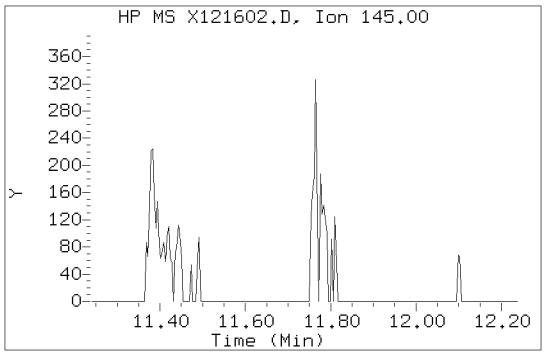
BEFORE

MASS
227
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
145
AREA
0
HEIGHT
0
27-Dec-2022
16:07
ALSHS
Ser

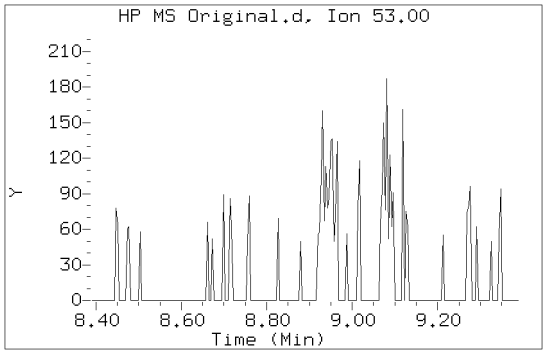


trans-1,4-Dichloro-2-butene (110-57-6)

Reason Code:

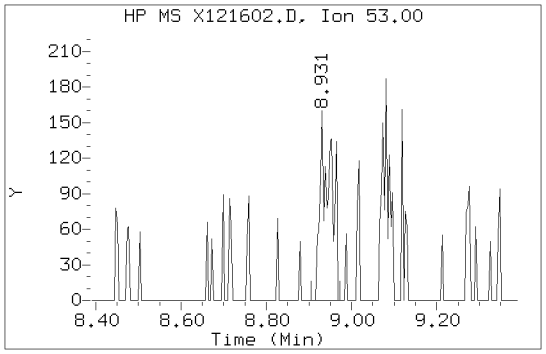
BEFORE

MASS
53
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



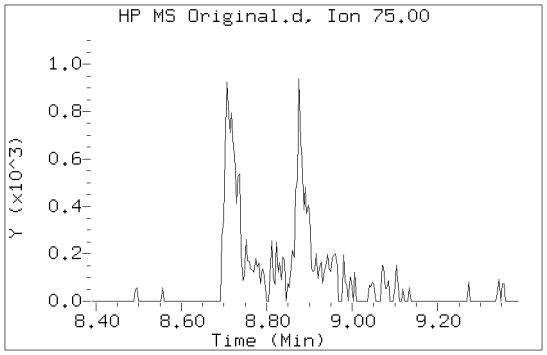
AFTER

MASS
53
AREA
280
HEIGHT
160
27-Dec-2022
16:07
ALSHS
Ser



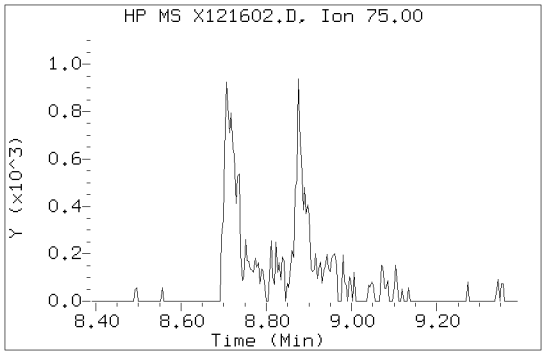
BEFORE

MASS
88
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
75
AREA
0
HEIGHT
0
27-Dec-2022
16:07
ALSHS
Ser

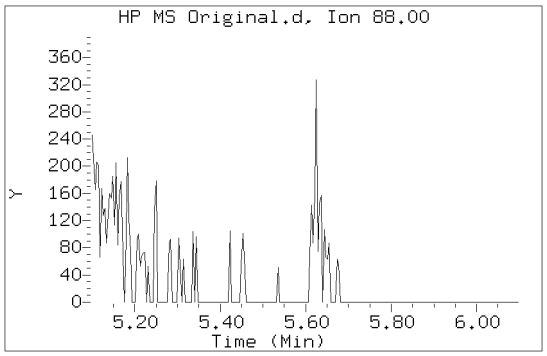


1,4-Dioxane ()

Reason Code:

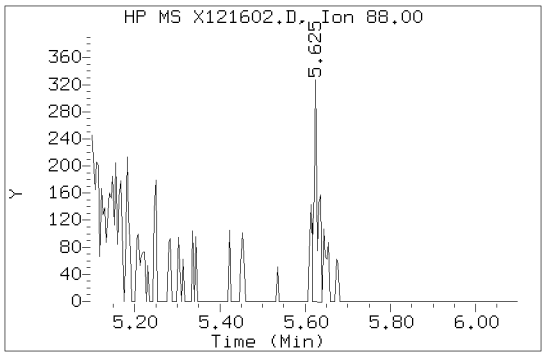
BEFORE

MASS
57
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
88
AREA
214
HEIGHT
327
27-Dec-2022
16:07
ALSHS
Ser

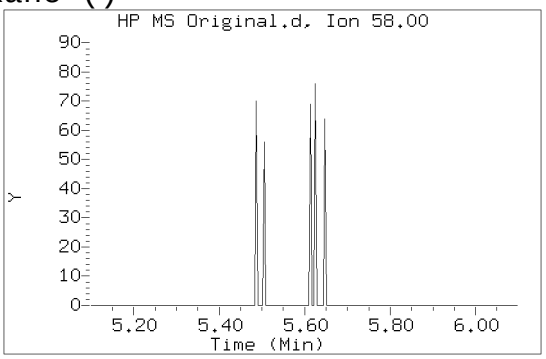


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121602.D
Inj Date : 16-DEC-2022 11:38
InstruID : voa6.i
LabSampID : VSTD000.25

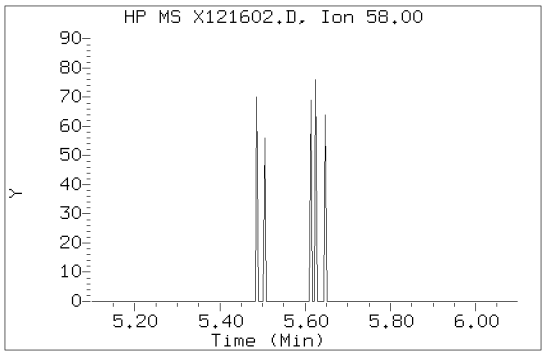
1,4-Dioxane ()

Reason Code:

BEFORE
MASS
41
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



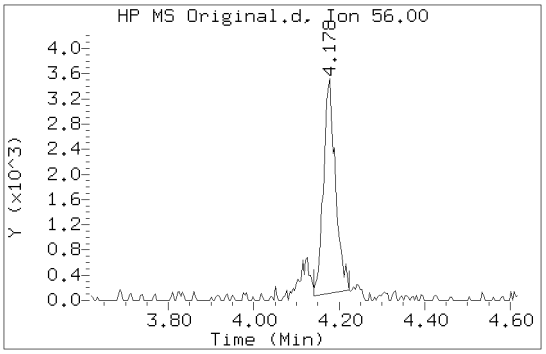
AFTER
MASS
58
AREA
0
HEIGHT
0
27-Dec-2022
16:07
ALSHS
Ser



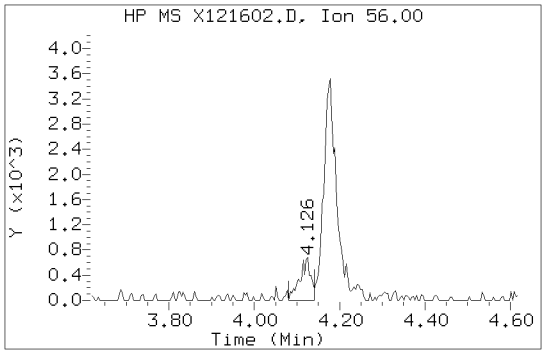
Cyclohexane (110-82-7)

Reason Code:

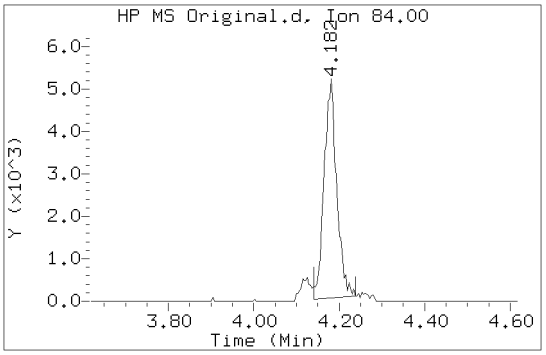
BEFORE
MASS
42
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



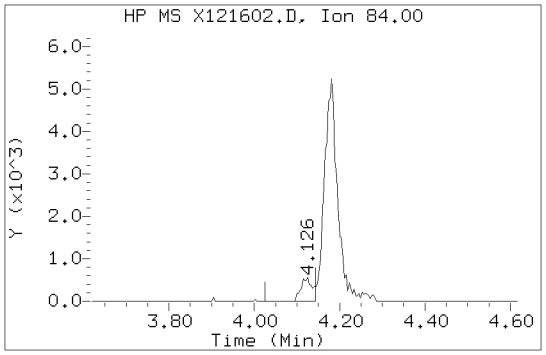
AFTER
MASS
56
AREA
1235
HEIGHT
682
27-Dec-2022
16:07
ALSHS
Ser



BEFORE
MASS
71
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



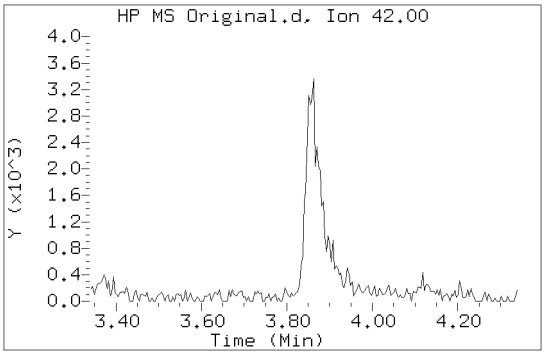
AFTER
MASS
84
AREA
1062
HEIGHT
557
27-Dec-2022
16:07
ALSHS
Ser



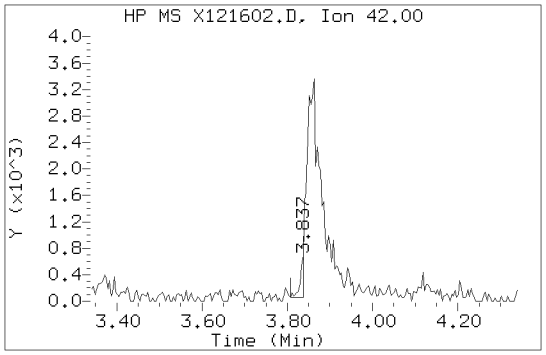
Tetrahydrofuran (109-99-9)

Reason Code:

BEFORE
MASS
101
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



AFTER
MASS
42
AREA
358
HEIGHT
628
27-Dec-2022
16:07
ALSHS
Ser



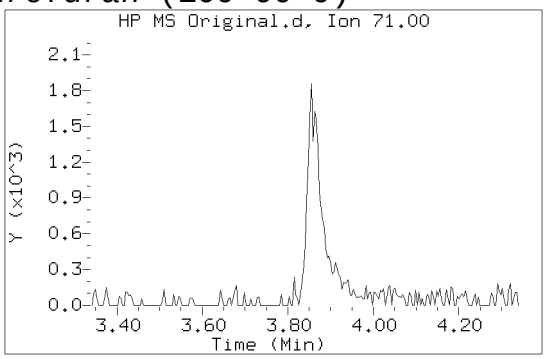
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121602.D
Inj Date : 16-DEC-2022 11:38
InstruID : voa6.i
LabSampID : VSTD000.25

Tetrahydrofuran (109-99-9)

Reason Code:

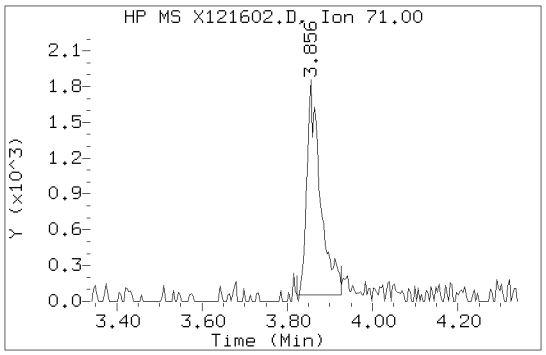
BEFORE

MASS
151
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
71
AREA
3962
HEIGHT
1803
27-Dec-2022
16:07
ALSHS
Ser

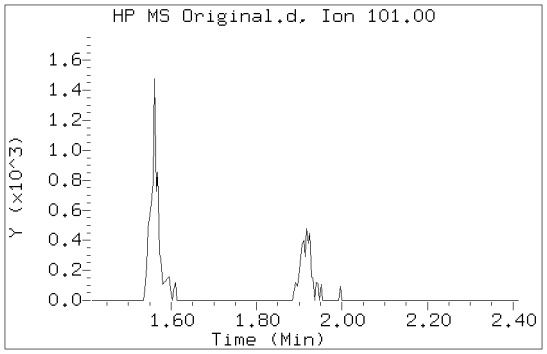


Freon TF (76-13-1)

Reason Code:

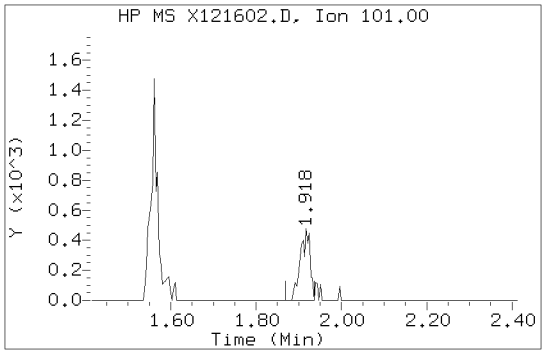
BEFORE

MASS
118
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



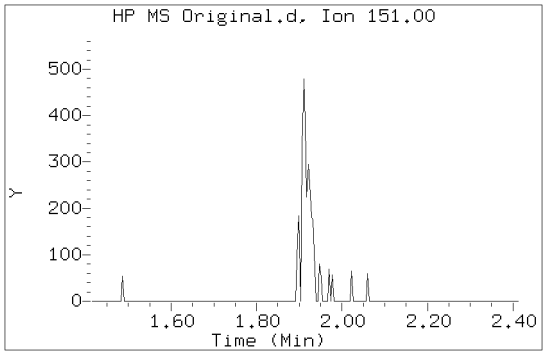
AFTER

MASS
101
AREA
765
HEIGHT
479
27-Dec-2022
16:07
ALSHS
Ser



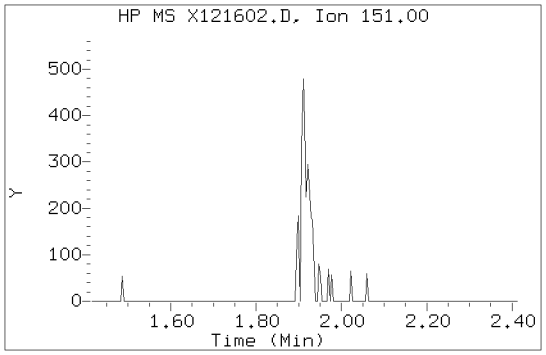
BEFORE

MASS
103
AREA
0
HEIGHT
0
16-Dec-2022
11:54
ALSHS
Server



AFTER

MASS
151
AREA
0
HEIGHT
0
27-Dec-2022
16:07
ALSHS
Ser



Data File: \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D Page 1
Report Date: 27-Dec-2022 16:07

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Lab Smp Id: VSTD000.5 Client Smp ID: VSTD000.5
Inj Date : 16-DEC-2022 12:20
Operator : PC Inst ID: voa6.i
Smp Info : VSTD000.5;VSTD000.5;1;2;
Misc Info : V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\8260W.m
Meth Date : 27-Dec-2022 16:07 voa6.i Quant Type: ISTD
Cal Date : 16-DEC-2022 11:38 Cal File: X121602.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: 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	4.178	4.178	(1.000)	461469	50.0000	
135 1,4-Dioxane	88	5.625	5.625	(1.346)	462	10.0000	10.95(M)
140 1,3-Butadiene	54	1.164	1.164	(0.279)	1793	0.50000	0.56(M)
25 Methacrylonitrile	41	3.848	3.848	(0.921)	2066	0.50000	0.63(M)
12 Isobutyl Alcohol	43	4.695	4.695	(1.124)	5178	10.0000	9.97(M)
13 Acetonitrile	39	2.210	2.210	(0.529)	2204	5.00000	5.24(M)
14 Allyl Chloride	41	2.206	2.206	(0.528)	4574	0.50000	0.57(M)
4 Propionitrile	54	3.686	3.686	(0.882)	2777	5.00000	5.89(M)
136 n-Hexane	57	2.772	2.772	(0.664)	1909	0.50000	0.57(M)
72 trans-1,4-Dichloro-2-butene	53	8.931	8.931	(1.165)	792	0.50000	0.56(M)
23 Chloroprene	53	1.771	1.771	(0.424)	900	0.50000	0.57(M)
145 alpha-Methylstyrene	118	9.272	9.272	(0.960)	4701	0.50000	0.60
200 Dimethyl Disulfide	94	6.202	6.202	(0.809)	5153	0.50000	0.59(M)
139 Diethyl ether	59	1.760	1.760	(0.421)	1864	0.50000	0.60
130 Ethyl Acetate	43	3.679	3.679	(0.881)	2065	0.50000	0.57(M)
40 Methyl Methacrylate	41	5.628	5.628	(1.347)	1788	0.50000	0.56(M)
49 Ethyl Methacrylate	69	6.727	6.727	(1.355)	1935	0.50000	0.59(M)
132 n-Butanol	56	5.291	5.291	(1.266)	622	10.0000	50.83(M)
142 Tetrahydrofuran	42	3.840	3.840	(0.919)	900	1.00000	(M)
150 Allyl alcohol	57	2.772	2.772	(0.664)	3089	10.0000	17.23

166	1,2,3-Trimethylbenzene	105	9.733	9.733 (1.007)	9626	0.50000	0.57(M)
131	Methyl Acrylate	55	3.743	3.743 (0.896)	1765	0.50000	0.56(M)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D Page 2
Report Date: 27-Dec-2022 16:07

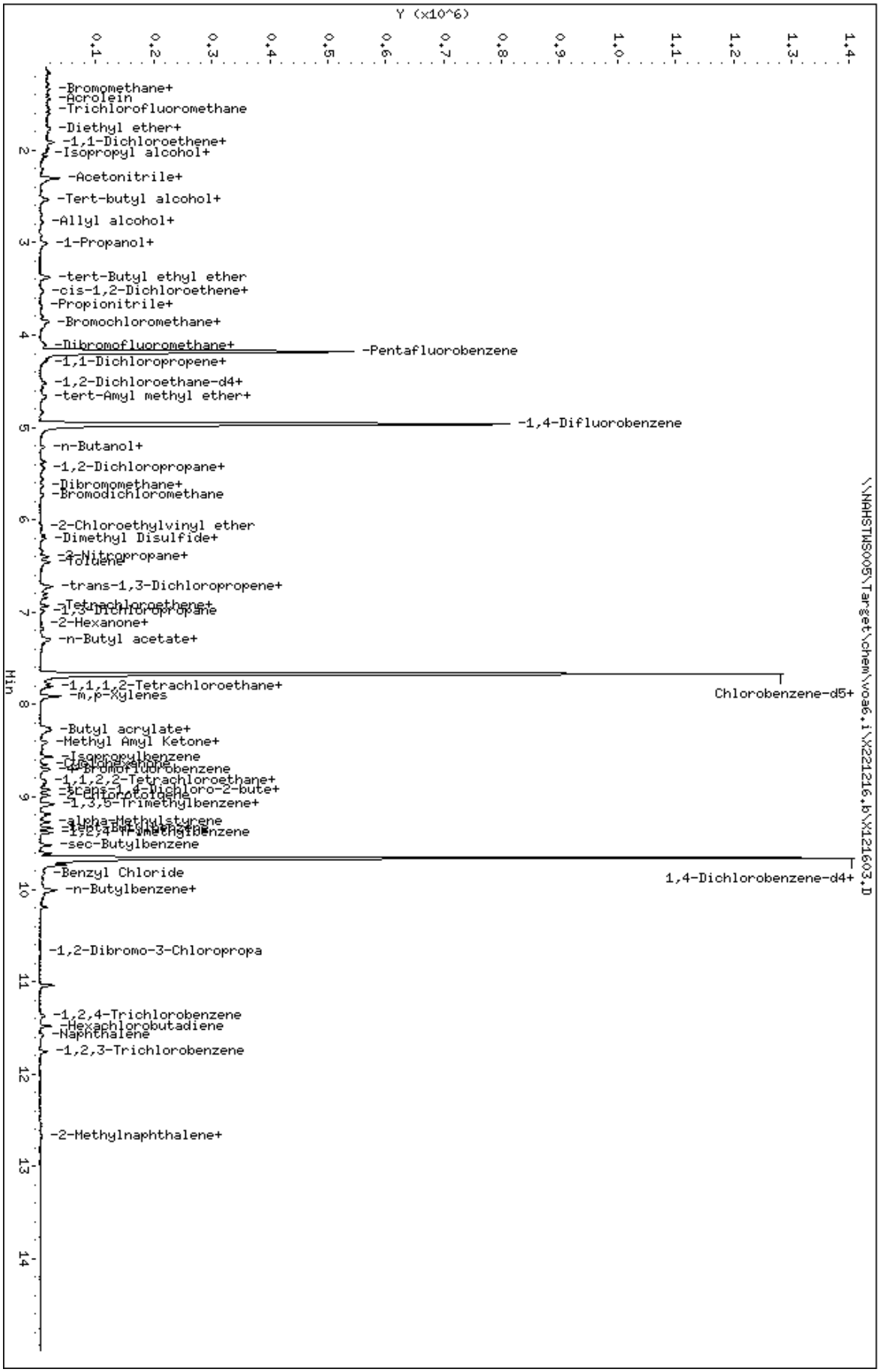
			QUANT SIG					AMOUNTS	
								CAL-AMT	ON-COL
	Compounds		MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
	162	Butyl acrylate	55	8.271	8.271	(1.079)	4718	0.50000	0.55(M)
	2	Dichlorodifluoromethane	85	0.972	0.972	(0.233)	1990	0.50000	1.00(M)
	3	Chloromethane	50	1.077	1.077	(0.258)	2466	0.50000	2.77(M)
	5	Vinyl Chloride	62	1.141	1.141	(0.273)	2412	0.50000	0.59(M)
	6	Bromomethane	94	1.336	1.336	(0.320)	1893	0.50000	2.36(M)
	7	Chloroethane	64	1.407	1.407	(0.337)	1653	0.50000	0.58(M)
	8	Trichlorofluoromethane	101	1.561	1.561	(0.374)	3286	0.50000	0.58(M)
	9	Acrolein	56	1.441	1.441	(0.345)	440	1.00000	4.17(M)
	10	Acetone	43	1.977	1.977	(0.473)	2669	1.00000	2.02(M)
	11	1,1-Dichloroethene	96	1.913	1.913	(0.458)	2037	0.50000	0.58(M)
	15	Iodomethane	142	2.026	2.026	(0.485)	2397	1.00000	3.84(TM)
	16	Acrylonitrile	53	2.566	2.566	(0.614)	1118	1.00000	0.94(M)
	17	Methylene Chloride	84	2.296	2.296	(0.550)	2938	0.50000	0.61(M)
	18	Methyl tert-butyl ether	73	2.536	2.536	(0.607)	5841	0.50000	0.50(M)
	19	Carbon Disulfide	76	2.067	2.067	(0.495)	9921	1.00000	1.08(M)
	20	trans-1,2-Dichloroethene	96	2.543	2.543	(0.609)	2218	0.50000	0.56(M)
	21	Vinyl Acetate	43	3.023	3.023	(0.724)	10138	1.00000	1.00(M)
	22	1,1-Dichloroethane	63	2.926	2.926	(0.700)	3874	0.50000	0.56(M)
	24	2-Butanone	43	3.649	3.649	(0.873)	1292	1.00000	3.93(M)
	26	2,2-Dichloropropane	77	3.514	3.514	(0.841)	3238	0.50000	0.55(M)
	27	cis-1,2-Dichloroethene	96	3.544	3.544	(0.848)	2852	0.50000	0.59
	28	Chloroform	83	3.908	3.908	(0.935)	4040	0.50000	0.52(M)
	29	Bromochloromethane	128	3.799	3.799	(0.909)	1481	0.50000	0.56
$	30	Dibromofluoromethane	113	4.110	4.110	(0.984)	2321	0.50000	0.35
	31	1,1,1-Trichloroethane	97	4.084	4.084	(0.978)	3512	0.50000	0.57(M)
	32	1,1-Dichloropropene	75	4.290	4.290	(0.864)	2468	0.50000	0.50(M)
	33	1,2-Dichloroethane	62	4.567	4.567	(0.920)	3129	0.50000	0.55(M)
	34	Carbon Tetrachloride	117	4.264	4.264	(0.859)	2763	0.50000	0.52(MH)
$	35	1,2-Dichloroethane-d4	65	4.481	4.481	(1.073)	2849	0.50000	0.87(T)
*	36	1,4-Difluorobenzene	114	4.965	4.965	(1.000)	687671	50.0000	
	37	Benzene	78	4.519	4.519	(0.910)	9243	0.50000	0.56
	38	Trichloroethene	130	5.216	5.216	(1.051)	2583	0.50000	0.55(M)
	39	Bromodichloromethane	83	5.730	5.730	(1.154)	3650	0.50000	0.59(M)
	41	2-Chloroethylvinyl ether	63	6.071	6.071	(1.223)	1861	1.00000	1.06(M)
	42	1,2-Dichloropropane	63	5.441	5.441	(1.096)	2449	0.50000	0.56(M)
	44	Dibromomethane	93	5.557	5.557	(1.119)	1725	0.50000	0.58
	45	4-Methyl-2-Pentanone	43	6.337	6.337	(0.826)	3741	1.00000	1.08(M)
	46	cis-1,3-Dichloropropene	75	6.168	6.168	(1.242)	3695	0.50000	0.51(M)
*	47	Chlorobenzene-d5	117	7.668	7.668	(1.000)	645291	50.0000	
$	48	Toluene-d8	98	6.401	6.401	(0.835)	9525	0.50000	0.59
	50	Toluene	91	6.460	6.460	(0.843)	10374	0.50000	0.58(M)
	51	trans-1,3-Dichloropropene	75	6.697	6.697	(1.349)	3042	0.50000	0.50
	52	2-Hexanone	43	7.117	7.117	(0.928)	2580	1.00000	1.09
	53	1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	2092	0.50000	0.58(M)
	54	1,3-Dichloropropane	76	6.993	6.993	(0.912)	4005	0.50000	0.56(M)
	55	Dibromochloromethane	129	7.180	7.180	(0.936)	2827	0.50000	0.54
	56	Tetrachloroethene	164	6.933	6.933	(0.904)	2131	0.50000	0.57(M)
	57	1,2-Dibromoethane	107	7.270	7.270	(0.948)	2340	0.50000	0.52(M)
	58	1-Chlorohexane	55	7.705	7.705	(1.552)	1829	0.50000	0.55(MH)
	59	Chlorobenzene	112	7.694	7.694	(1.003)	7747	0.50000	0.61
	60	1,1,2,2-Tetrachloroethane	131	7.784	7.784	(1.015)	2741	0.50000	0.58(M)
	61	Ethylbenzene	106	7.806	7.806	(1.018)	3064	0.50000	0.51(M)

62 m,p-Xylenes	106	7.911	7.911 (1.032)	9016	1.00000	1.17(M)
63 o-Xylene	106	8.252	8.252 (1.076)	4412	0.50000	0.58(M)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	64 Styrene	104	8.286	8.286	(1.081)	6634	0.50000	0.52(M)
	66 Bromoform	173	8.421	8.421	(1.098)	2013	0.50000	0.56(TM)
	67 Isopropylbenzene	105	8.567	8.567	(1.117)	8757	0.50000	0.50(M)
	68 1,1,2,2-Tetrachloroethane	83	8.845	8.845	(0.915)	3194	0.50000	0.57(M)
$	69 4-Bromofluorobenzene	95	8.706	8.706	(1.135)	3870	0.50000	0.71(M)
*	70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	347824	50.0000	
	71 1,2,3-Trichloropropane	75	8.871	8.871	(0.918)	2019	0.50000	0.52(M)
	73 n-Propylbenzene	91	8.923	8.923	(0.924)	11163	0.50000	0.57(M)
	74 Bromobenzene	156	8.818	8.818	(0.913)	3147	0.50000	0.55(M)
	75 1,3,5-Trimethylbenzene	105	9.073	9.073	(0.939)	7182	0.50000	0.50(M)
	76 2-Chlorotoluene	91	8.983	8.983	(0.930)	6718	0.50000	0.53(M)
	77 4-Chlorotoluene	91	9.088	9.088	(0.941)	7644	0.50000	0.53(M)
	78 tert-Butylbenzene	119	9.339	9.339	(0.967)	6389	0.50000	0.54(M)
	79 1,2,4-Trimethylbenzene	105	9.384	9.384	(0.971)	8496	0.50000	0.56(M)
	81 sec-Butylbenzene	105	9.523	9.523	(0.986)	7938	0.50000	0.51(M)
	82 p-Isopropyltoluene	119	9.651	9.651	(0.999)	7343	0.50000	0.52(M)
	83 1,3-Dichlorobenzene	146	9.613	9.613	(0.995)	4677	0.50000	0.49(M)
	84 1,4-Dichlorobenzene	146	9.681	9.681	(1.002)	5674	0.50000	0.54(M)
	86 Benzyl Chloride	91	9.831	9.831	(1.282)	3642	0.50000	3.03
	87 n-Butylbenzene	91	10.014	10.014	(1.036)	5149	0.50000	2.14(M)
	88 1,2-Dichlorobenzene	146	10.010	10.010	(1.036)	5504	0.50000	0.56(M)
	89 1,2-Dibromo-3-Chloropropane	155	10.678	10.678	(1.105)	441	0.50000	0.58(M)
	90 1,2,4-Trichlorobenzene	180	11.364	11.364	(1.176)	3187	0.50000	0.51(M)
	91 Hexachlorobutadiene	225	11.480	11.480	(1.188)	1477	0.50000	0.49(M)
	92 Naphthalene	128	11.581	11.581	(1.199)	7025	0.50000	0.50
	93 1,2,3-Trichlorobenzene	180	11.765	11.765	(1.218)	3572	0.50000	0.60(M)
M	94 1,2-Dichloroethylene (total)	96				5070	1.00000	
M	95 Xylenes (total)	106				13428	1.50000	
	141 Cyclohexane	56	4.114	4.114	(0.985)	2803	0.50000	1.84(M)
	138 Freon TF	101	1.917	1.917	(0.459)	1851	0.50000	0.54(M)
	147 Methylcyclohexane	55	5.415	5.415	(1.091)	4781	0.50000	0.56(M)
	146 Methyl Acetate	43	2.240	2.240	(0.536)	1269	0.50000	0.61(M)

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



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Sample Info: VSTD000.5;VSTD000.5;1;2;
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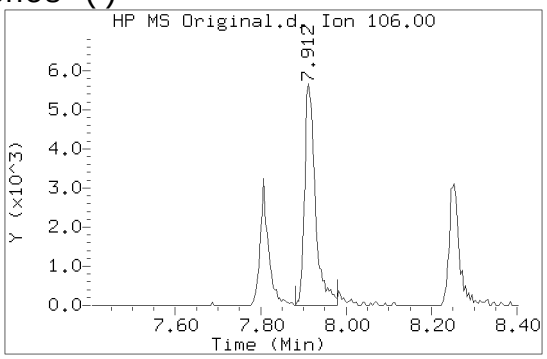
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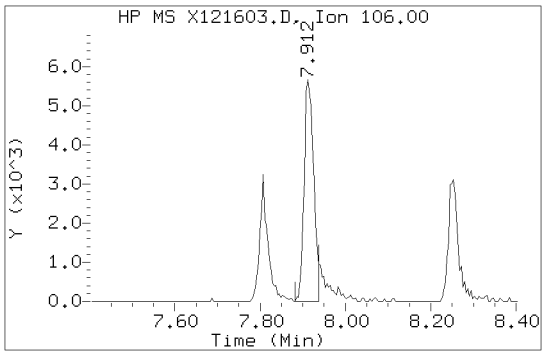
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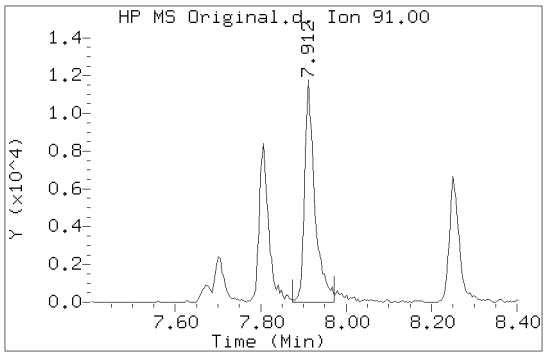
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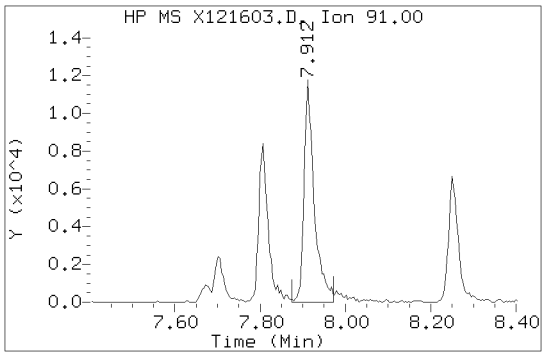
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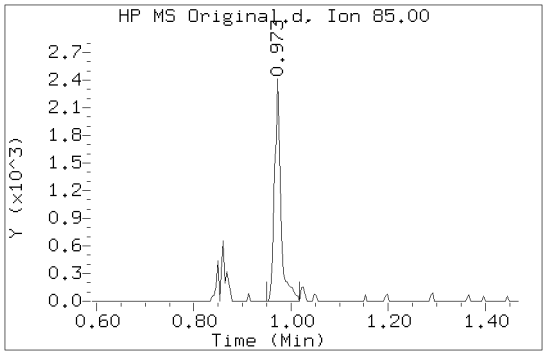
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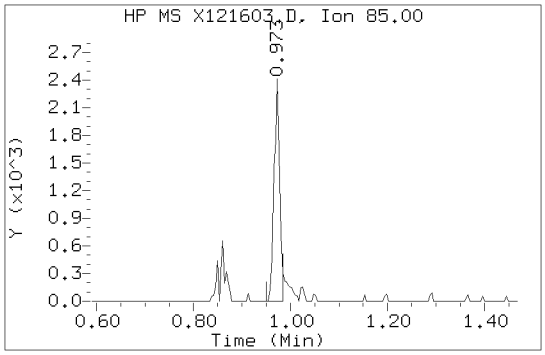
Dichlorodifluoromethane (75-71-8)

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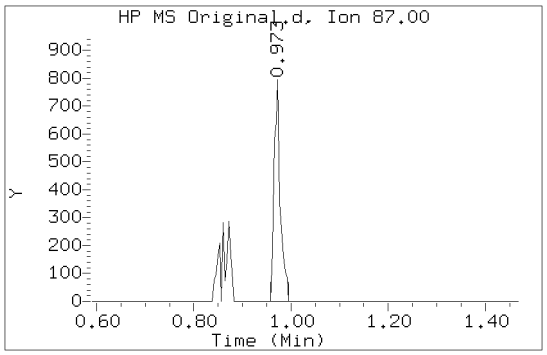
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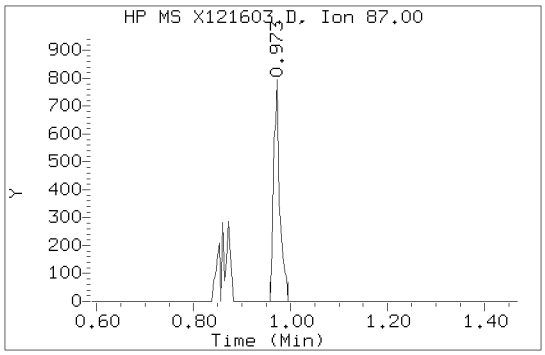
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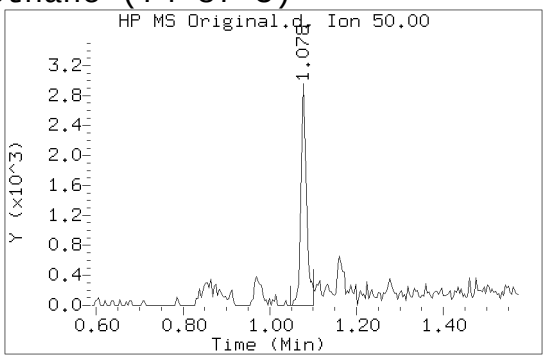


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Chloromethane (74-87-3)

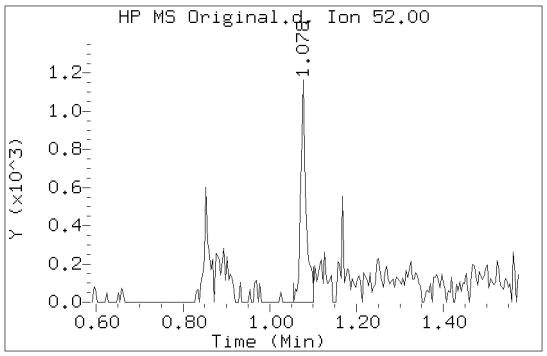
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BEFORE

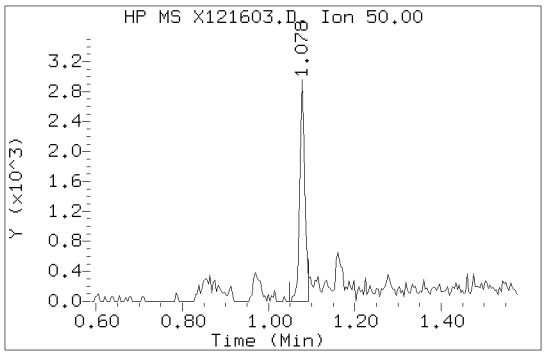
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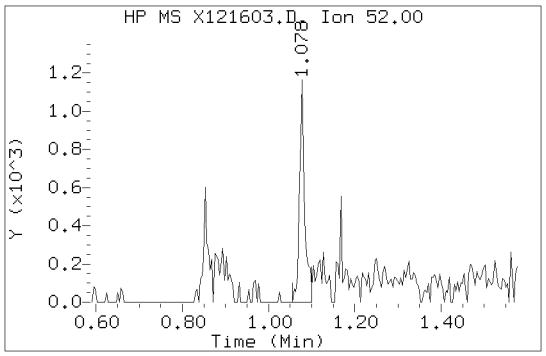
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AFTER

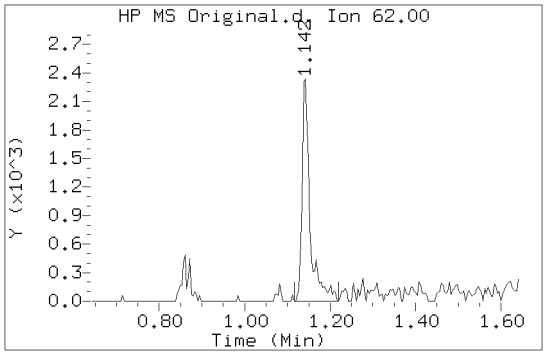
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Vinyl Chloride (75-01-4)

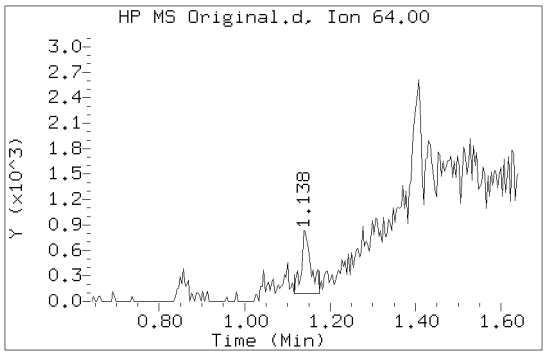
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BEFORE

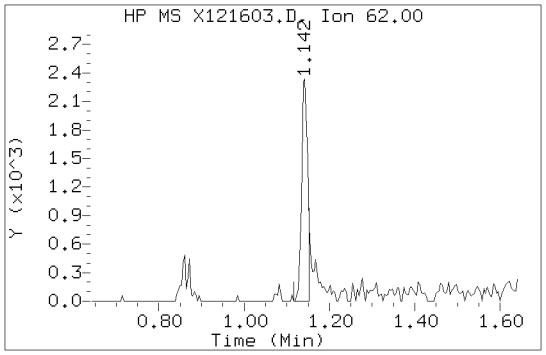
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pham



Reason Code:

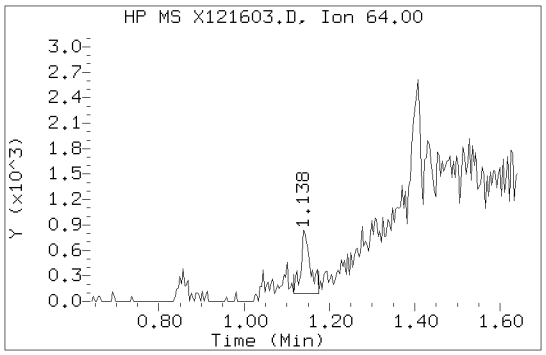
AFTER

MASS
62
AREA
2412
HEIGHT
2337
27-Dec-2022
16:07
linh
pham



AFTER

MASS
64
AREA
1174
HEIGHT
750
27-Dec-2022
16:07
linh
pham



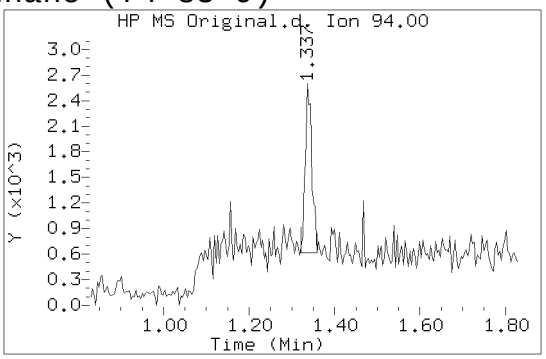
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

Bromomethane (74-83-9)

Reason Code:

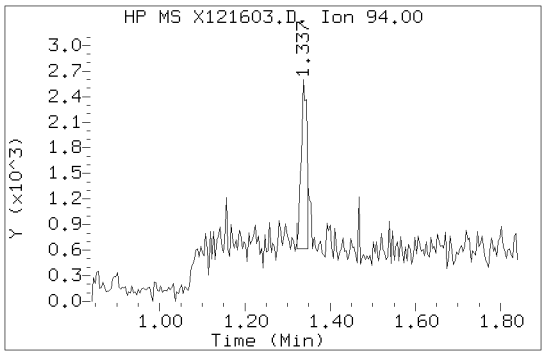
BEFORE

MASS
94
AREA
2146
HEIGHT
1983
27-Dec-2022
16:03
linh
pham



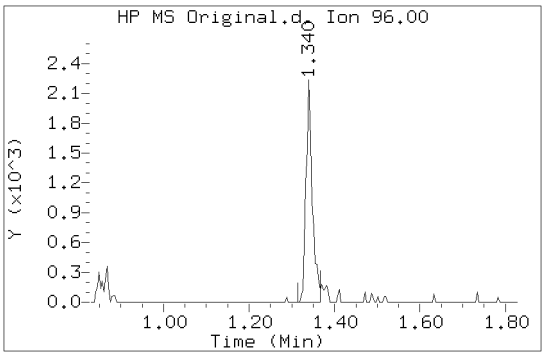
AFTER

MASS
94
AREA
1893
HEIGHT
1983
27-Dec-2022
16:07
linh
pham



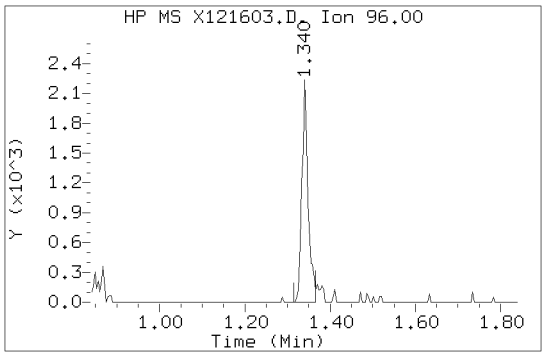
BEFORE

MASS
96
AREA
2304
HEIGHT
2236
27-Dec-2022
16:03
linh
pham



AFTER

MASS
96
AREA
2304
HEIGHT
2236
27-Dec-2022
16:07
linh
pham

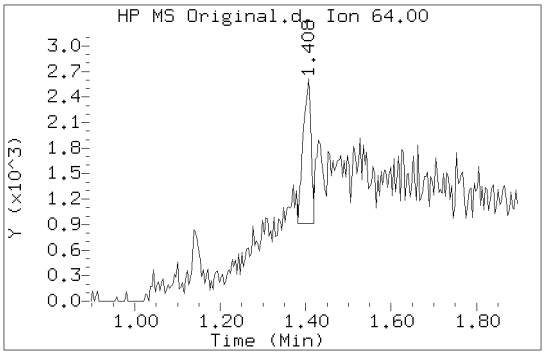


Chloroethane (75-00-3)

Reason Code:

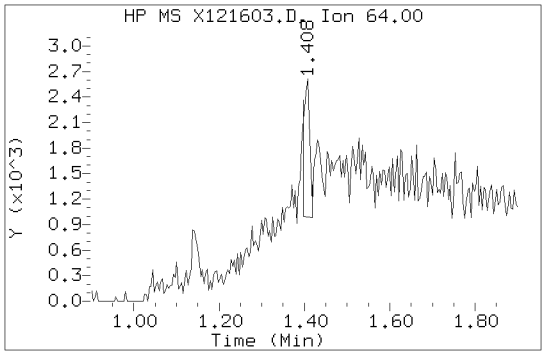
BEFORE

MASS
64
AREA
2196
HEIGHT
1702
27-Dec-2022
16:03
linh
pham



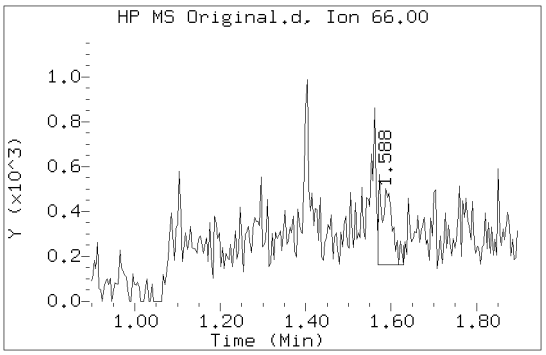
AFTER

MASS
64
AREA
1653
HEIGHT
1624
27-Dec-2022
16:07
linh
pham



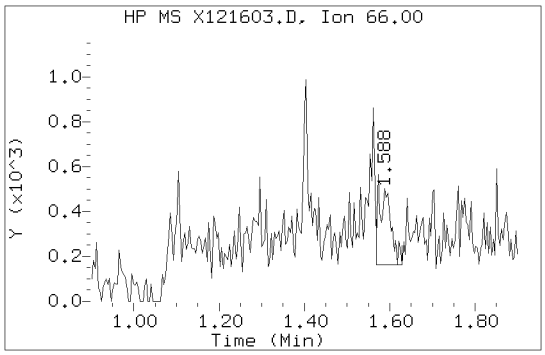
BEFORE

MASS
66
AREA
677
HEIGHT
340
27-Dec-2022
16:03
linh
pham



AFTER

MASS
66
AREA
677
HEIGHT
340
27-Dec-2022
16:07
linh
pham



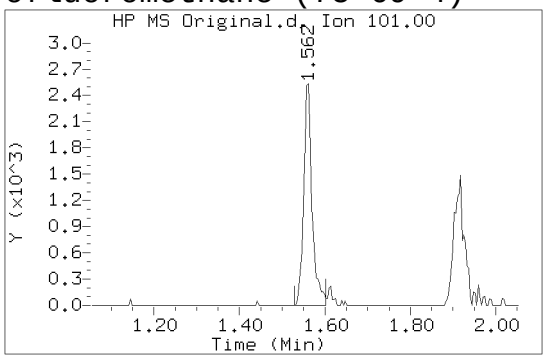
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

Trichlorofluoromethane (75-69-4)

Reason Code:

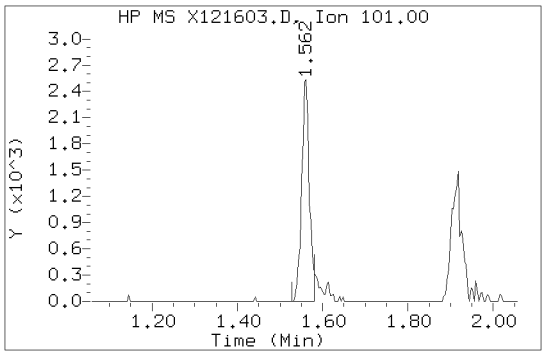
BEFORE

MASS
101
AREA
3530
HEIGHT
2534
27-Dec-2022
16:03
linh
pham



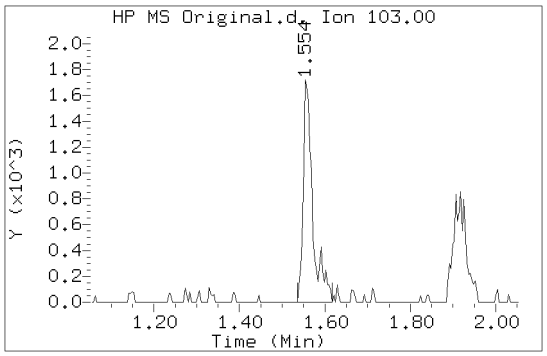
AFTER

MASS
101
AREA
3286
HEIGHT
2534
27-Dec-2022
16:07
linh
pham



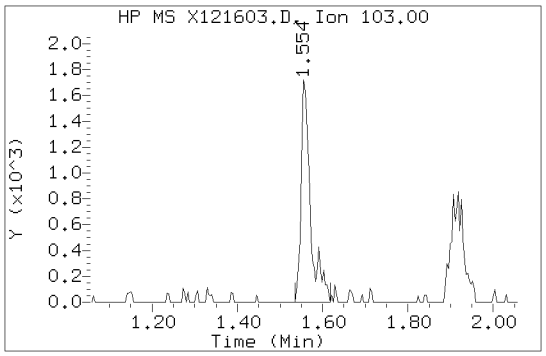
BEFORE

MASS
103
AREA
2708
HEIGHT
1720
27-Dec-2022
16:03
linh
pham



AFTER

MASS
103
AREA
2708
HEIGHT
1720
27-Dec-2022
16:07
linh
pham

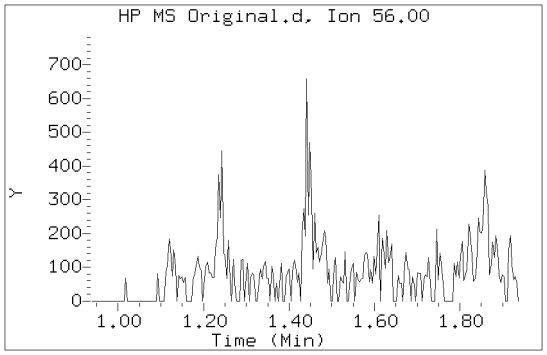


Acrolein (107-02-8)

Reason Code:

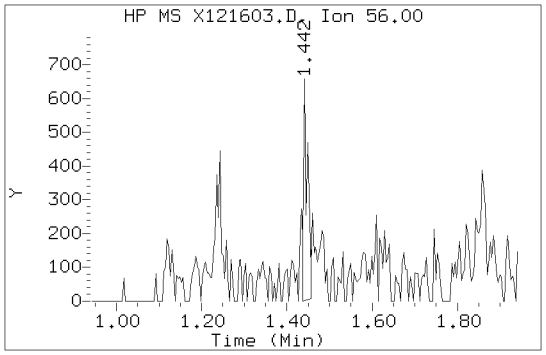
BEFORE

MASS
56
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



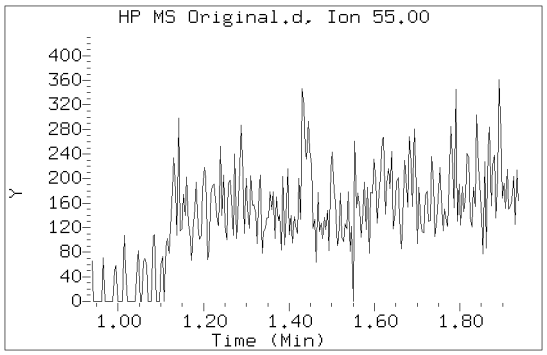
AFTER

MASS
56
AREA
440
HEIGHT
656
27-Dec-2022
16:07
linh
pham



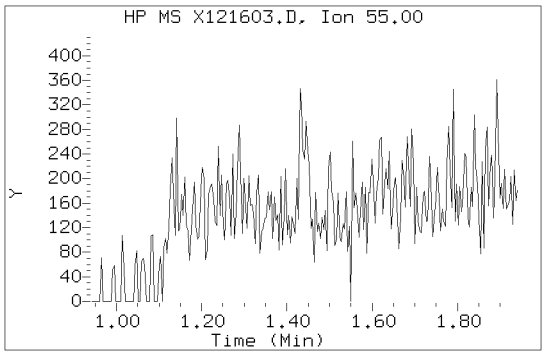
BEFORE

MASS
55
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



AFTER

MASS
55
AREA
0
HEIGHT
0
27-Dec-2022
16:07
linh
pham



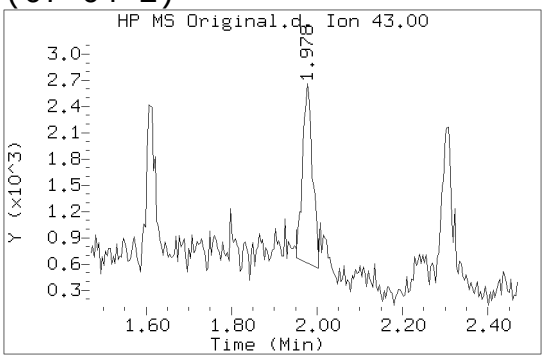
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

Acetone (67-64-1)

Reason Code:

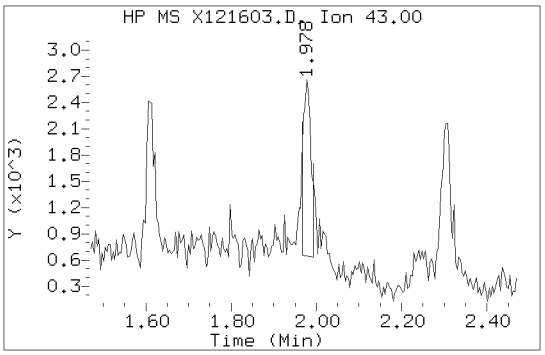
BEFORE

MASS
43
AREA
3388
HEIGHT
2046
27-Dec-2022
16:03
linh
pham



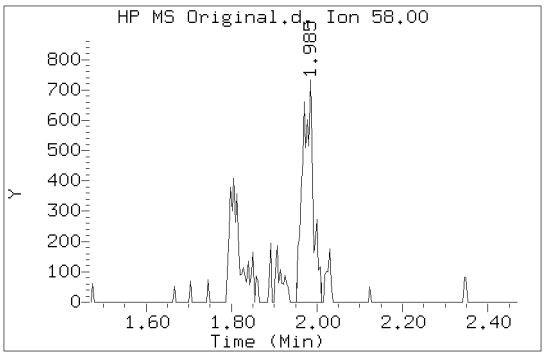
AFTER

MASS
43
AREA
2669
HEIGHT
2015
27-Dec-2022
16:07
linh
pham



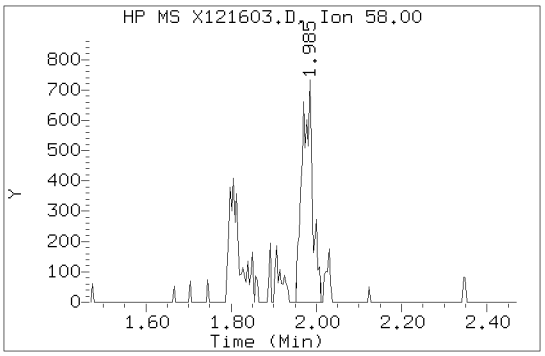
BEFORE

MASS
58
AREA
1264
HEIGHT
733
27-Dec-2022
16:03
linh
pham



AFTER

MASS
58
AREA
1264
HEIGHT
733
27-Dec-2022
16:07
linh
pham

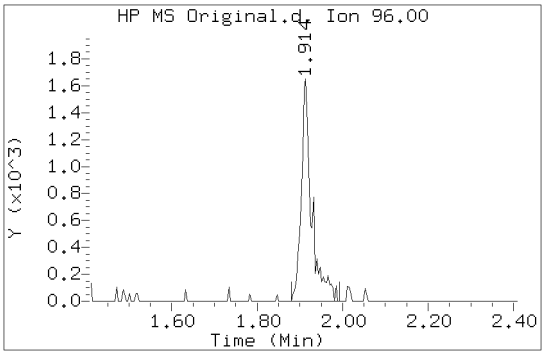


1,1-Dichloroethene (75-35-4)

Reason Code:

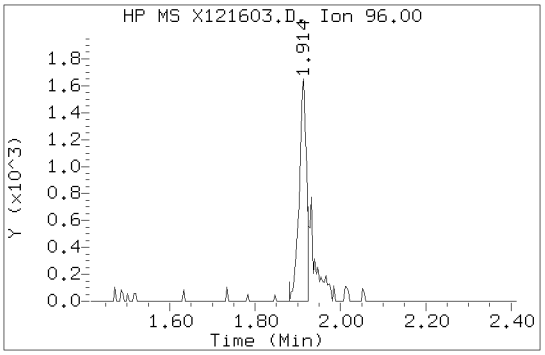
BEFORE

MASS
96
AREA
2836
HEIGHT
1651
27-Dec-2022
16:03
linh
pham



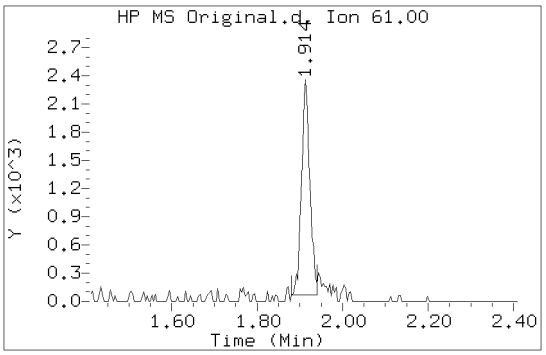
AFTER

MASS
96
AREA
2037
HEIGHT
1651
27-Dec-2022
16:07
linh
pham



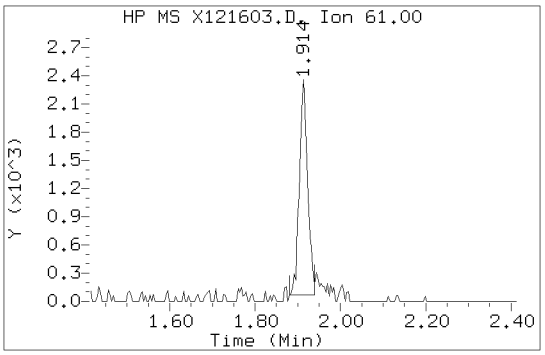
BEFORE

MASS
61
AREA
3197
HEIGHT
2293
27-Dec-2022
16:03
linh
pham



AFTER

MASS
61
AREA
3197
HEIGHT
2293
27-Dec-2022
16:07
linh
pham



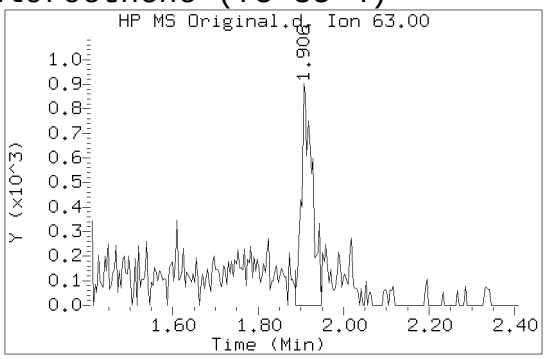
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

1,1-Dichloroethene (75-35-4)

Reason Code:

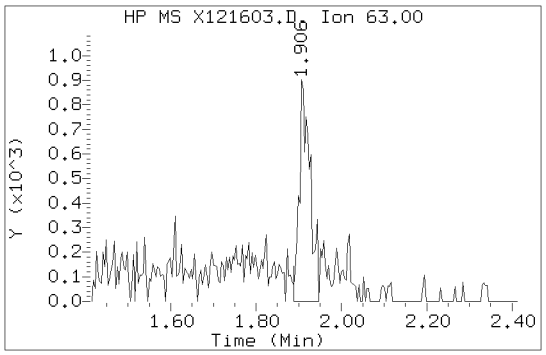
BEFORE

MASS
63
AREA
1607
HEIGHT
902
27-Dec-2022
16:03
linh
pham



AFTER

MASS
63
AREA
1607
HEIGHT
902
27-Dec-2022
16:07
linh
pham

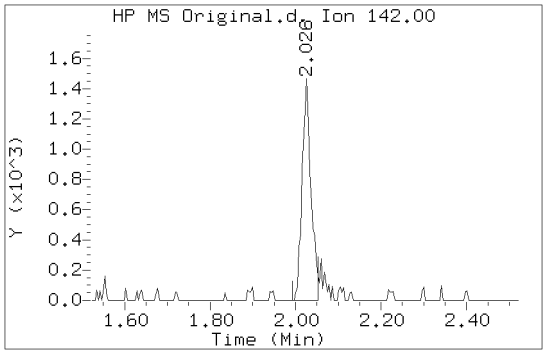


Iodomethane (74-88-4)

Reason Code:

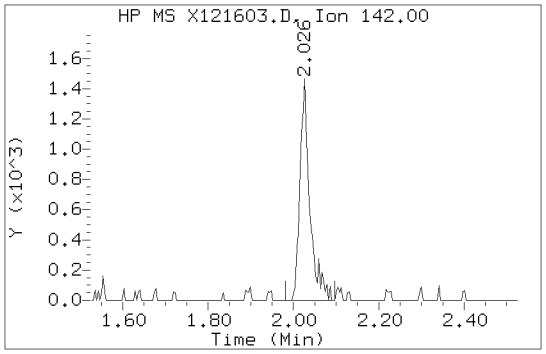
BEFORE

MASS
142
AREA
2166
HEIGHT
1466
27-Dec-2022
16:03
linh
pham



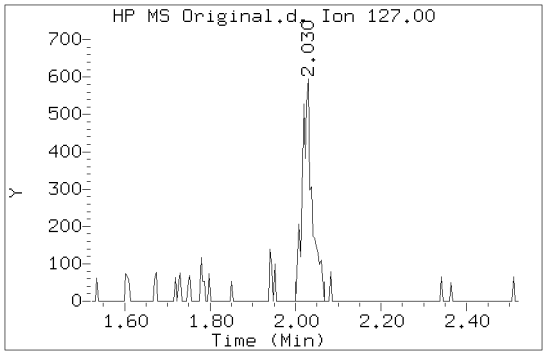
AFTER

MASS
142
AREA
2397
HEIGHT
1466
27-Dec-2022
16:07
linh
pham



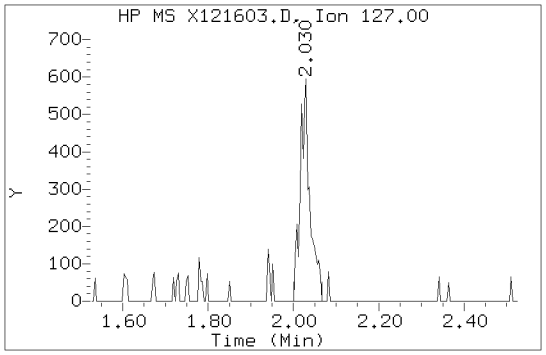
BEFORE

MASS
127
AREA
958
HEIGHT
595
27-Dec-2022
16:03
linh
pham



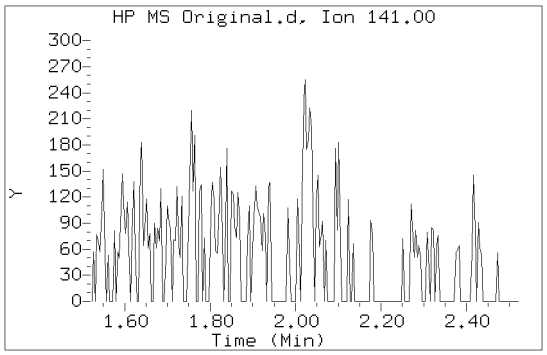
AFTER

MASS
127
AREA
958
HEIGHT
595
27-Dec-2022
16:07
linh
pham



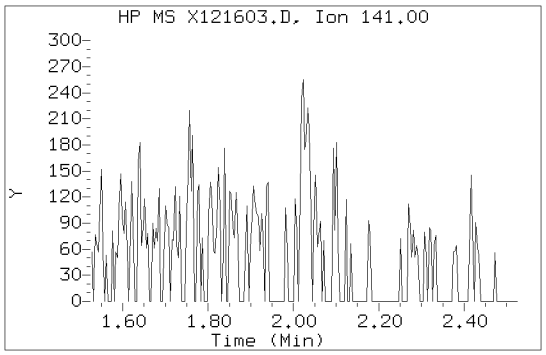
BEFORE

MASS
141
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



AFTER

MASS
141
AREA
0
HEIGHT
0
27-Dec-2022
16:07
linh
pham



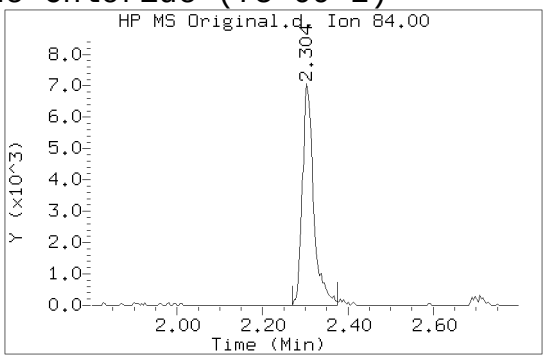
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

Methylene Chloride (75-09-2)

Reason Code:

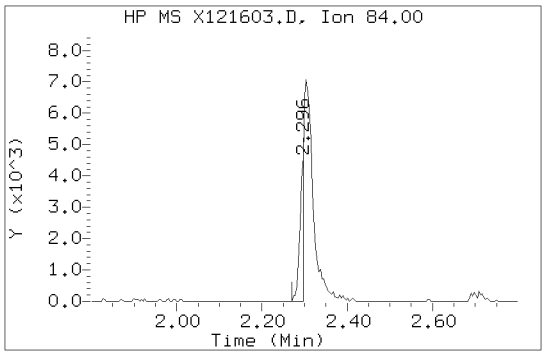
BEFORE

MASS
84
AREA
13307
HEIGHT
7067
27-Dec-2022
16:03
linh
pham



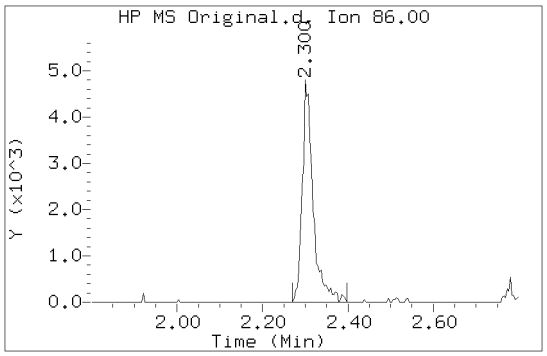
AFTER

MASS
84
AREA
2938
HEIGHT
4595
27-Dec-2022
16:07
linh
pham



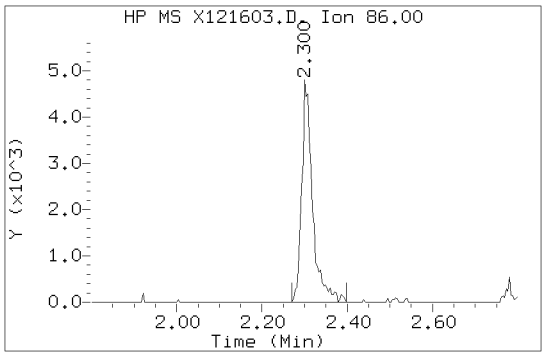
BEFORE

MASS
86
AREA
8692
HEIGHT
4802
27-Dec-2022
16:03
linh
pham



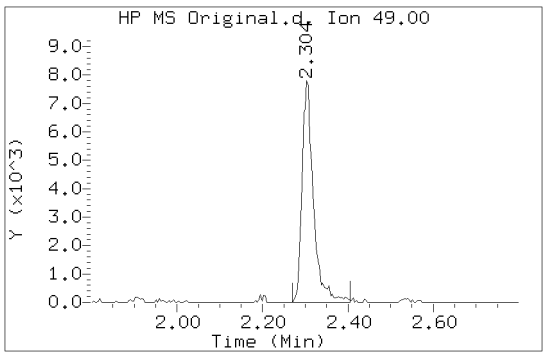
AFTER

MASS
86
AREA
8692
HEIGHT
4802
27-Dec-2022
16:07
linh
pham



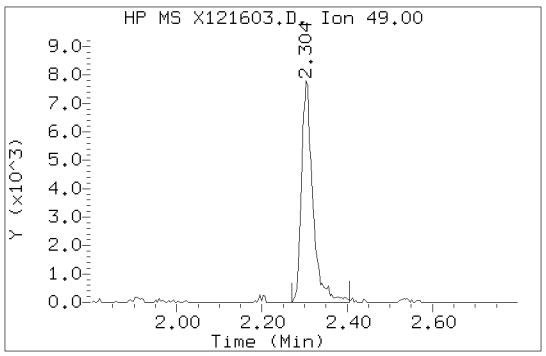
BEFORE

MASS
49
AREA
14733
HEIGHT
7803
27-Dec-2022
16:03
linh
pham



AFTER

MASS
49
AREA
14733
HEIGHT
7803
27-Dec-2022
16:07
linh
pham

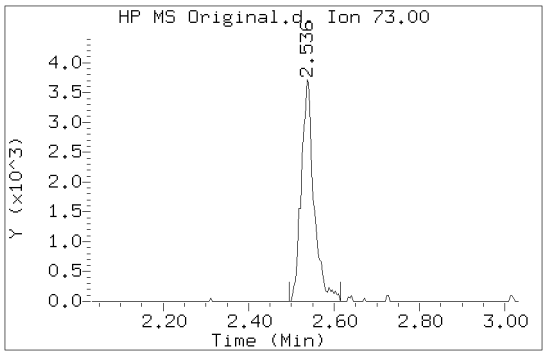


Methyl tert-butyl ether (1634-04-4)

Reason Code:

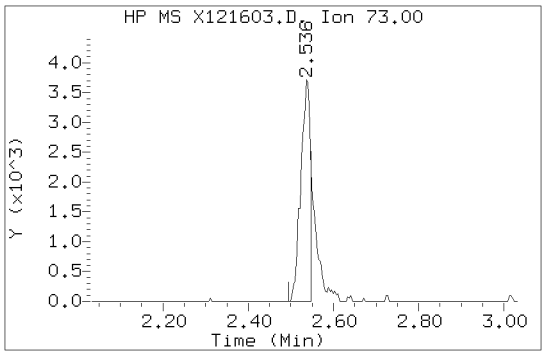
BEFORE

MASS
73
AREA
7826
HEIGHT
3716
27-Dec-2022
16:03
linh
pham



AFTER

MASS
73
AREA
5841
HEIGHT
3716
27-Dec-2022
16:07
linh
pham

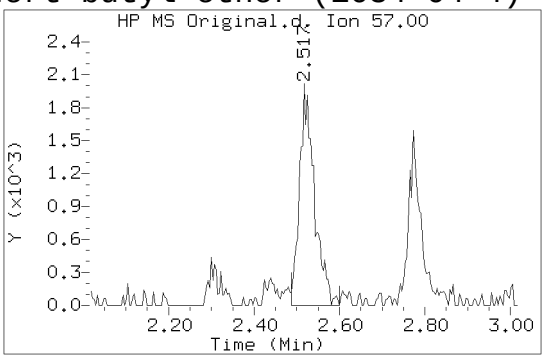


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

Methyl tert-butyl ether (1634-04-4)

BEFORE

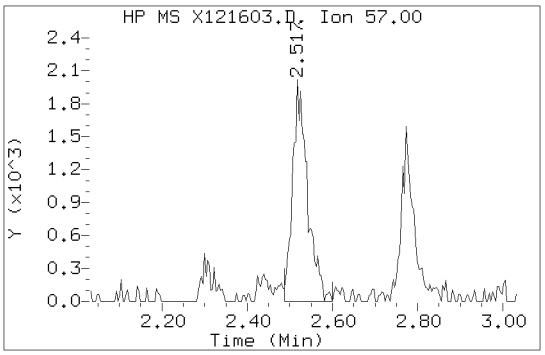
MASS
57
AREA
4915
HEIGHT
2019
27-Dec-2022
16:03
linh
pham



AFTER

MASS
57
AREA
4915
HEIGHT
2019
27-Dec-2022
16:07
linh
pham

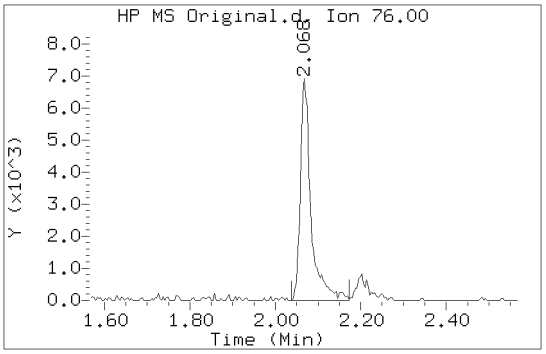
Reason Code:



Carbon Disulfide (75-15-0)

BEFORE

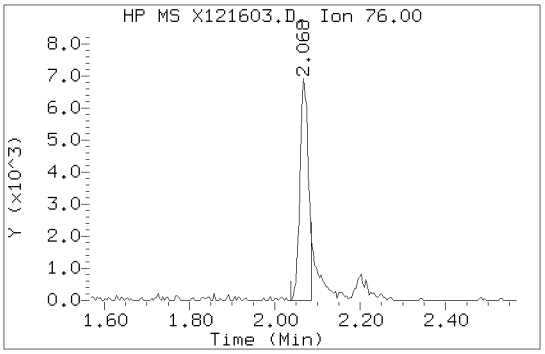
MASS
76
AREA
12313
HEIGHT
6923
27-Dec-2022
16:03
linh
pham



AFTER

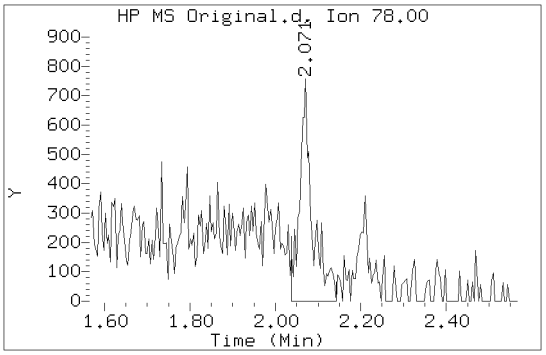
MASS
76
AREA
9921
HEIGHT
6923
27-Dec-2022
16:07
linh
pham

Reason Code:



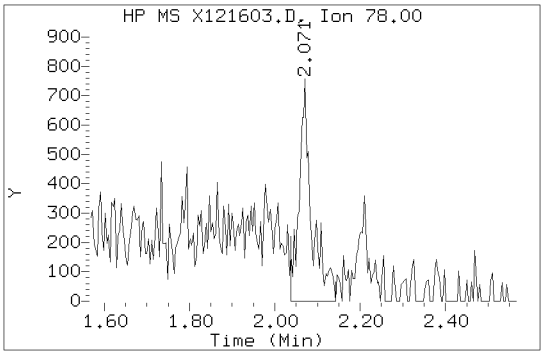
BEFORE

MASS
78
AREA
1586
HEIGHT
757
27-Dec-2022
16:03
linh
pham



AFTER

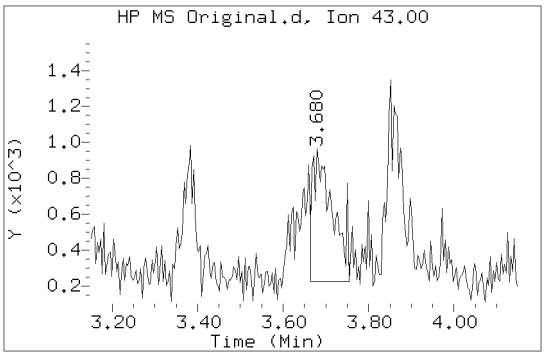
MASS
78
AREA
1586
HEIGHT
757
27-Dec-2022
16:07
linh
pham



2-Butanone (78-93-3)

BEFORE

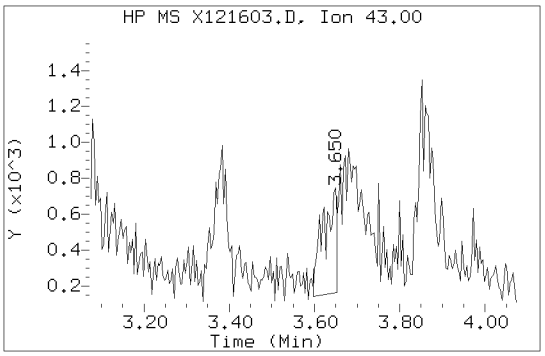
MASS
43
AREA
2415
HEIGHT
742
27-Dec-2022
16:03
linh
pham



AFTER

MASS
43
AREA
1292
HEIGHT
587
27-Dec-2022
16:07
linh
pham

Reason Code:



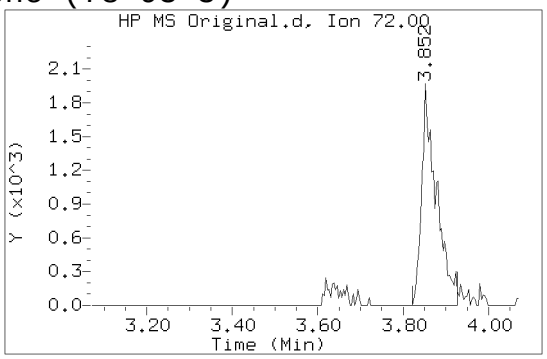
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

2-Butanone (78-93-3)

Reason Code:

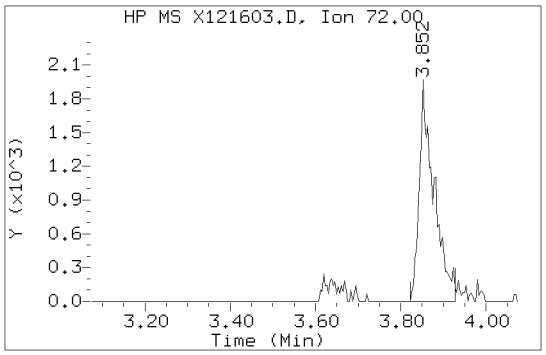
BEFORE

MASS
72
AREA
4698
HEIGHT
1970
27-Dec-2022
16:03
linh
pham



AFTER

MASS
72
AREA
4698
HEIGHT
1970
27-Dec-2022
16:07
linh
pham

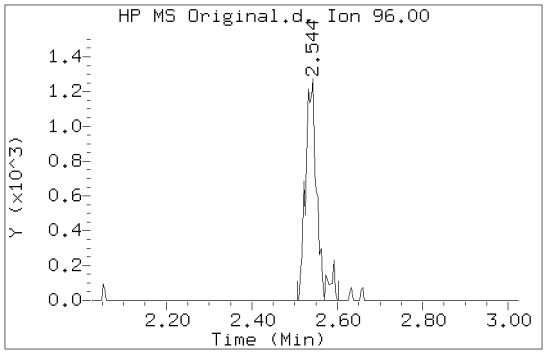


trans-1,2-Dichloroethene (156-60-5)

Reason Code:

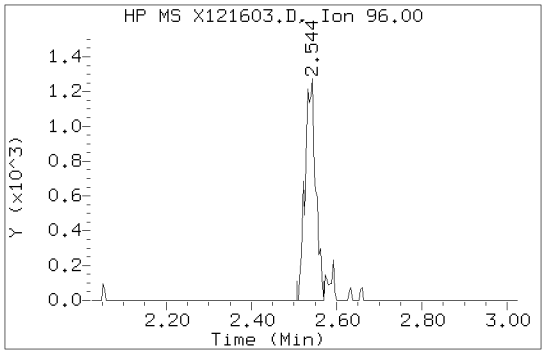
BEFORE

MASS
96
AREA
2404
HEIGHT
1274
27-Dec-2022
16:03
linh
pham



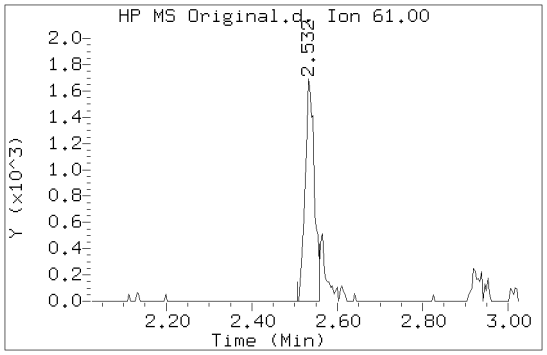
AFTER

MASS
96
AREA
2218
HEIGHT
1274
27-Dec-2022
16:07
linh
pham



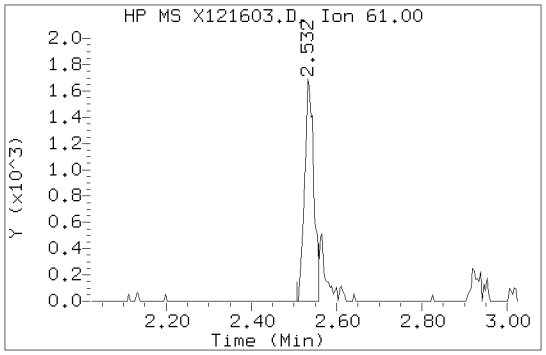
BEFORE

MASS
61
AREA
2571
HEIGHT
1692
27-Dec-2022
16:03
linh
pham



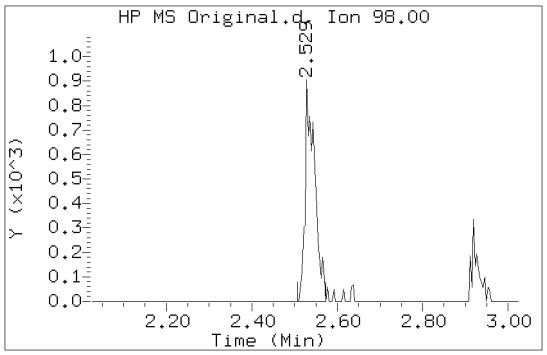
AFTER

MASS
61
AREA
2571
HEIGHT
1692
27-Dec-2022
16:07
linh
pham



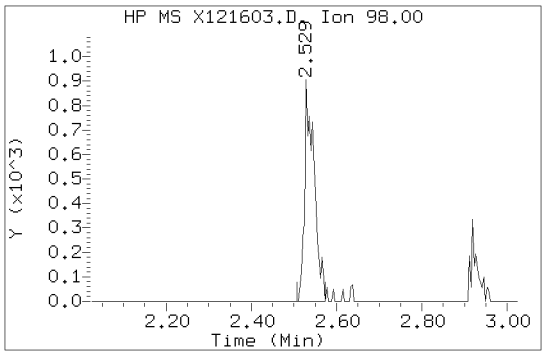
BEFORE

MASS
98
AREA
1412
HEIGHT
906
27-Dec-2022
16:03
linh
pham



AFTER

MASS
98
AREA
1412
HEIGHT
906
27-Dec-2022
16:07
linh
pham



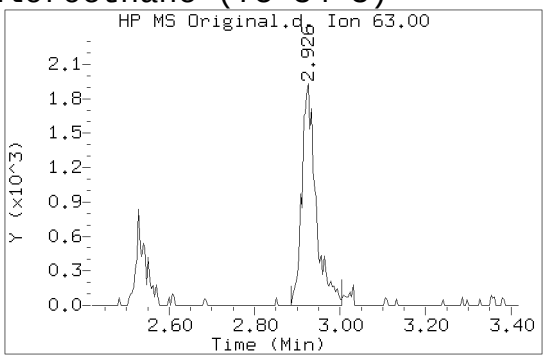
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

1,1-Dichloroethane (75-34-3)

Reason Code:

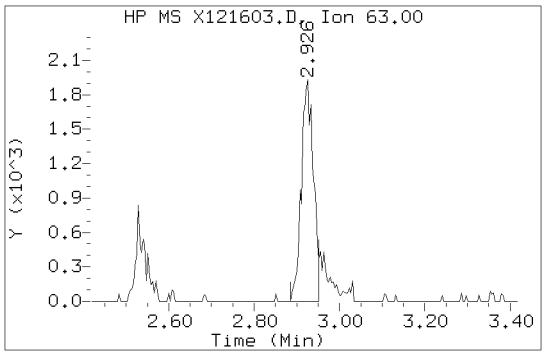
BEFORE

MASS
63
AREA
4504
HEIGHT
1931
27-Dec-2022
16:03
linh
pham



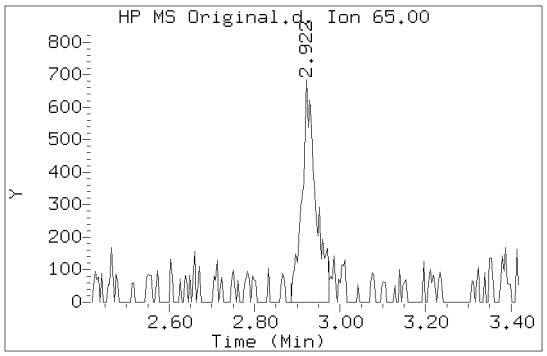
AFTER

MASS
63
AREA
3874
HEIGHT
1931
27-Dec-2022
16:07
linh
pham



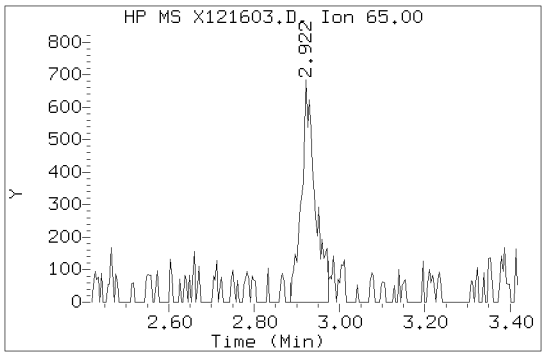
BEFORE

MASS
65
AREA
1548
HEIGHT
684
27-Dec-2022
16:03
linh
pham



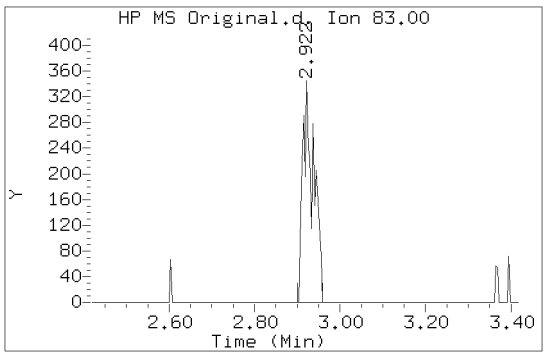
AFTER

MASS
65
AREA
1548
HEIGHT
684
27-Dec-2022
16:07
linh
pham



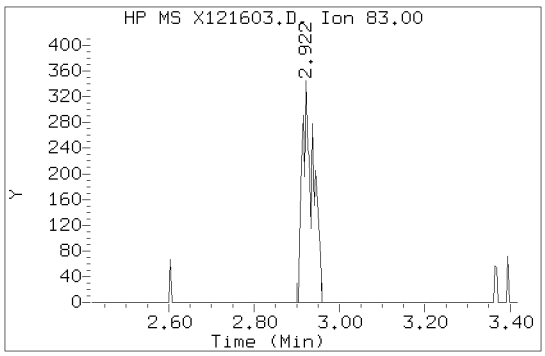
BEFORE

MASS
83
AREA
618
HEIGHT
345
27-Dec-2022
16:03
linh
pham



AFTER

MASS
83
AREA
618
HEIGHT
345
27-Dec-2022
16:07
linh
pham

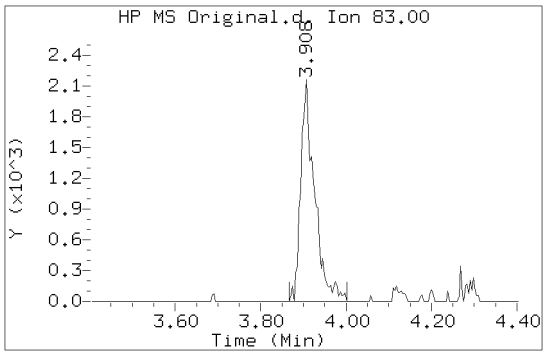


Chloroform (67-66-3)

Reason Code:

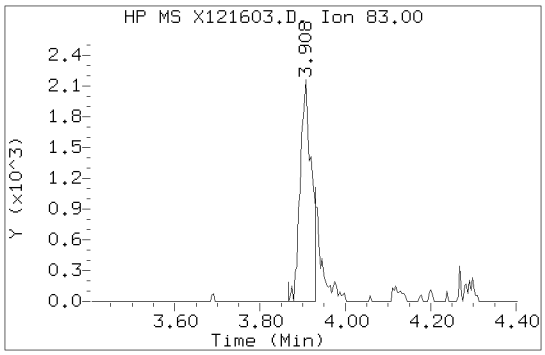
BEFORE

MASS
83
AREA
4949
HEIGHT
2160
27-Dec-2022
16:03
linh
pham



AFTER

MASS
83
AREA
4040
HEIGHT
2160
27-Dec-2022
16:07
linh
pham



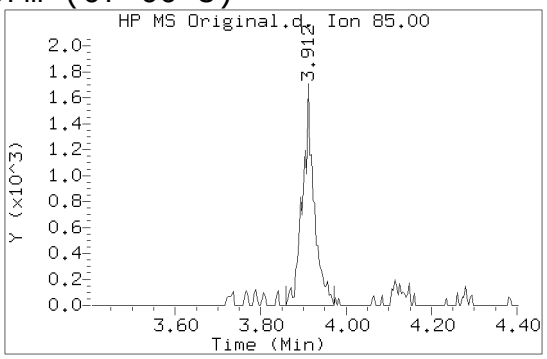
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

Chloroform (67-66-3)

Reason Code:

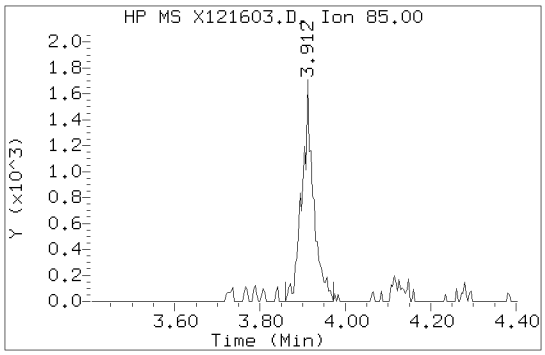
BEFORE

MASS
85
AREA
3222
HEIGHT
1709
27-Dec-2022
16:03
linh
pham



AFTER

MASS
85
AREA
3222
HEIGHT
1709
27-Dec-2022
16:07
linh
pham

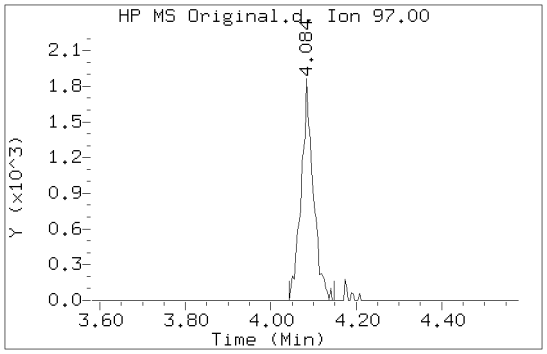


1,1,1-Trichloroethane (71-55-6)

Reason Code:

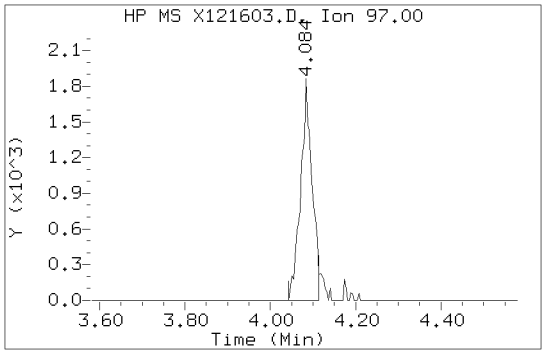
BEFORE

MASS
97
AREA
3710
HEIGHT
1863
27-Dec-2022
16:03
linh
pham



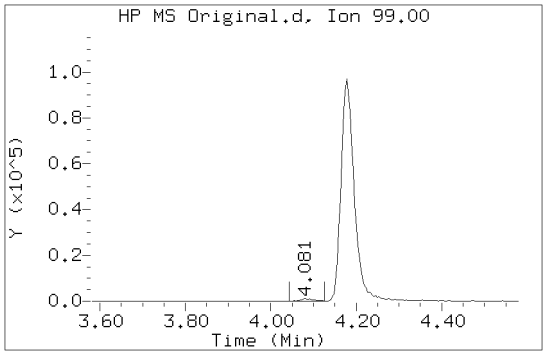
AFTER

MASS
97
AREA
3512
HEIGHT
1863
27-Dec-2022
16:07
linh
pham



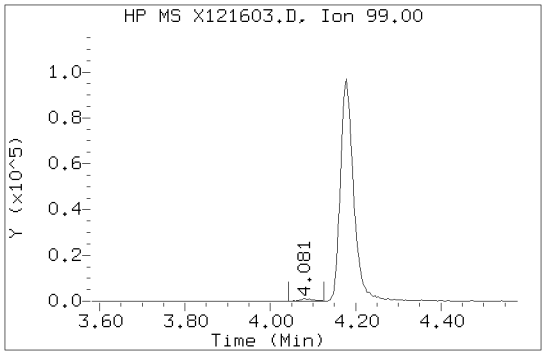
BEFORE

MASS
99
AREA
2299
HEIGHT
1029
27-Dec-2022
16:03
linh
pham



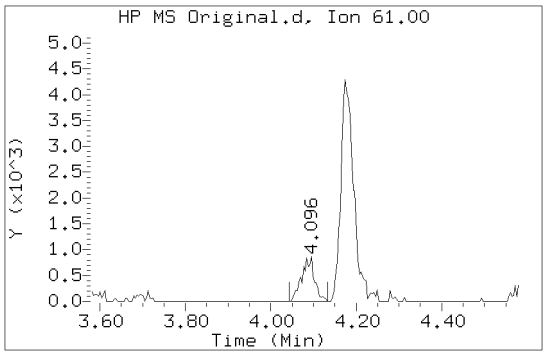
AFTER

MASS
99
AREA
2299
HEIGHT
1029
27-Dec-2022
16:07
linh
pham



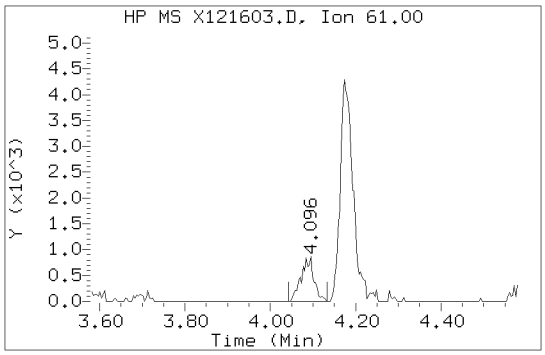
BEFORE

MASS
61
AREA
1801
HEIGHT
872
27-Dec-2022
16:03
linh
pham



AFTER

MASS
61
AREA
1801
HEIGHT
872
27-Dec-2022
16:07
linh
pham



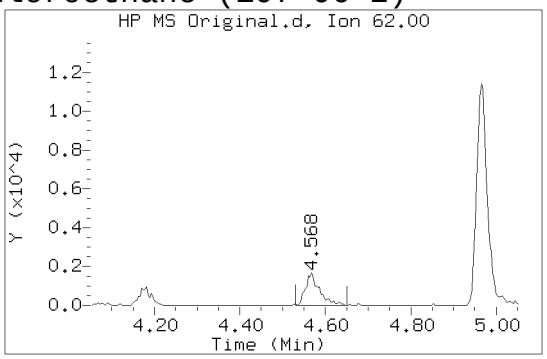
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

1,2-Dichloroethane (107-06-2)

Reason Code:

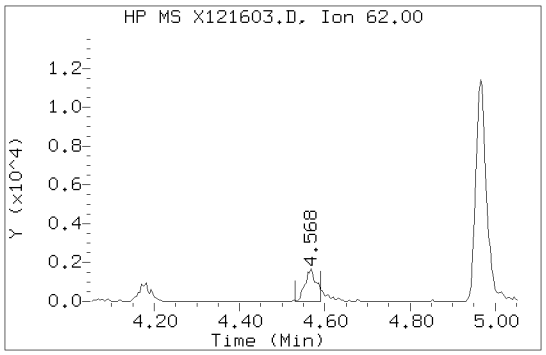
BEFORE

MASS
62
AREA
3822
HEIGHT
1678
27-Dec-2022
16:03
linh
pham



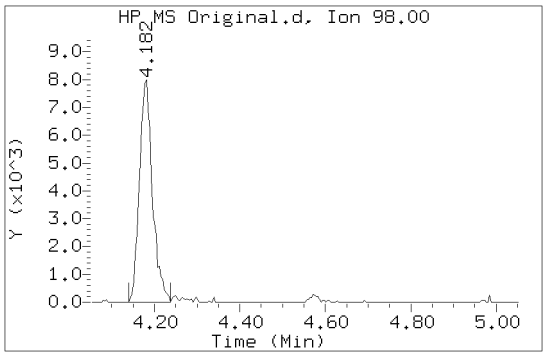
AFTER

MASS
62
AREA
3129
HEIGHT
1678
27-Dec-2022
16:07
linh
pham



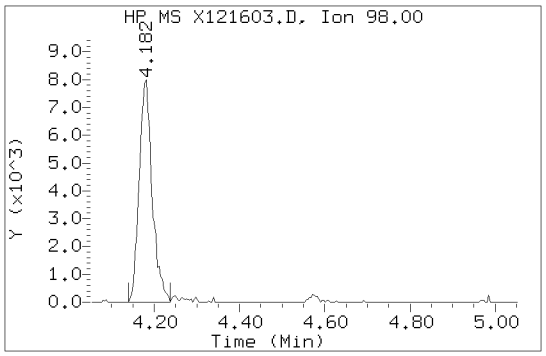
BEFORE

MASS
98
AREA
16918
HEIGHT
7987
27-Dec-2022
16:03
linh
pham



AFTER

MASS
98
AREA
16918
HEIGHT
7987
27-Dec-2022
16:07
linh
pham

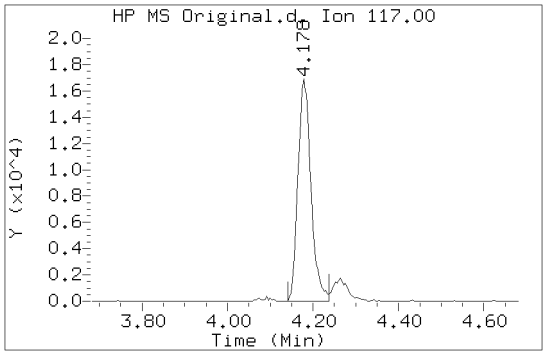


Carbon Tetrachloride (56-23-5)

Reason Code:

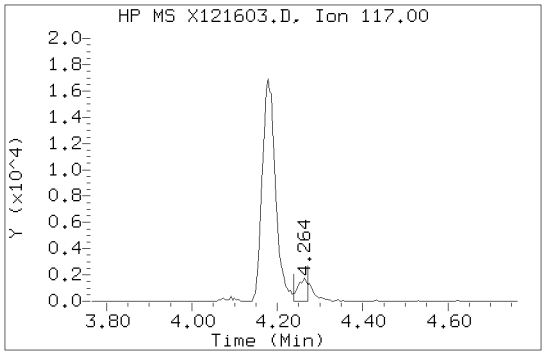
BEFORE

MASS
117
AREA
36559
HEIGHT
16920
27-Dec-2022
16:03
linh
pham



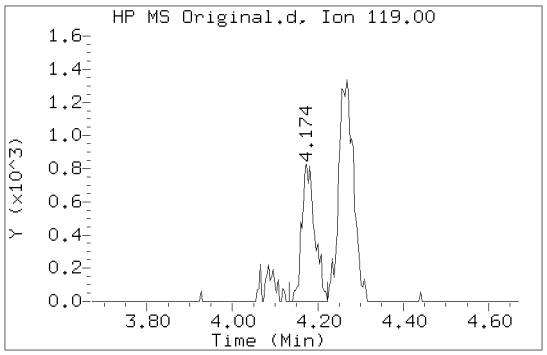
AFTER

MASS
117
AREA
2763
HEIGHT
1744
27-Dec-2022
16:07
linh
pham



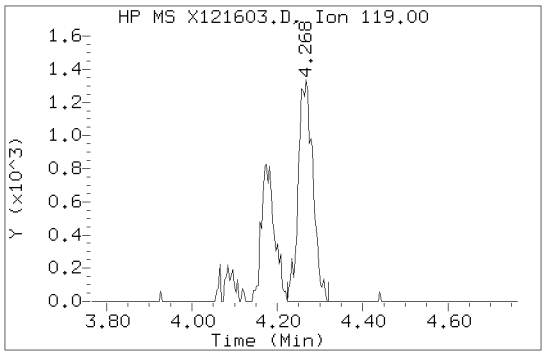
BEFORE

MASS
119
AREA
1780
HEIGHT
826
27-Dec-2022
16:03
linh
pham



AFTER

MASS
119
AREA
3227
HEIGHT
1337
27-Dec-2022
16:07
linh
pham

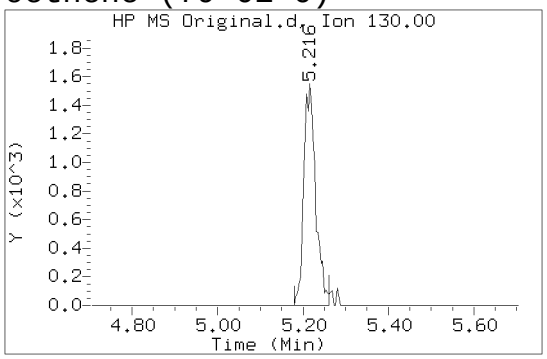


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

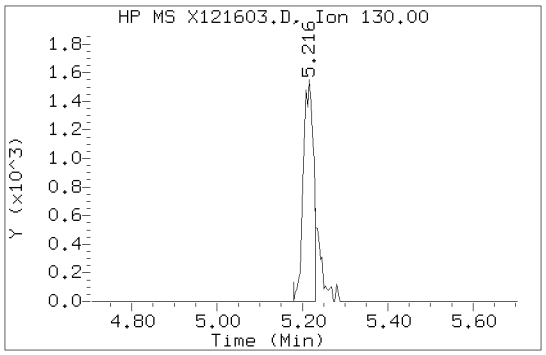
Trichloroethene (79-01-6)

Reason Code:

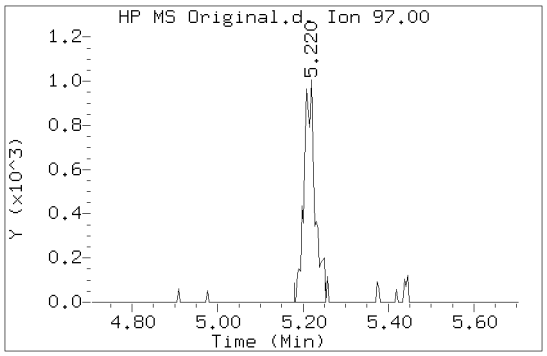
BEFORE
MASS
130
AREA
3011
HEIGHT
1551
27-Dec-2022
16:03
linh
pham



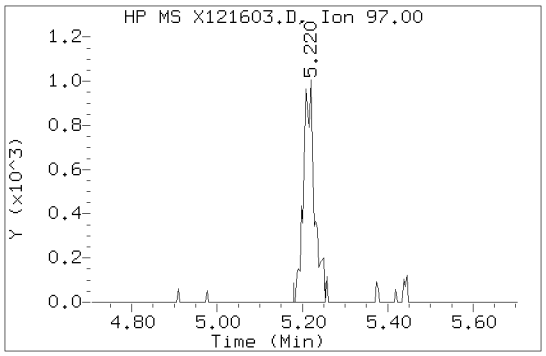
AFTER
MASS
130
AREA
2583
HEIGHT
1551
27-Dec-2022
16:07
linh
pham



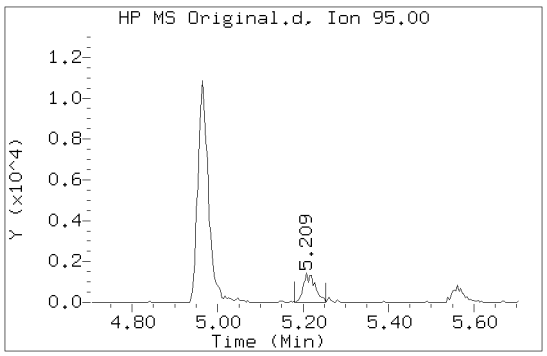
BEFORE
MASS
97
AREA
1808
HEIGHT
1006
27-Dec-2022
16:03
linh
pham



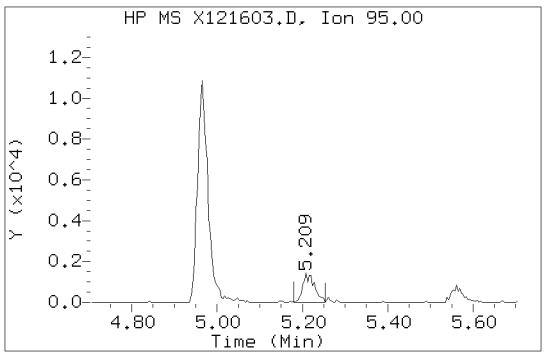
AFTER
MASS
97
AREA
1808
HEIGHT
1006
27-Dec-2022
16:07
linh
pham



BEFORE
MASS
95
AREA
2693
HEIGHT
1431
27-Dec-2022
16:03
linh
pham



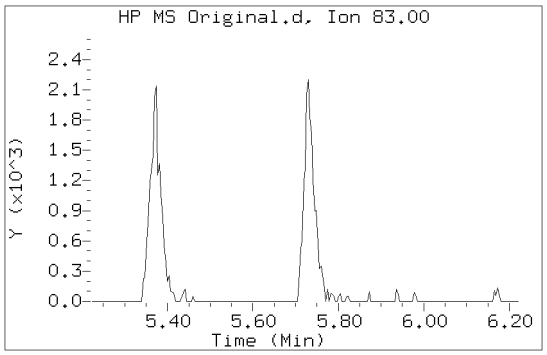
AFTER
MASS
95
AREA
2693
HEIGHT
1431
27-Dec-2022
16:07
linh
pham



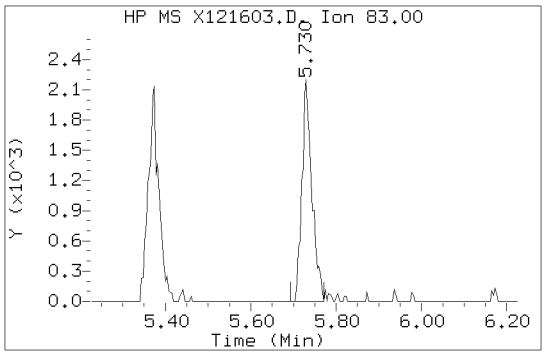
Bromodichloromethane (75-27-4)

Reason Code:

BEFORE
MASS
83
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



AFTER
MASS
83
AREA
3650
HEIGHT
2201
27-Dec-2022
16:07
linh
pham



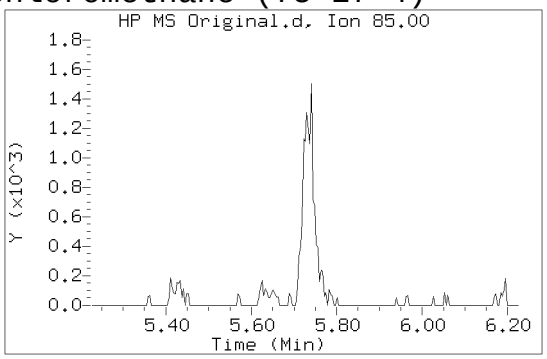
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

Bromodichloromethane (75-27-4)

Reason Code:

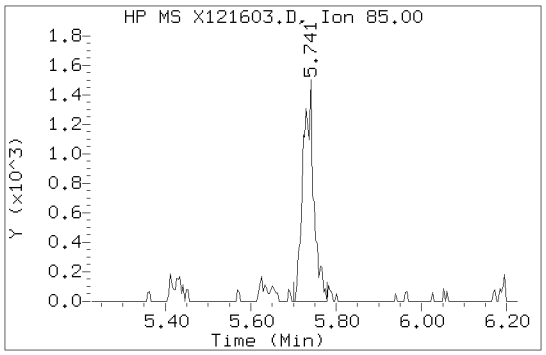
BEFORE

MASS
85
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



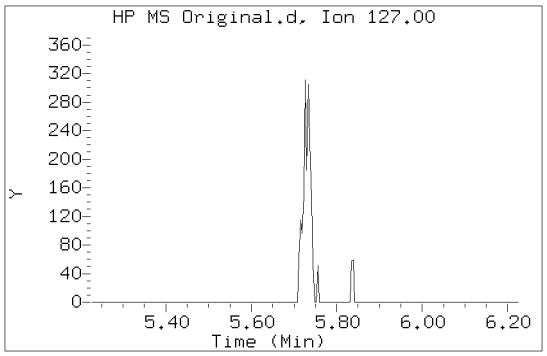
AFTER

MASS
85
AREA
2639
HEIGHT
1503
27-Dec-2022
16:07
linh
pham



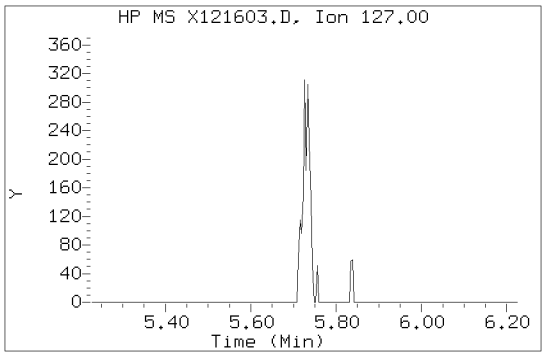
BEFORE

MASS
127
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



AFTER

MASS
127
AREA
0
HEIGHT
0
27-Dec-2022
16:07
linh
pham

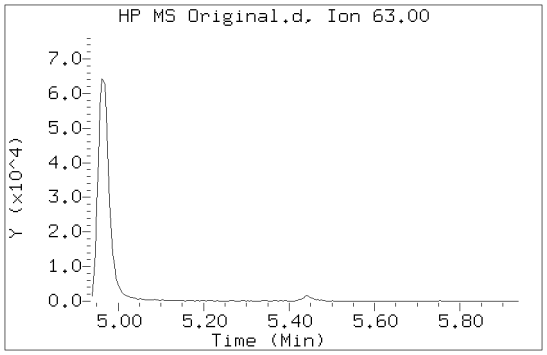


1,2-Dichloropropane (78-87-5)

Reason Code:

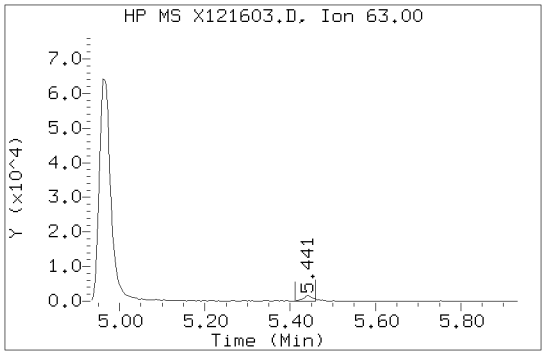
BEFORE

MASS
63
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



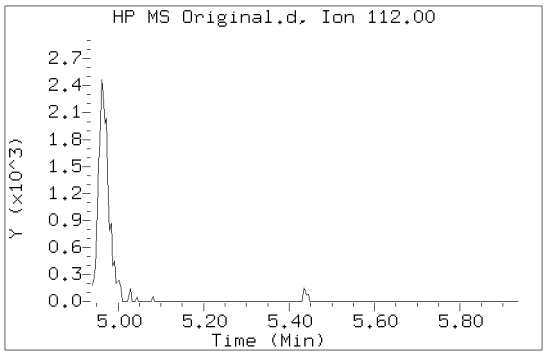
AFTER

MASS
63
AREA
2449
HEIGHT
1587
27-Dec-2022
16:07
linh
pham



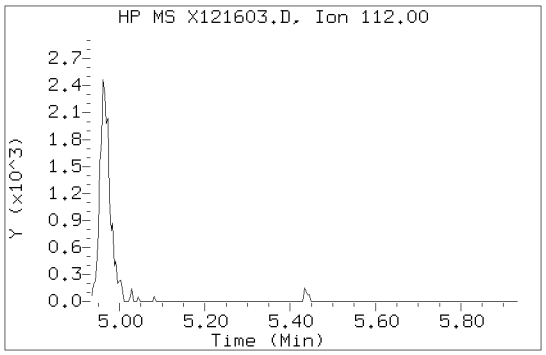
BEFORE

MASS
112
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



AFTER

MASS
112
AREA
0
HEIGHT
0
27-Dec-2022
16:07
linh
pham



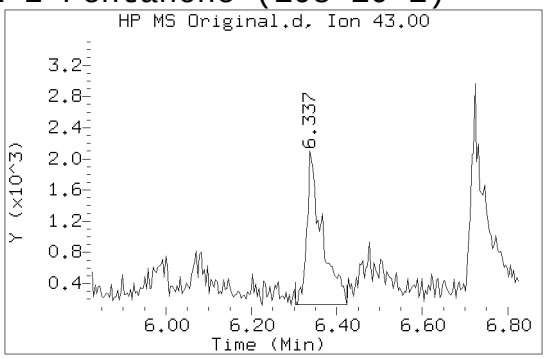
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

4-Methyl-2-Pentanone (108-10-1)

Reason Code:

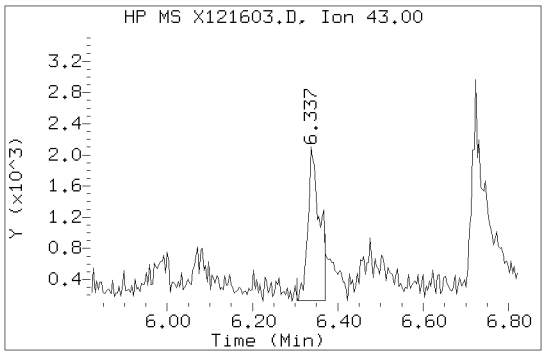
BEFORE

MASS
43
AREA
4873
HEIGHT
1970
27-Dec-2022
16:03
linh
pham



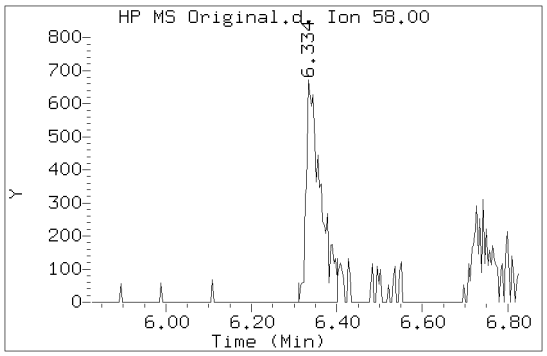
AFTER

MASS
43
AREA
3741
HEIGHT
1970
27-Dec-2022
16:07
linh
pham



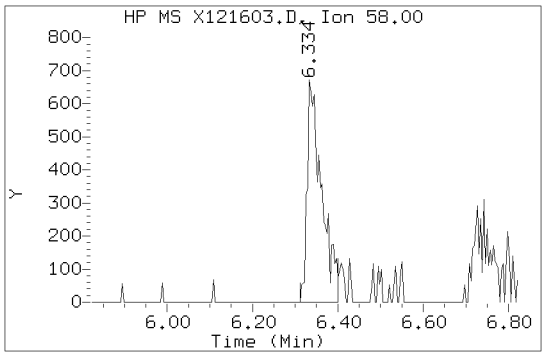
BEFORE

MASS
58
AREA
1585
HEIGHT
672
27-Dec-2022
16:03
linh
pham



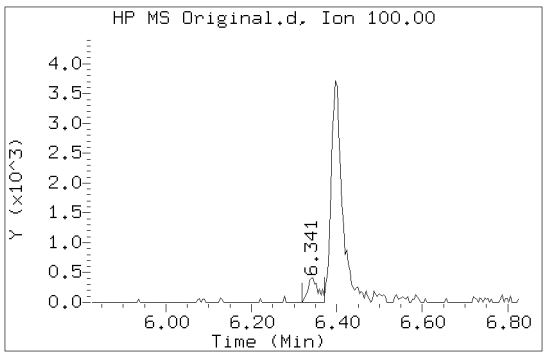
AFTER

MASS
58
AREA
1585
HEIGHT
672
27-Dec-2022
16:07
linh
pham



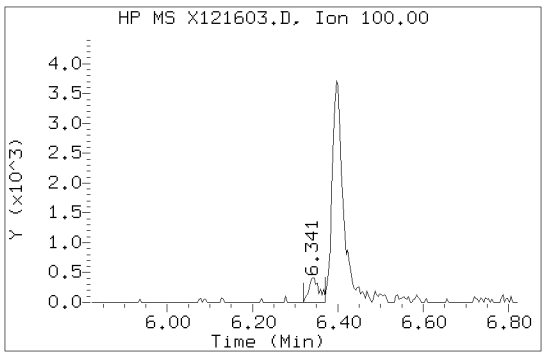
BEFORE

MASS
100
AREA
714
HEIGHT
412
27-Dec-2022
16:03
linh
pham



AFTER

MASS
100
AREA
714
HEIGHT
412
27-Dec-2022
16:07
linh
pham

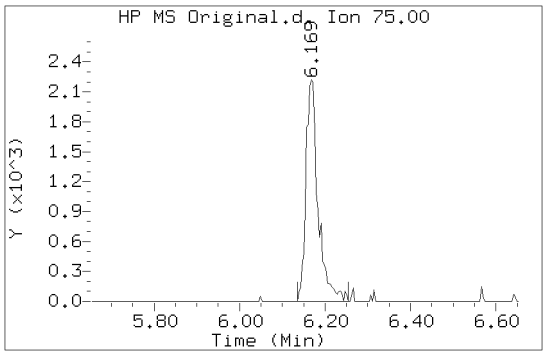


cis-1,3-Dichloropropene (10061-01-5)

Reason Code:

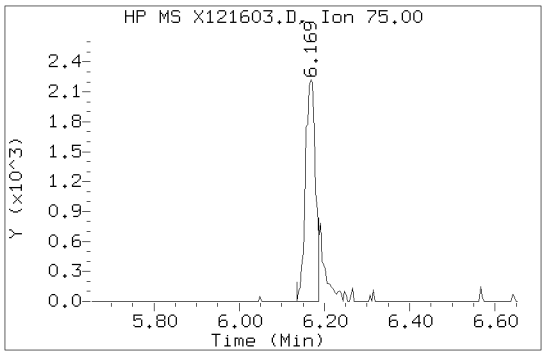
BEFORE

MASS
75
AREA
4432
HEIGHT
2222
27-Dec-2022
16:03
linh
pham



AFTER

MASS
75
AREA
3695
HEIGHT
2222
27-Dec-2022
16:07
linh
pham



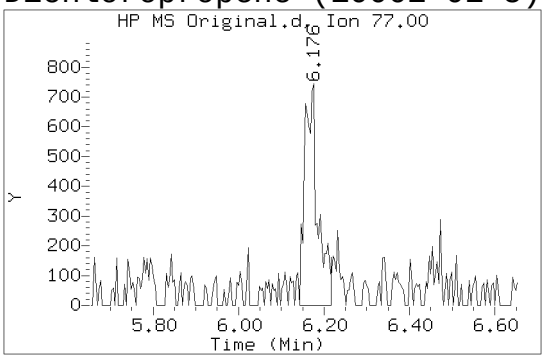
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

cis-1,3-Dichloropropene (10061-01-5)

Reason Code:

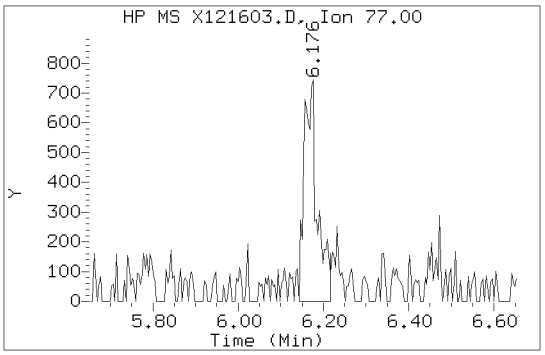
BEFORE

MASS
77
AREA
1607
HEIGHT
745
27-Dec-2022
16:03
linh
pham



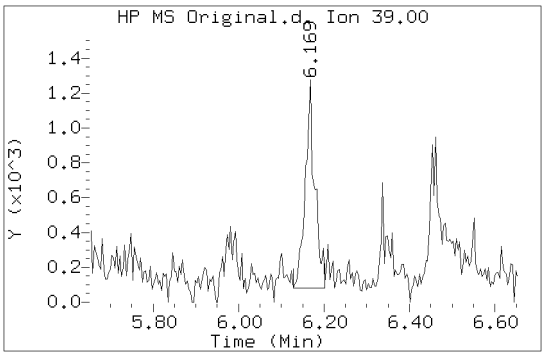
AFTER

MASS
77
AREA
1607
HEIGHT
745
27-Dec-2022
16:07
linh
pham



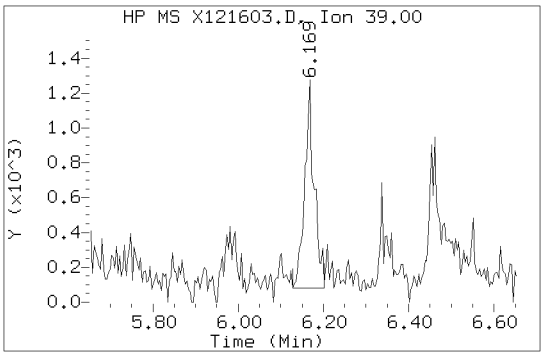
BEFORE

MASS
39
AREA
1836
HEIGHT
1193
27-Dec-2022
16:03
linh
pham



AFTER

MASS
39
AREA
1836
HEIGHT
1193
27-Dec-2022
16:07
linh
pham

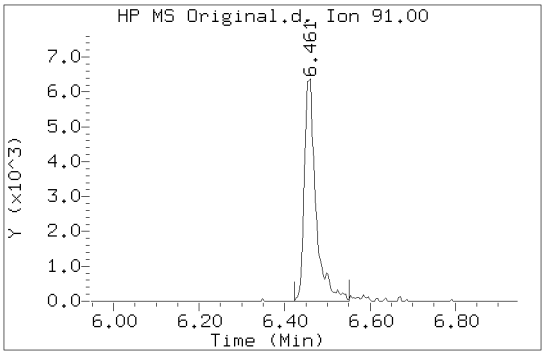


Toluene (108-88-3)

Reason Code:

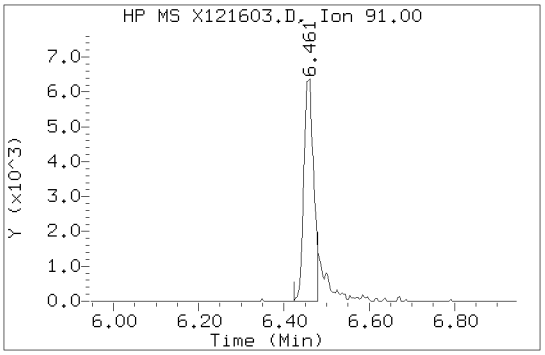
BEFORE

MASS
91
AREA
12225
HEIGHT
6374
27-Dec-2022
16:03
linh
pham



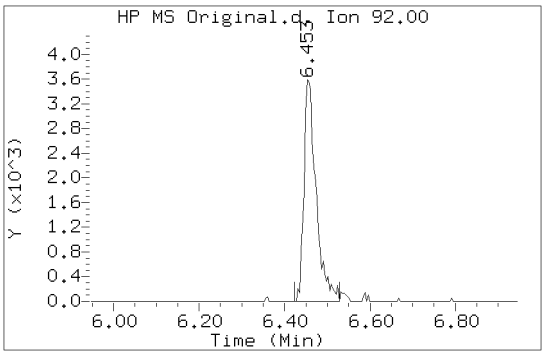
AFTER

MASS
91
AREA
10374
HEIGHT
6374
27-Dec-2022
16:07
linh
pham



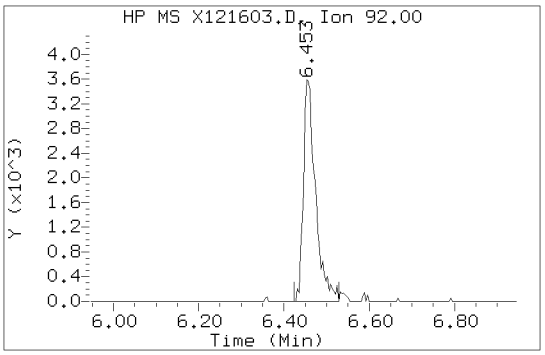
BEFORE

MASS
92
AREA
7180
HEIGHT
3591
27-Dec-2022
16:03
linh
pham



AFTER

MASS
92
AREA
7180
HEIGHT
3591
27-Dec-2022
16:07
linh
pham



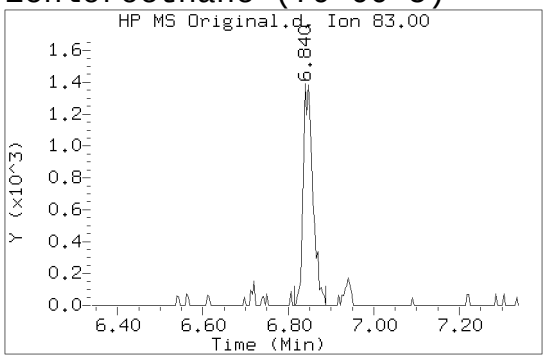
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

1,1,2-Trichloroethane (79-00-5)

Reason Code:

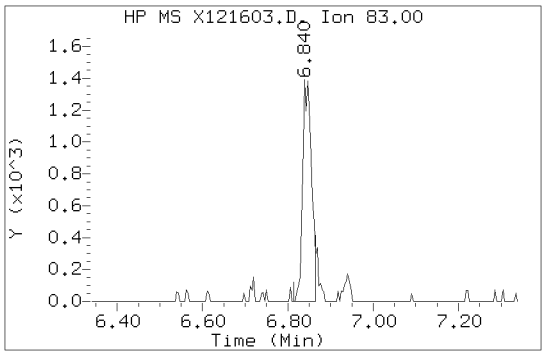
BEFORE

MASS
83
AREA
2247
HEIGHT
1391
27-Dec-2022
16:03
linh
pham



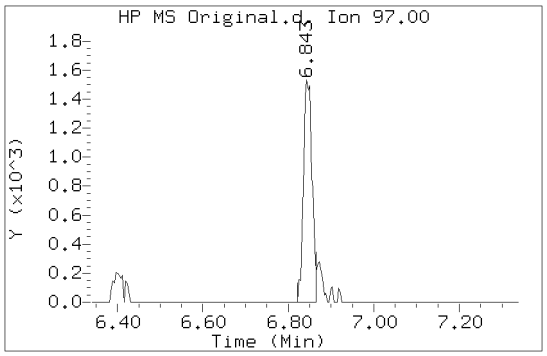
AFTER

MASS
83
AREA
2092
HEIGHT
1391
27-Dec-2022
16:07
linh
pham



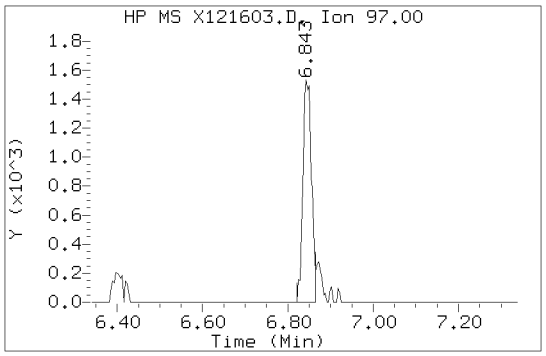
BEFORE

MASS
97
AREA
2224
HEIGHT
1532
27-Dec-2022
16:03
linh
pham



AFTER

MASS
97
AREA
2224
HEIGHT
1532
27-Dec-2022
16:07
linh
pham

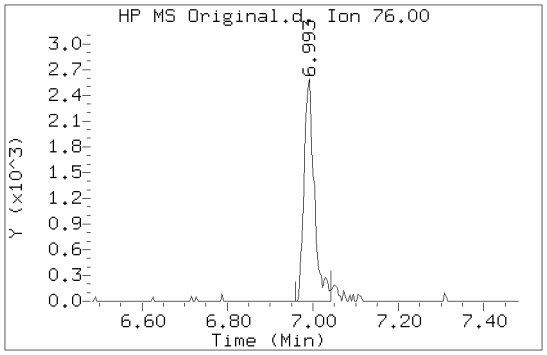


1,3-Dichloropropane (142-28-9)

Reason Code:

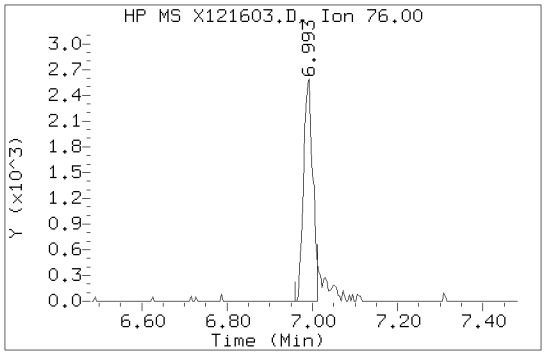
BEFORE

MASS
76
AREA
4415
HEIGHT
2592
27-Dec-2022
16:03
linh
pham



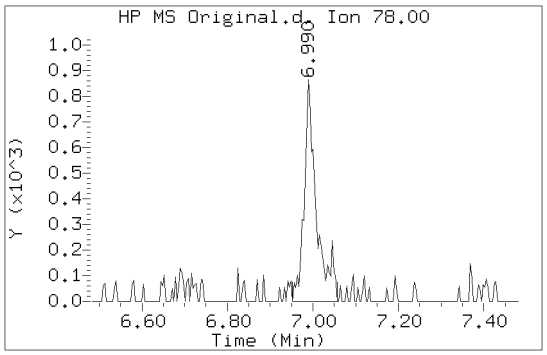
AFTER

MASS
76
AREA
4005
HEIGHT
2592
27-Dec-2022
16:07
linh
pham



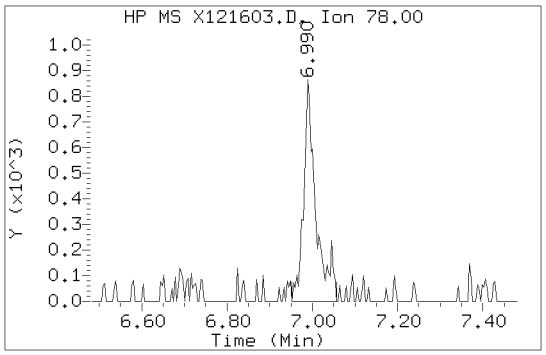
BEFORE

MASS
78
AREA
1727
HEIGHT
864
27-Dec-2022
16:03
linh
pham



AFTER

MASS
78
AREA
1727
HEIGHT
864
27-Dec-2022
16:07
linh
pham



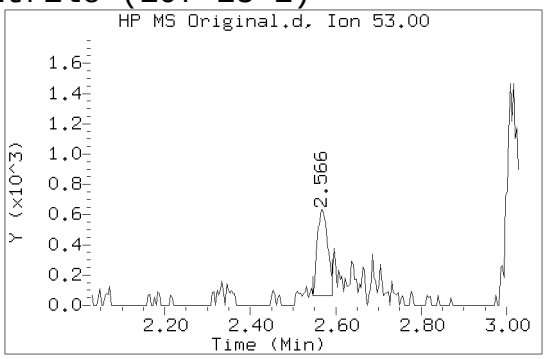
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

Acrylonitrile (107-13-1)

Reason Code:

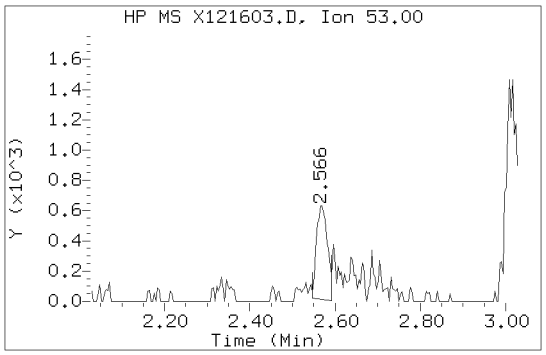
BEFORE

MASS
53
AREA
975
HEIGHT
571
27-Dec-2022
16:03
linh
pham



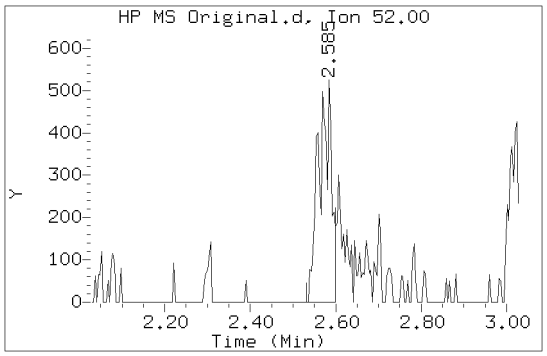
AFTER

MASS
53
AREA
1118
HEIGHT
618
27-Dec-2022
16:07
linh
pham



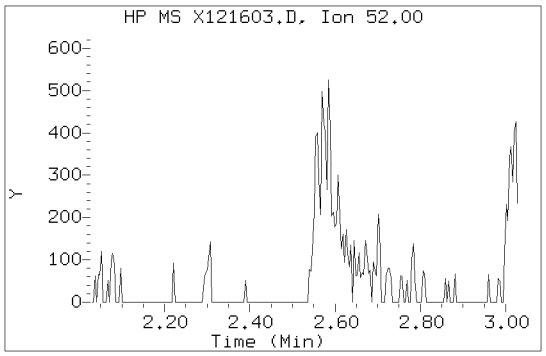
BEFORE

MASS
52
AREA
1100
HEIGHT
525
27-Dec-2022
16:03
linh
pham



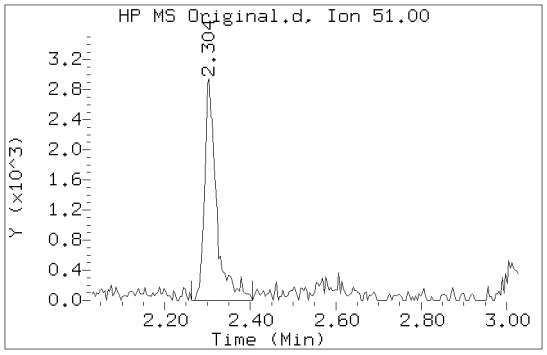
AFTER

MASS
52
AREA
0
HEIGHT
0
27-Dec-2022
16:07
linh
pham



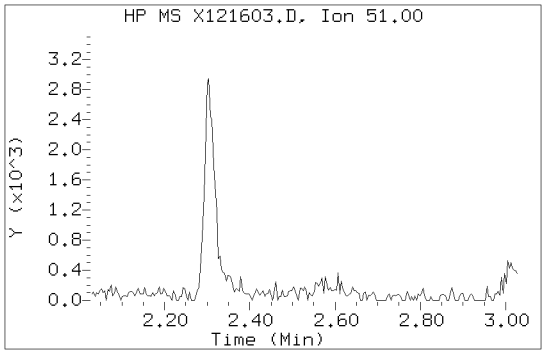
BEFORE

MASS
51
AREA
5708
HEIGHT
2946
27-Dec-2022
16:03
linh
pham



AFTER

MASS
51
AREA
0
HEIGHT
0
27-Dec-2022
16:07
linh
pham

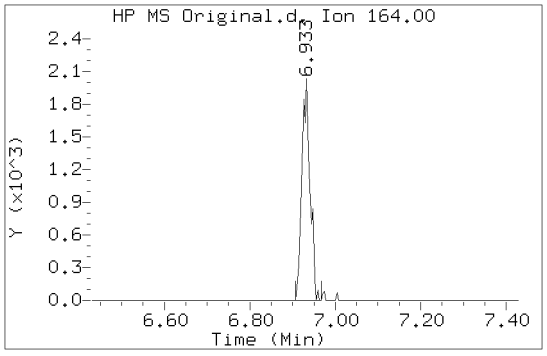


Tetrachloroethene (127-18-4)

Reason Code:

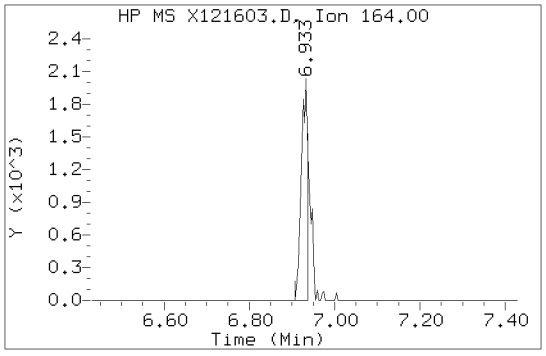
BEFORE

MASS
164
AREA
2777
HEIGHT
2036
27-Dec-2022
16:03
linh
pham



AFTER

MASS
164
AREA
2131
HEIGHT
2036
27-Dec-2022
16:07
linh
pham

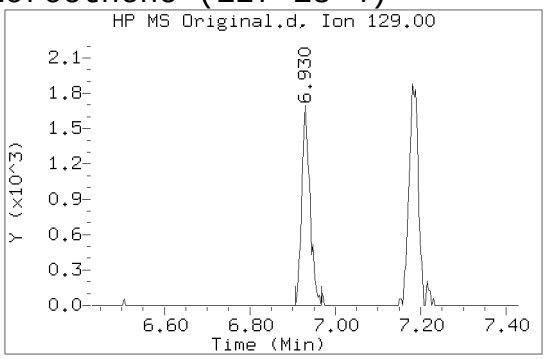


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

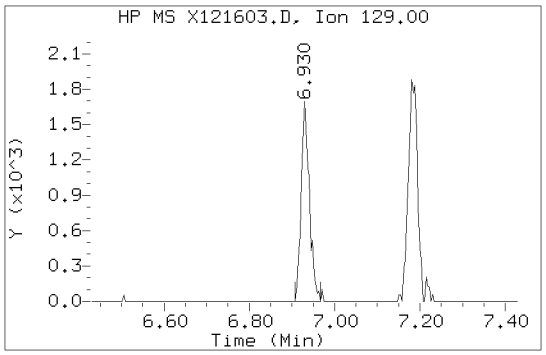
Tetrachloroethene (127-18-4)

Reason Code:

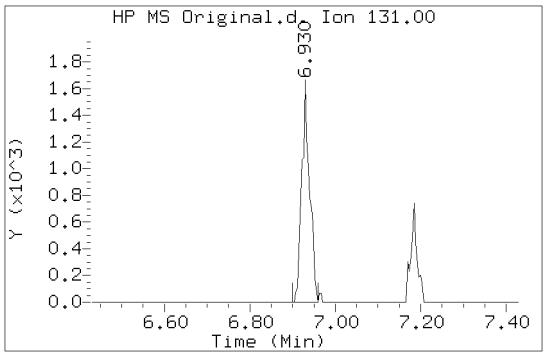
BEFORE
MASS
129
AREA
2342
HEIGHT
1697
27-Dec-2022
16:03
linh
pham



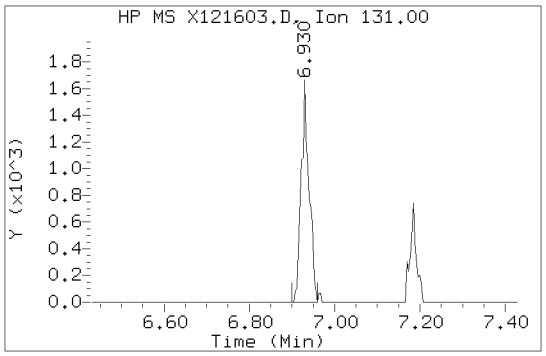
AFTER
MASS
129
AREA
2342
HEIGHT
1697
27-Dec-2022
16:07
linh
pham



BEFORE
MASS
131
AREA
2193
HEIGHT
1665
27-Dec-2022
16:03
linh
pham



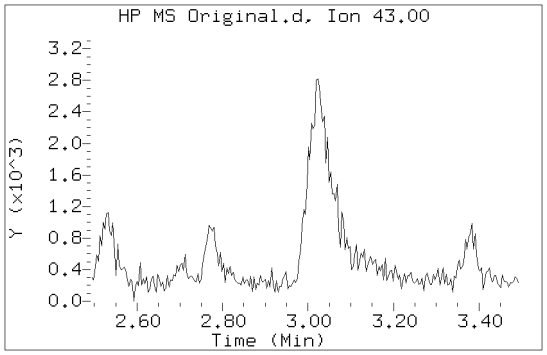
AFTER
MASS
131
AREA
2193
HEIGHT
1665
27-Dec-2022
16:07
linh
pham



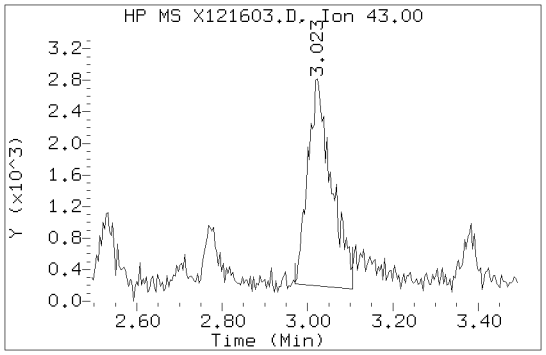
Vinyl Acetate (108-05-4)

Reason Code:

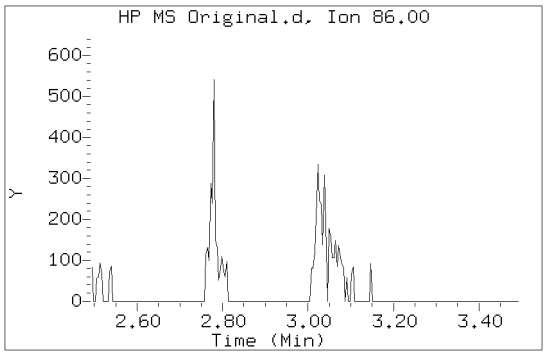
BEFORE
MASS
43
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



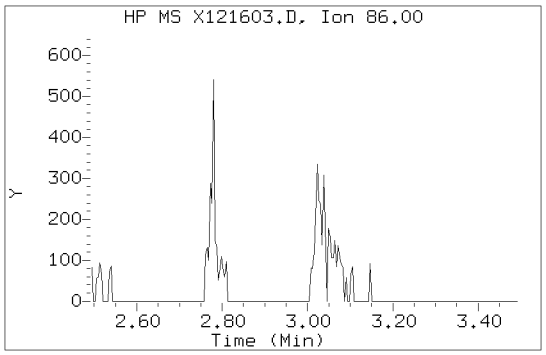
AFTER
MASS
43
AREA
10138
HEIGHT
2622
27-Dec-2022
16:07
linh
pham



BEFORE
MASS
86
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



AFTER
MASS
86
AREA
0
HEIGHT
0
27-Dec-2022
16:07
linh
pham

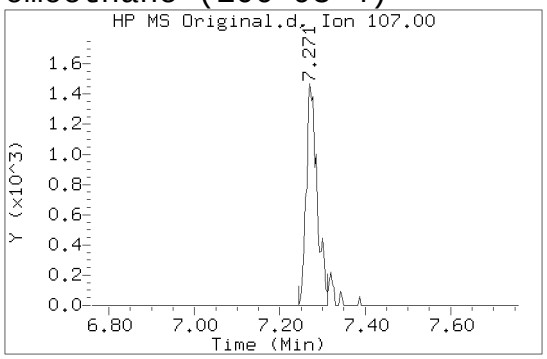


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

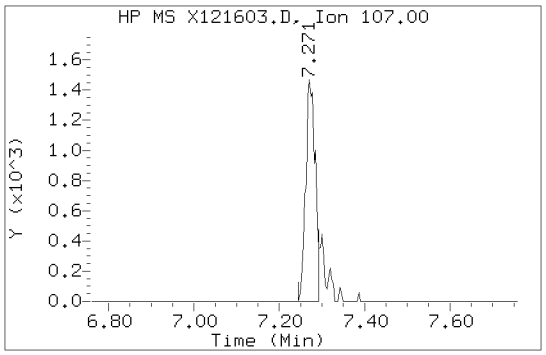
1,2-Dibromoethane (106-93-4)

Reason Code:

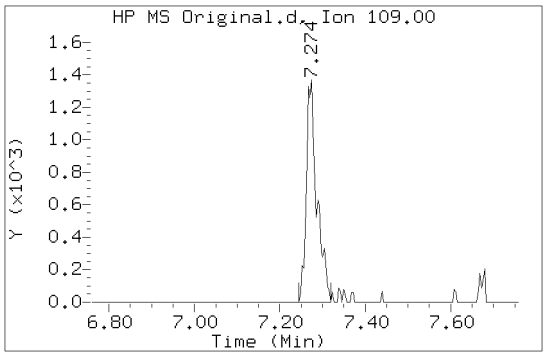
BEFORE
MASS
107
AREA
2627
HEIGHT
1469
27-Dec-2022
16:03
linh
pham



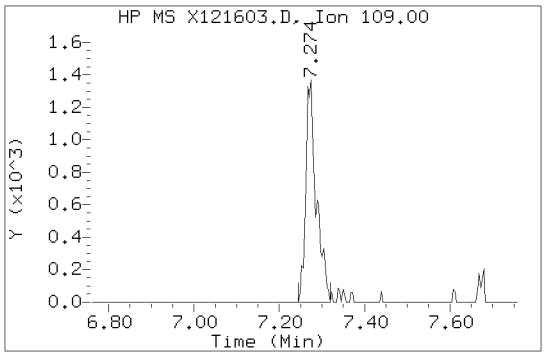
AFTER
MASS
107
AREA
2340
HEIGHT
1469
27-Dec-2022
16:07
linh
pham



BEFORE
MASS
109
AREA
2396
HEIGHT
1369
27-Dec-2022
16:03
linh
pham



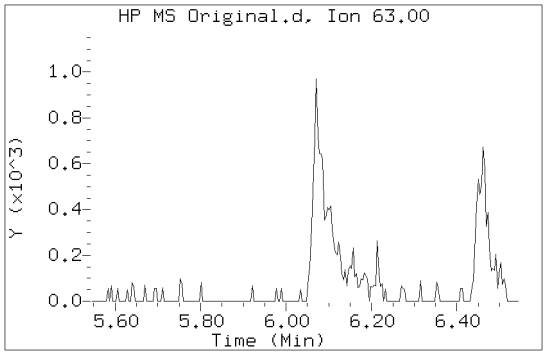
AFTER
MASS
109
AREA
2396
HEIGHT
1369
27-Dec-2022
16:07
linh
pham



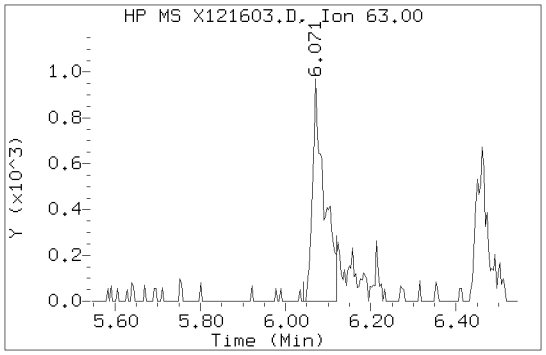
2-Chloroethylvinyl ether (110-75-8)

Reason Code:

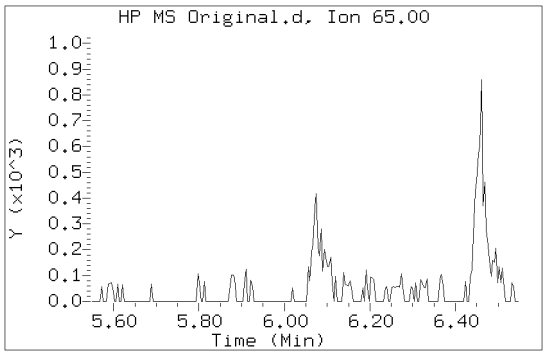
BEFORE
MASS
63
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



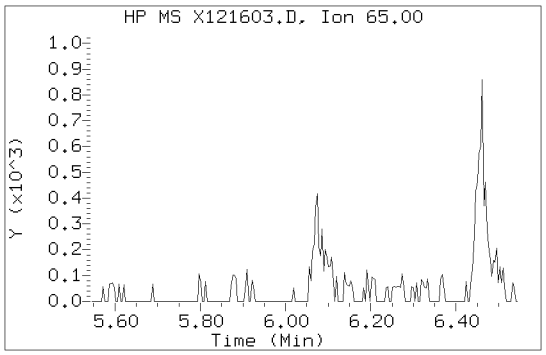
AFTER
MASS
63
AREA
1861
HEIGHT
970
27-Dec-2022
16:07
linh
pham



BEFORE
MASS
65
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



AFTER
MASS
65
AREA
0
HEIGHT
0
27-Dec-2022
16:07
linh
pham



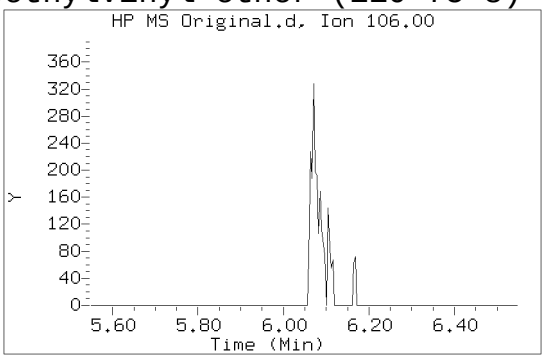
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

2-Chloroethylvinyl ether (110-75-8)

Reason Code:

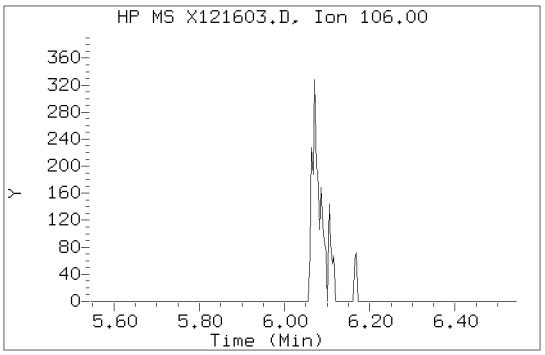
BEFORE

MASS
106
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



AFTER

MASS
106
AREA
0
HEIGHT
0
27-Dec-2022
16:07
linh
pham

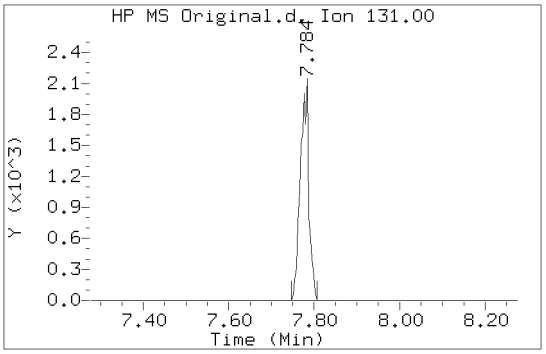


1,1,1,2-Tetrachloroethane (630-20-6)

Reason Code:

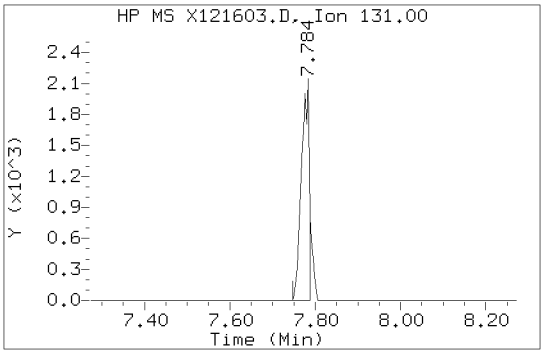
BEFORE

MASS
131
AREA
3036
HEIGHT
2146
27-Dec-2022
16:03
linh
pham



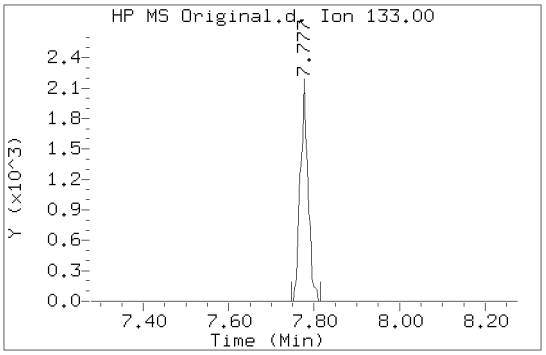
AFTER

MASS
131
AREA
2741
HEIGHT
2146
27-Dec-2022
16:07
linh
pham



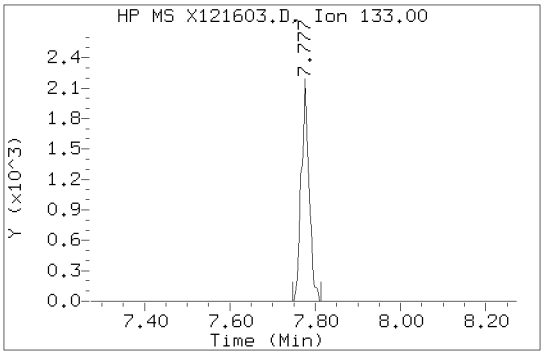
BEFORE

MASS
133
AREA
2829
HEIGHT
2191
27-Dec-2022
16:03
linh
pham



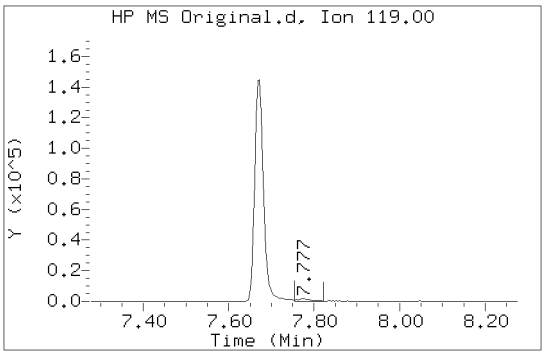
AFTER

MASS
133
AREA
2829
HEIGHT
2191
27-Dec-2022
16:07
linh
pham



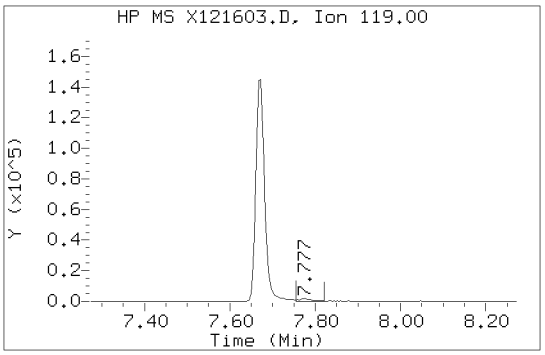
BEFORE

MASS
119
AREA
2971
HEIGHT
1971
27-Dec-2022
16:03
linh
pham



AFTER

MASS
119
AREA
2971
HEIGHT
1971
27-Dec-2022
16:07
linh
pham



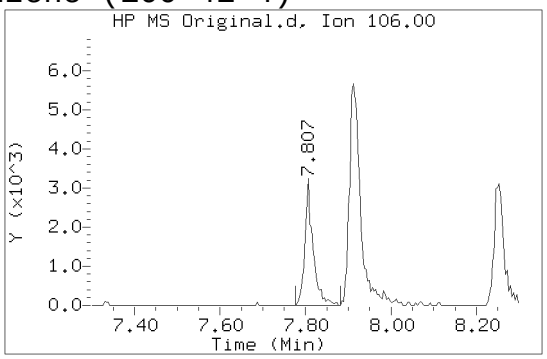
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

Ethylbenzene (100-41-4)

Reason Code:

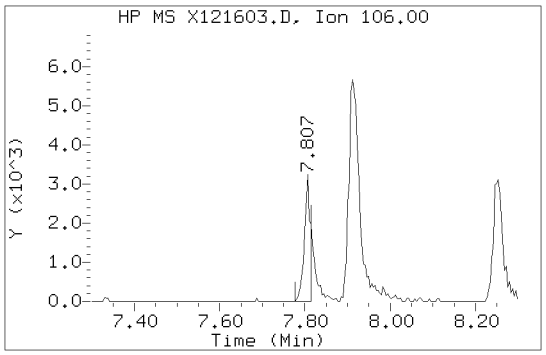
BEFORE

MASS
106
AREA
4331
HEIGHT
3242
27-Dec-2022
16:03
linh
pham



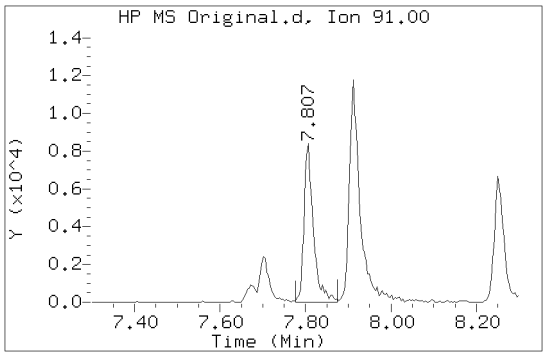
AFTER

MASS
106
AREA
3064
HEIGHT
3242
27-Dec-2022
16:07
linh
pham



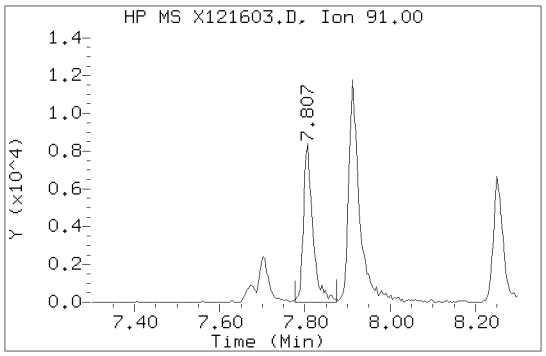
BEFORE

MASS
91
AREA
13136
HEIGHT
8410
27-Dec-2022
16:03
linh
pham



AFTER

MASS
91
AREA
13136
HEIGHT
8410
27-Dec-2022
16:07
linh
pham

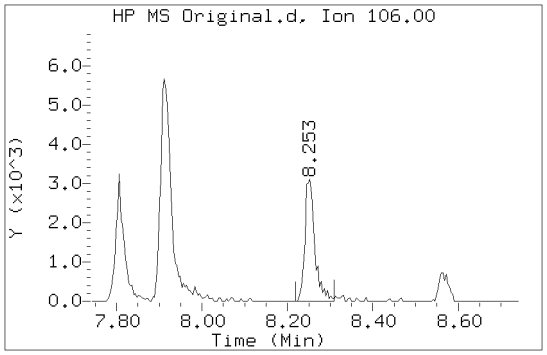


o-Xylene (95-47-6)

Reason Code:

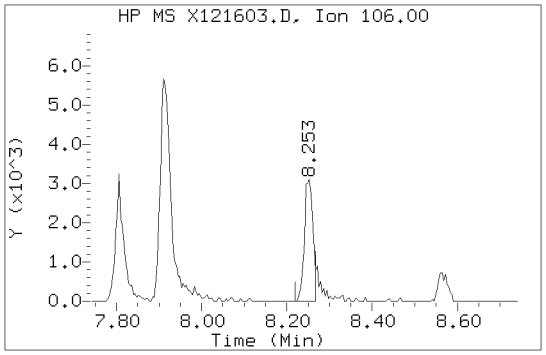
BEFORE

MASS
106
AREA
5100
HEIGHT
3111
27-Dec-2022
16:03
linh
pham



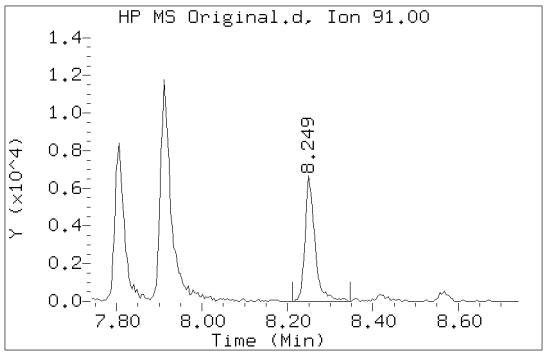
AFTER

MASS
106
AREA
4412
HEIGHT
3111
27-Dec-2022
16:07
linh
pham



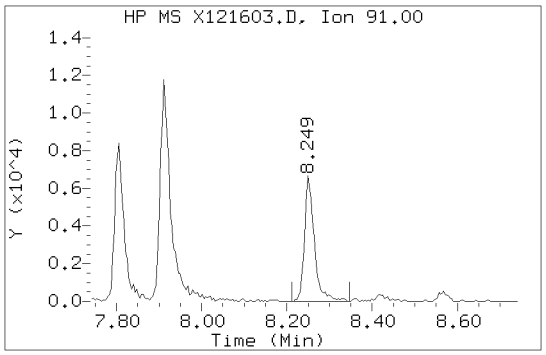
BEFORE

MASS
91
AREA
10808
HEIGHT
6665
27-Dec-2022
16:03
linh
pham



AFTER

MASS
91
AREA
10808
HEIGHT
6665
27-Dec-2022
16:07
linh
pham

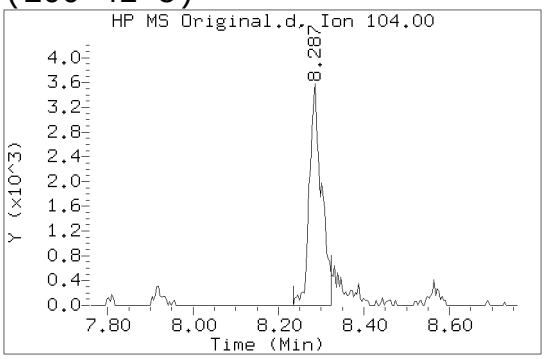


Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

Styrene (100-42-5)

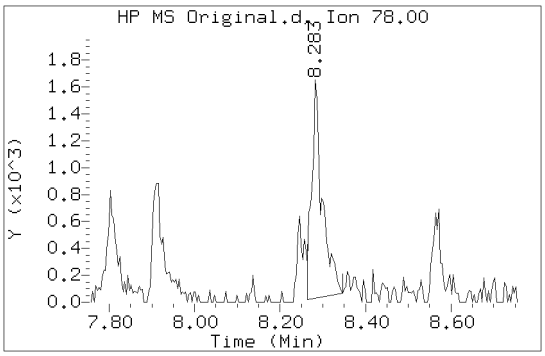
BEFORE

MASS
104
AREA
7074
HEIGHT
3581
27-Dec-2022
16:03
linh
pham



BEFORE

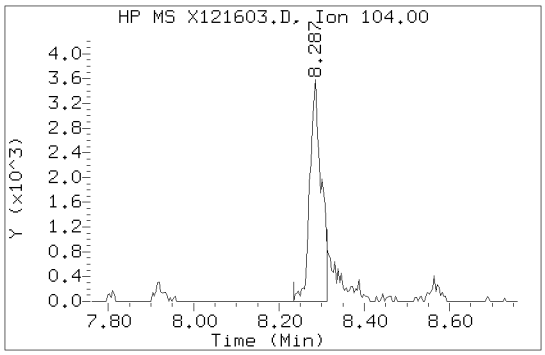
MASS
78
AREA
2827
HEIGHT
1622
27-Dec-2022
16:03
linh
pham



Reason Code:

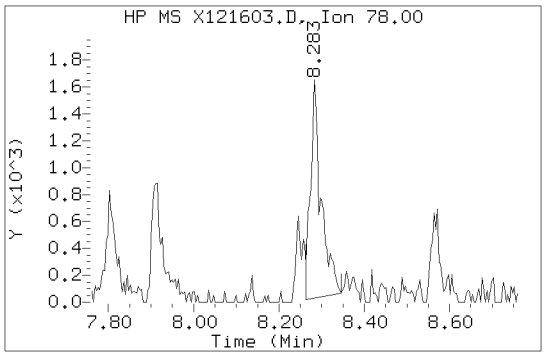
AFTER

MASS
104
AREA
6634
HEIGHT
3581
27-Dec-2022
16:07
linh
pham



AFTER

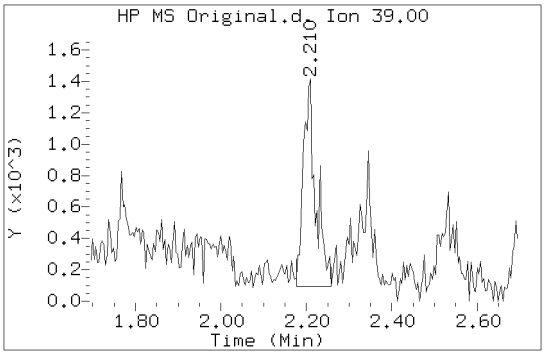
MASS
78
AREA
2827
HEIGHT
1622
27-Dec-2022
16:07
linh
pham



Acetonitrile (75-05-8)

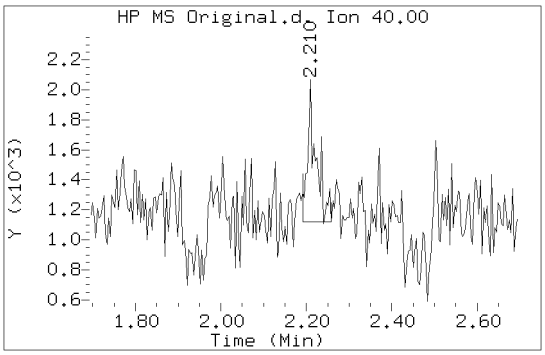
BEFORE

MASS
39
AREA
2674
HEIGHT
1321
27-Dec-2022
16:03
linh
pham



BEFORE

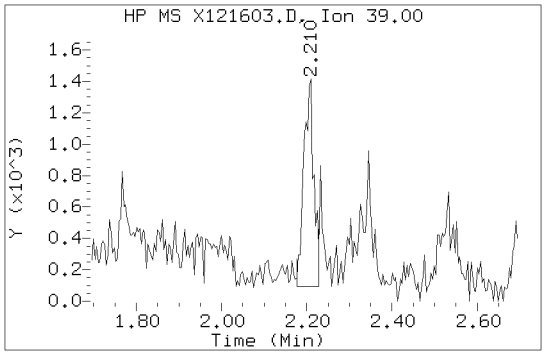
MASS
40
AREA
1296
HEIGHT
946
27-Dec-2022
16:03
linh
pham



Reason Code:

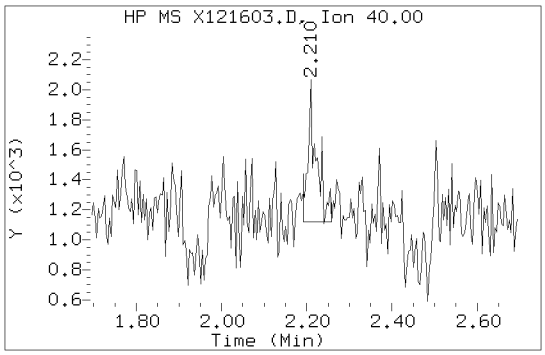
AFTER

MASS
39
AREA
2204
HEIGHT
1321
27-Dec-2022
16:07
linh
pham



AFTER

MASS
40
AREA
1296
HEIGHT
946
27-Dec-2022
16:07
linh
pham



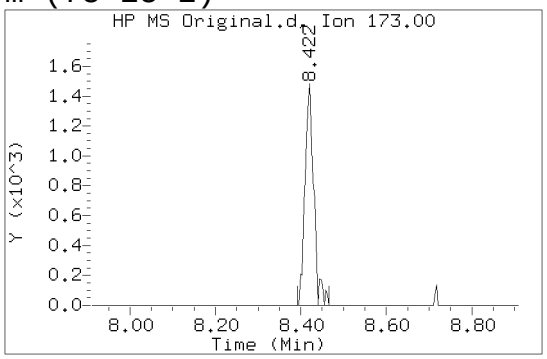
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

Bromoform (75-25-2)

Reason Code:

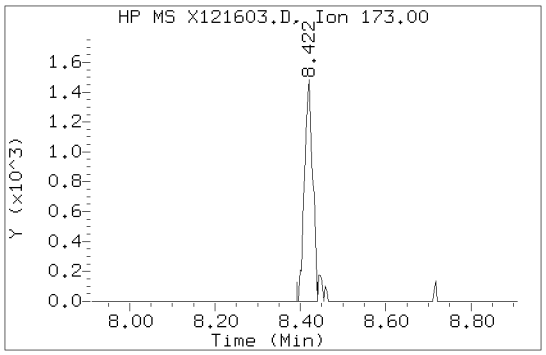
BEFORE

MASS
173
AREA
2158
HEIGHT
1483
27-Dec-2022
16:03
linh
pham



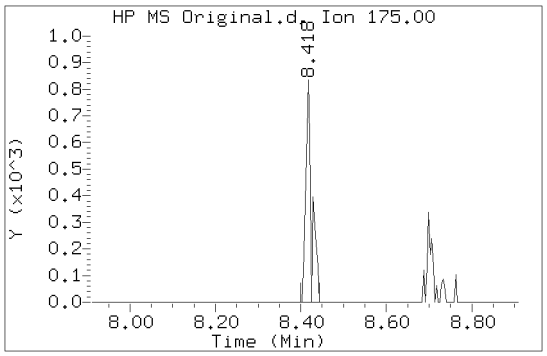
AFTER

MASS
173
AREA
2013
HEIGHT
1483
27-Dec-2022
16:07
linh
pham



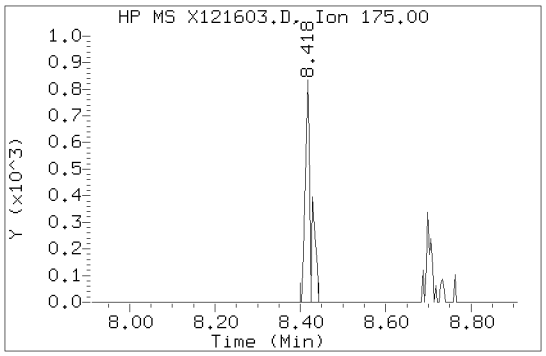
BEFORE

MASS
175
AREA
807
HEIGHT
835
27-Dec-2022
16:03
linh
pham



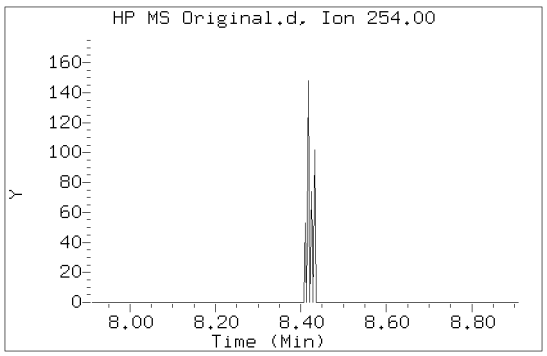
AFTER

MASS
175
AREA
807
HEIGHT
835
27-Dec-2022
16:07
linh
pham



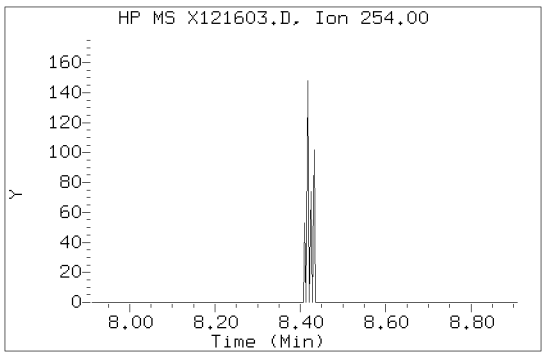
BEFORE

MASS
254
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



AFTER

MASS
254
AREA
0
HEIGHT
0
27-Dec-2022
16:07
linh
pham

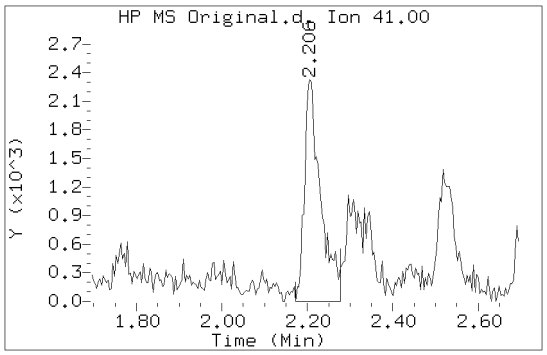


Allyl Chloride (107-05-1)

Reason Code:

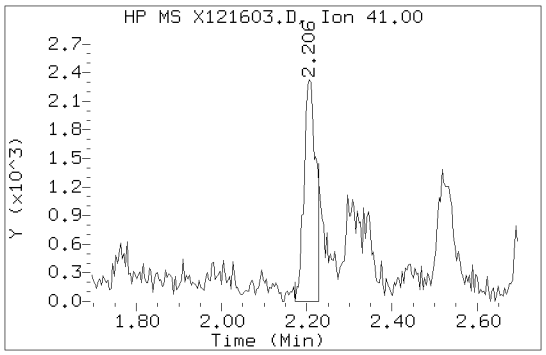
BEFORE

MASS
41
AREA
6169
HEIGHT
2326
27-Dec-2022
16:03
linh
pham



AFTER

MASS
41
AREA
4574
HEIGHT
2326
27-Dec-2022
16:07
linh
pham



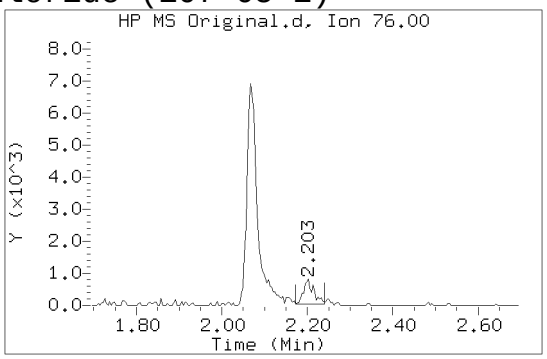
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

Allyl Chloride (107-05-1)

Reason Code:

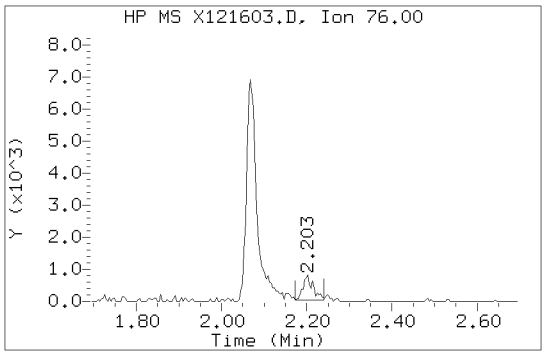
BEFORE

MASS
76
AREA
1254
HEIGHT
763
27-Dec-2022
16:03
linh
pham



AFTER

MASS
76
AREA
1254
HEIGHT
763
27-Dec-2022
16:07
linh
pham

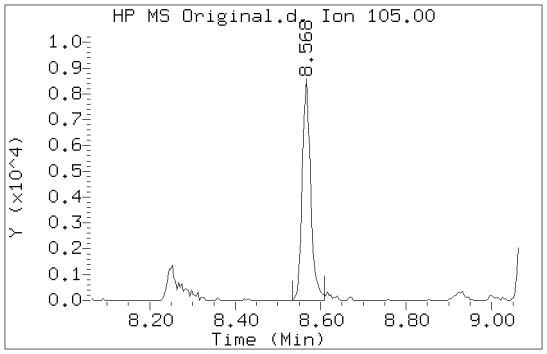


Isopropylbenzene (98-82-8)

Reason Code:

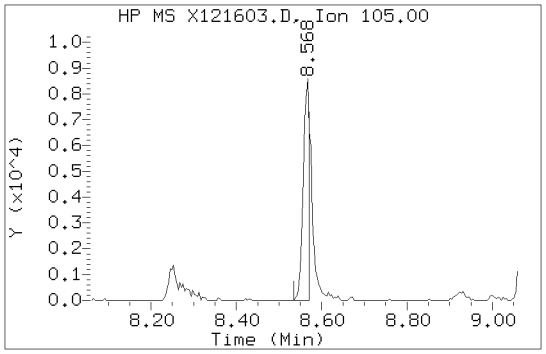
BEFORE

MASS
105
AREA
12091
HEIGHT
8588
27-Dec-2022
16:03
linh
pham



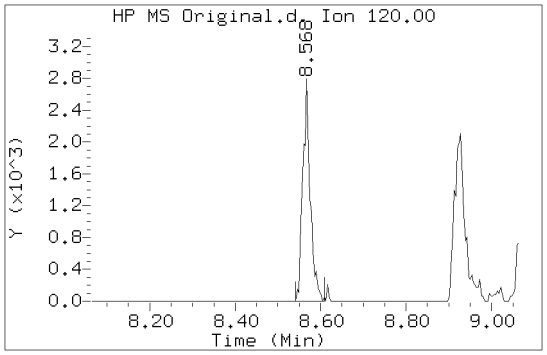
AFTER

MASS
105
AREA
8757
HEIGHT
8588
27-Dec-2022
16:07
linh
pham



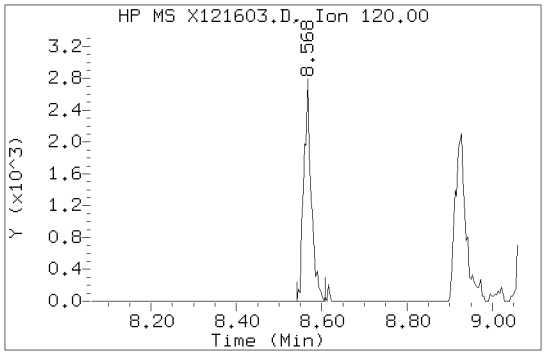
BEFORE

MASS
120
AREA
3462
HEIGHT
2793
27-Dec-2022
16:03
linh
pham



AFTER

MASS
120
AREA
3462
HEIGHT
2793
27-Dec-2022
16:07
linh
pham

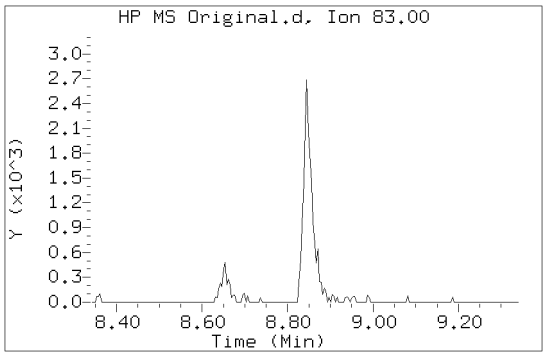


1,1,2,2-Tetrachloroethane (79-34-5)

Reason Code:

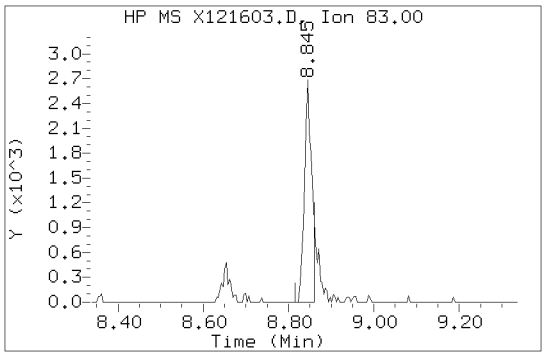
BEFORE

MASS
83
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



AFTER

MASS
83
AREA
3194
HEIGHT
2685
27-Dec-2022
16:07
linh
pham



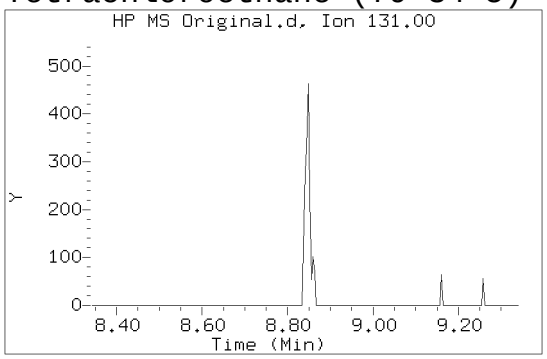
Data File : \\NAHSTWS005\Target\chem\voa6.i\X221216.b\X121603.D
Inj Date : 16-DEC-2022 12:20
InstruID : voa6.i
LabSampID : VSTD000.5

1,1,2,2-Tetrachloroethane (79-34-5)

Reason Code:

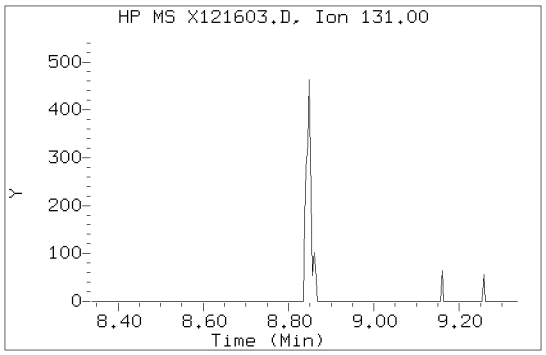
BEFORE

MASS
131
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



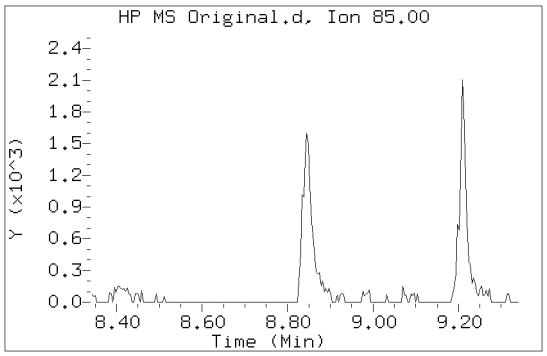
AFTER

MASS
131
AREA
0
HEIGHT
0
27-Dec-2022
16:07
linh
pham



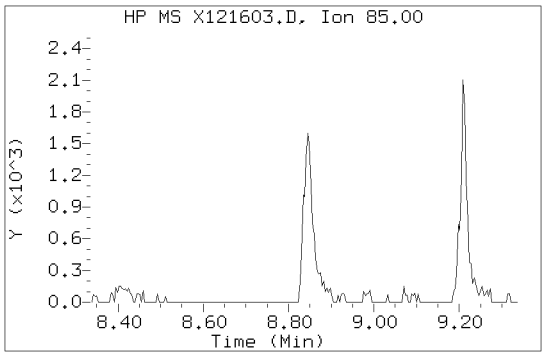
BEFORE

MASS
85
AREA
0
HEIGHT
0
27-Dec-2022
16:03
linh
pham



AFTER

MASS
85
AREA
0
HEIGHT
0
27-Dec-2022
16:07
linh
pham

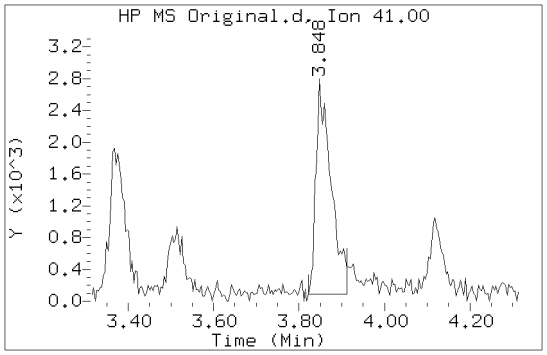


Methacrylonitrile (126-98-7)

Reason Code:

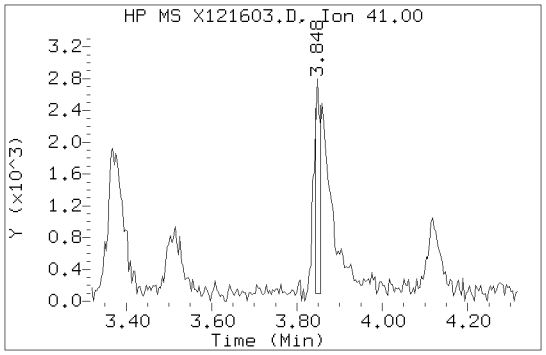
BEFORE

MASS
41
AREA
6587
HEIGHT
2708
27-Dec-2022
16:03
linh
pham



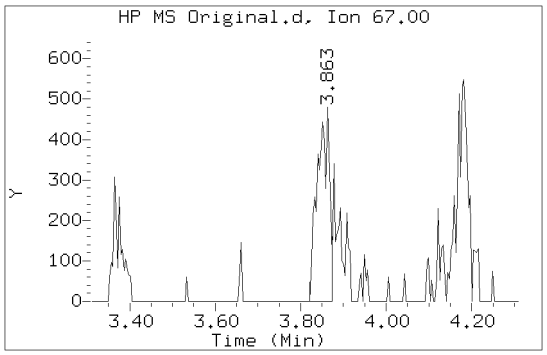
AFTER

MASS
41
AREA
2066
HEIGHT
2701
27-Dec-2022
16:07
linh
pham



BEFORE

MASS
67
AREA
937
HEIGHT
480
27-Dec-2022
16:03
linh
pham



AFTER

MASS
67
AREA
937
HEIGHT
480
27-Dec-2022
16:07
linh
pham

