PIONEER
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Transmitted via Electronic Mail

October 13, 2023

Ms. Tena Seeds
Washington State Department of Ecology
Toxics Cleanup Program
15700 Dayton Ave N., Shoreline, WA 98133

RE: **Quarterly Progress Report: July 1 through September 30, 2023**
Time Oil Bulk Terminal Site, Cleanup Site ID #14604
Prospective Purchaser Consent Decree No. 20-2-15215-3 SEA

Dear Ms. Seeds:

Pioneer Engineering & Environmental Services, LLC on behalf of TOC Seattle Terminal 1, LLC submits the attached Quarterly Progress Report for the Time Oil Bulk Terminal Site per Section XII of the Prospective Purchaser Consent Decree between the Washington State Department of Ecology and TOC Seattle Terminal 1, LLC. The quarterly progress report consists of a brief narrative summary of notable activities that occurred during the reporting period and that are anticipated for the upcoming reporting period.

If you have any questions about this report, please contact me at 773-435-3725.

Sincerely,

Kim Hempel
Project Coordinator
Pioneer Engineering & Environmental Services, LLC

Distribution List:
Doug Ciserella and Mike Ciserella, TOC Seattle Terminal 1, LLC
Bill Joyce, Hillis Clark Martin & Peterson P.S.
Jamie Stevens, CRETE Consulting
Kristin Anderson, Floyd|Snider

TIME OIL BULK TERMINAL SITE
PROSPECTIVE PURCHASER CONSENT DECREE NO. 20-2-15215-3 SEA
QUARTERLY PROGRESS REPORT: JULY 1 THROUGH SEPTEMBER 30, 2023

This report has been prepared in accordance with the requirements of the Time Oil Bulk Terminal Site Prospective Purchaser Consent Decree (PPCD) between the Washington State Department of Ecology (Ecology) and TOC Seattle Terminal 1, LLC. This progress report provides details on the following: 1) all on site activities; 2) any deviations from required tasks; 3) anticipated problems in meeting schedule or objectives and associated solutions 4) sampling, testing, or other data received; 5) work planned for the upcoming 3-month period; and, 6) deliverables planned for the upcoming 3-month period.

Summary of On-Site Activities Performed During the Reporting Period (PPCD Section XII.A)

- No on-site activities were performed this reporting period.

Deliverables

Deliverables during this reporting period included the following:

- The Quarterly Progress Report for the second quarter of 2023 was submitted to Ecology on July 14, 2023.
- Groundwater sampling results for the third quarter of 2023 and associated contour maps were submitted to Ecology on August 28, 2023.

Deviations from Required Tasks (PPCD Section XII.B)

- None.

Anticipated Problems in Meeting Schedule or Objectives and Associated Solutions (PPCD Section XII.C and XII.D)

- There are no anticipated problems in meeting the schedule of deliverables specified in Exhibit D of the PPCD. The schedule of deliverables and activities specified in Table 8.1 of the Cleanup Action Plan (Exhibit C of the PPCD) are currently on track or ahead of schedule.

Raw Data Received (PPCD Section XII.E)

- Groundwater sampling results for the 3rd Quarter 2023 were received from Friedman & Bruya, Inc. on April 17, 2023. Results were received in two sample delivery groups (F&BI 306447 and 306460) and an addendum to F&BI 406460. Copies of the laboratory reports for F&BI 306447, 306460, and 306460 Additional are provided as an attachment to this Progress Report.

July 6, 7, & 12, 2023?

Work Planned During the Upcoming Reporting Period (PPCD Section XII.F)

The following work is planned for the 4th Quarter 2023:

- Fourth round of groundwater sampling is scheduled for October 10, 2023;
- Construction on Lot F is anticipated to begin in early-mid October; and
- Site checks will be conducted periodically to ensure that conditions remain stable during the interim period prior to site development.

Deliverables Planned During the Upcoming Reporting Period (PPCD Section XII.G)

The following deliverables are anticipated to be completed during the next quarterly reporting period of October through December 2023:

- Transmittal of a summary of 4th Quarter 2023 groundwater sampling results and associated groundwater contour maps to Ecology via email; and
- Submittal of the Quarterly Progress Report for the 3rd Quarter 2023.

Other Pertinent Information, Including Changes in Key Personnel

- None.

Attachments

- Attachment 1 – Laboratory Analytical Reports

END QUARTERLY PROGRESS REPORT

ATTACHMENT 1

Laboratory Analytical Reports

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

July 7, 2023

Kristin Anderson, Project Manager
Floyd-Snider
Two Union Square
601 Union St, Suite 600
Seattle, WA 98101

Dear Ms Anderson:

Included are the results from the testing of material submitted on June 28, 2023 from the Cantera-TOC, F&BI 306447 project. There are 25 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Floyd Snider Lab Data, Pamela Osterhout
FDS0707R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on June 28, 2023 by Friedman & Bruya, Inc. from the Floyd-Snider Cantera-TOC, F&BI 306447 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Floyd-Snider
306447 -01	01MW12-062823
306447 -02	01MW19R-062823
306447 -03	01MW35-062823
306447 -04	01MW40-062823
306447 -05	01MW84-062823
306447 -06	MW05-062823
306447 -07	01MW15-062823
306447 -08	01MW46-062823
306447 -09	01MW53-062823
306447 -10	01MW56-062823
306447 -11	01MW85-062823
306447 -12	01MW84-D-062823
306447 -13	01MW107-062823
306447 -14	TB-062823

Samples MW05-062823, 01MW46-062823, 01MW56-062823, and 01MW85-062823 were sent to Fremont Analytical for sulfide, nitrate, nitrite, and sulfate analyses. The report is enclosed.

The 8260D vinyl chloride laboratory control sample and duplicate relative percent difference was outside of control limits. The samples associated were non-detect for vinyl chloride. The data were qualified accordingly.

All other quality control requirements were acceptable.

Date of Report: 07/07/23
Date Received: 06/28/23
Project: Cantera-TOC, F&BI 306447
Date Extracted: 06/29/23
Date Analyzed: 06/30/23

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
01MW12-062823 306447-01	110	118
01MW19R-062823 306447-02	1,300	122
01MW35-062823 306447-03	<100	113
01MW40-062823 306447-04	<100	119
01MW84-062823 306447-05	4,600	121
01MW84-D-062823 306447-12	4,300	120
Method Blank 03-1407 MB	<100	139

Date of Report: 07/07/23
Date Received: 06/28/23
Project: Cantera-TOC, F&BI 306447
Date Extracted: 06/29/23
Date Analyzed: 06/29/23

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 50-150)
01MW12-062823 306447-01	860 x	360 x	107
01MW19R-062823 306447-02	810 x	<250	116
01MW35-062823 306447-03	76 x	<250	116
01MW40-062823 306447-04	620 x	<250	118
01MW84-062823 306447-05	1,400 x	<250	129
01MW84-D-062823 306447-12	1,300 x	<250	120
Method Blank 03-1565 mb2	<50	<250	118

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW12-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	06/30/23	Lab ID:	306447-01
Date Analyzed:	06/30/23	Data File:	063021.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	78	126
Toluene-d8	103	84	115
4-Bromofluorobenzene	104	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	1.3

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW19R-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	06/30/23	Lab ID:	306447-02
Date Analyzed:	06/30/23	Data File:	063022.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	78	126
Toluene-d8	110	84	115
4-Bromofluorobenzene	109	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	2.1

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW35-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	06/30/23	Lab ID:	306447-03
Date Analyzed:	06/30/23	Data File:	063023.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	92	78	126
Toluene-d8	105	84	115
4-Bromofluorobenzene	101	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW40-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	06/30/23	Lab ID:	306447-04
Date Analyzed:	06/30/23	Data File:	063024.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	78	126
Toluene-d8	103	84	115
4-Bromofluorobenzene	99	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW84-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	06/30/23	Lab ID:	306447-05
Date Analyzed:	06/30/23	Data File:	063025.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	109	78	126
Toluene-d8	105	84	115
4-Bromofluorobenzene	100	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	MW05-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	07/03/23	Lab ID:	306447-06 1/10
Date Analyzed:	07/03/23	Data File:	070341.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	95	71	132
Toluene-d8	93	68	139
4-Bromofluorobenzene	98	62	136

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	6.9
cis-1,2-Dichloroethene	360
Trichloroethene	160
Benzene	1.5 j

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW15-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	07/03/23	Lab ID:	306447-07
Date Analyzed:	07/03/23	Data File:	070342.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	71	132
Toluene-d8	102	68	139
4-Bromofluorobenzene	99	62	136

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	28
cis-1,2-Dichloroethene	5.7
Trichloroethene	<0.5

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW46-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	07/03/23	Lab ID:	306447-08
Date Analyzed:	07/03/23	Data File:	070343.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	86	71	132
Toluene-d8	92	68	139
4-Bromofluorobenzene	97	62	136

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	25
Benzene	4.3

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW46-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	07/03/23	Lab ID:	306447-08 1/10
Date Analyzed:	07/05/23	Data File:	070511.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	90	71	132
Toluene-d8	91	68	139
4-Bromofluorobenzene	98	62	136

Compounds:	Concentration ug/L (ppb)
cis-1,2-Dichloroethene	260
Trichloroethene	280

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW53-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	07/03/23	Lab ID:	306447-09
Date Analyzed:	07/03/23	Data File:	070344.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	88	71	132
Toluene-d8	91	68	139
4-Bromofluorobenzene	97	62	136

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	0.51
cis-1,2-Dichloroethene	2.9
Trichloroethene	2.0

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW56-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	07/03/23	Lab ID:	306447-10
Date Analyzed:	07/03/23	Data File:	070345.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	71	132
Toluene-d8	100	68	139
4-Bromofluorobenzene	100	62	136

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	0.97
cis-1,2-Dichloroethene	<1
Trichloroethene	0.62

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW85-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	07/03/23	Lab ID:	306447-11 1/10
Date Analyzed:	07/03/23	Data File:	070346.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	71	132
Toluene-d8	102	68	139
4-Bromofluorobenzene	101	62	136

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	13
cis-1,2-Dichloroethene	1,000
Trichloroethene	110

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW84-D-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	07/03/23	Lab ID:	306447-12
Date Analyzed:	07/04/23	Data File:	070347.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	71	132
Toluene-d8	103	68	139
4-Bromofluorobenzene	99	62	136

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW107-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	07/03/23	Lab ID:	306447-13
Date Analyzed:	07/04/23	Data File:	070348.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	90	71	132
Toluene-d8	93	68	139
4-Bromofluorobenzene	99	62	136

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.02
cis-1,2-Dichloroethene	<1
Trichloroethene	<0.5

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TB-062823	Client:	Floyd-Snider
Date Received:	06/28/23	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	06/30/23	Lab ID:	306447-14
Date Analyzed:	06/30/23	Data File:	063014.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	108	78	126
Toluene-d8	101	84	115
4-Bromofluorobenzene	102	72	130

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.02
cis-1,2-Dichloroethene	<1
Trichloroethene	<0.5
Benzene	<0.35

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Floyd-Snider
Date Received:	Not Applicable	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	06/30/23	Lab ID:	03-1526 mb
Date Analyzed:	06/30/23	Data File:	063009.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	110	78	126
Toluene-d8	100	84	115
4-Bromofluorobenzene	103	72	130

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.02
cis-1,2-Dichloroethene	<1
Trichloroethene	<0.5
Benzene	<0.35

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Floyd-Snider
Date Received:	Not Applicable	Project:	Cantera-TOC, F&BI 306447
Date Extracted:	07/03/23	Lab ID:	03-1530 mb
Date Analyzed:	07/03/23	Data File:	070314.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	78	126
Toluene-d8	100	84	115
4-Bromofluorobenzene	102	72	130

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.02
cis-1,2-Dichloroethene	<1
Trichloroethene	<0.5
Benzene	<0.35

Date of Report: 07/07/23
Date Received: 06/28/23
Project: Cantera-TOC, F&BI 306447

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 306422-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	100	70-130

Date of Report: 07/07/23
Date Received: 06/28/23
Project: Cantera-TOC, F&BI 306447

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	104	116	65-151	11

Date of Report: 07/07/23
Date Received: 06/28/23
Project: Cantera-TOC, F&BI 306447

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 306439-04 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	10	<0.02	125	50-150
cis-1,2-Dichloroethene	ug/L (ppb)	10	<1	110	10-211
Benzene	ug/L (ppb)	10	<0.35	109	50-150
Trichloroethene	ug/L (ppb)	10	<0.5	108	35-149

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	10	99	133	64-142	29 vo
cis-1,2-Dichloroethene	ug/L (ppb)	10	99	104	70-130	5
Benzene	ug/L (ppb)	10	100	104	70-130	4
Trichloroethene	ug/L (ppb)	10	97	102	70-130	5

Date of Report: 07/07/23
Date Received: 06/28/23
Project: Cantera-TOC, F&BI 306447

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 306490-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	10	<0.02	130	50-150
cis-1,2-Dichloroethene	ug/L (ppb)	10	<1	107	10-211
Benzene	ug/L (ppb)	10	<0.35	107	50-150
Trichloroethene	ug/L (ppb)	10	<0.5	106	35-149

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	10	115	122	64-142	6
cis-1,2-Dichloroethene	ug/L (ppb)	10	84	88	70-130	5
Benzene	ug/L (ppb)	10	85	91	70-130	7
Trichloroethene	ug/L (ppb)	10	84	89	70-130	6

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

30647

SAMPLE CHAIN OF CUSTODY

06/28/23 Page # 1 of 2 UW6/D3/L5

Report To Kristin Anderson + Pamela Osterhout
Company Floyd Snider
Address 601 Union St, Suite 600
City, State, ZIP Seattle, WA 98101
Phone 206 292-2078 Email pmdata@floydsnider.com

SAMPLERS (*signature*)

PROJECT NAME: Canterra - TOC

PO #:

REMARKS: CVOCs by 8260
Project specific RLs? - Yes / No

INVOICE TO: Pioneer

TURNAROUND TIME
X Standard turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Benzene by 8260	TCE, cis-1,2-DCE and vinyl chloride	Nitrate, nitrite, sulfate by 300.0	Sulfide by SM4500	Notes
01MW12-062823	01 A-G	6/28/23	1420	GW	7	✓	✓						✓				
01MW19R-062823	02		1308	GW	7	✓	✓						✓				
01MW35-062823	03		1555	GW	7	✓	✓						✓				
01MW40-062823	04		1515	GW	7	✓	✓						✓				
01MW84-062823	05 A-F		1440	GW	6	✓	✓						✓				
MW05-062823	06 A-H		1052	GW	8								✓	✓	✓	✓	
01MW15-062823	07 A-F		1135	GW	6									✓			
01MW46-062823	08 A-H		1000	GW	8								✓	✓	✓	✓	
01MW53-062823	09 A-C		1144	GW	3									✓			
01MW56-062823	10 A-H		0950	GW	8									✓	✓	✓	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	C. OREIRO	FLOYD SNIDER	6/28/23	1802
Received by:	André Lagron	FBI	6/28/23	1802
Relinquished by:	Samples received at 3 °C			
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

306447

SAMPLE CHAIN OF CUSTODY

06/28/23 VW6/I3/L5

Page # 2 of 2

Report To Kristin + Pamela

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email labdata@floydsnider.com

SAMPLERS (*signature*)

PROJECT NAME: Cantera TOC

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO: Pioneer

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

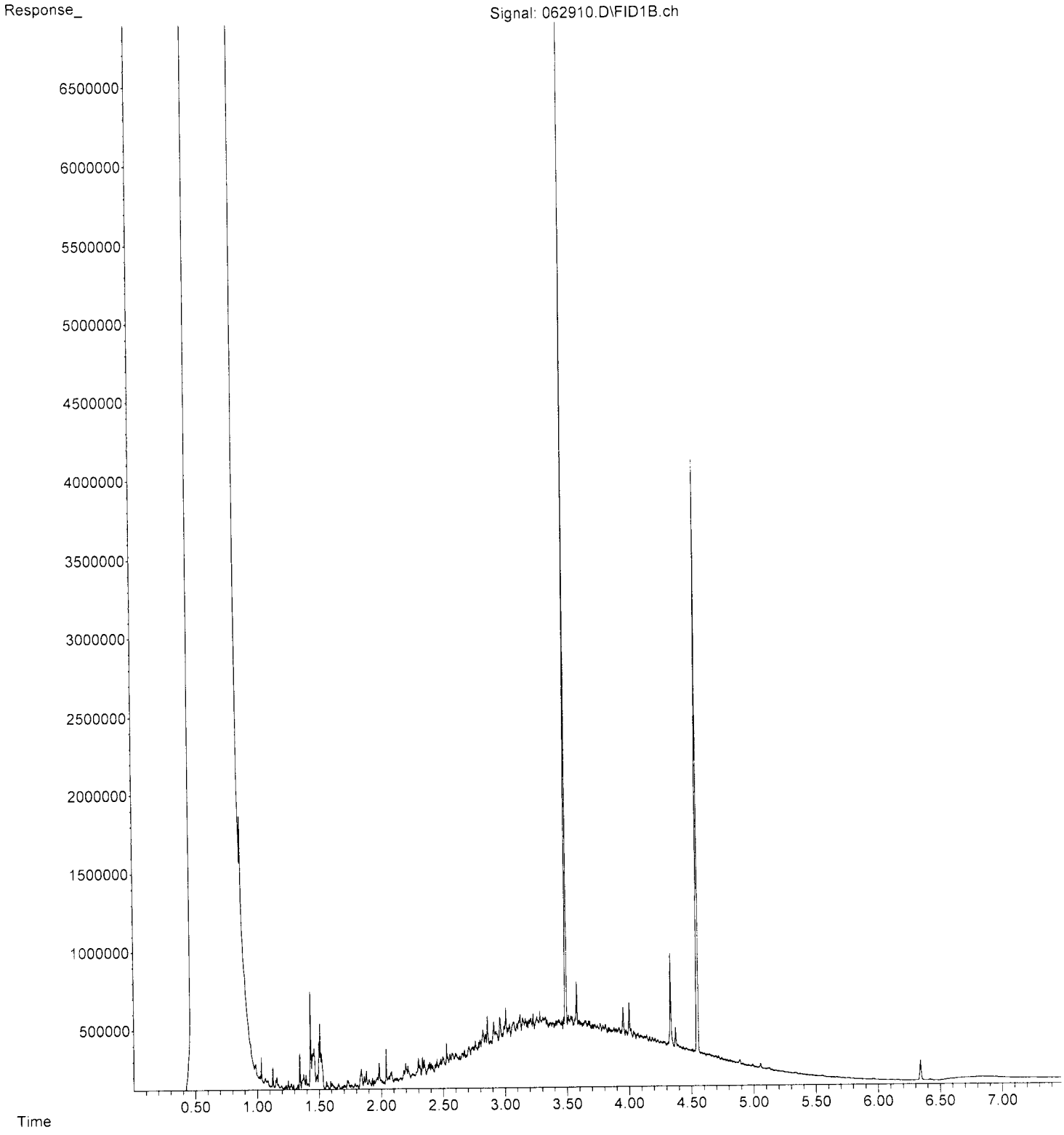
SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- (Default: Dispose after 30 days)

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	TCE, cis-1,2 DCE + Vinyl Chloride	Nitrate, Nitrite Sulfate 300.0	Sulfide SM 4500	Benzenes by 8260	Notes
01MW85-062823	~~11 A-H~~ 6/28	6/28/23	1230	GW	8								X	X	X		
01MW84D-062823	12 A-E		1443	GW	5	X	X									X	
01MW107-062823	13 A-F	↓	1640	GW	6								X				
TB-062823	14	6/28/23	1700	TB	1								X			X	

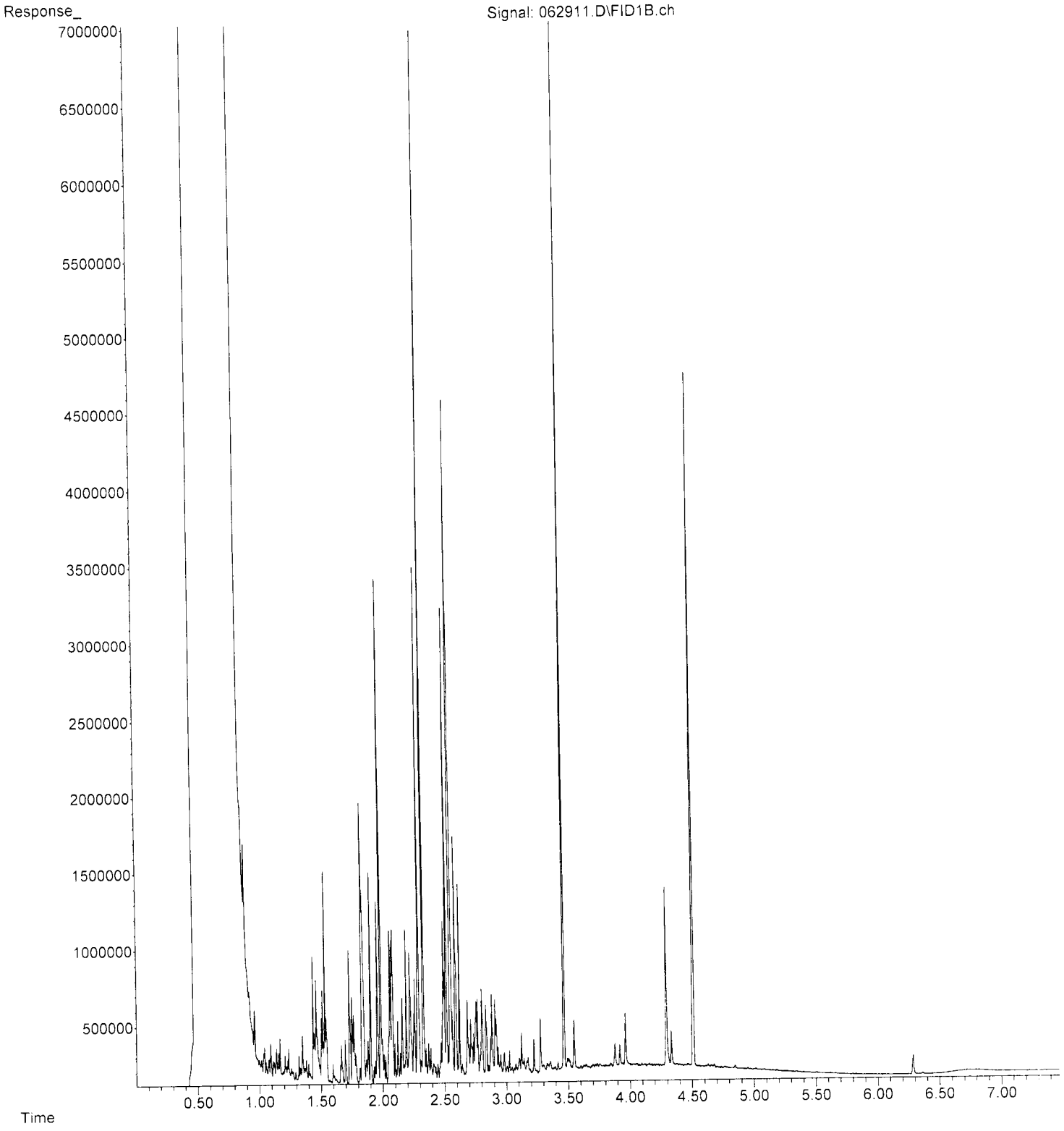
SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	E. OREIRO	FLOYD SNIDER	6/28/23	1802
Received by:	Andre Lagron	FBI	6/28/23	1802
Relinquished by:	Samples received at 3 °C			
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

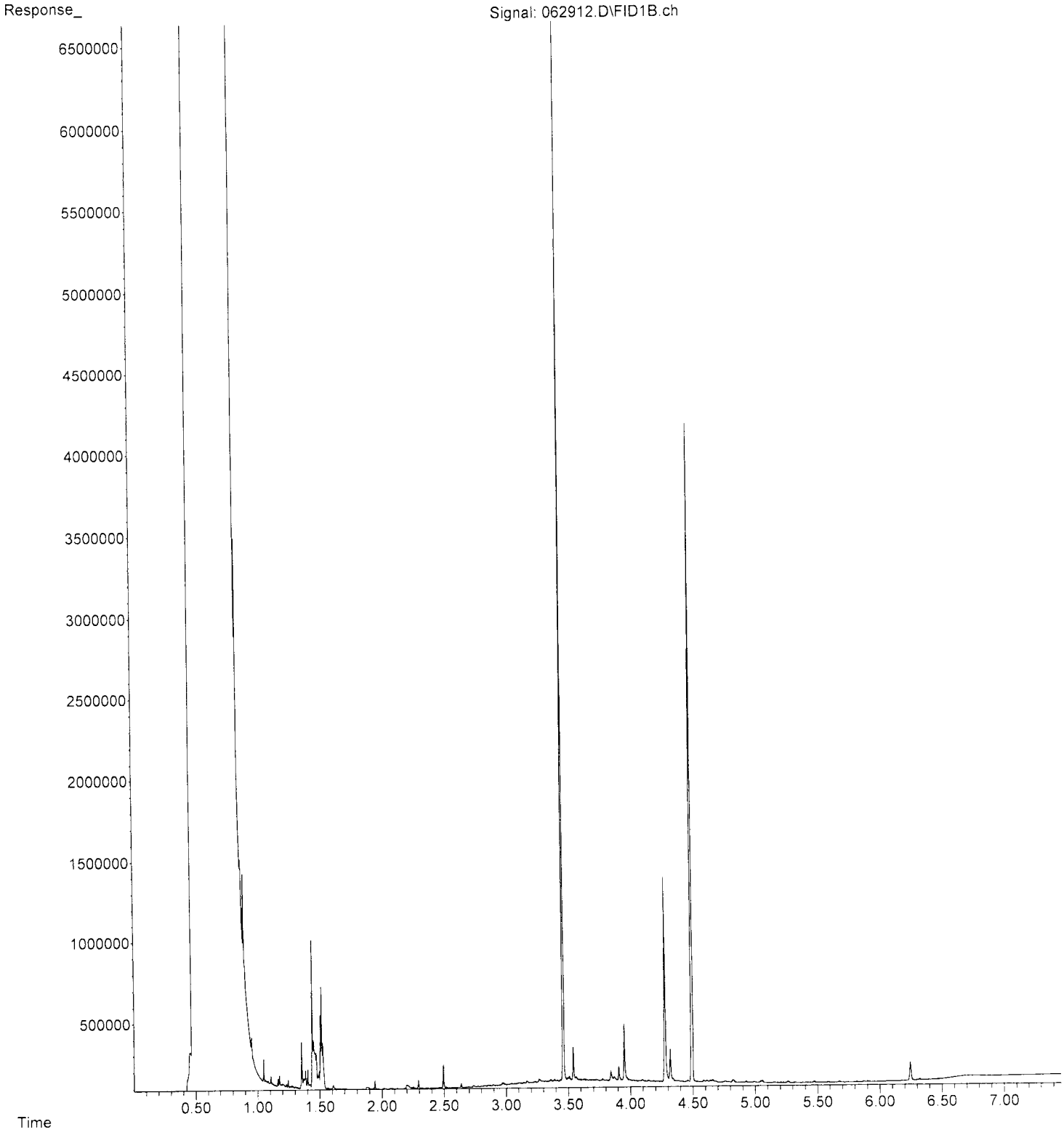
File :Q:\GC10\GC10_Data\06-29-23\062910.D
Operator : TL
Acquired : 29 Jun 2023 11:30 am using AcqMethod DX.M
Instrument : GC10
Sample Name: 306447-01
Misc Info :
Vial Number: 11



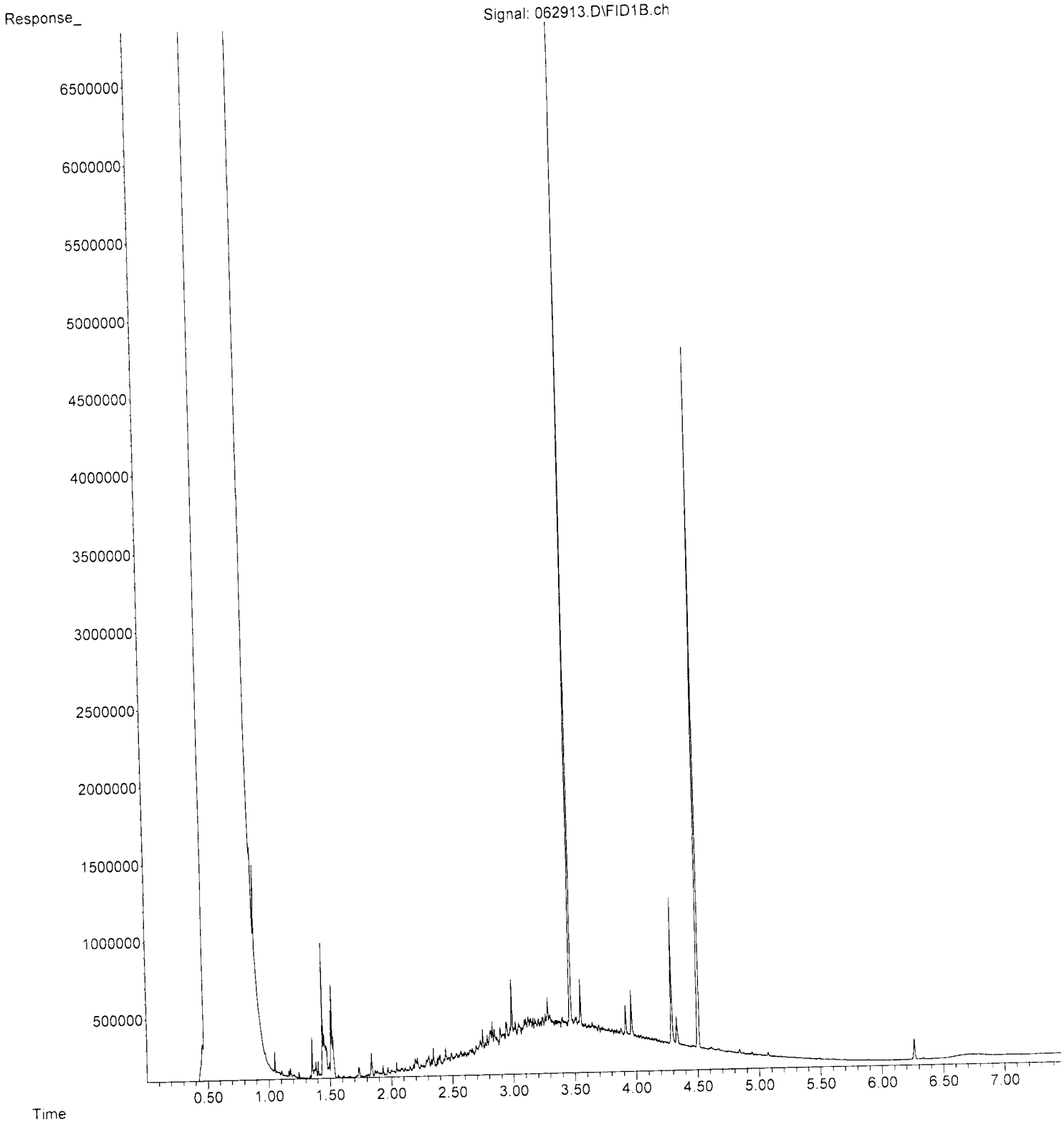
File :Q:\GC10\GC10_Data\06-29-23\062911.D
Operator : TL
Acquired : 29 Jun 2023 11:42 am using AcqMethod DX.M
Instrument : GC10
Sample Name: 306447-02
Misc Info :
Vial Number: 12



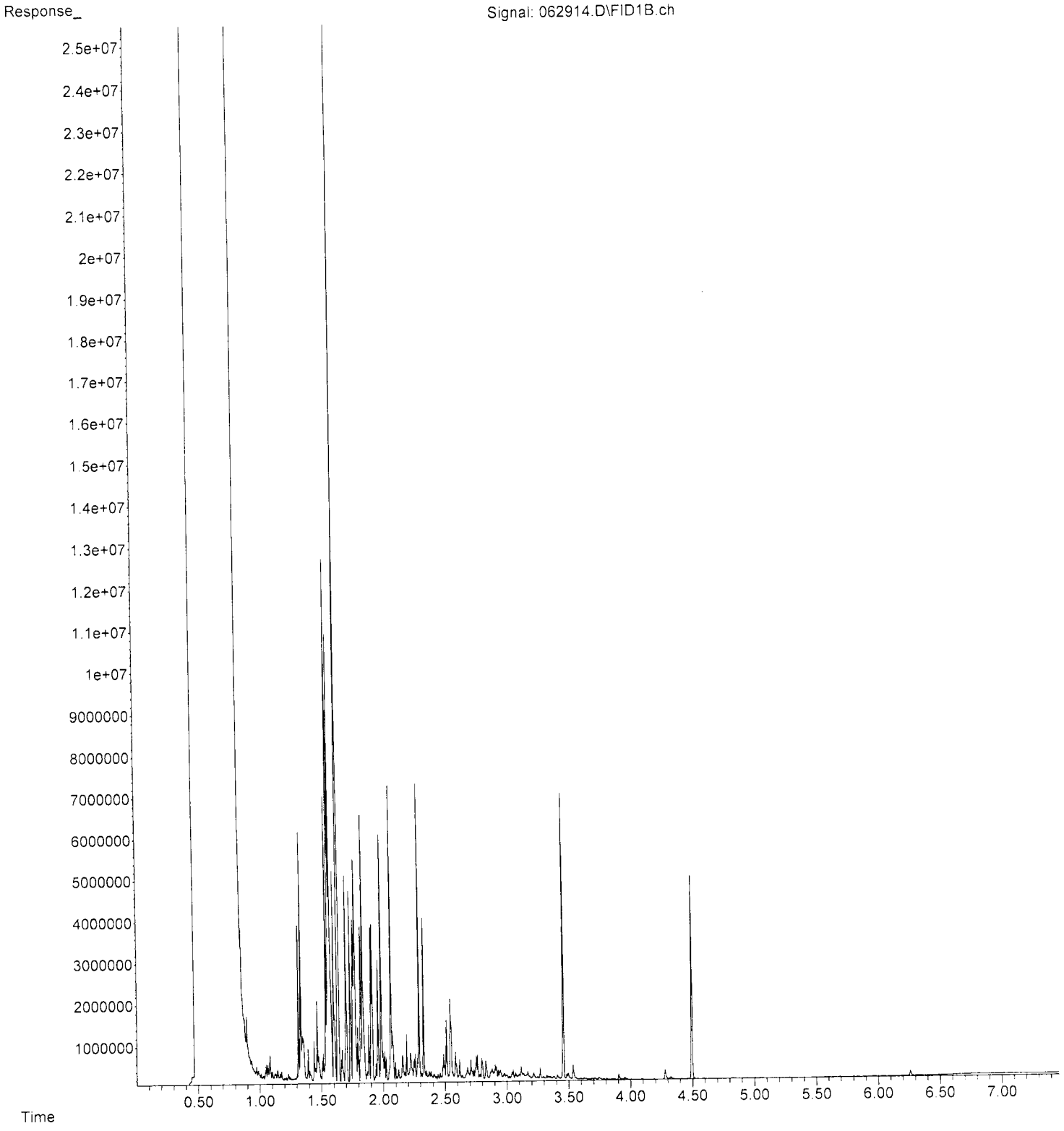
File :Q:\GC10\GC10_Data\06-29-23\062912.D
Operator : TL
Acquired : 29 Jun 2023 11:54 am using AcqMethod DX.M
Instrument : GC10
Sample Name: 306447-03
Misc Info :
Vial Number: 13



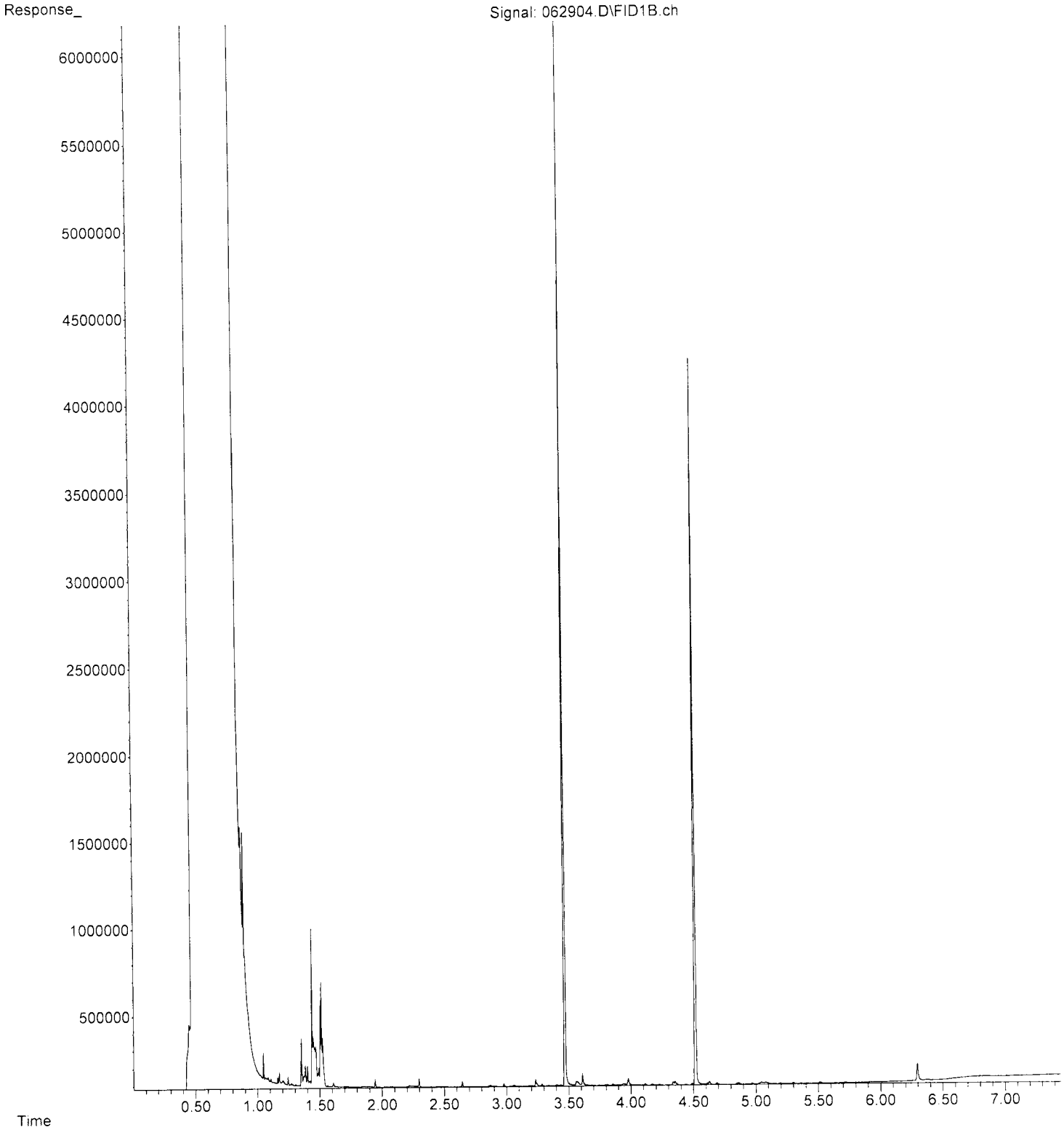
File :Q:\GC10\GC10_Data\06-29-23\062913.D
Operator : TL
Acquired : 29 Jun 2023 12:05 pm using AcqMethod DX.M
Instrument : GC10
Sample Name: 306447-04
Misc Info :
Vial Number: 14



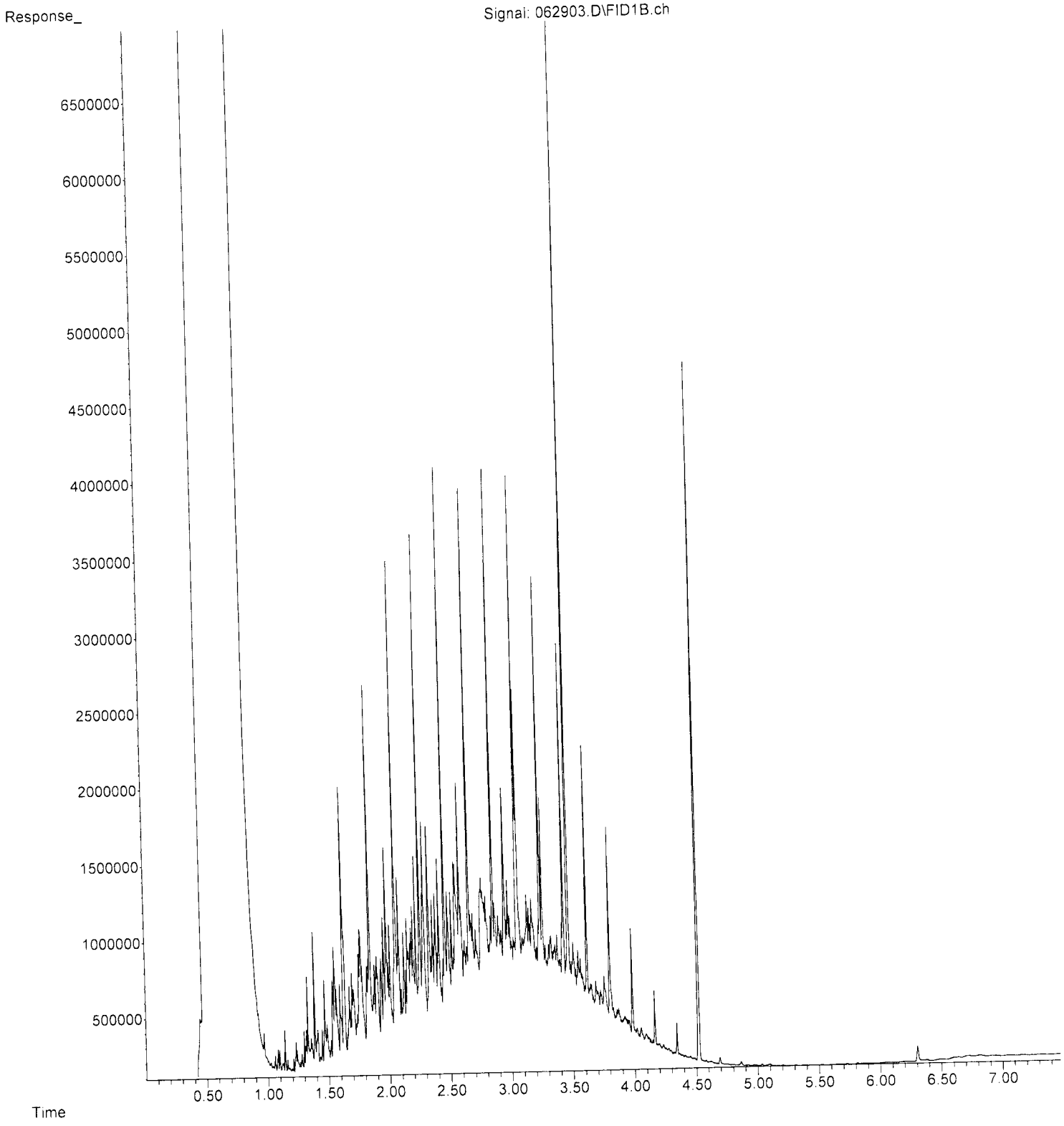
File :Q:\GC10\GC10_Data\06-29-23\062914.D
Operator : TL
Acquired : 29 Jun 2023 12:17 pm using AcqMethod DX.M
Instrument : GC10
Sample Name: 306447-05
Misc Info :
Vial Number: 15



File :Q:\GC10\GC10_Data\06-29-23\062904.D
Operator : TL
Acquired : 29 Jun 2023 09:02 am using AcqMethod DX.M
Instrument : GC10
Sample Name: 03-1565 mb2
Misc Info :
Vial Number: 6



File :Q:\GC10\GC10_Data\06-29-23\062903.D
Operator : TL
Acquired : 29 Jun 2023 08:50 am using AcqMethod DX.M
Instrument : GC10
Sample Name: 500 DX 68-66J
Misc Info :
Vial Number: 3



3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 306447
Work Order Number: 2306503

July 07, 2023

Attention Michael Erdahl:

Fremont Analytical, Inc. received 4 sample(s) on 6/29/2023 for the analyses presented in the following report.

Ion Chromatography by EPA Method 300.0
Sulfide by SM 4500-S2-F

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *07/07/2023*

CLIENT: Friedman & Bruya
Project: 306447
Work Order: 2306503

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2306503-001	MW05-062823	06/28/2023 10:52 AM	06/29/2023 12:06 PM
2306503-002	01MW46-062823	06/28/2023 10:00 AM	06/29/2023 12:06 PM
2306503-003	01MW56-062823	06/28/2023 9:50 AM	06/29/2023 12:06 PM
2306503-004	01MW85-062823	06/28/2023 12:30 PM	06/29/2023 12:06 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **2306503**
Date: **7/7/2023**

CLIENT: Friedman & Bruya
Project: 306447

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

CLIENT: Friedman & Bruya
Project: 306447

Lab ID: 2306503-001 **Collection Date:** 6/28/2023 10:52:00 AM
Client Sample ID: **MW05-062823** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Ion Chromatography by EPA Method 300.0				Batch ID: 40807		Analyst: AT
Nitrite (as N)	ND	0.600	D	mg/L	5	6/29/2023 6:51:00 PM
Nitrate (as N)	ND	0.500	D	mg/L	5	6/29/2023 6:51:00 PM
Sulfate	132	30.0	D	mg/L	50	6/30/2023 9:54:00 PM
NOTES: Diluted due to matrix.						
Sulfide by SM 4500-S2-F				Batch ID: R85056		Analyst: SS
Sulfide	3.60	0.500		mg/L	1	7/3/2023 11:22:17 AM

Lab ID: 2306503-002 **Collection Date:** 6/28/2023 10:00:00 AM
Client Sample ID: **01MW46-062823** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Ion Chromatography by EPA Method 300.0				Batch ID: 40807		Analyst: AT
Nitrite (as N)	ND	0.600	D	mg/L	5	6/29/2023 7:14:00 PM
Nitrate (as N)	ND	0.500	D	mg/L	5	6/29/2023 7:14:00 PM
Sulfate	186	30.0	D	mg/L	50	6/30/2023 10:17:00 PM
NOTES: Diluted due to matrix.						
Sulfide by SM 4500-S2-F				Batch ID: R85056		Analyst: SS
Sulfide	2.40	0.500		mg/L	1	7/3/2023 11:22:17 AM

CLIENT: Friedman & Bruya
Project: 306447

Lab ID: 2306503-003 **Collection Date:** 6/28/2023 9:50:00 AM
Client Sample ID: **01MW56-062823** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Ion Chromatography by EPA Method 300.0				Batch ID: 40807		Analyst: AT
Nitrite (as N)	ND	0.600	D	mg/L	5	6/29/2023 7:37:00 PM
Nitrate (as N)	0.910	0.500	D	mg/L	5	6/29/2023 7:37:00 PM
Sulfate	28.5	3.00	D	mg/L	5	6/29/2023 7:37:00 PM
NOTES: Diluted due to matrix.						
Sulfide by SM 4500-S2-F				Batch ID: R85056		Analyst: SS
Sulfide	4.40	0.500		mg/L	1	7/3/2023 11:22:17 AM

Lab ID: 2306503-004 **Collection Date:** 6/28/2023 12:30:00 PM
Client Sample ID: **01MW85-062823** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Ion Chromatography by EPA Method 300.0				Batch ID: 40807		Analyst: AT
Nitrite (as N)	ND	0.600	D	mg/L	5	6/29/2023 8:00:00 PM
Nitrate (as N)	ND	0.500	D	mg/L	5	6/29/2023 8:00:00 PM
Sulfate	60.9	3.00	D	mg/L	5	6/29/2023 8:00:00 PM
NOTES: Diluted due to matrix.						
Sulfide by SM 4500-S2-F				Batch ID: R85056		Analyst: SS
Sulfide	4.80	0.500		mg/L	1	7/3/2023 11:22:17 AM

Work Order: 2306503
CLIENT: Friedman & Bruya
Project: 306447

QC SUMMARY REPORT

Ion Chromatography by EPA Method 300.0

Sample ID: **MB-40807**	SampType: **MBLK**	Units: **mg/L**	Prep Date: **6/29/2023**	RunNo: **85091**
Client ID: **MBLKW**	Batch ID: **40807**		Analysis Date: **6/29/2023**	SeqNo: **1776288**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrite (as N)	ND	0.120									
Nitrate (as N)	ND	0.100									
Sulfate	ND	0.600									

Sample ID: **LCS-40807**	SampType: **LCS**	Units: **mg/L**	Prep Date: **6/29/2023**	RunNo: **85091**
Client ID: **LCSW**	Batch ID: **40807**		Analysis Date: **6/29/2023**	SeqNo: **1776289**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrite (as N)	0.700	0.120	0.7500	0	93.3	90	110				
Nitrate (as N)	0.711	0.100	0.7500	0	94.8	90	110				
Sulfate	3.58	0.600	3.750	0	95.3	90	110				

Sample ID: **2306479-001BDUP**	SampType: **DUP**	Units: **mg/L**	Prep Date: **6/29/2023**	RunNo: **85091**
Client ID: **BATCH**	Batch ID: **40807**		Analysis Date: **6/29/2023**	SeqNo: **1776291**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrite (as N)	ND	0.120						0		20	
Nitrate (as N)	ND	0.100						0		20	
Sulfate	2.29	0.600						2.332	1.82	20	

Sample ID: **2306479-001BMS**	SampType: **MS**	Units: **mg/L**	Prep Date: **6/29/2023**	RunNo: **85091**
Client ID: **BATCH**	Batch ID: **40807**		Analysis Date: **6/29/2023**	SeqNo: **1776292**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrite (as N)	0.702	0.120	0.7500	0	93.6	80	120				
Nitrate (as N)	0.701	0.100	0.7500	0	93.5	80	120				
Sulfate	5.88	0.600	3.750	2.332	94.6	80	120				

Work Order: 2306503
CLIENT: Friedman & Bruya
Project: 306447

QC SUMMARY REPORT

Ion Chromatography by EPA Method 300.0

Sample ID: **2306479-001BMSD**	SampType: **MSD**	Units: **mg/L**	Prep Date: **6/29/2023**	RunNo: **85091**
Client ID: **BATCH**	Batch ID: **40807**		Analysis Date: **6/29/2023**	SeqNo: **1776293**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrite (as N)	0.727	0.120	0.7500	0	96.9	80	120	0.7020	3.50	20	
Nitrate (as N)	0.728	0.100	0.7500	0	97.1	80	120	0.7010	3.78	20	
Sulfate	6.14	0.600	3.750	2.332	101	80	120	5.879	4.29	20	

Sample ID: **LCS-40808**	SampType: **LCS**	Units: **mg/L**	Prep Date: **6/30/2023**	RunNo: **85099**
Client ID: **LCSW**	Batch ID: **40808**		Analysis Date: **6/30/2023**	SeqNo: **1776368**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.61	0.600	3.750	0	96.3	90	110				

Sample ID: **MB-40808**	SampType: **MBLK**	Units: **mg/L**	Prep Date: **6/30/2023**	RunNo: **85099**
Client ID: **MBLKW**	Batch ID: **40808**		Analysis Date: **6/30/2023**	SeqNo: **1776370**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.600									

Sample ID: **2306503-002ADUP**	SampType: **DUP**	Units: **mg/L**	Prep Date: **6/30/2023**	RunNo: **85099**
Client ID: **01MW46-062823**	Batch ID: **40808**		Analysis Date: **6/30/2023**	SeqNo: **1776378**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	173	30.0						186.2	7.23	20	D

Sample ID: **2306503-002AMS**	SampType: **MS**	Units: **mg/L**	Prep Date: **6/30/2023**	RunNo: **85099**
Client ID: **01MW46-062823**	Batch ID: **40808**		Analysis Date: **6/30/2023**	SeqNo: **1776379**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	352	30.0	187.5	186.2	88.4	80	120				D

Work Order: 2306503
CLIENT: Friedman & Bruya
Project: 306447

QC SUMMARY REPORT

Ion Chromatography by EPA Method 300.0

Sample ID: **2306503-002AMSD** SampType: **MSD** Units: **mg/L** Prep Date: **6/30/2023** RunNo: **85099**
Client ID: **01MW46-062823** Batch ID: **40808** Analysis Date: **6/30/2023** SeqNo: **1776380**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	355	30.0	187.5	186.2	90.2	80	120	352.0	0.961	20	D

Work Order: 2306503
CLIENT: Friedman & Bruya
Project: 306447

QC SUMMARY REPORT

Sulfide by SM 4500-S2-F

Sample ID: **MB-R85056**	SampType: **MBLK**			Units: **mg/L**		Prep Date: **7/3/2023**			RunNo: **85056**		
Client ID: **MBLKW**	Batch ID: **R85056**					Analysis Date: **7/3/2023**			SeqNo: **1775518**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	ND	0.500									

Sample ID: **LCS-R85056**	SampType: **LCS**			Units: **mg/L**		Prep Date: **7/3/2023**			RunNo: **85056**		
Client ID: **LCSW**	Batch ID: **R85056**					Analysis Date: **7/3/2023**			SeqNo: **1775519**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	2.40	0.500	2.000	0	120	45.6	120				

Sample ID: **2306470-001ADUP**	SampType: **DUP**			Units: **mg/L**		Prep Date: **7/3/2023**			RunNo: **85056**		
Client ID: **BATCH**	Batch ID: **R85056**					Analysis Date: **7/3/2023**			SeqNo: **1775521**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	2.40	0.500						1.600	40.0	30	R

NOTES:
R - High RPD observed.

Sample ID: **2306536-002AMS**	SampType: **MS**			Units: **mg/L**		Prep Date: **7/3/2023**			RunNo: **85056**		
Client ID: **BATCH**	Batch ID: **R85056**					Analysis Date: **7/3/2023**			SeqNo: **1776234**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfide	4.00	0.500	2.000	1.200	140	21.5	190				

Fremont Analytical
An Alliance Technical Group Company

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2306503
Logged by:	Morgan Wilson	Date Received:	6/29/2023 12:06:00 PM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☑	No ☐	NA ☐ NaOH
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

Item Information

Item #	Temp °C
Sample	0.6

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2306503

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont	
PROJECT NAME/NO. 306447	PO # D-363
REMARKS Floyd Snider EDD	

TURNAROUND TIME
☒ Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	Nitrate	Nitrite	Sulfate	Sulfide							Notes
						ANALYSES REQUESTED										
MW05-062823		6/28/2023	1052	water	2	x	x	x	x							
01MW46-062823		6/28/2023	1000	water	2	x	x	x	x							
01MW56-062823		6/28/2023	950	water	2	x	x	x	x							
01MW85-062823		6/28/2023	1230	water	2	x	x	x	x							

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	6/29/23	0812
Received by:		Emma Tuck	FAI	6/29/23	12:46
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

July 6, 2023

Kristin Anderson, Project Manager
Floyd-Snider
Two Union Square
601 Union St, Suite 600
Seattle, WA 98101

Dear Ms Anderson:

Included are the results from the testing of material submitted on June 29, 2023 from the Cantera-TOC, F&BI 306460 project. There are 17 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Floyd Snider Lab Data, Pamela Osterhout
FDS0706R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 29, 2023 by Friedman & Bruya, Inc. from the Floyd-Snider Cantera-TOC, F&BI 306460 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Floyd-Snider
306460 -01	01MW108-062923
306460 -02	01MW49R-062923
306460 -03	02MW04R-062923
306460 -04	02MW07-062923
306460 -05	02MW19-062923

All quality control requirements were acceptable.

Date of Report: 07/06/23
Date Received: 06/29/23
Project: Cantera-TOC, F&BI 306460
Date Extracted: 07/03/23
Date Analyzed: 07/03/23

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
01MW49R-062923 306460-02	<100	116
02MW04R-062923 306460-03	<100	110
02MW07-062923 306460-04	<100	112
02MW19-062923 306460-05	<100	116
Method Blank 03-1412 MB	<100	107

Date of Report: 07/06/23
Date Received: 06/29/23
Project: Cantera-TOC, F&BI 306460
Date Extracted: 06/30/23
Date Analyzed: 06/30/23

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 50-150)
01MW49R-062923 306460-02	160 x	<250	120
02MW04R-062923 306460-03	65 x	<250	113
02MW07-062923 306460-04	76 x	<250	116
02MW19-062923 306460-05	76 x	<250	118
Method Blank 03-1570 MB2	<50	<250	108

Analysis For Total Metals By EPA Method 6020B

Client ID:	02MW07-062923	Client:	Floyd-Snider
Date Received:	06/29/23	Project:	Cantera-TOC, F&BI 306460
Date Extracted:	06/29/23	Lab ID:	306460-04
Date Analyzed:	06/30/23	Data File:	306460-04.120
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	1.13

Analysis For Total Metals By EPA Method 6020B

Client ID:	02MW19-062923	Client:	Floyd-Snider
Date Received:	06/29/23	Project:	Cantera-TOC, F&BI 306460
Date Extracted:	06/29/23	Lab ID:	306460-05
Date Analyzed:	06/30/23	Data File:	306460-05.123
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	4.24

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Floyd-Snider
Date Received:	NA	Project:	Cantera-TOC, F&BI 306460
Date Extracted:	06/29/23	Lab ID:	I3-521 mb
Date Analyzed:	06/30/23	Data File:	I3-521 mb.042
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW108-062923	Client:	Floyd-Snider
Date Received:	06/29/23	Project:	Cantera-TOC, F&BI 306460
Date Extracted:	07/03/23	Lab ID:	306460-01
Date Analyzed:	07/03/23	Data File:	070340.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	94	71	132
Toluene-d8	92	68	139
4-Bromofluorobenzene	102	62	136

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	0.065
cis-1,2-Dichloroethene	<1
Trichloroethene	<0.5

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	01MW49R-062923	Client:	Floyd-Snider
Date Received:	06/29/23	Project:	Cantera-TOC, F&BI 306460
Date Extracted:	07/03/23	Lab ID:	306460-02
Date Analyzed:	07/03/23	Data File:	070322.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	106	78	126
Toluene-d8	101	84	115
4-Bromofluorobenzene	107	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	02MW04R-062923	Client:	Floyd-Snider
Date Received:	06/29/23	Project:	Cantera-TOC, F&BI 306460
Date Extracted:	07/03/23	Lab ID:	306460-03
Date Analyzed:	07/03/23	Data File:	070323.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	78	126
Toluene-d8	102	84	115
4-Bromofluorobenzene	107	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	29

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	02MW07-062923	Client:	Floyd-Snider
Date Received:	06/29/23	Project:	Cantera-TOC, F&BI 306460
Date Extracted:	07/03/23	Lab ID:	306460-04
Date Analyzed:	07/03/23	Data File:	070324.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	103	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	02MW19-062923	Client:	Floyd-Snider
Date Received:	06/29/23	Project:	Cantera-TOC, F&BI 306460
Date Extracted:	07/03/23	Lab ID:	306460-05
Date Analyzed:	07/03/23	Data File:	070325.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Floyd-Snider
Date Received:	Not Applicable	Project:	Cantera-TOC, F&BI 306460
Date Extracted:	07/03/23	Lab ID:	03-1527 mb
Date Analyzed:	07/03/23	Data File:	070308.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	94	71	132
Toluene-d8	102	68	139
4-Bromofluorobenzene	101	62	136

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.02
cis-1,2-Dichloroethene	<1
Trichloroethene	<0.5
Benzene	<0.35

Date of Report: 07/06/23
Date Received: 06/29/23
Project: Cantera-TOC, F&BI 306460

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 306460-05 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	97	70-130

Date of Report: 07/06/23
Date Received: 06/29/23
Project: Cantera-TOC, F&BI 306460

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	108	116	65-151	7

Date of Report: 07/06/23
Date Received: 06/29/23
Project: Cantera-TOC, F&BI 306460

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 306460-04 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	1.13	108	103	75-125	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	97	80-120

Date of Report: 07/06/23
Date Received: 06/29/23
Project: Cantera-TOC, F&BI 306460

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 306440-06 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	10	<0.02	107	16-176
cis-1,2-Dichloroethene	ug/L (ppb)	10	<1	102	50-150
Benzene	ug/L (ppb)	10	<0.35	104	50-150
Trichloroethene	ug/L (ppb)	10	<0.5	106	43-133

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	10	96	96	43-149	0
cis-1,2-Dichloroethene	ug/L (ppb)	10	98	103	70-130	5
Benzene	ug/L (ppb)	10	101	105	70-130	4
Trichloroethene	ug/L (ppb)	10	102	105	70-130	3

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

SAMPLE CHAIN OF CUSTODY

306460

06/29/23

VW2/I3/L2

Page # 1 of 1

Report To Kristin Anderson + Pamela Osterhout

Company Floyd Snider

Address 601 Union St, Suite 600

City, State, ZIP Seattle, WA 98101

Phone 206 292-2078 Email

SAMPLERS (*signature*)

PROJECT NAME: Cantera - TDC

PO #

REMARKS: CVOCs + Benzene by 8260

Project specific RLs? - Yes / No

INVOICE TO: Pioneer

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	TCE, cis-1,2-DCE + vinyl chloride	Benzene by 8260D	Total Arsenic by 6020B		Notes
01MW108-062923	01 A-F	6/29/23	09:45	GW	6								✓				
01MW49R-062923	02 A-G	"	10:55	"	7	✓	✓							✓			
02MW04R-062923	03 ↓	"	11:30	"	7	✓	✓							✓			
02MW07-062923	04 A-H	"	12:42	"	8	✓	✓							✓	✓		
02MW19-062923	05 ↓	"	11:55	"	8	✓	✓							✓	✓		

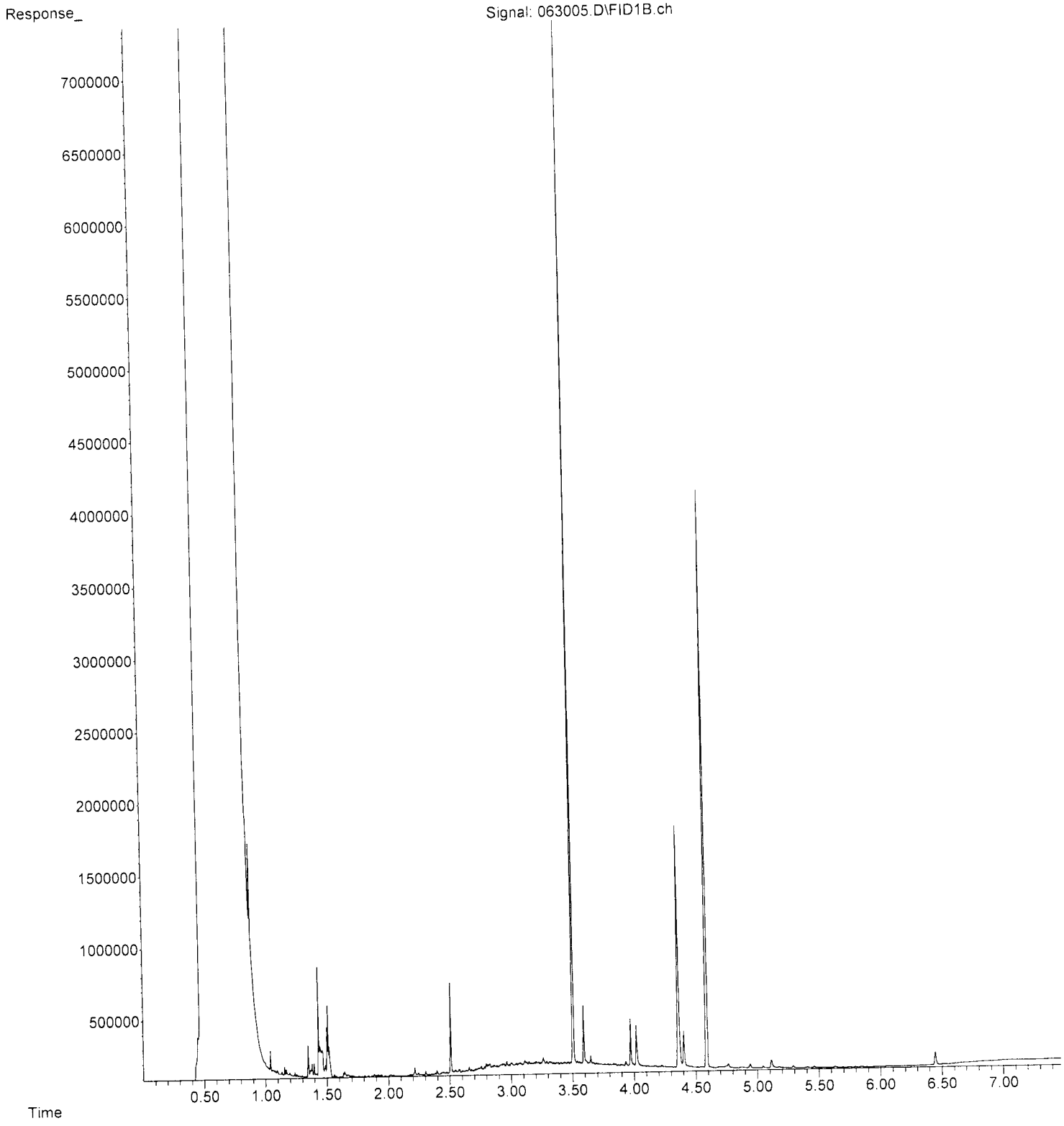
ANALYSES REQUESTED

Samples received at 3 °C

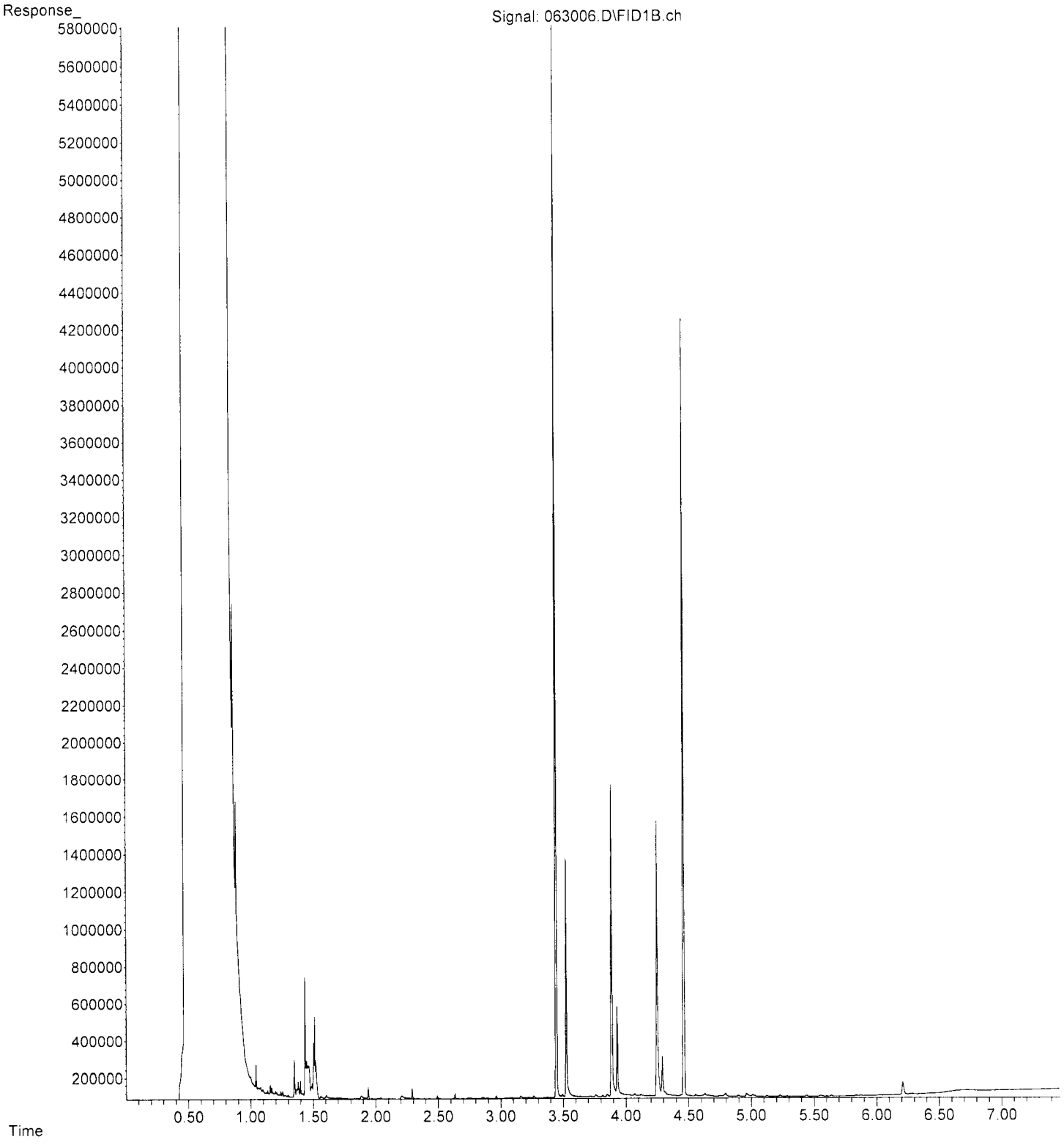
SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	meg mccann	Floyd/Snider	6/29/23	13:35
Received by:	DeeDee Webber	F&BI	6/29	13:35
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

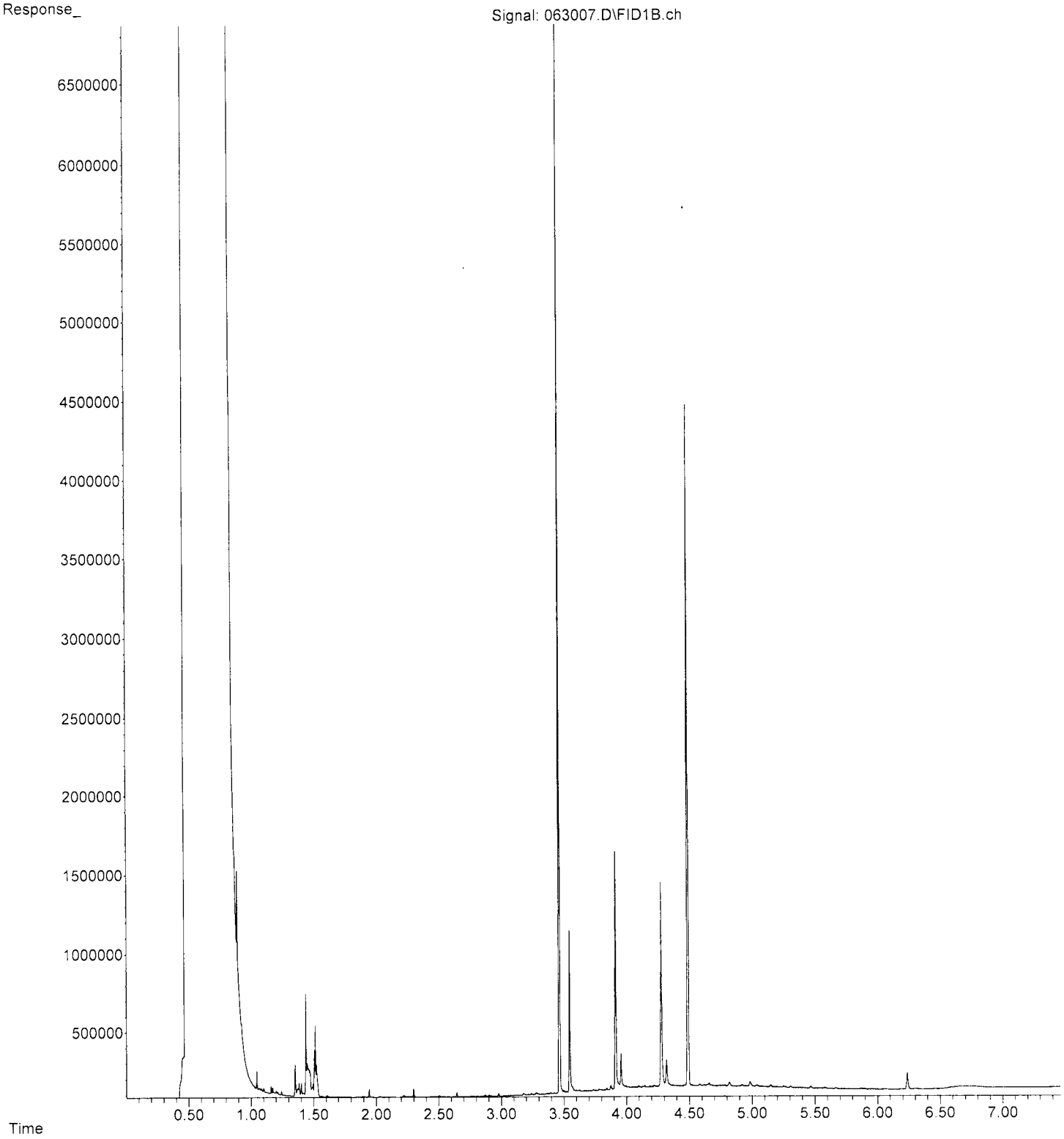
File :P:\Proc_GC10\06-30-23\063005.D
Operator : TL
Acquired : 30 Jun 2023 08:59 am using AcqMethod DX.M
Instrument : GC10
Sample Name: 306460-02
Misc Info :
Vial Number: 7



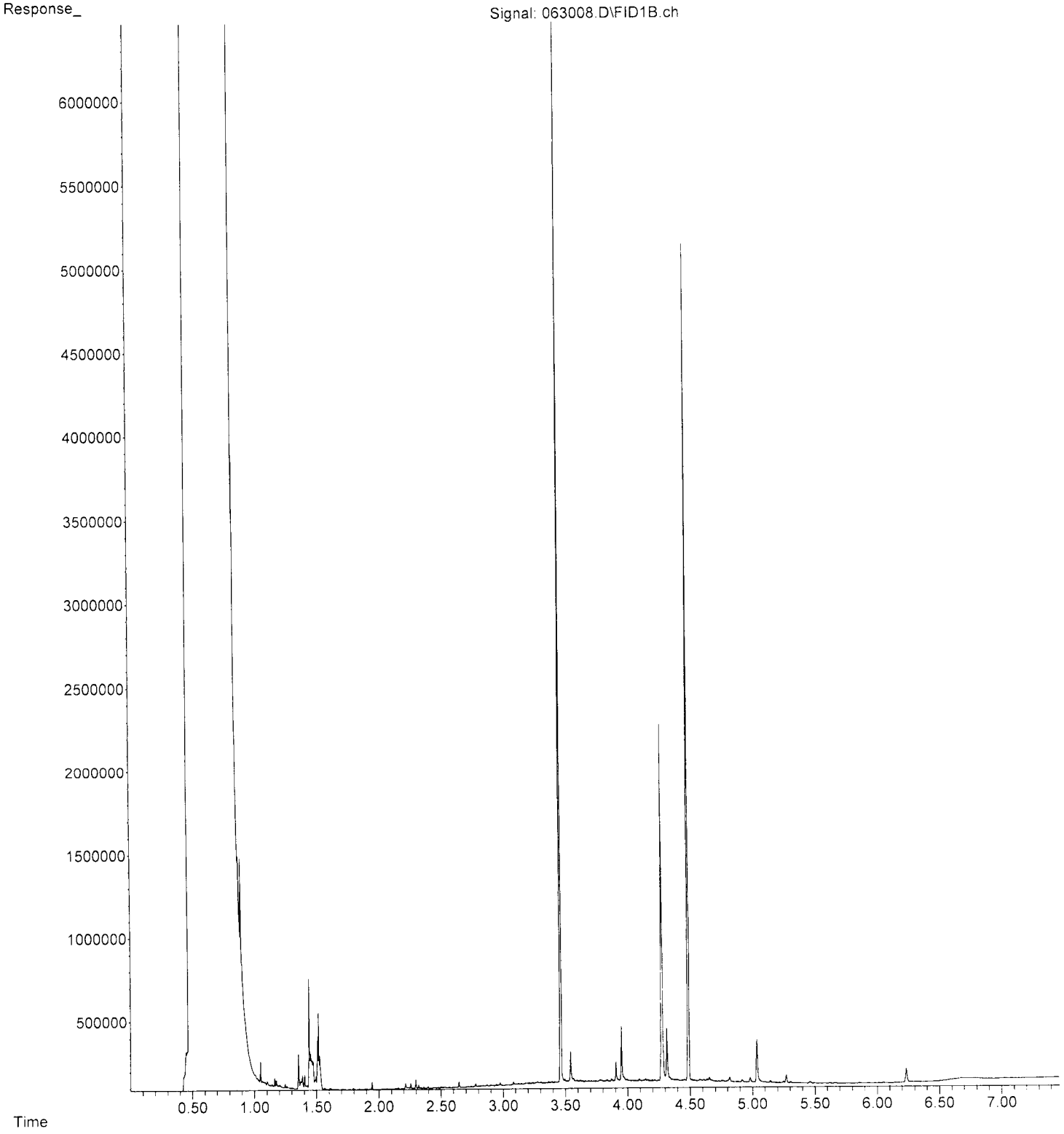
File :P:\Proc_GC10\06-30-23\063006.D
Operator : TL
Acquired : 30 Jun 2023 09:11 am using AcqMethod DX.M
Instrument : GC10
Sample Name: 306460-03
Misc Info :
Vial Number: 8



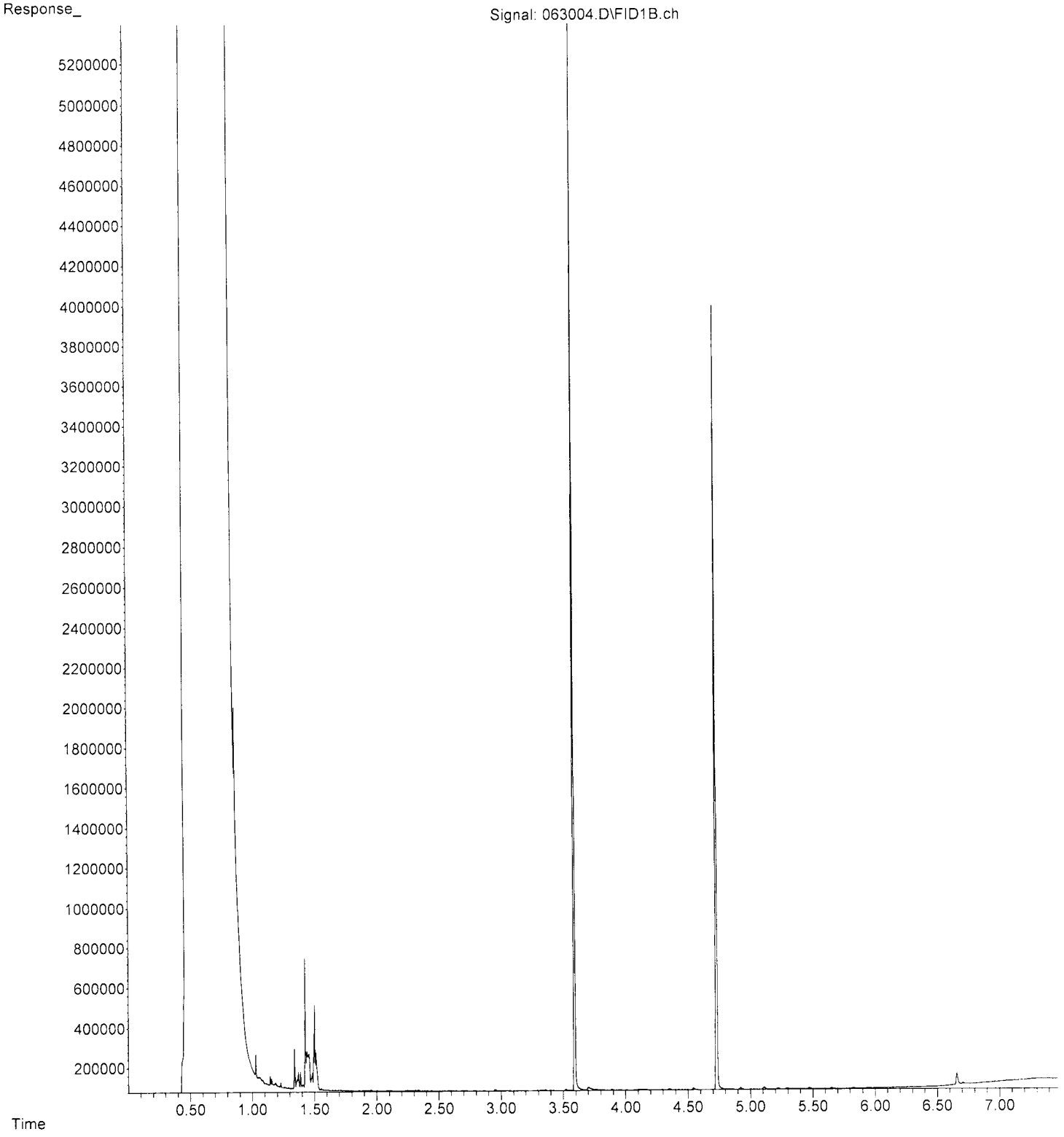
File :P:\Proc_GC10\06-30-23\063007.D
Operator : TL
Acquired : 30 Jun 2023 09:23 am using AcqMethod DX.M
Instrument : GC10
Sample Name: 306460-04
Misc Info :
Vial Number: 9



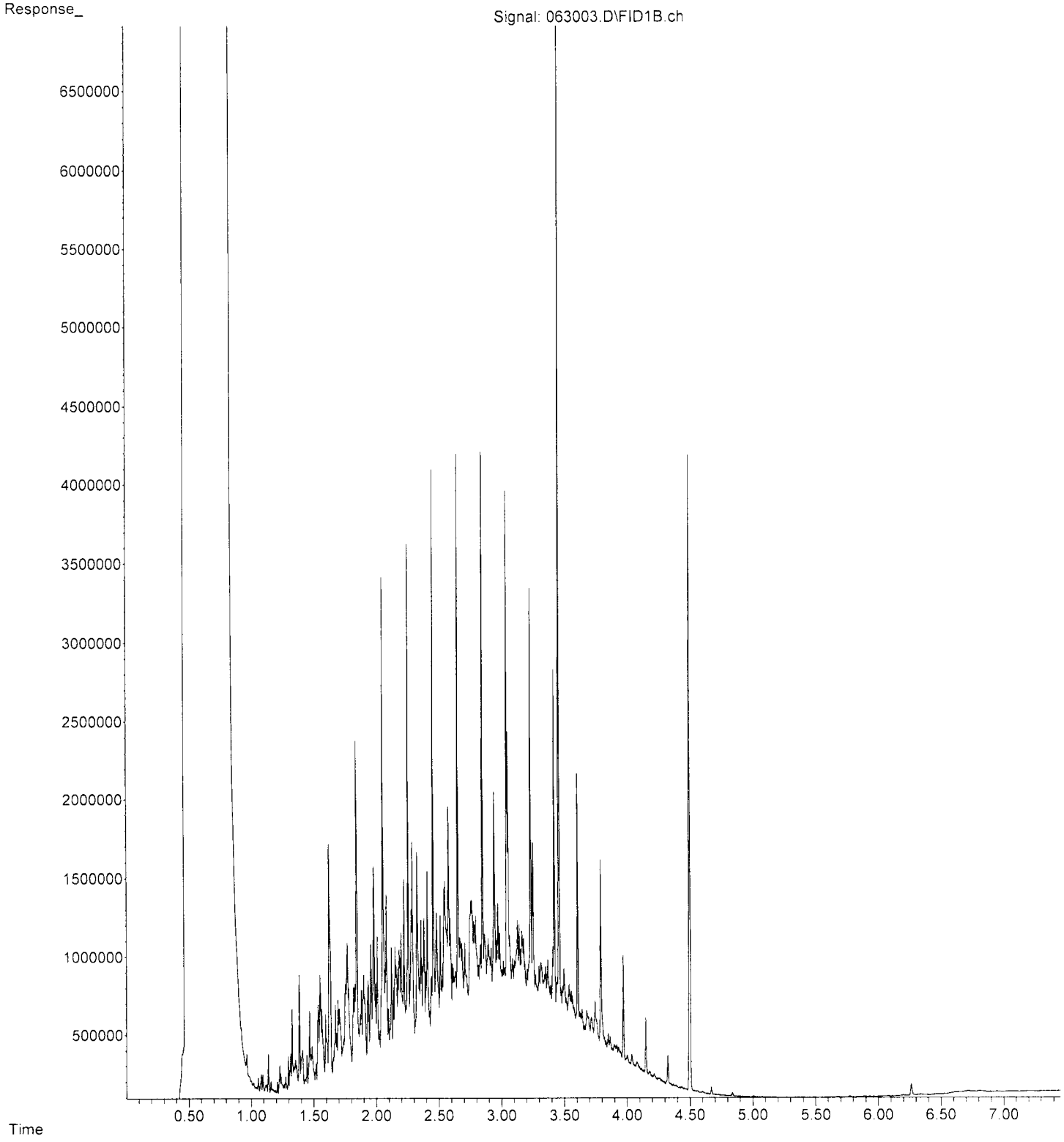
File :P:\Proc_GC10\06-30-23\063008.D
Operator : TL
Acquired : 30 Jun 2023 09:34 am using AcqMethod DX.M
Instrument : GC10
Sample Name: 306460-05
Misc Info :
Vial Number: 10



File :P:\Proc_GC10\06-30-23\063004.D
Operator : TL
Acquired : 30 Jun 2023 08:48 am using AcqMethod DX.M
Instrument : GC10
Sample Name: 03-1570 mb2
Misc Info :
Vial Number: 6



File :P:\Proc_GC10\06-30-23\063003.D
Operator : TL
Acquired : 30 Jun 2023 07:10 am using AcqMethod DX.M
Instrument : GC10
Sample Name: 500 DX 68-66J
Misc Info :
Vial Number: 3



FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

July 12, 2023

Kristin Anderson, Project Manager
Floyd-Snider
Two Union Square
601 Union St, Suite 600
Seattle, WA 98101

Dear Ms Anderson:

Included are the additional results from the testing of material submitted on June 29, 2023 from the Cantera-TOC, F&BI 306460 project. There are 5 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Floyd Snider Lab Data
FDS0712R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 29, 2023 by Friedman & Bruya, Inc. from the Floyd-Snider Cantera-TOC, F&BI 306460 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Floyd-Snider
306460-01	01MW108-062923
306460-02	01MW49R-062923
306460-03	02MW04R-062923
306460-04	02MW07-062923
306460-05	02MW19-062923

All quality control requirements were acceptable.

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	02MW04R-062923	Client:	Floyd-Snider
Date Received:	06/29/23	Project:	Cantera-TOC, F&BI 306460
Date Extracted:	07/10/23	Lab ID:	306460-03
Date Analyzed:	07/11/23	Data File:	071106.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	108	78	126
Toluene-d8	98	84	115
4-Bromofluorobenzene	100	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	34

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Floyd-Snider
Date Received:	Not Applicable	Project:	Cantera-TOC, F&BI 306460
Date Extracted:	07/10/23	Lab ID:	03-1543 mb
Date Analyzed:	07/10/23	Data File:	071007.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	71	132
Toluene-d8	103	68	139
4-Bromofluorobenzene	100	62	136

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35

Date of Report: 07/12/23
Date Received: 06/29/23
Project: Cantera-TOC, F&BI 306460

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 307058-05 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Benzene	ug/L (ppb)	10	<0.35	102	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	ug/L (ppb)	10	101	93	70-130	8

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

306460

SAMPLE CHAIN OF CUSTODY 06/29/23 VW2/I3/L2

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Report To Kristin Anderson + Pamela Osterhout
Company Floyd Snider
Address 601 Union St, Suite 600
City, State, ZIP Seattle, WA 98101
Phone 206 292-2078 Email

SAMPLERS (signature)

PROJECT NAME: Cantera - TDC
PO #:

REMARKS: CVOCs + Benzene by 8260
Project specific RLs? - Yes / No

INVOICE TO: Pioneer

TURNAROUND TIME
☒ Standard turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	TCE, cis-1,2-DCE + vinyl chloride	Benzene by 8260	Total Arsenic by 6020B	Benzene Rerun	Notes
						ANALYSES REQUESTED											
01MW108-062923	01 A-F	6/29/23	09:45	GW	6								✓				⊗ per KA 7/10
01MW49R-062923	02 A-G	"	10:55	"	7	✓	✓							✓			↓
02MW04R-062923	03 ↓	"	11:30	"	7	✓	✓							✓		⊗	
02MW07-062923	04 A-H	"	12:42	"	8	✓	✓							✓	✓		
02MW19-062923	05 ↓	"	11:55	"	8	✓	✓							✓	✓		

Samples received at 3 °C

PO

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	meg mccamm	Floyd/Snider	6/29/23	13:35
Received by:	DeeDee Webber	F&B	6/29	13:35
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
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