



October 18, 2024

File No.: 56763

Township of Esquimalt
1229 Esquimalt Road,
Esquimalt, BC V9A 3P1

Attention: Edgar Salamanca

ENVIRONMENTAL SOIL CHARACTERIZATION AT GOSPER CRESCENT, ESQUIMALT, BC

Dear Edgar,

Thurber Engineering Ltd. (Thurber) prepared this letter for the Township of Esquimalt (Township) to present the analytical soil results for samples collected from the boulevard and roadway on Gosper Crescent from 1034 to 1046 Gosper Crescent, Esquimalt, BC (hereafter referred to as the "Project Area"). The samples were collected for laboratory testing to characterize the soil for off-site disposal for a planned sewer and drain main repair project.

It is a condition of this memo that Thurber's performance of its professional services is subject to the attached Statement of Limitations and Conditions.

Thurber understands from the Township that the project requires excavation to a maximum depth of 1.5 meters below ground surface (mbgs).

1. REGULATORY CONTEXT

In British Columbia, environmental matters pertaining to contaminated sites generally fall under the jurisdiction of the Ministry of Environment and Climate Change Strategy (ENV), pursuant to the *Environmental Management Act (Act)*. The key regulation under the *Act* relating to the contaminated sites and contaminated soil relocation are the Contaminated Sites Regulation (CSR, B.C. Reg. 375/96, last amended May 31, 2022) and the Hazardous Waste Regulation (HWR, B.C. Reg. 63/88, last amended March 11, 2021).

As per Section 46.1 of the CSR, the applicable standards for relocating soil are the standards that apply at a receiving site, regardless of the use of the source site. For characterization purposes, the following generic land uses, and site-specific factors were considered:

Land Use	Site-Specific factors
- Residential Low-Density (RLD) - Commercial (CL) - Industrial (IL)	- Intake of contaminated soil - Toxicity to soil invertebrates and plants - Groundwater used for drinking water - Groundwater flow to surface water used by aquatic life (freshwater and marine)

Note: CSR standards for agricultural or wildlands use, or the site-specific factor of groundwater used for irrigation for RDL use, which are typically more stringent, were not considered as we understand the Township is not considering relocating soil to these types of properties.

It is noted that soil exceeding the IL standards and the Protocol 4 (P4) regional background concentrations for Vancouver Island is defined as “waste” and must be disposed of at a permitted facility.

2. SOIL SAMPLING

2.1 Drilling Program

Four boreholes (BH24-17 to BH24-20) were advanced within the Project Area to a maximum depth of 1.5 mbgs using a bobcat mounted auger. The soils observed during drilling were:

BH24-17 Adjacent to 1046 Gosper Crescent (Roadway)

- Asphalt from surface to 0.1 mbgs.
- Sandy gravel (Fill) from 0.1 to 1.4 mbgs.

BH24-18 Adjacent to 1034 Gosper Crescent (Roadway)

- Asphalt from surface to 0.1 mbgs.
- Sand and gravel from 0.1 to 0.4 mbgs.
- Silty clay with trace gravel from 0.4 to 1.2 mbgs.

BH24-19 Gosper Crescent (Boulevard)

- Topsoil with some sand from surface to 0.3 mbgs.
- Silty clay with trace gravel from 0.3 to 0.6 mbgs.

BH24-20 Gosper Crescent (Boulevard)

- Topsoil with some sand from surface to 0.3 mbgs.
- Silty clay from 0.3 to 0.6 mbgs.

2.2 Analytical Testing

Five soil samples (BH24-17-01, BH24-18-01, BH24-18-02, BH24-19-01, BH24-20-02) were submitted to Bureau Veritas for analysis of light and heavy extractable petroleum hydrocarbons (LEPH and HEPH), polycyclic aromatic hydrocarbons (PAH), sodium ion, chloride ion, and metals. Additionally, one sample (BH24-17-01) was submitted for analysis of volatile organic compounds (VOC).

3. ENVIRONMENTAL INVESTIGATION RESULTS

The concentrations of all analysed parameters were less than the CSR RLD standards. Therefore, the soil is considered RLD quality and can be relocated to a fill receiving site at which the RLD standards listed in Section 1 are applicable.

4. CLOSURE

We trust the above is sufficient for your needs. Please do not hesitate to contact us should you require additional information.

Yours truly,
Thurber Engineering Ltd.

Lora Paul, P.Eng., CSAP
Review Engineer



Kalum Skipper, GIT.
Environmental Geoscientist

Attachment
Statement of Limitations and Conditions
Test Location Plan
Analytical Tables
Laboratory Documents

Thurber Engineering Ltd. Permit to Practice #1001319

STATEMENT OF LIMITATIONS AND CONDITIONS

1. STANDARD OF CARE

This Report has been prepared in accordance with generally accepted engineering or environmental consulting practices in the applicable jurisdiction. No other warranty, expressed or implied, is intended or made.

2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment are a part of the Report, which is of a summary nature and is not intended to stand alone without reference to the instructions given to Thurber by the Client, communications between Thurber and the Client, and any other reports, proposals or documents prepared by Thurber for the Client relative to the specific site described herein, all of which together constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. THURBER IS NOT RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

3. BASIS OF REPORT

The Report has been prepared for the specific site, development, design objectives and purposes that were described to Thurber by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the Report, subject to the limitations provided herein, are only valid to the extent that the Report expressly addresses proposed development, design objectives and purposes, and then only to the extent that there has been no material alteration to or variation from any of the said descriptions provided to Thurber, unless Thurber is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

4. USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT THURBER'S WRITTEN CONSENT AND SUCH USE SHALL BE ON SUCH TERMS AND CONDITIONS AS THURBER MAY EXPRESSLY APPROVE. Ownership in and copyright for the contents of the Report belong to Thurber. Any use which a third party makes of the Report, is the sole responsibility of such third party. Thurber accepts no responsibility whatsoever for damages suffered by any third party resulting from use of the Report without Thurber's express written permission.

5. INTERPRETATION OF THE REPORT

- a) Nature and Exactness of Soil and Contaminant Description: Classification and identification of soils, rocks, geological units, contaminant materials and quantities have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors are judgmental in nature. Comprehensive sampling and testing programs implemented with the appropriate equipment by experienced personnel may fail to locate some conditions. All investigations utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and the Client and all other persons making use of such documents or records with our express written consent should be aware of this risk and the Report is delivered subject to the express condition that such risk is accepted by the Client and such other persons. Some conditions are subject to change over time and those making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client should disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.
- b) Reliance on Provided Information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to Thurber. Thurber has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Thurber does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other persons providing information relied on by Thurber. Thurber is entitled to rely on such representations, information and instructions and is not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.
- c) Design Services: The Report may form part of design and construction documents for information purposes even though it may have been issued prior to final design being completed. Thurber should be retained to review final design, project plans and related documents prior to construction to confirm that they are consistent with the intent of the Report. Any differences that may exist between the Report's recommendations and the final design detailed in the contract documents should be reported to Thurber immediately so that Thurber can address potential conflicts.
- d) Construction Services: During construction Thurber should be retained to provide field reviews. Field reviews consist of performing sufficient and timely observations of encountered conditions in order to confirm and document that the site conditions do not materially differ from those interpreted conditions considered in the preparation of the report. Adequate field reviews are necessary for Thurber to provide letters of assurance, in accordance with the requirements of many regulatory authorities.

6. RELEASE OF POLLUTANTS OR HAZARDOUS SUBSTANCES

Geotechnical engineering and environmental consulting projects often have the potential to encounter pollutants or hazardous substances and the potential to cause the escape, release or dispersal of those substances. Thurber shall have no liability to the Client under any circumstances, for the escape, release or dispersal of pollutants or hazardous substances, unless such pollutants or hazardous substances have been specifically and accurately identified to Thurber by the Client prior to the commencement of Thurber's professional services.

7. INDEPENDENT JUDGEMENTS OF CLIENT

The information, interpretations and conclusions in the Report are based on Thurber's interpretation of conditions revealed through limited investigation conducted within a defined scope of services. Thurber does not accept responsibility for independent conclusions, interpretations, interpolations and/or decisions of the Client, or others who may come into possession of the Report, or any part thereof, which may be based on information contained in the Report. This restriction of liability includes but is not limited to decisions made to develop, purchase or sell land.

Esquimalt Web Map



9/23/2024, 5:15:38 PM

 Township Boundary

 Parcel

 Lot Boundaries 1-2.5K

Civic Addresses 751-2500

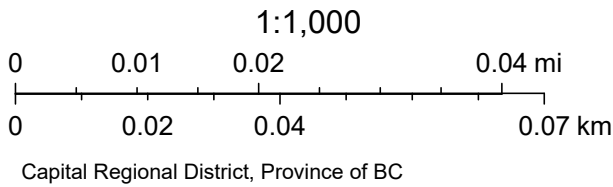


Table 1: Hydrocarbons in Soil
Job Number: 56763
Site Address: Gosper Crescent, Esquimalt, BC
Client: Township of Esquimalt

Sample ID	Soil Standards (µg/g)*			BH24-17-01	BH24-18-01	BH24-18-02	BH24-19-01	BH24-20-02
Sample Date				2-Aug-2024	2-Aug-2024	2-Aug-2024	2-Aug-2024	2-Aug-2024
Certificate of Analysis	Residential	Commercial	Industrial	C459220	C459220	C459220	C459220	C459220
Depth of Sample (m)	Low Density			0.1 - 0.4	0.1 - 0.4	0.4 - 0.7	0 - 0.3	0.3 - 0.6
Parameters	(RLD)	(CL)	(IL)					
Photoionization Detector (ppm)	ns	ns	ns	-	-	-	-	-
EPH (C10-C19)	ns	ns	ns	<100	<100	<100	<100	<100
EPH (C19-C32)	ns	ns	ns	140	<100	<100	<100	<100
LEPH (C10-C19)	1000	2000	2000	<100	<100	<100	<100	<100
HEPH (C19-C32)	1000	5000	5000	140	<100	<100	<100	<100
Acenaphthene	950	15000	15000	<0.0050	<0.050	<0.0050	<0.0050	<0.0050
Acenaphthylene	ns	ns	ns	0.031	<0.020	<0.0050	0.0088	<0.0050
Anthracene	2.5	30	30	0.032	<0.0050	<0.0040	0.0047	<0.0040
Benzo(a)anthracene	1	10	10	0.13	<0.0050	<0.020	0.034	<0.020
Benzo(a)pyrene	5	30	50	0.15	<0.0040	<0.020	0.053	<0.020
Benzo(b)fluoranthene	1	10	10	0.19	<0.020	<0.020	0.068	<0.020
Benzo(g,h,i)perylene	ns	ns	ns	0.086	<0.020	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	1	10	10	0.065	<0.020	<0.020	0.023	<0.020
Chrysene	200	4500	4500	0.16	<0.050	<0.020	0.045	<0.020
Dibenz(a,h)anthracene	1	10	10	0.024	<0.020	<0.020	<0.020	<0.020
Fluoranthene	50	200	200	0.27	<0.020	<0.020	0.094	<0.020
Fluorene	600	9500	9500	<0.020	<0.020	<0.020	<0.020	<0.020
Indeno(1,2,3-c,d)pyrene	1	10	10	0.071	<0.020	<0.020	0.036	<0.020
Methylnaphthalene, 1-	250	1000	1000	<0.050	<0.020	<0.050	<0.050	<0.050
Methylnaphthalene, 2-	60	950	950	<0.020	<0.020	<0.020	<0.020	<0.020
Naphthalene	0.6	20	20	<0.010	<0.010	<0.010	<0.010	<0.010
Phenanthrene	5	50	50	0.11	<0.010	<0.010	0.035	<0.010
Pyrene	10	100	100	0.22	<0.020	<0.020	0.074	<0.020
Quinoline	2.5	10	10	<0.050	<0.050	<0.050	<0.050	<0.050

Notes:

Values in µg/g unless otherwise stated.

- = not analyzed, ns = no standard

Dup. = duplicate

XXX.XX = Exceeds Applicable RLD Soil Standard

XXX.XX = Exceeds Applicable CL Soil Standard

XXX.XX = Exceeds Applicable IL Soil Standard

* Standards provided in Schedule 3.1 of the BC Contaminated Sites Regulation. Site specific factors include intake of contaminated soil, toxicity to soil invertebrates and plants, groundwater used for drinking water and groundwater flow to surface water used by aquatic life (freshwater and/or marine).

PAH = Polycyclic Aromatic Hydrocarbons

EPH₁₀₋₁₉ = LEPH, uncorrected for PAH

EPH₁₀₋₃₂ = HEPH, uncorrected for PAH

LEPH = Light Extractable Petroleum Hydrocarbons, corrected for PAH

HEPH = Heavy Extractable Petroleum Hydrocarbons, corrected for PAH

Table 2: VOC in Soil
Job Number: 56763
Site Address: Gosper Crescent, Esquimalt, BC
Client: Township of Esquimalt

Sample ID	Soil Standards (µg/g)*			BH24-17-01
Sample Date				2-Aug-24
Certificate of Analysis				C459220
Depth of Sample (m)	Residential Low Density (RLD)	Commercial (CL)	Industrial (IL)	0.1 - 0.4
Parameters				
Photoionization Detector (ppm)	ns	ns	ns	-
Acetone	15000	200000	200000	<5.0
Benzene	0.035	0.035	0.035	<0.0050
Bromobenzene	150	2000	2000	<0.20
Bromodichloromethane	100	550	550	<0.050
Butadiene, 1,3-	2	9.5	9.5	<0.080
Carbon Disulfide	1500	25000	25000	<15
Carbon Tetrachloride	5	50	50	<0.020
Chlorobenzene	1	10	10	<0.020
Chloroethane	ns	ns	ns	<0.10
Decane, n-	ns	ns	ns	<2.0
Dibromoethane, 1,2-	3.5	15	15	<0.020
Dichlorobenzene, 1,2-	1	10	10	<0.020
Dichlorodifluoromethane	3000	45000	45000	<0.20
Dichloroethane, 1,1-	5	50	50	<0.025
Dichloroethane, 1,2-	5	50	50	<0.020
Dichloroethylene, 1,1-	5	50	50	<0.025
Dichloroethylene, 1,2-cis-	5	50	50	<0.030
Dichloroethylene, 1,2-trans-	5	50	50	<0.030
Dichloromethane	5	50	50	<0.080
Dichloropropane, 1,2-	5	50	50	<0.020
Ethylbenzene	15	15	15	<0.010
Hexane, n-	ns	ns	ns	<0.50
Isopropylbenzene	1500	25000	25000	<0.20
Methyl Ethyl Ketone [MEK]	9500	150000	150000	<15
Methyl Isobutyl Ketone [MIBK]	ns	ns	ns	<0.50
Methylcyclohexane	ns	ns	ns	<0.20
Methyl tert-butyl ether [MTBE]	4000	20000	20000	<0.10
Styrene	5	50	50	<0.030
Tetrachloroethane, 1,1,1,2,2-	35	150	150	<0.020
Tetrachloroethylene (PERC)	2.5	2.5	2.5	<0.010
Toluene	0.5-6	0.5-6	0.5-6	<0.050
Trichloroben: = Exceeds Applicable IL S	2	10	10	<0.030
Trichloroethane, 1,1,1-	5	50	50	<0.020
Trichloroethane, 1,1,2-	5	50	50	<0.020
Trichloroethylene (TCE)	0.3	0.3	0.3	<0.0090
Trimethylbenzene, 1,2,4-	ns	ns	ns	<0.20
Trimethylbenzene, 1,3,5-	150	2500	2500	<0.20
Vinyl Chloride	0.95	45	45	<0.040
VHs (C6-C10)	ns	ns	ns	<10
VPHs (C6-C10)	200	200	200	<10
Xylene, m&p-	ns	ns	ns	<0.040
Xylene, o-	ns	ns	ns	<0.040
Xylenes, Total	6.5	6.5	6.5	<0.040

Notes:

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VOC = Volatile Organic Compounds

BTEX = Benzene, Toluene, Ethylbenzene and Xylenes

VPH = Volatile Petroleum Hydrocarbons, corrected for BTEX

VH = Volatile Petroleum Hydrocarbons, uncorrected for BTEX

Table 3: Metals in Soil
Job Number: 56763
Site Address: Gosper Crescent, Esquimalt, BC
Client: Township of Esquimalt

Sample ID	Soil Standards (µg/g)*			BH24-17-01	BH24-18-01	BH24-18-02	BH24-19-01	BH24-20-02
Sample Date				2-Aug-24	2-Aug-24	2-Aug-24	2-Aug-24	2-Aug-24
Certificate of Analysis	Residential	Commercial	Industrial (IL)	C459220	C459220	C459220	C459220	C459220
Depth of Sample (m)	Low Density (RLD)	(CL)		0.1 - 0.4	0.1 - 0.4	0.4 - 0.7	0 - 0.3	0.3 - 0.6
Parameters								
pH	ns	ns	ns	8.39	8.20	6.90	6.61	6.31
Aluminum (Al)	40000	250000	250000	19,300	18,900	17,400	17,600	18,200
Antimony (Sb)	20	40	40	0.96	0.15	0.12	0.29	0.14
Arsenic (As)	10	10	10	4.52	3.39	3.47	3.40	3.42
Barium (Ba)	350	350	350	52.9	49.1	51.2	95.0	79.5
Beryllium (Be)	1-85**	1-350**	1-350**	0.21	0.28	0.29	0.35	0.31
Boron (B)	8500	50000	1000000	5.0	2.9	1.2	1.9	1.4
Cadmium (Cd)	1-20**	1-50**	1-50**	0.073	0.079	<0.050	0.259	<0.050
Chromium (Cr) (III + VI)	60	60	60	40.0	27.5	29.4	33.9	35.6
Cobalt (Co)	25	25	25	17.9	13.8	12.0	9.29	12.6
Copper (Cu)	75-150**	75-300**	75-300**	44.6	62.5	33.8	28.4	19.2
Iron (Fe)	35000	150000	150000	28,500	29,500	24,000	21,800	25,500
Lead (Pb)	120	120-150**	120-1000**	11.1	3.43	3.83	17.1	6.40
Lithium (Li)	30	450	450	7.84	10.1	10.0	11.1	13.1
Manganese (Mn)	2000	2000	2000	507	590	447	485	419
Mercury (Hg)	10	75	75	<0.050	0.082	<0.050	0.059	<0.050
Molybdenum (Mo)	15	15	15	0.64	0.30	0.24	0.62	0.32
Nickel (Ni)	70-150**	70-250**	70-250**	34.4	24.8	22.6	23.8	23.2
Selenium (Se)	1	1	1	<0.50	<0.50	<0.50	<0.50	<0.50
Silver (Ag)	20	40	40	<0.050	<0.050	<0.050	0.090	0.052
Strontium (Sr)	9500	150000	150000	68.2	23.6	22.1	28.4	23.2
Thallium (Tl)	9	25	25	<0.050	<0.050	<0.050	0.057	0.071
Tin (Sn)	50	300	300	0.78	0.49	0.36	0.71	0.42
Tungsten (W)	15	200	200	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	30	30	30	0.246	0.227	0.267	0.398	0.402
Vanadium (V)	100	100	100	76.0	77.0	67.0	58.3	68.1
Zinc (Zn)	150-200**	150-200**	150-200**	56.4	47.2	39.5	66.9	44.4

Notes:

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XXX.XX = Exceeds Applicable IL Soil Standard

* Standards provided in Schedule 3.1 of the BC Contaminated Sites Regulation. Site specific factors include intake of contaminated soil, toxicity to soil invertebrates and plants, groundwater used for drinking water and groundwater flow to surface water used by aquatic life (freshwater and/or marine).

** Standard is pH dependent

Table 4: Sodium and Chloride in Soil
Job Number: 56763
Site Address: Gosper Crescent, Esquimalt, BC
Client: Township of Esquimalt

Sample ID				BH24-17-01	BH24-18-01	BH24-18-02	BH24-19-01	BH24-20-02
Certificate of Analysis	Soil Standards (µg/g)*			2-Aug-2024	2-Aug-24	2-Aug-2024	2-Aug-2024	2-Aug-2024
Sample Date				C459220	C459220	C459220	C459220	C459220
Depth of Sample (m)	Residential Low Density (RLD)	Commercial (CL)	Industrial (IL)	0.1 - 0.4	0.1 - 0.4	0.4 - 0.7	0 - 0.3	0.3 - 0.6
Parameters								
Chloride Ion	100	100	100	28.6	4.5	67.0	<3.1	<6.1
Sodium Ion	200	1000	1000	86.5	14.6	52.9	4.6	13.1

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Attention: Lora Paul

Thurber Engineering Ltd.
4464 MARKHAM ST.
SUITE 2302
VICTORIA, BC
CANADA V8Z 7X8

Your P.O. #: 56763
Your Project #: 56763
Site#: ESQUIMALT
Site Location: ESQUIMALT, BC
Your C.O.C. #: 8537307, 8537308

Report Date: 2024/08/20
Report #: R3543873
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C459220

Received: 2024/08/02, 13:28

Sample Matrix: Soil
Samples Received: 34

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Chloride (soluble)	2	2024/08/15	2024/08/15	BBY6SOP-00011	SM 24 4500-Cl- E m
Chloride (soluble)	25	2024/08/08	2024/08/08	BBY6SOP-00011	SM 24 4500-Cl- E m
Soluble Chloride Ion Calc. (mg/kg)	2	N/A	2024/08/15	BBY WI-00033	Auto Calc
Soluble Chloride Ion Calc. (mg/kg)	25	N/A	2024/08/08	BBY WI-00033	Auto Calc
Elements by ICPMS (total) (1)	8	2024/08/15	2024/08/15	BBY7SOP-00004 / BBY7SOP-00001	EPA 6020b R2 m
Elements by ICPMS (total) (1)	1	2024/08/16	2024/08/16	BBY7SOP-00004 / BBY7SOP-00001	EPA 6020b R2 m
Elements by ICPMS (total) (1)	25	2024/08/08	2024/08/08	BBY7SOP-00004 / BBY7SOP-00001	EPA 6020b R2 m
Moisture	2	2024/08/14	2024/08/15	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Moisture	25	2024/08/07	2024/08/08	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Soluble Sodium Ion Calc. (mg/kg)	2	N/A	2024/08/15	BBY WI-00033	Auto Calc
Soluble Sodium Ion Calc. (mg/kg)	8	N/A	2024/08/08	BBY WI-00033	Auto Calc
Soluble Sodium Ion Calc. (mg/kg)	17	N/A	2024/08/09	BBY WI-00033	Auto Calc
PAH in Soil by GC/MS (SIM)	2	2024/08/14	2024/08/14	BBY8SOP-00022	BCMOE BCLM Jul2017m
PAH in Soil by GC/MS (SIM)	20	2024/08/07	2024/08/07	BBY8SOP-00022	BCMOE BCLM Jul2017m
PAH in Soil by GC/MS (SIM)	5	2024/08/07	2024/08/08	BBY8SOP-00022	BCMOE BCLM Jul2017m
Total PAH and B(a)P Calculation (2)	2	N/A	2024/08/15	BBY WI-00033	Auto Calc
Total PAH and B(a)P Calculation (2)	23	N/A	2024/08/08	BBY WI-00033	Auto Calc
Total PAH and B(a)P Calculation (2)	2	N/A	2024/08/09	BBY WI-00033	Auto Calc
pH (2:1 DI Water Extract)	8	2024/08/15	2024/08/16	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	1	2024/08/16	2024/08/16	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	25	2024/08/08	2024/08/08	BBY6SOP-00028	BCMOE BCLM Mar2005 m
Saturated Paste	2	2024/08/15	2024/08/15	BBY6SOP-00030	BC Lab Manual 2015 m
Saturated Paste	25	2024/08/08	2024/08/08	BBY6SOP-00030	BC Lab Manual 2015 m
Soluble Cations (Ca,K,Mg,Na,S)	2	N/A	2024/08/15	BBY7SOP-00018 / BBY7SOP-00030 / BCLM Nov 2015	EPA 6010d m
Soluble Cations (Ca,K,Mg,Na,S)	25	N/A	2024/08/08	BBY7SOP-00018 / BBY7SOP-00030 / BCLM Nov 2015	EPA 6010d m



Attention: Lora Paul

Thurber Engineering Ltd.
4464 MARKHAM ST.
SUITE 2302
VICTORIA, BC
CANADA V8Z 7X8

Your P.O. #: 56763
Your Project #: 56763
Site#: ESQUIMALT
Site Location: ESQUIMALT, BC
Your C.O.C. #: 8537307, 8537308

Report Date: 2024/08/20

Report #: R3543873

Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C459220

Received: 2024/08/02, 13:28

Sample Matrix: Soil
Samples Received: 34

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
EPH less PAH in Soil By GC/FID (3)	2	N/A	2024/08/15	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID (3)	23	N/A	2024/08/08	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID (3)	2	N/A	2024/08/09	BBY WI-00033	Auto Calc
EPH in Soil by GC/FID	2	2024/08/14	2024/08/15	BBY8SOP-00029	BCMOE BCLM Dec2016 m
EPH in Soil by GC/FID	22	2024/08/07	2024/08/07	BBY8SOP-00029	BCMOE BCLM Dec2016 m
EPH in Soil by GC/FID	3	2024/08/07	2024/08/08	BBY8SOP-00029	BCMOE BCLM Dec2016 m
Extra VOCs in Soil - Field Pres. (4)	8	N/A	2024/08/10	BBY8SOP-00040	BCMOE BCLM Sep 2017m
Extra VOCs in Soil - Field Pres. (4)	3	N/A	2024/08/17	BBY8SOP-00040	BCMOE BCLM Sep 2017m
Extra VOCs in Soil - Field Pres. (4)	1	N/A	2024/08/09	BBY8SOP-00040	BCMOE BCLM Sep 2017m
VOCs, VH, F1, LH in Soil - Field Pres. (4)	3	N/A	2024/08/16	BBY8SOP-00009 / BBY8SOP-00011 / BBY8SOP-00012	BCMOE BCLM Sep2017 m
VOCs, VH, F1, LH in Soil - Field Pres. (4)	3	N/A	2024/08/08	BBY8SOP-00009 / BBY8SOP-00011 / BBY8SOP-00012	BCMOE BCLM Sep2017 m
VOCs, VH, F1, LH in Soil - Field Pres. (4)	6	N/A	2024/08/09	BBY8SOP-00009 / BBY8SOP-00011 / BBY8SOP-00012	BCMOE BCLM Sep2017 m
Volatile HC-BTEX for Soil (5)	3	N/A	2024/08/18	BBY WI-00033	Auto Calc
Volatile HC-BTEX for Soil (5)	9	N/A	2024/08/09	BBY WI-00033	Auto Calc

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report.



Attention: Lora Paul

Thurber Engineering Ltd.
4464 MARKHAM ST.
SUITE 2302
VICTORIA, BC
CANADA V8Z 7X8

Your P.O. #: 56763
Your Project #: 56763
Site#: ESQUIMALT
Site Location: ESQUIMALT, BC
Your C.O.C. #: 8537307, 8537308

Report Date: 2024/08/20
Report #: R3543873
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C459220

Received: 2024/08/02, 13:28

Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The sample is prepared per the BC MOE Lab Manual "Strong Acid Leachable Metals (SALM) in Soil - Prescriptive", Revision Nov 6, 2015.

(2) Total PAHs in Soil include: Quinoline, Naphthalene, 1-Methylnaphthalene, 2-Methylnaphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Acridine, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b&j)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene, and Benzo(g,h,i)perylene.

Total PAHs in Sediment include (B.C. Reg. 116/2018, Schedule 3.4): Naphthalene, 2-Methylnaphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(a)pyrene, and Dibenzo(a,h)anthracene.

(3) LEPH = EPH (C10 to C19) - (Naphthalene + Phenanthrene)

HEPH = EPH (C19 to C32) - (Benzo(a)anthracene + Benzo(a)pyrene + Benzo(b)fluoranthene + Benzo(k)fluoranthene + Dibenzo(a,h)anthracene + Indeno(1,2,3-cd)pyrene + Pyrene)

(4) The extraction date for VOC, BTEX, VH, or F1 samples that are field preserved with methanol equals the date sampled, unless otherwise stated.

(5) VPH = VH - (Benzene + Toluene + Ethylbenzene + m & p-Xylene + o-Xylene + Styrene)

Encryption Key

Shanaz Akbar
Customer Solutions Representative
20 Aug 2024 14:03:55

Please direct all questions regarding this Certificate of Analysis to:

Shanaz Akbar, Customer Solutions Representative

Email: Shanaz.Akbar@bureauveritas.com

Phone# (604) 734 7276

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Raphael Kwan, Senior Manager, BC and Yukon Regions responsible for British Columbia Environmental laboratory operations.



**BUREAU
VERITAS**

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		CSQ568			CSQ570		CSQ574			CSQ579	
Sampling Date		2024/08/01 10:30			2024/08/01 10:30		2024/08/01 09:15			2024/08/01 09:30	
COC Number		8537307			8537307		8537307			8537307	
	UNITS	SP24-01	RDL	QC Batch	SP24-02	QC Batch	BH24-01-01	RDL	QC Batch	BH24-02-02	QC Batch

Calculated Parameters											
VPH (VH6 to 10 - BTEX)	mg/kg	<10	10	B467275			<10	10	B467275		
Physical Properties											
Soluble (2:1) pH	pH	6.62	N/A	B469888	7.76	B469888	6.08	N/A	B469888	6.94	B469888
RDL = Reportable Detection Limit N/A = Not Applicable											

Bureau Veritas ID		CSQ580			CSQ582		CSQ583			CSQ585	
Sampling Date		2024/08/01 11:30			2024/08/01 11:45		2024/08/01 12:30			2024/08/01 12:50	
COC Number		8537307			8537307		8537307			8537307	
	UNITS	BH24-03-01	QC Batch	BH24-04-01	RDL	QC Batch	BH24-05-01	QC Batch	BH24-06-01	RDL	QC Batch

Calculated Parameters											
VPH (VH6 to 10 - BTEX)	mg/kg	<10	B478204	<10	10	B467275			<10	10	B478204
Physical Properties											
Soluble (2:1) pH	pH	5.86	B469888	6.01	N/A	B469888	6.45	B469888	7.41	N/A	B469888
RDL = Reportable Detection Limit N/A = Not Applicable											

Bureau Veritas ID		CSQ636			CSQ637		CSQ638			CSQ639	
Sampling Date		2024/08/01 13:15			2024/08/01 13:30		2024/08/01 14:00			2024/08/01 14:00	
COC Number		8537308			8537308		8537308			8537308	
	UNITS	BH24-07-01	QC Batch	BH24-08-01	RDL	QC Batch	BH24-09-01	QC Batch	BH24-09-02	RDL	QC Batch

Calculated Parameters											
VPH (VH6 to 10 - BTEX)	mg/kg			<10	10	B467275			<10	10	B467275
Physical Properties											
Soluble (2:1) pH	pH	6.05	B469888	6.41	N/A	B469894	6.90	B469894	7.14	N/A	B469894
RDL = Reportable Detection Limit N/A = Not Applicable											



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		CSQ640		CSQ641		CSQ642		CSQ643		
Sampling Date		2024/08/01 14:00		2024/08/01 14:30		2024/08/01 14:30		2024/08/01 14:50		
COC Number		8537308		8537308		8537308		8537308		
	UNITS	BH24-09-03	QC Batch	BH24-10-01	QC Batch	BH24-10-02	QC Batch	BH24-11-01	RDL	QC Batch

Calculated Parameters										
VPH (VH6 to 10 - BTEX)	mg/kg					<10	B478204	<10	10	B467275
Physical Properties										
Soluble (2:1) pH	pH	7.22	B480247	6.12	B469894	6.08	B478979	6.35	N/A	B469894
RDL = Reportable Detection Limit N/A = Not Applicable										

Bureau Veritas ID		CSQ643	CSQ644		CSQ645			CSQ646	CSQ647	
Sampling Date		2024/08/01 14:50	2024/08/01 15:15		2024/08/02 07:45			2024/08/02 07:45	2024/08/02 08:30	
COC Number		8537308	8537308		8537308			8537308	8537308	
	UNITS	BH24-11-01 Lab-Dup	BH24-12-01	QC Batch	BH24-13-01	RDL	QC Batch	BH24-13-02	BH24-14-01	QC Batch

Calculated Parameters										
VPH (VH6 to 10 - BTEX)	mg/kg				<10	10	B467275			
Physical Properties										
Soluble (2:1) pH	pH	6.37	6.21	B469894	8.82	N/A	B469894	8.62	6.59	B469894
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable										

Bureau Veritas ID		CSQ648			CSQ650	CSQ651		CSQ652		
Sampling Date		2024/08/02 09:30			2024/08/02 09:30	2024/08/02 09:00		2024/08/02 10:15		
COC Number		8537308			8537308	8537308		8537308		
	UNITS	BH24-15-01	RDL	QC Batch	BH24-15-03	BH24-16-01	QC Batch	BH24-17-01	RDL	QC Batch

Calculated Parameters										
VPH (VH6 to 10 - BTEX)	mg/kg	<10	10	B467275				<10	10	B467275
Physical Properties										
Soluble (2:1) pH	pH	7.50	N/A	B469894	6.51	6.54	B469894	8.39	N/A	B469894
RDL = Reportable Detection Limit N/A = Not Applicable										



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		CSQ655		CSQ656	CSQ658	CSQ661		CTH423	
Sampling Date		2024/08/02 10:45		2024/08/02 10:45	2024/08/02 11:15	2024/08/02 11:45			
COC Number		8537308		8537308	8537308	8537308		8537307	
	UNITS	BH24-18-01	QC Batch	BH24-18-02	BH24-19-01	BH24-20-02	QC Batch	BH24-09-02 - RERUN 1	QC Batch

Physical Properties									
Soluble (2:1) pH	pH	8.20	B478979	6.90	6.61	6.31	B469894	7.55	B478979

Bureau Veritas ID		CTH424	CTH433	CTH434	CTH435	
Sampling Date						
COC Number		8537307	8537307	8537307	8537307	
	UNITS	BH24-09-02 - RERUN 2	BH24-13-01 - RERUN 1	BH24-13-01 - RERUN 2	BH24-14-01 - RERUN 1	QC Batch

Physical Properties						
Soluble (2:1) pH	pH	7.57	8.85	8.85	6.52	B478979

Bureau Veritas ID		CTH436	
Sampling Date			
COC Number		8537307	
	UNITS	BH24-14-01 - RERUN 2	QC Batch
Physical Properties			
Soluble (2:1) pH	pH	6.52	B478979



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

PHYSICAL TESTING (SOIL)

Bureau Veritas ID		CSQ568	CSQ570	CSQ574	CSQ579		CSQ580	CSQ580		
Sampling Date		2024/08/01 10:30	2024/08/01 10:30	2024/08/01 09:15	2024/08/01 09:30		2024/08/01 11:30	2024/08/01 11:30		
COC Number		8537307	8537307	8537307	8537307		8537307	8537307		
	UNITS	SP24-01	SP24-02	BH24-01-01	BH24-02-02	QC Batch	BH24-03-01	BH24-03-01 Lab-Dup	RDL	QC Batch

Physical Properties										
Moisture	%	10	7.8	5.9	14	B468362	6.0	6.0	0.30	B468461
RDL = Reportable Detection Limit										
Lab-Dup = Laboratory Initiated Duplicate										

Bureau Veritas ID		CSQ582	CSQ583	CSQ585	CSQ636	CSQ637	CSQ638	CSQ639		
Sampling Date		2024/08/01 11:45	2024/08/01 12:30	2024/08/01 12:50	2024/08/01 13:15	2024/08/01 13:30	2024/08/01 14:00	2024/08/01 14:00		
COC Number		8537307	8537307	8537307	8537308	8537308	8537308	8537308		
	UNITS	BH24-04-01	BH24-05-01	BH24-06-01	BH24-07-01	BH24-08-01	BH24-09-01	BH24-09-02	RDL	QC Batch

Physical Properties										
Moisture	%	4.3	2.2	3.2	2.9	3.4	7.9	9.6	0.30	B468461
RDL = Reportable Detection Limit										

Bureau Veritas ID		CSQ641		CSQ642		CSQ643	CSQ644	CSQ645		
Sampling Date		2024/08/01 14:30		2024/08/01 14:30		2024/08/01 14:50	2024/08/01 15:15	2024/08/02 07:45		
COC Number		8537308		8537308		8537308	8537308	8537308		
	UNITS	BH24-10-01	QC Batch	BH24-10-02	QC Batch	BH24-11-01	BH24-12-01	BH24-13-01	RDL	QC Batch

Physical Properties										
Moisture	%	7.6	B468461	9.1	B478219	5.1	6.8	5.0	0.30	B468461
RDL = Reportable Detection Limit										

Bureau Veritas ID		CSQ646	CSQ647	CSQ648	CSQ650	CSQ651	CSQ652		
Sampling Date		2024/08/02 07:45	2024/08/02 08:30	2024/08/02 09:30	2024/08/02 09:30	2024/08/02 09:00	2024/08/02 10:15		
COC Number		8537308	8537308	8537308	8537308	8537308	8537308		
	UNITS	BH24-13-02	BH24-14-01	BH24-15-01	BH24-15-03	BH24-16-01	BH24-17-01	RDL	QC Batch

Physical Properties									
Moisture	%	17	5.1	5.8	19	4.2	4.1	0.30	B468461
RDL = Reportable Detection Limit									



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

PHYSICAL TESTING (SOIL)

Bureau Veritas ID		CSQ655		CSQ656	CSQ658		CSQ661	CSQ661		
Sampling Date		2024/08/02 10:45		2024/08/02 10:45	2024/08/02 11:15		2024/08/02 11:45	2024/08/02 11:45		
COC Number		8537308		8537308	8537308		8537308	8537308		
	UNITS	BH24-18-01	QC Batch	BH24-18-02	BH24-19-01	QC Batch	BH24-20-02	BH24-20-02 Lab-Dup	RDL	QC Batch
Physical Properties										
Moisture	%	5.2	B478219	13	6.7	B468461	9.9	9.9	0.30	B468569
RDL = Reportable Detection Limit										
Lab-Dup = Laboratory Initiated Duplicate										



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		CSQ568	CSQ570	CSQ574	CSQ579	CSQ580	CSQ582	CSQ583		
Sampling Date		2024/08/01 10:30	2024/08/01 10:30	2024/08/01 09:15	2024/08/01 09:30	2024/08/01 11:30	2024/08/01 11:45	2024/08/01 12:30		
COC Number		8537307	8537307	8537307	8537307	8537307	8537307	8537307		
	UNITS	SP24-01	SP24-02	BH24-01-01	BH24-02-02	BH24-03-01	BH24-04-01	BH24-05-01	RDL	QC Batch

Total Metals by ICPMS										
Total Aluminum (Al)	mg/kg	21600	21100	19100	25100	21000	17700	18800	100	B469883
Total Antimony (Sb)	mg/kg	0.30	0.35	1.05	0.28	0.24	0.18	0.26	0.10	B469883
Total Arsenic (As)	mg/kg	4.63	4.36	4.43	6.28	4.40	2.75	4.46	0.20	B469883
Total Barium (Ba)	mg/kg	81.9	102	132	111	111	94.9	60.8	0.10	B469883
Total Beryllium (Be)	mg/kg	0.36	0.34	0.38	0.49	0.35	0.33	0.27	0.20	B469883
Total Boron (B)	mg/kg	2.0	2.5	3.2	1.7	2.2	1.7	1.6	1.0	B469883
Total Cadmium (Cd)	mg/kg	0.117	0.111	0.233	0.054	0.100	0.123	0.106	0.050	B469883
Total Chromium (Cr)	mg/kg	31.6	34.0	28.2	45.0	32.7	27.8	28.9	0.50	B469883
Total Cobalt (Co)	mg/kg	11.1	12.5	8.51	13.8	10.1	8.37	13.3	0.10	B469883
Total Copper (Cu)	mg/kg	40.2	40.8	62.1	33.0	26.4	31.4	63.3	0.50	B469883
Total Iron (Fe)	mg/kg	26500	27600	23100	34100	25300	22800	26800	100	B469883
Total Lead (Pb)	mg/kg	14.6	15.4	65.6	14.5	16.3	27.8	9.26	0.10	B469883
Total Lithium (Li)	mg/kg	12.5	12.1	11.3	16.9	12.6	9.68	9.96	0.50	B469883
Total Manganese (Mn)	mg/kg	629	636	463	494	630	507	622	0.20	B469883
Total Mercury (Hg)	mg/kg	0.078	0.081	0.075	0.069	0.072	0.053	<0.050	0.050	B469883
Total Molybdenum (Mo)	mg/kg	0.48	0.61	0.67	0.48	0.34	0.39	0.32	0.10	B469883
Total Nickel (Ni)	mg/kg	26.0	26.3	23.8	30.0	26.0	21.8	26.2	0.50	B469883
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	B469883
Total Silver (Ag)	mg/kg	0.066	0.076	0.291	<0.050	<0.050	0.067	<0.050	0.050	B469883
Total Strontium (Sr)	mg/kg	28.9	45.9	36.0	33.4	28.7	25.7	29.0	0.10	B469883
Total Thallium (Tl)	mg/kg	0.054	<0.050	<0.050	0.061	<0.050	<0.050	<0.050	0.050	B469883
Total Tin (Sn)	mg/kg	5.41	0.75	1.81	0.65	0.72	0.79	0.47	0.10	B469883
Total Tungsten (W)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	B469883
Total Uranium (U)	mg/kg	0.470	0.449	0.600	0.573	0.383	0.454	0.287	0.050	B469883
Total Vanadium (V)	mg/kg	73.3	68.0	60.7	91.1	65.7	63.1	76.5	1.0	B469883
Total Zinc (Zn)	mg/kg	55.6	68.9	67.3	51.4	60.0	46.2	52.3	1.0	B469883

RDL = Reportable Detection Limit



BUREAU
VERITAS

Bureau Veritas Job #: C459220

Report Date: 2024/08/20

Thurber Engineering Ltd.

Client Project #: 56763

Site Location: ESQUIMALT, BC

Your P.O. #: 56763

Sampler Initials: KSK

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		CSQ585	CSQ636		CSQ637	CSQ638	CSQ639		
Sampling Date		2024/08/01 12:50	2024/08/01 13:15		2024/08/01 13:30	2024/08/01 14:00	2024/08/01 14:00		
COC Number		8537307	8537308		8537308	8537308	8537308		
	UNITS	BH24-06-01	BH24-07-01	QC Batch	BH24-08-01	BH24-09-01	BH24-09-02	RDL	QC Batch

Total Metals by ICPMS									
Total Aluminum (Al)	mg/kg	16700	18200	B469883	20000	22400	22300	100	B469891
Total Antimony (Sb)	mg/kg	0.20	0.28	B469883	0.30	0.72	0.88	0.10	B469891
Total Arsenic (As)	mg/kg	3.88	4.00	B469883	4.79	4.58	4.80	0.20	B469891
Total Barium (Ba)	mg/kg	60.0	63.5	B469883	85.7	155	162	0.10	B469891
Total Beryllium (Be)	mg/kg	0.25	0.31	B469883	0.31	0.45	0.51	0.20	B469891
Total Boron (B)	mg/kg	1.3	1.4	B469883	2.5	4.9	3.7	1.0	B469891
Total Cadmium (Cd)	mg/kg	0.091	0.115	B469883	0.107	0.188	0.273	0.050	B469891
Total Chromium (Cr)	mg/kg	26.1	29.6	B469883	31.9	38.5	37.0	0.50	B469891
Total Cobalt (Co)	mg/kg	11.8	12.1	B469883	14.7	12.0	12.9	0.10	B469891
Total Copper (Cu)	mg/kg	56.9	59.2	B469883	72.1	46.9	47.8	0.50	B469891
Total Iron (Fe)	mg/kg	25100	25200	B469883	27600	26100	26600	100	B469891
Total Lead (Pb)	mg/kg	8.54	12.3	B469883	11.7	98.2	102	0.10	B469891
Total Lithium (Li)	mg/kg	9.20	10.6	B469883	11.2	14.1	14.3	0.50	B469891
Total Manganese (Mn)	mg/kg	543	585	B469883	714	702	1580	0.20	B469891
Total Mercury (Hg)	mg/kg	<0.050	<0.050	B469883	0.084	0.194	0.159	0.050	B469891
Total Molybdenum (Mo)	mg/kg	0.28	0.30	B469883	0.35	0.81	0.73	0.10	B469891
Total Nickel (Ni)	mg/kg	24.4	26.1	B469883	27.8	29.4	30.3	0.50	B469891
Total Selenium (Se)	mg/kg	<0.50	<0.50	B469883	<0.50	<0.50	<0.50	0.50	B469891
Total Silver (Ag)	mg/kg	<0.050	<0.050	B469883	0.060	0.147	0.139	0.050	B469891
Total Strontium (Sr)	mg/kg	38.7	26.7	B469883	36.6	45.0	43.4	0.10	B469891
Total Thallium (Tl)	mg/kg	<0.050	<0.050	B469883	<0.050	0.056	0.060	0.050	B469891
Total Tin (Sn)	mg/kg	0.44	0.58	B469883	0.74	5.77	11.5	0.10	B469891
Total Tungsten (W)	mg/kg	<0.50	<0.50	B469883	<0.50	<0.50	<0.50	0.50	B469891
Total Uranium (U)	mg/kg	0.276	0.560	B469883	0.336	0.527	0.531	0.050	B469891
Total Vanadium (V)	mg/kg	68.2	67.0	B469883	72.9	66.9	67.1	1.0	B469891
Total Zinc (Zn)	mg/kg	47.7	56.4	B469883	60.4	114	239	1.0	B469891

RDL = Reportable Detection Limit



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		CSQ640			CSQ641		CSQ642		CSQ643		
Sampling Date		2024/08/01 14:00			2024/08/01 14:30		2024/08/01 14:30		2024/08/01 14:50		
COC Number		8537308			8537308		8537308		8537308		
	UNITS	BH24-09-03	RDL	QC Batch	BH24-10-01	QC Batch	BH24-10-02	QC Batch	BH24-11-01	RDL	QC Batch

Total Metals by ICPMS											
Total Aluminum (Al)	mg/kg				19700	B469891	20600	B478972	19900	100	B469891
Total Antimony (Sb)	mg/kg				0.44	B469891	0.33	B478972	0.66	0.10	B469891
Total Arsenic (As)	mg/kg				4.23	B469891	4.31	B478972	4.60	0.20	B469891
Total Barium (Ba)	mg/kg				112	B469891	123	B478972	121	0.10	B469891
Total Beryllium (Be)	mg/kg				0.36	B469891	0.34	B478972	0.35	0.20	B469891
Total Boron (B)	mg/kg				2.5	B469891	3.8	B478972	3.5	1.0	B469891
Total Cadmium (Cd)	mg/kg				0.159	B469891	0.096	B478972	0.328	0.050	B469891
Total Chromium (Cr)	mg/kg				30.8	B469891	35.6	B478972	38.4	0.50	B469891
Total Cobalt (Co)	mg/kg				8.59	B469891	9.00	B478972	9.69	0.10	B469891
Total Copper (Cu)	mg/kg				29.2	B469891	25.7	B478972	42.4	0.50	B469891
Total Iron (Fe)	mg/kg				22900	B469891	26500	B478972	23600	100	B469891
Total Lead (Pb)	mg/kg				54.6	B469891	26.2	B478972	112	0.10	B469891
Total Lithium (Li)	mg/kg				11.7	B469891	12.7	B478972	10.7	0.50	B469891
Total Manganese (Mn)	mg/kg				507	B469891	484	B478972	596	0.20	B469891
Total Mercury (Hg)	mg/kg				0.108	B469891	0.119	B478972	0.212	0.050	B469891
Total Molybdenum (Mo)	mg/kg				0.56	B469891	0.68	B478972	1.14	0.10	B469891
Total Nickel (Ni)	mg/kg				23.2	B469891	24.0	B478972	24.6	0.50	B469891
Total Selenium (Se)	mg/kg				<0.50	B469891	<0.50	B478972	<0.50	0.50	B469891
Total Silver (Ag)	mg/kg				0.078	B469891	0.083	B478972	0.117	0.050	B469891
Total Strontium (Sr)	mg/kg				27.4	B469891	26.4	B478972	50.0	0.10	B469891
Total Thallium (Tl)	mg/kg				0.058	B469891	0.087	B478972	<0.050	0.050	B469891
Total Tin (Sn)	mg/kg				2.51	B469891	1.82	B478972	3.19	0.10	B469891
Total Tungsten (W)	mg/kg				<0.50	B469891	<0.50	B478972	<0.50	0.50	B469891
Total Uranium (U)	mg/kg				0.576	B469891	0.633	B478972	0.504	0.050	B469891
Total Vanadium (V)	mg/kg				58.8	B469891	66.0	B478972	64.3	1.0	B469891
Total Zinc (Zn)	mg/kg	101	1.0	B480261	76.3	B469891	61.1	B478972	95.8	1.0	B469891

RDL = Reportable Detection Limit



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		CSQ644	CSQ645	CSQ646	CSQ647	CSQ648	CSQ650	CSQ651		
Sampling Date		2024/08/01 15:15	2024/08/02 07:45	2024/08/02 07:45	2024/08/02 08:30	2024/08/02 09:30	2024/08/02 09:30	2024/08/02 09:00		
COC Number		8537308	8537308	8537308	8537308	8537308	8537308	8537308		
	UNITS	BH24-12-01	BH24-13-01	BH24-13-02	BH24-14-01	BH24-15-01	BH24-15-03	BH24-16-01	RDL	QC Batch

Total Metals by ICPMS										
Total Aluminum (Al)	mg/kg	22000	22800	23700	21000	14200	26700	14800	100	B469891
Total Antimony (Sb)	mg/kg	2.41	0.42	0.27	0.79	0.10	0.26	0.47	0.10	B469891
Total Arsenic (As)	mg/kg	4.12	11.9	5.49	4.42	2.09	6.23	2.97	0.20	B469891
Total Barium (Ba)	mg/kg	158	94.6	110	113	44.4	112	153	0.10	B469891
Total Beryllium (Be)	mg/kg	0.42	0.39	0.40	0.42	0.26	0.57	0.24	0.20	B469891
Total Boron (B)	mg/kg	3.5	3.0	2.8	2.5	1.3	2.1	2.2	1.0	B469891
Total Cadmium (Cd)	mg/kg	0.236	0.161	0.079	0.274	0.052	<0.050	0.165	0.050	B469891
Total Chromium (Cr)	mg/kg	28.7	53.9	44.5	46.8	19.7	56.5	23.8	0.50	B469891
Total Cobalt (Co)	mg/kg	10.3	18.1	11.6	12.0	10.2	19.4	8.07	0.10	B469891
Total Copper (Cu)	mg/kg	32.9	78.9	40.7	49.9	41.6	56.8	24.9	0.50	B469891
Total Iron (Fe)	mg/kg	24700	34700	31800	27500	20100	39000	19500	100	B469891
Total Lead (Pb)	mg/kg	63.7	53.7	16.2	140	2.28	6.27	39.9	0.10	B469891
Total Lithium (Li)	mg/kg	13.0	16.2	18.9	11.7	5.22	20.6	9.26	0.50	B469891
Total Manganese (Mn)	mg/kg	788	825	495	673	441	711	480	0.20	B469891
Total Mercury (Hg)	mg/kg	0.153	0.288	0.112	0.096	<0.050	0.070	0.074	0.050	B469891
Total Molybdenum (Mo)	mg/kg	0.45	0.60	0.69	0.91	0.25	0.19	0.48	0.10	B469891
Total Nickel (Ni)	mg/kg	29.5	39.6	31.3	29.1	17.2	55.1	22.3	0.50	B469891
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	B469891
Total Silver (Ag)	mg/kg	0.095	0.077	0.089	0.102	<0.050	<0.050	0.066	0.050	B469891
Total Strontium (Sr)	mg/kg	34.0	39.3	38.5	30.4	28.2	47.6	29.2	0.10	B469891
Total Thallium (Tl)	mg/kg	0.076	<0.050	<0.050	<0.050	<0.050	0.071	<0.050	0.050	B469891
Total Tin (Sn)	mg/kg	1.62	1.75	2.90	1.41	0.66	0.59	1.49	0.10	B469891
Total Tungsten (W)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	B469891
Total Uranium (U)	mg/kg	0.451	0.487	0.737	0.493	0.201	0.358	0.360	0.050	B469891
Total Vanadium (V)	mg/kg	60.0	85.1	81.5	65.2	62.8	93.5	48.0	1.0	B469891
Total Zinc (Zn)	mg/kg	108	81.9	59.3	111	28.3	68.1	85.7	1.0	B469891

RDL = Reportable Detection Limit



BUREAU
VERITAS

Bureau Veritas Job #: C459220

Report Date: 2024/08/20

Thurber Engineering Ltd.

Client Project #: 56763

Site Location: ESQUIMALT, BC

Your P.O. #: 56763

Sampler Initials: KSK

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		CSQ652		CSQ655		CSQ656	CSQ658	CSQ661		
Sampling Date		2024/08/02 10:15		2024/08/02 10:45		2024/08/02 10:45	2024/08/02 11:15	2024/08/02 11:45		
COC Number		8537308		8537308		8537308	8537308	8537308		
	UNITS	BH24-17-01	QC Batch	BH24-18-01	QC Batch	BH24-18-02	BH24-19-01	BH24-20-02	RDL	QC Batch

Total Metals by ICPMS										
Total Aluminum (Al)	mg/kg	19300	B469891	18900	B478972	17400	17600	18200	100	B469891
Total Antimony (Sb)	mg/kg	0.96	B469891	0.15	B478972	0.12	0.29	0.14	0.10	B469891
Total Arsenic (As)	mg/kg	4.52	B469891	3.39	B478972	3.47	3.40	3.42	0.20	B469891
Total Barium (Ba)	mg/kg	52.9	B469891	49.1	B478972	51.2	95.0	79.5	0.10	B469891
Total Beryllium (Be)	mg/kg	0.21	B469891	0.28	B478972	0.29	0.35	0.31	0.20	B469891
Total Boron (B)	mg/kg	5.0	B469891	2.9	B478972	1.2	1.9	1.4	1.0	B469891
Total Cadmium (Cd)	mg/kg	0.073	B469891	0.079	B478972	<0.050	0.259	<0.050	0.050	B469891
Total Chromium (Cr)	mg/kg	40.0	B469891	27.5	B478972	29.4	33.9	35.6	0.50	B469891
Total Cobalt (Co)	mg/kg	17.9	B469891	13.8	B478972	12.0	9.29	12.8	0.10	B469891
Total Copper (Cu)	mg/kg	44.6	B469891	62.5	B478972	33.8	28.4	19.2	0.50	B469891
Total Iron (Fe)	mg/kg	28500	B469891	29500	B478972	24000	21800	25500	100	B469891
Total Lead (Pb)	mg/kg	11.1	B469891	3.43	B478972	3.83	17.1	6.40	0.10	B469891
Total Lithium (Li)	mg/kg	7.84	B469891	10.1	B478972	10.0	11.1	13.1	0.50	B469891
Total Manganese (Mn)	mg/kg	507	B469891	590	B478972	447	485	419	0.20	B469891
Total Mercury (Hg)	mg/kg	<0.050	B469891	0.082	B478972	<0.050	0.059	<0.050	0.050	B469891
Total Molybdenum (Mo)	mg/kg	0.64	B469891	0.30	B478972	0.24	0.62	0.32	0.10	B469891
Total Nickel (Ni)	mg/kg	34.4	B469891	24.8	B478972	22.6	23.8	23.2	0.50	B469891
Total Selenium (Se)	mg/kg	<0.50	B469891	<0.50	B478972	<0.50	<0.50	<0.50	0.50	B469891
Total Silver (Ag)	mg/kg	<0.050	B469891	<0.050	B478972	<0.050	0.090	0.052	0.050	B469891
Total Strontium (Sr)	mg/kg	68.2	B469891	23.6	B478972	22.1	28.4	23.2	0.10	B469891
Total Thallium (Tl)	mg/kg	<0.050	B469891	<0.050	B478972	<0.050	0.057	0.071	0.050	B469891
Total Tin (Sn)	mg/kg	0.78	B469891	0.49	B478972	0.36	0.71	0.42	0.10	B469891
Total Tungsten (W)	mg/kg	<0.50	B469891	<0.50	B478972	<0.50	<0.50	<0.50 (1)	0.50	B469891
Total Uranium (U)	mg/kg	0.246	B469891	0.227	B478972	0.267	0.398	0.402	0.050	B469891
Total Vanadium (V)	mg/kg	76.0	B469891	77.0	B478972	67.0	58.3	68.1	1.0	B469891
Total Zinc (Zn)	mg/kg	56.4	B469891	47.2	B478972	39.5	66.9	44.4	1.0	B469891

RDL = Reportable Detection Limit

(1) Matrix Spike outside acceptance criteria due to sample matrix interference.



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		CSQ661			CTH423	CTH424		
Sampling Date		2024/08/02 11:45						
COC Number		8537308			8537307	8537307		
	UNITS	BH24-20-02 Lab-Dup	RDL	QC Batch	BH24-09-02 - RERUN 1	BH24-09-02 - RERUN 2	RDL	QC Batch

Total Metals by ICPMS

Total Aluminum (Al)	mg/kg	19000	100	B469891				
Total Antimony (Sb)	mg/kg	0.16	0.10	B469891				
Total Arsenic (As)	mg/kg	3.38	0.20	B469891				
Total Barium (Ba)	mg/kg	82.6	0.10	B469891				
Total Beryllium (Be)	mg/kg	0.30	0.20	B469891				
Total Boron (B)	mg/kg	1.7	1.0	B469891				
Total Cadmium (Cd)	mg/kg	<0.050	0.050	B469891				
Total Chromium (Cr)	mg/kg	36.4	0.50	B469891				
Total Cobalt (Co)	mg/kg	12.4	0.10	B469891				
Total Copper (Cu)	mg/kg	19.0	0.50	B469891				
Total Iron (Fe)	mg/kg	25400	100	B469891				
Total Lead (Pb)	mg/kg	6.91	0.10	B469891				
Total Lithium (Li)	mg/kg	14.0	0.50	B469891				
Total Manganese (Mn)	mg/kg	422	0.20	B469891				
Total Mercury (Hg)	mg/kg	<0.050	0.050	B469891				
Total Molybdenum (Mo)	mg/kg	0.36	0.10	B469891				
Total Nickel (Ni)	mg/kg	23.3	0.50	B469891				
Total Selenium (Se)	mg/kg	<0.50	0.50	B469891				
Total Silver (Ag)	mg/kg	0.054	0.050	B469891				
Total Strontium (Sr)	mg/kg	25.1	0.10	B469891				
Total Thallium (Tl)	mg/kg	0.077	0.050	B469891				
Total Tin (Sn)	mg/kg	0.43	0.10	B469891				
Total Tungsten (W)	mg/kg	<0.50	0.50	B469891				
Total Uranium (U)	mg/kg	0.430	0.050	B469891				
Total Vanadium (V)	mg/kg	69.6	1.0	B469891				
Total Zinc (Zn)	mg/kg	45.8	1.0	B469891	60.3	60.9	1.0	B478972

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		CTH433	CTH434			CTH435		
Sampling Date								
COC Number		8537307	8537307			8537307		
	UNITS	BH24-13-01 - RERUN 1	BH24-13-01 - RERUN 2	RDL	QC Batch	BH24-14-01 - RERUN 1	RDL	QC Batch
Total Metals by ICPMS								
Total Arsenic (As)	mg/kg	6.76	6.93	0.20	B478972			
Total Lead (Pb)	mg/kg					121	0.10	B478972
RDL = Reportable Detection Limit								

Bureau Veritas ID		CTH436		
Sampling Date				
COC Number		8537307		
	UNITS	BH24-14-01 - RERUN 2	RDL	QC Batch
Total Metals by ICPMS				
Total Lead (Pb)	mg/kg	112	0.10	B478972
RDL = Reportable Detection Limit				



VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CSQ568			CSQ568		
Sampling Date		2024/08/01 10:30			2024/08/01 10:30		
COC Number		8537307			8537307		
	UNITS	SP24-01	RDL	QC Batch	SP24-01 Lab-Dup	RDL	QC Batch
Volatiles							
VH C6-C10	mg/kg	<10	10	B470636			
1,1,1-trichloroethane	mg/kg	<0.020	0.020	B470636			
1,1,2,2-tetrachloroethane	mg/kg	<0.020	0.020	B470636			
1,1,2-trichloroethane	mg/kg	<0.020	0.020	B470636			
1,1-dichloroethane	mg/kg	<0.025	0.025	B470636			
1,1-dichloroethene	mg/kg	<0.025	0.025	B470636			
1,2,4-trichlorobenzene	mg/kg	<0.030	0.030	B470636			
1,2,4-trimethylbenzene	mg/kg	<0.20	0.20	B470636			
1,2-dibromoethane	mg/kg	<0.020	0.020	B470636			
1,2-dichlorobenzene	mg/kg	<0.020	0.020	B470636			
1,2-dichloroethane	mg/kg	<0.020	0.020	B470636			
1,2-dichloropropane	mg/kg	<0.020	0.020	B470636			
1,3,5-trimethylbenzene	mg/kg	<0.20	0.20	B470636			
1,3-Butadiene	mg/kg	<0.080	0.080	B470636			
2-Butanone (MEK)	mg/kg	<15	15	B470636			
4-Methyl-2-pentanone (MIBK)	mg/kg	<0.50	0.50	B470636			
Acetone	mg/kg	<5.0	5.0	B470636			
Benzene	mg/kg	<0.0050	0.0050	B470636			
Bromobenzene	mg/kg	<0.20	0.20	B470636			
Bromodichloromethane	mg/kg	<0.050	0.050	B470636			
Carbon tetrachloride	mg/kg	<0.020	0.020	B470636			
Chlorobenzene	mg/kg	<0.020	0.020	B470636			
Chloroethane	mg/kg	<0.10	0.10	B470636			
cis-1,2-dichloroethene	mg/kg	<0.030	0.030	B470636			
Dichlorodifluoromethane	mg/kg	<0.20	0.20	B470636			
Dichloromethane	mg/kg	<0.080	0.080	B470636			
Ethylbenzene	mg/kg	<0.010	0.010	B470636			
Hexane	mg/kg	<0.50	0.50	B470636			
Isopropylbenzene	mg/kg	<0.20	0.20	B470636			
Methylcyclohexane	mg/kg	<0.20	0.20	B470636			
RDL = Reportable Detection Limit							
Lab-Dup = Laboratory Initiated Duplicate							



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CSQ568			CSQ568		
Sampling Date		2024/08/01 10:30			2024/08/01 10:30		
COC Number		8537307			8537307		
	UNITS	SP24-01	RDL	QC Batch	SP24-01 Lab-Dup	RDL	QC Batch
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	0.10	B470636			
n-Decane	mg/kg	<2.0	2.0	B470636			
Styrene	mg/kg	<0.030	0.030	B470636			
Tetrachloroethene	mg/kg	<0.010	0.010	B470636			
Toluene	mg/kg	<0.050	0.050	B470636			
trans-1,2-dichloroethene	mg/kg	<0.030	0.030	B470636			
Trichloroethene	mg/kg	<0.0090	0.0090	B470636			
Vinyl chloride	mg/kg	<0.040	0.040	B470636			
m & p-Xylene	mg/kg	<0.040	0.040	B470636			
o-Xylene	mg/kg	<0.040	0.040	B470636			
Xylenes (Total)	mg/kg	<0.040	0.040	B470636			
Extractable (MeOH) Carbon disulfide	mg/kg	<15	15	B471654	<15	15	B471654
Surrogate Recovery (%)							
Extractable (MeOH) 1,4-Difluorobenzene (sur.)	%	98		B471654	97		B471654
Extractable (MeOH) 4-Bromofluorobenzene (sur.)	%	98		B471654	96		B471654
Extractable (MeOH) D10-o-Xylene (sur.)	%	93		B471654	93		B471654
Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	%	107		B471654	107		B471654
1,4-Difluorobenzene (sur.)	%	101		B470636			
4-Bromofluorobenzene (sur.)	%	87		B470636			
D10-o-Xylene (sur.)	%	95		B470636			
D4-1,2-Dichloroethane (sur.)	%	109		B470636			
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate							



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CSQ574		CSQ580			CSQ580		
Sampling Date		2024/08/01 09:15		2024/08/01 11:30			2024/08/01 11:30		
COC Number		8537307		8537307			8537307		
	UNITS	BH24-01-01	QC Batch	BH24-03-01	RDL	QC Batch	BH24-03-01 Lab-Dup	RDL	QC Batch

Volatiles									
VH C6-C10	mg/kg	<10	B470636	<10	10	B478924	<10	10	B478924
1,1,1-trichloroethane	mg/kg	<0.020	B470636	<0.020	0.020	B478924	<0.020	0.020	B478924
1,1,2,2-tetrachloroethane	mg/kg	<0.020	B470636	<0.020	0.020	B478924	<0.020	0.020	B478924
1,1,2-trichloroethane	mg/kg	<0.020	B470636	<0.020	0.020	B478924	<0.020	0.020	B478924
1,1-dichloroethane	mg/kg	<0.025	B470636	<0.025	0.025	B478924	<0.025	0.025	B478924
1,1-dichloroethene	mg/kg	<0.025	B470636	<0.025	0.025	B478924	<0.025	0.025	B478924
1,2,4-trichlorobenzene	mg/kg	<0.030	B470636	<0.030	0.030	B478924	<0.030	0.030	B478924
1,2,4-trimethylbenzene	mg/kg	<0.20	B470636	<0.20	0.20	B478924	<0.20	0.20	B478924
1,2-dibromoethane	mg/kg	<0.020	B470636	<0.020	0.020	B478924	<0.020	0.020	B478924
1,2-dichlorobenzene	mg/kg	<0.020	B470636	<0.020	0.020	B478924	<0.020	0.020	B478924
1,2-dichloroethane	mg/kg	<0.020	B470636	<0.020	0.020	B478924	<0.020	0.020	B478924
1,2-dichloropropane	mg/kg	<0.020	B470636	<0.020	0.020	B478924	<0.020	0.020	B478924
1,3,5-trimethylbenzene	mg/kg	<0.20	B470636	<0.20	0.20	B478924	<0.20	0.20	B478924
1,3-Butadiene	mg/kg	<0.080	B470636	<0.080	0.080	B478924	<0.080	0.080	B478924
2-Butanone (MEK)	mg/kg	<15	B470636	<15	15	B478924	<15	15	B478924
4-Methyl-2-pentanone (MIBK)	mg/kg	<0.50	B470636	<0.50	0.50	B478924	<0.50	0.50	B478924
Acetone	mg/kg	<5.0	B470636	<5.0 ✓	5.0	B478924	<5.0	5.0	B478924
Benzene	mg/kg	<0.0050	B470636	<0.0050	0.0050	B478924	<0.0050	0.0050	B478924
Bromobenzene	mg/kg	<0.20	B470636	<0.20	0.20	B478924	<0.20	0.20	B478924
Bromodichloromethane	mg/kg	<0.050	B470636	<0.050	0.050	B478924	<0.050	0.050	B478924
Carbon tetrachloride	mg/kg	<0.020	B470636	<0.020	0.020	B478924	<0.020	0.020	B478924
Chlorobenzene	mg/kg	<0.020	B470636	<0.020	0.020	B478924	<0.020	0.020	B478924
Chloroethane	mg/kg	<0.10	B470636	<0.10	0.10	B478924	<0.10	0.10	B478924
cis-1,2-dichloroethene	mg/kg	<0.030	B470636	<0.030	0.030	B478924	<0.030	0.030	B478924
Dichlorodifluoromethane	mg/kg	<0.20	B470636	<0.20	0.20	B478924	<0.20	0.20	B478924
Dichloromethane	mg/kg	<0.080	B470636	<0.080	0.080	B478924	<0.080	0.080	B478924
Ethylbenzene	mg/kg	<0.010	B470636	<0.010	0.010	B478924	<0.010	0.010	B478924
Hexane	mg/kg	<0.50	B470636	<0.50	0.50	B478924	<0.50	0.50	B478924
Isopropylbenzene	mg/kg	<0.20	B470636	<0.20	0.20	B478924	<0.20	0.20	B478924
Methylcyclohexane	mg/kg	<0.20	B470636	<0.20	0.20	B478924	<0.20	0.20	B478924

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate



**BUREAU
VERITAS**

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CSQ574		CSQ580			CSQ580		
Sampling Date		2024/08/01 09:15		2024/08/01 11:30			2024/08/01 11:30		
COC Number		8537307		8537307			8537307		
	UNITS	BH24-01-01	QC Batch	BH24-03-01	RDL	QC Batch	BH24-03-01 Lab-Dup	RDL	QC Batch
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	B470636	<0.10	0.10	B478924	<0.10	0.10	B478924
n-Decane	mg/kg	<2.0	B470636	<2.0	2.0	B478924	<2.0	2.0	B478924
Styrene	mg/kg	<0.030	B470636	<0.030	0.030	B478924	<0.030	0.030	B478924
Tetrachloroethene	mg/kg	<0.010	B470636	<0.010	0.010	B478924	<0.010	0.010	B478924
Toluene	mg/kg	<0.050	B470636	<0.050	0.050	B478924	<0.050	0.050	B478924
trans-1,2-dichloroethene	mg/kg	<0.030	B470636	<0.030	0.030	B478924	<0.030	0.030	B478924
Trichloroethene	mg/kg	<0.0090	B470636	<0.0090	0.0090	B478924	<0.0090	0.0090	B478924
Vinyl chloride	mg/kg	<0.040	B470636	<0.040	0.040	B478924	<0.040	0.040	B478924
m & p-Xylene	mg/kg	<0.040	B470636	<0.040	0.040	B478924	<0.040	0.040	B478924
o-Xylene	mg/kg	<0.040	B470636	<0.040	0.040	B478924	<0.040	0.040	B478924
Xylenes (Total)	mg/kg	<0.040	B470636	<0.040	0.040	B478924	<0.040	0.040	B478924
Extractable (MeOH) Carbon disulfide	mg/kg	<15	B471654	<15	15	B481684			
Surrogate Recovery (%)									
Extractable (MeOH) 1,4-Difluorobenzene (sur.)	%	98	B471654	88		B481684			
Extractable (MeOH) 4-Bromofluorobenzene (sur.)	%	97	B471654	102		B481684			
Extractable (MeOH) D10-o-Xylene (sur.)	%	93	B471654	114		B481684			
Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	%	107	B471654	116		B481684			
1,4-Difluorobenzene (sur.)	%	101	B470636	103		B478924	101		B478924
4-Bromofluorobenzene (sur.)	%	88	B470636	113		B478924	112		B478924
D10-o-Xylene (sur.)	%	96	B470636	110		B478924	110		B478924
D4-1,2-Dichloroethane (sur.)	%	106	B470636	74		B478924	74		B478924
RDL = Reportable Detection Limit									
Lab-Dup = Laboratory Initiated Duplicate									



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CSQ582		CSQ585			CSQ585		
Sampling Date		2024/08/01 11:45		2024/08/01 12:50			2024/08/01 12:50		
COC Number		8537307		8537307			8537307		
	UNITS	BH24-04-01	QC Batch	BH24-06-01	RDL	QC Batch	BH24-06-01 Lab-Dup	RDL	QC Batch

Volatiles									
VH C6-C10	mg/kg	<10	B470636	<10	10	B478924			
1,1,1-trichloroethane	mg/kg	<0.020	B470636	<0.020	0.020	B478924			
1,1,2,2-tetrachloroethane	mg/kg	<0.020	B470636	<0.020	0.020	B478924			
1,1,2-trichloroethane	mg/kg	<0.020	B470636	<0.020	0.020	B478924			
1,1-dichloroethane	mg/kg	<0.025	B470636	<0.025	0.025	B478924			
1,1-dichloroethene	mg/kg	<0.025	B470636	<0.025	0.025	B478924			
1,2,4-trichlorobenzene	mg/kg	<0.030	B470636	<0.030	0.030	B478924			
1,2,4-trimethylbenzene	mg/kg	<0.20	B470636	<0.20	0.20	B478924			
1,2-dibromoethane	mg/kg	<0.020	B470636	<0.020	0.020	B478924			
1,2-dichlorobenzene	mg/kg	<0.020	B470636	<0.020	0.020	B478924			
1,2-dichloroethane	mg/kg	<0.020	B470636	<0.020	0.020	B478924			
1,2-dichloropropane	mg/kg	<0.020	B470636	<0.020	0.020	B478924			
1,3,5-trimethylbenzene	mg/kg	<0.20	B470636	<0.20	0.20	B478924			
1,3-Butadiene	mg/kg	<0.080	B470636	<0.080	0.080	B478924			
2-Butanone (MEK)	mg/kg	<15	B470636	<15	15	B478924			
4-Methyl-2-pentanone (MIBK)	mg/kg	<0.50	B470636	<0.50	0.50	B478924			
Acetone	mg/kg	<5.0	B470636	<5.0	5.0	B478924			
Benzene	mg/kg	<0.0050	B470636	<0.0050	0.0050	B478924			
Bromobenzene	mg/kg	<0.20	B470636	<0.20	0.20	B478924			
Bromodichloromethane	mg/kg	<0.050	B470636	<0.050	0.050	B478924			
Carbon tetrachloride	mg/kg	<0.020	B470636	<0.020	0.020	B478924			
Chlorobenzene	mg/kg	<0.020	B470636	<0.020	0.020	B478924			
Chloroethane	mg/kg	<0.10	B470636	<0.10	0.10	B478924			
cis-1,2-dichloroethene	mg/kg	<0.030	B470636	<0.030	0.030	B478924			
Dichlorodifluoromethane	mg/kg	<0.20	B470636	<0.20	0.20	B478924			
Dichloromethane	mg/kg	<0.080	B470636	<0.080	0.080	B478924			
Ethylbenzene	mg/kg	<0.010	B470636	<0.010	0.010	B478924			
Hexane	mg/kg	<0.50	B470636	<0.50	0.50	B478924			
Isopropylbenzene	mg/kg	<0.20	B470636	<0.20	0.20	B478924			
Methylcyclohexane	mg/kg	<0.20	B470636	<0.20	0.20	B478924			

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CSQ582		CSQ585			CSQ585		
Sampling Date		2024/08/01 11:45		2024/08/01 12:50			2024/08/01 12:50		
COC Number		8537307		8537307			8537307		
	UNITS	BH24-04-01	QC Batch	BH24-06-01	RDL	QC Batch	BH24-06-01 Lab-Dup	RDL	QC Batch
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	B470636	<0.10	0.10	B478924			
n-Decane	mg/kg	<2.0	B470636	<2.0	2.0	B478924			
Styrene	mg/kg	<0.030	B470636	<0.030	0.030	B478924			
Tetrachloroethene	mg/kg	<0.010	B470636	<0.010	0.010	B478924			
Toluene	mg/kg	<0.050	B470636	<0.050	0.050	B478924			
trans-1,2-dichloroethene	mg/kg	<0.030	B470636	<0.030	0.030	B478924			
Trichloroethene	mg/kg	<0.0090	B470636	<0.0090	0.0090	B478924			
Vinyl chloride	mg/kg	<0.040	B470636	<0.040	0.040	B478924			
m & p-Xylene	mg/kg	<0.040	B470636	<0.040	0.040	B478924			
o-Xylene	mg/kg	<0.040	B470636	<0.040	0.040	B478924			
Xylenes (Total)	mg/kg	<0.040	B470636	<0.040	0.040	B478924			
Extractable (MeOH) Carbon disulfide	mg/kg	<15	B471654	<15	15	B481684	<15	15	B481684
Surrogate Recovery (%)									
Extractable (MeOH) 1,4-Difluorobenzene (sur.)	%	98	B471654	90		B481684	89		B481684
Extractable (MeOH) 4-Bromofluorobenzene (sur.)	%	97	B471654	102		B481684	101		B481684
Extractable (MeOH) D10-o-Xylene (sur.)	%	98	B471654	116		B481684	119		B481684
Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	%	109	B471654	116		B481684	116		B481684
1,4-Difluorobenzene (sur.)	%	102	B470636	103		B478924			
4-Bromofluorobenzene (sur.)	%	88	B470636	113		B478924			
D10-o-Xylene (sur.)	%	104	B470636	105		B478924			
D4-1,2-Dichloroethane (sur.)	%	110	B470636	95		B478924			
RDL = Reportable Detection Limit									
Lab-Dup = Laboratory Initiated Duplicate									



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CSQ637	CSQ639		CSQ642		
Sampling Date		2024/08/01 13:30	2024/08/01 14:00		2024/08/01 14:30		
COC Number		8537308	8537308		8537308		
	UNITS	BH24-08-01	BH24-09-02	QC Batch	BH24-10-02	RDL	QC Batch
Volatiles							
VH C6-C10	mg/kg	<10	<10	B470636	<10	10	B478924
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	B470636	<0.020	0.020	B478924
1,1,2,2-tetrachloroethane	mg/kg	<0.020	<0.020	B470636	<0.020	0.020	B478924
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	B470636	<0.020	0.020	B478924
1,1-dichloroethane	mg/kg	<0.025	<0.025	B470636	<0.025	0.025	B478924
1,1-dichloroethene	mg/kg	<0.025	<0.025	B470636	<0.025	0.025	B478924
1,2,4-trichlorobenzene	mg/kg	<0.030	<0.030	B470636	<0.030	0.030	B478924
1,2,4-trimethylbenzene	mg/kg	<0.20	<0.20	B470636	<0.20	0.20	B478924
1,2-dibromoethane	mg/kg	<0.020	<0.020	B470636	<0.020	0.020	B478924
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	B470636	<0.020	0.020	B478924
1,2-dichloroethane	mg/kg	<0.020	<0.020	B470636	<0.020	0.020	B478924
1,2-dichloropropane	mg/kg	<0.020	<0.020	B470636	<0.020	0.020	B478924
1,3,5-trimethylbenzene	mg/kg	<0.20	<0.20	B470636	<0.20	0.20	B478924
1,3-Butadiene	mg/kg	<0.080	<0.080	B470636	<0.080	0.080	B478924
2-Butanone (MEK)	mg/kg	<15	<15	B470636	<15	15	B478924
4-Methyl-2-pentanone (MIBK)	mg/kg	<0.50	<0.50	B470636	<0.50	0.50	B478924
Acetone	mg/kg	<5.0	<5.0	B470636	<5.0	5.0	B478924
Benzene	mg/kg	<0.0050	0.0057	B470636	<0.0050	0.0050	B478924
Bromobenzene	mg/kg	<0.20	<0.20	B470636	<0.20	0.20	B478924
Bromodichloromethane	mg/kg	<0.050	<0.050	B470636	<0.050	0.050	B478924
Carbon tetrachloride	mg/kg	<0.020	<0.020	B470636	<0.020	0.020	B478924
Chlorobenzene	mg/kg	<0.020	<0.020	B470636	<0.020	0.020	B478924
Chloroethane	mg/kg	<0.10	<0.10	B470636	<0.10	0.10	B478924
cis-1,2-dichloroethene	mg/kg	<0.030	<0.030	B470636	<0.030	0.030	B478924
Dichlorodifluoromethane	mg/kg	<0.20	<0.20	B470636	<0.20	0.20	B478924
Dichloromethane	mg/kg	<0.080	<0.080	B470636	<0.080	0.080	B478924
Ethylbenzene	mg/kg	<0.010	<0.010	B470636	<0.010	0.010	B478924
Hexane	mg/kg	<0.50	<0.50	B470636	<0.50	0.50	B478924
Isopropylbenzene	mg/kg	<0.20	<0.20	B470636	<0.20	0.20	B478924
Methylcyclohexane	mg/kg	<0.20	<0.20	B470636	<0.20	0.20	B478924
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	B470636	<0.10	0.10	B478924
RDL = Reportable Detection Limit							



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CSQ637	CSQ639		CSQ642		
Sampling Date		2024/08/01 13:30	2024/08/01 14:00		2024/08/01 14:30		
COC Number		8537308	8537308		8537308		
	UNITS	BH24-08-01	BH24-09-02	QC Batch	BH24-10-02	RDL	QC Batch
n-Decane	mg/kg	<2.0	<2.0	B470636	<2.0	2.0	B478924
Styrene	mg/kg	<0.030	<0.030	B470636	<0.030	0.030	B478924
Tetrachloroethene	mg/kg	<0.010	<0.010	B470636	<0.010	0.010	B478924
Toluene	mg/kg	<0.050	<0.050	B470636	<0.050	0.050	B478924
trans-1,2-dichloroethene	mg/kg	<0.030	<0.030	B470636	<0.030	0.030	B478924
Trichloroethene	mg/kg	<0.0090	<0.0090	B470636	<0.0090	0.0090	B478924
Vinyl chloride	mg/kg	<0.040	<0.040	B470636	<0.040	0.040	B478924
m & p-Xylene	mg/kg	<0.040	<0.040	B470636	<0.040	0.040	B478924
o-Xylene	mg/kg	<0.040	<0.040	B470636	<0.040	0.040	B478924
Xylenes (Total)	mg/kg	<0.040	<0.040	B470636	<0.040	0.040	B478924
Extractable (MeOH) Carbon disulfide	mg/kg	<15	<15	B471654	<15	15	B481684
Surrogate Recovery (%)							
Extractable (MeOH) 1,4-Difluorobenzene (sur.)	%	96	98	B471654	100		B481684
Extractable (MeOH) 4-Bromofluorobenzene (sur.)	%	97	95	B471654	96		B481684
Extractable (MeOH) D10-o-Xylene (sur.)	%	98	92	B471654	90		B481684
Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	%	107	108	B471654	103		B481684
1,4-Difluorobenzene (sur.)	%	101	101	B470636	103		B478924
4-Bromofluorobenzene (sur.)	%	87	87	B470636	112		B478924
D10-o-Xylene (sur.)	%	99	98	B470636	106		B478924
D4-1,2-Dichloroethane (sur.)	%	108	107	B470636	75		B478924
RDL = Reportable Detection Limit							



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CSQ643	CSQ645	CSQ648	CSQ652		
Sampling Date		2024/08/01 14:50	2024/08/02 07:45	2024/08/02 09:30	2024/08/02 10:15		
COC Number		8537308	8537308	8537308	8537308		
	UNITS	BH24-11-01	BH24-13-01	BH24-15-01	BH24-17-01	RDL	QC Batch
Volatiles							
VH C6-C10	mg/kg	<10	<10	<10	<10	10	B470636
1,1,1-trichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	B470636
1,1,2,2-tetrachloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	B470636
1,1,2-trichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	B470636
1,1-dichloroethane	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	B470636
1,1-dichloroethene	mg/kg	<0.025	<0.025	<0.025	<0.025	0.025	B470636
1,2,4-trichlorobenzene	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	B470636
1,2,4-trimethylbenzene	mg/kg	<0.20	<0.20	<0.20	<0.20	0.20	B470636
1,2-dibromoethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	B470636
1,2-dichlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	B470636
1,2-dichloroethane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	B470636
1,2-dichloropropane	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	B470636
1,3,5-trimethylbenzene	mg/kg	<0.20	<0.20	<0.20	<0.20	0.20	B470636
1,3-Butadiene	mg/kg	<0.080	<0.080	<0.080	<0.080	0.080	B470636
2-Butanone (MEK)	mg/kg	<15	<15	<15	<15	15	B470636
4-Methyl-2-pentanone (MIBK)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	B470636
Acetone	mg/kg	<5.0	<5.0	<5.0	<5.0	5.0	B470636
Benzene	mg/kg	0.0079 (1)	<0.0050	<0.0050	<0.0050	0.0050	B470636
Bromobenzene	mg/kg	<0.20	<0.20	<0.20	<0.20	0.20	B470636
Bromodichloromethane	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	B470636
Carbon tetrachloride	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	B470636
Chlorobenzene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	B470636
Chloroethane	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	B470636
cis-1,2-dichloroethene	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	B470636
Dichlorodifluoromethane	mg/kg	<0.20	<0.20	<0.20	<0.20	0.20	B470636
Dichloromethane	mg/kg	<0.080	<0.080	<0.080	<0.080	0.080	B470636
Ethylbenzene	mg/kg	0.012	<0.010	<0.010	<0.010	0.010	B470636
Hexane	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	B470636
Isopropylbenzene	mg/kg	<0.20	<0.20	<0.20	<0.20	0.20	B470636
Methylcyclohexane	mg/kg	<0.20	<0.20	<0.20	<0.20	0.20	B470636
RDL = Reportable Detection Limit							
(1) Tentatively identified result and may be potentially biased high due to matrix interference.							



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		CSQ643	CSQ645	CSQ648	CSQ652		
Sampling Date		2024/08/01 14:50	2024/08/02 07:45	2024/08/02 09:30	2024/08/02 10:15		
COC Number		8537308	8537308	8537308	8537308		
	UNITS	BH24-11-01	BH24-13-01	BH24-15-01	BH24-17-01	RDL	QC Batch
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	B470636
n-Decane	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	B470636
Styrene	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	B470636
Tetrachloroethene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	B470636
Toluene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	B470636
trans-1,2-dichloroethene	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	B470636
Trichloroethene	mg/kg	<0.0090	<0.0090	<0.0090	<0.0090	0.0090	B470636
Vinyl chloride	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	B470636
m & p-Xylene	mg/kg	0.066	<0.040	<0.040	<0.040	0.040	B470636
o-Xylene	mg/kg	0.043	<0.040	<0.040	<0.040	0.040	B470636
Xylenes (Total)	mg/kg	0.11	<0.040	<0.040	<0.040	0.040	B470636
Extractable (MeOH) Carbon disulfide	mg/kg	<15	<15	<15	<15	15	B471654
Surrogate Recovery (%)							
Extractable (MeOH) 1,4-Difluorobenzene (sur.)	%	99	97	98	100		B471654
Extractable (MeOH) 4-Bromofluorobenzene (sur.)	%	97	98	96	96		B471654
Extractable (MeOH) D10-o-Xylene (sur.)	%	101	105	96	95		B471654
Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	%	108	108	109	109		B471654
1,4-Difluorobenzene (sur.)	%	100	101	100	101		B470636
4-Bromofluorobenzene (sur.)	%	88	86	87	90		B470636
D10-o-Xylene (sur.)	%	110	110	99	101		B470636
D4-1,2-Dichloroethane (sur.)	%	107	108	109	111		B470636
RDL = Reportable Detection Limit							



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CSQ568	CSQ570	CSQ574	CSQ579		CSQ580	CSQ582		
Sampling Date		2024/08/01 10:30	2024/08/01 10:30	2024/08/01 09:15	2024/08/01 09:30		2024/08/01 11:30	2024/08/01 11:45		
COC Number		8537307	8537307	8537307	8537307		8537307	8537307		
	UNITS	SP24-01	SP24-02	BH24-01-01	BH24-02-02	QC Batch	BH24-03-01	BH24-04-01	RDL	QC Batch

Calculated Parameters

Low Molecular Weight PAH's	mg/kg	0.21	1.4	1.7	0.23	B467168	0.10	0.11	0.050	B467168
High Molecular Weight PAH's	mg/kg	3.4	9.2	6.4	1.9	B467168	1.0	1.2	0.050	B467168
Total PAH	mg/kg	3.6	11	8.1	2.1	B467168	1.1	1.3	0.050	B467168

Polycyclic Aromatics

Quinoline	mg/kg	<0.050	<0.050	<0.050	<0.050	B468562	<0.050	<0.050	0.050	B468830
Naphthalene	mg/kg	<0.010	<0.010	0.021	<0.010	B468562	<0.010	<0.010	0.010	B468830
1-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	<0.050	B468562	<0.050	<0.050	0.050	B468830
2-Methylnaphthalene	mg/kg	<0.020	<0.020	0.027	<0.020	B468562	<0.020	<0.020	0.020	B468830
Acenaphthylene	mg/kg	0.076	0.40	0.23	0.075	B468562	0.047	0.045	0.0050	B468830
Acenaphthene	mg/kg	<0.0050	0.021	0.023	0.0061	B468562	<0.0050	<0.0050	0.0050	B468830
Fluorene	mg/kg	<0.020	0.056	0.10	<0.020	B468562	<0.020	<0.020	0.020	B468830
Phenanthrene	mg/kg	0.081	0.69	1.1	0.099	B468562	0.038	0.047	0.010	B468830
Anthracene	mg/kg	0.049	0.26	0.24	0.046	B468562	0.016	0.019	0.0040	B468830
Fluoranthene	mg/kg	0.46	1.4	1.6	0.30	B468562	0.16	0.18	0.020	B468830
Pyrene	mg/kg	0.59	1.6	1.3	0.29	B468562	0.14	0.16	0.020	B468830
Benzo(a)anthracene	mg/kg	0.31	0.65	0.52	0.10	B468562	0.069	0.092	0.020	B468830
Chrysene	mg/kg	0.32	0.78	0.60	0.19	B468562	0.10	0.12	0.020	B468830
Benzo(b&j)fluoranthene	mg/kg	0.49	1.3	0.74	0.32	B468562	0.15	0.17	0.020	B468830
Benzo(b)fluoranthene	mg/kg	0.31	0.80	0.45	0.21	B468562	0.095	0.11	0.020	B468830
Benzo(k)fluoranthene	mg/kg	0.18	0.48	0.28	0.11	B468562	0.056	0.061	0.020	B468830
Benzo(a)pyrene	mg/kg	0.44	1.2	0.59	0.20	B468562	0.13	0.15	0.020	B468830
Indeno(1,2,3-cd)pyrene	mg/kg	0.25	0.80	0.37	0.18	B468562	0.096	0.11	0.020	B468830
Dibenz(a,h)anthracene	mg/kg	0.080	0.20	0.11	0.046	B468562	0.026	0.032	0.020	B468830
Benzo(g,h,i)perylene	mg/kg	0.26	0.81	0.34	0.18	B468562	0.11	0.12	0.050	B468830

Calculated Parameters

LEPH (C10-C19 less PAH)	mg/kg	<100	<100	<100	<100	B467171	<100	<100	100	B467171
HEPH (C19-C32 less PAH)	mg/kg	<100	120	130	<100	B467171	<100	<100	100	B467171

Hydrocarbons

EPH (C10-C19)	mg/kg	<100	<100	<100	<100	B468576	<100	<100	100	B468835
EPH (C19-C32)	mg/kg	<100	130	130	<100	B468576	<100	<100	100	B468835

RDL = Reportable Detection Limit



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CSQ568	CSQ570	CSQ574	CSQ579		CSQ580	CSQ582		
Sampling Date		2024/08/01 10:30	2024/08/01 10:30	2024/08/01 09:15	2024/08/01 09:30		2024/08/01 11:30	2024/08/01 11:45		
COC Number		8537307	8537307	8537307	8537307		8537307	8537307		
	UNITS	SP24-01	SP24-02	BH24-01-01	BH24-02-02	QC Batch	BH24-03-01	BH24-04-01	RDL	QC Batch
Surrogate Recovery (%)										
D10-ANTHRACENE (sur.)	%	100	94	92	105	B468562	81	87		B468830
D8-ACENAPHTHYLENE (sur.)	%	80	83	83	81	B468562	78	85		B468830
D8-NAPHTHALENE (sur.)	%	76	78	76	77	B468562	78	83		B468830
TERPHENYL-D14 (sur.)	%	108	98	95	112	B468562	99	104		B468830
O-TERPHENYL (sur.)	%	76	86	74	79	B468576	79	77		B468835
RDL = Reportable Detection Limit										



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CSQ583	CSQ585	CSQ636	CSQ637	CSQ638	CSQ639		
Sampling Date		2024/08/01 12:30	2024/08/01 12:50	2024/08/01 13:15	2024/08/01 13:30	2024/08/01 14:00	2024/08/01 14:00		
COC Number		8537307	8537307	8537308	8537308	8537308	8537308		
	UNITS	BH24-05-01	BH24-06-01	BH24-07-01	BH24-08-01	BH24-09-01	BH24-09-02	RDL	QC Batch
Calculated Parameters									
Low Molecular Weight PAH's	mg/kg	<0.050	<0.050	<0.050	<0.050	0.41	0.41	0.050	B467168
High Molecular Weight PAH's	mg/kg	<0.050	0.56	0.16	<0.050	2.1	2.4	0.050	B467168
Total PAH	mg/kg	<0.050	0.59	0.19	<0.050	2.5	2.9	0.050	B467168
Polycyclic Aromatics									
Quinoline	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B468830
Naphthalene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	B468830
1-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B468830
2-Methylnaphthalene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	B468830
Acenaphthylene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.041	0.049	0.0050	B468830
Acenaphthene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.017	0.013	0.0050	B468830
Fluorene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.022	<0.020	0.020	B468830
Phenanthrene	mg/kg	<0.010	0.025	0.022	<0.010	0.29	0.29	0.010	B468830
Anthracene	mg/kg	<0.0040	0.0081	0.0054	<0.0040	0.049	0.055	0.0040	B468830
Fluoranthene	mg/kg	<0.020	0.11	0.044	<0.020	0.47	0.54	0.020	B468830
Pyrene	mg/kg	<0.020	0.097	0.041	<0.020	0.37	0.47	0.020	B468830
Benzo(a)anthracene	mg/kg	<0.020	0.060	0.021	<0.020	0.14	0.18	0.020	B468830
Chrysene	mg/kg	<0.020	0.070	0.027	<0.020	0.22	0.26	0.020	B468830
Benzo(b&j)fluoranthene	mg/kg	<0.020	0.076	<0.020	<0.020	0.26	0.29	0.020	B468830
Benzo(b)fluoranthene	mg/kg	<0.020	0.044	<0.020	<0.020	0.16	0.18	0.020	B468830
Benzo(k)fluoranthene	mg/kg	<0.020	0.028	<0.020	<0.020	0.091	0.11	0.020	B468830
Benzo(a)pyrene	mg/kg	<0.020	0.071	0.028	<0.020	0.20	0.24	0.020	B468830
Indeno(1,2,3-cd)pyrene	mg/kg	<0.020	0.042	<0.020	<0.020	0.13	0.15	0.020	B468830
Dibenz(a,h)anthracene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.038	0.042	0.020	B468830
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.14	0.16	0.050	B468830
Calculated Parameters									
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	<100	<100	<100	<100	100	B467171
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	<100	<100	<100	<100	100	B467171
Hydrocarbons									
EPH (C10-C19)	mg/kg	<100	<100	<100	<100	<100	<100	100	B468835
EPH (C19-C32)	mg/kg	<100	<100	<100	<100	<100	<100	100	B468835
RDL = Reportable Detection Limit									



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CSQ583	CSQ585	CSQ636	CSQ637	CSQ638	CSQ639		
Sampling Date		2024/08/01 12:30	2024/08/01 12:50	2024/08/01 13:15	2024/08/01 13:30	2024/08/01 14:00	2024/08/01 14:00		
COC Number		8537307	8537307	8537308	8537308	8537308	8537308		
	UNITS	BH24-05-01	BH24-06-01	BH24-07-01	BH24-08-01	BH24-09-01	BH24-09-02	RDL	QC Batch
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	88	89	87	92	86	88		B468830
D8-ACENAPHTHYLENE (sur.)	%	84	81	80	84	80	82		B468830
D8-NAPHTHALENE (sur.)	%	82	81	79	83	80	81		B468830
TERPHENYL-D14 (sur.)	%	108	106	106	112	103	106		B468830
O-TERPHENYL (sur.)	%	74	88	82	85	69	86		B468835
RDL = Reportable Detection Limit									



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CSQ641		CSQ642		CSQ643			CSQ643		
Sampling Date		2024/08/01 14:30		2024/08/01 14:30		2024/08/01 14:50			2024/08/01 14:50		
COC Number		8537308		8537308		8537308			8537308		
	UNITS	BH24-10-01	QC Batch	BH24-10-02	QC Batch	BH24-11-01	RDL	QC Batch	BH24-11-01 Lab-Dup	RDL	QC Batch

Calculated Parameters

Low Molecular Weight PAH's	mg/kg	0.41	B467168	0.25	B477782	1.8	0.050	B467168			
High Molecular Weight PAH's	mg/kg	3.1	B467168	1.4	B477782	11	0.050	B467168			
Total PAH	mg/kg	3.5	B467168	1.7	B477782	13	0.050	B467168			

Polycyclic Aromatics

Quinoline	mg/kg	<0.050	B468830	<0.050	B478244	<0.050	0.050	B468830	<0.050	0.050	B468830
Naphthalene	mg/kg	<0.010	B468830	<0.010	B478244	0.024	0.010	B468830	0.025	0.010	B468830
1-Methylnaphthalene	mg/kg	<0.050	B468830	<0.050	B478244	<0.050	0.050	B468830	<0.050	0.050	B468830
2-Methylnaphthalene	mg/kg	<0.020	B468830	<0.020	B478244	0.027	0.020	B468830	0.030	0.020	B468830
Acenaphthylene	mg/kg	0.10	B468830	0.045	B478244	0.33	0.0050	B468830	0.34	0.0050	B468830
Acenaphthene	mg/kg	0.0080	B468830	0.0054	B478244	0.034	0.0050	B468830	0.043	0.0050	B468830
Fluorene	mg/kg	<0.020	B468830	<0.020	B478244	0.078	0.020	B468830	0.077	0.020	B468830
Phenanthrene	mg/kg	0.25	B468830	0.17	B478244	1.1	0.010	B468830	1.1	0.010	B468830
Anthracene	mg/kg	0.052	B468830	0.031	B478244	0.21	0.0040	B468830	0.22	0.0040	B468830
Fluoranthene	mg/kg	0.56	B468830	0.30	B478244	2.1	0.020	B468830	2.1	0.020	B468830
Pyrene	mg/kg	0.49	B468830	0.26	B478244	1.9	0.020	B468830	2.1	0.020	B468830
Benzo(a)anthracene	mg/kg	0.24	B468830	0.10	B478244	0.83	0.020	B468830	0.86	0.020	B468830
Chrysene	mg/kg	0.33	B468830	0.15	B478244	1.1	0.020	B468830	1.2	0.020	B468830
Benzo(b&j)fluoranthene	mg/kg	0.43	B468830	0.17	B478244	1.5	0.020	B468830	1.6	0.020	B468830
Benzo(b)fluoranthene	mg/kg	0.27	B468830	0.11	B478244	0.97	0.020	B468830	1.0	0.020	B468830
Benzo(k)fluoranthene	mg/kg	0.15	B468830	0.066	B478244	0.54	0.020	B468830	0.53	0.020	B468830
Benzo(a)pyrene	mg/kg	0.36	B468830	0.15	B478244	1.3	0.020	B468830	1.3	0.020	B468830
Indeno(1,2,3-cd)pyrene	mg/kg	0.25	B468830	0.094	B478244	0.81	0.020	B468830	0.79	0.020	B468830
Dibenz(a,h)anthracene	mg/kg	0.073	B468830	0.027	B478244	0.24	0.020	B468830	0.24	0.020	B468830
Benzo(g,h,i)perylene	mg/kg	0.26	B468830	0.095	B478244	0.81	0.050	B468830	0.77	0.050	B468830

Calculated Parameters

LEPH (C10-C19 less PAH)	mg/kg	<100	B467171	<100	B478197	<100	100	B467171			
HEPH (C19-C32 less PAH)	mg/kg	<100	B467171	<100	B478197	200	100	B467171			

Hydrocarbons

EPH (C10-C19)	mg/kg	<100	B468835	<100	B478259	<100	100	B468835	<100	100	B468835
EPH (C19-C32)	mg/kg	<100	B468835	<100	B478259	200	100	B468835	180	100	B468835

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CSQ641		CSQ642		CSQ643			CSQ643		
Sampling Date		2024/08/01 14:30		2024/08/01 14:30		2024/08/01 14:50			2024/08/01 14:50		
COC Number		8537308		8537308		8537308			8537308		
	UNITS	BH24-10-01	QC Batch	BH24-10-02	QC Batch	BH24-11-01	RDL	QC Batch	BH24-11-01 Lab-Dup	RDL	QC Batch
Surrogate Recovery (%)											
D10-ANTHRACENE (sur.)	%	90	B468830	87	B478244	83		B468830	84		B468830
D8-ACENAPHTHYLENE (sur.)	%	85	B468830	80	B478244	87		B468830	87		B468830
D8-NAPHTHALENE (sur.)	%	84	B468830	79	B478244	85		B468830	87		B468830
TERPHENYL-D14 (sur.)	%	107	B468830	107	B478244	101		B468830	101		B468830
O-TERPHENYL (sur.)	%	79	B468835	90	B478259	77		B468835	84		B468835
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate											



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CSQ644	CSQ645	CSQ646	CSQ647	CSQ648	CSQ650		
Sampling Date		2024/08/01 15:15	2024/08/02 07:45	2024/08/02 07:45	2024/08/02 08:30	2024/08/02 09:30	2024/08/02 09:30		
COC Number		8537308	8537308	8537308	8537308	8537308	8537308		
	UNITS	BH24-12-01	BH24-13-01	BH24-13-02	BH24-14-01	BH24-15-01	BH24-15-03	RDL	QC Batch

Calculated Parameters

Low Molecular Weight PAH's	mg/kg	1.5	2.2	0.071	0.73	<0.050	<0.050	0.050	B467168
High Molecular Weight PAH's	mg/kg	9.1	21	0.67	5.5	0.082	<0.050	0.050	B467168
Total PAH	mg/kg	11	24	0.74	6.2	0.11	<0.050	0.050	B467168

Polycyclic Aromatics

Quinoline	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B468830
Naphthalene	mg/kg	0.014	0.017	<0.010	<0.010	<0.010	<0.010	0.010	B468830
1-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	B468830
2-Methylnaphthalene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.025	<0.020	0.020	B468830
Acenaphthylene	mg/kg	0.30	0.79	0.030	0.18	<0.0050	<0.0050	0.0050	B468830
Acenaphthene	mg/kg	0.019	0.036	<0.0050	0.015	<0.0050	<0.0050	0.0050	B468830
Fluorene	mg/kg	0.048	0.059	<0.020	0.024	<0.020	<0.020	0.020	B468830
Phenanthrene	mg/kg	0.93	0.84	0.028	0.40	<0.010	<0.010	0.010	B468830
Anthracene	mg/kg	0.14	0.42	0.013	0.11	<0.0040	<0.0040	0.0040	B468830
Fluoranthene	mg/kg	1.8	3.1	0.11	1.0	<0.020	<0.020	0.020	B468830
Pyrene	mg/kg	1.7	3.3	0.099	0.91	<0.020	<0.020	0.020	B468830
Benzo(a)anthracene	mg/kg	0.61	1.8	0.044	0.43	<0.020	<0.020	0.020	B468830
Chrysene	mg/kg	0.93	2.0	0.070	0.57	0.061	<0.020	0.020	B468830
Benzo(b&j)fluoranthene	mg/kg	1.2	3.0	0.10	0.77	0.021	<0.020	0.020	B468830
Benzo(b)fluoranthene	mg/kg	0.78	1.9	0.068	0.50	0.021	<0.020	0.020	B468830
Benzo(k)fluoranthene	mg/kg	0.42	1.1	0.034	0.27	<0.020	<0.020	0.020	B468830
Benzo(a)pyrene	mg/kg	1.0	2.8	0.086	0.63	<0.020	<0.020	0.020	B468830
Indeno(1,2,3-cd)pyrene	mg/kg	0.62	1.7	0.058	0.39	<0.020	<0.020	0.020	B468830
Dibenz(a,h)anthracene	mg/kg	0.17	0.52	<0.020	0.11	<0.020	<0.020	0.020	B468830
Benzo(g,h,i)perylene	mg/kg	0.63	1.9	0.064	0.40	<0.050	<0.050	0.050	B468830

Calculated Parameters

LEPH (C10-C19 less PAH)	mg/kg	<100	<100	<100	<100	<100	<100	100	B467171
HEPH (C19-C32 less PAH)	mg/kg	100	330	<100	<100	410	<100	100	B467171

Hydrocarbons

EPH (C10-C19)	mg/kg	<100	<100	<100	<100	<100	<100	100	B468835
EPH (C19-C32)	mg/kg	110	350	<100	<100	410	<100	100	B468835

RDL = Reportable Detection Limit



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VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CSQ644	CSQ645	CSQ646	CSQ647	CSQ648	CSQ650		
Sampling Date		2024/08/01 15:15	2024/08/02 07:45	2024/08/02 07:45	2024/08/02 08:30	2024/08/02 09:30	2024/08/02 09:30		
COC Number		8537308	8537308	8537308	8537308	8537308	8537308		
	UNITS	BH24-12-01	BH24-13-01	BH24-13-02	BH24-14-01	BH24-15-01	BH24-15-03	RDL	QC Batch
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	84	86	86	86	87	89		B468830
D8-ACENAPHTHYLENE (sur.)	%	87	83	82	86	82	83		B468830
D8-NAPHTHALENE (sur.)	%	86	83	80	85	82	80		B468830
TERPHENYL-D14 (sur.)	%	101	99	104	103	101	109		B468830
O-TERPHENYL (sur.)	%	87	76	79	78	90	79		B468835
RDL = Reportable Detection Limit									



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CSQ651	CSQ652		CSQ655		CSQ656		
Sampling Date		2024/08/02 09:00	2024/08/02 10:15		2024/08/02 10:45		2024/08/02 10:45		
COC Number		8537308	8537308		8537308		8537308		
	UNITS	BH24-16-01	BH24-17-01	QC Batch	BH24-18-01	QC Batch	BH24-18-02	RDL	QC Batch
Calculated Parameters									
Low Molecular Weight PAH's	mg/kg	0.081	0.18	B467168	<0.050	B477782	<0.050	0.050	B467168
High Molecular Weight PAH's	mg/kg	0.69	1.4	B467168	<0.050	B477782	<0.050	0.050	B467168
Total PAH	mg/kg	0.77	1.6	B467168	<0.050	B477782	<0.050	0.050	B467168
Polycyclic Aromatics									
Quinoline	mg/kg	<0.050	<0.050	B468830	<0.050	B478244	<0.050	0.050	B469387
Naphthalene	mg/kg	<0.010	<0.010	B468830	<0.010	B478244	<0.010	0.010	B469387
1-Methylnaphthalene	mg/kg	<0.050	<0.050	B468830	<0.050	B478244	<0.050	0.050	B469387
2-Methylnaphthalene	mg/kg	<0.020	<0.020	B468830	<0.020	B478244	<0.020	0.020	B469387
Acenaphthylene	mg/kg	0.025	0.031	B468830	<0.0050	B478244	<0.0050	0.0050	B469387
Acenaphthene	mg/kg	<0.0050	<0.0050	B468830	<0.0050	B478244	<0.0050	0.0050	B469387
Fluorene	mg/kg	<0.020	<0.020	B468830	<0.020	B478244	<0.020	0.020	B469387
Phenanthrene	mg/kg	0.046	0.11	B468830	<0.010	B478244	<0.010	0.010	B469387
Anthracene	mg/kg	0.010	0.032	B468830	<0.0040	B478244	<0.0040	0.0040	B469387
Fluoranthene	mg/kg	0.13	0.27	B468830	<0.020	B478244	<0.020	0.020	B469387
Pyrene	mg/kg	0.12	0.22	B468830	<0.020	B478244	<0.020	0.020	B469387
Benzo(a)anthracene	mg/kg	0.063	0.13	B468830	<0.020	B478244	<0.020	0.020	B469387
Chrysene	mg/kg	0.091	0.16	B468830	<0.020	B478244	<0.020	0.020	B469387
Benzo(b&j)fluoranthene	mg/kg	0.11	0.19	B468830	<0.020	B478244	<0.020	0.020	B469387
Benzo(b)fluoranthene	mg/kg	0.073	0.12	B468830	<0.020	B478244	<0.020	0.020	B469387
Benzo(k)fluoranthene	mg/kg	0.038	0.065	B468830	<0.020	B478244	<0.020	0.020	B469387
Benzo(a)pyrene	mg/kg	0.089	0.15	B468830	<0.020	B478244	<0.020	0.020	B469387
Indeno(1,2,3-cd)pyrene	mg/kg	0.048	0.071	B468830	<0.020	B478244	<0.020	0.020	B469387
Dibenz(a,h)anthracene	mg/kg	<0.020	0.024	B468830	<0.020	B478244	<0.020	0.020	B469387
Benzo(g,h,i)perylene	mg/kg	<0.050	0.086	B468830	<0.050	B478244	<0.050	0.050	B469387
Calculated Parameters									
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	B467171	<100	B478197	<100	100	B467171
HEPH (C19-C32 less PAH)	mg/kg	<100	140	B467171	<100	B478197	<100	100	B467171
Hydrocarbons									
EPH (C10-C19)	mg/kg	<100	<100	B468835	<100	B478259	<100	100	B469392
EPH (C19-C32)	mg/kg	<100	140	B468835	<100	B478259	<100	100	B469392
RDL = Reportable Detection Limit									



LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CSQ651	CSQ652		CSQ655		CSQ656		
Sampling Date		2024/08/02 09:00	2024/08/02 10:15		2024/08/02 10:45		2024/08/02 10:45		
COC Number		8537308	8537308		8537308		8537308		
	UNITS	BH24-16-01	BH24-17-01	QC Batch	BH24-18-01	QC Batch	BH24-18-02	RDL	QC Batch
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	88	85	B468830	84	B478244	81		B469387
D8-ACENAPHTHYLENE (sur.)	%	85	80	B468830	77	B478244	75		B469387
D8-NAPHTHALENE (sur.)	%	84	79	B468830	75	B478244	73		B469387
TERPHENYL-D14 (sur.)	%	106	101	B468830	105	B478244	102		B469387
O-TERPHENYL (sur.)	%	87	84	B468835	96	B478259	77		B469392
RDL = Reportable Detection Limit									



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CSQ656			CSQ658		CSQ661		
Sampling Date		2024/08/02 10:45			2024/08/02 11:15		2024/08/02 11:45		
COC Number		8537308			8537308		8537308		
	UNITS	BH24-18-02 Lab-Dup	RDL	QC Batch	BH24-19-01	QC Batch	BH24-20-02	RDL	QC Batch
Calculated Parameters									
Low Molecular Weight PAH's	mg/kg				<0.050	B467168	<0.050	0.050	B467168
High Molecular Weight PAH's	mg/kg				0.43	B467168	<0.050	0.050	B467168
Total PAH	mg/kg				0.48	B467168	<0.050	0.050	B467168
Polycyclic Aromatics									
Quinoline	mg/kg	<0.050	0.050	B469387	<0.050	B469387	<0.050	0.050	B468830
Naphthalene	mg/kg	<0.010	0.010	B469387	<0.010	B469387	<0.010	0.010	B468830
1-Methylnaphthalene	mg/kg	<0.050	0.050	B469387	<0.050	B469387	<0.050	0.050	B468830
2-Methylnaphthalene	mg/kg	<0.020	0.020	B469387	<0.020	B469387	<0.020	0.020	B468830
Acenaphthylene	mg/kg	<0.0050	0.0050	B469387	0.0088	B469387	<0.0050	0.0050	B468830
Acenaphthene	mg/kg	<0.0050	0.0050	B469387	<0.0050	B469387	<0.0050	0.0050	B468830
Fluorene	mg/kg	<0.020	0.020	B469387	<0.020	B469387	<0.020	0.020	B468830
Phenanthrene	mg/kg	<0.010	0.010	B469387	0.035	B469387	<0.010	0.010	B468830
Anthracene	mg/kg	<0.0040	0.0040	B469387	0.0047	B469387	<0.0040	0.0040	B468830
Fluoranthene	mg/kg	<0.020	0.020	B469387	0.094	B469387	<0.020	0.020	B468830
Pyrene	mg/kg	<0.020	0.020	B469387	0.074	B469387	<0.020	0.020	B468830
Benzo(a)anthracene	mg/kg	<0.020	0.020	B469387	0.034	B469387	<0.020	0.020	B468830
Chrysene	mg/kg	<0.020	0.020	B469387	0.045	B469387	<0.020	0.020	B468830
Benzo(b&j)fluoranthene	mg/kg	<0.020	0.020	B469387	0.068	B469387	<0.020	0.020	B468830
Benzo(b)fluoranthene	mg/kg	<0.020	0.020	B469387	0.042	B469387	<0.020	0.020	B468830
Benzo(k)fluoranthene	mg/kg	<0.020	0.020	B469387	0.023	B469387	<0.020	0.020	B468830
Benzo(a)pyrene	mg/kg	<0.020	0.020	B469387	0.053	B469387	<0.020	0.020	B468830
Indeno(1,2,3-cd)pyrene	mg/kg	<0.020	0.020	B469387	0.036	B469387	<0.020	0.020	B468830
Dibenz(a,h)anthracene	mg/kg	<0.020	0.020	B469387	<0.020	B469387	<0.020	0.020	B468830
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	B469387	<0.050	B469387	<0.050	0.050	B468830
Calculated Parameters									
LEPH (C10-C19 less PAH)	mg/kg				<100	B467171	<100	100	B467171
HEPH (C19-C32 less PAH)	mg/kg				<100	B467171	<100	100	B467171
Hydrocarbons									
EPH (C10-C19)	mg/kg	<100	100	B469392	<100	B469392	<100	100	B468835
EPH (C19-C32)	mg/kg	<100	100	B469392	<100	B469392	<100	100	B468835
RDL = Reportable Detection Limit									
Lab-Dup = Laboratory Initiated Duplicate									



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Bureau Veritas ID		CSQ656			CSQ658		CSQ661		
Sampling Date		2024/08/02 10:45			2024/08/02 11:15		2024/08/02 11:45		
COC Number		8537308			8537308		8537308		
	UNITS	BH24-18-02 Lab-Dup	RDL	QC Batch	BH24-19-01	QC Batch	BH24-20-02	RDL	QC Batch
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	79		B469387	88	B469387	89		B468830
D8-ACENAPHTHYLENE (sur.)	%	73		B469387	79	B469387	84		B468830
D8-NAPHTHALENE (sur.)	%	72		B469387	78	B469387	81		B468830
TERPHENYL-D14 (sur.)	%	100		B469387	107	B469387	109		B468830
O-TERPHENYL (sur.)	%	73		B469392	72	B469392	77		B468835
RDL = Reportable Detection Limit									
Lab-Dup = Laboratory Initiated Duplicate									



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

SOLUBLE SODIUM AND CHLORIDE IN SOIL (SOIL)

Bureau Veritas ID		CSQ568		CSQ570	CSQ574		CSQ579		CSQ580		
Sampling Date		2024/08/01 10:30		2024/08/01 10:30	2024/08/01 09:15		2024/08/01 09:30		2024/08/01 11:30		
COC Number		8537307		8537307	8537307		8537307		8537307		
	UNITS	SP24-01	RDL	SP24-02	BH24-01-01	RDL	BH24-02-02	RDL	BH24-03-01	RDL	QC Batch

ANIONS											
Soluble Chloride (Cl)	mg/L	101	10	44	<10	10	<10	10	<10	10	B469969
Calculated Parameters											
Soluble Chloride (Cl)	mg/kg	50.1	5.0	23.4	<5.3	5.3	<5.9	5.9	<5.4	5.4	B467244
Soluble Sodium (Na)	mg/kg	52.6	2.5	54.0	10.7	2.6	10.8	2.9	10.4	2.7	B467400
Soluble Parameters											
Saturation %	%	49.8	N/A	53.0	52.6	N/A	58.6	N/A	54.1	N/A	B469880
Soluble Sodium (Na)	mg/L	106	5.0	102	20.3	5.0	18.5	5.0	19.2	5.0	B469949
RDL = Reportable Detection Limit N/A = Not Applicable											

Bureau Veritas ID		CSQ582		CSQ583		CSQ585			CSQ636		CSQ637		
Sampling Date		2024/08/01 11:45		2024/08/01 12:30		2024/08/01 12:50			2024/08/01 13:15		2024/08/01 13:30		
COC Number		8537307		8537307		8537307			8537308		8537308		
	UNITS	BH24-04-01	RDL	BH24-05-01	RDL	BH24-06-01	RDL	QC Batch	BH24-07-01	RDL	BH24-08-01	RDL	QC Batch

ANIONS													
Soluble Chloride (Cl)	mg/L	<10	10	<10	10	<10	10	B469969	<10	10	<10	10	B469975
Calculated Parameters													
Soluble Chloride (Cl)	mg/kg	<5.6	5.6	<3.9	3.9	<3.8	3.8	B467244	<5.3	5.3	<4.3	4.3	B467244
Soluble Sodium (Na)	mg/kg	10.7	2.8	6.2	2.0	9.1	1.9	B467400	7.6	2.6	6.9	2.2	B467400
Soluble Parameters													
Saturation %	%	56.1	N/A	39.5	N/A	38.3	N/A	B469880	52.8	N/A	43.1	N/A	B469902
Soluble Sodium (Na)	mg/L	19.1	5.0	15.7	5.0	23.7	5.0	B469949	14.4	5.0	16.0	5.0	B469958
RDL = Reportable Detection Limit N/A = Not Applicable													



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

SOLUBLE SODIUM AND CHLORIDE IN SOIL (SOIL)

Bureau Veritas ID		CSQ638		CSQ639		CSQ641			CSQ642		
Sampling Date		2024/08/01 14:00		2024/08/01 14:00		2024/08/01 14:30			2024/08/01 14:30		
COC Number		8537308		8537308		8537308			8537308		
	UNITS	BH24-09-01	RDL	BH24-09-02	RDL	BH24-10-01	RDL	QC Batch	BH24-10-02	RDL	QC Batch

ANIONS											
Soluble Chloride (Cl)	mg/L	30	10	35	10	<10	10	B469975	<10	10	B479205
Calculated Parameters											
Soluble Chloride (Cl)	mg/kg	21.6	7.3	23.9	6.8	<5.8	5.8	B467244	<5.0	5.0	B478184
Soluble Sodium (Na)	mg/kg	62.7	3.6	65.7	3.4	21.5	2.9	B467400	14.5	2.5	B478189
Soluble Parameters											
Saturation %	%	72.8	N/A	68.1	N/A	58.4	N/A	B469902	49.9	N/A	B478797
Soluble Sodium (Na)	mg/L	86.1	5.0	96.4	5.0	36.8	5.0	B469958	29.0	5.0	B479073
RDL = Reportable Detection Limit N/A = Not Applicable											

Bureau Veritas ID		CSQ643			CSQ643			CSQ644		CSQ645		
Sampling Date		2024/08/01 14:50			2024/08/01 14:50			2024/08/01 15:15		2024/08/02 07:45		
COC Number		8537308			8537308			8537308		8537308		
	UNITS	BH24-11-01	RDL	QC Batch	BH24-11-01 Lab-Dup	RDL	QC Batch	BH24-12-01	RDL	BH24-13-01	RDL	QC Batch

ANIONS												
Soluble Chloride (Cl)	mg/L	19	10	B469975	18	10	B469975	<10	10	15	10	B469975
Calculated Parameters												
Soluble Chloride (Cl)	mg/kg	9.3	4.8	B467244				<5.5	5.5	10.6	7.0	B467244
Soluble Sodium (Na)	mg/kg	23.8	2.4	B467400				9.2	2.7	71.9	3.5	B467400
Soluble Parameters												
Saturation %	%	48.1	N/A	B469902	48.1	N/A	B469902	54.7	N/A	70.4	N/A	B469902
Soluble Sodium (Na)	mg/L	49.4	5.0	B469958	49.7	5.0	B469958	16.8	5.0	102	5.0	B469958
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable												



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

SOLUBLE SODIUM AND CHLORIDE IN SOIL (SOIL)

Bureau Veritas ID		CSQ646		CSQ647		CSQ648		CSQ650		CSQ651		
Sampling Date		2024/08/02 07:45		2024/08/02 08:30		2024/08/02 09:30		2024/08/02 09:30		2024/08/02 09:00		
COC Number		8537308		8537308		8537308		8537308		8537308		
	UNITS	BH24-13-02	RDL	BH24-14-01	RDL	BH24-15-01	RDL	BH24-15-03	RDL	BH24-16-01	RDL	QC Batch

ANIONS

Soluble Chloride (Cl)	mg/L	85	10	65	10	184	10	137	10	12	10	B469975
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Calculated Parameters

Soluble Chloride (Cl)	mg/kg	40.4	4.8	29.2	4.5	96.3	5.2	87.0	6.3	6.1	5.2	B467244
Soluble Sodium (Na)	mg/kg	66.6	2.4	24.4	2.2	37.9	2.6	34.2	3.2	7.4	2.6	B467400

Soluble Parameters

Saturation %	%	47.6	N/A	44.7	N/A	52.4	N/A	63.3	N/A	51.6	N/A	B469902
Soluble Sodium (Na)	mg/L	140	5.0	54.6	5.0	72.3	5.0	53.9	5.0	14.3	5.0	B469958

RDL = Reportable Detection Limit

N/A = Not Applicable

Bureau Veritas ID		CSQ652			CSQ655			CSQ656		CSQ658		
Sampling Date		2024/08/02 10:15			2024/08/02 10:45			2024/08/02 10:45		2024/08/02 11:15		
COC Number		8537308			8537308			8537308		8537308		
	UNITS	BH24-17-01	RDL	QC Batch	BH24-18-01	RDL	QC Batch	BH24-18-02	RDL	BH24-19-01	RDL	QC Batch

ANIONS

Soluble Chloride (Cl)	mg/L	51	10	B469975	14	10	B479205	100	10	<10	10	B469975
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Calculated Parameters

Soluble Chloride (Cl)	mg/kg	28.6	5.7	B467244	4.5	3.1	B478184	67.0	6.7	<3.1	3.1	B467244
Soluble Sodium (Na)	mg/kg	86.5	2.8	B467400	14.6	1.6	B478189	52.9	3.4	4.6	1.6	B467400

Soluble Parameters

Saturation %	%	56.5	N/A	B469902	31.0	N/A	B478797	67.2	N/A	31.2	N/A	B469902
Soluble Sodium (Na)	mg/L	153	5.0	B469958	47.1	5.0	B479073	78.7	5.0	14.6	5.0	B469958

RDL = Reportable Detection Limit

N/A = Not Applicable



BUREAU
VERITAS

Bureau Veritas Job #: C459220
Report Date: 2024/08/20

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

SOLUBLE SODIUM AND CHLORIDE IN SOIL (SOIL)

Bureau Veritas ID		CSQ661		
Sampling Date		2024/08/02 11:45		
COC Number		8537308		
	UNITS	BH24-20-02	RDL	QC Batch
ANIONS				
Soluble Chloride (Cl)	mg/L	<10	10	B469975
Calculated Parameters				
Soluble Chloride (Cl)	mg/kg	<6.1	6.1	B467244
Soluble Sodium (Na)	mg/kg	13.1	3.0	B467400
Soluble Parameters				
Saturation %	%	60.6	N/A	B469902
Soluble Sodium (Na)	mg/L	21.6	5.0	B469958
RDL = Reportable Detection Limit N/A = Not Applicable				



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.7°C
Package 2	14.7°C

Version 2: Report reissued to include results on samples SP24-01 & SP24-02 only as requested by Kalum Skipper on 2024/08/14.

Version 3: Report reissued to include results on samples listed as per client request received 2024/08/14.

VOCs

BH24-03-01/CSQ580

BH24-06-01/CSQ585

BH24-10-02/CSQ642

LEPH/HEPH/PAH

BH24-10-02/CSQ642

BH24-18-01/CSQ655

Zinc

BH24-09-03/CSQ640

BH24-09-02 - RERUN 1/CTH423

BH24-09-02 - RERUN 2/CTH424

Arsenic

BH24-13-01 - RERUN 1/CTH433

BH24-13-01 - RERUN 2/CTH434

Lead

BH24-14-01 - RERUN 1/CTH435

BH24-14-01 - RERUN 2/CTH436

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B468562	D10-ANTHRACENE (sur.)	2024/08/07	90	50 - 140	93	50 - 140	102	%				
B468562	D8-ACENAPHTHYLENE (sur.)	2024/08/07	81	50 - 140	82	50 - 140	86	%				
B468562	D8-NAPHTHALENE (sur.)	2024/08/07	76	50 - 140	79	50 - 140	81	%				
B468562	TERPHENYL-D14 (sur.)	2024/08/07	104	50 - 140	100	50 - 140	116	%				
B468576	O-TERPHENYL (sur.)	2024/08/07	89	60 - 140	82	60 - 140	78	%				
B468830	D10-ANTHRACENE (sur.)	2024/08/07	81	50 - 140	86	50 - 140	90	%				
B468830	D8-ACENAPHTHYLENE (sur.)	2024/08/07	88	50 - 140	85	50 - 140	83	%				
B468830	D8-NAPHTHALENE (sur.)	2024/08/07	86	50 - 140	79	50 - 140	76	%				
B468830	TERPHENYL-D14 (sur.)	2024/08/07	101	50 - 140	105	50 - 140	111	%				
B468835	O-TERPHENYL (sur.)	2024/08/07	71	60 - 140	72	60 - 140	80	%				
B469387	D10-ANTHRACENE (sur.)	2024/08/08	81	50 - 140	82	50 - 140	83	%				
B469387	D8-ACENAPHTHYLENE (sur.)	2024/08/08	75	50 - 140	78	50 - 140	79	%				
B469387	D8-NAPHTHALENE (sur.)	2024/08/08	75	50 - 140	79	50 - 140	77	%				
B469387	TERPHENYL-D14 (sur.)	2024/08/08	100	50 - 140	100	50 - 140	104	%				
B469392	O-TERPHENYL (sur.)	2024/08/08	80	60 - 140	68	60 - 140	85	%				
B470636	1,4-Difluorobenzene (sur.)	2024/08/08			98	50 - 140	101	%				
B470636	4-Bromofluorobenzene (sur.)	2024/08/08			99	50 - 140	92	%				
B470636	D10-o-Xylene (sur.)	2024/08/08			94	50 - 140	98	%				
B470636	D4-1,2-Dichloroethane (sur.)	2024/08/08			107	50 - 140	106	%				
B471654	Extractable (MeOH) 1,4-Difluorobenzene (sur.)	2024/08/09	95	50 - 140	99	50 - 140	99	%				
B471654	Extractable (MeOH) 4-Bromofluorobenzene (sur.)	2024/08/09	96	50 - 140	99	50 - 140	97	%				
B471654	Extractable (MeOH) D10-o-Xylene (sur.)	2024/08/09	90	50 - 140	85	50 - 140	91	%				
B471654	Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	2024/08/09	103	50 - 140	107	50 - 140	106	%				
B478244	D10-ANTHRACENE (sur.)	2024/08/14	81	50 - 140	86	50 - 140	87	%				
B478244	D8-ACENAPHTHYLENE (sur.)	2024/08/14	77	50 - 140	83	50 - 140	79	%				
B478244	D8-NAPHTHALENE (sur.)	2024/08/14	77	50 - 140	82	50 - 140	78	%				
B478244	TERPHENYL-D14 (sur.)	2024/08/14	103	50 - 140	107	50 - 140	108	%				
B478259	O-TERPHENYL (sur.)	2024/08/15	89	60 - 140	75	60 - 140	89	%				
B478924	1,4-Difluorobenzene (sur.)	2024/08/16	101	50 - 140	102	50 - 140	102	%				
B478924	4-Bromofluorobenzene (sur.)	2024/08/16	115	50 - 140	115	50 - 140	110	%				



QUALITY ASSURANCE REPORT(CONT'D)

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B478924	D10-o-Xylene (sur.)	2024/08/16	112	50 - 140	94	50 - 140	97	%		20		
B478924	D4-1,2-Dichloroethane (sur.)	2024/08/16	111	50 - 140	101	50 - 140	73	%		50		
B481684	Extractable (MeOH) 1,4-Difluorobenzene (sur.)	2024/08/17	99	50 - 140	87	50 - 140	88	%		50		
B481684	Extractable (MeOH) 4-Bromofluorobenzene (sur.)	2024/08/17	94	50 - 140	101	50 - 140	104	%		50		
B481684	Extractable (MeOH) D10-o-Xylene (sur.)	2024/08/17	95	50 - 140	101	50 - 140	116	%		50		
B481684	Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	2024/08/17	100	50 - 140	113	50 - 140	118	%		50		
B468362	Moisture	2024/08/08					<0.30	%	3.7	20		
B468461	Moisture	2024/08/08					<0.30	%	0	20		
B468562	1-Methylnaphthalene	2024/08/07	87	50 - 140	89	50 - 140	<0.050	mg/kg	NC	50		
B468562	2-Methylnaphthalene	2024/08/07	88	50 - 140	87	50 - 140	<0.020	mg/kg	22	50		
B468562	Acenaphthene	2024/08/07	87	50 - 140	87	50 - 140	<0.0050	mg/kg	9.0	50		
B468562	Acenaphthylene	2024/08/07	83	50 - 140	83	50 - 140	<0.0050	mg/kg	NC	50		
B468562	Anthracene	2024/08/07	87	50 - 140	87	50 - 140	<0.0040	mg/kg	NC	50		
B468562	Benzo(a)anthracene	2024/08/07	77	50 - 140	72	50 - 140	<0.020	mg/kg	NC	50		
B468562	Benzo(a)pyrene	2024/08/07	79	50 - 140	81	50 - 140	<0.020	mg/kg	NC	50		
B468562	Benzo(b,j)fluoranthene	2024/08/07	80	50 - 140	78	50 - 140	<0.020	mg/kg	NC	50		
B468562	Benzo(b)fluoranthene	2024/08/07	84	50 - 140	81	50 - 140	<0.020	mg/kg	NC	50		
B468562	Benzo(g,h,i)perylene	2024/08/07	81	50 - 140	84	50 - 140	<0.050	mg/kg	NC	50		
B468562	Benzo(k)fluoranthene	2024/08/07	76	50 - 140	86	50 - 140	<0.020	mg/kg	NC	50		
B468562	Chrysene	2024/08/07	76	50 - 140	73	50 - 140	<0.020	mg/kg	NC	50		
B468562	Dibenz(a,h)anthracene	2024/08/07	84	50 - 140	88	50 - 140	<0.020	mg/kg	NC	50		
B468562	Fluoranthene	2024/08/07	94	50 - 140	90	50 - 140	<0.020	mg/kg	NC	50		
B468562	Fluorene	2024/08/07	79	50 - 140	81	50 - 140	<0.020	mg/kg	1.6	50		
B468562	Indeno(1,2,3-cd)pyrene	2024/08/07	86	50 - 140	90	50 - 140	<0.020	mg/kg	NC	50		
B468562	Naphthalene	2024/08/07	80	50 - 140	82	50 - 140	<0.010	mg/kg	30	50		
B468562	Phenanthrene	2024/08/07	80	50 - 140	80	50 - 140	<0.010	mg/kg	10	50		
B468562	Pyrene	2024/08/07	97	50 - 140	90	50 - 140	<0.020	mg/kg	NC	50		
B468562	Quinoline	2024/08/07	108	50 - 140	106	50 - 140	<0.050	mg/kg	NC	50		
B468569	Moisture	2024/08/08					<0.30	%	0	20		
B468576	EPH (C10-C19)	2024/08/08	120	60 - 140	111	70 - 130	<100	mg/kg	NC	40		



QUALITY ASSURANCE REPORT(CONT'D)

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B468576	EPH (C19-C32)	2024/08/08	108	60 - 140	102	70 - 130	<100	mg/kg	NC	40		
B468830	1-Methylnaphthalene	2024/08/07	86	50 - 140	83	50 - 140	<0.050	mg/kg	NC	50		
B468830	2-Methylnaphthalene	2024/08/07	91	50 - 140	87	50 - 140	<0.020	mg/kg	10	50		
B468830	Acenaphthene	2024/08/07	87	50 - 140	83	50 - 140	<0.0050	mg/kg	24	50		
B468830	Acenaphthylene	2024/08/07	88	50 - 140	86	50 - 140	<0.0050	mg/kg	2.8	50		
B468830	Anthracene	2024/08/07	77	50 - 140	82	50 - 140	<0.0040	mg/kg	4.4	50		
B468830	Benzo(a)anthracene	2024/08/07	62	50 - 140	79	50 - 140	<0.020	mg/kg	2.7	50		
B468830	Benzo(a)pyrene	2024/08/07	NC	50 - 140	85	50 - 140	<0.020	mg/kg	6.5	50		
B468830	Benzo(b&g)fluoranthene	2024/08/07	69	50 - 140	81	50 - 140	<0.020	mg/kg	7.5	50		
B468830	Benzo(b)fluoranthene	2024/08/07	76	50 - 140	89	50 - 140	<0.020	mg/kg	7.1	50		
B468830	Benzo(g,h,i)perylene	2024/08/07	66	50 - 140	91	50 - 140	<0.050	mg/kg	5.2	50		
B468830	Benzo(k)fluoranthene	2024/08/07	65	50 - 140	78	50 - 140	<0.020	mg/kg	0.39	50		
B468830	Chrysene	2024/08/07	NC	50 - 140	82	50 - 140	<0.020	mg/kg	5.5	50		
B468830	Dibenz(a,h)anthracene	2024/08/07	82	50 - 140	95	50 - 140	<0.020	mg/kg	1.8	50		
B468830	Fluoranthene	2024/08/07	NC	50 - 140	89	50 - 140	<0.020	mg/kg	1.0	50		
B468830	Fluorene	2024/08/07	88	50 - 140	88	50 - 140	<0.020	mg/kg	1.6	50		
B468830	Indeno(1,2,3-cd)pyrene	2024/08/07	68	50 - 140	89	50 - 140	<0.020	mg/kg	3.0	50		
B468830	Naphthalene	2024/08/07	93	50 - 140	89	50 - 140	<0.010	mg/kg	3.8	50		
B468830	Phenanthrene	2024/08/07	NC	50 - 140	81	50 - 140	<0.010	mg/kg	0.94	50		
B468830	Pyrene	2024/08/07	NC	50 - 140	81	50 - 140	<0.020	mg/kg	6.9	50		
B468830	Quinoline	2024/08/07	115	50 - 140	111	50 - 140	<0.050	mg/kg	NC	50		
B468835	EPH (C10-C19)	2024/08/07	105	60 - 140	105	70 - 130	<100	mg/kg	NC	40		
B468835	EPH (C19-C32)	2024/08/07	93	60 - 140	96	70 - 130	<100	mg/kg	14	40		
B469387	1-Methylnaphthalene	2024/08/08	72	50 - 140	75	50 - 140	<0.050	mg/kg	NC	50		
B469387	2-Methylnaphthalene	2024/08/08	76	50 - 140	79	50 - 140	<0.020	mg/kg	NC	50		
B469387	Acenaphthene	2024/08/08	73	50 - 140	76	50 - 140	<0.0050	mg/kg	NC	50		
B469387	Acenaphthylene	2024/08/08	75	50 - 140	79	50 - 140	<0.0050	mg/kg	NC	50		
B469387	Anthracene	2024/08/08	73	50 - 140	75	50 - 140	<0.0040	mg/kg	NC	50		
B469387	Benzo(a)anthracene	2024/08/08	69	50 - 140	74	50 - 140	<0.020	mg/kg	NC	50		
B469387	Benzo(a)pyrene	2024/08/08	74	50 - 140	78	50 - 140	<0.020	mg/kg	NC	50		
B469387	Benzo(b&g)fluoranthene	2024/08/08	67	50 - 140	72	50 - 140	<0.020	mg/kg	NC	50		



QUALITY ASSURANCE REPORT(CONT'D)

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B469387	Benzol(b)fluoranthene	2024/08/08	71	50 - 140	77	50 - 140	<0.020	mg/kg	NC	50		
B469387	Benzol(g,h,i)perylene	2024/08/08	80	50 - 140	83	50 - 140	<0.050	mg/kg	NC	50		
B469387	Benzol(k)fluoranthene	2024/08/08	73	50 - 140	75	50 - 140	<0.020	mg/kg	NC	50		
B469387	Chrysene	2024/08/08	71	50 - 140	76	50 - 140	<0.020	mg/kg	NC	50		
B469387	Dibenz(a,h)anthracene	2024/08/08	88	50 - 140	90	50 - 140	<0.020	mg/kg	NC	50		
B469387	Fluoranthene	2024/08/08	81	50 - 140	84	50 - 140	<0.020	mg/kg	NC	50		
B469387	Fluorene	2024/08/08	76	50 - 140	79	50 - 140	<0.020	mg/kg	NC	50		
B469387	Indeno(1,2,3-cd)pyrene	2024/08/08	80	50 - 140	84	50 - 140	<0.020	mg/kg	NC	50		
B469387	Naphthalene	2024/08/08	79	50 - 140	81	50 - 140	<0.010	mg/kg	NC	50		
B469387	Phenanthrene	2024/08/08	75	50 - 140	78	50 - 140	<0.010	mg/kg	NC	50		
B469387	Pyrene	2024/08/08	75	50 - 140	78	50 - 140	<0.020	mg/kg	NC	50		
B469387	Quinoline	2024/08/08	113	50 - 140	112	50 - 140	<0.050	mg/kg	NC	50		
B469392	EPH (C10-C19)	2024/08/08	106	60 - 140	91	70 - 130	<100	mg/kg	NC	40		
B469392	EPH (C19-C32)	2024/08/08	97	60 - 140	85	70 - 130	<100	mg/kg	NC	40		
B469880	Saturation %	2024/08/08					0	%	0.026	30	102	75 - 125
B469883	Total Aluminum (Al)	2024/08/08	NC	75 - 125	101	75 - 125	<100	mg/kg	0.48	40	96	70 - 130
B469883	Total Antimony (Sb)	2024/08/08	98	75 - 125	101	75 - 125	<0.10	mg/kg	1.4	30		
B469883	Total Arsenic (As)	2024/08/08	103	75 - 125	103	75 - 125	<0.20	mg/kg	0.23	30	109	70 - 130
B469883	Total Barium (Ba)	2024/08/08	112	75 - 125	101	75 - 125	<0.10	mg/kg	2.7	40	96	70 - 130
B469883	Total Beryllium (Be)	2024/08/08	99	75 - 125	102	75 - 125	<0.20	mg/kg	NC	30	92	70 - 130
B469883	Total Boron (B)	2024/08/08	97	75 - 125	102	75 - 125	<1.0	mg/kg	NC	30		
B469883	Total Cadmium (Cd)	2024/08/08	102	75 - 125	100	75 - 125	<0.050	mg/kg	5.9	30	107	70 - 130
B469883	Total Chromium (Cr)	2024/08/08	105	75 - 125	104	75 - 125	<0.50	mg/kg	2.4	30	86	70 - 130
B469883	Total Cobalt (Co)	2024/08/08	100	75 - 125	104	75 - 125	<0.10	mg/kg	0.85	30	98	70 - 130
B469883	Total Copper (Cu)	2024/08/08	104	75 - 125	108	75 - 125	<0.50	mg/kg	1.9	30	103	70 - 130
B469883	Total Iron (Fe)	2024/08/08	NC	75 - 125	97	75 - 125	<100	mg/kg	0.60	30	95	70 - 130
B469883	Total Lead (Pb)	2024/08/08	100	75 - 125	100	75 - 125	<0.10	mg/kg	0.42	40	102	70 - 130
B469883	Total Lithium (Li)	2024/08/08	101	75 - 125	101	75 - 125	<0.50	mg/kg	2.4	30	92	70 - 130
B469883	Total Manganese (Mn)	2024/08/08	119	75 - 125	101	75 - 125	<0.20	mg/kg	1.8	30	104	70 - 130
B469883	Total Mercury (Hg)	2024/08/08	101	75 - 125	100	75 - 125	<0.050	mg/kg	NC	40	105	70 - 130
B469883	Total Molybdenum (Mo)	2024/08/08	102	75 - 125	99	75 - 125	<0.10	mg/kg	3.0	40	104	70 - 130



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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B469883	Total Nickel (Ni)	2024/08/08	99	75 - 125	101	75 - 125	<0.50	mg/kg	2.3	30	102	70 - 130
B469883	Total Selenium (Se)	2024/08/08	106	75 - 125	106	75 - 125	<0.50	mg/kg	NC	30	90	70 - 130
B469883	Total Silver (Ag)	2024/08/08	95	75 - 125	93	75 - 125	<0.050	mg/kg	NC	40	99	70 - 130
B469883	Total Strontium (Sr)	2024/08/08	116	75 - 125	103	75 - 125	<0.10	mg/kg	3.6	40	101	70 - 130
B469883	Total Thallium (Tl)	2024/08/08	95	75 - 125	95	75 - 125	<0.050	mg/kg	NC	30		
B469883	Total Tin (Sn)	2024/08/08	107	75 - 125	103	75 - 125	<0.10	mg/kg	9.0	40	118	70 - 130
B469883	Total Tungsten (W)	2024/08/08	94	75 - 125	101	75 - 125	<0.50	mg/kg	NC	40		
B469883	Total Uranium (U)	2024/08/08	98	75 - 125	98	75 - 125	<0.050	mg/kg	1.9	30	94	70 - 130
B469883	Total Vanadium (V)	2024/08/08	108	75 - 125	101	75 - 125	<1.0	mg/kg	2.5	30	96	70 - 130
B469883	Total Zinc (Zn)	2024/08/08	97	75 - 125	99	75 - 125	<1.0	mg/kg	2.8	30	101	70 - 130
B469888	Soluble (2:1) pH	2024/08/08			100	97 - 103			1.1	N/A		
B469891	Total Aluminum (Al)	2024/08/08	NC	75 - 125	100	75 - 125	<100	mg/kg	4.3	40	100	70 - 130
B469891	Total Antimony (Sb)	2024/08/08	87	75 - 125	101	75 - 125	<0.10	mg/kg	10	30		
B469891	Total Arsenic (As)	2024/08/08	96	75 - 125	101	75 - 125	<0.20	mg/kg	0.93	30	108	70 - 130
B469891	Total Barium (Ba)	2024/08/08	102	75 - 125	98	75 - 125	<0.10	mg/kg	3.8	40	95	70 - 130
B469891	Total Beryllium (Be)	2024/08/08	97	75 - 125	100	75 - 125	<0.20	mg/kg	2.2	30	97	70 - 130
B469891	Total Boron (B)	2024/08/08	104	75 - 125	100	75 - 125	<1.0	mg/kg	20	30		
B469891	Total Cadmium (Cd)	2024/08/08	97	75 - 125	101	75 - 125	<0.050	mg/kg	NC	30	105	70 - 130
B469891	Total Chromium (Cr)	2024/08/08	97	75 - 125	103	75 - 125	<0.50	mg/kg	2.1	30	89	70 - 130
B469891	Total Cobalt (Co)	2024/08/08	96	75 - 125	105	75 - 125	<0.10	mg/kg	3.0	30	99	70 - 130
B469891	Total Copper (Cu)	2024/08/08	97	75 - 125	104	75 - 125	<0.50	mg/kg	0.82	30	102	70 - 130
B469891	Total Iron (Fe)	2024/08/08	NC	75 - 125	98	75 - 125	<100	mg/kg	0.49	30	94	70 - 130
B469891	Total Lead (Pb)	2024/08/08	96	75 - 125	98	75 - 125	<0.10	mg/kg	7.8	40	101	70 - 130
B469891	Total Lithium (Li)	2024/08/08	103	75 - 125	102	75 - 125	<0.50	mg/kg	7.1	30	93	70 - 130
B469891	Total Manganese (Mn)	2024/08/08	NC	75 - 125	100	75 - 125	<0.20	mg/kg	0.89	30	104	70 - 130
B469891	Total Mercury (Hg)	2024/08/08	97	75 - 125	98	75 - 125	<0.050	mg/kg	NC	40	102	70 - 130
B469891	Total Molybdenum (Mo)	2024/08/08	95	75 - 125	97	75 - 125	<0.10	mg/kg	12	40	103	70 - 130
B469891	Total Nickel (Ni)	2024/08/08	92	75 - 125	100	75 - 125	<0.50	mg/kg	0.71	30	103	70 - 130
B469891	Total Selenium (Se)	2024/08/08	101	75 - 125	107	75 - 125	<0.50	mg/kg	NC	30	91	70 - 130
B469891	Total Silver (Ag)	2024/08/08	90	75 - 125	93	75 - 125	<0.050	mg/kg	4.9	40	103	70 - 130
B469891	Total Strontium (Sr)	2024/08/08	104	75 - 125	103	75 - 125	<0.10	mg/kg	7.9	40	100	70 - 130



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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B469891	Total Thallium (Tl)	2024/08/08	91	75 - 125	93	75 - 125	<0.050	mg/kg	7.7	30		
B469891	Total Tin (Sn)	2024/08/08	100	75 - 125	103	75 - 125	<0.10	mg/kg	2.2	40	115	70 - 130
B469891	Total Tungsten (W)	2024/08/08	69 (1)	75 - 125	101	75 - 125	<0.50	mg/kg	NC	40		
B469891	Total Uranium (U)	2024/08/08	95	75 - 125	97	75 - 125	<0.050	mg/kg	6.8	30	92	70 - 130
B469891	Total Vanadium (V)	2024/08/08	101	75 - 125	99	75 - 125	<1.0	mg/kg	2.2	30	99	70 - 130
B469891	Total Zinc (Zn)	2024/08/08	92	75 - 125	97	75 - 125	<1.0	mg/kg	3.0	30	100	70 - 130
B469894	Soluble (2:1) pH	2024/08/08			100	97 - 103			0.31	N/A		
B469902	Saturation %	2024/08/08					0	%	0.017	30	104	75 - 125
B469949	Soluble Sodium (Na)	2024/08/08	103	80 - 120	96	80 - 120	<5.0	mg/L	7.2	40	104	75 - 125
B469958	Soluble Sodium (Na)	2024/08/08	96	80 - 120	95	80 - 120	<5.0	mg/L	0.73	40	90	75 - 125
B469969	Soluble Chloride (Cl)	2024/08/08	102	75 - 125	99	80 - 120	<10	mg/L	15	30	88	75 - 125
B469975	Soluble Chloride (Cl)	2024/08/08	105	75 - 125	100	80 - 120	<10	mg/L	6.5	30	83	75 - 125
B470636	1,1,1-trichloroethane	2024/08/08			95	60 - 130	<0.020	mg/kg				
B470636	1,1,2,2-tetrachloroethane	2024/08/08			97	60 - 130	<0.020	mg/kg				
B470636	1,1,2-trichloroethane	2024/08/08			96	60 - 130	<0.020	mg/kg				
B470636	1,1-dichloroethane	2024/08/08			105	60 - 130	<0.025	mg/kg				
B470636	1,1-dichloroethene	2024/08/08			112	60 - 130	<0.025	mg/kg				
B470636	1,2,4-trichlorobenzene	2024/08/08			101	60 - 130	<0.030	mg/kg				
B470636	1,2,4-trimethylbenzene	2024/08/08			124	60 - 130	<0.20	mg/kg				
B470636	1,2-dibromoethane	2024/08/08			97	60 - 130	<0.020	mg/kg				
B470636	1,2-dichlorobenzene	2024/08/08			101	60 - 130	<0.020	mg/kg				
B470636	1,2-dichloroethane	2024/08/08			97	60 - 130	<0.020	mg/kg				
B470636	1,2-dichloropropane	2024/08/08			101	60 - 130	<0.020	mg/kg				
B470636	1,3,5-trimethylbenzene	2024/08/08			118	60 - 130	<0.20	mg/kg				
B470636	1,3-Butadiene	2024/08/08			108	50 - 140	<0.080	mg/kg				
B470636	2-Butanone (MEK)	2024/08/08			126	50 - 140	<15	mg/kg				
B470636	4-Methyl-2-pentanone (MIBK)	2024/08/08			112	50 - 140	<0.50	mg/kg				
B470636	Acetone	2024/08/08			114	50 - 140	<5.0	mg/kg				
B470636	Benzene	2024/08/08			109	60 - 130	<0.0050	mg/kg				
B470636	Bromobenzene	2024/08/08			98	60 - 130	<0.20	mg/kg				
B470636	Bromodichloromethane	2024/08/08			97	60 - 130	<0.050	mg/kg				



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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B470636	Carbon tetrachloride	2024/08/08			95	60 - 130	<0.020	mg/kg				
B470636	Chlorobenzene	2024/08/08			99	60 - 130	<0.020	mg/kg				
B470636	Chloroethane	2024/08/08			72	50 - 140	<0.10	mg/kg				
B470636	cis-1,2-dichloroethene	2024/08/08			100	60 - 130	<0.030	mg/kg				
B470636	Dichlorodifluoromethane	2024/08/08			54	50 - 140	<0.20	mg/kg				
B470636	Dichloromethane	2024/08/08			93	60 - 130	<0.080	mg/kg				
B470636	Ethylbenzene	2024/08/08			101	60 - 130	<0.010	mg/kg				
B470636	Hexane	2024/08/08			89	60 - 130	<0.50	mg/kg				
B470636	Isopropylbenzene	2024/08/08			105	60 - 130	<0.20	mg/kg				
B470636	m & p-Xylene	2024/08/08			104	60 - 130	<0.040	mg/kg				
B470636	Methylcyclohexane	2024/08/08			102	60 - 130	<0.20	mg/kg				
B470636	Methyl-tert-butylether (MTBE)	2024/08/08			105	60 - 130	<0.10	mg/kg				
B470636	n-Decane	2024/08/08			133 (2)	60 - 130	<2.0	mg/kg				
B470636	o-Xylene	2024/08/08			107	60 - 130	<0.040	mg/kg				
B470636	Styrene	2024/08/08			94	60 - 130	<0.030	mg/kg				
B470636	Tetrachloroethene	2024/08/08			99	60 - 130	<0.010	mg/kg				
B470636	Toluene	2024/08/08			89	60 - 130	<0.050	mg/kg				
B470636	trans-1,2-dichloroethene	2024/08/08			110	60 - 130	<0.030	mg/kg				
B470636	Trichloroethene	2024/08/08			97	60 - 130	<0.0090	mg/kg				
B470636	VH C6-C10	2024/08/08			89	70 - 130	<10	mg/kg				
B470636	Vinyl chloride	2024/08/08			99	50 - 140	<0.040	mg/kg				
B470636	Xylenes (Total)	2024/08/08					<0.040	mg/kg				
B471654	Extractable (MeOH) Carbon disulfide	2024/08/09	96	60 - 140	65	60 - 140	<15	mg/kg	NC	50		
B478219	Moisture	2024/08/15					<0.30	%	0	20		
B478244	1-Methylnaphthalene	2024/08/15	74	50 - 140	77	50 - 140	<0.050	mg/kg	NC	50		
B478244	2-Methylnaphthalene	2024/08/15	78	50 - 140	82	50 - 140	<0.020	mg/kg	NC	50		
B478244	Acenaphthene	2024/08/15	73	50 - 140	76	50 - 140	<0.0050	mg/kg	NC	50		
B478244	Acenaphthylene	2024/08/15	76	50 - 140	79	50 - 140	<0.0050	mg/kg	NC	50		
B478244	Anthracene	2024/08/15	72	50 - 140	75	50 - 140	<0.0040	mg/kg	NC	50		
B478244	Benzo(a)anthracene	2024/08/15	66	50 - 140	68	50 - 140	<0.020	mg/kg	NC	50		
B478244	Benzo(a)pyrene	2024/08/15	71	50 - 140	75	50 - 140	<0.020	mg/kg	NC	50		



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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B478244	Benzo(b&l)fluoranthene	2024/08/15	67	50 - 140	70	50 - 140	<0.020	mg/kg	NC	50		
B478244	Benzo(b)fluoranthene	2024/08/15	73	50 - 140	75	50 - 140	<0.020	mg/kg	NC	50		
B478244	Benzo(g,h,i)perylene	2024/08/15	71	50 - 140	76	50 - 140	<0.050	mg/kg	NC	50		
B478244	Benzo(k)fluoranthene	2024/08/15	68	50 - 140	73	50 - 140	<0.020	mg/kg	NC	50		
B478244	Chrysene	2024/08/15	69	50 - 140	71	50 - 140	<0.020	mg/kg	NC	50		
B478244	Dibenz(a,h)anthracene	2024/08/15	77	50 - 140	83	50 - 140	<0.020	mg/kg	NC	50		
B478244	Fluoranthene	2024/08/15	78	50 - 140	80	50 - 140	<0.020	mg/kg	NC	50		
B478244	Fluorene	2024/08/15	75	50 - 140	79	50 - 140	<0.020	mg/kg	NC	50		
B478244	Indeno(1,2,3-cd)pyrene	2024/08/15	73	50 - 140	78	50 - 140	<0.020	mg/kg	NC	50		
B478244	Naphthalene	2024/08/15	80	50 - 140	84	50 - 140	<0.010	mg/kg	NC	50		
B478244	Phenanthrene	2024/08/15	70	50 - 140	72	50 - 140	<0.010	mg/kg	NC	50		
B478244	Pyrene	2024/08/15	70	50 - 140	72	50 - 140	<0.020	mg/kg	NC	50		
B478244	Quinoline	2024/08/15	104	50 - 140	106	50 - 140	<0.050	mg/kg	NC	50		
B478259	EPH (C10-C19)	2024/08/15	107	60 - 140	92	70 - 130	<100	mg/kg	NC	40		
B478259	EPH (C19-C32)	2024/08/15	100	60 - 140	84	70 - 130	<100	mg/kg	NC	40		
B478797	Saturation %	2024/08/15					0	%	0	30	101	75 - 125
B478924	1,1,1-trichloroethane	2024/08/16	106	50 - 140	96	60 - 130	<0.020	mg/kg	NC	50		
B478924	1,1,2,2-tetrachloroethane	2024/08/16	90	50 - 140	92	60 - 130	<0.020	mg/kg	NC	50		
B478924	1,1,2-trichloroethane	2024/08/16	104	50 - 140	101	60 - 130	<0.020	mg/kg	NC	50		
B478924	1,1-dichloroethane	2024/08/16	99	50 - 140	92	60 - 130	<0.025	mg/kg	NC	50		
B478924	1,1-dichloroethene	2024/08/16	117	50 - 140	110	60 - 130	<0.025	mg/kg	NC	50		
B478924	1,2,4-trichlorobenzene	2024/08/16	111	50 - 140	110	60 - 130	<0.030	mg/kg	NC	50		
B478924	1,2,4-trimethylbenzene	2024/08/16	121	50 - 140	115	60 - 130	<0.20	mg/kg	NC	50		
B478924	1,2-dibromoethane	2024/08/16	112	50 - 140	106	60 - 130	<0.020	mg/kg	NC	50		
B478924	1,2-dichlorobenzene	2024/08/16	107	50 - 140	109	60 - 130	<0.020	mg/kg	NC	50		
B478924	1,2-dichloroethane	2024/08/16	105	50 - 140	100	60 - 130	<0.020	mg/kg	NC	50		
B478924	1,2-dichloropropane	2024/08/16	98	50 - 140	91	60 - 130	<0.020	mg/kg	NC	50		
B478924	1,3,5-trimethylbenzene	2024/08/16	113	50 - 140	107	60 - 130	<0.20	mg/kg	NC	50		
B478924	1,3-Butadiene	2024/08/16	112	50 - 140	67	50 - 140	<0.080	mg/kg	NC	50		
B478924	2-Butanone (MEK)	2024/08/16			135	50 - 140	<15	mg/kg	NC	50		
B478924	4-Methyl-2-pentanone (MIBK)	2024/08/16			128	50 - 140	<0.50	mg/kg	NC	50		



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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B478924	Acetone	2024/08/16			109	50 - 140	<5.0	mg/kg	NC	50		
B478924	Benzene	2024/08/16	109	50 - 140	101	60 - 130	<0.0050	mg/kg	NC	50		
B478924	Bromobenzene	2024/08/16	109	50 - 140	106	60 - 130	<0.20	mg/kg	NC	50		
B478924	Bromodichloromethane	2024/08/16	103	50 - 140	98	60 - 130	<0.050	mg/kg	NC	50		
B478924	Carbon tetrachloride	2024/08/16	112	50 - 140	100	60 - 130	<0.020	mg/kg	NC	50		
B478924	Chlorobenzene	2024/08/16	109	50 - 140	103	60 - 130	<0.020	mg/kg	NC	50		
B478924	Chloroethane	2024/08/16	68	50 - 140	94	50 - 140	<0.10	mg/kg	NC	50		
B478924	cis-1,2-dichloroethene	2024/08/16	117	50 - 140	111	60 - 130	<0.030	mg/kg	NC	50		
B478924	Dichlorodifluoromethane	2024/08/16	84	50 - 140	68	50 - 140	<0.20	mg/kg	NC	50		
B478924	Dichloromethane	2024/08/16	92	50 - 140	89	60 - 130	<0.080	mg/kg	NC	50		
B478924	Ethylbenzene	2024/08/16	104	50 - 140	94	60 - 130	<0.010	mg/kg	NC	50		
B478924	Hexane	2024/08/16	92	50 - 140	82	60 - 130	<0.50	mg/kg	NC	50		
B478924	Isopropylbenzene	2024/08/16	109	50 - 140	102	60 - 130	<0.20	mg/kg	NC	50		
B478924	m & p-Xylene	2024/08/16	105	50 - 140	96	60 - 130	<0.040	mg/kg	NC	50		
B478924	Methylcyclohexane	2024/08/16	110	50 - 140	99	60 - 130	<0.20	mg/kg	NC	50		
B478924	Methyl-tert-butylether (MTBE)	2024/08/16	106	50 - 140	103	60 - 130	<0.10	mg/kg	NC	50		
B478924	n-Decane	2024/08/16	89	50 - 140	103	60 - 130	<2.0	mg/kg	NC	50		
B478924	o-Xylene	2024/08/16	103	50 - 140	97	60 - 130	<0.040	mg/kg	NC	50		
B478924	Styrene	2024/08/16	118	50 - 140	113	60 - 130	<0.030	mg/kg	NC	50		
B478924	Tetrachloroethene	2024/08/16	119	50 - 140	114	60 - 130	<0.010	mg/kg	NC	50		
B478924	Toluene	2024/08/16	105	50 - 140	99	60 - 130	<0.050	mg/kg	NC	50		
B478924	trans-1,2-dichloroethene	2024/08/16	120	50 - 140	113	60 - 130	<0.030	mg/kg	NC	50		
B478924	Trichloroethene	2024/08/16	118	50 - 140	107	60 - 130	<0.0090	mg/kg	NC	50		
B478924	VH C6-C10	2024/08/16			109	70 - 130	<10	mg/kg	NC	50		
B478924	Vinyl chloride	2024/08/16	79	50 - 140	71	50 - 140	<0.040	mg/kg	NC	50		
B478924	Xylenes (Total)	2024/08/16					<0.040	mg/kg	NC	50		
B478972	Total Aluminum (Al)	2024/08/16	NC	75 - 125	103	75 - 125	<100	mg/kg	6.7	40	88	70 - 130
B478972	Total Antimony (Sb)	2024/08/16	98	75 - 125	106	75 - 125	<0.10	mg/kg	0.63	30		
B478972	Total Arsenic (As)	2024/08/16	101	75 - 125	103	75 - 125	<0.20	mg/kg	6.8	30	99	70 - 130
B478972	Total Barium (Ba)	2024/08/16	108	75 - 125	104	75 - 125	<0.10	mg/kg	3.6	40	92	70 - 130
B478972	Total Beryllium (Be)	2024/08/16	99	75 - 125	103	75 - 125	<0.20	mg/kg	NC	30	88	70 - 130



QUALITY ASSURANCE REPORT(CONT'D)

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
B478972	Total Boron (B)	2024/08/16	93	75 - 125	99	75 - 125	<1.0	mg/kg	16	30		
B478972	Total Cadmium (Cd)	2024/08/16	102	75 - 125	104	75 - 125	<0.050	mg/kg	2.1	30	101	70 - 130
B478972	Total Chromium (Cr)	2024/08/16	99	75 - 125	105	75 - 125	<0.50	mg/kg	1.7	30	82	70 - 130
B478972	Total Cobalt (Co)	2024/08/16	104	75 - 125	109	75 - 125	<0.10	mg/kg	5.5	30	92	70 - 130
B478972	Total Copper (Cu)	2024/08/16	100	75 - 125	105	75 - 125	<0.50	mg/kg	5.5	30	97	70 - 130
B478972	Total Iron (Fe)	2024/08/16	NC	75 - 125	106	75 - 125	<100	mg/kg	3.2	30	94	70 - 130
B478972	Total Lead (Pb)	2024/08/16	102	75 - 125	104	75 - 125	<0.10	mg/kg	3.7	40	99	70 - 130
B478972	Total Lithium (Li)	2024/08/16	101	75 - 125	102	75 - 125	<0.50	mg/kg	5.5	30	86	70 - 130
B478972	Total Manganese (Mn)	2024/08/16	119	75 - 125	104	75 - 125	<0.20	mg/kg	2.2	30	100	70 - 130
B478972	Total Mercury (Hg)	2024/08/16	104	75 - 125	106	75 - 125	<0.050	mg/kg	NC	40	98	70 - 130
B478972	Total Molybdenum (Mo)	2024/08/16	103	75 - 125	103	75 - 125	<0.10	mg/kg	8.9	40	100	70 - 130
B478972	Total Nickel (Ni)	2024/08/16	99	75 - 125	103	75 - 125	<0.50	mg/kg	2.6	30	96	70 - 130
B478972	Total Selenium (Se)	2024/08/16	103	75 - 125	105	75 - 125	<0.50	mg/kg	NC	30	72	70 - 130
B478972	Total Silver (Ag)	2024/08/16	90	75 - 125	91	75 - 125	<0.050	mg/kg	NC	40	92	70 - 130
B478972	Total Strontium (Sr)	2024/08/16	119	75 - 125	104	75 - 125	<0.10	mg/kg	4.1	40	95	70 - 130
B478972	Total Thallium (Tl)	2024/08/16	95	75 - 125	96	75 - 125	<0.050	mg/kg	8.2	30		
B478972	Total Tin (Sn)	2024/08/16	104	75 - 125	108	75 - 125	<0.10	mg/kg	3.0	40	109	70 - 130
B478972	Total Tungsten (W)	2024/08/16	94	75 - 125	108	75 - 125	<0.50	mg/kg	NC	40		
B478972	Total Uranium (U)	2024/08/16	101	75 - 125	103	75 - 125	<0.050	mg/kg	2.3	30	100	70 - 130
B478972	Total Vanadium (V)	2024/08/16	103	75 - 125	104	75 - 125	<1.0	mg/kg	5.5	30	91	70 - 130
B478972	Total Zinc (Zn)	2024/08/16	100	75 - 125	104	75 - 125	<1.0	mg/kg	2.0	30	97	70 - 130
B478979	Soluble (2:1) pH	2024/08/16			100	97 - 103			0.14	N/A		
B479073	Soluble Sodium (Na)	2024/08/15	90	80 - 120	93	80 - 120	<5.0	mg/L	1.4	40	89	75 - 125
B479205	Soluble Chloride (Cl)	2024/08/15	108	75 - 125	102	80 - 120	<10	mg/L	9.2	30	84	75 - 125
B480247	Soluble (2:1) pH	2024/08/16			100	97 - 103			0.39	N/A		
B480261	Total Zinc (Zn)	2024/08/16	100	75 - 125	104	75 - 125	<1.0	mg/kg	0.039	30	104	70 - 130



QUALITY ASSURANCE REPORT(CONT'D)

Thurber Engineering Ltd.
Client Project #: 56763
Site Location: ESQUIMALT, BC
Your P.O. #: 56763
Sampler Initials: KSK

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits

B481684 Extractable (MeOH) Carbon disulfide

2024/08/17

91

60 - 140

60

60 - 140

<15

mg/kg

NC

50

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Spike recovery exceeds acceptance criteria (high recovery). As results are non-detect, there is no impact on data quality.



BUREAU
VERITAS

Bureau Veritas Job #: C459220

Report Date: 2024/08/20

Thurber Engineering Ltd.

Client Project #: 56763

Site Location: ESQUIMALT, BC

Your P.O. #: 56763

Sampler Initials: KSK

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Mauro Oselin, P.Chem., QP, Scientific Specialist



Bureau Veritas Proprietary Software
Logiciel Propriétaire de Bureau Veritas

Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Raphael Kwan, Senior Manager, BC and Yukon Regions responsible for British Columbia Environmental laboratory operations.

CHAIN OF CUSTODY RECORD
ENV CCC - 02015/1

$$\frac{2}{2} = 1$$

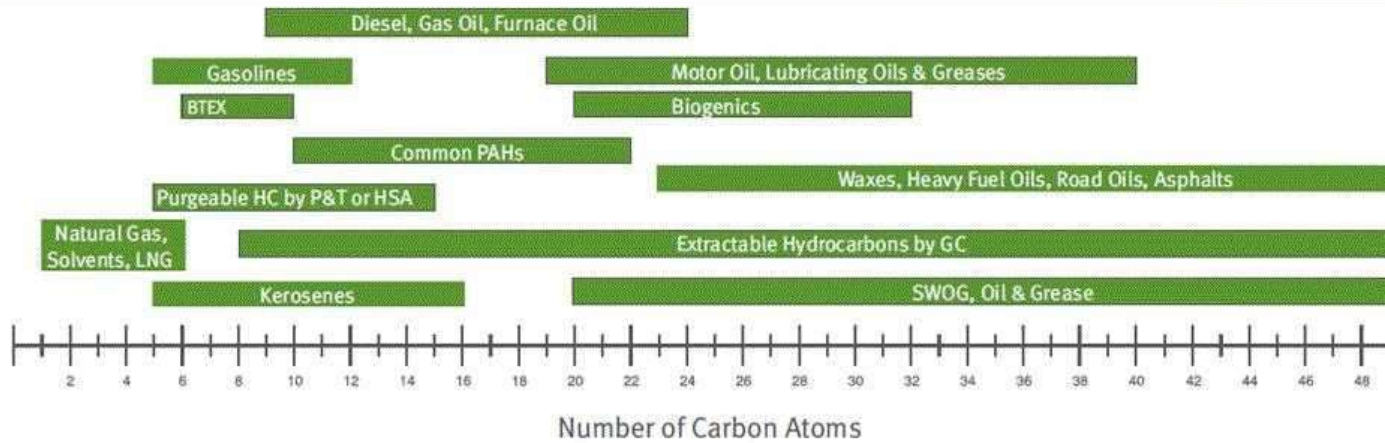
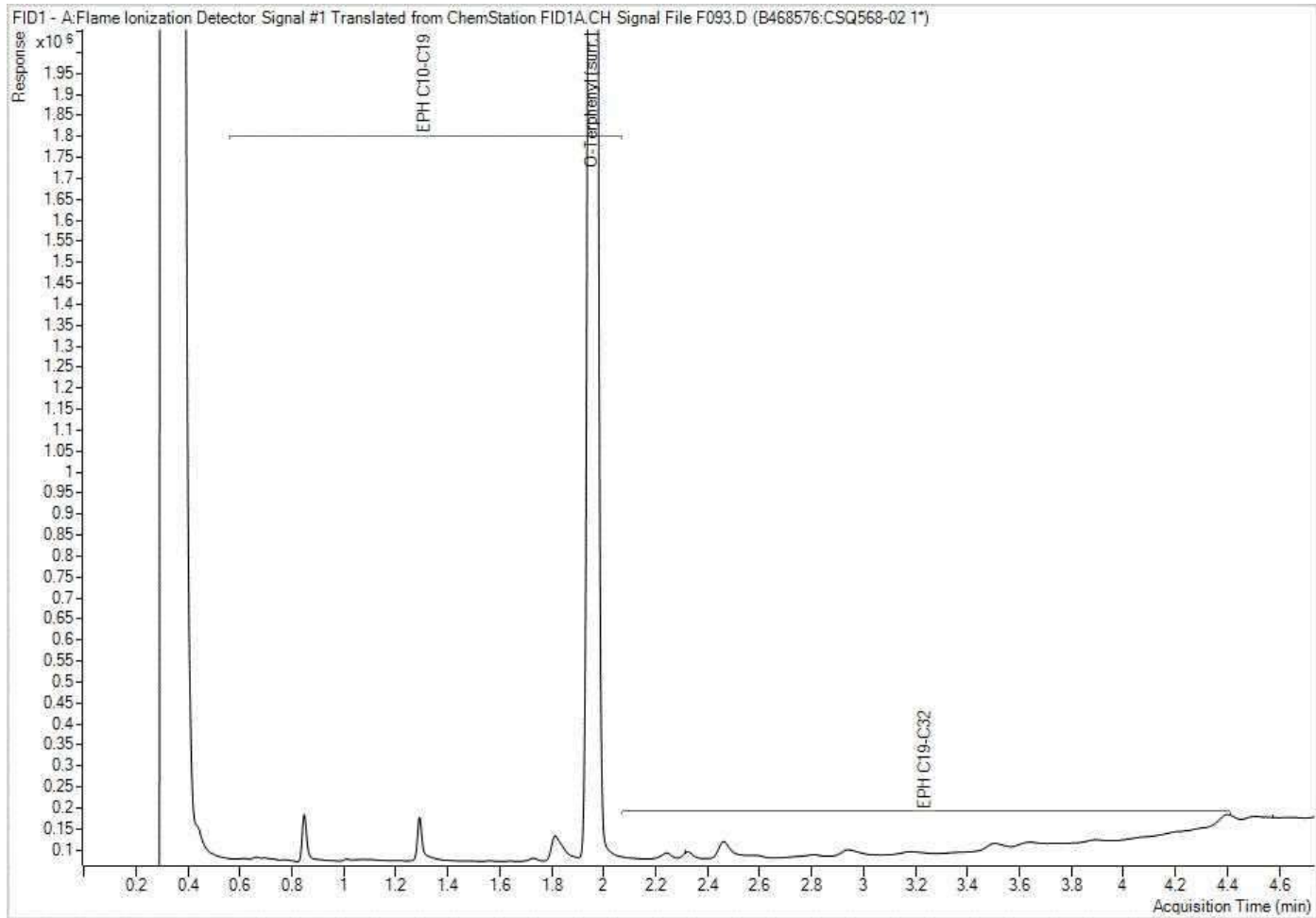
Company:	IEC	0
Contact Name:	Leah Bui	0
Project #:	56765	0

FOOTNOTES

SAMPLES MUST BE KEPT COOL. (DO NOT EXCEED TIME OF SAMPLES UNTIL DELIVERY TO BULK ANALYSTS)

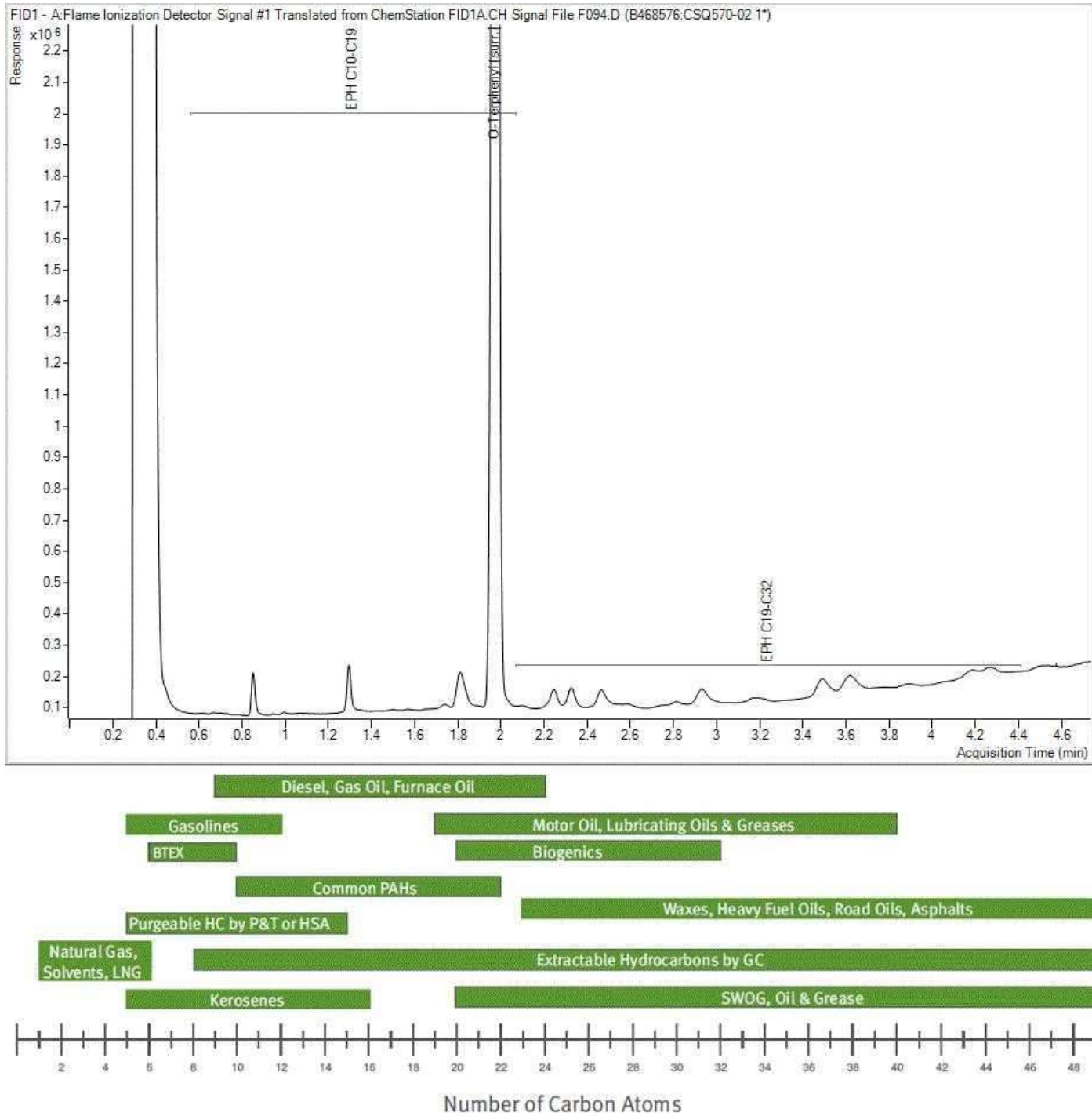
Company:		15C	
Contact Name:		Lynn Scott	
Project #:		56765	
SAMPLE MONTH: APR COQ: 1-2001 FROM TIME OF SAMPLING UNTIL DELIVERY TO END USER: N/A			
Sample Identification		Core Sampling	
Core	Sample	Core	Sample
14	GH24-07-01	14	GH24-07-01
15	GH24-08-01	15	GH24-08-01
16	GH24-09-01	16	GH24-09-01
17	GH24-09-03	17	GH24-09-03
18	GH24-10-01	18	GH24-10-01
19	GH24-10-02	19	GH24-10-02
20	GH24-11-01	20	GH24-11-01
21	GH24-12-01	21	GH24-12-01
22	GH24-13-01	22	GH24-13-01
23	GH24-13-02	23	GH24-13-02
24	GH24-14-01	24	GH24-14-01
25	GH24-15-01	25	GH24-15-01
26	GH24-15-02	26	GH24-15-02
27	GH24-16-01	27	GH24-16-01
28	GH24-17-01	28	GH24-17-01
29	GH24-17-02	29	GH24-17-02
30	GH24-18-01	30	GH24-18-01
31	GH24-18-02	31	GH24-18-02
32	GH24-19-01	32	GH24-19-01
33	GH24-19-02	33	GH24-19-02
34	GH24-20-01	34	GH24-20-01
35	GH24-20-02	35	GH24-20-02
36	GH24-21-01	36	GH24-21-01
37	GH24-21-02	37	GH24-21-02
38	GH24-22-01	38	GH24-22-01
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EPH in Soil by GC/FID Chromatogram



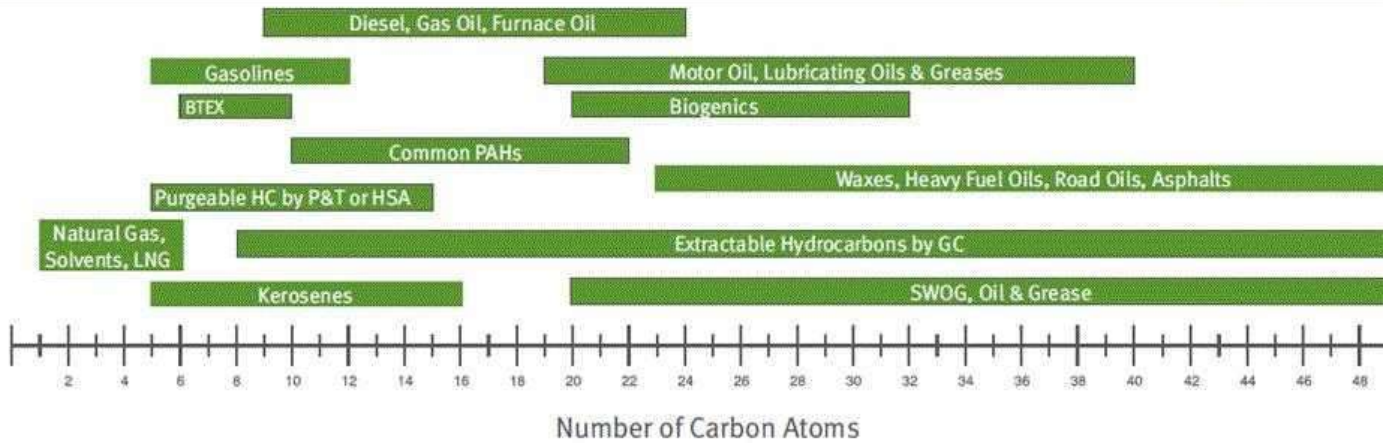
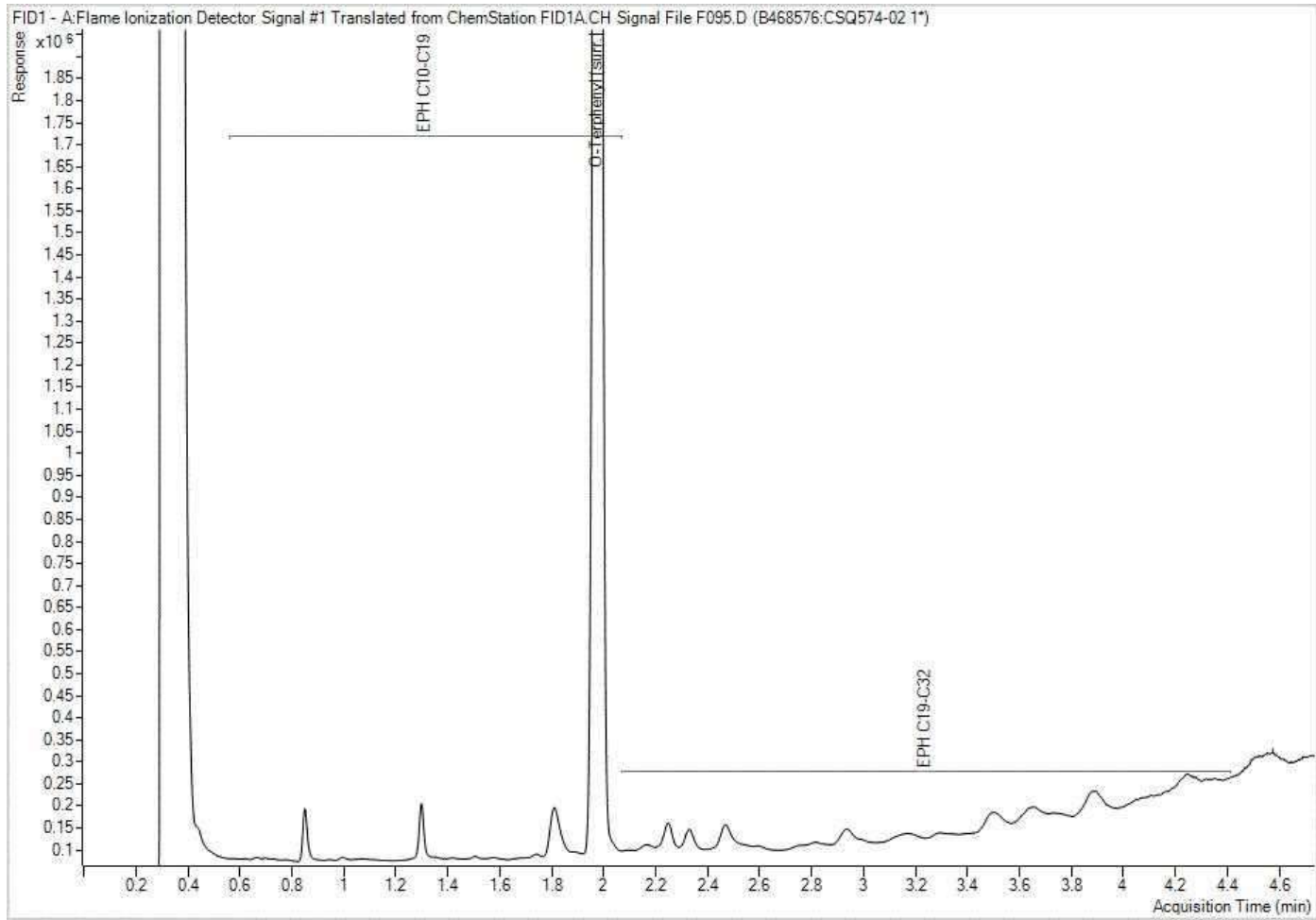
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EPH in Soil by GC/FID Chromatogram



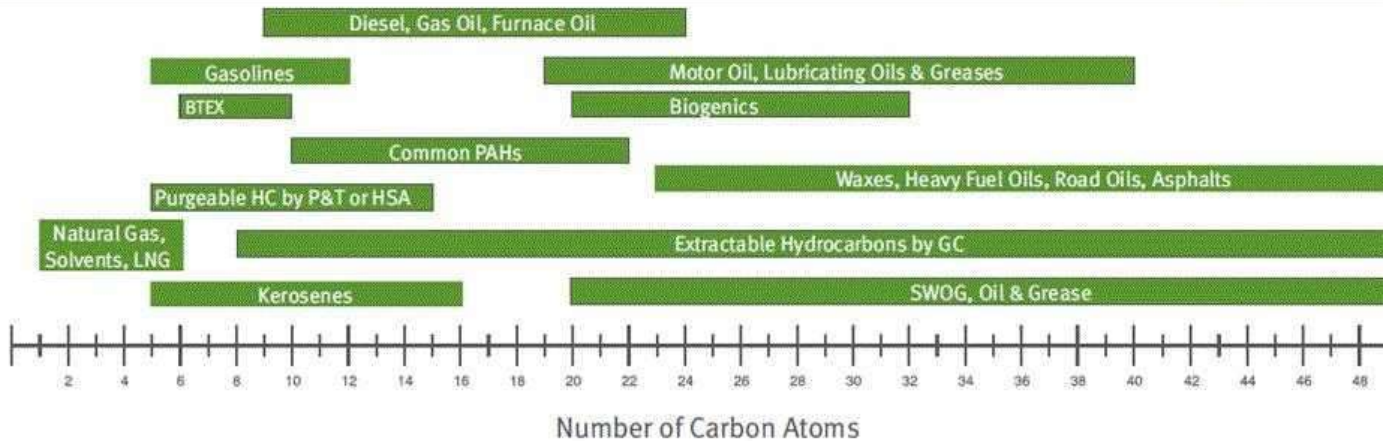
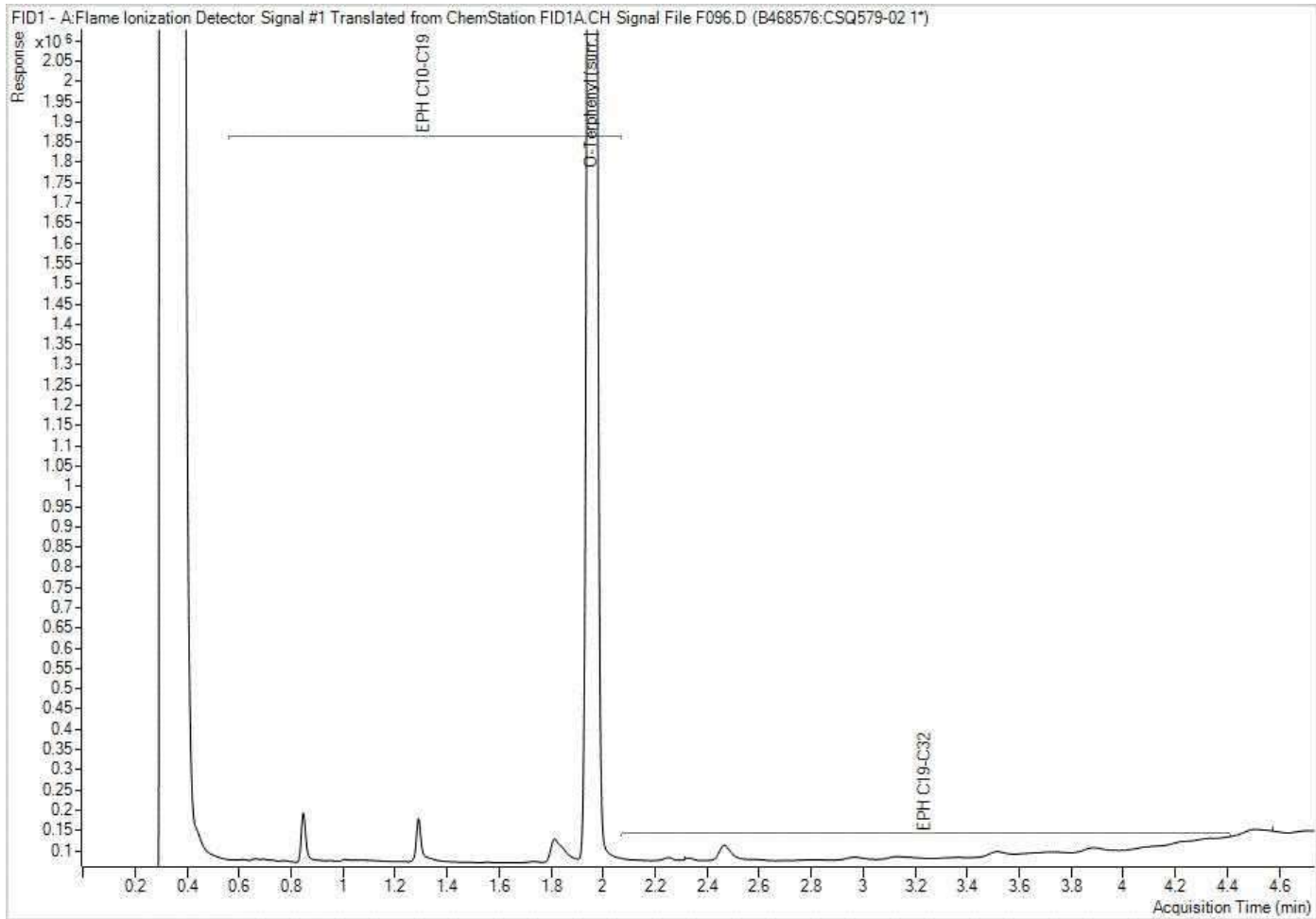
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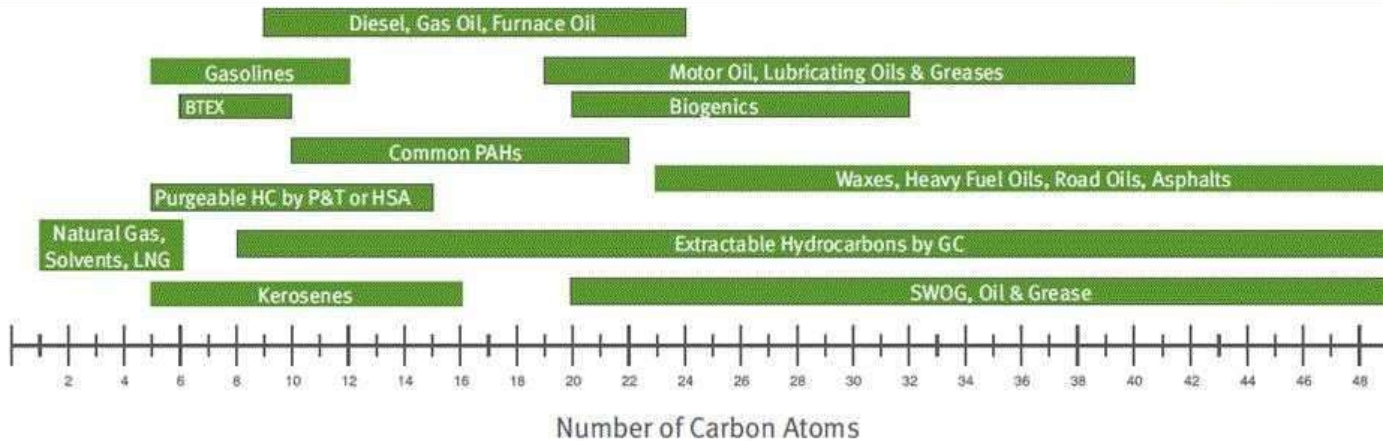
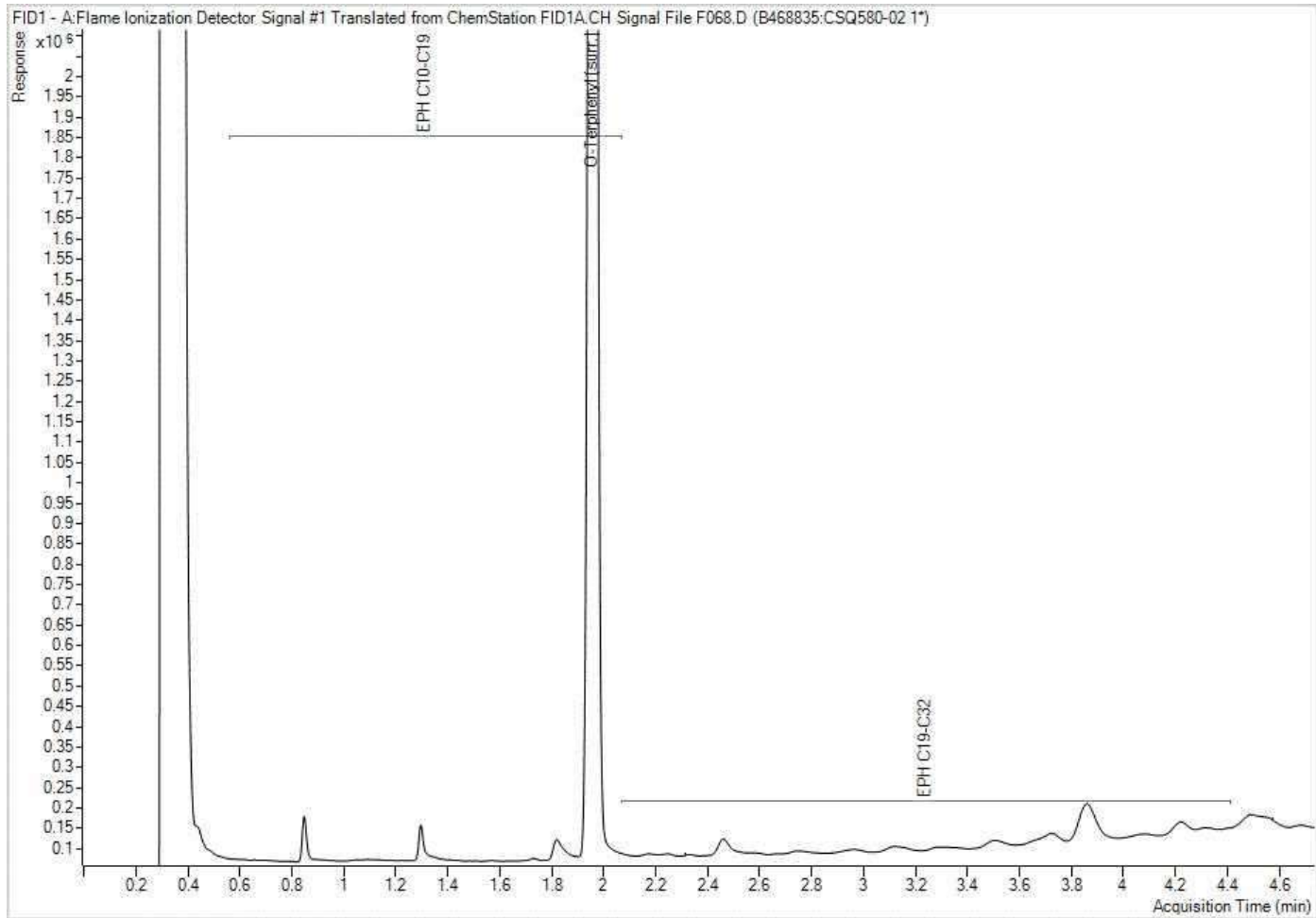
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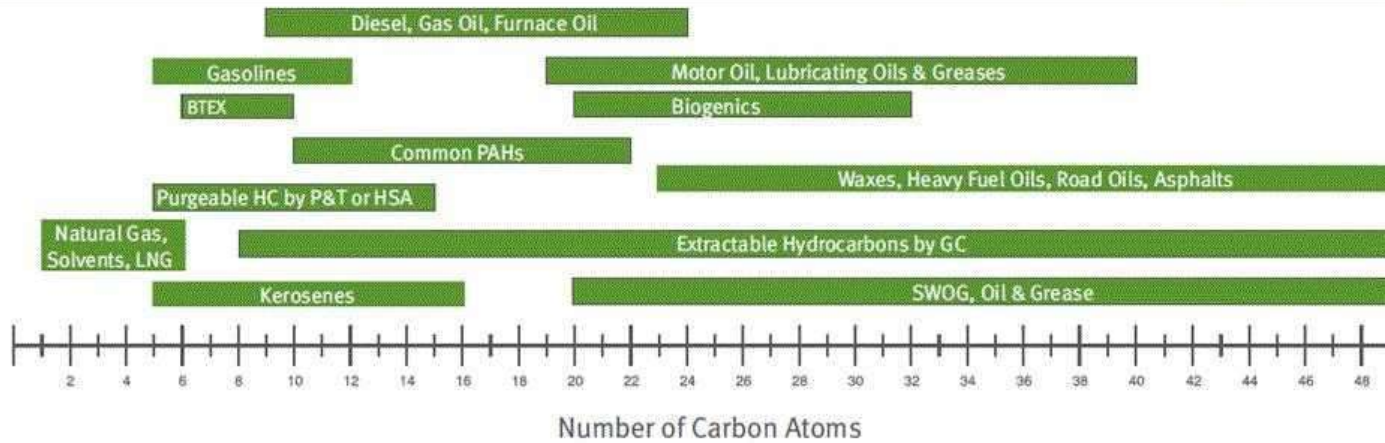
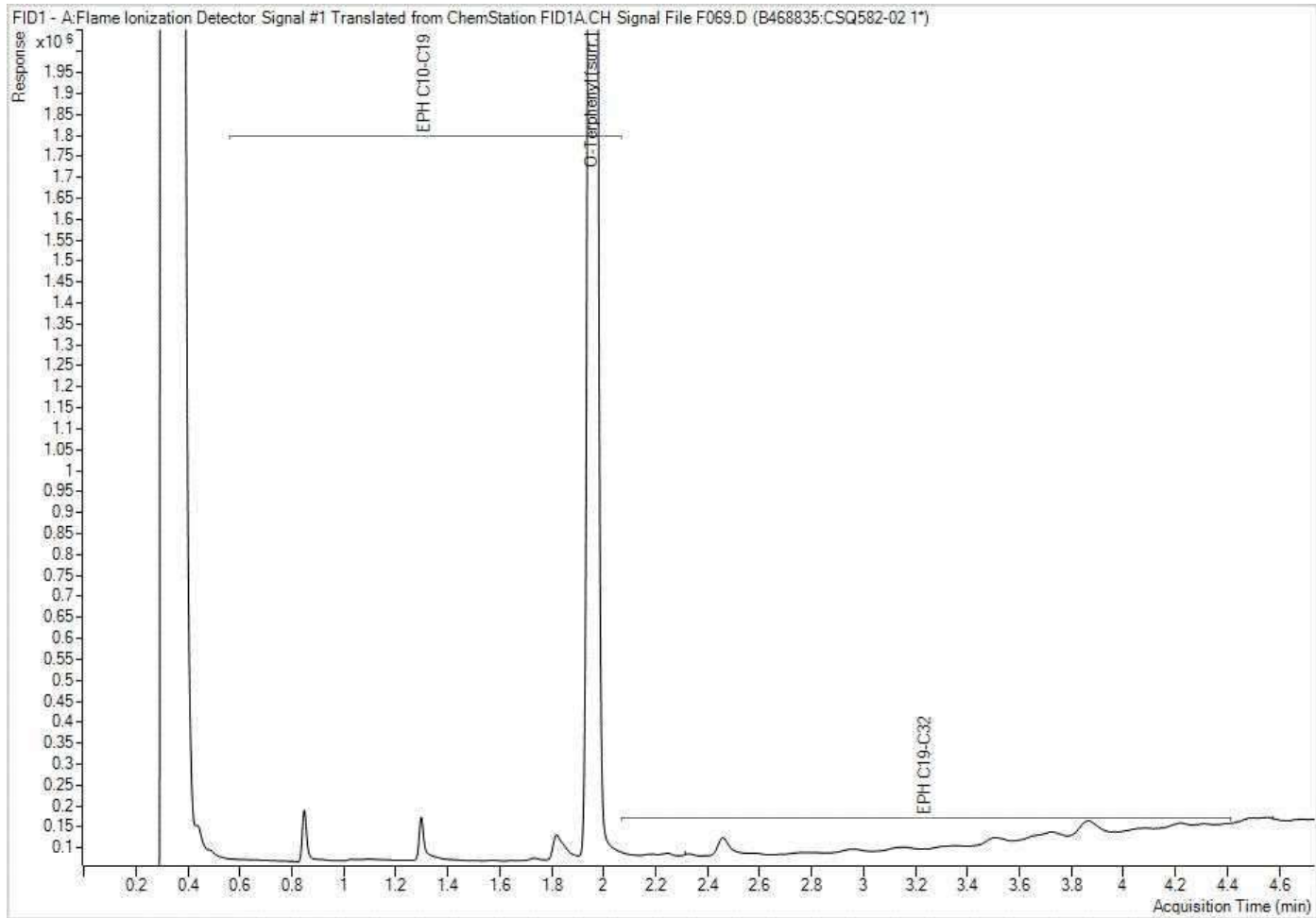
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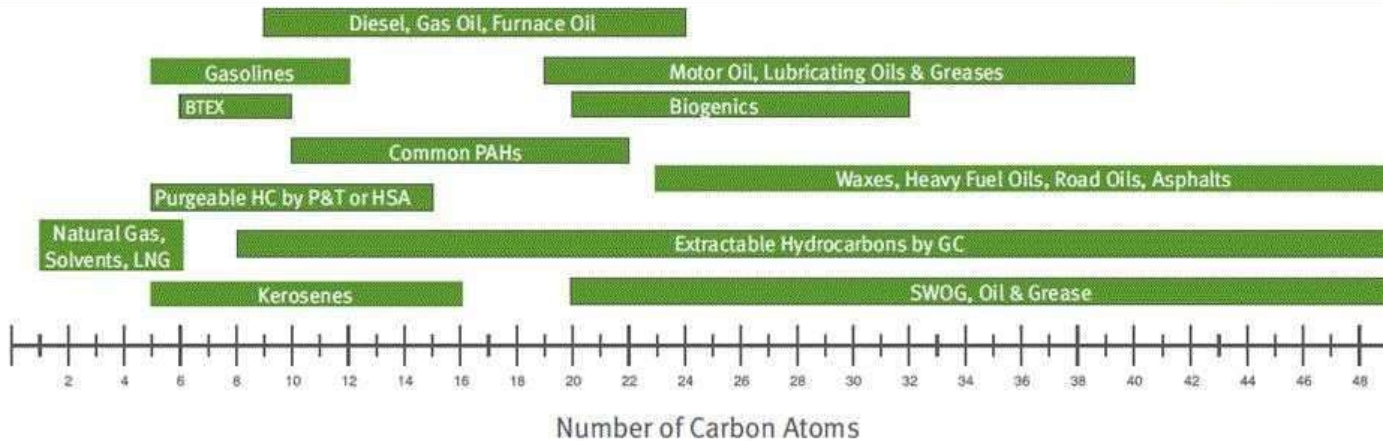
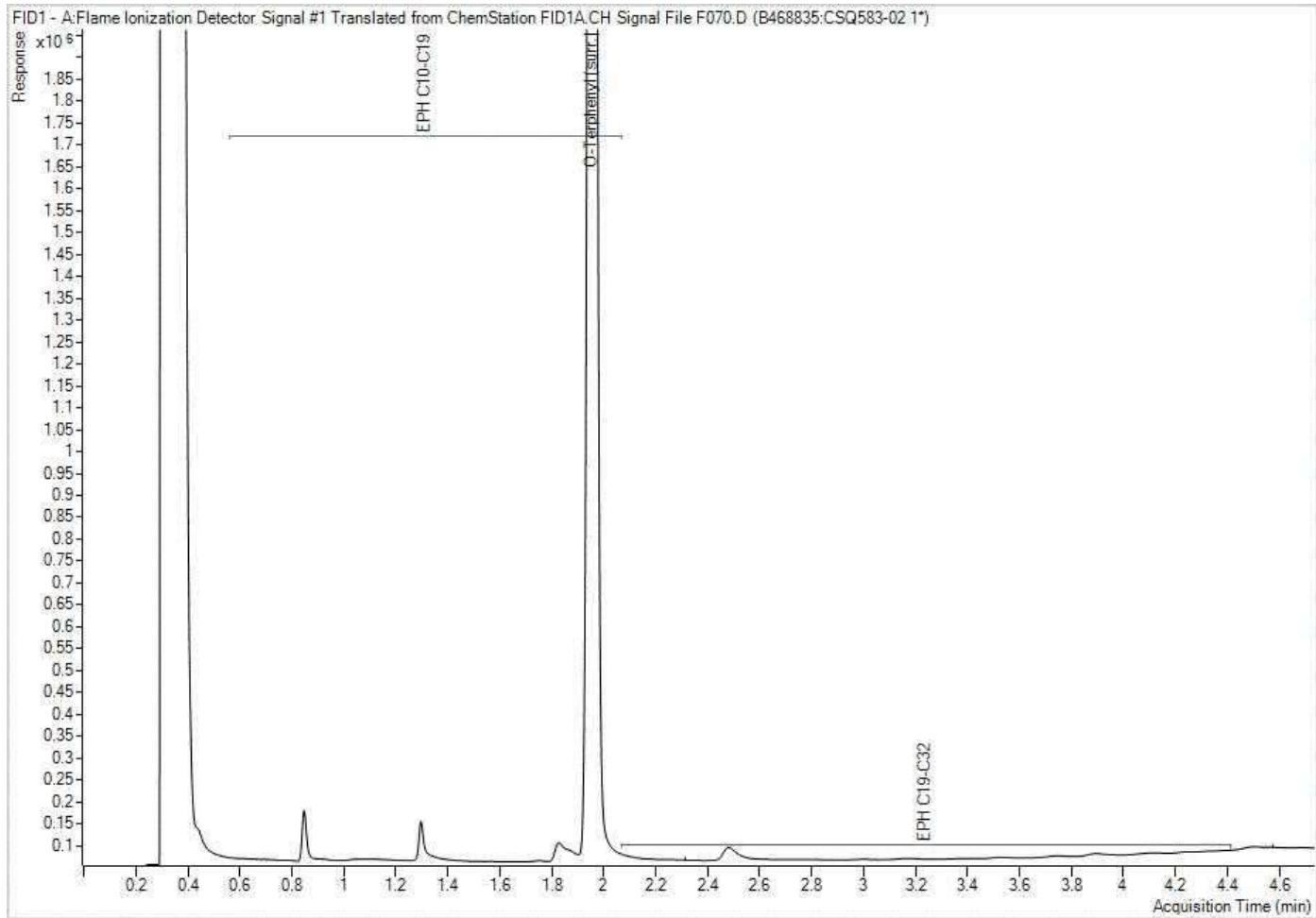
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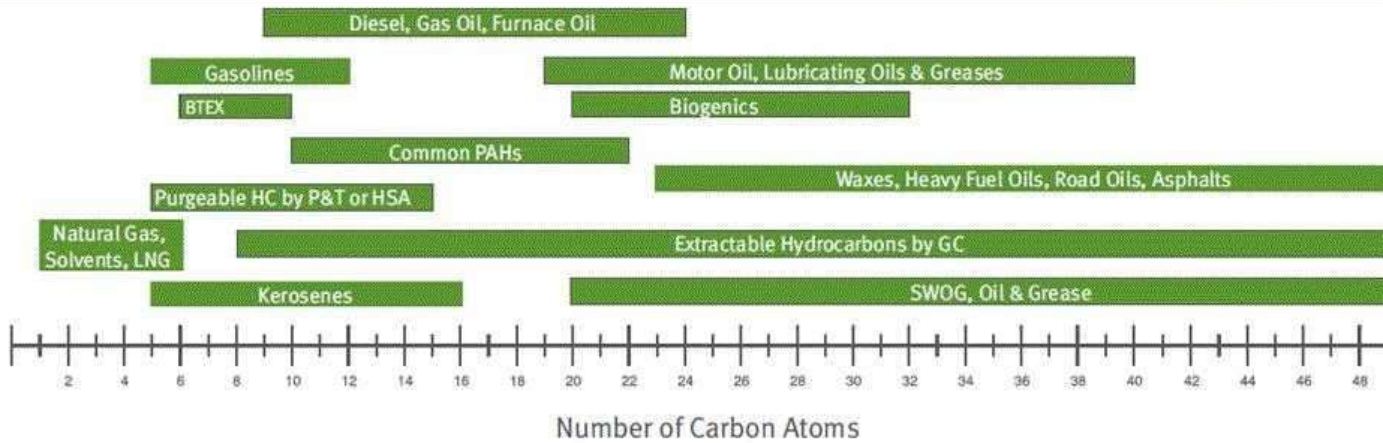
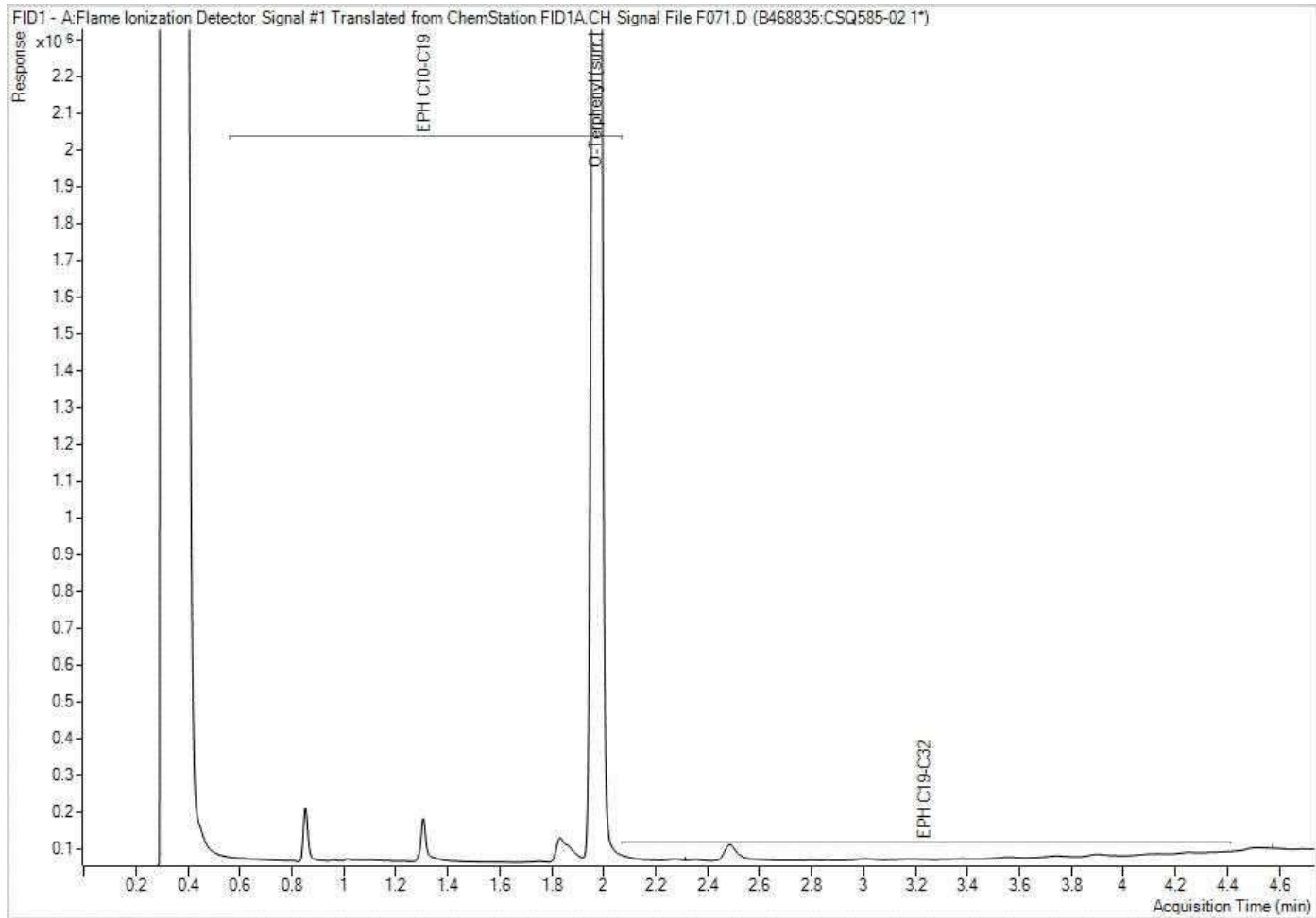
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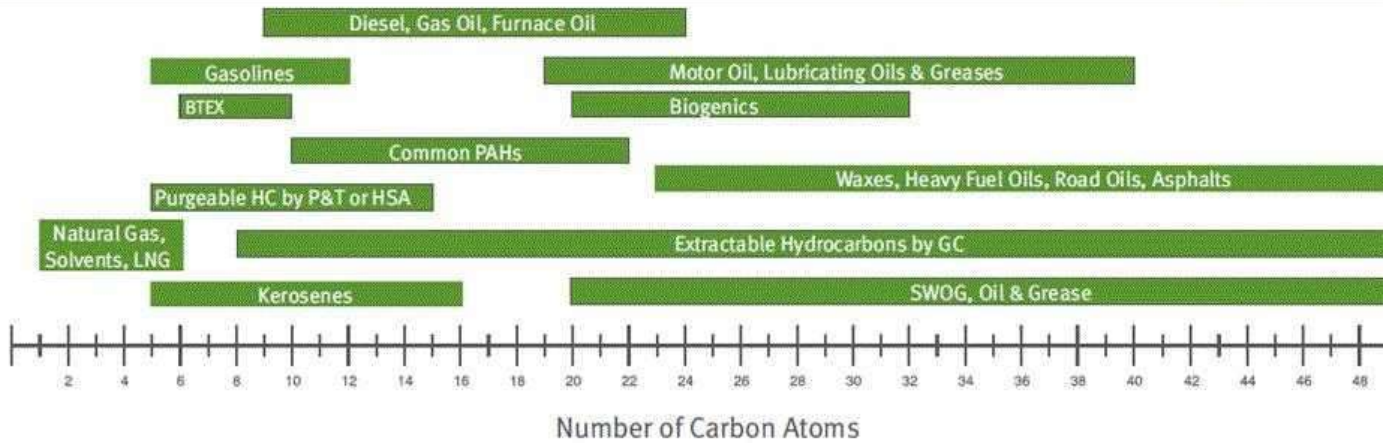
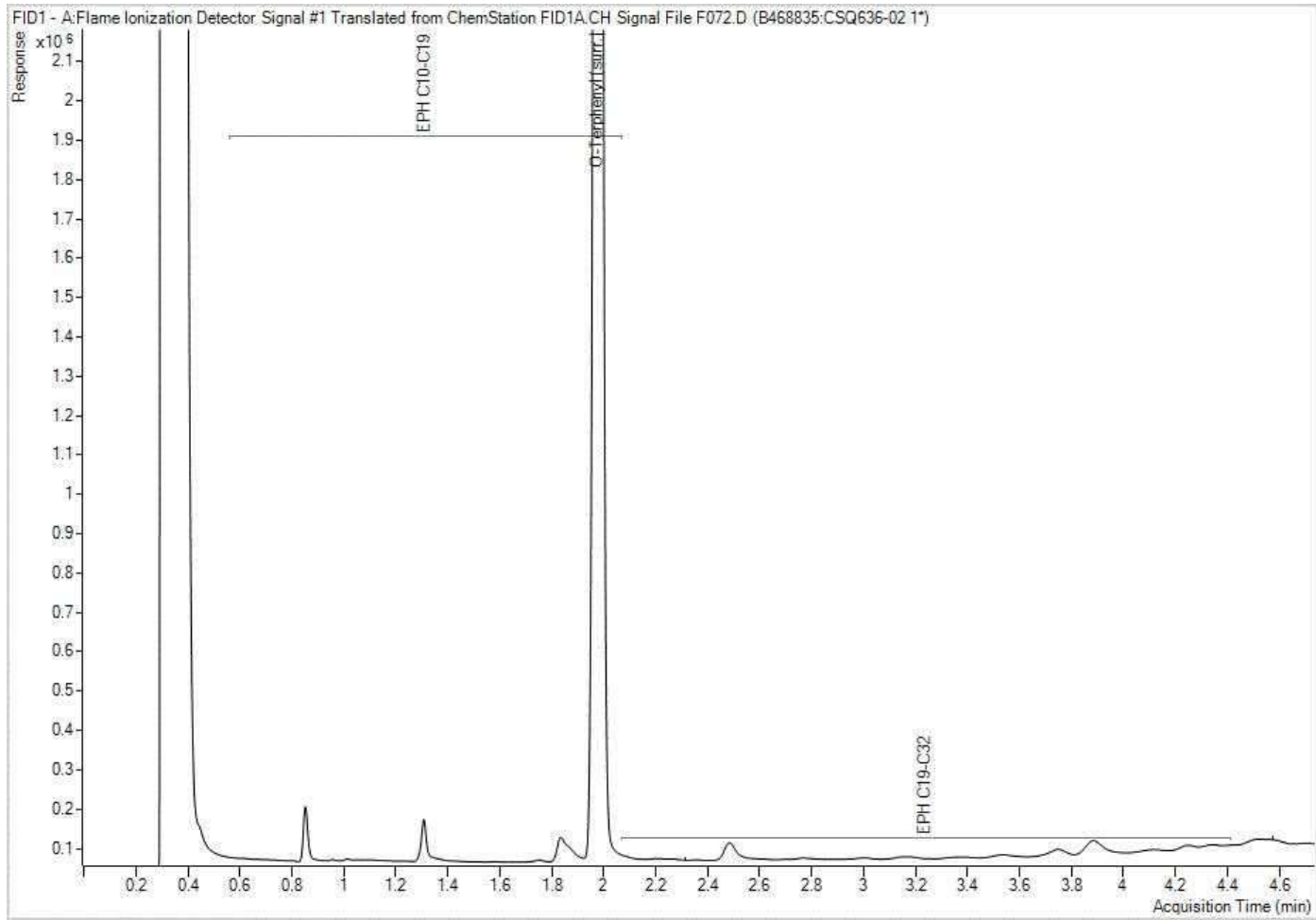
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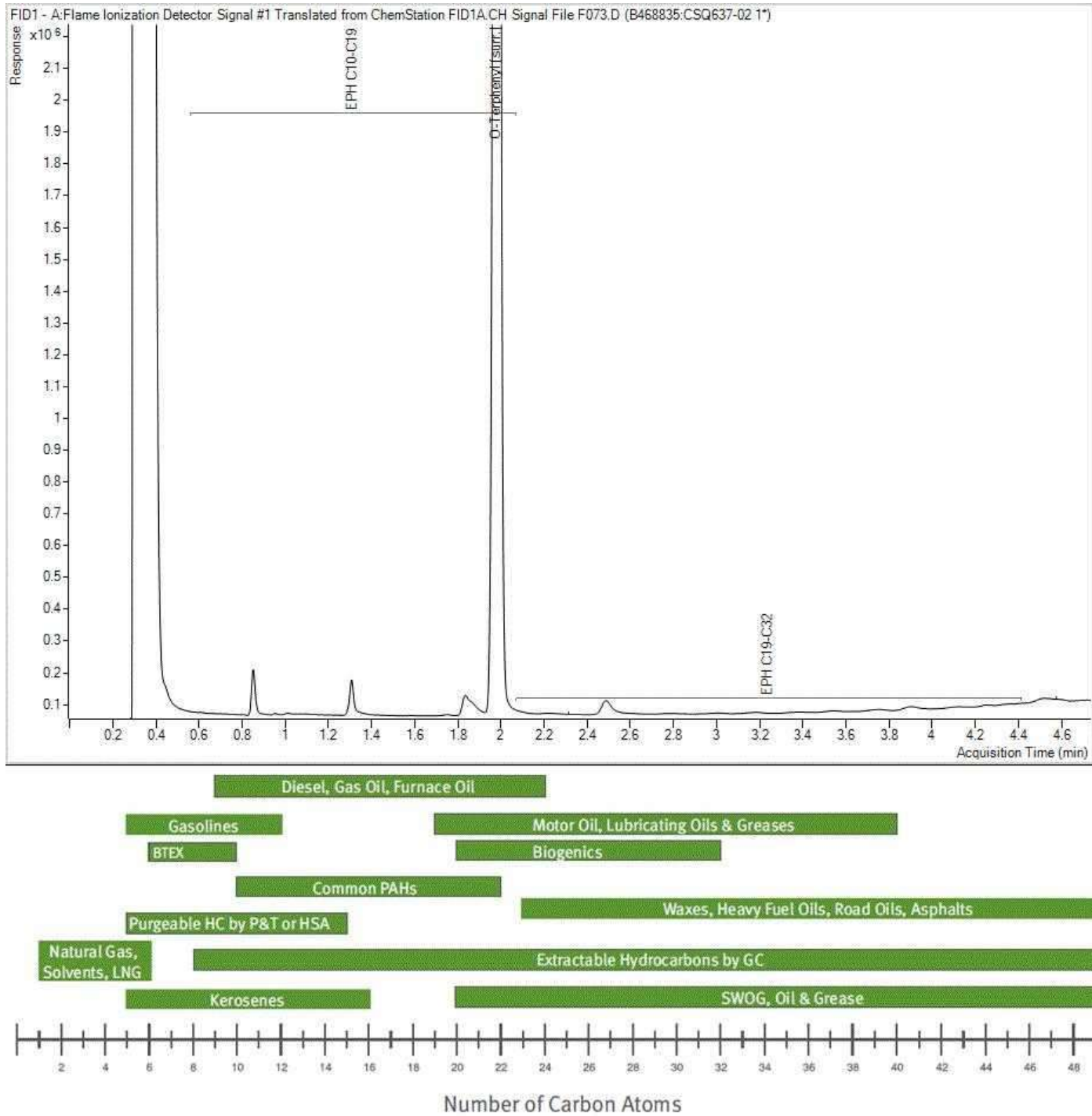
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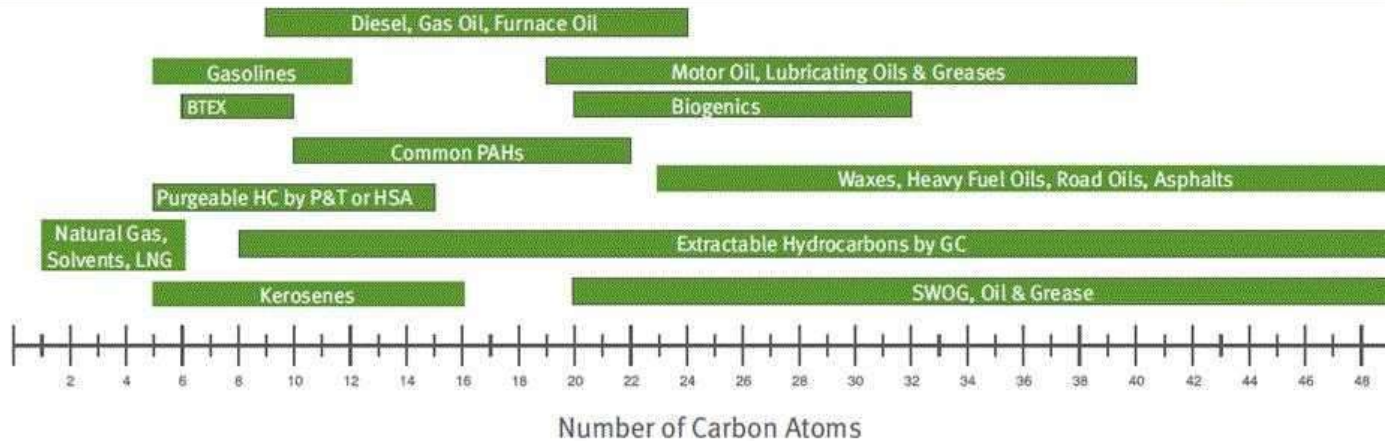
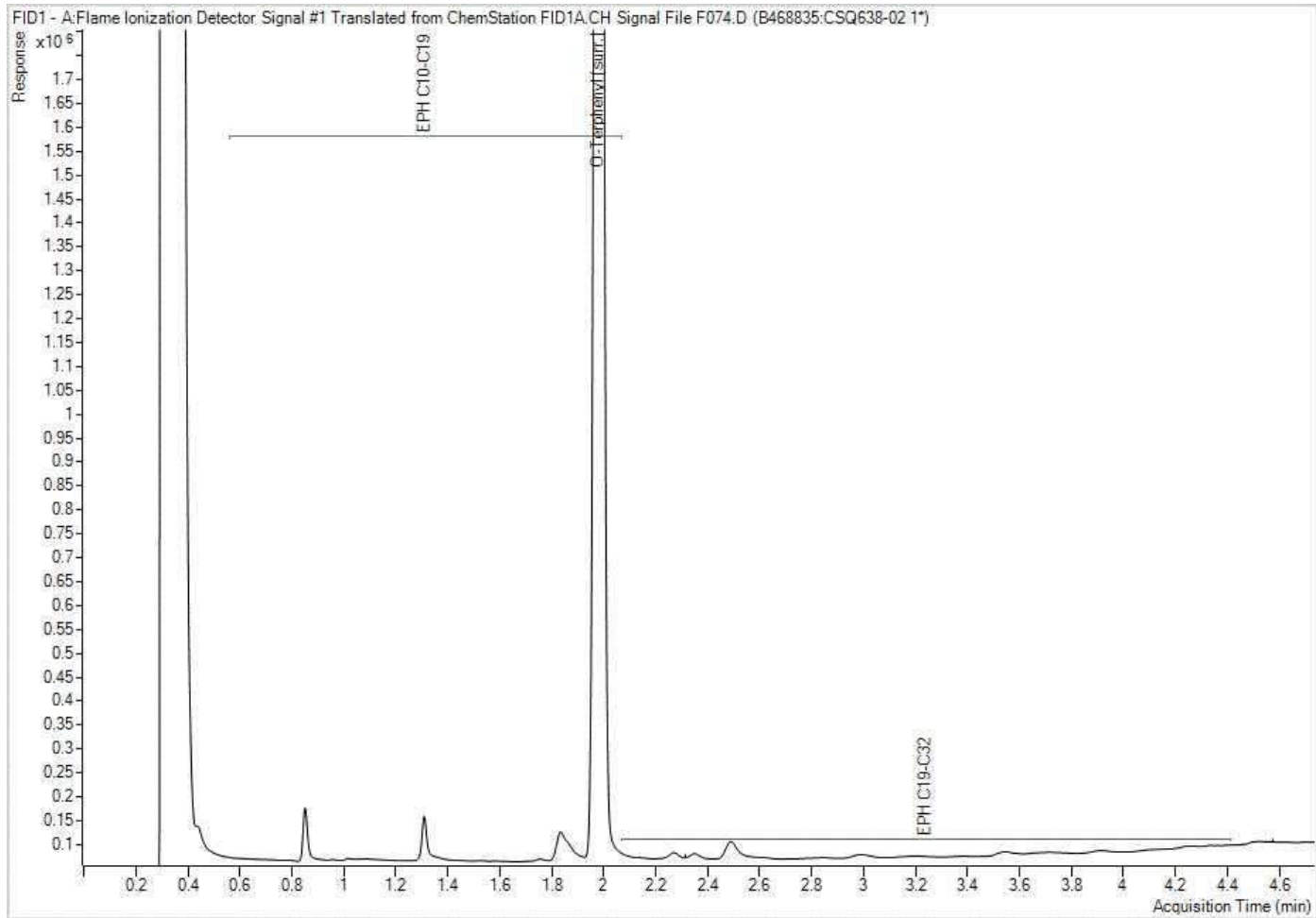
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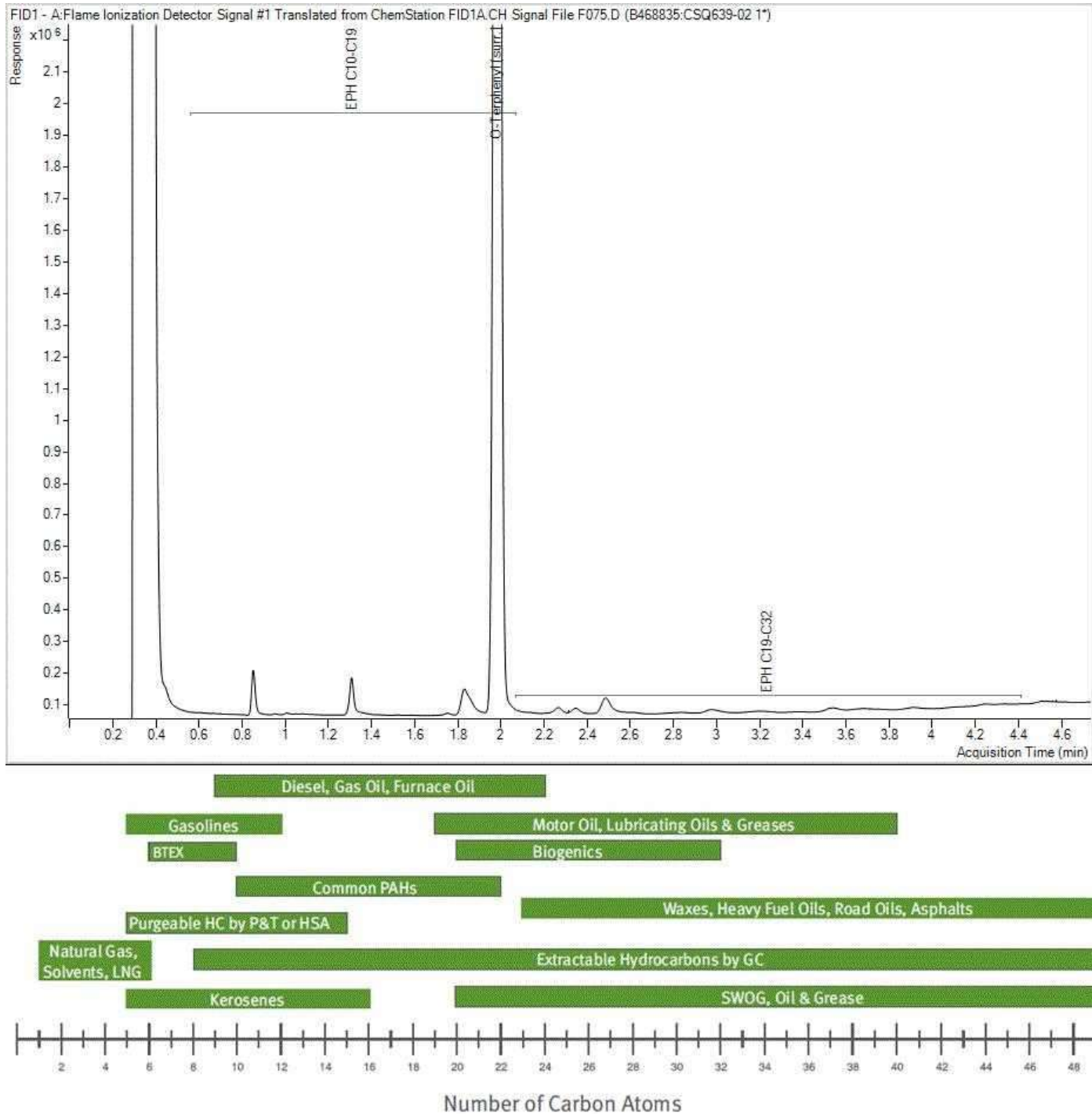
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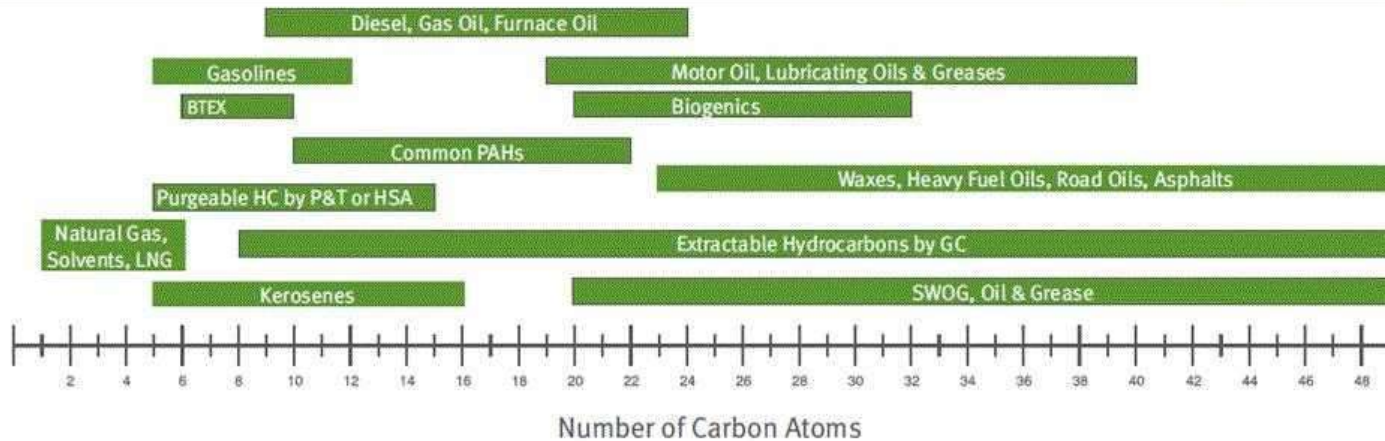
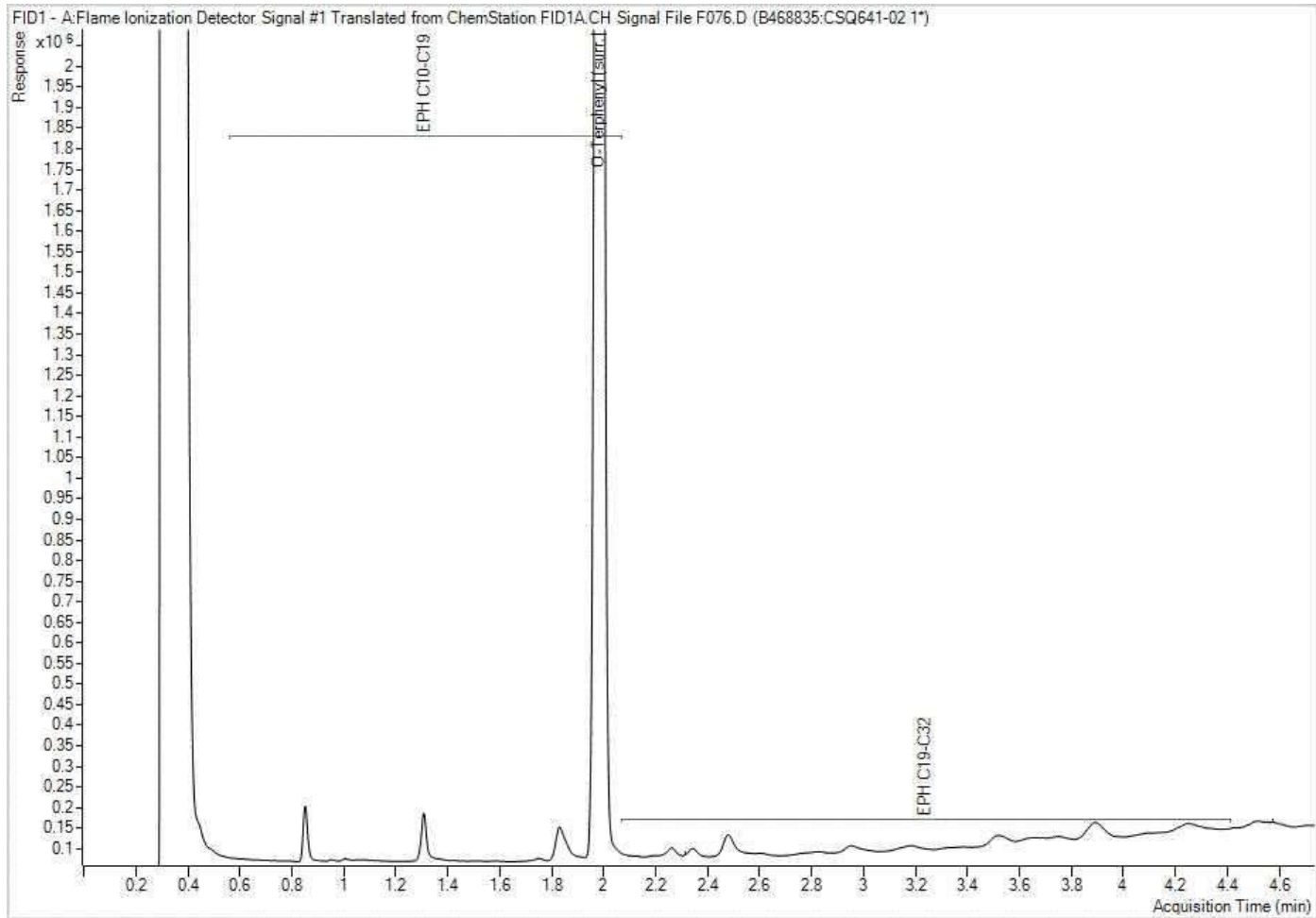
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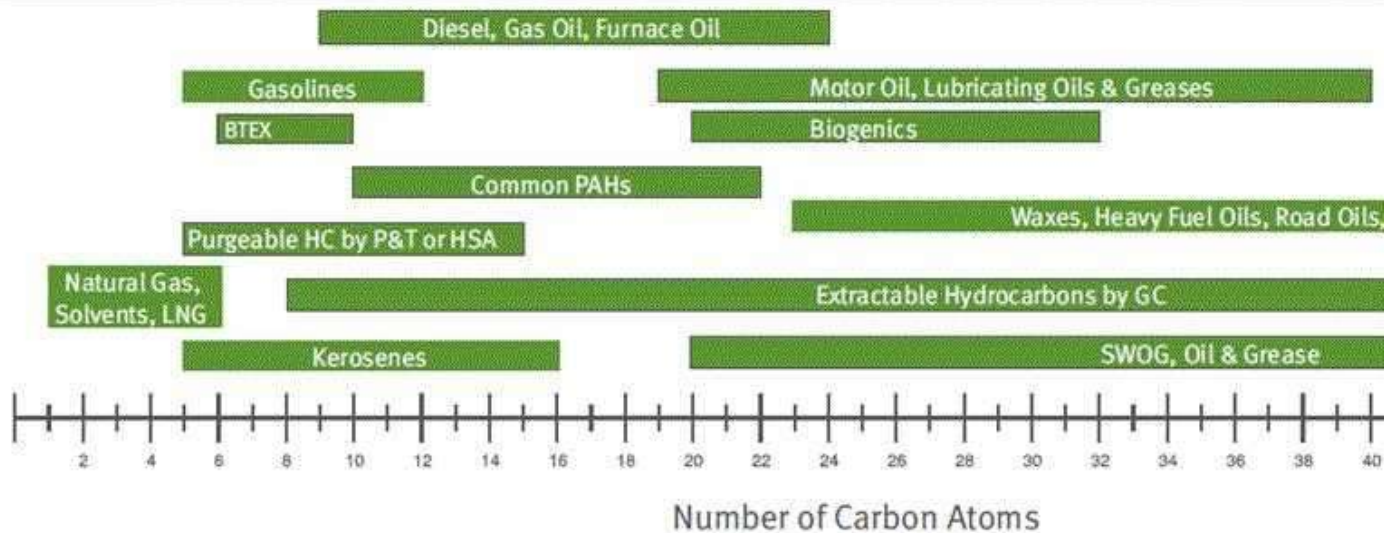
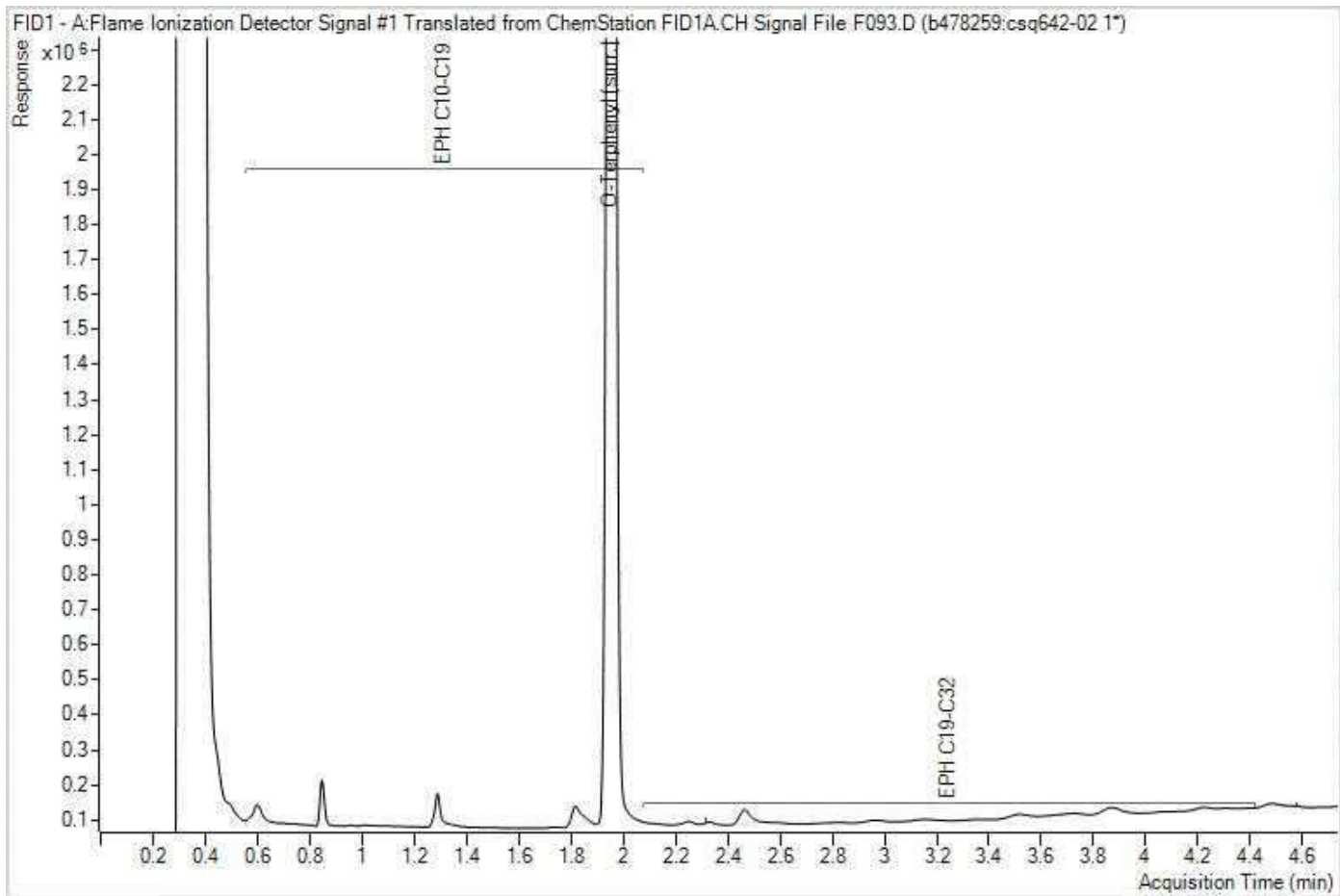
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EPH in Soil by GC/FID Chromatogram



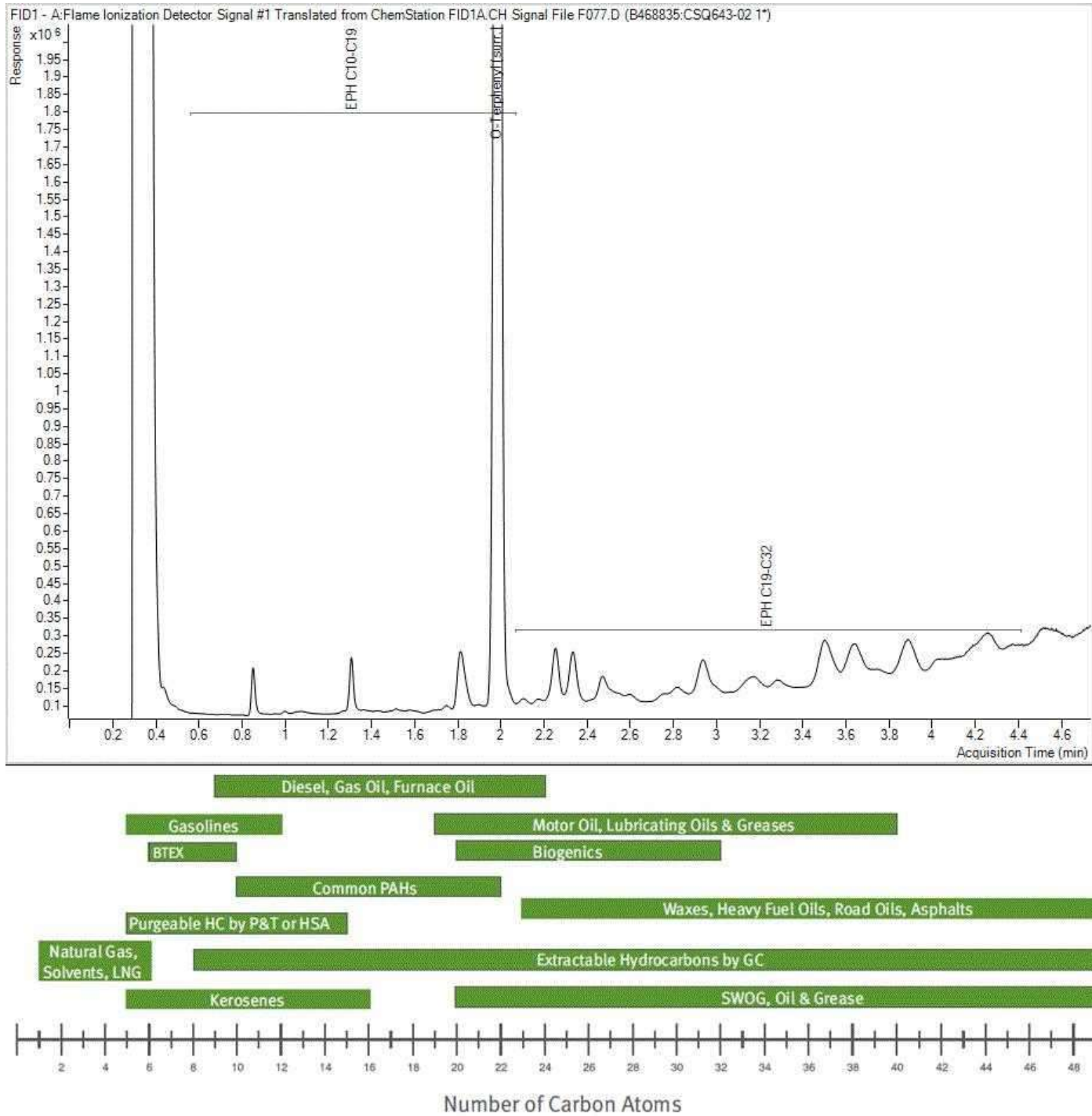
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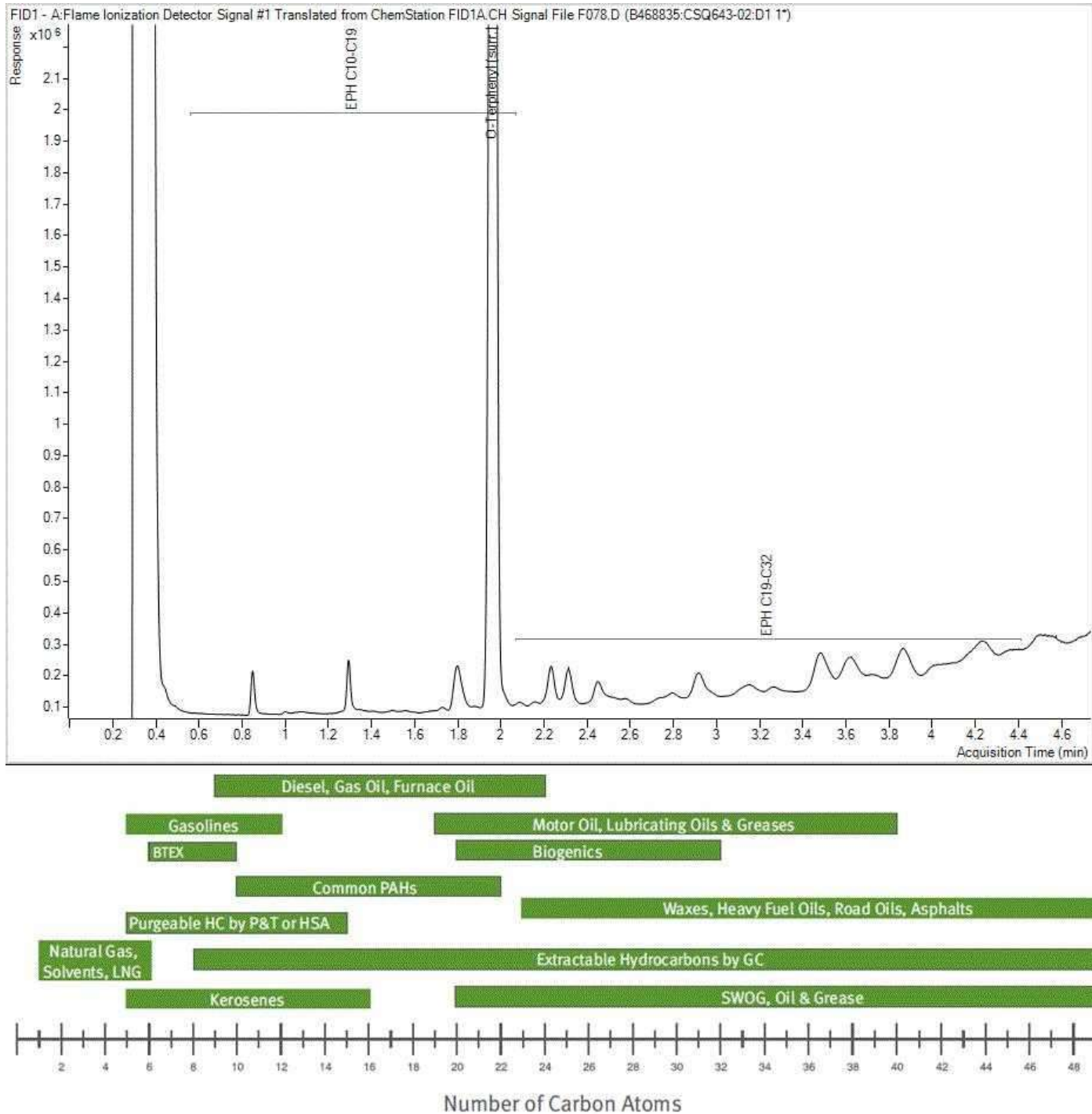
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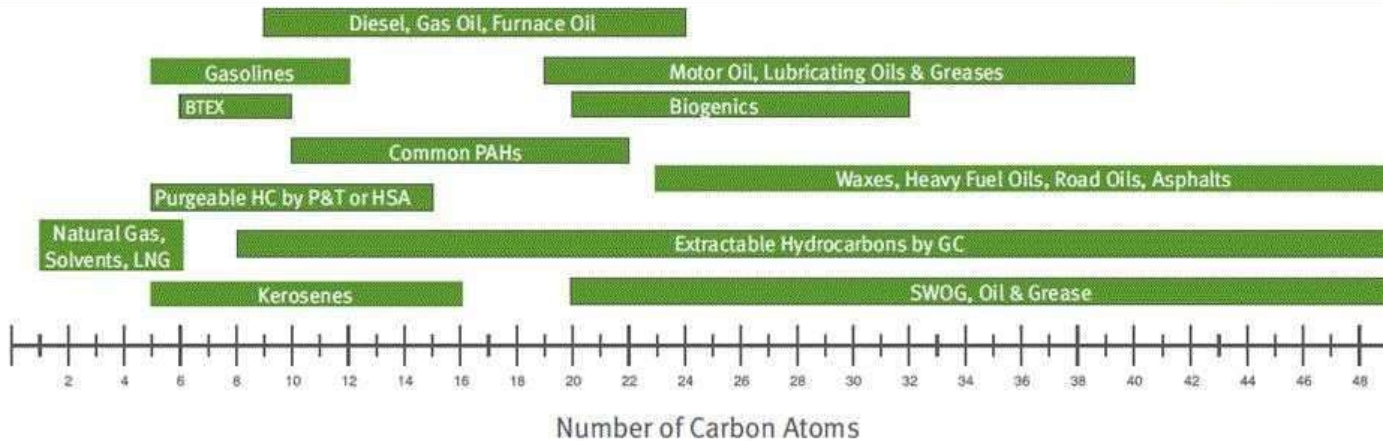
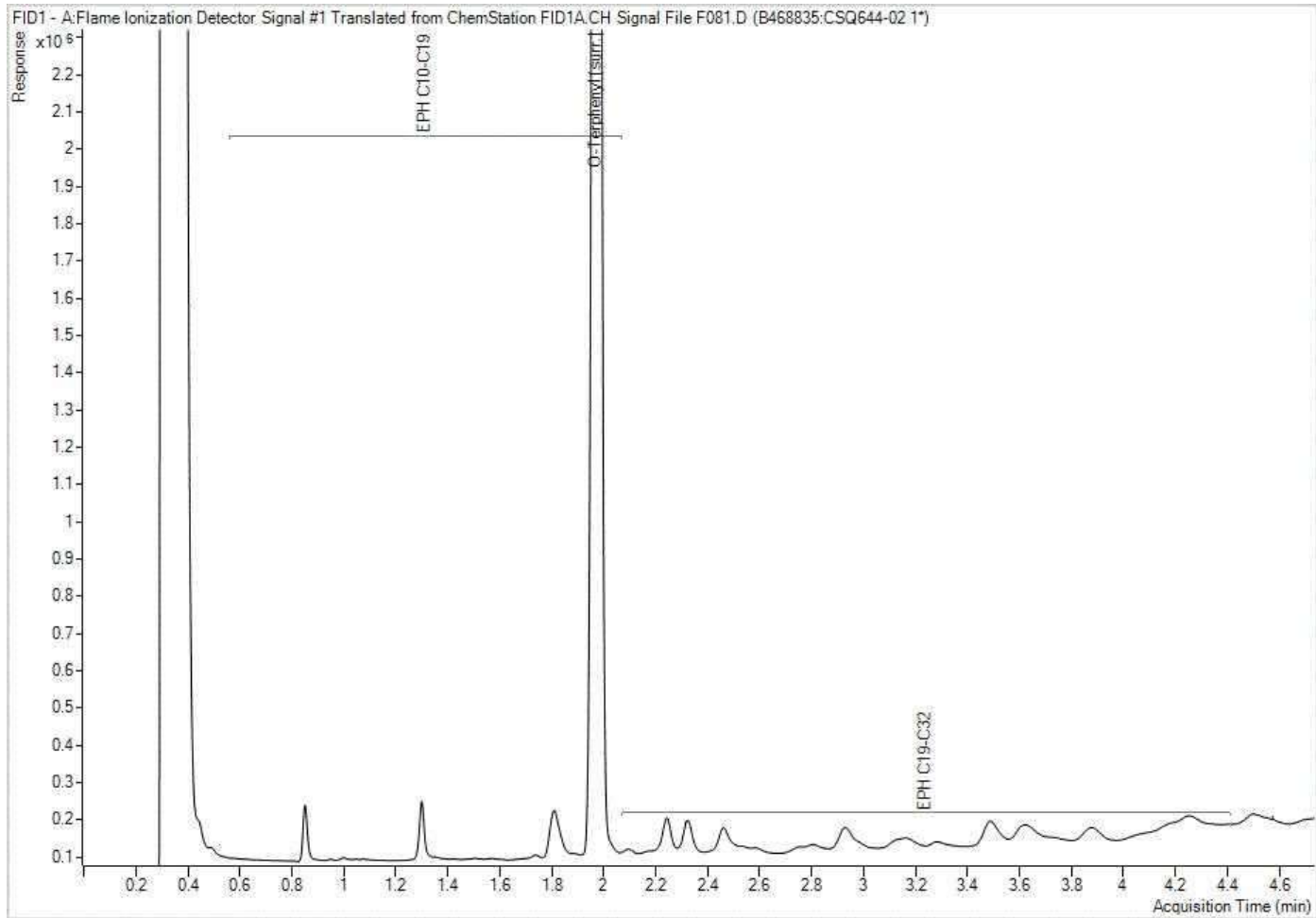
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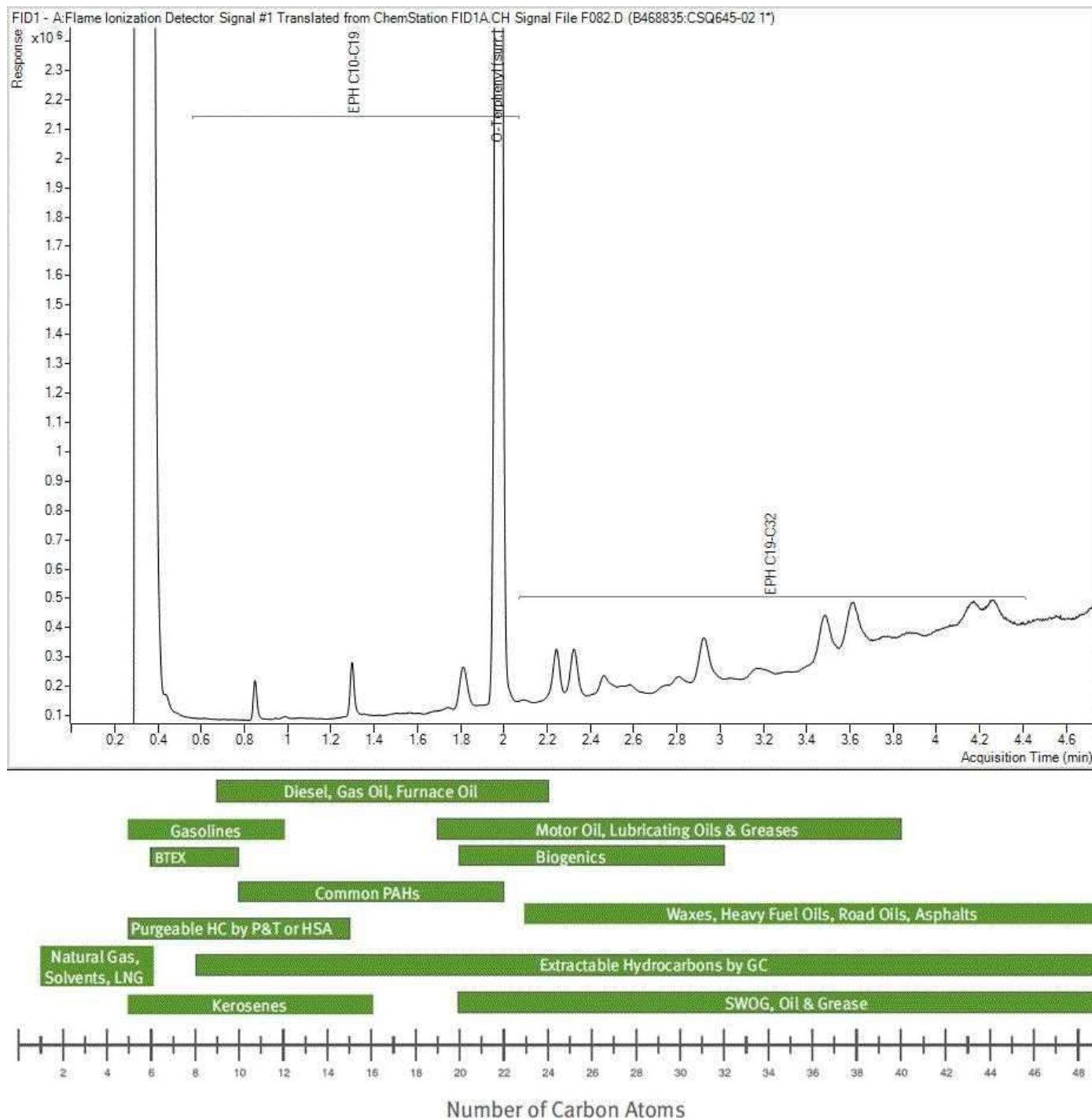
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EPH in Soil by GC/FID Chromatogram



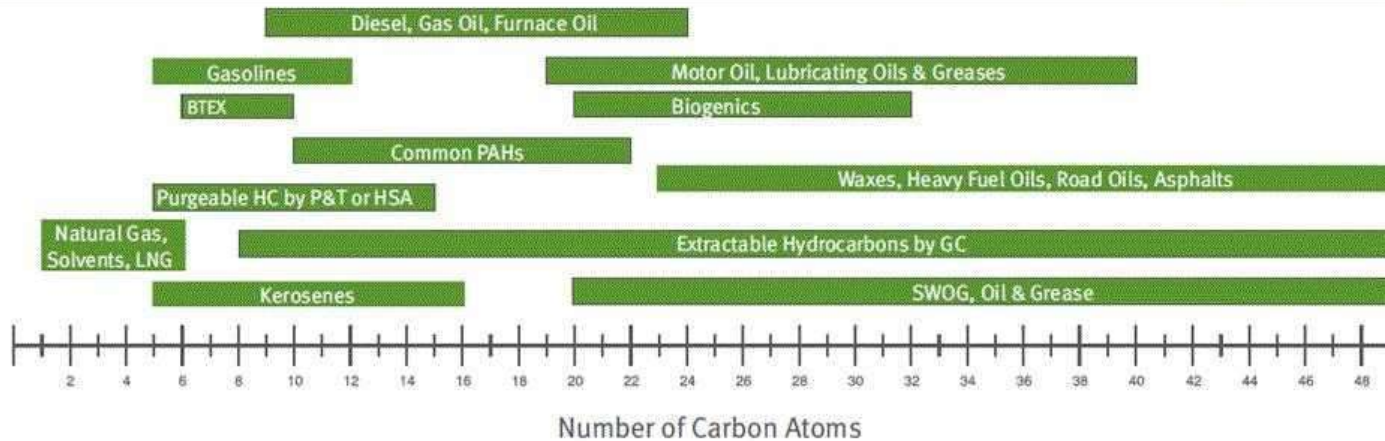
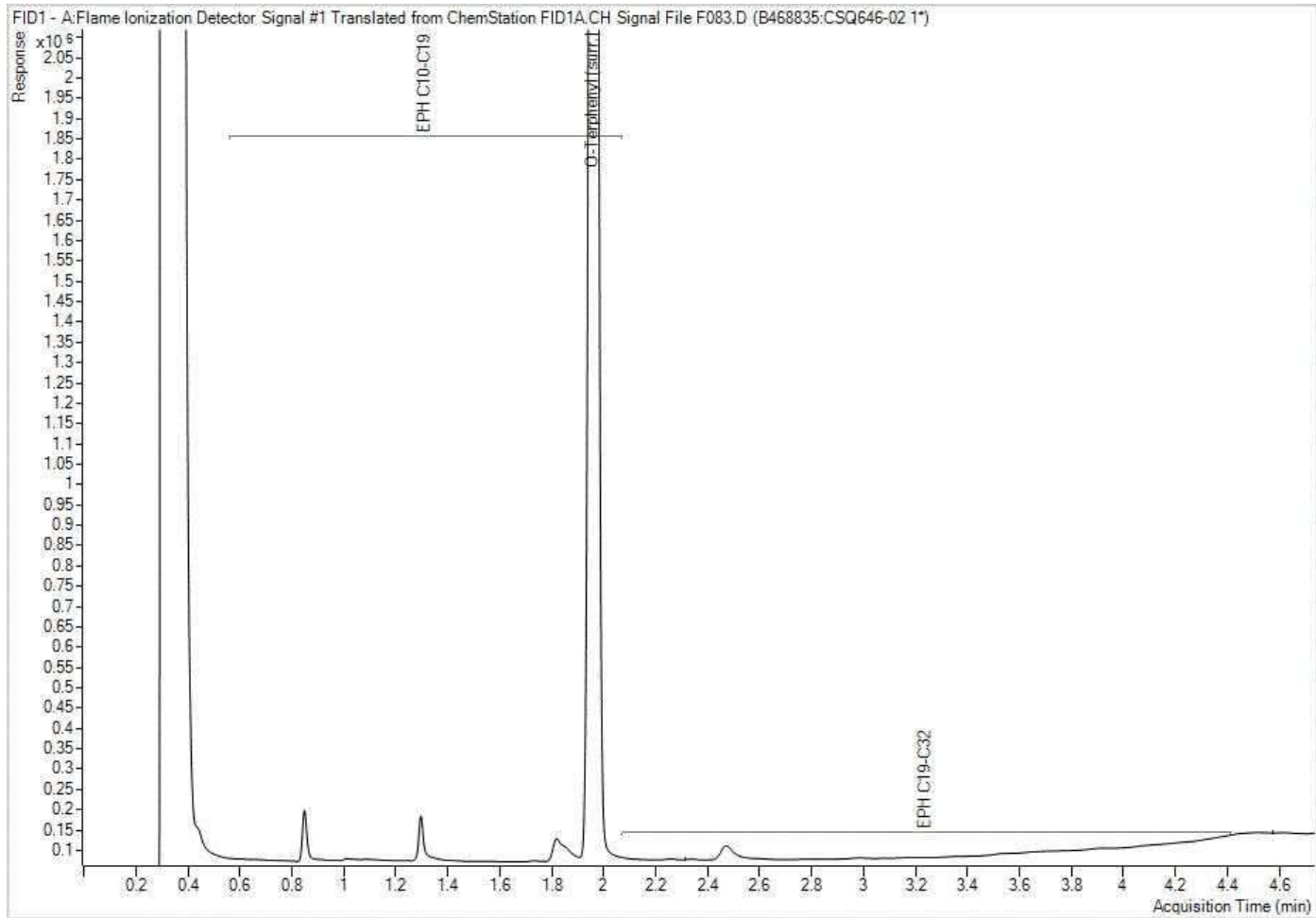
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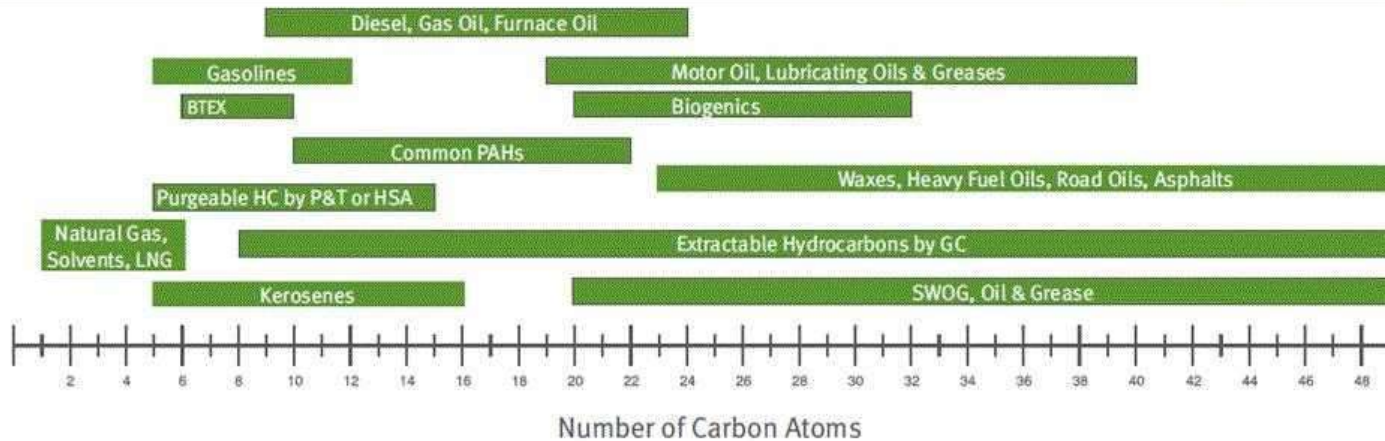
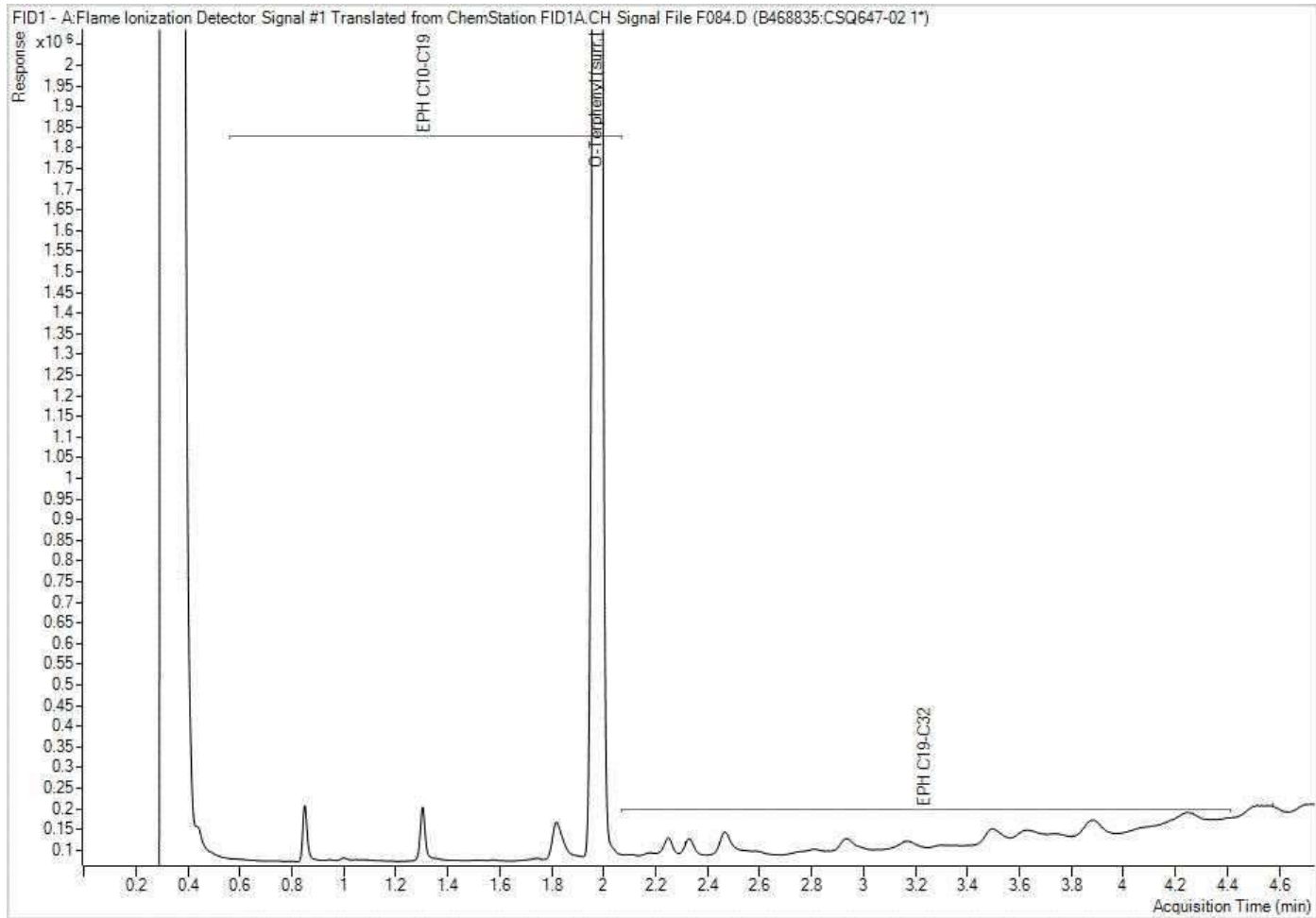
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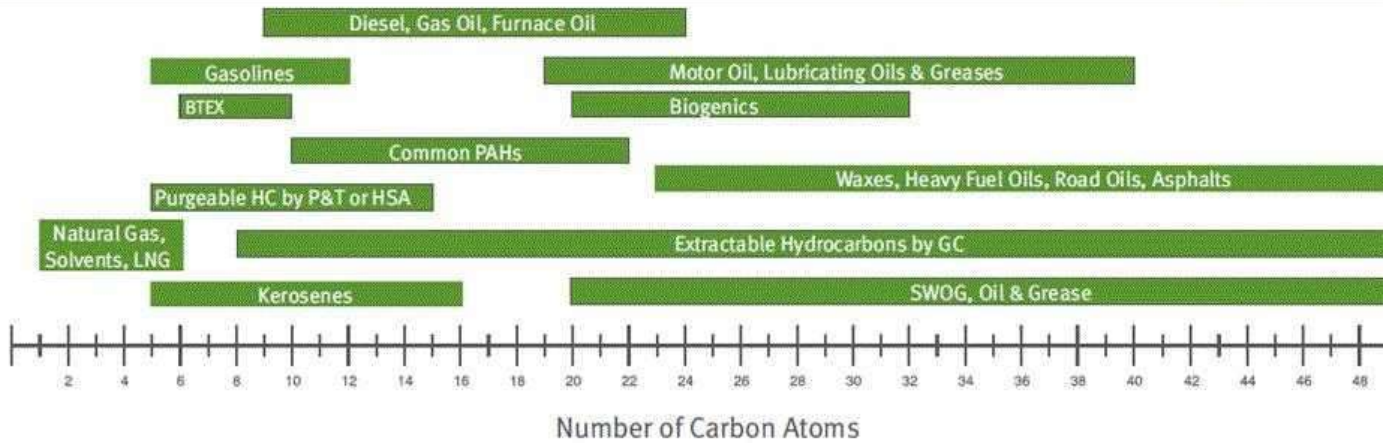
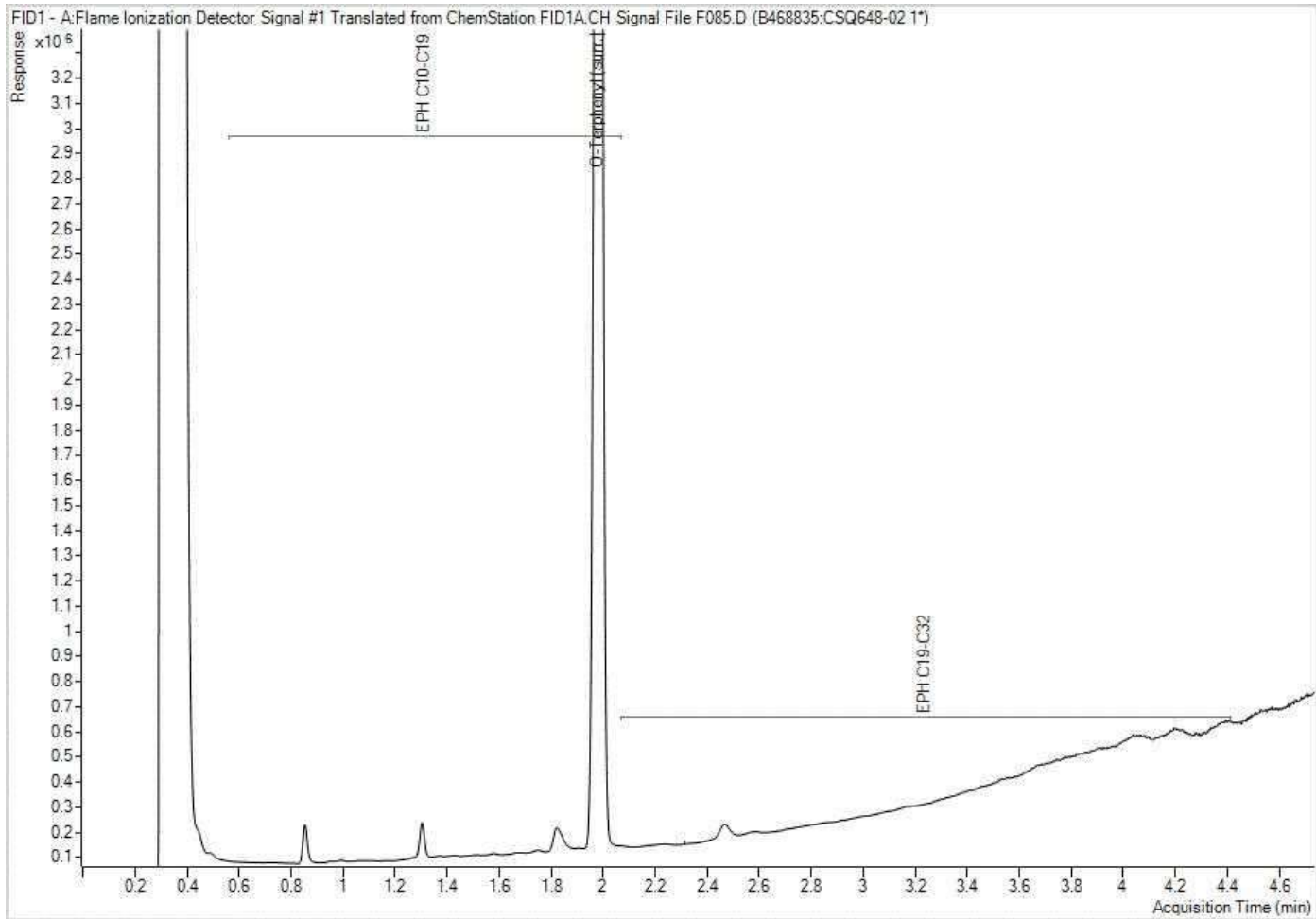
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EPH in Soil by GC/FID Chromatogram



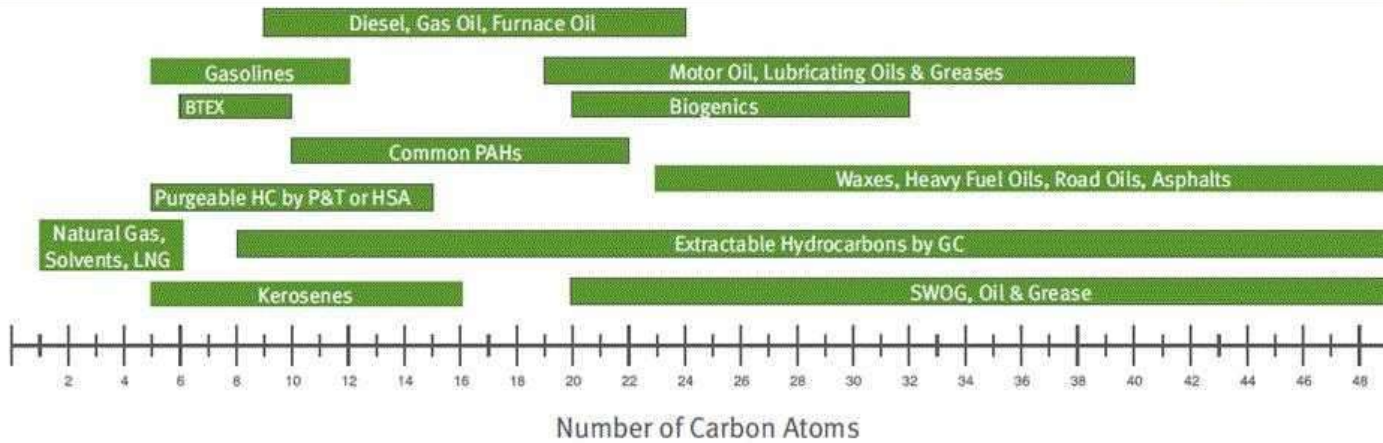
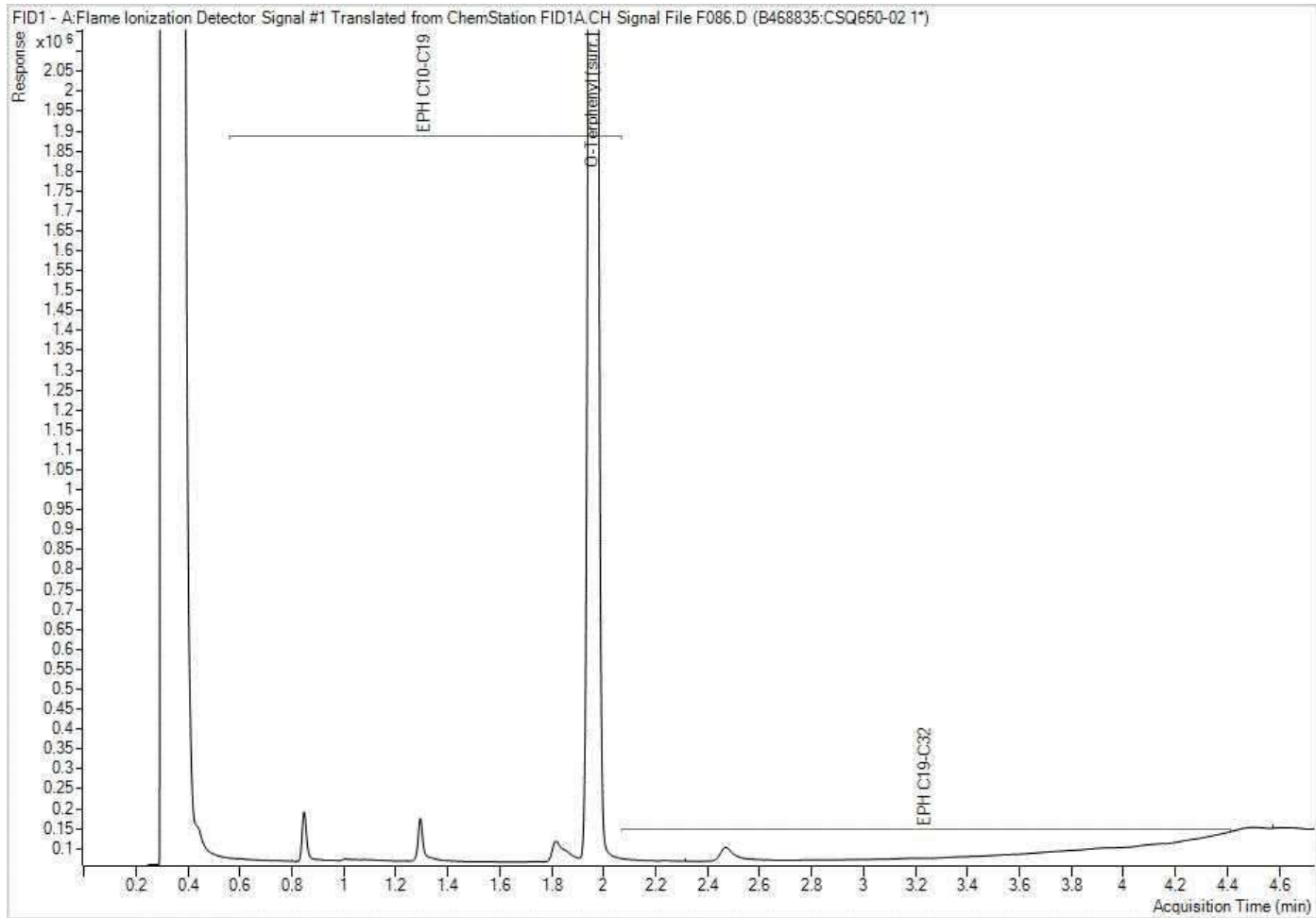
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EPH in Soil by GC/FID Chromatogram



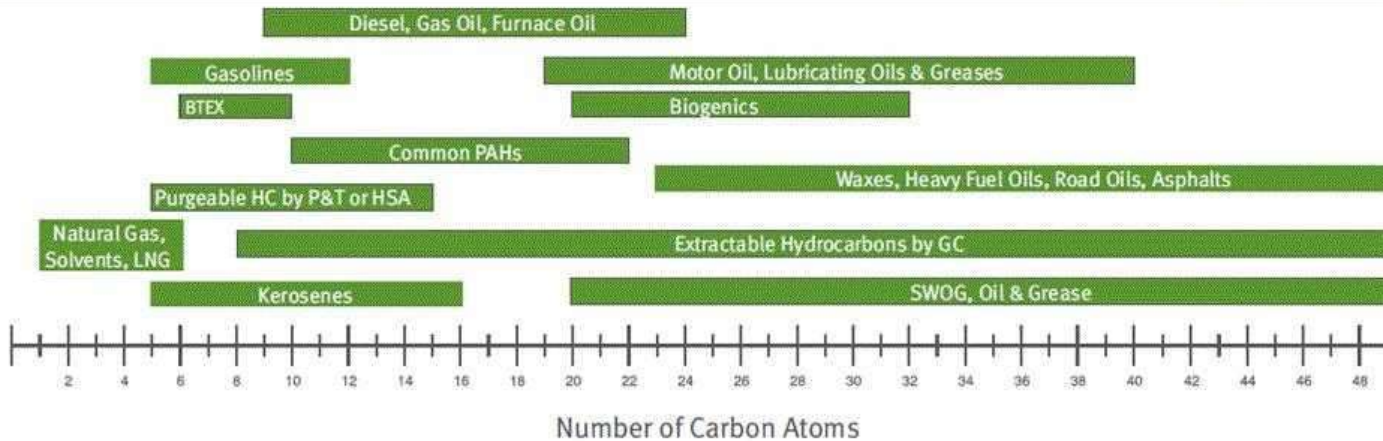
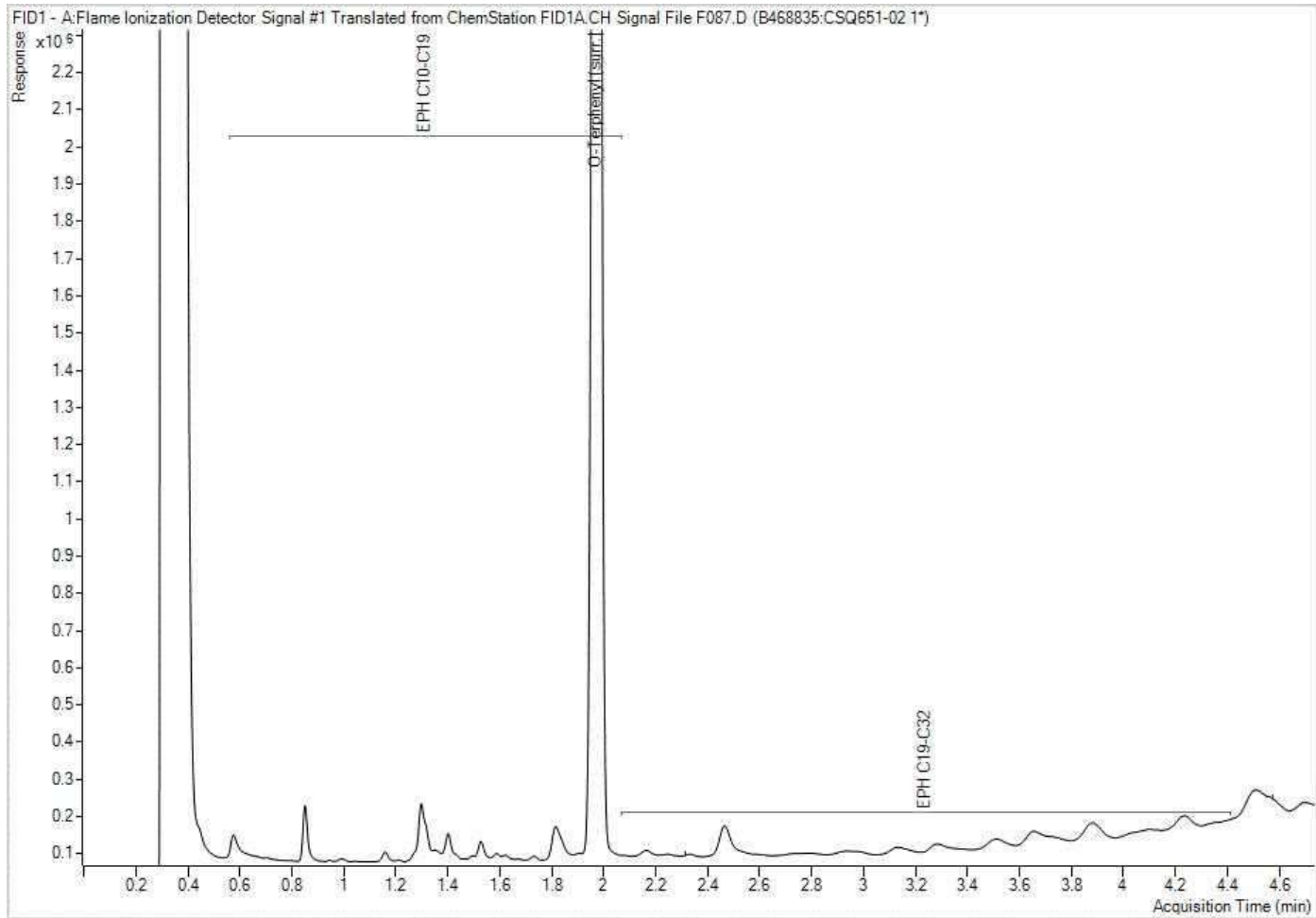
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EPH in Soil by GC/FID Chromatogram



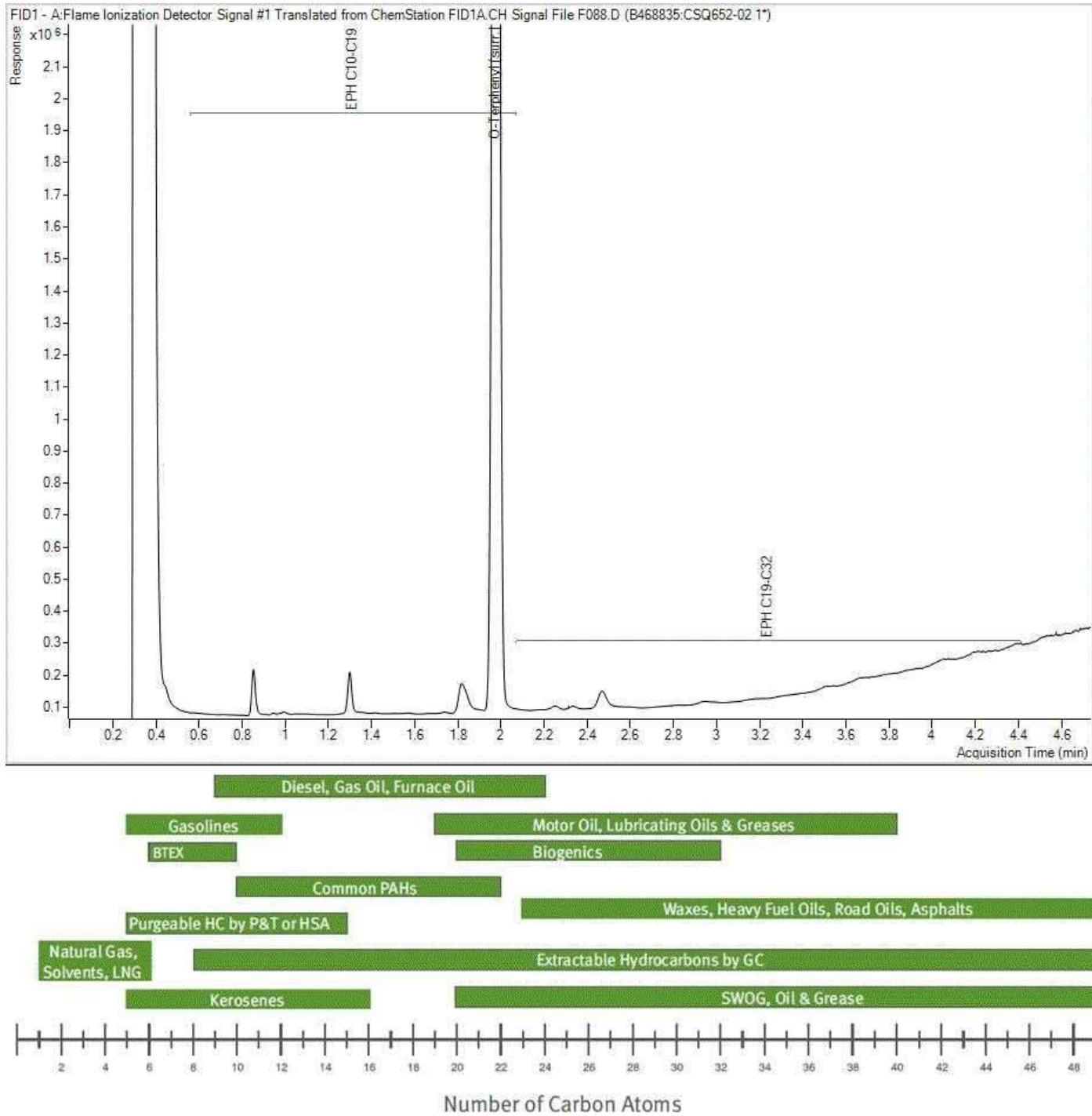
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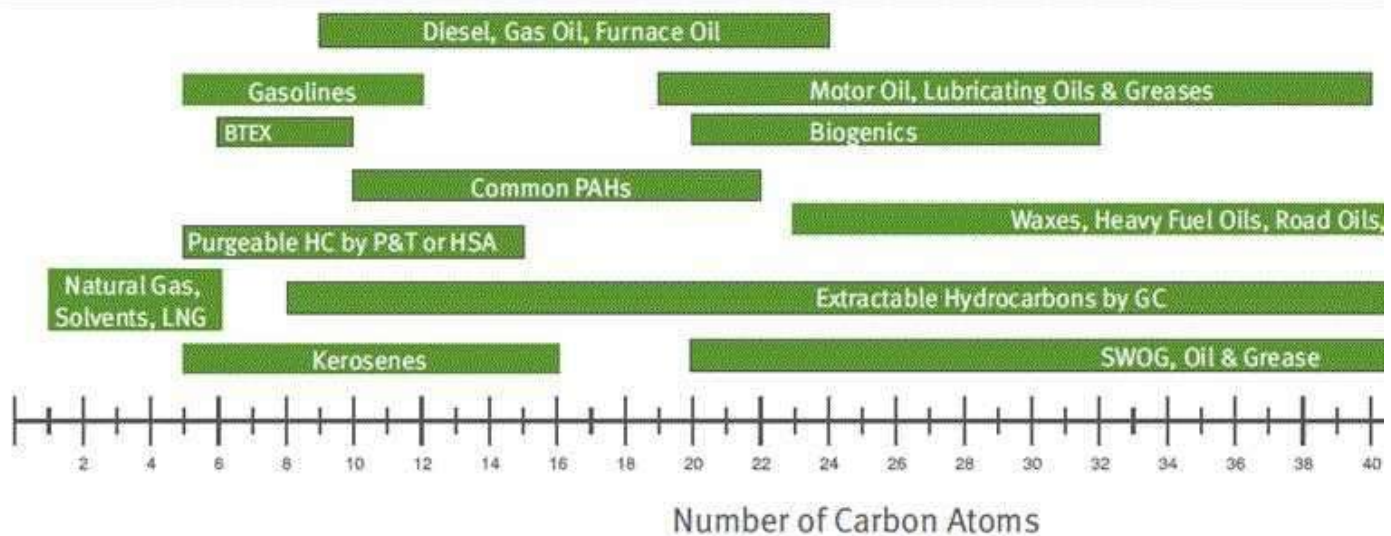
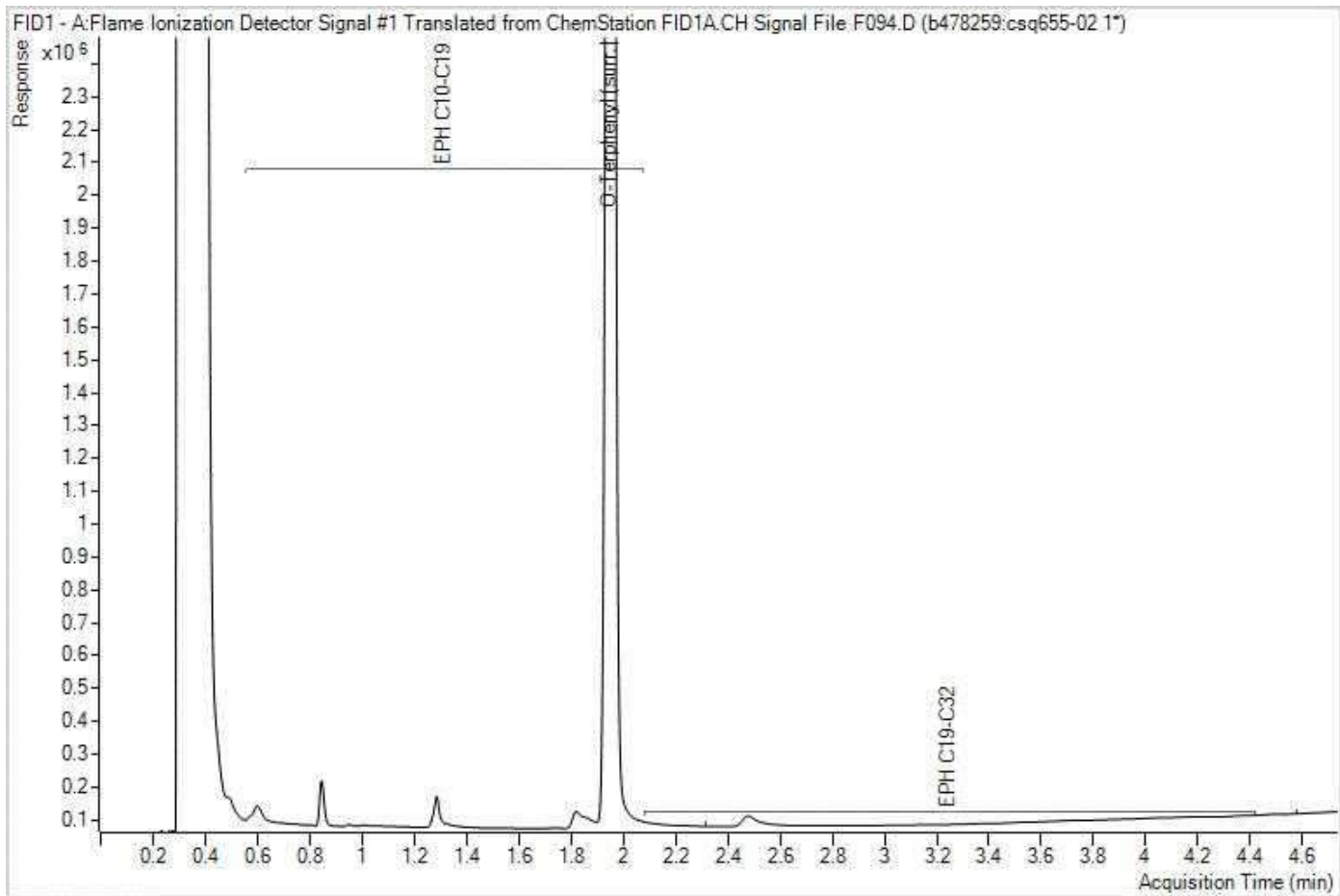
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EPH in Soil by GC/FID Chromatogram



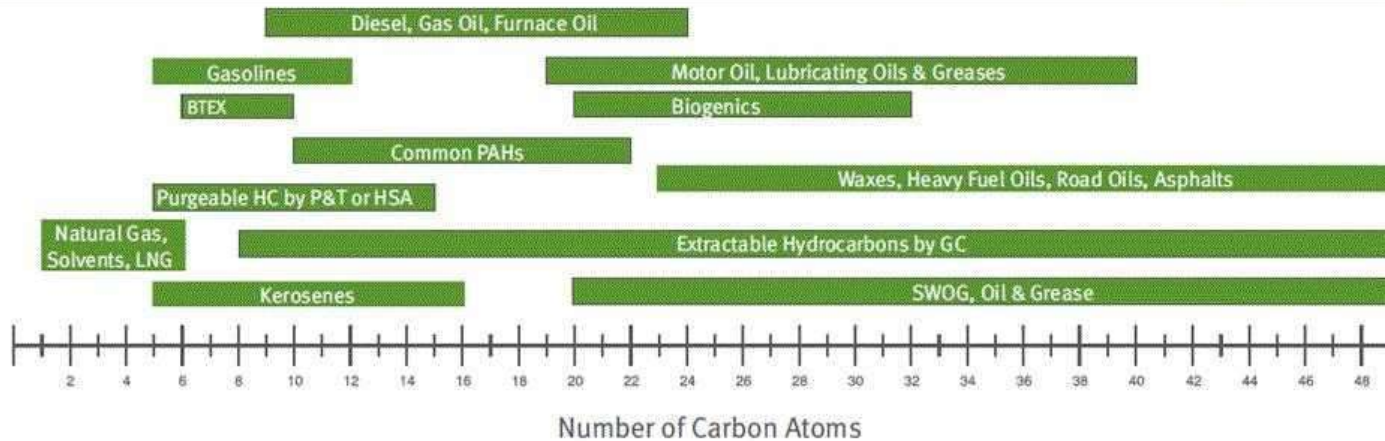
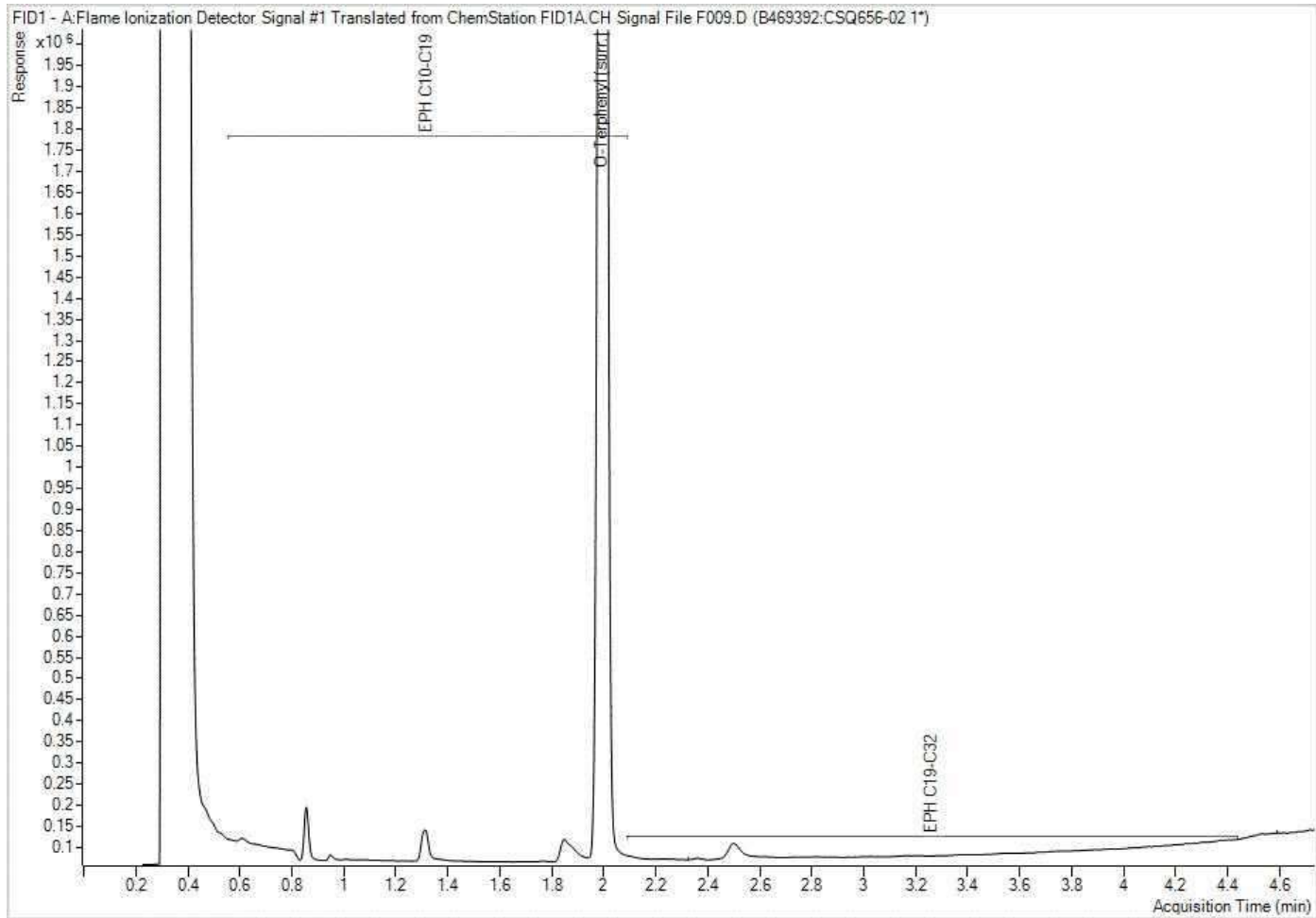
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EPH in Soil by GC/FID Chromatogram



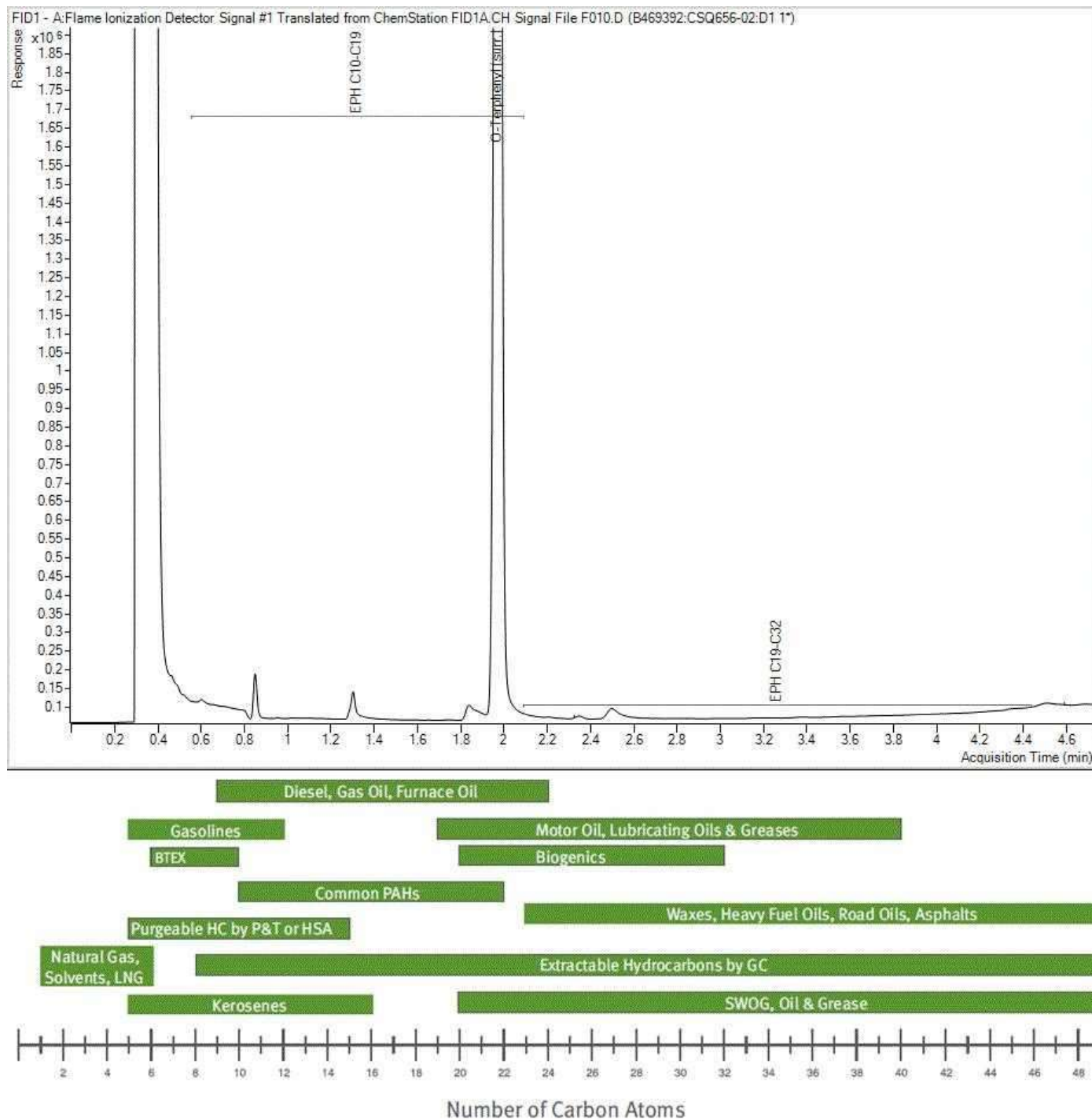
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EPH in Soil by GC/FID Chromatogram



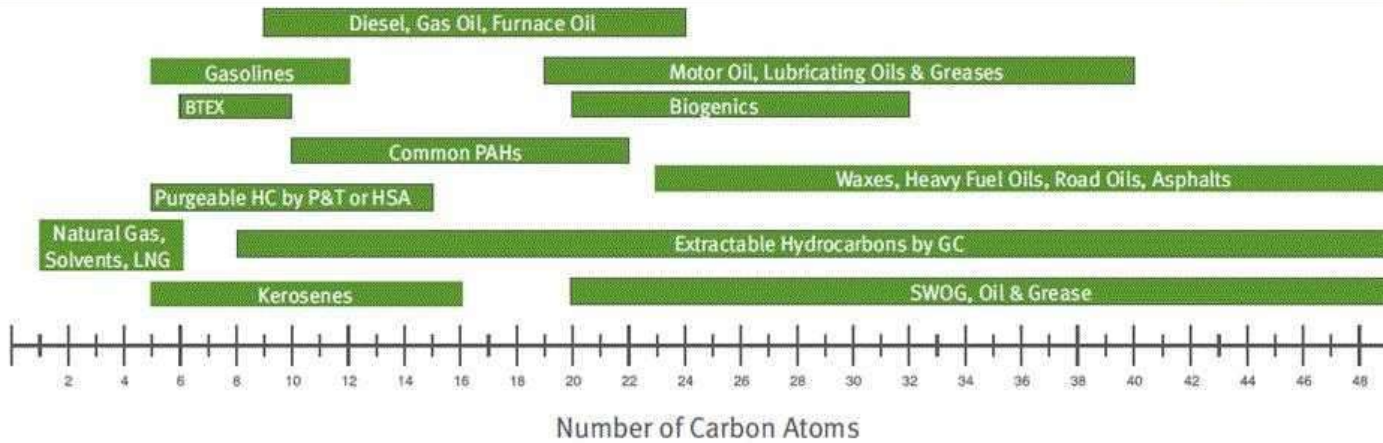
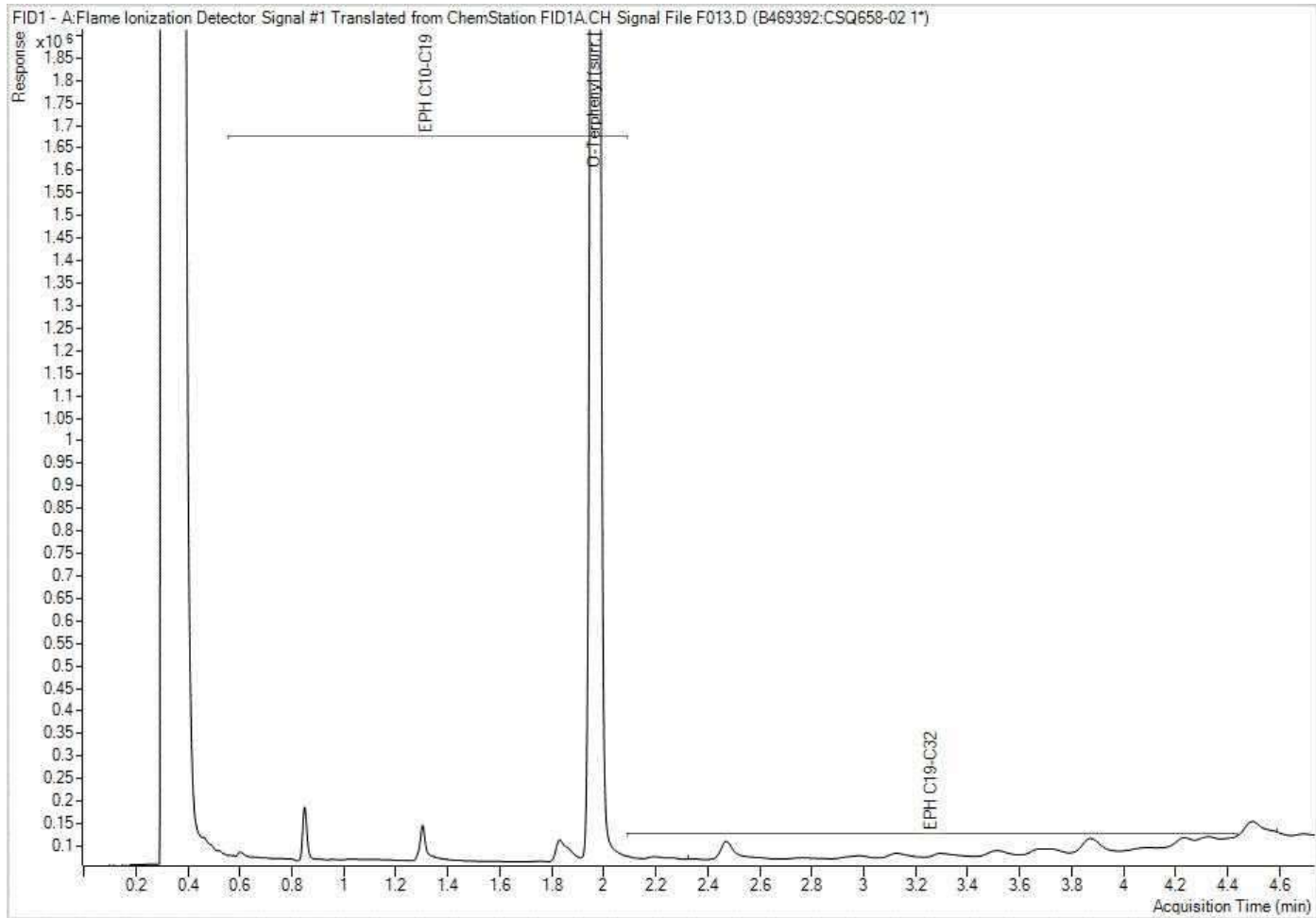
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EPH in Soil by GC/FID Chromatogram



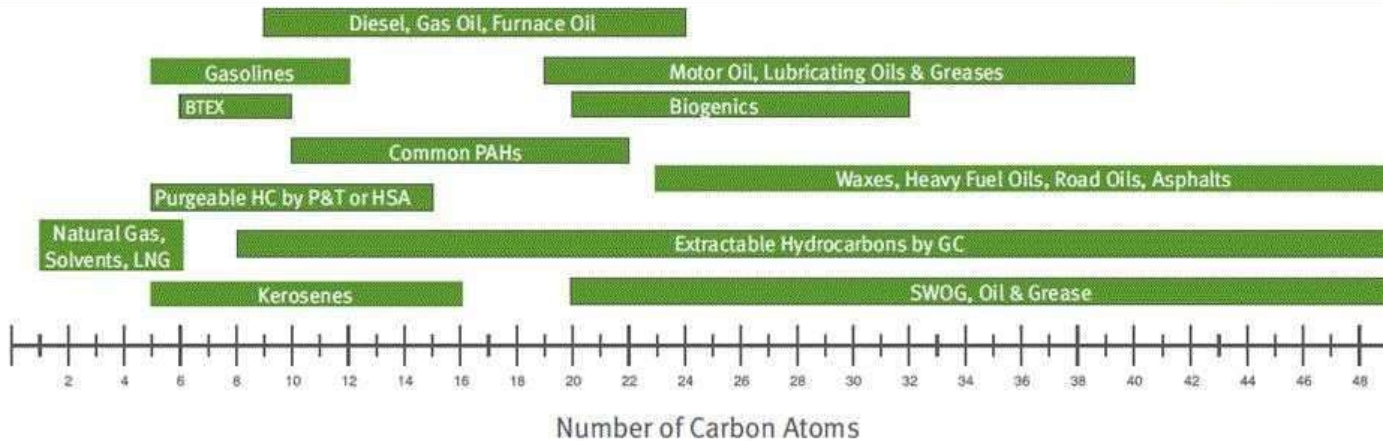
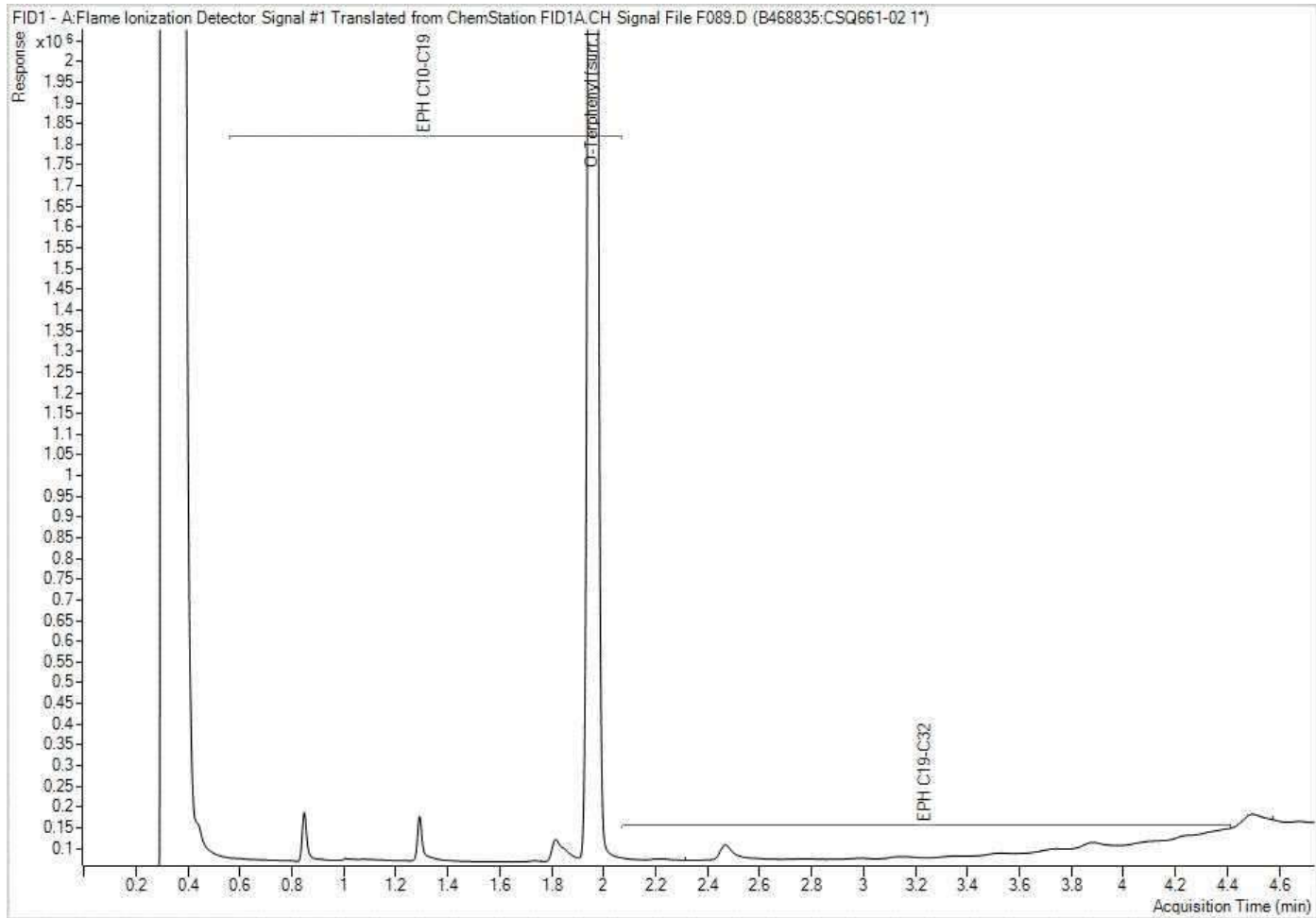
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