

Technical Memorandum

TO: Sandy Smith, Washington State Department of Ecology
FROM: Christine Kimmel, LHG; and Katie Gauglitz, LG
DATE: March 7, 2022
RE: **Groundwater Quality Results**
Dry Season 2021 Long-Term Groundwater Compliance Monitoring
Cascade Pole Site, Olympia, Washington
Project No. 0021043.020.021

At the request of the Port of Olympia, Landau Associates, Inc. (Landau) is providing the Washington State Department of Ecology (Ecology) with the results of the dry season groundwater sampling event conducted in September 2021 at the Cascade Pole site (Site) located in Olympia, Washington. Groundwater sampling was conducted as part of the Long-Term Groundwater Compliance Monitoring (LTGCM) program outlined in the first amendment to Agreed Order No. DE 00TCPSR-753. This technical memorandum provides a summary of the 2021 dry season sampling event.

Groundwater Monitoring

Groundwater elevation measurements were collected on September 16, 2021 and are presented in Table 1. All interior perimeter well groundwater elevations achieved the current hydraulic control goals identified for the Site during the September monitoring event.

A total of 15 water quality samples (14 wells and 1 quality assurance sample) were collected during the dry season sampling event. Samples were collected from the following well pairs: PZ-12 and PZ 13, LW-3 and PZ-17, LW-4R and PZ-18, and MW-02S and PZ-19. Samples were also collected from interior monitoring wells MW-01S, MW-01D, MW-02D, MW-05S, MW-05D, and CW-13. The locations of the sampled wells are shown on Figure 1.

One additional sample was collected on October 28, 2021 from interior monitoring well MW-05D to confirm the results of the dry season sample analysis.

Groundwater samples were submitted to Analytical Resources Inc. (ARI), located in Tukwila, Washington for analysis of polycyclic aromatic hydrocarbons (PAHs) using US Environmental Protection Agency (EPA) Method 8270D/E with select ion monitoring (SIM); follow-up pentachlorophenol (PCP) analysis was conducted using EPA Method 8041A if PCP results from initial analyses using EPA Method 8270D (SIM) were below the reporting limits; gasoline-range total petroleum hydrocarbons (TPH-G) using Method NWTPH-Gx; and diesel-range (TPH-D), oil-range TPH (TPH-O), and creosote-range total petroleum hydrocarbons using Method NWTPH Dx.

Analytical Results

Analytical results were compared to the cleanup screening levels. To evaluate the analytical data for the carcinogenic PAHs (cPAHs), the toxicity equivalency quotients (TEQ) of individual cPAHs were calculated and summed for comparison to the benzo(a)pyrene cleanup level using the methodology established in Washington Administrative Code (WAC) 173-340-708. To calculate the TEQ, the toxicity equivalency factor (TEF) for a given cPAH compound was multiplied by the compound concentration, or half the reporting limit for compounds that were not detected above the laboratory reporting limit, and the resulting values were summed. The analytical results for the dry season sampling event (September 2021) are summarized in Table 2. The laboratory report is included in Attachment 1.

Landau performed an internal data quality evaluation on the groundwater analytical data to determine the acceptability of the analytical results. The data quality evaluation conducted included the following review:

- Chain-of-custody records
- Holding times
- Laboratory method blanks
- Surrogate recoveries
- Completeness
- Blank spikes/laboratory control samples
- Laboratory matrix spikes and matrix spike duplicates
- Overall assessment of data quality
- Laboratory and field duplicates

The results of the internal data quality evaluation indicated the data was acceptable for monitoring purposes. The data has been submitted to Ecology through its Environmental Information Management database (EIM).

The analytical results for the dry season monitoring event indicate groundwater concentrations below the respective laboratory reporting limits for exterior wells PZ-17 and PZ-19, and interior wells PZ-12 and LW-4R. Low-level concentrations of various PAH compounds and TPH constituents, below the cleanup screening levels, were reported for exterior wells PZ-13 and PZ-18, and interior wells LW-3, MW-01D, MW-02S, MW-02D, MW-05S, and CW-13.

Groundwater analytical results for interior well MW-05D indicated carbon range concentrations of 1,580 micrograms per liter ($\mu\text{g/L}$) and 3,120 $\mu\text{g/L}$ in the TPH-G analytical testing results for September and October, respectively. Upon review of the laboratory chromatographs, this peak in the carbon range was identified by the laboratory as naphthalene. The concentrations are below the naphthalene project cleanup screening level of 4,900 $\mu\text{g/L}$.

Groundwater analytical results from shallow interior well MW-01S indicate the following compounds were detected at concentrations above the respective project cleanup screening levels: naphthalene (5,850 $\mu\text{g/L}$), PCP (3,640 $\mu\text{g/L}$), total cPAHs (0.85 $\mu\text{g/L}$), TPH-G (31,000 $\mu\text{g/L}$), and creosote (11,900 $\mu\text{g/L}$). The dry season concentration results are within historical ranges for well MW-01S. As

indicated above, concentrations at MW-01D (deep paired well to MW-01S) were below the respective laboratory reporting limits, with the exception of a low-level detection of naphthalene, indicating hydraulic control of the interior shallow groundwater.

2022 Semiannual Sampling Event

The next semiannual sampling event is planned for early 2022 and will include both groundwater elevation monitoring and groundwater quality sample collection at the following well pairs: PZ-12 and PZ-13, LW-3 and PZ-17, LW-4R and PZ-18, and MW-02S and PZ-19, along with samples from interior shallow and deep wells MW-01S, MW-01D, MW-02D, MW-05S, MW-05D, and CW-13.

The results of the dry season sampling event (September 2021) and the pending wet season sampling event (early 2022) will be presented in an annual progress report that will summarize the LTGCM program.

Limitations

This technical memorandum has been prepared for the exclusive use of the Port of Olympia for specific application to the long-term compliance monitoring project at the Cascade Pole Site. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of Landau Associates. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. Landau makes no other warranty, either express or implied.

This document has been prepared under the supervision and direction of the following key staff.

LANDAU ASSOCIATES, INC.



Christine B. Kimmel, LHG
Senior Associate



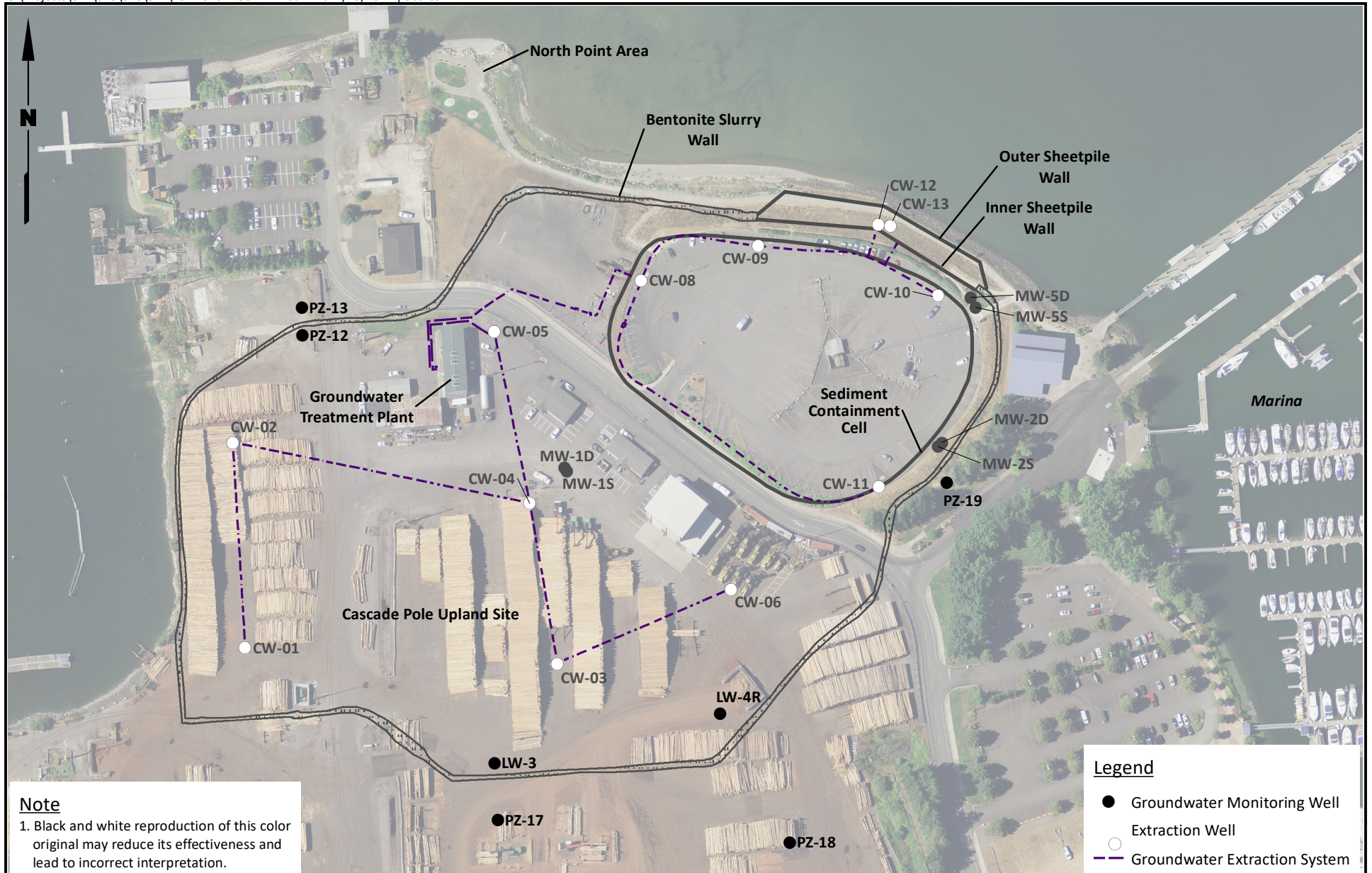
Katie M. Gauglitz, LG
Senior Project Geologist

KMG/CBK/kjg

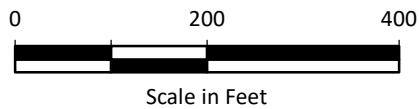
[\\EDM\DATA01\PROJECTS\021\043\R\SEMIANNUALS\SEPTEMBER 2021 LTGCM\LANDAU_CASCADE POLE FINAL SEPT 2021 LTGCM TM 3-7-22]

Attachments

Figure 1	Monitoring Network Well Locations
Table 1	Groundwater Elevations
Table 2	Summary of Current Analytical Results
Attachment 1	Laboratory Data



Source: Thurston County Aerial, 2018



Port of Olympia
 Olympia, Washington

**Monitoring Network
 Well Locations**

Figure
1

Table 1
Groundwater Elevations
Cascade Pole Site
Port of Olympia, Washington

Collection Date	Well ID	Depth to Groundwater (ft) (a)	Top of Well Casing Elevation	Groundwater Elevation (MLLW) (a)	Maximum Elevation Goal (b)	Goal Exceeded?
9/16/2021	PZ-13	7.41	19.50	12.09	--	
9/16/2021	PZ-12	4.30	19.00	14.70	15.50	No
9/16/2021	PZ-17	7.33	20.48	13.15	--	
9/16/2021	LW-3	4.58	19.83	15.25	15.50	No
9/16/2021	PZ-18	7.93	21.2	13.27	--	
9/16/2021	LW-4R	7.93	22.02	14.09	15.50	No
9/16/2021	PZ-19	15.95	23.67	7.72	--	
9/16/2021	MW-02S	18.07	31.96	13.89	15.50	No
9/16/2021	MW-02S	18.07	31.96	13.89	15.50	No
9/16/2021	MW-02D	22.22	31.81	9.59	--	
9/16/2021	MW-01S	6.63	21.64	15.01	--	
9/16/2021	MW-01D	10.91	21.72	10.81	--	--
9/16/2021	MW-05S	16.62	29.45	12.83	16.50	No
9/16/2021	MW-05D	16.52	26.50	9.98	--	

Notes:

(a) Below top of PVC well casing

(b) Short-term hydraulic control goal is 15.5 ft along the majority of the cutoff wall alignment and 16.5 ft adjacent to Budd Inlet.

Groundwater elevations determined by subtracting depth to groundwater below top of casing (ft) from top of well casing elevation (MLLW, ft).

Abbreviations and Acronyms:

ft = foot/feet

ID = identification

NM = Not measured

NA = Not available

MLLW = Mean low low water

PVC = polyvinyl chloride

-- = No hydraulic goal established

Table 2
Summary of Current Analytical Results
Groundwater Compliance Monitoring
Cascade Pole Site
Port of Olympia, Washington

	Cleanup Screening Levels (a)	PZ-12 2110239-12 9/16/2021	PZ-13 2110239-13 9/16/2021	PZ-17 2110239-05 9/17/2021	PZ-18 2110239-04 9/16/2021	PZ-19 2110239-11 9/17/2021	LW-3 2110239-07 9/16/2021	LW-4R 2110239-08 9/16/2021	MW-01S 2110239-15 9/17/2021	MW-02S 2110239-09 9/17/2021	MW-05S 2110239-02 9/16/2021	Dup of MW-05S PZ-30 2110239-03 9/16/2021	MW-01D 2110239-14 9/17/2021	MW-02D 2110239-10 9/17/2021	MW-05D 2110239-06 9/16/2021	MW-05D 2110448-02 10/28/2021	CW-13 2110239-16 9/16/2021		
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (µg/L)																			
EPA Method SW8270D,E / SW8270D,E-SIM																			
Naphthalene	4,900	1.0 U	1.4	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5850	1.0 U	14.6 J	11.1 J	1.2	22.3	1.0 U	NA	1.7
2-Methylnaphthalene		1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	510	1.0 U	1.4	1.1	1.0 U	4.1	1.0 U	NA	1.0 U
Acenaphthylene		1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.9	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
Acenaphthene		1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	289	6.6	10.3 J	8.1 J	1.0 U	9.7	1.0 U	NA	1.0 U
Dibenzofuran		1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	97.3	1.3	1.0 U	1.0 U	1.0 U	2.8	1.0 U	NA	1.0 U
Fluorene		1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	93.4	1.6	1.0 U	1.0 U	1.0 U	3.0	1.0 U	NA	1.0 U
Pentachlorophenol	3	10.0 U	10.0 U	30.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	3640	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	NA	10.0 U
Phenanthrene		1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	106	1.0 U	1.0 U	1.0 U	1.0 U	2.3	1.0 U	NA	1.0 U
Anthracene		1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	15.6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
Fluoranthene		1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	19.2	1.0 U	1.0 U	1.0 U	1.0 U	1.3	1.0 U	NA	1.0 U
Pyrene	2,600	1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	13.8	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
Benzo(a)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.32	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.30 U	NA	0.10 U
Chrysene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.49	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.30 U	NA	0.10 U
Benzo(a)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.00 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.30 U	NA	0.10 U
Indeno(1,2,3-cd)Pyrene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.00 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.30 U	NA	0.10 U
Dibenz(a,h)Anthracene		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.00 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.30 U	NA	0.10 U
Benzo(g,h,i)Perylene		1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	1.0 U
1-Methylnaphthalene		1.0 U	1.0 U	3.0 U	1.0 U	1.0 U	1.5	1.0 U	1.0 U	1.0 U	366	2.4	4.3	3.3	1.0 U	5.7	1.0 U	NA	1.0 U
Total Benzofluoranthenes		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	2.00 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.60 U	NA	0.20 U
cPAH TEQ (b)	0.1 (c)	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	ND	ND	ND	ND	ND	ND	NA	ND
cPAH TEQ (b) (Using 1/2 RL for ND)	0.1 (c)	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.85	0.076	0.076	0.076	0.076	0.076	0.227	NA	0.076
PENTACHLOROPHENOL (µg/L)																			
EPA Method SW8041A																			
Pentachlorophenol	3	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA	0.25 U
PETROLEUM HYDROCARBONS																			
Method NWTPH-Gx (µg/L)																			
Gasoline	1,000	100 U	100 U	100 U	252	100 U	306	100 U	100 U	100 U	31,000	100 U	122	122	100 U	100 U	1,580 (d)	3,120 (d)	100 U
Method NWTPH-Dx (µg/L)																			
Diesel	500	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	NA	100 U
Motor Oil	500	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	NA	200 U
Creosote Oil	500	200 U	200 U	200 U	214	200 U	259	200 U	200 U	200 U	11,900	200 U	215	200 U	200 U	200 U	202	NA	200 U

Notes:
 U = Indicates the compound was undetected at the given reporting limit.
 J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold indicates detected compound. Box indicates exceedance of screening levels.
 Box indicates exceedance of screening level.
 (a) Groundwater screening levels are MTCA Method B for marine surface water for cPAHs and PCP; MTCA Method A for TPH-Gx/TPH-Dx.
 (b) Toxicity equivalency factor (TEQ) as described in WAC 173-340-708 (8).
 (c) cPAH cleanup screening levels based on practical quantitation limit (PQL) for individual cPAHs.
 (d) Follow up data review of laboratory chromatograms analysts identified the peak in the carbon range as naphthalene.

Abbreviations/Acronyms:
 cPAH = carcinogenic polycyclic aromatic hydrocarbon
 µg/L = micrograms per liter
 EPA = US Environmental Protection Agency
 MTCA = Model Toxics Control Act
 NA = not analyzed
 ND = Not Detected.
 NWTPH-Dx = total petroleum hydrocarbons diesel range
 NWTPH-Gx = TPH gasoline range
 PCP = pentachlorophenol
 RL = reporting limit
 SIM = select ion monitoring
 WAC = Washington Administrative Code

ATTACHMENT 1

Laboratory Data



Analytical Resources, LLC
Analytical Chemists and Consultants

22 October 2021

Christine Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Cascade Pole

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
2110239

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.





2170039

Chain-of-Custody Record

<input type="checkbox"/> North Seattle (206) 631-8660	<input type="checkbox"/> Spokane (509) 327-9737	Date _____	Turnaround Time: _____
<input checked="" type="checkbox"/> Tacoma (253) 926-2493	<input type="checkbox"/> Portland (503) 542-1080	Page <u>1</u> of <u>1</u>	<input checked="" type="radio"/> Standard
<input type="checkbox"/> Olympia (360) 791-3178	<input type="checkbox"/> _____		<input type="radio"/> Accelerated

Project Name Port of Olympia Project No. 0021041.010.020
 Project Location/Event Cascade Pole / Dry season
 Sampler's Name SMR/CAL
 Project Contact Sierra Mott, Chris Kimmel
 Send Results To S. Mott, C. Kimmel, D. Jorgensen, D. Bach

Testing Parameters

NWTPH-Gx
NWTPH-Dx+Crack
PAHs
C-PAHs Sim
PCP 8270
PCP 8041

Special Handling Requirements: _____
 Shipment Method: _____
 Stored on ice: Yes / No

Sample I.D.	Date	Time	Matrix	No. of Containers	NWTPH-Gx	NWTPH-Dx+Crack	PAHs	C-PAHs Sim	PCP 8270	PCP 8041	Observations/Comments
Trip Blank-20210917	—	—	Aq	2	X						
MW-05s-20210916	9/16/21	1351		8	X	X	X	X	X	X	— Allow water samples to settle, collect aliquot from clear portion <input type="checkbox"/>
P2-30-20210916	9/16/21	1352									— NWTPH-Dx - Acid wash cleanup <input type="checkbox"/>
P2-18-20210916	9/16/21	1300									- Silica gel cleanup <input type="checkbox"/>
P2-17-20210917	9/17/21	1200									— Dissolved metal samples were field filtered
MW-05D-20210916	9/16/21	1520 ^{SMR}									
LW-3-20210916	9/16/21	18267									
LW-4R-20210916	9/16/21	1641									
MW-02S-20210917	9/17/21	1740 ^{SMR}									Other <u>Run all samples</u>
MW-02D-20210917	9/17/21	1300									<u>for PCP using 8270-</u>
P2-19-20210917	9/17/21	1304									<u>SMR</u>
P2-18-20210916	9/16/21	1038									<u>unless If result</u>
P2-13-20210916	9/16/21	1050									<u>NO, run PCP 8041-</u>
MW-01D-20210917	9/17/21	955									
MW-01S-20210917	9/17/21	951									
CW-13-20210916	9/16/21	1355									

Relinquished by
 Signature SMR
 Printed Name Simone Rodriguez
 Company Landau Associates Inc
 Date 9/17/21 Time 1634

Received by
 Signature [Signature]
 Printed Name Jacob Watter
 Company APZ
 Date 09/17/2021 Time 1634

Relinquished by
 Signature _____
 Printed Name _____
 Company _____
 Date _____ Time _____

Received by
 Signature _____
 Printed Name _____
 Company _____
 Date _____ Time _____



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
22-Oct-2021 16:36

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TripBlank-20210917	21I0239-01	Water	16-Sep-2021 10:38	17-Sep-2021 16:34
MW-05s-20210916	21I0239-02	Water	16-Sep-2021 13:51	17-Sep-2021 16:34
PZ-30-20210916	21I0239-03	Water	16-Sep-2021 13:52	17-Sep-2021 16:34
PZ-18-20210916	21I0239-04	Water	16-Sep-2021 17:00	17-Sep-2021 16:34
PZ-17-20210917	21I0239-05	Water	17-Sep-2021 12:00	17-Sep-2021 16:34
MW-05D-20210916	21I0239-06	Water	16-Sep-2021 15:20	17-Sep-2021 16:34
LW-3-20210916	21I0239-07	Water	16-Sep-2021 18:27	17-Sep-2021 16:34
LW-4R-20210916	21I0239-08	Water	16-Sep-2021 16:41	17-Sep-2021 16:34
MW-02S-20210917	21I0239-09	Water	17-Sep-2021 07:40	17-Sep-2021 16:34
MW-02D-20210917	21I0239-10	Water	17-Sep-2021 13:00	17-Sep-2021 16:34
PZ-19-20210917	21I0239-11	Water	17-Sep-2021 13:04	17-Sep-2021 16:34
PZ-12-20210916	21I0239-12	Water	16-Sep-2021 10:38	17-Sep-2021 16:34
PZ-13-20210916	21I0239-13	Water	16-Sep-2021 10:50	17-Sep-2021 16:34
MW-01D-20210917	21I0239-14	Water	17-Sep-2021 09:55	17-Sep-2021 16:34
MW-01S-20210917	21I0239-15	Water	17-Sep-2021 09:51	17-Sep-2021 16:34
CW-13-20210916	21I0239-16	Water	16-Sep-2021 13:55	17-Sep-2021 16:34



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
22-Oct-2021 16:36

Work Order Case Narrative

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270E-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits with the exception of surrogates flagged on the associated forms.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits with the exception of analytes flagged on the associated forms.

Pentachlorophenol - EPA Method SW8041A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
22-Oct-2021 16:36

Semivolatiles - EPA Method SW8270E

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are out of control high in the CCAL. All associated samples that contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits with the exception of analytes flagged on the associated forms.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.



WORK ORDER

21I0239

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Landau Associates, Inc.

Project Manager: Kelly Bottem

Project: Cascade Pole

Project Number: Cascade Pole/0021041.010.020

Preservation Confirmation

Container ID	Container Type	pH
21I0239-01 A	VOA Vial, Clear, 40 mL, HCL	Bubble
21I0239-01 B	VOA Vial, Clear, 40 mL, HCL	
21I0239-02 A	VOA Vial, Clear, 40 mL, HCL	
21I0239-02 B	VOA Vial, Clear, 40 mL, HCL	
21I0239-02 C	Glass NM, Amber, 500 mL	
21I0239-02 D	Glass NM, Amber, 500 mL	
21I0239-02 E	Glass NM, Amber, 500 mL	
21I0239-02 F	Glass NM, Amber, 500 mL	
21I0239-02 G	Glass NM, Amber, 500 mL	
21I0239-02 H	Glass NM, Amber, 500 mL	
21I0239-02 I	Glass NM, Amber, 500 mL	
21I0239-02 J	Glass NM, Amber, 500 mL	
21I0239-03 A	VOA Vial, Clear, 40 mL, HCL	
21I0239-03 B	VOA Vial, Clear, 40 mL, HCL	
21I0239-03 C	Glass NM, Amber, 500 mL	
21I0239-03 D	Glass NM, Amber, 500 mL	
21I0239-03 E	Glass NM, Amber, 500 mL	
21I0239-03 F	Glass NM, Amber, 500 mL	
21I0239-03 G	Glass NM, Amber, 500 mL	
21I0239-03 H	Glass NM, Amber, 500 mL	
21I0239-03 I	Glass NM, Amber, 500 mL	
21I0239-03 J	Glass NM, Amber, 500 mL	
21I0239-04 A	VOA Vial, Clear, 40 mL, HCL	
21I0239-04 B	VOA Vial, Clear, 40 mL, HCL	
21I0239-04 C	Glass NM, Amber, 500 mL	
21I0239-04 D	Glass NM, Amber, 500 mL	
21I0239-04 E	Glass NM, Amber, 500 mL	
21I0239-04 F	Glass NM, Amber, 500 mL	
21I0239-04 G	Glass NM, Amber, 500 mL	
21I0239-04 H	Glass NM, Amber, 500 mL	
21I0239-04 I	Glass NM, Amber, 500 mL	
21I0239-04 J	Glass NM, Amber, 500 mL	
21I0239-05 A	VOA Vial, Clear, 40 mL, HCL	
21I0239-05 B	VOA Vial, Clear, 40 mL, HCL	



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Client: Landau Associates, Inc.	Project Manager: Kelly Bottem
Project: Cascade Pole	Project Number: Cascade Pole/0021041.010.020

21I0239-05 C	Glass NM, Amber, 500 mL
21I0239-05 D	Glass NM, Amber, 500 mL
21I0239-05 E	Glass NM, Amber, 500 mL
21I0239-05 F	Glass NM, Amber, 500 mL
21I0239-05 G	Glass NM, Amber, 500 mL
21I0239-05 H	Glass NM, Amber, 500 mL
21I0239-05 I	Glass NM, Amber, 500 mL
21I0239-05 J	Glass NM, Amber, 500 mL
21I0239-06 A	VOA Vial, Clear, 40 mL, HCL
21I0239-06 B	VOA Vial, Clear, 40 mL, HCL
21I0239-06 C	Glass NM, Amber, 500 mL
21I0239-06 D	Glass NM, Amber, 500 mL
21I0239-06 E	Glass NM, Amber, 500 mL
21I0239-06 F	Glass NM, Amber, 500 mL
21I0239-06 G	Glass NM, Amber, 500 mL
21I0239-06 H	Glass NM, Amber, 500 mL
21I0239-06 I	Glass NM, Amber, 500 mL
21I0239-06 J	Glass NM, Amber, 500 mL
21I0239-07 A	VOA Vial, Clear, 40 mL, HCL
21I0239-07 B	VOA Vial, Clear, 40 mL, HCL
21I0239-07 C	Glass NM, Amber, 500 mL
21I0239-07 D	Glass NM, Amber, 500 mL
21I0239-07 E	Glass NM, Amber, 500 mL
21I0239-07 F	Glass NM, Amber, 500 mL
21I0239-07 G	Glass NM, Amber, 500 mL
21I0239-07 H	Glass NM, Amber, 500 mL
21I0239-07 I	Glass NM, Amber, 500 mL
21I0239-07 J	Glass NM, Amber, 500 mL
21I0239-08 A	VOA Vial, Clear, 40 mL, HCL
21I0239-08 B	VOA Vial, Clear, 40 mL, HCL
21I0239-08 C	Glass NM, Amber, 500 mL
21I0239-08 D	Glass NM, Amber, 500 mL
21I0239-08 E	Glass NM, Amber, 500 mL
21I0239-08 F	Glass NM, Amber, 500 mL
21I0239-08 G	Glass NM, Amber, 500 mL
21I0239-08 H	Glass NM, Amber, 500 mL

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WORK ORDER

21I0239

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Client: Landau Associates, Inc.

Project Manager: Kelly Bottem

Project: Cascade Pole

Project Number: Cascade Pole/0021041.010.020

21I0239-08 I	Glass NM, Amber, 500 mL
21I0239-08 J	Glass NM, Amber, 500 mL
21I0239-09 A	VOA Vial, Clear, 40 mL, HCL
21I0239-09 B	VOA Vial, Clear, 40 mL, HCL
21I0239-09 C	Glass NM, Amber, 500 mL
21I0239-09 D	Glass NM, Amber, 500 mL
21I0239-09 E	Glass NM, Amber, 500 mL
21I0239-09 F	Glass NM, Amber, 500 mL
21I0239-09 G	Glass NM, Amber, 500 mL
21I0239-09 H	Glass NM, Amber, 500 mL
21I0239-09 I	Glass NM, Amber, 500 mL
21I0239-09 J	Glass NM, Amber, 500 mL
21I0239-10 A	VOA Vial, Clear, 40 mL, HCL
21I0239-10 B	VOA Vial, Clear, 40 mL, HCL
21I0239-10 C	Glass NM, Amber, 500 mL
21I0239-10 D	Glass NM, Amber, 500 mL
21I0239-10 E	Glass NM, Amber, 500 mL
21I0239-10 F	Glass NM, Amber, 500 mL
21I0239-10 G	Glass NM, Amber, 500 mL
21I0239-10 H	Glass NM, Amber, 500 mL
21I0239-10 I	Glass NM, Amber, 500 mL
21I0239-10 J	Glass NM, Amber, 500 mL
21I0239-11 A	VOA Vial, Clear, 40 mL, HCL
21I0239-11 B	VOA Vial, Clear, 40 mL, HCL
21I0239-11 C	Glass NM, Amber, 500 mL
21I0239-11 D	Glass NM, Amber, 500 mL
21I0239-11 E	Glass NM, Amber, 500 mL
21I0239-11 F	Glass NM, Amber, 500 mL
21I0239-11 G	Glass NM, Amber, 500 mL
21I0239-11 H	Glass NM, Amber, 500 mL
21I0239-11 I	Glass NM, Amber, 500 mL
21I0239-11 J	Glass NM, Amber, 500 mL
21I0239-12 A	VOA Vial, Clear, 40 mL, HCL
21I0239-12 B	VOA Vial, Clear, 40 mL, HCL
21I0239-12 C	Glass NM, Amber, 500 mL
21I0239-12 D	Glass NM, Amber, 500 mL



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Project Manager: Kelly Bottem

Project: Cascade Pole

Project Number: Cascade Pole/0021041.010.020

21I0239-12 E	Glass NM, Amber, 500 mL
21I0239-12 F	Glass NM, Amber, 500 mL
21I0239-12 G	Glass NM, Amber, 500 mL
21I0239-12 H	Glass NM, Amber, 500 mL
21I0239-12 I	Glass NM, Amber, 500 mL
21I0239-12 J	Glass NM, Amber, 500 mL
21I0239-13 A	VOA Vial, Clear, 40 mL, HCL
21I0239-13 B	VOA Vial, Clear, 40 mL, HCL
21I0239-13 C	Glass NM, Amber, 500 mL
21I0239-13 D	Glass NM, Amber, 500 mL
21I0239-13 E	Glass NM, Amber, 500 mL
21I0239-13 F	Glass NM, Amber, 500 mL
21I0239-13 G	Glass NM, Amber, 500 mL
21I0239-13 H	Glass NM, Amber, 500 mL
21I0239-13 I	Glass NM, Amber, 500 mL
21I0239-13 J	Glass NM, Amber, 500 mL
21I0239-14 A	VOA Vial, Clear, 40 mL, HCL
21I0239-14 B	VOA Vial, Clear, 40 mL, HCL
21I0239-14 C	Glass NM, Amber, 500 mL
21I0239-14 D	Glass NM, Amber, 500 mL
21I0239-14 E	Glass NM, Amber, 500 mL
21I0239-14 F	Glass NM, Amber, 500 mL
21I0239-14 G	Glass NM, Amber, 500 mL
21I0239-14 H	Glass NM, Amber, 500 mL
21I0239-14 I	Glass NM, Amber, 500 mL
21I0239-14 J	Glass NM, Amber, 500 mL
21I0239-15 A	VOA Vial, Clear, 40 mL, HCL
21I0239-15 B	VOA Vial, Clear, 40 mL, HCL
21I0239-15 C	Glass NM, Amber, 500 mL
21I0239-15 D	Glass NM, Amber, 500 mL
21I0239-15 E	Glass NM, Amber, 500 mL
21I0239-15 F	Glass NM, Amber, 500 mL
21I0239-15 G	Glass NM, Amber, 500 mL
21I0239-15 H	Glass NM, Amber, 500 mL
21I0239-15 I	Glass NM, Amber, 500 mL
21I0239-15 J	Glass NM, Amber, 500 mL



WORK ORDER

21I0239

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Client: Landau Associates, Inc.

Project Manager: Kelly Bottem

Project: Cascade Pole

Project Number: Cascade Pole/0021041.010.020

21I0239-16 A	VOA Vial, Clear, 40 mL, HCL
21I0239-16 B	VOA Vial, Clear, 40 mL, HCL
21I0239-16 C	Glass NM, Amber, 500 mL
21I0239-16 D	Glass NM, Amber, 500 mL
21I0239-16 E	Glass NM, Amber, 500 mL
21I0239-16 F	Glass NM, Amber, 500 mL
21I0239-16 G	Glass NM, Amber, 500 mL
21I0239-16 H	Glass NM, Amber, 500 mL
21I0239-16 I	Glass NM, Amber, 500 mL
21I0239-16 J	Glass NM, Amber, 500 mL

Preservation Confirmed By _____

Date _____



Cooler Receipt Form

ARI Client: Landa Tacama

Project Name: Part of Olympia

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 21J0239

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1634 2.1 1.6 0.6 3.6 1.8 3.1 1.3 0.5

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: DOO 2565

Cooler Accepted by: JS

Date: 09/17/2001 Time: 1634

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

How were bottles sealed in plastic bags? Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? JS YES NO

Date VOC Trip Blank was made at ARI: NA 09/13/2001

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JS Date: 09/18/2001 Time: 0940 Labels checked by: JS

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

vials w/ air bubbles marked on preservation sheet lab to determine sizes. Client has 2 samples w/ ID "P2-18-20010916" listed on the COC. The one w/ sample time of 1038 has "P2-12-20010916" listed on container labels logged w/ this IO.

By: JS Date: 09/18/2001
All samples listing 8 containers, actually have 10 containers each.



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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TripBlank-20210917
21I0239-01 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/16/2021 10:38
Instrument: NT2 Analyst: PKC Analyzed: 09/20/2021 12:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-01 B
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 09/20/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	93.7	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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MW-05s-20210916
21I0239-02 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/16/2021 13:51
Instrument: NT2 Analyst: PKC Analyzed: 09/20/2021 14:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-02 A
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 09/20/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	122	ug/L	
HC ID: GRO						
<i>Surrogate: Toluene-d8</i>			80-120 %	98.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	97.7	%	



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
22-Oct-2021 16:36

MW-05s-20210916
21I0239-02 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/16/2021 13:51

Instrument: NT6 Analyst: JZ

Analyzed: 09/30/2021 14:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-02 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	1.0	14.6	ug/L	
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	10.3	ug/L	
2-Methylnaphthalene	91-57-6	1	1.0	1.4	ug/L	
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	4.3	ug/L	

Surrogate: 2-Fluorobiphenyl

54.4-120 % 98.8 %

Surrogate: 2,4,6-Tribromophenol

49.3-128 % 122 %

Surrogate: p-Terphenyl-d14

60-120 % 114 %



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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MW-05s-20210916
21I0239-02 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/16/2021 13:51
Instrument: NT8 Analyst: JZ Analyzed: 10/16/2021 00:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-02 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-02 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	1	0.10	ND	ug/L	U
Chrysene	218-01-9	1	0.10	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.20	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.10	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.10	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>71.8</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>128</i>	<i>%</i>	<i>*</i>



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MW-05s-20210916
21I0239-02 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/16/2021 13:51
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 00:09

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-02 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-02 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-02 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	215	ug/L	
HC ID: DRO						
<i>Surrogate: o-Terphenyl</i>			50-150 %	88.2	%	



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MW-05s-20210916
21I0239-02 (Water)

Phenols

Method: EPA 8041A Sampled: 09/16/2021 13:51
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 15:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-02 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	71.4	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	91.4	%	



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PZ-30-20210916
21I0239-03 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/16/2021 13:52
Instrument: NT2 Analyst: PKC Analyzed: 09/20/2021 15:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-03 B
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 09/20/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	122	ug/L	
HC ID: GRO						
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	97.0	%	



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Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
22-Oct-2021 16:36

PZ-30-20210916
21I0239-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/16/2021 13:52

Instrument: NT6 Analyst: JZ

Analyzed: 09/30/2021 15:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-03 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	1.0	11.1	ug/L	
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	8.1	ug/L	
2-Methylnaphthalene	91-57-6	1	1.0	1.1	ug/L	
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	3.3	ug/L	

Surrogate: 2-Fluorobiphenyl

54.4-120 %

80.9

%

Surrogate: 2,4,6-Tribromophenol

49.3-128 %

102

%

Surrogate: p-Terphenyl-d14

60-120 %

95.3

%



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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PZ-30-20210916
21I0239-03 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/16/2021 13:52
Instrument: NT8 Analyst: JZ Analyzed: 10/16/2021 00:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-03 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-03 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	1	0.10	ND	ug/L	U
Chrysene	218-01-9	1	0.10	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.20	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.10	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.10	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>52.6</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>83.0</i>	<i>%</i>	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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PZ-30-20210916
21I0239-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/16/2021 13:52
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 00:29

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-03 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-03 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-03 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	83.9	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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PZ-30-20210916
21I0239-03 (Water)

Phenols

Method: EPA 8041A Sampled: 09/16/2021 13:52
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 15:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-03 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	74.6	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	95.8	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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PZ-18-20210916
21I0239-04 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/16/2021 17:00
Instrument: NT2 Analyst: PKC Analyzed: 09/20/2021 15:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-04 A
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 09/20/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	252	ug/L	
HC ID: GRO						
<i>Surrogate: Toluene-d8</i>			80-120 %	102	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	98.0	%	



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Project Manager: Christine Kimmel

Reported:
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PZ-18-20210916
21I0239-04 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/16/2021 17:00

Instrument: NT6 Analyst: JZ

Analyzed: 09/30/2021 15:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-04 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U

Surrogate: 2-Fluorobiphenyl	54.4-120 %	79.8	%
Surrogate: 2,4,6-Tribromophenol	49.3-128 %	105	%
Surrogate: p-Terphenyl-d14	60-120 %	94.6	%



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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PZ-18-20210916
21I0239-04 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/16/2021 17:00
Instrument: NT8 Analyst: JZ Analyzed: 10/16/2021 01:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-04 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-04 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	1	0.10	ND	ug/L	U
Chrysene	218-01-9	1	0.10	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.20	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.10	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.10	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>65.4</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>107</i>	<i>%</i>	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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PZ-18-20210916
21I0239-04 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/16/2021 17:00
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 00:50

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-04 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-04 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-04 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	214	ug/L	
HC ID: DRO						
<i>Surrogate: o-Terphenyl</i>			50-150 %	114	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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PZ-18-20210916
21I0239-04 (Water)

Phenols

Method: EPA 8041A Sampled: 09/16/2021 17:00
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 15:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-04 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	72.8	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	94.3	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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PZ-17-20210917
21I0239-05 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/17/2021 12:00
Instrument: NT2 Analyst: PKC Analyzed: 09/20/2021 15:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-05 A
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 09/20/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	94.6	%	



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Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
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PZ-17-20210917
21I0239-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/17/2021 12:00

Instrument: NT6 Analyst: JZ

Analyzed: 09/30/2021 16:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-05 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	3	3.0	ND	ug/L	U
Acenaphthylene	208-96-8	3	3.0	ND	ug/L	U
Acenaphthene	83-32-9	3	3.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	3	3.0	ND	ug/L	U
Dibenzofuran	132-64-9	3	3.0	ND	ug/L	U
Fluorene	86-73-7	3	3.0	ND	ug/L	U
Pentachlorophenol	87-86-5	3	30.0	ND	ug/L	U
Phenanthrene	85-01-8	3	3.0	ND	ug/L	U
Anthracene	120-12-7	3	3.0	ND	ug/L	U
Carbazole	86-74-8	3	3.0	ND	ug/L	U
Fluoranthene	206-44-0	3	3.0	ND	ug/L	U
Pyrene	129-00-0	3	3.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	3	3.0	ND	ug/L	U
Chrysene	218-01-9	3	3.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	3	3.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	3	3.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	3	3.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	3	3.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	3	3.0	ND	ug/L	U
<i>Surrogate: 2-Fluorobiphenyl</i>			54.4-120 %	96.2	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>			49.3-128 %	116	%	
<i>Surrogate: p-Terphenyl-d14</i>			60-120 %	115	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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PZ-17-20210917
21I0239-05 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/17/2021 12:00
Instrument: NT8 Analyst: JZ Analyzed: 10/16/2021 01:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-05 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-05 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	1	0.10	ND	ug/L	U
Chrysene	218-01-9	1	0.10	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.20	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.10	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.10	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>62.6</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>113</i>	<i>%</i>	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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PZ-17-20210917
21I0239-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/17/2021 12:00
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 01:10

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-05 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-05 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-05 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	92.5	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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PZ-17-20210917
21I0239-05 (Water)

Phenols

Method: EPA 8041A Sampled: 09/17/2021 12:00
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 16:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-05 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	72.4	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	94.0	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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MW-05D-20210916
21I0239-06 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/16/2021 15:20
Instrument: NT2 Analyst: PKC Analyzed: 09/20/2021 16:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-06 A
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 09/20/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	1580	ug/L	
HC ID: GRO						
<i>Surrogate: Toluene-d8</i>			80-120 %	98.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	99.4	%	



Landau Associates, Inc.
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Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
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MW-05D-20210916
21I0239-06 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/16/2021 15:20

Instrument: NT6 Analyst: JZ

Analyzed: 09/30/2021 16:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-06 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	1.3	ug/L	
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
<i>Surrogate: 2-Fluorobiphenyl</i>			54.4-120 %	83.4	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>			49.3-128 %	115	%	
<i>Surrogate: p-Terphenyl-d14</i>			60-120 %	101	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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MW-05D-20210916
21I0239-06 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/16/2021 15:20
Instrument: NT8 Analyst: JZ Analyzed: 10/18/2021 12:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-06 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-06 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	3	0.30	ND	ug/L	U
Chrysene	218-01-9	3	0.30	ND	ug/L	U
Benzo(a)fluoranthene, Total		3	0.60	ND	ug/L	U
Benzo(a)pyrene	50-32-8	3	0.30	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	3	0.30	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	3	0.30	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>28.4</i>	<i>%</i>	<i>*</i>
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>135</i>	<i>%</i>	<i>*</i>



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MW-05D-20210916
21I0239-06 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/16/2021 15:20
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 01:30

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-06 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-06 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-06 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	202	ug/L	
HC ID: DRO						
<i>Surrogate: o-Terphenyl</i>			50-150 %	96.9	%	



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MW-05D-20210916
21I0239-06 (Water)

Phenols

Method: EPA 8041A Sampled: 09/16/2021 15:20
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 16:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-06 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	71.0	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	96.2	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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LW-3-20210916
21I0239-07 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/16/2021 18:27
Instrument: NT2 Analyst: PKC Analyzed: 09/20/2021 16:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-07 A
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 09/20/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	306	ug/L	
HC ID: GRO						
<i>Surrogate: Toluene-d8</i>			80-120 %	100	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	98.4	%	



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Reported:
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LW-3-20210916
21I0239-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/16/2021 18:27

Instrument: NT6 Analyst: JZ

Analyzed: 09/30/2021 17:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-07 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	1.5	ug/L	
<i>Surrogate: 2-Fluorobiphenyl</i>			54.4-120 %	84.2	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>			49.3-128 %	106	%	
<i>Surrogate: p-Terphenyl-d14</i>			60-120 %	87.8	%	



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Project Manager: Christine Kimmel

Reported:
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LW-3-20210916
21I0239-07 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/16/2021 18:27
Instrument: NT8 Analyst: JZ Analyzed: 10/16/2021 15:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-07 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-07 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	1	0.10	ND	ug/L	U
Chrysene	218-01-9	1	0.10	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.20	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.10	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.10	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>54.3</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>53.9</i>	<i>%</i>	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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LW-3-20210916
21I0239-07 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/16/2021 18:27
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 01:50

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-07 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-07 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-07 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	259	ug/L	
HC ID: DRO						
<i>Surrogate: o-Terphenyl</i>			50-150 %	102	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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LW-3-20210916
21I0239-07 (Water)

Phenols

Method: EPA 8041A Sampled: 09/16/2021 18:27
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 16:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-07 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	71.1	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	96.3	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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LW-4R-20210916
21I0239-08 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/16/2021 16:41
Instrument: NT2 Analyst: PKC Analyzed: 09/20/2021 16:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-08 B
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 09/20/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	95.7	%	



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Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
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LW-4R-20210916
21I0239-08 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/16/2021 16:41

Instrument: NT6 Analyst: JZ

Analyzed: 09/30/2021 18:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-08 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U

Surrogate: 2-Fluorobiphenyl

54.4-120 % 88.5 %

Surrogate: 2,4,6-Tribromophenol

49.3-128 % 111 %

Surrogate: p-Terphenyl-d14

60-120 % 104 %



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Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
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LW-4R-20210916
21I0239-08 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/16/2021 16:41
Instrument: NT8 Analyst: JZ Analyzed: 10/16/2021 15:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-08 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-08 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	1	0.10	ND	ug/L	U
Chrysene	218-01-9	1	0.10	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.20	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.10	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.10	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>44.9</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>91.1</i>	<i>%</i>	



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LW-4R-20210916
21I0239-08 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/16/2021 16:41
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 03:11

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-08 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-08 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-08 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	102	%	



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LW-4R-20210916
21I0239-08 (Water)

Phenols

Method: EPA 8041A Sampled: 09/16/2021 16:41
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 17:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-08 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	68.3	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	89.3	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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MW-02S-20210917
21I0239-09 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/17/2021 07:40
Instrument: NT2 Analyst: PKC Analyzed: 09/20/2021 17:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-09 A
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 09/20/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	97.9	%	



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Project Manager: Christine Kimmel

Reported:
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MW-02S-20210917
21I0239-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/17/2021 07:40

Instrument: NT6 Analyst: JZ

Analyzed: 09/30/2021 18:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-09 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	6.6	ug/L	
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	1.3	ug/L	
Fluorene	86-73-7	1	1.0	1.6	ug/L	
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	2.4	ug/L	

Surrogate: 2-Fluorobiphenyl

54.4-120 % 91.6 %

Surrogate: 2,4,6-Tribromophenol

49.3-128 % 117 %

Surrogate: p-Terphenyl-d14

60-120 % 106 %



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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MW-02S-20210917
21I0239-09 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/17/2021 07:40
Instrument: NT8 Analyst: JZ Analyzed: 10/16/2021 16:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-09 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-09 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	1	0.10	ND	ug/L	U
Chrysene	218-01-9	1	0.10	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.20	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.10	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.10	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>64.2</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>119</i>	<i>%</i>	



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MW-02S-20210917
21I0239-09 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/17/2021 07:40
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 03:31

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-09 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-09 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-09 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	99.1	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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MW-02S-20210917
21I0239-09 (Water)

Phenols

Method: EPA 8041A Sampled: 09/17/2021 07:40
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 17:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-09 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	70.3	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	89.6	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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MW-02D-20210917
21I0239-10 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/17/2021 13:00
Instrument: NT2 Analyst: PKC Analyzed: 09/20/2021 17:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-10 A
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 09/20/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	95.9	%	



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MW-02D-20210917
21I0239-10 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/17/2021 13:00

Instrument: NT6 Analyst: JZ

Analyzed: 09/30/2021 19:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-10 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	1.0	22.3	ug/L	
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	9.7	ug/L	
2-Methylnaphthalene	91-57-6	1	1.0	4.1	ug/L	
Dibenzofuran	132-64-9	1	1.0	2.8	ug/L	
Fluorene	86-73-7	1	1.0	3.0	ug/L	
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	2.3	ug/L	
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	2.6	ug/L	
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	5.7	ug/L	
<i>Surrogate: 2-Fluorobiphenyl</i>			54.4-120 %	82.6	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>			49.3-128 %	107	%	
<i>Surrogate: p-Terphenyl-d14</i>			60-120 %	99.1	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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MW-02D-20210917
21I0239-10 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/17/2021 13:00
Instrument: NT8 Analyst: JZ Analyzed: 10/16/2021 16:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-10 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-10 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	1	0.10	ND	ug/L	U
Chrysene	218-01-9	1	0.10	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.20	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.10	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.10	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>58.6</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>101</i>	<i>%</i>	



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MW-02D-20210917
21I0239-10 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/17/2021 13:00
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 03:51

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-10 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-10 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-10 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	107	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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MW-02D-20210917
21I0239-10 (Water)

Phenols

Method: EPA 8041A Sampled: 09/17/2021 13:00
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 17:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-10 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	70.9	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	93.1	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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PZ-19-20210917
21I0239-11 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/17/2021 13:04
Instrument: NT2 Analyst: PKC Analyzed: 09/20/2021 17:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-11 A
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 09/20/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	94.0	%	



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PZ-19-20210917
21I0239-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/17/2021 13:04

Instrument: NT6 Analyst: JZ

Analyzed: 09/30/2021 19:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-11 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
<i>Surrogate: 2-Fluorobiphenyl</i>			54.4-120 %	87.8	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>			49.3-128 %	115	%	
<i>Surrogate: p-Terphenyl-d14</i>			60-120 %	107	%	



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Reported:
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PZ-19-20210917
21I0239-11 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/17/2021 13:04
Instrument: NT8 Analyst: JZ Analyzed: 10/16/2021 17:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-11 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-11 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	1	0.10	ND	ug/L	U
Chrysene	218-01-9	1	0.10	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.20	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.10	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.10	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>64.2</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>128</i>	<i>%</i>	<i>*</i>



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PZ-19-20210917
21I0239-11 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/17/2021 13:04
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 04:11

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-11 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-11 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-11 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	101	%	



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PZ-19-20210917
21I0239-11 (Water)

Phenols

Method: EPA 8041A Sampled: 09/17/2021 13:04
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 18:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-11 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	69.7	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	93.8	%	



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PZ-12-20210916
21I0239-12 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/16/2021 10:38
Instrument: NT2 Analyst: PKC Analyzed: 09/20/2021 18:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-12 A
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 09/20/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	92.0	%	



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Reported:
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PZ-12-20210916
21I0239-12 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/16/2021 10:38

Instrument: NT6 Analyst: JZ

Analyzed: 09/30/2021 20:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-12 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U
<i>Surrogate: 2-Fluorobiphenyl</i>			54.4-120 %	96.2	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>			49.3-128 %	120	%	
<i>Surrogate: p-Terphenyl-d14</i>			60-120 %	112	%	



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PZ-12-20210916
21I0239-12 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/16/2021 10:38
Instrument: NT8 Analyst: JZ Analyzed: 10/16/2021 17:44

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3520C (Liq Liq)	Sample Size: 500 mL	Extract ID: 21I0239-12 G 01
	Preparation Batch: BJI0597	Final Volume: 0.5 mL	
	Prepared: 09/23/2021		
Sample Cleanup:	Cleanup Method: Silica Gel	Initial Volume: 0.5 mL	Extract ID: 21I0239-12 G 01
	Cleanup Batch: CJJ0090	Final Volume: 0.5 mL	
	Cleaned: 13-Oct-2021		

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	1	0.10	ND	ug/L	U
Chrysene	218-01-9	1	0.10	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.20	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.10	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.10	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>69.0</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>110</i>	<i>%</i>	



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PZ-12-20210916
21I0239-12 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/16/2021 10:38
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 04:31

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-12 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-12 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-12 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	103	%	



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PZ-12-20210916
21I0239-12 (Water)

Phenols

Method: EPA 8041A Sampled: 09/16/2021 10:38
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 18:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-12 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	70.8	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	96.1	%	



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PZ-13-20210916
21I0239-13 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/16/2021 10:50
Instrument: NT2 Analyst: PKC Analyzed: 09/20/2021 18:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-13 A
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 09/20/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.9	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	96.9	%	



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PZ-13-20210916
21I0239-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/16/2021 10:50

Instrument: NT6 Analyst: JZ

Analyzed: 09/30/2021 20:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-13 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	1.0	1.4	ug/L	
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U

Surrogate: 2-Fluorobiphenyl

54.4-120 % 96.7 %

Surrogate: 2,4,6-Tribromophenol

49.3-128 % 120 %

Surrogate: p-Terphenyl-d14

60-120 % 111 %



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Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
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PZ-13-20210916
21I0239-13 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/16/2021 10:50
Instrument: NT8 Analyst: JZ Analyzed: 10/16/2021 18:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-13 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-13 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	1	0.10	ND	ug/L	U
Chrysene	218-01-9	1	0.10	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.20	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.10	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.10	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>62.1</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>134</i>	<i>%</i>	<i>*</i>



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PZ-13-20210916
21I0239-13 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/16/2021 10:50
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 04:51

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-13 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 19-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-13 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 19-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-13 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	82.4	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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PZ-13-20210916
21I0239-13 (Water)

Phenols

Method: EPA 8041A Sampled: 09/16/2021 10:50
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 18:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-13 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	73.6	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	99.8	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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MW-01D-20210917
21I0239-14 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/17/2021 09:55
Instrument: NT2 Analyst: PKC Analyzed: 09/21/2021 13:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-14 A
Preparation Batch: BJI0577 Sample Size: 10 mL
Prepared: 09/21/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	93.5	%	



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Reported:
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MW-01D-20210917
21I0239-14 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/17/2021 09:55

Instrument: NT6 Analyst: JZ

Analyzed: 10/02/2021 12:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-14 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	1.0	1.2	ug/L	
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U

Surrogate: 2-Fluorobiphenyl

54.4-120 %

86.9

%

Surrogate: 2,4,6-Tribromophenol

49.3-128 %

106

%

Q

Surrogate: p-Terphenyl-d14

60-120 %

104

%



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MW-01D-20210917
21I0239-14 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/17/2021 09:55
Instrument: NT8 Analyst: JZ Analyzed: 10/16/2021 18:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-14 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-14 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	1	0.10	ND	ug/L	U
Chrysene	218-01-9	1	0.10	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.20	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.10	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.10	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>69.3</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>141</i>	<i>%</i>	<i>*</i>



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MW-01D-20210917
21I0239-14 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/17/2021 09:55
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 05:11

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-14 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-14 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-14 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	109	%	



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MW-01D-20210917
21I0239-14 (Water)

Phenols

Method: EPA 8041A Sampled: 09/17/2021 09:55
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 19:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-14 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	73.1	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	99.6	%	



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MW-01S-20210917
21I0239-15 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/17/2021 09:51
Instrument: NT2 Analyst: PKC Analyzed: 09/21/2021 13:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-15 A
Preparation Batch: BJI0577 Sample Size: 0.4 mL
Prepared: 09/21/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	2500	31000	ug/L	
HC ID: GRO						
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	101	%	



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Project Manager: Christine Kimmel

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MW-01S-20210917
21I0239-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/17/2021 09:51

Instrument: NT6 Analyst: JZ

Analyzed: 10/02/2021 13:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-15 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes	
Naphthalene	91-20-3	1	1.0	8770	ug/L	E	
Acenaphthylene	208-96-8	1	1.0	5.9	ug/L		
Acenaphthene	83-32-9	1	1.0	162	ug/L	E	
2-Methylnaphthalene	91-57-6	1	1.0	250	ug/L	E	
Dibenzofuran	132-64-9	1	1.0	84.6	ug/L	E	
Fluorene	86-73-7	1	1.0	83.9	ug/L	E	
Pentachlorophenol	87-86-5	1	10.0	2020	ug/L	E	
Phenanthrene	85-01-8	1	1.0	105	ug/L	E	
Anthracene	120-12-7	1	1.0	15.6	ug/L		
Carbazole	86-74-8	1	1.0	31.6	ug/L		
Fluoranthene	206-44-0	1	1.0	19.2	ug/L		
Pyrene	129-00-0	1	1.0	13.8	ug/L		
Benzo(a)anthracene	56-55-3	1	1.0	2.0	ug/L		
Chrysene	218-01-9	1	1.0	2.2	ug/L		
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U	
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U	
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U	
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U	
1-Methylnaphthalene	90-12-0	1	1.0	190	ug/L	E	
<i>Surrogate: 2-Fluorobiphenyl</i>				54.4-120 %	75.8	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>				49.3-128 %	101	%	Q
<i>Surrogate: p-Terphenyl-d14</i>				60-120 %	86.2	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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MW-01S-20210917
21I0239-15 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/17/2021 09:51
Instrument: NT8 Analyst: JZ Analyzed: 10/18/2021 13:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-15 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-15 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	10	1.00	1.32	ug/L	D
Chrysene	218-01-9	10	1.00	1.49	ug/L	D
Benzo(a)fluoranthene, Total		10	2.00	ND	ug/L	U
Benzo(a)pyrene	50-32-8	10	1.00	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	10	1.00	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	10	1.00	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>112</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>149</i>	<i>%</i>	<i>*</i>



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MW-01S-20210917
21I0239-15 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/17/2021 09:51
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 05:51

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-15 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-15 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-15 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	12100	ug/L	E
HC ID: CREOSOTE						
<i>Surrogate: o-Terphenyl</i>				50-150 %	96.3 %	



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
22-Oct-2021 16:36

MW-01S-20210917
2110239-15RE1 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/17/2021 09:51

Instrument: NT6 Analyst: JZ

Analyzed: 10/04/2021 13:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 2110239-15RE1 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	50	50.0	6450	ug/L	D, E
Acenaphthylene	208-96-8	50	50.0	ND	ug/L	U
Acenaphthene	83-32-9	50	50.0	289	ug/L	D
2-Methylnaphthalene	91-57-6	50	50.0	510	ug/L	D
Dibenzofuran	132-64-9	50	50.0	97.3	ug/L	D
Fluorene	86-73-7	50	50.0	93.4	ug/L	D
Pentachlorophenol	87-86-5	50	500	3640	ug/L	D
Phenanthrene	85-01-8	50	50.0	106	ug/L	D
Anthracene	120-12-7	50	50.0	ND	ug/L	U
Carbazole	86-74-8	50	50.0	ND	ug/L	U
Fluoranthene	206-44-0	50	50.0	ND	ug/L	U
Pyrene	129-00-0	50	50.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	50	50.0	ND	ug/L	U
Chrysene	218-01-9	50	50.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	50	50.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	50	50.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	50	50.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	50	50.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	50	50.0	366	ug/L	D

Surrogate: 2-Fluorobiphenyl

54.4-120 %

D1

D1

Surrogate: 2,4,6-Tribromophenol

49.3-128 %

D1

D1

Surrogate: p-Terphenyl-d14

60-120 %

D1

D1



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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MW-01S-20210917
2110239-15RE1 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/17/2021 09:51
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 05:31

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 2110239-15RE1 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 2110239-15RE1 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 2110239-15RE1 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	10	1000	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	10	2000	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	10	2000	11900	ug/L	D
HC ID: CREOSOTE						
<i>Surrogate: o-Terphenyl</i>				50-150 %	88.0 %	



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
22-Oct-2021 16:36

MW-01S-20210917
2110239-15RE2 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/17/2021 09:51

Instrument: NT6 Analyst: JZ

Analyzed: 10/04/2021 13:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 2110239-15RE2 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	150	150	5850	ug/L	D
Acenaphthylene	208-96-8	150	150	ND	ug/L	U
Acenaphthene	83-32-9	150	150	305	ug/L	D
2-Methylnaphthalene	91-57-6	150	150	560	ug/L	D
Dibenzofuran	132-64-9	150	150	ND	ug/L	U
Fluorene	86-73-7	150	150	ND	ug/L	U
Pentachlorophenol	87-86-5	150	1500	3420	ug/L	D
Phenanthrene	85-01-8	150	150	ND	ug/L	U
Anthracene	120-12-7	150	150	ND	ug/L	U
Carbazole	86-74-8	150	150	ND	ug/L	U
Fluoranthene	206-44-0	150	150	ND	ug/L	U
Pyrene	129-00-0	150	150	ND	ug/L	U
Benzo(a)anthracene	56-55-3	150	150	ND	ug/L	U
Chrysene	218-01-9	150	150	ND	ug/L	U
Benzo(a)pyrene	50-32-8	150	150	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	150	150	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	150	150	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	150	150	ND	ug/L	U
1-Methylnaphthalene	90-12-0	150	150	381	ug/L	D
<i>Surrogate: 2-Fluorobiphenyl</i>			54.4-120 %		D1	D1
<i>Surrogate: 2,4,6-Tribromophenol</i>			49.3-128 %		D1	D1
<i>Surrogate: p-Terphenyl-d14</i>			60-120 %		D1	D1



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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CW-13-20210916
21I0239-16 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/16/2021 13:55
Instrument: NT2 Analyst: PKC Analyzed: 09/21/2021 13:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 21I0239-16 A
Preparation Batch: BJI0577 Sample Size: 10 mL
Prepared: 09/21/2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.7	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	97.6	%	



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
22-Oct-2021 16:36

CW-13-20210916
21I0239-16 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 09/16/2021 13:55

Instrument: NT6 Analyst: JZ

Analyzed: 10/04/2021 12:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0596
Prepared: 09/23/2021

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 21I0239-16 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	1.0	1.7	ug/L	
Acenaphthylene	208-96-8	1	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	1.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	1.0	ND	ug/L	U
Pentachlorophenol	87-86-5	1	10.0	ND	ug/L	U
Phenanthrene	85-01-8	1	1.0	ND	ug/L	U
Anthracene	120-12-7	1	1.0	ND	ug/L	U
Carbazole	86-74-8	1	1.0	ND	ug/L	U
Fluoranthene	206-44-0	1	1.0	ND	ug/L	U
Pyrene	129-00-0	1	1.0	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	1.0	ND	ug/L	U
Chrysene	218-01-9	1	1.0	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	1.0	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	1.0	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	1.0	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	1.0	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	1.0	ND	ug/L	U

Surrogate: 2-Fluorobiphenyl

54.4-120 %

84.9

%

Surrogate: 2,4,6-Tribromophenol

49.3-128 %

103

%

Q

Surrogate: p-Terphenyl-d14

60-120 %

99.2

%



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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CW-13-20210916
21I0239-16 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 09/16/2021 13:55
Instrument: NT8 Analyst: JZ Analyzed: 10/16/2021 19:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3520C (Liq Liq) Extract ID: 21I0239-16 G 01
Preparation Batch: BJI0597 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 21I0239-16 G 01
Cleanup Batch: CJJ0090 Initial Volume: 0.5 mL
Cleaned: 13-Oct-2021 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzo(a)anthracene	56-55-3	1	0.10	ND	ug/L	U
Chrysene	218-01-9	1	0.10	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.20	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.10	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.10	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>			<i>31-120 %</i>	<i>61.0</i>	<i>%</i>	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>			<i>10-125 %</i>	<i>128</i>	<i>%</i>	<i>*</i>



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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CW-13-20210916
21I0239-16 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 09/16/2021 13:55
Instrument: FID4 Analyst: TWC/JGR Analyzed: 10/22/2021 06:12

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 09/23/2021	Sample Size: 500 mL Final Volume: 1 mL	Extract ID: 21I0239-16 C 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL	Extract ID: 21I0239-16 C 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL	Extract ID: 21I0239-16 C 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	100	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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CW-13-20210916
21I0239-16 (Water)

Phenols

Method: EPA 8041A Sampled: 09/16/2021 13:55
Instrument: ECD8 Analyst: YZ Analyzed: 10/18/2021 19:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 21I0239-16 I 01
Preparation Batch: BJI0683 Sample Size: 500 mL
Prepared: 09/23/2021 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.25	ND	ug/L	U
<i>Surrogate: 2,4,6-Tribromophenol</i>			26-120 %	71.8	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>			26-120 %	97.8	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BJI0520 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJI0520-BLK1)				Prepared: 20-Sep-2021 Analyzed: 20-Sep-2021 11:35						
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.96		ug/L	5.00		99.1	80-120			
Surrogate: 4-Bromofluorobenzene	4.82		ug/L	5.00		96.4	80-120			
LCS (BJI0520-BS1)				Prepared: 20-Sep-2021 Analyzed: 20-Sep-2021 09:52						
Gasoline Range Organics (Tol-Nap)	1050	100	ug/L	1000		105	72-128			
Surrogate: Toluene-d8	5.12		ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	4.95		ug/L	5.00		99.0	80-120			
LCS Dup (BJI0520-BSD1)				Prepared: 20-Sep-2021 Analyzed: 20-Sep-2021 10:33						
Gasoline Range Organics (Tol-Nap)	1040	100	ug/L	1000		104	72-128	0.41	30	
Surrogate: Toluene-d8	5.17		ug/L	5.00		103	80-120			
Surrogate: 4-Bromofluorobenzene	4.88		ug/L	5.00		97.5	80-120			



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
22-Oct-2021 16:36

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BJI0577 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJI0577-BLK1)		Prepared: 21-Sep-2021 Analyzed: 21-Sep-2021 11:39								
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.94		ug/L	5.00		98.9	80-120			
Surrogate: 4-Bromofluorobenzene	4.71		ug/L	5.00		94.1	80-120			
LCS (BJI0577-BS1)		Prepared: 21-Sep-2021 Analyzed: 21-Sep-2021 09:55								
Gasoline Range Organics (Tol-Nap)	1080	100	ug/L	1000		108	72-128			
Surrogate: Toluene-d8	5.12		ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	4.86		ug/L	5.00		97.1	80-120			
LCS Dup (BJI0577-BSD1)		Prepared: 21-Sep-2021 Analyzed: 21-Sep-2021 10:36								
Gasoline Range Organics (Tol-Nap)	865	100	ug/L	1000		86.5	72-128	22.10	30	
Surrogate: Toluene-d8	5.09		ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	4.85		ug/L	5.00		97.0	80-120			



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130 2nd Avenue S.
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Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
22-Oct-2021 16:36

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BJI0596 - EPA 3510C SepF

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJI0596-BLK1)										
				Prepared: 23-Sep-2021 Analyzed: 30-Sep-2021 12:47						
Naphthalene	ND	1.0	ug/L							U
Acenaphthylene	ND	1.0	ug/L							U
Acenaphthene	ND	1.0	ug/L							U
2-Methylnaphthalene	ND	1.0	ug/L							U
Dibenzofuran	ND	1.0	ug/L							U
Fluorene	ND	1.0	ug/L							U
Pentachlorophenol	ND	10.0	ug/L							U
Phenanthrene	ND	1.0	ug/L							U
Anthracene	ND	1.0	ug/L							U
Carbazole	ND	1.0	ug/L							U
Fluoranthene	ND	1.0	ug/L							U
Pyrene	ND	1.0	ug/L							U
Benzo(a)anthracene	ND	1.0	ug/L							U
Chrysene	ND	1.0	ug/L							U
Benzo(a)pyrene	ND	1.0	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	1.0	ug/L							U
Dibenzo(a,h)anthracene	ND	1.0	ug/L							U
Benzo(g,h,i)perylene	ND	1.0	ug/L							U
1-Methylnaphthalene	ND	1.0	ug/L							U
<i>Surrogate: 2-Fluorobiphenyl</i>	24.9		ug/L	25.0		99.5	54.4-120			
<i>Surrogate: 2,4,6-Tribromophenol</i>	45.5		ug/L	37.5		121	49.3-128			
<i>Surrogate: p-Terphenyl-d14</i>	29.4		ug/L	25.0		118	60-120			
LCS (BJI0596-BS1)										
				Prepared: 23-Sep-2021 Analyzed: 30-Sep-2021 13:20						
Naphthalene	25.3	1.0	ug/L	25.0		101	51.9-120			
Acenaphthylene	26.3	1.0	ug/L	25.0		105	56.5-120			
Acenaphthene	25.6	1.0	ug/L	25.0		102	60.9-120			
2-Methylnaphthalene	26.3	1.0	ug/L	25.0		105	56.5-120			
Dibenzofuran	27.7	1.0	ug/L	25.0		111	61.9-120			
Fluorene	28.0	1.0	ug/L	25.0		112	62.3-120			
Pentachlorophenol	66.5	10.0	ug/L	65.0		102	40.7-124			
Phenanthrene	26.7	1.0	ug/L	25.0		107	61-120			
Anthracene	25.4	1.0	ug/L	25.0		102	64.6-120			
Carbazole	25.1	1.0	ug/L	25.0		100	42-177			
Fluoranthene	27.7	1.0	ug/L	25.0		111	67.9-120			



Landau Associates, Inc.
130 2nd Avenue S.
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Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
22-Oct-2021 16:36

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BJI0596 - EPA 3510C SepF

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BJI0596-BS1)										
					Prepared: 23-Sep-2021	Analyzed: 30-Sep-2021 13:20				
Pyrene	31.2	1.0	ug/L	25.0		125	69-135			
Benzo(a)anthracene	26.4	1.0	ug/L	25.0		106	65-133			
Chrysene	27.9	1.0	ug/L	25.0		112	61.5-120			
Benzo(a)pyrene	28.8	1.0	ug/L	25.0		115	74-121			
Indeno(1,2,3-cd)pyrene	34.0	1.0	ug/L	25.0		136	40-147			
Dibenzo(a,h)anthracene	33.9	1.0	ug/L	25.0		136	37-148			
Benzo(g,h,i)perylene	34.5	1.0	ug/L	25.0		138	49.4-120			*
1-Methylnaphthalene	28.2	1.0	ug/L	25.0		113	54.4-120			
<i>Surrogate: 2-Fluorobiphenyl</i>	24.1		ug/L	25.0		96.3	54.4-120			
<i>Surrogate: 2,4,6-Tribromophenol</i>	48.1		ug/L	37.5		128	49.3-128			
<i>Surrogate: p-Terphenyl-d14</i>	28.8		ug/L	25.0		115	60-120			
LCS Dup (BJI0596-BSD1)										
					Prepared: 23-Sep-2021	Analyzed: 30-Sep-2021 13:53				
Naphthalene	25.0	1.0	ug/L	25.0		99.8	51.9-120	1.51	30	
Acenaphthylene	25.2	1.0	ug/L	25.0		101	56.5-120	4.42	30	
Acenaphthene	24.9	1.0	ug/L	25.0		99.6	60.9-120	2.60	30	
2-Methylnaphthalene	25.4	1.0	ug/L	25.0		102	56.5-120	3.42	30	
Dibenzofuran	26.6	1.0	ug/L	25.0		107	61.9-120	3.92	30	
Fluorene	27.0	1.0	ug/L	25.0		108	62.3-120	3.75	30	
Pentachlorophenol	62.7	10.0	ug/L	65.0		96.5	40.7-124	5.80	30	
Phenanthrene	25.4	1.0	ug/L	25.0		102	61-120	4.92	30	
Anthracene	24.8	1.0	ug/L	25.0		99.0	64.6-120	2.68	30	
Carbazole	24.1	1.0	ug/L	25.0		96.2	42-177	4.32	30	
Fluoranthene	27.0	1.0	ug/L	25.0		108	67.9-120	2.77	30	
Pyrene	30.1	1.0	ug/L	25.0		121	69-135	3.63	30	
Benzo(a)anthracene	25.8	1.0	ug/L	25.0		103	65-133	2.47	30	
Chrysene	27.2	1.0	ug/L	25.0		109	61.5-120	2.62	30	
Benzo(a)pyrene	27.6	1.0	ug/L	25.0		110	74-121	4.29	30	
Indeno(1,2,3-cd)pyrene	32.3	1.0	ug/L	25.0		129	40-147	4.96	30	
Dibenzo(a,h)anthracene	32.6	1.0	ug/L	25.0		130	37-148	4.02	30	
Benzo(g,h,i)perylene	32.5	1.0	ug/L	25.0		130	49.4-120	6.03	30	*
1-Methylnaphthalene	27.4	1.0	ug/L	25.0		109	54.4-120	2.81	30	
<i>Surrogate: 2-Fluorobiphenyl</i>	23.3		ug/L	25.0		93.0	54.4-120			
<i>Surrogate: 2,4,6-Tribromophenol</i>	46.7		ug/L	37.5		125	49.3-128			



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BJI0596 - EPA 3510C SepF

Instrument: NT6 Analyst: JZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BJI0596-BSD1)					Prepared: 23-Sep-2021 Analyzed: 30-Sep-2021 13:53					
<i>Surrogate: p-Terphenyl-d14</i>	27.4		ug/L	25.0		109	60-120			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BJI0597 - EPA 3520C (Liq Liq)

Instrument: NT8 Analyst: JZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJI0597-BLK1)										
					Prepared: 23-Sep-2021		Analyzed: 15-Oct-2021 23:09			
Benzo(a)anthracene	ND	0.10	ug/L							U
Chrysene	ND	0.10	ug/L							U
Benzo(a)fluoranthene, Total	ND	0.20	ug/L							U
Benzo(a)pyrene	ND	0.10	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.10	ug/L							U
Dibenzo(a,h)anthracene	ND	0.10	ug/L							U
Surrogate: 2-Methylnaphthalene-d10	2.22		ug/L	3.00		73.9	31-120			
Surrogate: Dibenzo[a,h]anthracene-d14	2.60		ug/L	3.00		86.8	10-125			
LCS (BJI0597-BS1)										
					Prepared: 23-Sep-2021		Analyzed: 15-Oct-2021 23:36			
Benzo(a)anthracene	2.48	0.10	ug/L	3.00		82.5	37-120			
Chrysene	2.90	0.10	ug/L	3.00		96.6	48-120			
Benzo(a)fluoranthene, Total	8.39	0.20	ug/L	9.00		93.3	46-120			
Benzo(a)pyrene	2.68	0.10	ug/L	3.00		89.2	25-120			
Indeno(1,2,3-cd)pyrene	3.28	0.10	ug/L	3.00		109	32-120			
Dibenzo(a,h)anthracene	3.81	0.10	ug/L	3.00		127	21-120			*
Surrogate: 2-Methylnaphthalene-d10	2.12		ug/L	3.00		70.7	31-120			
Surrogate: Dibenzo[a,h]anthracene-d14	4.20		ug/L	3.00		140	10-125			*
LCS Dup (BJI0597-BSD1)										
					Prepared: 23-Sep-2021		Analyzed: 16-Oct-2021 00:03			
Benzo(a)anthracene	2.40	0.10	ug/L	3.00		80.1	37-120	3.01	30	
Chrysene	2.82	0.10	ug/L	3.00		94.1	48-120	2.59	30	
Benzo(a)fluoranthene, Total	7.99	0.20	ug/L	9.00		88.8	46-120	4.96	30	
Benzo(a)pyrene	2.53	0.10	ug/L	3.00		84.4	25-120	5.57	30	
Indeno(1,2,3-cd)pyrene	2.82	0.10	ug/L	3.00		93.8	32-120	15.20	30	
Dibenzo(a,h)anthracene	3.09	0.10	ug/L	3.00		103	21-120	20.80	30	
Surrogate: 2-Methylnaphthalene-d10	2.25		ug/L	3.00		75.1	31-120			
Surrogate: Dibenzo[a,h]anthracene-d14	4.11		ug/L	3.00		137	10-125			*



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 22-Oct-2021 16:36
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Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BJI0593 - EPA 3510C SepF

Instrument: FID4 Analyst: TWC/JGR

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJI0593-BLK1)										
					Prepared: 23-Sep-2021 Analyzed: 21-Oct-2021 23:09					
Diesel Range Organics (C12-C24)	ND	100	ug/L							U
Motor Oil Range Organics (C24-C38)	ND	200	ug/L							U
Creosote Range Organics (C12-C22)	ND	200	ug/L							U
<i>Surrogate: o-Terphenyl</i>	230		ug/L	225	102		50-150			
LCS (BJI0593-BS1)										
					Prepared: 23-Sep-2021 Analyzed: 21-Oct-2021 23:29					
Diesel Range Organics (C12-C24)	2640	100	ug/L	3000		88.0	56-120			
Motor Oil Range Organics (C24-C38)	ND	200	ug/L				30-160			U
<i>Surrogate: o-Terphenyl</i>	240		ug/L	225	107		50-150			
LCS Dup (BJI0593-BSD1)										
					Prepared: 23-Sep-2021 Analyzed: 21-Oct-2021 23:49					
Diesel Range Organics (C12-C24)	2650	100	ug/L	3000		88.2	56-120	0.28	30	
Motor Oil Range Organics (C24-C38)	ND	200	ug/L				30-160			U
<i>Surrogate: o-Terphenyl</i>	239		ug/L	225	106		50-150			



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Analysis by: Analytical Resources, LLC

Phenols - Quality Control

Batch BJI0683 - EPA 3510C SepF

Instrument: ECD8 Analyst: YZ

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJI0683-BLK1)					Prepared: 23-Sep-2021 Analyzed: 18-Oct-2021 13:43					
Pentachlorophenol	ND	0.25	ug/L							U
<i>Surrogate: 2,4,6-Tribromophenol</i>	1.77		ug/L	2.50		70.8	26-120			
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>	2.20		ug/L	2.50		88.0	26-120			
LCS (BJI0683-BS1)					Prepared: 23-Sep-2021 Analyzed: 18-Oct-2021 14:29					
Pentachlorophenol [2C]	2.00	0.25	ug/L	2.50		79.9	48-120			
<i>Surrogate: 2,4,6-Tribromophenol</i>	1.85		ug/L	2.50		74.2	26-120			
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>	2.40		ug/L	2.50		96.1	26-120			
LCS Dup (BJI0683-BSD1)					Prepared: 23-Sep-2021 Analyzed: 18-Oct-2021 14:47					
Pentachlorophenol [2C]	1.96	0.25	ug/L	2.50		78.4	48-120	1.82	30	
<i>Surrogate: 2,4,6-Tribromophenol</i>	1.81		ug/L	2.50		72.3	26-120			
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>	2.31		ug/L	2.50		92.4	26-120			



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Certified Analyses included in this Report

Analyte	Certifications
EPA 8270E in Water	
Phenol	WADOE,DoD-ELAP,NELAP
bis(2-chloroethyl) ether	WADOE,DoD-ELAP,NELAP
2-Chlorophenol	WADOE,DoD-ELAP,NELAP
1,3-Dichlorobenzene	WADOE,DoD-ELAP,NELAP
1,4-Dichlorobenzene	WADOE,DoD-ELAP,NELAP
1,2-Dichlorobenzene	WADOE,DoD-ELAP,NELAP
Benzyl alcohol	WADOE,DoD-ELAP,NELAP
2,2'-Oxybis(1-chloropropane)	WADOE,DoD-ELAP,NELAP
2-Methylphenol	WADOE,DoD-ELAP,NELAP
Hexachloroethane	WADOE,DoD-ELAP,NELAP
N-Nitroso-di-n-Propylamine	WADOE,DoD-ELAP,NELAP
4-Methylphenol	WADOE,DoD-ELAP,NELAP
Nitrobenzene	WADOE,DoD-ELAP,NELAP
Isophorone	WADOE,DoD-ELAP,NELAP
2-Nitrophenol	WADOE,DoD-ELAP,NELAP
2,4-Dimethylphenol	WADOE,DoD-ELAP,NELAP
Bis(2-Chloroethoxy)methane	WADOE,DoD-ELAP,NELAP
2,4-Dichlorophenol	WADOE,DoD-ELAP,NELAP
1,2,4-Trichlorobenzene	WADOE,DoD-ELAP,NELAP
Naphthalene	WADOE,DoD-ELAP,NELAP,ADEC
Benzoic acid	WADOE,DoD-ELAP,NELAP
4-Chloroaniline	WADOE,DoD-ELAP,NELAP
2,6-Dinitrotoluene	WADOE,DoD-ELAP,NELAP
Hexachlorobutadiene	WADOE,DoD-ELAP,NELAP
4-Chloro-3-Methylphenol	WADOE,DoD-ELAP,NELAP
Hexachlorocyclopentadiene	WADOE,DoD-ELAP,NELAP
2,4,6-Trichlorophenol	WADOE,DoD-ELAP,NELAP
2,4,5-Trichlorophenol	WADOE,DoD-ELAP,NELAP
2-Chloronaphthalene	WADOE,DoD-ELAP,NELAP
2-Nitroaniline	WADOE,DoD-ELAP,NELAP
Acenaphthylene	WADOE,DoD-ELAP,NELAP,ADEC
Dimethylphthalate	WADOE,DoD-ELAP,NELAP
Acenaphthene	WADOE,DoD-ELAP,NELAP,ADEC
3-Nitroaniline	WADOE,DoD-ELAP,NELAP
2-Methylnaphthalene	WADOE,DoD-ELAP,NELAP,ADEC



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2,4-Dinitrophenol	WADOE,DoD-ELAP,NELAP
Dibenzofuran	WADOE,DoD-ELAP,NELAP
4-Nitrophenol	WADOE,DoD-ELAP,NELAP
2,4-Dinitrotoluene	WADOE,DoD-ELAP,NELAP
Fluorene	WADOE,DoD-ELAP,NELAP,ADEC
4-Chlorophenylphenyl ether	WADOE,DoD-ELAP,NELAP
Diethyl phthalate	WADOE,DoD-ELAP,NELAP
4-Nitroaniline	WADOE,DoD-ELAP,NELAP
4,6-Dinitro-2-methylphenol	WADOE,DoD-ELAP,NELAP
N-Nitrosodiphenylamine	WADOE,DoD-ELAP,NELAP
4-Bromophenyl phenyl ether	WADOE,DoD-ELAP,NELAP
Hexachlorobenzene	WADOE,DoD-ELAP,NELAP
Pentachlorophenol	WADOE,DoD-ELAP,NELAP
Phenanthrene	WADOE,DoD-ELAP,NELAP,ADEC
Anthracene	WADOE,DoD-ELAP,NELAP,ADEC
Carbazole	WADOE,DoD-ELAP,NELAP,ADEC
Di-n-butylphthalate	WADOE,DoD-ELAP,NELAP
Fluoranthene	WADOE,DoD-ELAP,NELAP,ADEC
Pyrene	WADOE,DoD-ELAP,NELAP,ADEC
Butylbenzylphthalate	WADOE,DoD-ELAP,NELAP
Benzo(a)anthracene	WADOE,DoD-ELAP,NELAP,ADEC
3,3'-Dichlorobenzidine	WADOE,DoD-ELAP,NELAP
Chrysene	WADOE,DoD-ELAP,NELAP,ADEC
bis(2-Ethylhexyl)phthalate	WADOE,DoD-ELAP,NELAP
Di-n-Octylphthalate	WADOE,DoD-ELAP,NELAP
Benzo(b)fluoranthene	WADOE,DoD-ELAP,NELAP,ADEC
Benzo(k)fluoranthene	WADOE,DoD-ELAP,NELAP,ADEC
Benzo(a)pyrene	WADOE,DoD-ELAP,NELAP,ADEC
Indeno(1,2,3-cd)pyrene	WADOE,DoD-ELAP,NELAP,ADEC
Dibenzo(a,h)anthracene	WADOE,DoD-ELAP,NELAP,ADEC
Benzo(g,h,i)perylene	WADOE,DoD-ELAP,NELAP,ADEC
Benzo(a)fluoranthenes, Total	WADOE,DoD-ELAP,NELAP,ADEC
N-Nitrosodimethylamine	WADOE,DoD-ELAP,NELAP
Aniline	WADOE,DoD-ELAP,NELAP
1-Methylnaphthalene	WADOE,DoD-ELAP,NELAP,ADEC
Azobenzene (1,2-DP-Hydrazine)	WADOE,NELAP
Benzidine	WADOE,DoD-ELAP
Retene	WADOE,DoD-ELAP
Pyridine	WADOE,DoD-ELAP



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2,6-Dichlorophenol	WADOE
alpha-Terpineol	WADOE,DoD-ELAP
1,4-Dioxane	WADOE,DoD-ELAP
2,3,4,6-Tetrachlorophenol	WADOE,DoD-ELAP
Triphenyl Phosphate	WADOE,DoD-ELAP
Butyl Diphenyl Phosphate	WADOE,DoD-ELAP
Dibutyl Phenyl Phosphate	WADOE,DoD-ELAP
Tributyl Phosphate	WADOE,DoD-ELAP
Butylated Hydroxytoluene	WADOE,DoD-ELAP
Tetrachloroguaiacol	WADOE,DoD-ELAP
3,4,5-Trichloroguaiacol	WADOE
3,4,6-Trichloroguaiacol	WADOE
4,5,6-Trichloroguaiacol	WADOE
Guaiacol	WADOE
1,2,4,5-Tetrachlorobenzene	WADOE

EPA 8270E-SIM in Water

Naphthalene	DoD-ELAP
2-Methylnaphthalene	DoD-ELAP
1-Methylnaphthalene	DoD-ELAP
2-Chloronaphthalene	DoD-ELAP
Biphenyl	DoD-ELAP
2,6-Dimethylnaphthalene	DoD-ELAP
Acenaphthylene	DoD-ELAP
Acenaphthene	DoD-ELAP
Dibenzofuran	DoD-ELAP
2,3,5-Trimethylnaphthalene	DoD-ELAP
Fluorene	DoD-ELAP
Dibenzothiophene	DoD-ELAP
Phenanthrene	DoD-ELAP
Anthracene	DoD-ELAP
Carbazole	DoD-ELAP
1-Methylphenanthrene	DoD-ELAP
Fluoranthene	DoD-ELAP
Pyrene	DoD-ELAP
Benzo(a)anthracene	DoD-ELAP
Chrysene	DoD-ELAP
Benzo(b)fluoranthene	DoD-ELAP
Benzo(k)fluoranthene	DoD-ELAP
Benzo(j)fluoranthene	DoD-ELAP



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Benzofluoranthenes, Total	DoD-ELAP
Benzo(e)pyrene	DoD-ELAP
Benzo(a)pyrene	DoD-ELAP
Perylene	DoD-ELAP
Indeno(1,2,3-cd)pyrene	DoD-ELAP
Dibenzo(a,h)anthracene	DoD-ELAP
Benzo(g,h,i)perylene	DoD-ELAP
Benzo(b)thiophene	DoD-ELAP

NWTPH-Dx in Water

Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Diesel Range Organics (C12-C25)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE
Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP
Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP



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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2022
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2022
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022



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Notes and Definitions

- * Flagged value is not within established control limits.
- D The reported value is from a dilution
- D1 Surrogate was not detected due to sample extract dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- J Estimated concentration value detected below the reporting limit.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants

08 November 2021

Christine Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Cascade Pole

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
2110239

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Kelly Bottem, Client Services Manager





210039

Chain-of-Custody Record

<input type="checkbox"/> North Seattle (206) 631-8660	<input type="checkbox"/> Spokane (509) 327-9737	Date _____	Turnaround Time: _____
<input checked="" type="checkbox"/> Tacoma (253) 926-2493	<input type="checkbox"/> Portland (503) 542-1080	Page <u>1</u> of <u>1</u>	<input checked="" type="radio"/> Standard
<input type="checkbox"/> Olympia (360) 791-3178	<input type="checkbox"/> _____		<input type="radio"/> Accelerated

Project Name Port of Olympia Project No. 0021041.010.020

Project Location/Event Cascade Pole / Dry season

Sampler's Name SMR/CAL

Project Contact Sierra Mott, Chris Kimmel

Send Results To S. Mott, C. Kimmel, D. Jorgensen, D. Bach

Special Handling Requirements: _____

Shipment Method: _____

Stored on ice: Yes / No

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters						Observations/Comments
					NWTPH-Gx	NWTPH-Dx+Cruste	PAHs	CPAHs Sim	PCP 8270	PCP 8041	
Trip Blank - 20210917	—	—	Aq	2	X						
MW-05s - 20210916	9/16/21	1351		8	X	X	X	X	X		
P2-30 - 20210916	9/16/21	1352									
P2-18 - 20210916	9/16/21	1300									
P2-17 - 20210917	9/17/21	1200									
MW-05D - 20210916	9/16/21	1520 ^{SMR}									
LW-3 - 20210916	9/16/21	18267									
LW-4R - 20210916	9/16/21	1641									
MW-02S - 20210917	9/17/21	1740 ^{SMR}									
MW-02D - 20210917	9/17/21	1300									
P2-19 - 20210917	9/17/21	1304									
P2-18 - 20210916	9/16/21	1038									
P2-13 - 20210916	9/16/21	1050									
MW-01D - 20210917	9/17/21	955									
MW-01S - 20210917	9/17/21	951									
CW-13 - 20210916	9/16/21	1355									

- Allow water samples to settle, collect aliquot from clear portion
- NWTPH-Dx - Acid wash cleanup
- Silica gel cleanup
- Dissolved metal samples were field filtered

Other Run all samples for PCP using 8270-SMR unless if result NO, run PCP 8041 -

Relinquished by Signature <u>SMR</u> Printed Name <u>Simone Rodriguez</u> Company <u>Landau Associates Inc</u> Date <u>9/17/21</u> Time <u>1634</u>	Received by Signature <u>[Signature]</u> Printed Name <u>Jacob Walter</u> Company <u>APZ</u> Date <u>9/17/21</u> Time <u>1634</u>	Relinquished by Signature _____ Printed Name _____ Company _____ Date _____ Time _____	Received by Signature _____ Printed Name _____ Company _____ Date _____ Time _____
--	--	---	---



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TripBlank-20210917	21I0239-01	Water	16-Sep-2021 10:38	17-Sep-2021 16:34
MW-05s-20210916	21I0239-02	Water	16-Sep-2021 13:51	17-Sep-2021 16:34
PZ-30-20210916	21I0239-03	Water	16-Sep-2021 13:52	17-Sep-2021 16:34
PZ-18-20210916	21I0239-04	Water	16-Sep-2021 17:00	17-Sep-2021 16:34
PZ-17-20210917	21I0239-05	Water	17-Sep-2021 12:00	17-Sep-2021 16:34
MW-05D-20210916	21I0239-06	Water	16-Sep-2021 15:20	17-Sep-2021 16:34
LW-3-20210916	21I0239-07	Water	16-Sep-2021 18:27	17-Sep-2021 16:34
LW-4R-20210916	21I0239-08	Water	16-Sep-2021 16:41	17-Sep-2021 16:34
MW-02S-20210917	21I0239-09	Water	17-Sep-2021 07:40	17-Sep-2021 16:34
MW-02D-20210917	21I0239-10	Water	17-Sep-2021 13:00	17-Sep-2021 16:34
PZ-19-20210917	21I0239-11	Water	17-Sep-2021 13:04	17-Sep-2021 16:34
PZ-12-20210916	21I0239-12	Water	16-Sep-2021 10:38	17-Sep-2021 16:34
PZ-13-20210916	21I0239-13	Water	16-Sep-2021 10:50	17-Sep-2021 16:34
MW-01D-20210917	21I0239-14	Water	17-Sep-2021 09:55	17-Sep-2021 16:34
MW-01S-20210917	21I0239-15	Water	17-Sep-2021 09:51	17-Sep-2021 16:34
CW-13-20210916	21I0239-16	Water	16-Sep-2021 13:55	17-Sep-2021 16:34



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

Case Narrative

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270E-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits with the exception of surrogates flagged on the associated forms.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits with the exception of analytes flagged on the associated forms.

Pentachlorophenol - EPA Method SW8041A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

Semivolatiles - EPA Method SW8270E

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are out of control high in the CCAL. All associated samples that contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits with the exception of analytes flagged on the associated forms.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.



WORK ORDER

21I0239

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Landau Associates, Inc.

Project Manager: Kelly Bottem

Project: Cascade Pole

Project Number: Cascade Pole/0021041.010.020

Preservation Confirmation

Container ID	Container Type	pH
21I0239-01 A	VOA Vial, Clear, 40 mL, HCL	Bubble
21I0239-01 B	VOA Vial, Clear, 40 mL, HCL	
21I0239-02 A	VOA Vial, Clear, 40 mL, HCL	
21I0239-02 B	VOA Vial, Clear, 40 mL, HCL	
21I0239-02 C	Glass NM, Amber, 500 mL	
21I0239-02 D	Glass NM, Amber, 500 mL	
21I0239-02 E	Glass NM, Amber, 500 mL	
21I0239-02 F	Glass NM, Amber, 500 mL	
21I0239-02 G	Glass NM, Amber, 500 mL	
21I0239-02 H	Glass NM, Amber, 500 mL	
21I0239-02 I	Glass NM, Amber, 500 mL	
21I0239-02 J	Glass NM, Amber, 500 mL	
21I0239-03 A	VOA Vial, Clear, 40 mL, HCL	
21I0239-03 B	VOA Vial, Clear, 40 mL, HCL	
21I0239-03 C	Glass NM, Amber, 500 mL	
21I0239-03 D	Glass NM, Amber, 500 mL	
21I0239-03 E	Glass NM, Amber, 500 mL	
21I0239-03 F	Glass NM, Amber, 500 mL	
21I0239-03 G	Glass NM, Amber, 500 mL	
21I0239-03 H	Glass NM, Amber, 500 mL	
21I0239-03 I	Glass NM, Amber, 500 mL	
21I0239-03 J	Glass NM, Amber, 500 mL	
21I0239-04 A	VOA Vial, Clear, 40 mL, HCL	
21I0239-04 B	VOA Vial, Clear, 40 mL, HCL	
21I0239-04 C	Glass NM, Amber, 500 mL	
21I0239-04 D	Glass NM, Amber, 500 mL	
21I0239-04 E	Glass NM, Amber, 500 mL	
21I0239-04 F	Glass NM, Amber, 500 mL	
21I0239-04 G	Glass NM, Amber, 500 mL	
21I0239-04 H	Glass NM, Amber, 500 mL	
21I0239-04 I	Glass NM, Amber, 500 mL	
21I0239-04 J	Glass NM, Amber, 500 mL	
21I0239-05 A	VOA Vial, Clear, 40 mL, HCL	
21I0239-05 B	VOA Vial, Clear, 40 mL, HCL	



WORK ORDER

21I0239

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Landau Associates, Inc.	Project Manager: Kelly Bottem
Project: Cascade Pole	Project Number: Cascade Pole/0021041.010.020

21I0239-05 C	Glass NM, Amber, 500 mL
21I0239-05 D	Glass NM, Amber, 500 mL
21I0239-05 E	Glass NM, Amber, 500 mL
21I0239-05 F	Glass NM, Amber, 500 mL
21I0239-05 G	Glass NM, Amber, 500 mL
21I0239-05 H	Glass NM, Amber, 500 mL
21I0239-05 I	Glass NM, Amber, 500 mL
21I0239-05 J	Glass NM, Amber, 500 mL
21I0239-06 A	VOA Vial, Clear, 40 mL, HCL
21I0239-06 B	VOA Vial, Clear, 40 mL, HCL
21I0239-06 C	Glass NM, Amber, 500 mL
21I0239-06 D	Glass NM, Amber, 500 mL
21I0239-06 E	Glass NM, Amber, 500 mL
21I0239-06 F	Glass NM, Amber, 500 mL
21I0239-06 G	Glass NM, Amber, 500 mL
21I0239-06 H	Glass NM, Amber, 500 mL
21I0239-06 I	Glass NM, Amber, 500 mL
21I0239-06 J	Glass NM, Amber, 500 mL
21I0239-07 A	VOA Vial, Clear, 40 mL, HCL
21I0239-07 B	VOA Vial, Clear, 40 mL, HCL
21I0239-07 C	Glass NM, Amber, 500 mL
21I0239-07 D	Glass NM, Amber, 500 mL
21I0239-07 E	Glass NM, Amber, 500 mL
21I0239-07 F	Glass NM, Amber, 500 mL
21I0239-07 G	Glass NM, Amber, 500 mL
21I0239-07 H	Glass NM, Amber, 500 mL
21I0239-07 I	Glass NM, Amber, 500 mL
21I0239-07 J	Glass NM, Amber, 500 mL
21I0239-08 A	VOA Vial, Clear, 40 mL, HCL
21I0239-08 B	VOA Vial, Clear, 40 mL, HCL
21I0239-08 C	Glass NM, Amber, 500 mL
21I0239-08 D	Glass NM, Amber, 500 mL
21I0239-08 E	Glass NM, Amber, 500 mL
21I0239-08 F	Glass NM, Amber, 500 mL
21I0239-08 G	Glass NM, Amber, 500 mL
21I0239-08 H	Glass NM, Amber, 500 mL

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WORK ORDER

21I0239

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Landau Associates, Inc.

Project Manager: Kelly Bottem

Project: Cascade Pole

Project Number: Cascade Pole/0021041.010.020

21I0239-08 I	Glass NM, Amber, 500 mL
21I0239-08 J	Glass NM, Amber, 500 mL
21I0239-09 A	VOA Vial, Clear, 40 mL, HCL
21I0239-09 B	VOA Vial, Clear, 40 mL, HCL
21I0239-09 C	Glass NM, Amber, 500 mL
21I0239-09 D	Glass NM, Amber, 500 mL
21I0239-09 E	Glass NM, Amber, 500 mL
21I0239-09 F	Glass NM, Amber, 500 mL
21I0239-09 G	Glass NM, Amber, 500 mL
21I0239-09 H	Glass NM, Amber, 500 mL
21I0239-09 I	Glass NM, Amber, 500 mL
21I0239-09 J	Glass NM, Amber, 500 mL
21I0239-10 A	VOA Vial, Clear, 40 mL, HCL
21I0239-10 B	VOA Vial, Clear, 40 mL, HCL
21I0239-10 C	Glass NM, Amber, 500 mL
21I0239-10 D	Glass NM, Amber, 500 mL
21I0239-10 E	Glass NM, Amber, 500 mL
21I0239-10 F	Glass NM, Amber, 500 mL
21I0239-10 G	Glass NM, Amber, 500 mL
21I0239-10 H	Glass NM, Amber, 500 mL
21I0239-10 I	Glass NM, Amber, 500 mL
21I0239-10 J	Glass NM, Amber, 500 mL
21I0239-11 A	VOA Vial, Clear, 40 mL, HCL
21I0239-11 B	VOA Vial, Clear, 40 mL, HCL
21I0239-11 C	Glass NM, Amber, 500 mL
21I0239-11 D	Glass NM, Amber, 500 mL
21I0239-11 E	Glass NM, Amber, 500 mL
21I0239-11 F	Glass NM, Amber, 500 mL
21I0239-11 G	Glass NM, Amber, 500 mL
21I0239-11 H	Glass NM, Amber, 500 mL
21I0239-11 I	Glass NM, Amber, 500 mL
21I0239-11 J	Glass NM, Amber, 500 mL
21I0239-12 A	VOA Vial, Clear, 40 mL, HCL
21I0239-12 B	VOA Vial, Clear, 40 mL, HCL
21I0239-12 C	Glass NM, Amber, 500 mL
21I0239-12 D	Glass NM, Amber, 500 mL



WORK ORDER

21I0239

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Landau Associates, Inc.

Project Manager: Kelly Bottem

Project: Cascade Pole

Project Number: Cascade Pole/0021041.010.020

21I0239-12 E	Glass NM, Amber, 500 mL
21I0239-12 F	Glass NM, Amber, 500 mL
21I0239-12 G	Glass NM, Amber, 500 mL
21I0239-12 H	Glass NM, Amber, 500 mL
21I0239-12 I	Glass NM, Amber, 500 mL
21I0239-12 J	Glass NM, Amber, 500 mL
21I0239-13 A	VOA Vial, Clear, 40 mL, HCL
21I0239-13 B	VOA Vial, Clear, 40 mL, HCL
21I0239-13 C	Glass NM, Amber, 500 mL
21I0239-13 D	Glass NM, Amber, 500 mL
21I0239-13 E	Glass NM, Amber, 500 mL
21I0239-13 F	Glass NM, Amber, 500 mL
21I0239-13 G	Glass NM, Amber, 500 mL
21I0239-13 H	Glass NM, Amber, 500 mL
21I0239-13 I	Glass NM, Amber, 500 mL
21I0239-13 J	Glass NM, Amber, 500 mL
21I0239-14 A	VOA Vial, Clear, 40 mL, HCL
21I0239-14 B	VOA Vial, Clear, 40 mL, HCL
21I0239-14 C	Glass NM, Amber, 500 mL
21I0239-14 D	Glass NM, Amber, 500 mL
21I0239-14 E	Glass NM, Amber, 500 mL
21I0239-14 F	Glass NM, Amber, 500 mL
21I0239-14 G	Glass NM, Amber, 500 mL
21I0239-14 H	Glass NM, Amber, 500 mL
21I0239-14 I	Glass NM, Amber, 500 mL
21I0239-14 J	Glass NM, Amber, 500 mL
21I0239-15 A	VOA Vial, Clear, 40 mL, HCL
21I0239-15 B	VOA Vial, Clear, 40 mL, HCL
21I0239-15 C	Glass NM, Amber, 500 mL
21I0239-15 D	Glass NM, Amber, 500 mL
21I0239-15 E	Glass NM, Amber, 500 mL
21I0239-15 F	Glass NM, Amber, 500 mL
21I0239-15 G	Glass NM, Amber, 500 mL
21I0239-15 H	Glass NM, Amber, 500 mL
21I0239-15 I	Glass NM, Amber, 500 mL
21I0239-15 J	Glass NM, Amber, 500 mL



WORK ORDER

21I0239

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Landau Associates, Inc.

Project Manager: Kelly Bottem

Project: Cascade Pole

Project Number: Cascade Pole/0021041.010.020

21I0239-16 A	VOA Vial, Clear, 40 mL, HCL
21I0239-16 B	VOA Vial, Clear, 40 mL, HCL
21I0239-16 C	Glass NM, Amber, 500 mL
21I0239-16 D	Glass NM, Amber, 500 mL
21I0239-16 E	Glass NM, Amber, 500 mL
21I0239-16 F	Glass NM, Amber, 500 mL
21I0239-16 G	Glass NM, Amber, 500 mL
21I0239-16 H	Glass NM, Amber, 500 mL
21I0239-16 I	Glass NM, Amber, 500 mL
21I0239-16 J	Glass NM, Amber, 500 mL

Preservation Confirmed By _____

Date _____



Cooler Receipt Form

ARI Client: Landa Tacama

Project Name: Part of Olympia

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 21J0239

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1634 2.1 1.6 0.6 3.6 1.8 3.1 1.3 0.5

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: DOO 2565

Cooler Accepted by: JS

Date: 09/17/2001 Time: 1634

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

How were bottles sealed in plastic bags? Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? JS YES NO

Date VOC Trip Blank was made at ARI: NA 09/13/2001

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JS Date: 09/18/2001 Time: 0940 Labels checked by: JS

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

vials w/ air bubbles marked on preservation sheet lab to determine sizes. Client has 2 samples w/ ID "P2-18-20010916" listed on the COC. The one w/ sample time of 1038 has "P2-12-20010916" listed on container labels logged w/ this IO.

By: JS Date: 09/18/2001
All samples listing 8 containers, actually have 10 containers each.



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

TripBlank-20210917
2110239-01 (Water)

Volatile Organic Compounds

Method: NWTPHg
Instrument: NT2

Sampled: 09/16/2021 10:38
Analyzed: 20-Sep-2021 12:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 20-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			80-120 %	98.3	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	93.7	%	

Date : 20-SEP-2021 12:16

Client ID:

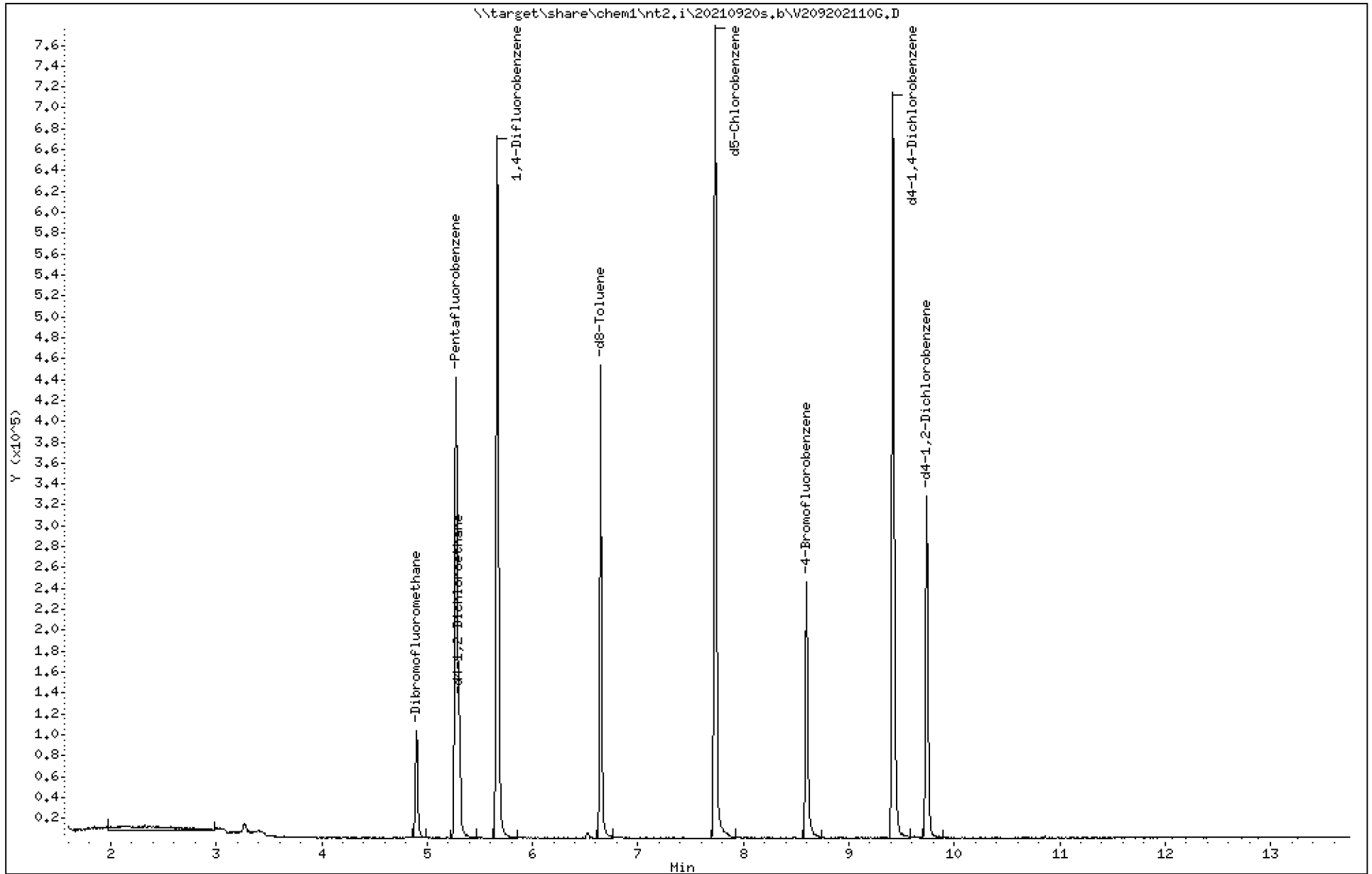
Instrument: nt2.i

Sample Info: 2110239-01

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202110G.D
Lab Smp Id: 21I0239-01
Inj Date : 20-SEP-2021 12:16
Operator : PKC
Smp Info : 21I0239-01
Misc Info : 15-
Comment :
Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Meth Date : 21-Sep-2021 09:54 nt2.i
Cal Date : 02-SEP-2021 09:50
Als bottle: 52
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 4.14
Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	CONCENTRATIONS					
			RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.899	4.899	(0.929)	62457	5.50832	5.508
* 32 Pentafluorobenzene	168		5.276	5.276	(1.000)	243570	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.301	5.300	(1.005)	34703	5.53252	5.533
* 37 1,4-Difluorobenzene	114		5.666	5.665	(1.000)	431941	10.0000	
\$ 43 d8-Toluene	98		6.645	6.644	(1.173)	229714	4.91507	4.915
* 53 d5-Chlorobenzene	117		7.733	7.733	(1.000)	378877	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.603	8.596	(1.112)	62462	4.68745	4.687
* 76 d4-1,4-Dichlorobenzene	152		9.418	9.417	(1.000)	173710	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.740	9.740	(1.034)	78598	5.05483	5.055

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202110G.D Calibration Time: 10:13
 Lab Smp Id: 21I0239-01
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	256594	128297	513188	243570	-5.08
37 1,4-Difluorobenze	460187	230094	920374	431941	-6.14
53 d5-Chlorobenzene	406665	203333	813330	378877	-6.83
76 d4-1,4-Dichlorobe	202468	101234	404936	173710	-14.20

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.28	0.01
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.01
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	0.01
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.00

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-01
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.508	110.17	
\$ 33 d4-1,2-Dichloroeth	5.000	5.533	110.65	
\$ 43 d8-Toluene	5.000	4.915	98.30	
\$ 62 4-Bromofluorobenze	5.000	4.687	93.75	
\$ 79 d4-1,2-Dichloroben	5.000	5.055	101.10	

REVIEW SUMMARY FOR FILE - V209202110G.D

Lab ID: 21I0239-01
nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 12:16

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 12:16

Client ID:

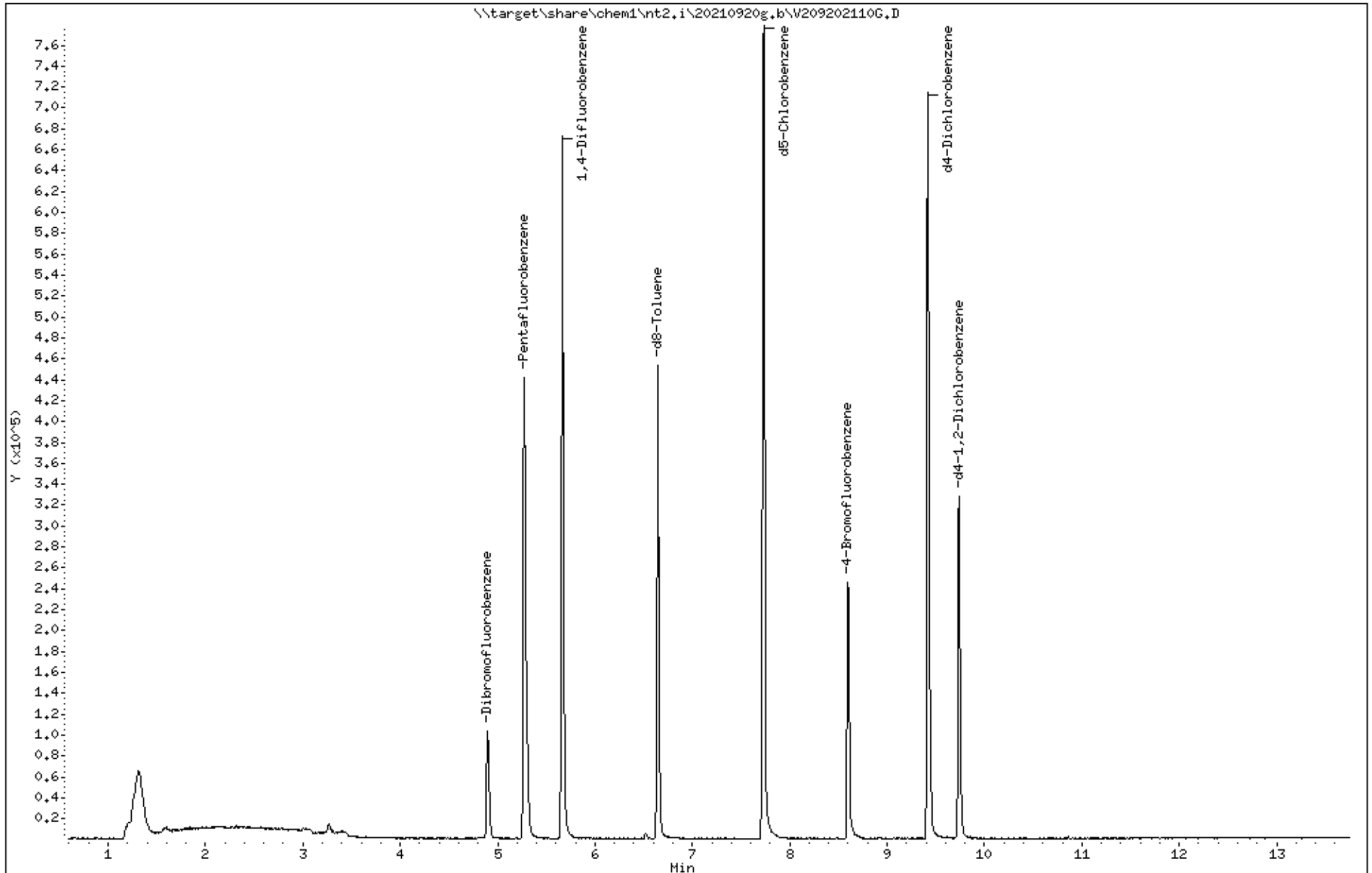
Instrument: nt2.i

Sample Info: 2110239-01

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202110G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 12:16

ARI ID: 21I0239-01
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

=====

GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	3	0.000
8015C 2MP-TMB (3.00 to 9.38)	22222222	3	0.000
AK101 nC6-nC10 (3.44 to 8.58)	45246913	2	0.000
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	3	0.000
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	4	0.000

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.734	1173604	d5-Chlorobenzene
8.597	377415	4-Bromofluorobenzene
6.645	641376	d8-Toluene
9.418	1069407	d4-Dichlorobenzene
9.741	493630	d4-1,2-Dichlorobenzene



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

MW-05s-20210916
2110239-02 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/16/2021 13:51
Analyzed: 22-Oct-2021 00:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJ10593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 15-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 15-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	215	ug/L	
HC ID: DRO						
Surrogate: <i>o</i> -Terphenyl			50-150 %	88.2	%	

Date : 22-OCT-2021 00:09

Client ID:

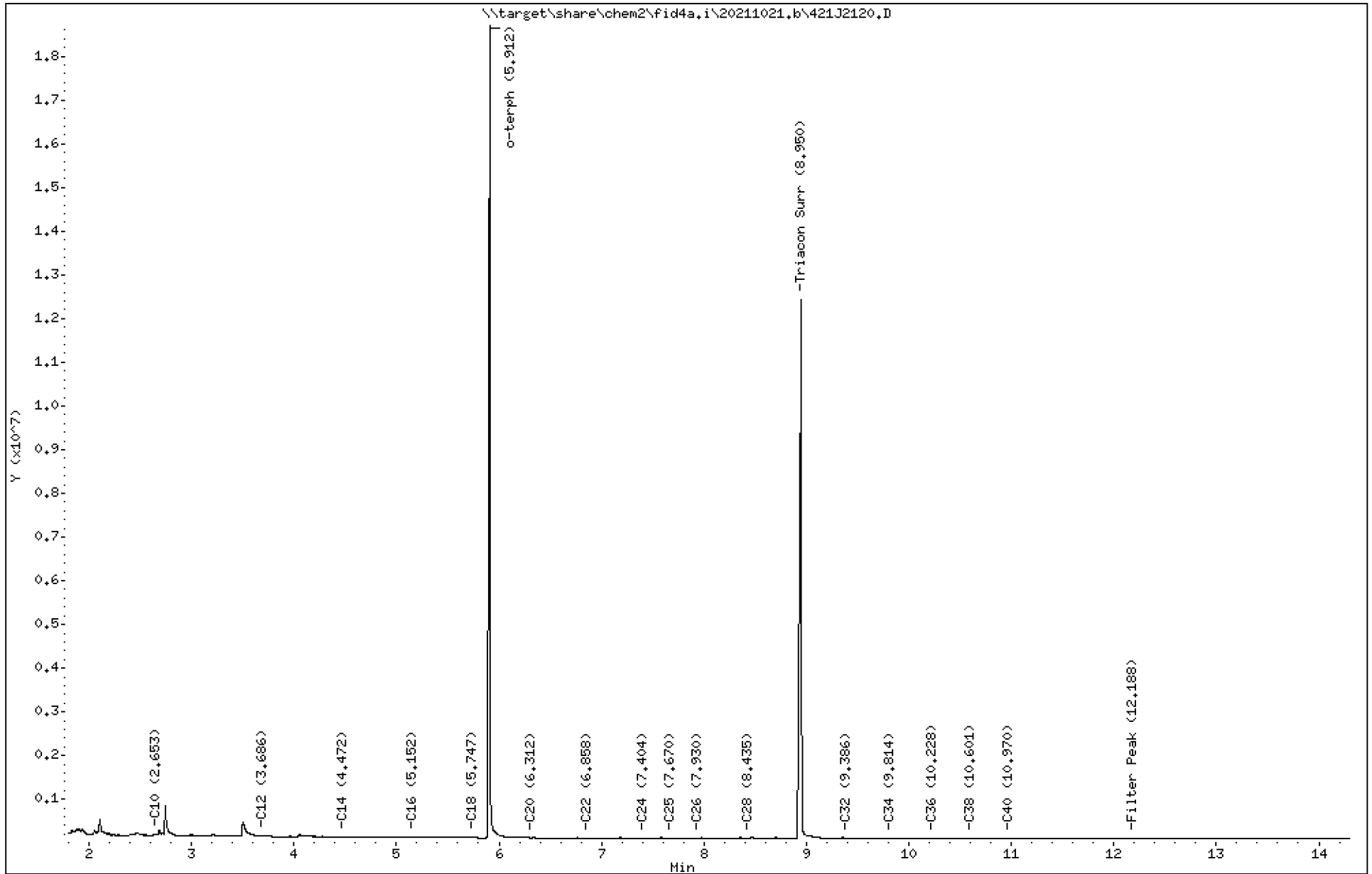
Instrument: fid4a.i

Sample Info: 2110239-02

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0.25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2120.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-02
Client ID:
Injection: 22-OCT-2021 00:09
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

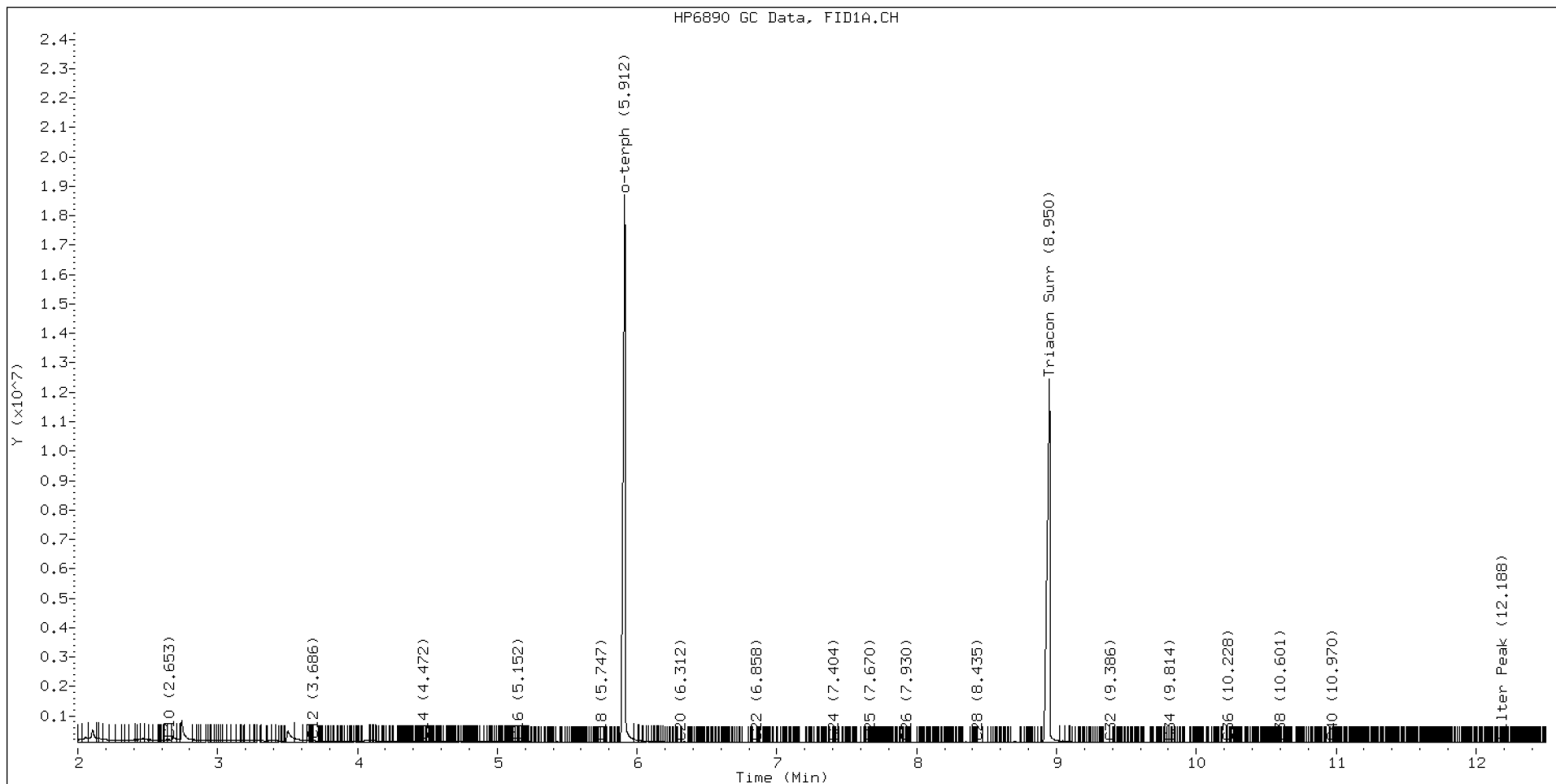
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.319	0.003	1973549	2780297	WATPHD	(C12-C24)	4812035	30.3
C10	2.653	0.002	95515	126538	WATPHM	(C24-C38)	941164	7.2
C12	3.686	-0.003	60055	115561	AK102	(C10-C25)	11057789	59.0
C14	4.472	-0.002	30749	18270	AK103	(C25-C36)	843783	8.3
C16	5.152	0.006	24057	9537	OR.DIES	(C10-C28)	11393072	60.5
C18	5.747	-0.003	18437	22594				
C20	6.312	0.008	14998	3742				
C22	6.858	0.001	12143	21470				
C24	7.404	0.000	10128	4538				
C25	7.670	-0.003	6651	2609				
C26	7.930	-0.007	5751	2555				
C28	8.435	-0.009	4914	1933				
C32	9.386	0.002	4044	3632				
C34	9.814	0.003	694	400				
Filter Peak	12.188	0.001	5612	3039	CREOSOT	(C12-C22)	4526441	107.3
C36	10.228	0.012	511	301				
C38	10.601	0.000	1636	323				
C40	10.970	-0.001	3733	2368				
o-terph	5.912	-0.002	18605118	18860666				
Triacon Surr	8.950	-0.006	12340216	16839493				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	18860666	99.2
Triacontane	16839493	79.5

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

MW-05s-20210916
2110239-02 (Water)

Volatile Organic Compounds

Method: NWTPhg
Instrument: NT2

Sampled: 09/16/2021 13:51
Analyzed: 20-Sep-2021 14:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 20-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	122	ug/L	
HC ID: GRO						
Surrogate: Toluene-d8			80-120 %	98.4	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	97.7	%	

Date : 20-SEP-2021 14:47

Client ID:

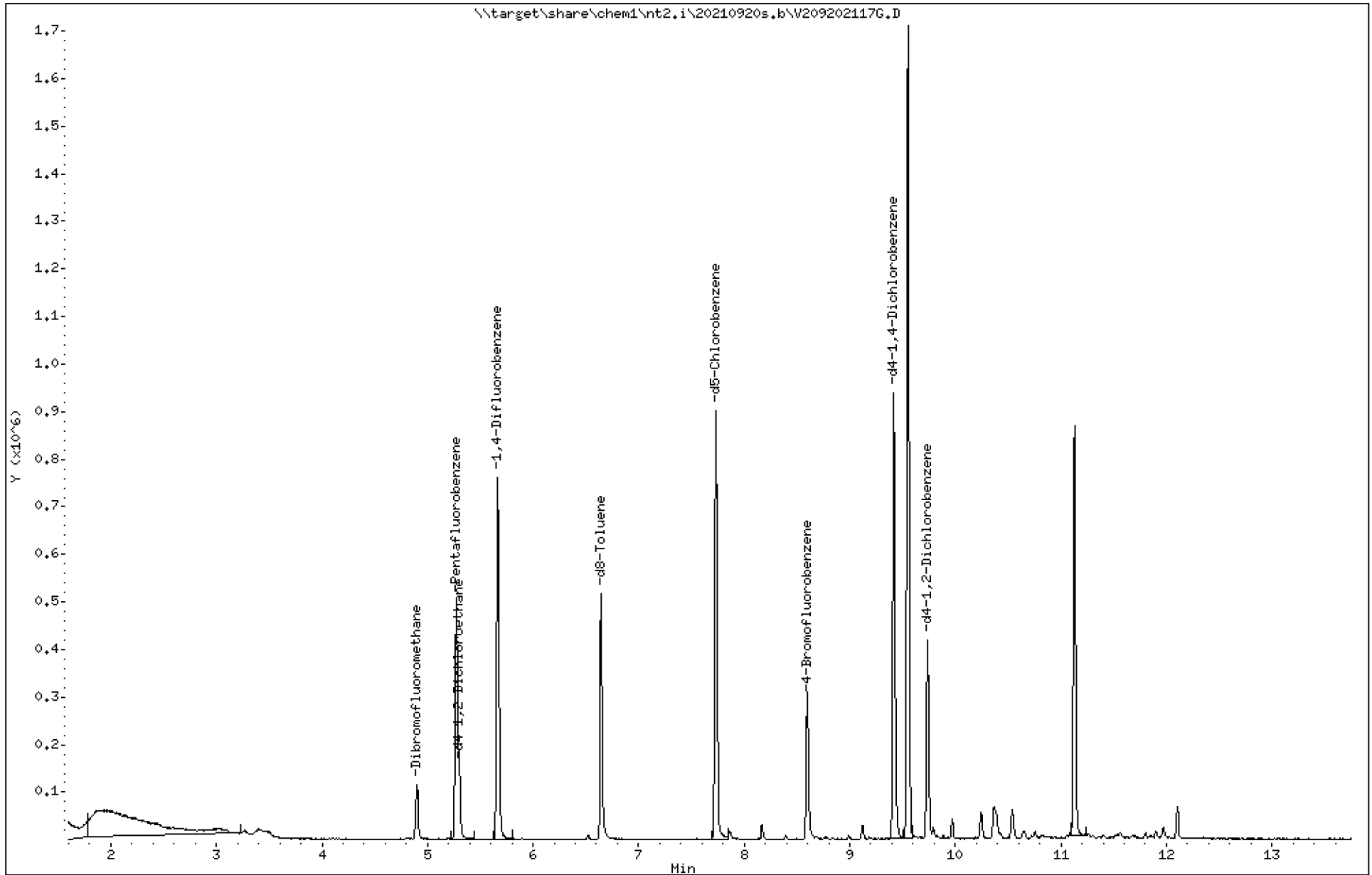
Instrument: nt2.i

Sample Info: 2110239-02

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202117G.D
 Lab Smp Id: 21I0239-02
 Inj Date : 20-SEP-2021 14:47
 Operator : PKC
 Smp Info : 21I0239-02
 Misc Info : 15-
 Comment :
 Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Meth Date : 21-Sep-2021 09:54 nt2.i
 Cal Date : 02-SEP-2021 09:50
 Als bottle: 52
 Dil Factor: 1.00000
 Integrator: HP RTE
 Target Version: 4.14
 Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
 Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.899	4.899	(0.929)	67734	5.35758	5.358
* 32 Pentafluorobenzene	168		5.276	5.276	(1.000)	271581	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.300	5.300	(1.005)	37345	5.33965	5.340
* 37 1,4-Difluorobenzene	114		5.665	5.665	(1.000)	479463	10.0000	
\$ 43 d8-Toluene	98		6.644	6.644	(1.173)	255275	4.92062	4.921
* 53 d5-Chlorobenzene	117		7.733	7.733	(1.000)	433694	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.602	8.596	(1.112)	74532	4.88628	4.886
* 76 d4-1,4-Dichlorobenzene	152		9.417	9.417	(1.000)	207215	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.740	9.740	(1.034)	96285	5.19108	5.191

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202117G.D Calibration Time: 10:13
 Lab Smp Id: 21I0239-02
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzen	256594	128297	513188	271581	5.84
37 1,4-Difluorobenze	460187	230094	920374	479463	4.19
53 d5-Chlorobenzene	406665	203333	813330	433694	6.65
76 d4-1,4-Dichlorobe	202468	101234	404936	207215	2.34

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzen	5.28	4.78	5.78	5.28	-0.00
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	-0.00
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	0.00
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	-0.00

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-02
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.358	107.15	
\$ 33 d4-1,2-Dichloroeth	5.000	5.340	106.79	
\$ 43 d8-Toluene	5.000	4.921	98.41	
\$ 62 4-Bromofluorobenze	5.000	4.886	97.73	
\$ 79 d4-1,2-Dichloroben	5.000	5.191	103.82	

REVIEW SUMMARY FOR FILE - V209202117G.D

Lab ID: 21I0239-02

nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 14:47

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 14:47

Client ID:

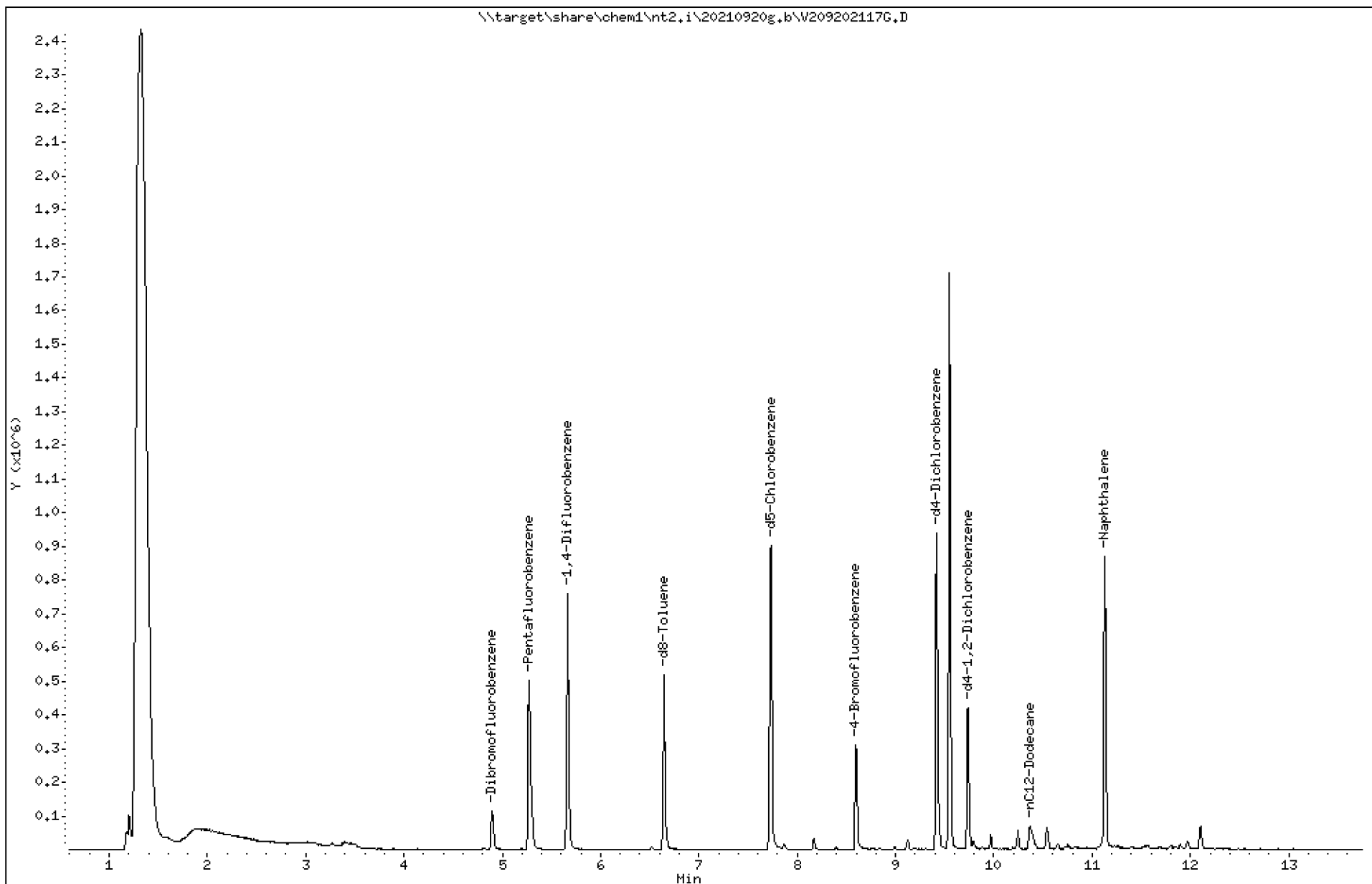
Instrument: nt2.i

Sample Info: 21I0239-02

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202117G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 14:47

ARI ID: 21I0239-02
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

=====

GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	2734460	0.084
8015C 2MP-TMB (3.00 to 9.38)	22222222	103379	0.005
AK101 nC6-nC10 (3.44 to 8.58)	45246913	65337	0.001
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	4151586	0.122
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	2734461	0.123

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.733	1375827	d5-Chlorobenzene
8.597	470834	4-Bromofluorobenzene
6.645	740041	d8-Toluene
9.418	1306580	d4-Dichlorobenzene
9.740	639956	d4-1,2-Dichlorobenzene



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

PZ-30-20210916
2110239-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/16/2021 13:52
Analyzed: 22-Oct-2021 00:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJ10593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 15-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 15-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			<i>50-150 %</i>	<i>83.9</i>	<i>%</i>	

Date : 22-OCT-2021 00:29

Client ID:

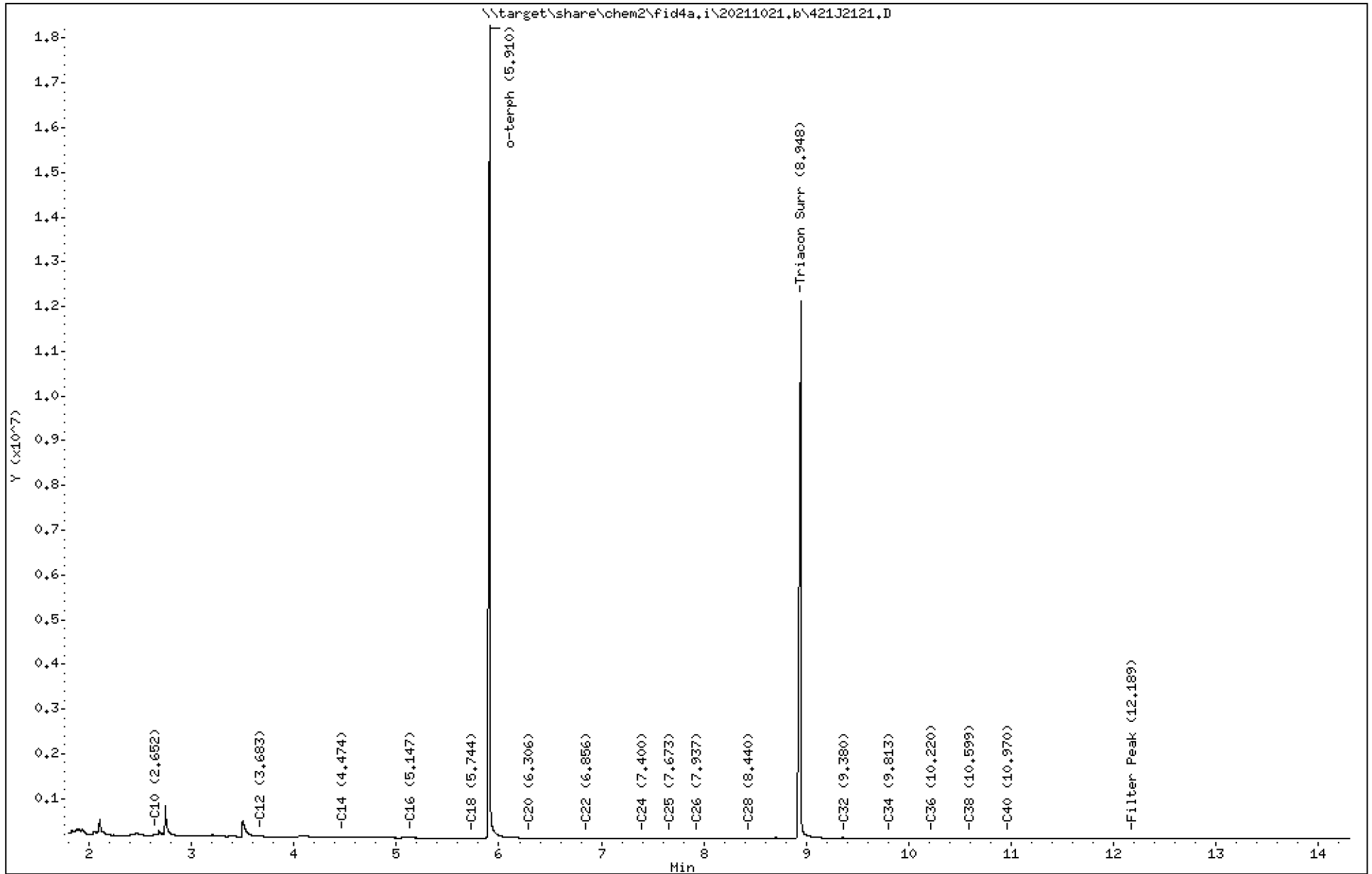
Instrument: fid4a.i

Sample Info: 2110239-03

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0,25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2121.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-03
Client ID:
Injection: 22-OCT-2021 00:29
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

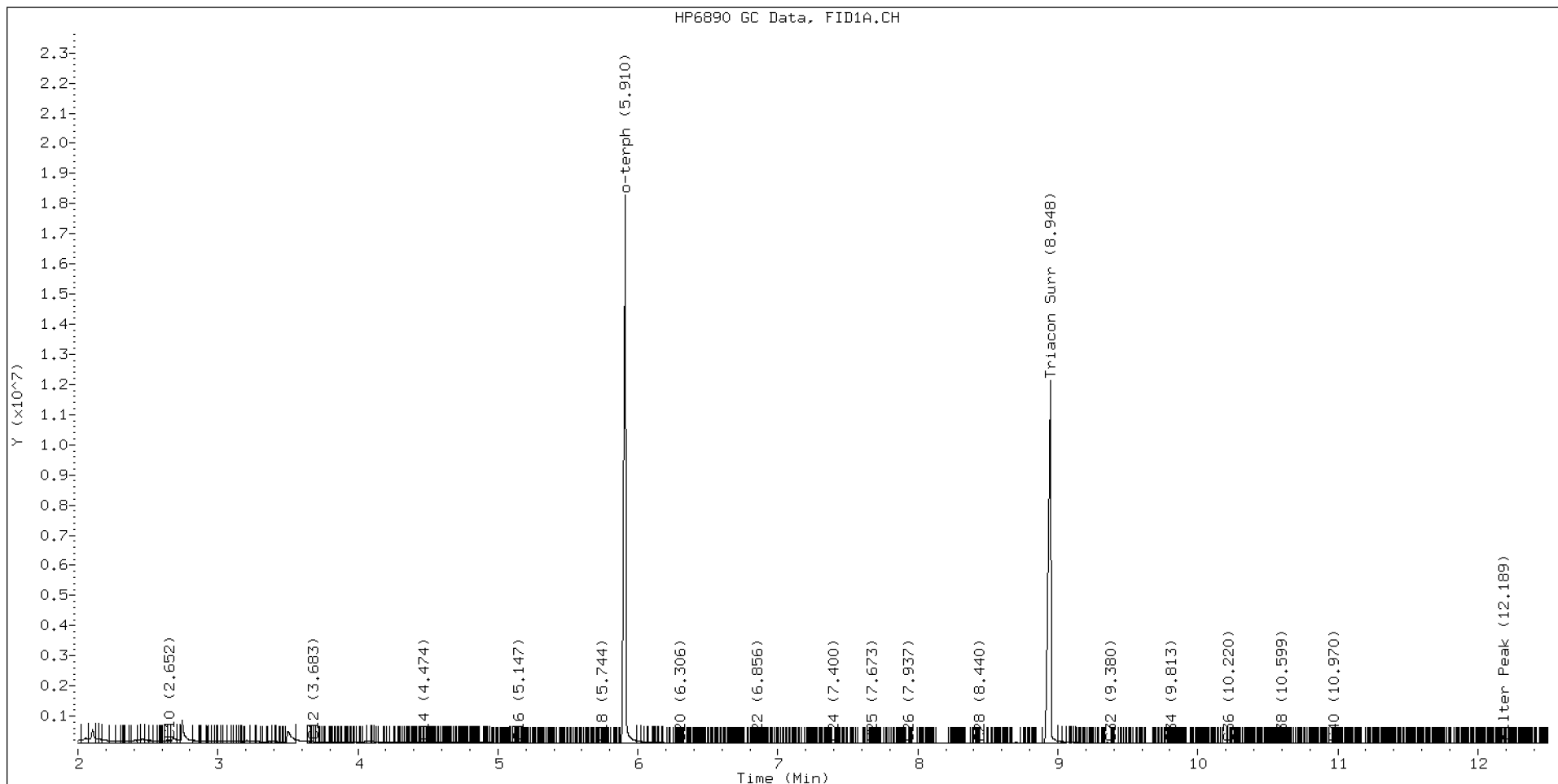
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.318	0.002	2005397	2820025	WATPHD	(C12-C24)	3282498	20.7
C10	2.652	0.000	88355	112539	WATPHM	(C24-C38)	837224	6.4
C12	3.683	-0.006	50956	56771	AK102	(C10-C25)	8768962	46.8
C14	4.474	-0.001	22262	14240	AK103	(C25-C36)	721173	7.1
C16	5.147	0.001	16204	8025	OR.DIES	(C10-C28)	8853497	47.0
C18	5.744	-0.006	9292	5987				
C20	6.306	0.003	9092	5752				
C22	6.856	-0.001	2327	457				
C24	7.400	-0.004	3105	3213				
C25	7.673	-0.001	2377	671				
C26	7.937	0.000	523	184				
C28	8.440	-0.004	646	178				
C32	9.380	-0.004	6047	3250				
C34	9.813	0.002	3439	1319				
Filter Peak	12.189	0.002	6454	963	CREOSOT	(C12-C22)	3213030	76.1
C36	10.220	0.004	3717	2377				
C38	10.599	-0.001	4645	1823				
C40	10.970	-0.001	6248	3095				
o-terph	5.910	-0.003	18180900	17944303				
Triacon Surr	8.948	-0.008	12016380	16109204				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	17944303	94.4
Triacontane	16109204	76.0

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

PZ-30-20210916
2110239-03 (Water)

Volatile Organic Compounds

Method: NWTPhg
Instrument: NT2

Sampled: 09/16/2021 13:52
Analyzed: 20-Sep-2021 15:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 20-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	122	ug/L	
HC ID: GRO						
Surrogate: Toluene-d8			80-120 %	101	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	97.0	%	

Date : 20-SEP-2021 15:08

Client ID:

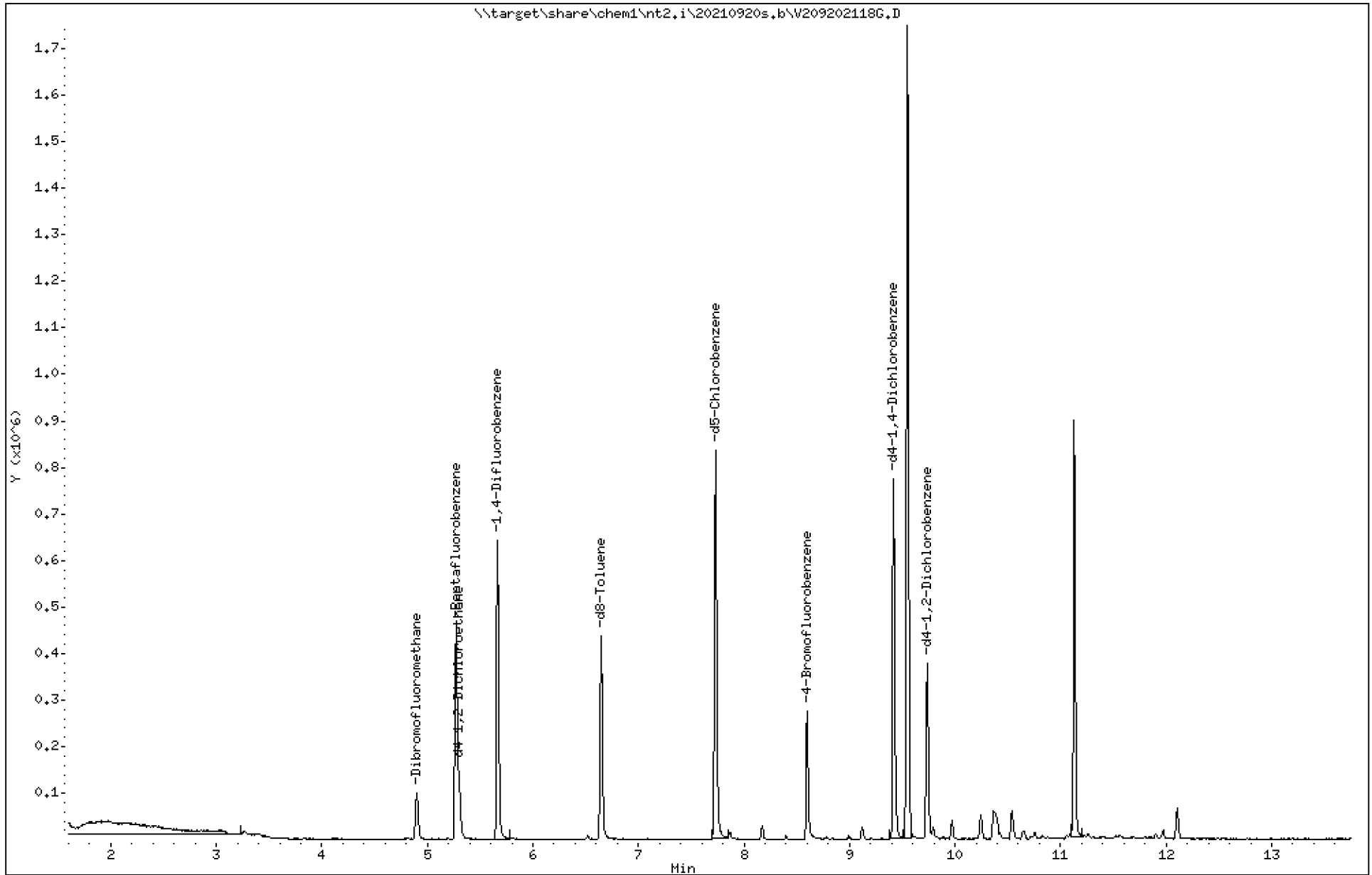
Instrument: nt2.i

Sample Info: 2110239-03

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202118G.D
 Lab Smp Id: 21I0239-03
 Inj Date : 20-SEP-2021 15:08
 Operator : PKC
 Smp Info : 21I0239-03
 Misc Info : 15-
 Comment :
 Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Meth Date : 21-Sep-2021 09:54 nt2.i
 Cal Date : 02-SEP-2021 09:50
 Als bottle: 53
 Dil Factor: 1.00000
 Integrator: HP RTE
 Target Version: 4.14
 Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
 Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.896	4.899	(0.928)	58705	5.32336	5.323
* 32 Pentafluorobenzene	168		5.273	5.276	(1.000)	236892	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.297	5.300	(1.005)	32722	5.36376	5.364
* 37 1,4-Difluorobenzene	114		5.668	5.665	(1.000)	417085	10.0000	
\$ 43 d8-Toluene	98		6.647	6.644	(1.173)	227141	5.03312	5.033
* 53 d5-Chlorobenzene	117		7.730	7.733	(1.000)	379708	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.600	8.596	(1.112)	64746	4.84822	4.848
* 76 d4-1,4-Dichlorobenzene	152		9.421	9.417	(1.000)	182284	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.737	9.740	(1.034)	84650	5.18798	5.188

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202118G.D Calibration Time: 10:13
 Lab Smp Id: 21I0239-03
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	256594	128297	513188	236892	-7.68
37 1,4-Difluorobenze	460187	230094	920374	417085	-9.37
53 d5-Chlorobenzene	406665	203333	813330	379708	-6.63
76 d4-1,4-Dichlorobe	202468	101234	404936	182284	-9.97

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.27	-0.05
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.06
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	-0.04
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.03

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-03
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.323	106.47	
\$ 33 d4-1,2-Dichloroeth	5.000	5.364	107.28	
\$ 43 d8-Toluene	5.000	5.033	100.66	
\$ 62 4-Bromofluorobenze	5.000	4.848	96.96	
\$ 79 d4-1,2-Dichloroben	5.000	5.188	103.76	

REVIEW SUMMARY FOR FILE - V209202118G.D

Lab ID: 21I0239-03

nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 15:08

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 15:08

Client ID:

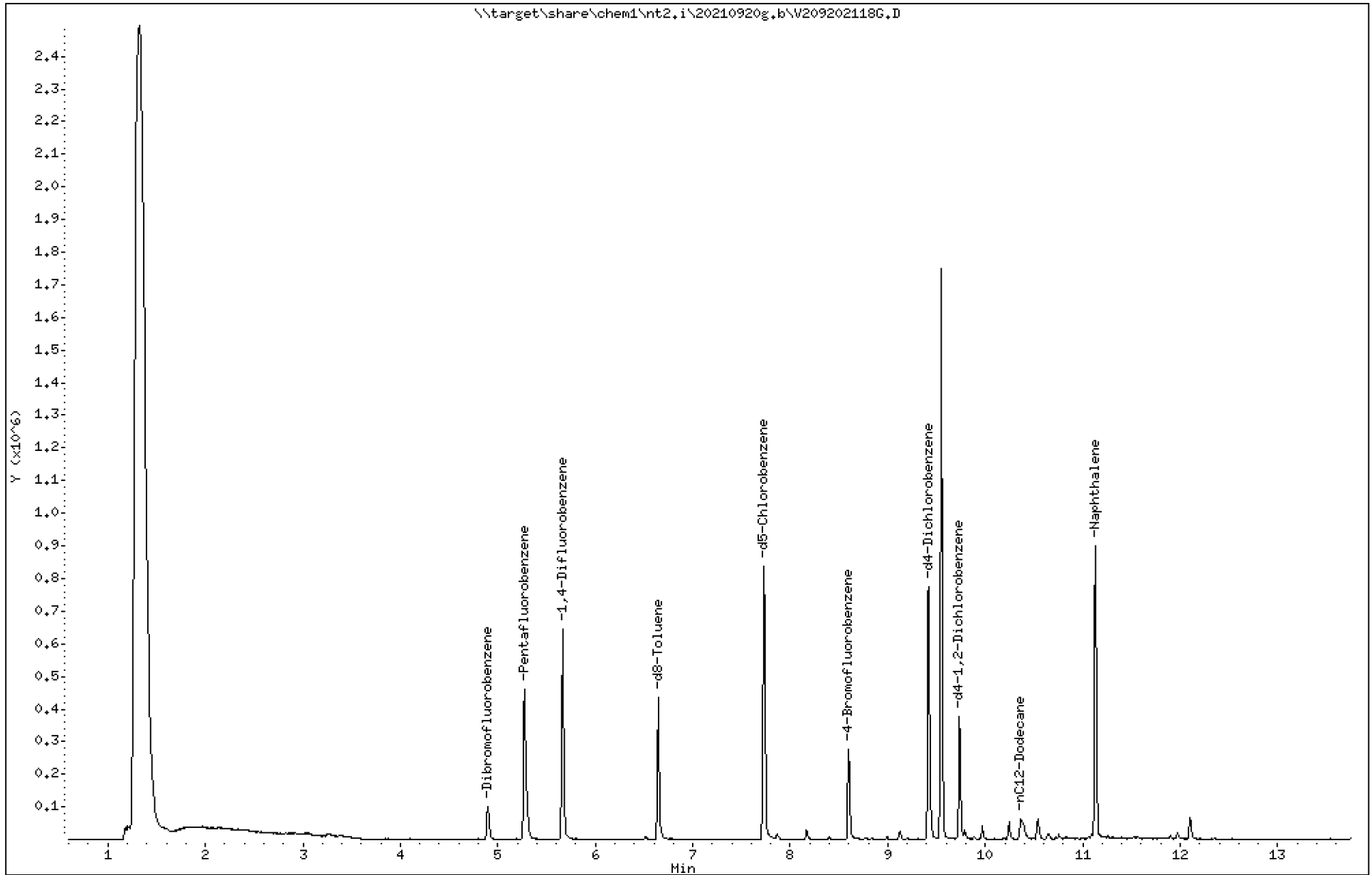
Instrument: nt2.i

Sample Info: 2110239-03

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202118G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 15:08

ARI ID: 21I0239-03
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

=====

GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	2741302	0.084
8015C 2MP-TMB (3.00 to 9.38)	22222222	98270	0.004
AK101 nC6-nC10 (3.44 to 8.58)	45246913	61869	0.001
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	4129808	0.122
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	2741304	0.123

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.730	1186238	d5-Chlorobenzene
8.600	397445	4-Bromofluorobenzene
6.648	647973	d8-Toluene
9.421	1145559	d4-Dichlorobenzene
9.737	530775	d4-1,2-Dichlorobenzene



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

PZ-18-20210916
2110239-04 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/16/2021 17:00
Analyzed: 22-Oct-2021 00:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJ10593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 15-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 15-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	214	ug/L	
HC ID: DRO						
Surrogate: <i>o</i> -Terphenyl			50-150 %	114	%	

Date : 22-OCT-2021 00:50

Client ID:

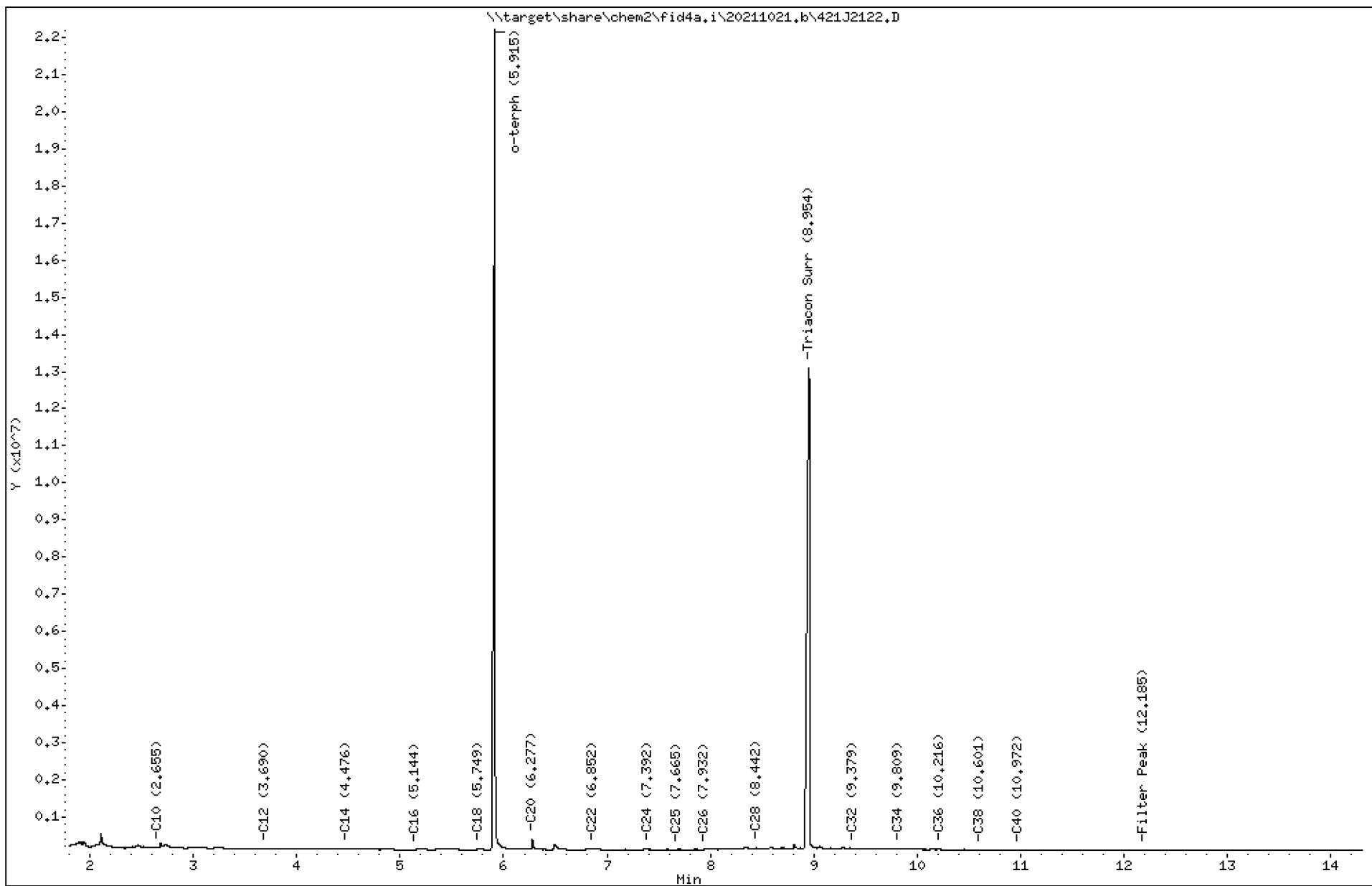
Instrument: fid4a.i

Sample Info: 21I0239-04

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0,25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2122.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-04
Client ID:
Injection: 22-OCT-2021 00:50
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

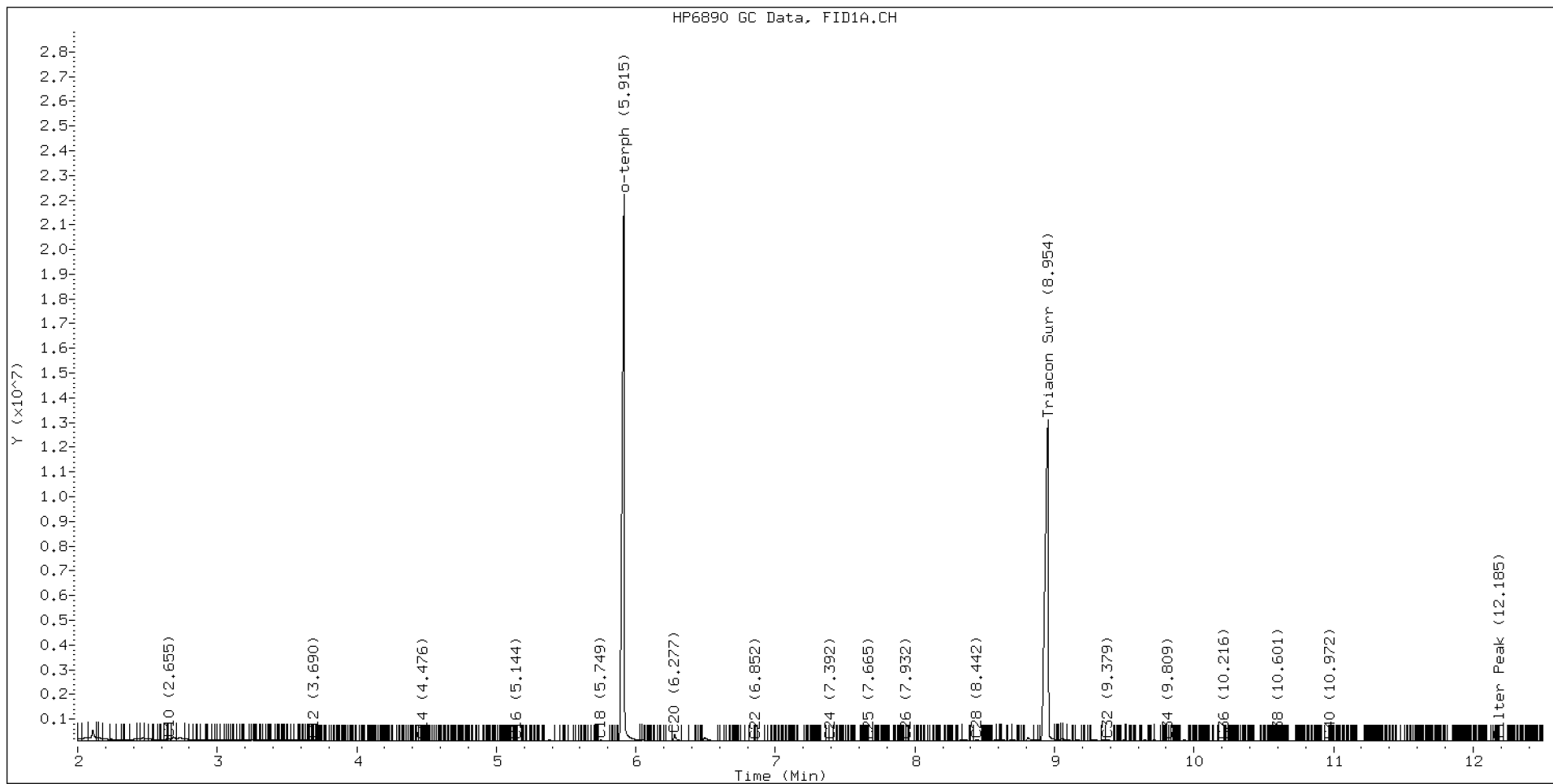
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.324	0.008	2003848	2809288	WATPHD	(C12-C24)	4938548	31.1
C10	2.655	0.003	89305	98490	WATPHM	(C24-C38)	5244015	39.9
C12	3.690	0.001	43047	38037	AK102	(C10-C25)	9247339	49.4
C14	4.476	0.002	23716	8227	AK103	(C25-C36)	4816818	47.7
C16	5.144	-0.002	17086	4248	OR.DIES	(C10-C28)	10553918	56.1
C18	5.749	-0.001	43515	129855				
C20	6.277	-0.026	278530	338927				
C22	6.852	-0.004	23405	10476				
C24	7.392	-0.013	20323	32896				
C25	7.665	-0.008	12941	3220				
C26	7.932	-0.005	18362	9808				
C28	8.442	-0.002	66465	161820				
C32	9.379	-0.005	54264	139584				
C34	9.809	-0.002	26119	23098				
Filter Peak	12.185	-0.003	474	119	CREOSOT	(C12-C22)	4507059	106.8
C36	10.216	-0.001	19477	6779				
C38	10.601	-0.000	10665	4212				
C40	10.972	0.001	6444	2515				
o-terph	5.915	0.002	22115436	24434847				
Triacon Surr	8.954	-0.002	13000375	21678477				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	24434847	128.5
Triacontane	21678477	102.3

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

PZ-18-20210916
2110239-04 (Water)

Volatile Organic Compounds

Method: NWTPhg
Instrument: NT2

Sampled: 09/16/2021 17:00
Analyzed: 20-Sep-2021 15:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 20-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	252	ug/L	
HC ID: GRO						
Surrogate: Toluene-d8			80-120 %	102	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	98.0	%	

Date : 20-SEP-2021 15:30

Client ID:

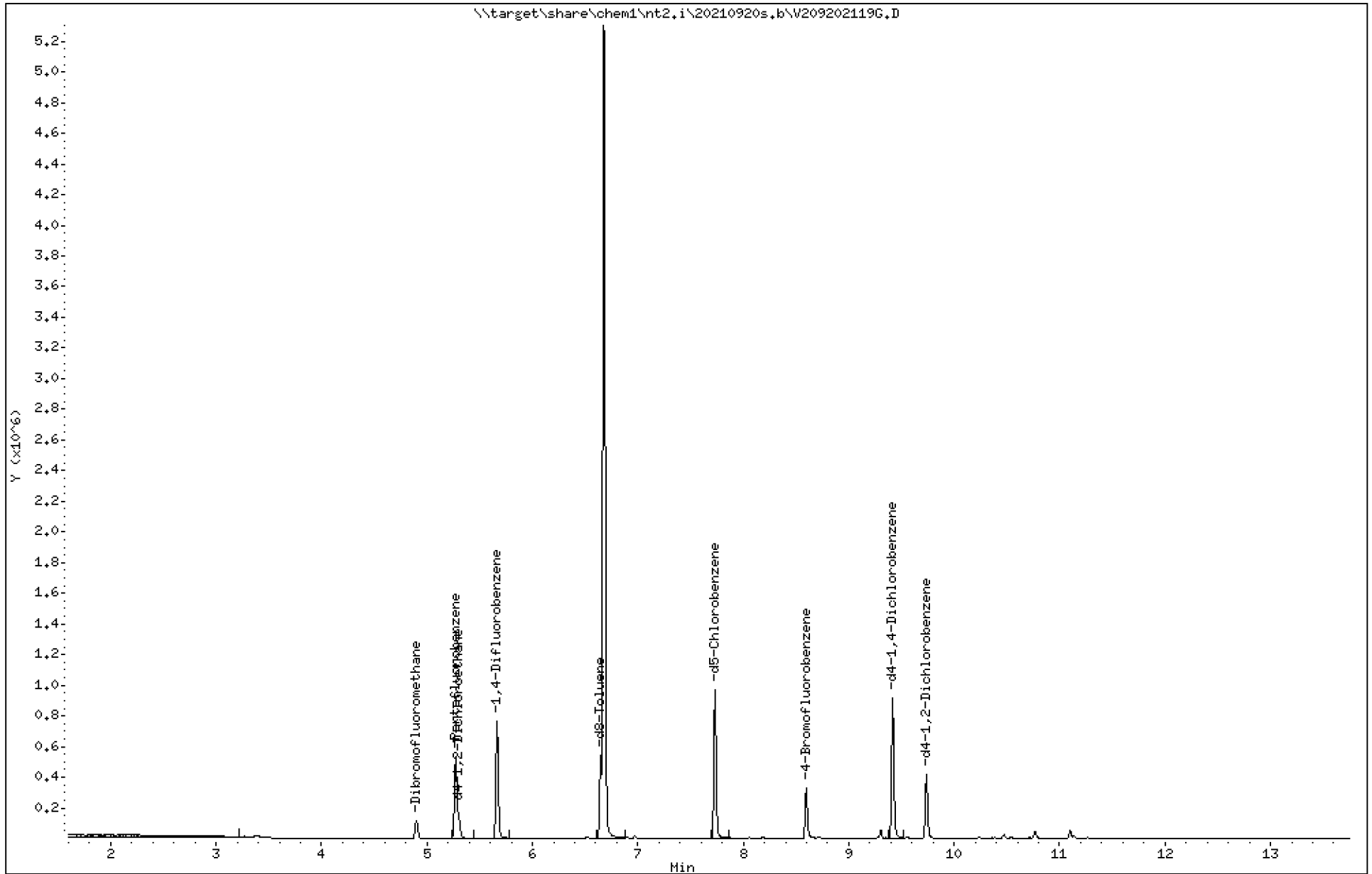
Instrument: nt2.i

Sample Info: 2110239-04

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202119G.D
 Lab Smp Id: 21I0239-04
 Inj Date : 20-SEP-2021 15:30
 Operator : PKC
 Smp Info : 21I0239-04
 Misc Info : 15-
 Comment :
 Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Meth Date : 21-Sep-2021 09:54 nt2.i
 Cal Date : 02-SEP-2021 09:50
 Als bottle: 54
 Dil Factor: 1.00000
 Integrator: HP RTE
 Target Version: 4.14
 Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
 Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.895	4.899	(0.928)	70266	5.44522	5.445
* 32 Pentafluorobenzene	168		5.272	5.276	(1.000)	277199	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.302	5.300	(1.006)	40130	5.62157	5.622
* 37 1,4-Difluorobenzene	114		5.667	5.665	(1.000)	488024	10.0000	
\$ 43 d8-Toluene	98		6.646	6.644	(1.173)	268809	5.09060	5.091
* 53 d5-Chlorobenzene	117		7.729	7.733	(1.000)	444954	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.598	8.596	(1.113)	76644	4.89758	4.898
* 76 d4-1,4-Dichlorobenzene	152		9.419	9.417	(1.000)	214725	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.735	9.740	(1.034)	96679	5.03002	5.030

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202119G.D Calibration Time: 10:13
 Lab Smp Id: 21I0239-04
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	256594	128297	513188	277199	8.03
37 1,4-Difluorobenze	460187	230094	920374	488024	6.05
53 d5-Chlorobenzene	406665	203333	813330	444954	9.42
76 d4-1,4-Dichlorobe	202468	101234	404936	214725	6.05

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.27	-0.08
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.03
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	-0.06
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.02

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-04
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.445	108.90	
\$ 33 d4-1,2-Dichloroeth	5.000	5.622	112.43	
\$ 43 d8-Toluene	5.000	5.091	101.81	
\$ 62 4-Bromofluorobenze	5.000	4.898	97.95	
\$ 79 d4-1,2-Dichloroben	5.000	5.030	100.60	

REVIEW SUMMARY FOR FILE - V209202119G.D

Lab ID: 21I0239-04

nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 15:30

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 15:30

Client ID:

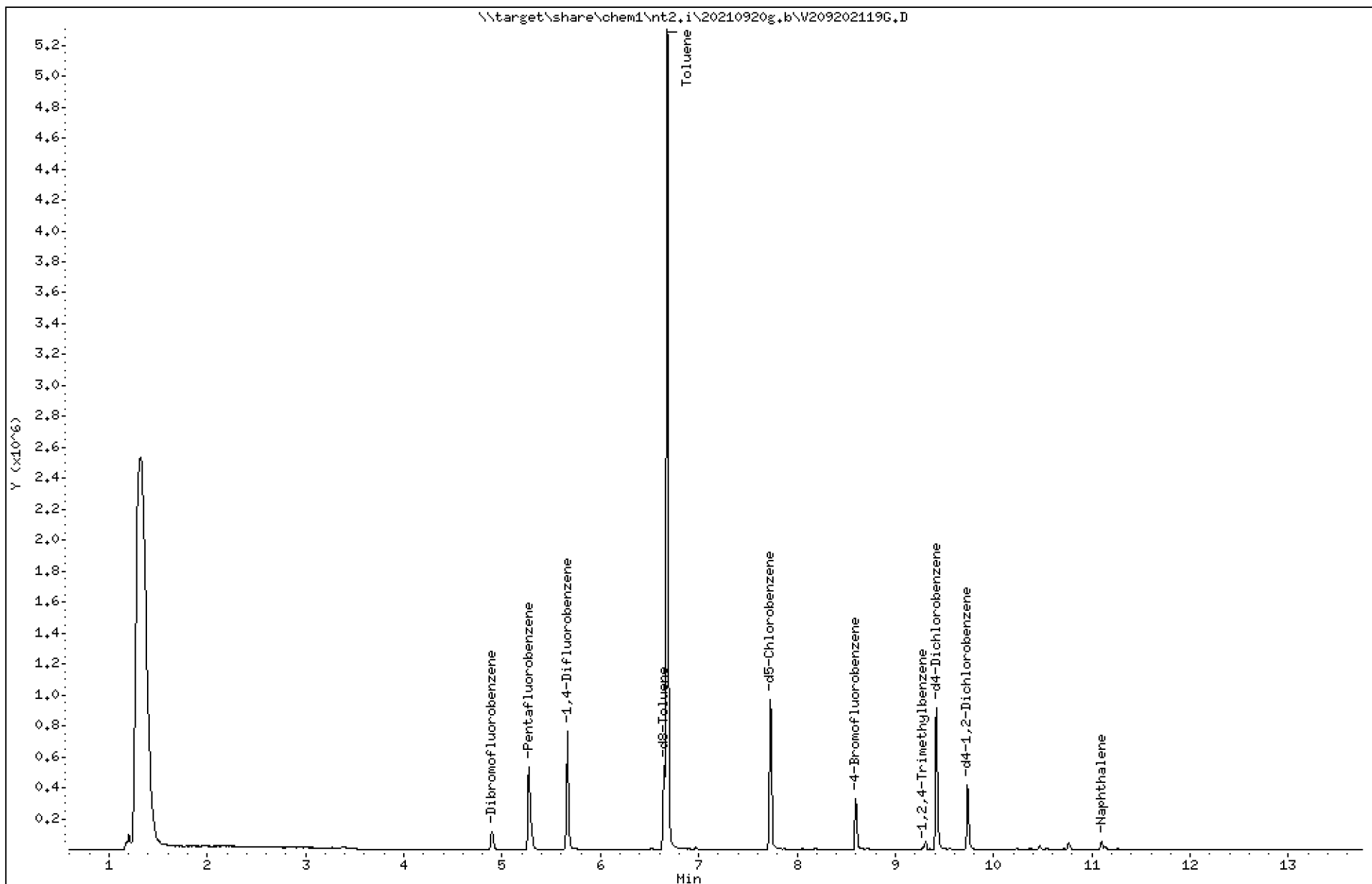
Instrument: nt2.i

Sample Info: 21I0239-04

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202119G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 15:30

ARI ID: 21I0239-04
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

=====

GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	8349071	0.257
8015C 2MP-TMB (3.00 to 9.38)	22222222	8371000	0.377
AK101 nC6-nC10 (3.44 to 8.58)	45246913	8238388	0.182
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	8537235	0.252
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	8349072	0.376

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.729	1403552	d5-Chlorobenzene
8.599	481084	4-Bromofluorobenzene
6.647	589663	d8-Toluene
9.420	1339176	d4-Dichlorobenzene
9.736	611460	d4-1,2-Dichlorobenzene



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

PZ-17-20210917
2110239-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/17/2021 12:00
Analyzed: 22-Oct-2021 01:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJ10593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 15-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 15-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	92.5	%	

Date : 22-OCT-2021 01:10

Client ID:

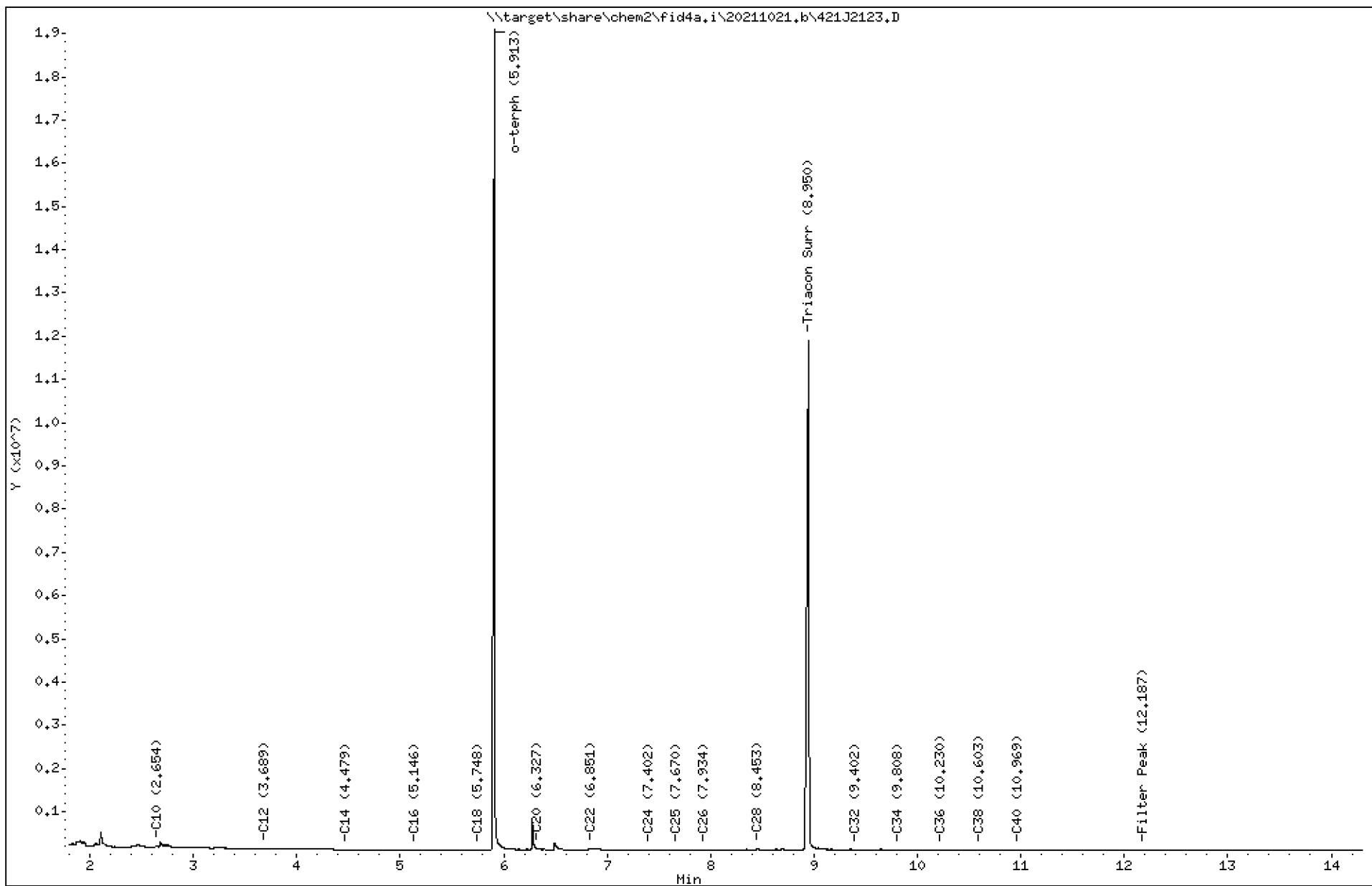
Instrument: fid4a.i

Sample Info: 2110239-05

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0,25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2123.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-05
Client ID:
Injection: 22-OCT-2021 01:10
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

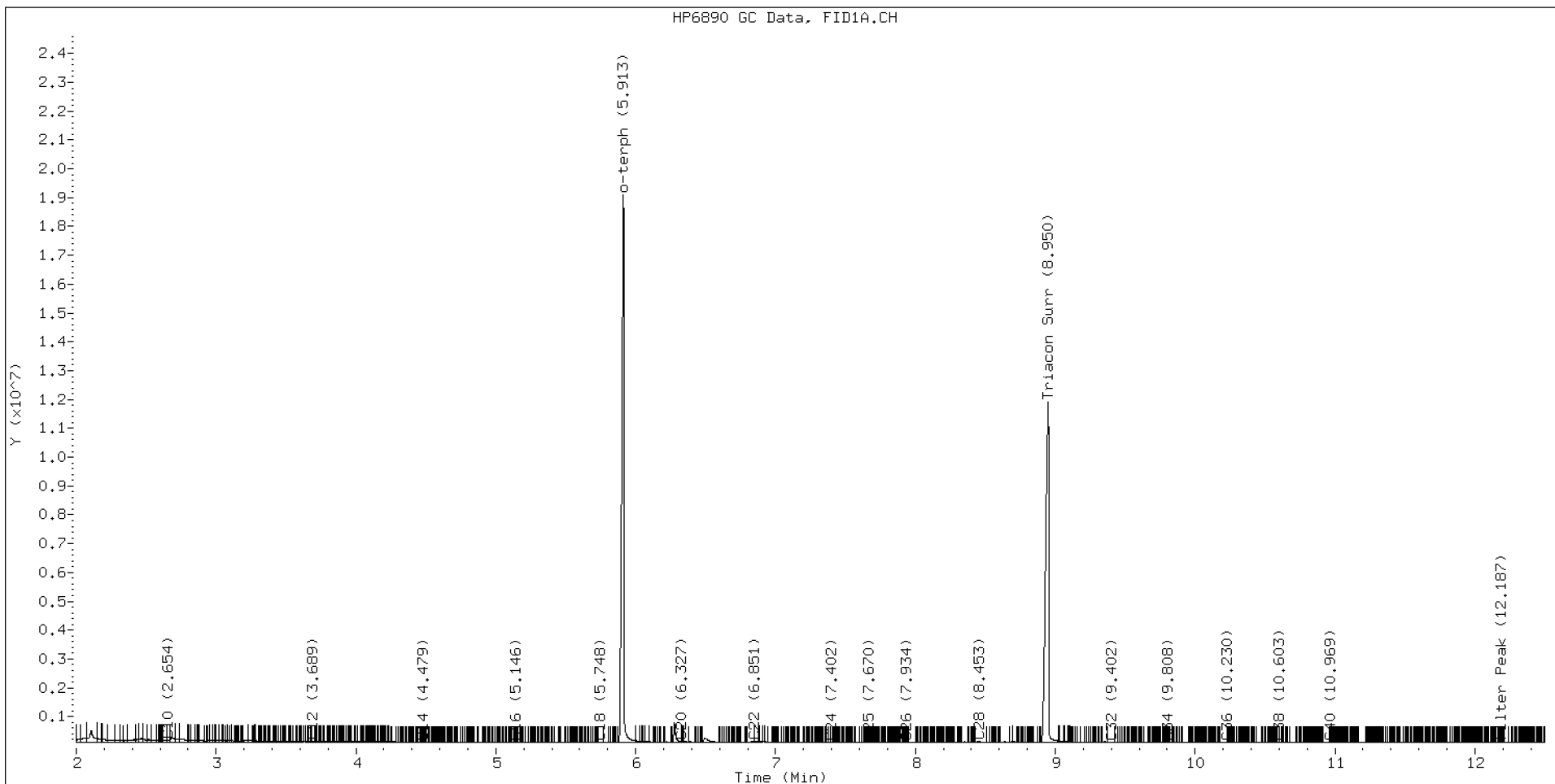
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.320	0.004	1923399	2706245	WATPHD	(C12-C24)	3259068	20.5
C10	2.654	0.002	88653	113065	WATPHM	(C24-C38)	1246365	9.5
C12	3.689	0.000	35301	39637	AK102	(C10-C25)	7112614	38.0
C14	4.479	0.004	12911	5755	AK103	(C25-C36)	1132310	11.2
C16	5.146	0.000	6925	2064	OR.DIES	(C10-C28)	7355662	39.1
C18	5.748	-0.002	9392	15524				
C20	6.327	0.024	27490	18924				
C22	6.851	-0.006	38253	59847				
C24	7.402	-0.002	3602	2075				
C25	7.670	-0.003	857	276				
C26	7.934	-0.003	2574	856				
C28	8.453	0.009	24922	66491				
C32	9.402	0.018	15506	36688				
C34	9.808	-0.003	5676	2801				
Filter Peak	12.187	-0.001	2457	817	CREOSOT	(C12-C22)	3158536	74.8
C36	10.230	0.014	4547	3042				
C38	10.603	0.002	3794	3262				
C40	10.969	-0.002	4316	1690				
o-terph	5.913	-0.001	18992011	19786564				
Triacon Surr	8.950	-0.006	11799674	17982919				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	19786564	104.1
Triacontane	17982919	84.9

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

PZ-17-20210917
2110239-05 (Water)

Volatile Organic Compounds

Method: NWTPHg
Instrument: NT2

Sampled: 09/17/2021 12:00
Analyzed: 20-Sep-2021 15:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 20-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	94.6	%	

Date : 20-SEP-2021 15:51

Client ID:

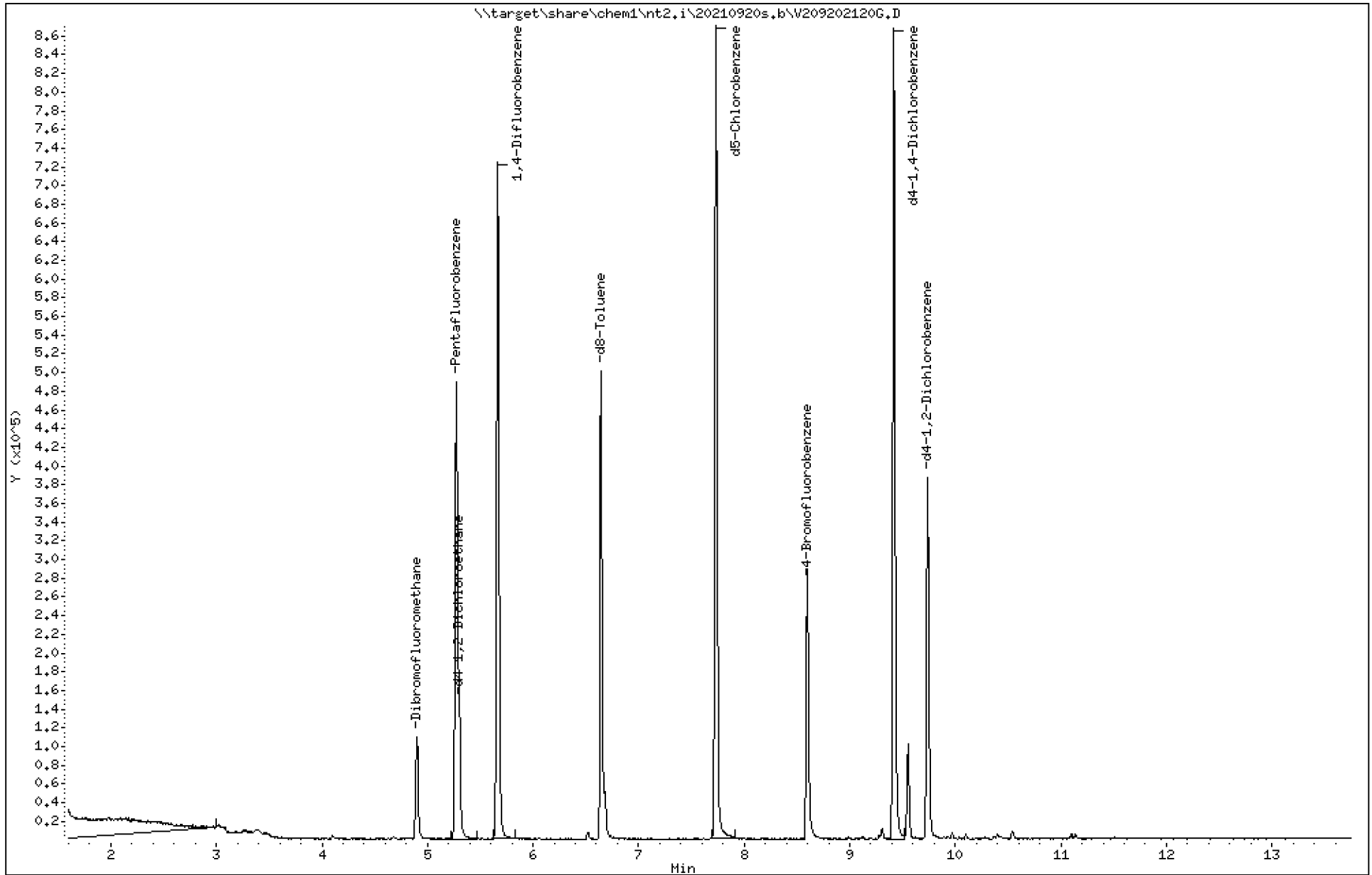
Instrument: nt2.i

Sample Info: 2110239-05

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202120G.D
Lab Smp Id: 21I0239-05
Inj Date : 20-SEP-2021 15:51
Operator : PKC
Smp Info : 21I0239-05
Misc Info : 15-
Comment :
Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Meth Date : 21-Sep-2021 09:54 nt2.i
Cal Date : 02-SEP-2021 09:50
Als bottle: 55
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 4.14
Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	CONCENTRATIONS					
			ON-COLUMN	FINAL				
	MASS		RT	EXP RT	REL RT	RESPONSE	(ug/L)	(ug/L)
=====	=====		=====	=====	=====	=====	=====	=====
\$ 27 Dibromofluoromethane	111		4.899	4.899	(0.929)	65645	5.33482	5.335
* 32 Pentafluorobenzene	168		5.276	5.276	(1.000)	264328	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.301	5.300	(1.005)	38656	5.67876	5.679
* 37 1,4-Difluorobenzene	114		5.665	5.665	(1.000)	462223	10.0000	
\$ 43 d8-Toluene	98		6.645	6.644	(1.173)	252476	5.04818	5.048
* 53 d5-Chlorobenzene	117		7.733	7.733	(1.000)	418649	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.603	8.596	(1.112)	69647	4.73011	4.730
* 76 d4-1,4-Dichlorobenzene	152		9.418	9.417	(1.000)	199037	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.740	9.740	(1.034)	88985	4.99463	4.995

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202120G.D Calibration Time: 10:13
 Lab Smp Id: 21I0239-05
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzen	256594	128297	513188	264328	3.01
37 1,4-Difluorobenze	460187	230094	920374	462223	0.44
53 d5-Chlorobenzene	406665	203333	813330	418649	2.95
76 d4-1,4-Dichlorobe	202468	101234	404936	199037	-1.69

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzen	5.28	4.78	5.78	5.28	0.00
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.00
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	0.00
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.00

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-05
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.335	106.70	
\$ 33 d4-1,2-Dichloroeth	5.000	5.679	113.58	
\$ 43 d8-Toluene	5.000	5.048	100.96	
\$ 62 4-Bromofluorobenze	5.000	4.730	94.60	
\$ 79 d4-1,2-Dichloroben	5.000	4.995	99.89	

REVIEW SUMMARY FOR FILE - V209202120G.D

Lab ID: 21I0239-05

nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 15:51

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 15:51

Client ID:

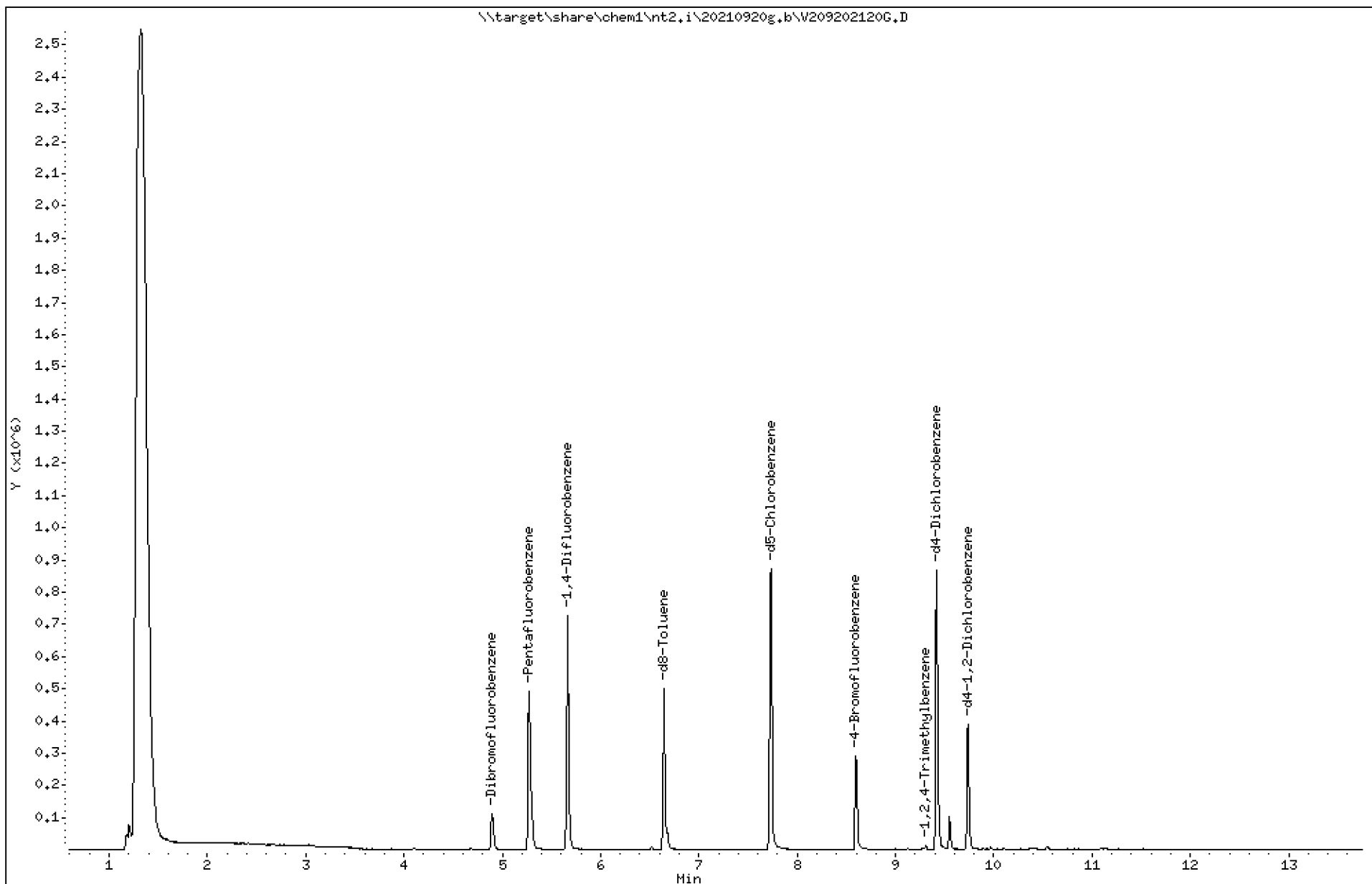
Instrument: nt2.i

Sample Info: 2110239-05

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202120G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 15:51

ARI ID: 21I0239-05
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	142933	0.004
8015C 2MP-TMB (3.00 to 9.38)	22222222	10689	0.000
AK101 nC6-nC10 (3.44 to 8.58)	45246913	2	0.000
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	157240	0.005
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	142934	0.006

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.734	1331063	d5-Chlorobenzene
8.597	431426	4-Bromofluorobenzene
6.645	764021	d8-Toluene
9.418	1235182	d4-Dichlorobenzene
9.740	570196	d4-1,2-Dichlorobenzene



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

MW-05D-20210916
2110239-06 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/16/2021 15:20
Analyzed: 22-Oct-2021 01:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJ10593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 15-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 15-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	202	ug/L	
HC ID: DRO						
Surrogate: o-Terphenyl			50-150 %	96.9	%	

Date : 22-OCT-2021 01:30

Client ID:

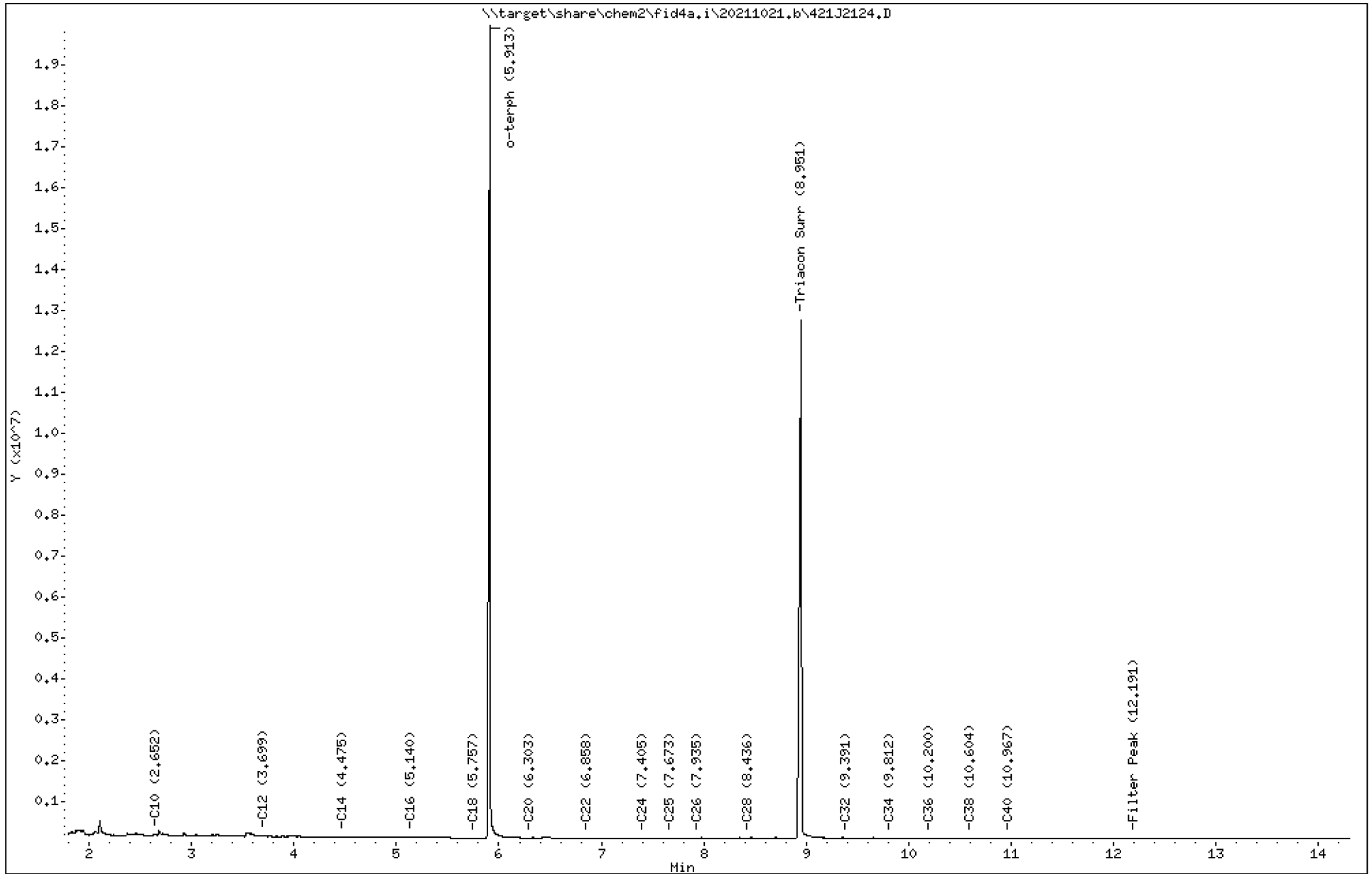
Instrument: fid4a.i

Sample Info: 2110239-06

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0.25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2124.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-06
Client ID:
Injection: 22-OCT-2021 01:30
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

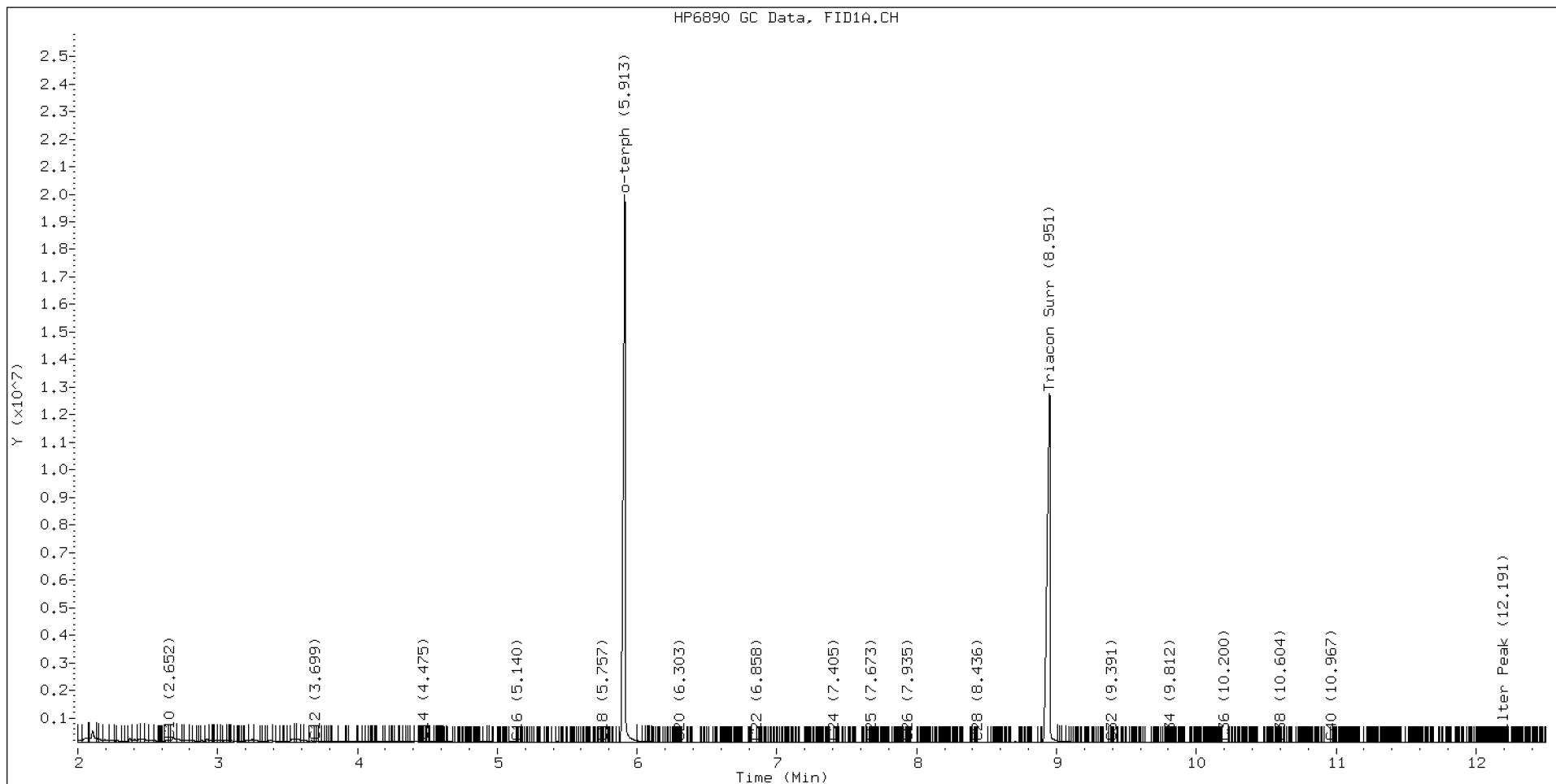
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.318	0.003	1899595	2706182	WATPHD	(C12-C24)	4468426	28.2
C10	2.652	0.000	92930	113432	WATPHM	(C24-C38)	1379355	10.5
C12	3.699	0.010	61033	57235	AK102	(C10-C25)	9469842	50.6
C14	4.475	0.001	28146	5619	AK103	(C25-C36)	1237143	12.2
C16	5.140	-0.006	27111	13500	OR.DIES	(C10-C28)	9764776	51.9
C18	5.757	0.007	12629	3153				
C20	6.303	0.000	12049	4733				
C22	6.858	0.001	9998	18534				
C24	7.405	0.001	7455	9606				
C25	7.673	0.000	4195	1238				
C26	7.935	-0.001	4234	2475				
C28	8.436	-0.008	4148	818				
C32	9.391	0.007	8030	3552				
C34	9.812	0.001	5867	2292				
Filter Peak	12.191	0.004	611	324	CREOSOT	(C12-C22)	4270112	101.2
C36	10.200	-0.016	7829	16294				
C38	10.604	0.004	3497	1205				
C40	10.967	-0.004	3139	2275				
o-terph	5.913	-0.001	19872177	20730044				
Triacon Surr	8.951	-0.005	12676358	18975239				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	20730044	109.0
Triacontane	18975239	89.6

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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MW-05D-20210916
2110239-06 (Water)

Volatile Organic Compounds

Method: NWTPhg Sampled: 09/16/2021 15:20
Instrument: NT2 Analyzed: 20-Sep-2021 16:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 20-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	1580	ug/L	
HC ID: GRO						
Surrogate: Toluene-d8			80-120 %	98.8	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	99.4	%	

Date : 20-SEP-2021 16:12

Client ID:

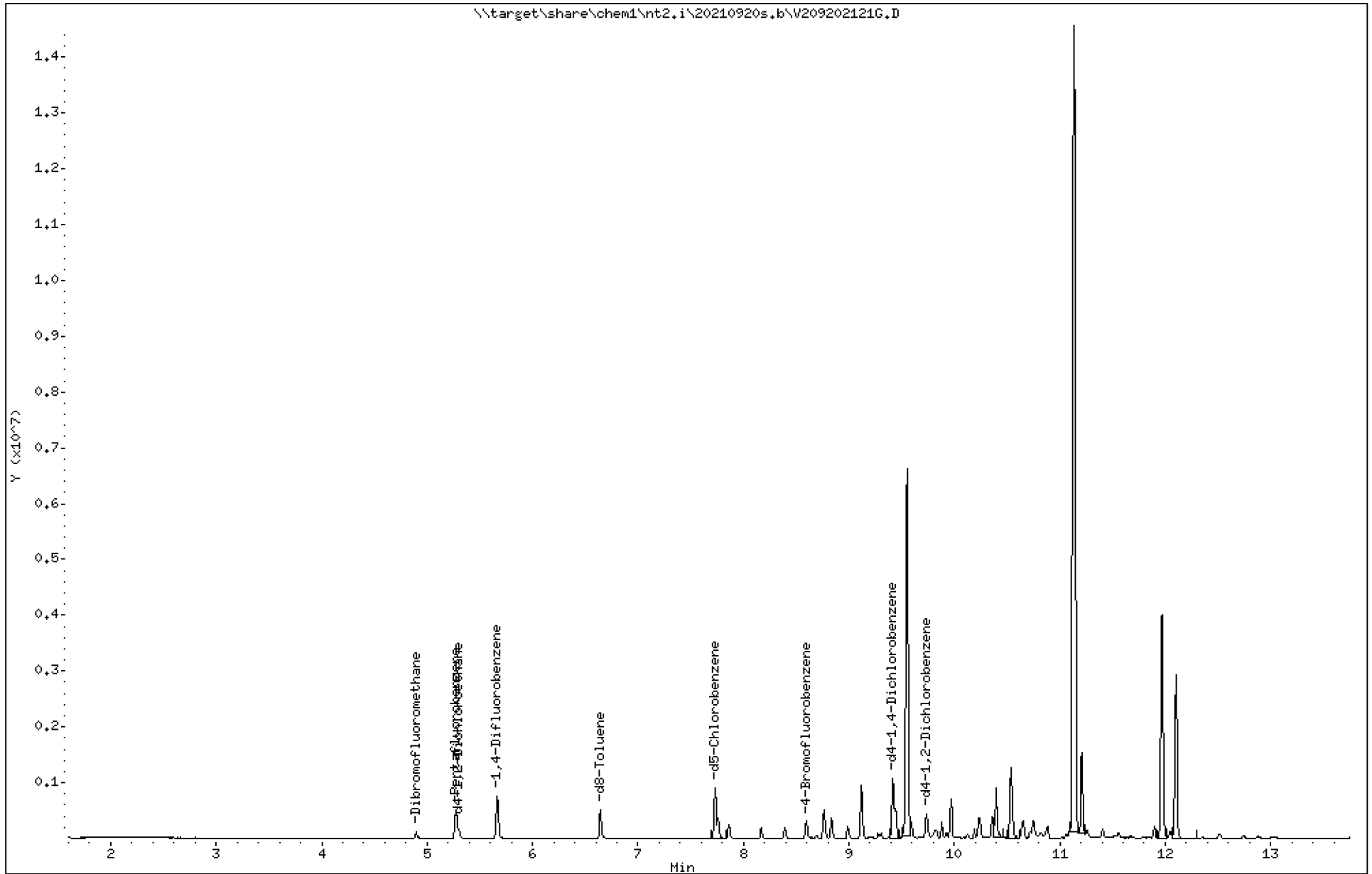
Instrument: nt2.i

Sample Info: 21I0239-06

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202121G.D
Lab Smp Id: 21I0239-06
Inj Date : 20-SEP-2021 16:12
Operator : PKC
Smp Info : 21I0239-06
Misc Info : 15-
Comment :
Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Meth Date : 21-Sep-2021 09:54 nt2.i
Cal Date : 02-SEP-2021 09:50
Als bottle: 56
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 4.14
Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	CONCENTRATIONS					
			RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.898	4.899	(0.929)	65917	5.27693	5.277
* 32 Pentafluorobenzene	168		5.275	5.276	(1.000)	268335	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.300	5.300	(1.005)	39000	5.64374	5.644
* 37 1,4-Difluorobenzene	114		5.665	5.665	(1.000)	474130	10.0000	
\$ 43 d8-Toluene	98		6.644	6.644	(1.173)	253495	4.94127	4.941
* 53 d5-Chlorobenzene	117		7.732	7.733	(1.000)	425210	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.602	8.596	(1.112)	74323	4.96980	4.970
* 76 d4-1,4-Dichlorobenzene	152		9.417	9.417	(1.000)	216552	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.733	9.740	(1.034)	99726	5.14478	5.145

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202121G.D Calibration Time: 10:13
 Lab Smp Id: 21I0239-06
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	256594	128297	513188	268335	4.58
37 1,4-Difluorobenze	460187	230094	920374	474130	3.03
53 d5-Chlorobenzene	406665	203333	813330	425210	4.56
76 d4-1,4-Dichlorobe	202468	101234	404936	216552	6.96

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.28	-0.01
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	-0.01
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	-0.01
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	-0.01

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-06
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.277	105.54	
\$ 33 d4-1,2-Dichloroeth	5.000	5.644	112.87	
\$ 43 d8-Toluene	5.000	4.941	98.83	
\$ 62 4-Bromofluorobenze	5.000	4.970	99.40	
\$ 79 d4-1,2-Dichloroben	5.000	5.145	102.90	

REVIEW SUMMARY FOR FILE - V209202121G.D

Lab ID: 21I0239-06

nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 16:12

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 16:12

Client ID:

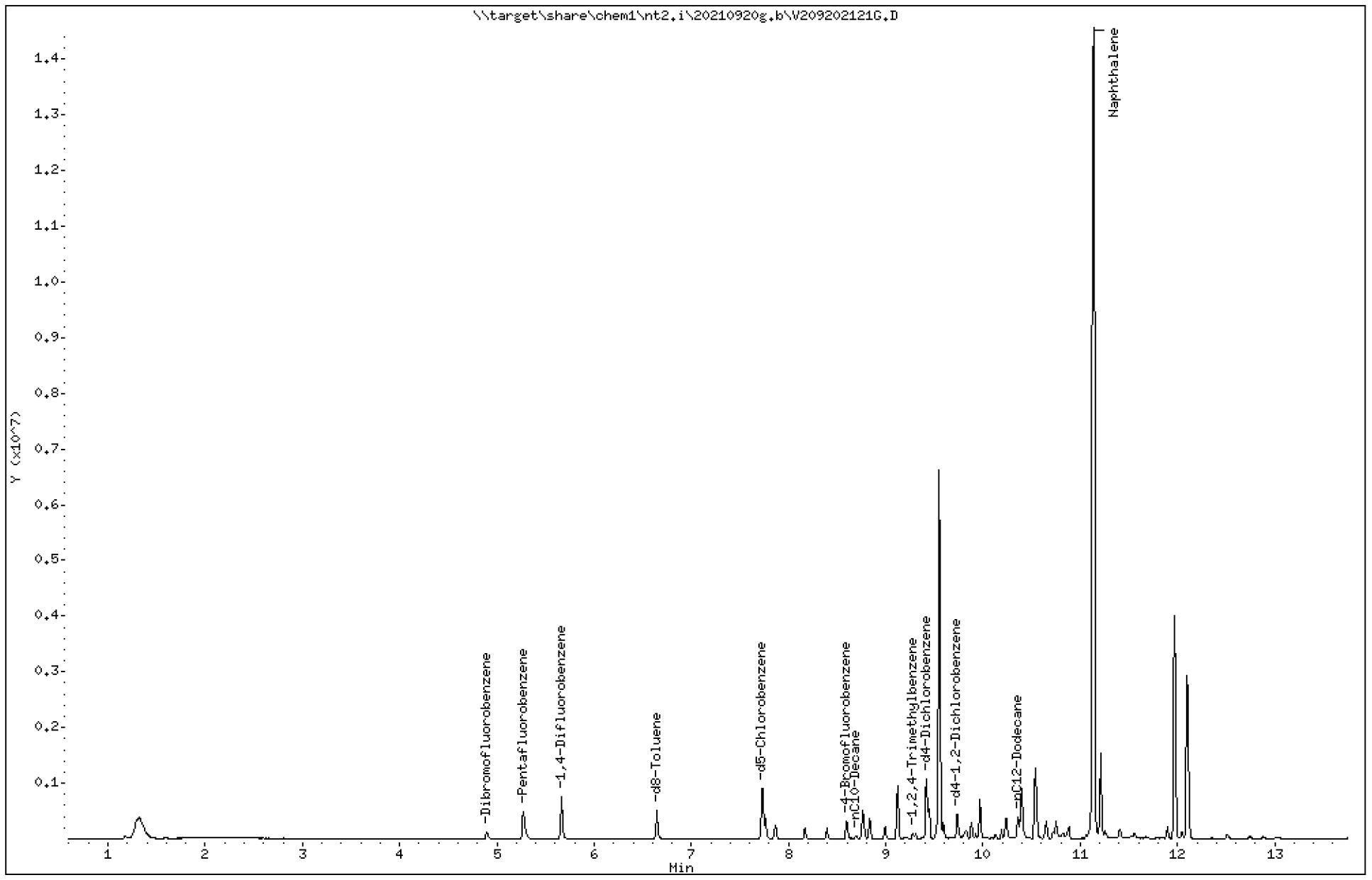
Instrument: nt2.i

Sample Info: 21I0239-06

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202121G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 16:12

ARI ID: 21I0239-06
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

=====

GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	20606965	0.635 M
8015C 2MP-TMB (3.00 to 9.38)	22222222	4792030	0.216
AK101 nC6-nC10 (3.44 to 8.58)	45246913	1419536	0.031
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	53550245	1.578 M
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	20606966	0.927 M

* Surrogate areas are subtracted from Total Area

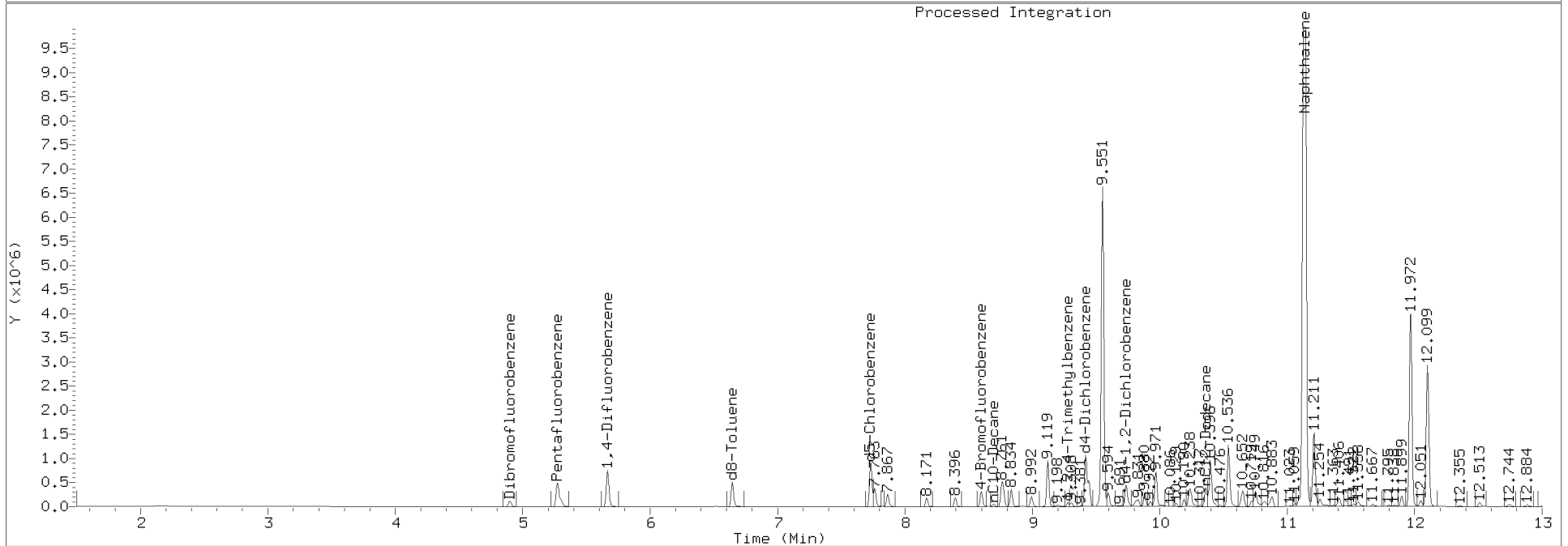
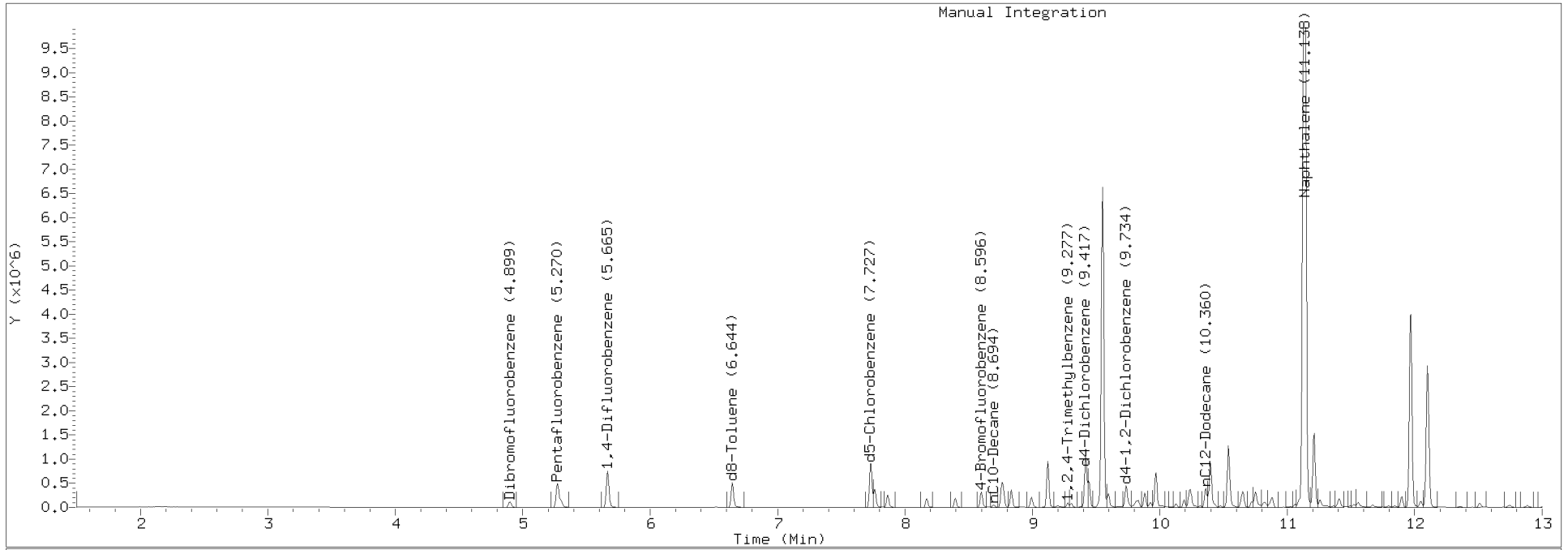
NW Gas Range Subtracted Peaks

7.727	1369665	d5-Chlorobenzene
8.596	461375	4-Bromofluorobenzene
6.644	730274	d8-Toluene
9.417	1575234	d4-Dichlorobenzene
9.734	705768	d4-1,2-Dichlorobenzene

TPHG Manual Integrations Report

Datafile: NT2, 20210920g.b/V209202121G.D Injection: 20-SEP-2021 16:12

Lab ID:21I0239-06





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

LW-3-20210916
2110239-07 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/16/2021 18:27
Analyzed: 22-Oct-2021 01:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJI0593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 15-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 15-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	259	ug/L	
HC ID: DRO						
Surrogate: <i>o</i> -Terphenyl			50-150 %	102	%	

Date : 22-OCT-2021 01:50

Client ID:

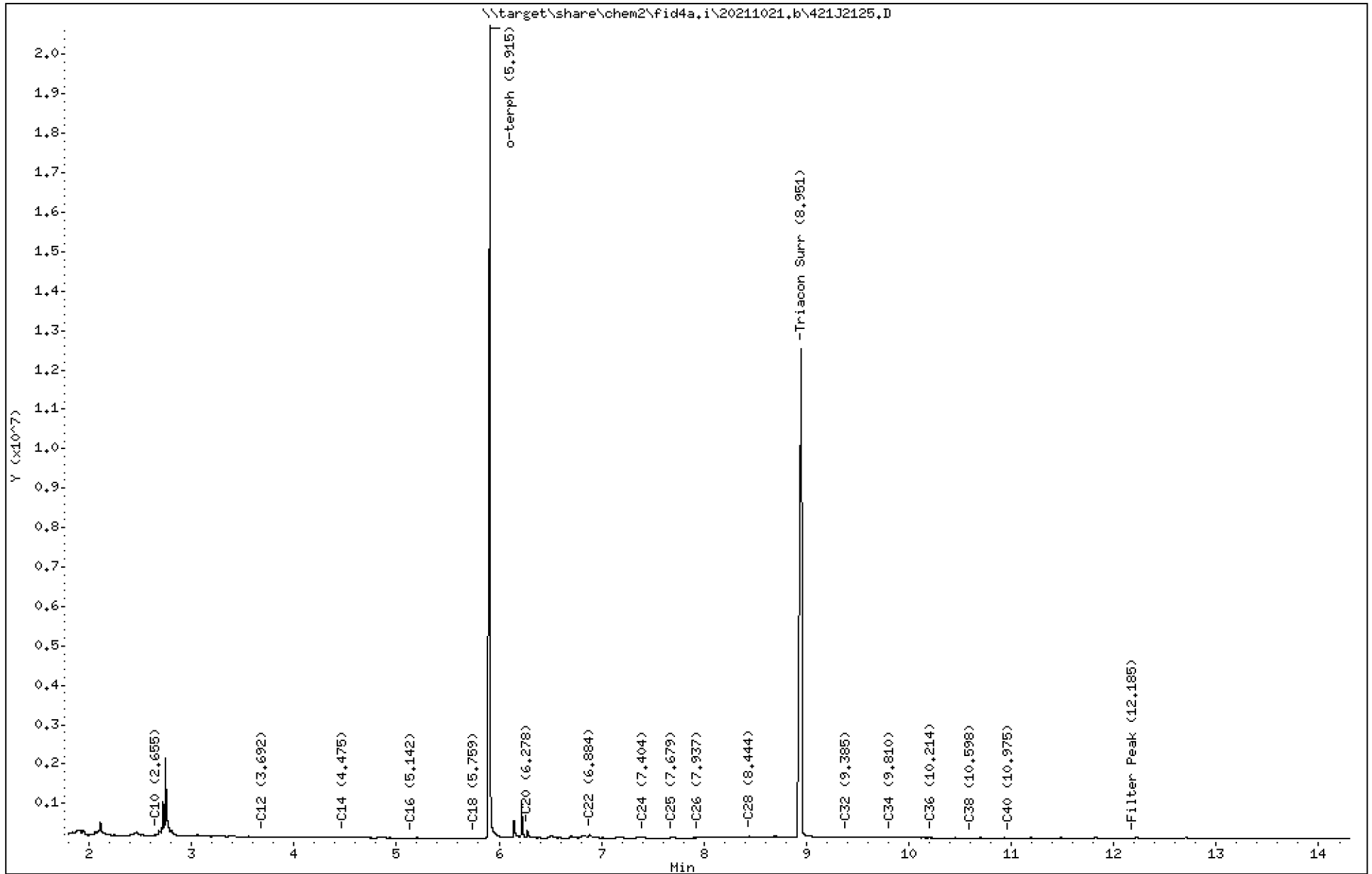
Instrument: fid4a.i

Sample Info: 2110239-07

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0,25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2125.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-07
Client ID:
Injection: 22-OCT-2021 01:50
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

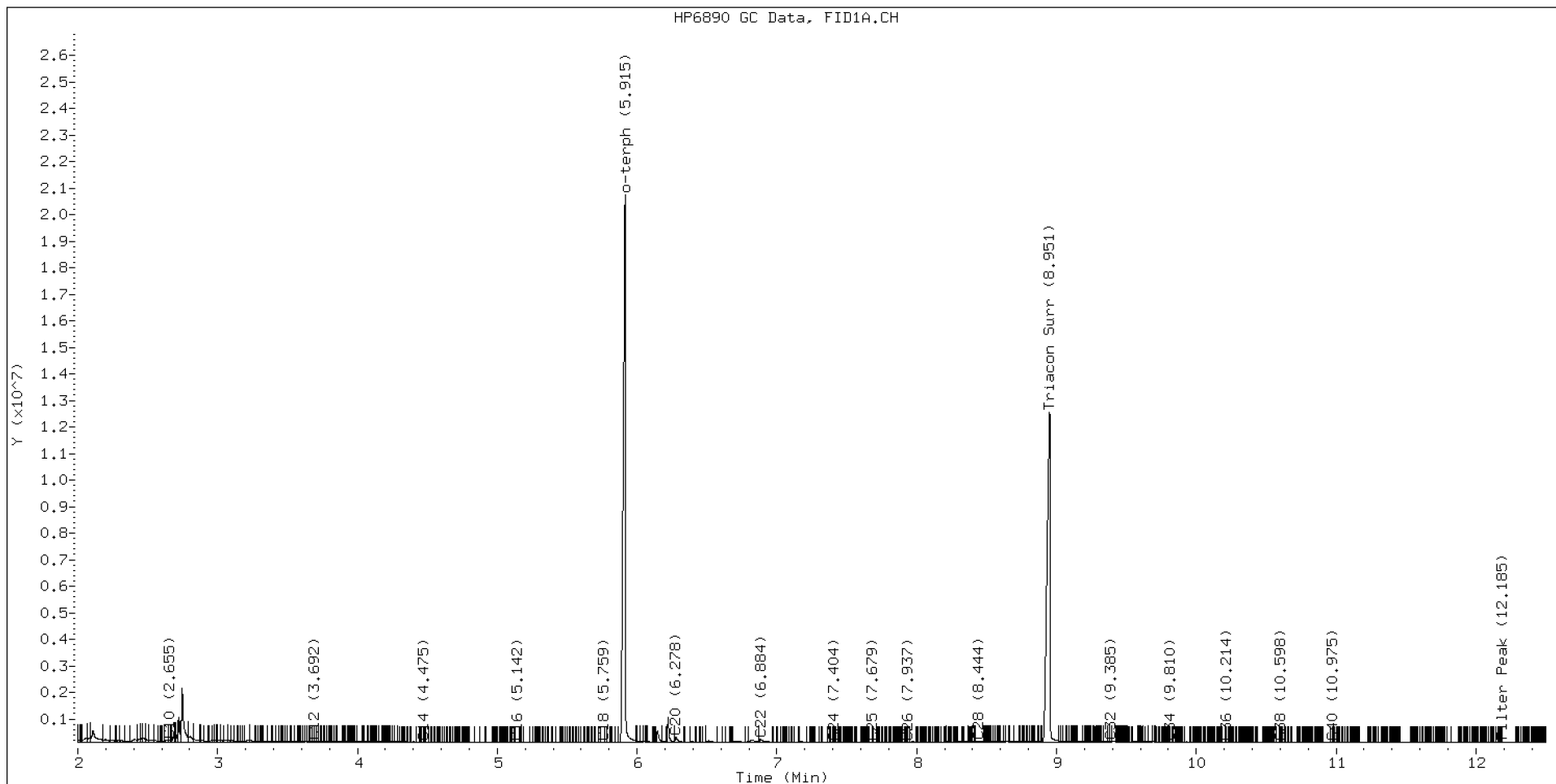
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.325	0.009	1939312	2700854	WATPHD	(C12-C24)	5948253	37.5
C10	2.655	0.004	92417	102121	WATPHM	(C24-C38)	4286805	32.6
C12	3.692	0.003	43766	44751	AK102	(C10-C25)	13291545	71.0
C14	4.475	0.001	22806	4551	AK103	(C25-C36)	3851081	38.1
C16	5.142	-0.004	14514	25138	OR.DIES	(C10-C28)	14467661	76.8
C18	5.759	0.009	10628	16570				
C20	6.278	-0.025	192653	286448				
C22	6.884	0.027	111309	290671				
C24	7.404	-0.000	19057	7545				
C25	7.679	0.006	18547	18976				
C26	7.937	0.000	19193	9201				
C28	8.444	-0.000	54422	150871				
C32	9.385	0.000	44789	30409				
C34	9.810	-0.001	24348	6043				
Filter Peak	12.185	-0.002	1271	286	CREOSOT	(C12-C22)	5474421	129.7
C36	10.214	-0.003	17933	8870				
C38	10.598	-0.003	11567	6191				
C40	10.975	0.005	7848	3460				
o-terph	5.915	0.001	20633352	21782545				
Triacon Surr	8.951	-0.005	12437057	19688670				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	21782545	114.6
Triacontane	19688670	92.9

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

LW-3-20210916
2110239-07 (Water)

Volatile Organic Compounds

Method: NWTPhg
Instrument: NT2

Sampled: 09/16/2021 18:27
Analyzed: 20-Sep-2021 16:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 20-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	306	ug/L	
HC ID: GRO						
Surrogate: Toluene-d8			80-120 %	100	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	98.4	%	

Date : 20-SEP-2021 16:34

Client ID:

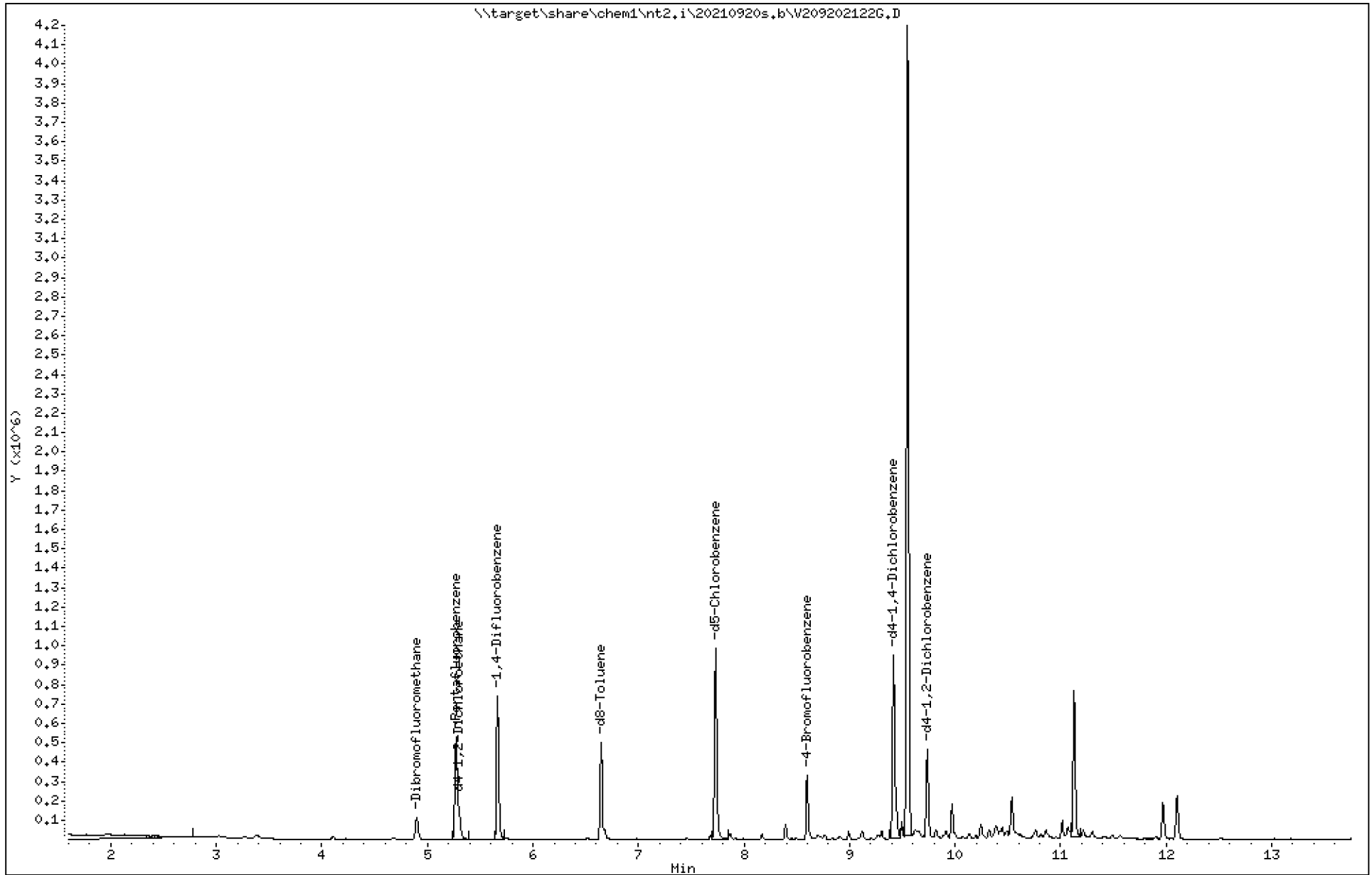
Instrument: nt2.i

Sample Info: 2110239-07

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202122G.D
Lab Smp Id: 21I0239-07
Inj Date : 20-SEP-2021 16:34
Operator : PKC
Smp Info : 21I0239-07
Misc Info : 15-
Comment :
Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Meth Date : 21-Sep-2021 09:54 nt2.i
Cal Date : 02-SEP-2021 09:50
Als bottle: 57
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 4.14
Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	CONCENTRATIONS					
			ON-COLUMN	FINAL	RT	EXP RT	REL RT	RESPONSE
\$ 27 Dibromofluoromethane	111		4.895	4.899	(0.928)	69594	5.47334	5.473
* 32 Pentafluorobenzene	168		5.272	5.276	(1.000)	273137	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.297	5.300	(1.005)	39804	5.65882	5.659
* 37 1,4-Difluorobenzene	114		5.668	5.665	(1.000)	479439	10.0000	
\$ 43 d8-Toluene	98		6.647	6.644	(1.173)	259402	5.00042	5.000
* 53 d5-Chlorobenzene	117		7.729	7.733	(1.000)	444297	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.599	8.596	(1.113)	76889	4.92051	4.921
* 76 d4-1,4-Dichlorobenzene	152		9.420	9.417	(1.000)	216927	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.736	9.740	(1.034)	99378	5.11796	5.118

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202122G.D Calibration Time: 10:13
 Lab Smp Id: 21I0239-07
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzen	256594	128297	513188	273137	6.45
37 1,4-Difluorobenze	460187	230094	920374	479439	4.18
53 d5-Chlorobenzene	406665	203333	813330	444297	9.25
76 d4-1,4-Dichlorobe	202468	101234	404936	216927	7.14

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzen	5.28	4.78	5.78	5.27	-0.07
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.04
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	-0.05
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.03

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-07
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.473	109.47	
\$ 33 d4-1,2-Dichloroeth	5.000	5.659	113.18	
\$ 43 d8-Toluene	5.000	5.000	100.01	
\$ 62 4-Bromofluorobenze	5.000	4.921	98.41	
\$ 79 d4-1,2-Dichloroben	5.000	5.118	102.36	

REVIEW SUMMARY FOR FILE - V209202122G.D

Lab ID: 21I0239-07

nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 16:34

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 16:34

Client ID:

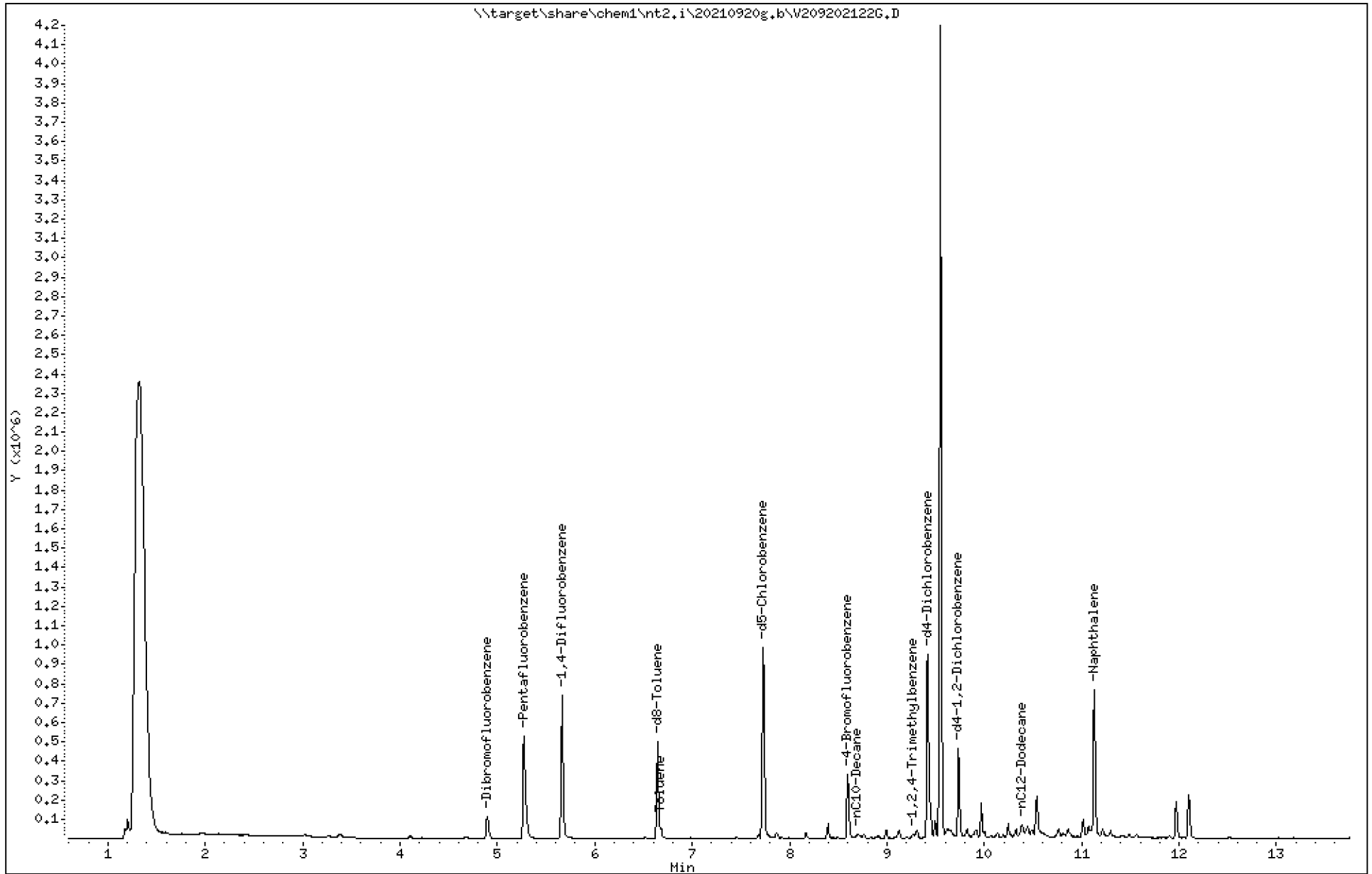
Instrument: nt2.i

Sample Info: 2110239-07

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202122G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 16:34

ARI ID: 21I0239-07
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	7971917	0.245 M
8015C 2MP-TMB (3.00 to 9.38)	22222222	767197	0.035 M
AK101 nC6-nC10 (3.44 to 8.58)	45246913	360683	0.008 M
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	10392054	0.306 M
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	7984052	0.359 M

* Surrogate areas are subtracted from Total Area

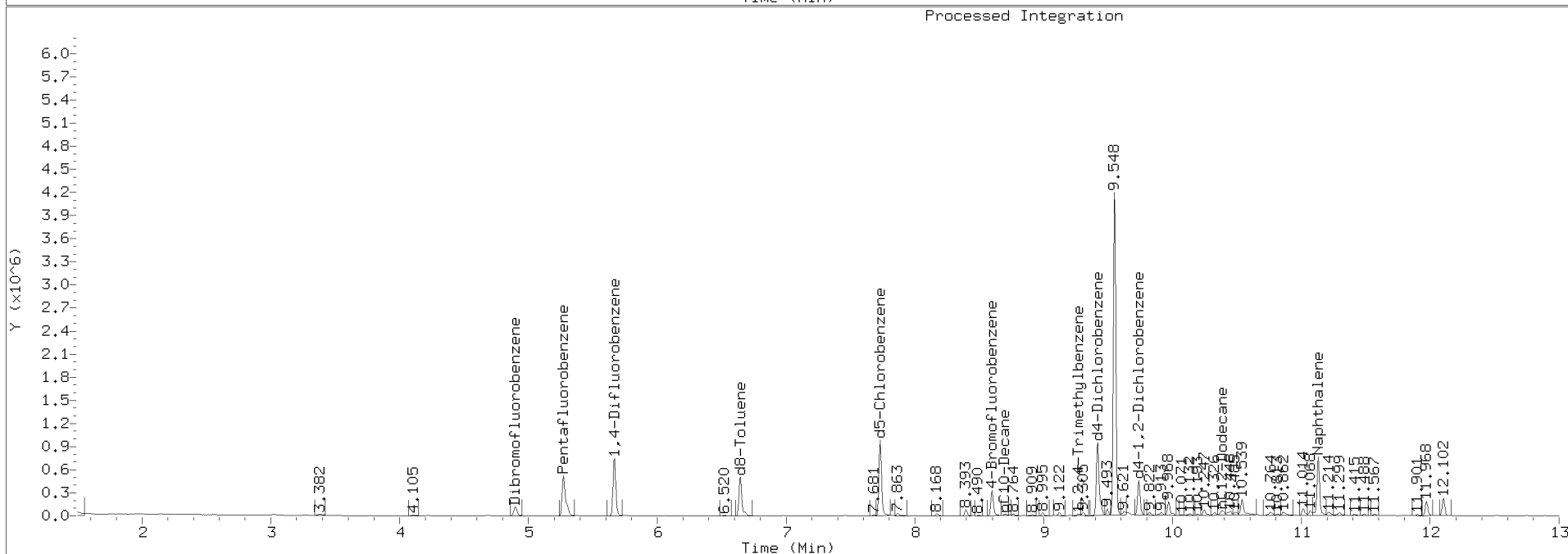
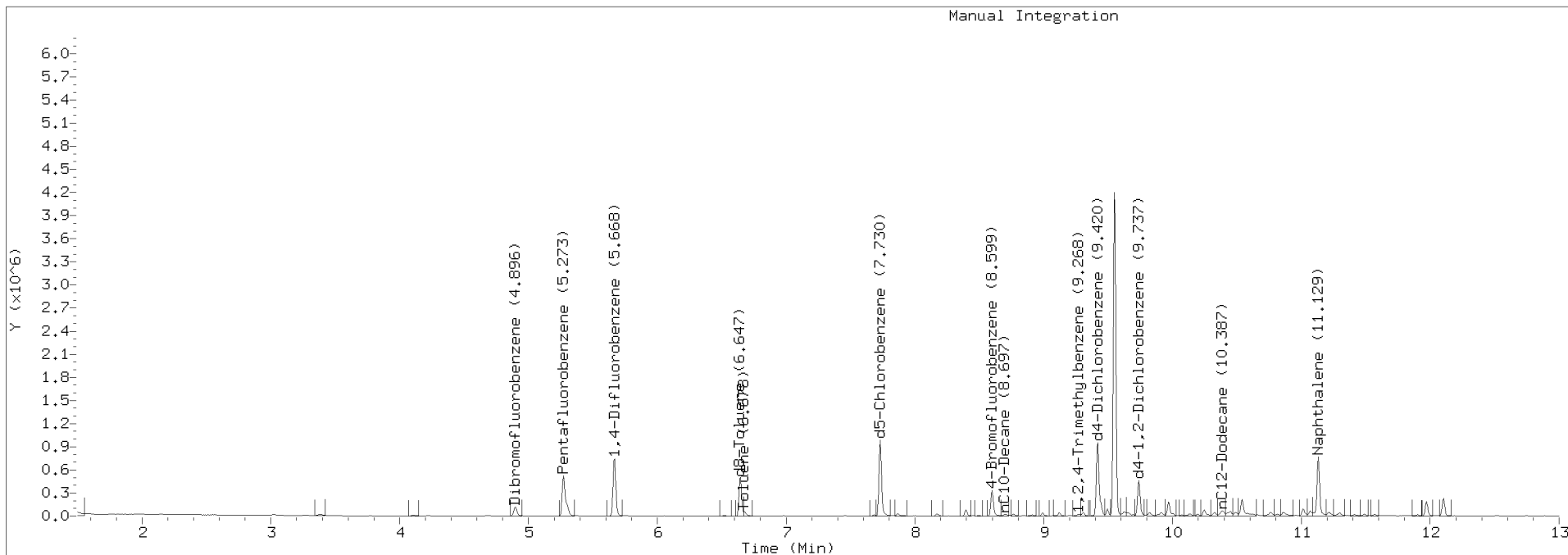
NW Gas Range Subtracted Peaks

7.730	1407175	d5-Chlorobenzene
8.599	482483	4-Bromofluorobenzene
6.647	732201	d8-Toluene
9.420	1515725	d4-Dichlorobenzene
9.737	675442	d4-1,2-Dichlorobenzene

TPHG Manual Integrations Report

Datafile: NT2, 20210920g.b/V209202122G.D Injection: 20-SEP-2021 16:34

Lab ID:21I0239-07





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

LW-4R-20210916
2110239-08 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/16/2021 16:41
Analyzed: 22-Oct-2021 03:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJ10593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 15-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 15-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			<i>50-150 %</i>	<i>102</i>	<i>%</i>	

Date : 22-OCT-2021 03:11

Client ID:

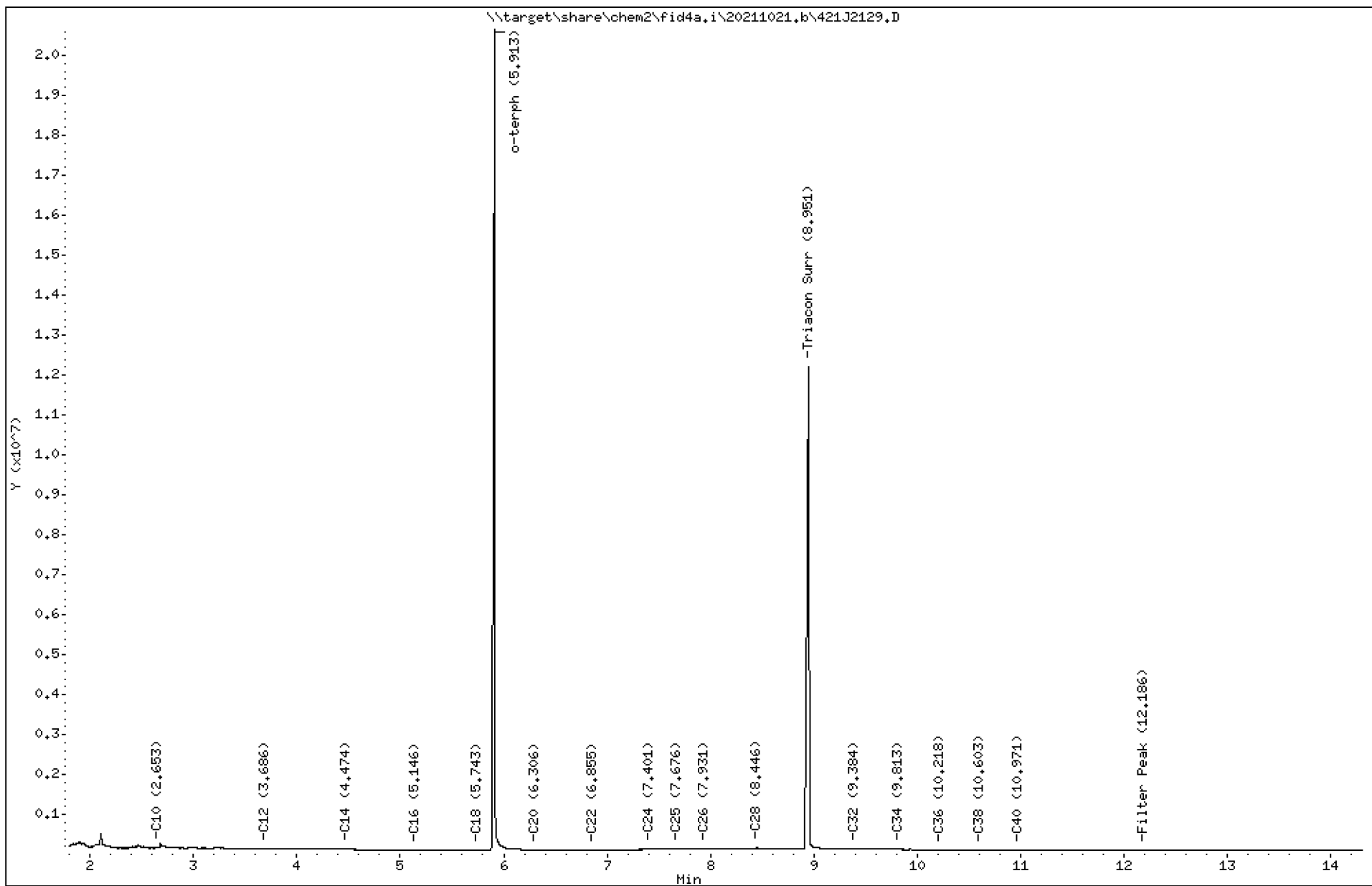
Instrument: fid4a.i

Sample Info: 2110239-08

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0,25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2129.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-08
Client ID:
Injection: 22-OCT-2021 03:11
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

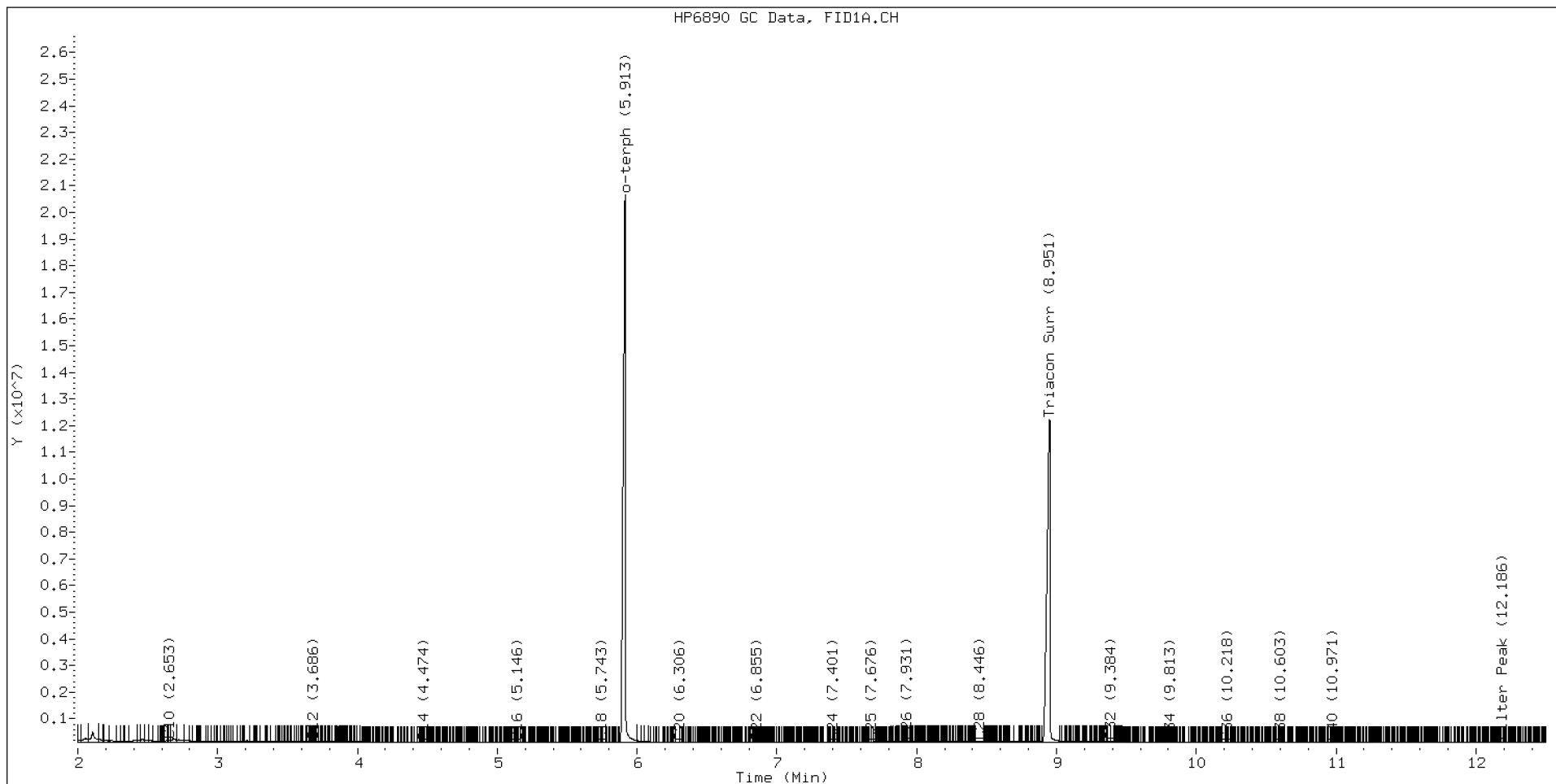
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.319	0.003	1835986	2627674	WATPHD	(C12-C24)	2994351	18.9
C10	2.653	0.002	80741	92827	WATPHM	(C24-C38)	4613839	35.1
C12	3.686	-0.003	37842	16894	AK102	(C10-C25)	6878987	36.7
C14	4.474	0.000	17846	5329	AK103	(C25-C36)	4270604	42.3
C16	5.146	0.000	10228	5552	OR.DIES	(C10-C28)	8497279	45.1
C18	5.743	-0.007	5280	1289				
C20	6.306	0.003	10336	9323				
C22	6.855	-0.002	11702	5138				
C24	7.401	-0.003	21259	8433				
C25	7.676	0.003	25854	8931				
C26	7.931	-0.006	29736	17662				
C28	8.446	0.002	56047	150550				
C32	9.384	0.000	41706	51318				
C34	9.813	0.003	20997	14347				
Filter Peak	12.186	-0.002	901	559	CREOSOT	(C12-C22)	2482940	58.8
C36	10.218	0.002	9651	3343				
C38	10.603	0.002	3789	1676				
C40	10.971	0.000	1997	1117				
o-terph	5.913	0.000	20548859	21749130				
Triacon Surr	8.951	-0.005	12108015	18747214				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	21749130	114.4
Triacontane	18747214	88.5

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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LW-4R-20210916
2110239-08 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/16/2021 16:41
Instrument: NT2 Analyzed: 20-Sep-2021 16:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 20-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	95.7	%	

Date : 20-SEP-2021 16:55

Client ID:

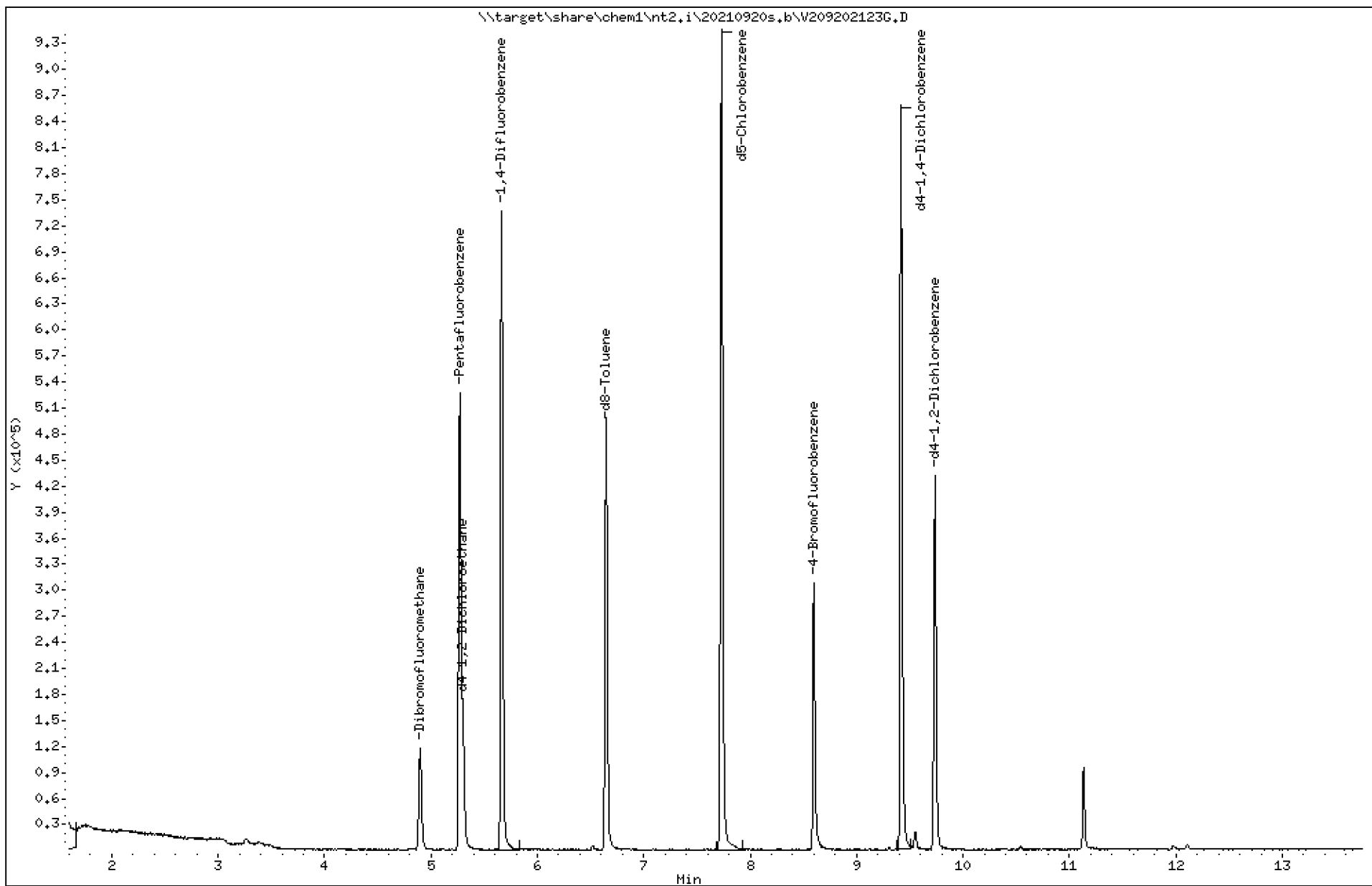
Instrument: nt2.i

Sample Info: 2110239-08

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202123G.D
Lab Smp Id: 21I0239-08
Inj Date : 20-SEP-2021 16:55
Operator : PKC
Smp Info : 21I0239-08
Misc Info : 15-
Comment :
Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Meth Date : 21-Sep-2021 09:54 nt2.i
Cal Date : 02-SEP-2021 09:50
Als bottle: 58
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 4.14
Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	CONCENTRATIONS					
			ON-COLUMN	FINAL				
	MASS		RT	EXP RT	REL RT	RESPONSE	(ug/L)	(ug/L)
=====	=====		=====	=====	=====	=====	=====	=====
\$ 27 Dibromofluoromethane	111		4.896	4.899	(0.928)	69807	5.40218	5.402
* 32 Pentafluorobenzene	168		5.273	5.276	(1.000)	277582	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.297	5.300	(1.005)	41715	5.83554	5.836
* 37 1,4-Difluorobenzene	114		5.668	5.665	(1.000)	486650	10.0000	
\$ 43 d8-Toluene	98		6.648	6.644	(1.173)	262685	4.98867	4.989
* 53 d5-Chlorobenzene	117		7.730	7.733	(1.000)	433534	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.600	8.596	(1.112)	72992	4.78708	4.787
* 76 d4-1,4-Dichlorobenzene	152		9.421	9.417	(1.000)	203430	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.737	9.740	(1.034)	92935	5.10369	5.104

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202123G.D Calibration Time: 10:13
 Lab Smp Id: 21I0239-08
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	256594	128297	513188	277582	8.18
37 1,4-Difluorobenze	460187	230094	920374	486650	5.75
53 d5-Chlorobenzene	406665	203333	813330	433534	6.61
76 d4-1,4-Dichlorobe	202468	101234	404936	203430	0.48

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.27	-0.05
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.06
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	-0.04
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.03

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-08
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.402	108.04	
\$ 33 d4-1,2-Dichloroeth	5.000	5.836	116.71	
\$ 43 d8-Toluene	5.000	4.989	99.77	
\$ 62 4-Bromofluorobenze	5.000	4.787	95.74	
\$ 79 d4-1,2-Dichloroben	5.000	5.104	102.07	

REVIEW SUMMARY FOR FILE - V209202123G.D

Lab ID: 21I0239-08

nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 16:55

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 16:55

Client ID:

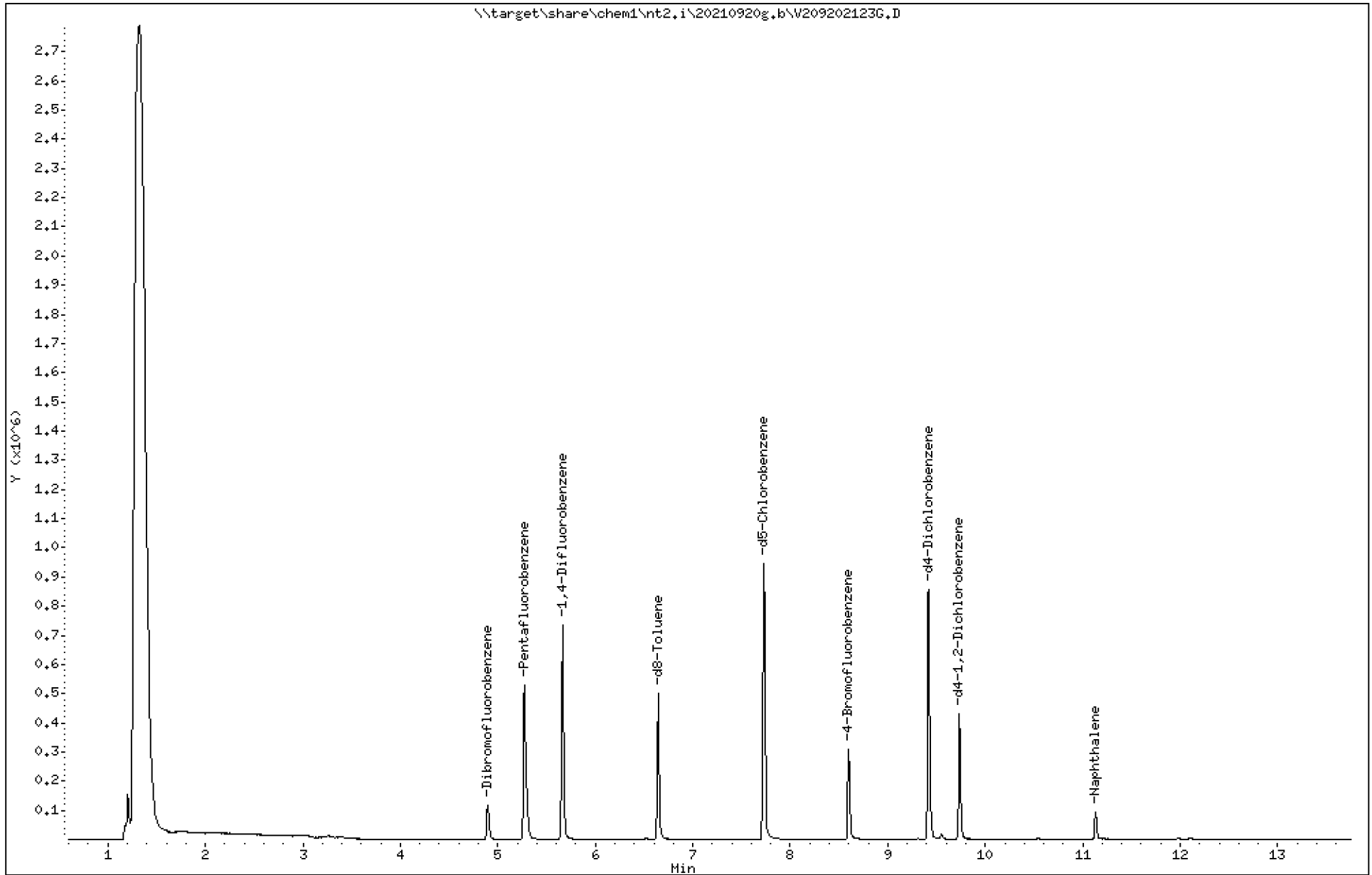
Instrument: nt2.i

Sample Info: 2110239-08

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202123G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 16:55

ARI ID: 21I0239-08
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	31405	0.001
8015C 2MP-TMB (3.00 to 9.38)	22222222	3	0.000
AK101 nC6-nC10 (3.44 to 8.58)	45246913	2	0.000
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	168560	0.005
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	31405	0.001

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.731	1360927	d5-Chlorobenzene
8.600	450754	4-Bromofluorobenzene
6.642	742049	d8-Toluene
9.421	1285686	d4-Dichlorobenzene
9.737	595048	d4-1,2-Dichlorobenzene



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

MW-02S-20210917
2110239-09 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/17/2021 07:40
Analyzed: 22-Oct-2021 03:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJ10593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 15-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 15-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
Surrogate: <i>o</i> -Terphenyl			50-150 %	99.1	%	

Date : 22-OCT-2021 03:31

Client ID:

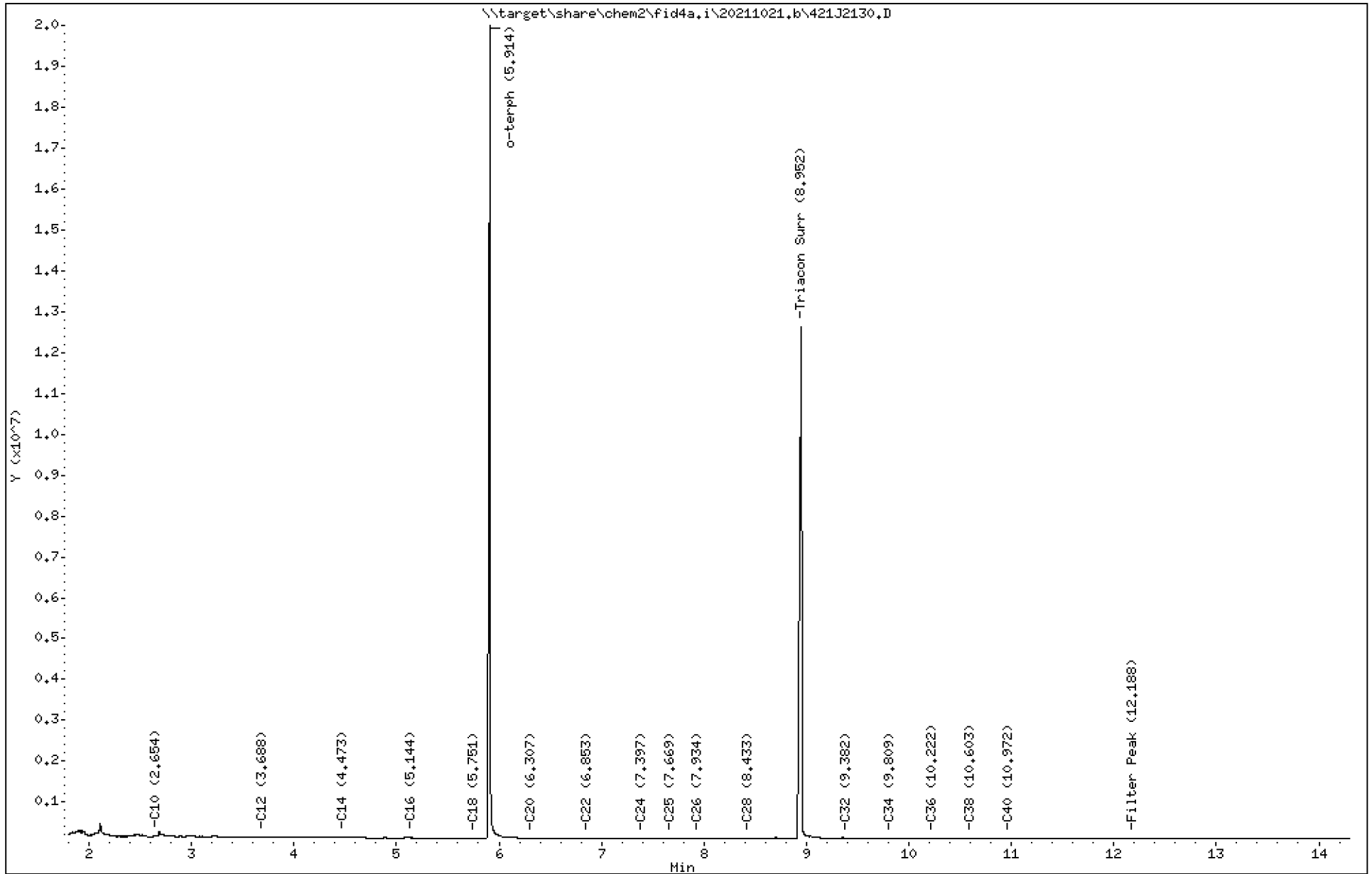
Instrument: fid4a.i

Sample Info: 2110239-09

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0.25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2130.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-09
Client ID:
Injection: 22-OCT-2021 03:31
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

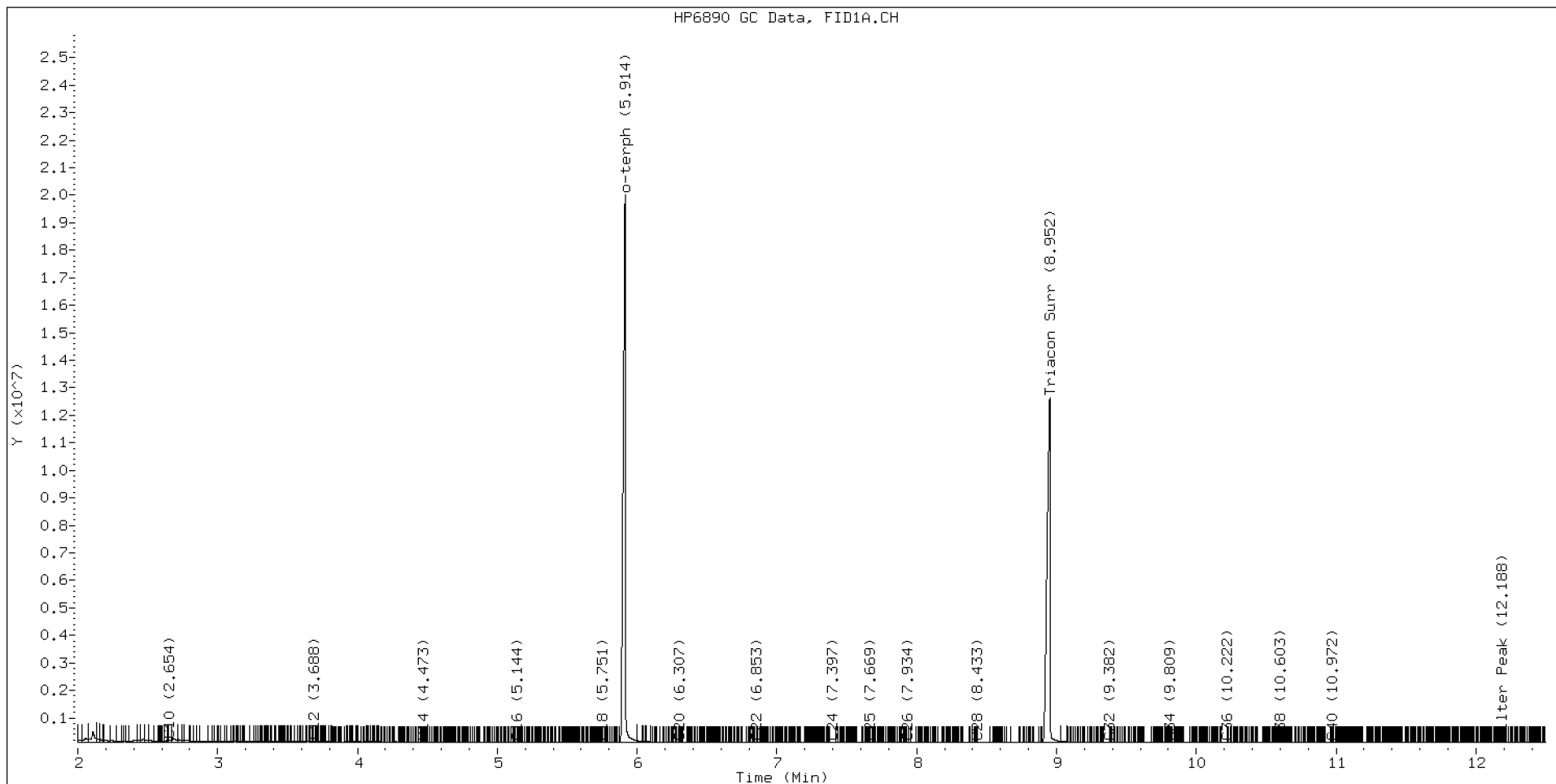
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.323	0.007	1844338	2616771	WATPHD	(C12-C24)	2818974	17.8
C10	2.654	0.003	78220	95887	WATPHM	(C24-C38)	761539	5.8
C12	3.688	-0.001	35052	24256	AK102	(C10-C25)	6167067	32.9
C14	4.473	-0.002	18160	5403	AK103	(C25-C36)	651620	6.4
C16	5.144	-0.002	16863	7511	OR.DIES	(C10-C28)	6265563	33.3
C18	5.751	0.001	8048	3554				
C20	6.307	0.003	9967	5284				
C22	6.853	-0.004	5271	3451				
C24	7.397	-0.007	10069	18238				
C25	7.669	-0.004	1708	1169				
C26	7.934	-0.002	685	484				
C28	8.433	-0.012	639	253				
C32	9.382	-0.002	5344	1582				
C34	9.809	-0.002	2263	663				
Filter Peak	12.188	0.001	5821	1703	CREOSOT	(C12-C22)	2692542	63.8
C36	10.222	0.005	2714	664				
C38	10.603	0.002	3765	924				
C40	10.972	0.001	5739	2819				
o-terph	5.914	0.001	19905921	21198953				
Triacon Surr	8.952	-0.004	12524347	18762196				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	21198953	111.5
Triacontane	18762196	88.6

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

MW-02S-20210917
2110239-09 (Water)

Volatile Organic Compounds

Method: NWTPHg
Instrument: NT2

Sampled: 09/17/2021 07:40
Analyzed: 20-Sep-2021 17:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 20-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			80-120 %	99.6	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	97.9	%	

Date : 20-SEP-2021 17:16

Client ID:

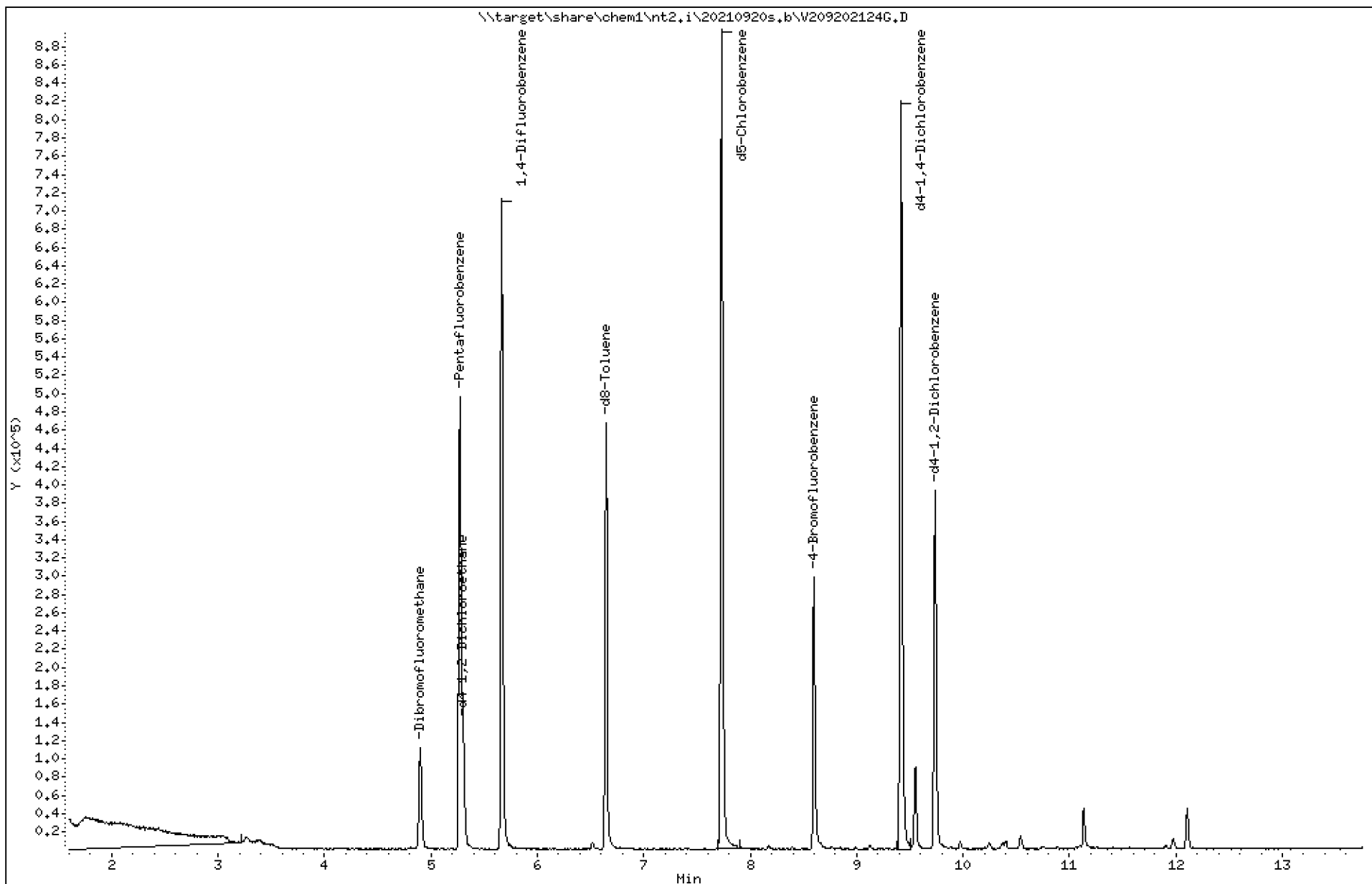
Instrument: nt2.i

Sample Info: 2110239-09

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202124G.D
Lab Smp Id: 21I0239-09
Inj Date : 20-SEP-2021 17:16
Operator : PKC
Smp Info : 21I0239-09
Misc Info : 15-
Comment :
Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Meth Date : 21-Sep-2021 09:54 nt2.i
Cal Date : 02-SEP-2021 09:50
Als bottle: 59
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 4.14
Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	CONCENTRATIONS					
			ON-COLUMN	FINAL	RT	EXP RT	REL RT	RESPONSE
\$ 27 Dibromofluoromethane	111		4.895	4.899	(0.928)	64960	5.42131	5.421
* 32 Pentafluorobenzene	168		5.272	5.276	(1.000)	257397	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.303	5.300	(1.006)	40058	6.04318	6.043
* 37 1,4-Difluorobenzene	114		5.668	5.665	(1.000)	458203	10.0000	
\$ 43 d8-Toluene	98		6.647	6.644	(1.173)	246859	4.97918	4.979
* 53 d5-Chlorobenzene	117		7.729	7.733	(1.000)	408446	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.599	8.596	(1.113)	70335	4.89616	4.896
* 76 d4-1,4-Dichlorobenzene	152		9.420	9.417	(1.000)	195487	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.736	9.740	(1.034)	89034	5.08813	5.088

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202124G.D Calibration Time: 10:13
 Lab Smp Id: 21I0239-09
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzen	256594	128297	513188	257397	0.31
37 1,4-Difluorobenze	460187	230094	920374	458203	-0.43
53 d5-Chlorobenzene	406665	203333	813330	408446	0.44
76 d4-1,4-Dichlorobe	202468	101234	404936	195487	-3.45

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzen	5.28	4.78	5.78	5.27	-0.07
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.05
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	-0.05
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.03

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-09
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.421	108.43	
\$ 33 d4-1,2-Dichloroeth	5.000	6.043	120.86	
\$ 43 d8-Toluene	5.000	4.979	99.58	
\$ 62 4-Bromofluorobenze	5.000	4.896	97.92	
\$ 79 d4-1,2-Dichloroben	5.000	5.088	101.76	

REVIEW SUMMARY FOR FILE - V209202124G.D

Lab ID: 21I0239-09

nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 17:16

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 17:16

Client ID:

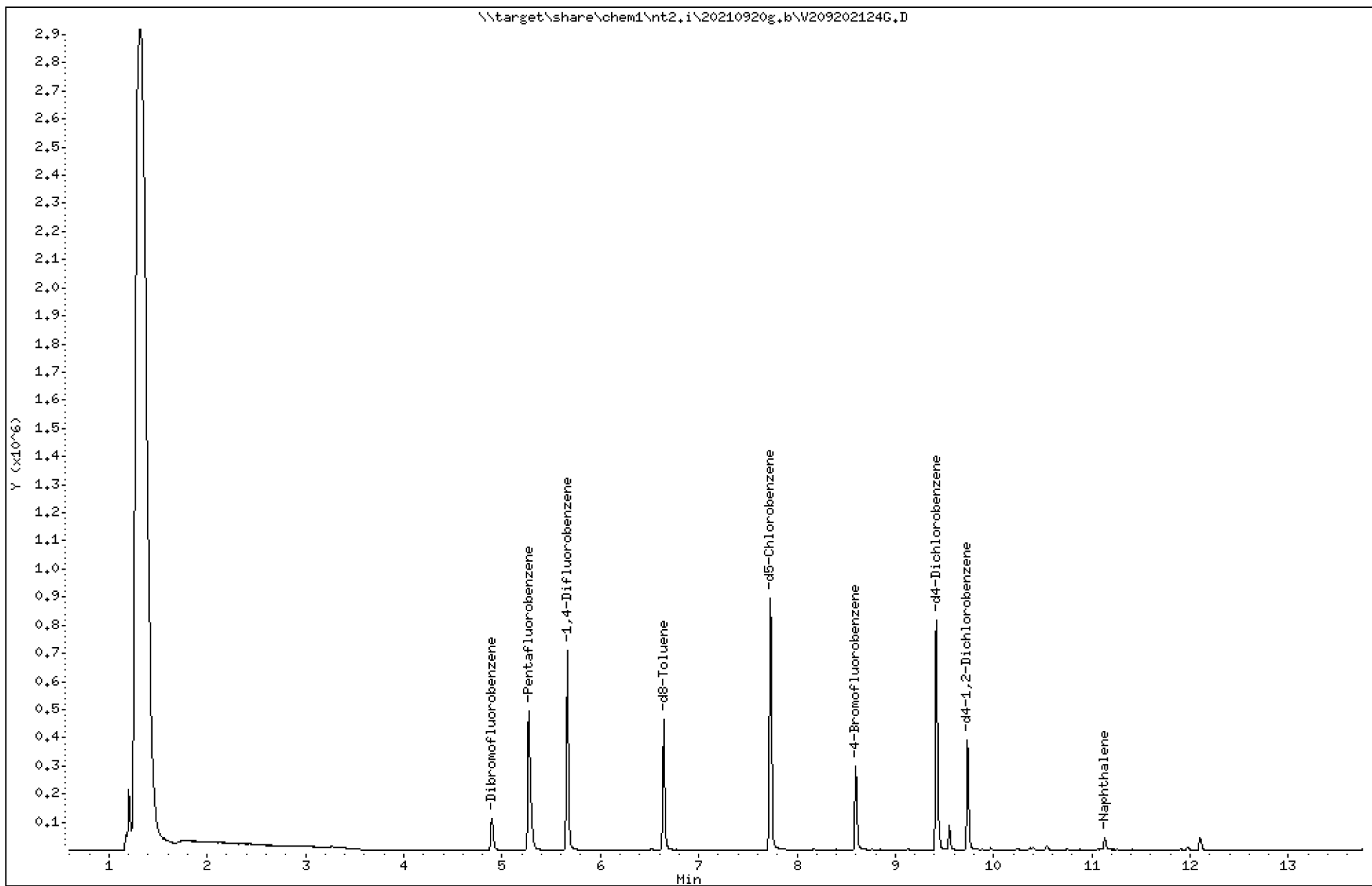
Instrument: nt2.i

Sample Info: 2110239-09

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202124G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 17:16

ARI ID: 21I0239-09
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	140125	0.004
8015C 2MP-TMB (3.00 to 9.38)	22222222	3	0.000
AK101 nC6-nC10 (3.44 to 8.58)	45246913	3	0.000
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	231007	0.007
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	140127	0.006

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.730	1272470	d5-Chlorobenzene
8.599	425490	4-Bromofluorobenzene
6.647	690869	d8-Toluene
9.420	1211715	d4-Dichlorobenzene
9.737	569843	d4-1,2-Dichlorobenzene



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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MW-02D-20210917
2110239-10 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/17/2021 13:00
Analyzed: 22-Oct-2021 03:51

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJ10593 Prepared: 23-Sep-2021	Sample Size: 500 mL Final Volume: 1 mL
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	107	%	

Date : 22-OCT-2021 03:51

Client ID:

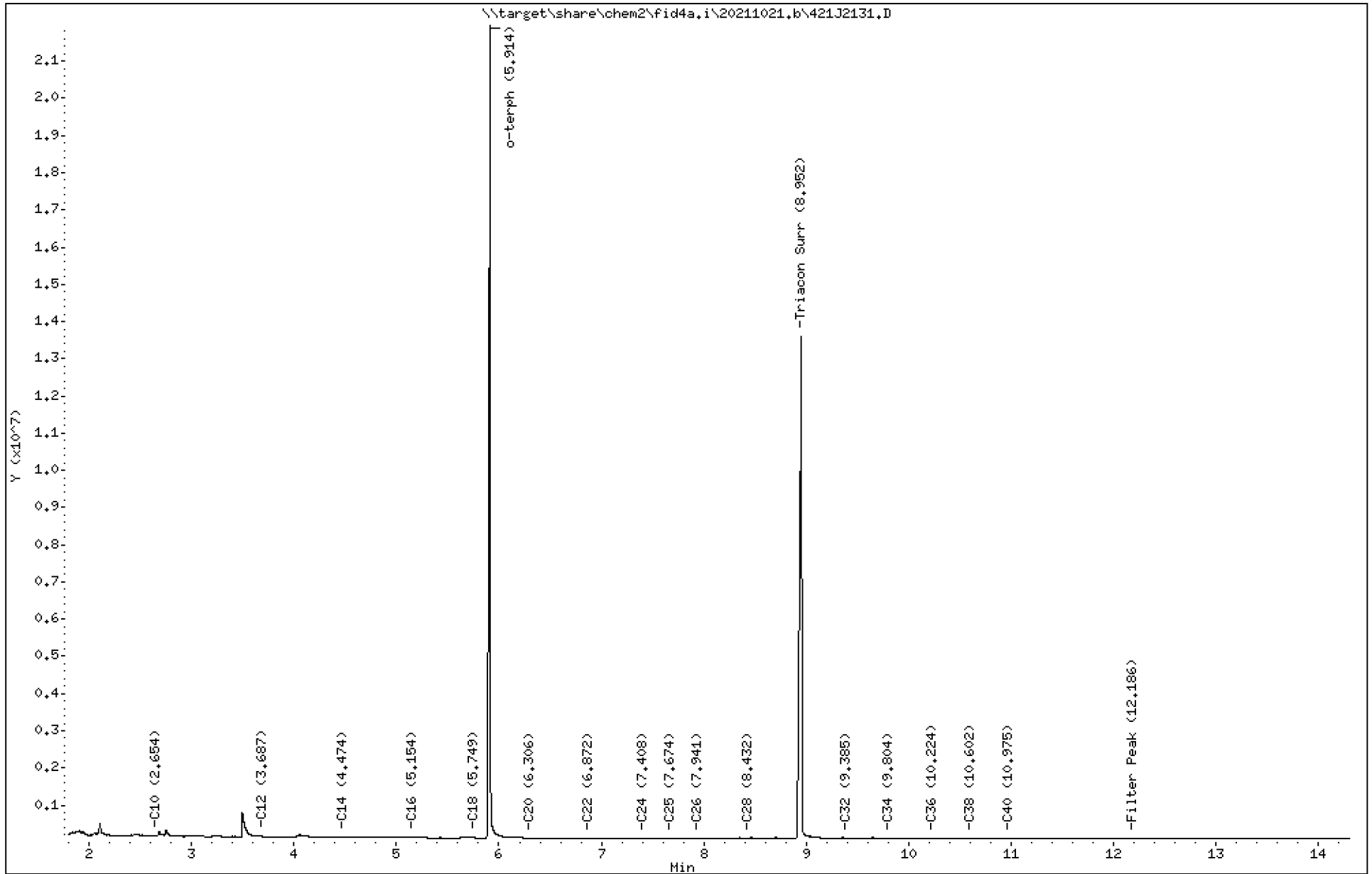
Instrument: fid4a.i

Sample Info: 21I0239-10

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0,25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2131.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-10
Client ID:
Injection: 22-OCT-2021 03:51
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

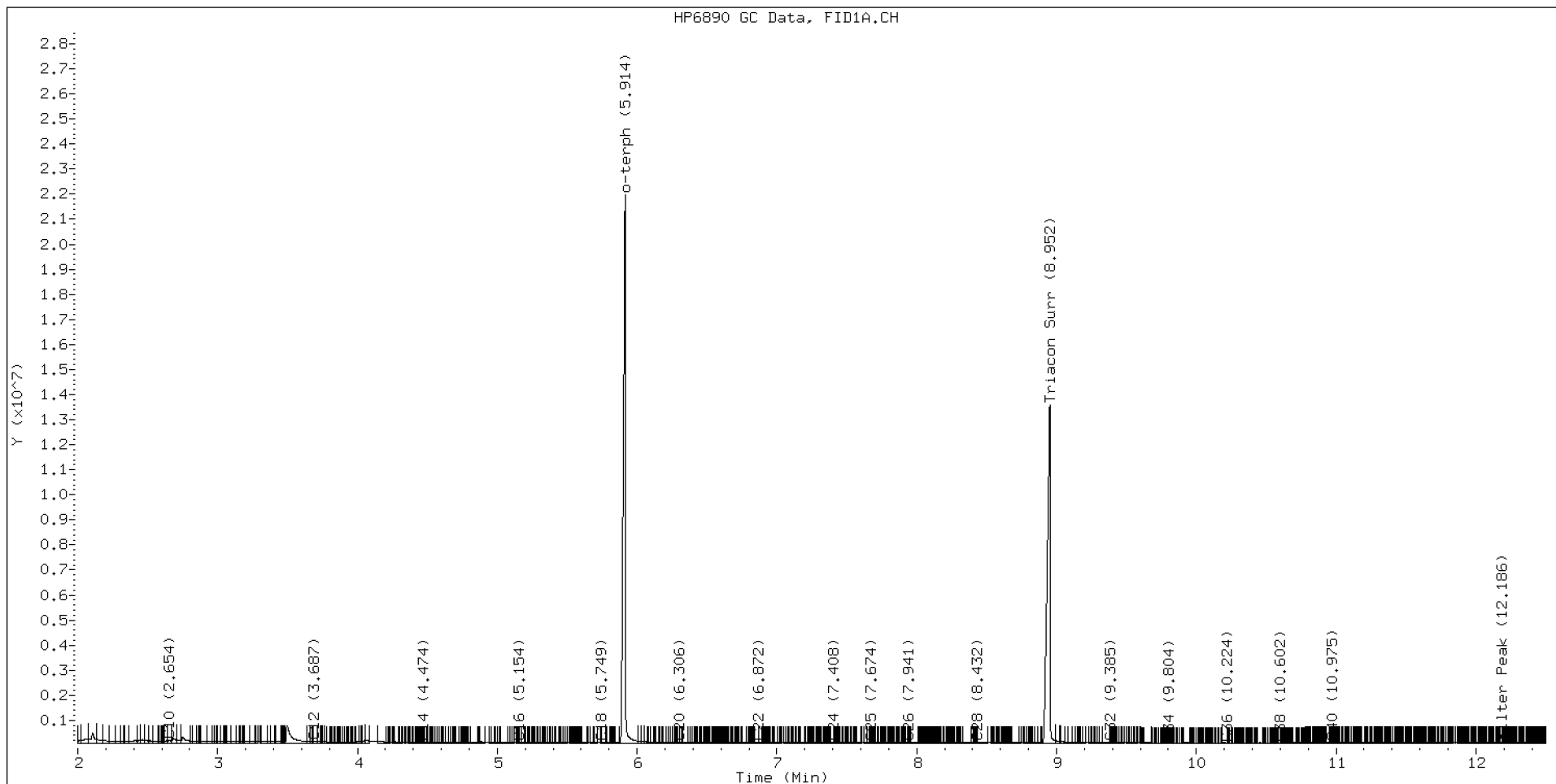
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.319	0.004	1810687	2591230	WATPHD	(C12-C24)	4222435	26.6
C10	2.654	0.002	90112	124225	WATPHM	(C24-C38)	1232347	9.4
C12	3.687	-0.002	55931	85601	AK102	(C10-C25)	10135762	54.1
C14	4.474	-0.001	26581	13207	AK103	(C25-C36)	1139011	11.3
C16	5.154	0.009	26812	8008	OR.DIES	(C10-C28)	10514101	55.8
C18	5.749	-0.001	19842	29874				
C20	6.306	0.003	14069	11549				
C22	6.872	0.015	10509	17665				
C24	7.408	0.004	7888	9175				
C25	7.674	0.001	6140	1809				
C26	7.941	0.004	6224	1240				
C28	8.432	-0.012	5336	1584				
C32	9.385	0.001	4985	1942				
C34	9.804	-0.007	762	456				
Filter Peak	12.186	-0.001	5176	1282	CREOSOT	(C12-C22)	3999748	94.8
C36	10.224	0.007	668	256				
C38	10.602	0.001	1129	382				
C40	10.975	0.004	3145	1228				
o-terph	5.914	0.001	21860249	22908540				
Triacon Surr	8.952	-0.004	13489779	19708300				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	22908540	120.5
Triacontane	19708300	93.0

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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MW-02D-20210917
2110239-10 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/17/2021 13:00
Instrument: NT2 Analyzed: 20-Sep-2021 17:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 20-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	95.9	%	

Date : 20-SEP-2021 17:38

Client ID:

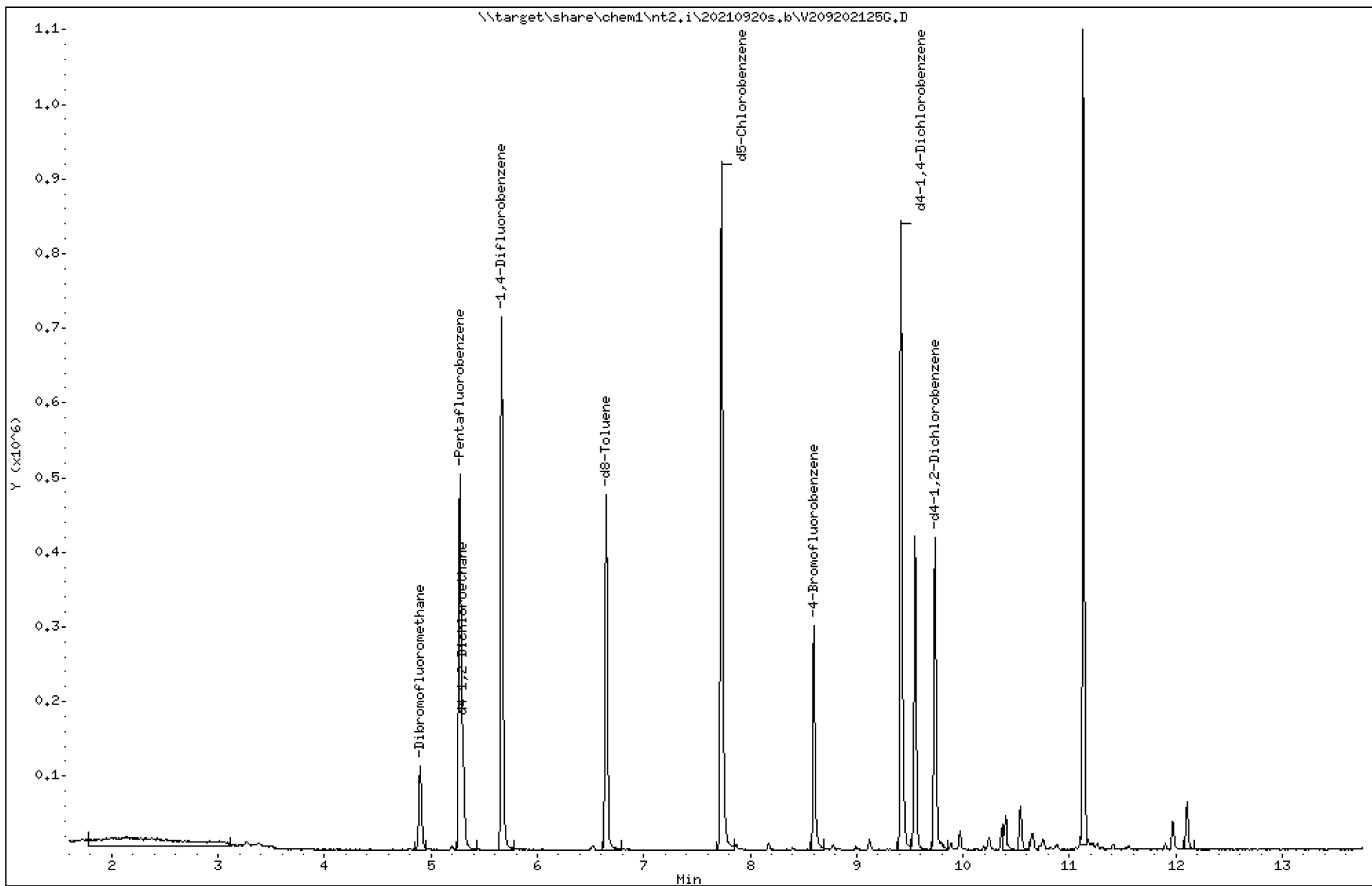
Instrument: nt2.i

Sample Info: 2110239-10

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202125G.D
Lab Smp Id: 21I0239-10
Inj Date : 20-SEP-2021 17:38
Operator : PKC
Smp Info : 21I0239-10
Misc Info : 15-
Comment :
Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Meth Date : 21-Sep-2021 09:54 nt2.i
Cal Date : 02-SEP-2021 09:50
Als bottle: 60
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 4.14
Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	CONCENTRATIONS					
			RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.896	4.899	(0.928)	64518	5.29747	5.297
* 32 Pentafluorobenzene	168		5.273	5.276	(1.000)	261622	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.297	5.300	(1.005)	39062	5.79776	5.798
* 37 1,4-Difluorobenzene	114		5.668	5.665	(1.000)	469952	10.0000	
\$ 43 d8-Toluene	98		6.648	6.644	(1.173)	256969	5.05352	5.054
* 53 d5-Chlorobenzene	117		7.730	7.733	(1.000)	429240	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.600	8.596	(1.112)	72404	4.79602	4.796
* 76 d4-1,4-Dichlorobenzene	152		9.421	9.417	(1.000)	199646	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.737	9.740	(1.034)	93867	5.25258	5.253

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202125G.D Calibration Time: 10:13
 Lab Smp Id: 21I0239-10
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	256594	128297	513188	261622	1.96
37 1,4-Difluorobenze	460187	230094	920374	469952	2.12
53 d5-Chlorobenzene	406665	203333	813330	429240	5.55
76 d4-1,4-Dichlorobe	202468	101234	404936	199646	-1.39

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.27	-0.05
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.06
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	-0.04
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.03

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-10
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.297	105.95	
\$ 33 d4-1,2-Dichloroeth	5.000	5.798	115.96	
\$ 43 d8-Toluene	5.000	5.054	101.07	
\$ 62 4-Bromofluorobenze	5.000	4.796	95.92	
\$ 79 d4-1,2-Dichloroben	5.000	5.253	105.05	

REVIEW SUMMARY FOR FILE - V209202125G.D

Lab ID: 21I0239-10

nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 17:38

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 17:38

Client ID:

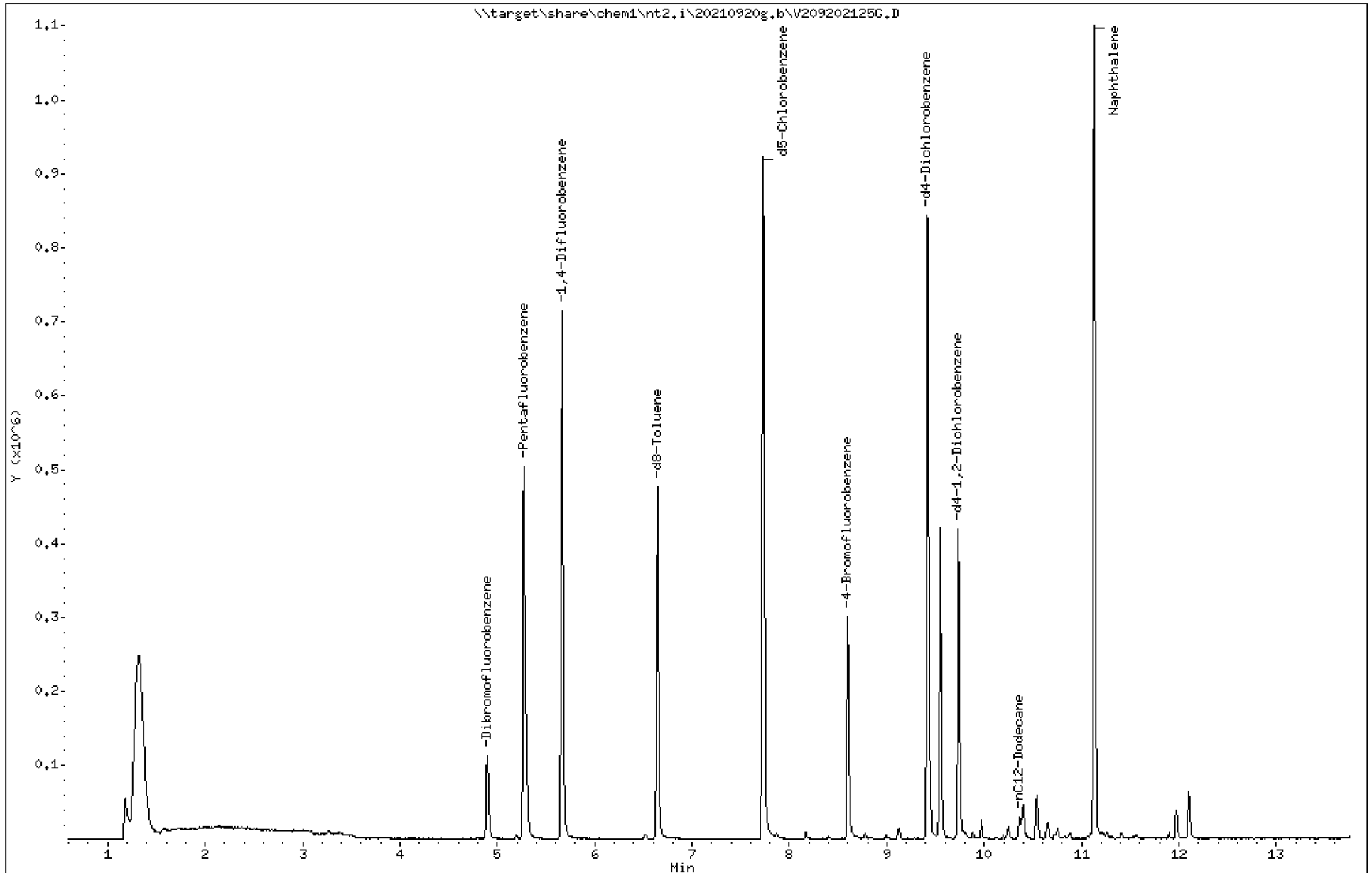
Instrument: nt2.i

Sample Info: 21I0239-10

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202125G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 17:38

ARI ID: 21I0239-10
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	776470	0.024
8015C 2MP-TMB (3.00 to 9.38)	22222222	29572	0.001
AK101 nC6-nC10 (3.44 to 8.58)	45246913	11727	0.000
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	2426171	0.071
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	776472	0.035

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.730	1359811	d5-Chlorobenzene
8.600	436578	4-Bromofluorobenzene
6.642	715708	d8-Toluene
9.415	1279505	d4-Dichlorobenzene
9.737	588277	d4-1,2-Dichlorobenzene



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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PZ-19-20210917
2110239-11 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/17/2021 13:04
Analyzed: 22-Oct-2021 04:11

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BJI0593 Prepared: 23-Sep-2021	Sample Size: 500 mL Final Volume: 1 mL
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CJJ0119 Cleaned: 15-Oct-2021	Initial Volume: 1 mL Final Volume: 1 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CJJ0118 Cleaned: 15-Oct-2021	Initial Volume: 1 uL Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			<i>50-150 %</i>	<i>101</i>	<i>%</i>	

Date : 22-OCT-2021 04:11

Client ID:

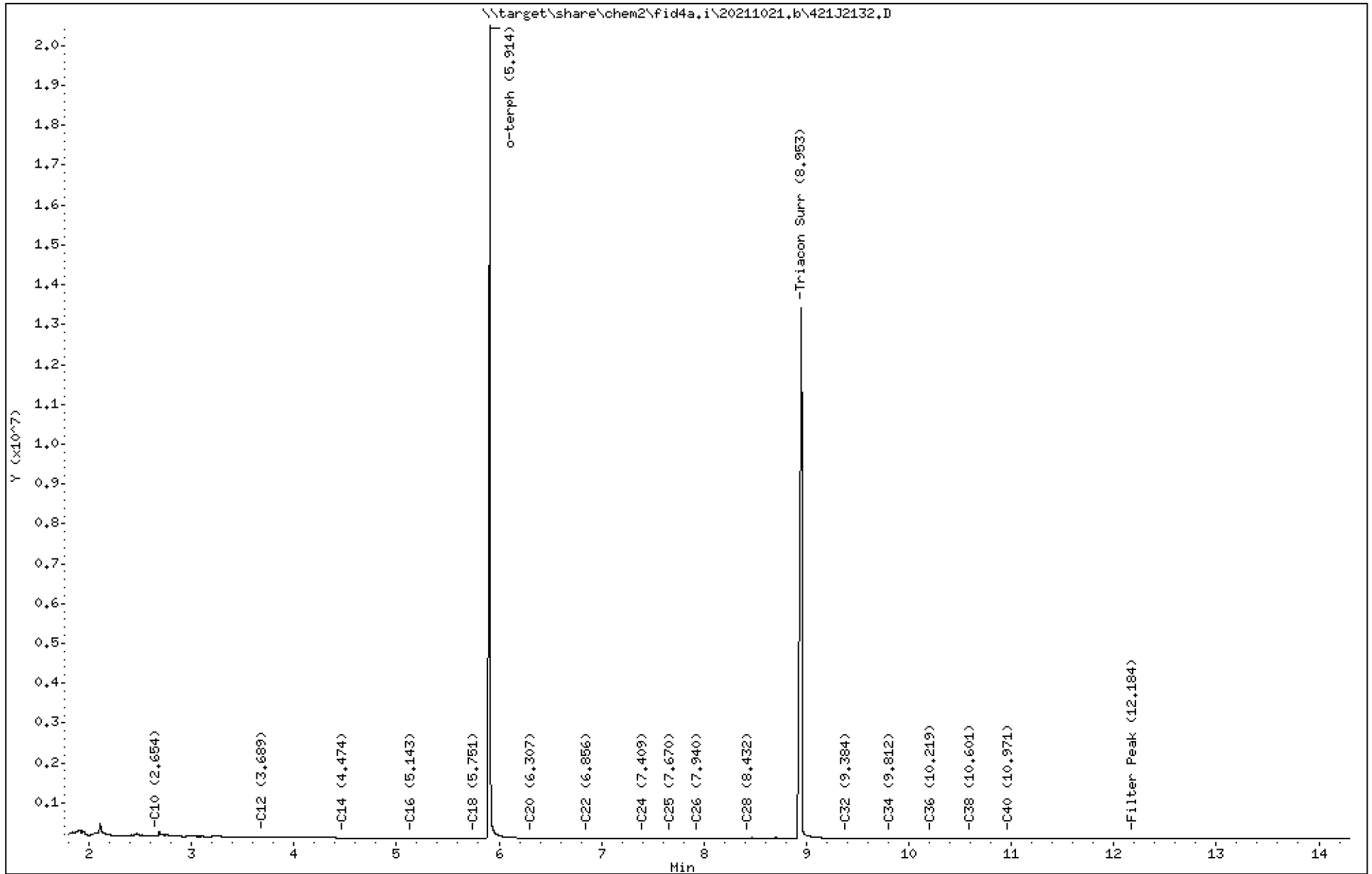
Instrument: fid4a.i

Sample Info: 2110239-11

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0,25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2132.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-11
Client ID:
Injection: 22-OCT-2021 04:11
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

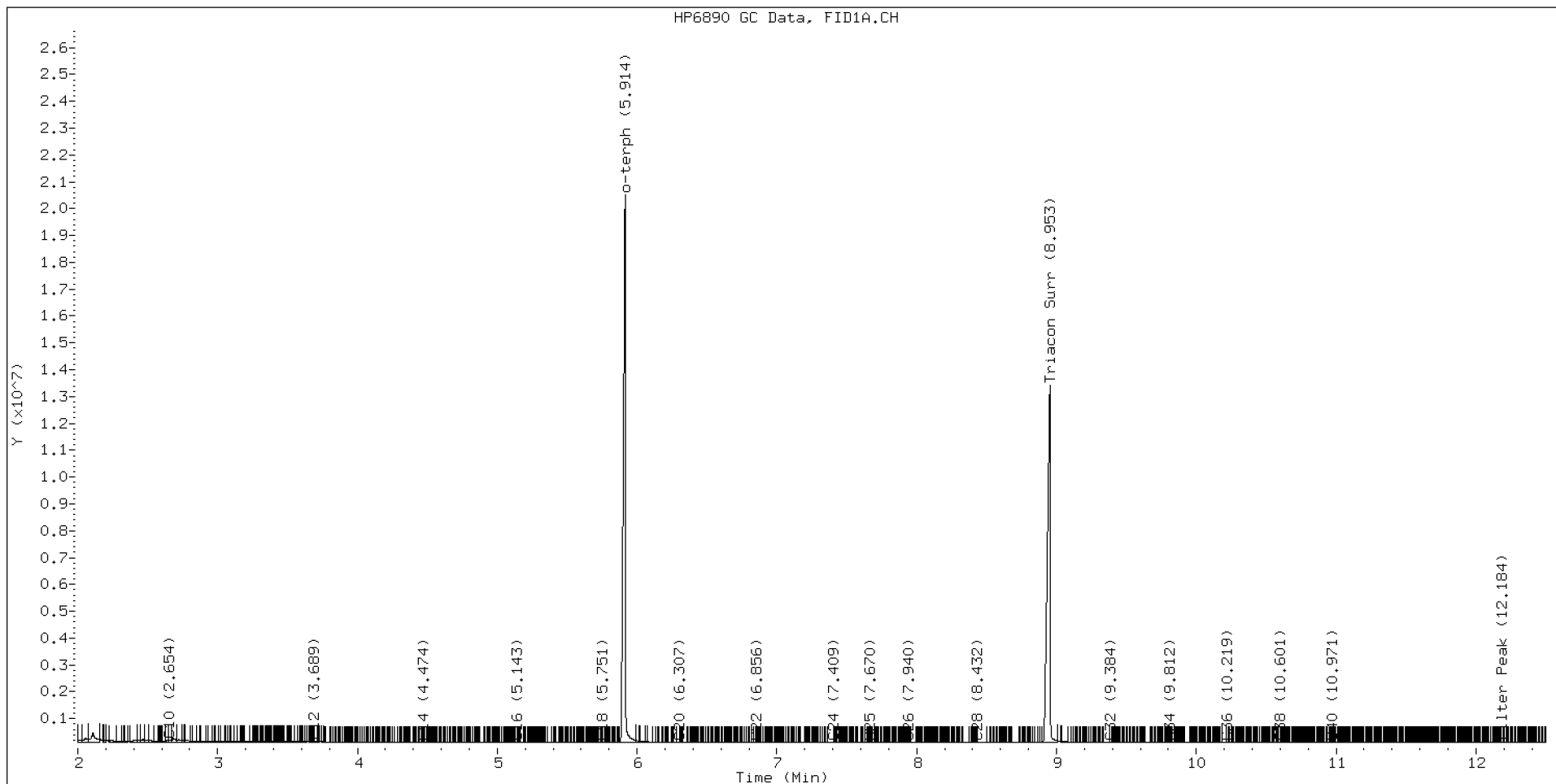
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.321	0.005	1800839	2577917	WATPHD	(C12-C24)	2332972	14.7
C10	2.654	0.003	82296	102513	WATPHM	(C24-C38)	883412	6.7
C12	3.689	0.000	36064	23284	AK102	(C10-C25)	5907251	31.5
C14	4.474	0.000	15741	3145	AK103	(C25-C36)	769813	7.6
C16	5.143	-0.003	8646	4260	OR.DIES	(C10-C28)	5995587	31.8
C18	5.751	0.001	3788	1830				
C20	6.307	0.004	8406	2920				
C22	6.856	-0.000	1046	391				
C24	7.409	0.005	360	117				
C25	7.670	-0.003	543	228				
C26	7.940	0.004	498	147				
C28	8.432	-0.012	1138	686				
C32	9.384	0.000	6385	4083				
C34	9.812	0.001	3814	931				
Filter Peak	12.184	-0.003	6833	4373	CREOSOT	(C12-C22)	2289580	54.3
C36	10.219	0.002	4118	3156				
C38	10.601	0.000	4716	1163				
C40	10.971	0.000	6297	3104				
o-terph	5.914	0.001	20404977	21570285				
Triacon Surr	8.953	-0.003	13304000	19201126				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	21570285	113.4
Triacontane	19201126	90.6

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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PZ-19-20210917
2110239-11 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 09/17/2021 13:04
Instrument: NT2 Analyzed: 20-Sep-2021 17:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 20-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	94.0	%	

Date : 20-SEP-2021 17:59

Client ID:

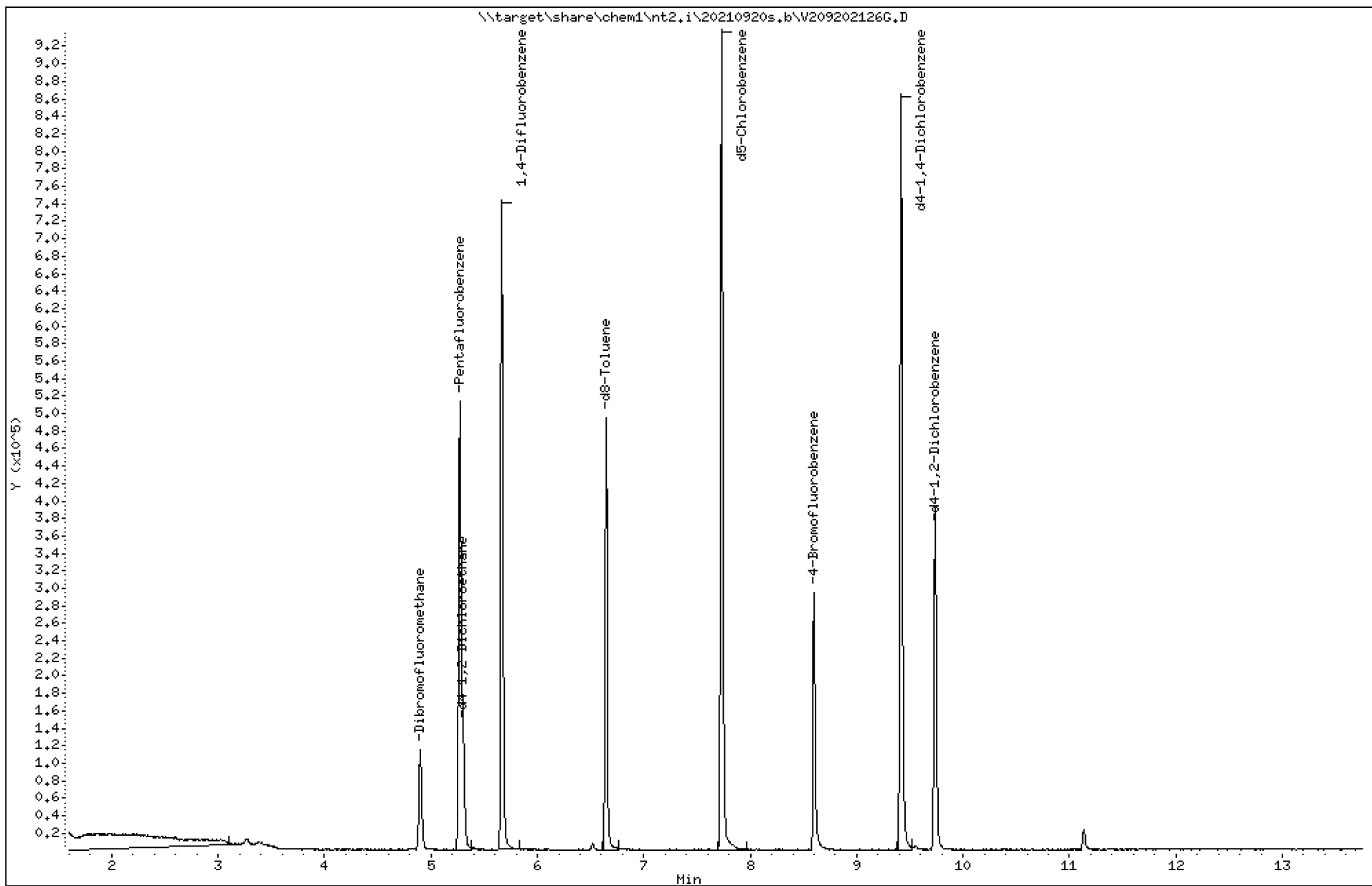
Instrument: nt2.i

Sample Info: 2110239-11

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202126G.D
Lab Smp Id: 21I0239-11
Inj Date : 20-SEP-2021 17:59
Operator : PKC
Smp Info : 21I0239-11
Misc Info : 15-
Comment :
Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Meth Date : 21-Sep-2021 09:54 nt2.i
Cal Date : 02-SEP-2021 09:50
Als bottle: 61
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 4.14
Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	CONCENTRATIONS					
			ON-COLUMN	FINAL	RT	EXP RT	REL RT	RESPONSE
\$ 27 Dibromofluoromethane	111		4.895	4.899	(0.928)	68494	5.57989	5.580
* 32 Pentafluorobenzene	168		5.272	5.276	(1.000)	263687	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.303	5.300	(1.006)	39670	5.84189	5.842
* 37 1,4-Difluorobenzene	114		5.668	5.665	(1.000)	477107	10.0000	
\$ 43 d8-Toluene	98		6.647	6.644	(1.173)	254520	4.93029	4.930
* 53 d5-Chlorobenzene	117		7.729	7.733	(1.000)	426722	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.599	8.596	(1.113)	70566	4.70186	4.702
* 76 d4-1,4-Dichlorobenzene	152		9.420	9.417	(1.000)	198502	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.742	9.740	(1.034)	92187	5.18830	5.188

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202126G.D Calibration Time: 10:13
 Lab Smp Id: 21I0239-11
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	256594	128297	513188	263687	2.76
37 1,4-Difluorobenze	460187	230094	920374	477107	3.68
53 d5-Chlorobenzene	406665	203333	813330	426722	4.93
76 d4-1,4-Dichlorobe	202468	101234	404936	198502	-1.96

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.27	-0.07
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.04
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	-0.05
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.03

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-11
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.580	111.60	
\$ 33 d4-1,2-Dichloroeth	5.000	5.842	116.84	
\$ 43 d8-Toluene	5.000	4.930	98.61	
\$ 62 4-Bromofluorobenze	5.000	4.702	94.04	
\$ 79 d4-1,2-Dichloroben	5.000	5.188	103.77	

REVIEW SUMMARY FOR FILE - V209202126G.D

Lab ID: 21I0239-11

nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 17:59

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 17:59

Client ID:

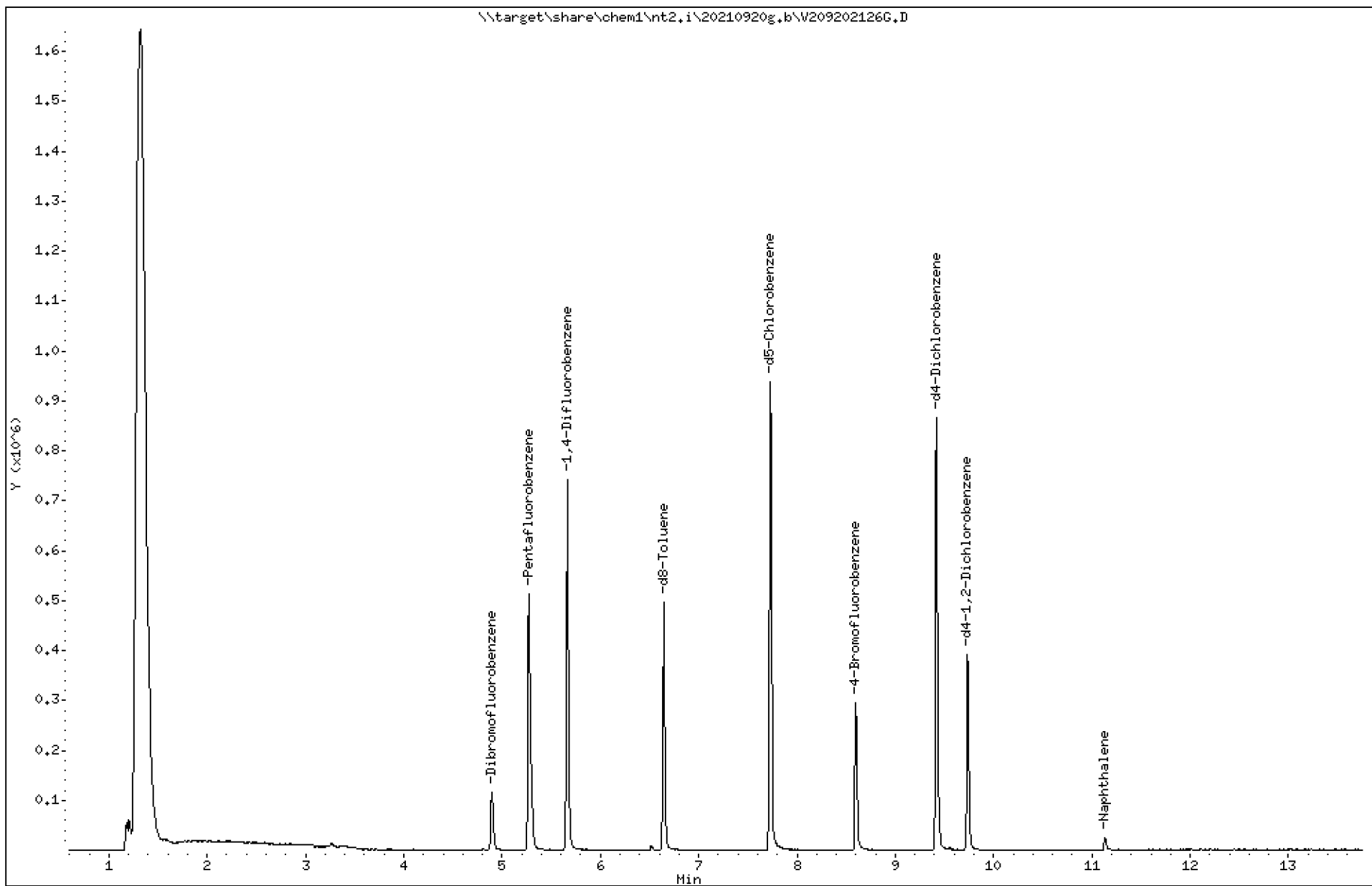
Instrument: nt2.i

Sample Info: 2110239-11

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202126G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 17:59

ARI ID: 21I0239-11
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	2	0.000
8015C 2MP-TMB (3.00 to 9.38)	22222222	3	0.000
AK101 nC6-nC10 (3.44 to 8.58)	45246913	3	0.000
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	37356	0.001
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	4	0.000

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.730	1337683	d5-Chlorobenzene
8.599	431433	4-Bromofluorobenzene
6.647	717811	d8-Toluene
9.420	1232317	d4-Dichlorobenzene
9.736	576986	d4-1,2-Dichlorobenzene



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

PZ-12-20210916
2110239-12 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/16/2021 10:38
Analyzed: 22-Oct-2021 04:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJ10593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 15-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 15-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	103	%	

Date : 22-OCT-2021 04:31

Client ID:

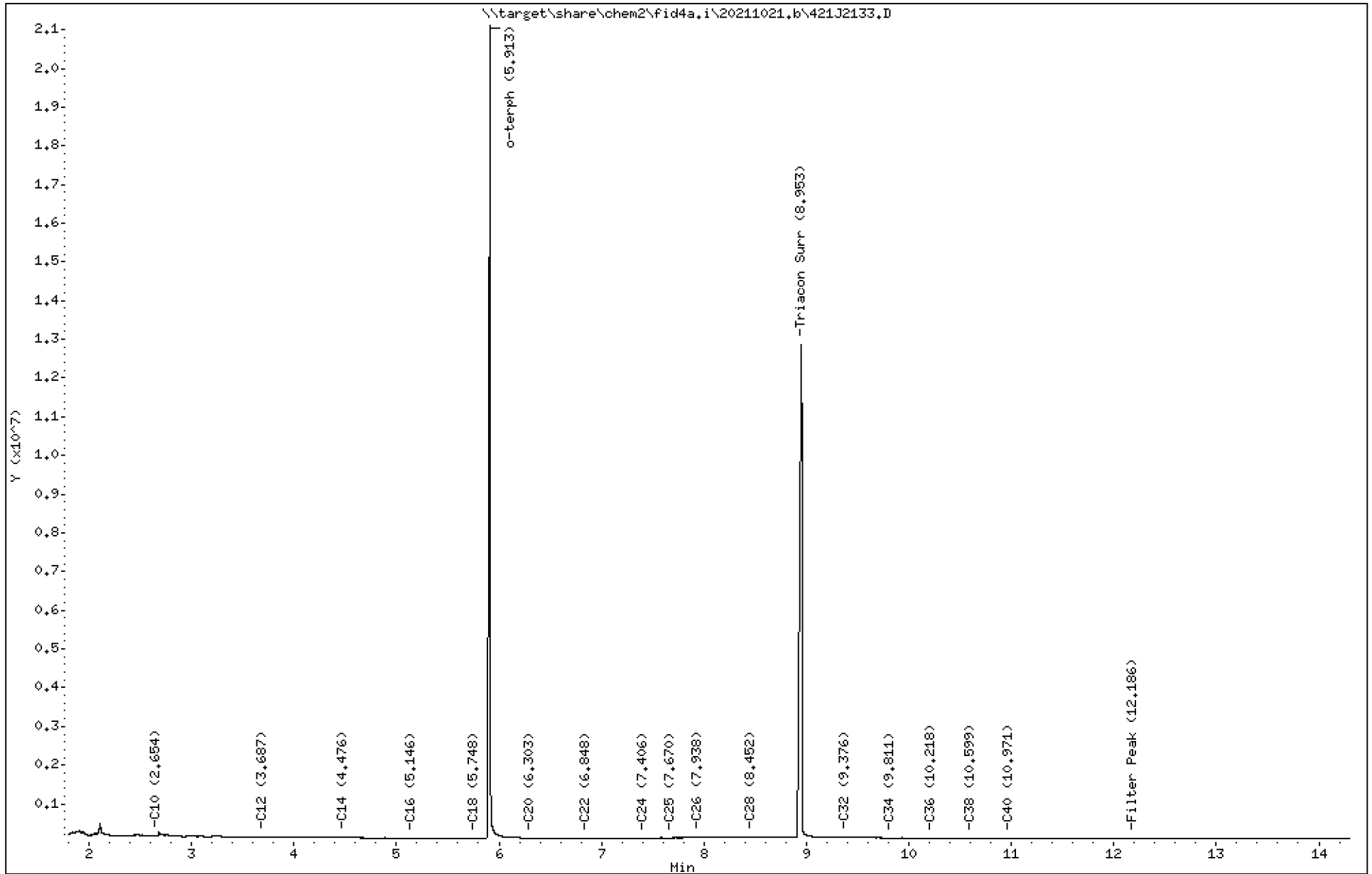
Instrument: fid4a.i

Sample Info: 2110239-12

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0,25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2133.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-12
Client ID:
Injection: 22-OCT-2021 04:31
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

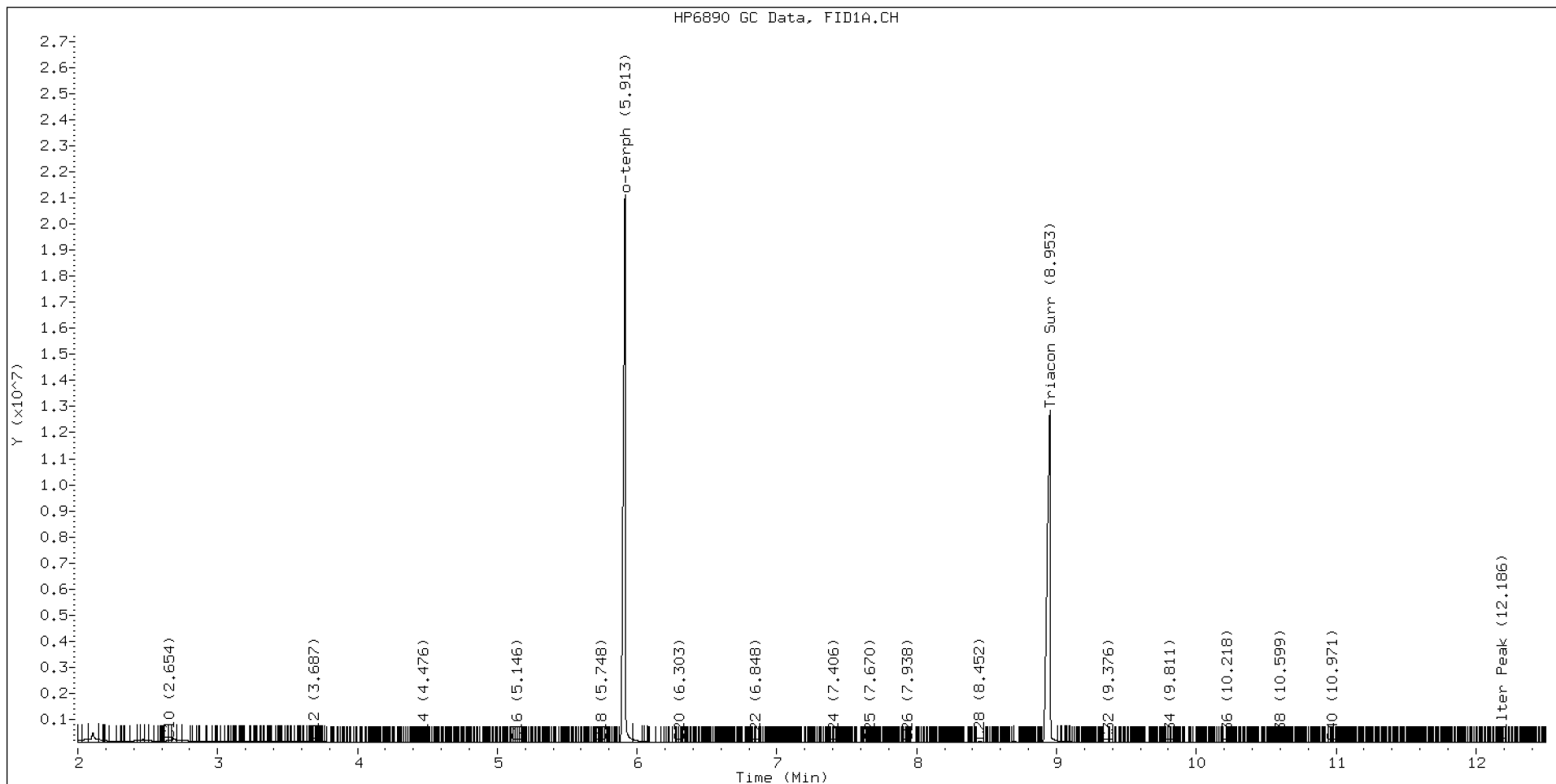
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.320	0.004	1776579	2552288	WATPHD	(C12-C24)	3333062	21.0
C10	2.654	0.003	83519	107558	WATPHM	(C24-C38)	3688862	28.1
C12	3.687	-0.002	40040	27909	AK102	(C10-C25)	7309093	39.0
C14	4.476	0.002	19430	7742	AK103	(C25-C36)	3327984	32.9
C16	5.146	0.000	12613	9366	OR.DIES	(C10-C28)	8444575	44.9
C18	5.748	-0.002	7717	3428				
C20	6.303	0.000	11779	8140				
C22	6.848	-0.009	8476	3360				
C24	7.406	0.002	15745	5455				
C25	7.670	-0.003	16857	6661				
C26	7.938	0.001	19953	9835				
C28	8.452	0.008	42690	105815				
C32	9.376	-0.008	23238	8067				
C34	9.811	0.000	16724	5787				
Filter Peak	12.186	-0.002	793	254	CREOSOT	(C12-C22)	2970790	70.4
C36	10.218	0.001	11606	6315				
C38	10.599	-0.002	8237	2036				
C40	10.971	0.000	6431	1276				
o-terph	5.913	0.000	21007913	22014796				
Triacon Surr	8.953	-0.003	12769056	19818032				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	22014796	115.8
Triacontane	19818032	93.6

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

PZ-12-20210916
2110239-12 (Water)

Volatile Organic Compounds

Method: NWTPHg
Instrument: NT2

Sampled: 09/16/2021 10:38
Analyzed: 20-Sep-2021 18:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 20-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	92.0	%	

Date : 20-SEP-2021 18:21

Client ID:

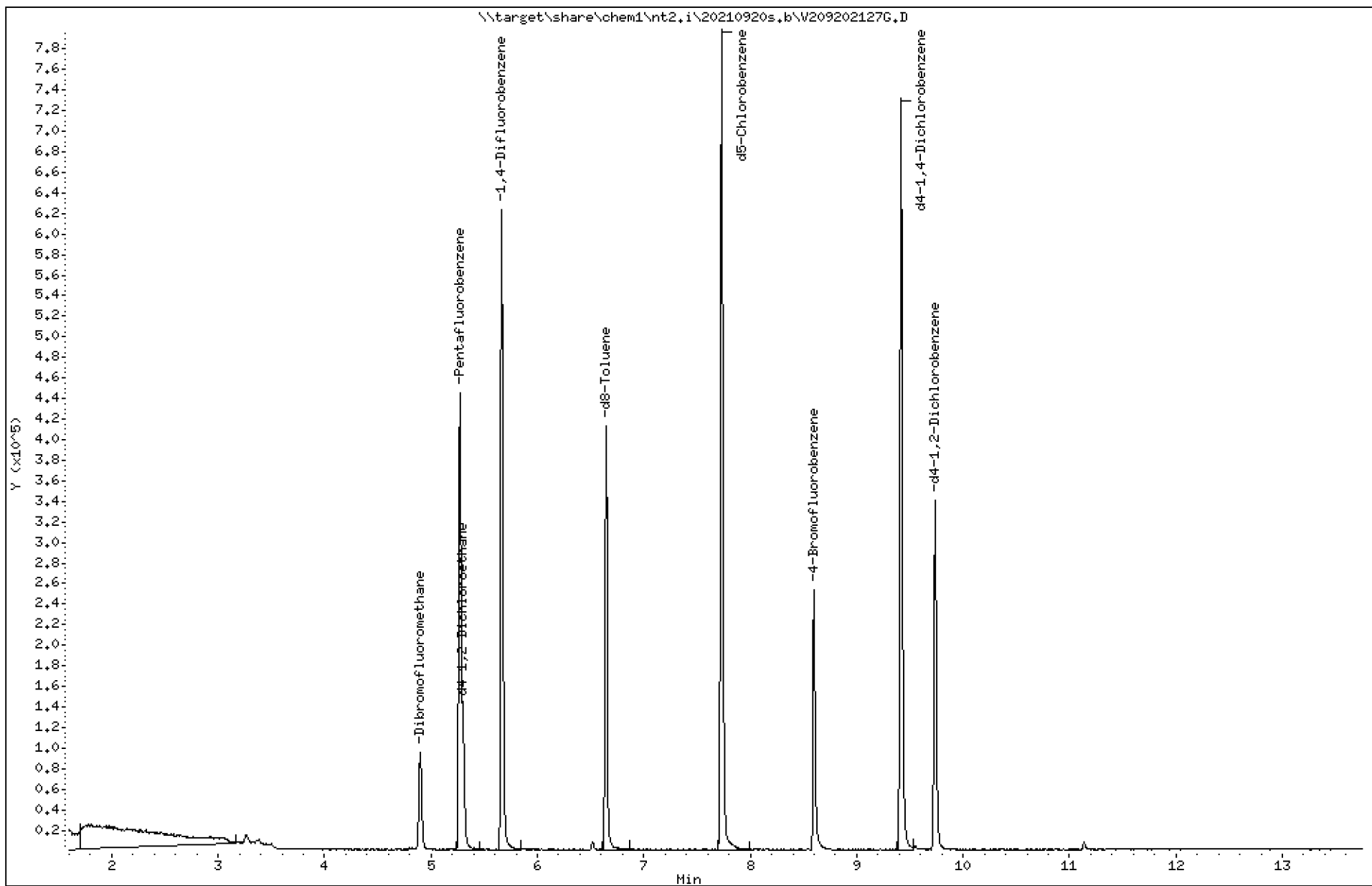
Instrument: nt2.i

Sample Info: 2110239-12

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202127G.D
 Lab Smp Id: 21I0239-12
 Inj Date : 20-SEP-2021 18:21
 Operator : PKC
 Smp Info : 21I0239-12
 Misc Info : 15-
 Comment :
 Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Meth Date : 21-Sep-2021 09:54 nt2.i
 Cal Date : 02-SEP-2021 09:50
 Als bottle: 62
 Dil Factor: 1.00000
 Integrator: HP RTE
 Target Version: 4.14
 Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
 Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.896	4.899	(0.928)	58914	5.58943	5.589
* 32 Pentafluorobenzene	168		5.273	5.276	(1.000)	226419	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.297	5.300	(1.005)	33632	5.76793	5.768
* 37 1,4-Difluorobenzene	114		5.668	5.665	(1.000)	410247	10.0000	
\$ 43 d8-Toluene	98		6.647	6.644	(1.173)	220498	4.96736	4.967
* 53 d5-Chlorobenzene	117		7.729	7.733	(1.000)	369703	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.599	8.596	(1.113)	59793	4.59850	4.599
* 76 d4-1,4-Dichlorobenzene	152		9.420	9.417	(1.000)	172506	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.736	9.740	(1.034)	78829	5.10507	5.105

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202127G.D Calibration Time: 10:13
 Lab Smp Id: 21I0239-12
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	256594	128297	513188	226419	-11.76
37 1,4-Difluorobenze	460187	230094	920374	410247	-10.85
53 d5-Chlorobenzene	406665	203333	813330	369703	-9.09
76 d4-1,4-Dichlorobe	202468	101234	404936	172506	-14.80

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.27	-0.07
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.05
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	-0.04
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.03

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-12
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.589	111.79	
\$ 33 d4-1,2-Dichloroeth	5.000	5.768	115.36	
\$ 43 d8-Toluene	5.000	4.967	99.35	
\$ 62 4-Bromofluorobenze	5.000	4.599	91.97	
\$ 79 d4-1,2-Dichloroben	5.000	5.105	102.10	

REVIEW SUMMARY FOR FILE - V209202127G.D

Lab ID: 21I0239-12

nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 18:21

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 18:21

Client ID:

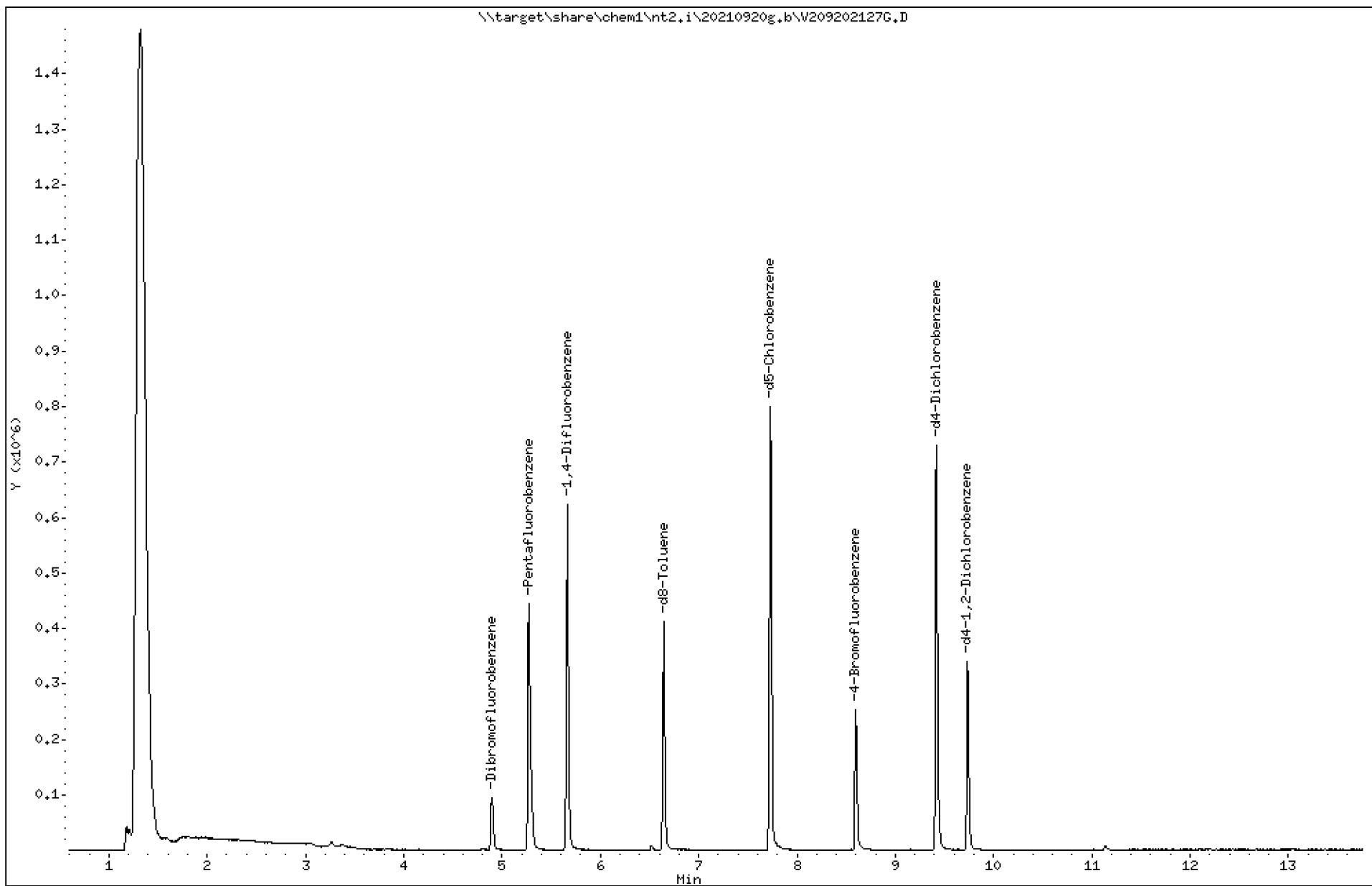
Instrument: nt2.i

Sample Info: 2110239-12

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202127G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 18:21

ARI ID: 21I0239-12
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

=====

GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	3	0.000
8015C 2MP-TMB (3.00 to 9.38)	22222222	2	0.000
AK101 nC6-nC10 (3.44 to 8.58)	45246913	1	0.000
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	3	0.000
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	4	0.000

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.730	1146304	d5-Chlorobenzene
8.600	369711	4-Bromofluorobenzene
6.647	613461	d8-Toluene
9.421	1051477	d4-Dichlorobenzene
9.737	491171	d4-1,2-Dichlorobenzene



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

PZ-13-20210916
2110239-13 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/16/2021 10:50
Analyzed: 22-Oct-2021 04:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJ10593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 19-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 19-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	82.4	%	

Date : 22-OCT-2021 04:51

Client ID:

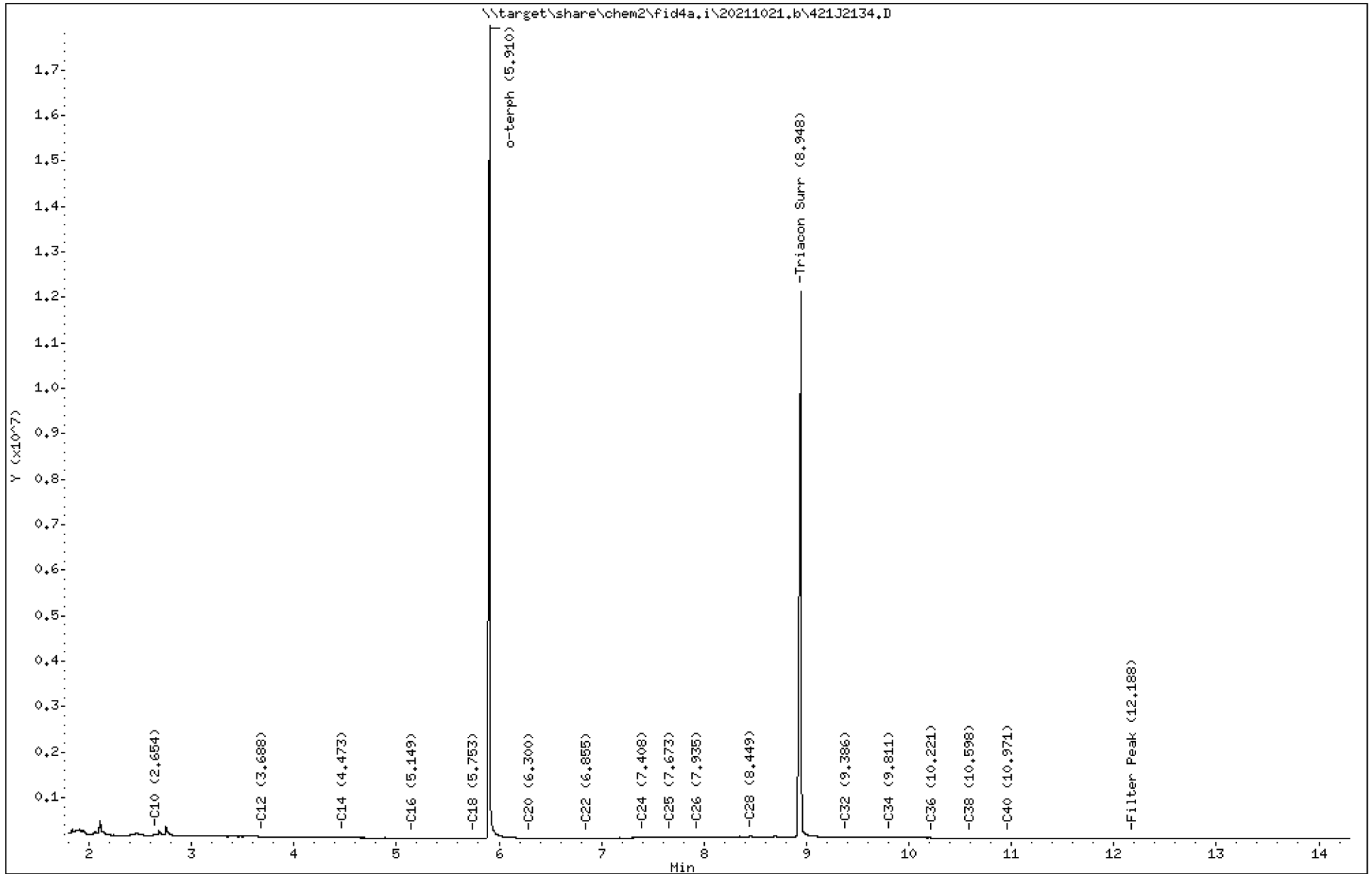
Instrument: fid4a.i

Sample Info: 21I0239-13

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0,25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2134.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-13
Client ID:
Injection: 22-OCT-2021 04:51
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

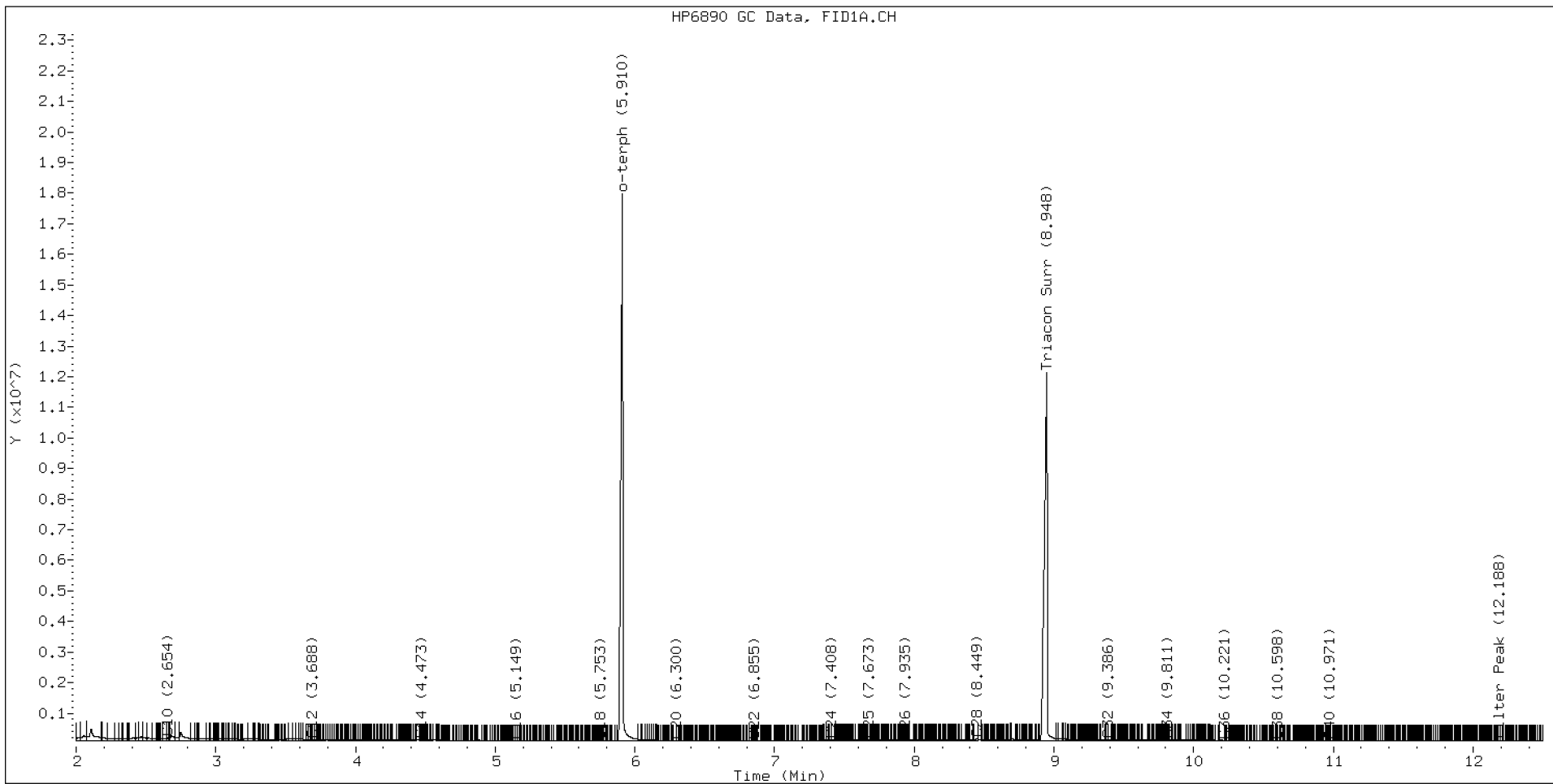
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.320	0.004	1773483	2567510	WATPHD	(C12-C24)	2633017	16.6
C10	2.654	0.003	84603	101330	WATPHM	(C24-C38)	5146705	39.2
C12	3.688	-0.001	43589	13036	AK102	(C10-C25)	7114231	38.0
C14	4.473	-0.001	17587	8778	AK103	(C25-C36)	4681159	46.3
C16	5.149	0.003	8430	4945	OR.DIES	(C10-C28)	8754654	46.5
C18	5.753	0.003	2253	1221				
C20	6.300	-0.003	7141	6136				
C22	6.855	-0.002	9677	2384				
C24	7.408	0.003	19633	5860				
C25	7.673	-0.001	24511	15657				
C26	7.935	-0.002	30474	11966				
C28	8.449	0.005	52921	84729				
C32	9.386	0.002	40147	38197				
C34	9.811	0.000	24315	10858				
Filter Peak	12.188	0.000	6439	3186	CREOSOT	(C12-C22)	2189576	51.9
C36	10.221	0.004	14484	4314				
C38	10.598	-0.002	9665	3359				
C40	10.971	0.000	8100	2404				
o-terph	5.910	-0.003	17876341	17621024				
Triacon Surr	8.948	-0.007	12031797	16961978				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	17621024	92.7
Triacontane	16961978	80.1

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

PZ-13-20210916
2110239-13 (Water)

Volatile Organic Compounds

Method: NWTPHg
Instrument: NT2

Sampled: 09/16/2021 10:50
Analyzed: 20-Sep-2021 18:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0520 Sample Size: 10 mL
Prepared: 20-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			80-120 %	99.9	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	96.9	%	

Date : 20-SEP-2021 18:42

Client ID:

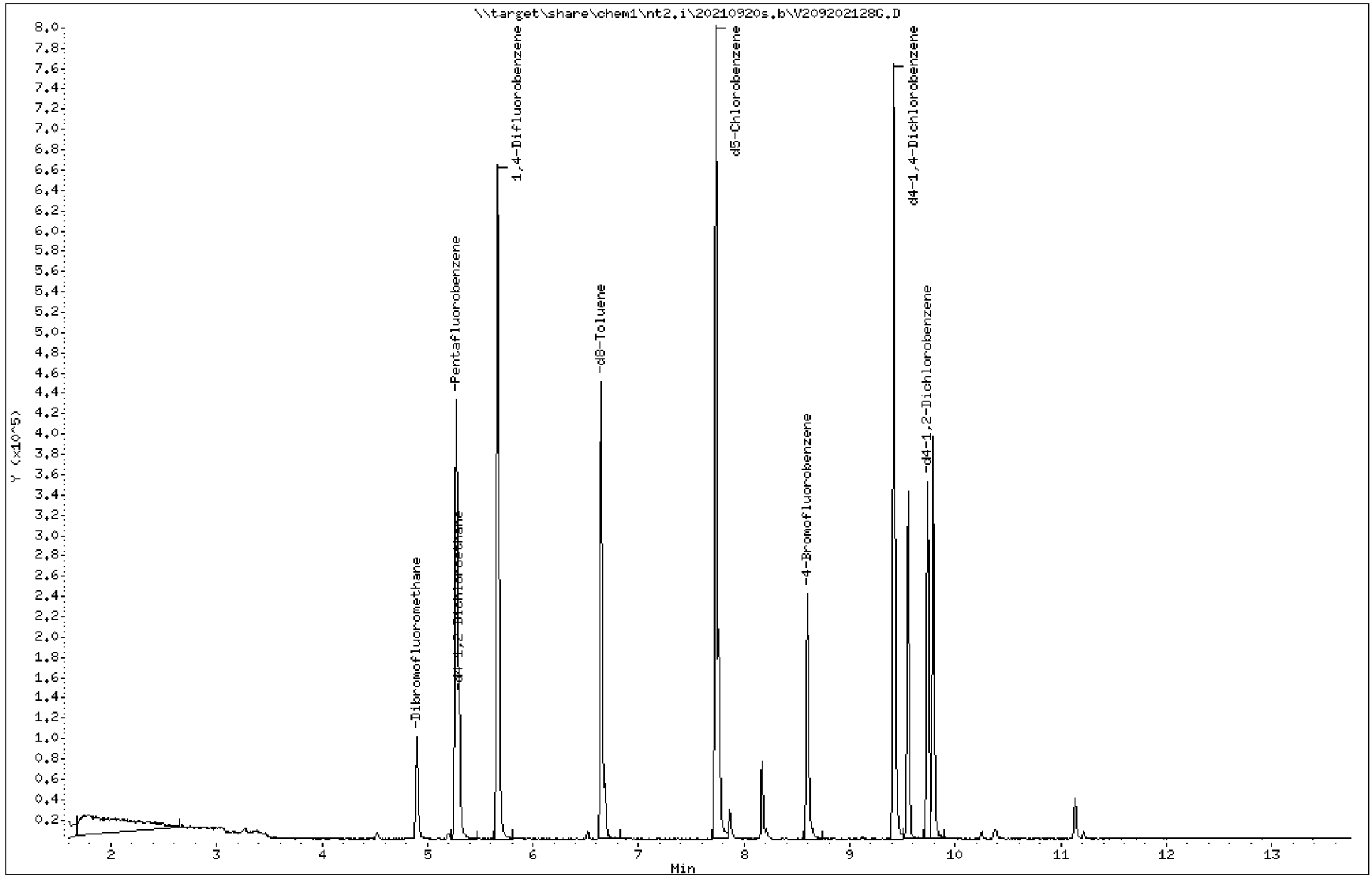
Instrument: nt2.i

Sample Info: 2110239-13

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202128G.D
 Lab Smp Id: 21I0239-13
 Inj Date : 20-SEP-2021 18:42
 Operator : PKC
 Smp Info : 21I0239-13
 Misc Info : 15-
 Comment :
 Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Meth Date : 21-Sep-2021 09:54 nt2.i
 Cal Date : 02-SEP-2021 09:50
 Als bottle: 63
 Dil Factor: 1.00000
 Integrator: HP RTE
 Target Version: 4.14
 Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
 Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.899	4.899	(0.929)	59975	5.57324	5.573
* 32 Pentafluorobenzene	168		5.276	5.276	(1.000)	231166	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.300	5.300	(1.005)	35694	5.99585	5.996
* 37 1,4-Difluorobenzene	114		5.665	5.665	(1.000)	420066	10.0000	
\$ 43 d8-Toluene	98		6.644	6.644	(1.173)	227085	4.99617	4.996
* 53 d5-Chlorobenzene	117		7.733	7.733	(1.000)	370692	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.602	8.596	(1.112)	63162	4.84464	4.845
* 76 d4-1,4-Dichlorobenzene	152		9.417	9.417	(1.000)	176591	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.739	9.740	(1.034)	80636	5.10130	5.101

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202128G.D Calibration Time: 10:13
 Lab Smp Id: 21I0239-13
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	256594	128297	513188	231166	-9.91
37 1,4-Difluorobenze	460187	230094	920374	420066	-8.72
53 d5-Chlorobenzene	406665	203333	813330	370692	-8.85
76 d4-1,4-Dichlorobe	202468	101234	404936	176591	-12.78

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.28	-0.01
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	-0.00
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	-0.00
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	-0.00

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-13
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.573	111.46	
\$ 33 d4-1,2-Dichloroeth	5.000	5.996	119.92	
\$ 43 d8-Toluene	5.000	4.996	99.92	
\$ 62 4-Bromofluorobenze	5.000	4.845	96.89	
\$ 79 d4-1,2-Dichloroben	5.000	5.101	102.03	

REVIEW SUMMARY FOR FILE - V209202128G.D

Lab ID: 21I0239-13

nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 18:42

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 18:42

Client ID:

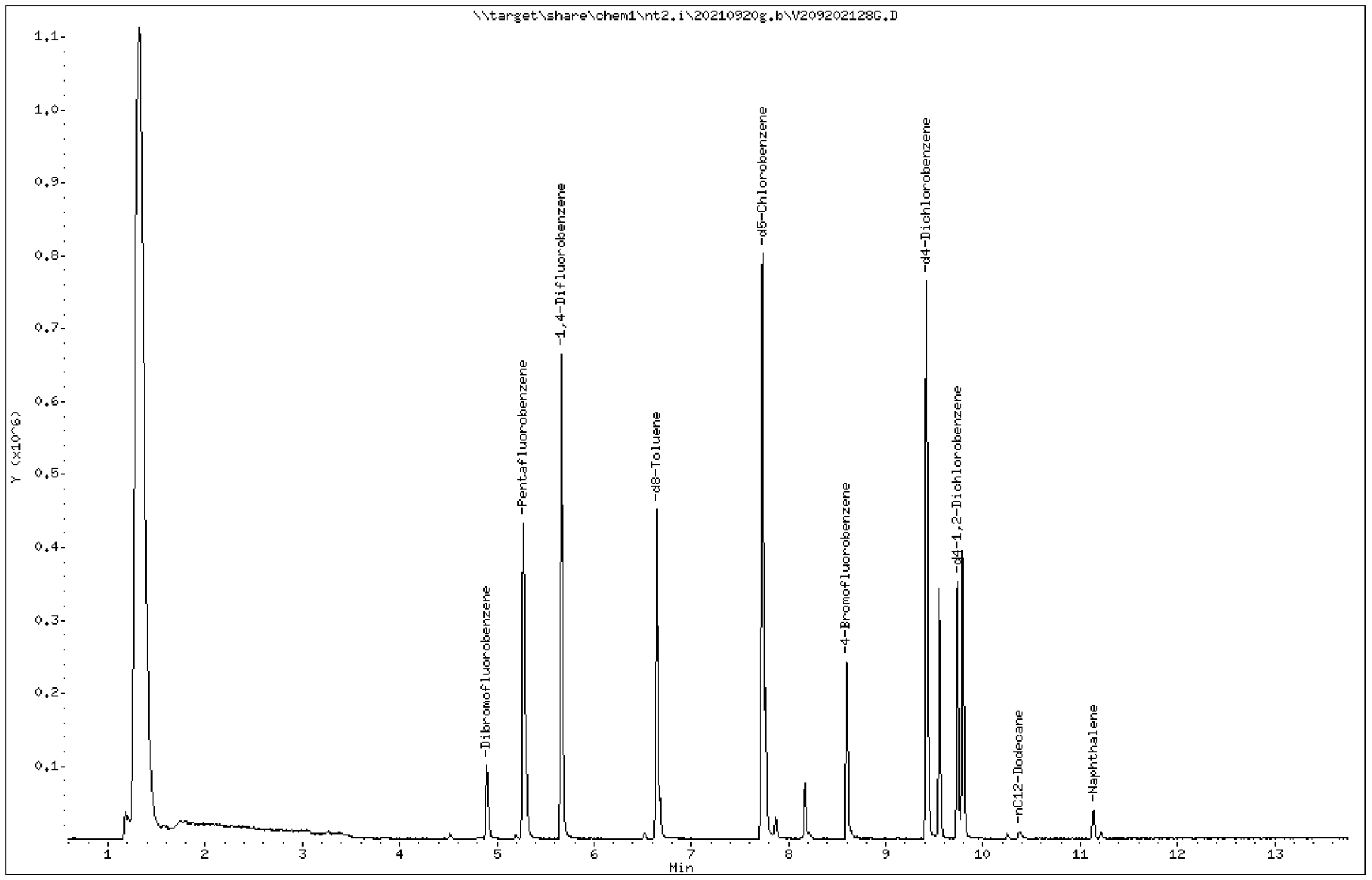
Instrument: nt2.i

Sample Info: 2110239-13

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202128G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 18:42

ARI ID: 21I0239-13
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

=====

GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
WAGas Tol-C12 (6.58 to 10.46)	32472667	1484511	0.046
8015C 2MP-TMB (3.00 to 9.38)	22222222	427386	0.019
AK101 nC6-nC10 (3.44 to 8.58)	45246913	427386	0.009
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	1541833	0.045
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	1484512	0.067

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.733	1120721	d5-Chlorobenzene
8.597	379929	4-Bromofluorobenzene
6.645	693009	d8-Toluene
9.418	1089440	d4-Dichlorobenzene
9.740	500295	d4-1,2-Dichlorobenzene



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

MW-01D-20210917
2110239-14 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/17/2021 09:55
Analyzed: 22-Oct-2021 05:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJ10593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 15-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 15-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			<i>50-150 %</i>	<i>109</i>	<i>%</i>	

Date : 22-OCT-2021 05:11

Client ID:

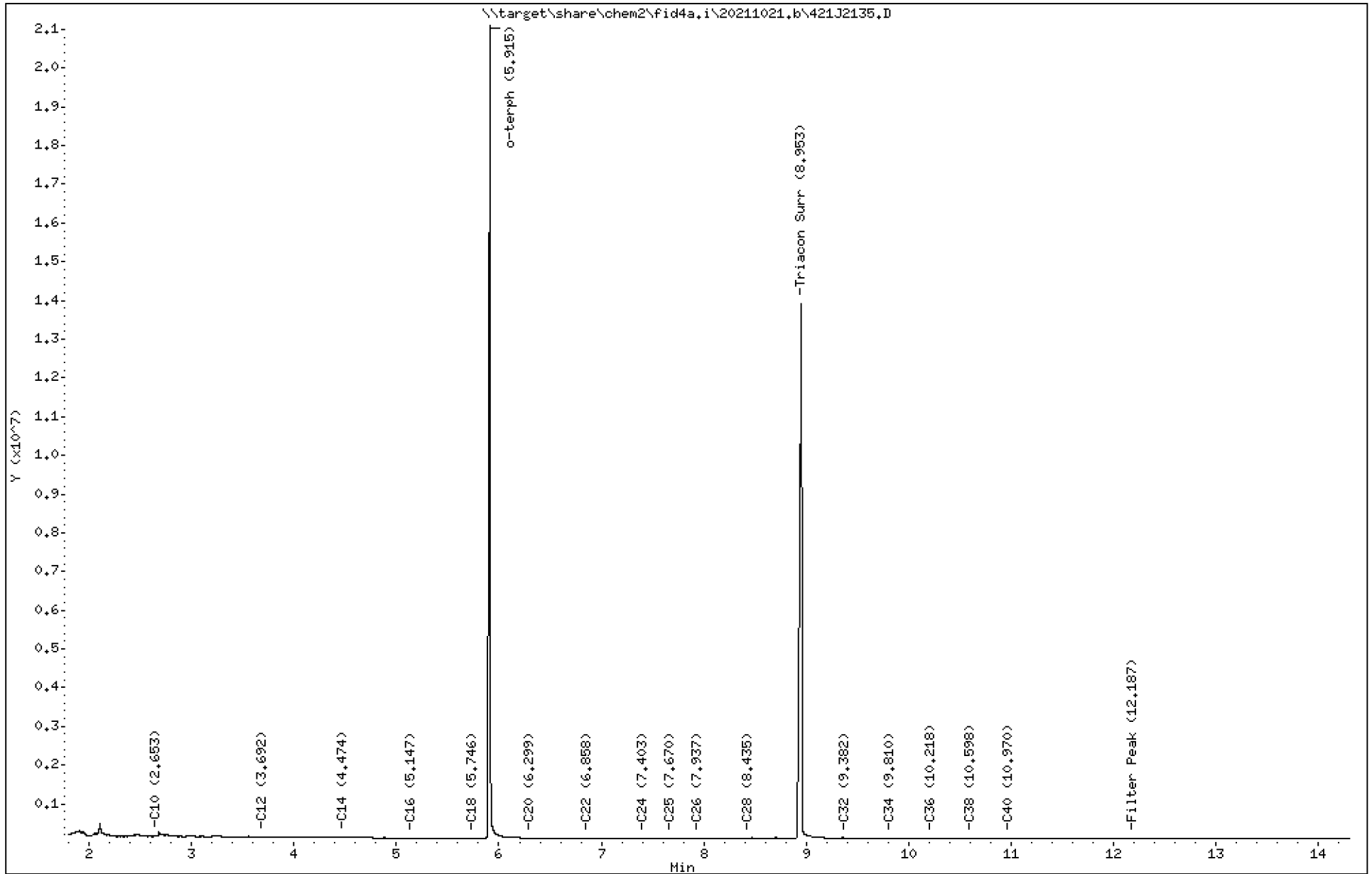
Instrument: fid4a.i

Sample Info: 21I0239-14

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0,25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2135.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-14
Client ID:
Injection: 22-OCT-2021 05:11
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

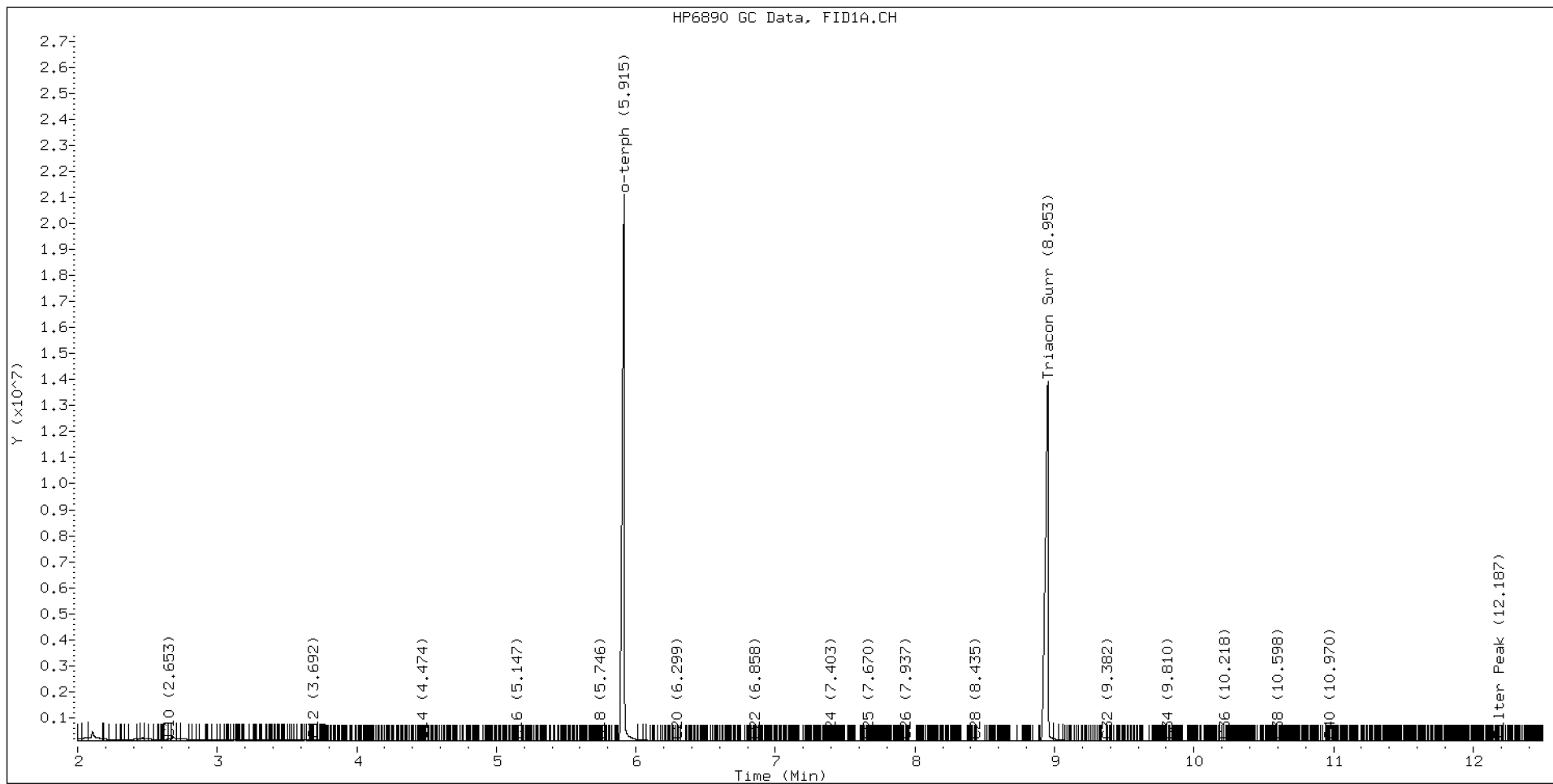
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.319	0.003	1745128	2527704	WATPHD	(C12-C24)	3034481	19.1
C10	2.653	0.002	80312	107741	WATPHM	(C24-C38)	1332355	10.1
C12	3.692	0.003	41147	50371	AK102	(C10-C25)	6770326	36.1
C14	4.474	0.000	21352	7434	AK103	(C25-C36)	1170665	11.6
C16	5.147	0.001	14745	5112	OR.DIES	(C10-C28)	6928764	36.8
C18	5.746	-0.004	9457	5630				
C20	6.299	-0.004	12416	7241				
C22	6.858	0.001	2859	1550				
C24	7.403	-0.002	1775	673				
C25	7.670	-0.003	2011	951				
C26	7.937	0.000	1792	595				
C28	8.435	-0.009	2389	941				
C32	9.382	-0.002	8479	7280				
C34	9.810	-0.001	5658	3829				
Filter Peak	12.187	-0.001	5333	2097	CREOSOT	(C12-C22)	2939350	69.7
C36	10.218	0.001	5572	3298				
C38	10.598	-0.002	6115	3927				
C40	10.970	-0.001	7708	2686				
o-terph	5.915	0.002	21000203	23212345				
Triacon Surr	8.953	-0.003	13818605	20174013				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	23212345	122.1
Triacontane	20174013	95.2

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

MW-01D-20210917
2110239-14 (Water)

Volatile Organic Compounds

Method: NWTPHg
Instrument: NT2

Sampled: 09/17/2021 09:55
Analyzed: 21-Sep-2021 13:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0577 Sample Size: 10 mL
Prepared: 21-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			80-120 %	99.8	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	93.5	%	

Date : 21-SEP-2021 13:04

Client ID:

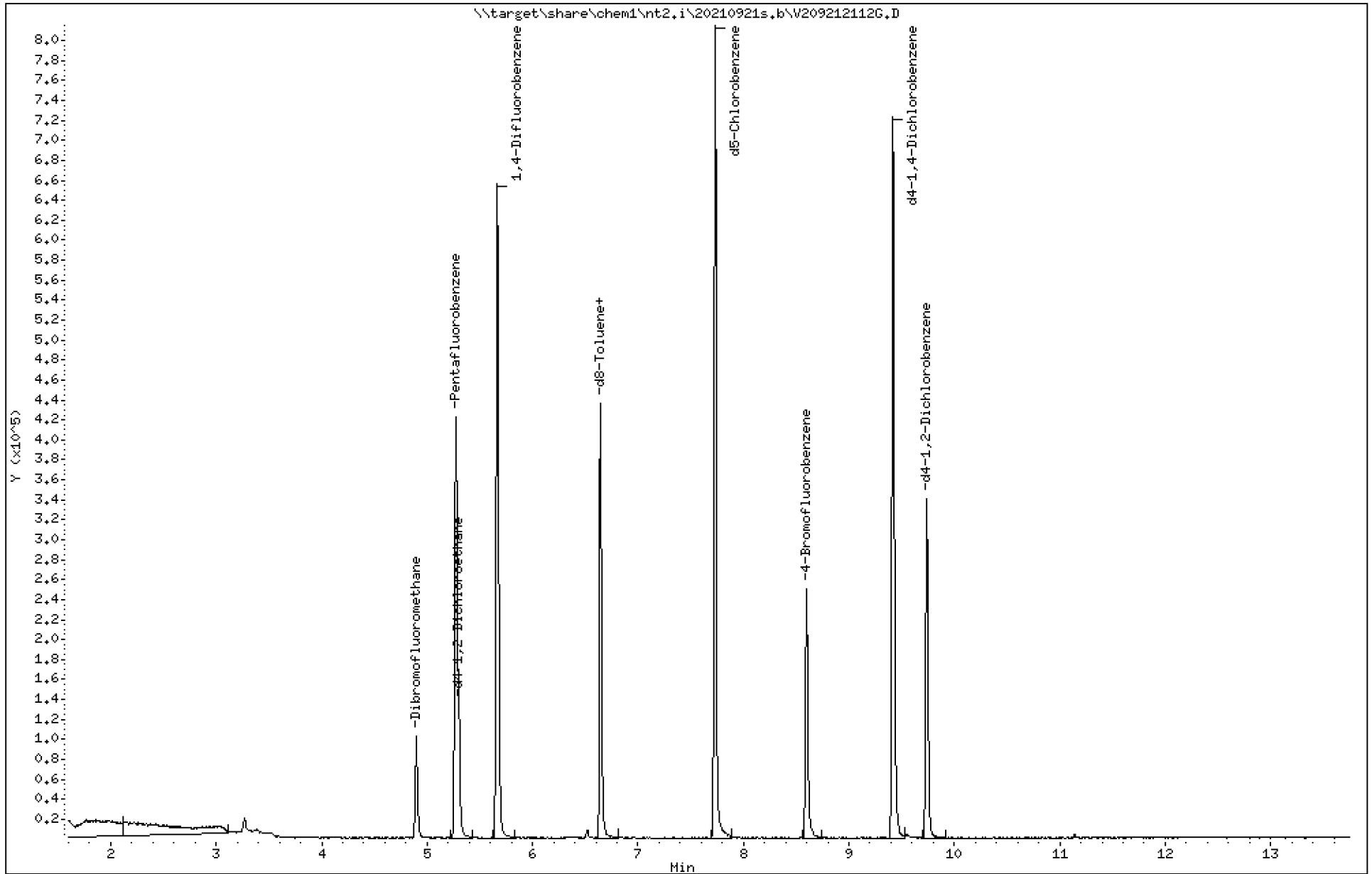
Instrument: nt2.i

Sample Info: 2110239-14

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210921s.b\V209212112G.D
Lab Smp Id: 21I0239-14
Inj Date : 21-SEP-2021 13:04
Operator : PKC
Smp Info : 21I0239-14
Misc Info : 1
Comment :
Method : \\target\share\chem1\nt2.i\20210921s.b\826090221.m
Meth Date : 22-Sep-2021 10:02 nt2.i
Cal Date : 02-SEP-2021 09:50
Als bottle: 52
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 4.14
Processing Host: LANIH-202105A

Inst ID: nt2.i

Quant Type: ISTD
Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	CONCENTRATIONS					
			ON-COLUMN	FINAL	RT	EXP RT	REL RT	RESPONSE
\$ 27 Dibromofluoromethane	111		4.899	4.900	(0.929)	60004	5.60019	5.600
* 32 Pentafluorobenzene	168		5.276	5.277	(1.000)	230165	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.300	5.301	(1.005)	35250	5.94702	5.947
* 37 1,4-Difluorobenzene	114		5.665	5.666	(1.000)	413970	10.0000	
\$ 43 d8-Toluene	98		6.644	6.645	(1.173)	223409	4.98768	4.988
* 53 d5-Chlorobenzene	117		7.733	7.727	(1.000)	377314	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.602	8.597	(1.112)	62025	4.67394	4.674
* 76 d4-1,4-Dichlorobenzene	152		9.417	9.418	(1.000)	171708	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.739	9.740	(1.034)	78360	5.09829	5.098

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 21-SEP-2021
 Lab File ID: V209212112G.D Calibration Time: 10:16
 Lab Smp Id: 21I0239-14
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210921s.b\826090221.m
 Misc Info: 1

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	250062	125031	500124	230165	-7.96
37 1,4-Difluorobenze	447450	223725	894900	413970	-7.48
53 d5-Chlorobenzene	404707	202354	809414	377314	-6.77
76 d4-1,4-Dichlorobe	200624	100312	401248	171708	-14.41

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.28	-0.02
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	-0.02
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	0.07
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	-0.01

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20151001
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-14
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210921s.b\826090221.m
Misc Info: 1

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.600	112.00	
\$ 33 d4-1,2-Dichloroeth	5.000	5.947	118.94	
\$ 43 d8-Toluene	5.000	4.988	99.75	
\$ 62 4-Bromofluorobenze	5.000	4.674	93.48	
\$ 79 d4-1,2-Dichloroben	5.000	5.098	101.97	

REVIEW SUMMARY FOR FILE - V209212112G.D

Lab ID: 21I0239-14

nt2.i, 20210921s.b\826090221.m, 21-SEP-2021 13:04

RT CO-ELUTION COMPOUNDS

Date : 21-SEP-2021 13:04

Client ID:

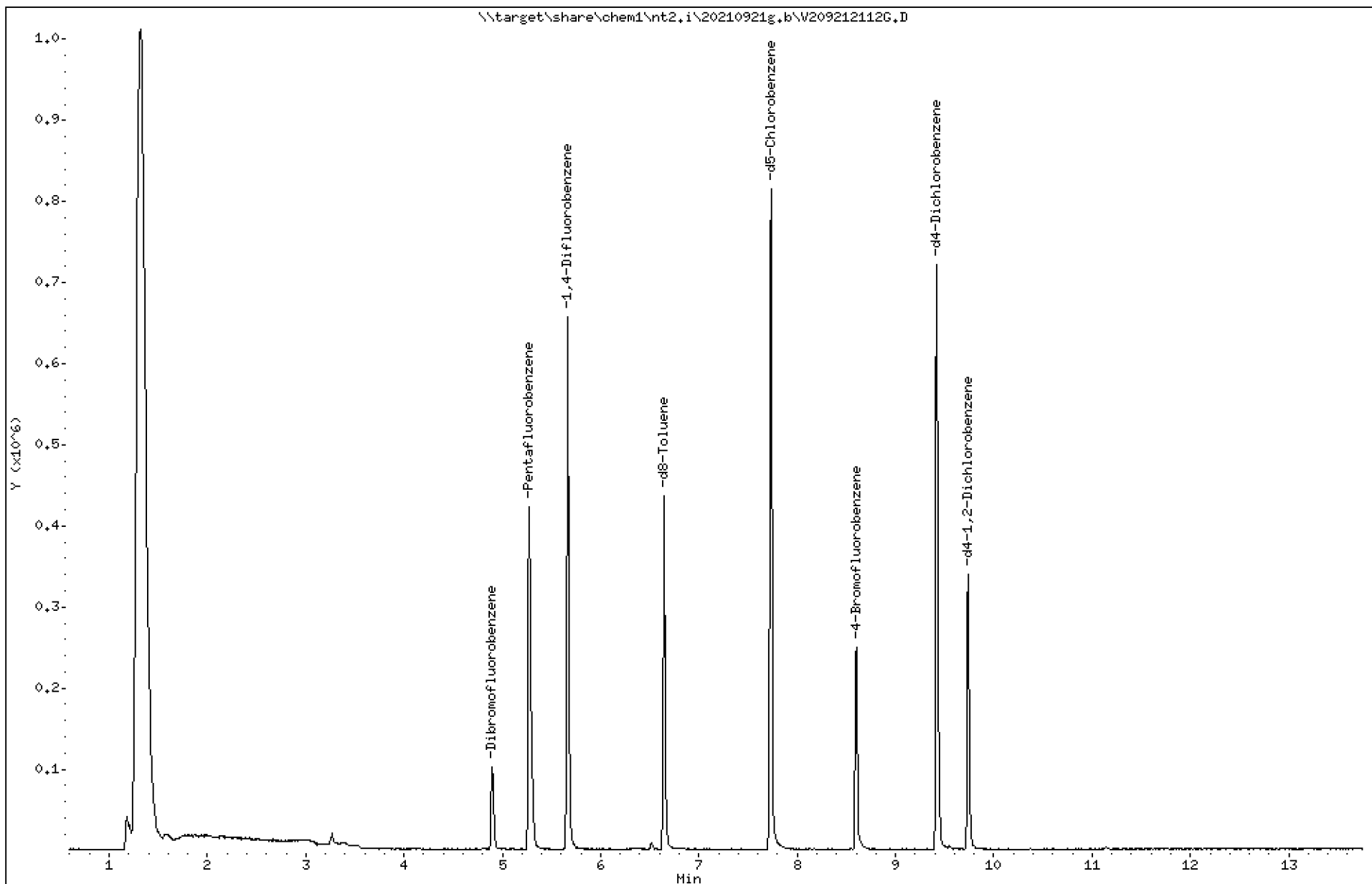
Instrument: nt2.i

Sample Info: 21I0239-14

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210921g.b/V209212112G.D
Method: \20210921g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 21-SEP-2021 13:04

ARI ID: 21I0239-14
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

=====

GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	2	0.000
8015C 2MP-TMB (3.00 to 9.38)	22222222	34403	0.002
AK101 nC6-nC10 (3.44 to 8.58)	45246913	11759	0.000
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	2	0.000
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	11761	0.001

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.733	1177730	d5-Chlorobenzene
8.603	379550	4-Bromofluorobenzene
6.644	626069	d8-Toluene
9.418	1067862	d4-Dichlorobenzene
9.740	493685	d4-1,2-Dichlorobenzene



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

MW-01S-20210917
2110239-15 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/17/2021 09:51
Analyzed: 22-Oct-2021 05:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJ10593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 15-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 15-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	12100	ug/L	E
HC ID: CREOSOTE						
Surrogate: o-Terphenyl			50-150 %	96.3	%	

Date : 22-OCT-2021 05:51

Client ID:

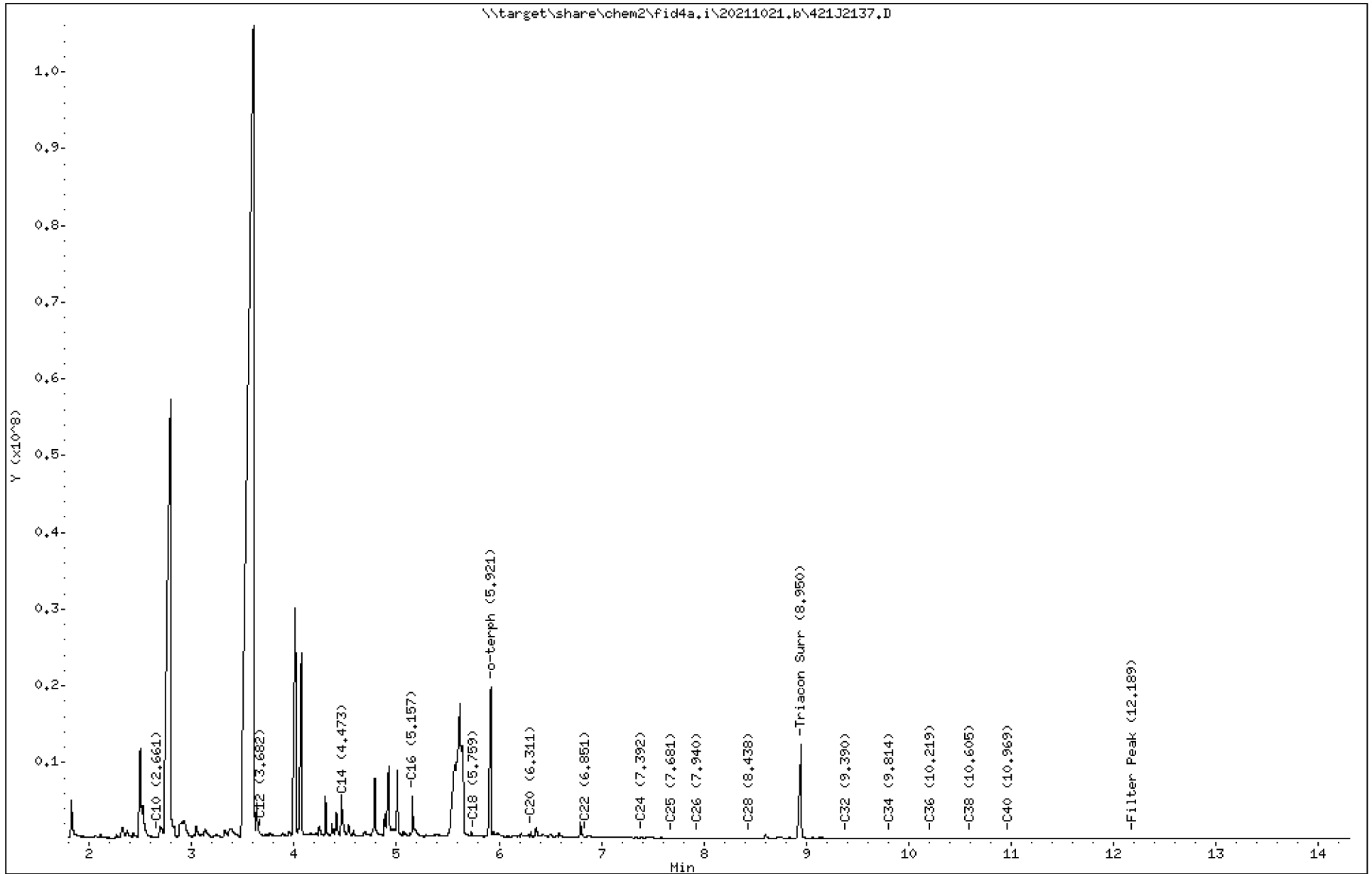
Instrument: fid4a.i

Sample Info: 2110239-15

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0,25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2137.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-15
Client ID:
Injection: 22-OCT-2021 05:51
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

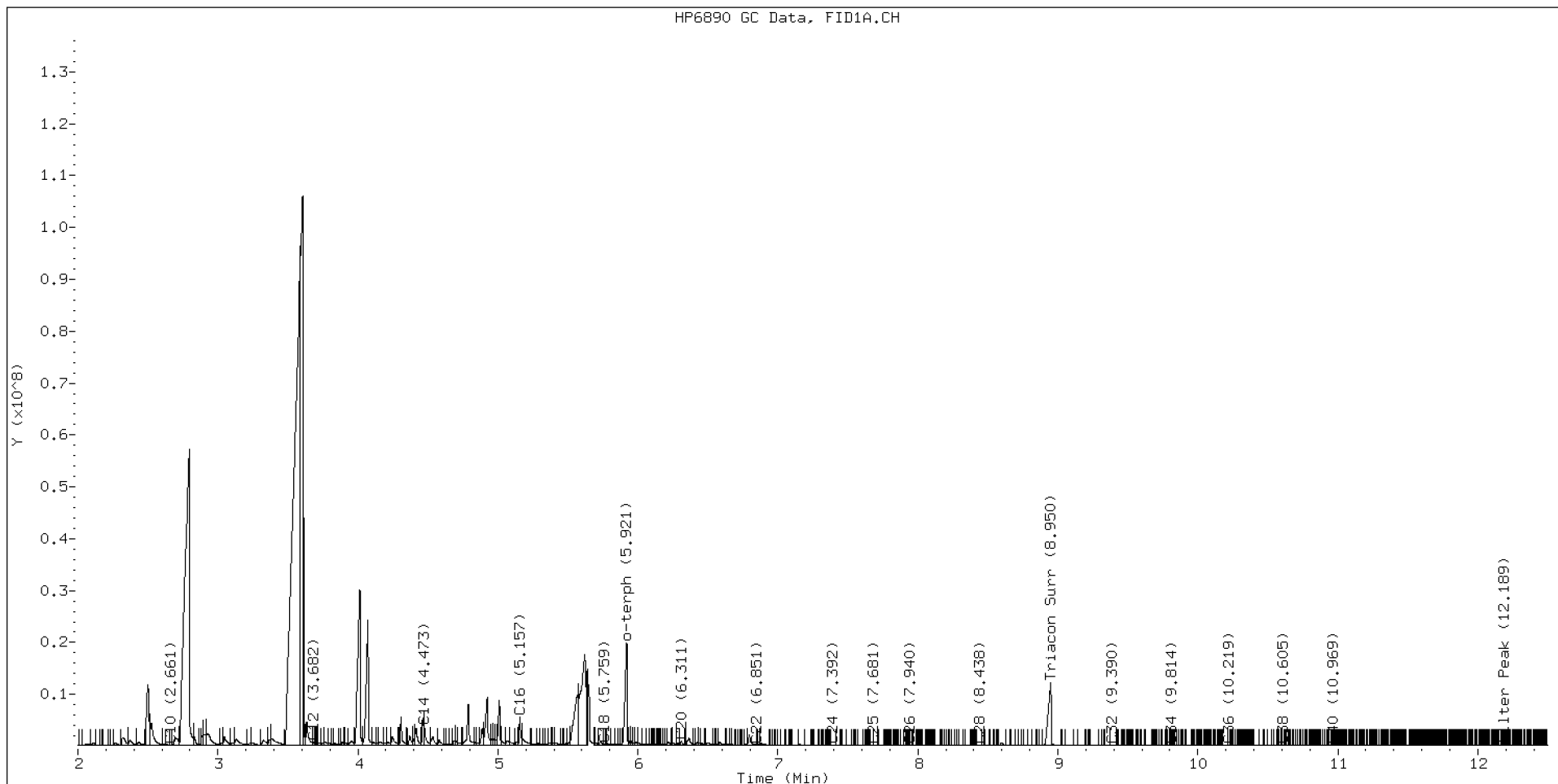
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.321	0.005	1870820	2507042	WATPHD	(C12-C24)	258497168	1629.8
C10	2.661	0.009	137199	118565	WATPHM	(C24-C38)	7593375	57.8
C12	3.682	-0.008	601968	590590	AK102	(C10-C25)	855176003	4565.2
C14	4.473	-0.001	3765586	3776706	AK103	(C25-C36)	6451110	63.8
C16	5.157	0.011	5476787	4155667	OR.DIES	(C10-C28)	857605897	4554.9
C18	5.759	0.009	349066	186304				
C20	6.311	0.007	823506	961717				
C22	6.851	-0.006	189249	56520				
C24	7.392	-0.013	103379	198050				
C25	7.681	0.007	84330	111935				
C26	7.940	0.003	43469	10806				
C28	8.438	-0.006	65717	110794				
C32	9.390	0.006	34724	74978				
C34	9.814	0.003	13536	6702				
Filter Peak	12.189	0.002	1951	378	CREOSOT	(C12-C22)	254974072	6042.0
C36	10.219	0.002	8685	6342				
C38	10.605	0.004	12997	7578				
C40	10.969	-0.002	6731	2642				
o-terph	5.921	0.007	19680728	20586426				
Triacon Surr	8.950	-0.006	12205746	17830657				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	20586426	108.3
Triacontane	17830657	84.2

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

MW-01S-20210917
2110239-15 (Water)

Volatile Organic Compounds

Method: NWTPHg
Instrument: NT2

Sampled: 09/17/2021 09:51
Analyzed: 21-Sep-2021 13:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0577 Sample Size: 0.4 mL
Prepared: 21-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	2500	31000	ug/L	
HC ID: GRO						
Surrogate: Toluene-d8			80-120 %	101	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	101	%	

Date : 21-SEP-2021 13:27

Client ID: 25x

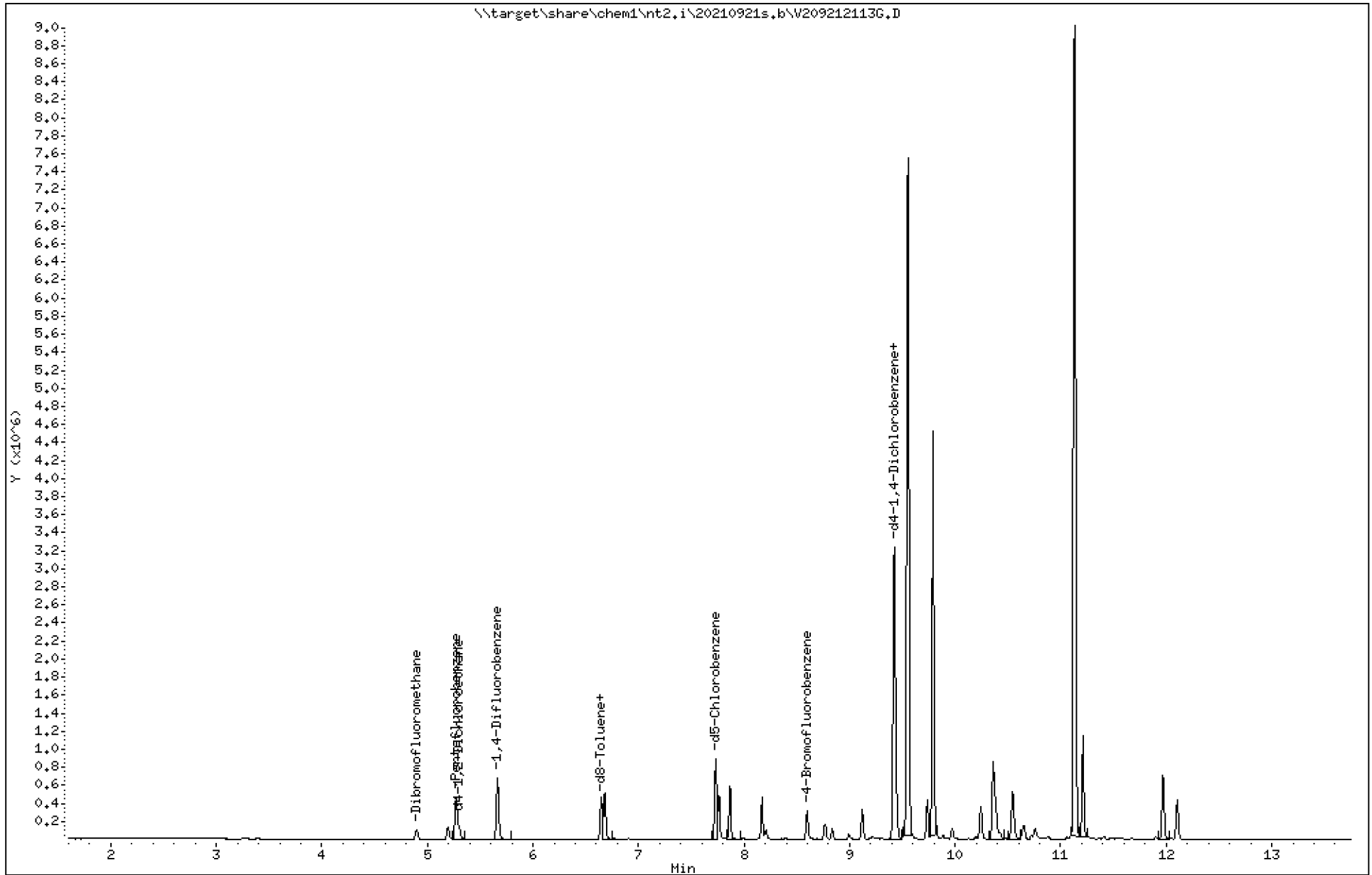
Sample Info: 2110239-15,25X

Instrument: nt2.i

Operator: PKC

Column diameter: 0.18

Column phase: RTXVMS



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210921s.b\V209212113G.D
Lab Smp Id: 21I0239-15 Client Smp ID: 25x
Inj Date : 21-SEP-2021 13:27
Operator : PKC Inst ID: nt2.i
Smp Info : 21I0239-15,25X
Misc Info : 1
Comment :
Method : \\target\share\chem1\nt2.i\20210921s.b\826090221.m
Meth Date : 22-Sep-2021 10:02 nt2.i Quant Type: ISTD
Cal Date : 02-SEP-2021 09:50 Cal File: V209022110.D
Als bottle: 53
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: gsurr.sub
Target Version: 4.14
Processing Host: LANIH-202105A

Compounds	QUANT	SIG	CONCENTRATIONS					
			MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ug/L)
=====	=====	=====	=====	=====	=====	=====	=====	
\$ 27 Dibromofluoromethane	111		4.895	4.900	(0.928)	61703	5.46171	5.462
* 32 Pentafluorobenzene	168		5.272	5.277	(1.000)	242683	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.302	5.301	(1.006)	36246	5.79963	5.800
* 37 1,4-Difluorobenzene	114		5.667	5.666	(1.000)	427061	10.0000	
\$ 43 d8-Toluene	98		6.646	6.645	(1.173)	234304	5.07056	5.071
* 53 d5-Chlorobenzene	117		7.728	7.727	(1.000)	398244	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.598	8.597	(1.113)	70758	5.05179	5.052
* 76 d4-1,4-Dichlorobenzene	152		9.419	9.418	(1.000)	206698	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.419	9.740	(1.000)	202761	10.9589	10.959

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 21-SEP-2021
 Lab File ID: V209212113G.D Calibration Time: 10:16
 Lab Smp Id: 21I0239-15 Client Smp ID: 25x
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210921s.b\826090221.m
 Misc Info: 1

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	250062	125031	500124	242683	-2.95
37 1,4-Difluorobenze	447450	223725	894900	427061	-4.56
53 d5-Chlorobenzene	404707	202354	809414	398244	-1.60
76 d4-1,4-Dichlorobe	200624	100312	401248	206698	3.03

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.27	-0.09
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.02
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	0.01
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.01

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20151001
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-15 Client Smp ID: 25x
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210921s.b\826090221.m
Misc Info: 1

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.462	109.23	
\$ 33 d4-1,2-Dichloroeth	5.000	5.800	115.99	
\$ 43 d8-Toluene	5.000	5.071	101.41	
\$ 62 4-Bromofluorobenze	5.000	5.052	101.04	
\$ 79 d4-1,2-Dichloroben	5.000	10.959	219.18	

REVIEW SUMMARY FOR FILE - V209212113G.D

Lab ID: 21I0239-15

nt2.i, 20210921s.b\826090221.m, 21-SEP-2021 13:27

RT CO-ELUTION COMPOUNDS

Date : 21-SEP-2021 13:27

Client ID:

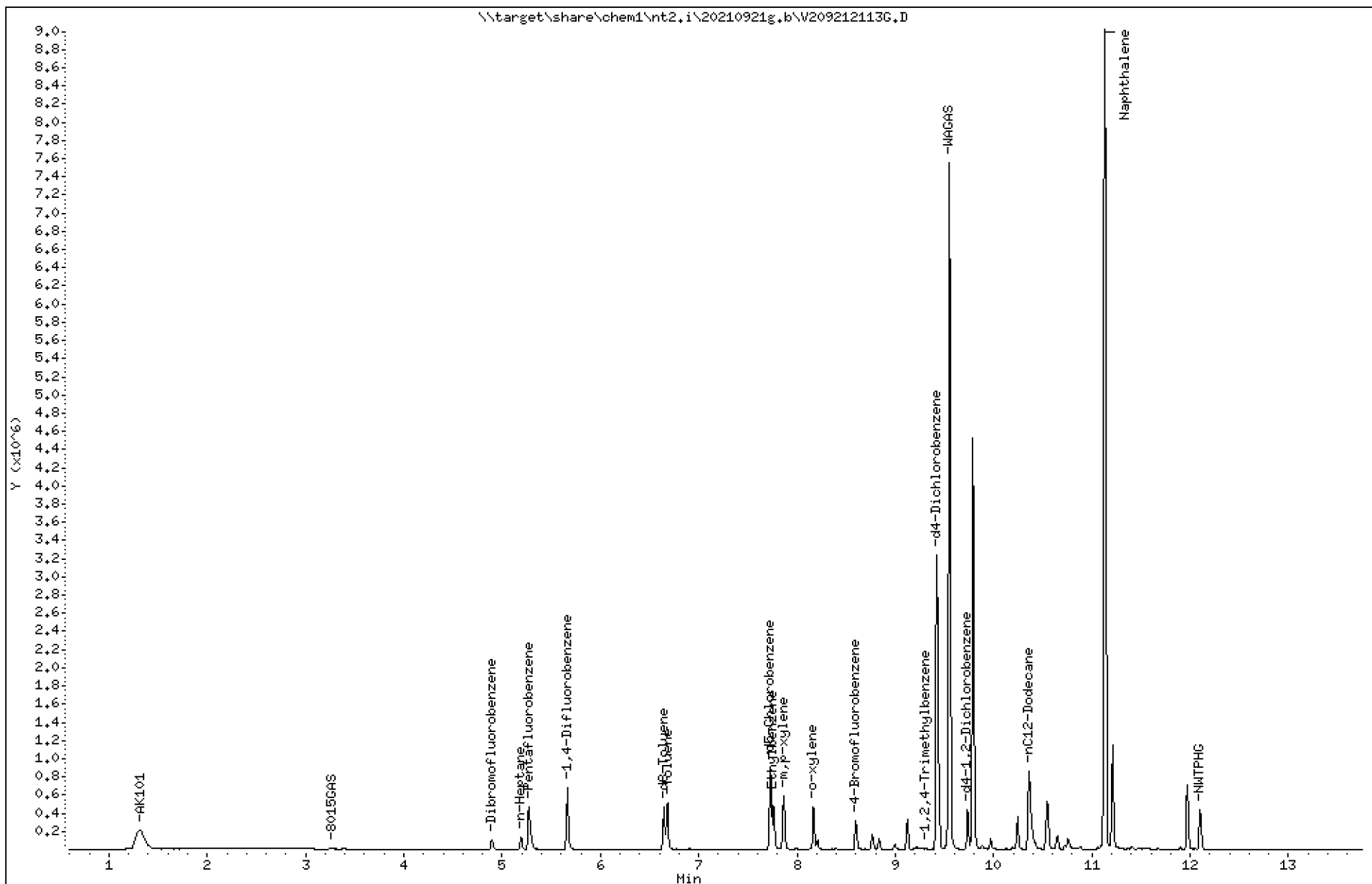
Instrument: nt2.i

Sample Info: 21I0239-15,25X

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210921g.b/V209212113G.D
Method: \20210921g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 21-SEP-2021 13:27

ARI ID: 21I0239-15
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

=====

GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	24494086	0.754
8015C 2MP-TMB (3.00 to 9.38)	22222222	4624692	0.208
AK101 nC6-nC10 (3.44 to 8.58)	45246913	3502348	0.077
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	42111102	1.241
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	24711464	1.112

* Surrogate areas are subtracted from Total Area

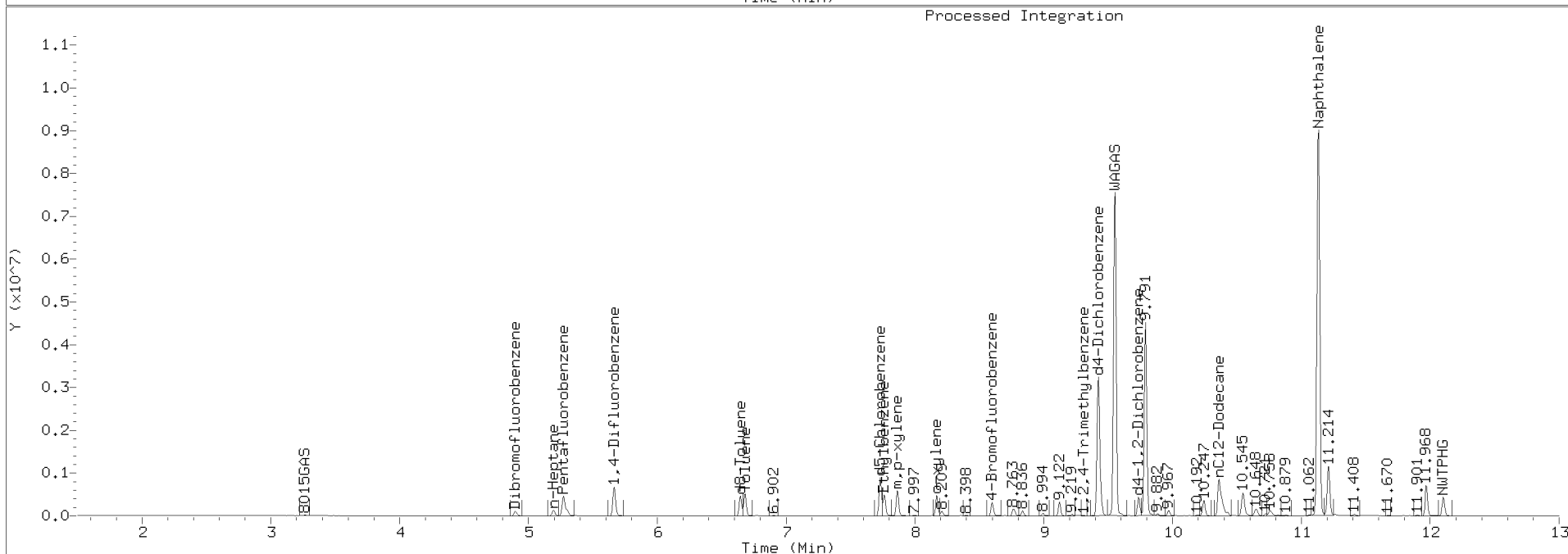
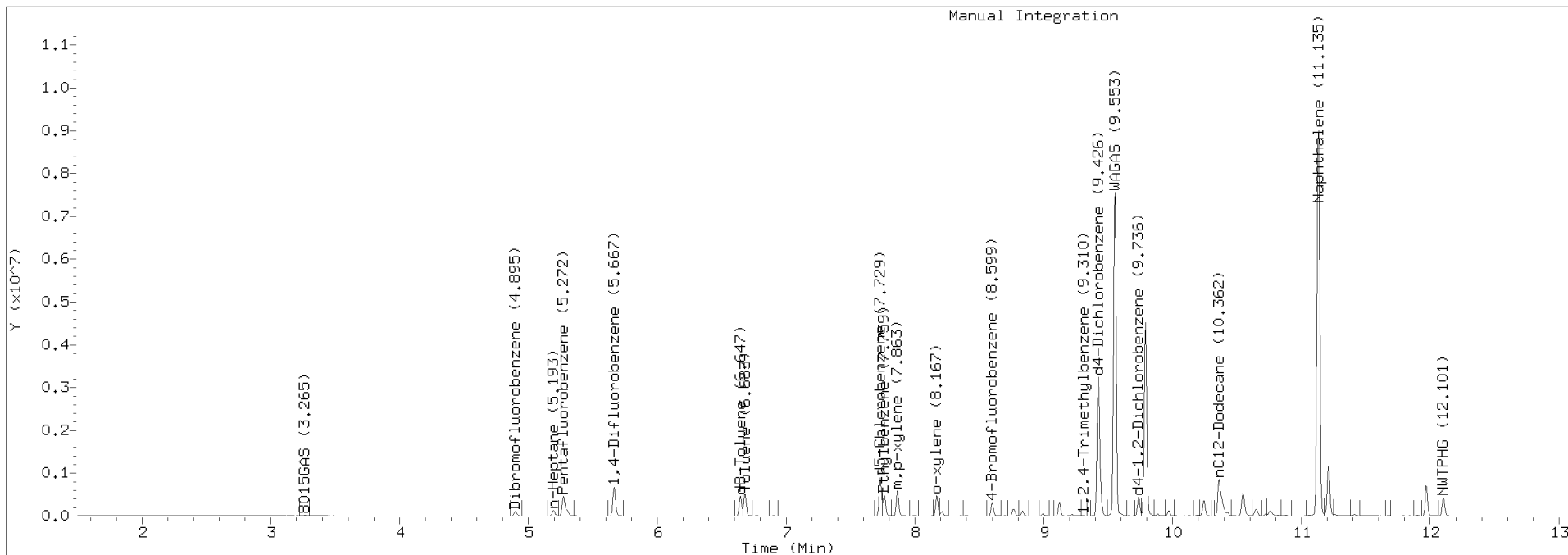
NW Gas Range Subtracted Peaks

7.729	1230001	d5-Chlorobenzene
8.599	448462	4-Bromofluorobenzene
6.647	692060	d8-Toluene
9.426	5142264	d4-Dichlorobenzene
9.736	612426	d4-1,2-Dichlorobenzene

TPHG Manual Integrations Report

Datafile: NT2, 20210921g.b/V209212113G.D Injection: 21-SEP-2021 13:27

Lab ID:21I0239-15





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

MW-01S-20210917
21I0239-15RE1 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/17/2021 09:51
Analyzed: 22-Oct-2021 05:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJ10593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 15-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 15-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	10	1000	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	10	2000	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	10	2000	11900	ug/L	D
HC ID: CREOSOTE						
Surrogate: o-Terphenyl			50-150 %	88.0	%	

Date : 22-OCT-2021 05:31

Client ID:

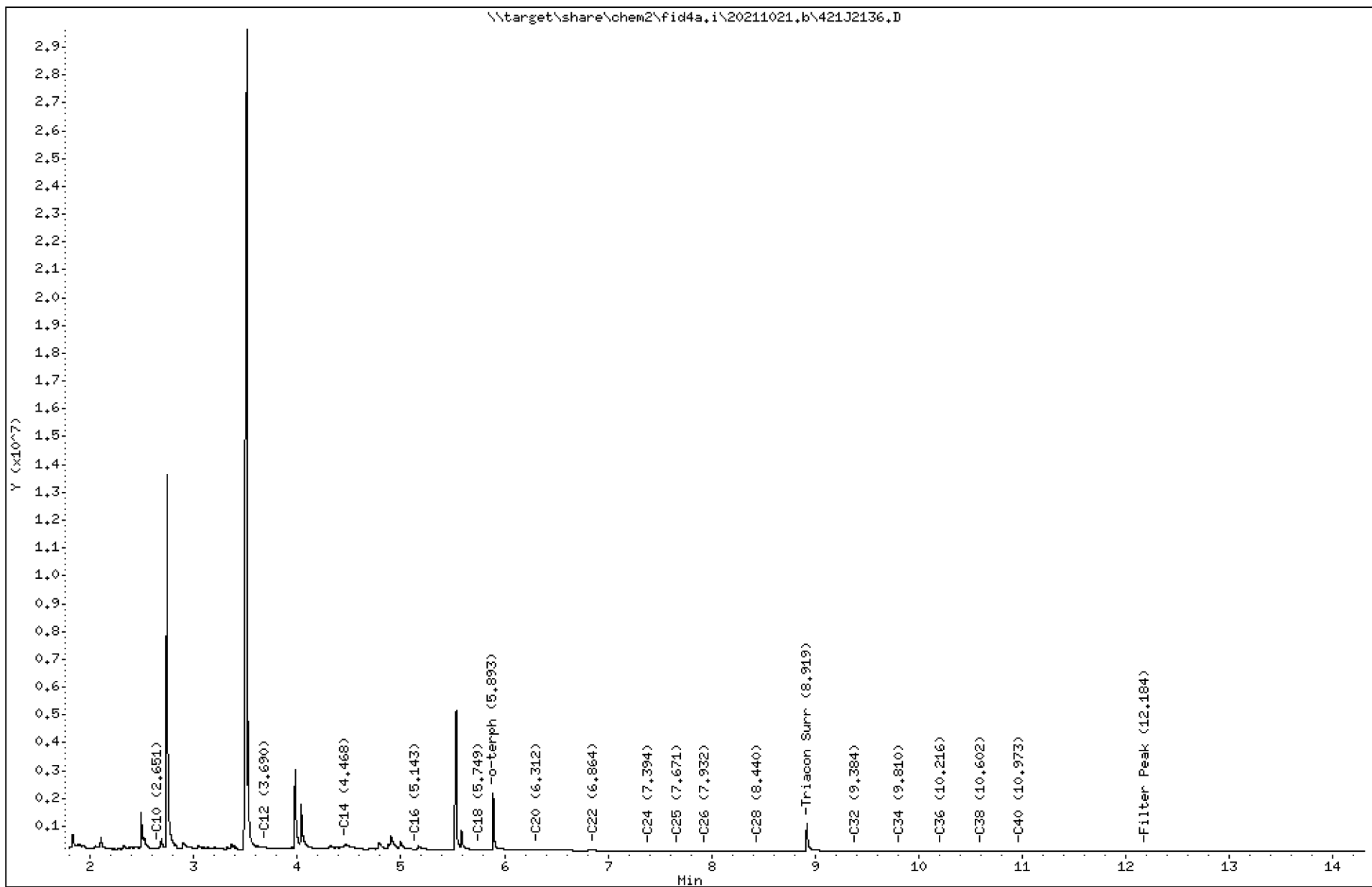
Instrument: fid4a.i

Sample Info: 21I0239-15RE1,10

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0.25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2136.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239RE1-15
Client ID:
Injection: 22-OCT-2021 05:31
Dilution Factor: 10
RT Std: 419H1603.D

FID:4A RESULTS

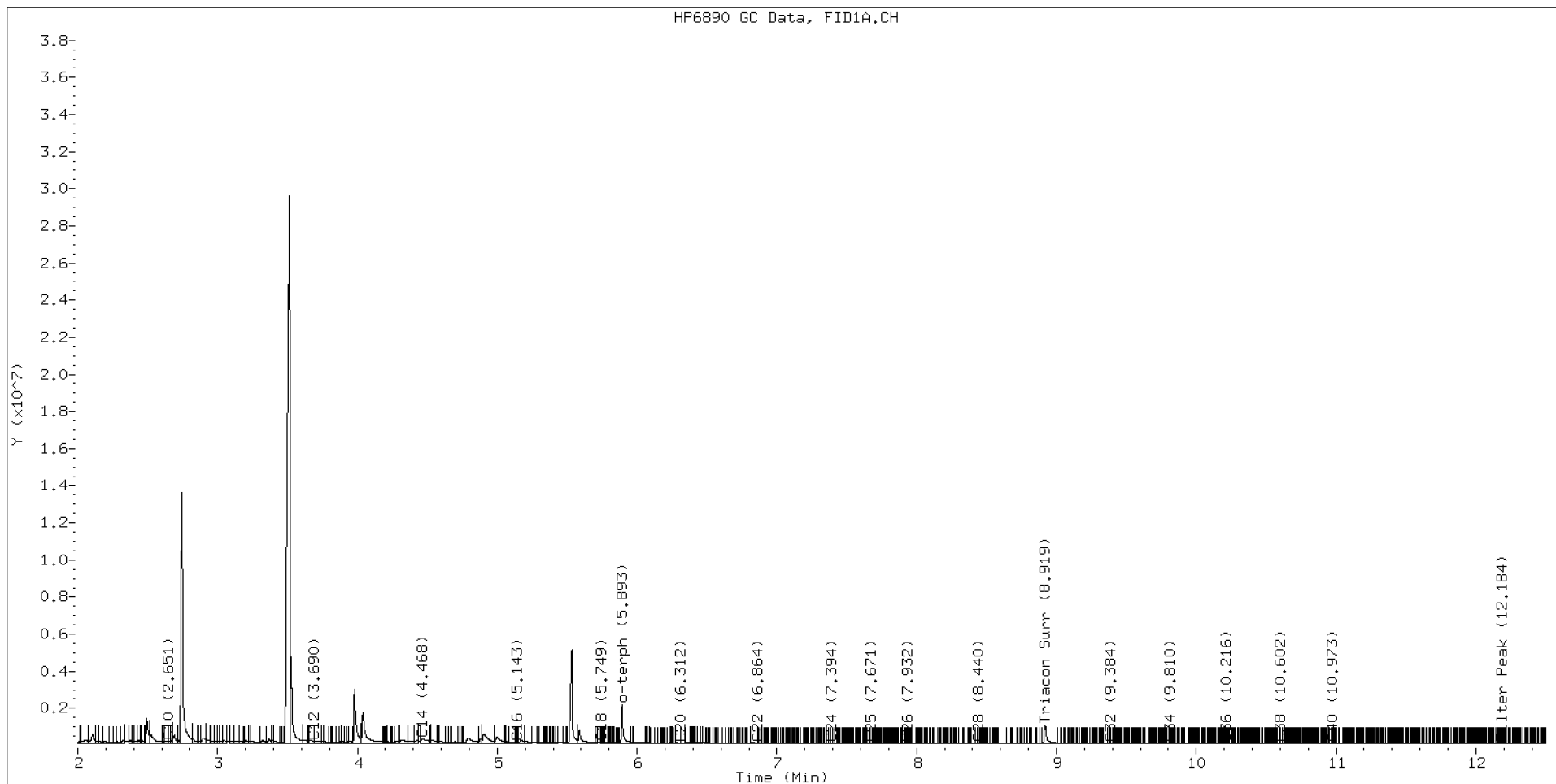
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.320	0.004	1857544	2571795	WATPHD	(C12-C24)	25393049	160.1
C10	2.651	-0.001	108420	104118	WATPHM	(C24-C38)	791340	6.0
C12	3.690	0.001	136078	396162	AK102	(C10-C25)	83338467	444.9
C14	4.468	-0.007	236810	781164	AK103	(C25-C36)	637702	6.3
C16	5.143	-0.002	68369	33930	OR.DIES	(C10-C28)	83412943	443.0
C18	5.749	-0.001	47438	30604				
C20	6.312	0.008	31776	6348				
C22	6.864	0.008	29908	20128				
C24	7.394	-0.010	6473	6195				
C25	7.671	-0.002	3871	2727				
C26	7.932	-0.005	1262	245				
C28	8.440	-0.004	891	576				
C32	9.384	0.000	5320	3368				
C34	9.810	-0.001	3584	1067				
Filter Peak	12.184	-0.003	7364	3982	CREOSOT	(C12-C22)	25071470	594.1
C36	10.216	-0.001	4045	2167				
C38	10.602	0.001	5711	1954				
C40	10.973	0.002	6584	2617				
o-terph	5.893	-0.021	2064781	1887180				
Triacon Surr	8.919	-0.037	991703	1271324				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	1887180	9.9
Triacontane	1271324	6.0

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

CW-13-20210916
2110239-16 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx
Instrument: FID4

Sampled: 09/16/2021 13:55
Analyzed: 22-Oct-2021 06:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJ10593 Sample Size: 500 mL
Prepared: 23-Sep-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CJJ0119 Initial Volume: 1 mL
Cleaned: 15-Oct-2021 Final Volume: 1 mL

Sample Cleanup: Cleanup Method: Sulfuric Acid
Cleanup Batch: CJJ0118 Initial Volume: 1 uL
Cleaned: 15-Oct-2021 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	100	ND	ug/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	200	ND	ug/L	U
Creosote Range Organics (C12-C22)	8001-58-9	1	200	ND	ug/L	U
<i>Surrogate: o-Terphenyl</i>			<i>50-150 %</i>	<i>100</i>	<i>%</i>	

Date : 22-OCT-2021 06:12

Client ID:

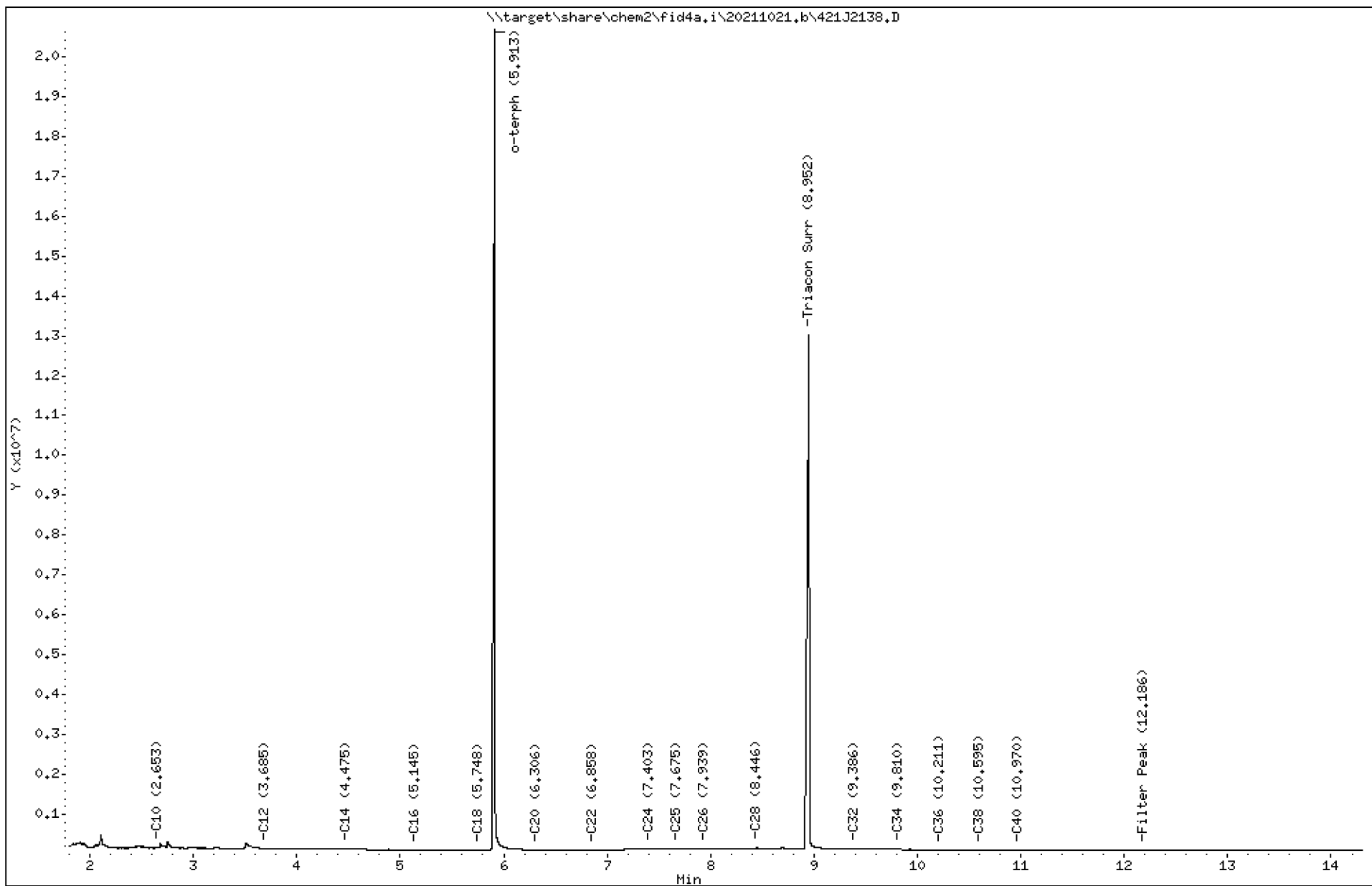
Instrument: fid4a.i

Sample Info: 2110239-16

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0,25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2138.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: 21I0239-16
Client ID:
Injection: 22-OCT-2021 06:12
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

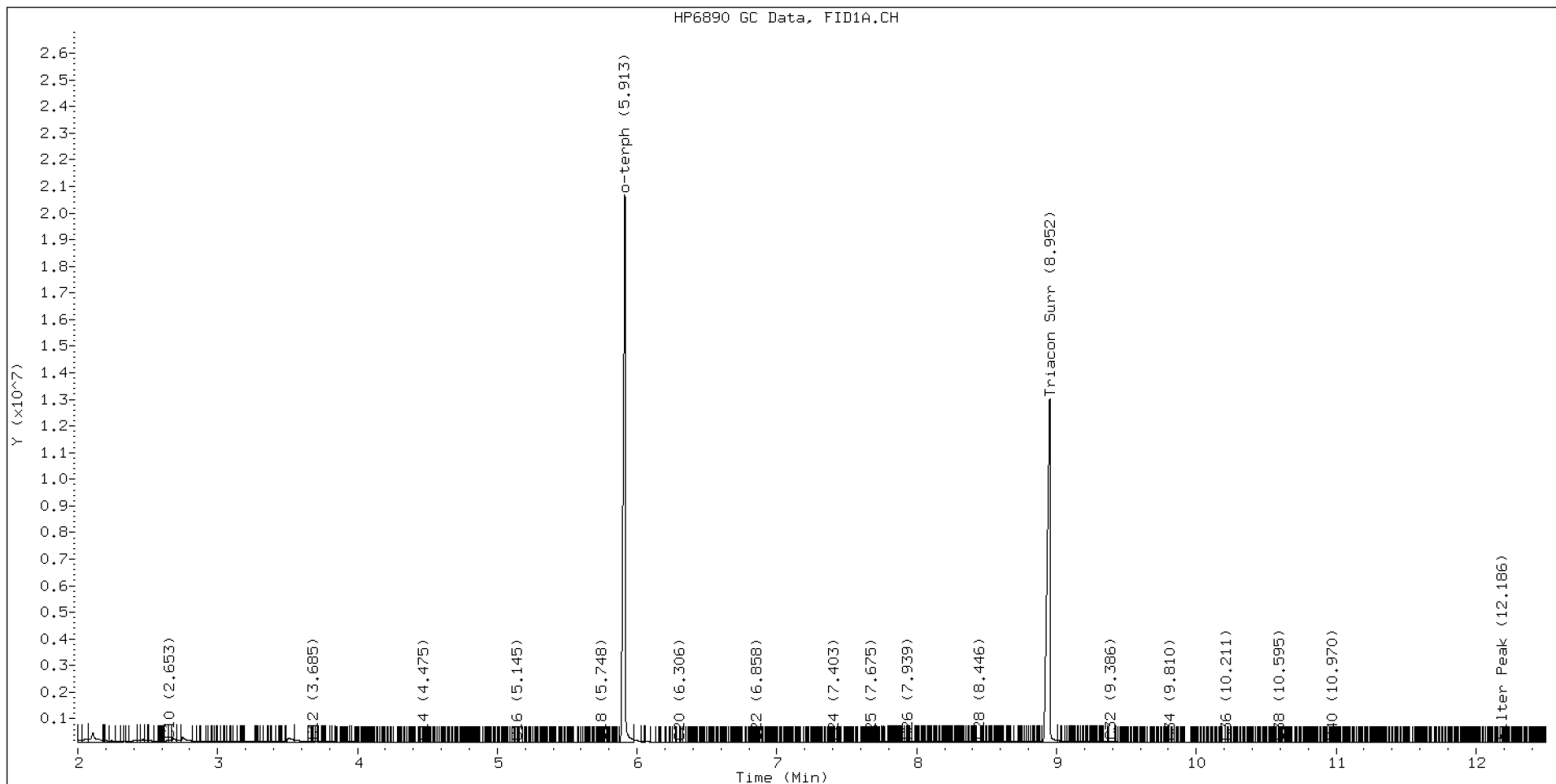
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.320	0.004	1706561	2483350	WATPHD	(C12-C24)	3325901	21.0
C10	2.653	0.001	78240	101847	WATPHM	(C24-C38)	5197712	39.5
C12	3.685	-0.004	43820	41058	AK102	(C10-C25)	7848637	41.9
C14	4.475	0.001	18900	10295	AK103	(C25-C36)	4836172	47.9
C16	5.145	-0.000	13423	4681	OR.DIES	(C10-C28)	9782619	52.0
C18	5.748	-0.002	8252	4066				
C20	6.306	0.003	10786	6960				
C22	6.858	0.001	14310	7026				
C24	7.403	-0.001	25568	10162				
C25	7.675	0.002	29293	10154				
C26	7.939	0.002	35499	15838				
C28	8.446	0.002	59539	77644				
C32	9.386	0.002	40647	96107				
C34	9.810	-0.000	19834	10753				
Filter Peak	12.186	-0.001	997	413	CREOSOT	(C12-C22)	2718412	64.4
C36	10.211	-0.005	8852	6367				
C38	10.595	-0.005	3015	1404				
C40	10.970	-0.000	1247	621				
o-terph	5.913	-0.000	20576728	21431897				
Triacon Surr	8.952	-0.004	12899251	18730733				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	21431897	112.7
Triacontane	18730733	88.4

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

CW-13-20210916
2110239-16 (Water)

Volatile Organic Compounds

Method: NWTPHg
Instrument: NT2

Sampled: 09/16/2021 13:55
Analyzed: 21-Sep-2021 13:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJI0577 Sample Size: 10 mL
Prepared: 21-Sep-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			80-120 %	99.7	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	97.6	%	

Date : 21-SEP-2021 13:48

Client ID:

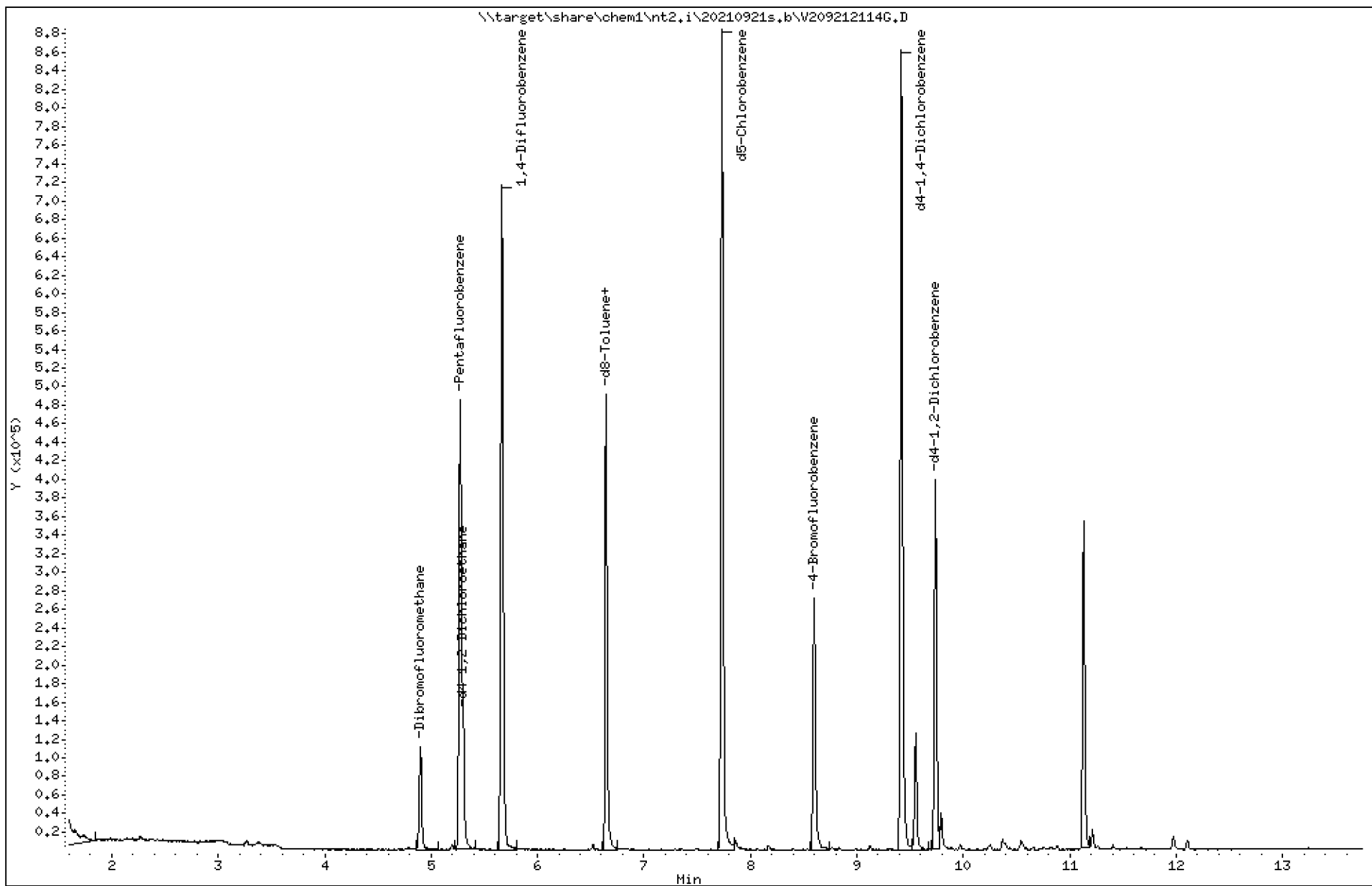
Instrument: nt2.i

Sample Info: 2110239-16

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210921s.b\V209212114G.D
 Lab Smp Id: 21I0239-16
 Inj Date : 21-SEP-2021 13:48
 Operator : PKC
 Smp Info : 21I0239-16
 Misc Info : 1
 Comment :
 Method : \\target\share\chem1\nt2.i\20210921s.b\826090221.m
 Meth Date : 22-Sep-2021 10:02 nt2.i
 Cal Date : 02-SEP-2021 09:50
 Als bottle: 54
 Dil Factor: 1.00000
 Integrator: HP RTE
 Target Version: 4.14
 Processing Host: LANIH-202105A

Inst ID: nt2.i

Quant Type: ISTD
 Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.899	4.900	(0.930)	63294	5.31244	5.312
* 32 Pentafluorobenzene	168		5.270	5.277	(1.000)	255935	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.300	5.301	(1.006)	37836	5.74057	5.741
* 37 1,4-Difluorobenzene	114		5.665	5.666	(1.000)	459618	10.0000	
\$ 43 d8-Toluene	98		6.644	6.645	(1.173)	247880	4.98438	4.984
* 53 d5-Chlorobenzene	117		7.733	7.727	(1.000)	404934	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.602	8.597	(1.112)	69472	4.87803	4.878
* 76 d4-1,4-Dichlorobenzene	152		9.417	9.418	(1.000)	194533	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.740	9.740	(1.034)	90522	5.19854	5.199

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 21-SEP-2021
 Lab File ID: V209212114G.D Calibration Time: 10:16
 Lab Smp Id: 21I0239-16
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210921s.b\826090221.m
 Misc Info: 1

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	250062	125031	500124	255935	2.35
37 1,4-Difluorobenze	447450	223725	894900	459618	2.72
53 d5-Chlorobenzene	404707	202354	809414	404934	0.06
76 d4-1,4-Dichlorobe	200624	100312	401248	194533	-3.04

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.27	-0.13
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	-0.01
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	0.07
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	-0.01

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20151001
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: 21I0239-16
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210921s.b\826090221.m
Misc Info: 1

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.312	106.25	
\$ 33 d4-1,2-Dichloroeth	5.000	5.741	114.81	
\$ 43 d8-Toluene	5.000	4.984	99.69	
\$ 62 4-Bromofluorobenze	5.000	4.878	97.56	
\$ 79 d4-1,2-Dichloroben	5.000	5.199	103.97	

REVIEW SUMMARY FOR FILE - V209212114G.D

Lab ID: 21I0239-16

nt2.i, 20210921s.b\826090221.m, 21-SEP-2021 13:48

RT CO-ELUTION COMPOUNDS

Date : 21-SEP-2021 13:48

Client ID:

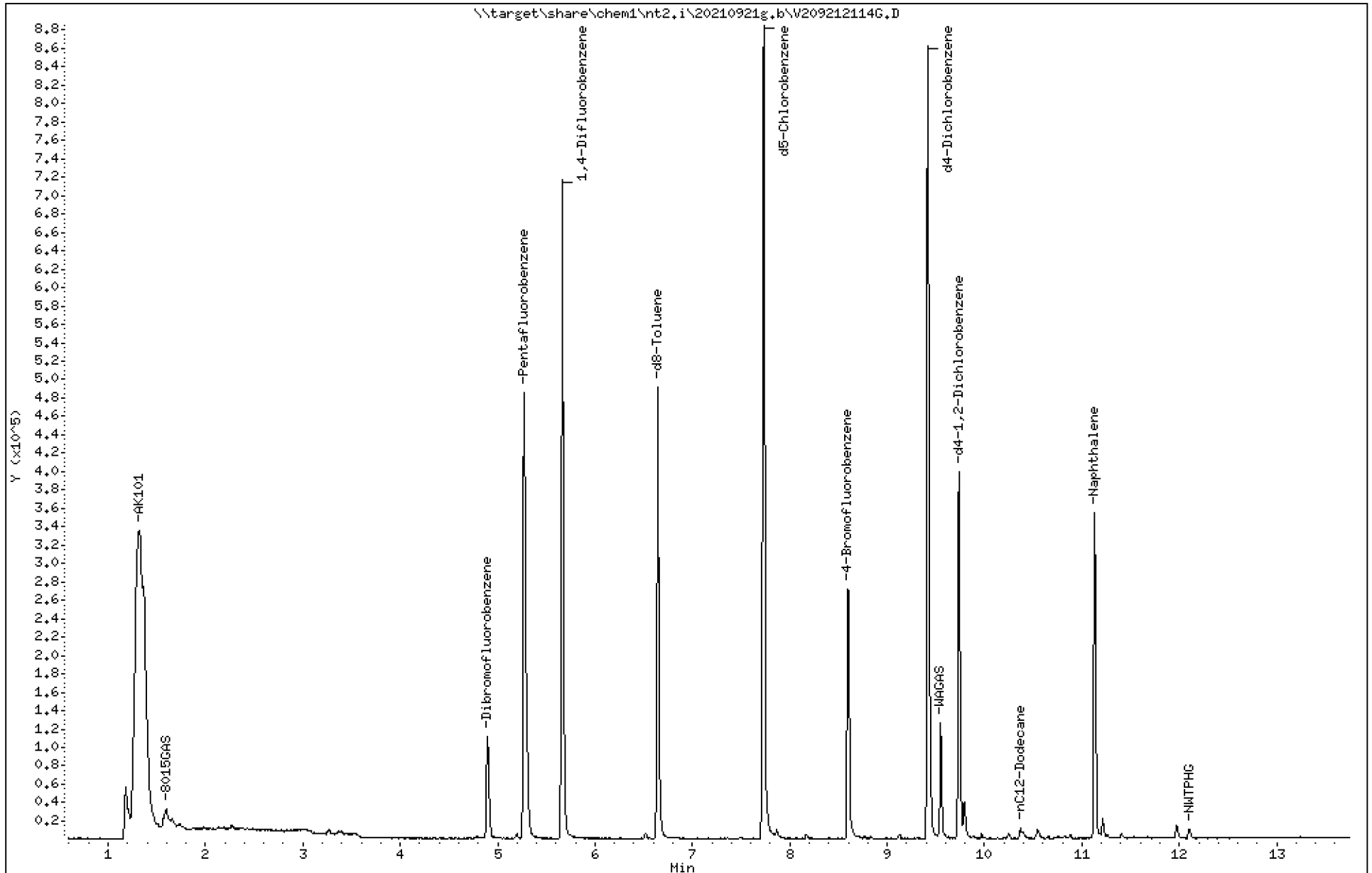
Instrument: nt2.i

Sample Info: 21I0239-16

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210921g.b/V209212114G.D
Method: \20210921g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 21-SEP-2021 13:48

ARI ID: 21I0239-16
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	265481	0.008
8015C 2MP-TMB (3.00 to 9.38)	22222222	2	0.000
AK101 nC6-nC10 (3.44 to 8.58)	45246913	2	0.000
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	806249	0.024
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	265482	0.012

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.733	1301499	d5-Chlorobenzene
8.597	424073	4-Bromofluorobenzene
6.645	700479	d8-Toluene
9.418	1250732	d4-Dichlorobenzene
9.740	561594	d4-1,2-Dichlorobenzene



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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Analysis by: Analytical Resources, LLC
Volatile Organic Compounds - Quality Control

Batch BJI0520 - EPA 5030C (Purge and Trap)

Instrument: NT2

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJI0520-BLK1)				Prepared: 20-Sep-2021 Analyzed: 20-Sep-2021 11:35						
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.96		ug/L	5.00		99.1	80-120			
Surrogate: 4-Bromofluorobenzene	4.82		ug/L	5.00		96.4	80-120			

Date : 20-SEP-2021 11:35

Client ID:

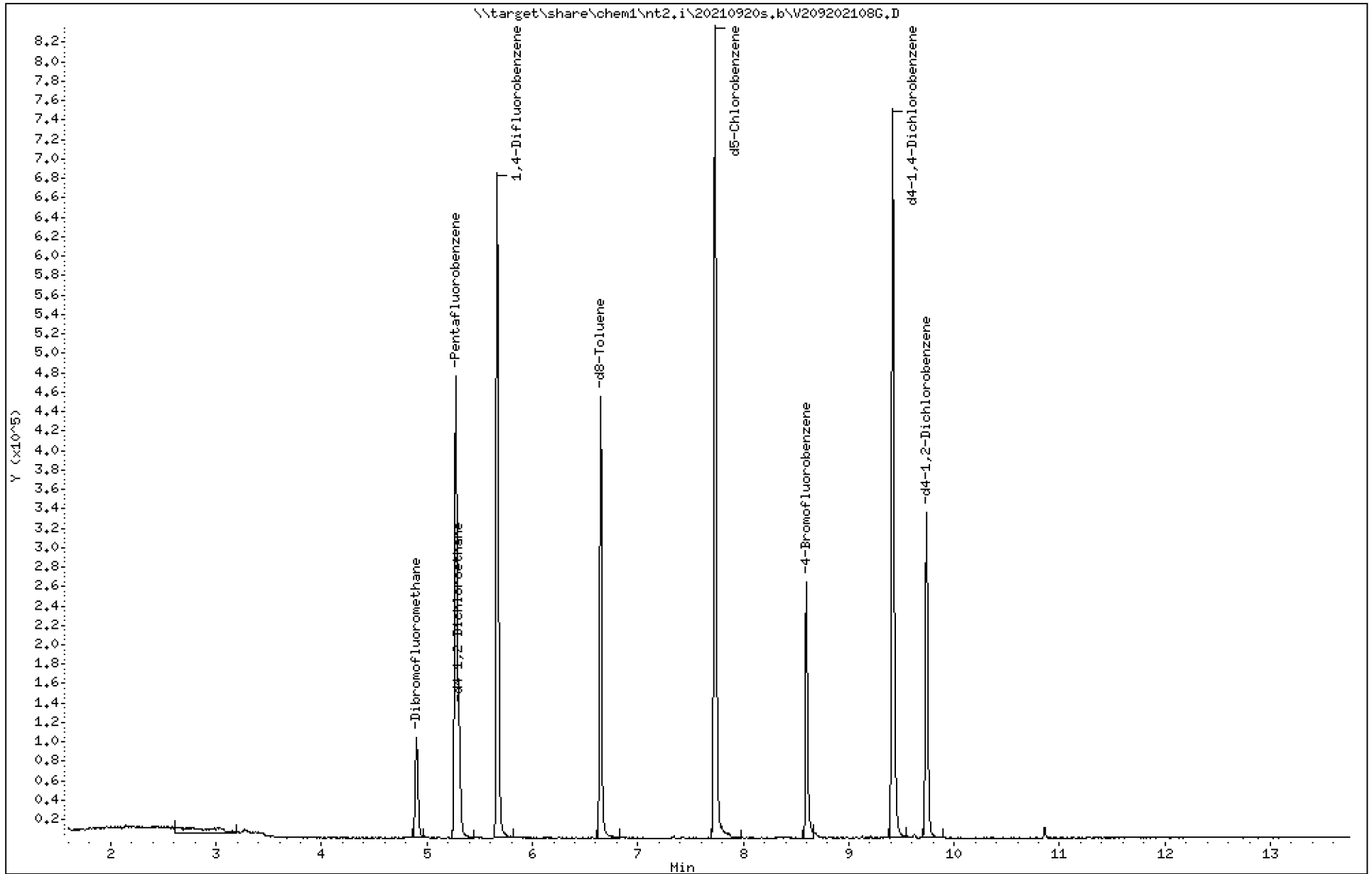
Instrument: nt2.i

Sample Info: BJI0520-BLK1

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202108G.D
Lab Smp Id: BJI0520-BLK1
Inj Date : 20-SEP-2021 11:35
Operator : PKC
Smp Info : BJI0520-BLK1
Misc Info : 15-
Comment :
Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Meth Date : 21-Sep-2021 09:54 nt2.i
Cal Date : 02-SEP-2021 09:50
Als bottle: 52
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 4.14
Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	CONCENTRATIONS					
			ON-COLUMN	FINAL				
	MASS		RT	EXP RT	REL RT	RESPONSE	(ug/L)	(ug/L)
\$ 27 Dibromofluoromethane	111		4.901	4.899	(0.930)	62101	5.40005	5.400
* 32 Pentafluorobenzene	168		5.272	5.276	(1.000)	247037	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.303	5.300	(1.006)	35959	5.65230	5.652
* 37 1,4-Difluorobenzene	114		5.668	5.665	(1.000)	446646	10.0000	
\$ 43 d8-Toluene	98		6.647	6.644	(1.173)	239563	4.95704	4.957
* 53 d5-Chlorobenzene	117		7.729	7.733	(1.000)	383103	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.599	8.596	(1.113)	64975	4.82225	4.822
* 76 d4-1,4-Dichlorobenzene	152		9.420	9.417	(1.000)	180176	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.742	9.740	(1.034)	81406	5.04754	5.048

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202108G.D Calibration Time: 10:13
 Lab Smp Id: BJI0520-BLK1
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	256594	128297	513188	247037	-3.72
37 1,4-Difluorobenze	460187	230094	920374	446646	-2.94
53 d5-Chlorobenzene	406665	203333	813330	383103	-5.79
76 d4-1,4-Dichlorobe	202468	101234	404936	180176	-11.01

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.27	-0.07
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.04
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	-0.05
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.03

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: BJI0520-BLK1
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.400	108.00	
\$ 33 d4-1,2-Dichloroeth	5.000	5.652	113.05	
\$ 43 d8-Toluene	5.000	4.957	99.14	
\$ 62 4-Bromofluorobenze	5.000	4.822	96.44	
\$ 79 d4-1,2-Dichloroben	5.000	5.048	100.95	

REVIEW SUMMARY FOR FILE - V209202108G.D

Lab ID: BJI0520-BLK1
nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 11:35

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 11:35

Client ID:

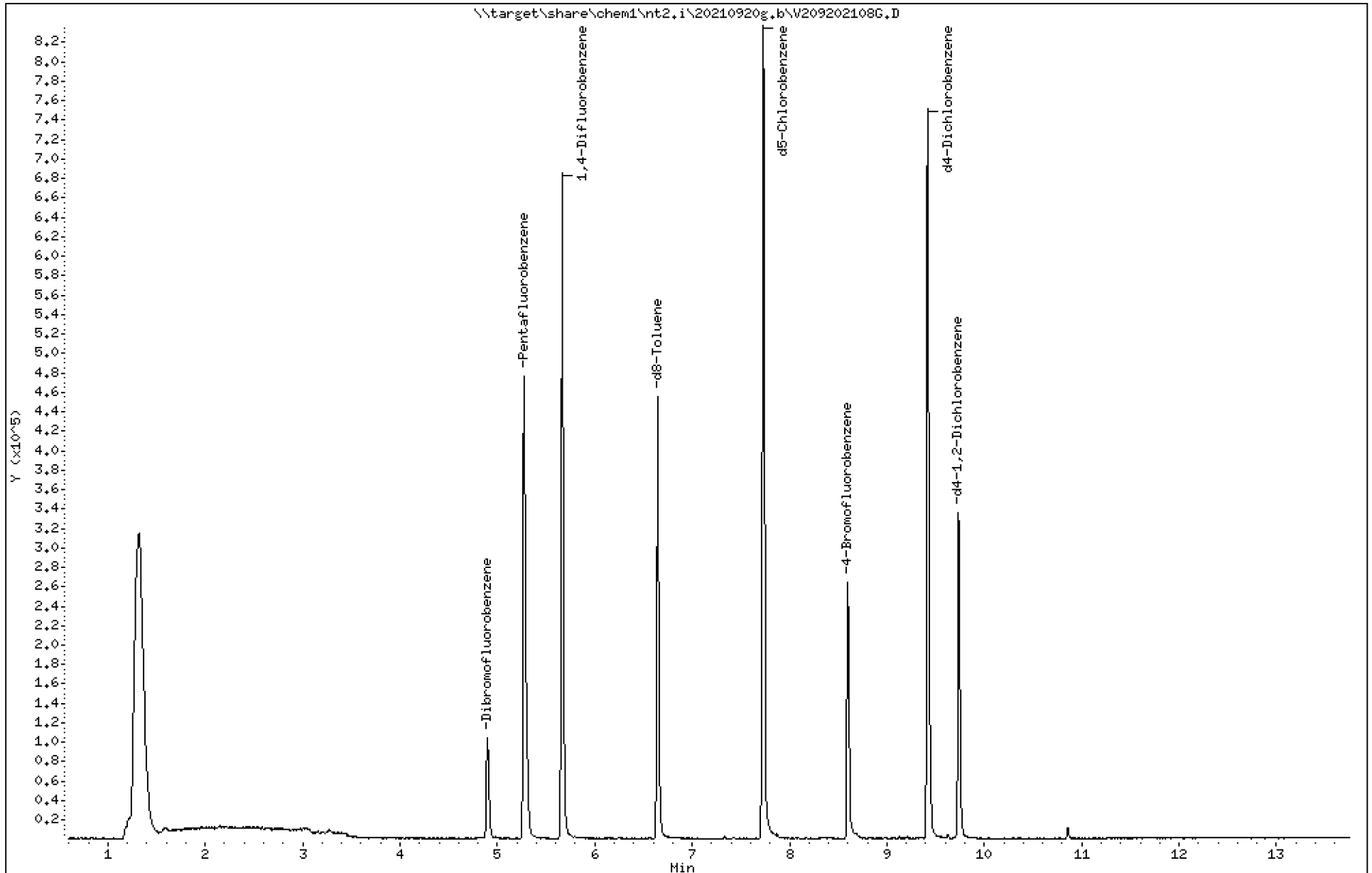
Instrument: nt2.i

Sample Info: BJI0520-BLK1

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202108G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 11:35

ARI ID: BJI0520-BLK1
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	2	0.000
8015C 2MP-TMB (3.00 to 9.38)	22222222	2	0.000
AK101 nC6-nC10 (3.44 to 8.58)	45246913	2	0.000
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	13155	0.000
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	3	0.000

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.730	1219096	d5-Chlorobenzene
8.599	400675	4-Bromofluorobenzene
6.647	658645	d8-Toluene
9.420	1110708	d4-Dichlorobenzene
9.736	510996	d4-1,2-Dichlorobenzene



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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Analysis by: Analytical Resources, LLC
Volatile Organic Compounds - Quality Control

Batch BJI0520 - EPA 5030C (Purge and Trap)

Instrument: NT2

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BJI0520-BS1)				Prepared: 20-Sep-2021 Analyzed: 20-Sep-2021 09:52						
Gasoline Range Organics (Tol-Nap)	1050	100	ug/L	1000		105	72-128			
Surrogate: Toluene-d8	5.12		ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	4.95		ug/L	5.00		99.0	80-120			

Date : 20-SEP-2021 09:52

Client ID:

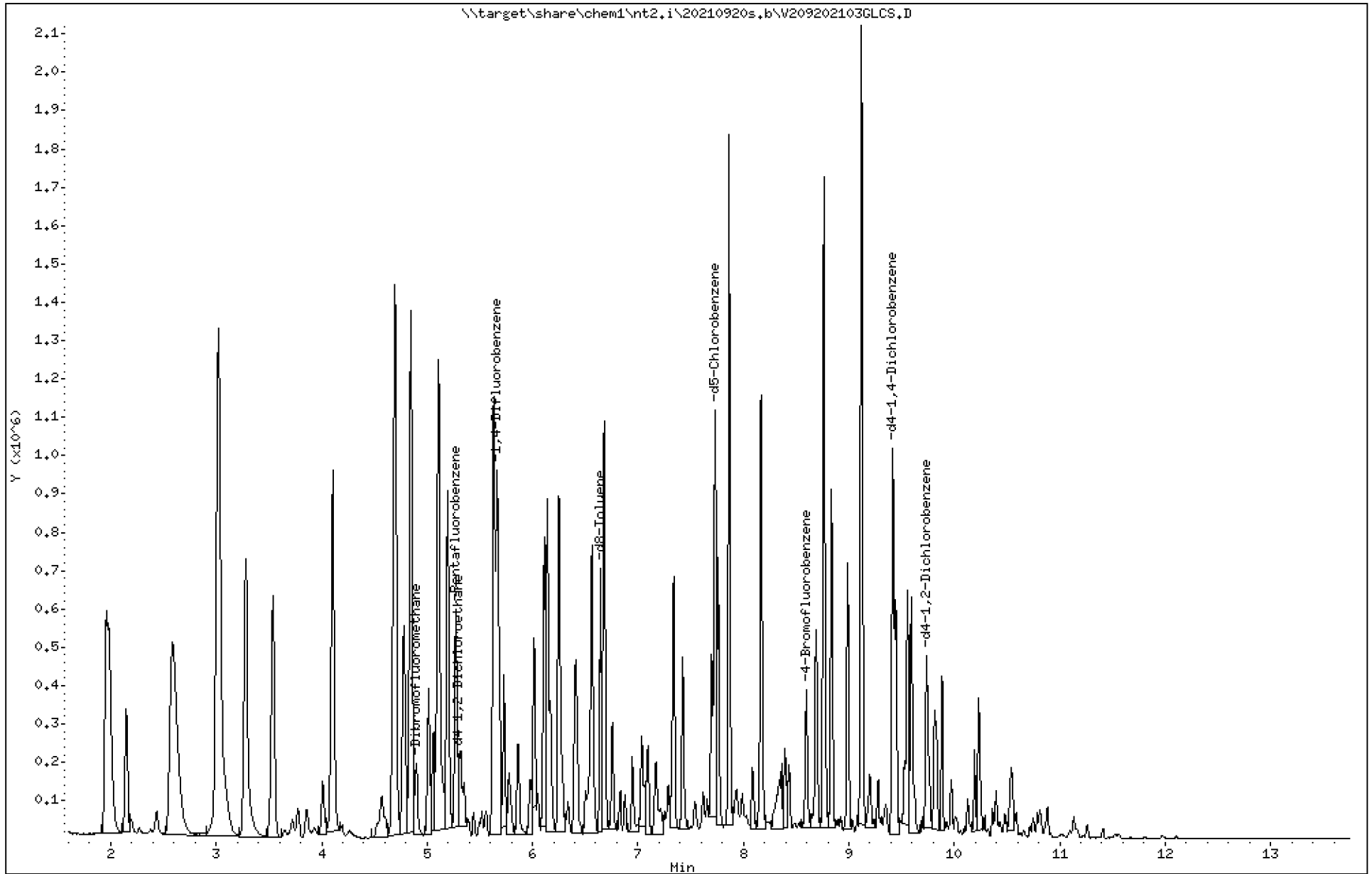
Instrument: nt2.i

Sample Info: BJI0520-B61

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202103GLCS.D
Lab Smp Id: BJI0520-BS1
Inj Date : 20-SEP-2021 09:52
Operator : PKC
Smp Info : BJI0520-BS1
Misc Info : 15-
Comment :
Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Meth Date : 21-Sep-2021 09:54 nt2.i
Cal Date : 02-SEP-2021 09:50
Als bottle: 52
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 4.14
Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	CONCENTRATIONS					
			ON-COLUMN	FINAL				
	MASS		RT	EXP RT	REL RT	RESPONSE	(ug/L)	(ug/L)
=====	=====		=====	=====	=====	=====	=====	=====
\$ 27 Dibromofluoromethane	111		4.894	4.899	(0.928)	73279	5.03567	5.036
* 32 Pentafluorobenzene	168		5.271	5.276	(1.000)	312596	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.301	5.300	(1.006)	44255	5.49742	5.497
* 37 1,4-Difluorobenzene	114		5.666	5.665	(1.000)	548777	10.0000	
\$ 43 d8-Toluene	98		6.645	6.644	(1.173)	304163	5.12244	5.122
* 53 d5-Chlorobenzene	117		7.727	7.733	(1.000)	476441	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.597	8.596	(1.113)	82964	4.95107	4.951
* 76 d4-1,4-Dichlorobenzene	152		9.418	9.417	(1.000)	231216	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.740	9.740	(1.034)	104537	5.05094	5.051

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
Lab File ID: V209202103GLCS.D Calibration Time: 10:13
Lab Smp Id: BJI0520-BS1
Analysis Type: VOA Level:
Quant Type: ISTD Sample Type:
Operator: PKC
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzen	256594	128297	513188	312596	21.83
37 1,4-Difluorobenze	460187	230094	920374	548777	19.25
53 d5-Chlorobenzene	406665	203333	813330	476441	17.16
76 d4-1,4-Dichlorobe	202468	101234	404936	231216	14.20

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzen	5.28	4.78	5.78	5.27	-0.10
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.01
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	-0.07
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.01

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: BJI0520-BS1
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.036	100.71	
\$ 33 d4-1,2-Dichloroeth	5.000	5.497	109.95	
\$ 43 d8-Toluene	5.000	5.122	102.45	
\$ 62 4-Bromofluorobenze	5.000	4.951	99.02	
\$ 79 d4-1,2-Dichloroben	5.000	5.051	101.02	

REVIEW SUMMARY FOR FILE - V209202103GLCS.D

Lab ID: BJI0520-BS1

nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 09:52

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 09:52

Client ID:

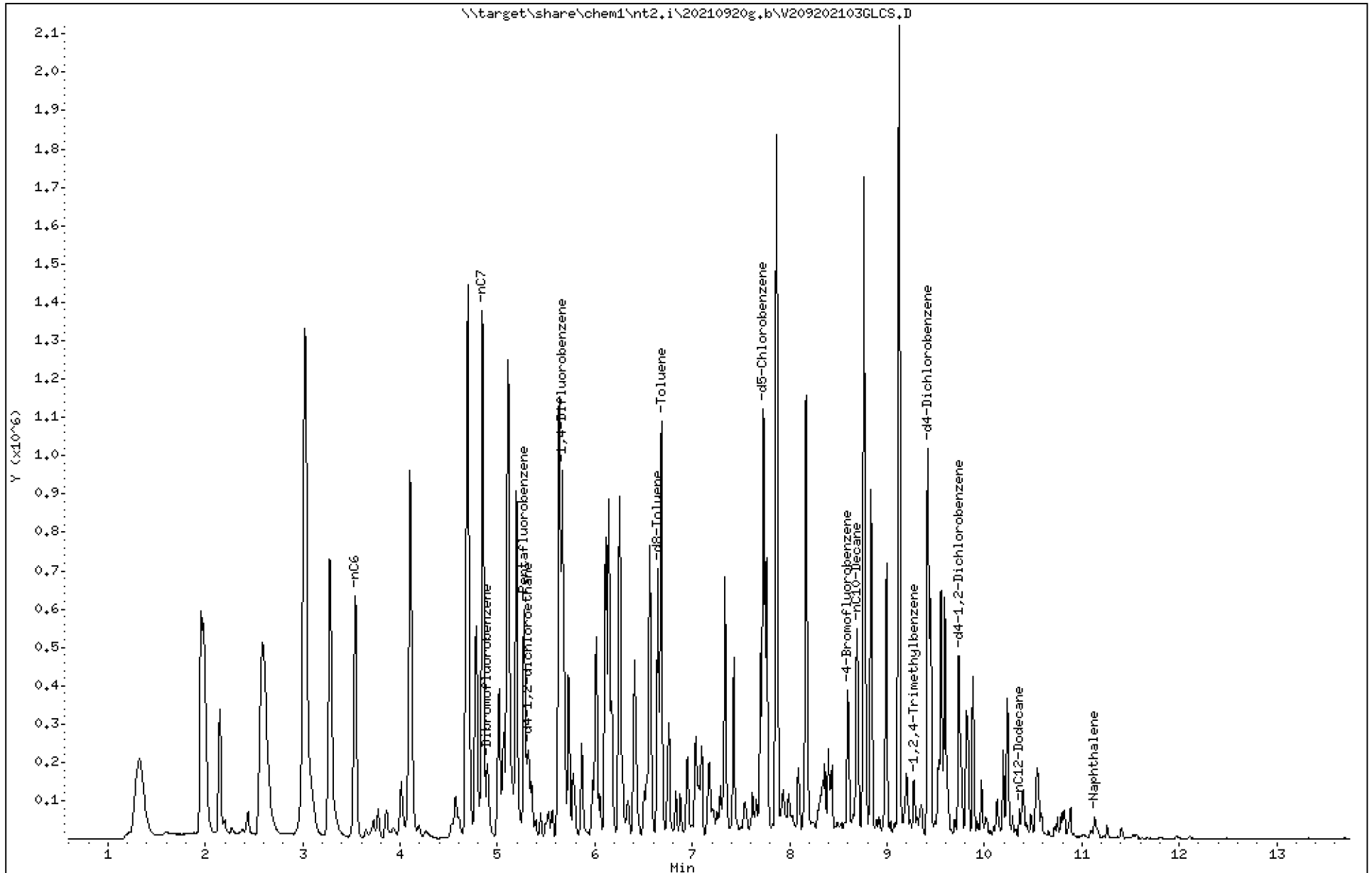
Sample Info: BJI0520-B61

Instrument: nt2.i

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202103GLCS.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 09:52

ARI ID: BJI0520-BS1
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

=====

GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	34188481	1.053 M
8015C 2MP-TMB (3.00 to 9.38)	22222222	63703036	2.867 M
AK101 nC6-nC10 (3.44 to 8.58)	45246913	48056773	1.062 M
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	35555495	1.048 M
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	57009486	2.565 M

* Surrogate areas are subtracted from Total Area

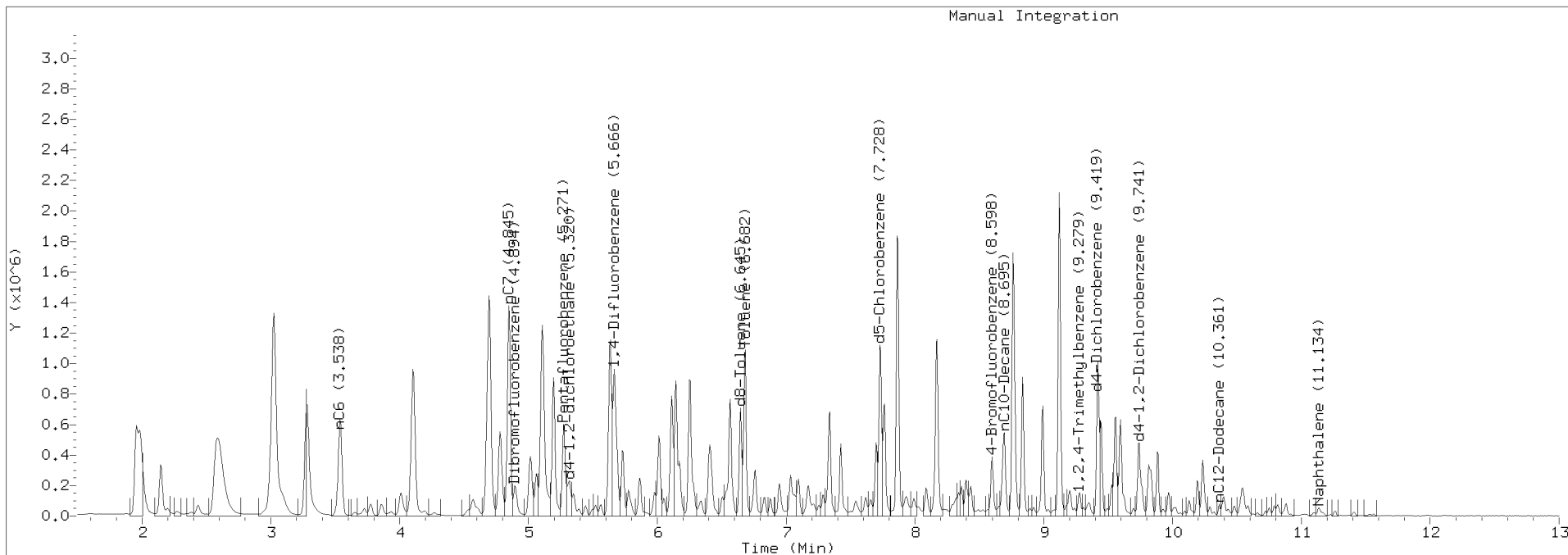
NW Gas Range Subtracted Peaks

7.728	1764444	d5-Chlorobenzene
8.598	613048	4-Bromofluorobenzene
6.645	971358	d8-Toluene
9.419	1560909	d4-Dichlorobenzene
9.741	939998	d4-1,2-Dichlorobenzene

TPHG Manual Integrations Report

Datafile: NT2, 20210920g.b/V209202103GLCS.D Injection: 20-SEP-2021 09:52

Lab ID:BJI0520-BS1





Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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Analysis by: Analytical Resources, LLC
Volatile Organic Compounds - Quality Control

Batch BJI0520 - EPA 5030C (Purge and Trap)

Instrument: NT2

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BJI0520-BSD1)				Prepared: 20-Sep-2021 Analyzed: 20-Sep-2021 10:33						
Gasoline Range Organics (Tol-Nap)	1040	100	ug/L	1000		104	72-128	0.41	30	
Surrogate: Toluene-d8	5.17		ug/L	5.00		103	80-120			
Surrogate: 4-Bromofluorobenzene	4.88		ug/L	5.00		97.5	80-120			

Date : 20-SEP-2021 10:33

Client ID:

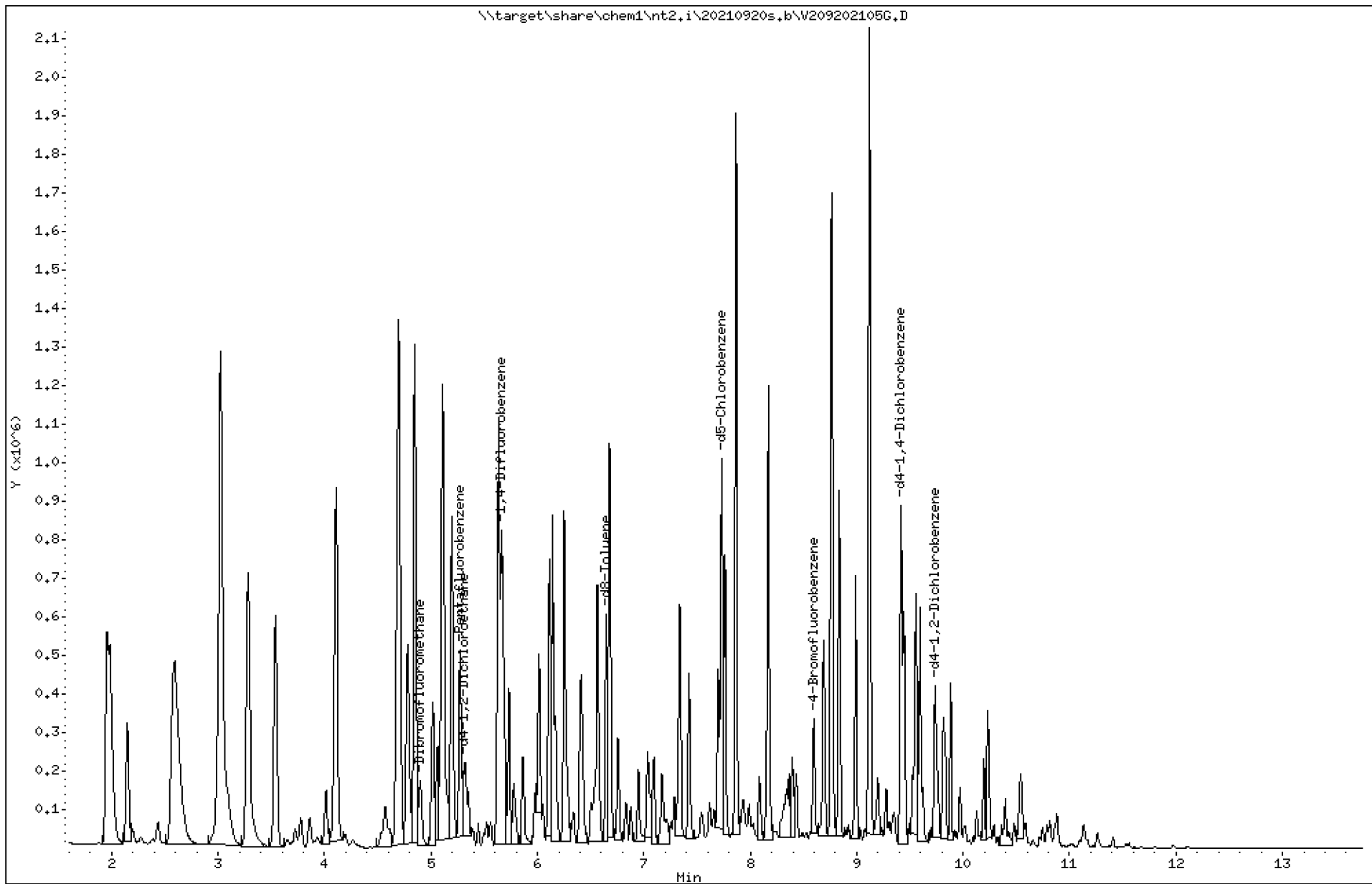
Instrument: nt2.i

Sample Info: BJI0520-BSD1

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210920s.b\V209202105G.D
Lab Smp Id: BJI0520-BSD1
Inj Date : 20-SEP-2021 10:33
Operator : PKC
Smp Info : BJI0520-BSD1
Misc Info : 15-
Comment :
Method : \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Meth Date : 21-Sep-2021 09:54 nt2.i
Cal Date : 02-SEP-2021 09:50
Als bottle: 54
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 4.14
Processing Host: PAULC-202101A

Inst ID: nt2.i

Quant Type: ISTD
Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	CONCENTRATIONS					
			MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ug/L)
\$ 27 Dibromofluoromethane	111		4.901	4.899	(0.930)	64645	5.23013	5.230
* 32 Pentafluorobenzene	168		5.272	5.276	(1.000)	265512	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.302	5.300	(1.006)	39663	5.80071	5.801
* 37 1,4-Difluorobenzene	114		5.667	5.665	(1.000)	466622	10.0000	
\$ 43 d8-Toluene	98		6.646	6.644	(1.173)	260798	5.16542	5.165
* 53 d5-Chlorobenzene	117		7.729	7.733	(1.000)	421011	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.598	8.596	(1.113)	72217	4.87714	4.877
* 76 d4-1,4-Dichlorobenzene	152		9.419	9.417	(1.000)	199418	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.736	9.740	(1.034)	91118	5.10458	5.105

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 20-SEP-2021
 Lab File ID: V209202105G.D Calibration Time: 10:13
 Lab Smp Id: BJI0520-BSD1
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	256594	128297	513188	265512	3.48
37 1,4-Difluorobenze	460187	230094	920374	466622	1.40
53 d5-Chlorobenzene	406665	203333	813330	421011	3.53
76 d4-1,4-Dichlorobe	202468	101234	404936	199418	-1.51

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.27	-0.08
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	0.03
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	-0.05
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	0.02

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20150930
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: BJI0520-BSD1
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210920s.b\826090221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.230	104.60	
\$ 33 d4-1,2-Dichloroeth	5.000	5.801	116.01	
\$ 43 d8-Toluene	5.000	5.165	103.31	
\$ 62 4-Bromofluorobenze	5.000	4.877	97.54	
\$ 79 d4-1,2-Dichloroben	5.000	5.105	102.09	

REVIEW SUMMARY FOR FILE - V209202105G.D

Lab ID: BJI0520-BSD1
nt2.i, 20210920s.b\826090221.m, 20-SEP-2021 10:33

RT CO-ELUTION COMPOUNDS

Date : 20-SEP-2021 10:33

Client ID:

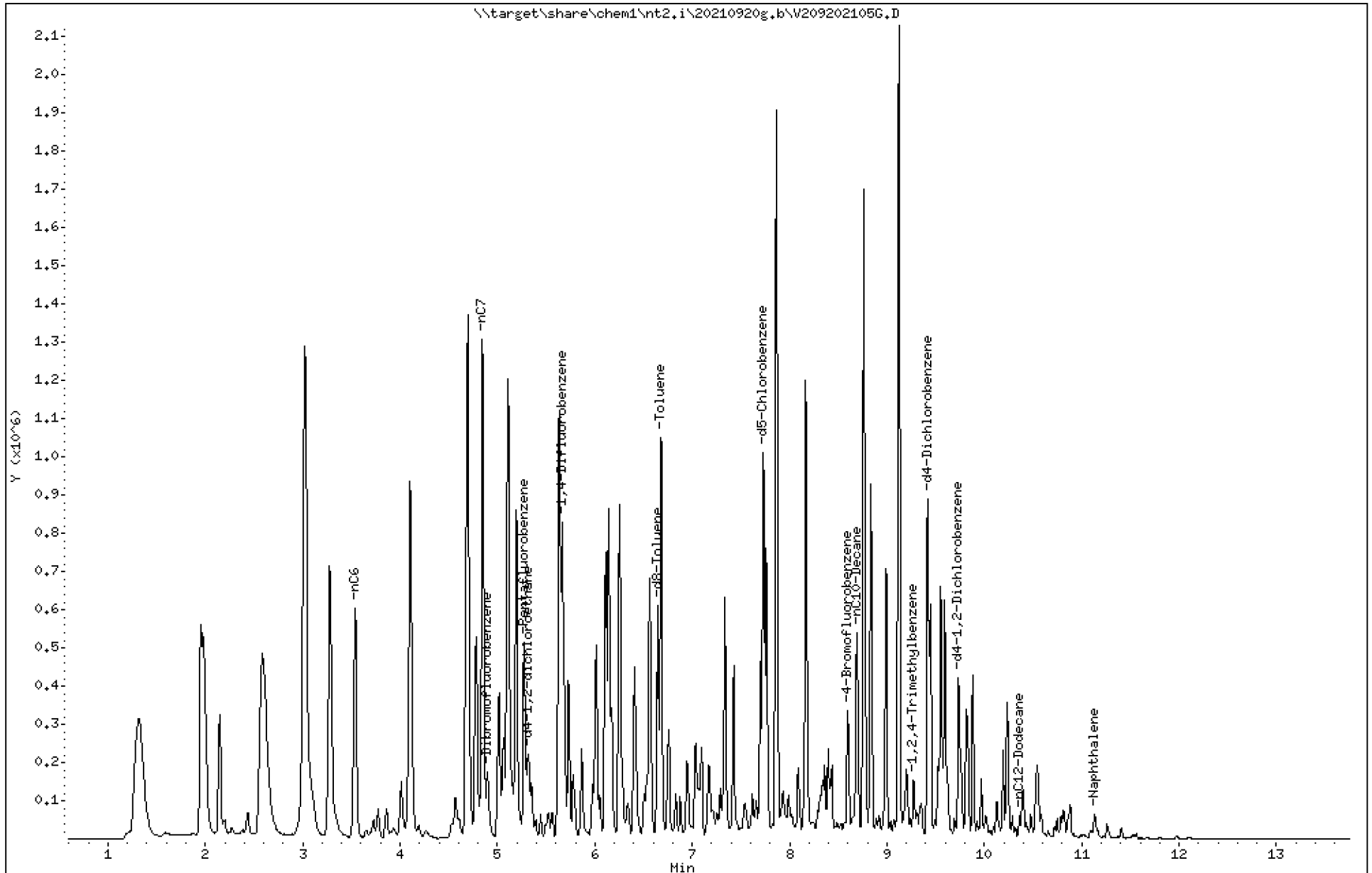
Sample Info: BJI0520-BSD1

Instrument: nt2.i

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210920g.b/V209202105G.D
Method: \20210920g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 20-SEP-2021 10:33

ARI ID: BJI0520-BSD1
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	33978877	1.046 M
8015C 2MP-TMB (3.00 to 9.38)	22222222	62157462	2.797 M
AK101 nC6-nC10 (3.44 to 8.58)	45246913	46654468	1.031 M
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	35410590	1.043 M
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	56066968	2.523 M

* Surrogate areas are subtracted from Total Area

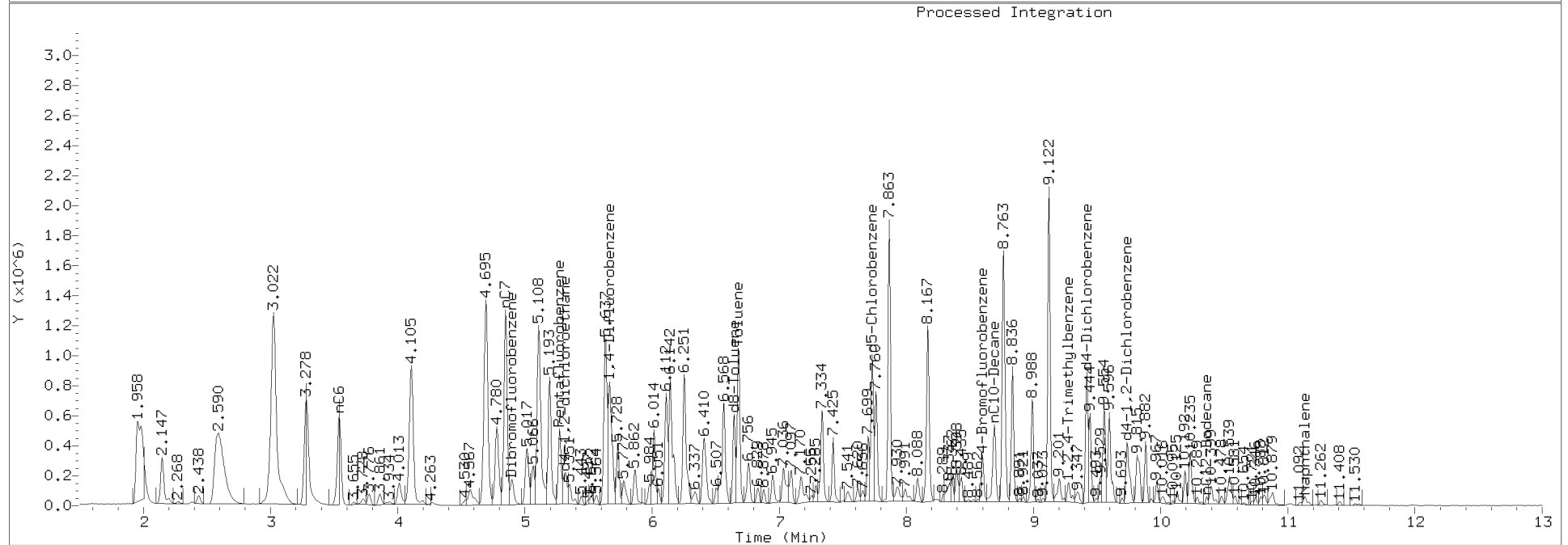
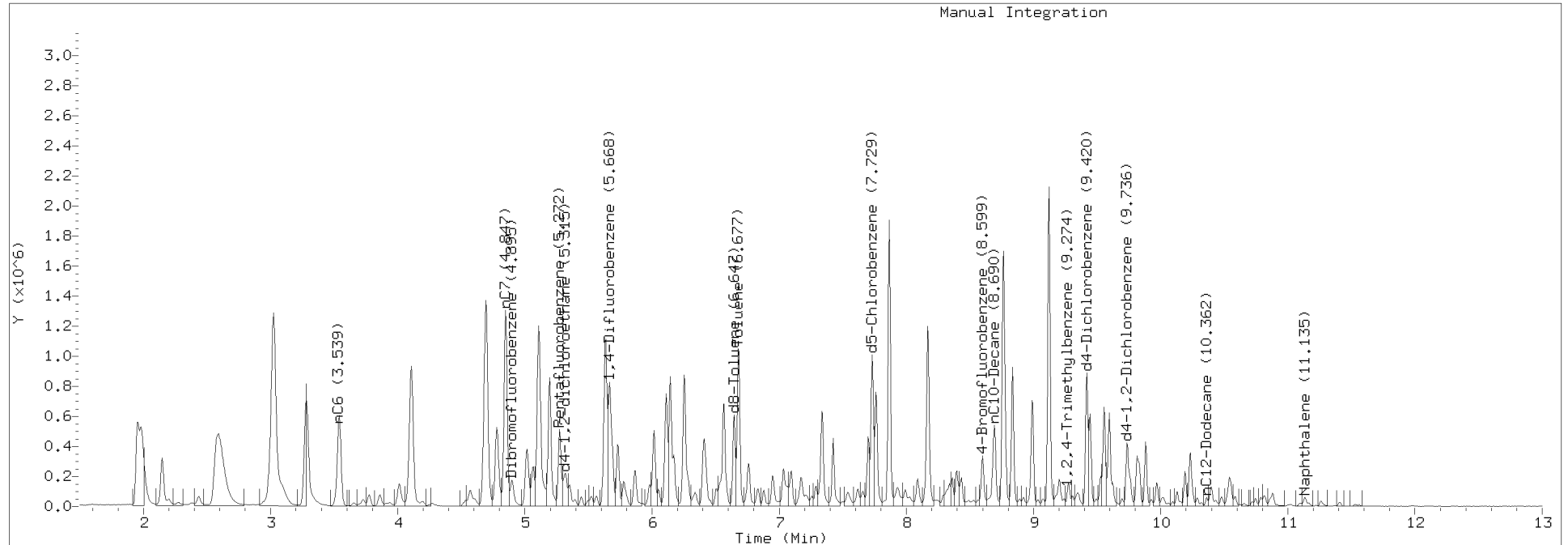
NW Gas Range Subtracted Peaks

7.729	1582412	d5-Chlorobenzene
8.599	532360	4-Bromofluorobenzene
6.647	865358	d8-Toluene
9.420	1247913	d4-Dichlorobenzene
9.736	864838	d4-1,2-Dichlorobenzene

TPHG Manual Integrations Report

Datafile: NT2, 20210920g.b/V209202105G.D Injection: 20-SEP-2021 10:33

Lab ID:BJI0520-BSD1





Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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Analysis by: Analytical Resources, LLC
Volatile Organic Compounds - Quality Control

Batch BJI0577 - EPA 5030C (Purge and Trap)

Instrument: NT2

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJI0577-BLK1)				Prepared: 21-Sep-2021 Analyzed: 21-Sep-2021 11:39						
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.94		ug/L	5.00		98.9	80-120			
Surrogate: 4-Bromofluorobenzene	4.71		ug/L	5.00		94.1	80-120			

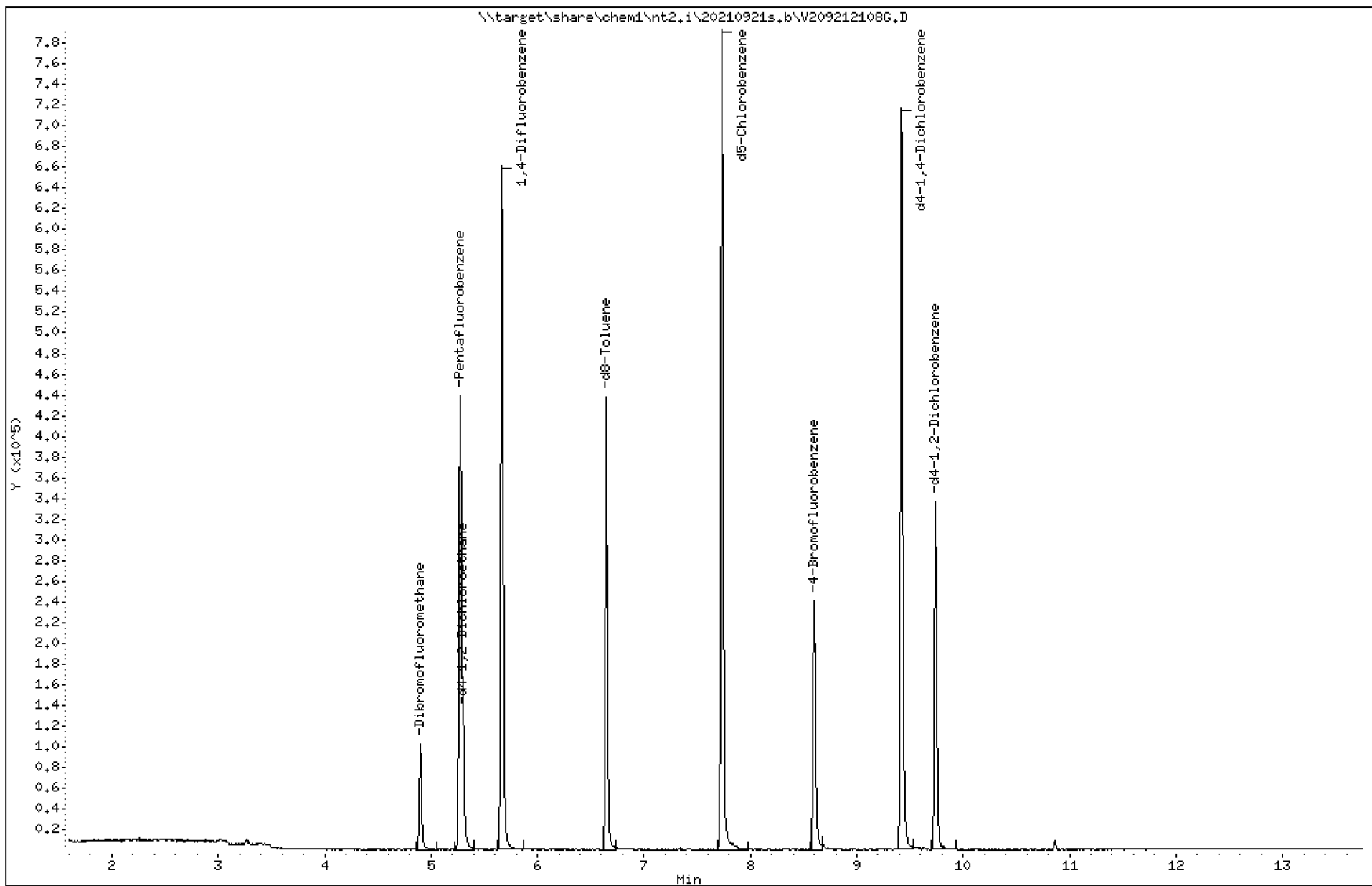
Date : 21-SEP-2021 11:39
Client ID:
Sample Info: BJI0577-BLK1

Instrument: nt2.i

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210921s.b\V209212108G.D
Lab Smp Id: BJI0577-BLK1
Inj Date : 21-SEP-2021 11:39
Operator : PKC
Smp Info : BJI0577-BLK1
Misc Info : 1
Comment :
Method : \\target\share\chem1\nt2.i\20210921s.b\826090221.m
Meth Date : 22-Sep-2021 10:02 nt2.i
Cal Date : 02-SEP-2021 09:50
Als bottle: 53
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 4.14
Processing Host: LANIH-202105A

Inst ID: nt2.i

Quant Type: ISTD
Cal File: V209022110.D

Compound Sublist: gsurr.sub

Compounds	QUANT	SIG	CONCENTRATIONS					
			RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111	====	4.899	4.900	(0.929)	60040	5.51336	5.513
* 32 Pentafluorobenzene	168		5.276	5.277	(1.000)	233930	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.301	5.301	(1.005)	35092	5.82508	5.825 (M)
* 37 1,4-Difluorobenzene	114		5.666	5.666	(1.000)	419427	10.0000	
\$ 43 d8-Toluene	98		6.645	6.645	(1.173)	224351	4.94354	4.944
* 53 d5-Chlorobenzene	117		7.733	7.727	(1.000)	376212	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.603	8.597	(1.112)	62277	4.70667	4.707
* 76 d4-1,4-Dichlorobenzene	152		9.418	9.418	(1.000)	173117	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.740	9.740	(1.034)	77457	4.99852	4.999

QC Flag Legend

M - Compound response manually integrated.

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 21-SEP-2021
 Lab File ID: V209212108G.D Calibration Time: 10:16
 Lab Smp Id: BJI0577-BLK1
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210921s.b\826090221.m
 Misc Info: 1

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	250062	125031	500124	233930	-6.45
37 1,4-Difluorobenze	447450	223725	894900	419427	-6.26
53 d5-Chlorobenzene	404707	202354	809414	376212	-7.04
76 d4-1,4-Dichlorobe	200624	100312	401248	173117	-13.71

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.28	-0.00
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	-0.00
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	0.08
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	-0.00

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20151001
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: BJI0577-BLK1
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210921s.b\826090221.m
Misc Info: 1

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.513	110.27	
\$ 33 d4-1,2-Dichloroeth	5.000	5.825	116.50	
\$ 43 d8-Toluene	5.000	4.944	98.87	
\$ 62 4-Bromofluorobenze	5.000	4.707	94.13	
\$ 79 d4-1,2-Dichloroben	5.000	4.999	99.97	

REVIEW SUMMARY FOR FILE - V209212108G.D

Lab ID: BJI0577-BLK1

nt2.i, 20210921s.b\826090221.m, 21-SEP-2021 11:39

RT CO-ELUTION COMPOUNDS

Date : 21-SEP-2021 11:39

Client ID:

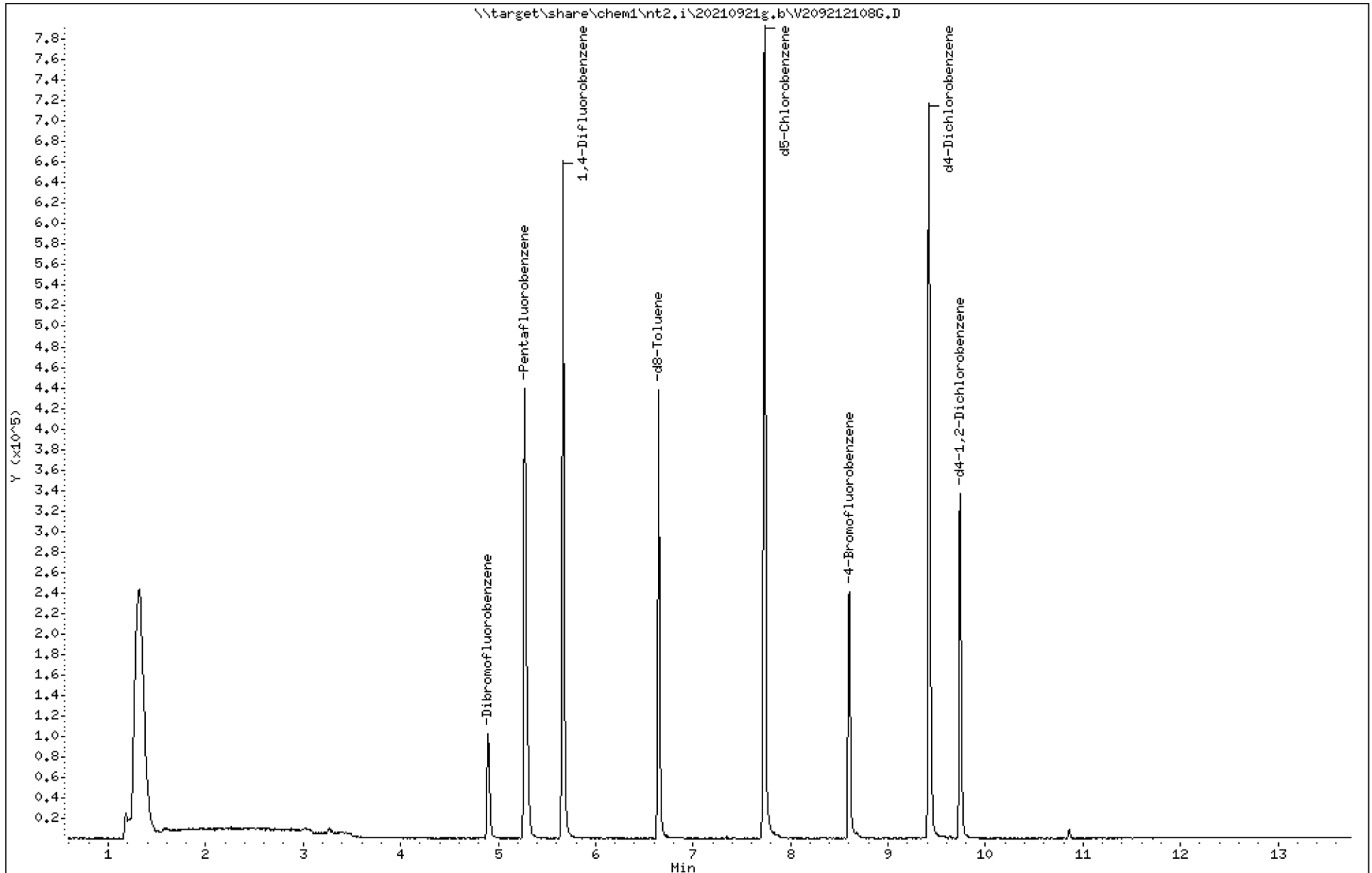
Instrument: nt2.i

Sample Info: BJI0577-BLK1

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210921g.b/V209212108G.D
Method: \20210921g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 21-SEP-2021 11:39

ARI ID: BJI0577-BLK1
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	-----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	2	0.000
8015C 2MP-TMB (3.00 to 9.38)	22222222	2	0.000
AK101 nC6-nC10 (3.44 to 8.58)	45246913	2	0.000
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	2	0.000
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	3	0.000

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.734	1173987	d5-Chlorobenzene
8.603	383940	4-Bromofluorobenzene
6.645	630184	d8-Toluene
9.418	1066865	d4-Dichlorobenzene
9.741	502002	d4-1,2-Dichlorobenzene



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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Analysis by: Analytical Resources, LLC
Volatile Organic Compounds - Quality Control

Batch BJI0577 - EPA 5030C (Purge and Trap)

Instrument: NT2

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BJI0577-BS1)				Prepared: 21-Sep-2021 Analyzed: 21-Sep-2021 09:55						
Gasoline Range Organics (Tol-Nap)	1080	100	ug/L	1000		108	72-128			
Surrogate: Toluene-d8	5.12		ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	4.86		ug/L	5.00		97.1	80-120			

Date : 21-SEP-2021 09:55

Client ID: GAS

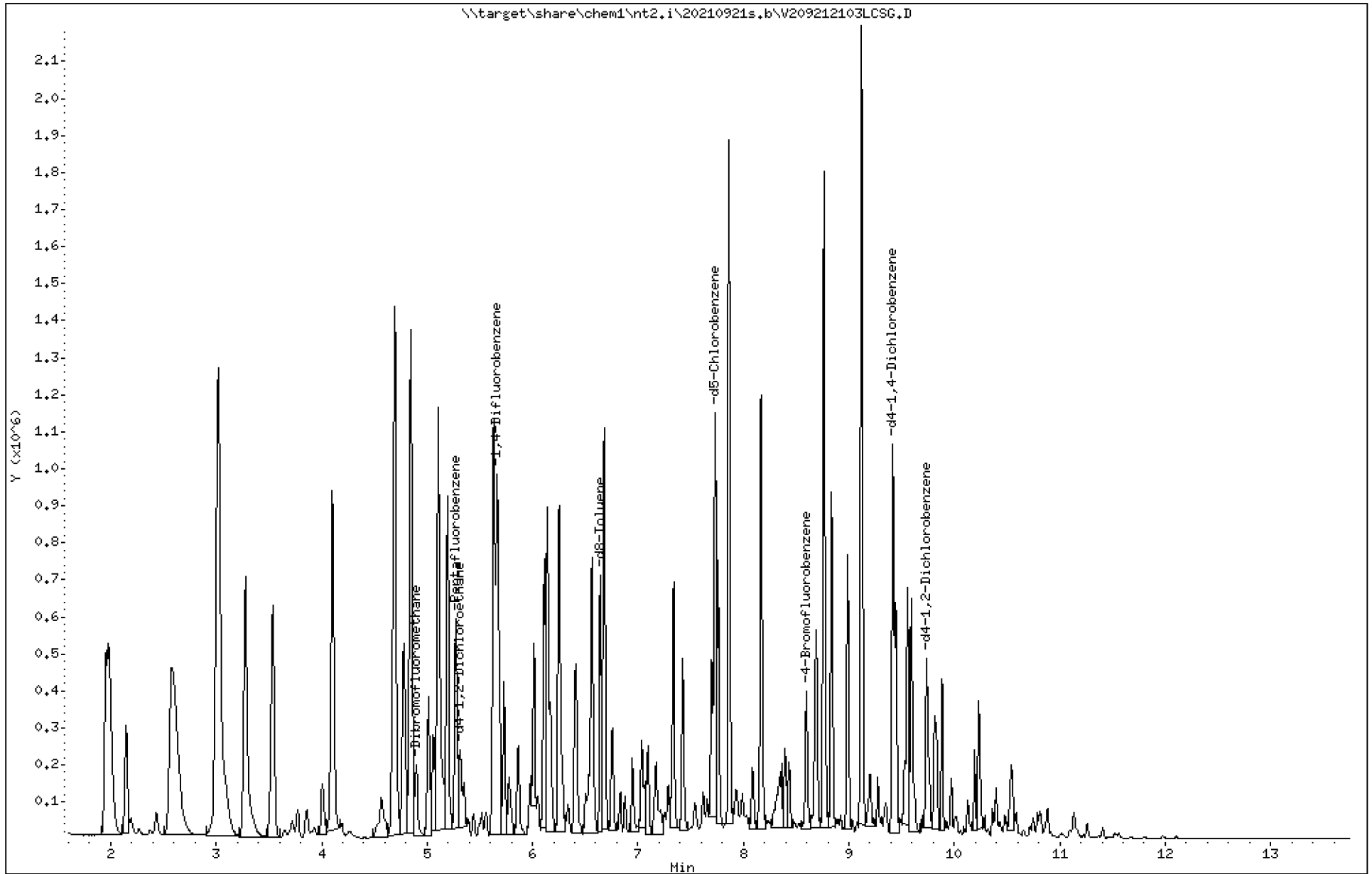
Sample Info: BJI0577-B61

Instrument: nt2.i

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210921s.b\V209212103LCSG.D
 Lab Smp Id: BJI0577-BS1 Client Smp ID: GAS
 Inj Date : 21-SEP-2021 09:55
 Operator : PKC Inst ID: nt2.i
 Smp Info : BJI0577-BS1
 Misc Info : 1
 Comment :
 Method : \\target\share\chem1\nt2.i\20210921s.b\826090221.m
 Meth Date : 22-Sep-2021 10:02 nt2.i Quant Type: ISTD
 Cal Date : 02-SEP-2021 09:50 Cal File: V209022110.D
 Als bottle: 52
 Dil Factor: 1.00000
 Integrator: HP RTE Compound Sublist: gsurr.sub
 Target Version: 4.14
 Processing Host: LANIH-202105A

Compounds	QUANT	SIG	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.899	4.900	(0.930)	75442	5.24146	5.241
* 32 Pentafluorobenzene	168		5.270	5.277	(1.000)	309188	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.300	5.301	(1.006)	45319	5.69164	5.692
* 37 1,4-Difluorobenzene	114		5.665	5.666	(1.000)	551297	10.0000	
\$ 43 d8-Toluene	98		6.644	6.645	(1.173)	305199	5.11639	5.116
* 53 d5-Chlorobenzene	117		7.733	7.727	(1.000)	493703	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.596	8.597	(1.112)	84320	4.85606	4.856
* 76 d4-1,4-Dichlorobenzene	152		9.417	9.418	(1.000)	235218	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.740	9.740	(1.034)	104612	4.96857	4.969

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 21-SEP-2021
 Lab File ID: V209212103LCSG.D Calibration Time: 10:16
 Lab Smp Id: BJI0577-BS1 Client Smp ID: GAS
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210921s.b\826090221.m
 Misc Info: 1

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	250062	125031	500124	309188	23.64
37 1,4-Difluorobenze	447450	223725	894900	551297	23.21
53 d5-Chlorobenzene	404707	202354	809414	493703	21.99
76 d4-1,4-Dichlorobe	200624	100312	401248	235218	17.24

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.27	-0.13
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	-0.01
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	0.07
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	-0.01

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20151001
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: BJI0577-BS1 Client Smp ID: GAS
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210921s.b\826090221.m
Misc Info: 1

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.241	104.83	
\$ 33 d4-1,2-Dichloroeth	5.000	5.692	113.83	
\$ 43 d8-Toluene	5.000	5.116	102.33	
\$ 62 4-Bromofluorobenze	5.000	4.856	97.12	
\$ 79 d4-1,2-Dichloroben	5.000	4.969	99.37	

REVIEW SUMMARY FOR FILE - V209212103LCSG.D

Lab ID: BJI0577-BS1

nt2.i, 20210921s.b\826090221.m, 21-SEP-2021 09:55

RT CO-ELUTION COMPOUNDS

Date : 21-SEP-2021 09:55

Client ID:

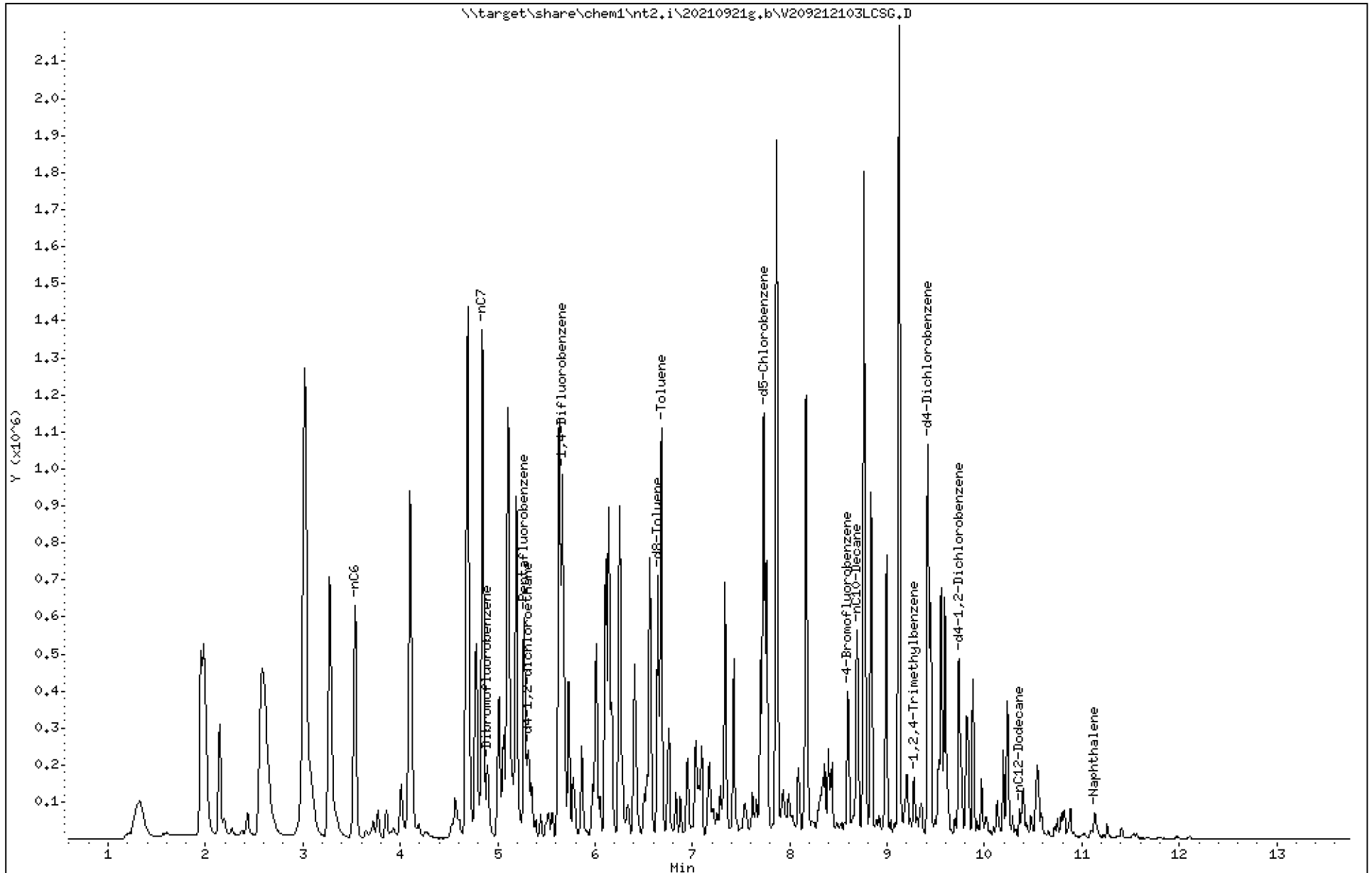
Instrument: nt2.i

Sample Info: BJI0577-B61

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210921g.b/V209212103LCSG.D
Method: \20210921g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 21-SEP-2021 09:55

ARI ID: BJI0577-BS1
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

=====

GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	35178687	1.083 M
8015C 2MP-TMB (3.00 to 9.38)	22222222	65009282	2.925 M
AK101 nC6-nC10 (3.44 to 8.58)	45246913	48101429	1.063
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	36639750	1.080 M
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	57892263	2.605 M

* Surrogate areas are subtracted from Total Area

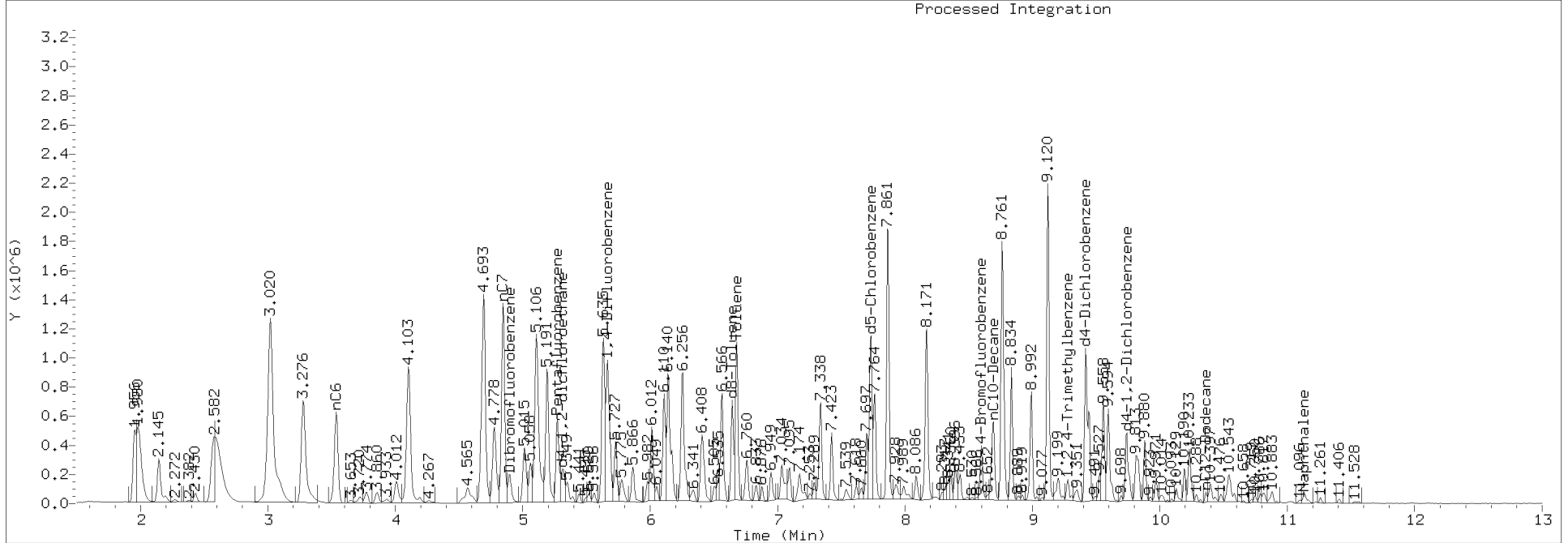
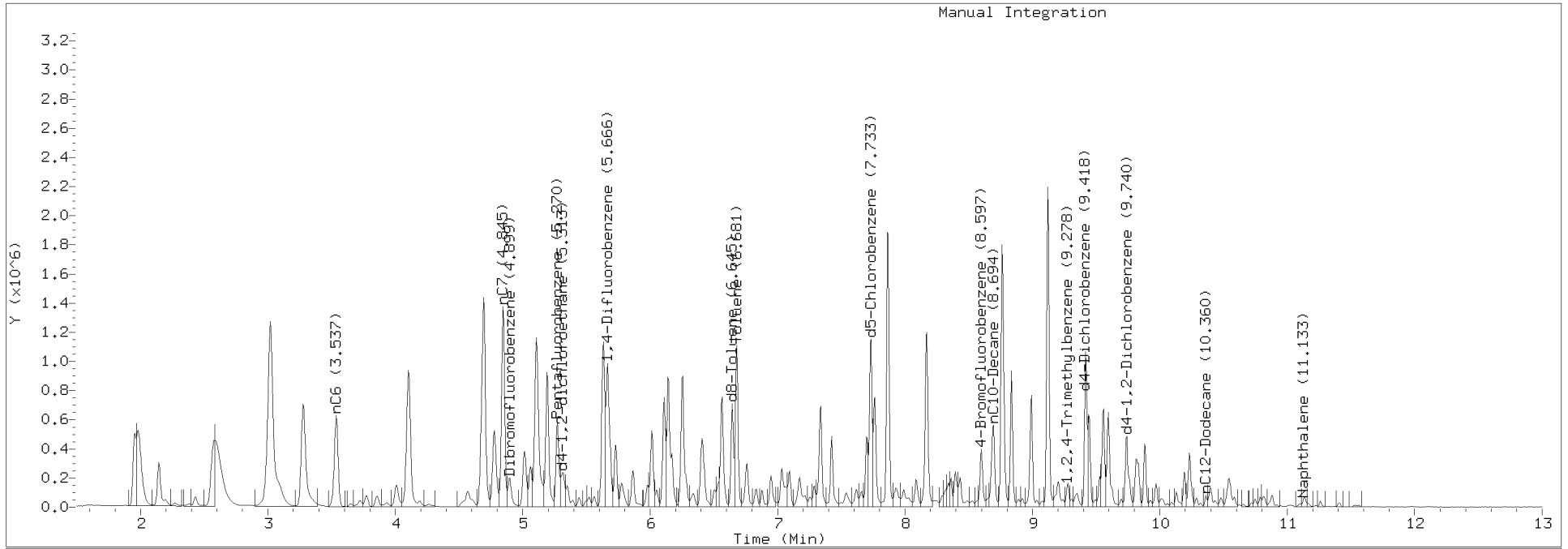
NW Gas Range Subtracted Peaks

7.733	1821819	d5-Chlorobenzene
8.597	635278	4-Bromofluorobenzene
6.645	1091599	d8-Toluene
9.418	1566495	d4-Dichlorobenzene
9.740	956159	d4-1,2-Dichlorobenzene

TPHG Manual Integrations Report

Datafile: NT2, 20210921g.b/V209212103LCSG.D Injection: 21-SEP-2021 09:55

Lab ID:BJI0577-BS1





Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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Analysis by: Analytical Resources, LLC
Volatile Organic Compounds - Quality Control

Batch BJI0577 - EPA 5030C (Purge and Trap)

Instrument: NT2

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BJI0577-BSD1)				Prepared: 21-Sep-2021 Analyzed: 21-Sep-2021 10:36						
Gasoline Range Organics (Tol-Nap)	865	100	ug/L	1000		86.5	72-128	22.10	30	
Surrogate: Toluene-d8	5.09		ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	4.85		ug/L	5.00		97.0	80-120			

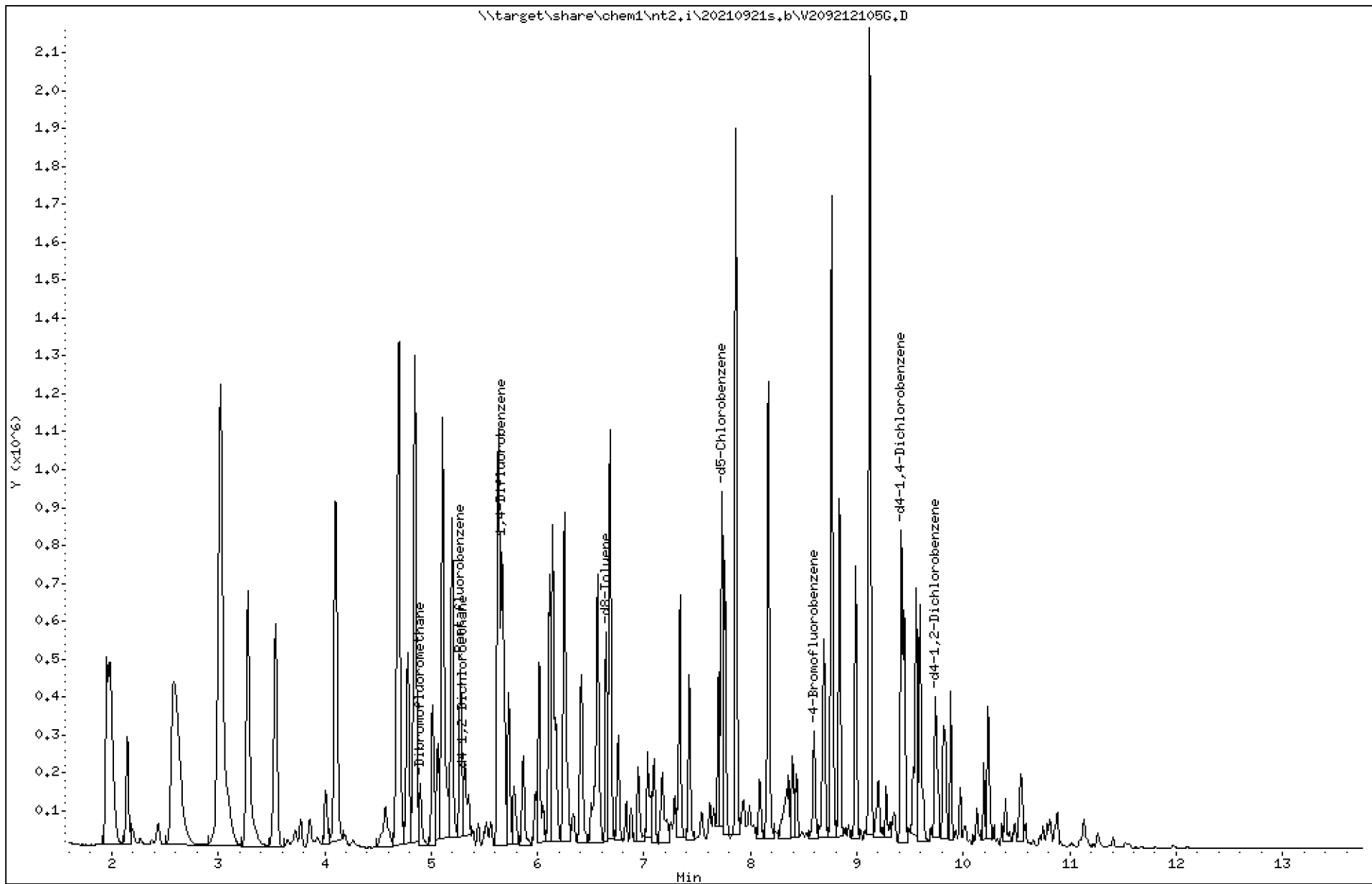
Date : 21-SEP-2021 10:36
Client ID: GAS
Sample Info: BJI0577-BSD1

Instrument: nt2.i

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt2.i\20210921s.b\V209212105G.D
Lab Smp Id: BJI0577-BSD1 Client Smp ID: GAS
Inj Date : 21-SEP-2021 10:36
Operator : PKC Inst ID: nt2.i
Smp Info : BJI0577-BSD1
Misc Info : 1
Comment :
Method : \\target\share\chem1\nt2.i\20210921s.b\826090221.m
Meth Date : 22-Sep-2021 10:02 nt2.i Quant Type: ISTD
Cal Date : 02-SEP-2021 09:50 Cal File: V209022110.D
Als bottle: 54
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: gsurr.sub
Target Version: 4.14
Processing Host: LANIH-202105A

Compounds	QUANT	SIG	CONCENTRATIONS					
			ON-COLUMN	FINAL				
	MASS		RT	EXP RT	REL RT	RESPONSE	(ug/L)	(ug/L)
=====	=====		=====	=====	=====	=====	=====	=====
\$ 27 Dibromofluoromethane	111		4.899	4.900	(0.929)	60084	5.26653	5.267
* 32 Pentafluorobenzene	168		5.276	5.277	(1.000)	245073	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.300	5.301	(1.005)	43438	6.88263	6.883
* 37 1,4-Difluorobenzene	114		5.665	5.666	(1.000)	441792	10.0000	
\$ 43 d8-Toluene	98		6.644	6.645	(1.173)	243311	5.08991	5.090
* 53 d5-Chlorobenzene	117		7.732	7.727	(1.000)	386749	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.602	8.597	(1.112)	65964	4.84950	4.849
* 76 d4-1,4-Dichlorobenzene	152		9.417	9.418	(1.000)	185747	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.739	9.740	(1.034)	85145	5.12103	5.121

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt2.i Calibration Date: 21-SEP-2021
 Lab File ID: V209212105G.D Calibration Time: 10:16
 Lab Smp Id: BJI0577-BSD1 Client Smp ID: GAS
 Analysis Type: VOA Level:
 Quant Type: ISTD Sample Type:
 Operator: PKC
 Method File: \\target\share\chem1\nt2.i\20210921s.b\826090221.m
 Misc Info: 1

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	250062	125031	500124	245073	-2.00
37 1,4-Difluorobenze	447450	223725	894900	441792	-1.26
53 d5-Chlorobenzene	404707	202354	809414	386749	-4.44
76 d4-1,4-Dichlorobe	200624	100312	401248	185747	-7.42

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.28	4.78	5.78	5.28	-0.02
37 1,4-Difluorobenze	5.67	5.17	6.17	5.67	-0.02
53 d5-Chlorobenzene	7.73	7.23	8.23	7.73	0.07
76 d4-1,4-Dichlorobe	9.42	8.92	9.92	9.42	-0.01

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20151001
Sample Matrix: NONE Fraction: VOA
Lab Smp Id: BJI0577-BSD1 Client Smp ID: GAS
Level: Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt2.i\20210921s.b\826090221.m
Misc Info: 1

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.267	105.33	
\$ 33 d4-1,2-Dichloroeth	5.000	6.883	137.65	
\$ 43 d8-Toluene	5.000	5.090	101.80	
\$ 62 4-Bromofluorobenze	5.000	4.849	96.99	
\$ 79 d4-1,2-Dichloroben	5.000	5.121	102.42	

REVIEW SUMMARY FOR FILE - V209212105G.D

Lab ID: BJI0577-BSD1
nt2.i, 20210921s.b\826090221.m, 21-SEP-2021 10:36

RT CO-ELUTION COMPOUNDS

Date : 21-SEP-2021 10:36

Client ID:

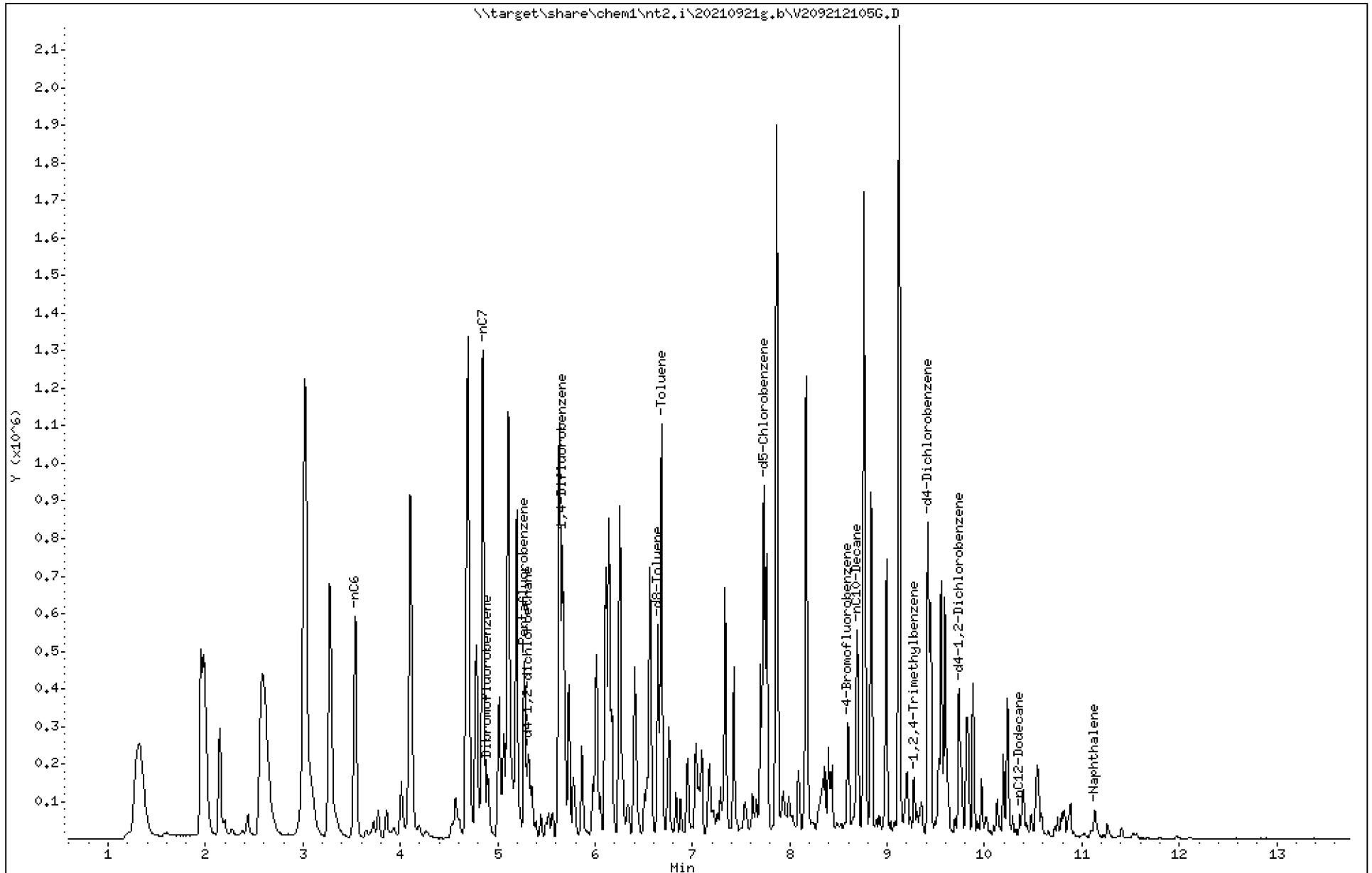
Sample Info: BJI0577-BSD1

Instrument: nt2.i

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20210921g.b/V209212105G.D
Method: \20210921g.b\GA090221.m
Instrument: nt2.i
Gas Ical Date: 09/02/21
Injection Date: 21-SEP-2021 10:36

ARI ID: BJI0577-BSD1
Client ID:
Matrix: NONE
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	----	-----	-----
WAGas Tol-C12 (6.58 to 10.46)	32472667	28147787	0.867
8015C 2MP-TMB (3.00 to 9.38)	22222222	54568535	2.456
AK101 nC6-nC10 (3.44 to 8.58)	45246913	40397323	0.893
NWTPHG Tol-Nap (6.58 to 11.23)	33940581	29346693	0.865
mod8015 nC7-nC12 (4.75 to 10.46)	22222222	47782177	2.150

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.733	1178327	d5-Chlorobenzene
8.596	411758	4-Bromofluorobenzene
6.644	757586	d8-Toluene
9.417	1844060	d4-Dichlorobenzene
9.740	730249	d4-1,2-Dichlorobenzene



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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Analysis by: Analytical Resources, LLC

Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BJI0593 - EPA 3510C SepF

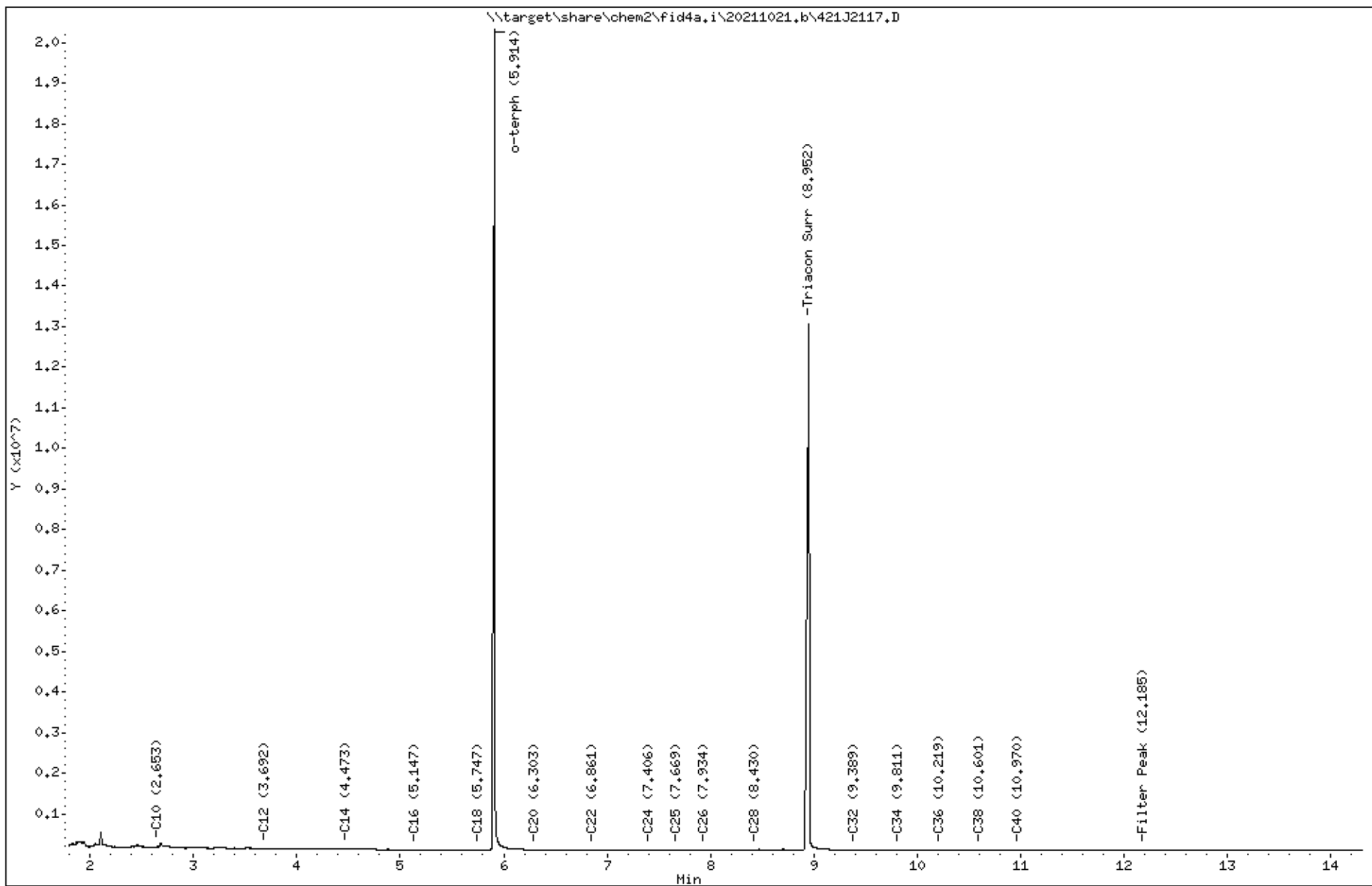
Instrument: FID4

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJI0593-BLK1)				Prepared: 23-Sep-2021 Analyzed: 21-Oct-2021 23:09						
Diesel Range Organics (C12-C24)	ND	100	ug/L							U
Motor Oil Range Organics (C24-C38)	ND	200	ug/L							U
Creosote Range Organics (C12-C22)	ND	200	ug/L							U
Surrogate: o-Terphenyl	230		ug/L	225		102	50-150			

Date : 21-OCT-2021 23:09
Client ID:
Sample Info: BJI0593-BLK1

Instrument: fid4a.i
Operator: TWC/JGR
Column diameter: 0.25

Column phase: RTX-1



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2117.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: BJI0593-BLK1
Client ID:
Injection: 21-OCT-2021 23:09
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

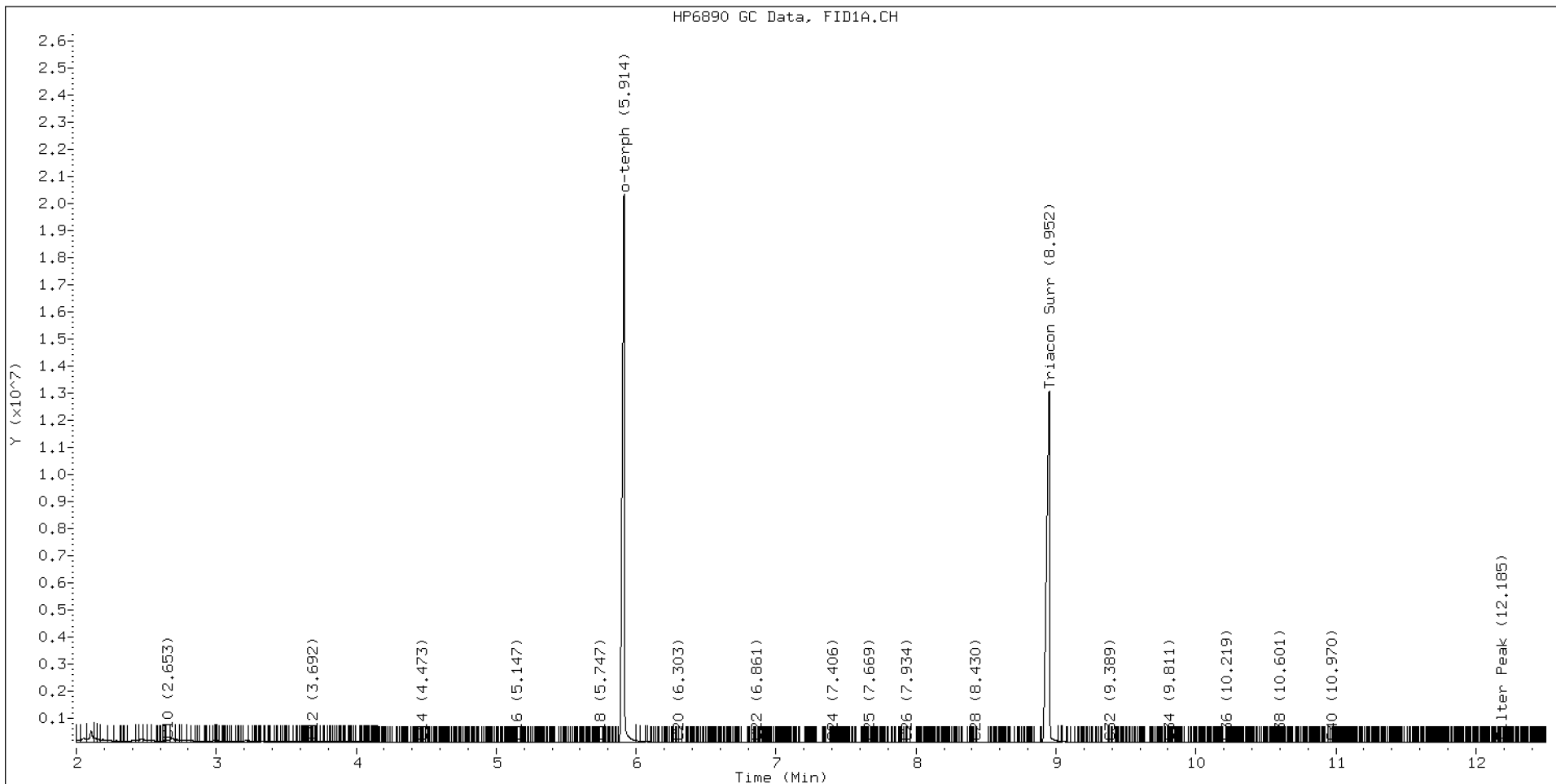
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.319	0.003	1984550	2784735	WATPHD	(C12-C24)	2921126	18.4
C10	2.653	0.002	89598	113638	WATPHM	(C24-C38)	991802	7.5
C12	3.692	0.003	44356	45061	AK102	(C10-C25)	6947379	37.1
C14	4.473	-0.001	21385	9604	AK103	(C25-C36)	808743	8.0
C16	5.147	0.001	13323	5956	OR.DIES	(C10-C28)	7030217	37.3
C18	5.747	-0.003	7375	6803				
C20	6.303	-0.000	9751	3804				
C22	6.861	0.004	1600	1011				
C24	7.406	0.002	727	194				
C25	7.669	-0.004	625	462				
C26	7.934	-0.003	321	122				
C28	8.430	-0.014	1326	685				
C32	9.389	0.005	7257	3918				
C34	9.811	-0.000	5555	4068				
Filter Peak	12.185	-0.003	10066	5955	CREOSOT	(C12-C22)	2883266	68.3
C36	10.219	0.002	6347	2487				
C38	10.601	-0.000	8176	2818				
C40	10.970	-0.001	9804	7753				
o-terph	5.914	0.001	20223529	21873886				
Triacon Surr	8.952	-0.004	12957398	19533850				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	21873886	115.0
Triacontane	19533850	92.2

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021





Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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Analysis by: Analytical Resources, LLC
Petroleum Hydrocarbons - Quality Control

Batch BJI0593 - EPA 3510C SepF

Instrument: FID4

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BJI0593-BS1)				Prepared: 23-Sep-2021 Analyzed: 21-Oct-2021 23:29						
Diesel Range Organics (C12-C24)	2640	100	ug/L	3000		88.0	56-120			
Surrogate: <i>o</i> -Terphenyl	240		ug/L	225		107	50-150			

Date : 21-OCT-2021 23:29

Client ID:

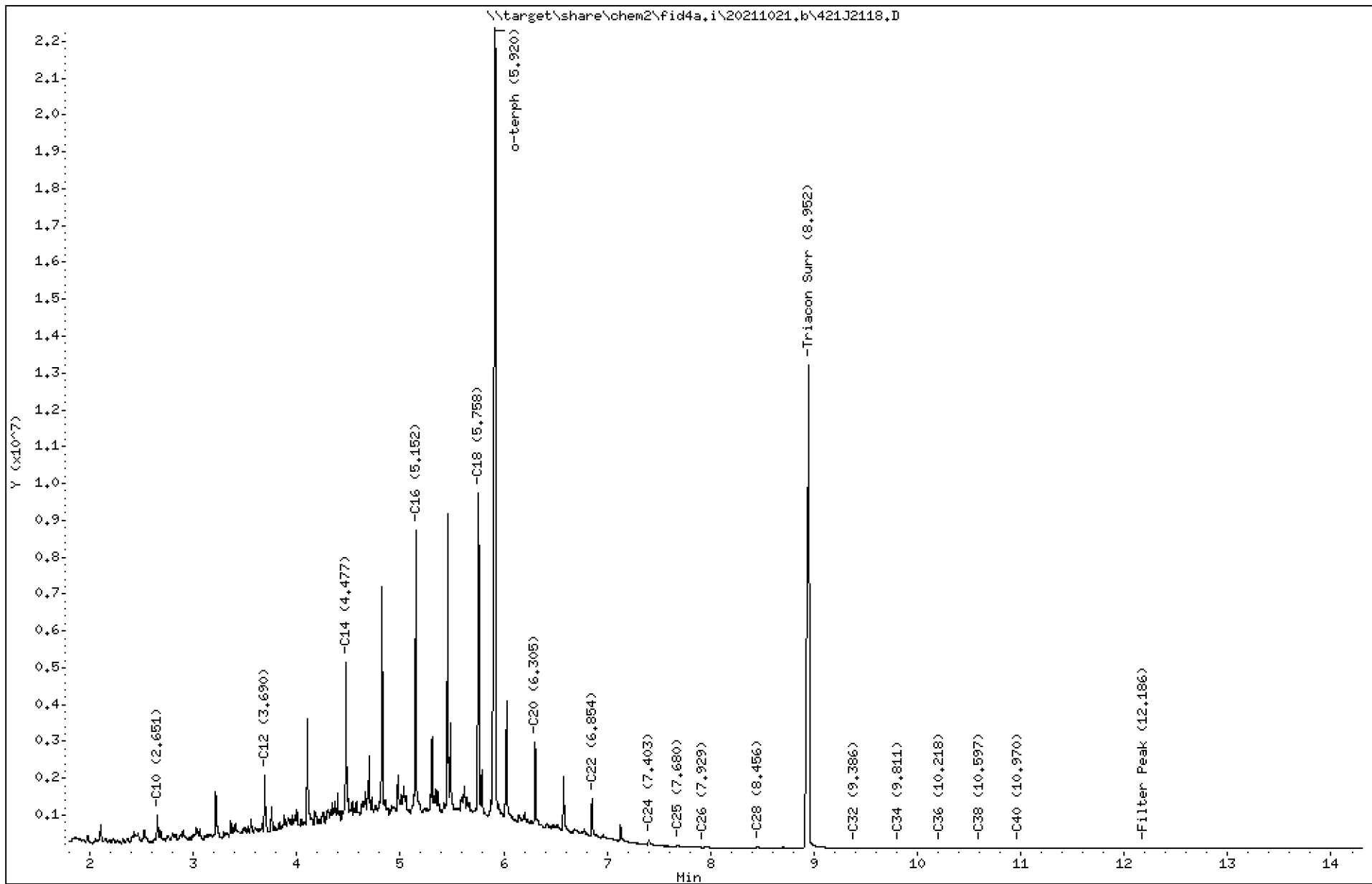
Instrument: fid4a.i

Sample Info: BJI0593-B61

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0.25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2118.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: BJI0593-BS1
Client ID:
Injection: 21-OCT-2021 23:29
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

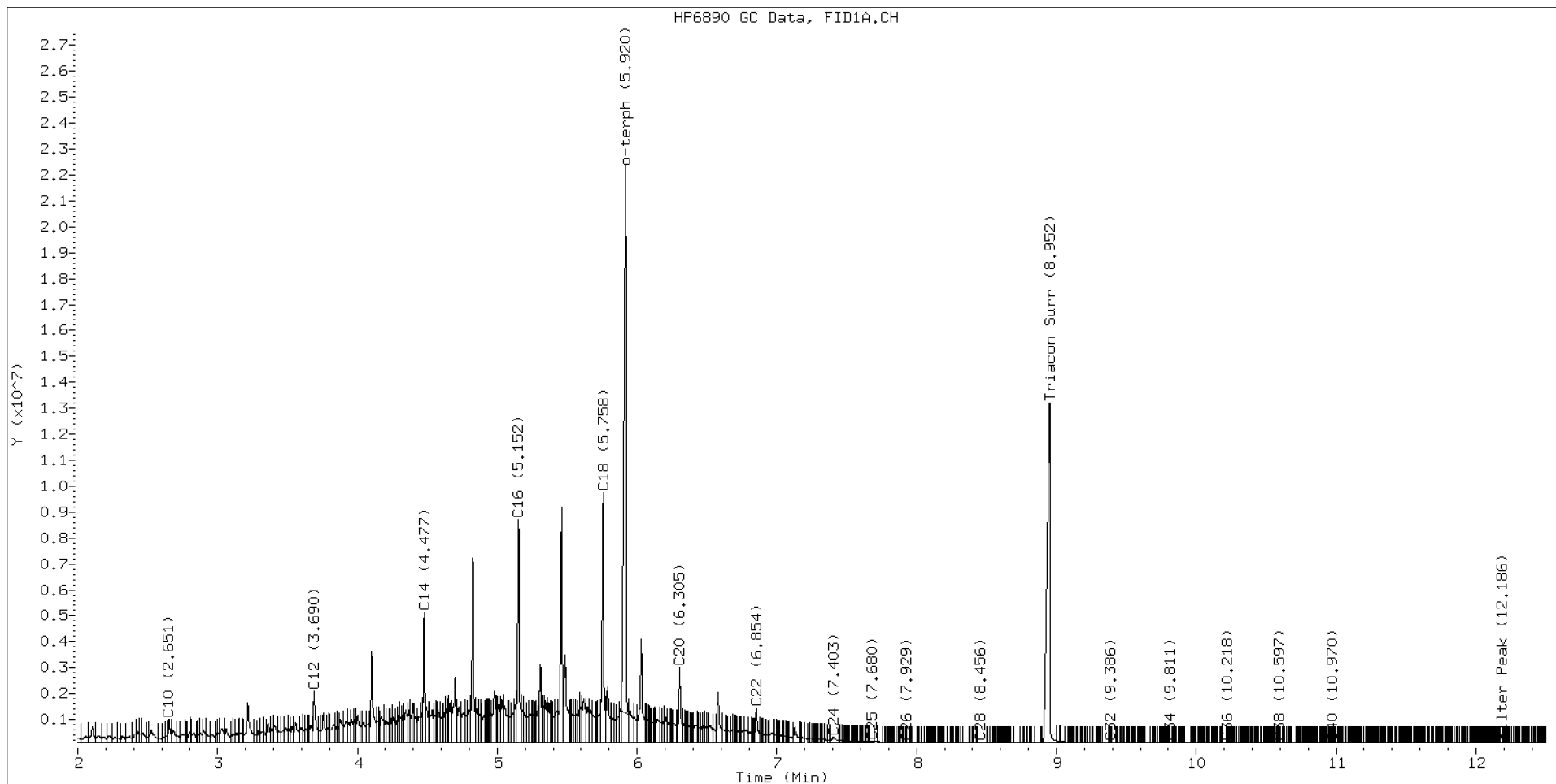
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.319	0.003	2118782	2892476	WATPHD	(C12-C24)	209306025	1319.6
C10	2.651	-0.000	896061	978078	WATPHM	(C24-C38)	2140378	16.3
C12	3.690	0.001	1965523	2421065	AK102	(C10-C25)	238333746	1272.3
C14	4.477	0.003	5025408	3893482	AK103	(C25-C36)	1463510	14.5
C16	5.152	0.006	8609732	7064727	OR.DIES	(C10-C28)	239233877	1270.6
C18	5.758	0.008	9633854	8924119				
C20	6.305	0.001	2886664	2943126				
C22	6.854	-0.003	1334120	1470628				
C24	7.403	-0.001	211407	456554				
C25	7.680	0.006	67339	129147				
C26	7.929	-0.008	17805	5253				
C28	8.456	0.011	23887	53166				
C32	9.386	0.001	2921	576				
C34	9.811	-0.000	1543	437				
Filter Peak	12.186	-0.001	6056	1196	CREOSOT	(C12-C22)	203903561	4831.8
C36	10.218	0.001	2141	421				
C38	10.597	-0.004	3188	952				
C40	10.970	-0.001	5361	1327				
o-terph	5.920	0.006	21122687	22802199				
Triacon Surr	8.952	-0.004	13113753	19557023				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	22802199	119.9 M
Triacontane	19557023	92.3

M Indicates the peak was manually integrated

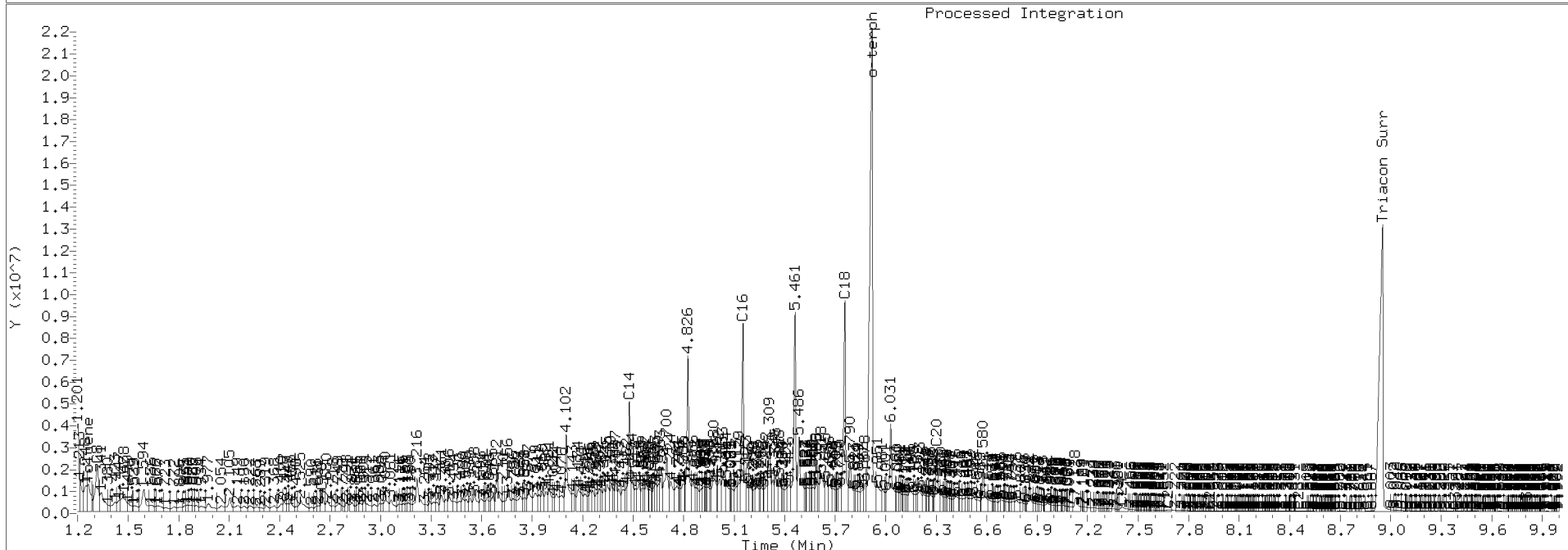
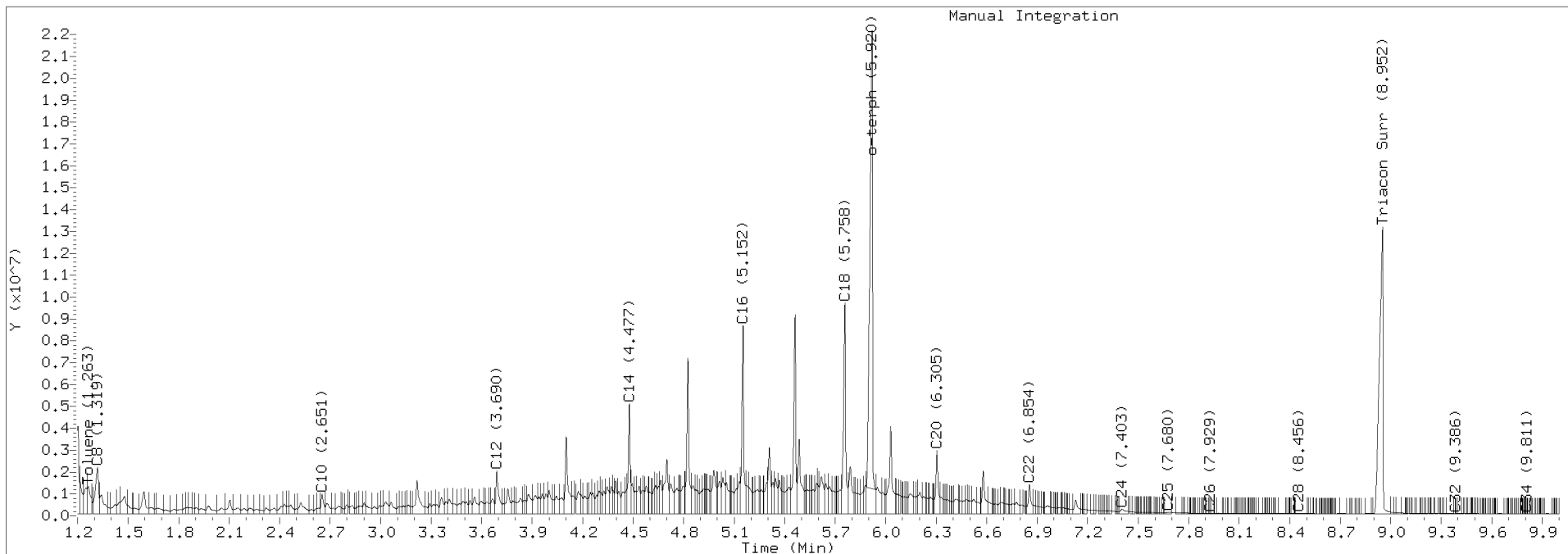
Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021



TPH Manual Integrations Report

Datafile: FID4A, 20211021.b/421J2118.D Injection: 21-OCT-2021 23:29

Lab ID:BJI0593-BS1





Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021041.010.020 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 17:48
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Analysis by: Analytical Resources, LLC
Petroleum Hydrocarbons - Quality Control

Batch BJI0593 - EPA 3510C SepF

Instrument: FID4

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BJI0593-BSD1)				Prepared: 23-Sep-2021 Analyzed: 21-Oct-2021 23:49						
Diesel Range Organics (C12-C24)	2650	100	ug/L	3000		88.2	56-120	0.28	30	
Surrogate: <i>o</i> -Terphenyl	239		ug/L	225		106	50-150			

Data File: \\target\share\chem2\fid4a.i\20211021.b\421J2119.D

Page 1

Date : 21-OCT-2021 23:49

Client ID:

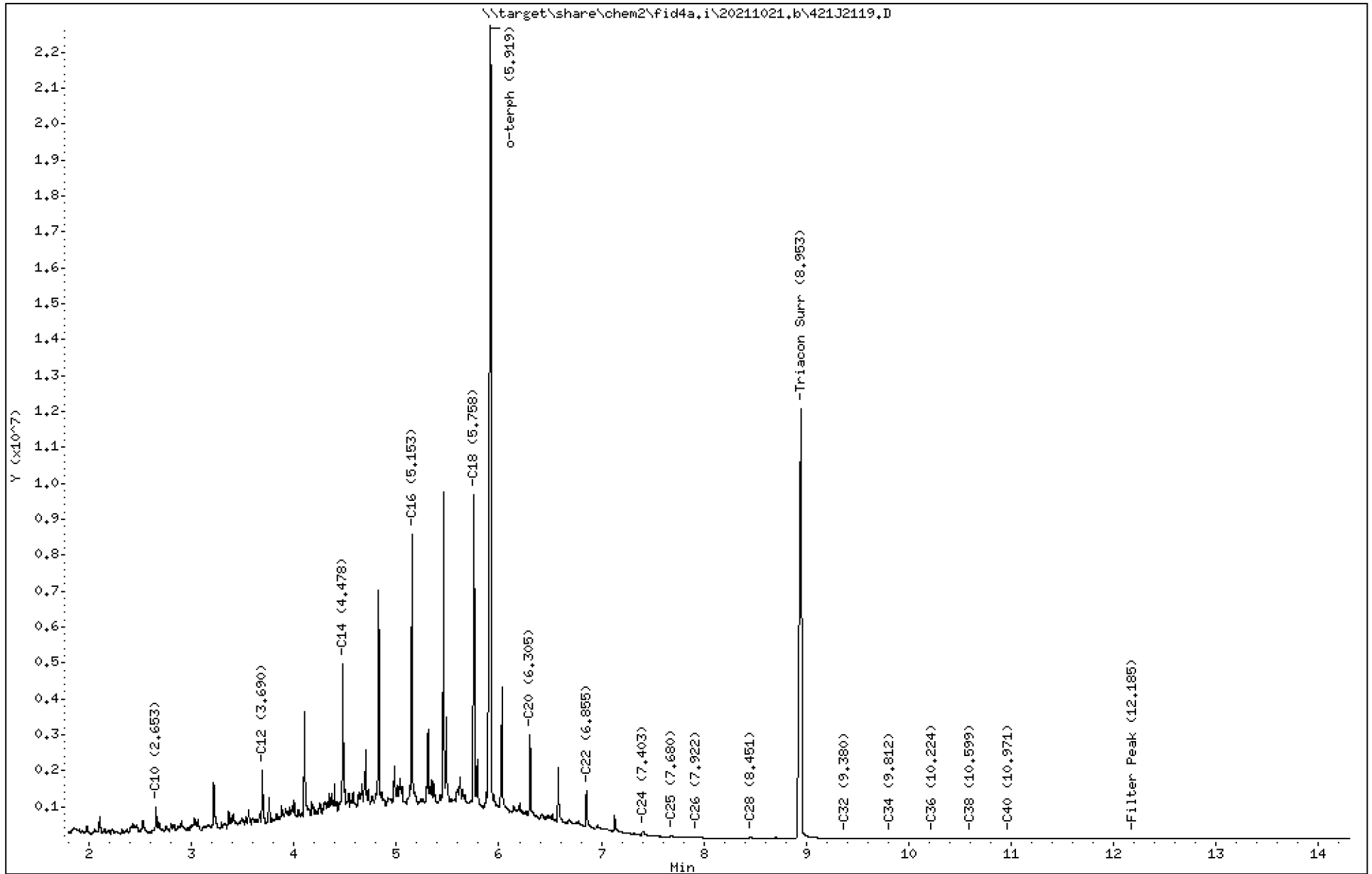
Instrument: fid4a.i

Sample Info: BJI0593-BSD1

Operator: TWC/JGR

Column phase: RTX-1

Column diameter: 0,25



Analytical Resources Inc.
TPH Quantitation Report

Data file: 20211021.b/421J2119.D
Method: 20211021.b\FID4TPH.m
Instrument: fid4a.i, TWC/JGR
Report Date: 10/22/2021
Macro: 09-SEP-2019
Calibration Dates: Gas:XX-XXX-XXXX Diesel:07-SEP-2021 M.Oil:14-APR-2021

ARI ID: BJI0593-BSD1
Client ID:
Injection: 21-OCT-2021 23:49
Dilution Factor: 1
RT Std: 419H1603.D

FID:4A RESULTS

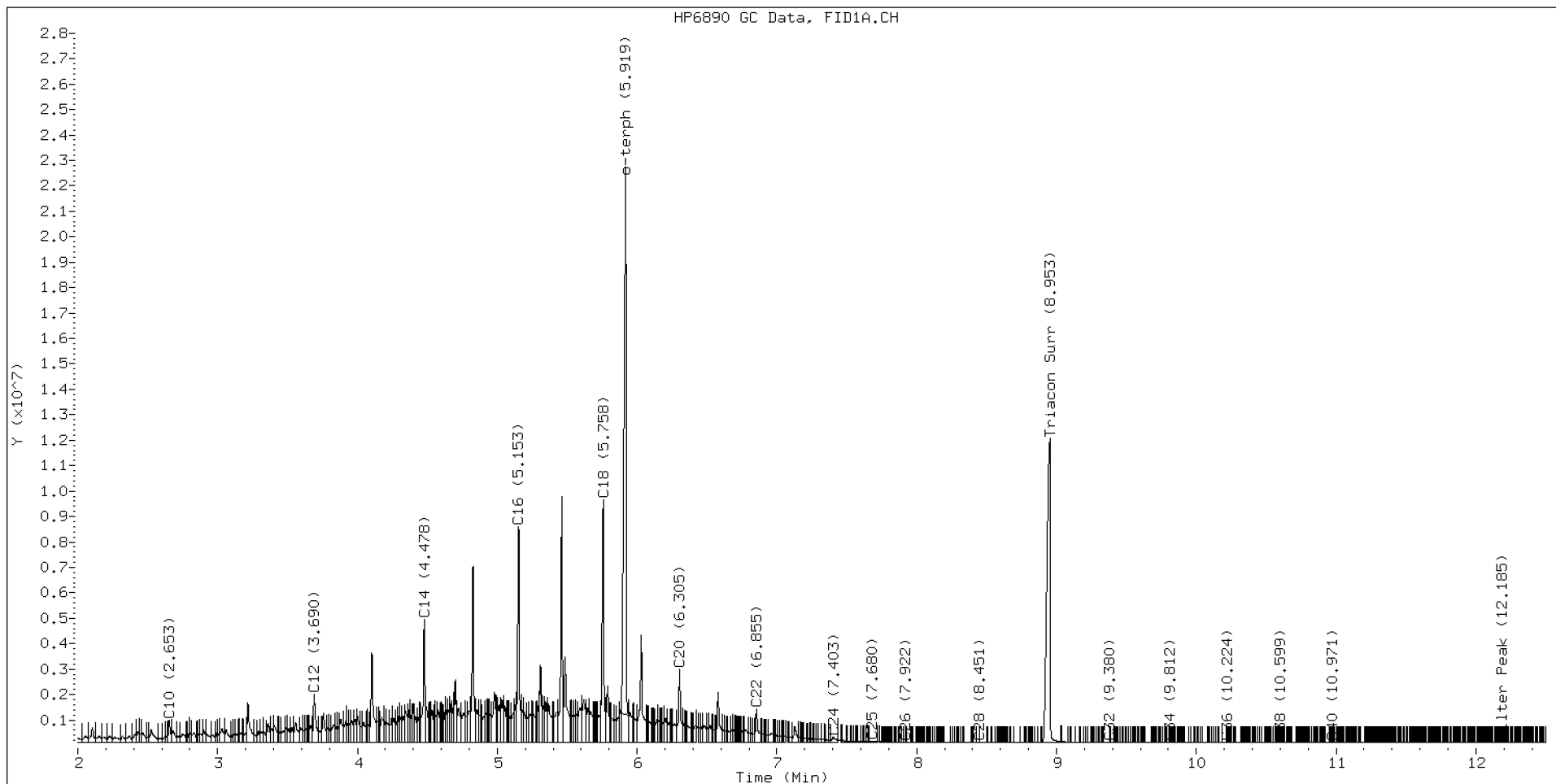
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc (mg/L)
C8	1.318	0.002	2078253	2803824	WATPHD	(C12-C24)	209886268	1323.3
C10	2.653	0.001	889807	953335	WATPHM	(C24-C38)	2083802	15.9
C12	3.690	0.001	1914885	2393019	AK102	(C10-C25)	238974246	1275.7
C14	4.478	0.004	4858648	4802956	AK103	(C25-C36)	1445529	14.3
C16	5.153	0.007	8477912	6993296	OR.DIES	(C10-C28)	239980402	1274.6
C18	5.758	0.008	9563400	8958741				
C20	6.305	0.001	2884640	2999299				
C22	6.855	-0.002	1312864	1705413				
C24	7.403	-0.001	204515	449764				
C25	7.680	0.006	70051	198549				
C26	7.922	-0.015	19768	11698				
C28	8.451	0.007	26257	20013				
C32	9.380	-0.004	2738	1592				
C34	9.812	0.001	563	187				
Filter Peak	12.185	-0.003	3516	1723	CREOSOT	(C12-C22)	203524273	4822.9
C36	10.224	0.007	423	102				
C38	10.599	-0.002	1245	711				
C40	10.971	0.000	3018	749				
o-terph	5.919	0.005	21532784	22686090				
Triacon Surr	8.953	-0.003	11958705	19755197				

Range Times: NW Diesel(3.689 - 7.404) AK102(2.65 - 7.67) Jet A(2.65 - 5.75)
NW M.Oil(7.40 - 10.60) AK103(7.67 - 10.22) OR Diesel(2.65 - 8.44)

Surrogate	Area	Amount
o-Terphenyl	22686090	119.3 M
Triacontane	19755197	93.3 M

M Indicates the peak was manually integrated

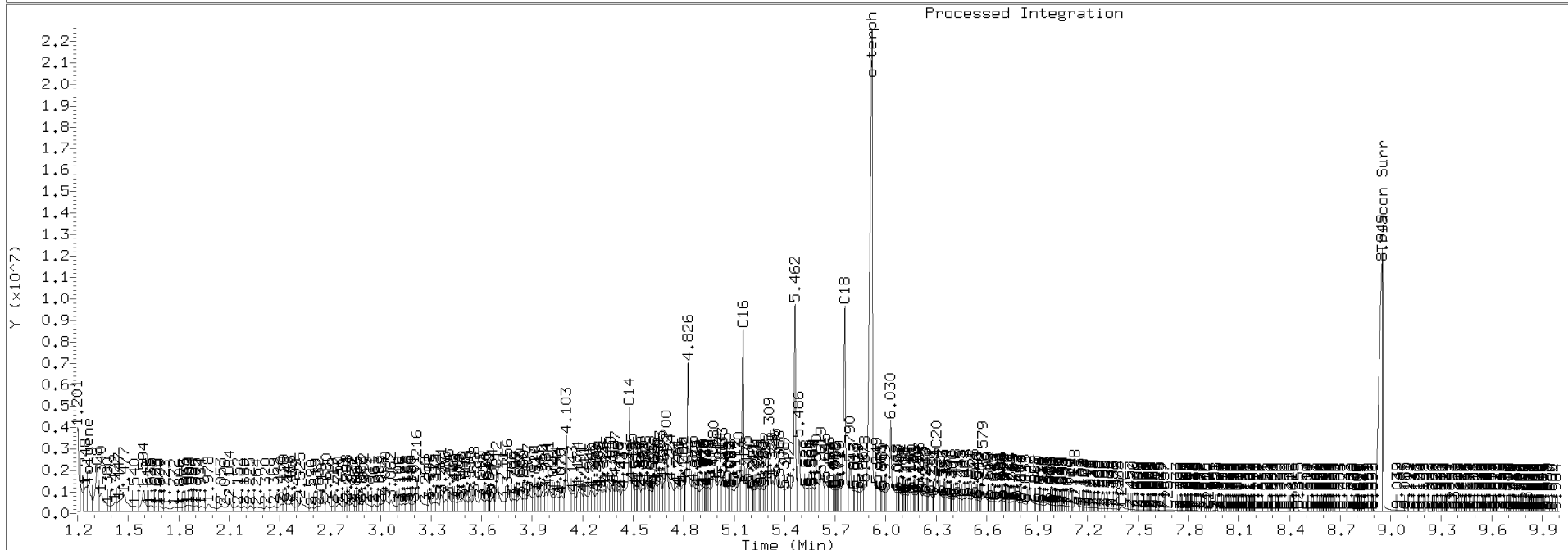
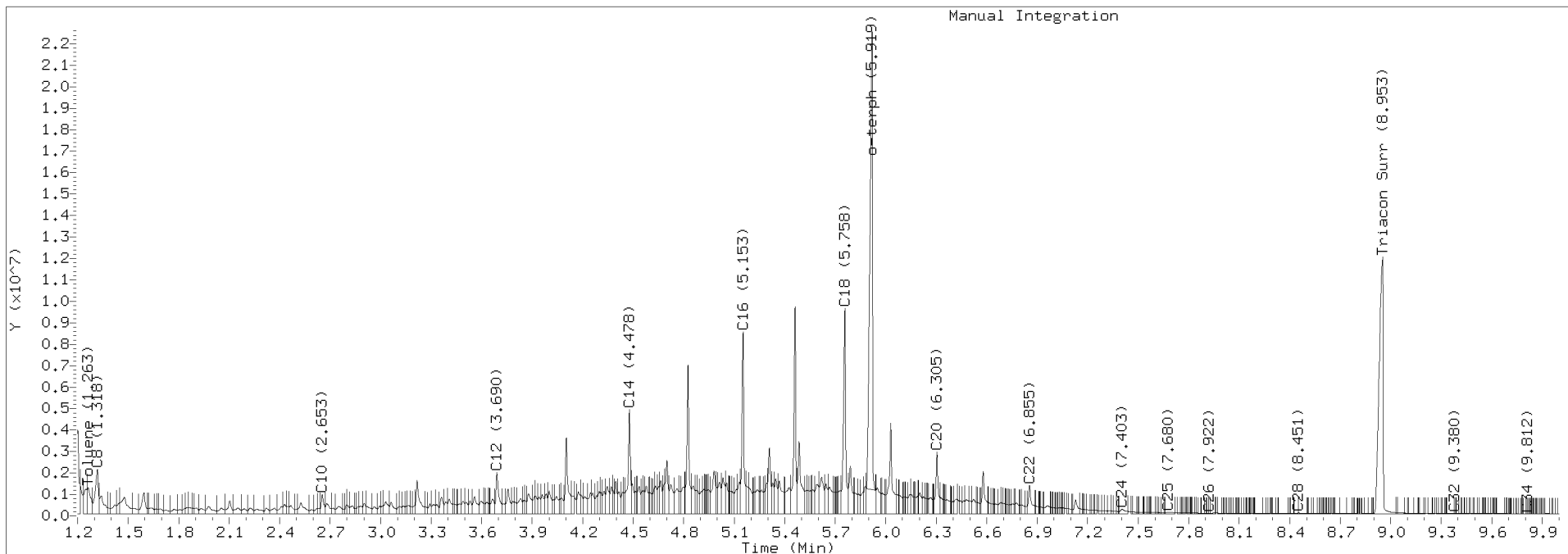
Analyte	RF	Curve Date
o-Terph Surr	190151.8	07-SEP-2021
Triacon Surr	211827.9	25-OCT-2019
Gas	15000.0	XX-XXX-XXXX
Diesel	158608.3	07-SEP-2021
Motor Oil	131440.7	14-APR-2021
AK102	187323.0	07-SEP-2021
AK103	101056.3	14-APR-2021
OR Diesel	188282.5	07-SEP-2021
Bunker C	72152.7	14-OCT-2021
Creosote	42199.9	21-OCT-2021



TPH Manual Integrations Report

Datafile: FID4A, 20211021.b/421J2119.D Injection: 21-OCT-2021 23:49

Lab ID:BJI0593-BSD1





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

Certified Analyses included in this Report

Analyte	Certifications
NWTPH-Dx in Water	
Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Diesel Range Organics (C12-C25)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE
Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE
NWTPHg in Water	
Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP
Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021041.010.020
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2022
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2022
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022



Landau Associates, Inc.
130 2nd Avenue S.
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Project: Cascade Pole
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Project Manager: Christine Kimmel

Reported:
08-Nov-2021 17:48

Notes and Definitions

- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- D The reported value is from a dilution
- * Flagged value is not within established control limits.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants

08 November 2021

Christine Kimmel
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Cascade Pole

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
21J0448

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Kelly Bottem, Client Services Manager





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021043.000.010.011
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 08:45

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Trip Blank-20211028	21J0448-01	Water	28-Oct-2021 09:42	28-Oct-2021 15:00
MW-05D-20211028	21J0448-02	Water	28-Oct-2021 09:42	28-Oct-2021 15:00



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021043.000.010.011
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 08:45

Case Narrative

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.



Cooler Receipt Form

ARI Client: Landaw
Cascade pole - 2B 10/28/21

Project Name: Cascade pole

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 2170448

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO
 Were custody papers included with the cooler? YES NO
 Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time: 3:35 pm 3.8

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: DOO 9708

Cooler Accepted by: [Signature]

Date: 10/28/21

Time: 5:00

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO
 What kind of packing material was used? Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____
 Was sufficient ice used (if appropriate)? NA YES NO
 How were bottles sealed in plastic bags? Individually Grouped Not
 Did all bottles arrive in good condition (unbroken)? YES NO
 Were all bottle labels complete and legible? YES NO
 Did the number of containers listed on COC match with the number of containers received? YES NO
 Did all bottle labels and tags agree with custody papers? YES NO
 Were all bottles used correct for the requested analyses? YES NO
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO
 Were all VOC vials free of air bubbles? NA YES NO
 Was sufficient amount of sample sent in each bottle? YES NO
 Date VOC Trip Blank was made at ARI: NA 10/26/2021
 Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: [Signature] Date: 10/28/2021 Time: 1704 Labels checked by: [Signature]

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021043.000.010.011
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 08:45

Trip Blank-20211028
21J0448-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT3

Sampled: 10/28/2021 09:42
Analyzed: 02-Nov-2021 19:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJK0066 Sample Size: 10 mL
Prepared: 02-Nov-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	108	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	98.9	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	98.1	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	98.3	%	



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021043.000.010.011 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 08:45
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Trip Blank-20211028
21J0448-01 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 10/28/2021 09:42
Instrument: NT3 Analyzed: 03-Nov-2021 18:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJK0102 Sample Size: 10 mL
Prepared: 03-Nov-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	97.1	%	

Date : 03-NOV-2021 18:52

Client ID:

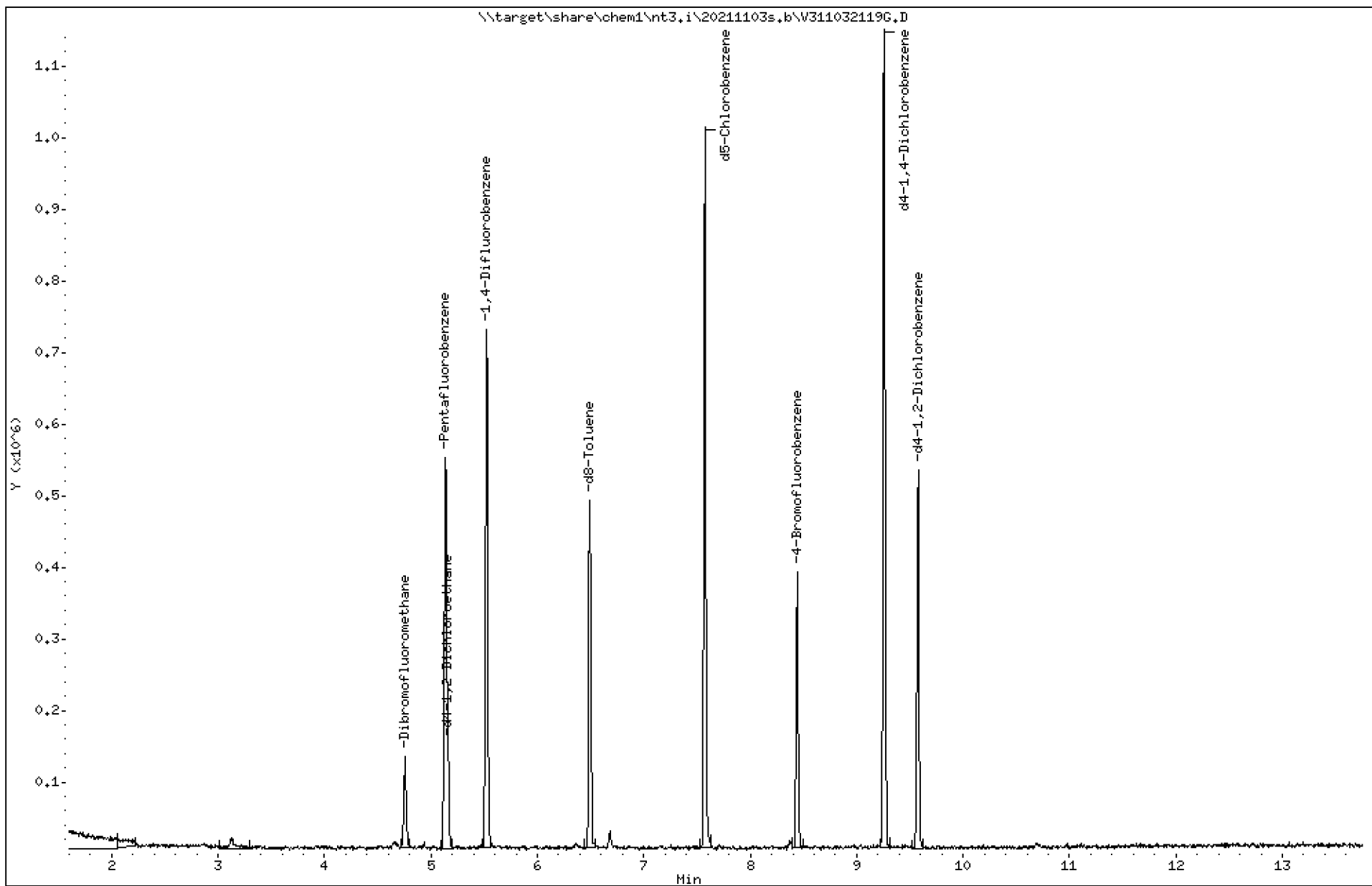
Instrument: nt3.i

Sample Info: 21J0448-01

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt3.i\20211103s.b\V311032119G.D
 Lab Smp Id: 21J0448-01
 Inj Date : 03-NOV-2021 18:52
 Operator : PKC Inst ID: nt3.i
 Smp Info : 21J0448-01
 Misc Info : 15-
 Comment :
 Method : \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
 Meth Date : 03-Nov-2021 13:31 paul Quant Type: ISTD
 Cal Date : 02-NOV-2021 15:48 Cal File: V311022112.D
 Als bottle: 61
 Dil Factor: 1.00000
 Integrator: HP RTE Compound Sublist: gsurr.sub
 Target Version: 4.14

Concentration Formula: Amt * DF * Pv / Sa * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Pv	10.000	Purge Volume (mL)
Sa	10.000	Sample Amount (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT	SIG	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.751	4.750	(0.925)	64512	5.12646	5.126
* 32 Pentafluorobenzene	168		5.133	5.133	(1.000)	281111	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.160	5.160	(1.005)	34314	5.25937	5.259
* 37 1,4-Difluorobenzene	114		5.521	5.521	(1.000)	444406	10.0000	
\$ 43 d8-Toluene	98		6.494	6.488	(1.176)	247376	4.91826	4.918
* 53 d5-Chlorobenzene	117		7.573	7.573	(1.000)	432654	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.440	8.439	(1.114)	86479	4.85271	4.853
* 76 d4-1,4-Dichlorobenzene	152		9.258	9.258	(1.000)	257404	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.577	9.577	(1.034)	115541	5.14267	5.143

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt3.i Calibration Date: 02-NOV-2021
 Lab File ID: V311032119G.D Calibration Time: 14:32
 Lab Smp Id: 21J0448-01
 Analysis Type: VOA Level: LOW
 Quant Type: ISTD Sample Type: WATER
 Operator: PKC
 Method File: \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	291645	145823	583290	281111	-3.61
37 1,4-Difluorobenze	454955	227478	909910	444406	-2.32
53 d5-Chlorobenzene	440555	220278	881110	432654	-1.79
76 d4-1,4-Dichlorobe	258516	129258	517032	257404	-0.43

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.13	4.63	5.63	5.13	0.01
37 1,4-Difluorobenze	5.52	5.02	6.02	5.52	0.01
53 d5-Chlorobenzene	7.57	7.07	8.07	7.57	0.01
76 d4-1,4-Dichlorobe	9.26	8.76	9.76	9.26	0.00

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20151005
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: 21J0448-01
Level: LOW Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.126	102.53	80-120
\$ 33 d4-1,2-Dichloroeth	5.000	5.259	105.19	80-128
\$ 43 d8-Toluene	5.000	4.918	98.37	80-120
\$ 62 4-Bromofluorobenze	5.000	4.853	97.05	80-120
\$ 79 d4-1,2-Dichloroben	5.000	5.143	102.85	80-120

REVIEW SUMMARY FOR FILE - V311032119G.D

Lab ID: 21J0448-01

nt3.i, 20211103s.b\8260D110221.m, 03-NOV-2021 18:52

RT CO-ELUTION COMPOUNDS

Date : 03-NOV-2021 18:52

Client ID:

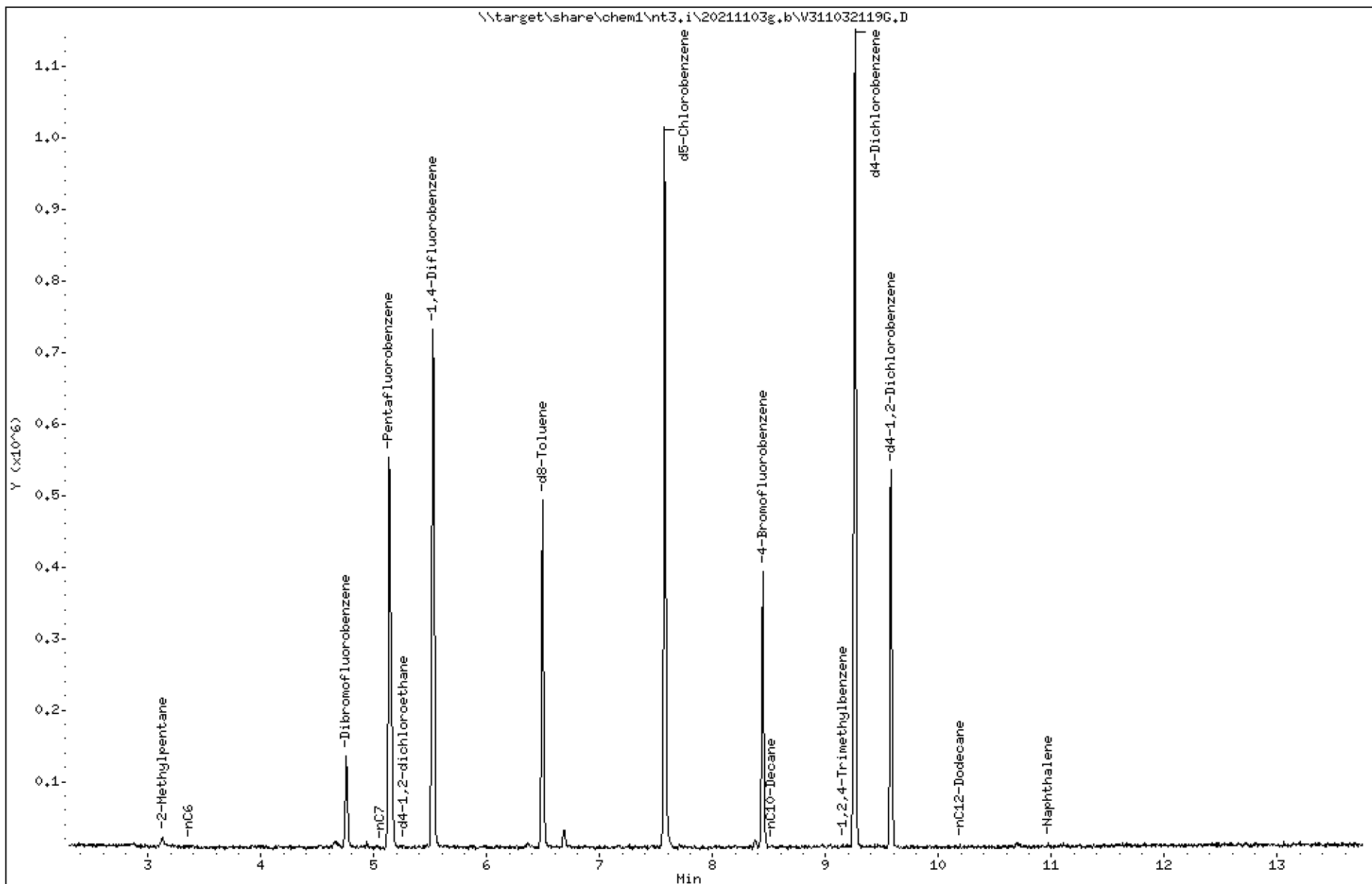
Instrument: nt3.i

Sample Info: 21J0448-01

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20211103g.b/V311032119G.D
Method: \20211103g.b\NWTPHG110321.m
Instrument: nt3.i
Gas Ical Date: 03-NOV-2021
Injection Date: 03-NOV-2021 18:52

ARI ID: 21J0448-01
Client ID:
Matrix: WATER
Dilution Factor: 1.000
Operator: PKC

=====

GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	----	-----	-----
WAGas Tol-C12 (6.43 to 10.29)	49658111	306272	0.006
8015C 2MP-TMB (3.02 to 9.22)	86291970	549538	0.006
AK101 nC6-nC10 (3.27 to 8.41)	68836549	428993	0.006
NWTPHG Tol-Nap (6.43 to 11.07)	52529913	381817	0.007
mod8015 nC7-nC12 (4.94 to 10.29)	72133421	399571	0.006

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.574	1322862	d5-Chlorobenzene
6.495	682105	d8-Toluene
9.259	1479345	d4-Dichlorobenzene
8.440	521508	4-Bromofluorobenzene
9.578	686965	d4-1,2-Dichlorobenzene



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021043.000.010.011
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 08:45

MW-05D-20211028
21J0448-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D
Instrument: NT3

Sampled: 10/28/2021 09:42
Analyzed: 03-Nov-2021 02:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJK0066 Sample Size: 10 mL
Prepared: 02-Nov-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	3.71	ug/L	
m,p-Xylene	179601-23-1	1	0.40	2.98	ug/L	
o-Xylene	95-47-6	1	0.20	2.28	ug/L	
Xylenes, total	1330-20-7	1	0.60	5.26	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	104	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	102	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	98.7	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	100	%	



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021043.000.010.011
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 08:45

MW-05D-20211028
21J0448-02 (Water)

Volatile Organic Compounds

Method: NWTPHg
Instrument: NT3

Sampled: 10/28/2021 09:42
Analyzed: 04-Nov-2021 02:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJK0102 Sample Size: 0.5 mL
Prepared: 03-Nov-2021 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	2000	3120	ug/L	
HC ID: GRO						
Surrogate: Toluene-d8			80-120 %	99.3	%	
Surrogate: 4-Bromofluorobenzene			80-120 %	98.6	%	

Date : 04-NOV-2021 02:02

Client ID:

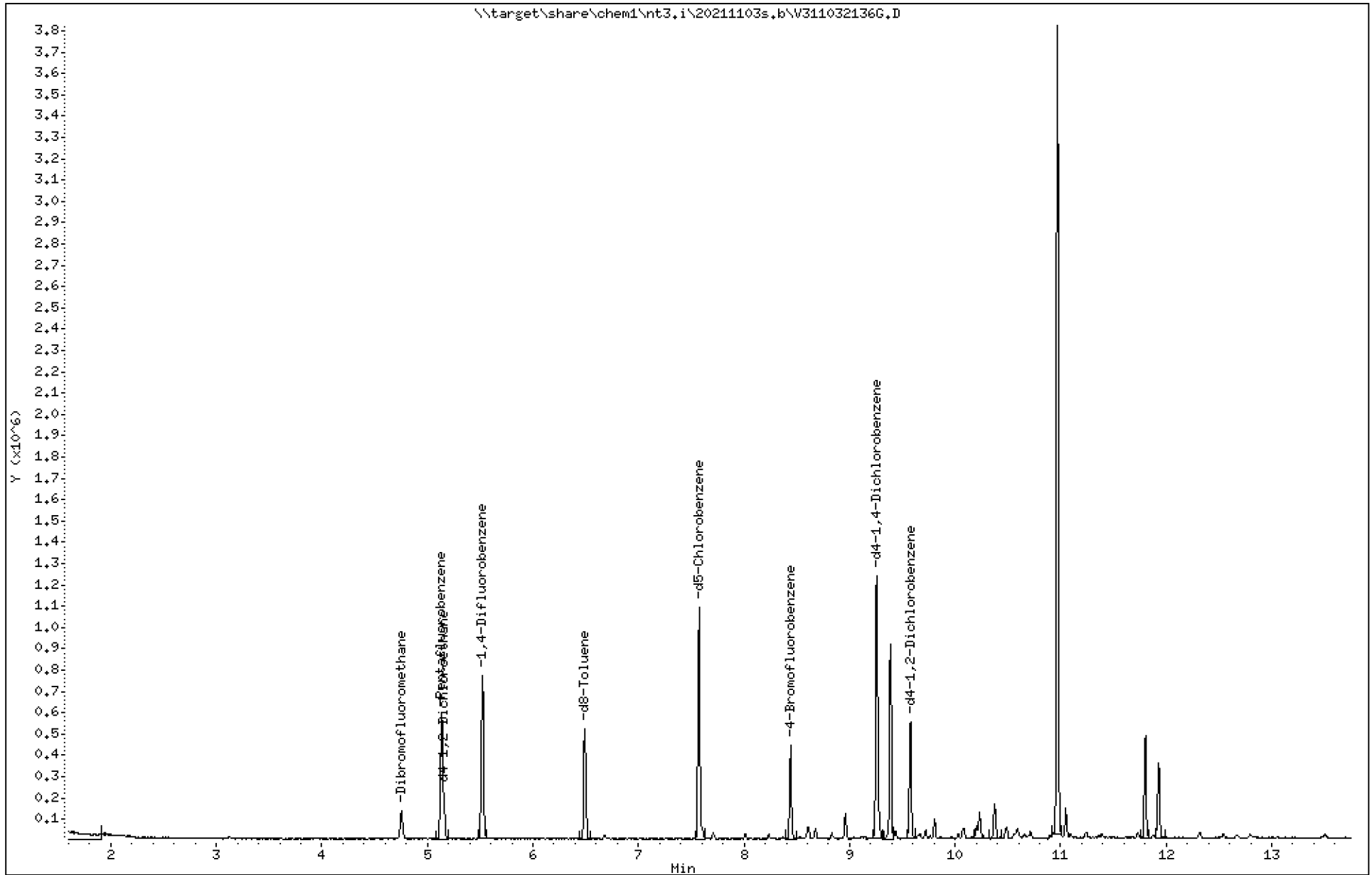
Instrument: nt3.i

Sample Info: 21J0448-02,20X

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt3.i\20211103s.b\V311032136G.D
 Lab Smp Id: 21J0448-02
 Inj Date : 04-NOV-2021 02:02
 Operator : PKC Inst ID: nt3.i
 Smp Info : 21J0448-02,20X
 Misc Info : 15-
 Comment :
 Method : \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
 Meth Date : 03-Nov-2021 13:31 paul Quant Type: ISTD
 Cal Date : 02-NOV-2021 15:48 Cal File: V311022112.D
 Als bottle: 61
 Dil Factor: 1.00000
 Integrator: HP RTE Compound Sublist: gsurr.sub
 Target Version: 4.14

Concentration Formula: Amt * DF * Pv / Sa * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Pv	20.000	Purge Volume (mL)
Sa	10.000	Sample Amount (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT	SIG	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.751	4.750	(0.925)	67432	5.07139	10.143
* 32 Pentafluorobenzene	168		5.134	5.133	(1.000)	297026	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.155	5.160	(1.004)	36559	5.30322	10.606
* 37 1,4-Difluorobenzene	114		5.522	5.521	(1.000)	463521	10.0000	
\$ 43 d8-Toluene	98		6.489	6.488	(1.175)	260589	4.96730	9.935
* 53 d5-Chlorobenzene	117		7.574	7.573	(1.000)	449928	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.445	8.439	(1.115)	91386	4.93118	9.862
* 76 d4-1,4-Dichlorobenzene	152		9.259	9.258	(1.000)	267974	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.577	9.577	(1.034)	121612	5.19938	10.399

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt3.i Calibration Date: 02-NOV-2021
 Lab File ID: V311032136G.D Calibration Time: 14:32
 Lab Smp Id: 21J0448-02
 Analysis Type: VOA Level: LOW
 Quant Type: ISTD Sample Type: WATER
 Operator: PKC
 Method File: \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	291645	145823	583290	297026	1.85
37 1,4-Difluorobenze	454955	227478	909910	463521	1.88
53 d5-Chlorobenzene	440555	220278	881110	449928	2.13
76 d4-1,4-Dichlorobe	258516	129258	517032	267974	3.66

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.13	4.63	5.63	5.13	0.02
37 1,4-Difluorobenze	5.52	5.02	6.02	5.52	0.01
53 d5-Chlorobenzene	7.57	7.07	8.07	7.57	0.01
76 d4-1,4-Dichlorobe	9.26	8.76	9.76	9.26	0.01

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20151005
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: 21J0448-02
Level: LOW Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.071	101.43	80-120
\$ 33 d4-1,2-Dichloroeth	5.000	5.303	106.06	80-128
\$ 43 d8-Toluene	5.000	4.967	99.35	80-120
\$ 62 4-Bromofluorobenze	5.000	4.931	98.62	80-120
\$ 79 d4-1,2-Dichloroben	5.000	5.199	103.99	80-120

REVIEW SUMMARY FOR FILE - V311032136G.D

Lab ID: 21J0448-02

nt3.i, 20211103s.b\8260D110221.m, 04-NOV-2021 02:02

RT CO-ELUTION COMPOUNDS

Date : 04-NOV-2021 02:02

Client ID:

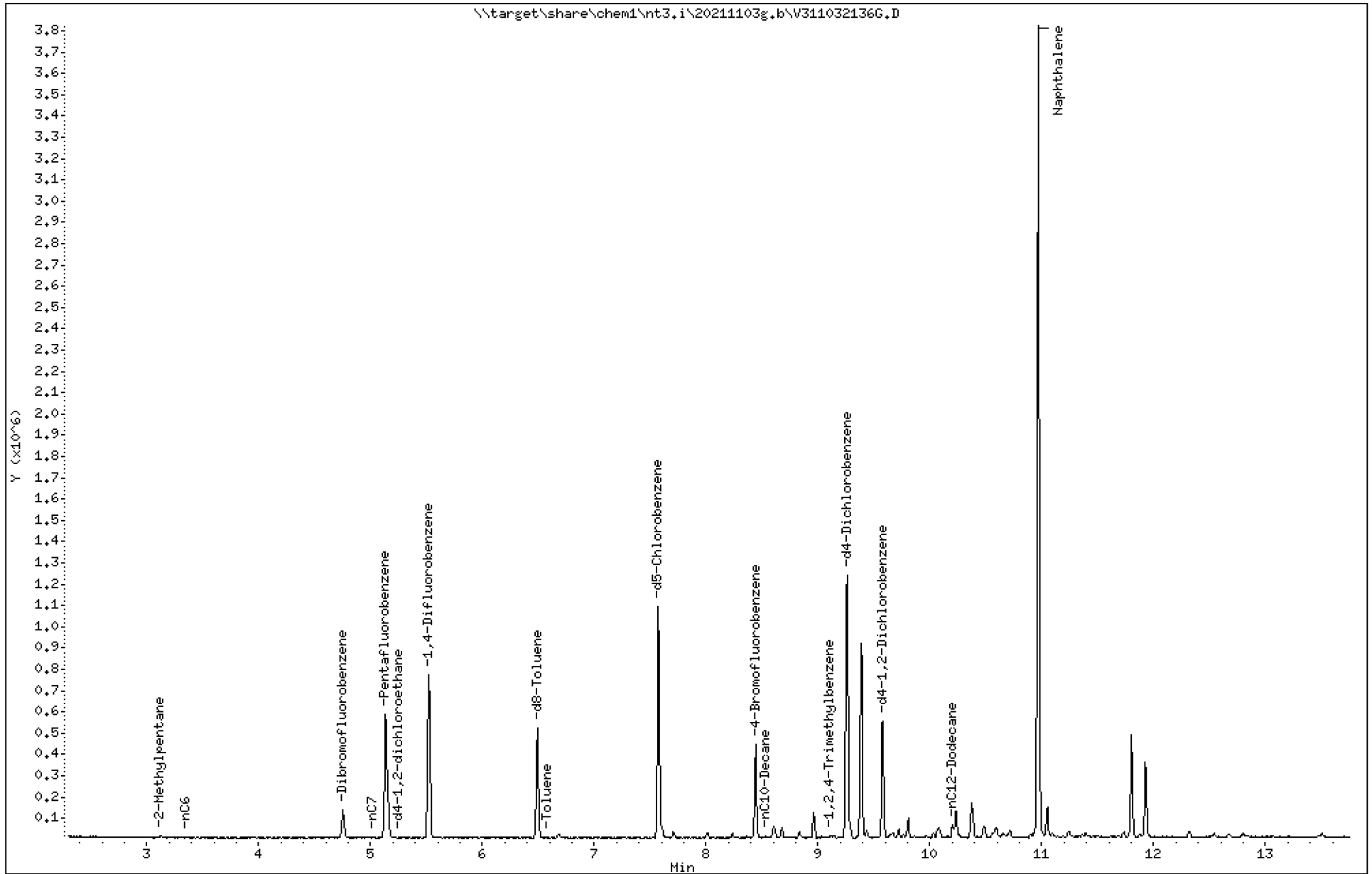
Instrument: nt3.i

Sample Info: 21J0448-02,20X

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20211103g.b/V311032136G.D
Method: \20211103g.b\NWTPHG110321.m
Instrument: nt3.i
Gas Ical Date: 03-NOV-2021
Injection Date: 04-NOV-2021 02:02

ARI ID: 21J0448-02
Client ID:
Matrix: WATER
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	----	-----	-----
WAGas Tol-C12 (6.43 to 10.29)	49658111	2550328	0.051 M
8015C 2MP-TMB (3.02 to 9.22)	86291970	912837	0.011 M
AK101 nC6-nC10 (3.27 to 8.41)	68836549	483196	0.007
NWTPHG Tol-Nap (6.43 to 11.07)	52529913	8198198	0.156 M
mod8015 nC7-nC12 (4.94 to 10.29)	72133421	2672171	0.037 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area

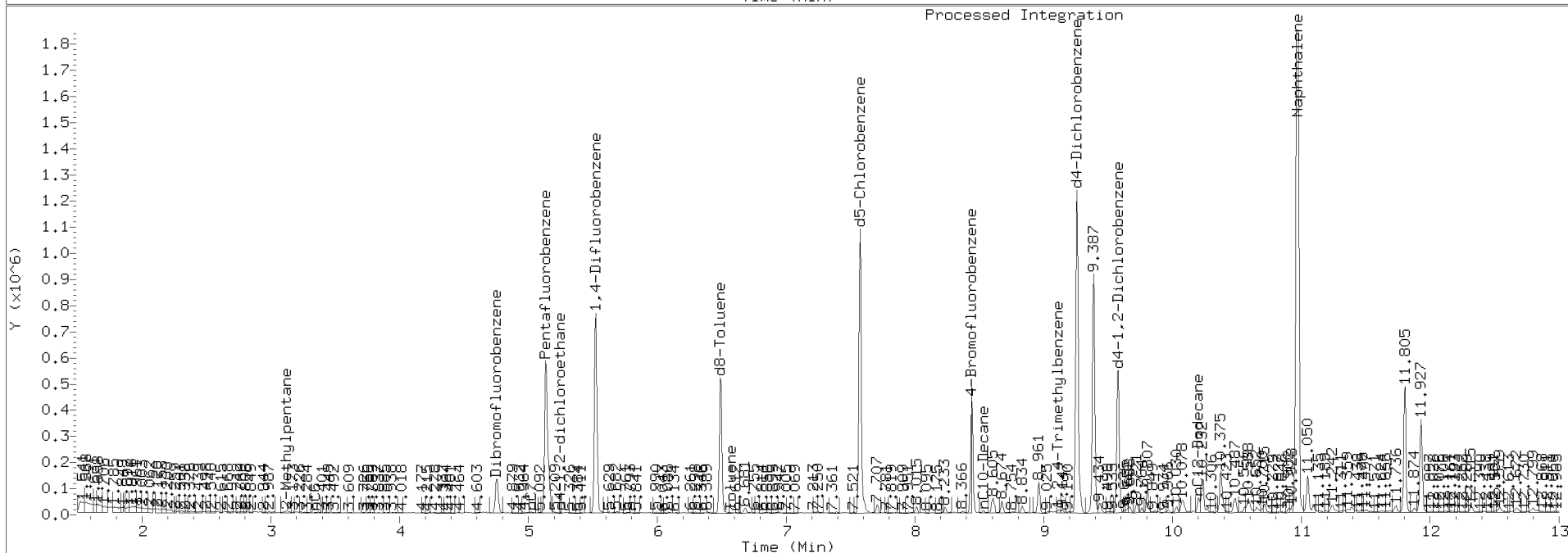
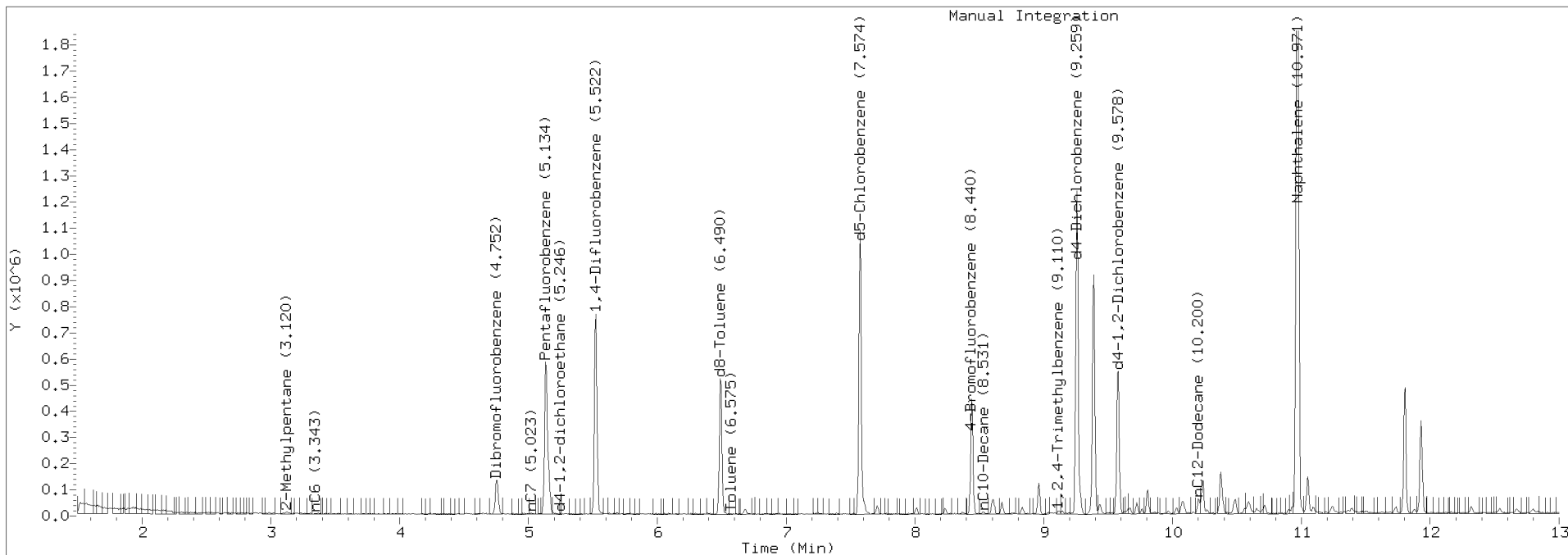
NW Gas Range Subtracted Peaks

7.574	1454065	d5-Chlorobenzene
6.490	722100	d8-Toluene
9.259	1680454	d4-Dichlorobenzene
8.440	551395	4-Bromofluorobenzene
9.578	729521	d4-1,2-Dichlorobenzene

TPHG Manual Integrations Report

Datafile: NT3, 20211103g.b/V3111032136G.D Injection: 04-NOV-2021 02:02

Lab ID:21J0448-02





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021043.000.010.011
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 08:45

Analysis by: Analytical Resources, LLC
Volatile Organic Compounds - Quality Control

Batch BJK0066 - EPA 5030C (Purge and Trap)

Instrument: NT3

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0066-BLK1)		Prepared: 02-Nov-2021 Analyzed: 02-Nov-2021 18:21								
Benzene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Xylenes, total	ND	0.60	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4.85		ug/L	5.00		96.9	80-129			
Surrogate: Toluene-d8	4.89		ug/L	5.00		97.9	80-120			
Surrogate: 4-Bromofluorobenzene	4.89		ug/L	5.00		97.8	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.96		ug/L	5.00		99.1	80-120			



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021043.000.010.011
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 08:45

Analysis by: Analytical Resources, LLC
Volatile Organic Compounds - Quality Control

Batch BJK0066 - EPA 5030C (Purge and Trap)

Instrument: NT3

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BJK0066-BS1)				Prepared: 02-Nov-2021 Analyzed: 02-Nov-2021 17:05						
Benzene	9.54	0.20	ug/L	10.0		95.4	80-120			
Toluene	9.37	0.20	ug/L	10.0		93.7	80-120			
Ethylbenzene	9.72	0.20	ug/L	10.0		97.2	80-120			
m,p-Xylene	19.8	0.40	ug/L	20.0		99.2	80-121			
o-Xylene	9.65	0.20	ug/L	10.0		96.5	80-121			
Xylenes, total	29.5	0.60	ug/L	30.0		98.3	76-127			
Surrogate: 1,2-Dichloroethane-d4	5.05		ug/L	5.00		101	80-129			
Surrogate: Toluene-d8	5.03		ug/L	5.00		101	80-120			
Surrogate: 4-Bromofluorobenzene	5.02		ug/L	5.00		100	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.83		ug/L	5.00		96.7	80-120			



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021043.000.010.011
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 08:45

Analysis by: Analytical Resources, LLC
Volatile Organic Compounds - Quality Control

Batch BJK0066 - EPA 5030C (Purge and Trap)

Instrument: NT3

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BJK0066-BSD1)				Prepared: 02-Nov-2021 Analyzed: 02-Nov-2021 17:30						
Benzene	11.0	0.20	ug/L	10.0		110	80-120	14.70	30	
Toluene	11.1	0.20	ug/L	10.0		111	80-120	17.30	30	
Ethylbenzene	11.0	0.20	ug/L	10.0		110	80-120	12.70	30	
m,p-Xylene	22.3	0.40	ug/L	20.0		111	80-121	11.70	30	
o-Xylene	10.9	0.20	ug/L	10.0		109	80-121	11.80	30	
Xylenes, total	33.1	0.60	ug/L	30.0		110	76-127	11.70	30	
Surrogate: 1,2-Dichloroethane-d4	5.19		ug/L	5.00		104	80-129			
Surrogate: Toluene-d8	5.03		ug/L	5.00		101	80-120			
Surrogate: 4-Bromofluorobenzene	4.97		ug/L	5.00		99.5	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.76		ug/L	5.00		95.2	80-120			



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021043.000.010.011 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 08:45
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Analysis by: Analytical Resources, LLC
Volatile Organic Compounds - Quality Control

Batch BJK0102 - EPA 5030C (Purge and Trap)

Instrument: NT3

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0102-BLK1)					Prepared: 03-Nov-2021 Analyzed: 03-Nov-2021 18:26					
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	5.01		ug/L	5.00		100	80-120			
Surrogate: 4-Bromofluorobenzene	4.90		ug/L	5.00		97.9	80-120			

Date : 03-NOV-2021 18:26

Client ID:

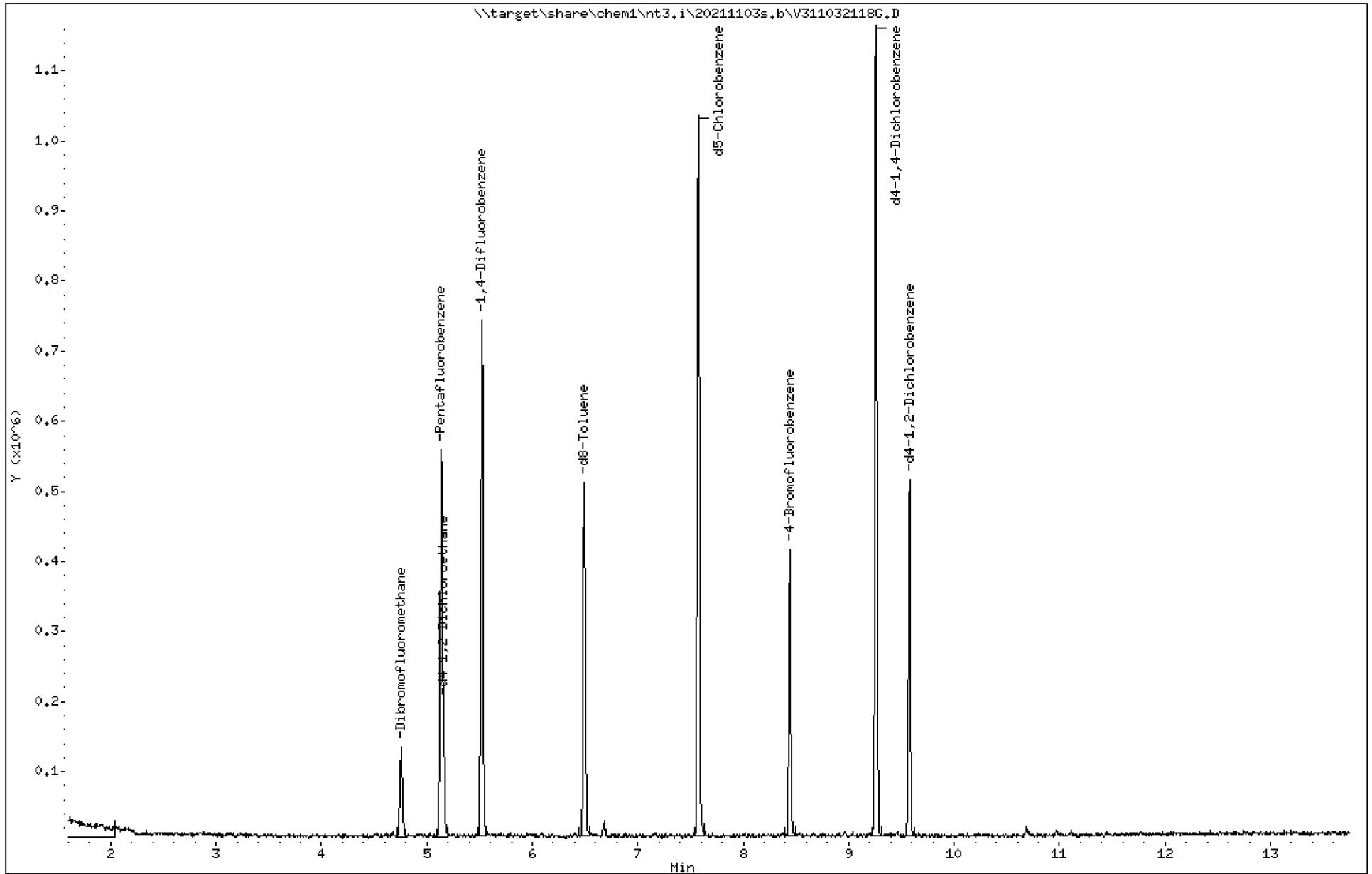
Instrument: nt3.i

Sample Info: BJK0102-BLK1

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt3.i\20211103s.b\V311032118G.D
 Lab Smp Id: BJK0102-BLK1
 Inj Date : 03-NOV-2021 18:26
 Operator : PKC Inst ID: nt3.i
 Smp Info : BJK0102-BLK1
 Misc Info : 15-
 Comment :
 Method : \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
 Meth Date : 03-Nov-2021 13:31 paul Quant Type: ISTD
 Cal Date : 02-NOV-2021 15:48 Cal File: V311022112.D
 Als bottle: 61
 Dil Factor: 1.00000
 Integrator: HP RTE Compound Sublist: gsurr.sub
 Target Version: 4.14

Concentration Formula: Amt * DF * Pv / Sa * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Pv	10.000	Purge Volume (mL)
Sa	10.000	Sample Amount (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT	SIG	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.751	4.750	(0.925)	64185	5.00049	5.000
* 32 Pentafluorobenzene	168		5.134	5.133	(1.000)	286732	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.155	5.160	(1.004)	34998	5.25905	5.259
* 37 1,4-Difluorobenzene	114		5.522	5.521	(1.000)	451573	10.0000	
\$ 43 d8-Toluene	98		6.489	6.488	(1.175)	256068	5.01027	5.010
* 53 d5-Chlorobenzene	117		7.574	7.573	(1.000)	451071	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.440	8.439	(1.114)	90977	4.89667	4.897
* 76 d4-1,4-Dichlorobenzene	152		9.259	9.258	(1.000)	255825	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.578	9.577	(1.034)	112020	5.01673	5.017

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt3.i Calibration Date: 02-NOV-2021
 Lab File ID: V311032118G.D Calibration Time: 14:32
 Lab Smp Id: BJK0102-BLK1
 Analysis Type: VOA Level: LOW
 Quant Type: ISTD Sample Type: WATER
 Operator: PKC
 Method File: \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	291645	145823	583290	286732	-1.68
37 1,4-Difluorobenze	454955	227478	909910	451573	-0.74
53 d5-Chlorobenzene	440555	220278	881110	451071	2.39
76 d4-1,4-Dichlorobe	258516	129258	517032	255825	-1.04

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.13	4.63	5.63	5.13	0.02
37 1,4-Difluorobenze	5.52	5.02	6.02	5.52	0.02
53 d5-Chlorobenzene	7.57	7.07	8.07	7.57	0.01
76 d4-1,4-Dichlorobe	9.26	8.76	9.76	9.26	0.01

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20151005
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: BJK0102-BLK1
Level: LOW Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	5.000	100.01	80-120
\$ 33 d4-1,2-Dichloroeth	5.000	5.259	105.18	80-128
\$ 43 d8-Toluene	5.000	5.010	100.21	80-120
\$ 62 4-Bromofluorobenze	5.000	4.897	97.93	80-120
\$ 79 d4-1,2-Dichloroben	5.000	5.017	100.33	80-120

REVIEW SUMMARY FOR FILE - V311032118G.D

Lab ID: BJK0102-BLK1

nt3.i, 20211103s.b\8260D110221.m,

03-NOV-2021 18:26

RT

CO-ELUTION COMPOUNDS

Date : 03-NOV-2021 18:26

Client ID:

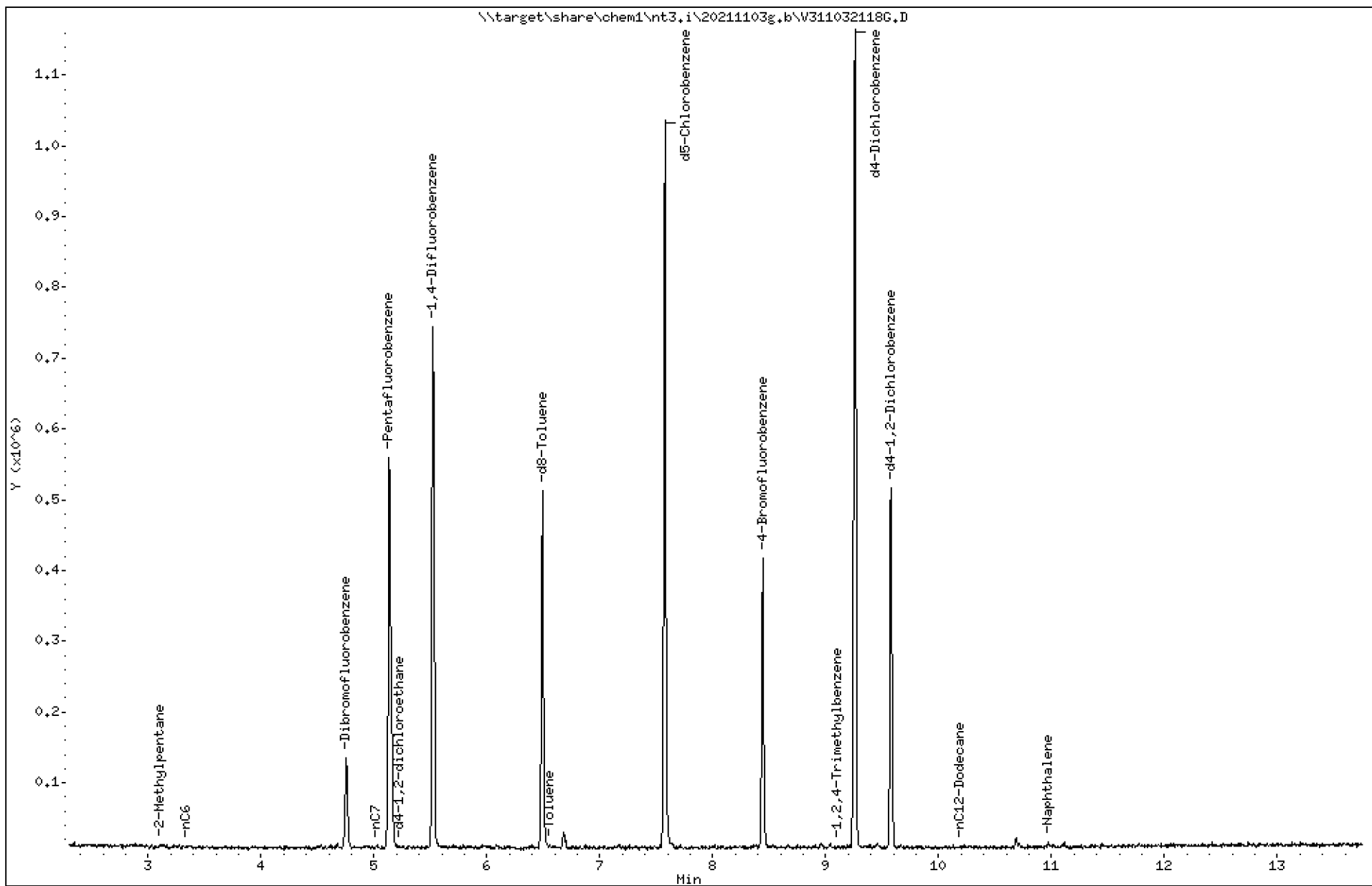
Sample Info: BJK0102-BLK1

Instrument: nt3.i

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20211103g.b/V311032118G.D
Method: \20211103g.b\NWTPHG110321.m
Instrument: nt3.i
Gas Ical Date: 03-NOV-2021
Injection Date: 03-NOV-2021 18:26

ARI ID: BJK0102-BLK1
Client ID:
Matrix: WATER
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	----	-----	-----
WAGas Tol-C12 (6.43 to 10.29)	49658111	335373	0.007
8015C 2MP-TMB (3.02 to 9.22)	86291970	508191	0.006
AK101 nC6-nC10 (3.27 to 8.41)	68836549	388813	0.006
NWTPHG Tol-Nap (6.43 to 11.07)	52529913	405275	0.008
mod8015 nC7-nC12 (4.94 to 10.29)	72133421	441620	0.006

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area

NW Gas Range Subtracted Peaks

7.574	1353677	d5-Chlorobenzene
6.490	679045	d8-Toluene
9.259	1498759	d4-Dichlorobenzene
8.441	520138	4-Bromofluorobenzene
9.578	673200	d4-1,2-Dichlorobenzene



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021043.000.010.011 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 08:45
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Analysis by: Analytical Resources, LLC
Volatile Organic Compounds - Quality Control

Batch BJK0102 - EPA 5030C (Purge and Trap)

Instrument: NT3

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BJK0102-BS1)					Prepared: 03-Nov-2021 Analyzed: 03-Nov-2021 16:21					
Gasoline Range Organics (Tol-Nap)	1080	100	ug/L	1000		108	72-128			
Surrogate: Toluene-d8	5.08		ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	4.93		ug/L	5.00		98.7	80-120			

Date : 03-NOV-2021 16:21

Client ID:

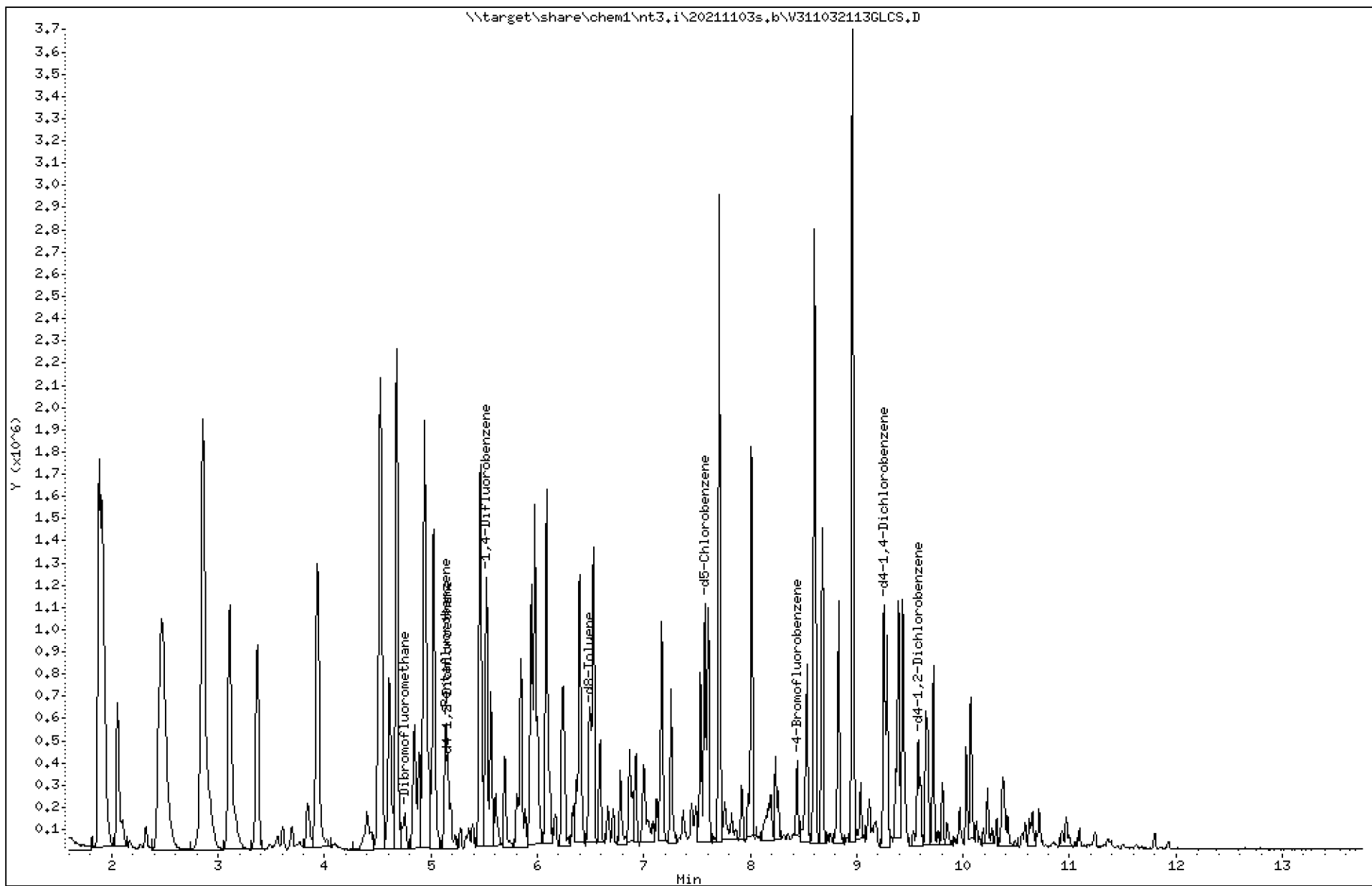
Instrument: nt3.i

Sample Info: BJK0102-B61

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge

Data file : \\target\share\chem1\nt3.i\20211103s.b\V311032113GLCS.D
 Lab Smp Id: BJK0102-BS1
 Inj Date : 03-NOV-2021 16:21
 Operator : PKC
 Smp Info : BJK0102-BS1
 Misc Info : 15-
 Comment :
 Method : \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
 Meth Date : 03-Nov-2021 13:31 paul
 Cal Date : 02-NOV-2021 15:48
 Als bottle: 61
 Dil Factor: 1.00000
 Integrator: HP RTE
 Target Version: 4.14

Inst ID: nt3.i

Quant Type: ISTD

Cal File: V311022112.D

Compound Sublist: gsurr.sub

Concentration Formula: Amt * DF * Pv / Sa * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Pv	10.000	Purge Volume (mL)
Sa	10.000	Sample Amount (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT	SIG	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.756	4.750	(0.926)	59967	4.97198	4.972
* 32 Pentafluorobenzene	168		5.134	5.133	(1.000)	269425	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.160	5.160	(1.005)	48229	7.71277	7.713(R)
* 37 1,4-Difluorobenzene	114		5.522	5.521	(1.000)	422395	10.0000	
\$ 43 d8-Toluene	98		6.489	6.488	(1.175)	242674	5.07619	5.076
* 53 d5-Chlorobenzene	117		7.573	7.573	(1.000)	412475	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.440	8.439	(1.114)	83812	4.93313	4.933
* 76 d4-1,4-Dichlorobenzene	152		9.258	9.258	(1.000)	244238	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.577	9.577	(1.034)	104587	4.90605	4.906

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt3.i Calibration Date: 02-NOV-2021
 Lab File ID: V311032113GLCS.D Calibration Time: 14:32
 Lab Smp Id: BJK0102-BS1
 Analysis Type: VOA Level: LOW
 Quant Type: ISTD Sample Type: WATER
 Operator: PKC
 Method File: \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	291645	145823	583290	269425	-7.62
37 1,4-Difluorobenze	454955	227478	909910	422395	-7.16
53 d5-Chlorobenzene	440555	220278	881110	412475	-6.37
76 d4-1,4-Dichlorobe	258516	129258	517032	244238	-5.52

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.13	4.63	5.63	5.13	0.01
37 1,4-Difluorobenze	5.52	5.02	6.02	5.52	0.01
53 d5-Chlorobenzene	7.57	7.07	8.07	7.57	0.01
76 d4-1,4-Dichlorobe	9.26	8.76	9.76	9.26	0.01

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20151005
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: BJK0102-BS1
Level: LOW Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	4.972	99.44	80-120
\$ 33 d4-1,2-Dichloroeth	5.000	7.713	154.26*	80-128
\$ 43 d8-Toluene	5.000	5.076	101.52	80-120
\$ 62 4-Bromofluorobenze	5.000	4.933	98.66	80-120
\$ 79 d4-1,2-Dichloroben	5.000	4.906	98.12	80-120

REVIEW SUMMARY FOR FILE - V311032113GLCS.D

Lab ID: BJK0102-BS1

nt3.i, 20211103s.b\8260D110221.m,

03-NOV-2021 16:21

RT

CO-ELUTION COMPOUNDS

Date : 03-NOV-2021 16:21

Client ID:

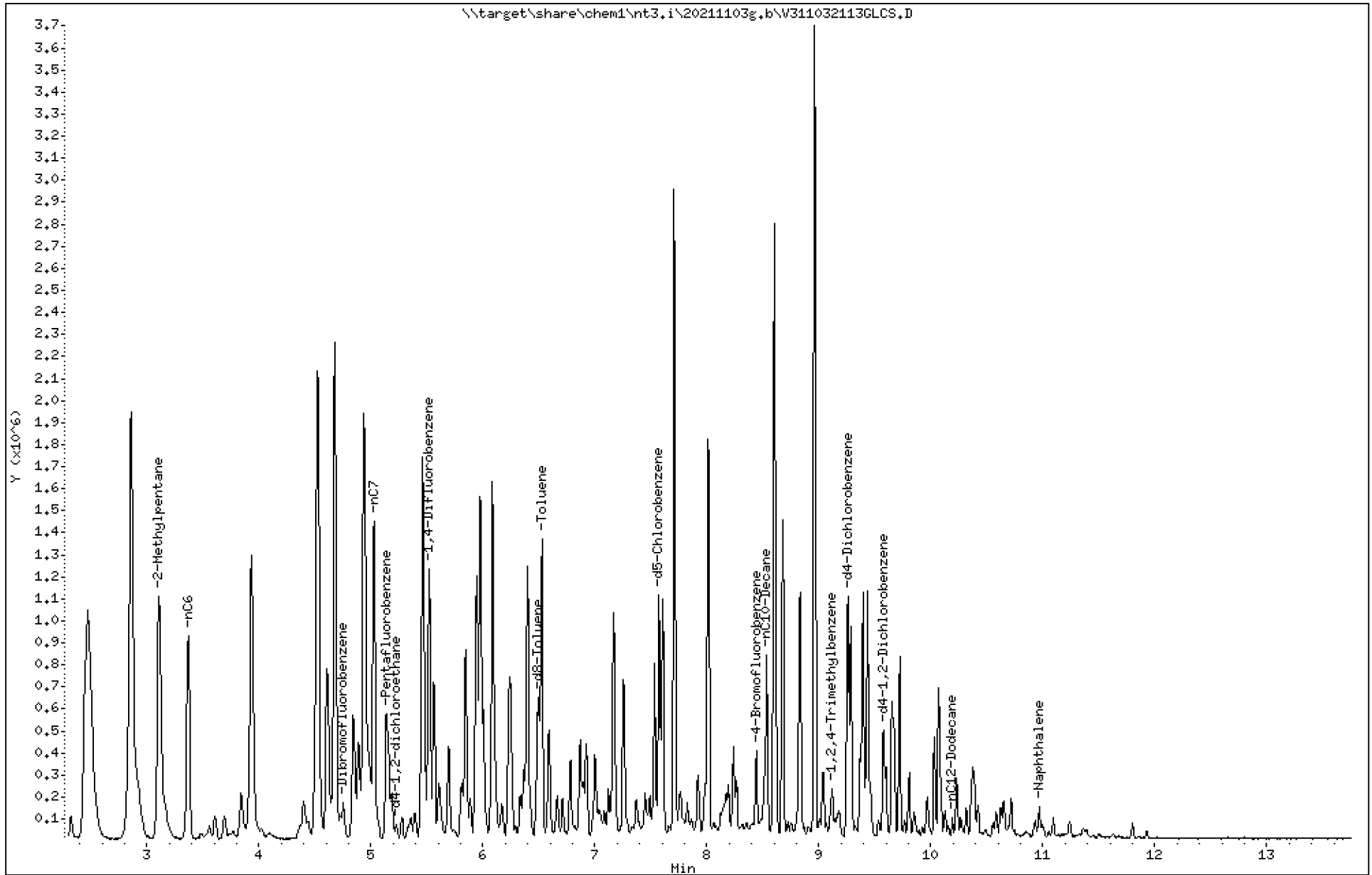
Instrument: nt3.i

Sample Info: BJK0102-B61

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20211103g.b/V311032113GLCS.D
Method: \20211103g.b\NWTPHG110321.m
Instrument: nt3.i
Gas Ical Date: 03-NOV-2021
Injection Date: 03-NOV-2021 16:21

ARI ID: BJK0102-BS1
Client ID:
Matrix: WATER
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	----	-----	-----
WAGas Tol-C12 (6.43 to 10.29)	49658111	53721345	1.082 M
8015C 2MP-TMB (3.02 to 9.22)	86291970	92420090	1.071 M
AK101 nC6-nC10 (3.27 to 8.41)	68836549	73447766	1.067
NWTPHG Tol-Nap (6.43 to 11.07)	52529913	56871850	1.083 M
mod8015 nC7-nC12 (4.94 to 10.29)	72133421	77845810	1.079 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area

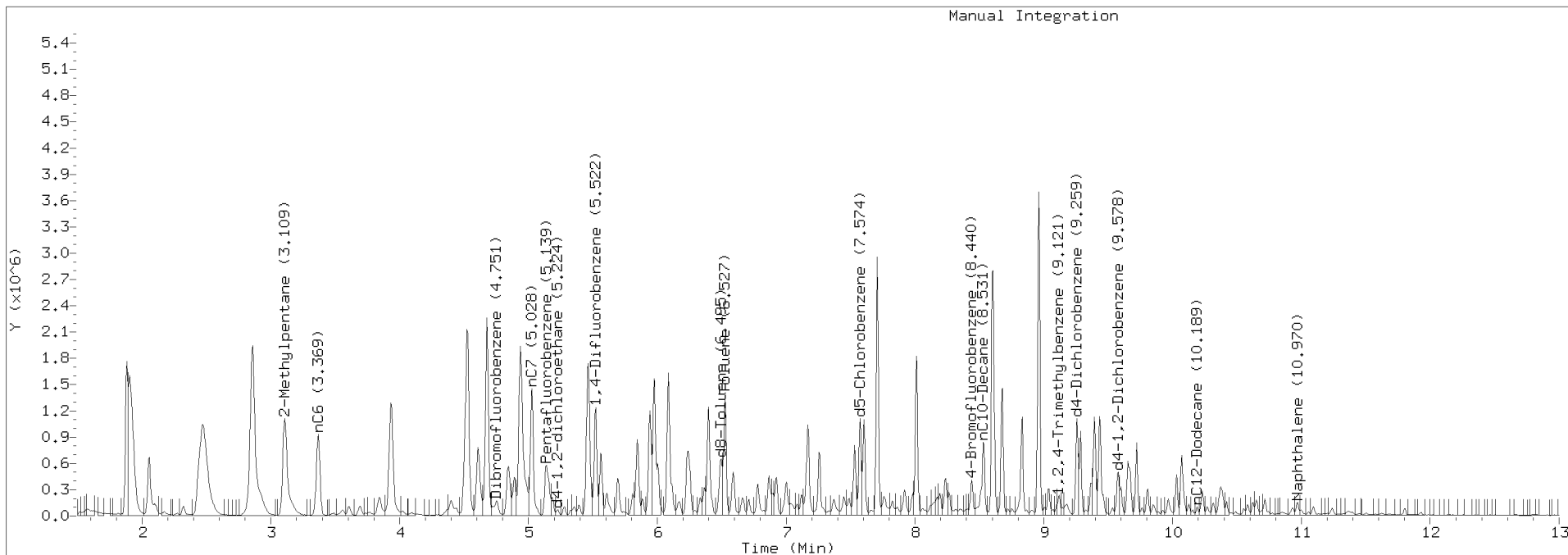
NW Gas Range Subtracted Peaks

7.574	1593261	d5-Chlorobenzene
6.495	1165056	d8-Toluene
9.259	1426619	d4-Dichlorobenzene
8.440	626857	4-Bromofluorobenzene
9.578	715342	d4-1,2-Dichlorobenzene

TPHG Manual Integrations Report

Datafile: NT3, 20211103g.b/V311032113GLCS.D Injection: 03-NOV-2021 16:21

Lab ID:BJK0102-BS1





Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021043.000.010.011 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 08:45
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Analysis by: Analytical Resources, LLC
Volatile Organic Compounds - Quality Control

Batch BJK0102 - EPA 5030C (Purge and Trap)

Instrument: NT3

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BJK0102-BSD1)				Prepared: 03-Nov-2021 Analyzed: 03-Nov-2021 17:11						
Gasoline Range Organics (Tol-Nap)	1050	100	ug/L	1000		105	72-128	3.17	30	
Surrogate: Toluene-d8	5.03		ug/L	5.00		101	80-120			
Surrogate: 4-Bromofluorobenzene	5.03		ug/L	5.00		101	80-120			

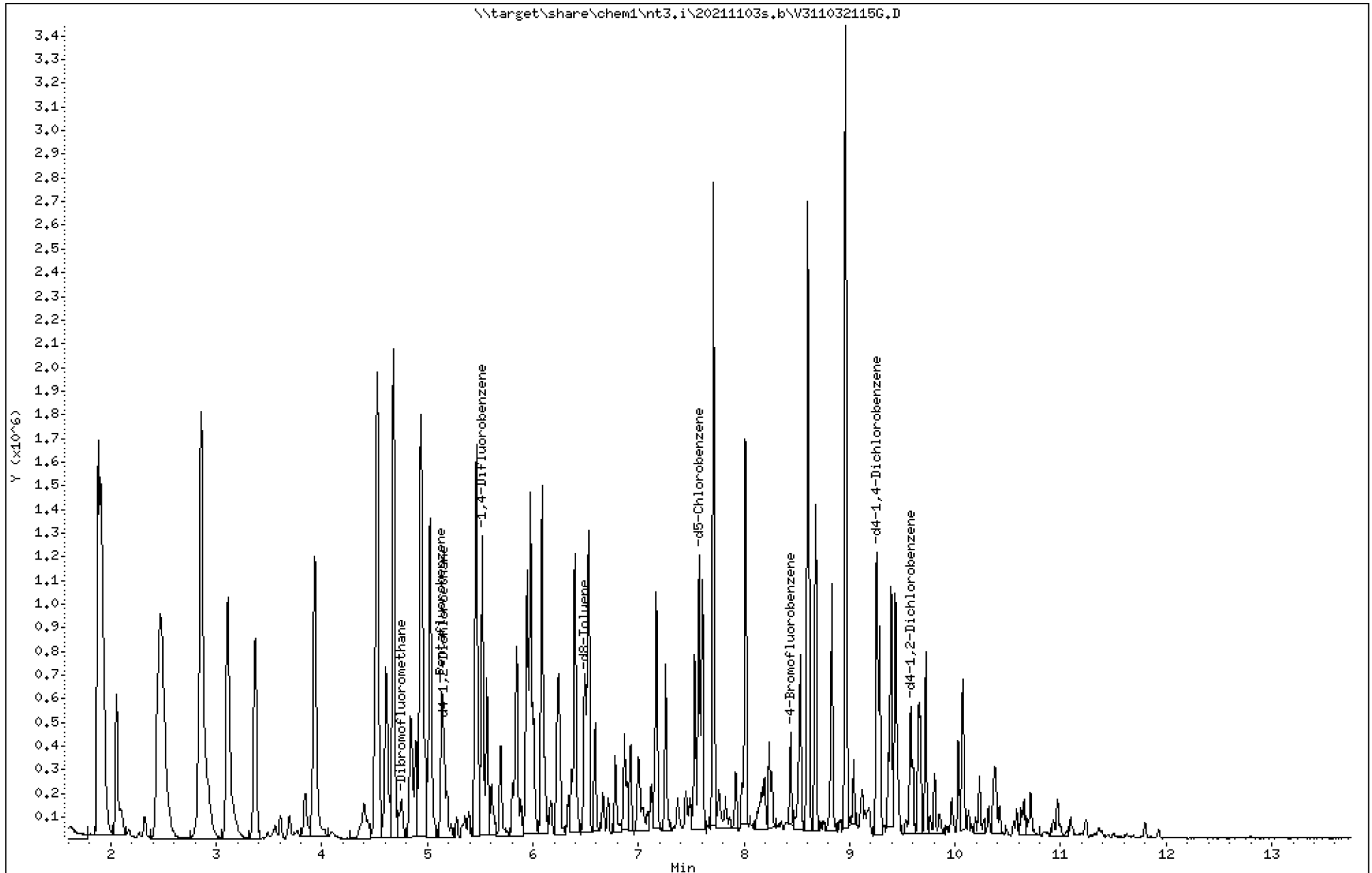
Date : 03-NOV-2021 17:11
Client ID:
Sample Info: BJK0102-BSD1

Instrument: nt3.i

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



ARI Labs, Inc.

8260C 10 ml purge
 Data file : \\target\share\chem1\nt3.i\20211103s.b\V311032115G.D
 Lab Smp Id: BJK0102-BSD1
 Inj Date : 03-NOV-2021 17:11
 Operator : PKC Inst ID: nt3.i
 Smp Info : BJK0102-BSD1
 Misc Info : 15-
 Comment :
 Method : \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
 Meth Date : 03-Nov-2021 13:31 paul Quant Type: ISTD
 Cal Date : 02-NOV-2021 15:48 Cal File: V311022112.D
 Als bottle: 61
 Dil Factor: 1.00000
 Integrator: HP RTE Compound Sublist: gsurr.sub
 Target Version: 4.14

Concentration Formula: Amt * DF * Pv / Sa * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Pv	10.000	Purge Volume (mL)
Sa	10.000	Sample Amount (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT	SIG	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ug/L)	FINAL (ug/L)
\$ 27 Dibromofluoromethane	111		4.756	4.750	(0.926)	64572	4.89457	4.895
* 32 Pentafluorobenzene	168		5.138	5.133	(1.000)	294703	10.0000	
\$ 33 d4-1,2-Dichloroethane	67		5.154	5.160	(1.003)	48372	7.07212	7.072 (R)
* 37 1,4-Difluorobenzene	114		5.521	5.521	(1.000)	471348	10.0000	
\$ 43 d8-Toluene	98		6.488	6.488	(1.175)	268079	5.02522	5.025
* 53 d5-Chlorobenzene	117		7.573	7.573	(1.000)	447106	10.0000	
\$ 62 4-Bromofluorobenzene	174		8.444	8.439	(1.115)	92670	5.03202	5.032
* 76 d4-1,4-Dichlorobenzene	152		9.258	9.258	(1.000)	264344	10.0000	
\$ 79 d4-1,2-Dichlorobenzene	152		9.577	9.577	(1.034)	115795	5.01866	5.019

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

ARI Labs, Inc.

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: nt3.i Calibration Date: 02-NOV-2021
 Lab File ID: V311032115G.D Calibration Time: 14:32
 Lab Smp Id: BJK0102-BSD1
 Analysis Type: VOA Level: LOW
 Quant Type: ISTD Sample Type: WATER
 Operator: PKC
 Method File: \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
 Misc Info: 15-

Test Mode:

Use Last Continuing Calibrator.
 If Continuing Cal. use Initial Cal. Level 5

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	291645	145823	583290	294703	1.05
37 1,4-Difluorobenze	454955	227478	909910	471348	3.60
53 d5-Chlorobenzene	440555	220278	881110	447106	1.49
76 d4-1,4-Dichlorobe	258516	129258	517032	264344	2.25

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
32 Pentafluorobenzon	5.13	4.63	5.63	5.14	0.10
37 1,4-Difluorobenze	5.52	5.02	6.02	5.52	0.00
53 d5-Chlorobenzene	7.57	7.07	8.07	7.57	0.00
76 d4-1,4-Dichlorobe	9.26	8.76	9.76	9.26	0.00

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

ARI Labs, Inc.

RECOVERY REPORT

Client Name: Client SDG: 20151005
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: BJK0102-BSD1
Level: LOW Operator: PKC
Data Type: MS DATA SampleType: SAMPLE
SpikeList File: allspike.spk Quant Type: ISTD
Sublist File: gsurr.sub
Method File: \\target\share\chem1\nt3.i\20211103s.b\8260D110221.m
Misc Info: 15-

SURROGATE COMPOUND	AMOUNT ADDED ug/L	AMOUNT RECOVERED ug/L	% RECOVERED	LIMITS
\$ 27 Dibromofluorometha	5.000	4.895	97.89	80-120
\$ 33 d4-1,2-Dichloroeth	5.000	7.072	141.44*	80-128
\$ 43 d8-Toluene	5.000	5.025	100.50	80-120
\$ 62 4-Bromofluorobenze	5.000	5.032	100.64	80-120
\$ 79 d4-1,2-Dichloroben	5.000	5.019	100.37	80-120

REVIEW SUMMARY FOR FILE - V311032115G.D

Lab ID: BJK0102-BSD1

nt3.i, 20211103s.b\8260D110221.m, 03-NOV-2021 17:11

RT CO-ELUTION COMPOUNDS

Date : 03-NOV-2021 17:11

Client ID:

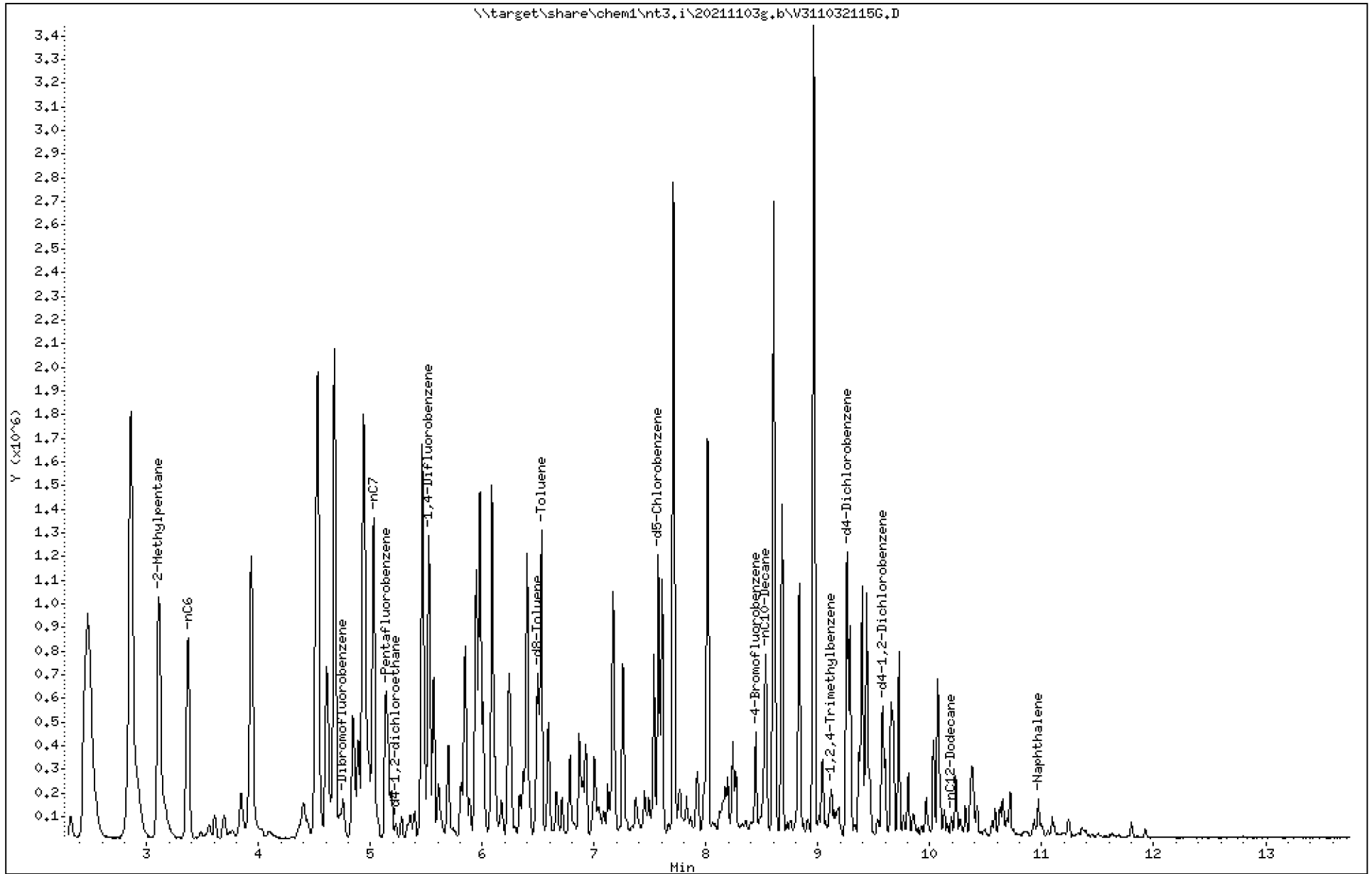
Instrument: nt3.i

Sample Info: BJK0102-BSD1

Operator: PKC

Column phase: RTXVMS

Column diameter: 0.18



Analytical Resources Inc.
GC/MS Gas Quantitation Report

Data file: 20211103g.b/V311032115G.D
Method: \20211103g.b\NWTPHG110321.m
Instrument: nt3.i
Gas Ical Date: 03-NOV-2021
Injection Date: 03-NOV-2021 17:11

ARI ID: BJK0102-BSD1
Client ID:
Matrix: WATER
Dilution Factor: 1.000
Operator: PKC

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GASOLINE HYDROCARBONS

Range	RF	Total Area*	Amount (ug/mL)
-----	----	-----	-----
WAGas Tol-C12 (6.43 to 10.29)	49658111	51887196	1.045 M
8015C 2MP-TMB (3.02 to 9.22)	86291970	88564102	1.026
AK101 nC6-nC10 (3.27 to 8.41)	68836549	70249103	1.021
NWTPHG Tol-Nap (6.43 to 11.07)	52529913	55097573	1.049 M
mod8015 nC7-nC12 (4.94 to 10.29)	72133421	74909738	1.038 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area

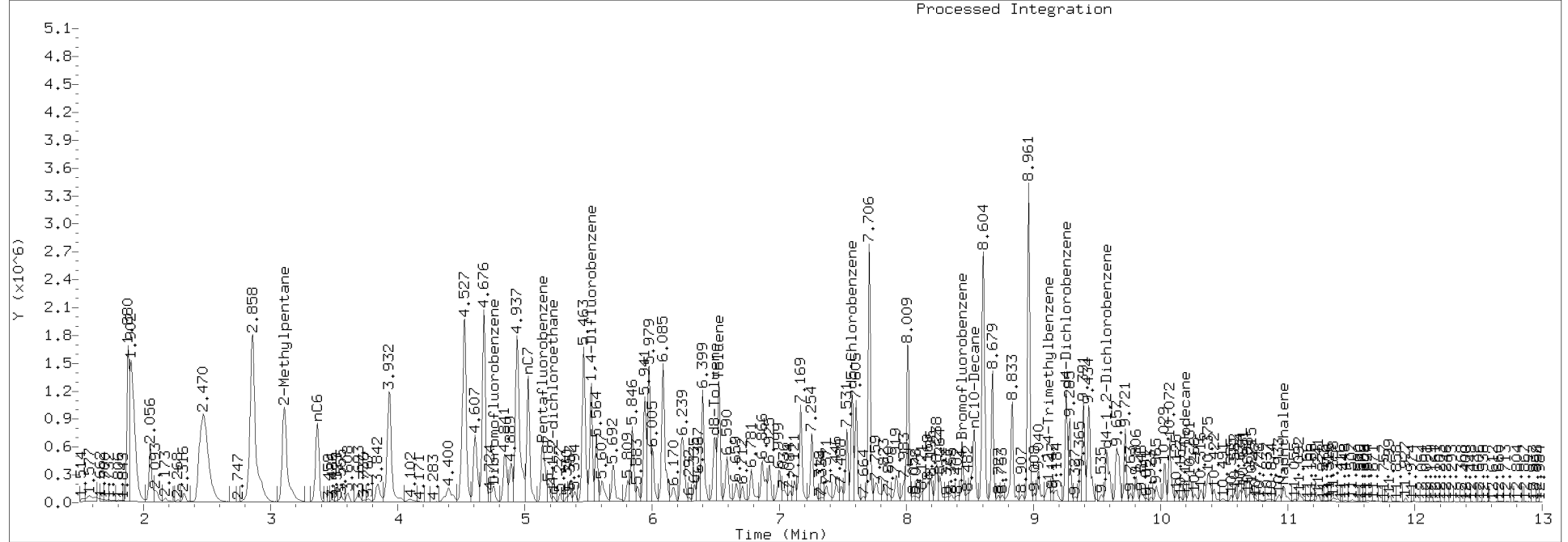
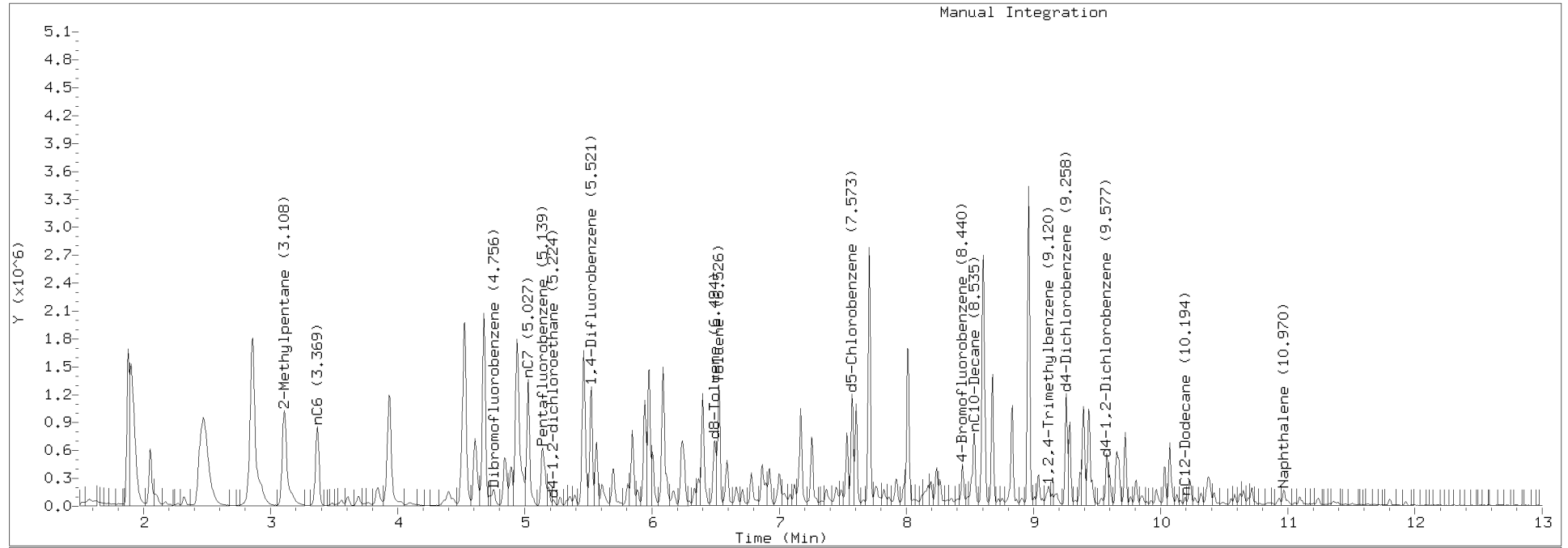
NW Gas Range Subtracted Peaks

7.573	1681568	d5-Chlorobenzene
6.494	1187429	d8-Toluene
9.258	1724389	d4-Dichlorobenzene
8.440	670480	4-Bromofluorobenzene
9.577	857422	d4-1,2-Dichlorobenzene

TPHG Manual Integrations Report

Datafile: NT3, 20211103g.b/V311032115G.D Injection: 03-NOV-2021 17:11

Lab ID:BJK0102-BSD1





Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021043.000.010.011
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 08:45

Certified Analyses included in this Report

Analyte	Certifications
EPA 8260D in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021043.000.010.011
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 08:45

2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE



Landau Associates, Inc. 130 2nd Avenue S. Edmonds WA, 98020	Project: Cascade Pole Project Number: Cascade Pole/0021043.000.010.011 Project Manager: Christine Kimmel	Reported: 08-Nov-2021 08:45
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NWTPHg in Water

Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP
Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2022
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2022
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022



Landau Associates, Inc.
130 2nd Avenue S.
Edmonds WA, 98020

Project: Cascade Pole
Project Number: Cascade Pole/0021043.000.010.011
Project Manager: Christine Kimmel

Reported:
08-Nov-2021 08:45

Notes and Definitions

- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.