2022 GROUNDWATER MONITORING REPORT: NONENE LOADING RACK HOLLYFRONTIER PUGET SOUND REFINERY

prepared for:

HollyFrontier Puget Sound Refining LLC 8505 South Texas Rd. Anacortes, WA 98221

June 16, 2022

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228 East Champion Street, Suite 101, Bellingham, WA 98225 360.752.9571 | www.whatcom-es.com 2022 GROUNDWATER MONITORING REPORT NONENE LOADING RACK HOLLYFRONTIER PUGET SOUND REFINERY

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HollyFrontier Puget Sound Refining LLC 8505 South Texas Rd. Anacortes, WA 98221



prepared by:

Whatcom Environmental Services 228 East Champion Street, Suite 101 Bellingham, WA 98225

June 16, 2022

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Eric Libolt QA/QC Reviewer

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1.0 INTRODUCTION

A release of nonene to the ground occurred at the HollyFrontier Puget Sound Refining, LLC (HFPSR) nonene loading rack on October 23, 2011. A clogged oily water sewer drain caused the nonene to overflow the loading rack drainage sump. The nonene overflowed into the surrounding rail line ballast-rock. The nonene release location is shown on Figure 1.

The release and subsequent site characterization work was documented in a report prepared by Whatcom Environmental Services for Shell Puget Sound Refinery dated January 11, 2012 (WES, 2012a). Annual Groundwater Monitoring Reports summarizing the groundwater conditions at the site in 2012 through 2021 were completed and submitted to the client (WES, 2012b; WES, 2014; WES, 2015(2); WES, 2016; WES, 2017; WES, 2018; WES, 2019; WES, 2020; WES, 2021).

On February 10, 2015, the Washington State Department of Ecology (Ecology) submitted a letter to the client following their review of the annual 2014 summary document that stated that the monitoring frequency of the site may be reduced to annual from quarterly (Ecology, 2015). The letter from Ecology is included in Appendix A.

The annual groundwater sample was collected on February 28, 2022. This report documents the 2022 groundwater monitoring results and should be used in conjunction with the previous reports to document the condition of groundwater at the nonene loading rack release site.

Gasoline and diesel range total petroleum hydrocarbons (TPH) were detected in groundwater at the site in 2022. The laboratory analytical results showed that groundwater concentrations of diesel range contaminants, gasoline range contaminants, and BTEX constituents (benzene, toluene, ethylbenzene, and total xylenes) were below the applicable MTCA Method A target groundwater cleanup levels.

2.0 SITE DESCRIPTION

The HFPSR site is located at 8505 South Texas Road in Anacortes, Washington on March Point. The property is zoned for heavy industry. The site is located in the northwest quarter of the northwest quarter of Section 4 in Township 34 North, Range 2 east. Mr. Jim Schneider is the facility contact for the site (360) 293-0868.

2.1 SURROUNDING AREA AND SITE TOPOGRAPHY

The HFPSR site is bordered on the north by North Texas Road and the Tesoro Refinery, on the east by East March Point Road, on the south by South Texas Road, and on the west by West March Point Road. Fidalgo Bay is located approximately 0.25 miles west of the site and Padilla Bay is located approximately 1.25 miles to the east. The city of Anacortes, Washington is located approximately 3.75 miles to the northwest of the site.

The median elevation of the nonene loading rack site is approximately 70 feet above mean sea level. The site generally slopes towards the west but is made up of two relatively level areas; one approximately 75 feet above sea level (loading rack), and the other approximately 65 feet above sea level (monitoring well location).

2.2 SITE GEOLOGY

The subject property is located in the northern portion of the Puget Sound Basin. The region is characterized by thick sequences of Pleistocene glacial advance outwash and meltwater deposits that were deposited on a basement of tectonically deformed ancient sedimentary and metamorphic bedrock. The glacial deposits have been reworked by more recent fluvial, lacustrine, and aeolian actions into the landforms present today.

The HFPSR site is underlain by glacial till of the Vashon Stade (WDNR, 2000). The till consists of dense, unsorted diamicton which includes clast sizes ranging from boulders to clay. The unit contains localized areas of laminated silt and fine sand. Smaller clasts are generally subangular to rounded while boulders tend to be polished, faceted and striated. The unit ranges in color from gray and olive-gray to brown and yellowish-

brown, depending on lithologic content and oxidation state. The thickness of the unit is from less than 1 meter to a maximum of approximately 25 meters.

2.3 SITE HYDROLOGY

A groundwater monitoring well (W-129) was installed at the site in November 2011 at the location shown on Figure 1. Groundwater was first encountered at approximately 16 feet below ground surface (bgs). All cuttings and split-spoon samples appeared dry to moist above that depth. Following completion of the well, groundwater levels gradually rose to approximately 1 foot below the ground surface in the well. This may indicate that the well was completed in a confined aquifer as soils did not appear to be saturated during the drilling of the well until the well reached approximately 16 feet in depth.

Based on numerous groundwater wells and historic groundwater studies conducted at the HFPSR site, the general direction of groundwater flow follows the topography and flows to the west/southwest on the west side of March Point.

3.0 GROUNDWATER SAMPLING

One groundwater sample was collected from monitoring well W-129 on February 28, 2022. The groundwater sample was analyzed at Eurofins Environment Testing Northwest (formerly TestAmerica) environmental laboratory for diesel range TPH using method NWTPH-Dx, gasoline range TPH using method NWTPH-Gx, and BTEX constituents using method EPA-8260.

Prior to each sampling event, the depth to water in well W-129 was measured from the top of the PVC well casing with an electronic well probe and recorded in the field notebook. The depth to water recorded in 2022 is presented on Table 1. The groundwater sample was collected using a low-flow sampling procedure in accordance with EPA sampling guidelines (EPA, 2017). A YSI 556 multi-parameter water quality meter was used to monitor the groundwater chemistry during well purging prior to sample collection. The groundwater sample was collected after groundwater chemistry parameters had stabilized. The final groundwater chemistry parameters representing stable groundwater conditions are summarized in Table 2.

The sample was collected in sample bottles provided by Eurofins and stored on ice in a cooler immediately following collection. All sample containers included a sample label indicating the sample identification, the project name, the sampling date and time, and the sampler's name. Standard industry protocols regarding sample preservation, chain-of-custody, and shipping were followed.

4.0 GROUNDWATER SAMPLING RESULTS

Groundwater analytical data are summarized in Table 1. Stable groundwater chemistry parameters recorded prior to sample collection are presented in Table 2. The original groundwater laboratory analytical data reports are included in Appendix B.

Gasoline range TPH was detected in the groundwater during the sampling event in 2022. Gasoline range TPH was detected at a concentration of 480 μ g/L, which is below the MTCA Method A target cleanup level for gasoline range TPH without the presence of benzene or other BTEX constituents.

Diesel range TPH was detected in the groundwater during the sampling event in 2022. Diesel range TPH was detected at a concentration of 140 μ g/L, which is below the MTCA Method A target cleanup level for diesel range TPH. Oil range TPH was not detected in the groundwater during the 2022 sampling event.

No BTEX constituents were detected in 2022 at concentrations exceeding the laboratory reporting limit.

5.0 CONCLUSIONS

One groundwater sample was collected from monitoring well W-129 in 2022 and analyzed for gasoline and diesel range TPH, and BTEX constituents. The laboratory analytical results indicated that concentrations of gasoline and diesel range TPH, as well as BTEX constituents, did not exceed the MTCA Method A target cleanup levels in 2022. The site is underlain by silt and clay which will limit the vertical migration of contamination.

6.0 LIMITATIONS

This environmental report is based on conditions that existed at the time the investigation was performed, and samples collected. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, ground instability, or groundwater fluctuations.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted environmental practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

This report has been prepared for use by HFPSR by Whatcom Environmental Services, Inc. Whatcom Environmental prepares a report for the client's exclusive use for a particular project and in accordance with generally accepted practices at the time of investigation. This report was prepared for exclusive use by the client and its agents and may not be used, relied upon, or assigned to a third party without written consent from Whatcom Environmental. This report is not intended for use by others, and the information contained herein is not applicable to other sites. This report may be made available to regulatory agencies.

7.0 REFERENCES

- U.S. Environmental Protection Agency, 2017 (rev. 4), Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, EQASOP-GW4, https://www.epa.gov/sites/default/files/2017-10/documents/eqasop-gw4.pdf
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- Whatcom Environmental Services, Inc. August 24, 2020 Groundwater Monitoring Report, Nonene Loading Rack, Shell Oil Products US, Puget Sound Refinery. Prepared for: Shell Oil Products US, Puget Sound Refinery.
- Whatcom Environmental Services, Inc. October 12, 2021 Groundwater Monitoring Report, Nonene Loading Rack, Shell Oil Products US, Puget Sound Refinery. Prepared for: Shell Oil Products US, Puget Sound Refinery.





			NWTPH-Dx	NWTPH-Dx	NWTPH-Gx	EPA-8260	EPA-8260	EPA-8260	EPA-8260
Sample ID	Date	Depth to Water	Diesel Range	Lube-oil Range	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylenes
		(ft below casing)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
MTCA Method A Cleanup Levels		5	500	500	800/1000 ^a	5	1,000	700	1,000
NONENE (W-129)	12/5/11	*4.08	ND(<130)	ND(<250)	1,300	ND(<0.12)	ND(<0.20)	ND(<0.10)	ND(<0.91)
	3/21/12	3.83	750	ND(<240)	260	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.0)
	6/25/12	3.81	360	ND(<240)	420	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.0)
	9/18/12	5.64	230	ND(<240)	530	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.0)
	11/20/12	3.39	510	ND(<240)	570	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.0)
	2/19/13	3.69	660	ND(<240)	160	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.0)
	4/22/13	3.73	460	ND(<240)	92	ND(<0.5)	2.1	ND(<0.5)	ND(<1.0)
	7/31/13	5.07	130	ND(<240)	200	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.0)
	11/25/13	4.15	190	ND(<240)	510	ND(<1.0)	ND(<1.0)	ND(<1.0)	ND(<3.0)
	3/19/14	3.66	200	ND(<240)	510	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<2.0)
	6/11/14	4.90	190	ND(<240)	870	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<2.0)
	8/5/14	4.87	210	ND(<240)	820	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<2.0)
	11/11/14	4.02	150	ND(<260)	780	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<2.0)
	8/25/15	6.63	ND(<210)	ND(<480)	790	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<2.0)
	8/10/16	5.93	ND(<120)	ND(<270)	410	ND(<2.0)	ND(<2.0)	ND(<3.0)	ND(<2.0)
	8/3/17	6.20	120	ND(<270)	470	ND(<0.4)	ND(<1.0)	ND(<1.0)	ND(<3.0)
	6/26/18	5.10	130	ND(<360)	590	ND(<3.0)	ND(<2.0)	ND(<3.0)	ND(<3.0)
	8/7/19	5.32	200	ND(<370)	130	ND(<3.0)	ND(<2.0)	ND(<3.0)	ND(<3.0)
	8/11/20	5.40	130	ND(<360)	640	ND(<3.0)	ND(<2.0)	ND(<3.0)	ND(<3.0)
	5/4/21	4.50	150	ND(<370)	1,200	ND(<0.2)	ND(<0.2)	ND(<0.2)	ND(<0.5)
	2/28/22	3.84	140	ND(<350)	480	ND(<1.0)	ND(<1.0)	ND(<1.0)	ND(<2.0)

Table 1. Groundwater Sample Analytical Results - Nonene Loading Rack

^a - Cleanup level dependant on BTEX concentrations

ND - indicates analyte was not detected at level above the laboratory reporting limit (shown)

* - DTW collected on 12/7/11

Sample ID	Date	Temperature	Electrical Conductivity	Total Dissolved Solids	Salinity	Dissolved Oxygen	рН	Oxidation/Reduction Potential
		(°C)	(mS/cm)	(g/L)	(ppt)	(mg/L)	(pH units)	(mV)
NONENE (W-129)	12/5/11	11 77	0.577	0 375	0.28	0.60	7 95	64 50
NONLINE (W-125)	2/01/10	0.05	0.577	0.375	0.20	0.00	8.00	22.60
	5/21/12	9.95	0.564	0.379	0.28	0.08	8.00 7.01	-22.00
	0/25/12	13.09	0.566	0.368	0.28	0.03	7.91	-46.80
	9/18/12*							
	11/20/12	12.79	0.631	0.410	0.31	0.63	7.69	9.30
	2/19/13	10.24	0.584	0.380	0.29	0.02	7.60	-60.90
	4/22/13	11.30	0.587	0.381	0.29	0.02	7.70	-40.10
	7/31/13	15.26	0.577	0.375	0.28	0.01	7.83	-38.90
	11/25/13	12.62	0.640	0.416	0.31	0.56	7.97	66.00
	3/19/14	10.15	0.609	0.396	0.30	0.02	7.74	-18.70
	6/11/14	16.04	0.589	0.383	0.29	0.02	7.84	25.00
	8/5/14	15.17	0.625	0.406	0.31	0.61	8.15	11.70
	11/11/14	13.92	0.646	0.420	0.32	0.58	8.24	20.50
	8/25/15	17.31	0.595	0.387	0.29	0.63	7.75	113.10
	8/10/16	18.02	0.616	0.400	0.30	0.15	8.08	-90.90
	8/3/17	18.46	0.583	0.379	0.28	0.18	8.65	-18.80
	6/26/18	15.92	0.582	0.578	0.28	0.19	7 43	43 80
	8/7/19	16.67	0.640	0.416	0.31	0.12	7.81	-37 20
	8/11/20	17 73	0.617	0.401	0.30	0.12	7.53	-14 50
	5/11/20	10.02	0.017	0.405	0.30	0.47	7.33	-17.50
	5/4/21	12.93	0.023	0.405	0.30	0.65	1.39	0.40
	2/28/22	9.22	0.594	0.386	0.29	0.64	6.84	105.00

Table 2. Groundwater Chemistry Parameters - Nonene Loading Rack

Data collected using a YSI 556 MPS water meter

* - Parameters not recorded due to meter error

APPENDIX A

Letter from Ecology granting permission for Annual Monitoring February 10, 2015



STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000 711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

February 10, 2015

Mr. Gary Barklind Shell Oil Products US 8505 S. Texas Road PO Box 622 Anacortes, WA 98221-0622

Re: Ecology Review of 2014 Groundwater Monitoring Report: Nonene Loading Rack, Shell Puget Sound Refinery

Mr. Barklind:

The Washington State Department of Ecology (Ecology) has reviewed the 2014 Groundwater Monitoring Report: Nonene Loading Rack for the Shell Oil Puget Sound Refinery site. This report provides background on the release of nonene to the ground (rail line ballast rock) on October 21, 2011 and subsequent groundwater monitoring, including four rounds of monitoring in 2014. The release of nonene was characterized and then described in a 2012 Independent Remedial Action Report (IRAP) for the Nonene Loading Rack. The IRAP describes the analysis of two extractable and volatile soil samples that may pose a threat to human health and potable groundwater and the installation of one groundwater monitoring well.

Since the release of nonene in 2011, quarterly groundwater monitoring has been performed at one well (W-129) with analysis for petroleum hydrocarbons and BTEX. Results of the groundwater monitoring demonstrate a decreasing trend for diesel range hydrocarbons and only one exceedance of MTCA Method A cleanup levels for gasoline range hydrocarbons during the first round in 2011. There have been no BTEX exceedances.

Without additional soil sampling and analysis, Ecology assumes the soil remains at concentrations that may pose a threat to human health or potable groundwater. Ecology therefore agrees that the frequency of groundwater monitoring can be reduced from quarterly to an annual basis beginning the first quarter of 2015.

If you have any questions regarding this letter, please contact me at (360) 407-6999 or Guy.Barrett@ecy.wa.gov. Thank you.

Mr. Gary Barklind February 10, 2015 Page 2 of 2

Sincerely,

and Juy

Guy Barrett, LHG Site Manager Industrial Section Waste 2 Resources Program

cc: Mark Dirkx, Ecology Kim Wigfield, Ecology

By Certified Mail # 91 7199 9991 7032 9431 7488

APPENDIX B

2022 Groundwater Sample Laboratory Analytical Data

Environment Testing America

ANALYTICAL REPORT

Eurofins Seattle 5755 8th Street East Tacoma, WA 98424 Tel: (253)922-2310

Laboratory Job ID: 580-110866-1

Client Project/Site: HFC: Nonene Loading Rack Site Groundwater Monitori

For:

Whatcom Environmental Services Inc. 228 East Champion Street #101 Bellingham, Washington 98225

Attn: Eric Libolt

Shuid any-

Authorized for release by: 3/14/2022 4:57:48 PM

Sheri Cruz, Project Manager I (253)922-2310 Sheri.Cruz@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Job ID: 580-110866-1

Client: Whatcom Environmental Services Inc.

Project/Site: HFC: Nonene Loading Rack Site Groundwater Monito

Laboratory: Eurofins Seattle

Narrative

Job Narrative 580-110866-1

Case Narrative

Comments

No additional comments.

Receipt

The samples were received on 3/1/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.8° C.

GC/MS VOA

Method 8260D: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for analytical batch 580-383290 recovered outside control limits for the following analytes: Benzene.

Method 8260D: The surrogate recovery for the blank associated with analytical batch 580-383290 was outside the upper control limits.

Method NWTPH-Gx: The continuing calibration verification (CCV) associated with batch 580-383288 recovered above the upper control limit for Gasoline. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: Trip Blanks (580-110866-2) and (CCV 580-383288/26).

Method NWTPH-Gx: CCV drift flag removed due to CCV not being a part of bracket associated with this sample. W-129 (580-110866-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 580-383561, so a LCS/LCSD were created and substituted for the MS/MSD/DUP.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Whatcom Environmental Services Inc. Project/Site: HFC: Nonene Loading Rack Site Groundwater Monitori

Job ID: 580-110866-1

2 3 4 5 6 7 8 9

Qualifiara
Quaimers

Qualifier Qualifier Description '1 LCSRLCSD PRD exceeds control limits. Instance Strain Surrogate recovery exceeds control limits. high biased. Instance Glossary Abbreviation Tese commonly used abbreviations may or may not be present in this report. Instance a Listed under the "D" column to designate that the result is reported on a dry weight basis Instance Instance GLOBY Contains Free Liquid Column Free Liquid Instance Instance CFL Contains Free Liquid Control firming Unit Instance Instance Instance DR Duplicate Error Ratio (normalized absolute difference) Dil toin Factor Instance Instance Instance DL Detection Limit (boD/DOE) Extended Detection Limit (DoD/DOE) Extende Detecti	GC/MS VOA		2
*1 EDSILCSD RPD exceeds control limits. Sit+a Surrogate recovery exceeds control limits, high biased. Clossary ************************************	Qualifier	Qualifier Description	
Sh* Surgadar recovery exceeds control limits, high biased. Clossary Abbreviation These commonly used abbreviations may or may not be present in this report. a Listed under the "D" column to designate that the result is reported on a dry weight basis %R Percent Recovery CH Contains Free Liquid CFU Colony Forming Unit CNF Contains No Free Liquid DR Duplicate Error Ratio (normalized absolute difference) DI Fac Dilution Factor DL Detection Limit (DoD/DOE) DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample DLC Desision Level Concentration (Radiochemistry) EDL Estimated Detection Limit (DoD/DOE) LQ Limit of Detection (DoD/DOE) LQ Limit of Quanitation (DoD/DOE) LQ Limit of Quanitation (Radiochemistry) MDA Minimum Detectable Concentration (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry) MDA Minimum Detectable Concentration (Radiochemistry) MDA Minimum Detectable Concentration (Radiochemistry) MDA Minimum Detectable Concentration (Radiochemistry) <td< td=""><td>*1</td><td>LCS/LCSD RPD exceeds control limits.</td><td>k</td></td<>	*1	LCS/LCSD RPD exceeds control limits.	k
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AbsenceIncomposite of a single status and	Glossary		
nListed under the 'D' column to designate that the result is reported on a dry weight basis%RPercent Recovery%RContains Free LiquidCFLContains Free LiquidCFLContains No Free LiquidDKDuplicate Error Ratio (normalized absolute difference)DI FacDiution FactorDL aDetection Limit (DoD/DOE)DL, RA, RE, INIndicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sampleDL, RA, RE, INIndicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sampleDL, RA, RE, INIndicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sampleDL, RA, RE, INIndicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sampleDL, RA, RE, INIndicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sampleDL, RA, RE, INIndicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sampleDL, RA, RE, INIndicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sampleDL, RA, RE, INIndicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sampleDL, RA, RE, INIndicates a Dilution, ReadiochemistryROLLimit of Quantitation (DoD/DOE)LOQLimit of Quantitation InitiMDLMethod Detection Limit (IndiCher EDL if shown)MDLMethod Quantitation LimitNDNo Dete	Abbreviation	These commonly used abbreviations may or may not be present in this report.	
%RGreent RecoveryCFLContains Free LiquidCFUColony Forming UnitCNFContains No Free LiquidCNFContains No Free LiquidDFRDilution Error Ratio (normalized absolute difference)DIFAcDilution FachorDLDetection Limit (DoD/DOE)DL, RA, RE, INIndicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sampleDLDecision Level Concentration (Radiochemistry)EDLBesision Level Concentration (Radiochemistry)EDLLimit of Detection (DoD/DOE)LOQLimit of Quantitation (CoD/DOE)MCLEPA recommended "Maximum Contaminant Level"MDAMinimum Detectable Activity (Radiochemistry)MDLMinimum Detectable Activity (Radiochemistry)MDLMinimum Detectable Concentration (Radiochemistry)MDLMoto Detectoin LimitMINMoto Autination (CoD/DOE)MDLMoto Autination (CoD/DOE)MDLMoto Autination (CoD/DOE)MDLMoto Quantitation (Radiochemistry)MDLMoto Autination (Colico)MDLMoto Autination (Colico)MDL	¤	Listed under the "D" column to designate that the result is reported on a dry weight basis	
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CFUColony Forming UnitCNFContains NF rect lquidDFRUplicate Forre Ratio (normalized absolute difference)DI FacDiution FactorDI FacDiution FactorDLDetection Limit (DoD/DOE)DLDetection Limit (DoD/DOE)DLDecision Level Concentration (Radiochemistry)EDLStimated Detection Limit (Dioxin)EDLLimit of Detection Limit (DioXin)LOLimit of Quantitation (DoD/DOE)LOLimit of Quantitation (DoD/DOE)MCLEP recommended "Maximum Contaminant Level"MDAMinum Detectable Activity (Radiochemistry)MDLMinum Detectable Concentration (Radiochemistry)MDLMost Probable NumberMDLMost Probable NumberMDLMost Probable NumberNDLNot CalutatedNDLNot Detected at the reporting limit (or MDL or EDL if shown)NCNot Calutation LimitPOSPositive / PresentPOSPositive / PresentPOSPositive / PresentPOSPositive / PresentPOSPositive / Present (Radiochemistry)REMRelave Error Ratio (Radiochemistry)REMRelave Error Ratio (Radiochemistry) <td< td=""><td>CFL</td><td>Contains Free Liquid</td><td></td></td<>	CFL	Contains Free Liquid	
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MPNMost Probable NumberMQLMethod Quantitation LimitNCNot CalculatedNDNot Detected at the reporting limit (or MDL or EDL if shown)NEGNegative / AbsentPOSPositive / PresentPQLPractical Quantitation LimitPRESPresumptiveQCQuality ControlRERRelative Error Ratio (Radiochemistry)RLReporting Limit or Requested Limit (Radiochemistry)RPDRelative Precent Difference, a measure of the relative difference between two pointsTEFToxicity Equivalent Factor (Dioxin)TEQToxicity Equivalent Quotient (Dioxin)TNTCTox Numerous To Count	ML	Minimum Level (Dioxin)	
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QCQuality ControlRERRelative Error Ratio (Radiochemistry)RLReporting Limit or Requested Limit (Radiochemistry)RPDRelative Percent Difference, a measure of the relative difference between two pointsTEFToxicity Equivalent Factor (Dioxin)TEQToxicity Equivalent Quotient (Dioxin)TNTCToo Numerous To Count	PRES	Presumptive	
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RPDRelative Percent Difference, a measure of the relative difference between two pointsTEFToxicity Equivalent Factor (Dioxin)TEQToxicity Equivalent Quotient (Dioxin)TNTCToo Numerous To Count	RL	Reporting Limit or Requested Limit (Radiochemistry)	
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TEQ Toxicity Equivalent Quotient (Dioxin) TNTC Too Numerous To Count	TEF	Toxicity Equivalent Factor (Dioxin)	
TNTC Too Numerous To Count	TEQ	Toxicity Equivalent Quotient (Dioxin)	
	TNTC	Too Numerous To Count	

Client Sample Results

Client: Whatcom Environmental Services Inc. Project/Site: HFC: Nonene Loading Rack Site Groundwater Monitori

Client Sample ID: W-129 Pate Collected: 02/28/22 11: Pate Received: 03/01/22 09:4		Lab Sample ID: 580-110866-1 Matrix: Water							
Method: 8260D - Volatile O	rganic Compo	unds by G	C/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	*1	1.0		ug/L			03/09/22 18:28	1
Toluene	ND		1.0		ug/L			03/09/22 18:28	1
Ethylbenzene	ND		1.0		ug/L			03/09/22 18:28	
m-Xylene & p-Xylene	ND		2.0		ug/L			03/09/22 18:28	1
o-Xylene	ND		1.0		ug/L			03/09/22 18:28	1
Xylenes, Total	ND		2.0		ug/L			03/09/22 18:28	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Toluene-d8 (Surr)	85		80 - 120			-		03/09/22 18:28	1
1,2-Dichloroethane-d4 (Surr)	111		80 - 120					03/09/22 18:28	1
4-Bromofluorobenzene (Surr)	99		80 - 120					03/09/22 18:28	-
Dibromofluoromethane (Surr)	103		80 - 120					03/09/22 18:28	

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.48		0.050		mg/L			03/10/22 22:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		77 - 123			-		03/10/22 22:57	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Únit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	0.14		0.11		mg/L		03/11/22 09:50	03/12/22 17:48	1
Motor Oil (>C24-C36)	ND		0.35		mg/L		03/11/22 09:50	03/12/22 17:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	96		50 - 150				03/11/22 09:50	03/12/22 17:48	1

Client Sample Results

Client: Whatcom Environmental Services Inc. Project/Site: HFC: Nonene Loading Rack Site Groundwater Monitori

I ab Sample ID: 580-110866-2 ater

Date Collected: 02/28/22 00:01 Date Received: 03/01/22 09:45

Client Sample ID: Trip Blanks

Lav	Sample	ю.	500-		00
			Mat	rix:	W

Method: 8260D - Volatile Organic Compounds by GC/MS

	rguine compo		0/11/0					
Analyte	Result	Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	*1	1.0	ug/L			03/09/22 18:54	1
Toluene	ND		1.0	ug/L			03/09/22 18:54	1
Ethylbenzene	ND		1.0	ug/L			03/09/22 18:54	1
m-Xylene & p-Xylene	ND		2.0	ug/L			03/09/22 18:54	1
o-Xylene	ND		1.0	ug/L			03/09/22 18:54	1
Xylenes, Total	ND		2.0	ug/L			03/09/22 18:54	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	87		80 - 120				03/09/22 18:54	1
1,2-Dichloroethane-d4 (Surr)	111		80 - 120				03/09/22 18:54	1
4-Bromofluorobenzene (Surr)	100		80 - 120				03/09/22 18:54	1
Dibromofluoromethane (Surr)	106		80 - 120				03/09/22 18:54	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.050		mg/L			03/09/22 18:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		77 - 123					03/09/22 18:54	1

Eurofins Seattle

Client: Whatcom Environmental Services Inc. Project/Site: HFC: Nonene Loading Rack Site Groundwater Monitori

Method: 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: Method Blank Prep Type: Total/NA

Job ID: 580-110866-1

Matrix: Water Analysis Batch: 383290

Lab Sample ID: MB 580-383290/5

-	МВ	МВ							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/L			03/09/22 10:58	1
Toluene	ND		1.0		ug/L			03/09/22 10:58	1
Ethylbenzene	ND		1.0		ug/L			03/09/22 10:58	1
m-Xylene & p-Xylene	ND		2.0		ug/L			03/09/22 10:58	1
o-Xylene	ND		1.0		ug/L			03/09/22 10:58	1
Xylenes, Total	ND		2.0		ug/L			03/09/22 10:58	1

	MB	IVI B				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	92		80 - 120		03/09/22 10:58	1
1,2-Dichloroethane-d4 (Surr)	110		80 - 120		03/09/22 10:58	1
4-Bromofluorobenzene (Surr)	111		80 - 120		03/09/22 10:58	1
Dibromofluoromethane (Surr)	123	S1+	80 - 120		03/09/22 10:58	1

Lab Sample ID: LCS 580-383290/8 **Matrix: Water** Analysis Batch: 383290

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	10.0	9.44		ug/L		94	80 - 122	
Toluene	10.0	9.85		ug/L		99	80 - 120	
Ethylbenzene	10.0	9.94		ug/L		99	80 - 120	
m-Xylene & p-Xylene	10.0	10.2		ug/L		102	80 - 120	
o-Xylene	10.0	9.42		ug/L		94	80 - 120	
Xylenes, Total	20.0	19.6		ug/L		98	80 - 120	

	LCS LCS					
Surrogate	%Recovery	Qualifier	Limits			
Toluene-d8 (Surr)	97		80 - 120			
1,2-Dichloroethane-d4 (Surr)	102		80 - 120			
4-Bromofluorobenzene (Surr)	102		80 - 120			
Dibromofluoromethane (Surr)	99		80 - 120			

Lab Sample ID: LCSD 580-383290/9 Matrix: Water Analysis Batch: 383290

· · · · · , · · · · · · · · · · · · · · · · · · ·	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	10.0	11.3	*1	ug/L		113	80 - 122	18	14
Toluene	10.0	10.4		ug/L		104	80 - 120	5	13
Ethylbenzene	10.0	10.7		ug/L		107	80 - 120	8	14
m-Xylene & p-Xylene	10.0	10.9		ug/L		109	80 - 120	6	14
o-Xylene	10.0	11.0		ug/L		110	80 - 120	15	16
Xylenes, Total	20.0	21.9		ug/L		110	80 - 120	11	16
	CSD / CSD								

	LUSD	LUSD	
Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	106		80 - 120
1,2-Dichloroethane-d4 (Surr)	105		80 - 120

Client Sample ID: Lab Control Sample

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Eurofins Seattle

Prep Type: Total/NA

Client: Whatcom Environmental Services Inc. Project/Site: HFC: Nonene Loading Rack Site Groundwater Monitori

Job ID: 580-110866-1

Method: 8260D - Volat	ile Organio	C	ompou	nds by GC	/MS	(Co	ntinu	led)					
Lab Sample ID: LCSD 580 Matrix: Water Analysis Batch: 383290)-383290/9						C	lient S	Sam	ple	ID: Lab	Control Sam Prep Type: T	ole Dup otal/NA
-	1000	100	20										
Surrogato	% Pacavary		bD	Limite									
4-Bromofluorobenzene (Surr)	105	Que		80 120									
Dibromofluoromethane (Surr)	100			80 - 120									
Method: NWTPH-Gx -	Northwest	- V	olatile	Petroleum	Pro	luc	te (G	C/MS	3)				
			olutilo	i otroioun				<u>o</u> nne	-)				
Lab Sample ID: MB 580-3 Matrix: Water	83288/5									CIIE	ent Sam	Prep Type: T	otal/NA
Analysis Datch. 303200		MB	МВ										
Analyte	Re	sult	Qualifier	RL		MDL	Unit		D	P	repared	Analyzed	Dil Fac
Gasoline		ND		0.050			mg/L					03/09/22 10:58	1
		ΜВ	MB										
Surrogate	%Reco	very	Qualifier	Limits						P	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)		111		77 - 123								03/09/22 10:58	1
Lab Sample ID: LCS 580- Matrix: Water	383288/ 6							Cli	ient	Sa	mple ID	: Lab Control : Prep Type: T	Sample otal/NA
Analysis Batch: 383288													
				Spike	LCS	LCS	5					%Rec.	
Analyte				Added	Result	Qua	lifier	Unit		<u>D</u>	%Rec	Limits	
Gasoline				1.00	1.08			mg/L			108	55 - 148	
	LCS	LCS	6										
Surrogate	%Recovery	Qua	alifier	Limits									
4-Bromofluorobenzene (Surr)	103			77 - 123									
Lab Sample ID: LCSD 580 Matrix: Water)-383288/7						С	lient S	Sam	ple	ID: Lab	Control Sam	ole Dup
Analysis Batch: 383288												пер туре. т	
Analysis Baton. 000200				Spike	LCSD	LCS	D					%Rec.	RPD
Analyte				Added	Result	Qua	lifier	Unit		D	%Rec	Limits RPI	D Limit
Gasoline				1.00	1.09			mg/L			109	55 - 148	1 10
	1050	100	הי										
Surrogate	%Recovery	0	lifior	l imite									
4-Bromofluorobenzene (Surr)	107	dut		77 - 123									
Lab Sample ID: MB 580-3	83518/5									Clie	ent Sam	ple ID: Metho	d Blank
Matrix: Water												Prep Type: T	otal/NA
Analysis Batch: 383518													
Analyta	D -	MB				MDI	4:ما ا		•	-	ronored	Ancherad	
	Re		Qualifier	RL					<u> </u>		repared	- Analyzea	
Gasuille		ND		0.000			mg/∟					03/10/22 10.03	I
		MB	MB										
Surrogate	%Reco	very	Qualifier	Limits						P	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)		105		77 - 123								03/10/22 18:03	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS) (Continued)

Client: Whatcom Environmental Services Inc.

Project/Site: HFC: Nonene Loading Rack Site Groundwater Monitori

2 3 4 5 6 7 8 9

Lab Sample ID: LCS 580-3 Matrix: Water	883518/8						С	lient	Sar	nple ID:	Lab Cont	rol Sa	ample
Analysis Batch: 383518											1100 190	0. 10	
				Spike	LCS	LCS					%Rec.		
Analyte				Added	Result	Qualifie	r Unit		D	%Rec	Limits		
Gasoline				1.00	1.03		mg/L			103	55 - 148		
							-						
	LCS	LCS		,									
Surrogate	%Recovery	Qua	lifier	Limits									
4-Bromofluorobenzene (Surr)	101			77 - 123									
- Lab Sample ID: LCSD 580	-383518/9						Client	Sam	nle	ID [.] I ab	Control S	ampl	e Dun
Matrix: Water							onone	oun	ipio		Pren Tyn	e' Toi	al/NA
Analysis Batch: 383518													
				Spike	LCSD	LCSD					%Rec.		RPD
Analyte				Added	Result	Qualifie	r Unit		D	%Rec	Limits	RPD	Limit
Gasoline				1.00	1.03		mg/L			103	55 - 148	0	10
							0						
	LCSD	LCS	D										
Surrogate	%Recovery	Qua	lifier	Limits									
	103			77 - 123									
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-33	Northwest 83561/1-A	: - S	emi-Vo	latile Petr	oleun	n Prod	ucts (GC) Clie	nt Samp	ole ID: Me	thod	Blank
4-Bromofluorobenzene (Surr) Wethod: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668	Northwest 83561/1-A	: - S	emi-Vo	latile Petr	oleun	n Prod	ucts (GC)) Clie	nt Samp	ole ID: Me Prep Typ Prep Bat	thod e: Tot ch: 3	Blank al/NA 33561
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668	Northwest 83561/1-A	: - S	emi-Vo	latile Petr	oleun	n Prod	ucts (GC) Clie	ent Samp	ole ID: Me Prep Typ Prep Bat	thod e: Tot ch: 3	Blank al/NA 83561
4-Bromofluorobenzene (Surr) Wethod: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 Analyte	Northwest 83561/1-A Re	MB esult	emi-Vo MB Qualifier	latile Petr	oleun	MDL Un	ucts (GC)) Clie Pr	ent Samp	Die ID: Me Prep Typ Prep Bat	thod e: Tot ch: 3	Blank al/NA 33561 Dil Fac
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Mater Oil (2 C24 C26)	Northwest 83561/1-A Re	MB sult ND	emi-Vo MB Qualifier	latile Petr	oleun	MDL Un	ucts (GC)) Clie Pr 03/1	repared 1/22 09:50	Die ID: Me Prep Typ Prep Bat 03/12/22 1: 03/12/22 1:	thod e: Tot ch: 3 d 5:27	Blank al/NA 33561 Dil Fac
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Motor Oil (>C24-C36)	Northwest 83561/1-A Re	MB esult ND ND	emi-Vo MB Qualifier	latile Petr 	oleun	MDL Un mg	ucts (t L) Clie Pr 03/1 [:] 03/1 [:]	repared 1/22 09:50 1/22 09:50	Die ID: Me Prep Typ Prep Bat 03/12/22 1: 03/12/22 1:	thod e: Tot ch: 3 d 5:27 5:27	Blank al/NA 33561 Dil Fac 1 1
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Motor Oil (>C24-C36)	Northwest 83561/1-A 	MB esult ND ND MB	MB Qualifier MB	latile Petr 	oleun	MDL Un mg	ucts (t L) Clie Pr 03/1 [:] 03/1 [:]	repared 1/22 09:50	Die ID: Me Prep Typ Prep Bat 03/12/22 1: 03/12/22 1:	thod e: Tot ch: 3 d 5:27 5:27	Blank cal/NA 33561 Dil Fac 1 1
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 <u>Analyte</u> #2 Diesel (C10-C24) Motor Oil (>C24-C36) Surrogate	Northwest 83561/1-A 	MB esult ND ND MB very	MB Qualifier MB Qualifier	latile Petr 	oleun	MDL Un mg	ucts (t L	GC)) Clie 03/1 [:] 03/1 [:] 03/1 [:]	repared 1/22 09:50 1/22 09:50	Die ID: Me Prep Typ Prep Bat 03/12/22 1: 03/12/22 1: Analyze	thod e: Tot cch: 3 d 5:27 5:27	Blank cal/NA 33561 Dil Fac 1 1 Dil Fac
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Motor Oil (>C24-C36) Surrogate o-Terphenyl	Northwest 83561/1-A 	MB esult ND ND MB very 94	MB Qualifier MB Qualifier	latile Petr 	oleun	MDL Un mg	ucts (t L) Clie 03/1 03/1 03/1	repared 1/22 09:50 1/22 09:50 1/22 09:50	Die ID: Me Prep Typ Prep Bat 03/12/22 1: 03/12/22 1: 03/12/22 1: 03/12/22 1:	thod e: Tot ch: 3 d 5:27 5:27 5:27	Blank cal/NA B3561 Dil Fac 1 1 1 Dil Fac 1
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Motor Oil (>C24-C36) Surrogate o-Terphenyl Lab Sample ID: LCS 580-3 Matrix: Water Analysis Batch: 383668	Northwest 83561/1-A 	MB MB ssult ND ND MB very 94	MB Qualifier MB Qualifier	latile Petr 	oleun	MDL Un mg	ucts (t L C	GC,) Clie 03/1 03/1 03/1 : Sar	repared 1/22 09:50 1/22 09:50 1/22 09:50 repared 1/22 09:50 mple ID:	Die ID: Me Prep Typ Prep Bat 03/12/22 1: 03/12/22 1: 03/12/22 1: 03/12/22 1: Analyze 03/12/22 1 Lab Contt Prep Typ Prep Bat	thod e: Tot ch: 3 5:27 5:27 5:27 5:27 5:27 5:27 5:27 5:27	Blank cal/NA 33561 Dil Fac 1 1 Dil Fac 1 ample cal/NA
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Motor Oil (>C24-C36) Surrogate o-Terphenyl Lab Sample ID: LCS 580-3 Matrix: Water Analysis Batch: 383668	Northwest 83561/1-A 	MB MB Sult ND ND MB very 94	MB Qualifier MB Qualifier	Iatile Petr RL 0.11 0.35 Limits 50 - 150 Spike		MDL Un mg mg	ucts (t L	GC) Clie 03/1 03/1 03/1 03/1 : Sar	repared 1/22 09:50 1/22 09:50 1/22 09:50 1/22 09:50 nple ID:	Die ID: Me Prep Typ Prep Bat 03/12/22 1 03/12/22 1 03/12/22 1 Analyze 03/12/22 1 Lab Cont Prep Typ Prep Bat %Rec.	thod e: Tot ch: 3 5:27 5:27 5:27 rol Sa e: Tot ch: 3	Blank cal/NA 33561 Dil Fac 1 1 Dil Fac 1 ample cal/NA 33561
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Motor Oil (>C24-C36) Surrogate o-Terphenyl Lab Sample ID: LCS 580-3 Matrix: Water Analysis Batch: 383668 Analyte	Northwest 83561/1-A 	MB esult ND ND MB very 94	MB Qualifier MB Qualifier	latile Petr 	LCS	MDL Un mg mg	t L C	<u>GC</u>) Clie 03/1 03/1 03/1 : Sar	repared 1/22 09:50 1/22 09:50 1/22 09:50 repared 1/22 09:50 nple ID: %Rec	Die ID: Me Prep Typ Prep Bat 03/12/22 1 03/12/22 1 03/12/22 1 Analyze 03/12/22 1 Lab Cont Prep Typ Prep Bat %Rec. Limits	thod e: Tot ch: 3 5:27 5:27 5:27 rol Sa e: Tot ch: 3	Blank cal/NA 33561 Dil Fac 1 Dil Fac 7 ample cal/NA 33561
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Motor Oil (>C24-C36) Surrogate o-Terphenyl Lab Sample ID: LCS 580-3 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24)	Northwest 83561/1-A 	MB soult ND ND MB very 94	MB Qualifier MB Qualifier	Limits 50 - 150 Spike Added 4.00	LCS Result 3.99	MDL Un mg mg	t L L C	<u> </u>) Clie 03/1: 03/1: 03/1: 03/1 : Sar	repared 1/22 09:50 1/22 09:50 1/22 09:50 nple ID: %Rec 100	Die ID: Me Prep Typ Prep Bat 03/12/22 1: 03/12/22 1: 03/12/22 1: Analyze 03/12/22 1: Analyze 03/12/22 1: Lab Cont Prep Typ Prep Bat %Rec. Limits 50 - 120	thod e: Tot ch: 3 5:27 5:27 5:27 rol Sa e: Tot ch: 3	Blank al/NA 33561 Dil Fac 1 Dil Fac 7 ample aal/NA 33561
4-Bromofluorobenzene (Surr) Wethod: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Motor Oil (>C24-C36) Surrogate o-Terphenyl Lab Sample ID: LCS 580-3 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Motor Oil (>C24-C36)	Northwest 83561/1-A 	MB esult ND ND MB very 94	MB Qualifier MB Qualifier	Limits 50 - 150 Spike Added 4.00 4.00	LCS Result 3.99 4.35	MDL Un mg mg LCS Qualifie	t L L C T Mnit mg/L ma/L	<u> </u>) Clie 03/1 03/1 03/1 : Sar	repared 1/22 09:50 1/22 09:50 1/22 09:50 nple ID: <u>%Rec</u> 100 109	Die ID: Me Prep Typ Prep Bat 03/12/22 1: 03/12/22 1: 03/12/22 1: Analyze 03/12/22 1: Analyze 03/12/22 1: Analyze 03/12/22 1: Analyze 03/12/22 1: 50.120 64 - 120	thod e: Tot ch: 3 5:27 5:27 5:27 rol Sa e: Tot ch: 3	Blank al/NA 33561 Dil Fac 1 Dil Fac 1 mple ample 33561
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 <u>Analyte</u> #2 Diesel (C10-C24) Motor Oil (>C24-C36) <u>Surrogate</u> o-Terphenyl Lab Sample ID: LCS 580-3 Matrix: Water Analysis Batch: 383668 <u>Analyte</u> #2 Diesel (C10-C24) Motor Oil (>C24-C36)	Northwest 83561/1-A 	MB esult ND ND MB very 94	MB Qualifier MB Qualifier	Limits 50 - 150 Spike Added 4.00 4.00	LCS Result 3.99 4.35	MDL Un mg mg LCS Qualifie	t L L L L L L L L L L L L L L L L L L L	<u> </u>) Clie 03/1 03/1 03/1 : Sar	repared 1/22 09:50 1/22 09:50 1/22 09:50 nple ID: <u>%Rec</u> 100 109	Die ID: Me Prep Typ Prep Bat 03/12/22 1: 03/12/22 1: 03/12/22 1: 03/12/22 1: Lab Cont Prep Typ Prep Bat %Rec. Limits 50 - 120 64 - 120	thod e: Tot ch: 3 5:27 5:27 5:27 rol Sa e: Tot ch: 3	Blank cal/NA 33561 Dil Fac 1 1 Dil Fac 1 ample cal/NA 33561
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Motor Oil (>C24-C36) Surrogate o-Terphenyl Lab Sample ID: LCS 580-3 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Motor Oil (>C24-C36)	Northwest 83561/1-A 	MB ssult ND ND MB very 94	MB Qualifier MB Qualifier	Limits 50 - 150 Spike Added 4.00 4.00	LCS Result 3.99 4.35	MDL Un mg mg	t L L L L L L L L L L L L L L L L L L L	GC) Clie 03/1 03/1 03/1 : Sar	repared 1/22 09:50 1/22 09:50 1/22 09:50 nple ID: %Rec 100 109	Die ID: Me Prep Typ Prep Bat 03/12/22 1: 03/12/22 1: 03/12/22 1: 03/12/22 1: Lab Cont Prep Typ Prep Bat %Rec. Limits 50 - 120 64 - 120	thod e: Tot ch: 3 5:27 5:27 5:27 rol Sa e: Tot ch: 3	Blank cal/NA 33561 Dil Fac 1 1 2 <i>Dil Fac</i> 1 ample cal/NA 33561
4-Bromofluorobenzene (Surr) Method: NWTPH-Dx - I Lab Sample ID: MB 580-38 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Motor Oil (>C24-C36) Surrogate o-Terphenyl Lab Sample ID: LCS 580-3 Matrix: Water Analysis Batch: 383668 Analyte #2 Diesel (C10-C24) Motor Oil (>C24-C36) Surrogate #2 Diesel (C10-C24) Motor Oil (>C24-C36)	Northwest 83561/1-A 	MB esult ND ND MB very 94	MB Qualifier MB Qualifier	Limits Spike Added 4.00 4.00 4.00	LCS Result 3.99 4.35	MDL Un mg mg	t L L C Mg/L mg/L	GC) Clie 03/1 03/1 03/1 : Sar	ent Samp repared 1/22 09:50 1/22 09:50 1/22 09:50 nple ID: 1/22 09:50 nple ID: 1/22 09:50 nple ID:	Die ID: Me Prep Typ Prep Bat 03/12/22 1 03/12/22 1 03/12/22 1 Analyze 03/12/22 1 Lab Cont Prep Typ Prep Bat %Rec. Limits 50 - 120 64 - 120	thod e: Tot ch: 3 5:27 5:27 sd 5:27 rol Sa e: Tot ch: 3	Blank cal/NA 33561 Dil Fac 1 1 Dil Fac 1 ample cal/NA 33561

Lab Sample ID: LCSD 580-383561/3-A		(Client Sa	ample	ID: Lab	Control	Sample	e Dup	
Matrix: Water						Prep Ty	pe: Tot	al/NA	
Analysis Batch: 383668							Prep Ba	atch: 3	83561
	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
#2 Diesel (C10-C24)	4.00	3.80		mg/L		95	50 - 120	5	26
Motor Oil (>C24-C36)	4.00	4.27		mg/L		107	64 - 120	2	24

Eurofins Seattle

		Q	C Sample Res	sults	
Client: Whatcom Envi Project/Site: HFC: No Monitori	ironmental Services onene Loading Rack	Inc. Site Grour	ndwater	Job ID: 580-110866-1	2
Method: NWTPH	-Dx - Northwest	- Semi-\	/olatile Petroleu	Im Products (GC) (Continued)	
Lab Sample ID: LC	SD 580-383561/3-A			Client Sample ID: Lab Control Sample Dup	
Matrix: Water Analysis Batch: 38	3668			Prep Type: Total/NA Prep Batch: 383561	5
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits		6
o-Terphenyl	<u>91</u>		50 - 150		7
					8
					9

Eurofins Seattle

Dilution

Run

Factor

1

1

1

Batch

Number

Prepared

383290 03/09/22 18:28 B1M

383518 03/10/22 22:57 B1M

383561 03/11/22 09:50 JJY

383668 03/12/22 17:48 JAE

or Analyzed

Analyst

Lab

FGS SEA

FGS SEA

FGS SEA

FGS SEA

Lab Sample ID: 580-110866-2

Client: Whatcom Environmental Services Inc. Project/Site: HFC: Nonene Loading Rack Site Groundwater Monitori

Batch

Method

8260D

3510C

NWTPH-Gx

NWTPH-Dx

Matrix: Water

Matrix: Water

Lab Sample ID: 580-110866-1

9 10

Client Sample ID: Trip Blanks
Date Collected: 02/28/22 00:01
Date Received: 03/01/22 09:45

Batch

Туре

Analysis

Analysis

Analysis

Prep

Client Sample ID: W-129

Date Collected: 02/28/22 11:55

Date Received: 03/01/22 09:45

Prep Type

Total/NA

Total/NA

Total/NA

Total/NA

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	383290	03/09/22 18:54	B1M	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	383288	03/09/22 18:54	B1M	FGS SEA

Laboratory References:

FGS SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Whatcom Environmental Services Inc. Project/Site: HFC: Nonene Loading Rack Site Groundwater Monitori

Laboratory: Eurofins Seattle

The accreditations/certifications listed below are applicable to this report.

Authority Washington Program State Identification Number C788 Expiration Date
07-13-22



Job ID: 580-110866-1

Sample Summary

Client: Whatcom Environmental Services Inc. Project/Site: HFC: Nonene Loading Rack Site Groundwater Monitori

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-110866-1	W-129	Water	02/28/22 11:55	03/01/22 09:45
580-110866-2	Trip Blanks	Water	02/28/22 00:01	03/01/22 09:45

Eurofins FGS, Seattle 5755 8th Street East

Chain of Custody Record

🔅 eurofins

S Environment Testing TestAmerica

Tacoma, WA 98424

Client Information	Sampler. Lab Ava Gempler Cru					t: Sheri L							Ca	Carrier Tracking No(s):						COC No:					
Client Contact: Gary Barklind	Phone: E-M# 360-752-9571 she						cruz@eurofinset.com							FedEx						Page: Page 1 of 1					
Company: HollyFrontier Puget Sound Refinery	er Puget Sound Refinery Analysis								is R	eque	este	đ				Ţ	Job #: 110	866							
Address: 8505 S. Texas Road	Due Date Reques	ted:						Ţ									Ţ	1000 C	i	Preservation Co	ides:				
City:	TAT Requested (days):							1		ĺ								AMAN PRINT ALL		B - NaOH	N - Hexane N - None				
State, Zip: WA, 98221		Standard TAT																Associate Associate Associate		D - Nitric Acid E - NaHSO4	P - Na2O4S Q - Na2SO3				
Phone: 360-293-0868	PO #: Contact G Barl														Ì			AND A COUNTRY		F - MeOH G - Amchlor H - Ascorbic Acid	R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate				
Email: gary.barklind@hollyfrontier.com	WO #:	WO #:				(ON J												Alateborgenan yaşı	[]. 일 J-	I-Ice U J-DIWater V	U - Acetone V - MCAA				
Project Name: HFC: Nonene Loading Rack Site Groundwater Monitoring	Project #: 58004434	Project #: 58004434				Yes o				Ì						ĺ		10122410210	ontain	K - EDTA L - EDA	W - pH 4-5 Z - other (specify)				
Site: Washington	SSOW#:				Sam	NSD (09										000000000000000000000000000000000000000	ŭ o 5	Other:					
Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered	Perform MS/I	NWTPH-GX	BTEX - EPA 82	NWTPH-Dx			87465 1857				SAUTRON				Special Ir	nstructions/Note:				
NI 400	2/02/20	11:56	Preserv	ation Code:	Å	X												2	<u>×</u> _						
W-129	2/28/22 [1];55 am G W			~~~	-	┢─┼	$\hat{}$	$\hat{\mathbf{v}}$	^									1	<u> </u>						
	Filled at Lab									_	+ + + + + + + + + + + + + + + + + + +					2	Please provide results to both HollyFrontier PSR and WES								
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					$\left \right $										L -	580)-110	866 C	Chai	in of Custody					
Possible Hazard Identification					Ц	Sam	nle l	Dispo	sali	(Afr	pe ma	av be	asse	0000	t if s	amn	les ai	re reta	aine	d longer than	1 month)				
Non-Hazard Flammable Skin Irritant Po	ison B Unkr	iown 🗖 I	Radiologica	a/			1 Rei	turn T	ro Cl	lient			Disp	osal	By Li	ab		Ъ _А	rchi	ve For	Months				
Deliverable Requested: I, II, III, IV, Other (specify)						Spec	cial Ir	nstruc	tions	s/QC	Requ	uirem	ients:												
Empty Kit Relinquished by:			Date:			Time:							Method of Shipment:							1					
Ava Compler Avalormph	2-28-22 1:45pm WES				Tom Hank						- <u>-</u>	$\frac{Date/Time:}{3/1/22}$					2	0945	Company						
Relinquished by:	Date/Time: Company				Received by:						U	Date/Time:							Company						
Relinquished by:	Date/Time: Company					Received by: Date/Time: Company									Company										
Custody Seals Intact: Custody Seal No.:		a volete te esti				c	ooler	Tempe Fer(rature SC	e(s) ℃ ఎ	and C S เพ	Other F	Remark	s set	/6.		14 F	11 x x +		A2	0.8/1.5 4/				

Ver: 01/16/2019

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Login Sample Receipt Checklist

Client: Whatcom Environmental Services Inc.

Login Number: 110866 List Number: 1 Creator: Blankinship, Tom X

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

List Source: Eurofins Seattle