



Groundwater Sampling Report

November 27, 2024

SITE INFORMATION

Yarrow Bay Marina
5207 Lake Washington Boulevard NE
Kirkland, King County, Washington 98033

PROJECT INFORMATION

Washington Department of Ecology Facility No.: 2486
Washington Department of Ecology VCP No.: NW1791
Washington Department of Ecology Cleanup Site No.: 8780
AEI Project No. 469497

PREPARED FOR

Mr. Dale Myers
Toxics Cleanup Program
Washington State Department of
Ecology - NW Regional Office
3169 160th Avenue SE
Bellevue, WA 98008-5452

PREPARED BY

AEI Consultants
2500 Camino Diablo
Walnut Creek, California

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November 27, 2024

Mr. Dale Myers
Toxics Cleanup Program
Washington State Department of Ecology - Northwest Regional Office
3169 160th Avenue SE
Bellevue, Washington 98008-5452

Subject: Groundwater Sampling Report
5207 Lake Washington Boulevard NE
Kirkland, Washington 98033
AEI Project No. 469497
Washington Department of Ecology Facility No.: 2486
Washington Department of Ecology VCP No.: NW1791
Washington Department of Ecology Cleanup Site No.: 8780

Dear Mr. Myers,

On behalf of Kirkland Yarrow Bay, LLC, AEI Consultants (AEI) has prepared this report to document the groundwater monitoring well sampling activities for the property located at 5207 Lake Washington Boulevard NE, in the city of Kirkland, King County, Washington (the "Site"). In a letter dated January 24, 2017, a *Restrictive Covenant No Further Action* (Restrictive Covenant) was granted by the Washington Department of Ecology that requested three consecutive years of groundwater sampling at the Site. The recent sampling was performed in an effort to satisfy the confirmation groundwater sampling activities as required in the Restrictive Covenant.

AEI appreciates the opportunity to support this important project. If you have any questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in blue ink, appearing to read "CK", followed by a horizontal line.

Cade Klock
Senior Geologist

AEI Consultants
701 Campus Square West, Suite 723A
El Segundo, California 90245
Phone: 310.798.4255
Email: cklock@aeiconsultants.com

1.0 BACKGROUND

A release of petroleum hydrocarbons was discovered at the Site in 2006. After the completion of investigation activities, a *Restrictive Covenant No Further Action* (Restrictive Covenant) was granted by the Washington State Department of Ecology (WDOE) in their letter dated January 24, 2017, in which three consecutive years of sampling were requested. The first groundwater sampling event was completed on December 8, 2017 by ATC Group Services, LLC (ATC), as documented in their January 9, 2018 *Groundwater Monitoring Report - 2017 Annual Event*. Following the 2017 sampling event, a change of ownership resulted in the unintentional lapse of continued consecutive annual sampling activities. Upon discovery of the oversight during 2022, a sampling event was immediately scheduled in accordance with the Restrictive Covenant letter.

On October 7, 2022 and October 18, 2023, AEI conducted the second and third groundwater monitoring activities at the Site, as described in our November 15, 2022 and November 13, 2023 Groundwater Sampling Reports. Results from the second and third rounds of the groundwater monitoring collected from well MW-1 indicated that the concentrations of total petroleum hydrocarbon in diesel range (TPH-DRO) and residual oil range (TPH-RRO) exceeded the Method Toxics Control Act (MTCA) Method A combined and/or individual screening levels for TPH-DRO and TPH-RRO of 500 micrograms per liter ($\mu\text{g/L}$). Additionally, the results of the third groundwater sampling event yielded TPH-RRO above the Method A screening level. Based on the exceedance of TPH-RRO during the third sampling event, the groundwater sample was additionally analyzed for polyaromatic hydrocarbons (PAHs). Results from further PAHs analysis did not yield concentrations of PAHs above their respective Method A/B screening levels. The WDOE requested that monitoring be continued until cleanup levels are met to comply with MTCA.

The field activities outlined in the below report document the 2024 sampling event and are intended to satisfy the third sampling event required by WDOE in their 2017 letter.

2.0 FIELD ACTIVITIES

AEI performed the third groundwater monitoring event, including groundwater level gauging measurements and groundwater sampling. Tables 1 and 2 summarize the current and historical analytical results.

2.1 Monitoring Well Condition Assessment

Prior to conducting gauging and sampling activities on October 25, 2024, a monitoring well condition assessment of well MW-1 was completed. This assessment consisted of observing the condition of the casing, well box, well plug, bolts, and lid for indications of wear or failure. The inspection found that one bolt needed replacement as the bolt did not fit properly to secure the well box. Additional issues were not observed, and the bolt fitting does not pose a condition that would impact the integrity of the planned testing; thus, sampling was completed as planned. Well condition report is included in field notes, presented in Appendix A.

2.2 Groundwater Elevation Gauging

Prior to the groundwater sampling activities, a depth-to-groundwater measurement was

obtained at monitoring well MW-1 on October 25, 2024. Before the depth to water was measured, the well cap was removed from the well and the well was allowed to equilibrate for 10 minutes. Depth to groundwater was measured from the top of the well casing using an electric water level indicator calibrated to within 0.01 foot, and recorded on field sampling forms, presented in Appendix A.

2.3 Groundwater Sampling Activities

Following groundwater elevation gauging activities, a groundwater sample was obtained from the well. Prior to collection of the sample, the well was purged using low-flow sampling techniques with a peristaltic pump at a rate of approximately 200 milliliters per minute. During purging and sampling, groundwater quality parameters [e.g., temperature, pH, specific conductivity, dissolved oxygen, turbidity, and oxidation-reduction potential] were recorded.

After the groundwater parameters had stabilized, a groundwater sample was collected from the well using the peristaltic pump. The groundwater sample was decanted into laboratory supplied, 40-milliliter, hydrochloric acid-preserved, volatile organic analysis vials, and 1-liter amber bottles. Upon filling and capping each bottle, the bottles were checked for the presence of air bubbles to ensure there was no visible headspace. The sample was labeled and placed in an insulated, ice-chilled cooler for transport under chain-of-custody protocol to Pace Analytical in Mount Juliet, Tennessee. The groundwater sample was analyzed for volatile organic compounds (VOCs) using United States Environmental Protection Agency (US EPA) Testing Method 8260D, TPH Gasoline Range Organics (GRO) using Testing Method NWTPH-Gx and TPH-DRO and TPH-RRO using Testing Method NWTPH-Dx. Appendix B contains the laboratory analytical report and chain-of-custody documentation.

No notable anomalies or variations to sampling methods are reported during the October 25, 2024, sampling activities.

3.0 FINDINGS

The findings from the groundwater gauging and sampling activities are summarized below.

3.1 Depth to Groundwater Observations

Depth to groundwater was recorded to be 6.82 feet below the top of well casing during the October 25, 2024, event.

3.2 Groundwater Analytical Results

For purposes of providing context to the data generated during this investigation, analytical results were compared to the WDOE MTCA Method A (unrestrictive land use) and Method B (common method for setting clean-up levels), Cleanup Levels and Risk Calculation (CLARC), as referenced in Ecology's CLARC Tables, revised July 2024. The presence of a chemical at concentrations below applicable cleanup levels can generally be assumed to not pose a significant threat to human health or the environment.

Tables 1 and 2 present the current and historical groundwater analytical results for monitoring event at the Site and the comparative screening levels. (Note: B: the same analyte is found in the associated blank; J: the identification of the analyte is acceptable; however, the reported value is an estimate; C3: The reported concentration is an estimate. The continuing calibration

standard associated with this data responded low. Method sensitivity check is acceptable). The groundwater analytical results from the October 2024 groundwater monitoring event can be summarized as follows:

- TPH-GRO was detected at a concentration of 36.6 J micrograms per liter ($\mu\text{g/L}$). The detected concentration is below the MTCA Method A cleanup level of 800 $\mu\text{g/L}$.
- TPH-DRO was detected at a concentration of 570 $\mu\text{g/L}$. The detected concentration is above the MTCA Method A combined screening levels for TPH-DRO and TPH-RRO of 500 $\mu\text{g/L}$.
- TPH-RRO was detected at a concentration of 687 $\mu\text{g/L}$. The detected concentration is above the MTCA Method A combined screening levels for TPH-DRO and TPH-RRO of 500 $\mu\text{g/L}$.
- Benzene was detected at a concentration of 0.831 $\mu\text{g/L}$. The detected concentration is above the MTCA Method B cancer of 0.8 $\mu\text{g/L}$.
- Other VOCs, including toluene, ethylbenzene, and total xylenes were detected either below their respective Method A/B screening levels, where applicable, or below the laboratory reported detection limits (RDLs) in the groundwater sample collected and analyzed as shown on Table 1.

4.0 SUMMARY AND CONCLUSIONS

AEI has performed groundwater monitoring and sampling at the Site as described above. The sampling activities were completed to meet the requirement in the *Restrictive Covenant No Further Action*, that was granted by the WDOE in their letter dated January 24, 2017. Results from the fourth round of the groundwater monitoring collected from well MW-1 yielded benzene at a concentration of 0.831 $\mu\text{g/L}$, which exceeds the MTCA Method B level of 0.8 $\mu\text{g/L}$. Other VOCs were detected below their respective MTCA Method A and B levels. TPH-DRO was detected at a concentration of 570 $\mu\text{g/L}$ and TPH-RRO was detected at a concentration of 687 $\mu\text{g/L}$, which exceeds the MTCA Method A unrestricted land use of 500 $\mu\text{g/L}$ for both the individual and combined TPH results.

Based on the results from the groundwater monitoring event, the benzene concentration in groundwater beneath the Site exceeds the MTCA Method B screening level and the TPH-DRO and RRO concentrations in groundwater beneath the Site exceed the applicable MTCA Method A screening levels.

5.0 REFERENCES

AEI Consultants, 2023, *Groundwater Sampling Report, 5207 Lake Washington Boulevard NE, Kirkland, Washington, 98033*, dated November 13.

AEI Consultants, 2022, *Groundwater Sampling Report, 5207 Lake Washington Boulevard NE, Kirkland, Washington, 98033*, dated November 15.

ATC Group Services Inc, 2018, *Groundwater Monitoring Report-2017 Annual Event. 5207 Lake Washington Boulevard NE, Kirkland, Washington 98033*, dated January 9.

Washington State Department of Ecology, 2017, *Environmental Covenant. 5207 Lake Washington Boulevard NE, Kirkland, Washington 98033*, dated January 24.

Washington State Department of Ecology, 2023, *Method Toxic Control Act (MTCA) Cleanup Levels and Risk Calculation (CLARC) Master Table*. January.

6.0 SIGNATURES

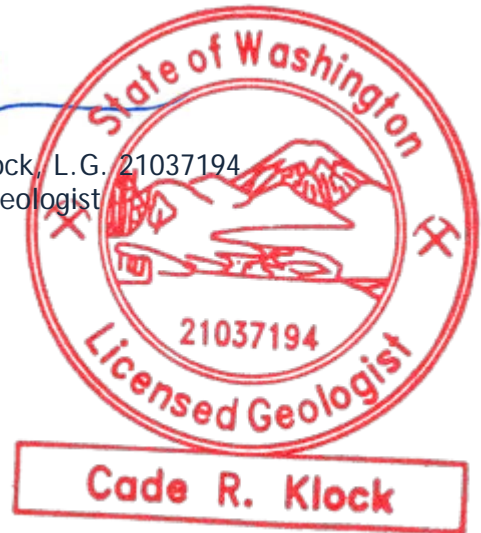
This document was prepared by, or under the direction of the undersigned.



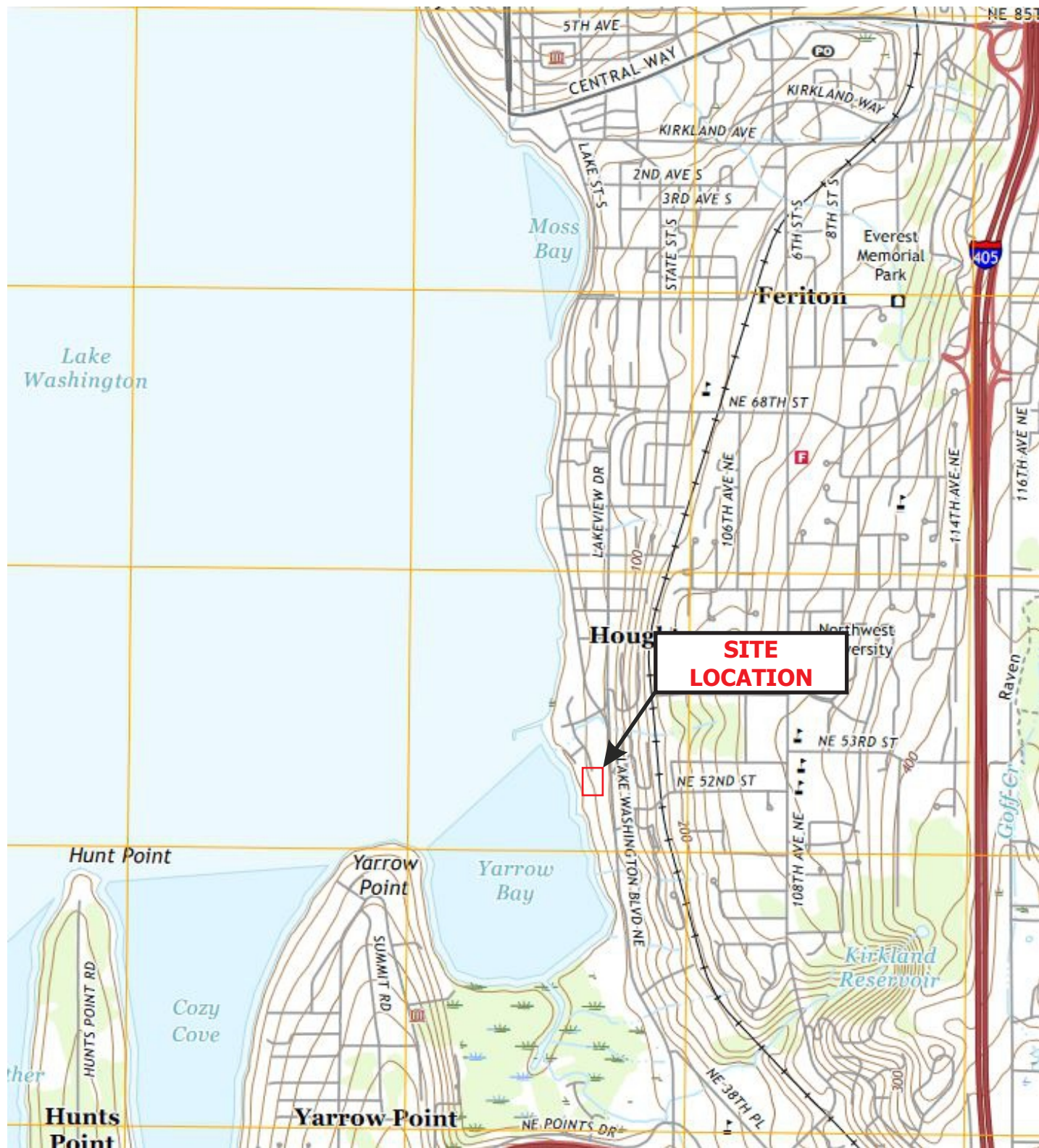
Natasha Budimirovic
Project Geologist



Cade Klock, L.G. 21037194
Senior Geologist



Figures



LEGEND

— Approximate Site Boundary

Map: Kirkland Quadrangle, Washington
Date: 2020
Source: USGS

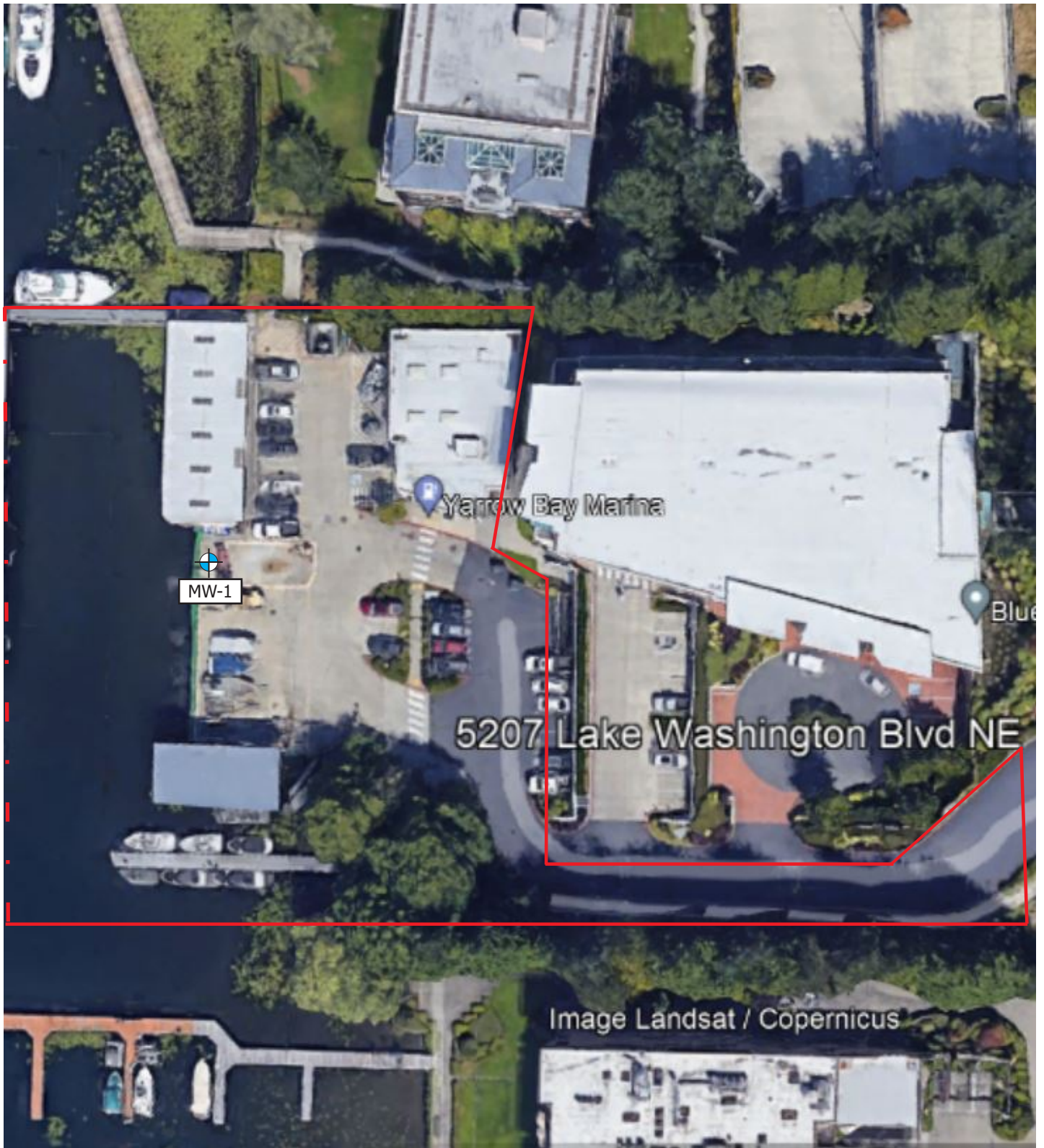


SITE LOCATION MAP




5207 Lake Washington Blvd. NE
Kirkland, Washington

FIGURE 1
Project No. 469497



LEGEND

- Approximate Property Boundary
-  Groundwater Monitoring Well Location

0 30 60
SCALE: 1" = 60'
Scale is Approximate



SITE MAP



5207 Lake Washington Blvd. NE
Kirkland, Washington

FIGURE 2
Project No. 469497

Tables

Table 1: GROUNDWATER SAMPLE DATA SUMMARY - VOCs
5207 Lake Washington Boulevard, Kirkland, Washington 98033
AEI Project Number: 469497

Location ID	Date	TPH by NWTPH-Gx and NWTPH-Dx			VOCs by US EPA 8260D										
		TPH-GRO (µg/L)	TPH-DRO (µg/L)	TPH-RRO (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Acetone (µg/L)	2-Butanone (MEK) (µg/L)	Methyl tert-butyl ether (µg/L)	1,2,4-TMB (µg/L)	1,2,3-TMB (µg/L)	1,3,5-TMB (µg/L)	Remaining VOCs (µg/L)
MW-1	12/8/2017*	ND<50.0	ND<49.9	ND<99.8	ND<1.0	ND<1.0	ND<1.0	ND<2.0	NA	NA	NA	ND<0.200	ND<0.200	ND<0.200	ND<RDL
	10/7/2022	ND<100	278	312	0.0540	0.407	0.0470 J	0.288	21.1	2.36	0.0940	ND<0.200	ND<0.200	ND<0.200	ND<RDL
	10/18/2023	62.6 B J	246	534	ND<0.0400	0.137 J	ND<0.100	ND<0.260	14.6	1.15 C3	0.0820	ND<0.200	ND<0.200	ND<0.200	ND<RDL
	10/25/2024	36.6 J	570	687	0.831	0.0590 J	1.42	5.17	8.18	ND<1.00	0.0720	0.369	0.225	0.133	ND<RDL
Comparison Values:															
WDOE CLARC Method A unrestricted land use		800	500	500	5.0	1,000	700	1,000	--	--	20	--	--	--	Various
WDOE CLARC Method B non cancer		--	--	--	32	640	800	1,600	7,200	4,800	--	80	80	80	Various
WDOE CLARC Method B cancer		--	--	--	0.8	--	--	--	--	--	24	--	--	--	Various
WA or Federal Maximum Contaminant Level (MCL)		--	--	--	5.0	1,000	700	10,000	--	--	--	--	--	--	Various

Notes:	
µg/L	Micrograms per liter
ND<RDL	Not detected above the laboratory reported detection limit
NA	Not analyzed
EPA	Environmental Protection Agency
MEK	Methyl ethyl ketone
TMB	Trimethylbenzene
TPH-GRO	Total petroleum hydrocarbons as gasoline
TPH-DRO	Total petroleum hydrocarbons as diesel
TPH-RRO	Total petroleum hydrocarbons as motor oil (residual range organics)
VOCs	Volatile organic compounds
	Combined TPH DRO & RRO results exceed Method A comparison value
Bold	Individual result exceeds Method A/B comparison value
--	No comparison value established
B	The same analyte is found in the associated blank.
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
J	The identification of the analyte is acceptable; the reported value is an estimate.
*	Sampled by ATC Group Services Inc.

Comparison Values:	
WDOE CLARC	Washington Department of Ecology Cleanup Levels and Risk Calculation for cancer and noncancer risk drivers for individual chemicals (WDOE, July 2024)

Table 2: HISTORICAL GROUNDWATER SAMPLE DATA SUMMARY - PAHs
5207 Lake Washington Boulevard, Kirkland, Washington 98033
AEI Project Number: 469497

Location ID	Date	PAHs by 8270E-SIM						Remaining PAHs (µg/L)
		Acenaphthene (µg/L)	Anthracene (µg/L)	Fluoranthene (µg/L)	Fluorene (µg/L)	Phenanthrene (µg/L)	Pyrene (µg/L)	
MW-1	10/18/2023	0.784 T8	0.0282 J, T8	0.0506 J, T8	0.0361 T8	0.167 T8	0.0336 T8	ND<RDL
<u>Comparison Values:</u>								
WDOE CLARC Method A unrestricted land use		--	--	--	--	--	--	Various
WDOE CLARC Method B non cancer		480	2,400	640	320	--	240	Various
WDOE CLARC Method B cancer		--	--	--	--	--	--	Various
WA or Federal Maximum Contaminant Level (MCL)		--	--	--	--	--	--	Various

Notes:

µg/L	Micrograms per liter
ND<RDL	Not detected above the laboratory reported detection limit
PAHs	Polycyclic aromatic hydrocarbons
--	No comparison value established
J	The identification of the analyte is acceptable; the reported value is an estimate.
T8	Sample(s) received past/too close to holding time expiration.

Comparison Values:

WDOE CLARC	Washington Department of Ecology Cleanup Levels and Risk Calculation for cancer and noncancer risk drivers for individual chemicals (WDOE, July 2024)
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Appendix A

Field Data Sheets

Water Level Field Data Sheet
ADDRESS
CITY, California

Project Name: Yarrow Bay Marina

Project No.: 469497

Field Personnel: N. Budimirovic

Site Location: 5207 Lake Washington Blvd. NE, Kirkland, WA

Date: 10/25/2024

[illegible]

Note:

BTOC = below top of casing
N/A = not available
NM = not measured

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Low Flow Sampling

Monitoring Well ID:

MW-1

Project Name: Yarrow Bay Marina

Date of Sampling: 10/25/2024

Job Number: 469497

Name of Sampler: N. Budimirovic

Project Address: 5207 Lake WA Blvd. NE, Kirkland, WA

MONITORING WELL DATA

Well Casing Diameter (inches)	2"
Static Depth to Groundwater (feet below top of casing)	4.82
Total Well Depth (feet below top of casing)	7.81
Screened Interval (feet below top of casing)	-
Pump Intake Position (feet above bottom of casing)	4' -
Free Product Present?	NO
Thickness (ft):	

GROUNDWATER EQUILIBRATION

Time	Depth to Groundwater	Flow rate (ml/min)	Temperature (deg C)	Conductivity (µg/cm)	DO (mg/L)	pH (-)	ORP (meV)	Turbidity (NTU)	Comments
Stabilization Criteria ¹	<4" Drawdown	>500 ml/min	± 1	± 3%	±0.3	± 0.1	± 10	<10	(as needed)
1112	4.82	200	23.0	932	7.12	8.57	-160.1	112.1	
1115	4.86	200	22.68	801	6.45	8.57	-101.3	91.2	
1118	4.91	200	22.55	757	5.91	8.63	-79.1	76.3	
1121	4.93	200	22.50	721	5.32	8.69	-71.0	78.1	
1124	4.94	200	21.97	714	4.91	8.71	-69.9	75.5	
1127	4.94	200	21.93	698	4.68	8.71	-63.1	70.1	
1130	9.95	200	21.68	691	4.71	8.72	-63.6	69.3	
1133	9.95	200	21.66	698	4.72	8.71	-66.7	63.5	

SAMPLING

Sample Time	Sample ID	Containers	Analysis	TAT	Comments
1150	MW-1	15	TPH, VOCs	STAT	-

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

¹ : As prescribed by the Representative Sampling of Groundwater for Hazardous Substances (DTSC 2006)

Appendix B

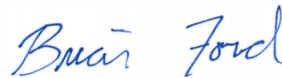
Laboratory Analytical Report

AEI Consultants - CA

Sample Delivery Group: L1793144
Samples Received: 10/26/2024
Project Number: 469497
Description: Yarrow Bay Yacht Basin and Marina

Report To: Natasha Budimirovic
2500 Camino Diablo
Walnut Creek, CA 94597

Entire Report Reviewed By:



Brian Ford
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 mydata.pacelabs.com

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

MW-1 L1793144-01 GW

Collected by
N Budimirovic

Collected date/time
10/25/24 11:50

Received date/time
10/26/24 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG2393405	1	11/01/24 06:41	11/01/24 06:41	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260D	WG2396393	1	11/07/24 01:56	11/07/24 01:56	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG2394061	1	11/02/24 23:09	11/05/24 22:50	MAA	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Brian Ford
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	36.6	J	31.6	100	1	11/01/2024 06:41	WG2393405
(S) a,a,a-Trifluorotoluene(FID)	97.9			78.0-120		11/01/2024 06:41	WG2393405

Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	8.18		0.548	1.00	1	11/07/2024 01:56	WG2396393
Acrylonitrile	U		0.0760	0.500	1	11/07/2024 01:56	WG2396393
Acrolein	U	C3	0.758	50.0	1	11/07/2024 01:56	WG2396393
Benzene	0.831		0.0160	0.0400	1	11/07/2024 01:56	WG2396393
Bromobenzene	U		0.0420	0.500	1	11/07/2024 01:56	WG2396393
Bromodichloromethane	U		0.0315	0.100	1	11/07/2024 01:56	WG2396393
Bromoform	U		0.239	1.00	1	11/07/2024 01:56	WG2396393
Bromomethane	U		0.148	0.500	1	11/07/2024 01:56	WG2396393
n-Butylbenzene	U	C3	0.153	0.500	1	11/07/2024 01:56	WG2396393
sec-Butylbenzene	U		0.101	0.500	1	11/07/2024 01:56	WG2396393
tert-Butylbenzene	U		0.0620	0.200	1	11/07/2024 01:56	WG2396393
Carbon tetrachloride	U		0.0432	0.200	1	11/07/2024 01:56	WG2396393
Chlorobenzene	U		0.0229	0.100	1	11/07/2024 01:56	WG2396393
Chlorodibromomethane	U		0.0180	0.100	1	11/07/2024 01:56	WG2396393
Chloroethane	U		0.0432	0.200	1	11/07/2024 01:56	WG2396393
Chloroform	U		0.0166	0.100	1	11/07/2024 01:56	WG2396393
Chloromethane	U		0.0556	0.500	1	11/07/2024 01:56	WG2396393
2-Chlorotoluene	U		0.0368	0.100	1	11/07/2024 01:56	WG2396393
4-Chlorotoluene	U	C3	0.0452	0.200	1	11/07/2024 01:56	WG2396393
1,2-Dibromo-3-Chloropropane	U		0.204	1.00	1	11/07/2024 01:56	WG2396393
1,2-Dibromoethane	U		0.0210	0.100	1	11/07/2024 01:56	WG2396393
Dibromomethane	U		0.0400	0.200	1	11/07/2024 01:56	WG2396393
1,2-Dichlorobenzene	U		0.0580	0.200	1	11/07/2024 01:56	WG2396393
1,3-Dichlorobenzene	U		0.0680	0.200	1	11/07/2024 01:56	WG2396393
1,4-Dichlorobenzene	U		0.0788	0.200	1	11/07/2024 01:56	WG2396393
Dichlorodifluoromethane	U	C3	0.0327	0.200	1	11/07/2024 01:56	WG2396393
1,1-Dichloroethane	U		0.0230	0.100	1	11/07/2024 01:56	WG2396393
1,2-Dichloroethane	U		0.0190	0.100	1	11/07/2024 01:56	WG2396393
1,1-Dichloroethene	U		0.0200	0.100	1	11/07/2024 01:56	WG2396393
cis-1,2-Dichloroethene	U		0.0276	0.100	1	11/07/2024 01:56	WG2396393
trans-1,2-Dichloroethene	U		0.0572	0.200	1	11/07/2024 01:56	WG2396393
1,2-Dichloropropane	U		0.0508	0.200	1	11/07/2024 01:56	WG2396393
1,1-Dichloropropene	U		0.0280	0.100	1	11/07/2024 01:56	WG2396393
1,3-Dichloropropane	U		0.0700	0.200	1	11/07/2024 01:56	WG2396393
cis-1,3-Dichloropropene	U		0.0271	0.100	1	11/07/2024 01:56	WG2396393
trans-1,3-Dichloropropene	U		0.0612	0.200	1	11/07/2024 01:56	WG2396393
2,2-Dichloropropane	U		0.0317	0.100	1	11/07/2024 01:56	WG2396393
Di-isopropyl ether	U		0.0140	0.0400	1	11/07/2024 01:56	WG2396393
Ethylbenzene	1.42		0.0212	0.100	1	11/07/2024 01:56	WG2396393
Hexachloro-1,3-butadiene	U		0.508	1.00	1	11/07/2024 01:56	WG2396393
Isopropylbenzene	U		0.0345	0.100	1	11/07/2024 01:56	WG2396393
p-Isopropyltoluene	U		0.0932	0.200	1	11/07/2024 01:56	WG2396393
2-Butanone (MEK)	U		0.500	1.00	1	11/07/2024 01:56	WG2396393
Methylene Chloride	U		0.265	1.00	1	11/07/2024 01:56	WG2396393
4-Methyl-2-pentanone (MIBK)	U		0.400	1.00	1	11/07/2024 01:56	WG2396393
Methyl tert-butyl ether	0.0720		0.0118	0.0400	1	11/07/2024 01:56	WG2396393
Naphthalene	U		0.124	0.500	1	11/07/2024 01:56	WG2396393
n-Propylbenzene	U		0.0472	0.200	1	11/07/2024 01:56	WG2396393



Volatile Organic Compounds (GC/MS) by Method 8260D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Styrene	U		0.109	0.500	1	11/07/2024 01:56	WG2396393
1,1,1,2-Tetrachloroethane	U		0.0200	0.100	1	11/07/2024 01:56	WG2396393
1,1,2,2-Tetrachloroethane	U		0.0156	0.100	1	11/07/2024 01:56	WG2396393
1,1,2-Trichlorotrifluoroethane	U		0.0270	0.100	1	11/07/2024 01:56	WG2396393
Tetrachloroethene	U		0.0280	0.100	1	11/07/2024 01:56	WG2396393
Toluene	0.0590	J	0.0500	0.200	1	11/07/2024 01:56	WG2396393
1,2,3-Trichlorobenzene	U		0.0250	0.500	1	11/07/2024 01:56	WG2396393
1,2,4-Trichlorobenzene	U		0.193	0.500	1	11/07/2024 01:56	WG2396393
1,1,1-Trichloroethane	U		0.0110	0.100	1	11/07/2024 01:56	WG2396393
1,1,2-Trichloroethane	U		0.0353	0.100	1	11/07/2024 01:56	WG2396393
Trichloroethene	U		0.0160	0.0400	1	11/07/2024 01:56	WG2396393
Trichlorofluoromethane	U		0.0200	0.100	1	11/07/2024 01:56	WG2396393
1,2,3-Trichloropropane	U		0.204	0.500	1	11/07/2024 01:56	WG2396393
1,2,4-Trimethylbenzene	0.369		0.0464	0.200	1	11/07/2024 01:56	WG2396393
1,2,3-Trimethylbenzene	0.225		0.0460	0.200	1	11/07/2024 01:56	WG2396393
1,3,5-Trimethylbenzene	0.133	J	0.0432	0.200	1	11/07/2024 01:56	WG2396393
Vinyl chloride	U		0.0273	0.100	1	11/07/2024 01:56	WG2396393
Xylenes, Total	5.17		0.191	0.260	1	11/07/2024 01:56	WG2396393
(S) Toluene-d8	99.7			75.0-131		11/07/2024 01:56	WG2396393
(S) 4-Bromofluorobenzene	93.4			67.0-138		11/07/2024 01:56	WG2396393
(S) 1,2-Dichloroethane-d4	93.6			70.0-130		11/07/2024 01:56	WG2396393

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	570		66.7	200	1	11/05/2024 22:50	WG2394061
Residual Range Organics (RRO)	687		83.3	250	1	11/05/2024 22:50	WG2394061
(S) o-Terphenyl	108			52.0-156		11/05/2024 22:50	WG2394061

Sample Narrative:

L1793144-01 WG2394061: Sample resembles laboratory standards for Diesel and Hydraulic Oil.

Method Blank (MB)

(MB) R4142052-3 10/31/24 23:21

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	98.7			78.0-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4142052-1 10/31/24 21:54 • (LCSD) R4142052-2 10/31/24 22:37

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Gasoline Range Organics-NWTPH	5000	4540	4550	90.8	91.0	70.0-124			0.220	20
(S) a,a,a-Trifluorotoluene(FID)				102	101	78.0-120				

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Cp

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Cn

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Sr

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Qc

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Gl

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Sc

Method Blank (MB)

(MB) R4143546-2 11/06/24 21:29

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		0.548	1.00
Acrylonitrile	U		0.0760	0.500
Acrolein	U		0.758	50.0
Benzene	U		0.0160	0.0400
Bromobenzene	U		0.0420	0.500
Bromodichloromethane	U		0.0315	0.100
Bromoform	U		0.239	1.00
Bromomethane	U		0.148	0.500
n-Butylbenzene	U		0.153	0.500
sec-Butylbenzene	U		0.101	0.500
tert-Butylbenzene	U		0.0620	0.200
Carbon tetrachloride	U		0.0432	0.200
Chlorobenzene	U		0.0229	0.100
Chlorodibromomethane	U		0.0180	0.100
Chloroethane	U		0.0432	0.200
Chloroform	U		0.0166	0.100
Chloromethane	U		0.0556	0.500
2-Chlorotoluene	U		0.0368	0.100
4-Chlorotoluene	U		0.0452	0.200
1,2-Dibromo-3-Chloropropane	U		0.204	1.00
1,2-Dibromoethane	U		0.0210	0.100
Dibromomethane	U		0.0400	0.200
1,2-Dichlorobenzene	U		0.0580	0.200
1,3-Dichlorobenzene	U		0.0680	0.200
1,4-Dichlorobenzene	U		0.0788	0.200
Dichlorodifluoromethane	U		0.0327	0.200
1,1-Dichloroethane	U		0.0230	0.100
1,2-Dichloroethane	U		0.0190	0.100
1,1-Dichloroethene	U		0.0200	0.100
cis-1,2-Dichloroethene	U		0.0276	0.100
trans-1,2-Dichloroethene	U		0.0572	0.200
1,2-Dichloropropane	U		0.0508	0.200
1,1-Dichloropropene	U		0.0280	0.100
1,3-Dichloropropane	U		0.0700	0.200
cis-1,3-Dichloropropene	U		0.0271	0.100
trans-1,3-Dichloropropene	U		0.0612	0.200
2,2-Dichloropropane	U		0.0317	0.100
Di-isopropyl ether	U		0.0140	0.0400
Ethylbenzene	U		0.0212	0.100
Hexachloro-1,3-butadiene	U		0.508	1.00

¹Cp

²Tc

³Ss

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⁹Sc

Method Blank (MB)

(MB) R4143546-2 11/06/24 21:29

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Isopropylbenzene	U		0.0345	0.100
p-Isopropyltoluene	U		0.0932	0.200
2-Butanone (MEK)	U		0.500	1.00
Methylene Chloride	U		0.265	1.00
4-Methyl-2-pentanone (MIBK)	U		0.400	1.00
Methyl tert-butyl ether	U		0.0118	0.0400
Naphthalene	U		0.124	0.500
n-Propylbenzene	U		0.0472	0.200
Styrene	U		0.109	0.500
1,1,1,2-Tetrachloroethane	U		0.0200	0.100
1,1,2,2-Tetrachloroethane	U		0.0156	0.100
1,1,2-Trichlorotrifluoroethane	U		0.0270	0.100
Tetrachloroethene	U		0.0280	0.100
Toluene	U		0.0500	0.200
1,2,3-Trichlorobenzene	U		0.0250	0.500
1,2,4-Trichlorobenzene	U		0.193	0.500
1,1,1-Trichloroethane	U		0.0110	0.100
1,1,2-Trichloroethane	U		0.0353	0.100
Trichloroethene	U		0.0160	0.0400
Trichlorofluoromethane	U		0.0200	0.100
1,2,3-Trichloropropane	U		0.204	0.500
1,2,4-Trimethylbenzene	U		0.0464	0.200
1,2,3-Trimethylbenzene	U		0.0460	0.200
1,3,5-Trimethylbenzene	U		0.0432	0.200
Vinyl chloride	U		0.0273	0.100
Xylenes, Total	U		0.191	0.260
(S) Toluene-d8	100			75.0-131
(S) 4-Bromofluorobenzene	94.3			67.0-138
(S) 1,2-Dichloroethane-d4	88.4			70.0-130

Laboratory Control Sample (LCS)

(LCS) R4143546-1 11/06/24 20:31

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	25.0	27.5	110	10.0-160	
Acrylonitrile	25.0	26.4	106	45.0-153	
Acrolein	25.0	11.0	44.0	10.0-160	J
Benzene	5.00	4.43	88.6	70.0-123	

1Cp

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Laboratory Control Sample (LCS)

(LCS) R4143546-1 11/06/24 20:31

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromobenzene	5.00	4.50	90.0	73.0-121	
Bromodichloromethane	5.00	4.60	92.0	73.0-121	
Bromoform	5.00	5.16	103	64.0-132	
Bromomethane	5.00	4.05	81.0	56.0-147	
n-Butylbenzene	5.00	3.97	79.4	68.0-135	
sec-Butylbenzene	5.00	4.27	85.4	74.0-130	
tert-Butylbenzene	5.00	4.34	86.8	75.0-127	
Carbon tetrachloride	5.00	5.01	100	66.0-128	
Chlorobenzene	5.00	4.94	98.8	76.0-128	
Chlorodibromomethane	5.00	4.88	97.6	74.0-127	
Chloroethane	5.00	4.19	83.8	61.0-134	
Chloroform	5.00	4.81	96.2	72.0-123	
Chloromethane	5.00	4.44	88.8	51.0-138	
2-Chlorotoluene	5.00	4.41	88.2	75.0-124	
4-Chlorotoluene	5.00	3.79	75.8	75.0-124	
1,2-Dibromo-3-Chloropropane	5.00	4.01	80.2	59.0-130	
1,2-Dibromoethane	5.00	4.70	94.0	74.0-128	
Dibromomethane	5.00	4.80	96.0	75.0-122	
1,2-Dichlorobenzene	5.00	4.75	95.0	76.0-124	
1,3-Dichlorobenzene	5.00	4.49	89.8	76.0-125	
1,4-Dichlorobenzene	5.00	4.45	89.0	77.0-121	
Dichlorodifluoromethane	5.00	3.52	70.4	43.0-156	
1,1-Dichloroethane	5.00	4.64	92.8	70.0-127	
1,2-Dichloroethane	5.00	5.07	101	65.0-131	
1,1-Dichloroethene	5.00	4.79	95.8	65.0-131	
cis-1,2-Dichloroethene	5.00	4.51	90.2	73.0-125	
trans-1,2-Dichloroethene	5.00	4.67	93.4	71.0-125	
1,2-Dichloropropane	5.00	4.31	86.2	74.0-125	
1,1-Dichloropropene	5.00	4.74	94.8	73.0-125	
1,3-Dichloropropane	5.00	4.79	95.8	80.0-125	
cis-1,3-Dichloropropene	5.00	4.65	93.0	76.0-127	
trans-1,3-Dichloropropene	5.00	4.54	90.8	73.0-127	
2,2-Dichloropropane	5.00	5.37	107	59.0-135	
Di-isopropyl ether	5.00	5.23	105	60.0-136	
Ethylbenzene	5.00	4.87	97.4	74.0-126	
Hexachloro-1,3-butadiene	5.00	7.02	140	57.0-150	
Isopropylbenzene	5.00	4.90	98.0	72.0-127	
p-Isopropyltoluene	5.00	4.08	81.6	72.0-133	
2-Butanone (MEK)	25.0	25.3	101	30.0-160	
Methylene Chloride	5.00	4.50	90.0	68.0-123	

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Laboratory Control Sample (LCS)

(LCS) R4143546-1 11/06/24 20:31

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
4-Methyl-2-pentanone (MIBK)	25.0	29.6	118	56.0-143	
Methyl tert-butyl ether	5.00	4.72	94.4	66.0-132	
Naphthalene	5.00	4.03	80.6	59.0-130	
n-Propylbenzene	5.00	4.19	83.8	74.0-126	
Styrene	5.00	4.57	91.4	72.0-127	
1,1,1,2-Tetrachloroethane	5.00	5.56	111	74.0-129	
1,1,2,2-Tetrachloroethane	5.00	4.07	81.4	68.0-128	
1,1,2-Trichlorotrifluoroethane	5.00	4.33	86.6	61.0-139	
Tetrachloroethene	5.00	5.43	109	70.0-136	
Toluene	5.00	4.75	95.0	75.0-121	
1,2,3-Trichlorobenzene	5.00	6.45	129	59.0-139	
1,2,4-Trichlorobenzene	5.00	6.06	121	62.0-137	
1,1,1-Trichloroethane	5.00	4.99	99.8	69.0-126	
1,1,2-Trichloroethane	5.00	4.72	94.4	78.0-123	
Trichloroethene	5.00	5.27	105	76.0-126	
Trichlorofluoromethane	5.00	5.04	101	61.0-142	U
1,2,3-Trichloropropane	5.00	4.26	85.2	67.0-129	
1,2,4-Trimethylbenzene	5.00	4.07	81.4	70.0-126	
1,2,3-Trimethylbenzene	5.00	4.00	80.0	74.0-124	
1,3,5-Trimethylbenzene	5.00	4.19	83.8	73.0-127	
Vinyl chloride	5.00	4.31	86.2	63.0-134	
Xylenes, Total	15.0	14.7	98.0	72.0-127	
(S) Toluene-d8			99.8	75.0-131	
(S) 4-Bromofluorobenzene			97.8	67.0-138	
(S) 1,2-Dichloroethane-d4			89.3	70.0-130	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

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Method Blank (MB)

(MB) R4142418-1 11/04/24 23:35

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Diesel Range Organics (DRO)	U		66.7	200
Residual Range Organics (RRO)	U		83.3	250
(S) o-Terphenyl	97.5			52.0-156

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4142418-2 11/04/24 23:55 • (LCSD) R4142418-3 11/05/24 00:15

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Diesel Range Organics (DRO)	1500	1540	1530	103	102	50.0-150			0.651	20
(S) o-Terphenyl				110	95.5	52.0-156				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

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9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

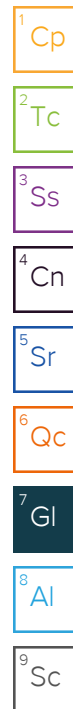
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
C3	The reported concentration is an estimate. The continuing calibration standard associated with this data responded low. Method sensitivity check is acceptable.
J	The identification of the analyte is acceptable; the reported value is an estimate.



ACCREDITATIONS & LOCATIONS

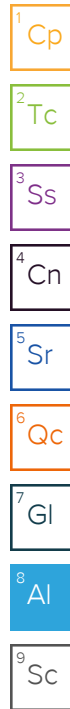
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



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