MAUL FOSTER ALONGI
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April 30, 2024
Project No. M0229.04.14

Tom Middleton
Washington State Department of Ecology
PO Box 47775
Olympia, Washington 98504-7775

Re: Former Hambleton Bros. Log Yard Compliance Groundwater Monitoring
Cleanup Site ID No. 2482

Dear Tom Middleton:

On behalf of the Port of Camas-Washougal, on April 11, 2024, Maul Foster & Alongi, Inc., collected a groundwater sample from monitoring well MW-7 from the former Hambleton Bros. Log Yard Site (Site; see the attached figure), consistent with the cleanup action plan.[1] The Site is in Washougal, Washington, on Clark County parcel number 73134179.

Monitoring was completed using a peristaltic pump, dedicated tubing, and industry standard techniques per the groundwater monitoring plan included in the Construction Completion Report.[2] A letter from the Washington State Department of Ecology[3] stipulated that sampling events should include analysis for diesel-range organics and lube oil-range organics with silica gel treatment, as well as total and dissolved organic carbon due to high, naturally occurring organic carbon that may be contributing to total petroleum hydrocarbon concentration in groundwater at the Site.

Depth to water was 22.12 feet below top of casing. The groundwater parameters from sampling MW-7 on April 11, 2024, are shown on the field sampling data sheet (see Attachment A) and confirm that low levels of turbidity were achieved (i.e., 3.62 nephelometric turbidity units) at the time the sample was collected. The groundwater sample was analyzed for diesel-range organics and lube oil-range organics by method Northwest Total Petroleum Hydrocarbons-Dx (TPH-Dx) and method TPH-Dx with silica gel treatment,[4] as well as total and dissolved organic carbon by Standard Methods for the Examination of Water and Wastewater M5310B. The analyses were completed by Specialty Analytical, Inc., in Clackamas, Oregon. Laboratory analytical results are included as Attachment B and are summarized in the attached table. A data quality assurance and quality control report is included as Attachment C. The data are considered acceptable for their intended use.

[1] Ecology. 2013. *Cleanup Action Plan, Hambleton Bros. Log Yard, Washougal, WA.* Washington State Department of Ecology: Lacey, WA. May.
[2] MFA. 2015. *Construction Completion Report, Former Hambleton Bros. Log Yard – Remedial Action.* Prepared for Port of Camas-Washougal. Maul Foster & Alongi, Inc.: Vancouver, WA. March 16.
[3] Ecology. 2021. Panjini Balaraju, Washington State Department of Ecology. *Property Development/Building Construction on the Log Pond Area, Approval Letter, Hambleton Bros Log Yard.* Letter to David Ripp, Port of Camas-Washougal. September 14.
[4] Ecology. 2023. *Guidance for Silica Gel Cleanup in Washington State.* Toxics Cleanup Program Publication No. 22-09-059. Washington State Department of Ecology: Olympia, WA. November.

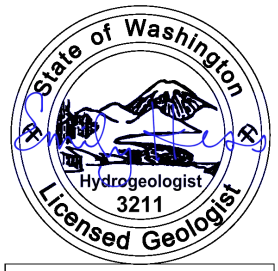
Diesel-range organics and lube oil-range organics were not detected (see table). Consistent with Ecology's Implementation Memorandum No. 4,[5] the diesel- and lube oil-range hydrocarbon results were summed for a total detected concentration (Diesel + Oil). When results are non-detect, half the reporting limit is used. When both results are non-detect, the highest reporting limit is shown. The April 2024 results were both non-detect for the TPH-Dx analysis and method TPH-Dx with silica gel treatment. This is the third consecutive groundwater monitoring event where the results were non-detect for the method TPH-Dx with silica gel treatment.

Biogenic interference (naturally occurring organics) can occur when analyzing for petroleum hydrocarbons and may increase the reported concentration of petroleum hydrocarbons if organic carbon present. Due to the proximity of the Site to the Columbia River, the Site history of being a lumber mill, and the monitoring well located downgradient of the former log pond, the groundwater samples collected since August 2021 have been analyzed for total and dissolved organic carbon. Total organic carbon was detected at a concentration of 8.56 milligrams per liter and dissolved organic carbon was detected at a concentration of 7.68 milligrams per liter, which are elevated relative to regional organic carbon concentrations.[6] Therefore, the groundwater was analyzed for TPH-Dx using silica gel treatment. Neither lube oil-range organic nor diesel-range organics were detected in the groundwater sample following the silica gel treatment indicating that biogenic interference is occurring. In addition, the NWTPH-Dx analysis without silica gel cleanup either did not detect or had detections of lube oil- and diesel-range organics below the Model Toxic Control Act Methods A cleanup level.

The next sampling event is scheduled for October 2025. Please let us know if you have any questions.

Sincerely,

Maul Foster & Alongi, Inc.



4.30.24

Emily Hess, LHG
Senior Hydrogeologist

Ysabel Perez, GIT
Staff Geologist

Attachments

Limitations

Figure

[5] Ecology. 2004. *Memorandum (Re: Determining Compliance with Method A Cleanup Levels for Diesel and Heavy Oil) to File. Implementation Memorandum No. 4.* Prepared by T. Nord, Washington State Department of Ecology. June.
[6] Total and dissolved organic carbon data obtained from Ecology's Environmental Information Management System database for groundwater in Clark County.

Table

A—Field Sampling Data Sheet

B—Lab Analytical Report

C—Data Validation Memorandum

cc: David Ripp, Port of Camas-Washougal
Jennifer Taylor, Port of Camas-Washougal

Limitations

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Figure

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Figure
Monitoring Well Location

Former Hambleton Bros. Log Yard
Washougal, Washington

Legend

- Monitoring Well
- Soil Management
- Site Boundary

Note: Property boundary is approximate and based on legal description provided by KC Development (Sept. 10, 2012).

0 75 150
Feet

Source: Aerial photograph obtained from Mapbox.

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Path: X:\0229.04\08_Remedial_Action\Completion Report\Projects\Fig_Monitoring Well Location_050115.mxd
Print Date: 4/10/2018
Approved By: ahughes
Produced By: rroberts
Project: 0229.04.08-04

Table

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Table
MW-7 Groundwater Field Parameters and Analytical Results
Former Hambleton Bros. Log Yard

Location:	Units	MTCA Method A CUL[1]	MW-7								
Collection Date:			10/28/2011	04/17/2015	10/27/2016	04/09/2018	10/10/2019	04/08/2021	08/17/2021	10/26/2022	04/11/2024
Collection Method:			Inertia Pump	Peristaltic Pump	Peristaltic Pump	Peristaltic Pump	Disposable Bailer	Disposable Bailer	Submersible Pump	Submersible Pump	Peristaltic Pump
Field Parameters											
Depth to water	ft MPE	NV	20.61	26.00	27.90	22.91	32.23	30.07	33.02	32.78	22.12
pH	SU	NV	5.92	5.98	6.88	6.58	6.07	6.66	6.69	6.62	6.93
Temperature	°C	NV	14.53	13.56	15.5	12.6	13.1	11.7	15.0	14.4	12.2
Conductivity	uS/cm	NV	91	1,567	1,566	1,037	921	880	576.9	878	729
Dissolved oxygen	mg/L	NV	0.64	0.7	0.49	4.35	1.17	2.07	0.16	0.40	0.44
ORP	mV	NV	-173.7	58.2	-62.5	-4.9	137.7	134.3	79.8	11.5	-29.4
Turbidity	NTU	NV	82.51	11.73	4.98	4.58	22	101	0.28	4.36	3.62
Analytical Results											
TPH											
Diesel-range hydrocarbons	ug/L	500	588	646	1,680	332	821	1,440	228	101	83.6 U
Lube oil-range hydrocarbons		500	591	907	4,740	571	598	1,080	425	209 U	209 U
Diesel + Oil[a]		500	1,180	1,550	6,420	903	1,420	2,520	653	206	209 U
TPH with Acid/Silica-Gel Treatment											
Diesel-range hydrocarbons	ug/L	500	--	--	--	--	--	--	105 U	83.3 U	83.6 U
Lube oil-range hydrocarbons		500	--	--	--	--	--	--	209 U	208 U	209 U
Diesel + Oil[a]		500	--	--	--	--	--	--	209 U	208 U	209 U
Conventional Parameters											
Total organic carbon	mg/L	NV	--	--	--	--	--	--	9.36	9.62	8.56
Dissolved organic carbon		NV	--	--	--	--	--	--	9.29	9.52	7.68

Notes

Shading indicates exceedance of MTCA Method A CUL. Non-detect results were not compared with screening criteria.

-- = not analyzed.

°C = degrees Celsius.

CUL = cleanup level.

ft MPE = feet below measuring point elevation.

mg/L = milligrams per liter.

MTCA = Model Toxics Control Act.

mV = millivolts.

NV = no value.

NTU = nephelometric turbidity units.

ORP = oxidation-reduction potential .

SU = standard units.

TPH = total petroleum hydrocarbons

U = result is non-detect at the method reporting limit.

ug/L = micrograms per liter.

uS/cm = microsiemens per centimeter.

[a]Diesel+Oil is the sum of diesel- and lube-oil range hydrocarbons. When results are non-detect, half the reporting limit is used. When both results are non-detect, the highest reporting limit is shown.

Reference

[1]Ecology. 2024. *Cleanup Levels and Risk Calculation (CLARC) table.* Washington State Department of Ecology, Toxics Cleanup Program. February.

Attachment A

Field Sampling Data Sheets

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Groundwater Field Sampling Data Sheet

MAUL FOSTER ALONGI

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0229.04.14	Port of Camas-Washougal	Former Hambleton Lumber	April 2024	Y. Perez

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
MW-7	Monitoring	Stick-up	Top of Casing	2.0	22-37	29.0

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTP - DTW*	*DTB - DTW*	*(gal/ft x water column)*
04/11/2024	11:17	37.23	--	22.12	--	15.11	2.46

0.75" = 0.023 gal/ft
1'' = 0.041 gal/ft
1.5" = 0.092 gal/ft
2" = 0.163 gal/ft
3" = 0.367 gal/ft
4" = 0.653 gal/ft
6" = 1.469 gal/ft
8" = 2.611 gal/ft

Water Quality Data

Purge Method	Peristaltic Pump	*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, other*							
Purge Start Time	11:44	*ideally < 0.3 ft drawdown*	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*	
Time	**Cumulative Purge Volume**	**Flowrate**	**Water Level**	**pH**	**Temperature**	**Conductivity**	**Dissolved Oxygen**	**ORP**	**Turbidity**
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
11:53	0.5	0.35	23	6.95	12.0	783	1.77	-9.2	13.70
11:56	0.6	0.35	23	6.95	12.0	727	1.16	-16.4	--
12:25	1.5	0.35	23	6.93	12.1	730	0.53	-23.1	7.32
12:28	1.6	0.35	23	6.93	12.1	730	0.46	-24.6	2.27
12:31	1.7	0.35	23	6.93	12.2	731	0.43	-28.1	1.91
12:34	1.8	0.35	23	6.93	12.2	729	0.44	-29.4	3.62

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Clear, colorless, black particles present at time of sampling.

General Comments

Purging paused at 12:08 PM due to equipment check; purging resumed at 12:23.
Only one (1) yellow poly bottle field-filtered.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	MW-7		
Sample Date	04/11/2024	Sample Time	12:34

Container Type	Preservative	Filtered (Y/N)	No. Containers
VOA			0
Amber glass		N	2
Poly		Y	2
		Total No. Containers:	4

Attachment B

Laboratory Analytical Report

MAUL FOSTER ALONGI

Specialty Analytical

9011 SE Jannsen Rd
Clackamas, OR 97015
TEL: (503) 607-1331
Website: www.specialtyanalytical.com

April 25, 2024

Emily Hess
Maul Foster & Alongi
330 E Mill Plain Blvd
Suite 405
Vancouver, WA 98660
TEL: (360) 694-2691
FAX: (360) 906-1958

RE: POCW/ 0229.04.014-01 Order No.: 2404167

Dear Emily Hess:

REVISED REPORT: Please see case narrative for information on revision.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Marty French
Lab Director

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

Case Narrative

WO#: **2404167**
Date: **4/23/2024**

CLIENT: Maul Foster & Alongi
Project: POCW/ 0229.04.014-01

Revision 1.

Report revised at client request to remove additional paperwork.

Specialty Analytical

WO#: **2404167**
Date Reported: **4/25/2024**

CLIENT: Maul Foster & Alongi
Project: POCW/ 0229.04.014-01
Lab ID: 2404167-001
Client Sample ID MW-7

Collection Date: 4/11/2024 12:34:00 PM
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
NWTPH-DX WITH SILICA CLEAN-UP				**NWTPH-DX/SIL**	**SW3510C**	Analyst: **BLM**
Diesel	ND	0.0836		mg/L	1	4/18/2024 11:44:00 PM
Lube Oil	ND	0.209		mg/L	1	4/18/2024 11:44:00 PM
Surr: Decanoic Acid		-		%Rec	1	4/18/2024 11:44:00 PM
Surr: o-Terphenyl	139	50 - 150		%Rec	1	4/18/2024 11:44:00 PM
NWTPH-DX - RBC				**NWTPH-DX**	**SW 3510C**	Analyst: **BLM**
Diesel	ND	0.0836		mg/L	1	4/18/2024 11:44:00 PM
Lube Oil	ND	0.209		mg/L	1	4/18/2024 11:44:00 PM
Surr: o-Terphenyl	139	50 - 150		%Rec	1	4/18/2024 11:44:00 PM
ORGANIC CARBON, DISSOLVED				**M5310 B**	**M5310 B**	Analyst: **NK**
Organic Carbon, Dissolved	7.68	0.500		mg/L	1	4/22/2024 5:10:48 PM
ORGANIC CARBON, TOTAL				**M5310 B**	**M5310 B**	Analyst: **NK**
Organic Carbon, Total	8.56	0.500		mg/L	1	4/22/2024 2:30:15 PM

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

Accreditation Program Analytes Report

WO#: **2404167**

25-Apr-24

Client: Maul Foster & Alongi

Project: POCW/ 0229.04.014-01

Program Name	Sample ID	ClientSampleID	Matrix	Test Name	Analyte	Status
ORELAP	2404167-001A	MW-7	Aqueous	NWTPH-Dx - RBC	Lube Oil	A
					Diesel	A
	2404167-001B			ORGANIC CARBON, Total	Organic Carbon, Total	A
	2404167-001C			ORGANIC CARBON, DISSOLVED	Organic Carbon, Dissolved	A

ORELAP A Accredited A

ACCRED

QC SUMMARY REPORT

Specialty Analytical

WO#: **2404167**

4/25/2024

Client: Maul Foster & Alongi

Project: POCW/ 0229.04.014-01 **TestCode:** **DOC_W**

Sample ID: **CCV1-R53718** SampType: **CCV** TestCode: **DOC_W** Units: **mg/L** Prep Date: RunNo: **53718**

Client ID: **CCV** Batch ID: **23480** TestNo: **M5310 B** **M5310 B** Analysis Date: **4/22/2024** SeqNo: **694762**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Dissolved	9.85	0.500	10.00	0	98.5	90	110				

Sample ID: **CCB1-R53718** SampType: **CCB** TestCode: **DOC_W** Units: **mg/L** Prep Date: RunNo: **53718**

Client ID: **CCB** Batch ID: **23480** TestNo: **M5310 B** **M5310 B** Analysis Date: **4/22/2024** SeqNo: **694763**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Dissolved	ND	0.500									

Sample ID: **MB-R53718** SampType: **MBLK** TestCode: **DOC_W** Units: **mg/L** Prep Date: RunNo: **53718**

Client ID: **PBW** Batch ID: **23480** TestNo: **M5310 B** **M5310 B** Analysis Date: **4/22/2024** SeqNo: **694765**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Dissolved	ND	0.500									

Sample ID: **LCS-R53718** SampType: **LCS** TestCode: **DOC_W** Units: **mg/L** Prep Date: RunNo: **53718**

Client ID: **LCSW** Batch ID: **23480** TestNo: **M5310 B** **M5310 B** Analysis Date: **4/22/2024** SeqNo: **694766**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Dissolved	9.99	0.500	10.00	0	99.9	84.1	109				

Qualifiers: H Holding times for preparation or analysis exceeded

QC SUMMARY REPORT

Specialty Analytical

WO#: **2404167**

4/25/2024

Client: Maul Foster & Alongi

Project: POCW/ 0229.04.014-01 **TestCode:** **DOC_W**

Sample ID: **LCS-R53718**	SampType: **LCS**	TestCode: **DOC_W**	Units: **mg/L**	Prep Date:	RunNo: **53718**
Client ID: **LCSW**	Batch ID: **23480**	TestNo: **M5310 B**	**M5310 B**	Analysis Date: **4/22/2024**	SeqNo: **694766**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **CCV2-R53718**	SampType: **CCV**	TestCode: **DOC_W**	Units: **mg/L**	Prep Date:	RunNo: **53718**
Client ID: **CCV**	Batch ID: **23480**	TestNo: **M5310 B**	**M5310 B**	Analysis Date: **4/22/2024**	SeqNo: **694767**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Dissolved	10.3	0.500	10.00	0	103	90	110				

Sample ID: **CCB2-R53718**	SampType: **CCB**	TestCode: **DOC_W**	Units: **mg/L**	Prep Date:	RunNo: **53718**
Client ID: **CCB**	Batch ID: **23480**	TestNo: **M5310 B**	**M5310 B**	Analysis Date: **4/22/2024**	SeqNo: **694768**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Dissolved	ND	0.500									

Sample ID: **2404123-001CMS**	SampType: **MS**	TestCode: **DOC_W**	Units: **mg/L**	Prep Date: **4/22/2024**	RunNo: **53718**
Client ID: **BatchQC**	Batch ID: **23480**	TestNo: **M5310 B**	**M5310 B**	Analysis Date: **4/22/2024**	SeqNo: **694770**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Dissolved	7.31	0.500	5.000	2.242	101	74.7	121				

Qualifiers: H Holding times for preparation or analysis exceeded

QC SUMMARY REPORT

Specialty Analytical

WO#: **2404167**

4/25/2024

Client: Maul Foster & Alongi

Project: POCW/ 0229.04.014-01 **TestCode:** **DOC_W**

Sample ID: **2404123-001CMSD**	SampType: **MSD**	TestCode: **DOC_W**	Units: **mg/L**	Prep Date: **4/22/2024**	RunNo: **53718**
Client ID: **BatchQC**	Batch ID: **23480**	TestNo: **M5310 B**	**M5310 B**	Analysis Date: **4/22/2024**	SeqNo: **694771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Dissolved	7.18	0.500	5.000	2.242	98.7	74.7	121	7.307	1.82	20	

Sample ID: **CCV3-R53718**	SampType: **CCV**	TestCode: **DOC_W**	Units: **mg/L**	Prep Date:	RunNo: **53718**
Client ID: **CCV**	Batch ID: **23480**	TestNo: **M5310 B**	**M5310 B**	Analysis Date: **4/22/2024**	SeqNo: **694775**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Dissolved	9.98	0.500	10.00	0	99.8	90	110				

Sample ID: **CCB3-R53718**	SampType: **CCB**	TestCode: **DOC_W**	Units: **mg/L**	Prep Date:	RunNo: **53718**
Client ID: **CCB**	Batch ID: **23480**	TestNo: **M5310 B**	**M5310 B**	Analysis Date: **4/22/2024**	SeqNo: **694776**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Dissolved	ND	0.500									

Qualifiers: H Holding times for preparation or analysis exceeded

QC SUMMARY REPORT

Specialty Analytical

WO#: **2404167**

4/25/2024

Client: Maul Foster & Alongi

Project: POCW/ 0229.04.014-01 **TestCode:** **DXLLSIL_W**

Sample ID: **CCV-1**	SampType: **CCV**	TestCode: **DXLLSIL_W**	Units: **mg/L**	Prep Date:	RunNo: **53688**
Client ID: **CCV**	Batch ID: **23457**	TestNo: **NWTPH-Dx/Si**	**SW3510C**	Analysis Date: **4/18/2024**	SeqNo: **694209**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	5.93	0.0800	6.000	0	98.9	85	115				
Lube Oil	3.13	0.200	3.000	0	104	85	115				

Sample ID: **MB-23457**	SampType: **MBLK**	TestCode: **DXLLSIL_W**	Units: **mg/L**	Prep Date: **4/17/2024**	RunNo: **53688**
Client ID: **PBW**	Batch ID: **23457**	TestNo: **NWTPH-Dx/Si**	**SW3510C**	Analysis Date: **4/18/2024**	SeqNo: **694210**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	0.0800									
Lube Oil	ND	0.200									
Surr: Decanoic Acid	0										
Surr: o-Terphenyl	0.261		0.2000		130	50	150				

Sample ID: **LCS-23457**	SampType: **LCS**	TestCode: **DXLLSIL_W**	Units: **mg/L**	Prep Date: **4/17/2024**	RunNo: **53688**
Client ID: **LCSW**	Batch ID: **23457**	TestNo: **NWTPH-Dx/Si**	**SW3510C**	Analysis Date: **4/18/2024**	SeqNo: **694211**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	0.940	0.0800	1.000	0	94.0	60.7	121				
Lube Oil	0.824	0.200	1.000	0	82.4	64	126				
Surr: Decanoic Acid	0.0267										MI

Qualifiers: H Holding times for preparation or analysis exceeded

QC SUMMARY REPORT

Specialty Analytical

WO#: **2404167**

4/25/2024

Client: Maul Foster & Alongi

Project: POCW/ 0229.04.014-01 **TestCode:** **DXLLSIL_W**

Sample ID: **LCSD-23457**	SampType: **LCSD**	TestCode: **DXLLSIL_W**	Units: **mg/L**	Prep Date: **4/17/2024**	RunNo: **53688**
Client ID: **LCSS02**	Batch ID: **23457**	TestNo: **NWTPH-Dx/Si SW3510C**		Analysis Date: **4/18/2024**	SeqNo: **694212**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	0.921	0.0800	1.000	0	92.1	60.7	121	0.9395	2.02	20	
Lube Oil	0.898	0.200	1.000	0	89.8	64	126	0.8244	8.55	20	
Surr: Decanoic Acid	0.0241								0	0	MI

Sample ID: **CCV-2**	SampType: **CCV**	TestCode: **DXLLSIL_W**	Units: **mg/L**	Prep Date:	RunNo: **53688**
Client ID: **CCV**	Batch ID: **23457**	TestNo: **NWTPH-Dx/Si SW3510C**		Analysis Date: **4/19/2024**	SeqNo: **694214**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	8.34	0.0800	8.000	0	104	85	115				
Lube Oil	3.96	0.200	4.000	0	99.1	85	115				

Qualifiers: H Holding times for preparation or analysis exceeded

QC SUMMARY REPORT

Specialty Analytical

WO#: **2404167**

4/25/2024

Client: Maul Foster & Alongi

Project: POCW/ 0229.04.014-01 **TestCode:** **NWTPHDXLL_W**

Sample ID: **CCV-1** SampType: **CCV** TestCode: **NWTPHDXLL** Units: **mg/L** Prep Date: RunNo: **53682**

Client ID: **CCV** Batch ID: **23456** TestNo: **NWTPH-Dx** **SW 3510C** Analysis Date: **4/18/2024** SeqNo: **694130**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	5.93	0.0800	6.000	0	98.9	85	115				
Lube Oil	3.13	0.200	3.000	0	104	85	115				

Sample ID: **MB-23456** SampType: **MBLK** TestCode: **NWTPHDXLL** Units: **mg/L** Prep Date: **4/17/2024** RunNo: **53682**

Client ID: **PBW** Batch ID: **23456** TestNo: **NWTPH-Dx** **SW 3510C** Analysis Date: **4/18/2024** SeqNo: **694131**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	0.0800									
Lube Oil	ND	0.200									
Surr: o-Terphenyl	0.261		0.2000		130	50	150				

Sample ID: **LCS-23456** SampType: **LCS** TestCode: **NWTPHDXLL** Units: **mg/L** Prep Date: **4/17/2024** RunNo: **53682**

Client ID: **LCSW** Batch ID: **23456** TestNo: **NWTPH-Dx** **SW 3510C** Analysis Date: **4/18/2024** SeqNo: **694132**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	0.926	0.0800	1.000	0	92.6	60.7	121				
Lube Oil	0.824	0.200	1.000	0	82.4	64	126				

Qualifiers: H Holding times for preparation or analysis exceeded

QC SUMMARY REPORT

Specialty Analytical

WO#: **2404167**

4/25/2024

Client: Maul Foster & Alongi

Project: POCW/ 0229.04.014-01 **TestCode:** **NWTPHDXLL_W**

Sample ID: **LCSD-23456**	SampType: **LCSD**	TestCode: **NWTPHDXLL**	Units: **mg/L**	Prep Date: **4/17/2024**	RunNo: **53682**
Client ID: **LCSS02**	Batch ID: **23456**	TestNo: **NWTPH-Dx**	**SW 3510C**	Analysis Date: **4/18/2024**	SeqNo: **694133**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	0.915	0.0800	1.000	0	91.5	60.7	121	0.9257	1.18	20	
Lube Oil	0.898	0.200	1.000	0	89.8	64	126	0.8244	8.55	20	

Sample ID: **CCV-2**	SampType: **CCV**	TestCode: **NWTPHDXLL**	Units: **mg/L**	Prep Date:	RunNo: **53682**
Client ID: **CCV**	Batch ID: **23456**	TestNo: **NWTPH-Dx**	**SW 3510C**	Analysis Date: **4/19/2024**	SeqNo: **694135**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	8.34	0.0800	8.000	0	104	85	115				
Lube Oil	3.96	0.200	4.000	0	99.1	85	115				

Qualifiers: H Holding times for preparation or analysis exceeded

QC SUMMARY REPORT

Specialty Analytical

WO#: **2404167**

4/25/2024

Client: Maul Foster & Alongi

Project: POCW/ 0229.04.014-01 **TestCode:** **TOC_W**

Sample ID: **CCV1-R53717** SampType: **CCV** TestCode: **TOC_W** Units: **mg/L** Prep Date: RunNo: **53717**

Client ID: **CCV** Batch ID: **23477** TestNo: **M5310 B** **M5310 B** Analysis Date: **4/22/2024** SeqNo: **694745**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	9.85	0.500	10.00	0	98.5	90	110				

Sample ID: **CCB1-R53717** SampType: **CCB** TestCode: **TOC_W** Units: **mg/L** Prep Date: RunNo: **53717**

Client ID: **CCB** Batch ID: **23477** TestNo: **M5310 B** **M5310 B** Analysis Date: **4/22/2024** SeqNo: **694746**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	ND	0.500									

Sample ID: **MB-R53717** SampType: **MBLK** TestCode: **TOC_W** Units: **mg/L** Prep Date: RunNo: **53717**

Client ID: **PBW** Batch ID: **23477** TestNo: **M5310 B** **M5310 B** Analysis Date: **4/22/2024** SeqNo: **694748**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	ND	0.500									

Sample ID: **LCS-R53717** SampType: **LCS** TestCode: **TOC_W** Units: **mg/L** Prep Date: RunNo: **53717**

Client ID: **LCSW** Batch ID: **23477** TestNo: **M5310 B** **M5310 B** Analysis Date: **4/22/2024** SeqNo: **694749**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	9.99	0.500	10.00	0	99.9	84.1	109				

Qualifiers: H Holding times for preparation or analysis exceeded

QC SUMMARY REPORT

Specialty Analytical

WO#: **2404167**

4/25/2024

Client: Maul Foster & Alongi

Project: POCW/ 0229.04.014-01 **TestCode:** **TOC_W**

Sample ID: **LCS-R53717** SampType: **LCS** TestCode: **TOC_W** Units: **mg/L** Prep Date: RunNo: **53717**

Client ID: **LCSW** Batch ID: **23477** TestNo: **M5310 B** **M5310 B** Analysis Date: **4/22/2024** SeqNo: **694749**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **2404167-001BMS** SampType: **MS** TestCode: **TOC_W** Units: **mg/L** Prep Date: **4/22/2024** RunNo: **53717**

Client ID: **MW-7** Batch ID: **23477** TestNo: **M5310 B** **M5310 B** Analysis Date: **4/22/2024** SeqNo: **694755**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	13.2	0.500	5.000	8.557	93.7	74.7	121				

Sample ID: **2404167-001BMSD** SampType: **MSD** TestCode: **TOC_W** Units: **mg/L** Prep Date: **4/22/2024** RunNo: **53717**

Client ID: **MW-7** Batch ID: **23477** TestNo: **M5310 B** **M5310 B** Analysis Date: **4/22/2024** SeqNo: **694756**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	13.5	0.500	5.000	8.557	98.3	74.7	121	13.24	1.72	20	

Sample ID: **CCV3-R53717** SampType: **CCV** TestCode: **TOC_W** Units: **mg/L** Prep Date: RunNo: **53717**

Client ID: **CCV** Batch ID: **23477** TestNo: **M5310 B** **M5310 B** Analysis Date: **4/22/2024** SeqNo: **694760**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	9.98	0.500	10.00	0	99.8	90	110				

Qualifiers: H Holding times for preparation or analysis exceeded

QC SUMMARY REPORT

Specialty Analytical

WO#: **2404167**

4/25/2024

Client: Maul Foster & Alongi

Project: POCW/ 0229.04.014-01 **TestCode:** **TOC_W**

Sample ID: **CCB3-R53717** SampType: **CCB** TestCode: **TOC_W** Units: **mg/L** Prep Date: RunNo: **53717**

Client ID: **CCB** Batch ID: **23477** TestNo: **M5310 B** **M5310 B** Analysis Date: **4/22/2024** SeqNo: **694761**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	ND	0.500									

Qualifiers: H Holding times for preparation or analysis exceeded

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Website: www.specialtyanalytical.com

Sample Receipt Checklist

Client Name MAUL_FOSTER Work Order Number 2404167

RcptNo: 1 Date and Time Received 4/15/2024 1:55:00 PM Received by: Mandy Wehe

Completed by Reviewed by:

Completed Date: 4/15/2024 Reviewed Date: 4/15/2024 2:24:02 PM

Carrier name: SA

Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	Not Present ☐
Are matrices correctly identified on Chain of custody?	Yes ☑	No ☐	
Is it clear what analyses were requested?	Yes ☑	No ☐	
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Samples in proper container/bottle?	Yes ☑	No ☐	
Were correct preservatives used and noted?	Yes ☑	No ☐	NA ☐
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
Were container lables complete (ID, Pres, Date)?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
All samples received at a temp. of > 0° C to 6.0° C?	Yes ☑	No ☐	NA ☐
Response when temperature is outside of range:			
Preservative added to bottles:			
Sample Temp. taken and recorded upon receipt?	Yes ☑	No ☐	To 1.4 ºC
Water - Were bubbles absent in VOC vials?	Yes ☐	No ☐	No Vials ☑
Water - Was there Chlorine Present?	Yes ☐	No ☐	NA ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	NA ☐
Are Samples considered acceptable?	Yes ☑	No ☐	
Custody Seals present?	Yes ☐	No ☑	
Traffic Report or Packing Lists present?	Yes ☐	No ☑	
Airbill or Sticker?	Air Bill ☐	Sticker ☐	Not Present ☑
Airbill No:			
Sample Tags Present?	Yes ☐	No ☑	
Sample Tags Listed on COC?	Yes ☐	No ☑	
Tag Numbers:			
Sample Condition?	Intact ☑	Broken ☐	Leaking ☐

Case Number: SDG: SAS:

Adjusted? _____ Checked by

Any No and/or NA (not applicable) response must be detailed in the comments section be

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Sample Receipt Checklist

Client Contacted? ☐ Yes ☑ No ☐ NA Person Contacted: Comments:

Contact Mode: ☐ Phone: ☐ Fax: ☐ Email: ☐ In Person:

Client Instructions:

Date Contacted: Contacted By:

Regarding:

CorrectiveAction:

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Clackamas, OR 97015
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Fax: 503-607-1336

Chain of Custody Record

Date: 4/11/2024 Page: 1 of: 1
Project Name: PDXW
Project No: 0229.04014-01 PO No: 0229 04014
Collected by: YSABEL PEREZ
State Collected: OR [ ] WA [X] OTHER
Report To (PM): Emily Hess
PM Email: ehess@maulfoster.com

Laboratory Project No (internal): 2404167
Temperature on Receipt: 1.4 °C
Cooling: ice
Shipped Via: SA
Custody Seal: Y (N) Intact / Broken Cooler / Bottle
MDL [ ] TIER IV [ ] EDD [ ]
Sample Disposal: [ ] Return to client [X] Disposal by lab (after 60 days)

Client: MFA
Address: 330 E Mill Plain Ste 405
City, State, Zip: Van WA 98661
Telephone: 360 980 2497
AP Email: accounting@maulfoster.com

Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	NWTPH-Dx	NWTPH Dx w/ silica gel	Total Org. Carbon	Dissolved Org. Carbon	Comments
1 MW-7	4/11/24	1234	W	4	X	H	H	H	
2									
3									
4									
5									
6									
7									
8									
9									
10									

Requested Tests

*Matrix: A = Air, AQ = Aqueous, L=Liquid, O = Oil, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water, M = Miscellaneous

Turn-around Time: Standard (5-7 Business): [ ] 3 Day: [X] 2 Day: [ ] Next Day: [ ] Same Day: [ ]
Expedited turn-around requests should be coordinated in advance

Relinquished	Date/Time		Received	Date/Time	
x YSABEL PEREZ	4/15/2024	1148	x	4-15-24	1148
x	4-15-24	1355	x	4/15/24	1355
x	Date/Time		x	Date/Time	

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Definition Only

WO#: **2404167**
Date: **4/23/2024**

Definitions:

KEY TO FLAGS

A: This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was qualified against gasoline calibration standards.

A1: This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was qualified against diesel calibration standards.

A2: This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was qualified against lube oil calibration standards.

A3: The results was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.

A4: The product appears to be aged or degraded.

B: The blank exhibited a positive result greater than the reporting limit for this compound.

BC: Sample concentration is >10x positive result in blank. Data is considered acceptable.

CN: See Case Narrative.

E: Result exceeds the calibration range for this compound. The result should be considered an estimate.

F: The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.

FS: Follow-up testing is suggested.

G: Result may be biased high due to biogenic interferences. Clean up is recommended.

H: Sample was analyzed outside recommended holding time.

HT: At client's request, samples was analyzed outside of recommended holding time.

HP: Sample was analyzed outside recommended holding time due to VOA having pH >2.

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Definition Only

WO#: **2404167**
Date: **4/23/2024**

Definitions:

J: The results for this analyte is between the MDL and the PQL and should be considered an estimated concentration.

K: Diesel result is biased high due to amount of Oil contained in the sample.

L: Diesel result is biased high due to amount of Gasoline contained in the sample.

M: Oil result is biased high due to amount of Diesel contained in the sample.

N: Gasoline result is biased high due to amount of Diesel contained in the sample.

MC: Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.

MI: Result is outside control limits due to matrix interference.

NH: Sample matrix is non-homogeneous

MSA: Value determined by Method of Standard Addition.

O: Laboratory Control Standard (LCS) exceeded laboratory control limits but meets CCV criteria. Data meets EPA requirements.

Q: Detection levels elevated due to sample matrix.

R: RPD control limits were exceeded

RF: Duplicate failed due to result being at or near the method-reporting limit.

RP: Matrix spike values exceed established QC limits; post digestion spike is in control.

S: Recovery is outside control limits.

SC: CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.

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Definition Only

WO#: **2404167**

Date: **4/23/2024**

Definitions:

SL: LCS exceeded recovery control limits, but associated MS/MSD passing. Data meets EPA requirements.

SV: CCV exceded low recovery control limits. ND as reported evaluated using EPA method 8260D section 11.4.3.2

TA: Sample treated with ascorbic acid for the removal of thiocyanates.

TS: Sample treated with Sodium Sulfite for the removal of chlorine.

Attachment C

Data Validation Memorandum

MAUL
FOSTER
ALONGI

Data Validation Memorandum

Project No. M0229.04.014 | April 25, 2024 | Port of Camas-Washougal

Maul Foster & Alongi, Inc. (MFA), conducted an independent Stage 2A review of the quality of analytical results for a groundwater sample collected on April 11, 2024, at the Port of Camas-Washougal's former Hambleton Bros. Log Yard property.

Specialty Analytical Inc. (SA) performed the analyses. MFA reviewed SA report number 2404167. The analyses performed and the sample analyzed are listed in the following tables.

Analysis	Reference
Diesel- and lube-oil-range hydrocarbons	NWTPH-Dx
Diesel- and lube-oil-range hydrocarbons with silica gel treatment	NWTPH-Dx/SG
Total and dissolved organic carbon	SM 5310B

Notes
NWTPH = Northwest Total Petroleum Hydrocarbons.
SG = silica gel treatment.
SM = Standard Methods for the Examination of Water and Wastewater.

Sample Analyzed
Report 2404167
MW-7

Data Validation Procedures

Analytical results were evaluated according to applicable sections of U.S. Environmental Protection Agency (EPA) guidelines for data review (EPA 2020a, 2020b) and appropriate laboratory- and method-specific guidelines (EPA 1986, SA 2023).

Data validation procedures were modified, as appropriate, to accommodate quality control requirements for methods that EPA data review guidelines do not specifically address (e.g., Northwest Total Petroleum Hydrocarbons [NWTPH]-Dx).

Based on the data quality assurance/quality control review described herein, the data, with the appropriate final data qualifiers assigned, are considered acceptable for their intended use. Final data qualifiers represent qualifiers originating from the laboratory and accepted by the reviewer, and data qualifiers assigned by the reviewer during validation.

Final data qualifier:

- U = result is non-detect at the method reporting limit (MRL).

General Qualifications

Total And Dissolved Compounds

Total and dissolved organic carbon results were compared.

The total organic carbon result for sample MW-7 was greater than the associated dissolved organic carbon result.

Sample Conditions

Sample Custody

Sample custody was appropriately documented on the chain-of-custody (COC) form accompanying the report.

Holding Times

Extractions and analyses were performed within the recommended holding times.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

Reporting Limits

The laboratory evaluated results to MRLs.

Blank Results

Method Blanks

Laboratory method blanks are used to evaluate whether laboratory contamination was introduced during sample preparation and analysis. Laboratory method blank analyses were performed at the required frequencies, in accordance with laboratory- and method-specific requirements.

All laboratory method blank results were non-detect to MRLs.

Equipment Rinsate Blanks

Equipment rinsate blanks are used to evaluate the adequacy of the field equipment decontamination process when decontaminated sampling equipment is used to collect samples.

These blanks were not required for this sampling event, as all samples were collected using dedicated or single-use equipment.

Continuing Calibration Blanks

Continuing calibration blanks (CCBs) are used to evaluate analytical background contamination. CCB results were not required for Stage 2A validation but were reviewed when provided by the laboratory.

All CCB results were non-detect to MRLs.

Laboratory Control Sample and Laboratory Control Sample Duplicate Results

Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) results are used to evaluate laboratory precision and accuracy. The LCSs and LCSDs were prepared and analyzed at the required frequency, in accordance with laboratory- and method-specific requirements.

All LCS and LCSD results were within acceptance limits for percent recovery and relative percent difference (RPD).

Laboratory Duplicate Results

Laboratory duplicate results are used to evaluate laboratory precision and sample homogeneity. No laboratory duplicate results were reported; laboratory precision was evaluated using LCS and LCSD or matrix spike (MS) and matrix spike duplicate (MSD) results.

Matrix Spike and Matrix Spike Duplicate Results

MS and MSD results are used to evaluate laboratory precision, accuracy, and the effect of the sample matrix on sample preparation and target analyte recovery. The MS and MSD samples were prepared and analyzed at the required frequency, in accordance with laboratory- and method-specific requirements.

All MS and MSD results were within acceptance limits for percent recovery and RPD.

Surrogate Results

Surrogate results are used to evaluate laboratory performance of target organic compounds for individual samples. The reviewer confirmed with the laboratory that o-terphenyl surrogate results are not reported for batch quality control results other than laboratory method blanks due to system limitations. This is in accordance with the methods.

According to report 2404167, the NWTPH-Dx/SG decanoic acid surrogate had low or no recovery for sample MW-7 and the batch 23457 quality control results. The reviewer confirmed with the laboratory that this surrogate is used to evaluate whether the silica gel cleanup is removing the correct fraction, and thus a low recovery is expected. The batch 23457 LCS and LCSD show decanoic acid results of 0.0267 milligrams per liter (mg/L) and 0.0241 mg/L, respectively, with a flag for matrix interference. The reviewer confirmed that matrix interference for the LCS/LCSD is from the spike standard and is expected in the chromatogram.

All surrogate results were within percent recovery acceptance limits.

Continuing Calibration Verification Results

Continuing calibration verification (CCV) results are used to evaluate instrument sensitivity, precision, and accuracy throughout the analytical sequence. CCV results are not required for Stage 2A validation, however, the reviewer evaluated CCV results when provided by the laboratory.

All CCV results were within percent recovery acceptance limits.

Field Duplicate Results

Field duplicate results are used to evaluate field precision and sample homogeneity. No field duplicate samples were submitted for analysis.

Data Package

The data package was reviewed for transcription errors, omissions, and anomalies.

At MFA's request, report 2404167 was revised by SA on April 25, 2024, to remove an email chain from the report.

On the COC form accompanying report 2404167, sample MW-7 is marked to be held for NWTPH-Dx/SG and total and dissolved organic carbon. The reviewer confirmed that these analyses were taken off hold by the MFA project manager after sample receipt.

No other issues were found.

References

EPA. 1986. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* EPA publication SW-846. 3rd ed. U.S. Environmental Protection Agency. Final updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), V (2015), VI phase I (2017), VI phase II (2018), VI phase III (2019), VII phase I (2019), and VII phase II (2020).

EPA. 2020a. *National Functional Guidelines for Inorganic Superfund Methods Data Review.* EPA 542-R-20-006. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation: Washington, DC. November.

EPA. 2020b. *National Functional Guidelines for Organic Superfund Methods Data Review.* EPA 540-R-20-005. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation: Washington, DC. November.

SA. 2023. *Quality Assurance Manual.* Rev. 2023-3. Specialty Analytical Inc.: Clackamas, OR. June 2.