



May 1, 2018

Project No. 0229.04.13

Rebecca Lawson

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 Ms. Lawson:

On behalf of the Port of Camas-Washougal, on April 9, 2018, Maul Foster & Alongi, Inc., collected a groundwater sample from monitoring well MW-7 from the former Hambleton Bros. Log Yard Site (see the attached figure), consistent with the cleanup action plan<sup>1</sup>. The site is located in the City of Washougal, Clark County, Washington, on Clark County parcel number 73134179.

Monitoring was completed using low flow sampling techniques per the groundwater monitoring plan included in the Construction Completion Report.<sup>2</sup> The groundwater parameters from sampling MW-7 on April 9, 2018, are shown on the field sampling data sheet (see Attachment A). The groundwater sample was analyzed for diesel-range organics and lube oil-range organics by method Northwest Total Petroleum Hydrocarbons-Dx. The analysis was 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.

Lube oil-range organics were detected at 571 micrograms per liter (ug/L) and diesel-range organics were detected at 332 ug/L (see table). Consistent with the Washington State Department of Ecology's (Ecology's) Implementation Memorandum No. 4,<sup>3</sup> the diesel- and lube oil-range hydrocarbon results were summed for a total detected concentration. The individual lube oil-range and the total detected concentrations are above the Ecology Model

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<sup>1</sup> Ecology. 2013. Cleanup action plan, Hambleton Bros. Log Yard, Washougal, WA. Washington State Department of Ecology, Lacey, Washington. May.

<sup>2</sup> MFA. 2015. Construction completion report, former Hambleton Bros. Log Yard – remedial action. Prepared for Port of Camas-Washougal. Prepared by Maul Foster & Alongi, Inc. March 16.

<sup>3</sup> 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.

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Toxics Control Act Method A groundwater cleanup level of 500 ug/L. These results are lower than the results from all previous monitoring events at MW-7.

The next sampling event is scheduled for October 2019. Please let us know if you have any questions.

Sincerely,

Maul Foster & Alongi, Inc.

5/1/18  
Emily Hess, LG  
Project Geologist



Alan R. Hughes, LG  
Senior Geologist

Attachments: Limitations  
Table  
Figure  
A—Water Field Sampling Data Sheet  
B—Laboratory Analytical Results  
C—Data Validation Memorandum

cc: David Ripp, Port of Camas-Washougal

## LIMITATIONS

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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.

# TABLE



**Table**  
**MW-7 Groundwater Parameters and Analytical Sample Results**  
**Former Hambleton Bros. Log Yard**  
**Washougal, Washington**

Date Collected	Method A CUL	10/28/2011	04/17/2015	10/27/2016	04/09/2018
<b>Field Parameters</b>					
Depth to water (ft MPE)	NA	20.61	26.00	27.90	22.91
pH (pH units)	NA	5.92	5.98	6.88	6.58
Temperature (°C)	NA	14.53	13.56	15.50	12.60
Conductivity (uS/cm)	NA	91	1567	1566	1037
Dissolved oxygen (mg/L)	NA	0.64	0.7	0.49	4.35
Redox potential (mV)	NA	-173.7	58.2	-62.5	-4.9
Turbidity (NTU)	NA	82.51	11.73	4.98	4.58
<b>Petroleum Hydrocarbon Analytical Results (ug/L)</b>					
Diesel-range	500	<b>588</b>	<b>646</b>	<b>1680</b>	332
Lube Oil-range	500	<b>591</b>	<b>907</b>	<b>4740</b>	<b>571</b>
Diesel + Lube Oil <sup>a</sup>	500	<b>1179</b>	<b>1553</b>	<b>6420</b>	<b>903</b>
NOTES: °C = degrees Celsius. CUL = cleanup level. ft MPE = feet below measuring point elevation. mg/L = milligrams per liter. mV = millivolts. NA = not applicable. NTU = nephelometric turbidity units. ug/L = micrograms per liter. uS/cm = microsiemens per centimeter. <sup>a</sup> Diesel + Lube Oil = sum of diesel-range and lube oil-range organics.					




FIGURE



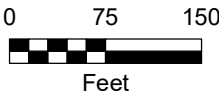


**Figure**  
**Monitoring Well Location**  
Former Hambleton Bros. Log Yard  
Washougal, Washington

**Legend**

-  Monitoring Well
-  Soil Management
-  Site Boundary

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



Source: Aerial photograph obtained from Mapbox.

# ATTACHMENT A

## WATER FIELD SAMPLING DATA SHEET



# Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

## Water Field Sampling Data Sheet

<b>Client Name</b>	Port of Camas-Washougal	<b>Sample Location</b>	MW-7				
<b>Project #</b>	0229.04.13	<b>Sampler</b>	Emily Hess				
<b>Project Name</b>	Former Hambleton Lumber	<b>Sampling Date</b>	4/9/2018				
<b>Sampling Event</b>	April 2018	<b>Sample Name</b>	MW-7				
<b>Sub Area</b>		<b>Sample Depth</b>	32				
<b>FSDS QA:</b>	ENH 4/9/2018	<b>Easting</b>		<b>Northing</b>		<b>TOC</b>	

### Hydrology/Level Measurements

Date	Time	DT-Bottom	DT-Product	DT-Water	(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
					DTP-DTW	DTB-DTW	Pore Volume
4/9/2018	9:47	37.18		22.91		14.27	2.33

(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	Time	Purge Vol (gal)	Flowrate l/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
(2) Peristaltic Pump	10:03:00 AM	0.15	0.1	6.14	12.8	1037	3.16	69.7	10.56
	10:08:00 AM	0.3	0.1	6.31	12.3	1037	4.02	48.7	10.76
	10:13:00 AM	0.45	0.1	6.45	12.2	1039	4.49	33.3	6.98
	10:18:00 AM	0.6	0.1	6.49	12.4	1036	5.38	21.9	6.21
	10:23:00 AM	0.75	0.1	6.55	12.4	1037	5.1	6.6	5.12
Final Field Parameters									
	10:28:00 AM	0.9	0.1	6.58	12.6	1037	4.35	-4.9	4.58

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

**Water Quality Observations:** Clear with black/reddish brown silt-sized particles.

### Sample Information

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
(2) Peristaltic Pump	Groundwater	10:28:00 AM	VOA-Glass		
			Amber Glass	1	No
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	1	

### General Sampling Comments

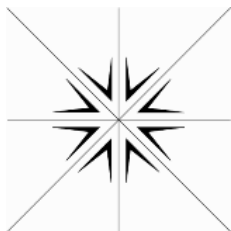
Began purging at 9:57. Water level while purging varied from 22.66 to 22.70 feet below top of casing.

Signature \_\_\_\_\_

# ATTACHMENT B

## LABORATORY ANALYTICAL RESULTS





# Specialty Analytical

9011 SE Jannsen Rd  
Clackamas, Oregon 97015  
TEL: 503-607-1331 FAX: 503-607-1336  
Website: [www.specialtyanalytical.com](http://www.specialtyanalytical.com)

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April 13, 2018

Emily Hess  
Maul Foster & Alongi  
400 E. Mill Plain Blvd.  
Suite 400  
Vancouver, WA 98660  
TEL: (360) 694-2691  
FAX (360) 906-1958  
RE: Port of Camas Washougal / 0229.04.13

Dear Emily Hess:

Order No.: 1804077

Specialty Analytical received 1 sample(s) on 4/10/2018 for the analyses presented in the following report.

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,

A handwritten signature in black ink, appearing to read "Marty French", written in a cursive style.

Marty French  
Lab Director

# Specialty Analytical

Date Reported: 13-Apr-18

CLIENT: Maul Foster & Alongi

Collection Date: 4/9/2018 10:28:00 AM

Project: Port of Camas Washougal / 0229.04.13

Lab ID: 1804077-001

Client Sample ID: MW-7

Matrix: GROUNDWATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>NWTPH-DX - RBC</b>		<b>NWTPH-DX</b>				Analyst: <b>JH</b>
Diesel	0.332	0.0766		mg/L	1	4/12/2018 1:06:57 PM
Lube Oil	0.571	0.192		mg/L	1	4/12/2018 1:06:57 PM
Surr: o-Terphenyl	129	50-150		%REC	1	4/12/2018 1:06:57 PM

# QC SUMMARY REPORT

WO#: 1804077

13-Apr-18

## Specialty Analytical

**Client:** Maul Foster & Alongi

**Project:** Port of Camas Washougal / 0229.04.13

**TestCode:** NWTPHDXLL\_W

Sample ID	R25472CCV	SampType:	CCV	TestCode:	NWTPHDXLL	Units:	mg/L	Prep Date:		RunNo:	25472			
Client ID:	CCV	Batch ID:	11685	TestNo:	NWTPH-Dx	SW3510B		Analysis Date:	4/12/2018	SeqNo:	341986			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel		6.49		0.0800	6.000	0		108	85	115				
Lube Oil		3.02		0.200	3.000	0		101	85	115				

Sample ID	MB-11685	SampType:	MBLK	TestCode:	NWTPHDXLL	Units:	mg/L	Prep Date:	4/10/2018	RunNo:	25472			
Client ID:	PBW	Batch ID:	11685	TestNo:	NWTPH-Dx	SW3510B		Analysis Date:	4/12/2018	SeqNo:	341987			
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		0.213			0.2000			106	50	150				

Sample ID	LCS-11685	SampType:	LCS	TestCode:	NWTPHDXLL	Units:	mg/L	Prep Date:	4/10/2018	RunNo:	25472
Client ID:	LCSW	Batch ID:	11685	TestNo:	NWTPH-Dx	SW3510B		Analysis Date:	4/12/2018	SeqNo:	341988
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	0.826	0.0800	1.000	0	82.6	60.7	121				
Lube Oil	1.11	0.200	1.000	0	111	64	126				

Sample ID	LCSD-11685	SampType:	LCSD	TestCode:	NWTPHDXLL	Units:	mg/L	Prep Date:	4/10/2018	RunNo:	25472		
Client ID:	LCSS02	Batch ID:	11685	TestNo:	NWTPH-Dx	SW3510B		Analysis Date:	4/12/2018	SeqNo:	341989		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

**Qualifiers:** B Analyte detected in the associated Method Blank  
O RSD is greater than RSDlimit

H Holding times for preparation or analysis exceeded  
R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit  
S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: 1804077

13-Apr-18

## Specialty Analytical

Client: Maul Foster &amp; Alongi

Project: Port of Camas Washougal / 0229.04.13

TestCode: NWTPHDXLL\_W

Sample ID	LCSD-11685	SampType:	LCSD	TestCode:	NWTPHDXLL	Units:	mg/L	Prep Date:	4/10/2018	RunNo:	25472	
Client ID:	LCSS02	Batch ID:	11685	TestNo:	NWTPH-Dx	SW3510B		Analysis Date:	4/12/2018	SeqNo:	341989	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel		0.849	0.0800	1.000	0	84.9	60.7	121	0.8262	2.75	20	
Lube Oil		1.19	0.200	1.000	0	119	64	126	1.113	6.69	20	

Sample ID	CCV	SampType:	CCV	TestCode:	NWTPHDXLL	Units:	mg/L	Prep Date:		RunNo:	25472	
Client ID:	CCV	Batch ID:	11685	TestNo:	NWTPH-Dx	SW3510B		Analysis Date:	4/12/2018	SeqNo:	341994	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel		7.99	0.0800	8.000	0	99.9	85	115				
Lube Oil		4.06	0.200	4.000	0	101	85	115				

Qualifiers: B Analyte detected in the associated Method Blank  
O RSD is greater than RSDlimit

H Holding times for preparation or analysis exceeded  
R RPD outside accepted recovery limits

ND Not Detected at the Reporting Limit  
S Spike Recovery outside accepted reco

## KEY TO FLAGS

Rev. May 12, 2010

- A This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards
- A1 This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.
- A2 This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard.
- A3 The result 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 diesel.
- B The blank exhibited a positive result great than the reporting limit for this compound.
- CN See Case Narrative.
- D Result is based from a dilution.
- E Result exceeds the calibration range for this compound. The result should be considered as 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.
- G Result may be biased high due to biogenic interferences. Clean up is recommended.
- H Sample was analyzed outside recommended holding time.
- HT At clients request, samples was analyzed outside of recommended holding time.
- J The result for this analyte is between the MDL and the PQL and should be considered as 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.
- 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.
- 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 Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.
- \* The result for this parameter was greater than the maximum contaminant level of the TCLP regulatory limit.



**Specialty  
Analytical**

9011 SE Jannsen Rd  
Clackamas, OR 97015  
Phone: 503-607-1331  
Fax: 503-607-1336

## Chain of Custody Record

Date: 4/9/18

Page: 1 of 1

Laboratory Project No (internal): 1804077

Project Name: Port of Camas Warehouse

Temperature on Receipt: 4

Client: MFA

Project No: 0229.04.13 PO No:

Custody Seal: ~~Intact~~ Broken

Address: 400 E Mill Plain Blvd #400

Collected by: Emily Hess

Notes: NO custody seal on bottle

City, State, Zip: Vancouver, WA 98660

State Collected: OR WA OTHER

Shipped Via: SA

Telephone: 360-980-2497

Report To (PM): Emily Hess

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 60 days)

Invoice To: MFA

PM Email: ehess@mauifoster.com

Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests										Comments	
					NW-TPHDX											
1 MW-7	4/9/18	1028	SE	1	X											
2																
3																
4																
5																
6																
7																
8																
9																
10																

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

Turn-around Time: Standard (5-7 Business): X 3 Day: \_\_\_\_\_ 2 Day: \_\_\_\_\_ Next Day: \_\_\_\_\_ Same Day: \_\_\_\_\_

Relinquished	Date/Time	Received	Date/Time
x Emily Hess	4/9/18 11:40	x <i>Al</i>	4-10-18 10:30
Relinquished	Date/Time	Received	Date/Time
x <i>Al SA</i>	4-10-18 14:05	x <i>K. J.</i>	4-10-18 14:05

# ATTACHMENT C

## DATA VALIDATION MEMORANDUM



# DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 0229.04.13 | MAY 1, 2018 | PORT OF CAMAS-WASHOUGAL

Maul Foster & Alongi, Inc., conducted an independent review of the quality of analytical results for one groundwater sample collected at the Port of Camas-Washougal's former Hambleton Bros. Log Yard Site. The sample was collected on April 9, 2018.

Specialty Analytical, Inc. (SA) performed the analysis. SA report number 1804077 was reviewed. The analysis performed and sample analyzed are listed below.

Analysis	Reference
Diesel- and Lube Oil-Range Organics	NWTPH-Dx

NWTPH = Northwest Total Petroleum Hydrocarbons.

Sample Analyzed
<b>Report 1804077</b>
MW-7

## DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of U.S. Environmental Protection Agency (USEPA) procedures (USEPA, 2017) and appropriate laboratory and method-specific guidelines (SA, 2016; USEPA, 1986).

Data validation procedures were modified, as appropriate, to accommodate quality-control requirements for methods not specifically addressed by the USEPA procedures (e.g., NWTPH-Dx).

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

## HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

### Holding Times

Extractions and analyses were performed within the recommended holding time criteria.

### Preservation and Sample Storage

The samples were preserved and stored appropriately.

## BLANKS

### Method Blanks

Laboratory method blank analysis was performed at the required frequency. For purposes of data qualification, the method blank was associated with all samples prepared in the analytical batch. No target analytes were detected in the method blank.

### Trip Blanks

Trip blanks were not required for this sampling event.

### Equipment Rinsate Blanks

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

## SURROGATE RECOVERY RESULTS

The samples were spiked with surrogate compounds to evaluate laboratory performance on individual samples. All surrogate recoveries were within acceptance limits.

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike/matrix spike duplicate results are used to evaluate laboratory precision and accuracy. Matrix spike results are not required by NWTPH methods and thus were not reported.

## LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. Laboratory duplicate results were not reported.

## LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

A laboratory control sample/laboratory control sample duplicate (LCS/LCSD) is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS/LCSD samples were extracted and analyzed at the required frequency. All LCS/LCSD results were within acceptance limits for percent recovery and relative percent difference.

## FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. Field duplicates were not submitted for analysis with report 1804077.

## CONTINUING CALIBRATION VERIFICATION RESULTS

Continuing calibration verification (CCV) results are used to demonstrate instrument precision and accuracy through the end of the sample batch. All CCVs were within acceptance limits for percent recovery.

## REPORTING LIMITS

SA used routine reporting limits for non-detect results.

## DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies. None were found.

## REFERENCES

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- SA. 2016. Laboratory quality assurance plan. Revision 15. Specialty Analytical, Inc., Clackamas, Oregon. July.
- USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. EPA-530/SW-846. Update V. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September (revision 1, July 2014).
- USEPA. 2017. USEPA contract laboratory program, national functional guidelines for inorganic Superfund methods data review. EPA 540-R-2017-001. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.