MAUL FOSTER ALONGI
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June 14, 2017
Project No. 9085.10.03

Matt Graves, LG
Port of Vancouver
3103 Northwest Lower River Road
Vancouver, Washington 98660

Re: Former Hotel Soil Sampling—Port of Vancouver USA Terminal 1

Dear Mr. Graves:

On behalf of the Port of Vancouver USA (Port), Maul Foster & Alongi, Inc. (MFA) completed an investigation to assess soil conditions at the former Red Lion Hotel at the Terminal 1 property located at 200 Columbia Street in Vancouver, Washington (Terminal 1) (see Figure 1). The former Red Lion Hotel was demolished in March 2017. The purpose of this investigation was to acquire data representative of soil in the footprint of the former hotel to evaluate whether the soil may require special handling or disposal during future development of Terminal 1.

Previous soil investigations at Terminal 1 include the November 2008 Ecology & Environment, Inc. subsurface investigation and the 2015 and 2016 Hahn and Associates, Inc. initial and follow-up investigations (E&E, 2009; HAI, 2016). In 2017, MFA prepared a contaminated media management plan (CMMP) for Terminal 1 (MFA, 2017b) in which the following chemicals of concern (COCs) were identified in soil:

- Metals, including arsenic, cadmium, lead, and mercury
- Heavy-oil-range total petroleum hydrocarbons (TPH)
- Diesel-range TPH
- Gasoline-range TPH
- Naphthalene
- Polycyclic aromatic hydrocarbons (PAHs)

Additionally, MFA has completed soil sampling along the northern portion of Terminal 1 to help with soil management during the installation of a utility corridor (MFA, forthcoming). During this investigation, polychlorinated biphenyls (PCBs) were identified in soil, so additional soil was collected during this investigation to allow for PCB analysis. While COCs have been identified in soil at Terminal 1, the hotel was formerly located along the southwestern boundary of Terminal 1, where no investigations have been conducted. To address this data gap, soils were assessed during this investigation at five test pit locations within the former hotel footprint, as presented on Figure 2.

FIELDWORK

A work plan for this assessment was provided to the Port on January 25, 2017 (MFA, 2017a), and the fieldwork was performed on April 3 and 7, 2017. The investigation was conducted consistent with the work plan.

The Port coordinated the public and private utility locates and contacted the Underground Utility Notification Center before excavation began. The Port provided the excavator and operator for the fieldwork. The test pits were advanced under the observation of an MFA geologist. A photographic log of observations made during the fieldwork is available in Attachment A. MFA collected soil samples, described soil types, and used a photoionization detector (PID) to assess representative soil samples for organic vapors. Organic vapors were not detected, as indicated by the 0 part per million PID readings (see Attachment B). No additional olfactory indications of contamination, such as visible staining, odor, or buried waste, were observed.

Investigation locations are shown on Figure 2. These locations were selected to provide representative coverage of the former hotel footprint.

A soil sample was collected from each 5-foot depth interval at each test pit, for a total of three soil samples per test pit and 15 samples in total. Using the excavator, soil was collected from the sidewall of the test pit at the targeted depth and brought to the surface, and a grab sample was collected from the excavator bucket. Following sample collection and documentation of the soil characteristics, the test pits were backfilled using the excavated soils to generally match the surrounding grade.

No investigation-derived waste was generated, as excavated soil was placed back in the test pit excavations.

SITE GEOLOGY AND HYDROGEOLOGY

Subsurface soils in the test pits consisted of gravelly and sandy fill, consistent with fill soils observed elsewhere on the property during previous investigations. Gravelly sand with silt was observed from the surface to 2 feet below ground surface (bgs), and was underlain by loose sand to 15 feet bgs, the maximum depth explored. In test pits TP1 and TP2, metal railroad tracks, oriented east to west, were encountered. Owing to the sand's loose nature, there was significant sloughing of the sand from the sidewalls as the test pits were advanced. Detailed soil descriptions are provided on the test pit logs in Attachment B.

Groundwater was not encountered in the test pits. Based on groundwater monitoring conducted at Terminal 1, groundwater on the property is present approximately 20 feet bgs

and is inferred to flow to the north and northwest, away from the Columbia River, located approximately 100 feet south-southwest of the test pit investigation locations (see Figure 2).

ANALYTICAL WORK

The 15 soil samples were submitted under chain-of-custody protocols to Specialty Analytical, Inc., of Clackamas, Oregon. The samples were analyzed for petroleum hydrocarbons and metals by the following methods:

- Diesel- and oil-range TPH by method Northwest (NW) TPH-Dx
- Gasoline-range TPH by method NWTPH-Gx
- Total metals by U.S. Environmental Protection Agency (USEPA) Method 6020 for arsenic, cadmium, and lead
- Total mercury by USEPA Method 7471B

Additional sample material was collected and provided to the laboratory pending the results of the TPH analysis that could have triggered additional analyses for PAHs and PCBs. See Attachment C for the laboratory analytical reports and Attachment D for the data validation memorandum. The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

RESULTS

Petroleum hydrocarbons were not detected in the soil samples. Arsenic, cadmium, lead, and mercury were detected, but the detections were below the Model Toxics Control Act (MTCA) Method A cleanup levels (CULs) for unrestricted land use for all but one sample. Lead was detected in the gravelly sand in sample TP2-S-1 at a concentration of 508 milligrams per kilogram (mg/kg) at 1 foot bgs, which exceeds the MTCA Method A CUL of 250 mg/kg. The lead concentrations in samples collected from the deeper intervals at test pit TP2 were 1.99 mg/kg (8 feet bgs) and 5.48 mg/kg (13 feet bgs), both well below the CUL. The data are summarized in the attached Table 1. Based on this result, MFA requested the analysis of sample TP2-S-1 by the toxicity characteristic leaching procedure (TCLP) for lead. The result of 0.219 microgram per liter (mg/L) (see Table 2) is well below the TCLP limit of 5 mg/L for lead. Based on this result, the soil at TP2-S-1 is not a hazardous waste.

Based on the analytical results and field observations, followup analyses for other volatile organic compounds, PAHs, and PCBs were not conducted.

CONCLUSIONS

The soil assessment of the former hotel location findings are as follows:

- Indicators of contamination (organic vapors, staining, odor, buried waste) were not observed.
- Petroleum hydrocarbons were not detected in the soil samples.
- Only lead exceeded the MTCA Method A CULs, and in only one sample. This exceedance is in the surface layer of gravelly sand with silt at TP2.
- Lead concentrations in soil do not meet the criteria for definition as a hazardous waste.
- No shallow groundwater was encountered in the test pits.
- The lead-contaminated soil at TP2 may require special handing; the extent of this soil is undefined, since the gravelly sand layer was not sampled at TP3 through TP5.

RECOMMENDATIONS

Given the focused nature of this assessment, the presence of environmental contamination cannot be positively ruled out in all locations. However, the test pit locations were selected to be representative of areas in the former hotel footprint. In the event that impacted material is encountered during redevelopment activities, the soil must be managed as outlined in the CMMP (MFA, 2017b). As discussed in the CMMP, soil with COC concentrations above the respective MTCA Method A and B CULs, if excavated, should be handled as contaminated. The results of this investigation indicate that lead-contaminated soil may require management during future redevelopment, depending on the redevelopment footprint and excavation depths.

In accordance with the reclamation alternatives flow chart (MFA, 2017c), options for addressing the lead-contaminated soil include the following:

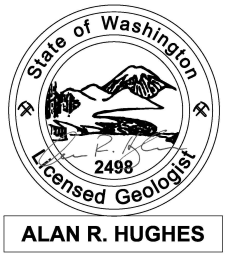
1. Remediate the soil now, prior to development. Doing so would require additional sampling and could result in remediation beyond that required for future development.

2. Once the development plans for the block are known, assess only the soil within the excavation footprint, and remediate only the portion that would require excavation

during redevelopment. Contaminated soil beyond the excavation footprint could remain in place, with a cap to prevent future exposure.

Sincerely,

Maul Foster & Alongi, Inc.



06/14/2017

Kyle K. Roslund, LG
Project Geologist

Alan Hughes, LG
Senior Geologist

Attachments: Limitations
Tables
Figures
A—Photographic Log
B—Test Pit Logs
C—Laboratory Analytical Report
D—Data Validation Memorandum

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.

REFERENCES

E&E. 2009. Terminal 1 phase II environmental assessment report, Port of Vancouver, USA, Vancouver, Washington. Ecology & Environment, Inc. March.

HAI. 2016. Subsurface investigation report, Port of Vancouver, USA—Terminal 1 property. Hahn and Associates, Inc. May 18.

MFA. 2017a. Letter (re: soil sampling—Port of Vancouver USA Terminal 1) to M. Graves, Port of Vancouver USA, Vancouver, Washington, from K. Roslund and J. Maul, Maul Foster & Alongi, Vancouver, Washington. January 25.

MFA. 2017b. Contaminated media management plan, Terminal 1—Port of Vancouver, Vancouver, Washington. Maul Foster & Alongi, Inc. February 8.

MFA. 2017c. Managing environmental conditions during Terminal 1 redevelopment. Prepared for the Port of Vancouver. Maul Foster & Alongi, Inc. March 31.

MFA. Forthcoming. Utility corridor soil sampling—Port of Vancouver USA Terminal 1. Maul Foster & Alongi, Inc.

TABLES

Table 1
Soil Analytical Results
Port of Vancouver Terminal 1
Vancouver, Washington

Location		TP1_Red Lion			TP2_Red Lion			TP3_Red Lion			TP4_Red Lion			TP5_Red Lion		
Sample Name		TP1-S-2	TP1-S-8	TP1-S-13	TP2-S-1	TP2-S-8	TP2-S-13	TP3-S-5.0	TP3-S-10.0	TP3-S-15.0	TP4-S-5.0	TP4-S-10.0	TP4-S-13.0	TP5-S-5.0	TP5-S-10.0	TP5-S-14.0
Collection Date		04/03/2017	04/03/2017	04/03/2017	04/03/2017	04/03/2017	04/03/2017	04/07/2017	04/07/2017	04/07/2017	04/07/2017	04/07/2017	04/07/2017	04/07/2017	04/07/2017	04/07/2017
Depth (ft bgs)		2	8	13	1	8	13	5	10	15	5	10	13	5	10	14
	MTCA[a]															
Total Petroleum Hydrocarbons (mg/kg)																
Gasoline-Range Hydrocarbons	100[b]	3.73 U	3.63 U	3.37 U	4.49 U	3.37 U	3.81 U	3.14 U	3.92 U	2.77 U	2.65 U	2.79 U	2.75 U	2.93 U	3.5 U	3.04 U
Diesel-Range Hydrocarbons	2000	16.5 U	15.7 U	16.9 U	17.3 U	15.8 U	17.4 U	16.9 U	19.3 U	15.8 U	15.4 U	15.9 U	15.8 U	16.3 U	18 U	16.6 U
Lube-Oil-Range Hydrocarbons	2000	55.2 U	52.2 U	56.4 U	57.6 U	52.5 U	57.9 U	56.4 U	64.2 U	52.7 U	51.5 U	52.9 U	52.5 U	54.3 U	60 U	55.4 U
Diesel + Lube Oil	2000[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals (mg/kg)																
Arsenic	20	1.3	1.4	1.45	3.43	1.17	1.89	1.08	1.69	1.17	1.02 U	1.36	1.11	1.18	1.8	1.44
Cadmium	2	0.132	0.126	0.111 U	0.348	0.104 U	0.12	0.106 U	0.127	0.102 U	0.106	0.105 U	0.166	0.108	0.179	0.116
Lead	250	82.6	3	2.38	**508**	1.99	5.48	8.08 J	5.12	1.91	1.7	1.78	2.39	4.32	3.56	2.46
Mercury	2	0.0179 U	0.0183	0.0188 U	0.290	0.0169 U	0.0189 U	0.0185 U	0.0212 U	0.0169 U	0.0166 U	0.0421	0.0163 U	0.0173 U	0.0213	0.0181 U

NOTES:

Bold values indicates cleanup level exceedance.

ft bgs = feet below ground surface.

J = Result is an estimated value.

mg/kg = milligrams per kilogram.

MTCA = Model Toxics Control Act.

ND = not detected.

U = not detected at or above method reporting limit.

[a]MTCA Method A unrestricted land use value, or the lower of carcinogenic/noncarcinogenic MTCA Method B values when MTCA A is not available.

[b]MTCA cleanup level for gasoline-range hydrocarbons with no detectable benzene.

[c]Diesel + Lube Oil = sum of diesel-range hydrocarbons and lube-oil-range hydrocarbons; half of method reporting limit used when results are not detected.

Table 2
TCLP Analytical Results
Port of Vancouver Terminal 1
Vancouver, Washington

	Location	TP2_Red Lion
	Sample Name	TP2-S-1
	Collection Date	04/03/2017
	Depth (ft bgs)	1
	TCLP Regulatory Threshold[a]	Result
TCLP Metals (mg/L)		
Lead	5	0.219

NOTES:

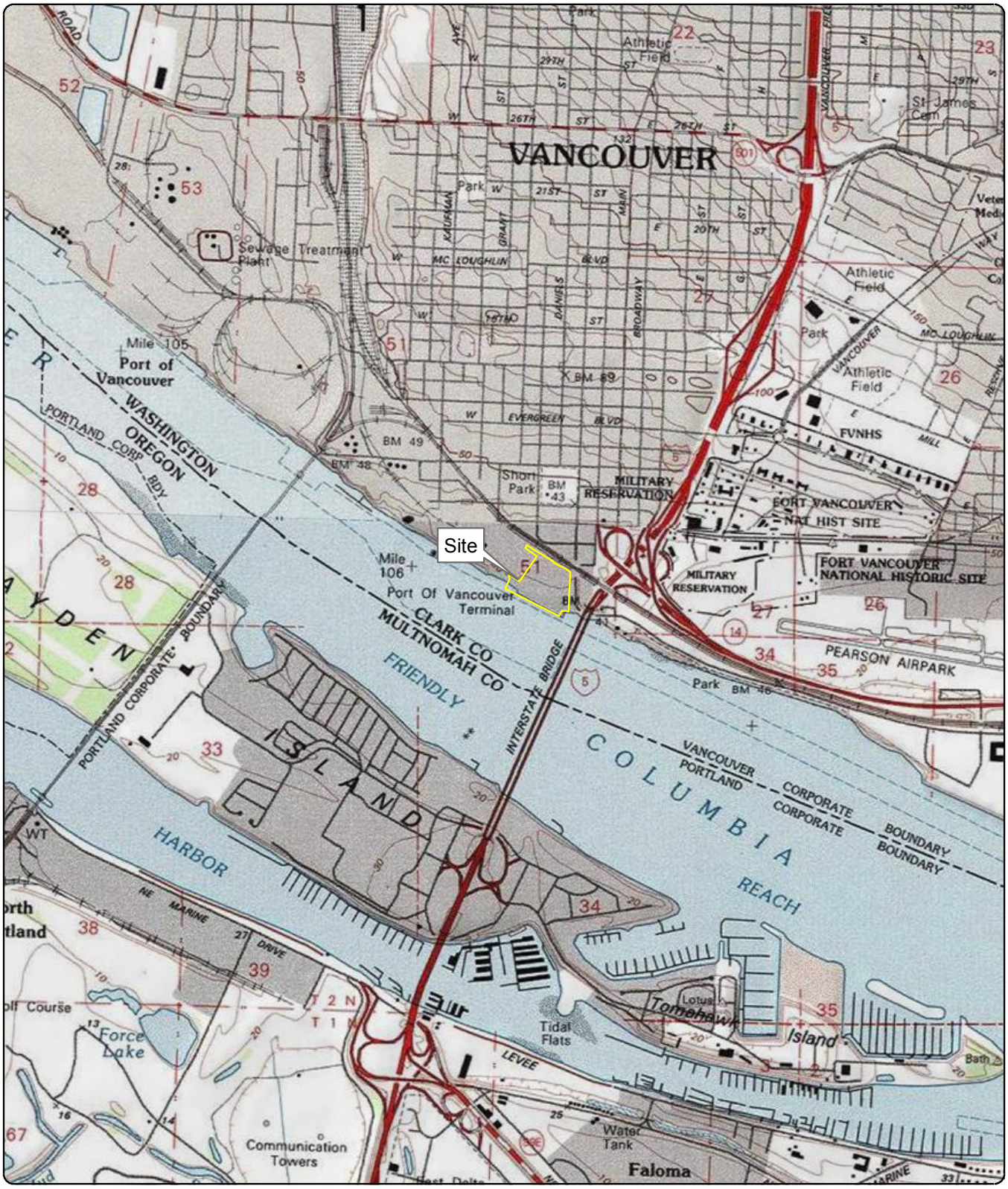
ft bgs = feet below ground surface.

mg/L= milligrams per liter.

TCLP = toxicity characteristic leaching procedure.

[a]Maximum concentration of contaminants for the toxicity characteristic; 40 CFR 261.24.

FIGURES



Site Address: 200 Columbia Street, Vancouver, Washington
Source: Taxlots obtained from Clark County GIS, US Geological Survey (1990) 7.5-minute topographic quadrangle: Portland
Section DLC51, Township 2 North, Range 1 East

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Figure 1
Site Location

Port of Vancouver
Terminal 1
Vancouver, Washington

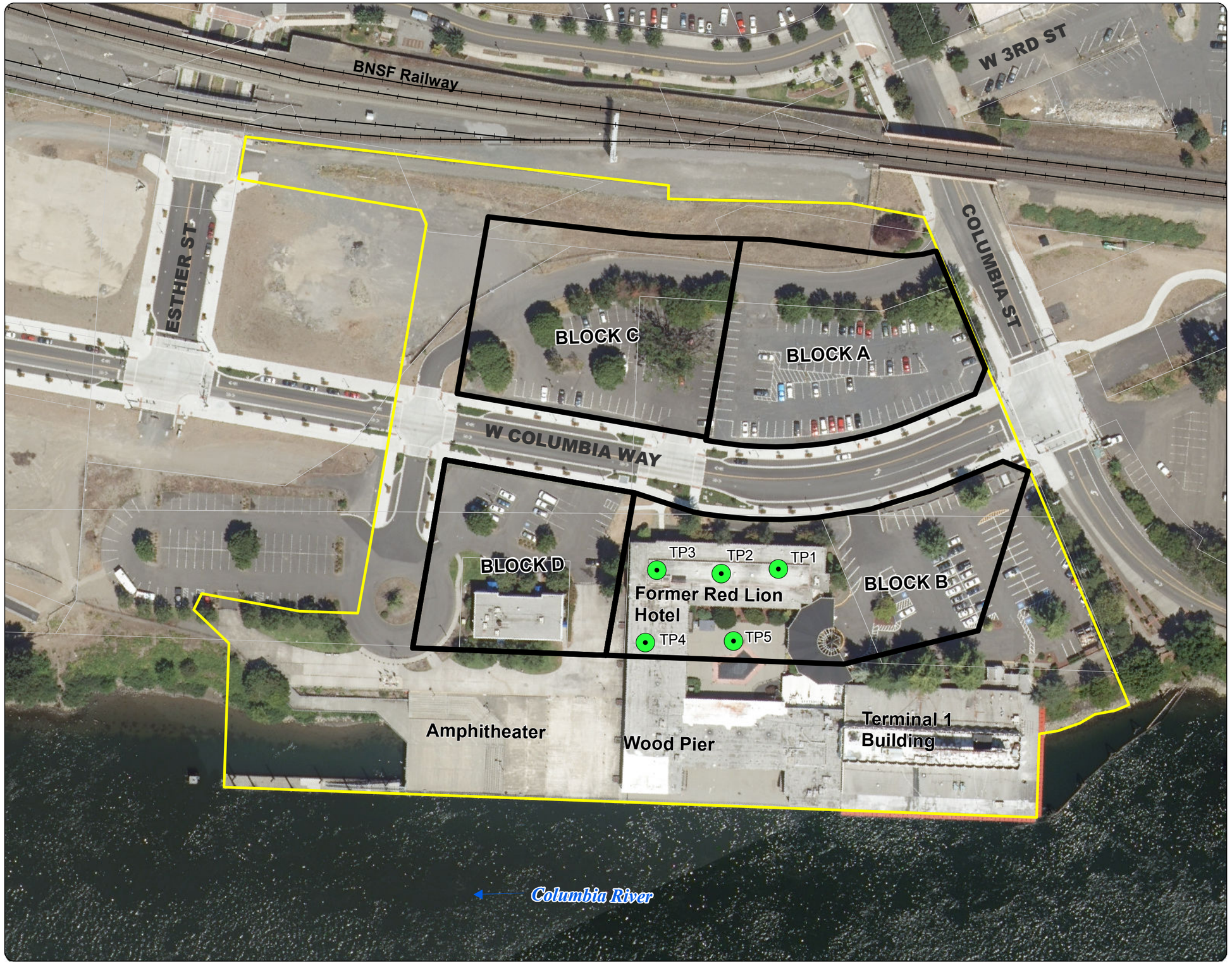
0 1,000 2,000
Feet

Path: X:\9085.10 Port of Vancouver\Projects\Fig1_Site Location_2.mxd
Print Date: 5/23/2017
Approved By: K. Roslund
Produced By: apadilla
Project: 9085.10.02-01

Figure 2
Investigation Locations

Port of Vancouver
Terminal 1
Vancouver, Washington

DRAFT



Legend

- Test Pit
- Project Area
- Blocks
- Railroad
- Tax Lot

0 50 100
Feet

Source: Aerial photograph (2016) and tax lots (2016) obtained from Clark County GIS.

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Path: X:\9085.10 Port of Vancouver\Projects\Fig2_Investigation Location_POV_vs_COV.mxd
Print Date: 4/26/2017
Approved By: krosland
Produced By: apadilla
Project: 9085.10.03-01

ATTACHMENT A

PHOTOGRAPHIC LOG

PHOTOGRAPHS

Project Name: Port of Vancouver Test Pitting
Project Number: 9085.10.03
Location: Terminal 1—Former Red Lion Hotel
Vancouver, Washington

Photograph 1: Former site of Red Lion Hotel. Photograph taken facing south.

Photograph 2: Metal rail line excavated from test pit TP1. Photograph taken facing north.

PHOTOGRAPHS

Project Name: Port of Vancouver Test Pitting
Project Number: 9085.10.03
Location: Terminal 1—Former Red Lion Hotel
Vancouver, Washington

Photograph 3: Test pit TP1. Photograph taken facing northwest.

Photograph 4: Test pit TP2. A trench box was used to limit sidewall sloughing. Photograph taken facing west.

PHOTOGRAPHS

Project Name: Port of Vancouver Test Pitting
Project Number: 9085.10.03
Location: Terminal 1—Former Red Lion Hotel
Vancouver, Washington

Photograph 5: Test pit TP3. Photograph taken facing east.

Photograph 6: Test pit TP4. Photograph taken facing north.

PHOTOGRAPHS

Project Name: Port of Vancouver Test Pitting
Project Number: 9085.10.03
Location: Terminal 1—Former Red Lion Hotel
Vancouver, Washington

Photograph 7: Electrical conduit encountered during excavation of test pit TP5. Photograph taken facing west.

Photograph 8: Test pit TP5. Photograph taken facing southwest.

ATTACHMENT B

TEST PIT LOGS

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
9085.10.03	**TP1**	**1 of 1**

Project Name	**Port of Vancouver**	TOC Elevation (feet)	
Project Location	**Former Red Lion Hotel, Vancouver, Washington**	Surface Elevation (feet)	
Start/End Date	**4/3/2017 to 4/3/2017**	Northing	
Driller/Equipment	**Port of Vancouver, John Maul/Hitachi 350LC Excavator**	Easting	
Geologist/Engineer	**Emily Hess**	Hole Depth	**15.0-feet**
Sample Method	**Grab**	Outer Hole Diam	**-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1				GRAB		TP1-S-2 PID = 0.0 ppm			0.0 to 2.5 feet: GRAVELLY SAND WITH SILT (SW-SM); orangish brown; 10% fines; 60% sand, fine to coarse; 30% gravel; 20% cobble, rounded; moist.
2									@ 1.0 feet: Metal pipe approximately 4 inches in diameter oriented north to south.
3				GRAB		TP1-S-4 PID = 0.0 ppm			2.5 to 15.0 feet: SAND (SW); grayish brown; 100% sand, fine to coarse; trace fines; moist. Significant sloughing of the sand generated sidewall cave-ins.
4									
5									
6									
7				GRAB		TP1-S-8 PID = 0.0 ppm			@ 7.0 feet: Metal rail line oriented east to west. One portion that was approximately 25 feet extending to the west was removed. An additional line approximately 3 feet north of the removed line was kept in place.
8									
9									
10									
11									
12				GRAB		TP1-S-13 PID = 0.0 ppm			
13									
14									@ 14.0 feet: Wet.
15									

Total depth: 15 feet bgs. Dimensions of test pit were 14 feet wide by 17 feet long.

Test Pit Completion Details:
0.0 to 15.0 feet: Backfilled with excavated soil.

The depth of the contact between the gravelly sand with silt and the sand varied across the excavation. The top layer is approximately 2 feet thick in the western edge of the test pit while it is approximately 4 feet thick in the eastern extent.

NOTES: *Test pit excavation.*
bgs = below ground surface.
Depths are approximate and relative to feet bgs.
ppm = parts per million.
PID = photoionization detector, soil head space reading in ppm.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
9085.10.03	**TP2**	**1 of 1**

Project Name	**Port of Vancouver**	TOC Elevation (feet)	
Project Location	**Former Red Lion Hotel, Vancouver, Washington**	Surface Elevation (feet)	
Start/End Date	**4/3/2017 to 4/3/2017**	Northing	
Driller/Equipment	**Port of Vancouver, John Maul/Hitachi 350LC Excavator**	Easting	
Geologist/Engineer	**Emily Hess**	Hole Depth	**15.0-feet**
Sample Method	**Grab**	Outer Hole Diam	**-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1				GRAB		TP2-S-1 PID = 0.0 ppm			0.0 to 2.0 feet: SANDY SILT (ML); reddish brown; 50% fines, low plasticity; 30% sand, fine to coarse; 20% gravel; 20% cobble, rounded; trace debris, including concrete, brick, and wood; moist.
2									
3				GRAB		TP2-S-4 PID = 0.0 ppm			2.0 to 15.0 feet: SAND (SW); grayish brown; 5% fines; 95% sand, fine to coarse; moist. Significant sloughing of the sand generated sidewall cave-ins, despite use of metal trench box that was 8 feet tall, 12 feet long, and four feet wide.
4									
5									
6									
7				GRAB		TP2-S-8 PID = 0.0 ppm			@ 7.0 feet: Metal feature likely related to rail line in eastern portion of the excavation. This eastern end of the test pit was approximately 20 feet west of the western end of TP1 and the metal feature was in the same orientation as the rail line removed from TP1.
8									
9									
10									
11									
12				GRAB		TP2-S-13 PID = 0.0 ppm			
13									
14									@ 14.0 feet: Wet.
15									

Total depth: 15 feet bgs. Dimensions of test pit were 11 feet wide by 18 feet long.

Test Pit Completion Details:
0.0 to 15.0 feet: Backfilled with excavated soil.

The depth of the contact between the sandy silt and the sand varied across the excavation. The top layer pinches out to approximately 1 foot thick in the western edge of the test pit while it is approximately 4 feet thick in the southern extent.

NOTES: Test pit excavation.
bgs = below ground surface.
Depths are approximate and relative to feet bgs.
ppm = parts per million.
PID = photoionization detector, soil head space reading in ppm.

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
9085.10.03	**TP3**	**1 of 1**

Project Name	**Port of Vancouver**	TOC Elevation (feet)	
Project Location	**Former Red Lion Hotel, Vancouver, Washington**	Surface Elevation (feet)	
Start/End Date	**4/7/2017 to 4/7/2017**	Northing	
Driller/Equipment	**Port of Vancouver, John Maul/Hitachi 350LC Excavator**	Easting	
Geologist/Engineer	**Kyle Roslund**	Hole Depth	**15.0-feet**
Sample Method	**Grab**	Outer Hole Diam	**-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 2.0 feet: SILTY SAND WITH GRAVEL (SM); reddish brown; 30% silt; 60% sand, medium dense, angular to subrounded, fine to coarse; 10% gravel, angular; trace cobble; trace brick; moist.
2				GRAB		TP3-S-2.0 PID = 0.0 ppm			2.0 to 15.0 feet: SAND (SP); gray; 5% silt; 95% sand, loose, subangular to subrounded, fine to coarse; moist.
3									
4									
5				GRAB		TP3-S-5.0 PID = 0.0 ppm			
6									
7									
8									
9									
10				GRAB		TP3-S-10.0 PID = 0.1 ppm			
11									
12									
13									
14				GRAB		TP3-S-15.0 PID = 0.0 ppm			
15									

Total depth: 15 feet bgs. Dimensions of test pit were 10 feet wide by 12 feet long.

Test Pit Completion Details:
0.0 to 15.0 feet: Backfilled with excavated soil and compacted.

NOTES: *Test pit excavation.*
bgs = below ground surface.
Depths are approximate and relative to feet bgs.
ppm = parts per million.
PID = photoionization detector, soil head space reading in ppm.

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
9085.10.03	**TP4**	**1 of 1**

Project Name	**Port of Vancouver**	TOC Elevation (feet)	
Project Location	**Former Red Lion Hotel, Vancouver, Washington**	Surface Elevation (feet)	
Start/End Date	**4/7/2017 to 4/7/2017**	Northing	
Driller/Equipment	**Port of Vancouver, John Maul/Hitachi 350LC Excavator**	Easting	
Geologist/Engineer	**Kyle Roslund**	Hole Depth	**15.0-feet**
Sample Method	**Grab**	Outer Hole Diam	**-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 1.5 feet: GRAVELLY SAND WITH SILT (SW); reddish brown; 15% fines; 60% sand, fine to coarse; 25% gravel, subangular to rounded; trace cobble, trace boulder, brick; moist.
2									1.5 to 15.0 feet: SAND (SP); gray; 5% fines; 95% sand, loose, fine to coarse, subrounded to subangular; trace gravel; moist.
3									2.0 feet: Wood debris.
4									
5				**GRAB**		**TP4-S-5.0 PID = 0.0 ppm**			
6									
7									
8									
9									
10				**GRAB**		**TP4-S-10.0 PID = 0.0 ppm**			
11									
12									
13				**GRAB**		**TP4-S-13.0 PID = 0.0 ppm**			
14									
15									

Total depth: 15 feet bgs. Dimensions of test pit were 10 feet wide by 10 feet long.

Test Pit Completion Details:
0.0 to 15.0 feet: Backfilled with excavated soil and compacted.

NOTES: *Test pit excavation.*
bgs = below ground surface.
Depths are approximate and relative to feet bgs.
ppm = parts per million.
PID = photoionization detector, soil head space reading in ppm.

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
9085.10.03	**TP5**	**1 of 1**

Project Name	**Port of Vancouver**	TOC Elevation (feet)	
Project Location	**Former Red Lion Hotel, Vancouver, Washington**	Surface Elevation (feet)	
Start/End Date	**4/7/2017 to 4/7/2017**	Northing	
Driller/Equipment	**Port of Vancouver, John Maul/Hitachi 350LC Excavator**	Easting	
Geologist/Engineer	**Kyle Roslund**	Hole Depth	**15.0-feet**
Sample Method	**Grab**	Outer Hole Diam	**-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									0.0 to 2.0 feet: GRAVELLY SAND WITH SILT (SW); reddish brown; 15% fines; 60% sand, fine to coarse; 25% gravel, subangular to rounded; trace cobble, trace boulder, brick; moist.
2				**GRAB**		**TP5-S-2.0 PID = 0.0 ppm**			2.0 to 15.0 feet: SAND (SP); gray; 5% silt; 95% sand, angular to subrounded, fine to coarse; moist.
3									2.5 feet: Electrical conduit.
4									
5				**GRAB**		**TP5-S-5.0 PID = 0.0 ppm**			
6									
7									
8									
9									
10				**GRAB**		**TP5-S-10.0 PID = 0.0 ppm**			
11									
12									
13									
14				**GRAB**		**TP5-S-14.0 PID = 0.0 ppm**			
15									

Total depth: 15 feet bgs. Dimensions of test pit were 10 feet wide by 8 feet long.

Test Pit Completion Details:
0.0 to 15.0 feet: Backfilled with excavated soil and compacted.

NOTES: *Test pit excavation.*
bgs = below ground surface.
Depths are approximate and relative to feet bgs.
ppm = parts per million.
PID = photoionization detector, soil head space reading in ppm.

GBLWC W:\GINT\GINTW\PROJECTS\9085.10\9085.10.03 RL.GPJ 5/23/17

ATTACHMENT C

LABORATORY ANALYTICAL REPORT

Specialty Analytical

11711 SE Capps Road, Ste B
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

April 14, 2017

Kyle Roslund
Maul Foster & Alongi
400 E. Mill Plain Blvd.
Suite 400
Vancouver, WA 98660

TEL: (360) 694-2691
FAX: (360) 906-1958

RE: Red Lion-Soil Test Pit / 9085.10.03

Dear Kyle Roslund: Order No.: 1704013

Specialty Analytical received 8 sample(s) on 4/4/2017 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,

Marty French
Lab Director

Specialty Analytical

Date Reported: 14-Apr-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/3/2017 9:45:00 AM
Project: Red Lion-Soil Test Pit / 9085.10.03
Lab ID: 1704013-001
Client Sample ID: TP1-S-2
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE		**D2216**				Analyst: **MIS**
Percent Moisture	9.35	0		wt%	1	4/4/2017 3:15:00 PM
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	16.5		mg/Kg-dry	1	4/5/2017 9:29:00 PM
Lube Oil	ND	55.2		mg/Kg-dry	1	4/5/2017 9:29:00 PM
Surr: o-Terphenyl	93.1	50-150		%REC	1	4/5/2017 9:29:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	3.73		mg/Kg-dry	1	4/6/2017 12:25:00 PM
Surr: 4-Bromofluorobenzene	90.9	50-150		%REC	1	4/6/2017 12:25:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	1300	1050		µg/Kg-dry	10	4/10/2017 11:28:33 AM
Cadmium	132	105		µg/Kg-dry	10	4/10/2017 11:28:33 AM
Lead	82600	262		µg/Kg-dry	10	4/10/2017 11:28:33 AM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	ND	0.0179		mg/Kg-dry	1	4/6/2017 3:18:48 PM

Specialty Analytical

Date Reported: 14-Apr-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/3/2017 8:50:00 AM
Project: Red Lion-Soil Test Pit / 9085.10.03
Lab ID: 1704013-002
Client Sample ID: TP1-S-4
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **mjf**
Hold	ND	0			1	4/14/2017 1:29:09 PM
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **mjf**
Hold	ND	0			1	4/14/2017 1:29:09 PM

Specialty Analytical

Date Reported: 14-Apr-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/3/2017 9:15:00 AM
Project: Red Lion-Soil Test Pit / 9085.10.03
Lab ID: 1704013-003
Client Sample ID: TP1-S-8
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE		**D2216**				Analyst: **MIS**
Percent Moisture	4.27	0		wt%	1	4/4/2017 3:15:00 PM
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	15.7		mg/Kg-dry	1	4/5/2017 8:01:00 PM
Lube Oil	ND	52.2		mg/Kg-dry	1	4/5/2017 8:01:00 PM
Surr: o-Terphenyl	93.3	50-150		%REC	1	4/5/2017 8:01:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	3.63		mg/Kg-dry	1	4/6/2017 12:52:00 PM
Surr: 4-Bromofluorobenzene	86.3	50-150		%REC	1	4/6/2017 12:52:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	1400	1040		µg/Kg-dry	10	4/10/2017 11:31:56 AM
Cadmium	126	104		µg/Kg-dry	10	4/10/2017 11:31:56 AM
Lead	3000	259		µg/Kg-dry	10	4/10/2017 11:31:56 AM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	0.0183	0.0168		mg/Kg-dry	1	4/6/2017 3:20:48 PM

Specialty Analytical

Date Reported: 14-Apr-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/3/2017 9:30:00 AM
Project: Red Lion-Soil Test Pit / 9085.10.03
Lab ID: 1704013-004
Client Sample ID: TP1-S-13
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE		**D2216**				Analyst: **MIS**
Percent Moisture	11.3	0		wt%	1	4/4/2017 3:15:00 PM
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	16.9		mg/Kg-dry	1	4/5/2017 8:23:00 PM
Lube Oil	ND	56.4		mg/Kg-dry	1	4/5/2017 8:23:00 PM
Surr: o-Terphenyl	90.9	50-150		%REC	1	4/5/2017 8:23:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	3.37		mg/Kg-dry	1	4/6/2017 1:19:00 PM
Surr: 4-Bromofluorobenzene	85.2	50-150		%REC	1	4/6/2017 1:19:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	1450	1110		µg/Kg-dry	10	4/10/2017 11:35:18 AM
Cadmium	ND	111		µg/Kg-dry	10	4/10/2017 11:35:18 AM
Lead	2380	277		µg/Kg-dry	10	4/10/2017 11:35:18 AM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	ND	0.0188		mg/Kg-dry	1	4/6/2017 3:22:48 PM

Specialty Analytical

Date Reported: 14-Apr-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/3/2017 10:35:00 AM
Project: Red Lion-Soil Test Pit / 9085.10.03
Lab ID: 1704013-005
Client Sample ID: TP2-S-1
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE		**D2216**				Analyst: **MIS**
Percent Moisture	13.2	0		wt%	1	4/4/2017 3:15:00 PM
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	17.3		mg/Kg-dry	1	4/5/2017 9:51:00 PM
Lube Oil	ND	57.6		mg/Kg-dry	1	4/5/2017 9:51:00 PM
Surr: o-Terphenyl	91.8	50-150		%REC	1	4/5/2017 9:51:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	4.49		mg/Kg-dry	1	4/6/2017 1:46:00 PM
Surr: 4-Bromofluorobenzene	86.3	50-150		%REC	1	4/6/2017 1:46:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	3430	1150		µg/Kg-dry	10	4/10/2017 11:38:41 AM
Cadmium	348	115		µg/Kg-dry	10	4/10/2017 11:38:41 AM
Lead	508000	2870		µg/Kg-dry	100	4/12/2017 10:04:06 AM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	0.290	0.0192		mg/Kg-dry	1	4/6/2017 3:26:48 PM

Specialty Analytical

Date Reported: 14-Apr-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/3/2017 10:05:00 AM
Project: Red Lion-Soil Test Pit / 9085.10.03
Lab ID: 1704013-006
Client Sample ID: TP2-S-4
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **mjf**
Hold	ND	0			1	4/14/2017 1:29:09 PM
HOLD PER CLIENT REQUEST		**PER CLIENT**				Analyst: **mjf**
Hold	ND	0			1	4/14/2017 1:29:09 PM

Specialty Analytical

Date Reported: 14-Apr-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/3/2017 10:15:00 AM
Project: Red Lion-Soil Test Pit / 9085.10.03
Lab ID: 1704013-007
Client Sample ID: TP2-S-8
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE		**D2216**				Analyst: **MIS**
Percent Moisture	4.77	0		wt%	1	4/4/2017 3:15:00 PM
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	15.8		mg/Kg-dry	1	4/5/2017 9:07:00 PM
Lube Oil	ND	52.5		mg/Kg-dry	1	4/5/2017 9:07:00 PM
Surr: o-Terphenyl	93.0	50-150		%REC	1	4/5/2017 9:07:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	3.37		mg/Kg-dry	1	4/6/2017 2:13:00 PM
Surr: 4-Bromofluorobenzene	84.7	50-150		%REC	1	4/6/2017 2:13:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	1170	1040		µg/Kg-dry	10	4/10/2017 11:42:03 AM
Cadmium	ND	104		µg/Kg-dry	10	4/10/2017 11:42:03 AM
Lead	1990	260		µg/Kg-dry	10	4/10/2017 11:42:03 AM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	ND	0.0169		mg/Kg-dry	1	4/6/2017 3:28:48 PM

Specialty Analytical

Date Reported: 14-Apr-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/3/2017 10:30:00 AM
Project: Red Lion-Soil Test Pit / 9085.10.03
Lab ID: 1704013-008
Client Sample ID: TP2-S-13
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE		**D2216**				Analyst: **MIS**
Percent Moisture	13.6	0		wt%	1	4/4/2017 3:15:00 PM
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	17.4		mg/Kg-dry	1	4/5/2017 10:13:00 PM
Lube Oil	ND	57.9		mg/Kg-dry	1	4/5/2017 10:13:00 PM
Surr: o-Terphenyl	95.9	50-150		%REC	1	4/5/2017 10:13:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	3.81		mg/Kg-dry	1	4/6/2017 2:41:00 PM
Surr: 4-Bromofluorobenzene	75.4	50-150		%REC	1	4/6/2017 2:41:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	1890	1140		µg/Kg-dry	10	4/10/2017 11:45:26 AM
Cadmium	120	114		µg/Kg-dry	10	4/10/2017 11:45:26 AM
Lead	5480	286		µg/Kg-dry	10	4/10/2017 11:45:26 AM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	ND	0.0189		mg/Kg-dry	1	4/6/2017 3:30:48 PM

QC SUMMARY REPORT

WO#: **1704013**

Specialty Analytical

14-Apr-17

Client: Maul Foster & Alongi

Project: Red Lion-Soil Test Pit / 9085.10.03 **TestCode: 6020_S**

Sample ID: **ICV** SampType: **ICV** TestCode: **6020_S** Units: **µg/Kg** Prep Date: RunNo: **20799**

Client ID: **ICV** Batch ID: **9717** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/6/2017** SeqNo: **278671**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	4860	10.0	5000	0	97.2	90	110				
Cadmium	4850	10.0	5000	0	97.1	90	110				
Lead	4800	10.0	5000	0	96.0	90	110				

Sample ID: **MB-9717** SampType: **MBLK** TestCode: **6020_S** Units: **µg/Kg** Prep Date: **4/5/2017** RunNo: **20799**

Client ID: **PBS** Batch ID: **9717** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/6/2017** SeqNo: **278674**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	10.0									
Cadmium	ND	10.0									
Lead	ND	10.0									

Sample ID: **LCS-9717** SampType: **LCS** TestCode: **6020_S** Units: **µg/Kg** Prep Date: **4/5/2017** RunNo: **20799**

Client ID: **LCSS** Batch ID: **9717** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/6/2017** SeqNo: **278675**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	4170	10.0	5000	0	83.4	73.4	120				
Cadmium	4380	10.0	5000	0	87.6	80	120				
Lead	4890	10.0	5000	0	97.8	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

O RSD is greater than RSDlimit

R RPD outside accepted recovery limits

S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704013**

Specialty Analytical

14-Apr-17

Client: Maul Foster & Alongi

Project: Red Lion-Soil Test Pit / 9085.10.03 **TestCode:** **6020_S**

Sample ID: **1704024-001ADUP** SampType: **DUP** TestCode: **6020_S** Units: **µg/Kg** Prep Date: **4/5/2017** RunNo: **20799**

Client ID: **ZZZZZZ** Batch ID: **9717** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/6/2017** SeqNo: **278677**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	24.4	0.916						24.94	2.03	20	
Cadmium	ND	0.916						0	0	20	RF
Lead	2.47	0.916						2.597	4.80	20	

Sample ID: **1704024-001AMS** SampType: **MS** TestCode: **6020_S** Units: **µg/Kg** Prep Date: **4/5/2017** RunNo: **20799**

Client ID: **ZZZZZZ** Batch ID: **9717** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/6/2017** SeqNo: **278678**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	465	0.981	490.6	24.94	89.7	70	130				
Cadmium	426	0.981	490.6	0.2682	86.9	70	130				
Lead	462	0.981	490.6	2.597	93.7	70	130				

Sample ID: **1704024-001AMSD** SampType: **MSD** TestCode: **6020_S** Units: **µg/Kg** Prep Date: **4/5/2017** RunNo: **20799**

Client ID: **ZZZZZZ** Batch ID: **9717** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/6/2017** SeqNo: **278679**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	488	1.00	502.0	24.94	92.3	70	130	465.0	4.84	20	
Cadmium	447	1.00	502.0	0.2682	89.0	70	130	426.4	4.73	20	
Lead	492	1.00	502.0	2.597	97.4	70	130	462.5	6.15	20	

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

O RSD is greater than RSDlimit

R RPD outside accepted recovery limits

S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704013**

Specialty Analytical

14-Apr-17

Client: Maul Foster & Alongi

Project: Red Lion-Soil Test Pit / 9085.10.03 **TestCode: 6020_S**

Sample ID: **ICV** SampType: **ICV** TestCode: **6020_S** Units: **µg/Kg** Prep Date: RunNo: **20799**

Client ID: **ICV** Batch ID: **9717** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/10/2017** SeqNo: **279081**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	4880	100	5000	0	97.7	90	110				
Cadmium	4810	10.0	5000	0	96.2	90	110				
Lead	4860	25.0	5000	0	97.2	90	110				

Sample ID: **ICV** SampType: **ICV** TestCode: **6020_S** Units: **µg/Kg** Prep Date: RunNo: **20799**

Client ID: **ICV** Batch ID: **9717** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/12/2017** SeqNo: **279641**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4680	25.0	5000	0	93.7	90	110				

Sample ID: **CCV** SampType: **CCV** TestCode: **6020_S** Units: **µg/Kg** Prep Date: RunNo: **20799**

Client ID: **CCV** Batch ID: **9717** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/12/2017** SeqNo: **279644**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4690	25.0	5000	0	93.8	90	110				

Qualifiers:

B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704013**

14-Apr-17

Specialty Analytical

Client: Maul Foster & Alongi

Project: Red Lion-Soil Test Pit / 9085.10.03 **TestCode:** **HG_CTS**

Sample ID: **MB-9725**	SampType: **MBLK**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date: **4/6/2017**	RunNo: **20809**
Client ID: **PBS**	Batch ID: **9725**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/6/2017**	SeqNo: **278762**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.0167									

Sample ID: **LCS-9725**	SampType: **LCS**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date: **4/6/2017**	RunNo: **20809**
Client ID: **LCSS**	Batch ID: **9725**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/6/2017**	SeqNo: **278763**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.417	0.0167	0.4000	0	104	80	120				

Sample ID: **1704024-001ADUP**	SampType: **DUP**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date: **4/6/2017**	RunNo: **20809**
Client ID: **ZZZZZZ**	Batch ID: **9725**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/6/2017**	SeqNo: **278765**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.0161						0	0	20	

Sample ID: **1704024-001AMS**	SampType: **MS**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date: **4/6/2017**	RunNo: **20809**
Client ID: **ZZZZZZ**	Batch ID: **9725**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/6/2017**	SeqNo: **278766**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.377	0.0166	0.3975	0.007638	93.0	75	125				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704013**

14-Apr-17

Specialty Analytical

Client: Maul Foster & Alongi

Project: Red Lion-Soil Test Pit / 9085.10.03 **TestCode:** **HG_CTS**

Sample ID: **1704024-001AMSD**	SampType: **MSD**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date: **4/6/2017**	RunNo: **20809**
Client ID: **ZZZZZZ**	Batch ID: **9725**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/6/2017**	SeqNo: **278767**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.416	0.0164	0.3924	0.007638	104	75	125	0.3775	9.74	20	

Sample ID: **9725-CCV**	SampType: **CCV**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date:	RunNo: **20809**
Client ID: **CCV**	Batch ID: **9725**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/6/2017**	SeqNo: **278774**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.438	0.0167	0.4000	0	109	90	110				

Sample ID: **9725-CCV**	SampType: **CCV**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date:	RunNo: **20809**
Client ID: **CCV**	Batch ID: **9725**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/6/2017**	SeqNo: **278778**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.409	0.0167	0.4000	0	102	90	110				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704013**

Specialty Analytical

14-Apr-17

Client: Maul Foster & Alongi

Project: Red Lion-Soil Test Pit / 9085.10.03 **TestCode:** **NWTPHDX_S**

Sample ID: **CCV**	SampType: **CCV**	TestCode: **NWTPHDX_S**	Units: **mg/Kg**	Prep Date:	RunNo: **20795**
Client ID: **CCV**	Batch ID: **9716**	TestNo: **NWTPH-Dx**	**SW3550C**	Analysis Date: **4/5/2017**	SeqNo: **278625**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	919	15.0	999.0	0	92.0	85	115				
Lube Oil	461	50.0	499.5	0	92.3	85	115				

Sample ID: **MB-9716**	SampType: **MBLK**	TestCode: **NWTPHDX_S**	Units: **mg/Kg**	Prep Date: **4/5/2017**	RunNo: **20795**
Client ID: **PBS**	Batch ID: **9716**	TestNo: **NWTPH-Dx**	**SW3550C**	Analysis Date: **4/5/2017**	SeqNo: **278626**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	15.0									
Lube Oil	ND	50.0									
Surr: o-Terphenyl	30.4		33.30		91.1	50	150				

Sample ID: **LCS-9716**	SampType: **LCS**	TestCode: **NWTPHDX_S**	Units: **mg/Kg**	Prep Date: **4/5/2017**	RunNo: **20795**
Client ID: **LCSS**	Batch ID: **9716**	TestNo: **NWTPH-Dx**	**SW3550C**	Analysis Date: **4/5/2017**	SeqNo: **278627**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	167	15.0	166.5	0	100	76.3	125				
Lube Oil	118	50.0	166.5	0	70.8	69.9	127				

Sample ID: **1704021-006ADUP**	SampType: **DUP**	TestCode: **NWTPHDX_S**	Units: **mg/Kg-dry**	Prep Date: **4/5/2017**	RunNo: **20795**
Client ID: **ZZZZZZ**	Batch ID: **9716**	TestNo: **NWTPH-Dx**	**SW3550C**	Analysis Date: **4/5/2017**	SeqNo: **278634**

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
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704013**

Specialty Analytical

14-Apr-17

Client: Maul Foster & Alongi

Project: Red Lion-Soil Test Pit / 9085.10.03 **TestCode:** **NWTPHDX_S**

Sample ID: **1704021-006ADUP** SampType: **DUP** TestCode: **NWTPHDX_S** Units: **mg/Kg-dry** Prep Date: **4/5/2017** RunNo: **20795**

Client ID: **ZZZZZZ** Batch ID: **9716** TestNo: **NWTPH-Dx** **SW3550C** Analysis Date: **4/5/2017** SeqNo: **278634**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	19.8						0	200	20	RF
Lube Oil	ND	66.0						0	0	20	

Sample ID: **1704013-004ADUP** SampType: **DUP** TestCode: **NWTPHDX_S** Units: **mg/Kg-dry** Prep Date: **4/5/2017** RunNo: **20795**

Client ID: **TP1-S-13** Batch ID: **9716** TestNo: **NWTPH-Dx** **SW3550C** Analysis Date: **4/5/2017** SeqNo: **278637**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	16.9						0	0	20	
Lube Oil	ND	56.4						0	0	20	

Sample ID: **CCV** SampType: **CCV** TestCode: **NWTPHDX_S** Units: **mg/Kg** Prep Date: RunNo: **20795**

Client ID: **CCV** Batch ID: **9716** TestNo: **NWTPH-Dx** **SW3550C** Analysis Date: **4/6/2017** SeqNo: **278644**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	1270	15.0	1332	0	95.6	85	115				
Lube Oil	589	50.0	666.0	0	88.4	85	115				

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

O RSD is greater than RSDlimit

R RPD outside accepted recovery limits

S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704013**

Specialty Analytical

14-Apr-17

Client: Maul Foster & Alongi

Project: Red Lion-Soil Test Pit / 9085.10.03 **TestCode:** **NWTPHGX_SA**

Sample ID: **CCV** SampType: **CCV** TestCode: **NWTPHGX_S** Units: **mg/Kg** Prep Date: RunNo: **20808**
Client ID: **CCV** Batch ID: **9722** TestNo: **NWTPH-Gx** **SW5035A** Analysis Date: **4/6/2017** SeqNo: **278751**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	87.8	2.50	100.0	0	87.8	80	120				

Sample ID: **LCS-9722** SampType: **LCS** TestCode: **NWTPHGX_S** Units: **mg/Kg** Prep Date: **4/6/2017** RunNo: **20808**
Client ID: **LCSS** Batch ID: **9722** TestNo: **NWTPH-Gx** **SW5035A** Analysis Date: **4/6/2017** SeqNo: **278752**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	46.0	2.50	50.00	0	92.0	53.5	121				

Sample ID: **MB-9722** SampType: **MBLK** TestCode: **NWTPHGX_S** Units: **mg/Kg** Prep Date: **4/6/2017** RunNo: **20808**
Client ID: **PBS** Batch ID: **9722** TestNo: **NWTPH-Gx** **SW5035A** Analysis Date: **4/6/2017** SeqNo: **278753**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	2.50									
Surr: 4-Bromofluorobenzene	3.49		5.000		69.8	50	150				

Sample ID: **1704013-008BDUP** SampType: **DUP** TestCode: **NWTPHGX_S** Units: **mg/Kg-dry** Prep Date: **4/6/2017** RunNo: **20808**
Client ID: **TP2-S-13** Batch ID: **9722** TestNo: **NWTPH-Gx** **SW5035A** Analysis Date: **4/6/2017** SeqNo: **278760**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	3.82						0	0	20	

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704013**

14-Apr-17

Specialty Analytical

Client: Maul Foster & Alongi

Project: Red Lion-Soil Test Pit / 9085.10.03 **TestCode:** **NWTPHGX_SA**

Sample ID: **CCV**	SampType: **CCV**	TestCode: **NWTPHGX_S**	Units: **mg/Kg**	Prep Date:	RunNo: **20808**
Client ID: **CCV**	Batch ID: **9722**	TestNo: **NWTPH-Gx**	**SW5035A**	Analysis Date: **4/6/2017**	SeqNo: **278761**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	118	2.50	125.0	0	94.4	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	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 that the maximum contaminant level of the TCLP regulatory limit.

CHAIN OF CUSTODY RECORD

Specialty Analytical
11711 SE Capps Road
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Contact Person/Project Manager: Kyle Roslund
Company: Mavi Foster & Alongi
Address: 400 E Mill Plain Blvd #400
Vancouver, WA 98660
Phone: _____ Fax: _____
Project No: 9085.10.03 Project Name: Red Lion - Soil Test Pitting
Project Site Location OR: _____ WA: X Other: _____
Invoice To: Port of Vancouver P.O. No.: 9085.10.03

Collected By:
Signature: Emily Hess
Printed: Emily Hess

Signature: _____
Printed: _____

Turn Around Time
☒ Normal 5-7 Business Days
☐ Rush _____
Specify
Rush Analyses Must Be Scheduled With The Lab In Advance

Date	Time	Sample I.D.	Matrix	No. of Containers	Analyses: NWTPH-Gx	NWTPH-Dx	6020 Total: Arsenic, Cadmium, Lead	HH Total: Mercury	PAHs: 8270 - HOLD	VOCs: 8260 - HOLD	PCBs: 8082 - HOLD				Comments	Lab I.D.
4/3/17	945	TP1-S-2	SO	6	X	X	X	X							Vials of 10 mL MeOH had 2 soil plugs. Hold	
	850	TP1-S-4		6	~~X~~	~~X~~	~~X~~	~~X~~								
	915	TP1-S-8		6	X	X	X	X								
	930	TP1-S-13		6	X	X	X	X								
	1035	TP2-S-1		6	X	X	X	X								
	1005	TP2-S-4		6	~~X~~	~~X~~	~~X~~	~~X~~							HOLD	
	1015	TP2-S-8		6	X	X	X	X								
	1030	TP2-S-13		6	X	X	X	X								

For Laboratory Use
Lab Job No. 1704013
Shipped Via: _____
Air Bill No. _____
Temperature On Receipt: 4 °C
Specialty Analytical Containers? Y / N
Specialty Analytical Trip Blanks? Y / N

Relinquished By:	Date	Time	Received By:	Relinquished By:	Date	Time
Company: MFA	4/3/17	15:03	Company: ASA	Company:		

Unless Reclaimed, Samples Will Be Disposed of 60 Days After Receipt.
Samples held beyond 60 days subject to storage fee(s)

Received For Lab By: _____ Date: 4/4/17 Time: 1404

Specialty Analytical

11711 SE Capps Road, Ste B
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

May 01, 2017

Kyle Roslund
Maul Foster & Alongi
400 E. Mill Plain Blvd.
Suite 400
Vancouver, WA 98660

TEL: (360) 694-2691
FAX: (360) 906-1958

RE: Red Lion Soil Testing / 9085.10.03

Dear Kyle Roslund: Order No.: 1704057

Specialty Analytical received 10 sample(s) on 4/7/2017 for the analyses presented in the following report.

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

Case Narrative

WO#: **1704057**

Date: **5/1/2017**

CLIENT: Maul Foster & Alongi

Project: Red Lion Soil Testing / 9085.10.03

Revised Report- This report has been revised to dry weight correct all sample results.

Specialty Analytical

Date Reported: 01-May-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/7/2017 8:30:00 AM
Project: Red Lion Soil Testing / 9085.10.03
Lab ID: 1704057-001
Client Sample ID: TP3-S-5.0
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	16.9		mg/Kg-dry	1	4/12/2017 10:17:00 PM
Lube Oil	ND	56.4		mg/Kg-dry	1	4/12/2017 10:17:00 PM
Surr: o-Terphenyl	92.9	50-150		%REC	1	4/12/2017 10:17:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	3.14		mg/Kg-dry	1	4/11/2017 2:58:00 PM
Surr: 4-Bromofluorobenzene	72.5	50-150		%REC	1	4/11/2017 2:58:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	1080	1060		µg/Kg-dry	10	4/14/2017 9:03:03 AM
Cadmium	ND	106		µg/Kg-dry	10	4/14/2017 9:03:03 AM
Lead	8080	265		µg/Kg-dry	10	4/14/2017 9:03:03 AM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	ND	0.0185		mg/Kg-dry	1	4/11/2017 12:09:13 PM

Specialty Analytical

Date Reported: 01-May-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/7/2017 8:40:00 AM
Project: Red Lion Soil Testing / 9085.10.03
Lab ID: 1704057-002
Client Sample ID: TP3-S-10.0
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	19.3		mg/Kg-dry	1	4/12/2017 10:39:00 PM
Lube Oil	ND	64.2		mg/Kg-dry	1	4/12/2017 10:39:00 PM
Surr: o-Terphenyl	94.5	50-150		%REC	1	4/12/2017 10:39:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	3.92		mg/Kg-dry	1	4/11/2017 3:25:00 PM
Surr: 4-Bromofluorobenzene	60.2	50-150		%REC	1	4/11/2017 3:25:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	1690	1240		µg/Kg-dry	10	4/14/2017 9:36:49 AM
Cadmium	127	124		µg/Kg-dry	10	4/14/2017 9:36:49 AM
Lead	5120	311		µg/Kg-dry	10	4/17/2017 12:36:52 PM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	ND	0.0212		mg/Kg-dry	1	4/11/2017 12:11:13 PM

Specialty Analytical

Date Reported: 01-May-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/7/2017 8:50:00 AM
Project: Red Lion Soil Testing / 9085.10.03
Lab ID: 1704057-003
Client Sample ID: TP3-S-15.0
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	15.8		mg/Kg-dry	1	4/12/2017 6:17:00 PM
Lube Oil	ND	52.7		mg/Kg-dry	1	4/12/2017 6:17:00 PM
Surr: o-Terphenyl	95.9	50-150		%REC	1	4/12/2017 6:17:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	2.77		mg/Kg-dry	1	4/11/2017 3:52:00 PM
Surr: 4-Bromofluorobenzene	67.7	50-150		%REC	1	4/11/2017 3:52:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	1170	1020		µg/Kg-dry	10	4/14/2017 9:40:11 AM
Cadmium	ND	102		µg/Kg-dry	10	4/14/2017 9:40:11 AM
Lead	1910	255		µg/Kg-dry	10	4/17/2017 12:40:14 PM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	ND	0.0169		mg/Kg-dry	1	4/11/2017 12:13:13 PM

Specialty Analytical

Date Reported: 01-May-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/7/2017 9:20:00 AM
Project: Red Lion Soil Testing / 9085.10.03
Lab ID: 1704057-004
Client Sample ID: TP5-S-5.0
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	16.3		mg/Kg-dry	1	4/12/2017 6:39:00 PM
Lube Oil	ND	54.3		mg/Kg-dry	1	4/12/2017 6:39:00 PM
Surr: o-Terphenyl	92.6	50-150		%REC	1	4/12/2017 6:39:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	2.93		mg/Kg-dry	1	4/11/2017 4:46:00 PM
Surr: 4-Bromofluorobenzene	70.5	50-150		%REC	1	4/11/2017 4:46:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	1180	1060		µg/Kg-dry	10	4/14/2017 9:43:34 AM
Cadmium	108	106		µg/Kg-dry	10	4/14/2017 9:43:34 AM
Lead	4320	264		µg/Kg-dry	10	4/17/2017 12:43:37 PM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	ND	0.0173		mg/Kg-dry	1	4/11/2017 12:17:13 PM

Specialty Analytical

Date Reported: 01-May-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/7/2017 9:35:00 AM
Project: Red Lion Soil Testing / 9085.10.03
Lab ID: 1704057-005
Client Sample ID: TP5-S-10.0
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	18.0		mg/Kg-dry	1	4/12/2017 7:01:00 PM
Lube Oil	ND	60.0		mg/Kg-dry	1	4/12/2017 7:01:00 PM
Surr: o-Terphenyl	94.4	50-150		%REC	1	4/12/2017 7:01:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	3.50		mg/Kg-dry	1	4/11/2017 5:13:00 PM
Surr: 4-Bromofluorobenzene	65.6	50-150		%REC	1	4/11/2017 5:13:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	1800	1190		µg/Kg-dry	10	4/14/2017 9:47:00 AM
Cadmium	179	119		µg/Kg-dry	10	4/14/2017 9:47:00 AM
Lead	3560	296		µg/Kg-dry	10	4/17/2017 12:46:59 PM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	0.0213	0.0186		mg/Kg-dry	1	4/11/2017 12:19:13 PM

Specialty Analytical

Date Reported: 01-May-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/7/2017 9:45:00 AM
Project: Red Lion Soil Testing / 9085.10.03
Lab ID: 1704057-006
Client Sample ID: TP5-S-14.0
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	16.6		mg/Kg-dry	1	4/12/2017 7:23:00 PM
Lube Oil	ND	55.4		mg/Kg-dry	1	4/12/2017 7:23:00 PM
Surr: o-Terphenyl	92.7	50-150		%REC	1	4/12/2017 7:23:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	3.04		mg/Kg-dry	1	4/11/2017 5:41:00 PM
Surr: 4-Bromofluorobenzene	69.2	50-150		%REC	1	4/11/2017 5:41:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	1440	1090		µg/Kg-dry	10	4/14/2017 9:50:23 AM
Cadmium	116	109		µg/Kg-dry	10	4/14/2017 9:50:23 AM
Lead	2460	273		µg/Kg-dry	10	4/17/2017 12:50:22 PM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	ND	0.0181		mg/Kg-dry	1	4/11/2017 12:21:13 PM

Specialty Analytical

Date Reported: 01-May-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/7/2017 10:05:00 AM
Project: Red Lion Soil Testing / 9085.10.03
Lab ID: 1704057-007
Client Sample ID: TP4-S-5.0
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	15.4		mg/Kg-dry	1	4/12/2017 8:07:00 PM
Lube Oil	ND	51.5		mg/Kg-dry	1	4/12/2017 8:07:00 PM
Surr: o-Terphenyl	89.3	50-150		%REC	1	4/12/2017 8:07:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	2.65		mg/Kg-dry	1	4/11/2017 6:08:00 PM
Surr: 4-Bromofluorobenzene	67.6	50-150		%REC	1	4/11/2017 6:08:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	ND	1020		µg/Kg-dry	10	4/14/2017 9:53:46 AM
Cadmium	106	102		µg/Kg-dry	10	4/14/2017 9:53:46 AM
Lead	1700	254		µg/Kg-dry	10	4/17/2017 12:53:44 PM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	ND	0.0171		mg/Kg-dry	1	4/11/2017 12:23:13 PM

Specialty Analytical

Date Reported: 01-May-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/7/2017 10:15:00 AM
Project: Red Lion Soil Testing / 9085.10.03
Lab ID: 1704057-008
Client Sample ID: TP4-S-10.0
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	15.9		mg/Kg-dry	1	4/12/2017 8:28:00 PM
Lube Oil	ND	52.9		mg/Kg-dry	1	4/12/2017 8:28:00 PM
Surr: o-Terphenyl	92.3	50-150		%REC	1	4/12/2017 8:28:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	2.79		mg/Kg-dry	1	4/11/2017 6:35:00 PM
Surr: 4-Bromofluorobenzene	67.8	50-150		%REC	1	4/11/2017 6:35:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	1360	1050		µg/Kg-dry	10	4/14/2017 9:57:08 AM
Cadmium	ND	105		µg/Kg-dry	10	4/14/2017 9:57:08 AM
Lead	1780	263		µg/Kg-dry	10	4/17/2017 12:57:07 PM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	0.0445	0.0172		mg/Kg-dry	1	4/11/2017 12:25:13 PM

Specialty Analytical

Date Reported: 01-May-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/7/2017 10:25:00 AM
Project: Red Lion Soil Testing / 9085.10.03
Lab ID: 1704057-009
Client Sample ID: TP4-S-13.0
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
NWTPH-DX		**NWTPH-DX**				Analyst: **JRC**
Diesel	ND	15.8		mg/Kg-dry	1	4/12/2017 8:50:00 PM
Lube Oil	ND	52.5		mg/Kg-dry	1	4/12/2017 8:50:00 PM
Surr: o-Terphenyl	92.9	50-150		%REC	1	4/12/2017 8:50:00 PM
NWTPH-GX		**NWTPH-GX**				Analyst: **JRC**
Gasoline	ND	2.75		mg/Kg-dry	1	4/11/2017 7:02:00 PM
Surr: 4-Bromofluorobenzene	68.6	50-150		%REC	1	4/11/2017 7:02:00 PM
ICP/MS METALS-TOTAL RECOVERABLE		**SW6020A**				Analyst: **JRC**
Arsenic	1110	977		µg/Kg-dry	10	4/14/2017 10:00:31 AM
Cadmium	166	97.7		µg/Kg-dry	10	4/14/2017 10:00:31 AM
Lead	2390	244		µg/Kg-dry	10	4/17/2017 1:00:29 PM
TOTAL MERCURY		**SW 7471B**				Analyst: **ml**
Mercury	ND	0.0171		mg/Kg-dry	1	4/11/2017 12:27:13 PM

QC SUMMARY REPORT

WO#: **1704057**

01-May-17

Specialty Analytical

Client: Maul Foster & Alongi

Project: Red Lion Soil Testing / 9085.10.03 **TestCode:** **6020_S**

Sample ID: **ICV** SampType: **ICV** TestCode: **6020_S** Units: **µg/Kg** Prep Date: RunNo: **20916**

Client ID: **ICV** Batch ID: **9734** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/14/2017** SeqNo: **280090**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	4790	100	5000	0	95.7	90	110				
Cadmium	4920	10.0	5000	0	98.3	90	110				
Lead	4680	25.0	5000	0	93.6	90	110				

Sample ID: **MB-9734** SampType: **MBLK** TestCode: **6020_S** Units: **µg/Kg** Prep Date: **4/10/2017** RunNo: **20916**

Client ID: **PBS** Batch ID: **9734** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/14/2017** SeqNo: **280093**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	100									
Cadmium	ND	10.0									
Lead	ND	25.0									

Sample ID: **LCS-9734** SampType: **LCS** TestCode: **6020_S** Units: **µg/Kg** Prep Date: **4/10/2017** RunNo: **20916**

Client ID: **LCSS** Batch ID: **9734** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/14/2017** SeqNo: **280094**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	4500	100	5000	0	90.1	73.4	120				
Cadmium	4600	10.0	5000	0	92.1	80	120				
Lead	4780	25.0	5000	0	95.7	80	120				

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

O RSD is greater than RSDlimit

R RPD outside accepted recovery limits

S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704057**

01-May-17

Specialty Analytical

Client: Maul Foster & Alongi

Project: Red Lion Soil Testing / 9085.10.03 **TestCode:** **6020_S**

Sample ID: **1704057-001BDUP** SampType: **DUP** TestCode: **6020_S** Units: **µg/Kg-dry** Prep Date: **4/10/2017** RunNo: **20916**

Client ID: **TP3-S-5.0** Batch ID: **9734** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/14/2017** SeqNo: **280096**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	1470	1060						1076	31.3	20	R
Cadmium	136	106						82.65	49.1	20	R
Lead	9200	264						8084	12.9	20	

Sample ID: **1704057-001BMS** SampType: **MS** TestCode: **6020_S** Units: **µg/Kg-dry** Prep Date: **4/10/2017** RunNo: **20916**

Client ID: **TP3-S-5.0** Batch ID: **9734** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/14/2017** SeqNo: **280097**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	6770	1050	5274	1076	108	70	130				
Cadmium	5720	105	5274	82.65	107	70	130				
Lead	18600	264	5274	8084	199	70	130				S

Sample ID: **1704057-001BMSD** SampType: **MSD** TestCode: **6020_S** Units: **µg/Kg-dry** Prep Date: **4/10/2017** RunNo: **20916**

Client ID: **TP3-S-5.0** Batch ID: **9734** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/14/2017** SeqNo: **280098**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	6360	1040	5221	1076	101	70	130	6767	6.19	20	
Cadmium	4690	104	5221	82.65	88.2	70	130	5722	19.8	20	
Lead	13400	261	5221	8084	102	70	130	18580	32.3	20	R

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

O RSD is greater than RSDlimit

R RPD outside accepted recovery limits

S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704057**

Specialty Analytical

01-May-17

Client: Maul Foster & Alongi

Project: Red Lion Soil Testing / 9085.10.03 **TestCode:** **6020_S**

Sample ID: **CCV** SampType: **CCV** TestCode: **6020_S** Units: **µg/Kg** Prep Date: RunNo: **20916**
Client ID: **CCV** Batch ID: **9734** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/14/2017** SeqNo: **280101**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	4790	100	5000	0	95.9	90	110				
Cadmium	4880	10.0	5000	0	97.6	90	110				
Lead	4520	25.0	5000	0	90.5	90	110				

Sample ID: **ICV** SampType: **ICV** TestCode: **6020_S** Units: **µg/Kg** Prep Date: RunNo: **20916**
Client ID: **ICV** Batch ID: **9734** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/17/2017** SeqNo: **280563**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4700	25.0	5000	0	94.0	90	110				

Sample ID: **CCV** SampType: **CCV** TestCode: **6020_S** Units: **µg/Kg** Prep Date: RunNo: **20916**
Client ID: **CCV** Batch ID: **9734** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/17/2017** SeqNo: **280568**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4670	25.0	5000	0	93.5	90	110				

Sample ID: **CCV** SampType: **CCV** TestCode: **6020_S** Units: **µg/Kg** Prep Date: RunNo: **20916**
Client ID: **CCV** Batch ID: **9734** TestNo: **SW6020A** **SW3050B** Analysis Date: **4/17/2017** SeqNo: **280578**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4630	25.0	5000	0	92.6	90	110				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704057**

01-May-17

Specialty Analytical

Client: Maul Foster & Alongi

Project: Red Lion Soil Testing / 9085.10.03 **TestCode:** **HG_CTS**

Sample ID: **MB-9733**	SampType: **MBLK**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date: **4/10/2017**	RunNo: **20849**
Client ID: **PBS**	Batch ID: **9733**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/11/2017**	SeqNo: **279328**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.0167									

Sample ID: **LCS-9733**	SampType: **LCS**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date: **4/10/2017**	RunNo: **20849**
Client ID: **LCSS**	Batch ID: **9733**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/11/2017**	SeqNo: **279329**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.406	0.0167	0.4000	0	101	80	120				

Sample ID: **1704054-007ADUP**	SampType: **DUP**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date: **4/10/2017**	RunNo: **20849**
Client ID: **ZZZZZZ**	Batch ID: **9733**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/11/2017**	SeqNo: **279331**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.191	0.0164						0.2104	9.53	20	

Sample ID: **1704054-007AMS**	SampType: **MS**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date: **4/10/2017**	RunNo: **20849**
Client ID: **ZZZZZZ**	Batch ID: **9733**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/11/2017**	SeqNo: **279332**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.451	0.0158	0.3780	0.2104	63.6	75	125				SMI

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704057**

01-May-17

Specialty Analytical

Client: Maul Foster & Alongi

Project: Red Lion Soil Testing / 9085.10.03 **TestCode:** **HG_CTS**

Sample ID: **1704054-007AMSD**	SampType: **MSD**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date: **4/10/2017**	RunNo: **20849**
Client ID: **ZZZZZZ**	Batch ID: **9733**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/11/2017**	SeqNo: **279333**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.441	0.0160	0.3842	0.2104	60.1	75	125	0.4509	2.12	20	SMI

Sample ID: **9733-CCV**	SampType: **CCV**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date:	RunNo: **20849**
Client ID: **CCV**	Batch ID: **9733**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/11/2017**	SeqNo: **279340**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.431	0.0167	0.4000	0	108	90	110				

Sample ID: **9733-CCV**	SampType: **CCV**	TestCode: **HG_CTS**	Units: **mg/Kg**	Prep Date:	RunNo: **20849**
Client ID: **CCV**	Batch ID: **9733**	TestNo: **SW 7471B**	**SW 7471B**	Analysis Date: **4/11/2017**	SeqNo: **279347**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.413	0.0167	0.4000	0	103	90	110				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704057**

01-May-17

Specialty Analytical

Client: Maul Foster & Alongi

Project: Red Lion Soil Testing / 9085.10.03 **TestCode:** **NWTPHDX_S**

Sample ID: **CCV**	SampType: **CCV**	TestCode: **NWTPHDX_S**	Units: **mg/Kg**	Prep Date:	RunNo: **20886**
Client ID: **CCV**	Batch ID: **9743**	TestNo: **NWTPH-Dx**	**SW3550C**	Analysis Date: **4/12/2017**	SeqNo: **279702**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	1010	15.0	999.0	0	101	85	115				
Lube Oil	488	50.0	499.5	0	97.6	85	115				

Sample ID: **MB-9743**	SampType: **MBLK**	TestCode: **NWTPHDX_S**	Units: **mg/Kg**	Prep Date: **4/11/2017**	RunNo: **20886**
Client ID: **PBS**	Batch ID: **9743**	TestNo: **NWTPH-Dx**	**SW3550C**	Analysis Date: **4/12/2017**	SeqNo: **279703**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	15.0									
Lube Oil	ND	50.0									
Surr: o-Terphenyl	31.5		33.30		94.5	50	150				

Sample ID: **LCS-9743**	SampType: **LCS**	TestCode: **NWTPHDX_S**	Units: **mg/Kg**	Prep Date: **4/11/2017**	RunNo: **20886**
Client ID: **LCSS**	Batch ID: **9743**	TestNo: **NWTPH-Dx**	**SW3550C**	Analysis Date: **4/12/2017**	SeqNo: **279704**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	186	15.0	166.5	0	112	76.3	125				
Lube Oil	154	50.0	166.5	0	92.6	69.9	127				

Sample ID: **1704057-006BDUP**	SampType: **DUP**	TestCode: **NWTPHDX_S**	Units: **mg/Kg-dry**	Prep Date: **4/11/2017**	RunNo: **20886**
Client ID: **TP5-S-14.0**	Batch ID: **9743**	TestNo: **NWTPH-Dx**	**SW3550C**	Analysis Date: **4/12/2017**	SeqNo: **279709**

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
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704057**

01-May-17

Specialty Analytical

Client: Maul Foster & Alongi

Project: Red Lion Soil Testing / 9085.10.03 **TestCode:** **NWTPHDX_S**

Sample ID: **1704057-006BDUP** SampType: **DUP** TestCode: **NWTPHDX_S** Units: **mg/Kg-dry** Prep Date: **4/11/2017** RunNo: **20886**

Client ID: **TP5-S-14.0** Batch ID: **9743** TestNo: **NWTPH-Dx** **SW3550C** Analysis Date: **4/12/2017** SeqNo: **279709**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	16.6						0	0	20	
Lube Oil	ND	55.4						0	0	20	

Sample ID: **1704057-002BDUP** SampType: **DUP** TestCode: **NWTPHDX_S** Units: **mg/Kg-dry** Prep Date: **4/11/2017** RunNo: **20886**

Client ID: **TP3-S-10.0** Batch ID: **9743** TestNo: **NWTPH-Dx** **SW3550C** Analysis Date: **4/12/2017** SeqNo: **279718**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	19.3						0	0	20	
Lube Oil	ND	64.2						0	0	20	

Sample ID: **CCV** SampType: **CCV** TestCode: **NWTPHDX_S** Units: **mg/Kg** Prep Date: RunNo: **20886**

Client ID: **CCV** Batch ID: **9743** TestNo: **NWTPH-Dx** **SW3550C** Analysis Date: **4/13/2017** SeqNo: **279743**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	1420	15.0	1332	0	107	85	115				

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

O RSD is greater than RSDlimit

R RPD outside accepted recovery limits

S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704057**

01-May-17

Specialty Analytical

Client: Maul Foster & Alongi

Project: Red Lion Soil Testing / 9085.10.03 **TestCode:** **NWTPHGX_SA**

Sample ID: **CCV**	SampType: **CCV**	TestCode: **NWTPHGX_S**	Units: **mg/Kg**	Prep Date:	RunNo: **20894**
Client ID: **CCV**	Batch ID: **9758**	TestNo: **NWTPH-Gx**	**SW5035A**	Analysis Date: **4/11/2017**	SeqNo: **279765**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	83.9	2.50	100.0	0	83.9	80	120				

Sample ID: **LCS-9758**	SampType: **LCS**	TestCode: **NWTPHGX_S**	Units: **mg/Kg**	Prep Date: **4/12/2017**	RunNo: **20894**
Client ID: **LCSS**	Batch ID: **9758**	TestNo: **NWTPH-Gx**	**SW5035A**	Analysis Date: **4/11/2017**	SeqNo: **279766**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	58.9	2.50	50.00	0	118	53.5	121				

Sample ID: **MB-9758**	SampType: **MBLK**	TestCode: **NWTPHGX_S**	Units: **mg/Kg**	Prep Date: **4/12/2017**	RunNo: **20894**
Client ID: **PBS**	Batch ID: **9758**	TestNo: **NWTPH-Gx**	**SW5035A**	Analysis Date: **4/11/2017**	SeqNo: **279767**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	2.50									
Surr: 4-Bromofluorobenzene	3.80		5.000		75.9	50	150				

Sample ID: **1704057-003ADUP**	SampType: **DUP**	TestCode: **NWTPHGX_S**	Units: **mg/Kg-dry**	Prep Date: **4/12/2017**	RunNo: **20894**
Client ID: **TP3-S-15.0**	Batch ID: **9758**	TestNo: **NWTPH-Gx**	**SW5035A**	Analysis Date: **4/11/2017**	SeqNo: **279771**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	2.77						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1704057**

01-May-17

Specialty Analytical

Client: Maul Foster & Alongi

Project: Red Lion Soil Testing / 9085.10.03 **TestCode:** **NWTPHGX_SA**

Sample ID: **CCV**	SampType: **CCV**	TestCode: **NWTPHGX_S**	Units: **mg/Kg**	Prep Date:	RunNo: **20894**
Client ID: **CCV**	Batch ID: **9758**	TestNo: **NWTPH-Gx**	**SW5035A**	Analysis Date: **4/11/2017**	SeqNo: **279778**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	124	2.50	150.0	0	82.8	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	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 that the maximum contaminant level of the TCLP regulatory limit.

CHAIN OF CUSTODY RECORD

Specialty Analytical

11711 SE Capps Road
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Contact Person/Project Manager: Kyle Roslund
Company: MAUL FOSTER ALONGI
Address: 400 E MILL PLAIN BLVD STE 400 VANCOUVER WA
Phone: 503 341 8112 Fax: kroslund@maulfoster.com
Project No. 9085.10.03 Project Name: Red Lion Site Investigation
Project Site Location OR ____ WA X Other ____
Invoice To: PORT OF VANCOUVER P.O. No. 9085.10.03

Collected By: K. Roslund
Signature: K. Roslund
Printed: KRR

Signature: ____
Printed: ____

Turn Around Time
☑ Normal 5-7 Business Days
☐ Rush ____
Specify
Rush Analyses Must Be Scheduled With The Lab In Advance

Date	Time	Sample I.D.	Matrix	No. of Containers	NWTPH-Gx	NWTPH-Dx	6020 Total As, Cd, Pb	7471 Total Hg	8270 PAH (HOLD)	8260 VOC (HOLD)	8082 PCB (HOLD)					Comments	Lab I.D.
4/7/17	0630	TP3-S-5.0	S	6	X	X	X	X									
	0640	TP3-S-10.0	S	6	X	X	X	X									
	0850	TP3-S-15.0	S	6	X	X	X	X									
	0920	TP5-S-5.0	S	6	X	X	X	X									
	0935	TP5-S-10.0	S	6	X	X	X	X									
	0945	TP5-S-14.0	S	6	X	X	X	X									
	1005	TP4-S-5.0	S	6	X	X	X	X									
	1015	TP4-S-10.0	S	6	X	X	X	X									
	1025	TP4-S-13.0	S	6	X	X	X	X									
		TRIP BLANK (HOLD)															

Analyses

For Laboratory Use
Lab Job No. 1704057
Shipped Via: ____
Air Bill No. ____
Temperature On Receipt ____ °C
Specialty Analytical Containers? Y / N
Specialty Analytical Trip Blanks? Y / N

Relinquished By:	Date	Time	Received By:	Relinquished By:	Date	Time
Company: MFA	4/7	1400	Company:	Company:		

Unless Reclaimed, Samples Will Be Disposed of 60 Days After Receipt.
Samples held beyond 60 days subject to storage fee(s)

Received For Lab By: [signature] Date 4/7/17 Time 1400

Specialty Analytical

11711 SE Capps Road, Ste B
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

May 10, 2017

Kyle Roslund
Maul Foster & Alongi
400 E. Mill Plain Blvd.
Suite 400
Vancouver, WA 98660

TEL: (360) 694-2691
FAX: (360) 906-1958

RE: Red Lion-Soil Test Pit / 9085.10.03

Dear Kyle Roslund: Order No.: 1705058

Specialty Analytical received 1 sample(s) on 5/8/2017 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,

Marty French
Lab Director

Specialty Analytical

Date Reported: 10-May-17

CLIENT: Maul Foster & Alongi
Collection Date: 4/3/2017 10:35:00 AM
Project: Red Lion-Soil Test Pit / 9085.10.03
Lab ID: 1705058-001
Client Sample ID: TP2-S-1
Matrix: SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
TCLP METALS ICP/MS METALS-TCLP LEACHED E1311/6020						Analyst: **JRC**
Lead, TCLP	0.219	0.00500		mg/L	10	5/10/2017 1:18:12 PM

QC SUMMARY REPORT

WO#: **1705058**

Specialty Analytical

10-May-17

Client: Maul Foster & Alongi

Project: Red Lion-Soil Test Pit / 9085.10.03 **TestCode:** **6020_TCLP**

Sample ID: **ICV** SampType: **ICV** TestCode: **6020_TCLP** Units: **mg/L** Prep Date: RunNo: **21287**
Client ID: **ICV** Batch ID: **9895** TestNo: **E1311/6020** **SW3010A** Analysis Date: **5/10/2017** SeqNo: **283827**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead, TCLP	0.0478	0.000100	0.0500	0	95.6	90	110				

Sample ID: **CCV** SampType: **CCV** TestCode: **6020_TCLP** Units: **mg/L** Prep Date: RunNo: **21287**
Client ID: **CCV** Batch ID: **9895** TestNo: **E1311/6020** **SW3010A** Analysis Date: **5/10/2017** SeqNo: **283828**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead, TCLP	0.0462	0.000100	0.0500	0	92.5	90	110				

Sample ID: **MB-9895** SampType: **MBLK** TestCode: **6020_TCLP** Units: **mg/L** Prep Date: **5/10/2017** RunNo: **21287**
Client ID: **PBW** Batch ID: **9895** TestNo: **E1311/6020** **SW3010A** Analysis Date: **5/10/2017** SeqNo: **283829**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead, TCLP	ND	0.000100									

Sample ID: **LCS-9895** SampType: **LCS** TestCode: **6020_TCLP** Units: **mg/L** Prep Date: **5/10/2017** RunNo: **21287**
Client ID: **LCSW** Batch ID: **9895** TestNo: **E1311/6020** **SW3010A** Analysis Date: **5/10/2017** SeqNo: **283830**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead, TCLP	0.0472	0.000100	0.0500	0	94.5	80	120				

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1705058**

Specialty Analytical

10-May-17

Client: Maul Foster & Alongi

Project: Red Lion-Soil Test Pit / 9085.10.03 **TestCode: 6020_TCLP**

Sample ID: **CCV**	SampType: **CCV**	TestCode: **6020_TCLP**	Units: **mg/L**	Prep Date:	RunNo: **21287**
Client ID: **CCV**	Batch ID: **9895**	TestNo: **E1311/6020**	**SW3010A**	Analysis Date: **5/10/2017**	SeqNo: **283831**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead, TCLP	0.0459	0.000100	0.0500	0	91.8	90	110				

Sample ID: **1705030-001ADUP**	SampType: **DUP**	TestCode: **6020_TCLP**	Units: **mg/L**	Prep Date: **5/10/2017**	RunNo: **21287**
Client ID: **ZZZZZZ**	Batch ID: **9895**	TestNo: **E1311/6020**	**SW3010A**	Analysis Date: **5/10/2017**	SeqNo: **283833**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead, TCLP	0.0177	0.00500						0.0368	70.3	20	RF

Sample ID: **1705030-001AMS**	SampType: **MS**	TestCode: **6020_TCLP**	Units: **mg/L**	Prep Date: **5/10/2017**	RunNo: **21287**
Client ID: **ZZZZZZ**	Batch ID: **9895**	TestNo: **E1311/6020**	**SW3010A**	Analysis Date: **5/10/2017**	SeqNo: **283834**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead, TCLP	0.260	0.00500	0.250	0.0368	89.3	70	130				

Sample ID: **1705030-001AMSD**	SampType: **MSD**	TestCode: **6020_TCLP**	Units: **mg/L**	Prep Date: **5/10/2017**	RunNo: **21287**
Client ID: **ZZZZZZ**	Batch ID: **9895**	TestNo: **E1311/6020**	**SW3010A**	Analysis Date: **5/10/2017**	SeqNo: **283835**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead, TCLP	0.317	0.00500	0.250	0.0368	112	70	130	0.260	19.7	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

QC SUMMARY REPORT

WO#: **1705058**

Specialty Analytical

10-May-17

Client: Maul Foster & Alongi

Project: Red Lion-Soil Test Pit / 9085.10.03 **TestCode:** **6020_TCLP**

Sample ID: **CCV**	SampType: **CCV**	TestCode: **6020_TCLP**	Units: **mg/L**	Prep Date:	RunNo: **21287**
Client ID: **CCV**	Batch ID: **9895**	TestNo: **E1311/6020**	**SW3010A**	Analysis Date: **5/10/2017**	SeqNo: **283842**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead, TCLP	0.0466	0.000100	0.0500	0	93.1	90	110				

Sample ID: **CCV**	SampType: **CCV**	TestCode: **6020_TCLP**	Units: **mg/L**	Prep Date:	RunNo: **21287**
Client ID: **CCV**	Batch ID: **9895**	TestNo: **E1311/6020**	**SW3010A**	Analysis Date: **5/10/2017**	SeqNo: **283849**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead, TCLP	0.0451	0.000100	0.0500	0	90.2	90	110				

Qualifiers:

B	Analyte detected in the associated Method Blank	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	R	RPD outside accepted recovery limits	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 that the maximum contaminant level of the TCLP regulatory limit.

CHAIN OF CUSTODY RECORD

Specialty Analytical
11711 SE Capps Road
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Contact Person/Project Manager: Kyle Roslund
Company: Maul Foster & Alongi
Address: 400 E Mill Plain Blvd #400
Vancouver, WA 98660
Phone: _____ Fax: _____
Project No: 9085.10.03 Project Name: Red Lion - Soil Test Pitting
Project Site Location OR: _____ WA: X Other: _____
Invoice To: Port of Vancouver P.O. No.: 9085.10.03

Collected By:
Signature: Emily Hess
Printed: Emily Hess

Signature: _____
Printed: _____

Turn Around Time
☒ Normal 5-7 Business Days
☐ Rush _____
Specify
Rush Analyses Must Be Scheduled With The Lab In Advance

Date	Time	Sample I.D.	Matrix	No. of Containers	NWTPH-Gx	NWTPH-Dx	6020 Total: Arsenic, Cadmium, Lead	7471 Total: Mercury	PAHs: 8270 - HOLD	VOCs: 8260 - HOLD	PCBs: 8082 - HOLD				Comments	Lab I.D.
4/3/17	945	TP1-S-2	SO	6	X	X	X	X							Vials of 10 mL MeOH had 2 soil plugs. HOLD	
	850	TP1-S-4		6	[illegible]											
	915	TP1-S-8		6	X	X	X	X								
	930	TP1-S-13		6	X	X	X	X								
	1035	TP2-S-1		6	X	X	X	X								
	1005	TP2-S-4		6	[illegible]										HOLD	
	1015	TP2-S-8		6	X	X	X	X								
	1030	TP2-S-13		6	X	X	X	X								

Analyses

For Laboratory Use
Lab Job No: [redacted] 1705058
Shipped Via: _____
Air Bill No.: _____
Temperature On Receipt: 4 °C
Specialty Analytical Containers? Y / N
Specialty Analytical Trip Blanks? Y / N

Relinquished By:	Date	Time	Received By:	Relinquished By:	Date	Time
Company: MFA	4/3/17	15:03	Company: ASA	Company:		

Unless Reclaimed, Samples Will Be Disposed of 60 Days After Receipt.
Samples held beyond 60 days subject to storage fee(s)

Received For Lab By: _____ Date: 4/4/17 Time: 1404

ATTACHMENT D

DATA VALIDATION MEMORANDUM

DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 9085.10.03 | JUNE 14, 2017 | PORT OF VANCOUVER

Maul Foster & Alongi, Inc., conducted an independent review of the quality of analytical results for test pit soil samples collected at the location of the former Red Lion Hotel at the Port of Vancouver Terminal 1 site. The samples were collected on April 3 and 7, 2017.

Specialty Analytical, Inc. (SA) performed the analyses. SA report numbers 1704013, 1704057_r2, and 1705058 were reviewed. The analyses performed and samples analyzed are listed below. Not all analyses were performed on all samples. Samples submitted on hold are also indicated below. Sample TP2-S-1 was initially submitted with report 1704013; follow up analyses were requested and later presented in report 1705058.

Analysis	Reference
Diesel- and Lube-Oil-Range Hydrocarbons	NWTPH-Dx
Gasoline-Range Hydrocarbons	NWTPH-Gx
Total Mercury	USEPA 7471B
TCLP Metals	USEPA Method 1311/6020A
Total Metals	USEPA 6020A

NWTPH = Northwest Total Petroleum Hydrocarbons.
TCLP = Toxicity characteristic leaching procedure.
USEPA = U.S. Environmental Protection Agency.

Samples Analyzed		
Report 1704013	**Report 1704057_r2**	**Report 1705058**
TP1-S-2	TP3-S-5.0	TP2-S-1
TP1-S-4 (Hold)	TP3-S-10.0	--
TP1-S-8	TP3-S-15.0	--
TP1-S-13	TP5-S-5.0	--
TP2-S-1	TP5-S-10.0	--
TP2-S-4 (Hold)	TP5-S-14.0	--
TP2-S-8	TP4-S-5.0	--
TP2-S-13	TP4-S-10.0	--
--	TP4-S-13.0	--
--	TRIP BLANK (Hold)	--

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2016a, b) and appropriate laboratory- and method-specific guidelines (SA, 2015; (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

All 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 analyses were performed at the required frequencies. For purposes of data qualification, the method blanks were associated with all samples prepared in the analytical batch.

All laboratory method blanks were non-detect at method reporting limits (MRLs).

Trip Blanks

A trip blank was submitted on hold, as stated in report 1704057_r2. Trip blank analysis was not required, as no samples were analyzed for volatile organic compounds.

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 (MS/MSD) results are used to evaluate laboratory precision and accuracy. All MS/MSD samples were extracted and analyzed at the required frequency.

When MS/MSD percent recoveries and relative percent differences (RPDs) were outside acceptance limits because of high concentrations of analyte in the sample, and MS/MSD exceedances were flagged by the laboratory because of high concentrations of analyte, no qualifications were made by the reviewer. MS/MSD percent recovery exceedance between 70 percent and 130 percent and RPD exceedances less than 30 percent were considered minor by the reviewer and were not qualified.

As stated in report 1704057_r2, the USEPA Method 6020A MS percent recovery result exceeded the upper percent recovery acceptance limit for total lead at 199 percent. In addition, the MS/MSD RPD exceeded acceptance criteria at 32.3 percent. The sample used to prepare the MS/MSD was qualified by the reviewer with "J" as estimated, as follows:

Sample	Component	Original Result (ug/kg)	Qualified Result (ug/kg)
TP3-S-5.0	Total lead	8080	8080 J

ug/kg = micrograms per kilogram.

Report 1704057_r2 states that the USEPA Method 7471B MS/MSD percent recovery results were below the lower percent recovery acceptance limit for total mercury at 63.6 percent and 60.1 percent, respectively. The sample used to prepare the MS/MSD was from an unrelated project; thus, no results were qualified.

All remaining MS/MSD results were within acceptance limits for percent recovery and RPDs.

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. All duplicate samples were extracted and analyzed at the required frequency. Duplicate results within five times the MRL were not evaluated for precision.

As stated in report 1704057_r2, the USEPA Method 6020A laboratory duplicate exceeded the RPD control limit for arsenic at 31.3 percent. This exceedance is minor; thus, the result was not qualified.

All remaining RPDs were within acceptance limits.

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.

All LCS/LCSD results were within acceptance limits for percent recovery and RPD.

FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. A field duplicate sample was not submitted for analysis.

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 CCV results were within percent recovery acceptance limits.

REPORTING LIMITS

SA used routine reporting limits for non-detect results, except for samples requiring dilutions because of high analyte concentrations and/or matrix interferences.

DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies. No issues were found.

REFERENCES

SA. 2015. Laboratory quality assurance plan. Specialty Analytical, Inc., Clackamas, Oregon. January.

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. 2016a. USEPA contract laboratory program, national functional guidelines for inorganic Superfund methods data review. EPA 540-R-2016-001. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. August.

USEPA. 2016b. USEPA contract laboratory program, national functional guidelines for Superfund organic methods data review. EPA 540-R-2016-002. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. August.