COLES+BETTS environmental consulting

December 21, 2022

Mr. Mark T. Pugh, R.G.
DEQ Northwest Region
700 NE Multnomah St, Ste 600
Portland, OR 97232

Regarding: **Merit USA/FPI/ORRCO Site: Post-Closure Water Monitoring Report #1 for 2022 (DEQ Order No. LQSR-NWR-12-09).**

Dear Mr. Pugh:

Introduction

Remediation activities are complete at the Merit USA/FPI/ORRCO site (Site) and a Certificate of Completion/Consent Order was issued on October 13, 2022 (Attachment A). The *Post-Closure Monitoring Plan*[1] for the Site requires (1) light, non-aqueous-phase liquid (LNAPL) monitoring and LNAPL removal at groundwater monitoring wells FP-3 and FP-7, and (2) water quality monitoring at specific groundwater monitoring and surface water locations. This report documents the first annual post-closure monitoring activities as completed per the *Post-Closure Monitoring Plan* on May 10, 2022.

Summary of LNAPL Monitoring and Removal at Wells FP-3 and FP-7

The presence of sheen or LNAPL was monitored monthly in groundwater monitoring wells FP-3 and FP-7. These wells are located north of the Record of Decision (ROD) Operable Units (OUs) OU3 and OU4 and within ORRCO's plant operations area (Figure 1). Monitoring data collected between January 2021 and November 2022 are discussed herein.

The monitoring procedures were used as described in the Post-Closure Monitoring Plan (Attachment B). LNAPL monitoring was completed monthly from January 2021 through April 2022 using a Coliwasa sampler lowered 1 foot below the top of the water table and retracted carefully to avoid touching the sampler to the well's sidewalls. Monthly LNAPL monitoring after April 2022 was completed by using an oil-water interface probe that allowed measurements to 0.01 foot of the product/water face depth and thickness of the LNAPL (if present). Field observations from these monthly monitoring events including the amount of removed LNAPL (in gallons) are summarized in Table 1 below.

[1] *Merit USA/FPI/ORRCO Five-Year Post-Closure Monitoring Plan for Operable Units 3 and 4, 4150 N. Suttle Road, Portland, Oregon (DEQ Order No. LQSR-NWR-04-02),* by Coles & Betts Environmental Consulting, dated July 22, 2021.

Table 1. Summary of Monthly LNAPL Monitoring and Removal

Well Number	FP-3		FP-7		
Date	**LNAPL thickness (feet)**	**LNAPL removed (gallons)**	**LNAPL thickness (feet)**	**LNAPL removed (gallons)**	**Notes**
01/11/2021	-	205	-	135	Sheen in both
02/04/2021	-	205	-	155	Sheen in both
03/15/2021	-	215	-	165	Sheen in both
04/05/2021	-	260	-	155	Sheen in both
05/08/2021	-	190	-	110	Sheen in both
06/01/2021	-	100	-	150	Sheen in both
07/15/2021	-	80	-	100	Sheen in both
08/03/2021	-	50	-	50	Sheen in both
09/25/2021	-	75	-	80	Sheen in both
10/16/2021	-	20	-	20	Sheen in both
11/23/2021	-	105	-	105	Sheen in both
12/27/2021	-	200	-	150	Sheen in both
01/17/2022	-	50	-	100	No sheen
02/02/2022	-	150	-	100	No sheen
03/05/2022	-	30	-	30	No sheen
04/09/2022	-	40	-	50	No sheen
05/16/2022	-	40	0.8	30	FP-3 oil on stinger only. FP-7 brown, viscous/sticky, no odor.
06/22/2022	0.02	20	0.61	62	FP-3 emulsified oil on the stinger, brown, no odor. FP-7 emulsified oil, brown, sticky, no odor.
07/29/22	Not measurable	~1	Not measurable	~1	Emulsified, trace amount on stinger in both wells.
08/12/2022	Sheen only	-	Sheen only	-	Sheen only in both wells.
09/13/2022	0.02	<1	0.02	<1	Brown, no odor, sticky on stinger in both wells.
10/06/2022	Not measurable	-	0.08	<1	FP-3 No oil on stinger. FP-7 brown on stinger only.
11/16/2022	0.04	<1	Not measurable	-	FP-3 had very light sheen on stinger. FP-7 did not have sheen on stinger, only had oil droplets.

From 01/11/2021 through 12/27/2021, monitoring wells FP-3 and FP-7 consistently showed a sheen but no accumulation of LNAPL.

From 01/17/2022 through 04/09/2022, monitoring wells FP-3 and FP-7 consistently showed no sheen or accumulation of LNAPL.

In May of 2022, the LNAPL monitoring method was changed from a Coliwasa sampler to an oil-water interface probe. On the 05/16/2022 monitoring date, a minimal trace of LNAPL was noted at monitoring well FP-3. An LNAPL thickness of approximately 0.8 feet was measured in FP-7. An estimated 30 gallons of product was removed from the well by vacuum truck. It is likely that a portion of that volume was an emulsion of water and product.

LNAPL thicknesses in FP-3 and in FP-7 decreased after May 2022. LNAPL in FP-7 between 0.61 foot in May 2022 and no product measured in August 2022 and increased slightly from 0.02 foot to 0.08 foot in September and October of 2022. LNAPL was only measured three times in FP-3 between May and November 2022. The petroleum product observed between May and August 2022 was described as brown, emulsified, viscous, and sticky in most cases.

LNAPL and any water extracted from the monitoring wells was recycled at the ORRCO facility.

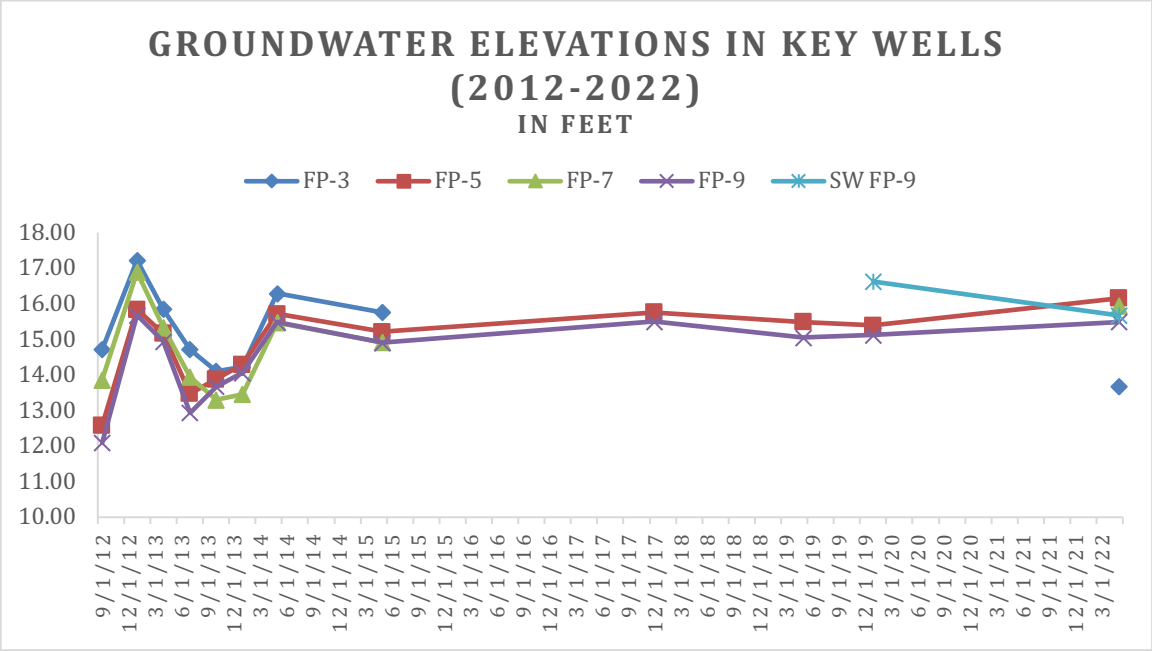
Annual Monitoring at Key Wells FP-3, FP-5, FP-7, and FP-9 & Surface Water
At the request of the Oregon Department of Environmental Quality (DEQ), annual groundwater monitoring will take place during April or May for five years starting in 2022 to monitor groundwater and surface water elevations and water quality in the interim period between the wet and dry seasons at the Site. This provides an estimate of groundwater and surface water conditions for the entire year without excessive contaminant dilution (wet season) or during a period when no surface water is present in the wetlands (dry season). The surface water and four key groundwater monitoring wells were selected for annual monitoring to represent conditions within the plant operations area (FP-3 and FP-7), within OU3 (FP-5), and within the wetlands (FP-9). Sample locations are illustrated on Figure 1.

Coles and Betts Environmental Consulting (C+BEC) collected surface water elevations, and groundwater elevations and samples at the four selected monitoring locations on May 10, 2022. The monitoring activities were completed as discussed in the *Post-Closure Monitoring Plan* and the groundwater elevations, field measurements of water quality, and analytical laboratory data are summarized below.

Groundwater and Surface Water Elevation Monitoring in or at Key Wells
Prior to collecting groundwater elevations, the groundwater monitoring wells were opened and allowed an hour to equilibrate with the atmosphere. The depth to water in each well was measured from a marked point on the well casing. The marked points at each well were professionally surveyed at well installation, and again following wetland remediation and paving activities at the site to allow for comparison between groundwater elevations between wells. Surface water was measured adjacent to FP-9 by measuring the top of the well to the top of the surface water adjacent to the well. Groundwater and surface water elevations are summarized in Table 2 and graphed in Chart 1.

Post-remediation groundwater elevations from the Spring and Winter of 2017, 2019, and 2020 were fairly consistent with the May 2022 elevations for wells FP-5, FP-7, and FP-9 with elevations between approximately 15 and 16 feet above mean sea level (msl). The May 2022 FP-3 elevation was similar to the lowest elevation recorded in October 2013, and approximately two feet lower than previous water elevations recorded in May 2014 and 2015. The surface water elevation was approximately 1 foot lower than measured in January 2020.

Chart 1. Groundwater Elevations in Key Wells and Surface Water (2012 through 2022)



Groundwater contours in the vicinity of these key monitoring locations are provided in Figure 2. The water elevations are provided in bold font and the estimated groundwater contour intervals defined in un-bolded blue font.

Previous groundwater elevation data, from the broader range of monitoring wells at the site indicates a general groundwater flow from the northeastern portion of the site toward the southwest. The May 2022 groundwater elevations suggest a slight groundwater mound in the area of OU3, possibly related to the lower groundwater elevations at FP-03 that would create a mounding effect at FP-07, record amount of precipitation in April 2022, recharge from the Dual ORRCO/Recology Bioswale, and/or the presence of free product. Well FP-3 has historically had the highest groundwater elevation, until May 2022. In addition, groundwater elevations at FP-3 and FP-7 may have been influenced by LNAPL. The FP-7 LNAPL monitoring with an interface probe indicated the depth to water on May 16, 2022 was 9.7 feet (15.18 feet elevation), with monthly elevations decreasing with the latest elevation in November 2022 at 14.84 feet. The groundwater mound appears to be dissipating.

Selected Field Parameters at Key Wells

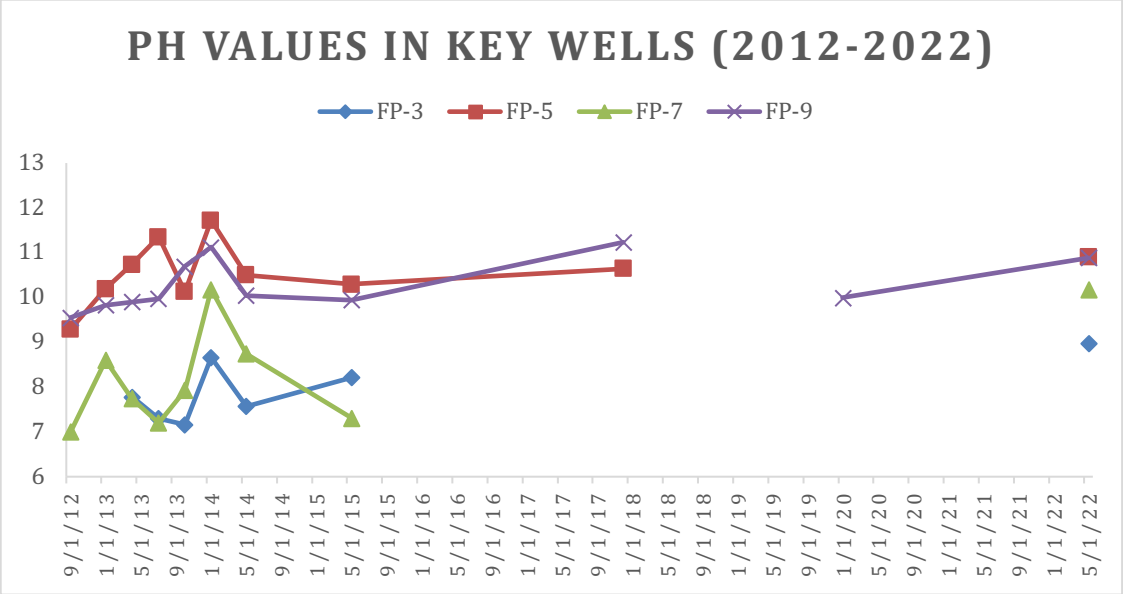
Groundwater samples were collected using a peristaltic pump to purge the wells with a flow rate as low as practical. Field parameters of pH, temperature, conductivity, dissolved oxygen, ORP and turbidity were measured during sampling using a calibrated multi-meter and flow-through cell during the purge process. Field parameters are provided in Table 2. Selected findings are presented below.

pH Values

Field parameter values indicate a general trend of increased pH readings in key wells FP-3, FP-5, FP-7, and FP-9 from May 2015 to May 2022, with some fluctuation in pH

observed in FP-9 (Chart 2). The key wells have historically higher pH values than several of the other monitoring wells on Site due to their locations within or adjacent to the aluminum dross-filled panhandle.

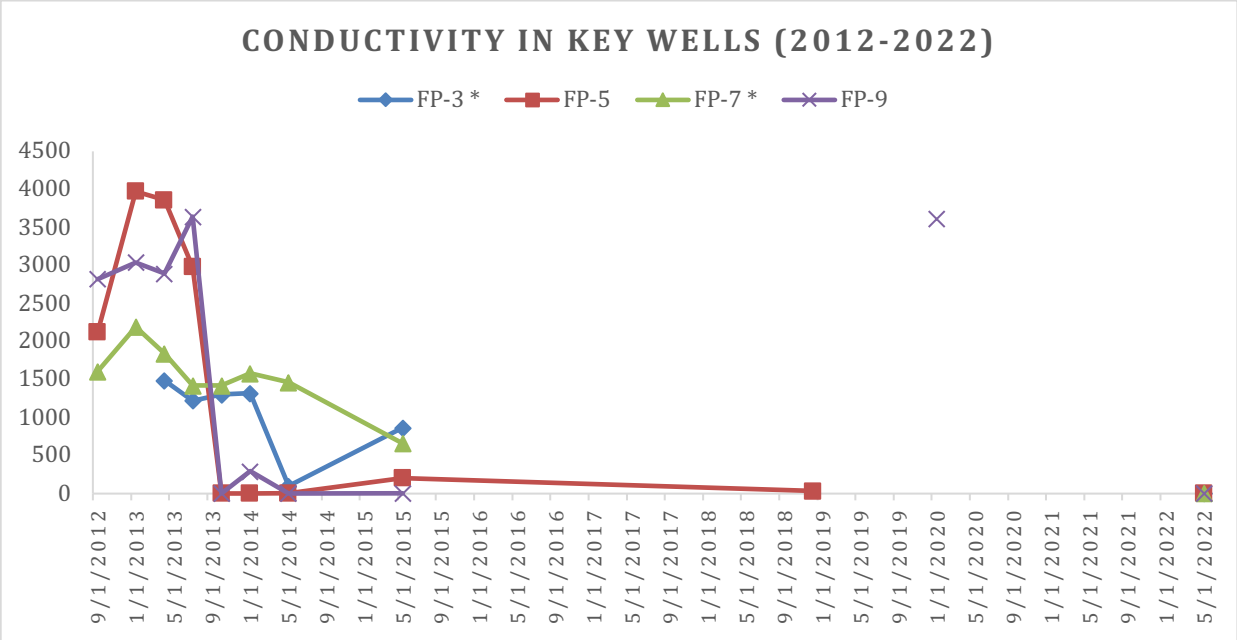
Chart 2. pH Values in Key Wells



Conductivity Readings in Key Monitoring Wells

Historical field conductivity readings at the site have varied greatly between 2012 and 2022 (see Chart 3). Conductivity readings in May 2022 were lower than in 2015 for monitoring wells FP-3, FP-5, and FP-7. Values at FP-9 have increased from May 2015 to January 2020 and decreased from January 2020 to May 2022. The reduced conductivity measurements are likely due to the wetland remediation and panhandle asphalt capping, and/or the April 2022 record precipitation in the region, and/or groundwater recharge from the dual bioswale.

Chart 3. Conductivity in Key Wells



Analytical Laboratory Results at Key Wells

Once field parameters stabilized at or after removing three well volumes from each well, the groundwater samples were placed into 1-liter amber bottles preserved with hydrochloric acid and 250 ml poly containers for laboratory analysis. The collected samples were labelled and placed in a chilled cooler for delivery to Apex Laboratories, LLC of Tigard, Oregon and analyzed as follows:

- Samples collected from FP-3 and FP-7 in the plant operations area were analyzed for diesel and oil-range petroleum hydrocarbons using WADOE Method NWTPH-Dx.

- Samples collected from FP-5 and FP-9 in the OU3 and OU4 areas were analyzed for dissolved metals (lead, zinc and chromium) using EPA Method 6020A and fluoride using EPA Method 300.0/9056A.

Data were compared to DEQ ROD Screening Criteria. Laboratory analytical results for groundwater monitoring are summarized in Table 3. The Apex Laboratories report is included as Attachment C.

FP-3 and FP-7 Diesel-Range and Oil-Range Organic Concentrations Over Time

Wells FP-3 and FP-7 were selected for post-closure monitoring since they have traditionally had the highest concentrations of diesel-range organics (DRO) and oil-range organics (ORO) at the Site. Concentrations of DRO and ORO in groundwater for a period of 9 to 10 years at FP-3 and FP-7 are presented in Charts 4 and 5, respectively.

Chart 4. FP-03 Groundwater DRO Data (2013-2022)

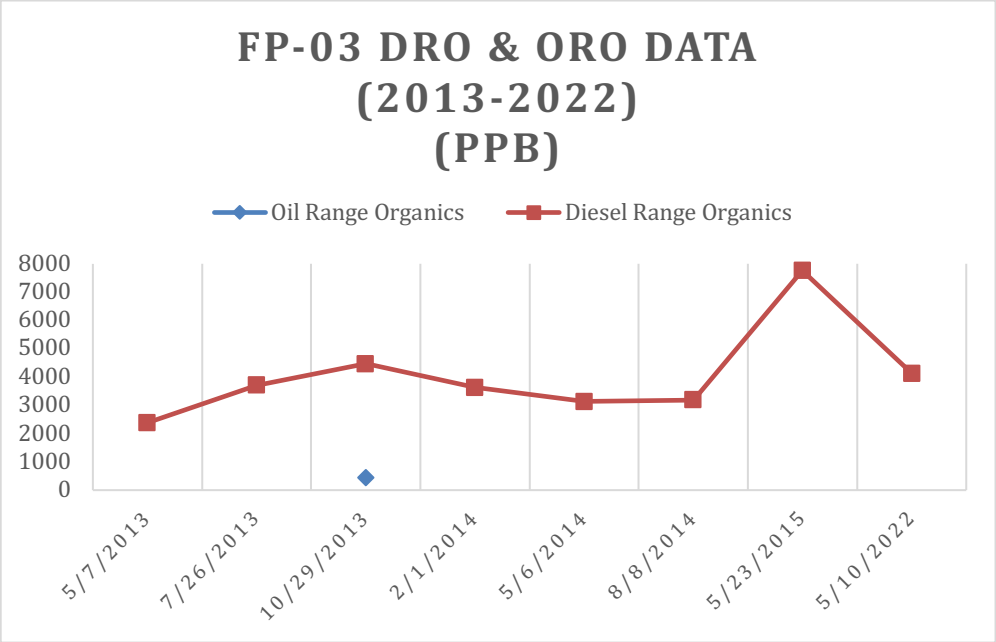
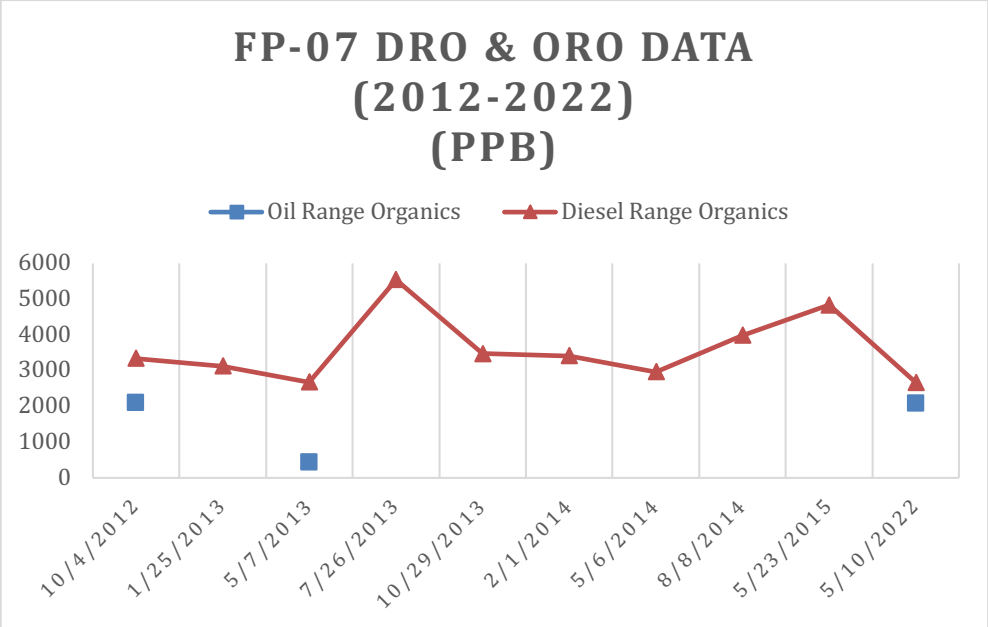


Chart 5. FP-07 Groundwater DRO Data (2013-2022)



The charts illustrate DRO concentrations in wells FP-3 and FP-7 fluctuated somewhat between 2012 and 2022, increasing temporarily in both wells in the second half of 2013 and in Spring of 2015. Concentrations of DRO in FP-7 were reduced to their lowest measured level by May 2022 and DRO concentrations also increased in FP-03 between May 2015 and May 2022. ORO concentrations were primarily non-detectable in both wells with the exception of elevated concentrations at FP-7 in October 2012 and May

2022. The elevated May 2022 concentration corresponds to a period of free floating product at FP-7.

The increased DRO concentrations in 2013 coincide with a period of lowered groundwater elevations. However, the increased DRO concentrations in May 2015 occurred at a time when groundwater elevations were in an intermediate range between recorded highs and low elations (see Chart 1, above).

The presence or absence of LNAPL is another factor that could affect DRO and ORO at FP-3 and FP-7 as a sheen and measurable free product have periodically been detected in each. The May 2022 DRO concentrations at FP-7 are lower than those at FP-3, considering that LNAPL was recorded in well FP-7 during monitoring and six days after monitoring. It is likely that this free product relates to the increase in ORO at FP-7 in May 2022.

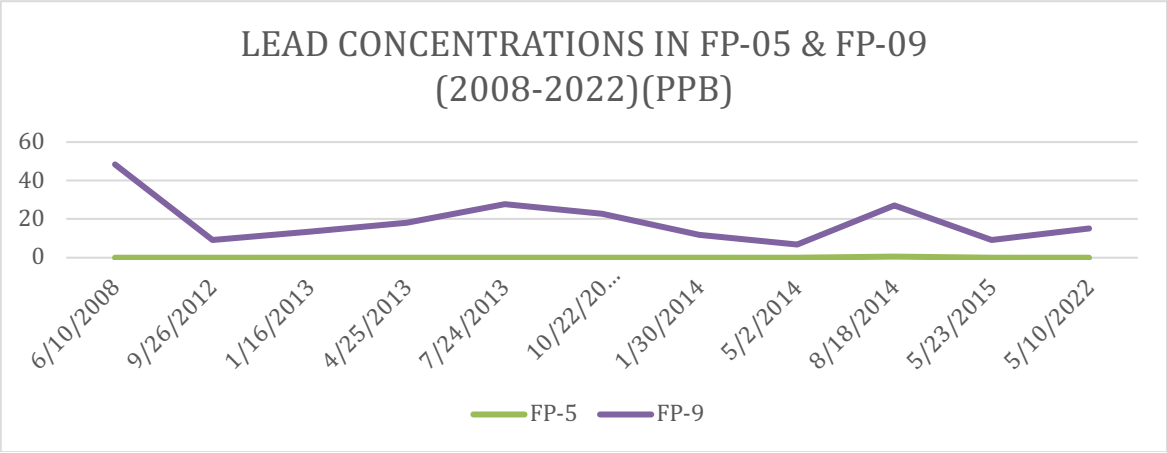
Several laboratory qualifiers have accompanied the DRO and ORO readings over the years (Table 3). These laboratory quality control notes indicate that the DRO/ORO concentrations reported may be impacted by other constituents in the groundwater samples including gasoline, volatile organic substances, other diesel-related material, etc., depending on the qualifier used for each specific sample.

FP-5 and FP-9 Metals Results Over Time

The May 2022 lead, zinc, chromium, and fluoride analytical laboratory results were compared to historical metals data from the Site and ROD Screening Levels. The findings are summarized below.

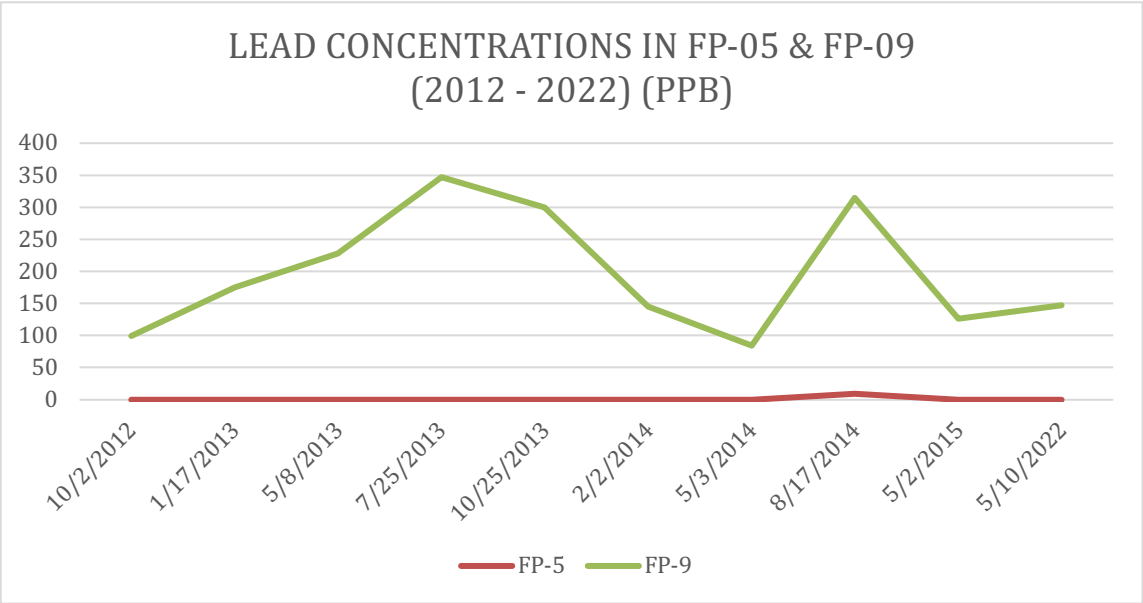
Lead concentrations in monitoring well FP-5 in OU3 remained non-detectable. Concentrations in FP-9, located in the wetland area of OU4, continued to vary and exceeded the ROD Screening Criteria of 2.5 ppb. Historical concentrations at this well are presented in Chart 6 below.

Chart 6. Lead Concentrations in FP-05 and FP-09 Between 2008 and 2022



Zinc concentrations in monitoring well FP-5 in OU3 remained non-detectable in May 2022 (the slight increase in August 2014 was due to an elevated laboratory reporting limit). Concentrations in FP-9, located in the wetland area of OU4, continued to vary and slightly exceeded the ROD Screening Criteria of 120 ppb in May 2022 with a concentration of 147 ppb. Historical concentrations at this well are presented in Chart 7.

Chart 7. Zinc Concentrations in FP-05 and FP-09 Between 2012 and 2022

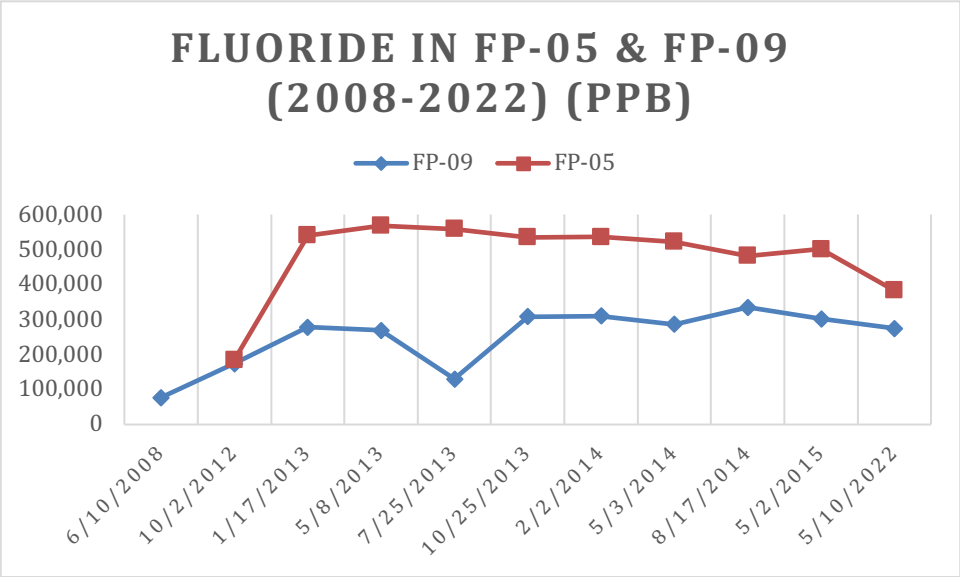


Chromium concentrations were not measured at monitoring wells FP-5 and FP-9 prior to May 2022. FP-5 had undetectable concentrations of chromium. Groundwater at FP-9 had 11.7 parts per billion (ppb) of chromium, slightly higher than the ROD Screening Criteria for the Site (11.0 ppb).

Fluoride concentrations in monitoring wells FP-5 and FP-9 have historically been higher than other wells at the Site due to their locations within (i.e., FP-05) or directly down-gradient from the aluminum dross fill (i.e., FP-9). Monitoring of these wells for fluoride during the transition between wet and dry season (*i.e.,* May) was agreed upon between ORRCO and DEQ because May is when concentrations are likely to be the highest for fluoride (i.e., "worst case").

Chart 8 below shows the fluoride concentrations at FP-05 and FP-09 between 2008 and 2022. There is a decrease in fluoride concentrations in both wells between 2015 (i.e., post-remediation) and May of 2022, particularly in FP-5. This decrease is likely due to the post-remediation asphalt cap that decreases the geochemical reactions between the aluminum dross fill and groundwater and thereby decreases the mobilization of fluoride into groundwater combined with the dross approaching steady state.

Chart 8. Fluoride Concentrations in FP-05 and FP-09 Between 2008 and 2022



Conclusions and Recommendations

The May 2022 groundwater monitoring and subsequent LNAPL elevation data indicated a potential groundwater mound in the area of FP-07. This mound has not been previously observed and was shown to decrease from May to November 2022. Monthly monitoring and removal of LNAPL at groundwater wells FP-03 and FP-07 indicate LNAPL was present in May 2022 and decreased over time from May 2022 to November 2022.

Recommendation – Continue to monitor the LNAPL and groundwater elevations in wells FP-03 and FP-07 and remove the LNAPL as practicable.

Diesel- and Oil-range organics (DRO/ORO) in groundwater at FP-3 was reduced from concentrations measured in 2015, but in FP-7, the combination of DRO and ORO concentrations indicated continued elevated levels, likely related to the presence of free floating LNAPL at the time of groundwater sampling.

Fluoride at well FP-05, and fluoride, chromium, lead, and zinc at well FP-09 were above their respective ROD screening criteria.

Recommendation – Continue to monitor the DRO and ORO in wells FP-03 and FP-07, and fluoride, chromium, lead, and zinc in wells FP-05 and FP-09.

This report is the first annual post-closure monitoring report. Additional reports will be submitted annually for 4 years (i.e., 2026) until approval is granted to discontinue monitoring.

Should you have any questions concerning this report, please contact the undersigned.

Regards,

Jill Betts, R.G.

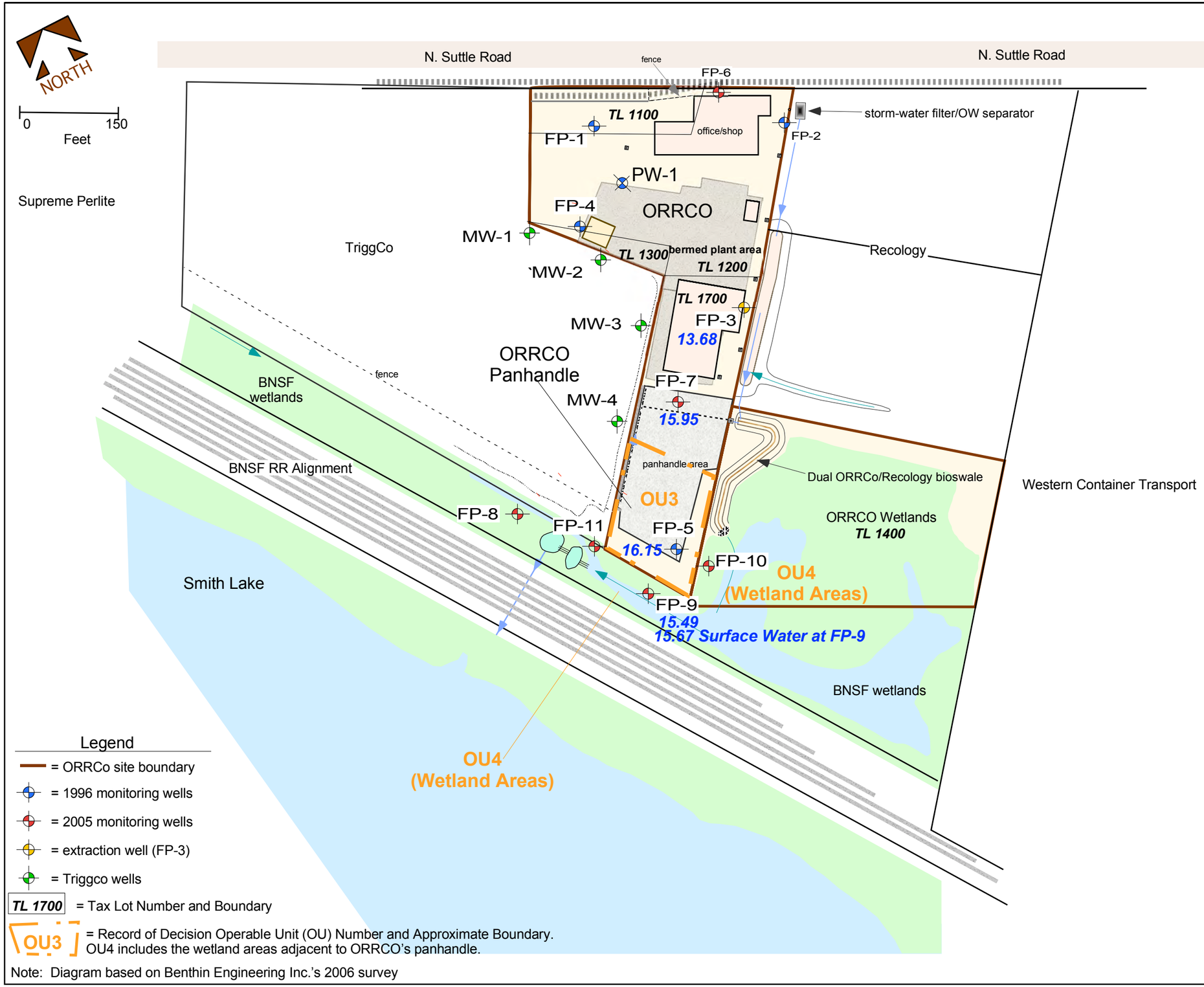
Report Reviewed by:

David G. Coles, M.S., R.G. (retired)

cc: Mr. Scott Briggs, ORRCO
Mr. Bill Briggs, ORRCO
Mr. Kevin T. Sasse, Dunn Carney
Mr. Chris Harris, Esq., ORRCO's General Counsel

Attachments:

- Figure 1. ORRCO Site Map
- Figure 2. ORRCO Site May 2022 Post-Closure Monitoring Event Groundwater Elevation Data
- Table 2. Field Monitoring Data for September 2012 through May 2022: Groundwater and Surface Water
- Table 3. Laboratory Analytical Results for Groundwater Monitoring (2013-2022)
- Attachment A – DEQ Order on Consent, Certificate of Completion
- Attachment B – *Merit USA/FPI/ORRCO Five-Year Post-Closure Monitoring Plan for Operable Units 3 and 4, 4150 N. Suttle Road, Portland, Oregon (DEQ Order No. LQSR-NWR-04-02),* by Coles & Betts Environmental Consulting, dated July 22, 2021
- Attachment C – Apex Labs Final Report and Chain of Custody, dated June 6, 2022



Legend

- = ORRCo site boundary
- = 1996 monitoring wells
- = 2005 monitoring wells
- = extraction well (FP-3)
- = Triggco wells

TL 1700 = Tax Lot Number and Boundary

OU3 = Record of Decision Operable Unit (OU) Number and Approximate Boundary. OU4 includes the wetland areas adjacent to ORRCO's panhandle.

Note: Diagram based on Benthin Engineering Inc.'s 2006 survey

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Approx. Scale: 1" = 150'	Approved By	Date/Revision
		12/2/2020 Rev. 0

Figure 1. ORRCO site showing site features including groundwater monitoring wells and Operable Units.

NORTH

0 150
Feet

Supreme Perlite

N. Suttle Road

N. Suttle Road

fence

FP-6

TL 1100

FP-1

office/shop

storm-water filter/OW separator

FP-2

PW-1

ORRCO

FP-4

bermed plant area

MW-1

TriggCo

TL 1300

Recology

`MW-2

TL 1200

TL 1700

FP-3

13.68

MW-3

15.00

14.00

ORRCO
Panhandle

fence

FP-7

BNSF
wetlands

MW-4

15.95

16.00

panhandle area

BNSF RR Alignment

Dual ORRCo/Recology bioswale

Western Container Transport

OU3

FP-8

FP-11

FP-5

ORRCO Wetlands
TL 1400

16.15

FP-10

FP-9

OU4
(Wetland Areas)

Smith Lake

15.49

15.67 Surface Water Elev. at FP-9

BNSF wetlands

OU4
(Wetland Areas)

Note:
Previous groundwater elevation data shows a gneral groundwater from from the northeast to the southwest. The May 2022 groundwater mounding at FP-7 may be due to recharge from the bioswale, a record amount of precipitation, and/or free product/water level measurement errors.

Legend

- = ORRCo site boundary
- = 1996 monitoring wells
- = 2005 monitoring wells
- = extraction well (FP-3)
- = Triggco wells

16.00 = Groundwater Elevation Contour (feet) with Elevation (feet above mean sea level)

16.15 = Groundwater Elevation (feet) at Groundwater Monitoring Well

= Groundwater Flow Direction

TL 1700 = Tax Lot Number and Boundary

OU3 = Record of Decision Operable Unit (OU) Number and Approximate Boundary. OU4 includes the wetland areas adjacent to ORRCO's panhandle.

Note: Diagram based on Benthin Engineering Inc.'s 2006 survey

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Approx. Scale: 1" = 150'	Approved By	Date/Revision
		11/22/2022 Rev. 0

Figure 2. ORRCO site May 2022 Post-Closure Monitoring Event Groundwater Elevation Data.

Table 2. Field Monitoring Data for September 2012 through May 2022: Groundwater and Surface Water
ORRCO, 4150 N Suttle Rd, Portland, OR

		Groundwater Monitoring Wells															Surface Water			
		Merit USA/FPI On-Site Monitoring Wells											Triggco Off-Site Monitoring Wells				Surface Water Sampling Points Next to Wells			
		FP-1	FP-2	FP-3 *	FP-4	FP-5	FP-6	FP-7 *	FP-8	FP-9	FP-10	FP-11	MW-1	MW-2	MW-3	MW-4	SW-FP-09	SW-FP-10	SW-FP-11	SW-SG-01
Top of Casing Elevation: Pre-Remediation (ft)		23.85	24.04	24.96	24.36	25.81	27.22	24.88	20.26	17.18	16.3	18.68	24.18	21.84	19.94	18.55	-	-	-	-
Top of Casing Elevation: Post-Remediation (ft)		23.85	24.04	24.96	24.36	34.73	27.22	24.88	20.26	17.18	16.3	18.68	24.18	21.84	19.94	18.55	17.18	16.3	18.68	-
Top of Casing Elevation: Post-Paving (ft)		-	24.78	24.57	-	31.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monitoring Date	Parameter																			
Before the Remedial Action																				
9/26/12	Water Level Depth (ft)	7.68	7.37	10.25	10.12	13.23	10.52	11.02	8.08	5.09	3.29	6.51	-	-	-	-	-	-	-	-
	Water Level Elevation (ft)	16.17	16.67	14.71	14.24	12.58	16.70	13.86	12.18	12.09	13.01	12.17	-	-	-	-	-	-	-	-
	pH	6.76	7.15	-	6.73	9.29	6.84	7.00	6.92	9.55	9.34	8.02	-	-	-	-	-	-	-	-
	Temperature (^{O}C)	20.20	19.90	-	14.60	19.90	16.90	16.00	17.40	14.30	17.80	15.30	-	-	-	-	-	-	-	-
	Conductivity (uS/cm)	502.00	679.00	-	725.00	2,120.00	208.00	1,606.00	1,269.00	2,820.00	3,450.00	1,875.00	-	-	-	-	-	-	-	-
	DO (mg/L)	2.36	1.14	-	2.14	0.72	5.17	1.45	2.31	1.71	0.24	2.26	-	-	-	-	-	-	-	-
	Eh (mV)	-102.00	-108.00	-	-90.00	-143.00	121.00	-134.00	-116.00	-155.00	-156.00	-189.00	-	-	-	-	-	-	-	-
During the Remedial Action																				
1/16/13	Water Level Depth (ft)	5.76	4.79	7.74	7.37	18.89	8.03	7.99	4.93	1.50	0.46	3.10	6.79	4.79	2.92	1.71	-	-	-	-
	Water Level Elevation (ft)	18.09	19.25	17.22	16.99	15.84	19.19	16.89	15.33	15.68	15.84	15.58	17.39	17.05	17.02	16.84	-	-	-	-
	pH	6.93	6.66	-	6.62	10.19	6.85	8.60	7.18	9.83	9.18	8.01	-	5.78	6.78	6.90	7.52	7.48	7.58	7.33
	Temperature (^{O}C)	12.70	17.30	-	12.50	12.10	13.90	14.10	7.50	21.70	8.70	8.00	-	10.20	13.60	10.30	4.20	4.60	6.20	4.60
	Conductivity (uS/cm)	480.00	269.00	-	594.00	3,970.00	144.00	2,190.00	376.00	3,040.00	3,570.00	1,245.00	-	143.00	1,046.00	1,480.00	359.00	404.00	369.00	374.00
	DO (mg/L)	1.30	2.46	-	0.20	3.95	5.02	1.23	5.40	1.54	3.50	6.67	-	3.75	4.00	4.16	7.04	6.94	6.07	6.67
	Eh (mV)	-98.00	-33.00	-	-47.00	-188.00	78.00	49.00	-100.00	-14.00	-19.00	-195.00	-	131.00	25.00	-129.00	100.00	92.00	91.00	95.00
4/25/13	Water Level Depth (ft)	6.89	6.48	9.11	8.53	19.57	9.65	9.55	5.45	2.24	1.22	3.87	8.25	5.93	4.85	2.82	-	-	-	-
	Water Level Elevation (ft)	16.96	17.56	15.85	15.83	15.16	17.57	15.33	14.81	14.94	15.08	14.81	15.93	15.91	15.09	15.73	-	-	-	-
	pH	6.56	(pH meter problems)	7.78	6.49	10.73	6.46	7.74	7.97	9.90	9.29	8.61	-	6.55	8.42	6.82	8.74	8.58	8.95	8.36
	Temperature (^{O}C)	16.80	13.80	13.90	14.20	17.50	13.40	15.50	13.80	14.10	13.10	14.00	-	13.40	14.70	11.30	22.80	19.00	24.70	18.50
	Conductivity (uS/cm)	454.00	440.00	1,488.00	635.00	3,860.00	167.00	1,840.00	613.00	2,890.00	3,330.00	1,823.00	-	579.00	1,167.00	1,077.00	669.00	705.00	651.00	654.00
	DO (mg/L)	0.78	1.36	0.44	0.70	1.12	3.12	0.40	0.49	0.74	0.41	0.52	-	1.73	1.01	1.62	3.26	2.38	3.55	2.14
	Eh (mV)	-86.00	-40.00	-144.00	-87.00	-71.00	100.00	-184.00	-155.00	-48.00	-64.00	-209.00	-	-67.00	-10.00	-138.00	36.00	-8.00	-5.00	46.00
7/24/13	Water Level Depth (ft)	7.75	7.56	10.25	9.85	21.26	10.68	10.94	7.51	4.25	2.94	5.78	9.66	7.30	5.34	4.12	-	-	-	-
	Water Level Elevation (ft)	16.10	16.48	14.71	14.51	13.47	16.54	13.94	12.75	12.93	13.36	12.90	14.52	14.54	14.60	14.43	-	-	-	-
	pH	6.71	7.04	7.30	6.64	11.35	6.55	7.20	6.89	9.97	9.75	8.43	-	6.64	6.56	6.95	-	-	-	-
	Temperature (^{O}C)	17.00	13.90	15.70	14.00	15.80	15.20	14.90	17.50	19.10	17.90	18.10	-	14.10	16.10	14.90	-	-	-	-
	Conductivity (uS/cm)	539.00	563.00	1,222.00	627.00	2,980.00	179.90	1,420.00	943.00	3,640.00	3,530.00	1,091.00	-	815.00	1,362.00	1,006.00	-	-	-	-
	DO (mg/L)	0.19	0.39	0.63	0.27	0.41	0.51	0.55	0.49	0.32	0.43	0.60	-	0.44	0.50	0.32	-	-	-	-
	Eh (mV)	-111.00	-55.00	-101.00	-51.00	-261.00	72.00	-155.00	-105.00	-161.00	-199.00	-232.00	-	-101.00	-33.00	-124.00	-	-	-	-
After the Remedial Action																				
10/22/13	Water Level Depth (ft)	8.23	8.79	10.47	10.60	17.49	11.20	11.58	6.99	3.51	2.53	5.14	10.42	8.04	6.03	4.71	-	-	-	-
	Water Level Elevation (ft)	15.62	15.99	14.10	13.76	13.88	16.02	13.30	13.27	13.67	13.77	13.54	13.76	13.80	13.91	13.84	-	-	-	-
	pH	6.70	6.83	7.16	6.57	10.13	6.59	7.93	7.39	10.69	9.56	8.76	-	6.74	6.79	6.98	7.94	8.02	11.40	12.62
	Temperature (^{O}C)	15.40	15.70	15.80	14.10	14.80	12.40	16.20	15.80	14.90	15.50	15.70	-	15.20	16.30	14.70	13.90	13.10	16.20	17.80
	Conductivity (uS/cm)	553.00	498.00	1,303.00	6.78	3.81	201.00	1,420.00	416.00	3.08	3.31	1,192.00	-	789.00	1,390.00	1,437.00	445.00	749.00	496.00	445.00
	DO (mg/L)	0.22	0.18	0.16	0.23	0.34	0.30	0.34	0.35	0.41	0.41	0.22	-	0.18	0.36	0.18	0.56	32.00	1.67	1.05
	Eh (mV)	-17.00	4.00	-84.00	-30.00	-195.00	59.00	-229.00	-71.00	-100.00	15.00	-215.00	-	-106.00	111.00	-78.00	40.00	0.74	-55.00	11.00
1/30/14	Water Level Depth (ft)	8.37	9.24	10.35	10.45	17.08	10.64	11.42	7.09	3.12	2.23	4.76	10.29	7.89	5.88	4.54	-	-	-	-
	Water Level Elevation (ft)	15.48	15.54	14.22	13.91	14.29	16.58	13.46	13.17	14.06	14.07	13.92	13.89	13.95	14.06	14.01	-	-	-	-
	pH	6.80	8.15	8.66	6.47	11.72	9.26	10.18	7.32	11.12	9.84	8.47	-	8.22	9.23	8.91	12.76	8.63	8.76	8.30
	Temperature (^{O}C)	14.30	13.10	12.90	11.50	14.70	12.10	15.60	5.80	8.20	9.70	7.60	-	13.80	13.80	12.20	6.10	9.20	8.20	7.20
	Conductivity (uS/cm)	460.00	451.00	1,318.00	602.00	3.63	216.00	1,578.00	241.00	291.00	3.01	225.00	-	703.00	1,154.00	1,593.00	313.00	357.00	319.00	332.00
	DO (mg/L)	0.10	0.14	0.19	0.27	0.14	0.28	0.09	0.41	0.36	0.23	0.27	-	0.23	0.23	0.16	0.86	0.65	0.77	0.84
	Eh (mV)	-83.00	-62.00	-53.00	-16.00	-362.00	16.00	-224.00	44.00	-142.00	-53.00	-5.00	-	-89.00	-72.00	-122.00	47.00	8.00	30.00	3.00

Table 2. Field Monitoring Data for September 2012 through May 2022: Groundwater and Surface Water
ORRCO, 4150 N Suttle Rd, Portland, OR

		Groundwater Monitoring Wells															Surface Water			
		Merit USA/FPI On-Site Monitoring Wells											Triggco Off-Site Monitoring Wells				Surface Water Sampling Points Next to Wells			
		FP-1	FP-2	FP-3 *	FP-4	FP-5	FP-6	FP-7 *	FP-8	FP-9	FP-10	FP-11	MW-1	MW-2	MW-3	MW-4	SW-FP-09	SW-FP-10	SW-FP-11	SW-SG-01
Top of Casing Elevation: Pre-Remediation (ft)		23.85	24.04	24.96	24.36	25.81	27.22	24.88	20.26	17.18	16.3	18.68	24.18	21.84	19.94	18.55	-	-	-	-
Top of Casing Elevation: Post-Remediation (ft)		23.85	24.04	24.96	24.36	34.73	27.22	24.88	20.26	17.18	16.3	18.68	24.18	21.84	19.94	18.55	17.18	16.3	18.68	-
Top of Casing Elevation: Post-Paving (ft)		-	24.78	24.57	-	31.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monitoring Date	Parameter																			
5/1/14	Water Level Depth (ft)	6.81	6.66	8.28	8.48	15.66	9.06	9.41	5.22	1.70	0.76	3.21	8.20	5.80	3.93	2.70	-	-	-	-
	Water Level Elevation (ft)	17.04	18.12	16.29	15.88	15.71	18.16	15.47	15.04	15.48	15.54	15.47	15.98	16.04	16.01	15.85	-	-	-	-
	pH	6.64	6.53	7.57	6.63	10.50	6.63	8.74	7.23	10.04	9.20	8.33	-	6.57	6.47	7.08	7.75	7.60	7.67	7.47
	Temperature (^{O}C)	14.90	14.50	13.80	13.40	14.10	11.50	14.70	12.70	13.20	12.90	12.90	-	13.00	13.70	12.60	17.50	17.50	19.30	18.90
	Conductivity (uS/cm)	324.00	317.00	99.70	605.00	3.03	148.00	1,462.00	256.00	2.62	2.97	477.00	-	286.00	754.00	1,003.00	321.00	342.00	260.00	269.00
	DO (mg/L)	0.17	0.14	0.18	0.21	0.26	0.24	0.12	0.20	0.21	0.24	0.23	-	0.15	0.21	0.19	0.20	1.30	0.53	0.55
	Eh (mV)	-114.00	-25.00	-235.00	-127.00	-100.00	67.00	-299.00	-120.00	-253.00	-214.00	-223.00	-	-75.00	-23.00	-133.00	-70.00	-45.00	1.00	39.00
5/2/15	Water Level Depth (ft)	6.84	6.85	8.81	8.69	16.16	9.33	9.97	5.53	2.28	1.28	3.91	8.43	6.14	4.20	2.93	-	-	-	-
	Water Level Elevation (ft)	17.01	17.93	15.76	15.67	15.21	17.89	14.91	14.73	14.90	15.02	14.77	15.75	15.70	15.74	15.62	-	-	-	-
	pH			8.21	6.72	10.29		7.31	7.03	9.94	9.15	7.84		6.40	6.63	7.14	8.22	7.63	7.78	8.08
	Temperature (^{O}C)			14.70	14.20	15.30		15.50	18.60	14.40	13.60	15.20		13.90	14.20	13.60	22.00	16.60	15.30	14.90
	Conductivity (uS/cm)			864.00	298.00	205.00		659.00	236.00	2.23	1,768.00	393.00		236.00	664.00	827.00	186.00	275.00	259.00	267.00
	DO (mg/L)			0.17	0.17	0.11		0.14	0.17	0.19	0.18	0.20		0.37	0.29	0.28	3.23	2.03	1.45	1.76
	Eh (mV)			-152.00	-104.00	-2,566.00		-179.00	-119.00	-129.00	-192.00	-177.00		-33.00	-45.00	-153.00	-32.00	63.00	31.00	48.00
December 2017	Water Level Depth (ft)	-	-	-	-	15.61	-	-	-	1.68	0.88	3.30	-	-	-	-	-	-	-	-
	Water Level Elevation (ft)	-	-	-	-	15.76	-	-	-	15.50	15.42	15.38	-	-	-	-	-	-	-	-
	pH	-	-	-	-	10.64	-	-	-	11.23	10.33	8.64	-	-	-	-	9.37	4.33	9.33	8.83
	Temperature (^{O}C)	-	-	-	-	15.50	-	-	-	10.60	10.80	11.40	-	-	-	-	4.90	6.10	4.50	5.80
	Conductivity (uS/cm)	-	-	-	-	3.12	-	-	-	-	-	-	-	-	-	-	-	-	-	170.00
	DO (mg/L)	-	-	-	-	0.19	-	-	-	0.19	0.12	0.16	-	-	-	-	1.26	1.43	1.32	1.18
	Eh (mV)	-	-	-	-	122.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May 2019	Water Level Depth (ft)	-	-	-	-	15.88	-	-	-	2.13	1.20	3.79	-	-	-	-	-	-	-	Broken
	Water Level Elevation (ft)	-	-	-	-	15.49	-	-	-	15.05	15.10	14.89	-	-	-	-	-	-	-	-
	pH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Temperature (^{O}C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Conductivity (uS/cm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DO (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Eh (mV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
January 2020	Water Level Depth (ft)	-	-	-	-	15.98	-	-	-	2.06	1.35	3.66	-	-	-	-	1.83	1.25	Dry	Broken
	Water Level Elevation (ft)	-	-	-	-	15.39	-	-	-	15.12	14.95	15.02	-	-	-	-	16.62	15.20	-	-
	pH	-	-	-	-	-	-	-	-	9.99	-	-	-	-	-	-	7.10	7.16	-	-
	Temperature (^{O}C)	-	-	-	-	-	-	-	-	9.39	-	-	-	-	-	-	7.14	7.03	-	-
	Conductivity (uS/cm)	-	-	-	-	-	-	-	-	3,614.00	-	-	-	-	-	-	101.00	175.00	-	-
	DO (mg/L)	-	-	-	-	-	-	-	-	0.88	-	-	-	-	-	-	6.66	5.52	-	-
	Eh (mV)	-	-	-	-	-	-	-	-	2.20	-	-	-	-	-	-	32.00	25.70	-	-
10-May 2022	Water Level Depth (ft)	-	-	10.89	-	15.22	-	8.93	-	1.69	-	-	-	-	-	-	1.51	-	-	-
	Water Level Elevation (ft)	-	-	13.68	-	16.15	-	15.95	-	15.49	-	-	-	-	-	-	15.67	-	-	-
	pH	-	-	8.98	-	10.90	-	10.17	-	10.88	-	-	-	-	-	-	-	-	-	-
	Temperature (^{O}C)	-	-	15.25	-	15.09	-	15.91	-	13.61	-	-	-	-	-	-	-	-	-	-
	Conductivity (uS/cm)	-	-	1.36	-	3.49	-	2.43	-	3.45	-	-	-	-	-	-	-	-	-	-
	DO (mg/L)	-	-	0.00	-	0.00	-	0.00	-	0.00	-	-	-	-	-	-	-	-	-	-
	ORP (mV)	-	-	-225.00	-	-206.00	-	-28.00	-	-264.00	-	-	-	-	-	-	-	-	-	-

Notes:

FP-3 is an extraction well, but is being used as a groundwater monitoring well

* Water depth measurements are uncertain due to the presence of free product (oil).

"-" not measured

FP-5: Top of Casing (TOC) was raised subsequent to panhandle fill/remediation activities.

DEQ did not require groundwater monitoring field parameters or sampling for the May 2019 monitoring event.

Table 3
Laboratory Analytical Results for Groundwater Monitoring (2013-2022)
ORRCO, 4150 N Suttle Rd, Portland, OR

			NWTPH-Dx				EPA 6020A (Diss)						EPA 300.0		300.0 (Diss)	
			Oil Range Organics		Diesel Range Organics		Chromium (field filtered)		Lead (field filtered)		Zinc (field filtered)		Fluoride		Fluoride (filtered)	
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
DEQ ROD Screening Criteria			-		-		11		2.5		120		1940		1940	
Field ID	**Date Sampled**	**Lab Report Number**														
FP-03	5/7/2013	A3E0205	404	U	**2,380**	F-11, H-02	-		1	U	4	U	**491**		-	
	7/26/2013	A3G0625	388	U	**3,700**	F-11	-		1	U	4	U	**335**		-	
	10/29/2013	A3K0111	**465**	F-01	**4,460**	F-11, F-20, F-01	-		0.2	U	4	U	**532**		-	
	2/1/2014	A4B0012	400	U	**3,630**	F-20	-		1	U	4	U	**861**		-	
	5/6/2014	A4E0293	392	U	**3,130**	F-11, F-20	-		0.2	U	4	U	**1,440**		-	
	8/8/2014	A4H0219	404	U	**3,180**	F-11	-		0.2	U	4	U	**1,150**		-	
	5/23/2015	A5E0699	412	U	**7,760**	F-11 F-20 F-01	-		0.2	U	4	U	-		-	
	5/10/2022	A2E0410	151	U	**4,120**	B-02	-		-		-		-		-	
FP-05	9/28/2012	A12I538	388	U	**479**	F-11	-		0.2	U	8	U	**185,000**		-	
	1/22/2013	A13A498	388	U	**945**	F-13	-		1	U	4	U	**540,000**		-	
	5/7/2013	A3E0205	377	U	**702**	F-20	-		1	U	4	U	**568,000**		-	
	7/26/2013	A3G0625	388	U	**545**	F-18	-		1	U	4	U	**559,000**		-	
	10/23/2013	A3J0641	388	U	**1,080**	F-18	-		0.2	U	4	U	**535,000**	A-01	-	
	2/1/2014	A4B0012	400	U	**767**	F-18	-		1	U	4	U	**536,000**		-	
	5/9/2014	A4E0293	400	U	**617**	F-11, F-20	-		0.2	U	4	U	**522,000**		-	
	8/24/2014	A4H0574	392	U	**729**	F-20	-		**0.567**		**9.36**		**482,000**		-	
	5/23/2015	A5E0699	-		-		-		0.2	U	4	U	**501,000**		**502,000**	
	5/10/2022	A2E0410	-		-		2	U	0.2	U	4	U	**383,000**		-	
FP-07	10/4/2012	A12J169	**2090**	F-16	**3,340**	F-11	-		**1**		4	U	-		-	
	1/25/2013	A13A498	381	U	**3,120**	F-01, F-11	-		**1**		4	U	-		-	
	5/7/2013	A3E0205	**420**		**2,680**	F-11, F-20	-		**1.16**		4	U	-		-	
	7/26/2013	A3G0625	388	U	**5,540**	F-11	-		**1.29**		4	U	-		-	
	10/29/2013	A3K0111	388	U	**3,470**	F-11	-		**0.656**		4	U	-		-	
	2/1/2014	A4B0012	404	U	**3,410**	F-20	-		1	U	4	U	-		-	
	5/6/2014	A4E0293	404	U	**2,960**	F-11	-		0.2	U	4	U	**43,900**		-	
	8/8/2014	A4H0219	392	U	**3,980**	F-11	-		**0.4**		4	U	**13,200**		-	
	5/23/2015	A5E0699	396	U	**4,830**	F-01	-		**0.322**		4	U	-		-	
	5/10/2022	A2E0410	**2,070**		**2,670**		-		-		-		-		-	
FP-09	6/10/2008	A806098	-		-		-		**48.4**		-		**77,200**		-	
	10/2/2012	A12J169	**1200**	F-16	**1,530**	F-11	-		**9.28**		**99.4**		**174,000**		-	
	1/17/2013	A13A375	392	U	**740**	F-11	-		**13.5**		**175**		**278,000**		-	
	5/8/2013	A3E0300	860	U	**838**	F-11, F-20	-		**18**		**228**		**269,000**		-	
	7/25/2013	A3G0625	430	U	**910**	F-18	-		**27.8**		**347**		**130,000**		-	
	10/25/2013	A3J0735	412	U	**939**	A-01, F-01	-		**22.8**		**300**		**308,000**		-	
	2/2/2014	A4B0012	400	U	**267**	F-18	-		**11.8**		**145**		**310,000**		-	
	5/3/2014	A4E0121	381	U	**767**	F-13, F-20, F-01	-		**6.81**		**84.3**		**286,000**		-	
	8/17/2014	A4H0403	460	U	**1,850**	F-11	-		**27.1**		**315**		**335,000**		-	
	5/2/2015	A5E0053	-		-		-		**9.33**		**126**		**302,000**		**301,000**	
	5/10/2022	A2E0410	-		-		**11.7**		**15.3**		**147**		**274,000**		-	

Notes:

1. µg/L = Micrograms per liter.
2. **Bold** values indicate the analyte was detected above method detection limits.
3. Red values indicate that the sample exceeds RBC and/or ROD Criteria.
4. ROD = Record of Decision
5. "-" = not analyzed or no DEQ ROD Screening Criteria.

Lab Qualifiers

U = Analyte was not detected above the reported method detection limit.
A-01 - Detected hydrocarbon pattern resembles a mixture of weathered diesel and weathered gasoline.
B-2 - Analyte detected in an associated blank at a level between one-half the MRF and the MRL.
H-02 - This sample was extracted outside of the recommended holding time.
F-01 -This sample appears to contain volatile range organics.
F-11 - The hydrocarbon pattern indicates possible weathered diesel, or a contribution from a related component.
F-13 - The chromatographic pattern does not resemble the fuel standard used for quantitation.
F-16 - Results for oil are biased high due to overlap from the reported diesel result.
F-18 - Result for Diesel (DRO C12-C24) is due to overlap from Gasoline or a Gasoline Range product.
F-20 - Result for Diesel is Estimated due to overlap from the Gasoline Range.

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

In the Matter of: **Oil Re-Refining Company, Fuel Processors, Inc. and Merit USA, Inc.**	**Order on Consent** **DEQ No. LQSR-NWR-12-09** **CERTIFICATION OF COMPLETION**

1. Findings

A. On September 18, 2012, the Oregon Department of Environmental Quality (DEQ) entered into an Order on Consent (Consent Order) DEQ No. LQSR-NWR-12-09 with Oil Re-Refining Company, Fuel Processor's Inc., and Merit USA, Inc., (collectively, Respondents) concerning the Property at 4150 N. Suttle Road in Portland, Oregon (the Site). The Site is referred to as Merit Oil, and assigned Environmental Cleanup Site Information #673 in DEQ Northwest Region Cleanup Program files.

B. Under the terms of the Consent Order, Respondents agreed to remove soil and sediment containing hotspot levels of lead, chromium, and/or zinc, implement engineering and institutional controls for remaining hazardous substances at concentrations above acceptable risk levels, and perform post-cleanup monitoring, in accordance with DEQ's Record of Decision dated June 2011. Work completed by Respondents includes:

- Removal of sediment hotspots from wetland areas of the facility, capping remaining sediment with contaminants above risk-based concentrations with clean soil, and restoring the wetland area with native plants;

- Excavation of hotspot fill from the panhandle upland area of the site;
- Off-site disposal of soil and sediment that exceeds hotspot levels;
- Consolidation of non-hotspot sediment within the upland panhandle area;
- Benching the bank of the panhandle area that borders the wetlands and capping the bank with clean fill;
- Capping the panhandle area with asphalt to minimize infiltration of rainfall through contaminated fill;
- Re-engineering the bank between the facility and the adjacent Triggco property to mitigate potential erosion and overland transport of contaminated fill to the wetland through Triggco's stormwater collection system;
- Periodic removal of light, non-aqueous phase liquid from monitoring wells FP-3 and FP-7;
- Surface water and groundwater monitoring and reporting; and
- Installation of a stormwater management system.

C. Site grading, removal and capping and excavation work began in November 2013, and was completed in September 2014. Approximately 1,830 tons of sediment and soil were removed and disposed of off-site at a permitted solid waste landfill. Approximately 39,000 square feet of wetland were remediated. The panhandle and upland area was capped with approximately 33,000 square feet of asphalt to prevent leaching of panhandle material, and to prevent direct contact with site workers. A lined stormwater swale with a filter at its discharge point was constructed along the western site boundary. The remediation work is summarized in an *Interim Project Completion Report* dated February 2, 2013, and a *Project Completion Report* dated March 3, 2014.

D. Seven surface water and/or groundwater monitoring events were completed between October 2013 and January 2020. The monitoring results are summarized in a report entitled *Request for Certification of Completion with Groundwater Monitoring* and dated September 21, 2020.

E. On February 1, 2021, DEQ provided public notice and opportunity to comment on a proposed Certification of Completion determination for the facility in accordance with ORS 465.320 and 465.325(10)(b). Copies of the work plans and reports completed for the project were available to review at DEQ's Northwest Region office in Portland and on DEQ's website. The public notice was published on February 1, 2021, in the *Oregon Secretary of State's Bulletin*, and in the Oregonian newspaper. The comment period was closed on March 2, 2021. No comments were received.

F. Based on the reports and other information submitted by Respondents, and DEQ's inspection and oversight of activities, DEQ finds that ORRCO, Fuel Processors, Inc, and Merit USA, Inc. have satisfactorily completed the Consent Order scope of work.

2. Conclusions

A. Based on the reports and other information submitted by Respondents, and DEQ's inspection and oversight of activities, DEQ finds that Respondents ORRCO, Fuel Processors, Inc, and Merit USA, Inc. have satisfactorily completed the Consent Order scope of work.

B. No further remedial actions are required at the site to protect the public health, safety, and welfare or the environment, except as provided under Subsection 3.B. of this Certification.

3. Conditions

A. This Certification of Completion applies only to the satisfactory completion of the work conducted by Respondents pursuant to the Consent Order.

B. Institutional and Engineering controls are memorialized in an Easement and Equitable Servitudes (E&ES) that was recorded with Multnomah County on October 7, 2022. Controls include maintenance of the asphalt cap and bank and wetland soil caps, implementation of the DEQ-approved contaminated media management plan (CMMP) dated July 22, 2021, and continued groundwater monitoring and reporting consistent with the Five-Year Post-Closure Monitoring Plan dated July 22, 2021.

C. DEQ's determination that no further remedial action is necessary at the Site may be withdrawn upon discovery of new information showing that public health, safety, and welfare or the environment are not being protected.

D. DEQ does not, by this certification, assume liability for any claim arising from acts or omissions of Respondents or its officers, employees, agents, successors, subsidiaries, or assigns relating to actions pursuant to the Consent Order.

4. Notice

This order constitutes certification of completion under ORS 465.325(10), and may be appealed by any aggrieved person in accordance with ORS 465.325(10)(c).

ISSUED BY:

State of Oregon

Department of Environmental Quality

By: _____
Kevin Parrett, Manager
DEQ Northwest Region Cleanup Program

10/12/2022
Date

The foregoing instrument is acknowledged before me this 12th day of October, 2022, by Kevin Parrett, Northwest Region Cleanup Manager of the Oregon Department of Environmental Quality, on its behalf.

OFFICIAL STAMP
BRENT JOHN FUNK
NOTARY PUBLIC - OREGON
COMMISSION NO. 1004970
MY COMMISSION EXPIRES OCTOBER 26, 2024

_____
NOTARY PUBLIC FOR OREGON
My commission expires: 10/26/2024

CERTIFICATE OF SERVICE

I certify that I served a true copy of the above Certification of Completion by depositing it in the United States mail, postage prepaid, and addressed to the following persons:

Kate L. Moore
Dunn Carney LLP
851 SW 6th Ave #1500
Portland, OR 97204

_____
(Name)

_____
(Date)

COLES+BETTS environmental consulting

July 22, 2021

Mr. Mark T. Pugh, R.G.
Project Manager
DEQ Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-5884

Regarding: **Merit USA/FPI/ORRCO Five-Year Post-Closure Monitoring Plan for Operable Units 3 and 4, 4150 N. Suttle Road, Portland, Oregon (DEQ Order No. LQSR-NWR-04-02)**

Dear Mr. Pugh:

This Monitoring Plan describes the post-closure monitoring requirements at the Merit USA/FPI/ORRCO site at 4150 N. Suttle Road, Portland, Oregon, as memorialized by the Oregon Department of Environmental Quality (DEQ) in an Easement and Equitable Servitudes (E&ES). The monitoring will occur within Operable Units (OUs) 3 and 4, located at the southern portion of the site at the panhandle and wetlands, and in the adjacent plant yard (OUR2B). The site layout, location of the work area and the OUs are indicated in Figure 1. The required monitoring activities described herein include annual groundwater monitoring and reporting, and monthly inspections and free-phase petroleum monitoring and vacuum extraction as warranted with reporting.

Monthly Inspections and Free-Phase Petroleum Monitoring and Reporting at Groundwater Monitoring Wells FP-3 and FP-7

DEQ requires the monthly inspections for free-phase petroleum at groundwater monitoring wells FP-3 and FP-7. These wells are located north of OUs 3 and 4 within ORRCO's plant operations area (Figure 1). The monitoring procedure for each well is as follows:

1. Obtain field notes and forms, and monitoring forms. Indicate date and list name(s) of staff completing field product monitoring in the field notes.
2. Open the monitoring well.
3. Lower a Coliwasa sampler* into the well and extend the sampler to 1 foot below the top of the water table.
4. Retract the Coliwasa sampler, with care taken not to touch the sampler along the well's sidewalls.
5. Inspect the sampler for free-phase petroleum.
    a. If free-phase petroleum <u>is</u> observed in the sampler, the features of the free product will be recorded in field notes (i.e., sheen, blebs, thickness, color, odor, and any other observations).
    b. If free-phase petroleum <u>is not</u> observed, the observation of "no free product" will be recorded in field notes.

6. If free-phase petroleum is present, ORRCO will remove it with a vacuum truck, and record the removed free product volume and groundwater volume brought up with the free product in the field notes.
7. Submit all field notes to the Plant Manager for subsequent reporting to DEQ.

Notes: *A new Coliwasa sampler will be used every time when free product is measured.

A letter report documenting the free product monitoring activities will be submitted to DEQ on a quarterly basis for the first year of monitoring, and on an annual basis thereafter for years two through five. If a year of monthly monitoring indicates there is no free product in one or both wells, monitoring and reporting will be reduced or eliminated as agreed upon by DEQ and ORRCO.

Annual Groundwater and Surface-Water Monitoring and Reporting for Wells FP-3, FP-5, FP-7, FP-9, and Surface Water Adjacent to FP-9

At the request of DEQ, annual groundwater monitoring will occur during April or May at four groundwater monitoring wells as follows:

- FP-3 (located in the plant operations area),
- FP-5 (located in OU3),
- FP-7 (located in the plant operations area), and
- FP-9 (located within the wetlands).

The groundwater elevations will be collected at all four monitoring wells before collecting groundwater samples. The surface water elevation also will be measured adjacent to FP-9.

Surface water will be collected adjacent to FP-9. The April/May event was selected to reflect the groundwater and surface-water conditions between the wet season and the dry season. This will provide an estimate of groundwater and surface-water conditions for the entire year without excessive contaminant dilution (wet season) or no surface water available (dry season).

The wells will be purged prior to sampling until field parameters stabilize. The field parameters conductivity, temperature, pH, redox, and dissolved oxygen will be measured at each groundwater well location using a calibrated multi-meter and flow-through cell.

The wells will be sampled using flow rates that are as low as practical. Groundwater samples will be collected and analyzed per the U.S. Environmental Protection Agency (EPA) methods, or per the other methods noted in the table below. Samples analyzed for dissolved metals will be field filtered using a 0.45-micron filter.

Groundwater Monitoring Well	Contaminant of Concern[1]	Laboratory Analyses
Plant Operations Area		
FP-3	Diesel- and oil-range petroleum hydrocarbons.	NWTPH-Dx
FP-7	Diesel- and oil-range petroleum hydrocarbons.	NWTPH-Dx
OUs 3 and 4		
FP-5	Dissolved metals lead, zinc and chromium. Fluoride.	EPA Method 6020A EPA Method 300.0/9056A
FP-9	Dissolved metals lead, zinc and chromium. Fluoride.	EPA Method 6020A EPA Method 300.0/9056A

The sample containers will be labeled and placed in a chilled container and shipped to Apex Laboratories, LLC of Tigard, Oregon for analyses.

The groundwater data will be compared to DEQ ROD Screening Criteria for Ecological Risk Screening (Table 12 of the ROD), to DEQ Risk-Based Criteria (RBCs), or to the fluoride screening criteria agreed upon by DEQ as follows:

- Diesel- and oil-range petroleum hydrocarbons will be compared to previous results to evaluate concentration trends.
- Dissolved lead will be compared to the DEQ ROD Screening Criteria of 2.5 µg/L.
- Dissolved zinc will be compared to the DEQ ROD Screening Criteria of 120 µg/L.
- Dissolved chromium will be compared to the DEQ ROD Screening Criteria of 11 µg/L.
- Fluoride data will be compared to the DEQ Screening Criteria of 1,940 µg/L.

A report will be submitted to DEQ within 45 days of receipt of the final analytical laboratory report. The report will summarize the field activities and observations, the analytical data results compared to DEQ screening criteria and previous monitoring results, and will present conclusions and recommendations. The groundwater flow direction and laboratory data will be presented in a site map(s).

Should you have any questions concerning this Monitoring Plan, please contact the undersigned.

Regards,

Jill Betts, R.G.

Report Reviewed by:

David G. Coles, M.S., R.G.

[1] This list reflects the reduced contaminants of concern as agreed upon by DEQ subsequent to the ROD.

cc: Mr. Scott Briggs, ORRCO
Mr. Bill Briggs, ORRCO
Ms. Kate LaRiche Moore, Dunn Carney

Attachment:

- Figure 1, ORRCO site showing site features including groundwater monitoring wells and Operable Units.

Legend

= ORRCo site boundary

= 1996 monitoring wells

= 2005 monitoring wells

= extraction well (FP-3)

= Triggco wells

TL 1700 = Tax Lot Number and Boundary

OU3 = Record of Decision Operable Unit (OU) Number and Approximate Boundary. OU4 includes the wetland areas adjacent to ORRCO's panhandle.

Note: Diagram based on Benthin Engineering Inc.'s 2006 survey

COLES+BETTS environmental consulting

Approx. Scale: 1" = 150'	Approved By	Date/Revision
		12/2/2020
		Rev. 0

Figure 1. ORRCO site showing site features including groundwater monitoring wells and Operable Units.

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Monday, June 6, 2022

Jill Betts
Coles & Betts Environmental Consulting
5741 NE Flanders Street
Portland, OR 97213

RE: A2E0410 - ORCCO_North Portland - 5002

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A2E0410, which was received by the laboratory on 5/11/2022 at 11:30:00AM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: DAuvil@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information

(See Cooler Receipt Form for details)

Cooler #1 4.8 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Coles & Betts Environmental Consulting	Project: **ORCCO North Portland**	
5741 NE Flanders Street	Project Number: **5002**	**Report ID:**
Portland, OR 97213	Project Manager: **Jill Betts**	**A2E0410 - 06 06 22 1022**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FP-3	A2E0410-01	Water	05/10/22 14:32	05/11/22 11:30
FP-7	A2E0410-02	Water	05/10/22 10:46	05/11/22 11:30
FP-5	A2E0410-03	Water	05/10/22 11:57	05/11/22 11:30
FP-9	A2E0410-04	Water	05/10/22 13:40	05/11/22 11:30

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ANALYTICAL REPORT

Coles & Betts Environmental Consulting	Project: **ORCCO North Portland**	
5741 NE Flanders Street	Project Number: **5002**	**Report ID:**
Portland, OR 97213	Project Manager: **Jill Betts**	**A2E0410 - 06 06 22 1022**

ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FP-3 (A2E0410-01)				**Matrix: Water**		**Batch: 22E0462**		
Diesel	**4.12**	---	0.0755	mg/L	1	05/13/22 00:59	NWTPH-Dx LL	**B-02**
Oil	ND	---	0.151	mg/L	1	05/13/22 00:59	NWTPH-Dx LL	
Surrogate: o-Terphenyl (Surr)		*Recovery: 83 %*	*Limits: 50-150 %*		*1*	*05/13/22 00:59*	*NWTPH-Dx LL*	
FP-7 (A2E0410-02)				**Matrix: Water**		**Batch: 22E0576**		
Diesel	**2.67**	---	0.0755	mg/L	1	05/16/22 22:12	NWTPH-Dx LL	
Oil	**2.07**	---	0.151	mg/L	1	05/16/22 22:12	NWTPH-Dx LL	
Surrogate: o-Terphenyl (Surr)		*Recovery: 67 %*	*Limits: 50-150 %*		*1*	*05/16/22 22:12*	*NWTPH-Dx LL*	

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ANALYTICAL REPORT

Coles & Betts Environmental Consulting	Project: **ORCCO North Portland**	
5741 NE Flanders Street	Project Number: **5002**	**Report ID:**
Portland, OR 97213	Project Manager: **Jill Betts**	**A2E0410 - 06 06 22 1022**

ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FP-5 (A2E0410-03)				**Matrix: Water**				
Batch: 22E0586								
Chromium	ND	---	2.00	ug/L	1	05/16/22 19:08	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	05/16/22 19:08	EPA 6020B (Diss)	
Zinc	ND	---	4.00	ug/L	1	05/16/22 19:08	EPA 6020B (Diss)	
FP-9 (A2E0410-04)				**Matrix: Water**				
Batch: 22E0599								
Chromium	**11.7**	---	2.00	ug/L	1	05/16/22 21:00	EPA 6020B (Diss)	
Lead	**15.3**	---	0.200	ug/L	1	05/16/22 21:00	EPA 6020B (Diss)	
Zinc	**147**	---	4.00	ug/L	1	05/16/22 21:00	EPA 6020B (Diss)	

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ANALYTICAL REPORT

Coles & Betts Environmental Consulting	Project: **ORCCO North Portland**	
5741 NE Flanders Street	Project Number: **5002**	**Report ID:**
Portland, OR 97213	Project Manager: **Jill Betts**	**A2E0410 - 06 06 22 1022**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
FP-5 (A2E0410-03)				**Matrix: Water**				
Batch: 22E0472								
Fluoride	**383**	---	10.0	mg/L	10	05/12/22 14:22	EPA 300.0	
FP-9 (A2E0410-04)				**Matrix: Water**				
Batch: 22E0472								
Fluoride	**274**	---	10.0	mg/L	10	05/12/22 14:43	EPA 300.0	

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ANALYTICAL REPORT

Coles & Betts Environmental Consulting	Project: **ORCCO North Portland**	
5741 NE Flanders Street	Project Number: **5002**	**Report ID:**
Portland, OR 97213	Project Manager: **Jill Betts**	**A2E0410 - 06 06 22 1022**

QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 22E0462 - EPA 3510C (Fuels/Acid Ext.)							**Water**					
Blank (22E0462-BLK1)			Prepared: 05/12/22 07:54		Analyzed: 05/12/22 22:38							
NWTPH-Dx LL												
Diesel	ND	---	0.0727	mg/L	1	---	---	---	---	---	---	B-02
Oil	ND	---	0.145	mg/L	1	---	---	---	---	---	---	
Surr: o-Terphenyl (Surr)		*Recovery: 104 %*	*Limits: 50-150 %*		*Dilution: 1x*							
LCS (22E0462-BS1)			Prepared: 05/12/22 07:54		Analyzed: 05/12/22 22:59							
NWTPH-Dx LL												
Diesel	0.416	---	0.0800	mg/L	1	0.500	---	83	36-132%	---	---	
Surr: o-Terphenyl (Surr)		*Recovery: 100 %*	*Limits: 50-150 %*		*Dilution: 1x*							
LCS Dup (22E0462-BSD1)			Prepared: 05/12/22 07:54		Analyzed: 05/12/22 23:19							
NWTPH-Dx LL												
Diesel	0.464	---	0.0800	mg/L	1	0.500	---	93	36-132%	11	30%	
Surr: o-Terphenyl (Surr)		*Recovery: 104 %*	*Limits: 50-150 %*		*Dilution: 1x*							
Batch 22E0576 - EPA 3510C (Fuels/Acid Ext.)							**Water**					
Blank (22E0576-BLK1)			Prepared: 05/16/22 10:12		Analyzed: 05/16/22 21:05							
NWTPH-Dx LL												
Diesel	ND	---	0.0727	mg/L	1	---	---	---	---	---	---	
Oil	ND	---	0.145	mg/L	1	---	---	---	---	---	---	
Surr: o-Terphenyl (Surr)		*Recovery: 85 %*	*Limits: 50-150 %*		*Dilution: 1x*							
LCS (22E0576-BS1)			Prepared: 05/16/22 10:12		Analyzed: 05/16/22 21:27							
NWTPH-Dx LL												
Diesel	0.367	---	0.0800	mg/L	1	0.500	---	73	36-132%	---	---	
Surr: o-Terphenyl (Surr)		*Recovery: 95 %*	*Limits: 50-150 %*		*Dilution: 1x*							
LCS Dup (22E0576-BSD1)			Prepared: 05/16/22 10:12		Analyzed: 05/16/22 21:50							**Q-19**
NWTPH-Dx LL												
Diesel	0.315	---	0.0800	mg/L	1	0.500	---	63	36-132%	15	30%	
Surr: o-Terphenyl (Surr)		*Recovery: 79 %*	*Limits: 50-150 %*		*Dilution: 1x*							

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Darrell Auvil, Client Services Manager

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Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

ANALYTICAL REPORT

Coles & Betts Environmental Consulting	Project: ORCCO North Portland	
5741 NE Flanders Street	Project Number: 5002	Report ID:
Portland, OR 97213	Project Manager: Jill Betts	A2E0410 - 06 06 22 1022

QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 22E0586 - Matrix Matched Direct Inject								Water				
Blank (22E0586-BLK1)			Prepared: 05/16/22 11:31 Analyzed: 05/16/22 17:45									
EPA 6020B (Diss)												
Chromium	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Lead	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Zinc	ND	---	4.00	ug/L	1	---	---	---	---	---	---	
LCS (22E0586-BS1)			Prepared: 05/16/22 11:31 Analyzed: 05/16/22 17:51									
EPA 6020B (Diss)												
Chromium	49.4	---	2.00	ug/L	1	55.6	---	89	80-120%	---	---	
Lead	52.2	---	0.200	ug/L	1	55.6	---	94	80-120%	---	---	
Zinc	54.6	---	4.00	ug/L	1	55.6	---	98	80-120%	---	---	
Duplicate (22E0586-DUP2)			Prepared: 05/16/22 11:31 Analyzed: 05/17/22 11:36									
QC Source Sample: Non-SDG (A2E0189-11RE1)												
Chromium	ND	---	20.0	ug/L	10	---	ND	---	---	---	20%	A-01, Q-16
Lead	ND	---	2.00	ug/L	10	---	1.16	---	---	***	20%	A-01, Q-16
Zinc	**56.3**	---	40.0	ug/L	10	---	57.4	---	---	2	20%	A-01, Q-16
Matrix Spike (22E0586-MS2)			Prepared: 05/16/22 11:31 Analyzed: 05/17/22 11:41									
QC Source Sample: Non-SDG (A2E0189-11RE1)												
EPA 6020B (Diss)												
Chromium	48.4	---	20.0	ug/L	10	55.6	ND	87	75-125%	---	---	A-01, Q-16
Lead	51.6	---	2.00	ug/L	10	55.6	1.16	91	75-125%	---	---	A-01, Q-16
Zinc	113	---	40.0	ug/L	10	55.6	57.4	100	75-125%	---	---	A-01, Q-16

Apex Laboratories

Darrell Auvil, Client Services Manager

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Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Coles & Betts Environmental Consulting	Project: **ORCCO North Portland**	
5741 NE Flanders Street	Project Number: **5002**	**Report ID:**
Portland, OR 97213	Project Manager: **Jill Betts**	**A2E0410 - 06 06 22 1022**

QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 22E0599 - EPA 3015A - Dissolved								Water				
Blank (22E0599-BLK1)			Prepared: 05/16/22 15:05		Analyzed: 05/16/22 20:49							
EPA 6020B (Diss)												
Chromium	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Lead	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Zinc	ND	---	4.00	ug/L	1	---	---	---	---	---	---	
LCS (22E0599-BS1)			Prepared: 05/16/22 15:05		Analyzed: 05/16/22 20:55							
EPA 6020B (Diss)												
Chromium	48.4	---	2.00	ug/L	1	55.6	---	87	80-120%	---	---	
Lead	49.0	---	0.200	ug/L	1	55.6	---	88	80-120%	---	---	
Zinc	51.6	---	4.00	ug/L	1	55.6	---	93	80-120%	---	---	
Duplicate (22E0599-DUP1)			Prepared: 05/16/22 15:05		Analyzed: 05/16/22 21:05							
QC Source Sample: FP-9 (A2E0410-04)												
EPA 6020B (Diss)												
Chromium	**11.0**	---	2.00	ug/L	1	---	11.7	---	---	7	20%	
Lead	**14.1**	---	0.200	ug/L	1	---	15.3	---	---	9	20%	
Zinc	**144**	---	4.00	ug/L	1	---	147	---	---	2	20%	
Matrix Spike (22E0599-MS1)			Prepared: 05/16/22 15:05		Analyzed: 05/16/22 21:11							
QC Source Sample: FP-9 (A2E0410-04)												
EPA 6020B (Diss)												
Chromium	67.5	---	2.00	ug/L	1	55.6	11.7	100	75-125%	---	---	
Lead	58.2	---	0.200	ug/L	1	55.6	15.3	77	75-125%	---	---	
Zinc	200	---	4.00	ug/L	1	55.6	147	96	75-125%	---	---	

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Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Coles & Betts Environmental Consulting	Project: **ORCCO North Portland**	
5741 NE Flanders Street	Project Number: **5002**	**Report ID:**
Portland, OR 97213	Project Manager: **Jill Betts**	**A2E0410 - 06 06 22 1022**

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 22E0472 - Method Prep: Aq							**Water**					
Blank (22E0472-BLK1)			Prepared: 05/12/22 09:49		Analyzed: 05/12/22 11:29							
EPA 300.0												
Fluoride	ND	---	1.00	mg/L	1	---	---	---	---	---	---	
LCS (22E0472-BS1)			Prepared: 05/12/22 09:49		Analyzed: 05/12/22 11:51							
EPA 300.0												
Fluoride	8.48	---	1.00	mg/L	1	8.00	---	106	90-110%	---	---	
Duplicate (22E0472-DUP1)			Prepared: 05/12/22 09:49		Analyzed: 05/12/22 12:34							
QC Source Sample: Non-SDG (A2E0403-01)												
Fluoride	ND	---	1.00	mg/L	1	---	ND	---	---	---	10%	
Duplicate (22E0472-DUP2)			Prepared: 05/12/22 09:49		Analyzed: 05/12/22 16:53							
QC Source Sample: Non-SDG (A2E0430-06)												
Fluoride	**1.22**	---	1.00	mg/L	1	---	1.14	---	---	7	10%	
Matrix Spike (22E0472-MS1)			Prepared: 05/12/22 09:49		Analyzed: 05/12/22 13:39							
QC Source Sample: Non-SDG (A2E0403-01)												
EPA 300.0												
Fluoride	10.7	---	1.25	mg/L	1	10.0	ND	107	90-119%	---	---	
Matrix Spike (22E0472-MS2)			Prepared: 05/12/22 09:49		Analyzed: 05/12/22 17:58							
QC Source Sample: Non-SDG (A2E0430-06)												
EPA 300.0												
Fluoride	12.7	---	1.25	mg/L	1	10.0	1.14	115	90-119%	---	---	

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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3510C (Fuels/Acid Ext.)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 22E0462							
A2E0410-01	Water	NWTPH-Dx LL	05/10/22 14:32	05/12/22 10:47	1060mL/2mL	1000mL/2mL	0.94
Batch: 22E0576							
A2E0410-02	Water	NWTPH-Dx LL	05/10/22 10:46	05/16/22 10:12	1060mL/2mL	1000mL/2mL	0.94

Dissolved Metals by EPA 6020B (ICPMS)

Prep: EPA 3015A - Dissolved

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 22E0599							
A2E0410-04	Water	EPA 6020B (Diss)	05/10/22 13:40	05/16/22 15:05	45mL/50mL	45mL/50mL	1.00

Prep: Matrix Matched Direct Inject

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 22E0586							
A2E0410-03	Water	EPA 6020B (Diss)	05/10/22 11:57	05/16/22 11:31	45mL/50mL	45mL/50mL	1.00

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 22E0472							
A2E0410-03	Water	EPA 300.0	05/10/22 11:57	05/12/22 09:49	5mL/5mL	5mL/5mL	1.00
A2E0410-04	Water	EPA 300.0	05/10/22 13:40	05/12/22 09:49	5mL/5mL	5mL/5mL	1.00

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QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

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A-01	pH >2 after additional acid preservation.
B-02	Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
Q-16	Reanalysis of an original Batch QC sample.
Q-19	Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

DET Analyte DETECTED at or above the detection or reporting limit.

ND Analyte NOT DETECTED at or above the detection or reporting limit.

NR Result Not Reported

RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.

" dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.

" wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.

" " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to ½ the Reporting Limit (RL).
-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) -
EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation.
Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provded by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

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Portland, OR 97213

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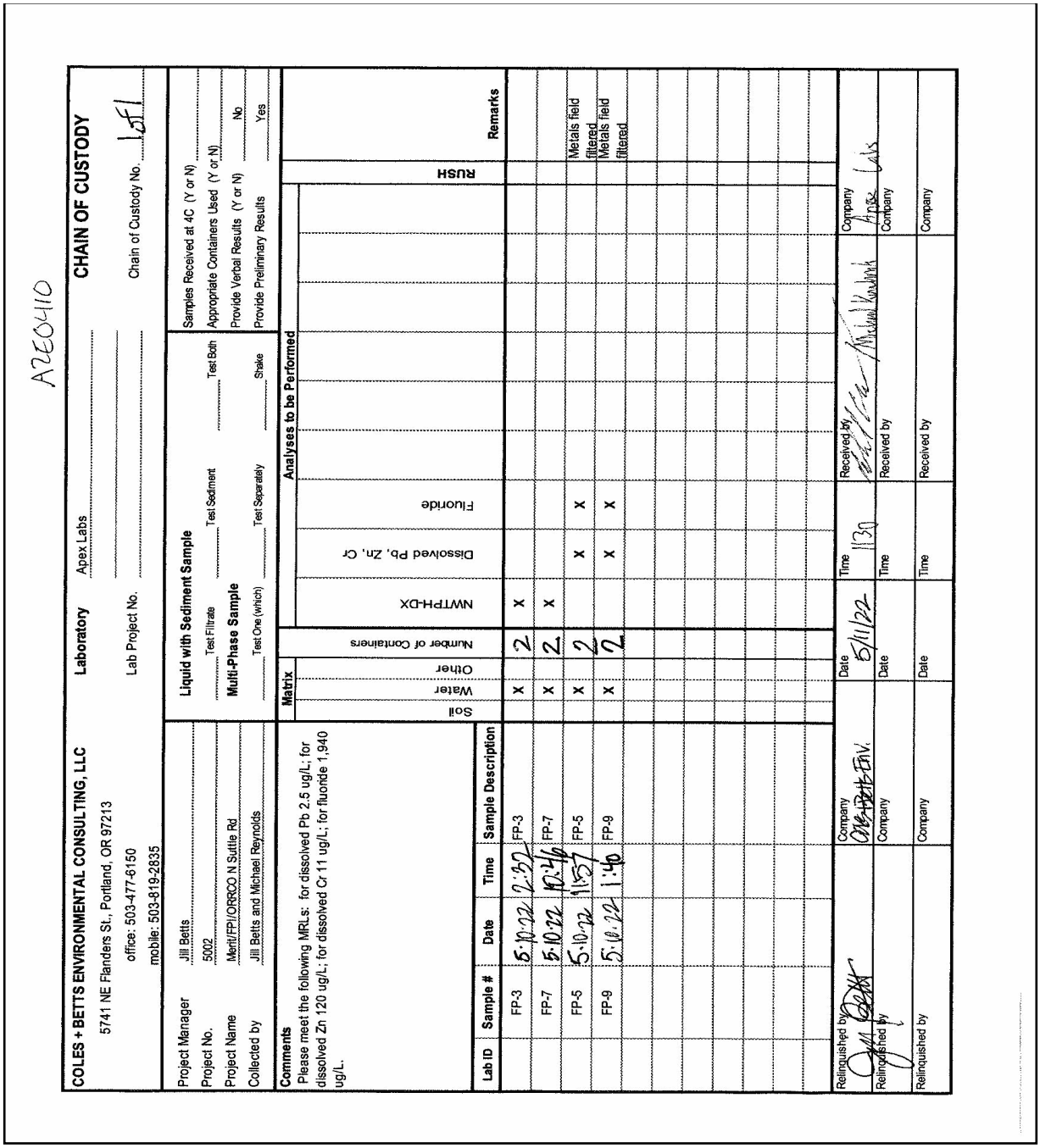

A2E0410

COLES + BETTS ENVIRONMENTAL CONSULTING, LLC — **Laboratory** Apex Labs — **CHAIN OF CUSTODY**

5741 NE Flanders St., Portland, OR 97213
office: 503-477-6150
mobile: 503-819-2835

Lab Project No. _____

Chain of Custody No. 1 of 1

Project Manager: Jill Betts
Project No.: 5002
Project Name: Merit/FPI/ORRCO N Suttle Rd
Collected by: Jill Betts and Michael Reynolds

Liquid with Sediment Sample — Test Filtrate _____ Test Sediment _____ Test Both _____
Multi-Phase Sample — Test One (which) _____ Test Separately _____ Shake _____

Samples Received at 4C (Y or N) _____
Appropriate Containers Used (Y or N) _____
Provide Verbal Results (Y or N) _____ No
Provide Preliminary Results _____ Yes

Comments
Please meet the following MRLs: for dissolved Pb 2.5 ug/L; for dissolved Zn 120 ug/L; for dissolved Cr 11 ug/L; for fluoride 1,940 ug/L.

Lab ID	Sample #	Date	Time	Sample Description	Matrix: Soil	Water	Other	Number of Containers	Analyses to be Performed: NWTPH-DX	Dissolved Pb, Zn, Cr	Fluoride	RUSH	Remarks
	FP-3	5.10.22	2:32	FP-3		X		2	X				
	FP-7	5.10.22	12:46	FP-7		X		2	X				
	FP-5	5.10.22	11:57	FP-5		X		2		X	X		Metals field filtered
	FP-9	5.10.22	1:40	FP-9		X		2		X	X		Metals field filtered

Relinquished by — Company — Date — Time — Received by — Company
Relinquished by — Company — Date — Time — Received by — Company
Relinquished by — Company — Date — Time — Received by — Company

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APEX LABS COOLER RECEIPT FORM

Client: Coles+Betts Env. Consulting Element WO#: A2E0410

Project/Project #: Mead/FPS/ORCCO N Suttle Rd / 5002

Delivery Info:

Date/time received: 5-11-22 @ 1130 By: MK

Delivered by: Apex X Client ESS FedEx UPS Swift Senvoy SDS Other

Cooler Inspection Date/time inspected: 5-11-22 @ 1212 By: MK

Chain of Custody included? Yes X No Custody seals? Yes No X

Signed/dated by client? Yes X No

Signed/dated by Apex? Yes X No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	4.8						
Received on ice? (Y/N)	Y						
Temp. blanks? (Y/N)	Y						
Ice type: (Gel/Real/Other)	Gel						
Condition:	good						

Cooler out of temp? (Y/N) Possible reason why:

Green dots applied to out of temperature samples? Yes/No

Out of temperature samples form initiated? Yes/No

Sample Inspection: Date/time inspected: 5/11/22 @ 1550 By: HAS

All samples intact? Yes X No Comments:

Bottle labels/COCs agree? Yes X No Comments:

COC/container discrepancies form initiated? Yes No X

Containers/volumes received appropriate for analysis? Yes X No Comments:

Do VOA vials have visible headspace? Yes No NA X

Comments

Water samples: pH checked: Yes X No NA pH appropriate? Yes No X NA

Comments: FP-7 : 2 of 2 ambers pH = 7.

Additional information:

Labeled by: HAS Witness: VJ Cooler Inspected by: HAS