FULCRUM
environmental consulting

Independent Soil Remediation
Smudge Pot Storage Area

Ranch 34
730 Henderson Road
Wapato, Washington

Project Number: 192902.08

August 21, 2020

Prepared for:

WA LAND MGMT, LLC
22605 Southeast 56th Street #200
Issaquah, Washington 98029

Prepared by:

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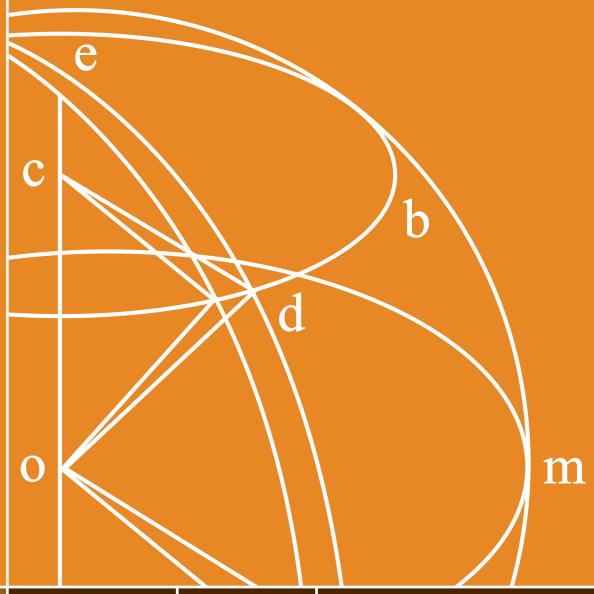

Report Title: Independent Soil Remediation, Smudge Pot Storage Area

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Site: Ranch 34
730 Henderson Road, Wapato, Washington
GPS coordinates: 46.478051, -120.360834

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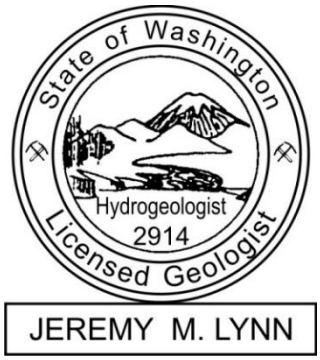

The professionals who completed site services, prepared, and reviewed this report include but are not limited to:

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Report Integrity:

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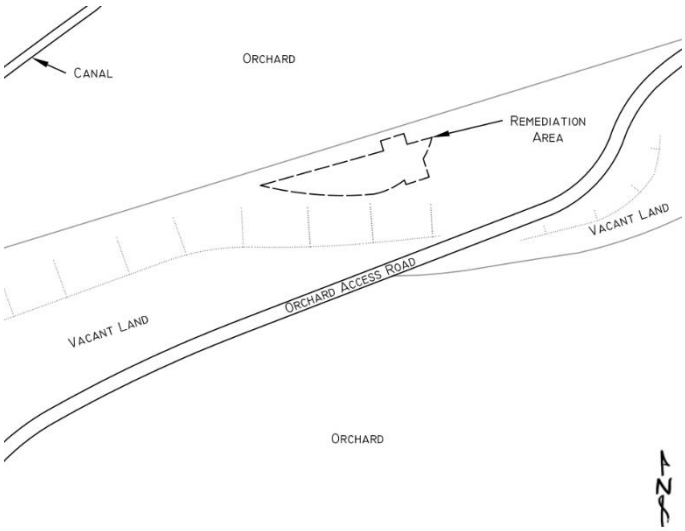
1.0 Introduction

Fulcrum Environmental Consulting, Inc. (Fulcrum) was retained by WA LAND MGMT, LLC to complete site characterization and remediation of one area of suspected petroleum contaminated soil (PCS) associated with historical smudge pot storage. See Figure 1 for the site location.



General Site Location

Ranch 34 is located at 730 Henderson Road in Wapato, Washington. The former smudge pot is located at coordinates 46.478051°, -120.360834° in Township 12N, Range 20E, Section 31, Yakima County, Washington. Petroleum contaminated soil was identified in a former smudge pot storage area located near the southeast corner of the ranch. The site and surrounding area land-use consists of arable land, typically utilized as orchard crop use.

During a Phase I Environmental Site Assessment (ESA) site walk performed on behalf of a prospective buyer, visibly stained soils were observed in the smudge pot storage area. The prospective buyer notified WA LAND MGMT, LLC and requested additional investigation and remediation if necessary.

Fulcrum completed limited Phase II investigation activities at the site to evaluate constituents of concern; and to approximate extents of impact and soil volumes. The investigation identified localized diesel fuel contamination at the site. The site was reported to the Washington State Department of Ecology (Ecology) on December 19, 2019 under the letter *Release Reporting at a Former Smudge Pot Storage Area – Ranch 34, 730 Henderson Road, Wapato, Washington.*

Fulcrum completed site remediation at the site in two events on:

- *December 3, 2019 – Initial Remediation*
- *March 18, 2020 – Final Remediation*

See Section 5.0 for a summary of the site activities. See Figure 2 for the former smudge pot storage location. See Figure 3 for sampling locations.

All investigation and remediation activities were completed as provided in The Model Toxics Control Act (MTCA), Washington Administrative Code (WAC) 173-340. In our professional opinion, the use of the independent remediation process is appropriate.

2.0 Scope of Work

Fulcrum's scope of services consisted of the following tasks:

- Complete initial investigation and waste characterization sampling of suspect contaminated soils.
- Complete waste characterization evaluation and request for offsite treatment or disposal.
- Direct excavation of petroleum contaminated soils.
- Collect confirmatory samples at the excavation extents for identified contaminants of concern.
- Prepare documentation of remedial activities.

Investigation and remedial activities were limited to the area of impact by the former smudge pot storage releases and were guided through the use of field screening including color, odor, sheet, and head space volatile organic compounds (VOCs) evaluated through a photoionization detector (PID). Investigation and remediation activities were supervised by Kyle Ames and Amanda Enbysk, Washington State Geologists-in-Training with Fulcrum. Work was performed under the direction of Jeremy Lynn, Washington State Licensed Hydrogeologist, with Fulcrum. See Appendix A for Professional certification.

Excavation of test pits completed during initial investigation and waste characterization activities were completed by WA LAND MGMT, LLC. Subsequent remedial excavation of PCS was completed by Spokane Environmental Services (SES) under contract to Fulcrum. Fulcrum utilized Fremont Analytical, Inc. (Fremont), of Seattle, Washington to provide laboratory services. Fremont is an Ecology accredited laboratory (accreditation number C910-19).

The following project partners were retained by WA LAND MGMT, LLC:

- Columbia Asphalt & Ready Mix to transport soils to the selected disposal facility.
- DR Trucking Services, LLC to transport soils to the selected disposal facility.
- SD Construction to transport soils to the selected disposal facility.
- Anderson Rock & Demolition Pits and Treatment Facility of Yakima, Washington to provide treatment of PCS.

No groundwater or surface water were encountered during remediation.

3.0 Discussion of Pertinent Regulations and Guidance

Fulcrum utilized applicable portions of the following guidance and Washington State regulations.

3.1 MTCA Regulations

In March of 1989, The Model Toxics Control Act (MTCA) went into effect in Washington State. The MTCA regulations, WAC 173-340-360, set standards to ensure quality of cleanup and protection of human health and the environment. A major portion of the MTCA regulation (completed in 1991) was the development of numerical cleanup standards and requirements for cleanup actions. Three options were established under

MTCA for site-specific cleanup levels: Method A, B, and C. Method A defines cleanup levels for 25 of the most common hazardous substances found at sites. Method B levels are set using a site risk assessment, which enables consideration of site-specific characteristics. Method C is similar to Method B; however, the individual substance's cancer risk portion of the assessment is set at 1 in 100,000 rather than 1 in 1,000,000.

Rule amendments to MTCA, which became effective August 15, 2001, changed the cleanup levels of petroleum hydrocarbon contamination. Whereas diesel and heavy oil concentrations were increased, the MTCA Method A cleanup levels for gasoline and gasoline components Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) were lowered significantly. Updates since 2001 have been primarily administrative in nature, although review and adjustment of cleanup levels are ongoing.

3.2 Cleanup Standard Selected

Ecology's MTCA Method A cleanup tables were developed to provide conservative cleanup levels for sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. Method A cleanup levels are specifically designated as appropriate for residential facilities and are appropriate for a conservative approach at schools and public sites. Therefore, Fulcrum has determined that Ecology's MTCA Method A cleanup levels to be the most appropriate regulatory guidance for evaluating the need for site cleanup at the site. Where Method A cleanup levels are not published, Fulcrum utilized default published Method B values.

3.3 Sampling Guidance Criteria

Fulcrum has utilized applicable portions of the following documents as guidance criteria for confirmation sampling protocol:

1. Washington State Department of Ecology, *Guidance for Remediation of Petroleum Contaminated Soil*, revised June 2016.
2. American Petroleum Institute, *A Guide to the Assessment and Remediation of Underground Petroleum Releases*, publication 1628, dated July 1996.
3. Washington State Department of Ecology, *Guidance for Site Checks and Site Assessments for Underground Storage Tanks*, revised April 2003.

4.0 Environmental Setting

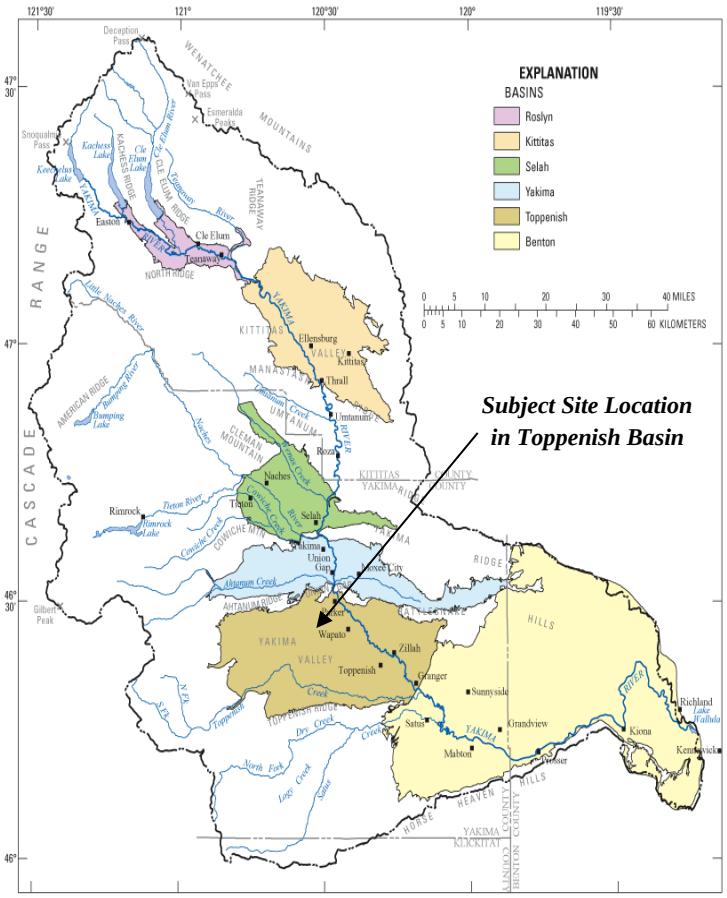
Contaminant transport within the subsurface and extent of impact is largely determined by the nature of the contaminant, as well as, regional and local geologic and hydrogeologic conditions. The following subsections describe regional and local subsurface site settings.

4.1 Regional Setting

From a regional setting, the subject site is located within the Yakima Folds Geomorphic Province (YFGP) on the western margin of the Columbia River Plateau. The Yakima Fold Belt is generally characterized by

anticlinal ridge and synclinal valley structures; and valley lowlands are composed of erosional sedimentary deposits including: alluvium, lacustrine, glacial, and glacial-fluvial materials with localized areas of windblown loess. The Yakima River is located to the northeast.

The Yakima River Basin (YRB) is located within the boundaries of the YFGP and extends from the northeastern slopes of the Cascade Mountain Range in Kittitas County to the confluence of the Yakima and Columbia Rivers in Benton County. The YRB additionally incorporates portions of Benton County and the majority of Yakima County. The YRB consists of a total of six structural aquifer basins and occupies 6,200 square miles. The network of Yakima Basin aquifers is supplied by the headwaters of the eastern slopes of the Cascade Mountain Range.



Six Structural Aquifer Basins - Courtesy of USGS

The subject site is located within the boundaries of the Toppenish Basin aquifer. The Toppenish Basin encompasses approximately 440-square miles and is bound by the Ahtanum Ridge to the north, the Toppenish Ridge to the south, and the Benton Basin to the east. The eastern boundary of the Toppenish Basin is concurrent with the approximate location of the City of Granger. The Toppenish basin is characterized by the east-west trending Wapato Syncline dividing the basin.

4.2 Local Geologic Setting

Site soils are identified by the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey at the smudge pot storage area as *Warden silt loam.* According to the USDA Soil Survey, *Warden silt loam* is well drained with a high capacity to store water.

Typical soil profile of *Warden silt loam* consists of the following:

- 0 to 19 inches below ground surface (bgs), silt loam
- 19 to 60 inches bgs, stratified very fine sandy loam to silt loam

While completing site activities, Fulcrum observed soil within the excavation pit, which ranged in depth from 2 to 5 feet bgs at the smudge pot area, to be composed of silt loam with gravel.

Groundwater was not encountered during excavation activities at the site during remediation activities. Shallow groundwater wells are not generally present within the vicinity of the subject site. Fulcrum viewed Ecology's well viewer database within the same township and the range of well depths were unavailable. Projected depths to groundwater are unknown at the smudge pot location; however, is estimated to be in the range of 120 to 150-feet depths due to the surrounding elevation.

5.0 Site Activities

Site activities consisted of an initial investigation for waste characterization and approximate contamination extent followed by two remediation events.

5.1 Initial Investigation and Waste Characterization

On September 19, 2019, initial investigation and waste characterization activities were completed to evaluate the approximate vertical and horizontal extents of impact and to determine a potential treatment or disposal facility for remedial planning purposes. Fulcrum met with WA LAND MGMT, LLC and completed select test pits through the former smudge pot area. Fulcrum completed visual observation and field screening to evaluate general extents of impact in each test pit. Field screening included evaluation of odor, color, sheen, and VOCs with the use of a PID. At each location, Fulcrum collected one composite sample of near surface representative soils to evaluate level of petroleum impact. See Appendix C for site photographs.

The former smudge pot storage area was generally estimated based on presence of residual surface staining to be approximately 15-feet north to south and 50-feet east to west, located immediately south of an orchard access roadway. Formerly during waste characterization sampling, the location was named Ranch 45. Currently the Ranch is known as 34.

Three soil samples were collected from the areas of where apparent petroleum impacts were greatest. Samples included the following:

- R45-091919-01.01: Eastern Portion of Smudge Pot Storage Area, Surface to 1-foot bgs
- R45-091919-02.01: Central Portion of Smudge Pot Storage Area, Surface to 1-foot bgs
- R45-091919-03.01: Western Portion of Smudge Pot Storage Area, Surface to 1-foot bgs

Each sample was collected into one, 4-ounce borosilicate jar with Teflon lined lids and two, 40-milliliter glass vials with Teflon lined lids. New, clean nitrile gloves were used during sampling. See Appendix B for a summary of Fulcrum's sample handling methodology. The soil samples were packaged on ice and shipped overnight via commercial carrier under chain-of-custody to Fremont for analysis.

Samples were laboratory composited for waste characterization. Samples were submitted for the following analyses:

- Diesel and heavy Oil by Northwest Total Petroleum Hydrocarbons (NWTPH) – Diesel Extended (Dx Ext)
- Polyaromatic Hydrocarbons (PAHs) by EPA Method 8270 (SIM)
- Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) Method 8082
- Volatile Organic Compounds (VOCs) by EPA Method 8260D
- Mercury by EPA Method 7471
- Metals including: Arsenic, Cadmium, Chromium, and Lead by EPA Method 6020B.

Results were reported under Fremont work order number 1909937. See Appendix E for Complete Laboratory Report.

Table 1: Waste Characterization Sample Results

Analyte	Result (mg/Kg)	MTCA Method A CUL	Exceeds MTCA Method A CUL	Dangerous Waste Level (mg/L)	Exceeds Dangerous Waste Level
Total PCBs [1]	<0.112	10[2]	No	-	-
Diesel	**89,300**	2,000	Yes	-	-
Heavy Oil	<5,370	2,000	No	-	-
Polyaromatic Hydrocarbons					
Benzo[a]pyrene	<0.477	2.0[2]	No	-	-
Benz[a]anthracene	<0.477	NA	NA	-	-
Benzo[b]fluoranthene	<0.477	NA	NA	-	-
Benzo[k]fluoranthene	<0.477	NA	NA	-	-
Chrysene	0.662	NA	NA	-	-
Dibenz[a,h]anthracene	<0.477	NA	NA	-	-
Indeno[1,2,3-cd]pyrene	<0.477	NA	NA	-	-
PAH TTEC (Per WAC 173-340-708)	*0.0066*	*0.1[2]*	*No*	-	-
Total PAH [Percentage Per WAC 173-303-100(6)]	*0.035%*	-	-	*1%*	*No*
Volatile Organic Compounds					
Halogenated/Chlorinated VOCs [1]	-	-	-	-	-
Benzene	<0.023	0.03	No	0.5	No
Toluene	<0.023	7	No	-	-
Ethylbenzene	<0.029	6	No	-	-
Total Xylenes	<0.057	9	No	-	-
Metals					
Mercury	<0.282	2	No	0.2	No
Arsenic	6.09	20	No	5	No
Cadmium	<0.187	2	No	1	No
Total Chromium	19.6	19 / 2,000[4]	No	5	No
Lead	8.87	250	No	5	No

All results, method reporting limits, and cleanup levels are presented in mg/Kg. Dangerous waste threshold values where published in WAC 173-303-090(8) are presented in milligrams per liter.

Results in Bold indicate a result above the MTCA Method cleanup level.
1 The individual chemical constituents were not detected above the method reporting limit (MRL)
2 Industrial MTCA Method A cleanup level
3 Select constituents have established MTCA Method A cleanup level. When a MTCA Method A cleanup level is not available, the MTCA Method B Standard Value is utilized for evaluation.
4 The MTCA Method A cleanup level for Chromium (III) is 2,000 mg/Kg and for Chromium (VI) is 19 mg/Kg

The following data qualifiers were noted in the laboratory results.

D - Dilution was required
S - Spike recovery outside accepted recovery limits
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)

Dilution, spike recovery, and calibration drift are commonly associated with high levels of petroleum hydrocarbons. A review of the data qualifiers listed within the laboratory QA/QC are satisfactory and should not affect project data or objectives.

The initial investigation confirmed the presence of diesel range petroleum hydrocarbons as the contaminants of concern for remediation. The PAH compound Chrysene was reported at a low concentration and below the MTCA Method A cleanup level.

The selected MTCA Method A threshold for PAHs was industrial land use as the treatment facility is an industrial site. PAHs are typically associated with diesel product and are expected to be remediated to below unrestricted land use threshold concentrations at the site with removal of the diesel impacted soil. However, based on discussions with Ecology associated with concurrent smudge pot remediation sites, screening for PAHs is appropriate for final site confirmation samples based on the waste characterization results.

5.2 Remedial Excavation

Remedial excavation of PCS began on December 3, 2019 and was completed on March 18, 2020. Remedial excavation activities were completed in two separate events:

- *Initial Remediation – December 3, 2019*
  - Removal of soil identified with contaminants of concern above MTCA Method A cleanup levels found during initial waste characterization
- *Final Remediation - March 18, 2020*
  - Removal of remaining soil identified with diesel concentrations above MTCA Method A cleanup level found in select confirmation samples collected on December 3, 2019.

Soils were excavated and loaded directly utilizing an excavator and dump trucks for transport to the treatment facility.

Fulcrum utilized field screening methods, including visual observation for staining or discoloration, sheen on water, and use of a PID to guide the excavation. When visibly impacted soils were removed and field

indications of contamination were absent, soil samples were collected to confirm completion of remediation.

Per the project SAP, all soil samples were collected by hand where possible, and from the excavator bucket where indicated. Soil samples were placed within a 4-ounce borosilicate jars with Teflon-lined lid (Diesel, Heavy Oil, and PAHs) and two 40 milliliter glass vials (for BTEX analysis) with a Teflon-lined lid for each sample location. New, clean nitrile gloves were used for each sample set.

Initial Excavation Extents – December 3, 2019

Fulcrum completed field screening of all soil samples as shown in Table 2 and 3. Laboratory results are provided in Section 6.0, Table 4.

5.2.1 Initial Remediation – December 3, 2019

The initial excavation occurred on December 3, 2019. The former smudge pot storage area was excavated to a footprint approximately 64 feet in length, 22 to 30 feet wide, and to depths ranging from 2 to 4 feet in depth with an average depth of about 3 feet bgs. The east and west portions of the excavation were completed to approximately 2 feet bgs before sloping to approximately 4 feet bgs in the center portion. Excavation was completed to remove all field indicators of impact.

Based on total area and linear extents of sidewalls exceeding 3-feet bgs, a total of 7 samples were collected and included five from pit bottom and two from excavation sidewalls.

Results from the initial remediation event identified two samples, R34-120319-01.2.5 from the west pit bottom and R34-120319-04.1 from the southeast pit bottom, with diesel concentrations above the MTCA Method A cleanup level, requiring a second remediation event.

Table 2: Field Screening – December 3, 2019

Sample Id	Color	Odor	PID (ppm)	Sheen	Other
1	Light Brown	No	0	No	Sandy silt loam with gravel surface layer
2	Light Brown	No	0	No	Sandy silt loam with gravel surface layer
3	Light Brown	No	0	No	Sandy silt loam with gravel surface layer
4	Light Brown	No	0	No	Sandy silt loam with gravel surface layer
5	Light Brown	No	0	No	Sandy silt loam with gravel surface layer
6	Light Brown	No	0	No	Sandy silt loam with gravel surface layer
7	Light Brown	No	0	No	Sandy silt loam with gravel surface layer

ppm Parts Per Million in air

5.2.2 Final Remediation – March 18, 2020

Results from the initial remediation identified two samples (R34-120319-01.2.5, R34-120319-04.1) with diesel concentrations above the MTCA Method A cleanup level. Fulcrum returned to the site on March 18, 2020 to complete remedial excavation activities. The remaining west area of contamination, represented by R34-120319-01.2.5, was excavated to a footprint approximately 16 feet in length (north-south), 11 feet in width (east-west), and a total depth of 5-feet bgs. The remaining east area of contamination, represented by R34-120319-04.1, was excavated to a footprint approximately 16 feet in length (north-south), 11 feet in width (east-west), and a total depth of 5-feet bgs. A total of five samples were collected from the excavation, including three from excavation pit bottoms and two from adjacent sidewalls.

Final Excavation Extents – March 18, 2020

During the final remediation event, additional PCS was observed extending north of the excavation area into an adjacent orchard access road. This area extended 10 feet northward into the road and measured 15 feet in length east to west and two feet in depth.

Confirmation samples were found to be below the MTCA Method A cleanup levels for all constituents.

Table 3: Field Screening - March 18, 2020

Sample Id	Color	Odor	PID (ppm)	Sheen	Other
8	10 YR 3/5	No	0	No	Sandy silt loam with gravel surface layer
9	10 YR 3/5	No	0	No	Sandy silt loam with gravel surface layer
10	10 YR 3/5	No	0	No	Sandy silt loam with gravel surface layer
11	10 YR 3/5	No	0	No	Sandy silt loam with gravel surface layer
12	10 YR 3/5	No	0	No	Sandy silt loam with gravel surface layer
3b	10 YR 3/5	No	0.01	No	Sandy silt loam with gravel surface layer
6b	10 YR 3/5	No	0	No	Sandy silt loam with gravel surface layer
7b	-	Yes	1.28	No	Silt loam with road gravel surface layer
8b	10 YR 3/5	No	0.01	No	Silt loam with road gravel surface layer
9b	10 YR 3/5	No	0.55	No	Silt loam with road gravel surface layer
10b	10 YR 3/5	No	0	No	Silt loam with road gravel surface layer

ppm Parts Per Million in air

6.0 Laboratory Results

All samples were packed on ice and shipped overnight via commercial carrier under chain-of-custody to Fremont for analysis by the following:

- Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
- Volatile Organic Compounds for Benzene, Toluene, Ethylbenzene and Xylenes by Environmental Protection Agency (EPA) Method 8260D

Based on feedback from Ecology on concurrent smudge-pot remediation sites and as a screening approach, additional analysis for the following was completed on select samples:

- Polycyclic Aromatic Hydrocarbons (PAH) by EPA Method 8270 (SIM)

Fulcrum selected samples R34-031820-08.05, R34-031820-09.05, R34-031820-11.03 for additional PAH analysis (EPA Method 8270 (SIM))

Results were reported under Fremont Project No. 1912053 (*initial remediation event*) and 2003320 (*final remediation event*) and are summarized in Table 4. See Appendix E for Complete Laboratory Results.

Table 4: Former Smudge Pot Storage Area Laboratory Results

Sample ID and Location	Analyte					
	Diesel	**Heavy Oil**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**
Initial Event – December 3, 2019						
R34-120319-01.2.5 West pit bottom, 2-feet bgs	**8,670**	<55.6	<0.0296	<0.0296	<0.0370	<0.111
R34-120319-02.2 Southwest pit bottom, 2-foot bgs	<19.4	<48.4	<0.0285	<0.0285	<0.0357	<0.107
R34-120319-03.4 Central pit bottom, 4-foot bgs	<23.7	<59.3	<0.0273	<0.0273	<0.0341	<0.1022
R34-120319-04.1 Southeast pit bottom, 1-feet bgs	**4,600**	<51.9	<0.0267	<0.0267	<0.0333	<0.1
R34-120319-05.2 East pit bottom, 2-feet bgs	<23.0	<57.5	<0.0247	<0.0247	<0.0308	<0.0925
R34-120319-06.4 Northeast sidewall, 4-feet bgs	<24.0	<60.1	<0.0349	<0.0349	<0.0436	<0.1309
R34-120319-07.4 Northwest sidewall, 4-foot bgs	72.7	<57.8	<0.0294	<0.0294	<0.0367	<0.1101
Final Event – March 18, 2020						
R34-031820-08.05 West pit bottom, 5-feet bgs	<20.4	<50.9	<0.0310	<0.0310	<0.0388	<0.1164
R34-031820-09.05	<21.5	<53.9	<0.0306	<0.0306	<0.0382	<0.1146

Sample ID and Location	Analyte					
	Diesel	**Heavy Oil**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**
East pit bottom, 5-feet bgs						
R34-031820-10.03 Southeast sidewall, 3-feet bgs	<21.8	<54.6	<0.0291	<0.0291	<0.0364	<0.1092
R34-031820-11.03 Southwest sidewall, 3-feet bgs	<23.0	<57.6	<0.0242	<0.0242	<0.0303	<0.908
R34-031820-12.02 West pit bottom, 2-feet bgs	<22.6	<56.5	<0.0274	<0.0274	<0.0343	<0.1029
MTCA Method A Cleanup Level	**2,000**	**2,000**	**0.03**	**7**	**6**	**9**

Results in **Bold** indicate a result above the MTCA Method cleanup level.

Laboratory analysis for samples collected on December 3, 2019 identified three sample locations with a detectable concentration of diesel range hydrocarbons in the initial remediation event. Samples included:

- R34-120319-01.2.5 at 2.5-feet bgs with 8,670 milligrams of analyte per kilogram of soil (mg/Kg)
- R34120319-04.1 at 1-feet bgs with 4,600 mg/Kg
- R34-120319-07.4 at 4-feet bgs with 72.7 mg/Kg

All other constituents including heavy oil and BTEX were non-detect for all samples collected from all events.

The following data qualifiers were noted in the laboratory results.

D – Dilution was required (WO# 1912053)
R – High Relative Percent Difference observed (WO#2003320).
H – Holding times for preparation or analysis exceeded (WO# 2003320)

Dilution is commonly associated with high levels of petroleum hydrocarbons. A dilution data qualifier indicates a concentration of analyte in the sample is high enough that dilution is required to get a quantifiable result.

High relative percent difference for four of the PAH constituents was observed within the Matrix Spike Duplicate (MSD), but was not observed within the Matrix Spike (MS). Laboratory notes indicate the spike recovery is within range.

A review of these data qualifiers indicate that laboratory QA/QC are satisfactory and should not affect project data or objectives.

7.0 Soil Treatment

Trucking partners completed a total of 12 trips during remedial activities:

- Initial Remediation (December 3, 2019) – 8 trips
- Final Remediation (March 18, 2020) – 4 trips

A total of 295.92 tons of PCS was delivered to Anderson's Rock & Demolition Pits and PCS Treatment Facility in Yakima, Washington for treatment by land farming.

See Appendix D for copies of weight tickets from Anderson's Rock & Demolition Pits and PCS Treatment Facility.

8.0 Discussion

The completed waste characterization event for the smudge pot storage area confirmed the presence of diesel fuel in site soils at 89,300 mg/Kg which is above the MTCA Method A cleanup levels for diesel range petroleum hydrocarbons of 2,000 mg/Kg.

During the initial remediation event on December 3, 2019, Fulcrum collected a total of seven representative confirmation samples from the remediation area, which included 5 pit bottom samples and 2 sidewall samples. Two samples were documented with diesel range petroleum hydrocarbons above the MTCA Method A cleanup level of 2,000 mg/Kg. Sample R34-120319-01.2.5 (west pit bottom) was documented with diesel at 8,670 mg/Kg and sample R34-120319-04.1 (southeast pit bottom) was documented with diesel at 4,600 mg/Kg. The remaining five sample results for diesel ranged from <19.4 mg/Kg to 72.7 mg/Kg which are all below the MTCA Method A cleanup level.

On March 18, 2020, Fulcrum completed additional excavation of the areas of residual diesel impact and extended areas represented by R34-120319-01.2.5 and R34-120319-04.1 to depths of approximately 5-feet bgs each. The additional west remediation area measured approximately 16 feet north-south and 11 feet east-west. The additional east remediation area measured approximately 16 feet north-south and 9 feet east-west. All samples collected from the additional areas of excavation were non-detect for all constituents analyzed.

Final confirmation sample results for both events documented diesel range petroleum hydrocarbon concentrations ranging from <19.4 mg/Kg to 72.7 mg/Kg. All final confirmation sample results documented non-detect concentrations of VOCs and PAHs where analyzed.

8.1 PAH Screening Analysis

Following analysis of final confirmation samples, Fulcrum requested additional analysis of three samples from the final excavation (R34-031820-08.05, 09.05, 11.03) for carcinogenic PAHs to assess human health

risk pursuant to WAC 173-340-708(8)(e). Results were reported under Fremont work order 2003320. See Appendix E for complete laboratory results.

All samples reported carcinogenic PAH concentrations below the method reporting limit. Using ½ the practical quantitation limit (PQL) for the samples, method reporting limits are confirmed to be low enough to provide a maximum total technical equivalent concentration (TTEC) of 0.035 mg/Kg, which is below the MTCA Method A cleanup level of 0.1 mg/Kg for carcinogenic PAHs in soil.

8.2 Terrestrial Ecological Evaluation

The Terrestrial Ecological Evaluation (TEE) process is required to be completed as a portion of cleanup action alternative review under MTCA. The intent of the TEE is to determine if site soil conditions subsequent to development of remedial alternative(s) may pose a threat to the terrestrial environment, including soil biota, plants, and wildlife. The TEE procedures are presented in WAC 173-340-7490 through 7494. Under the simplified TEE in WAC 173-340-7492, evaluation may be ended where residual concentrations are below threshold values in WAC 173-340-900, Table 749-2. Final confirmation sample results identified detectable concentration of diesel at a maximum concentration of 72.7 mg/Kg and below the Table 749-2 threshold value of 460 mg/Kg for unrestricted land use. Based on the final confirmation sample results, no further TEE is warranted.

9.0 Conclusions

Fulcrum performed waste characterization and soil remediation excavation services associated with a former smudge pot storage area located at Ranch 34 located in Yakima County, Washington. The smudge pot storage area was impacted by diesel as a result of handling and storing smudge pots that contained diesel fuel.

A total of 295.92 tons of soil was excavated from the former smudge pot storage location on the site. All excavated soils were transported to Anderson's Rock & Demolition Pits and PCS Treatment Facility for land farming.

Final post-remedial conditions were documented to meet Ecology regulatory criteria at the apparent smudge pot area and in Fulcrum's opinion no additional remediation is warranted associated with the Ranch 34 area.

Fulcrum recommends that a copy of this remediation report be retained. Alternately, Fulcrum recommends that a copy of the report be provided to Ecology for retention in their filing system. A copy of this report should be provided to a prospective buyer or investor of this property.

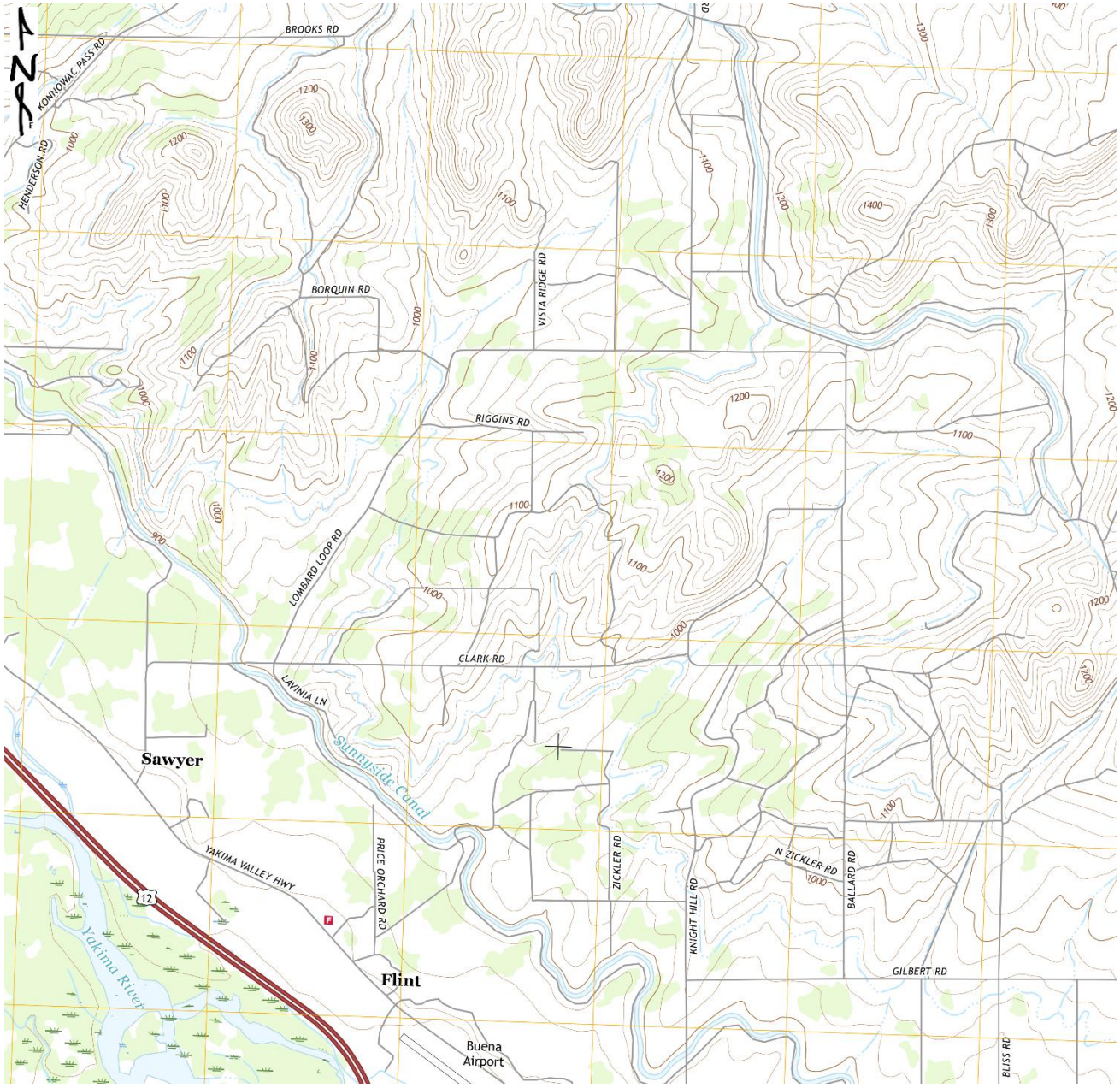
10.0 Limitations

Fulcrum Environmental Consulting, Inc. has performed professional services in accordance with generally accepted professional consulting principles and practices. No other warranty, expressed or implies, is made. The conclusions and recommendations are based upon our field observations, field screening, and independent laboratory analysis. The scope of services for this project is limited to the investigation of one petroleum spill location associated with the site.

Fulcrum makes no warranties expressed or implied as to the accuracy or completeness of other's work included or referenced herein, nor the use of segregated portions of this report. This document does not imply that the property is free of other environmental concerns. This report is solely for the use and information of our client. Any reliance on this report by a third party is at that party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing at the time services were performed. Fulcrum Environmental Consulting, Inc. is not responsible for the impact of changes in environmental standards, practices, or regulations subsequent to the performance of services. Fulcrum Environmental Consulting, Inc. assumes no liability for conditions that were not included in our scope of services, or conditions not generally recognized as predictable when services were performed.

Figures



1 0.5 0 KILOMETERS 1 2
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1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

Fulcrum Environmental Consulting, Inc.
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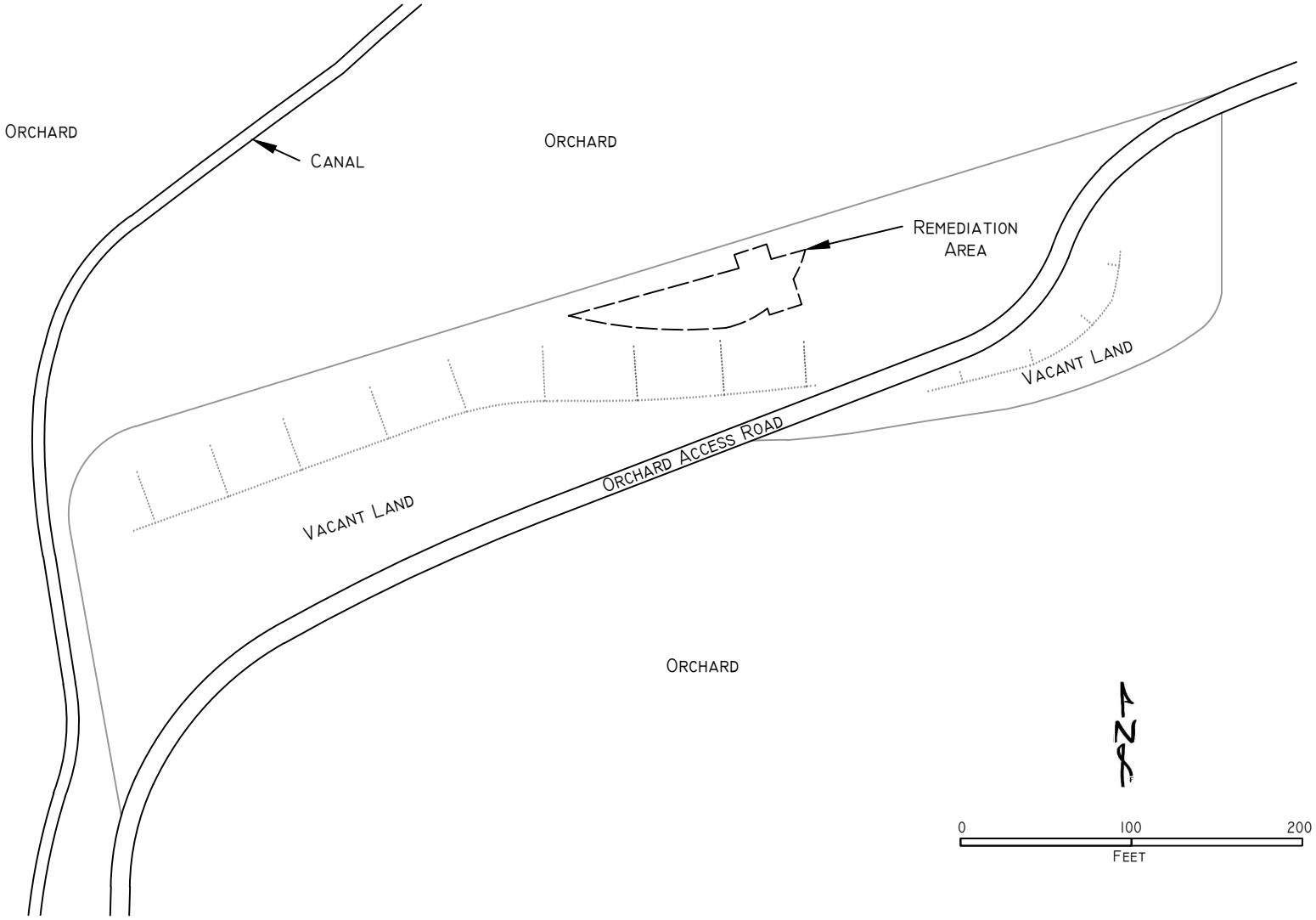
Smudge Pot Remediation. 192902.08. ALY. 12/16/19

Ranch 34
730 Henderson Road
Wapato, WA

Site Location

FIGURE
1



Fulcrum Environmental Consulting, Inc.
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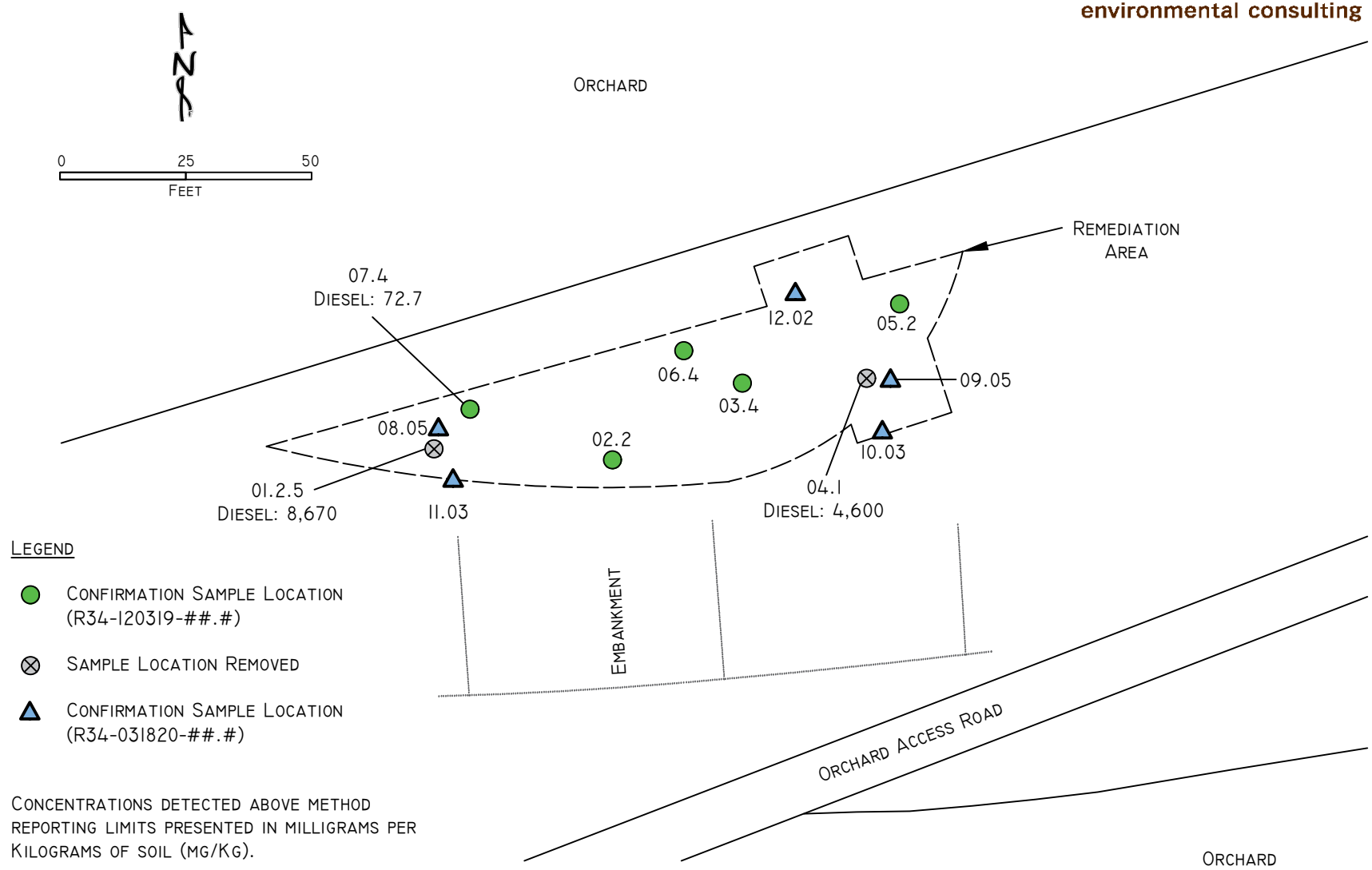
p: 509.574.0839 f: 509.575.8453 efulcrum.net
Smudge Pot Remediation. 192902.08. ALY. 03/27/20

Ranch 49
730 Henderson Road
Wapato, Washington

Site Overview

FIGURE
2



Fulcrum Environmental Consulting, Inc.
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Smudge Pot Remediation. 192902.08. ALY. 03/27/20

Ranch 34
730 Henderson Road
Wapato, Washington

Sample Locations

FIGURE
3

Appendix A

Professional Certifications

INSTITUTE OF HAZARDOUS MATERIALS MANAGEMENT

THIS CERTIFIES THAT

RYAN K. MATHEWS

HAS SUCCESSFULLY MET ALL THE REQUIREMENTS OF EDUCATION, EXPERIENCE AND EXAMINATION, AND IS HEREBY DESIGNATED A

CERTIFIED HAZARDOUS MATERIALS MANAGER
CHMM

January 31, 2007
DATE OF CERTIFICATION

14149
CREDENTIAL NUMBER

January 31, 2023
CERTIFICATION EXPIRES

EXECUTIVE DIRECTOR

VALID SO LONG AS THIS CREDENTIAL IS RENEWED ACCORDING TO SCHEDULE AND IS NOT OTHERWISE REVOKED.

ANSI Accredited Program PERSONNEL CERTIFICATION

Accredited by the American National Standards Institute and the Council of Engineering and Scientific Specialty Boards

STATE OF WASHINGTON

DEPARTMENT OF LICENSING – BUSINESS AND PROFESSIONS DIVISION

THIS CERTIFIES THAT THE PERSON OR BUSINESS NAMED BELOW IS AUTHORIZED AS A

GEOLOGIST
HYDROGEOLOGIST

JEREMY MATTHEW LYNN
1406 SUNSET DRIVE
PROSSER WA 99350

2914	12/05/2011	01/18/2019
License Number	Issued Date	Expiration Date

Pat Kohler

Pat Kohler, Director

PL-630-159 (R/3/16)

Appendix B

Remediation Work Plan

FULCRUM
environmental consulting

Remediation Work Plan
Smudge Pot Storage Area

Ranch 34
730 Henderson Road
Wapato, Washington

Project Number: 192902.08

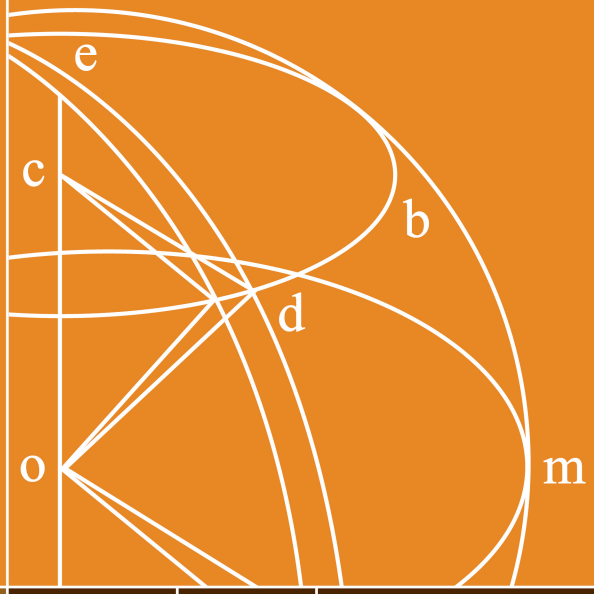
December 17, 2019

Prepared for:

WA LAND MGMT, LLC
c/o: Guy Kisling
22605 Southeast 56th Street #200
Issaquah, Washington 98029

Prepared by:

Fulcrum Environmental Consulting, Inc.
406 North 2nd Street
Yakima, Washington 98901



Report Title: Independent Soil Remedial, Smudge Pot Storage Area

Project Number: 192902.08

Date: December 17, 2019

Site: Ranch 34
730 Henderson Road, Wapato, Washington
GPS coordinates 46.478051, -120.360834

Prepared for: WA LAND MGMT, LLC
c/o: Guy Kisling
22605 Southeast 56th Street #200
Issaquah, Washington 98029

Prepared by: Fulcrum Environmental Consulting, Inc.
406 North Second Street
Yakima, Washington 98901
509.574.0839

The professionals who completed site services, prepared, and reviewed this report include but are not limited to:

Authored by: _____ **Date:** 12.17.19

Nicole McPhee, Environmental Technician
Fulcrum Environmental Consulting, Inc.

Reviewed by: _____ **Date:** 12.17.19

Ryan K. Mathews, CIH, CHMM, Principal
Fulcrum Environmental Consulting, Inc.

Report Integrity:

Fulcrum Environmental Consulting, Inc.'s scope of service for this project was limited to those services as established in the proposal, contract, verbal direction, and/or agreement. This report is subject to applicable federal, state, and local regulations governing project-specific conditions and was performed using recognized procedures and standards of the industry. Scientific data collected in situ may document conditions that may be specific to the time and day of service, and subject to change as a result of conditions beyond Fulcrum's control or knowledge. Fulcrum makes no warranties, expressed or implied as to the accuracy or completeness of other's work included herein. Fulcrum has performed these services in accordance with generally accepted environmental science standards of care at the time of the inspection. No warranty, expressed or implied, is made.

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APPENDICES

1.0 Introduction

This Remediation Work Plan has been prepared on behalf of WA LAND MGMT, LLC by Fulcrum Environmental Consulting, Inc. (Fulcrum) to describe the remediation activities that will be conducted at Ranch 34, located at 730 Henderson Road in Wapato, Washington. See Figure 1 for general site location.

The property is operated as irrigated permanent plantings of fruit trees. Property operated by WA LAND MGMT, LLC includes apples and soft fruits (peaches, apricots, etc.). Since first orchard use, smudge pots have been utilized as the primary frost protection system at the site. Typical of common regional practice, during off-season use in summer months, the smudge pots were removed from the field and stored at the site in a concentrated area(s).

During a Phase I Environmental Site Assessment (ESA) site walk performed on behalf of a prospective buyer, visibly stained soils were observed in the smudge pot storage area. The prospective buyer notified WA LAND MGMT, LLC and requested additional investigation and remediation if necessary.

Fulcrum completed limited Phase II investigation activities at the site to evaluate constituents of concern (COC); and to approximate extents of impact and soil volumes. Applicable results of the Phase II investigation are summarized in Section 3.

The intent is that all project activities were completed as provided in The Model Toxics Control Act (MTCA), Washington Administrative Code (WAC) 173-340. In our professional opinion, the use of the independent remediation process is appropriate given the current understanding of site conditions.

1.1 Purpose

The purpose of the work plan is to complete an independent remediation of site soils as provided under WAC 173-340-515. During this work, Fulcrum intends to consider all appropriate remedial strategies in accordance with the MTCA including engagement of Ecology under the Voluntary Cleanup Program and/or proceeding as an independent remedial action. These strategies may include calculating alternate cleanup levels under WAC 173-340-700 for petroleum hydrocarbons; completing a risk-based evaluation; using of monitored natural attenuation (MNA); applying institutional and engineering controls with a restrictive covenant; etc., or a combination of these methods.

1.2 Project Parties

This project is a coordination of the efforts of WA LAND MGMT, LLC, Fulcrum, and selected contractors. Fulcrum will lead remediation activities. Table 1 lists the people involved in this project, their respective organization, and their role.

Table 1: Organization of Project Staff and Responsibilities

Person/Agency or Firm	Role/Responsibility
Brett Calhoun, General Manager WA LAND MGMT, LLC Brett.Calhoun@pridepacking.com, 509.728.2772	Site General Manager: Responsible for assisting with site access.
Frank Winslow, Site Manager Washington State Department of Ecology frank.winslow@ecy.wa.gov, 509.454.7886	Provides local regulatory review of investigation findings and review of project documentation.
Ryan K. Mathews, CIH, CHMM Fulcrum Environmental Consulting, Inc. RMathews@efulcrum.net, 509.574.0839	Fulcrum Principal: Responsible for reviewing and managing project charter and contracting.
Jeremy M. Lynn, LHG, PMP Fulcrum Environmental Consulting, Inc. Jeremy.Lynn@efulcrum.net, 509.405.2450	Reviews the project scope, budget, and tracks progress. Provides supervision of onsite investigation activities and review of project geologic and hydrogeologic evaluation and documentation. All project documentation will be stamped by a Washington State Licensed Hydrogeologist.
Kyle Ames, GIT Fulcrum Environmental Consulting, Inc. Jeremy.Lynn@efulcrum.net, 509.574.0839	Assist with the site remediation and completes soil sampling under the direction of Fulcrum's Licensed Hydrogeologist.
Ashley Yellick, GIT Fulcrum Environmental Consulting, Inc. Jeremy.Lynn@efulcrum.net, 509.574.0839	Assist with the site remediation and completes soil sampling under the direction of Fulcrum's Licensed Hydrogeologist.
Mike Ridgeway Fremont Analytical, Inc. mridgeway@fremontanalytical.com; 206.352.3790	Project Laboratory: Responsible for completion of work tasks, including laboratory analysis, sample container provision, laboratory QA/QC, and review of project laboratory analysis.
Chris Smith Spokane Environmental Solutions, Inc. chris@spokaneenvironmental.com; 509.999.3600	Remedial Excavation Contractor Principal: Responsible for completion of excavation and soil transport activities.

1.3 Work Plan Organization

In addition to this Introduction, the Work Plan includes the following sections:

- Section 2: Site Description – describes the location, physical setting, and operational history at the Site.
- Section 3: Prior Investigation – summarizes the scope and results from previous environmental investigations that have been conducted at the Site in chronological order and describes the current understanding of environmental site conditions based on the previous investigations and the operational history of the Site.
- Section 4: Remedial Objectives – describes the objectives of the soil remediation work.
- Section 5: Remediation Activities – provides a narrative of the work tasks that will be completed to accomplish soil removal.
- Section 6: Reporting and Schedule – describes the investigation report that will be prepared per

MTCA requirements and the schedule for completion of significant investigation tasks.

- Section 7: References – provides a list of references cited in the Work Plan.
- Several appendices are included to provide information supporting the scope of the Work Plan.

1.4 Pertinent Regulations and Approach

In March of 1989, the Model Toxics Control Act (MTCA) went into effect in Washington State. The MTCA regulations set standards to ensure quality of cleanup and protection of human health and the environment. A major portion of the MTCA regulation (completed in 1991) was the development of numerical cleanup standards and requirements for cleanup actions. Three options were established under MTCA for site-specific cleanup levels: Method A, B and C. Method A defines cleanup levels for 25 of the most common hazardous substances found at sites. Method B levels are set using a site risk assessment, which enables consideration of site-specific characteristics. Method C is similar to Method B, however, the individual substance's cancer risk portion of the assessment is set at 1 in 100,000 rather than 1 in 1,000,000.

Ecology's MTCA Method A cleanup tables were developed to provide conservative cleanup levels for sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. Method A cleanup levels are specifically designated as appropriate for residential facilities and are appropriate for a conservative approach at school, public and commercial sites. Therefore, Fulcrum has determined that Ecology's MTCA Method A cleanup levels will be used as site screening levels (SSLs) during the investigation. However, use of Method A levels does not limit the use of site-specific Method B levels in future remediation design or implementation. Where MTCA Method A cleanup levels are not provided, Fulcrum will utilize Method B levels as the SSL.

2.0 Site Description

Ranch 34 site is located at 730 Henderson Road, in Wapato, Washington and is located on Yakima County Assessor tax parcel 191321-24002.

2.1 Physical Setting

The physical setting of the Site in terms of climate, topography, regional geology, regional hydrogeology, and surface water is described in the following paragraphs.

2.1.1 Climate

The climate is semi-arid with cool winters and hot/dry summers. The average daily maximum temperature at the Site ranges from 36 to 88 degrees Fahrenheit and the average annual precipitation is 8.4 inches (NOAA, 2016).

2.1.2 Topography

Site topography is generally level and varies with an elevation of about 950 feet above sea level.

2.1.3 Regional Geology

The Site is located in the Yakima Valley. The regional geology consists of Miocene basalt flows of the Columbian River Basalt Group overlain by the Ellensburg Formation, which is overlain by mostly Holocene alluvial deposits resulting from the adjacent Yakima River. Geologic information for the Site comes from the *Geologic Map of the Yakima Quadrangle, Washington* (Bentley, 1983) and the logs from nearby wells.

2.1.4 Regional Hydrogeology

The hydrogeologic units of the Yakima region can be split into the following two categories (Vaccaro, et al., 2009):

- Basin-Fill Units (including unconsolidated alluvial deposits and semi-consolidated to consolidated units of the Ellensburg Formation)
- Columbia River Basalt Group and interbedded units

The lithology and hydraulic characteristics of the basin-fill units are diverse and groundwater levels generally follow land surface contours. Groundwater generally flows towards the Yakima River in the shallow basin-fill units at the Site. The flow in the deeper units is controlled primarily by characteristics of the unit itself and the overlying units. Flowing artesian conditions exist in the Yakima basin where groundwater is present under confined conditions, described as "aerially extensive productive artesian zones."

2.1.5 Groundwater

A limited review of well logs on Washington State Department of Ecology Well Log Report indicates the first groundwater bearing zone is estimated to be present within the upper 50-feet but production wells are likely to be in excess of 150-feet.

2.2 Land Use

The current land use of Ranch 34 is designated by Yakima County as "agricultural". Presently the site is operated as irrigated permanent plantings of apples or soft fruits (including apricots, peaches, etc.).

3.0 Previously Completed Investigations

An initial investigation completed in September 2019 identified the following constituents of concern:

Table 2: Waste Characterization Sample Results

Analyte	Result (mg/Kg)	MTCA Method A CUL	Exceeds MTCA Method A CUL	Dangerous Waste Level (mg/L)	Exceeds Dangerous Waste Level
Total PCBs [1]	<0.112	10[2]	No	-	-
Diesel	**89,300**	2,000	Yes	-	-
Heavy Oil	<5,370	2,000	No	-	-
Polyaromatic Hydrocarbons					
Benzo[a]pyrene	<0.477	2.0[2]	No	-	-
Benz[a]anthracene	<0.477	NA	NA	-	-
Benzo[b]fluoranthene	<0.477	NA	NA	-	-
Benzo[k]fluoranthene	<0.477	NA	NA	-	-
Chrysene	0.662	NA	NA	-	-
Dibenz[a,h]anthracene	<0.477	NA	NA	-	-
Indeno[1,2,3-cd]pyrene	<0.477	NA	NA	-	-
PAH TTEC (Per WAC 173-340-708)	*0.0066*	*2.0[2]*	*No*	-	-
Total PAH [Percentage Per WAC 173-303-100(6)]	*0.035%*	-	-	*1%*	*No*
Volatile Organic Compounds					
Halogenated/Chlorinated VOCs [1]	-	-	-	-	-
Benzene	<0.023	0.03	No	0.5	No
Toluene	<0.023	7	No	-	-
Ethylbenzene	<0.029	6	No	-	-
Total Xylenes	<0.057	9	No	-	-
Metals					
Mercury	<0.282	2	No	0.2	No
Arsenic	6.09	20	No	5	No
Cadmium	<0.187	2	No	1	No
Total Chromium	19.6	19 / 2,000[4]	No	5	No
Lead	8.87	250	No	5	No

All results, method reporting limits, and cleanup levels are presented in mg/Kg. Dangerous waste threshold values where published in WAC 173-303-090(8) are presented in milligrams per liter.

Results in **Bold** indicate a result above the MTCA Method cleanup level.

[1] The individual chemical constituents were not detected above the method reporting limit (MRL)

[2] Industrial MTCA Method A cleanup level

[3] Select constituents have established MTCA Method A cleanup level. When a MTCA Method A cleanup level is not available, the MTCA Method B Standard Value is utilized for evaluation.

[4] The MTCA Method A cleanup level for Chromium (III) is 2,000 mg/Kg and for Chromium (VI) is 19 mg/Kg

On December 3, 2019, Fulcrum began soil remediation activities. During the work, soil was removed from an area about 64-feet in length and 30-feet in width.

Table 3: December 2019 Remediation Laboratory Results

Sample Number and Location	Analyte					
	Diesel	Heavy Oil	Benzene	Toluene	Ethylbenzene	Xylenes
R34-120319-01.2.5 West pit bottom	**8,670**	<55.6	<0.0296	<0.0296	<0.0370	<0.0740
R34-120319-02.2 Southwest pit bottom	<19.4	<48.4	<0.0285	<0.0285	<0.0357	<0.0713
R34-120319-03.4 Center pit bottom	<23.7	<59.3	<0.0273	<0.0273	<0.0341	<0.0681
R34-120319-04.1 Southeast pit bottom	**4,600**	<51.9	<0.0267	<0.0267	<0.0333	<0.0667
R34-120319-05.2 East pit bottom	<23.0	<57.5	<0.0247	<0.0247	<0.0308	<0.0617
R34-120319-06.4 Northeast sidewall	<24.0	<60.1	<0.0349	<0.0349	<0.0436	<0.0873
R34-120319-07.4 Northwest sidewall	72.7	<57.8	<0.0294	<0.0294	<0.0367	<0.0734
MTCA Method A CUL	2,000	2,000	0.03	7	6	9

All results and MTCA Method A CUL are reported in mg/Kg
Results in **Bold** indicate a result above the MTCA Method cleanup level.

Seven confirmation soil samples were collected, of which two reported remaining diesel concentrations of 4,600 and 8,670 mg/Kg. No other analytes were present above method detection limits. See Appendix C for the laboratory report.

Fulcrum estimates that an additional 20 to 30 cubic yards of soil will require remediation.

Based on results of the initial investigation, groundwater is not anticipated to be encountered during remediation excavation. If groundwater is encountered, additional evaluation may be needed to meet MTCA regulatory requirements and applicable amendments to this remediation work plan will be required.

4.0 Remedial Objectives

4.1 Remedial Action Objectives

Remedial Action Objectives are narrative goals for a cleanup action that address how the cleanup fits into the overall MTCA cleanup process. The following Remedial Action Objectives have been identified for the primary contaminants found at the Site:

1. Petroleum contaminated soils (diesel range petroleum hydrocarbons) will be addressed to achieve MTCA Method A cleanup levels in accordance with MTCA, including engagement of Ecology under the Voluntary Cleanup Program and/or proceeding as an independent remedial action through use of remedial strategies that may include calculating alternate cleanup levels under WAC

173-340-700 for petroleum hydrocarbons; completing a risk-based evaluation; using of monitored natural attenuation (MNA); applying institutional and engineering controls with a restrictive covenant; etc., or a combination of these methods.

Guidance associated with remedial action evaluation is presented in WAC 173-340-360.

4.2 Basis for the Selected Remedy

The selected remedy also meets the other requirements for selection under WAC 173-340-360(2)(b), which include the following:

1. Using Permanent Solutions to the Maximum Extent Practicable. Excavation and offsite treatment or disposal is a permanent solution. Use of treatment technologies such as incineration for the full extent of impacted soil is not a permanent solutions to the maximum extent practicable because their costs are substantially disproportionate to their benefits compared to other options.

2. Providing for a Reasonable Restoration Time Frame. Cleanup goals will be achieved at the Site following excavation of accessible soils. Where soils cannot be fully excavated, the remedial solution is required to have reasonable restoration time frame. MTCA does not provide a definition for "reasonable restoration time frame" and this approach is best considered in evaluation with the toxicity, mobility, and accessibly of the contamination.

3. Considering Public Concerns. The public review process is not required for independently completed projects.

If in-place management of impacted soils is appropriate it must meet the following minimum requirement for selection of a cleanup action under WAC 173-340-360(2)(a):

1. Protect Human Health and the Environment. The selected remedy will protect human health and the environment in the short-term and long-term by removing discrete areas of localized soil contamination and preventing exposure to impacted soil via consolidation of such soil beneath impermeable concrete or asphalt structures.

2. Comply with Cleanup Standards. The selected remedy will comply with cleanup levels for soil.

3. Comply with Applicable State and Federal Laws. The selected remedy is expected to comply with applicable state and federal laws.

4. Provide Compliance Monitoring. If contamination remains, a compliance monitoring program will be required.

The Remediation Work Plan takes into consideration identified contaminants, project construction scope, regulatory guidance, and remediation objectives.

5.0 Remediation Activities

5.1 General Steps

Remedial activities will be performed in accordance with MTCA. Excavation extent will be determined based on the conditions encountered in the field and will be guided by field screening, including color, odor, sheen, and headspace volatile organic compounds (VOCs) measured with a photoionization detector (PID). The excavation extents, primarily the depth, will be informed by the initial investigation completed in September 2019.

Safety measures will be implemented at each property, as follows:

- Controlling traffic as needed during earthwork activities.
- Protecting the excavations on a daily basis, if the area is not backfilled immediately or a gentle slope (typically less than 1 to 4) cannot be achieved.
- Placing high-visibility fencing around each excavation area to provide a visual warning for the public, personnel, and/or trespassers, until the area is ready to be backfilled.
- Using warning tape or other barriers at the site during earthwork activities.

Only if the excavation exceeds 3-feet will backfill be placed. If PCS remains at the location, a landscaping geotextile fabric shall be placed prior to placement of clean backfill.

All excavated soils will be delivered to Anderson's Rock & Demolition Pits and PCS Facility for treatment. If debris or large rock are encountered and reasonably separable, these materials may be retained onsite or disposed as solid waste.

Given the fall conditions and generally moist soil conditions, dust abatement is not anticipated to be needed. However, if conditions occur and dust abatement is needed only the water needed to accomplish dust abatement will be used as wet soils are more difficult to excavate and transport and impair the use of field screening techniques.

If trucks cannot be placed in close proximity to the excavation area plastic sheeting or tarps will be placed under trucks during the loading activities.

5.2 Field Records

A record of all field work shall be kept on the field form included in Appendix A and in the field geologist log book. The field forms and log book shall be reviewed by the supervision Geologist on a daily basis.

5.3 Field Screening

All sample locations will be screened in the field using the following methods:

- Visual indicators of staining
- Odor
- Sheen test
- Photo-ionization detector (PID)

5.4 Confirmation Soil Sampling

Final discrete soil samples will be collected from the specific location that based on field screening suggests the highest potential for COCs. The confirmation sampling will be collected based on the following field criteria:

5.4.1 Pit Bottom Samples

- A minimum of 3 samples will be collected from the pit bottom from the excavation
- Where the total area of the excavation exceeds 500 square feet, then 1 additional pit bottom sample will be collected for every 1,000 additional square feet

5.4.2 Sidewall Samples

- Where the excavation depth exceed 3 feet below ground surface, a minimum of four sidewall samples will be collected.
- Sidewall samples will be collected at a frequency of one sample per 50 linear feet of excavation sidewall

Sample labeling scheme shall consist of the following:

Ranch Number – Date – Unique Sample Number – Depth of Sample (e.g. R44 – 010120 – 01.01)

Sample locations within the established parameters above, will additionally use field indicators of impact to select sample locations with the greatest potential for residual impact. Soil samples at depths of up to 3-feet below ground surface where a safely accessed excavation is present shall be collected directly from the desired sample location. Where the sampling depth exceeds 3-feet, the soil sample shall be collected from the relatively undisturbed soil between the teeth of the excavator bucket.

Confirmation soil samples will be collected and analyzed by the following methodologies:

- Diesel and Heavy Oil by NWTPH-DxExt
- Benzene, Toluene, Ethylbenzene and Xylenes by Environmental Protection Agency (EPA) Method 8260C

All laboratory analysis shall be performed to demonstrate that the COCs are not present above the respective cleanup level.

5.4 Evaluation of Laboratory Results

Upon receipt of laboratory results review laboratory and method performance as provided in the QAPP.

6.0 Risk Screening Evaluation

This section describes the screening level risk assessment that will be conducted for the Site as part of the Remediation Work Plan if all PCS cannot be excavated. Sample locations or areas that do not meet MTCA cleanup levels will be described on tables and maps.

6.1 Potential Human Health Impacts

Data collected at the Site will be screened using Method A cleanup levels and standard Method B default values as developed by Ecology pursuant to Washington's MTCA Act (part VII of chapter 70.105D RCW) and released to stakeholders through the Cleanup Levels and Risk Calculation (CLARC) web site to determine whether concentrations of hazardous substances warrant further consideration with regard to potential human health impacts. Standard Method B cleanup levels will be adjusted for additive health effects associated with multiple hazardous substances and pathways of exposure in accordance with WAC 173-340-708. Locations that meet Method A or Method B cleanup levels may generally be used without future use restrictions on the property due to residual levels of contamination.

As described in WAC 173-340-700(6)(d), practical quantitation limits (PQLs) will also be considered during the screening level human health risk assessment. PQLs and Site screening levels that will be used in the Work Plan are described in the QAPP in Appendix B. The importance of using laboratory methods that will provide PQLs at or below Site screening levels is acknowledged.

6.2 Potential Ecological Impacts

Potential ecological impacts will be evaluated by following the requirements for a terrestrial ecological evaluation (TEE) set forth in WAC 173-340-7491 through WAC 173-340-7493 to determine whether concentrations of hazardous substances warrant further consideration with regard to terrestrial receptors (including soil biota, plants, and wildlife), Site conditions identified through the Work Plan will be evaluated to determine whether the Site meets any of the no further evaluation criteria for a TEE in WAC 173-340-7491(1). The four no further evaluation criteria are:

- All soil contaminated with hazardous substances is, or will be, located below the point of compliance.
- All soil contaminated with hazardous substances is, or will be, covered by buildings, paved roads, pavement, or other physical barriers that will prevent plants or wildlife from being exposed to the soil contamination.
- There is less than 1.5 acres of contiguous undeveloped land on the Site or within 500 feet of the Site contaminated with hazardous substances and there is less than ¼ acre of contiguous

undeveloped land on or within 500 feet of the Site affected by specific hazardous substances known to pose ecological concern.
- Concentrations of hazardous substances in soil do not exceed natural background levels.

The results of this evaluation will be documented in the Investigation Report. It is acknowledged that the no further evaluation criteria are dependent on institutional controls and/or completion dates for future development that are acceptable to Ecology.

If an exclusion from a TEE cannot be documented, then Site conditions will be evaluated to determine whether the Site meets any of the criteria for a site-specific TEE as set forth in WAC 173-340-7491. In summary, the site-specific TEE criteria are:

- The site is located on, or directly adjacent to, an area where management or land use plans will maintain or restore native or semi-native vegetation.
- The site is used by a threatened or endangered species.
- The area of contamination is located on a property that contains at least ten acres of native vegetation within 500 feet of the contamination, not including vegetation beyond the property boundaries.
- Ecology determines that the site may present a risk to significant wildlife populations.

If none of these site-specific criteria apply to the Site, then a simplified TEE will be conducted as set forth in WAC 173-340-7492 and the results will be summarized in the remediation report. If one or more of these site-specific criteria apply to the Site, then a site-specific TEE will be conducted as set forth in WAC 173-340-7493 and the results will be summarized in the remediation report. WAC Table 749-3 will be used for initial screening purposes using the COCs used in the remediation report.

7.0 Reporting & Scheduling

Fulcrum anticipates completing proposed remediation activities as follows:

Table 4: Projected Schedule of Events

Projected Completion Date	Tasks
March 16, 2020	Submit public utility request
March 16, 2020	Submit request for soil treatment to Yakima Health District
March 26, 2020	Complete private utility locate
March 31 and April 1, 2020	Complete soil excavation
About 7 days following sample collection	Receive laboratory results
Before May 1, 2020	Issue Soil Remediation Report

The proposed timeline is dependent upon subcontractor availability and currently scheduled onsite activities. Approximately 2 weeks following completion of receipt and review of laboratory analysis, a draft report of the investigation findings will be issued by Fulcrum. The proposed timeline is additionally based on an anticipated 5-business day turn-around-time for receipt of sample analytical results following

completion of onsite activities.

8.0 References

EPA Requirements for Quality Assurance Project Plans, EAP QA/R-5, EPA/240/B-01/003, U. S. Environmental Protection Agency, March 2001.

Guidance for Quality Assurance Project Plans, EAP QA/G-5, EPA/240/R-02/009, U. S. Environmental Protection Agency, December 2002.

Guidance for Data Quality Assessment – Practical Methods for Data Analysis, U.S. Environmental Protection Agency, EPA 600/R-96/084, EPA EZ/G9, QA97 Version, January 1998.

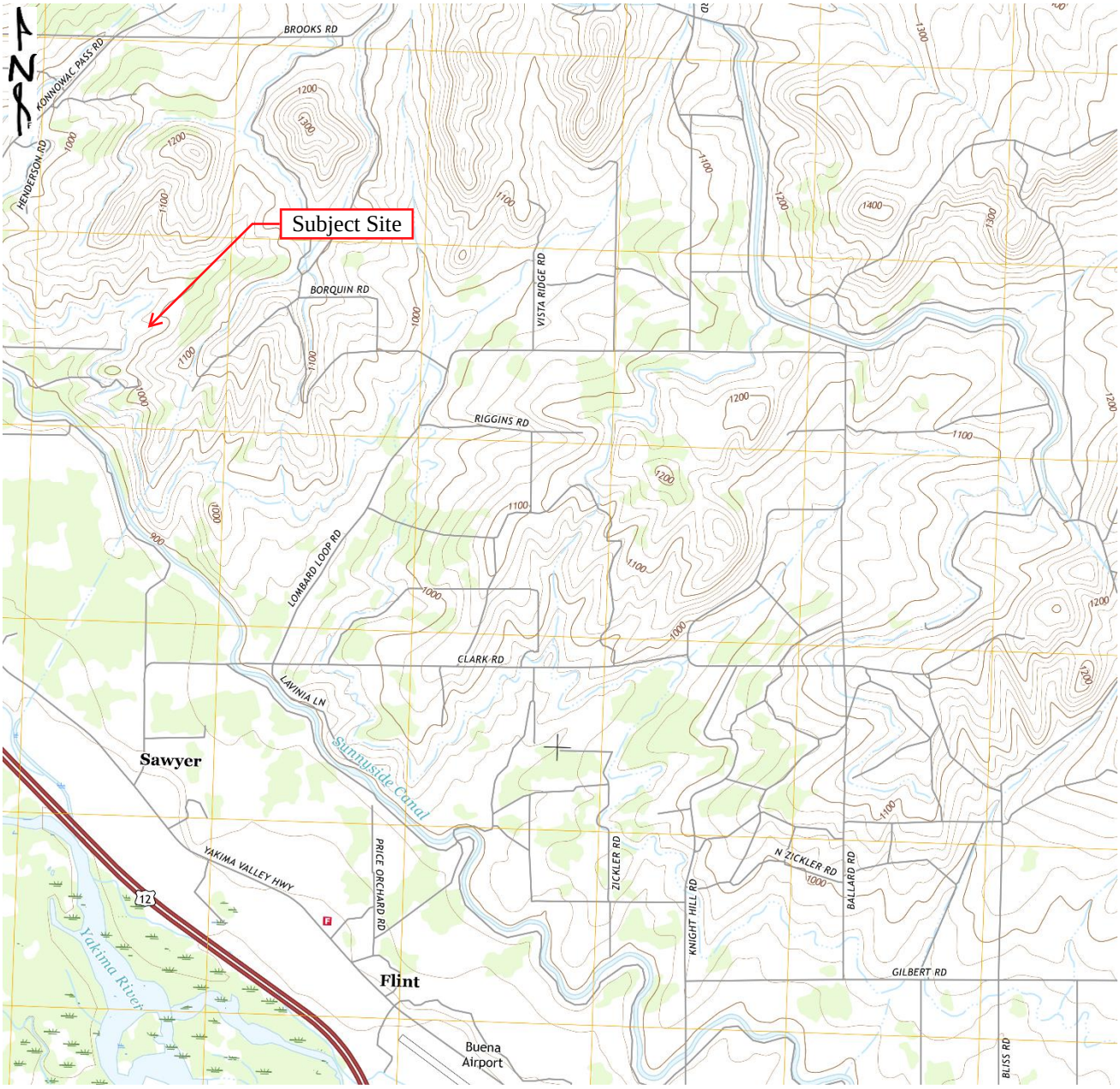
Guidance for Remediation of Petroleum Contaminated Sites, Washington State Department of Ecology, Publication 10-09-057, November 2010, revised June 2016.

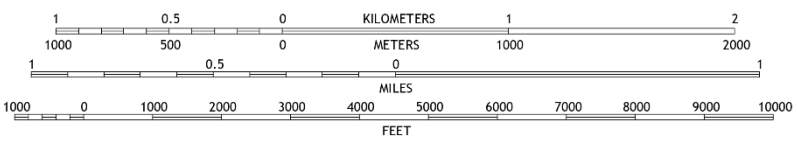
Incremental Sampling Methodology, Interstate Technology & Regulatory Council, https://www.itrcweb.org/ism-1/, February 2012.

Model Toxics Control Act, Washington State Department of Ecology, Washington Administrative Code 173-340.

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, U.S. Environmental Protection Agency, EPA SW-846.

Figures





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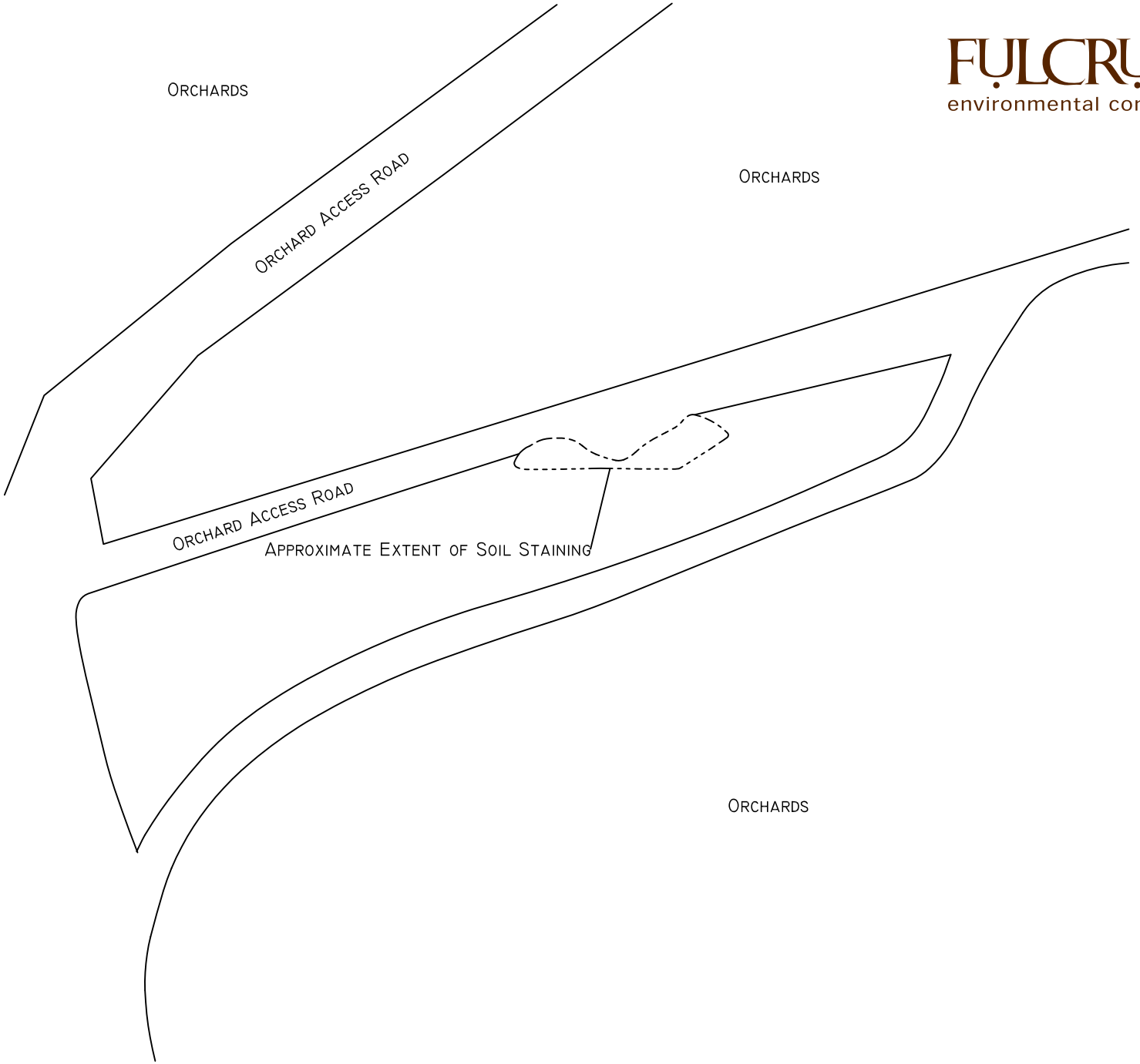
Smudge Pot Work Plan. 192902.08. ALY. 12/16/19

Ranch 34
4721 Konnowac Pass Road
Wapato, WA

Site Location

FIGURE
1



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Smudge Pot Work Plan. 192902.08. NLM. 12/17/19

Ranch 34
4721 Konnowae Pass Road
Wapato, Washington

General Remediation Area Map

FIGURE
2

Appendix A

Field Form

Ranch ____ Address _____ Field Lead:_____ Start Date/Time: _____ End Date/Time:_____

Table 1: Laboratory Results

Contaminant	Present (Y/N)
Diesel	
Heavy Oil	
Metals	
PAHs	

Table 2: PCS

Dimension (approx.)	Feet
Length	
Width	
Depth	

Estimated Volume of PCS: _____ Trucks or Trucks & Trailer: _____ Loads (Est.)

Truck No.	Driver	Left (time)	How Full	Returned (time)

Sample Plan

Collect pit bottom samples at 1 per 500-square feet

AND If depth is 3-ft or more collect sidewalls at rate of 1 per 50-linear feet of sidewall

AND *Duplicates at 10% of laboratory samples*

Container	Per Location	Planned For Ranch	Actual Collected
4-ounce jars			
40-ml voa vials			

Laboratory Analysis

- Diesel and heavy oil by NWPTH – Diesel Extended (Dx)
- BTEX by EPA Method 8260
- PAHs by EPA Method 8270 – PM selection following review Dx results

Notes:_____

1
2
3
4
5
6

1
2
3
4
5
6

Ranch ____ Address ____ Field Lead:_______________________________ Start Date/Time: ______________ End Date/Time:_______________

Table 3: Field Screening and Samples Collected

Sample	Color	Odor	Sheen	VOCs (ppm)	Description	Soil Sample Y/N	Sample Number (R##-MMDDYY-##.Depth)	# of Jars	# of Voas	Duplicate Collected Here	Other

Appendix B

Project SAP / QAPP

Sampling & Analysis Plan
Quality Assurance Project Plan
Former Smudge Pot Storage Area Remediation

Ranch 34
730 Henderson Road
Wapato, Washington

Project Number: 192902.08

December 17, 2019

Prepared for:

WA LAND MGMT, LLC
c/o: Guy Kisling
22605 Southeast 56th Street #200
Issaquah, Washington 98029

Prepared by:

Fulcrum Environmental Consulting, Inc.
406 North 2nd Street
Yakima, Washington 98901

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TABLES

1.0 Data Quality Objectives

The primary goal of this project is to accurately define magnitudes and extents of impact of petroleum hydrocarbons and other constituents in site soils post-remedial excavation. To do this, samples collected must be representative of site soil conditions. Variations in the level of site soil impact can occur due to natural environmental heterogeneity or may be caused by the sampling and analytical procedures, or sample collection and handling methods.

For this project to succeed, the precision (random error) and bias (systematic error) of the sample results must be low to reveal variability in concentrations between samples. Standard procedures will be used when collecting and handling soil samples to minimize any bias caused by the sampling process.

The precision and bias routinely obtained by the project laboratory for the selected analytical methods will meet the measurements quality objectives (MQOs) for this project. Table 1 lists the MQOs for assessing project data quality. Recovery limits (RL) and method reporting limit (MRL) are a function of the analytical methodology, laboratory equipment and concentration of other analytes in the sample. For instance, a sample with an appropriate methodology, sensitive laboratory equipment and very low or non-detect concentrations of analytes will typically achieve an exceptionally low MRL, often more than an order of magnitude below the MTCA cleanup regulations as the selected regulatory cleanup values. However, the same sample with a mixture of similar analytes may result in interferences among like analytes or sample dilution may result in significantly higher MRLs. As such, MRLs on samples collected during an investigation are likely to vary in RL and MRL.

These MQOs are based on adequacy and completeness of field sampling and performance characteristics of measurements done by the project laboratory.

Table 1: Laboratory Analyte MQOs for Soil Analysis

Analyte	Reporting Limit (mg/Kg)	LCS % Recovery Limits		Duplicate % RPD Limits	MS / MSD % recovery limits	
Petroleum Range Hydrocarbons						
Diesel by NWTPH-DxExt	20	65	135	30	65	135
Heavy Oil by NWTPH-DxExt	50	NA	NA	NA	NA	NA
Volatile Organic Compounds by EPA Method 8260						
Benzene	0.02	64.3	133	30	63.5	133
Ethylbenzene	0.025	74	129	30	54.5	134
m,p-Xylene	0.05	70	124	30	53.1	132
o-Xylene	0.025	68.1	139	30	53.3	139
Toluene	0.02	67	144	30	63.4	132

mg/Kg milligrams per kilogram
LCS Laboratory Control Standard
RPD Relative Percent Difference
NA Not Applicable

Should additional analysis beyond those specified in Table 1 be required, all additional analysis will be completed within applicable MQOs as appropriate for the selected methodologies to meet both analysis method and regulatory requirements.

2.0 Sampling Procedures

Soil sampling procedures were selected based upon observed and anticipated field conditions. Sampling will be consistent with Environmental Protection Agency (EPA) protocols as set forth in the document titles, *Preparation of Soil Sampling Protocols: Sampling Techniques and Strategies.* Additionally, all soil samples for volatile analysis will be collected per Ecology's *Technical Memorandum #5: Collecting and Preserving Soil Samples for VOC Analysis.* Specific analytes will be selected based on Ecology's published document titled, *Guidance for Remediation of Petroleum Contaminated Sites, Publication 10-09-057*, Revised June 2016.

The following is a summary of collection procedures anticipated for soil sampling and a summary of sample preparation for sample analysis and decontamination procedures.

2.1 Sampling Procedure for Soils

Soil samples collected from excavation extents will be obtained by direct collection from the desired location if accessible, otherwise collected from the excavator bucket. Samples will be collected at locations and elevations with the highest field indicators of impact during remedial excavation. All samples will be collected by hand using new nitrile gloves.

Samples will be collected into labeled, 4-ounce borosilicate sample jars. The number of sample containers at each location will be determined by sample location and analyses to be performed.

Each 40-milliliter vial sample utilized for EPA Method 8260 analysis will be collected using an impinger sampler to minimize loss of volatile organic compounds. Disposable, single-use impingers are utilized to collect a measured soil sample of undisturbed soil. Following each sample collection, the sample will be immediately placed into a new 40-milliliter glass vial with Teflon-lined lid. Consistent with Ecology guidance, sample preparation, including extraction by Methanol will be completed at the laboratory within 48-hours of sample collection. If laboratory provided methanol preserved sample vials are used, samples will be analyzed within 14-days of collection.

Field collected samples will be divided into two portions. The first portion will be placed in a clean, appropriately sized sample jar or vial and immediately placed on ice for laboratory analysis. The second portion of the sample will be placed in a re-closeable plastic bag for field screening.

Field screening will include observation, sheen analysis and/or headspace sampling. Observation refers to visual/olfactory observation of the sample for obvious indications of contamination. Sheen analysis involves dropping a small volume of sample into a container of clean water and observing any resulting sheen produced on the water surface. Headspace sampling is a measurement of the relative concentration

of volatile organic carbons (VOCs) in the soil sample headspace. For headspace sampling, the sample will remain in the sealed plastic bag for approximately 10 minutes in a warm area to promote volatilization. The probe of a photo-ionization detector (PID) will then be inserted into the bag and the highest response will be recorded for each sample. The intent of field screening for VOCs is limited to identification of presence of elevated concentrations only in order to assist with efficient selection of soil samples for laboratory analysis and is not intended to be utilized to document VOC concentrations, absence of impact or correlation of field screening data with laboratory analysis results.

Record of physical description of the soil including grain proportions, color, odor, location, condition, etc. will be completed in the field.

2.2 Sample Preparation for Various Analytical Methods

The following general procedures will be used during sample collection and preparation. Wear new disposable protective gloves during sampling activities. Preserve samples and adhere to holding times as described in Table 2 as required by the analytical method being requested. Check the sample lid to ensure cleanliness and that it is secured. Carefully label the sample container with the appropriate information. Use only waterproof ink to complete sample container labels. After label information has been completed, secure labels to the sample container by wrapping clear tape over the label and around the container. Transfer samples to a cooler. Preserve samples in the field on ice at 4° Celsius pending preparation for field analysis or shipping to the analytical laboratory.

At a minimum, the following information will be recorded in the field logbook:

1. Sample location designation
2. Sampling location condition and pertinent observations of surrounding area
3. Weather conditions
4. Manufacturer, model number and calibration results of meters/instruments used to measure field parameters
5. Soil color, grain size, and visual and olfactory indications of contamination
6. Soil sample interval/depth
7. Time of sample collection
8. Initials of samplers
9. Laboratory analysis to be performed
10. Any miscellaneous comments or observations

The following field information will additionally be included on the chain-of-custody forms:

1. Sample identification
2. Time of sample collection
3. Initials of samplers
4. Laboratory analysis to be performed
5. Any miscellaneous comments or observations

2.3 Decontamination

Every effort will be made to minimize the need for decontamination of sampling equipment through the use of dedicated sampling equipment (i.e. bowls, spoons, etc.): however, the use of non-dedicated sampling equipment (i.e., hand trowels, hand augers, split spoons, etc.) may be required in some locations. In these cases, the non-dedicated sampling equipment will be decontaminated prior to each use. Field equipment, that directly contacts samples or sample containers, will be decontaminated prior to use and between each sampling event. The following procedures will be used to prevent cross contamination of samples collected during this project.

Gross contamination will be removed by dry brushing or wiping the equipment with disposable toweling. Field equipment will then be washed in a solution of Alconox™, Liquinox™ or comparable non-hazardous laboratory detergent product and deionized water. Washed equipment will be double rinsed with deionized water. Rinsate will be discharged to the sample collection location. Field equipment will then be placed on clean aluminum foil or similar material.

All sample containers will be pre-cleaned as required by EPA guidance titled, *Test Methods for Evaluating Solid Waste* (SW-846); Standard Methods for the Examination of Water and Wastewater; and laboratory QA/QC protocol by the container manufacturer or selected analytical laboratory prior to shipping for sample collection. Sample containers will not be used for sample collection and storage without being certified clean by the manufacturer or analytical laboratory.

After the sample is collected and the container lids are tightly sealed, the exterior portion of the sample container will be cleaned. Care will be taken to ensure that sample labels remain legible during the exterior container cleaning.

2.4 Soil Sample Containers, Preservation, and Holding Time Requirements

Required sample containers, preservation methods, and holding times for the analytical parameters selected are summarized in Table 2. Analytical precision and accuracy are defined by the analytical test methodology and the project laboratory's QA/QC program. All analytical method accuracy, precision, and detection limits are within laboratory certification requirements and below the associated selected contaminant concentration cleanup values as established under MTCA Method A, or default Method B levels where Method A levels have not been established.

Table 2 presents the sample types, location, analytical parameters and methods, sample preservation, and specific requirements for sample container size and type for sample collected. Table 3 summarizes the number of QA/QC samples to be submitted according to method requirements.

Table 2: Soil Sample Type, Analytical Parameters, Preservation and Holding Times

Analytical Parameter and Method	Sample Preservation	Sample Containers, Other Comments	Maximum Holding Time
Diesel and Heavy Oil by NWTPH-DxExt	Cool to 4° C	4 oz. glass jar with Teflon lined lid	Preserve within 14 days, Analyze within 40 days
Volatile Organic Compounds by EPA Method 8260	Cool to 4° C	Two, 40-millimeter glass with septum lid	Preserve with 48-hours, Analyze within 14-days

Table 3: QA/QC Requirements for Soil Analysis

Analytical Parameter and Method	Total Field Samples[a] /Containers	QA/QC Sample Summary Analyses/Containers			
		Organic MS/MSD	Inorganic MS/MSD	Rinsate Blanks[b]	Trip Blanks
Diesel by NWTPH-Dx	# + d	2/2	NA	None	None
Volatile Organic Compounds by EPA Method 8260	# + d	1/1	NA	None	None

[a] Total number of field samples are estimated.

[b] Rinsate blanks only required for 1 in 20 samples per non-dedicated sampling device.

NA Not Applicable

d Duplicate Sample

One duplicate sample will be collected for each analytical methodology at the ranch.

2.5 Investigation Derived Wastes

Every effort will be made to minimize generation of investigation derived wastes (IDW) that cannot be disposed of as solid waste. All extra soil volume collected for a sample will remain at the sampling location. Disposable personal protective equipment and sampling equipment will double bagged in plastic garbage bags, labeled and disposed of at an approved solid waste facility.

2.6 Sample Handling and Custody Requirements

The project laboratory will provide sample containers for sample collection, and chain-of-custody forms. Each sample will be placed in the appropriate documented clean, laboratory provided container and sealed. Disposable nitrile gloves will be worn during the sampling process. Gloves will be changed between sample areas or if the gloves have been damaged in any manner. Sample documentation will be completed immediately following sample collection. The chain-of-custody forms will be filled out in ink and placed in a re-sealable plastic bag to avoid damage. Duplicates will be maintained in Fulcrum's files. The original will be sent to the analytical laboratory. The forms will include the date, site designation, sample designation, analysis required, turn-around-time, preservation and authorized signatures.

Each sample will have a unique identification number. The specific designation for sample codes is presented in Table 4 and is based on the date, sample location identification, sample matrix and consecutive sample number. At a minimum, label information will include:

1. Initials of the collector
2. Date and time of collection
3. Location
4. Sample number

A chain-of-custody record will be filled out and accompany each sample to document sample possession from collection through analytical reporting. A copy of this record will be maintained with analytical results and be included in subsequent data reporting.

Table 4: Sample Coding

Ranch Number	Sample Type	Consecutive Sample Number (assigned sequentially)	Sample Interval (depth in feet below ground surface)	Example
##	Date	01-20	0.01 (1-foot), .02 (2-feet), etc. bgs	R##-010120-01.01

Samples destined for analysis by an offsite laboratory will be cold transported in a cooler. Packaging and shipping of sample for analyses and storage will be per the following protocol:

1. Roughly 2 inches of cushioning material will be placed in the bottom of the cooler
2. Sample containers will be placed in the cooler in a manner to prevent breakage
3. Glass jars will be placed in re-sealable plastic bags and centered in the cooler to prevent breakage
4. Samples will be packaged with ice enclosed in re-sealable plastic bags or freeze packs ("blue ice")
5. QA/QC samples will be packaged with the samples that were collected that day
6. Free space in the cooler will be filled with cushioning material
7. Chain-of-custody paper work will be placed in plastic bags and placed inside the cooler
8. Cooler will be wrapped with strapping tape and signed custody seal(s) will be used to secure the cooler lid.
9. Samples will be shipped by commercial carrier for next day delivery. However, samples will not be shipped on Fridays, weekends, or immediately preceding a holiday, due to next day delivery limitations
10. Use of separate coolers to protect more delicate sample containers, such as 40 milliliter vials, is encouraged

When delivery for a sample set is scheduled, the shipper will receive a copy of the shipping manifest/tracking number. The documentation will be placed in the project file.

Upon receipt of the shipping container, the laboratory will inspect the integrity of the shipping container seal. The cooler will be opened and the shipment checked against the chain-of-custody record. Any inconsistencies or problems with a sample shipment will be noted and resolved. Once at the laboratory, the samples will be tracked through the laboratory by internal custody procedures and the laboratory's QA/QC procedures will be followed.

2.7 Inspection/Acceptance Requirements for Supplies and Consumables

Upon receipt, all supplies and consumable will be inspected for damage, including the shipping carton, individual packages and product integrity. Any product that is cracked, leaking or otherwise damaged or whose individual package is torn or opened to the environment will be discarded or returned.

A certificate indicating the sample container lot and statement that they have been cleaned in accordance to applicable standards will accompany each carton of new sample containers. A statement of cleaning will also be provided for sample containers that have been pre-cleaned and pre-preserved by the laboratory.

All reasonable effort will be made to ensure all sampling supplies and consumable are acquired prior to initiating field activities.

The following is a minimum list of supplies and consumable that will be required to conduct soil sampling:

1. Field notebook
2. Disposable nitrile gloves
3. Sampling equipment for soils (Hydraulic-push sampler, hand coring sampler, plastic spoons and bowls, stainless steel shovel, color chart for soil and water)
4. Camera
5. Sample containers: 4-ounce borosilicate with Teflon lined lids and 40 milliliter glass vials with septum lids
6. Sample labels
7. Ice or "Blue Ice" reusable packages
8. Chain-of-custody forms
9. Decontamination equipment (buckets, spray bottles, brushes, soap, etc.)
10. Deionized water
11. Insulated shipping containers (coolers or ice chests)

3.0 Measurement Procedures

3.1 Data Acquisition Requirements (Non-direct Measurements)

Non-direct data measurements are those items that require a subjective assessment. Items such as weather, problems with sample collection, etc. will be logged in the field notebook.

3.2 Data Management

Field data will be recorded in the field notebooks by, or under the supervision of a licensed Geologist. Daily observation reports will be generated by Fulcrum and submitted for internal review. Laboratory analytical reports will be transmitted to Fulcrum electronically. The project laboratory will review and validate analytical data in accordance with their internal QA/QC program.

All field notebooks and the project laboratory's analytical data will be reviewed by Fulcrum to assure that all pertinent information is accounted for and is correlated. Fulcrum will complete review of sample collection and laboratory analytical data and summarize the information in a database or report format.

Hard copies of all field notebooks, chain-of-custody forms, analytical data, laboratory reports, assessment reports and all electronic databases will be maintained by Fulcrum until project completion. Support and backup data will be archived for 5 years beyond completion of the project.

4.0 Sample Quality Control Requirements

4.1 Field QC Requirements

Field quality control will be maintained through the use of standard operating procedures for sample collection, handling and documentation. Any problems occurring during the sample process will be recorded in the field notebook or field datasheets.

Duplicate samples will be collected as part of sampling activities. The number, type and handling of QA/QC samples are specified in Table 3 for soil samples.

Duplicate samples are used to check the precision of field collection or laboratory analyses and verifies repeatability of the sample data. Duplicates are collected at the same time as the sample. The duplicate sample will be collected by evenly splitting the collected sample such that the both sub-samples are comparable and representative of the single sample. Duplicate soil samples will be collected from a sample location that is believed to have elevated levels of a particular compound.

4.2 Laboratory QA/QC Requirements

The selected project laboratory will be appropriately Ecology and EPA certified to complete the selected analysis.

Laboratory quality control tests consist of method blanks, matrix spikes, as well as duplicate and check standards (laboratory control standards). Surrogate recoveries will also be included for the organic analyses. Surrogate recoveries will be used to judge the accuracy for analysis of similar target analytes. Analytical precision can be estimated from duplicate and check standards, duplicate sample analysis and duplicate spiked sample analyses. Analytical bias will be estimated from matrix spikes, matrix spike duplicates and check standards. Recoveries from check standards provide an estimate of bias due to calibration. Mean percent recoveries of spiked sample analyses provide an estimate of bias due to interference.

The laboratory staff will report results of quality control analyses in the same units as expressed for the MQOs. They will also conduct quality assurance review of all analytical data generated at the project laboratory prior to releasing the data to the project manager.

The laboratory will be responsible for following their established QA/QC procedures and those required by the analytical methods. The following minimum QA/QC procedures will apply:

1. Sample holding and preservation requirements will be in accordance with analytical method reference parameters
2. Instrument tuning and calibration will be performed as required by the analytical method and equipment manufacturer
3. Laboratory QA/QC samples (duplicates) will be analyzed at frequencies specified by EPA, Ecology, and analytical reference methods
4. The laboratory will review the data package for performance, quality, and completeness
5. The method detection limit for the parameter analyzed will be below regulatory guidance levels
6. All laboratory parameters (recoveries, spikes, duplicates, etc.) are within their stated limits

Laboratory instrumentation will meet applicable calibration requirements to ensure that the instrumentation is capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable quantitative performance at the onset of analysis. Calibration during operation verifies acceptable performance of the instrument on a day-to-day basis. Tuning and instrument performance criteria will also be established, as appropriate, to ensure that instrument measurements may be interpreted correctly.

Laboratory calibration procedures are specified in the protocol for the specific analytical methods used. When there are no previously defined specifications, the calibration procedures will include:

- An initial and final three-point calibration before and after a run.
- A mid-range calibration after every tenth sample.

5.0 Data Management Procedures

At the completion of each sampling event, all field data and laboratory analytical data will be compiled and evaluated against the project MQOs.

Field methods and forms will be reviewed to ensure consistency. Field datasheets will be checked for missing or improbable measurements before leaving each site. Field data entered into spreadsheets or databases will be checked against the field datasheets for errors or omissions. Missing or unusual field parameter data will be omitted from the data set.

Field replicate variability will be evaluated by calculating the relative percent difference (RPD) for each duplicate set of samples and compared to the MQOs listed in Table 1.

Laboratory-generated data review and reporting will follow the procedures outlined in the laboratory's quality assurance program. Results will be checked for missing or questionable data. Individual data which fails to achieve QA/QC objectives will be flagged with appropriate qualifiers and their use restricted as

appropriate. A standard case narrative of laboratory QA/QC results will be issued by the laboratory for each sampling event.

If the data review and verification suggest significant problems with QA/QC for a sample event, the sample event or individual sample may be reanalyzed by the laboratory or resampled as necessary.

6.0 Audits and Reports

The project laboratory participates in performance and system audits of their routine procedures and is an environmental laboratory accredited by the Washington State Department of Ecology as of July 9, 2019. See the following link for accreditations associated with Fremont Analytical:

https://fortress.wa.gov/ecy/laboratorysearch/SearchLabName.aspx

Results of the laboratory's performance and system audits of their routine procedures are available from the laboratory on request.

7.0 Data Verification and Validation

As part of data review, field notes and data from the laboratory will be reviewed for errors and omissions and to ensure that data are correct, complete, meet investigation objectives, and are consistent. Other items that will be reviewed include:

- Results for quality control samples described in Quality Control section of this document accompany sample results
- Quality control results indicate that acceptance criteria were met
- Data qualifiers are properly assigned where necessary
- Data specified in the Sampling Design section above were obtained
- Methods and protocols specified in this QAPP were followed

After receiving the data package, Fulcrum will verify that the results have met the MQOs for bias, precision and accuracy. Precision will be estimated by calculating the RPD for the field duplicate results. Analytical bias is assumed to be within acceptable limits if laboratory quality control limits are met for blanks, matrix spikes and check standards. Overall accuracy will be assessed by comparing the measured result with the true value of the blind reference sample. If appropriate, sampling procedures, quality control steps or analytical procedures will be modified to address identified problems.

Once the data have been reviewed, verified and validated, the project manager will determine if the data can be used toward the project goals and objectives. A technical report will be prepared at the completion of all sampling and will include the following:

- Maps of the investigation area showing site features, soil and groundwater sample locations, water levels, groundwater flow direction, contaminant concentrations and distribution
- Description of field and laboratory methods
- Discussion of data quality and the significance of any problems encountered
- Summary tables of field and analytical data
- Discussion of water quality results. Significant or potentially significant findings
- Recommendations based on project goals if appropriate

8.0 References

D3370-18: Standard Practices for Sampling Water, ASTM Standards on Environmental Sampling, Designation: Pages 110-116, 2018.

EPA Requirements for Quality Assurance Project Plans, EAP QA/R-5, EPA/240/B-01/003, U. S. Environmental Protection Agency, March 2001.

Guidance for Quality Assurance Project Plans, EAP QA/G-5, EPA/240/R-02/009, U. S. Environmental Protection Agency, December 2002.

Guidance for Data Quality Assessment – Practical Methods for Data Analysis, U.S. Environmental Protection Agency, EPA 600/R-96/084, EPA EZ/G9, QA97 Version, January 1998.

Guidance for Remediation of Petroleum Contaminated Sites, Washington State Department of Ecology, Publication 10-09-057, November 2010, revised June 2016.

Model Toxics Control Act, Washington State Department of Ecology, Washington Administrative Code 173-340.

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, U.S. Environmental Protection Agency, EPA SW-846.

Appendix C

Waste Disposal and Characterization

FULCRUM environmental consulting

MEMORANDUM

DATE	November 21, 2019
TO	Ted Silvestri, Yakima Health District
FROM	Jeremy Lynn, LHG, Fulcrum Environmental Consulting, Inc.
RE	**Request for Soil Treatment at Anderson's Rock and Demolition Pit**
SUBJECT	WA LAND MGMT, LLC Ranch 34

In September 2019, Fulcrum Environmental Consulting, Inc. (Fulcrum) completed waste characterization on a former smudge pot storage area at WA LAND MGMT, LLC (WA LAND MGMT) Ranch 34. Ranch 34 was previously identified as Ranch 45 early in the project. One composite soil sample (R45-91919) from the most heavily stained soils at Ranch 34 was submitted to Fremont Analytical, Inc., a Washington State Department of Ecology accredited laboratory (C910-19) for analysis. Fulcrum requested analysis by Northwest Total Petroleum Hydrocarbons – Diesel Extended, Polychlorinated Biphenyls by U.S. Environmental Protection Agency (EPA) method 8082, Polyaromatic Hydrocarbons (PAHs) by EPA method 8270 (SIM), Volatile Organic Compounds (VOCs) by EPA method 8260D, total metals by EPA Method 6020B, and Mercury by EPA method 7471. A summary of the results is provided in Table 1.

Laboratory analysis found that only diesel fuel, with the related PAHs typical of diesel fuel and burned fuel are present in the samples.

Fulcrum completed a Total Toxicity Equivalency Concentration (TTEC) calculation for carcinogenic Polyaromatic Hydrocarbons (cPAHs). The TTEC calculation for the petroleum contaminated soils (PCS) from Ranch 34 detected only Chrysene present in the waste characterization sample. A value of 0 mg/Kg was used for all cPAHs not detected in the sample. The resulting TTEC is 0.0066 mg/Kg, which is below the MTCA Method A Industrial Cleanup level of 2.0 mg/Kg.

Total chromium is reported at 19.6 mg/Kg and above the MTCA Method A cleanup level of 19 for chromium (VI). However, results are consistent with naturally occurring background concentrations for the region and below dangerous waste threshold values using the 20:1 rule for Toxicity Characteristic Leaching Procedure (TCLP) dilution methodology.

Based on our observations, we estimate 213 tons of soil will be removed as PCS.

Fulcrum requests approval from YHD for delivery of contaminated soil to Anderson's Rock and Demolition Pits for treatment by landfarming. Columbia Asphalt will likely be responsible for delivery. Fulcrum will be responsible for YHD review fees. The WA LAND MGMT has arranged to pay Anderson's treatment charges directly.

If you have any questions, please contact me at 509.574.0839.

P. 509.574.0839 F. 509.575.8453
406 North 2nd Street
Yakima, Washington 98901
efulcrum.net

Table 1: Waste Characterization Sample Results

Analyte	Result (mg/Kg)	MTCA Method A CUL	Exceeds MTCA Method A CUL	Dangerous Waste Level (mg/L)	Exceeds Dangerous Waste Level
Total PCBs [1]	<0.112	10[2]	No	-	-
Diesel	**89,300**	2,000	Yes	-	-
Heavy Oil	<5,370	2,000	No	-	-
Polyaromatic Hydrocarbons					
Benzo[a]pyrene	<0.477	2.0[2]	No	-	-
Benz[a]anthracene	<0.477	NA	NA	-	-
Benzo[b]fluoranthene	<0.477	NA	NA	-	-
Benzo[k]fluoranthene	<0.477	NA	NA	-	-
Chrysene	0.662	NA	NA	-	-
Dibenz[a,h]anthracene	<0.477	NA	NA	-	-
Indeno[1,2,3-cd]pyrene	<0.477	NA	NA	-	-
PAH TTEC (Per WAC 173-340-708)	*0.0066*	*2.0[2]*	*No*	-	-
Total PAH [Percentage Per WAC 173-303-100(6)]	*0.035%*	-	-	*1%*	*No*
Volatile Organic Compounds					
Halogenated/Chlorinated VOCs [1]	-	-	-	-	-
Benzene	<0.023	0.03	No	0.5	No
Toluene	<0.023	7	No	-	-
Ethylbenzene	<0.029	6	No	-	-
Total Xylenes	<0.057	9	No	-	-
Metals					
Mercury	<0.282	2	No	0.2	No
Arsenic	6.09	20	No	5	No
Cadmium	<0.187	2	No	1	No
Total Chromium	**19.6**	19 / 2,000[4]	Yes	5	No
Lead	8.87	250	No	5	No

All results, method reporting limits, and cleanup levels are presented in mg/Kg. Dangerous waste threshold values where published in WAC 173-303-090(8) are presented in milligrams per liter.

Results in **Bold** indicate a result above the MTCA Method cleanup level.

[1] The individual chemical constituents were not detected above the method reporting limit (MRL)

[2] Industrial MTCA Method A cleanup level

[3] Select constituents have established MTCA Method A cleanup level. When a MTCA Method A cleanup level is not available, the MTCA Method B Standard Value is utilized for evaluation.

[4] The MTCA Method A cleanup level for Chromium (III) is 2,000 mg/Kg and for Chromium (VI) is 19 mg/Kg

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3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Fulcrum Environmental
Jeremy Lynn
406 N. 2nd Street
Yakima, WA 98901

RE: Pride Packing
Work Order Number: 1909337

September 27, 2019

Attention Jeremy Lynn:

Fremont Analytical, Inc. received 28 sample(s) on 9/20/2019 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Mercury by EPA Method 7471
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Polychlorinated Biphenyls (PCB) by EPA 8082
Sample Moisture (Percent Moisture)
Total Metals by EPA Method 6020B
Volatile Organic Compounds by EPA Method 8260D

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

CC:
Jackalyn Kandle
Kyle Ames

Date: *09/27/2019*

CLIENT: Fulcrum Environmental
Project: Pride Packing
Work Order: 1909337

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1909337-001	R29-91919-Composite	09/19/2019 8:30 AM	09/20/2019 10:16 AM
1909337-002	R29-91919-1.1	09/19/2019 8:30 AM	09/20/2019 10:16 AM
1909337-003	R29-91919-2.1	09/19/2019 8:30 AM	09/20/2019 10:16 AM
1909337-004	R29-91919-3.1	09/19/2019 8:30 AM	09/20/2019 10:16 AM
1909337-005	R46-91919-Composite	09/19/2019 9:30 AM	09/20/2019 10:16 AM
1909337-006	R46-91919-1.1	09/19/2019 9:30 AM	09/20/2019 10:16 AM
1909337-007	R46-91919-2.1	09/19/2019 9:30 AM	09/20/2019 10:16 AM
1909337-008	R46-91919-3.1	09/19/2019 9:30 AM	09/20/2019 10:16 AM
1909337-009	R45-91919-Composite	09/19/2019 10:30 AM	09/20/2019 10:16 AM
1909337-010	R45-91919-1.1	09/19/2019 10:30 AM	09/20/2019 10:16 AM
1909337-011	R45-91919-2.1	09/19/2019 10:30 AM	09/20/2019 10:16 AM
1909337-012	R45-91919-3.1	09/19/2019 10:30 AM	09/20/2019 10:16 AM
1909337-013	R54-91919-Composite	09/19/2019 11:15 AM	09/20/2019 10:16 AM
1909337-014	R54-91919-1.1	09/19/2019 11:15 AM	09/20/2019 10:16 AM
1909337-015	R54-91919-2.1	09/19/2019 11:15 AM	09/20/2019 10:16 AM
1909337-016	R54-91919-3.1	09/19/2019 11:15 AM	09/20/2019 10:16 AM
1909337-017	R26N-91919-Composite	09/19/2019 12:45 PM	09/20/2019 10:16 AM
1909337-018	R26N-91919-1.1	09/19/2019 12:45 PM	09/20/2019 10:16 AM
1909337-019	R26N-91919-2.1	09/19/2019 12:45 PM	09/20/2019 10:16 AM
1909337-020	R26N-91919-3.1	09/19/2019 12:45 PM	09/20/2019 10:16 AM
1909337-021	R26S-91919-Composite	09/19/2019 1:30 PM	09/20/2019 10:16 AM
1909337-022	R26S-91919-1.1	09/19/2019 1:30 PM	09/20/2019 10:16 AM
1909337-023	R26S-91919-2.1	09/19/2019 1:30 PM	09/20/2019 10:16 AM
1909337-024	R26S-91919-3.1	09/19/2019 1:30 PM	09/20/2019 10:16 AM
1909337-025	R30-91919-Composite	09/19/2019 2:10 PM	09/20/2019 10:16 AM
1909337-026	R30-91919-1.1	09/19/2019 2:10 PM	09/20/2019 10:16 AM
1909337-027	R30-91919-2.1	09/19/2019 2:10 PM	09/20/2019 10:16 AM
1909337-028	R30-91919-3.1	09/19/2019 2:10 PM	09/20/2019 10:16 AM

Case Narrative

WO#: **1909337**
Date: **9/27/2019**

CLIENT: Fulcrum Environmental
Project: Pride Packing

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-017A) required Acid Cleanup Procedure (Using Method No 3665A).
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-021A) required Acid Cleanup Procedure (Using Method No 3665A).
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-001A) required Acid Cleanup Procedure (Using Method No 3665A).
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-005A) required Acid Cleanup Procedure (Using Method No 3665A).
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-009A) required Acid Cleanup Procedure (Using Method No 3665A).
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-013A) required Acid Cleanup Procedure (Using Method No 3665A).
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-025A) required Acid Cleanup Procedure (Using Method No 3665A).
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-017A) required Florisil Cleanup Procedure (Using Method No 3620C).
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-021A) required Florisil Cleanup Procedure (Using Method No 3620C).
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-001A) required Florisil Cleanup Procedure (Using Method No 3620C).
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-005A) required Florisil Cleanup Procedure (Using Method No 3620C).
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-009A) required Florisil Cleanup Procedure (Using Method No 3620C).
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-013A) required Florisil Cleanup Procedure (Using Method No 3620C).
Prep Comments for METHOD (PREP-PCB-S), SAMPLE (1909337-025A) required Florisil Cleanup Procedure (Using Method No 3620C).

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Client: Fulcrum Environmental
Collection Date: 9/19/2019 10:30:00 AM
Project: Pride Packing
Lab ID: 1909337-009
Matrix: Soil
Client Sample ID: **R45-91919-Composite**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polychlorinated Biphenyls (PCB) by EPA 8082				Batch ID: 25935		Analyst: SB
Aroclor 1016	ND	0.112		mg/Kg-dry	1	9/25/2019 6:53:32 PM
Aroclor 1221	ND	0.112		mg/Kg-dry	1	9/25/2019 6:53:32 PM
Aroclor 1232	ND	0.112		mg/Kg-dry	1	9/25/2019 6:53:32 PM
Aroclor 1242	ND	0.112		mg/Kg-dry	1	9/25/2019 6:53:32 PM
Aroclor 1248	ND	0.112		mg/Kg-dry	1	9/25/2019 6:53:32 PM
Aroclor 1254	ND	0.112		mg/Kg-dry	1	9/25/2019 6:53:32 PM
Aroclor 1260	ND	0.112		mg/Kg-dry	1	9/25/2019 6:53:32 PM
Aroclor 1262	ND	0.112		mg/Kg-dry	1	9/25/2019 6:53:32 PM
Aroclor 1268	ND	0.112		mg/Kg-dry	1	9/25/2019 6:53:32 PM
Total PCBs	ND	0.112		mg/Kg-dry	1	9/25/2019 6:53:32 PM
Surr: Decachlorobiphenyl	70.7	8.21 - 173		%Rec	1	9/25/2019 6:53:32 PM
Surr: Tetrachloro-m-xylene	60.1	20.2 - 168		%Rec	1	9/25/2019 6:53:32 PM
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 25912		Analyst: DW
Diesel (Fuel Oil)	89,300	2,150	D	mg/Kg-dry	100	9/25/2019 11:34:31 AM
Heavy Oil	ND	5,370	D	mg/Kg-dry	100	9/25/2019 11:34:31 AM
Surr: 2-Fluorobiphenyl	975	50 - 150	DS	%Rec	100	9/25/2019 11:34:31 AM
Surr: o-Terphenyl	165	50 - 150	DS	%Rec	100	9/25/2019 11:34:31 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 25913		Analyst: SB
Naphthalene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
2-Methylnaphthalene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
1-Methylnaphthalene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Acenaphthylene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Acenaphthene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Fluorene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Phenanthrene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Anthracene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Fluoranthene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Pyrene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Benz(a)anthracene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Chrysene	662	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Benzo(b)fluoranthene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Benzo(k)fluoranthene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM

NOTES:
S - Outlying surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).

Client: Fulcrum Environmental
Collection Date: 9/19/2019 10:30:00 AM
Project: Pride Packing
Lab ID: 1909337-009
Matrix: Soil
Client Sample ID: **R45-91919-Composite**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 25913		Analyst: SB
Benzo(a)pyrene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Indeno(1,2,3-cd)pyrene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Dibenz(a,h)anthracene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Benzo(g,h,i)perylene	ND	477	D	µg/Kg-dry	10	9/26/2019 8:43:52 AM
Surr: 2-Fluorobiphenyl	88.2	24.4 - 151	D	%Rec	10	9/26/2019 8:43:52 AM
Surr: Terphenyl-d14 (surr)	75.6	31.4 - 162	D	%Rec	10	9/26/2019 8:43:52 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 25919		Analyst: TN
Dichlorodifluoromethane (CFC-12)	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Chloromethane	ND	0.0573		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Vinyl chloride	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Bromomethane	ND	0.0573	Q*	mg/Kg-dry	1	9/25/2019 4:01:30 AM
Trichlorofluoromethane (CFC-11)	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Chloroethane	ND	0.0573	Q	mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,1-Dichloroethene	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Methylene chloride	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
trans-1,2-Dichloroethene	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Methyl tert-butyl ether (MTBE)	ND	0.0573		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,1-Dichloroethane	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
cis-1,2-Dichloroethene	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Chloroform	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,1,1-Trichloroethane (TCA)	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,1-Dichloropropene	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Carbon tetrachloride	ND	0.0573		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,2-Dichloroethane (EDC)	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Benzene	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Trichloroethene (TCE)	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,2-Dichloropropane	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Bromodichloromethane	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Dibromomethane	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
cis-1,3-Dichloropropene	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Toluene	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
trans-1,3-Dichloropropylene	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,1,2-Trichloroethane	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,3-Dichloropropane	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Tetrachloroethene (PCE)	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Dibromochloromethane	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,2-Dibromoethane (EDB)	ND	0.00573		mg/Kg-dry	1	9/25/2019 4:01:30 AM

Client: Fulcrum Environmental **Collection Date:** 9/19/2019 10:30:00 AM
Project: Pride Packing
Lab ID: 1909337-009 **Matrix:** Soil
Client Sample ID: **R45-91919-Composite**

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 25919 Analyst: TN

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Chlorobenzene	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,1,1,2-Tetrachloroethane	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Ethylbenzene	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
m,p-Xylene	ND	0.0573		mg/Kg-dry	1	9/25/2019 4:01:30 AM
o-Xylene	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Styrene	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Isopropylbenzene	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Bromoform	ND	0.0573		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,1,2,2-Tetrachloroethane	ND	0.0229	Q	mg/Kg-dry	1	9/25/2019 4:01:30 AM
n-Propylbenzene	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Bromobenzene	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,3,5-Trimethylbenzene	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
2-Chlorotoluene	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
4-Chlorotoluene	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
tert-Butylbenzene	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,2,3-Trichloropropane	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,2,4-Trichlorobenzene	ND	0.0287	Q	mg/Kg-dry	1	9/25/2019 4:01:30 AM
sec-Butylbenzene	ND	0.0573		mg/Kg-dry	1	9/25/2019 4:01:30 AM
4-Isopropyltoluene	ND	0.0573		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,3-Dichlorobenzene	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,4-Dichlorobenzene	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
n-Butylbenzene	ND	0.0287		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,2-Dichlorobenzene	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,2-Dibromo-3-chloropropane	ND	0.573	Q	mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,2,4-Trimethylbenzene	ND	0.0229		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Hexachloro-1,3-butadiene	ND	0.0573		mg/Kg-dry	1	9/25/2019 4:01:30 AM
Naphthalene	ND	0.0573	Q	mg/Kg-dry	1	9/25/2019 4:01:30 AM
1,2,3-Trichlorobenzene	ND	0.0229	Q	mg/Kg-dry	1	9/25/2019 4:01:30 AM
Surr: Dibromofluoromethane	61.9	56.5 - 129		%Rec	1	9/25/2019 4:01:30 AM
Surr: Toluene-d8	90.7	64.5 - 151		%Rec	1	9/25/2019 4:01:30 AM
Surr: 1-Bromo-4-fluorobenzene	100	54.8 - 168		%Rec	1	9/25/2019 4:01:30 AM

NOTES:
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria
* - Flagged value is not within established control limits.

Mercury by EPA Method 7471

Batch ID: 25946 Analyst: WF

Mercury	ND	0.282		mg/Kg-dry	1	9/26/2019 1:51:34 PM

Analytical Report

Work Order: **1909337**
Date Reported: **9/27/2019**

Client: Fulcrum Environmental
Collection Date: 9/19/2019 10:30:00 AM
Project: Pride Packing
Lab ID: 1909337-009
Matrix: Soil
Client Sample ID: **R45-91919-Composite**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 25929		Analyst: CO
Arsenic	6.09	0.234		mg/Kg-dry	1	9/25/2019 4:52:16 PM
Cadmium	ND	0.187		mg/Kg-dry	1	9/25/2019 4:52:16 PM
Chromium	19.6	0.0937		mg/Kg-dry	1	9/25/2019 4:52:16 PM
Lead	8.87	0.187		mg/Kg-dry	1	9/25/2019 4:52:16 PM
Sample Moisture (Percent Moisture)				Batch ID: R54104		Analyst: CJ
Percent Moisture	14.6			wt%	1	9/24/2019 1:55:34 PM

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID	**MB-25929**	SampType:	**MBLK**	Units:	**mg/Kg**	Prep Date:	**9/25/2019**	RunNo:	**54147**
Client ID:	**MBLKS**	Batch ID:	**25929**			Analysis Date:	**9/25/2019**	SeqNo:	**1072544**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.197									
Cadmium	ND	0.157									
Chromium	ND	0.0787									
Lead	ND	0.157									

Sample ID	**LCS-25929**	SampType:	**LCS**	Units:	**mg/Kg**	Prep Date:	**9/25/2019**	RunNo:	**54147**
Client ID:	**LCSS**	Batch ID:	**25929**			Analysis Date:	**9/25/2019**	SeqNo:	**1072545**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	36.9	0.200	40.00	0	92.2	80	120				
Cadmium	1.88	0.160	2.000	0	93.8	80	120				
Chromium	41.0	0.0800	40.00	0	102	80	120				
Lead	19.5	0.160	20.00	0	97.6	80	120				

Sample ID	**1909379-001ADUP**	SampType:	**DUP**	Units:	**mg/Kg-dry**	Prep Date:	**9/25/2019**	RunNo:	**54147**
Client ID:	**BATCH**	Batch ID:	**25929**			Analysis Date:	**9/25/2019**	SeqNo:	**1072549**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	18.1	0.230						8.962	67.4	20	R
Cadmium	ND	0.184						0		20	
Chromium	52.3	0.0920						36.19	36.5	20	R
Lead	5.21	0.184						8.491	47.9	20	R

NOTES:
R - High RPD observed.

Sample ID	**1909379-001AMS**	SampType:	**MS**	Units:	**mg/Kg-dry**	Prep Date:	**9/25/2019**	RunNo:	**54147**
Client ID:	**BATCH**	Batch ID:	**25929**			Analysis Date:	**9/25/2019**	SeqNo:	**1072551**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	54.9	0.228	45.66	8.962	101	75	125				

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID **1909379-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **9/25/2019** RunNo: **54147**
Client ID: **BATCH** Batch ID: **25929** Analysis Date: **9/25/2019** SeqNo: **1072551**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	2.41	0.183	2.283	0.07222	103	75	125				
Chromium	101	0.0913	45.66	36.19	142	75	125				S
Lead	28.4	0.183	22.83	8.491	87.1	75	125				

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID **1909379-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **9/25/2019** RunNo: **54147**
Client ID: **BATCH** Batch ID: **25929** Analysis Date: **9/25/2019** SeqNo: **1072552**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	58.0	0.228	45.66	8.962	107	75	125	54.86	5.64	20	
Cadmium	2.46	0.183	2.283	0.07222	105	75	125	2.413	2.07	20	
Chromium	98.6	0.0913	45.66	36.19	137	75	125	101.2	2.60	20	S
Lead	33.3	0.183	22.83	8.491	109	75	125	28.38	16.0	20	

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID **1909379-001APDS** SampType: **PDS** Units: **mg/Kg-dry** Prep Date: **9/25/2019** RunNo: **54147**
Client ID: **BATCH** Batch ID: **25929** Analysis Date: **9/25/2019** SeqNo: **1072554**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	86.3	0.0899	44.9	36.2	111	75	125				

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID	**MB-25946**	SampType:	**MBLK**			Units:	**mg/Kg**	Prep Date:	**9/26/2019**		RunNo:	**54170**	
Client ID:	**MBLKS**	Batch ID:	**25946**					Analysis Date:	**9/26/2019**		SeqNo:	**1072963**	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Mercury		ND	0.250										

Sample ID	**LCS-25946**	SampType:	**LCS**			Units:	**mg/Kg**	Prep Date:	**9/26/2019**		RunNo:	**54170**	
Client ID:	**LCSS**	Batch ID:	**25946**					Analysis Date:	**9/26/2019**		SeqNo:	**1072964**	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Mercury		0.577	0.250	0.5000	0	115	80	120					

Sample ID	**1909309-001ADUP**	SampType:	**DUP**			Units:	**mg/Kg-dry**	Prep Date:	**9/26/2019**		RunNo:	**54170**	
Client ID:	**BATCH**	Batch ID:	**25946**					Analysis Date:	**9/26/2019**		SeqNo:	**1072966**	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Mercury		ND	0.269						0		20		

Sample ID	**1909309-001AMS**	SampType:	**MS**			Units:	**mg/Kg-dry**	Prep Date:	**9/26/2019**		RunNo:	**54170**	
Client ID:	**BATCH**	Batch ID:	**25946**					Analysis Date:	**9/26/2019**		SeqNo:	**1072967**	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Mercury		0.537	0.263	0.5269	0.1758	68.6	70	130				S	

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed and recovered within range.

Sample ID	**1909309-001AMSD**	SampType:	**MSD**			Units:	**mg/Kg-dry**	Prep Date:	**9/26/2019**		RunNo:	**54170**	
Client ID:	**BATCH**	Batch ID:	**25946**					Analysis Date:	**9/26/2019**		SeqNo:	**1072968**	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Mercury		0.563	0.269	0.5371	0.1758	72.1	70	130	0.5375	4.61	20		

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID **MB-25912**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **9/24/2019**	RunNo: **54138**
Client ID: **MBLKS**	Batch ID: **25912**		Analysis Date: **9/25/2019**	SeqNo: **1072351**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	14.1		20.00		70.6	50	150				
Surr: o-Terphenyl	16.7		20.00		83.5	50	150				

Sample ID **LCS-25912**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **9/24/2019**	RunNo: **54138**
Client ID: **LCSS**	Batch ID: **25912**		Analysis Date: **9/25/2019**	SeqNo: **1072352**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	470	20.0	500.0	0	94.0	65	135				
Surr: 2-Fluorobiphenyl	17.8		20.00		89.0	50	150				
Surr: o-Terphenyl	17.2		20.00		86.2	50	150				

Sample ID **1909309-001ADUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **9/24/2019**	RunNo: **54138**
Client ID: **BATCH**	Batch ID: **25912**		Analysis Date: **9/25/2019**	SeqNo: **1072358**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	71,200	2,060						88,240	21.3	30	D
Heavy Oil	ND	5,150						0		30	D
Surr: 2-Fluorobiphenyl	76.3		20.61		370	50	150		0		DS
Surr: o-Terphenyl	0		20.61		0	50	150		0		DS

NOTES:
S - Outlying surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).

Sample ID **1909309-005AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **9/24/2019**	RunNo: **54138**
Client ID: **BATCH**	Batch ID: **25912**		Analysis Date: **9/25/2019**	SeqNo: **1072360**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	117,000	2,340	585.8	122,800	-1,060	65	135				DS
Surr: 2-Fluorobiphenyl	108		23.43		460	50	150				DS

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID **1909309-005AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54138**
Client ID: **BATCH** Batch ID: **25912** Analysis Date: **9/25/2019** SeqNo: **1072360**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: o-Terphenyl	70.3		23.43		300	50	150				DS

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).
S - Outlying surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).

Sample ID **1909309-005AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54138**
Client ID: **BATCH** Batch ID: **25912** Analysis Date: **9/25/2019** SeqNo: **1072361**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	127,000	2,470	616.5	122,800	639	65	135	116,600	8.35	30	DS
Surr: 2-Fluorobiphenyl	109		24.66		440	50	150		0		DS
Surr: o-Terphenyl	85.1		24.66		345	50	150		0		DS

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).
S - Outlying surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).

Sample ID **1909309-029ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54138**
Client ID: **BATCH** Batch ID: **25912** Analysis Date: **9/25/2019** SeqNo: **1072370**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	202,000	2,520						203,900	0.787	30	D
Heavy Oil	ND	6,300						0		30	D
Surr: 2-Fluorobiphenyl	1,340		25.19		5,310	50	150		0		DS
Surr: o-Terphenyl	126		25.19		500	50	150		0		DS

NOTES:
S - Outlying surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID **MB-25913**	SampType: **MBLK**	Units: **µg/Kg**	Prep Date: **9/24/2019**	RunNo: **54178**
Client ID: **MBLKS**	Batch ID: **25913**		Analysis Date: **9/26/2019**	SeqNo: **1073077**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	40.0									
2-Methylnaphthalene	ND	40.0									
1-Methylnaphthalene	ND	40.0									
Acenaphthylene	ND	40.0									
Acenaphthene	ND	40.0									
Fluorene	ND	40.0									
Phenanthrene	ND	40.0									
Anthracene	ND	40.0									
Fluoranthene	ND	40.0									
Pyrene	ND	40.0									
Benz(a)anthracene	ND	40.0									
Chrysene	ND	40.0									
Benzo(b)fluoranthene	ND	40.0									
Benzo(k)fluoranthene	ND	40.0									
Benzo(a)pyrene	ND	40.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	40.0									
Benzo(g,h,i)perylene	ND	40.0									
Surr: 2-Fluorobiphenyl	436		500.0		87.2	24.4	151				
Surr: Terphenyl-d14 (surr)	436		500.0		87.1	31.4	162				

Sample ID **LCS-25913**	SampType: **LCS**	Units: **µg/Kg**	Prep Date: **9/24/2019**	RunNo: **54178**
Client ID: **LCSS**	Batch ID: **25913**		Analysis Date: **9/26/2019**	SeqNo: **1073078**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	866	40.0	1,000	0	86.6	63.6	135				
2-Methylnaphthalene	818	40.0	1,000	0	81.8	61.5	140				
1-Methylnaphthalene	827	40.0	1,000	0	82.7	59.6	140				
Acenaphthylene	831	40.0	1,000	0	83.1	61.2	141				
Acenaphthene	830	40.0	1,000	0	83.0	62.3	134				

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID **LCS-25913** SampType: **LCS** Units: **µg/Kg** Prep Date: **9/24/2019** RunNo: **54178**
Client ID: **LCSS** Batch ID: **25913** Analysis Date: **9/26/2019** SeqNo: **1073078**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluorene	854	40.0	1,000	0	85.4	64.1	134				
Phenanthrene	865	40.0	1,000	0	86.5	63.2	132				
Anthracene	829	40.0	1,000	0	82.9	61.5	136				
Fluoranthene	901	40.0	1,000	0	90.1	63.1	140				
Pyrene	917	40.0	1,000	0	91.7	63.4	140				
Benz(a)anthracene	944	40.0	1,000	0	94.4	62.7	148				
Chrysene	827	40.0	1,000	0	82.7	60.5	142				
Benzo(b)fluoranthene	858	40.0	1,000	0	85.8	55.8	158				
Benzo(k)fluoranthene	781	40.0	1,000	0	78.1	64	136				
Benzo(a)pyrene	808	40.0	1,000	0	80.8	61.9	151				
Indeno(1,2,3-cd)pyrene	776	40.0	1,000	0	77.6	48.3	147				
Dibenz(a,h)anthracene	791	40.0	1,000	0	79.1	47.9	150				
Benzo(g,h,i)perylene	721	40.0	1,000	0	72.1	44.4	144				
Surr: 2-Fluorobiphenyl	434		500.0		86.7	24.4	151				
Surr: Terphenyl-d14 (surr)	446		500.0		89.1	31.4	162				

Sample ID **1909306-009ADUP** SampType: **DUP** Units: **µg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54178**
Client ID: **BATCH** Batch ID: **25913** Analysis Date: **9/26/2019** SeqNo: **1073082**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	417						563.1	73.4	30	D
2-Methylnaphthalene	ND	417						886.4	81.3	30	DR
1-Methylnaphthalene	ND	417						0		30	D
Acenaphthylene	ND	417						0		30	D
Acenaphthene	ND	417						0		30	D
Fluorene	ND	417						0		30	D
Phenanthrene	ND	417						0		30	D
Anthracene	ND	417						0		30	D
Fluoranthene	ND	417						0		30	D
Pyrene	11,200	417						15,780	33.8	30	DR

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID **1909306-009ADUP** SampType: **DUP** Units: **µg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54178**
Client ID: **BATCH** Batch ID: **25913** Analysis Date: **9/26/2019** SeqNo: **1073082**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	ND	417						0		30	D
Chrysene	624	417						794.9	24.1	30	D
Benzo(b)fluoranthene	ND	417						417.0	32.1	30	D
Benzo(k)fluoranthene	ND	417						0		30	D
Benzo(a)pyrene	ND	417						423.5	49.6	30	D
Indeno(1,2,3-cd)pyrene	ND	417						503.8	39.3	30	D
Dibenz(a,h)anthracene	ND	417						0		30	D
Benzo(g,h,i)perylene	ND	417						610.6	41.0	30	D
Surr: 2-Fluorobiphenyl	441		521.0		84.6	24.4	151		0		D
Surr: Terphenyl-d14 (surr)	493		521.0		94.7	31.4	162		0		D

NOTES:
R - High RPD indicates matrix interference. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID **1909306-013AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54178**
Client ID: **BATCH** Batch ID: **25913** Analysis Date: **9/26/2019** SeqNo: **1073084**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	814	400	999.1	0	81.5	37	127				D
2-Methylnaphthalene	819	400	999.1	155.5	66.4	38.9	128				D
1-Methylnaphthalene	838	400	999.1	112.2	72.6	36.2	129				D
Acenaphthylene	718	400	999.1	0	71.9	39	132				D
Acenaphthene	800	400	999.1	0	80.1	39.5	124				D
Fluorene	1,850	400	999.1	0	185	38.3	128				DS
Phenanthrene	3,970	400	999.1	0	397	29.2	132				DS
Anthracene	2,440	400	999.1	0	244	38.8	128				DS
Fluoranthene	2,760	400	999.1	0	277	38.4	135				DS
Pyrene	25,300	400	999.1	22,940	241	37.8	134				DS
Benz(a)anthracene	1,150	400	999.1	224.4	93.0	39.2	143				D
Chrysene	1,920	400	999.1	1,168	75.5	35.9	131				D
Benzo(b)fluoranthene	1,190	400	999.1	354.3	83.8	36.3	148				D
Benzo(k)fluoranthene	884	400	999.1	327.1	55.7	31.2	133				D

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID **1909306-013AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54178**
Client ID: **BATCH** Batch ID: **25913** Analysis Date: **9/26/2019** SeqNo: **1073084**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(a)pyrene	843	400	999.1	119.2	72.4	35.9	144				D
Indeno(1,2,3-cd)pyrene	1,010	400	999.1	293.9	71.6	25.3	131				D
Dibenz(a,h)anthracene	840	400	999.1	119.0	72.2	27.4	132				D
Benzo(g,h,i)perylene	898	400	999.1	269.9	62.9	20.1	128				D
Surr: 2-Fluorobiphenyl	429		499.5		85.9	24.4	151				D
Surr: Terphenyl-d14 (surr)	578		499.5		116	31.4	162				D

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID **1909306-013AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54178**
Client ID: **BATCH** Batch ID: **25913** Analysis Date: **9/26/2019** SeqNo: **1073085**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	781	402	1,004	0	77.8	37	127	814.1	4.16	30	D
2-Methylnaphthalene	788	402	1,004	155.5	63.0	38.9	128	818.9	3.86	30	D
1-Methylnaphthalene	800	402	1,004	112.2	68.5	36.2	129	838.1	4.71	30	D
Acenaphthylene	830	402	1,004	0	82.7	39	132	718.2	14.4	30	D
Acenaphthene	753	402	1,004	0	75.0	39.5	124	800.0	6.06	30	D
Fluorene	1,820	402	1,004	0	181	38.3	128	1,850	1.54	30	DS
Phenanthrene	3,680	402	1,004	0	366	29.2	132	3,967	7.56	30	DS
Anthracene	2,120	402	1,004	0	211	38.8	128	2,437	13.8	30	DS
Fluoranthene	3,760	402	1,004	0	375	38.4	135	2,764	30.6	30	DRS
Pyrene	24,800	402	1,004	22,940	190	37.8	134	25,350	2.02	30	DS
Benz(a)anthracene	1,070	402	1,004	224.4	84.4	39.2	143	1,153	7.39	30	D
Chrysene	1,730	402	1,004	1,168	55.8	35.9	131	1,923	10.7	30	D
Benzo(b)fluoranthene	1,150	402	1,004	354.3	79.2	36.3	148	1,192	3.64	30	D
Benzo(k)fluoranthene	840	402	1,004	327.1	51.1	31.2	133	883.8	5.10	30	D
Benzo(a)pyrene	761	402	1,004	119.2	63.9	35.9	144	842.9	10.3	30	D
Indeno(1,2,3-cd)pyrene	948	402	1,004	293.9	65.2	25.3	131	1,009	6.24	30	D
Dibenz(a,h)anthracene	804	402	1,004	119.0	68.3	27.4	132	840.0	4.34	30	D
Benzo(g,h,i)perylene	745	402	1,004	269.9	47.4	20.1	128	898.0	18.6	30	D

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID **1909306-013AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54178**
Client ID: **BATCH** Batch ID: **25913** Analysis Date: **9/26/2019** SeqNo: **1073085**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	414		501.9		82.6	24.4	151		0		D
Surr: Terphenyl-d14 (surr)	549		501.9		109	31.4	162		0		D

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.
R - High RPD due to suspected sample inhomogeneity. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID **MB-25950** SampType: **MBLK** Units: **µg/Kg** Prep Date: **9/26/2019** RunNo: **54206**
Client ID: **MBLKS** Batch ID: **25950** Analysis Date: **9/27/2019** SeqNo: **1073725**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	40.0									
2-Methylnaphthalene	ND	40.0									
1-Methylnaphthalene	ND	40.0									
Acenaphthylene	ND	40.0									
Acenaphthene	ND	40.0									
Fluorene	ND	40.0									
Phenanthrene	ND	40.0									
Anthracene	ND	40.0									
Fluoranthene	ND	40.0									
Pyrene	ND	40.0									
Benz(a)anthracene	ND	40.0									
Chrysene	ND	40.0									
Benzo(b)fluoranthene	ND	40.0									
Benzo(k)fluoranthene	ND	40.0									
Benzo(a)pyrene	ND	40.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	40.0									
Benzo(g,h,i)perylene	ND	40.0									
Surr: 2-Fluorobiphenyl	389		500.0		77.8	24.4	151				
Surr: Terphenyl-d14 (surr)	349		500.0		69.7	31.4	162				

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID **LCS-25950** SampType: **LCS** Units: **µg/Kg** Prep Date: **9/26/2019** RunNo: **54206**
Client ID: **LCSS** Batch ID: **25950** Analysis Date: **9/27/2019** SeqNo: **1073726**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	899	40.0	1,000	0	89.9	63.6	135				
2-Methylnaphthalene	884	40.0	1,000	0	88.4	61.5	140				
1-Methylnaphthalene	902	40.0	1,000	0	90.2	59.6	140				
Acenaphthylene	893	40.0	1,000	0	89.3	61.2	141				
Acenaphthene	915	40.0	1,000	0	91.5	62.3	134				
Fluorene	913	40.0	1,000	0	91.3	64.1	134				
Phenanthrene	915	40.0	1,000	0	91.5	63.2	132				
Anthracene	871	40.0	1,000	0	87.1	61.5	136				
Fluoranthene	898	40.0	1,000	0	89.8	63.1	140				
Pyrene	890	40.0	1,000	0	89.0	63.4	140				
Benz(a)anthracene	842	40.0	1,000	0	84.2	62.7	148				
Chrysene	899	40.0	1,000	0	89.9	60.5	142				
Benzo(b)fluoranthene	974	40.0	1,000	0	97.4	55.8	158				
Benzo(k)fluoranthene	845	40.0	1,000	0	84.5	64	136				
Benzo(a)pyrene	920	40.0	1,000	0	92.0	61.9	151				
Indeno(1,2,3-cd)pyrene	930	40.0	1,000	0	93.0	48.3	147				
Dibenz(a,h)anthracene	872	40.0	1,000	0	87.2	47.9	150				
Benzo(g,h,i)perylene	911	40.0	1,000	0	91.1	44.4	144				
Surr: 2-Fluorobiphenyl	404		500.0		80.8	24.4	151				
Surr: Terphenyl-d14 (surr)	324		500.0		64.9	31.4	162				

Sample ID **1909356-001ADUP** SampType: **DUP** Units: **µg/Kg-dry** Prep Date: **9/26/2019** RunNo: **54206**
Client ID: **BATCH** Batch ID: **25950** Analysis Date: **9/27/2019** SeqNo: **1073731**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	86.1	47.2						128.3	39.4	30	
2-Methylnaphthalene	ND	47.2						0		30	
1-Methylnaphthalene	ND	47.2						0		30	
Acenaphthylene	ND	47.2						0		30	
Acenaphthene	ND	47.2						0		30	

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID **1909356-001ADUP** SampType: **DUP** Units: **µg/Kg-dry** Prep Date: **9/26/2019** RunNo: **54206**
Client ID: **BATCH** Batch ID: **25950** Analysis Date: **9/27/2019** SeqNo: **1073731**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluorene	ND	47.2						0		30	
Phenanthrene	ND	47.2						51.68	21.2	30	
Anthracene	ND	47.2						0		30	
Fluoranthene	ND	47.2						0		30	
Pyrene	ND	47.2						48.52	33.4	30	
Benz(a)anthracene	ND	47.2						0		30	
Chrysene	ND	47.2						0		30	
Benzo(b)fluoranthene	ND	47.2						0		30	
Benzo(k)fluoranthene	ND	47.2						0		30	
Benzo(a)pyrene	ND	47.2						0		30	
Indeno(1,2,3-cd)pyrene	ND	47.2						0		30	
Dibenz(a,h)anthracene	ND	47.2						0		30	
Benzo(g,h,i)perylene	ND	47.2						0		30	
Surr: 2-Fluorobiphenyl	381		590.3		64.6	24.4	151		0		
Surr: Terphenyl-d14 (surr)	297		590.3		50.3	31.4	162		0		

Sample ID **1909356-001AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **9/26/2019** RunNo: **54206**
Client ID: **BATCH** Batch ID: **25950** Analysis Date: **9/27/2019** SeqNo: **1073732**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	778	49.8	1,245	128.3	52.2	37	127				
2-Methylnaphthalene	727	49.8	1,245	30.67	55.9	38.9	128				
1-Methylnaphthalene	748	49.8	1,245	28.96	57.8	36.2	129				
Acenaphthylene	729	49.8	1,245	21.62	56.8	39	132				
Acenaphthene	757	49.8	1,245	0	60.8	39.5	124				
Fluorene	737	49.8	1,245	14.13	58.1	38.3	128				
Phenanthrene	741	49.8	1,245	51.68	55.4	29.2	132				
Anthracene	706	49.8	1,245	9.709	55.9	38.8	128				
Fluoranthene	754	49.8	1,245	35.58	57.7	38.4	135				
Pyrene	743	49.8	1,245	48.52	55.8	37.8	134				

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID **1909356-001AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **9/26/2019** RunNo: **54206**
Client ID: **BATCH** Batch ID: **25950** Analysis Date: **9/27/2019** SeqNo: **1073732**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	660	49.8	1,245	13.78	51.9	39.2	143				
Chrysene	640	49.8	1,245	24.83	49.4	35.9	131				
Benzo(b)fluoranthene	674	49.8	1,245	17.38	52.7	36.3	148				
Benzo(k)fluoranthene	615	49.8	1,245	13.25	48.4	31.2	133				
Benzo(a)pyrene	594	49.8	1,245	17.94	46.3	35.9	144				
Indeno(1,2,3-cd)pyrene	531	49.8	1,245	12.51	41.6	25.3	131				
Dibenz(a,h)anthracene	559	49.8	1,245	8.775	44.2	27.4	132				
Benzo(g,h,i)perylene	516	49.8	1,245	10.45	40.6	20.1	128				
Surr: 2-Fluorobiphenyl	319		622.3		51.3	24.4	151				
Surr: Terphenyl-d14 (surr)	261		622.3		41.9	31.4	162				

Sample ID **1909356-001AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **9/26/2019** RunNo: **54206**
Client ID: **BATCH** Batch ID: **25950** Analysis Date: **9/27/2019** SeqNo: **1073733**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	786	47.4	1,185	128.3	55.5	37	127	777.9	1.02	30	
2-Methylnaphthalene	677	47.4	1,185	30.67	54.6	38.9	128	726.6	7.06	30	
1-Methylnaphthalene	714	47.4	1,185	28.96	57.8	36.2	129	748.2	4.70	30	
Acenaphthylene	772	47.4	1,185	21.62	63.3	39	132	728.7	5.79	30	
Acenaphthene	786	47.4	1,185	0	66.3	39.5	124	757.2	3.73	30	
Fluorene	786	47.4	1,185	14.13	65.1	38.3	128	736.8	6.42	30	
Phenanthrene	768	47.4	1,185	51.68	60.5	29.2	132	740.9	3.61	30	
Anthracene	736	47.4	1,185	9.709	61.3	38.8	128	705.8	4.24	30	
Fluoranthene	769	47.4	1,185	35.58	61.9	38.4	135	753.6	2.03	30	
Pyrene	769	47.4	1,185	48.52	60.8	37.8	134	743.3	3.44	30	
Benz(a)anthracene	638	47.4	1,185	13.78	52.7	39.2	143	659.9	3.44	30	
Chrysene	713	47.4	1,185	24.83	58.1	35.9	131	640.2	10.8	30	
Benzo(b)fluoranthene	843	47.4	1,185	17.38	69.7	36.3	148	673.8	22.3	30	
Benzo(k)fluoranthene	626	47.4	1,185	13.25	51.7	31.2	133	615.2	1.68	30	
Benzo(a)pyrene	718	47.4	1,185	17.94	59.1	35.9	144	593.6	19.0	30	

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID **1909356-001AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **9/26/2019** RunNo: **54206**
Client ID: **BATCH** Batch ID: **25950** Analysis Date: **9/27/2019** SeqNo: **1073733**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Indeno(1,2,3-cd)pyrene	648	47.4	1,185	12.51	53.6	25.3	131	530.8	19.8	30	
Dibenz(a,h)anthracene	663	47.4	1,185	8.775	55.2	27.4	132	559.2	17.0	30	
Benzo(g,h,i)perylene	630	47.4	1,185	10.45	52.3	20.1	128	516.0	19.9	30	
Surr: 2-Fluorobiphenyl	341		592.4		57.6	24.4	151		0		
Surr: Terphenyl-d14 (surr)	284		592.4		47.9	31.4	162		0		

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID **MB-25935** SampType: **MBLK** Units: **mg/Kg** Prep Date: **9/25/2019** RunNo: **54179**
Client ID: **MBLKS** Batch ID: **25935** Analysis Date: **9/25/2019** SeqNo: **1073133**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.100									
Aroclor 1221	ND	0.100									
Aroclor 1232	ND	0.100									
Aroclor 1242	ND	0.100									
Aroclor 1248	ND	0.100									
Aroclor 1254	ND	0.100									
Aroclor 1260	ND	0.100									
Aroclor 1262	ND	0.100									
Aroclor 1268	ND	0.100									
Total PCBs	ND	0.100									
Surr: Decachlorobiphenyl	52.6		50.00		105	8.21	173				
Surr: Tetrachloro-m-xylene	48.5		50.00		97.0	20.2	168				

Sample ID **LCS1-25935** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/25/2019** RunNo: **54179**
Client ID: **LCSS** Batch ID: **25935** Analysis Date: **9/25/2019** SeqNo: **1073134**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.815	0.100	1.000	0	81.5	50.5	161				
Aroclor 1260	0.830	0.100	1.000	0	83.0	42.9	157				
Surr: Decachlorobiphenyl	48.8		50.00		97.5	8.21	173				
Surr: Tetrachloro-m-xylene	47.3		50.00		94.6	20.2	168				

Sample ID **LCS2-25935** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/25/2019** RunNo: **54179**
Client ID: **LCSS** Batch ID: **25935** Analysis Date: **9/25/2019** SeqNo: **1073135**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254	0.930	0.100	1.000	0	93.0	39.7	161				
Surr: Decachlorobiphenyl	55.3		50.00		111	8.21	173				
Surr: Tetrachloro-m-xylene	51.0		50.00		102	20.2	168				

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID **1909337-017ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/25/2019** RunNo: **54179**
Client ID: **R26N-91919-Composite** Batch ID: **25935** Analysis Date: **9/25/2019** SeqNo: **1073137**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.112						0		30	
Aroclor 1221	ND	0.112						0		30	
Aroclor 1232	ND	0.112						0		30	
Aroclor 1242	ND	0.112						0		30	
Aroclor 1248	ND	0.112						0		30	
Aroclor 1254	ND	0.112						0		30	
Aroclor 1260	ND	0.112						0		30	
Aroclor 1262	ND	0.112						0		30	
Aroclor 1268	ND	0.112						0		30	
Total PCBs	ND	0.112						0		30	
Surr: Decachlorobiphenyl	33.5		55.89		60.0	8.21	173		0		
Surr: Tetrachloro-m-xylene	28.4		55.89		50.8	20.2	168		0		

Sample ID **1909337-021AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **9/25/2019** RunNo: **54179**
Client ID: **R26S-91919-Composite** Batch ID: **25935** Analysis Date: **9/25/2019** SeqNo: **1073139**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.627	0.108	1.080	0	58.1	54.4	154				
Aroclor 1260	0.650	0.108	1.080	0	60.2	45.3	155				
Surr: Decachlorobiphenyl	37.0		53.99		68.6	8.79	173				
Surr: Tetrachloro-m-xylene	30.3		53.99		56.1	20.3	170				

Sample ID **1909337-021AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **9/25/2019** RunNo: **54179**
Client ID: **R26S-91919-Composite** Batch ID: **25935** Analysis Date: **9/25/2019** SeqNo: **1073140**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.577	0.0971	0.9707	0	59.4	54.4	154	0.6270	8.34	30	
Aroclor 1260	0.622	0.0971	0.9707	0	64.1	45.3	155	0.6500	4.35	30	
Surr: Decachlorobiphenyl	34.2		48.53		70.4	8.79	173		0		
Surr: Tetrachloro-m-xylene	26.5		48.53		54.5	20.3	170		0		

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID	**1909337-021AMSD**	SampType:	**MSD**		Units:	**mg/Kg-dry**	Prep Date:	**9/25/2019**		RunNo:	**54179**
Client ID:	**R26S-91919-Composite**	Batch ID:	**25935**				Analysis Date:	**9/25/2019**		SeqNo:	**1073140**

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

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID **LCS-25919** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **LCSS** Batch ID: **25919** Analysis Date: **9/24/2019** SeqNo: **1072837**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.916	0.0200	1.000	0	91.6	14.3	167				
Chloromethane	0.870	0.0500	1.000	0	87.0	32	156				
Vinyl chloride	0.877	0.0250	1.000	0	87.7	43.4	151				
Bromomethane	0.336	0.0500	1.000	0	33.6	35	155				S
Trichlorofluoromethane (CFC-11)	0.886	0.0200	1.000	0	88.6	33.8	156				
Chloroethane	0.604	0.0500	1.000	0	60.4	33.1	147				
1,1-Dichloroethene	0.833	0.0200	1.000	0	83.3	30.9	145				
Methylene chloride	0.837	0.0200	1.000	0	83.7	46.3	140				
trans-1,2-Dichloroethene	0.867	0.0200	1.000	0	86.7	68	130				
Methyl tert-butyl ether (MTBE)	0.925	0.0500	1.000	0	92.5	44.1	152				
1,1-Dichloroethane	0.836	0.0200	1.000	0	83.6	61.9	137				
cis-1,2-Dichloroethene	0.894	0.0200	1.000	0	89.4	71.3	135				
Chloroform	0.863	0.0200	1.000	0	86.3	69	145				
1,1,1-Trichloroethane (TCA)	0.888	0.0250	1.000	0	88.8	69	132				
1,1-Dichloropropene	0.930	0.0200	1.000	0	93.0	72.7	131				
Carbon tetrachloride	0.902	0.0500	1.000	0	90.2	63.4	137				
1,2-Dichloroethane (EDC)	0.855	0.0200	1.000	0	85.5	50.9	162				
Benzene	0.890	0.0200	1.000	0	89.0	64.3	133				
Trichloroethene (TCE)	0.947	0.0200	1.000	0	94.7	65.5	137				
1,2-Dichloropropane	0.867	0.0200	1.000	0	86.7	63.2	142				
Bromodichloromethane	0.861	0.0200	1.000	0	86.1	53.4	131				
Dibromomethane	0.883	0.0200	1.000	0	88.3	60.1	146				
cis-1,3-Dichloropropene	0.920	0.0200	1.000	0	92.0	59.1	143				
Toluene	0.942	0.0200	1.000	0	94.2	67	144				
trans-1,3-Dichloropropylene	0.923	0.0200	1.000	0	92.3	49.2	149				
1,1,2-Trichloroethane	0.897	0.0200	1.000	0	89.7	56.9	147				
1,3-Dichloropropane	0.906	0.0250	1.000	0	90.6	56.1	153				
Tetrachloroethene (PCE)	1.06	0.0250	1.000	0	106	52.7	150				
Dibromochloromethane	0.929	0.0250	1.000	0	92.9	70.6	144				
1,2-Dibromoethane (EDB)	0.920	0.00500	1.000	0	92.0	50.5	154				
Chlorobenzene	0.980	0.0250	1.000	0	98.0	84.9	125				

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID **LCS-25919** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **LCSS** Batch ID: **25919** Analysis Date: **9/24/2019** SeqNo: **1072837**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	0.978	0.0250	1.000	0	97.8	65.9	141				
Ethylbenzene	1.00	0.0250	1.000	0	100	74	129				
m,p-Xylene	2.01	0.0500	2.000	0	100	70	124				
o-Xylene	1.03	0.0250	1.000	0	103	68.1	139				
Styrene	1.01	0.0250	1.000	0	101	73.3	146				
Isopropylbenzene	1.07	0.0250	1.000	0	107	70	130				
Bromoform	1.02	0.0500	1.000	0	102	44.3	130				
1,1,2,2-Tetrachloroethane	0.859	0.0200	1.000	0	85.9	44.8	165				
n-Propylbenzene	1.09	0.0250	1.000	0	109	75.8	139				
Bromobenzene	1.11	0.0200	1.000	0	111	49.2	144				
1,3,5-Trimethylbenzene	1.09	0.0250	1.000	0	109	76.5	135				
2-Chlorotoluene	1.25	0.0250	1.000	0	125	76.7	129				
4-Chlorotoluene	1.03	0.0250	1.000	0	103	77.5	125				
tert-Butylbenzene	1.08	0.0250	1.000	0	108	66.2	130				
1,2,3-Trichloropropane	0.949	0.0250	1.000	0	94.9	67.9	136				
1,2,4-Trichlorobenzene	0.918	0.0250	1.000	0	91.8	65.5	150				
sec-Butylbenzene	1.08	0.0500	1.000	0	108	75.6	133				
4-Isopropyltoluene	1.07	0.0500	1.000	0	107	76.8	131				
1,3-Dichlorobenzene	1.07	0.0200	1.000	0	107	48.6	144				
1,4-Dichlorobenzene	1.04	0.0200	1.000	0	104	72.6	126				
n-Butylbenzene	1.11	0.0250	1.000	0	111	78.4	140				
1,2-Dichlorobenzene	0.999	0.0200	1.000	0	99.9	72.8	126				
1,2-Dibromo-3-chloropropane	0.714	0.500	1.000	0	71.4	40.2	155				
1,2,4-Trimethylbenzene	1.09	0.0200	1.000	0	109	77.5	129				
Hexachloro-1,3-butadiene	1.43	0.0500	1.000	0	143	42	151				
Naphthalene	0.679	0.0500	1.000	0	67.9	46.5	167				
1,2,3-Trichlorobenzene	0.730	0.0200	1.000	0	73.0	64.5	149				
Surr: Dibromofluoromethane	0.975		1.250		78.0	56.5	129				
Surr: Toluene-d8	1.14		1.250		91.1	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.33		1.250		106	54.8	168				

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID **LCS-25919** SampType: **LCS** Units: **mg/Kg** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **LCSS** Batch ID: **25919** Analysis Date: **9/24/2019** SeqNo: **1072837**

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

NOTES:
S - Outlying spike recovery observed (low bias). Samples will be qualified with a *.

Sample ID **LCSD-25919** SampType: **LCSD** Units: **mg/Kg** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **LCSS02** Batch ID: **25919** Analysis Date: **9/24/2019** SeqNo: **1072838**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.813	0.0200	1.000	0	81.3	14.3	167	0.9159	11.9	20	
Chloromethane	0.792	0.0500	1.000	0	79.2	32	156	0.8699	9.44	20	
Vinyl chloride	0.797	0.0250	1.000	0	79.7	43.4	151	0.8773	9.53	20	
Bromomethane	0.312	0.0500	1.000	0	31.2	35	155	0.3358	7.48	20	S
Trichlorofluoromethane (CFC-11)	0.770	0.0200	1.000	0	77.0	33.8	156	0.8861	14.0	20	
Chloroethane	0.544	0.0500	1.000	0	54.4	33.1	147	0.6039	10.4	20	
1,1-Dichloroethene	0.757	0.0200	1.000	0	75.7	30.9	145	0.8332	9.57	20	
Methylene chloride	0.760	0.0200	1.000	0	76.0	57.6	135	0.8366	9.62	20	
trans-1,2-Dichloroethene	0.784	0.0200	1.000	0	78.4	68	130	0.8666	10.0	20	
Methyl tert-butyl ether (MTBE)	0.896	0.0500	1.000	0	89.6	44.1	152	0.9245	3.18	20	
1,1-Dichloroethane	0.761	0.0200	1.000	0	76.1	61.9	137	0.8363	9.39	20	
cis-1,2-Dichloroethene	0.816	0.0200	1.000	0	81.6	71.6	123	0.8945	9.24	20	
Chloroform	0.792	0.0200	1.000	0	79.2	69	145	0.8631	8.65	20	
1,1,1-Trichloroethane (TCA)	0.813	0.0250	1.000	0	81.3	69	132	0.8884	8.92	20	
1,1-Dichloropropene	0.835	0.0200	1.000	0	83.5	72.7	131	0.9300	10.8	20	
Carbon tetrachloride	0.811	0.0500	1.000	0	81.1	63.4	137	0.9022	10.6	20	
1,2-Dichloroethane (EDC)	0.802	0.0200	1.000	0	80.2	50.9	162	0.8547	6.34	20	
Benzene	0.846	0.0200	1.000	0	84.6	74.6	124	0.8902	5.11	20	
Trichloroethene (TCE)	0.848	0.0200	1.000	0	84.8	65.5	137	0.9467	11.0	20	
1,2-Dichloropropane	0.801	0.0200	1.000	0	80.1	63.2	142	0.8672	7.96	20	
Bromodichloromethane	0.790	0.0200	1.000	0	79.0	53.4	131	0.8609	8.61	20	
Dibromomethane	0.829	0.0200	1.000	0	82.9	60.1	146	0.8829	6.29	20	
cis-1,3-Dichloropropene	0.841	0.0200	1.000	0	84.1	59.1	143	0.9204	9.02	20	
Toluene	0.879	0.0200	1.000	0	87.9	67	144	0.9422	6.89	20	

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID **LCSD-25919** SampType: **LCSD** Units: **mg/Kg** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **LCSS02** Batch ID: **25919** Analysis Date: **9/24/2019** SeqNo: **1072838**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
trans-1,3-Dichloropropylene	0.856	0.0200	1.000	0	85.6	49.2	149	0.9232	7.55	20	
1,1,2-Trichloroethane	0.843	0.0200	1.000	0	84.3	56.9	147	0.8973	6.23	20	
1,3-Dichloropropane	0.844	0.0250	1.000	0	84.4	56.1	153	0.9057	7.05	20	
Tetrachloroethene (PCE)	0.921	0.0250	1.000	0	92.1	52.7	150	1.055	13.6	20	
Dibromochloromethane	0.865	0.0250	1.000	0	86.5	70.6	144	0.9287	7.11	20	
1,2-Dibromoethane (EDB)	0.866	0.00500	1.000	0	86.6	50.5	154	0.9197	6.05	20	
Chlorobenzene	0.899	0.0250	1.000	0	89.9	84.9	125	0.9805	8.65	20	
1,1,1,2-Tetrachloroethane	0.911	0.0250	1.000	0	91.1	65.9	141	0.9784	7.14	20	
Ethylbenzene	0.960	0.0250	1.000	0	96.0	74	129	1.004	4.54	20	
m,p-Xylene	1.90	0.0500	2.000	0	95.1	70	124	2.006	5.34	20	
o-Xylene	0.985	0.0250	1.000	0	98.5	68.1	139	1.025	3.96	20	
Styrene	0.935	0.0250	1.000	0	93.5	73.3	146	1.012	7.84	20	
Isopropylbenzene	0.964	0.0250	1.000	0	96.4	70	130	1.068	10.2	20	
Bromoform	1.00	0.0500	1.000	0	100	44.3	130	1.019	1.95	20	
1,1,2,2-Tetrachloroethane	0.859	0.0200	1.000	0	85.9	44.8	165	0.8588	0.0259	20	
n-Propylbenzene	0.982	0.0250	1.000	0	98.2	75.8	139	1.092	10.6	20	
Bromobenzene	1.03	0.0200	1.000	0	103	49.2	144	1.107	7.35	20	
1,3,5-Trimethylbenzene	0.988	0.0250	1.000	0	98.8	76.5	135	1.092	10.0	20	
2-Chlorotoluene	1.13	0.0250	1.000	0	113	76.7	129	1.249	10.4	20	
4-Chlorotoluene	0.934	0.0250	1.000	0	93.4	77.5	125	1.035	10.3	20	
tert-Butylbenzene	0.970	0.0250	1.000	0	97.0	66.2	130	1.078	10.5	20	
1,2,3-Trichloropropane	0.945	0.0250	1.000	0	94.5	67.9	136	0.9492	0.487	20	
1,2,4-Trichlorobenzene	0.895	0.0250	1.000	0	89.5	65.5	150	0.9183	2.60	20	
sec-Butylbenzene	0.957	0.0500	1.000	0	95.7	75.6	133	1.078	11.9	20	
4-Isopropyltoluene	0.949	0.0500	1.000	0	94.9	76.8	131	1.075	12.4	20	
1,3-Dichlorobenzene	0.995	0.0200	1.000	0	99.5	48.6	144	1.075	7.72	20	
1,4-Dichlorobenzene	0.961	0.0200	1.000	0	96.1	72.6	126	1.040	7.86	20	
n-Butylbenzene	0.994	0.0250	1.000	0	99.4	78.4	140	1.113	11.2	20	
1,2-Dichlorobenzene	0.944	0.0200	1.000	0	94.4	72.8	126	0.9986	5.66	20	
1,2-Dibromo-3-chloropropane	0.790	0.500	1.000	0	79.0	40.2	155	0.7138	10.2	20	
1,2,4-Trimethylbenzene	0.974	0.0200	1.000	0	97.4	77.5	129	1.088	11.0	20	

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID **LCSD-25919** SampType: **LCSD** Units: **mg/Kg** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **LCSS02** Batch ID: **25919** Analysis Date: **9/24/2019** SeqNo: **1072838**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachloro-1,3-butadiene	1.30	0.0500	1.000	0	130	42	151	1.435	9.72	20	
Naphthalene	0.726	0.0500	1.000	0	72.6	46.5	167	0.6791	6.65	20	
1,2,3-Trichlorobenzene	0.757	0.0200	1.000	0	75.7	64.5	149	0.7303	3.56	20	
Surr: Dibromofluoromethane	0.999		1.250		79.9	56.5	129		0		
Surr: Toluene-d8	1.12		1.250		89.8	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.34		1.250		108	54.8	168		0		

NOTES:
S - Outlying spike recovery observed (low bias). Samples will be qualified with a *.

Sample ID **MB-25919** SampType: **MBLK** Units: **mg/Kg** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **MBLKS** Batch ID: **25919** Analysis Date: **9/24/2019** SeqNo: **1072839**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0200									
Chloromethane	ND	0.0500									
Vinyl chloride	ND	0.0250									
Bromomethane	ND	0.0500									Q*
Trichlorofluoromethane (CFC-11)	ND	0.0200									
Chloroethane	ND	0.0500									Q
1,1-Dichloroethene	ND	0.0200									
Methylene chloride	ND	0.0200									
trans-1,2-Dichloroethene	ND	0.0200									
Methyl tert-butyl ether (MTBE)	ND	0.0500									
1,1-Dichloroethane	ND	0.0200									
cis-1,2-Dichloroethene	ND	0.0200									
Chloroform	ND	0.0200									
1,1,1-Trichloroethane (TCA)	ND	0.0250									
1,1-Dichloropropene	ND	0.0200									
Carbon tetrachloride	ND	0.0500									
1,2-Dichloroethane (EDC)	ND	0.0200									
Benzene	ND	0.0200									

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID **MB-25919** SampType: **MBLK** Units: **mg/Kg** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **MBLKS** Batch ID: **25919** Analysis Date: **9/24/2019** SeqNo: **1072839**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	ND	0.0200									
1,2-Dichloropropane	ND	0.0200									
Bromodichloromethane	ND	0.0200									
Dibromomethane	ND	0.0200									
cis-1,3-Dichloropropene	ND	0.0200									
Toluene	ND	0.0200									
trans-1,3-Dichloropropylene	ND	0.0200									
1,1,2-Trichloroethane	ND	0.0200									
1,3-Dichloropropane	ND	0.0250									
Tetrachloroethene (PCE)	ND	0.0250									
Dibromochloromethane	ND	0.0250									
1,2-Dibromoethane (EDB)	ND	0.00500									
Chlorobenzene	ND	0.0250									
1,1,1,2-Tetrachloroethane	ND	0.0250									
Ethylbenzene	ND	0.0250									
m,p-Xylene	ND	0.0500									
o-Xylene	ND	0.0250									
Styrene	ND	0.0250									
Isopropylbenzene	ND	0.0250									
Bromoform	ND	0.0500									
1,1,2,2-Tetrachloroethane	ND	0.0200									Q
n-Propylbenzene	ND	0.0250									
Bromobenzene	ND	0.0200									
1,3,5-Trimethylbenzene	ND	0.0250									
2-Chlorotoluene	ND	0.0250									
4-Chlorotoluene	ND	0.0250									
tert-Butylbenzene	ND	0.0250									
1,2,3-Trichloropropane	ND	0.0250									
1,2,4-Trichlorobenzene	ND	0.0250									Q
sec-Butylbenzene	ND	0.0500									
4-Isopropyltoluene	ND	0.0500									

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID **MB-25919** SampType: **MBLK** Units: **mg/Kg** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **MBLKS** Batch ID: **25919** Analysis Date: **9/24/2019** SeqNo: **1072839**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	ND	0.0200									
1,4-Dichlorobenzene	ND	0.0200									
n-Butylbenzene	ND	0.0250									
1,2-Dichlorobenzene	ND	0.0200									
1,2-Dibromo-3-chloropropane	ND	0.500									Q
1,2,4-Trimethylbenzene	ND	0.0200									
Hexachloro-1,3-butadiene	ND	0.0500									
Naphthalene	ND	0.0500									Q
1,2,3-Trichlorobenzene	ND	0.0200									Q
Surr: Dibromofluoromethane	0.920		1.250		73.6	56.5	129				
Surr: Toluene-d8	1.13		1.250		90.3	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.30		1.250		104	54.8	168				

NOTES:
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria
* - Flagged value is not within established control limits.

Sample ID **1909309-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **BATCH** Batch ID: **25919** Analysis Date: **9/24/2019** SeqNo: **1072818**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0226						0		30	
Chloromethane	ND	0.0565						0		30	
Vinyl chloride	ND	0.0283						0		30	
Bromomethane	ND	0.0565						0		30	Q*
Trichlorofluoromethane (CFC-11)	ND	0.0226						0		30	
Chloroethane	ND	0.0565						0		30	Q
1,1-Dichloroethene	ND	0.0226						0		30	
Methylene chloride	ND	0.0226						0		30	
trans-1,2-Dichloroethene	ND	0.0226						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.0565						0		30	
1,1-Dichloroethane	ND	0.0226						0		30	

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID **1909309-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **BATCH** Batch ID: **25919** Analysis Date: **9/24/2019** SeqNo: **1072818**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	ND	0.0226						0		30	
Chloroform	ND	0.0226						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.0283						0		30	
1,1-Dichloropropene	ND	0.0226						0		30	
Carbon tetrachloride	ND	0.0565						0		30	
1,2-Dichloroethane (EDC)	ND	0.0226						0		30	
Benzene	ND	0.0226						0		30	
Trichloroethene (TCE)	ND	0.0226						0		30	
1,2-Dichloropropane	ND	0.0226						0		30	
Bromodichloromethane	ND	0.0226						0		30	
Dibromomethane	ND	0.0226						0		30	
cis-1,3-Dichloropropene	ND	0.0226						0		30	
Toluene	ND	0.0226						0.04045	200	30	R
trans-1,3-Dichloropropylene	ND	0.0226						0		30	
1,1,2-Trichloroethane	ND	0.0226						0		30	
1,3-Dichloropropane	ND	0.0283						0		30	
Tetrachloroethene (PCE)	ND	0.0283						0		30	
Dibromochloromethane	ND	0.0283						0		30	
1,2-Dibromoethane (EDB)	ND	0.00565						0		30	
Chlorobenzene	ND	0.0283						0		30	
1,1,1,2-Tetrachloroethane	ND	0.0283						0		30	
Ethylbenzene	ND	0.0283						0		30	
m,p-Xylene	0.0819	0.0565						0.07882	3.84	30	
o-Xylene	ND	0.0283						0		30	
Styrene	ND	0.0283						0		30	
Isopropylbenzene	ND	0.0283						0		30	
Bromoform	ND	0.0565						0		30	
1,1,2,2-Tetrachloroethane	ND	0.0226						0		30	Q
n-Propylbenzene	ND	0.0283						0		30	
Bromobenzene	ND	0.0226						0		30	
1,3,5-Trimethylbenzene	ND	0.0283						0		30	

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID **1909309-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **BATCH** Batch ID: **25919** Analysis Date: **9/24/2019** SeqNo: **1072818**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Chlorotoluene	ND	0.0283						0		30	
4-Chlorotoluene	ND	0.0283						0		30	
tert-Butylbenzene	ND	0.0283						0		30	
1,2,3-Trichloropropane	ND	0.0283						0		30	
1,2,4-Trichlorobenzene	ND	0.0283						0		30	Q
sec-Butylbenzene	ND	0.0565						0		30	
4-Isopropyltoluene	ND	0.0565						0		30	
1,3-Dichlorobenzene	ND	0.0226						0		30	
1,4-Dichlorobenzene	ND	0.0226						0		30	
n-Butylbenzene	ND	0.0283						0		30	
1,2-Dichlorobenzene	ND	0.0226						0		30	
1,2-Dibromo-3-chloropropane	ND	0.565						0		30	Q
1,2,4-Trimethylbenzene	0.0486	0.0226						0.05244	7.61	30	
Hexachloro-1,3-butadiene	ND	0.0565						0		30	
Naphthalene	ND	0.0565						0		30	Q
1,2,3-Trichlorobenzene	ND	0.0226						0		30	Q
Surr: Dibromofluoromethane	1.66		1.413		117	56.5	129		0		
Surr: Toluene-d8	1.66		1.413		118	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.38		1.413		97.7	54.8	168		0		

NOTES:
R - High RPD observed. The method is in control as indicated by the LCS.
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria
* - Flagged value is not within established control limits.

Sample ID **1909337-005BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **R46-91919-Composite** Batch ID: **25919** Analysis Date: **9/25/2019** SeqNo: **1072828**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0233						0		30	
Chloromethane	ND	0.0582						0		30	
Vinyl chloride	ND	0.0291						0		30	

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID **1909337-005BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **R46-91919-Composite** Batch ID: **25919** Analysis Date: **9/25/2019** SeqNo: **1072828**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromomethane	ND	0.0582						0		30	Q*
Trichlorofluoromethane (CFC-11)	ND	0.0233						0		30	
Chloroethane	ND	0.0582						0		30	Q
1,1-Dichloroethene	ND	0.0233						0		30	
Methylene chloride	ND	0.0233						0		30	
trans-1,2-Dichloroethene	ND	0.0233						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.0582						0		30	
1,1-Dichloroethane	ND	0.0233						0		30	
cis-1,2-Dichloroethene	ND	0.0233						0		30	
Chloroform	ND	0.0233						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.0291						0		30	
1,1-Dichloropropene	ND	0.0233						0		30	
Carbon tetrachloride	ND	0.0582						0		30	
1,2-Dichloroethane (EDC)	ND	0.0233						0		30	
Benzene	ND	0.0233						0		30	
Trichloroethene (TCE)	ND	0.0233						0		30	
1,2-Dichloropropane	ND	0.0233						0		30	
Bromodichloromethane	ND	0.0233						0		30	
Dibromomethane	ND	0.0233						0		30	
cis-1,3-Dichloropropene	ND	0.0233						0		30	
Toluene	ND	0.0233						0		30	
trans-1,3-Dichloropropylene	ND	0.0233						0		30	
1,1,2-Trichloroethane	ND	0.0233						0		30	
1,3-Dichloropropane	ND	0.0291						0		30	
Tetrachloroethene (PCE)	ND	0.0291						0		30	
Dibromochloromethane	ND	0.0291						0		30	
1,2-Dibromoethane (EDB)	ND	0.00582						0		30	
Chlorobenzene	ND	0.0291						0		30	
1,1,1,2-Tetrachloroethane	ND	0.0291						0		30	
Ethylbenzene	ND	0.0291						0		30	
m,p-Xylene	ND	0.0582						0		30	

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID **1909337-005BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **9/24/2019** RunNo: **54164**
Client ID: **R46-91919-Composite** Batch ID: **25919** Analysis Date: **9/25/2019** SeqNo: **1072828**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	ND	0.0291						0		30	
Styrene	ND	0.0291						0		30	
Isopropylbenzene	ND	0.0291						0		30	
Bromoform	ND	0.0582						0		30	
1,1,2,2-Tetrachloroethane	ND	0.0233						0		30	Q
n-Propylbenzene	ND	0.0291						0		30	
Bromobenzene	ND	0.0233						0		30	
1,3,5-Trimethylbenzene	ND	0.0291						0		30	
2-Chlorotoluene	ND	0.0291						0		30	
4-Chlorotoluene	ND	0.0291						0		30	
tert-Butylbenzene	ND	0.0291						0		30	
1,2,3-Trichloropropane	ND	0.0291						0		30	
1,2,4-Trichlorobenzene	ND	0.0291						0		30	Q
sec-Butylbenzene	ND	0.0582						0		30	
4-Isopropyltoluene	ND	0.0582						0		30	
1,3-Dichlorobenzene	ND	0.0233						0		30	
1,4-Dichlorobenzene	ND	0.0233						0		30	
n-Butylbenzene	ND	0.0291						0		30	
1,2-Dichlorobenzene	ND	0.0233						0		30	
1,2-Dibromo-3-chloropropane	ND	0.582						0		30	Q
1,2,4-Trimethylbenzene	ND	0.0233						0.05001	200	30	R
Hexachloro-1,3-butadiene	ND	0.0582						0		30	
Naphthalene	ND	0.0582						0		30	Q
1,2,3-Trichlorobenzene	ND	0.0233						0		30	Q
Surr: Dibromofluoromethane	1.14		1.455		78.4	56.5	129		0		
Surr: Toluene-d8	1.34		1.455		92.3	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.47		1.455		101	54.8	168		0		

NOTES:
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Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria
* - Flagged value is not within established control limits.

Work Order: 1909337
CLIENT: Fulcrum Environmental
Project: Pride Packing

QC SUMMARY REPORT

Sample Moisture (Percent Moisture)

Sample ID	**1909309-029ADUP**	SampType: **DUP**			Units: **wt%**		Prep Date: **9/24/2019**		RunNo: **54104**	
Client ID:	**BATCH**	Batch ID: **R54104**					Analysis Date: **9/24/2019**		SeqNo: **1071571**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	21.2	0.500						21.00	0.934	20	

Sample ID	**1909325-004ADUP**	SampType: **DUP**			Units: **wt%**		Prep Date: **9/24/2019**		RunNo: **54104**	
Client ID:	**BATCH**	Batch ID: **R54104**					Analysis Date: **9/24/2019**		SeqNo: **1071580**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	7.37	0.500						8.590	15.3	20	

Sample Log-In Check List

Client Name:	**FE**	Work Order Number:	**1909337**
Logged by:	**Mike Ridgeway**	Date Received:	**9/20/2019 10:16:00 AM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No ☐	Not Present	☐
2.	How was the sample delivered?	UPS				

Log In

3.	Coolers are present?	Yes	☑	No ☐	NA	☐
4.	Shipping container/cooler in good condition?	Yes	☑	No ☐		
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes	☐	No ☐	Not Required	☑
6.	Was an attempt made to cool the samples?	Yes	☑	No ☐	NA	☐
7.	Were all items received at a temperature of >0°C to 10.0°C*	Yes	☑	No ☐	NA	☐
8.	Sample(s) in proper container(s)?	Yes	☑	No ☐		
9.	Sufficient sample volume for indicated test(s)?	Yes	☑	No ☐		
10.	Are samples properly preserved?	Yes	☑	No ☐		
11.	Was preservative added to bottles?	Yes	☐	No ☑	NA	☐
12.	Is there headspace in the VOA vials?	Yes	☐	No ☐	NA	☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes	☑	No ☐		
14.	Does paperwork match bottle labels?	Yes	☑	No ☐		
15.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No ☐		
16.	Is it clear what analyses were requested?	Yes	☑	No ☐		
17.	Were all holding times able to be met?	Yes	☑	No ☐		

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes	☐	No ☐	NA	☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Cooler 1	7.3
Sample	6.8

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Chain of Custody Record and Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 09/19/2019 | Laboratory Project No (internal): 1909337 | Page: 1 of: 3

Client: Fulcrum Environmental Consulting, Inc.
Address: 406 North 2nd Street
City, State, Zip: Yakima, WA 98901
Telephone: (509)574-0839 Fax: (509) 459-9219

Project Name: Pride Packing
Project No: 192846 Collected by: Jackalyn Kandle
Location: Wapato, WA
Report To (PM): Jeremy Lynn
PM Email: jeremy.lynn@efulcrum.net, cc: kames@efulcrum.net, jackalyn.kandle@efulcrum.net

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

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) | Dissolved (D)	Benzene	Anions	Methane	Ethylene Glycol	Specific Conductance	Turbidity	Comments
R29-91919-1.1	9/19/2019	0830	S	X					X		X	X	X								Composite Sample #s R29-91919-1.1, R29-91919-2.1, and R29-91919-3.1
R29-91919-2.1	9/19/2019	0830	S	X					X		X	X	X								
R29-91919-3.1	9/19/2019	0830	S	X					X		X	X	X								
R46-91919-1.1	9/19/2019	0930	S	X					X		X	X	X								Composite Sample #s R46-91919-1.1, R46-91919-2.1, and R46-91919-3.1
R46-91919-2.1	9/19/2019	0930	S	X					X		X	X	X								
R46-91919-3.1	9/19/2019	0930	S	X					X		X	X	X								
R45-91919-1.1	9/19/2019	1030	S	X					X		X	X	X								Composite Sample #s R45-91919-1.1, R45-91919-2.1, and R45-91919-3.1
R45-91919-2.1	9/19/2019	1030	S	X					X		X	X	X								
R45-91919-3.1	9/19/2019	1030	S	X					X		X	X	X								
R54-91919-1.1	9/19/2019	1115	S	X					X		X	X	X								Composite Sample #s cont. →

**Metals Analysis (Circle): (MTCA-5) RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks:

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x Jackalyn Kandle	9.19.19 @ 4pm	x [signature]	9/20/19 10:10
x		x	

TAT → SameDay^ NextDay^ 2 Day 3 Day (STD)

^Please coordinate with the lab in advance

Chain of Custody Record and Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N. Tel: 206-352-3790
Seattle, WA 98103 Fax: 206-352-7178

Date: 09/19/2019 Laboratory Project No (internal): 1909337

Page: 2 of: 3

Client: Fulcrum Environmental Consulting, Inc.
Address: 406 North 2nd Street
City, State, Zip: Yakima, WA 98901
Telephone: (509)574-0839 Fax: (509) 459-9219

Project Name: Pride Packing
Project No: 192846 Collected by: Jackalyn Kandle
Location: Wapato, WA
Report To (PM): Jeremy Lynn
PM Email: jeremy.lynn@efulcrum.net, cc: kames@efulcrum.net, jackalyn.kandle@efulcrum.net

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

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) | Dissolved (D)	Benzene	Anions	Methane	Ethylene Glycol	Specific Conductance	Turbidity	Comments
R54-91919-2.1	9/19/2019	11:15	S	X					X		X	X	X								R54-91919-1.1, R54-91919-2.1,
R54-91919-3.1	9/19/2019	11:15	S	X					X		X	X	X								R54-91919-3.1
R26N-91919-1.1	9/19/2019	12:45p	S	X					X		X	X	X								Composite Sample #5
R26N-91919-2.1	9/19/2019	12:45p	S	X					X		X	X	X								R26N-91919-1.1, R26N-91919-2.1,
R26N-91919-3.1	9/19/2019	12:45p	S	X					X		X	X	X								and R26N-91919-3.1
R26S-91919-1.1	9/19/2019	1:30p	S	X					X		X	X	X								Composite Sample #5
R26S-91919-2.1	9/19/2019	1:30p	S	X					X		X	X	X								R26S-91919-1.1, R26S-91919-2.1,
R26S-91919-3.1	9/19/2019	1:30p	S	X					X		X	X	X								and R26S-91919-3.1
R30-91919-1.1	9/19/2019	2:10p	S	X					X		X	X	X								Composite Sample #5
R30-91919-2.1	9/19/2019	2:10p	S	X					X		X	X	X								~~and~~ R30-91919-1.1,

**Metals Analysis (Circle): (MTCA-5) RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

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Special Remarks:

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x Jackalyn Kandle	9.19.19 @ 4pm	x Joe Rowe	9/20/19 10:16
Relinquished	Date/Time	Received	Date/Time
x		x	

TAT → SameDay^ NextDay^ 2 Day 3 Day (STD)

^Please coordinate with the lab in advance

Fremont Analytical

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record and Laboratory Services Agreement

Date: 09/19/2019

Laboratory Project No (internal): 1909337

Page: 3 of: 3

Client: Fulcrum Environmental Consulting, Inc.
Address: 406 North 2nd Street
City, State, Zip: Yakima, WA 98901
Telephone: (509)574-0839 Fax: (509) 459-9219

Project Name: Pride Packing
Project No: 192846 Collected by: Jackalyn Kandle
Location: Wapato, WA
Report To (PM): Jeremy Lynn
PM Email: jeremy.lynn@efulcrum.net, cc: kames@efulcrum.net, jackalyn.kandle@efulcrum.net

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

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) | Dissolved (D)	Benzene	Anions	Methane	Ethylene Glycol	Specific Conductance	Turbidity	Comments
R30-91919-3.1	9/19/2019	2:10p	S	X					X		X	X	X								R30-91919-2.1, and R30-91919-3.1
	9/19/2019		S	X					X		X	X	X								
	9/19/2019		S	X					X		X	X	X								
	9/19/2019		S	X					X		X	X	X								
	9/19/2019		S	X					X		X	X	X								
	9/19/2019		S	X					X		X	X	X								
	9/19/2019		S	X					X		X	X	X								
	9/19/2019		S	X					X		X	X	X								
	9/19/2019		S	X					X		X	X	X								
	9/19/2019		S	X					X		X	X	X								

Jackalyn Kandle (not used)

**Metals Analysis (Circle): (MTCA-5 circled) RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks:

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x Jackalyn Kandle	9.19.19 @ 4 pm	x [signature]	9/20/19 10:16
x		x	

TAT → SameDay^ NextDay^ 2 Day 3 Day (STD circled)

^Please coordinate with the lab in advance

Appendix C

Site Photographs

Looking west – Site location of smudge pot storage area with gravel overburden. Water piping for mixing chemicals is present. (12/03/19)

Looking west – Initial excavation of east side of site. Orchard located to the north. (12/03/19)

Looking south – Excavator removing water piping after disconnection. (12/03/19)

Looking north – Discoloration, odor, and diesel spillage identified. (12/03/19)

Looking north – Excavator loading gravel overburden and contaminated soil into Columbia Asphalt truck with trailer. (12/03/19)

Looking west – Continued excavation towards the east. (12/03/19)

Looking west – Site prior to sampling. (12/03/19)

Looking east – Start of continued site remediation (03/18/20)

Looking south – View of excavated soils from the west portion (03/18/20)

Looking southeast – View of south and east sidewalls (03/18/20)

Looking northeast – View of north sidewall with maximum depth of 5-feet (03/18/20)

Looking east – Access road scraping for extent of petroleum contamination (03/18/20)

Appendix D

Soil Treatment Receipts

Yakima Health District
1210 Ahtanum Ridge Drive
Union Gap, Washington 98903
Phone (509) 575-4040

November 26, 2019

Mr. Jeremy Lynn
C\O Fulcrum Environmental Consulting
406 North 2nd Street
Yakima, WA 98901

RE: WA Land Mgmt, LLC - 7 Additional Sites, Yakima Valley, WA: Petroleum Contaminated Soil

Mr. Jeremy Lynn,

This office has reviewed the data on the above mentioned project. The data submitted indicates that the contaminant which requires remediation is diesel. Based on the data submitted it has been determined that the soil may be processed at the Anderson PCS Facility provided that all handling is in accordance with the procedure that has been approved by this office and Washington State Department of Ecology. This letter is to notify you that currently the soil will be considered to be stored on the property and no treatment can begin until the total fee is paid. Waste material may be stored for up to 90 days. Anderson PCS Facility will notify me of the total number of tons delivered for treatment and I will bill you for the remainder of the fee at that time.

FEE ACCOUNT:	Fulcrum Environmental Consulting
PROJECT NAME:	WA Land Mgmt, LLC - 7 Additional Sites Yakima Valley, WA
PRE-TREATMENT AUTHORIZATION:	(Based on time spent prior to soil delivery to the site at $141/hour)
TONNAGE FEE AT $0.60 PER TON:	To be determined after delivery
BALANCE OWED:	To be billed after delivery

If you have any questions regarding this letter, please contact me at (509) 249-6562.

Sincerely,

Ted Silvestri, RS
Environmental Health Specialist

cc: Anderson PCS Facility

DTG Enterprises Inc.

PO Box 14203
Mill Creek, WA 98082
425-549-3000

Invoice

Date	Invoice #
12/1/2019	86076

Bill To:
WA. LAND MGMT. LLC. 560 LATERAL B RD. WAPATO, WA 98951

Please make checks payable to "DTG Enterprises Inc."

Terms	Due Date
Net 10	12/11/2019

E-mail
accounting@dtgrecycle.com

All Past Due Invoices Are Subject to Finance Charges & Late Fees Computed at 1.5% Per Month 18% Per Annum

Item	Date	Description	Quantity	Rate	Amount
PCS - Petroleu...	12/3/2019	Petroleum contaminated soil per ton or $1,500 minimum - TKT#501212 / RANCH 34	31.33	30.00	939.90
PCS - Petroleu...	12/3/2019	Petroleum contaminated soil per ton or $1,500 minimum - TKT#501209 / RANCH 34	30.53	30.00	915.90

**** Effective January 9, 2017 ****
There will be a $4.00 per ton surcharge on loads from King County except City of Seattle.

Total

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425-549-3000

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Item	Date	Description	Quantity	Rate	Amount
PCS - Petroleu...	12/3/2019	Petroleum contaminated soil per ton or $1,500 minimum - TKT#501205 / RANCH 34	33.86	30.00	1,015.80
PCS - Petroleu...	12/3/2019	Petroleum contaminated soil per ton or $1,500 minimum - TKT#501203 / RANCH 34	35.07	30.00	1,052.10
PCS - Petroleu...	12/3/2019	Petroleum contaminated soil per ton or $1,500 minimum - TKT#501190 / RANCH 34	39.67	30.00	1,190.10
PCS - Petroleu...	12/3/2019	Petroleum contaminated soil per ton or $1,500 minimum - TKT#501195 / RANCH 34	31.74	30.00	952.20

**** Effective January 9, 2017 ****
There will be a $4.00 per ton surcharge on loads from King County except City of Seattle.

Total

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Mill Creek, WA 98082
425-549-3000

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12/1/2019	86076

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Item	Date	Description	Quantity	Rate	Amount
PCS - Petroleu...	12/4/2019	Petroleum contaminated soil per ton or $1,500 minimum - TKT#501218 / RANCH 34	29.09	30.00	872.70
PCS - Petroleu...	12/4/2019	Petroleum contaminated soil per ton or $1,500 minimum - TKT#501217 / RANCH 34	11.6	30.00	348.00

**** Effective January 9, 2017 ****
There will be a $4.00 per ton surcharge on loads from King County except City of Seattle.

Total

DTG Enterprises Inc.

PO Box 14203
Mill Creek, WA 98082
425-549-3000

Invoice

Date	Invoice #
3/16/2020	99719

Bill To:
WA. LAND MGMT. LLC. 560 LATERAL B RD. WAPATO, WA 98951

Please make checks payable to "DTG Enterprises Inc."

Terms	Due Date
Net 30	4/15/2020

E-mail
accounting@dtgrecycle.com

All Past Due Invoices Are Subject to Finance Charges & Late Fees Computed at 1.5% Per Month 18% Per Annum

Item	Date	Description	Quantity	Rate	Amount
PCS - Petroleu...	3/18/2020	Petroleum contaminated soil per ton or $1,500 minimum - TKT#506076 / RANCH 34	13.95	30.00	418.50T
PCS - Petroleu...	3/18/2020	Petroleum contaminated soil per ton or $1,500 minimum - TKT#506035 / RANCH ~~36~~ 34	13.22	30.00	396.60T
PCS - Petroleu...	3/18/2020	Petroleum contaminated soil per ton or $1,500 minimum - TKT#506082 / RANCH 34	12.53	30.00	375.90T
PCS - Petroleu...	3/18/2020	Petroleum contaminated soil per ton or $1,500 minimum - TKT#506059 / RANCH 34	13.33	30.00	399.90T

**** Effective January 9, 2017 ****
There will be a $4.00 per ton surcharge on loads from King County except City of Seattle.

Total

Appendix E

Laboratory Results

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Fulcrum Environmental
Jeremy Lynn
406 N. 2nd Street
Yakima, WA 98901

RE: WA Land Mgmt R34
Work Order Number: 1912053

December 11, 2019

Attention Jeremy Lynn:

Fremont Analytical, Inc. received 7 sample(s) on 12/4/2019 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Sample Moisture (Percent Moisture)
Volatile Organic Compounds by EPA Method 8260D

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *12/11/2019*

CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34
Work Order: 1912053

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1912053-001	R34-120319-01.2.5	12/03/2019 12:00 AM	12/04/2019 10:08 AM
1912053-002	R34-120319-02.2	12/03/2019 12:00 AM	12/04/2019 10:08 AM
1912053-003	R34-120319-03.4	12/03/2019 12:00 AM	12/04/2019 10:08 AM
1912053-004	R34-120319-04.1	12/03/2019 12:00 AM	12/04/2019 10:08 AM
1912053-005	R34-120319-05.2	12/03/2019 12:00 AM	12/04/2019 10:08 AM
1912053-006	R34-120319-06.4	12/03/2019 12:00 AM	12/04/2019 10:08 AM
1912053-007	R34-120319-07.4	12/03/2019 12:00 AM	12/04/2019 10:08 AM

Case Narrative

WO#: **1912053**
Date: **12/11/2019**

CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **1912053**
Date Reported: **12/11/2019**

Client: Fulcrum Environmental
Collection Date: 12/3/2019
Project: WA Land Mgmt R34
Lab ID: 1912053-001
Matrix: Soil
Client Sample ID: **R34-120319-01.2.5**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 26745		Analyst: DW
Diesel (Fuel Oil)	8,670	222	D	mg/Kg-dry	10	12/11/2019 2:04:11 PM
Heavy Oil	ND	55.6		mg/Kg-dry	1	12/10/2019 8:04:01 PM
Surr: 2-Fluorobiphenyl	148	50 - 150		%Rec	1	12/10/2019 8:04:01 PM
Surr: o-Terphenyl	142	50 - 150		%Rec	1	12/10/2019 8:04:01 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 26754		Analyst: KT
Benzene	ND	0.0296		mg/Kg-dry	1	12/10/2019 4:14:43 PM
Toluene	ND	0.0296		mg/Kg-dry	1	12/10/2019 4:14:43 PM
Ethylbenzene	ND	0.0370		mg/Kg-dry	1	12/10/2019 4:14:43 PM
m,p-Xylene	ND	0.0740		mg/Kg-dry	1	12/10/2019 4:14:43 PM
o-Xylene	ND	0.0370		mg/Kg-dry	1	12/10/2019 4:14:43 PM
Surr: Dibromofluoromethane	101	78.3 - 116		%Rec	1	12/10/2019 4:14:43 PM
Surr: Toluene-d8	103	84.2 - 114		%Rec	1	12/10/2019 4:14:43 PM
Surr: 1-Bromo-4-fluorobenzene	103	81.9 - 115		%Rec	1	12/10/2019 4:14:43 PM
Sample Moisture (Percent Moisture)				Batch ID: R55784		Analyst: EAS
Percent Moisture	14.9	0.500		wt%	1	12/6/2019 12:08:47 PM

Analytical Report

Work Order: **1912053**
Date Reported: **12/11/2019**

Client: Fulcrum Environmental
Collection Date: 12/3/2019
Project: WA Land Mgmt R34
Lab ID: 1912053-002
Matrix: Soil
Client Sample ID: **R34-120319-02.2**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 26745		Analyst: DW
Diesel (Fuel Oil)	ND	19.4		mg/Kg-dry	1	12/10/2019 8:34:12 PM
Heavy Oil	ND	48.4		mg/Kg-dry	1	12/10/2019 8:34:12 PM
Surr: 2-Fluorobiphenyl	131	50 - 150		%Rec	1	12/10/2019 8:34:12 PM
Surr: o-Terphenyl	137	50 - 150		%Rec	1	12/10/2019 8:34:12 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 26754		Analyst: KT
Benzene	ND	0.0285		mg/Kg-dry	1	12/11/2019 10:56:40 AM
Toluene	ND	0.0285		mg/Kg-dry	1	12/11/2019 10:56:40 AM
Ethylbenzene	ND	0.0357		mg/Kg-dry	1	12/11/2019 10:56:40 AM
m,p-Xylene	ND	0.0713		mg/Kg-dry	1	12/11/2019 10:56:40 AM
o-Xylene	ND	0.0357		mg/Kg-dry	1	12/11/2019 10:56:40 AM
Surr: Dibromofluoromethane	94.9	78.3 - 116		%Rec	1	12/11/2019 10:56:40 AM
Surr: Toluene-d8	96.9	84.2 - 114		%Rec	1	12/11/2019 10:56:40 AM
Surr: 1-Bromo-4-fluorobenzene	99.8	81.9 - 115		%Rec	1	12/11/2019 10:56:40 AM
Sample Moisture (Percent Moisture)				Batch ID: R55784		Analyst: EAS
Percent Moisture	11.7	0.500		wt%	1	12/6/2019 12:08:47 PM

Analytical Report

Work Order: **1912053**
Date Reported: **12/11/2019**

Client: Fulcrum Environmental
Collection Date: 12/3/2019
Project: WA Land Mgmt R34
Lab ID: 1912053-003
Matrix: Soil
Client Sample ID: **R34-120319-03.4**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 26746		Analyst: DW
Diesel (Fuel Oil)	ND	23.7		mg/Kg-dry	1	12/10/2019 7:03:30 PM
Heavy Oil	ND	59.3		mg/Kg-dry	1	12/10/2019 7:03:30 PM
Surr: 2-Fluorobiphenyl	91.1	50 - 150		%Rec	1	12/10/2019 7:03:30 PM
Surr: o-Terphenyl	89.8	50 - 150		%Rec	1	12/10/2019 7:03:30 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 26754		Analyst: KT
Benzene	ND	0.0273		mg/Kg-dry	1	12/11/2019 11:27:21 AM
Toluene	ND	0.0273		mg/Kg-dry	1	12/11/2019 11:27:21 AM
Ethylbenzene	ND	0.0341		mg/Kg-dry	1	12/11/2019 11:27:21 AM
m,p-Xylene	ND	0.0681		mg/Kg-dry	1	12/11/2019 11:27:21 AM
o-Xylene	ND	0.0341		mg/Kg-dry	1	12/11/2019 11:27:21 AM
Surr: Dibromofluoromethane	95.7	78.3 - 116		%Rec	1	12/11/2019 11:27:21 AM
Surr: Toluene-d8	99.4	84.2 - 114		%Rec	1	12/11/2019 11:27:21 AM
Surr: 1-Bromo-4-fluorobenzene	99.8	81.9 - 115		%Rec	1	12/11/2019 11:27:21 AM
Sample Moisture (Percent Moisture)				Batch ID: R55784		Analyst: EAS
Percent Moisture	20.0	0.500		wt%	1	12/6/2019 12:08:47 PM

Analytical Report

Work Order: **1912053**
Date Reported: **12/11/2019**

Client: Fulcrum Environmental
Collection Date: 12/3/2019
Project: WA Land Mgmt R34
Lab ID: 1912053-004
Matrix: Soil
Client Sample ID: **R34-120319-04.1**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 26746		Analyst: DW
Diesel (Fuel Oil)	4,600	208	D	mg/Kg-dry	10	12/11/2019 10:11:56 AM
Heavy Oil	ND	51.9		mg/Kg-dry	1	12/10/2019 10:05:15 PM
Surr: 2-Fluorobiphenyl	96.8	50 - 150		%Rec	1	12/10/2019 10:05:15 PM
Surr: o-Terphenyl	90.1	50 - 150		%Rec	1	12/10/2019 10:05:15 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 26754		Analyst: KT
Benzene	ND	0.0267		mg/Kg-dry	1	12/11/2019 11:58:04 AM
Toluene	ND	0.0267		mg/Kg-dry	1	12/11/2019 11:58:04 AM
Ethylbenzene	ND	0.0333		mg/Kg-dry	1	12/11/2019 11:58:04 AM
m,p-Xylene	ND	0.0667		mg/Kg-dry	1	12/11/2019 11:58:04 AM
o-Xylene	ND	0.0333		mg/Kg-dry	1	12/11/2019 11:58:04 AM
Surr: Dibromofluoromethane	95.3	78.3 - 116		%Rec	1	12/11/2019 11:58:04 AM
Surr: Toluene-d8	98.4	84.2 - 114		%Rec	1	12/11/2019 11:58:04 AM
Surr: 1-Bromo-4-fluorobenzene	99.7	81.9 - 115		%Rec	1	12/11/2019 11:58:04 AM
Sample Moisture (Percent Moisture)				Batch ID: R55784		Analyst: EAS
Percent Moisture	8.16	0.500		wt%	1	12/6/2019 12:08:47 PM

Analytical Report

Work Order: **1912053**
Date Reported: **12/11/2019**

Client: Fulcrum Environmental
Collection Date: 12/3/2019
Project: WA Land Mgmt R34
Lab ID: 1912053-005
Matrix: Soil
Client Sample ID: **R34-120319-05.2**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 26746		Analyst: DW
Diesel (Fuel Oil)	ND	23.0		mg/Kg-dry	1	12/10/2019 10:35:26 PM
Heavy Oil	ND	57.5		mg/Kg-dry	1	12/10/2019 10:35:26 PM
Surr: 2-Fluorobiphenyl	87.8	50 - 150		%Rec	1	12/10/2019 10:35:26 PM
Surr: o-Terphenyl	85.9	50 - 150		%Rec	1	12/10/2019 10:35:26 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 26754		Analyst: KT
Benzene	ND	0.0247		mg/Kg-dry	1	12/11/2019 12:28:53 PM
Toluene	ND	0.0247		mg/Kg-dry	1	12/11/2019 12:28:53 PM
Ethylbenzene	ND	0.0308		mg/Kg-dry	1	12/11/2019 12:28:53 PM
m,p-Xylene	ND	0.0617		mg/Kg-dry	1	12/11/2019 12:28:53 PM
o-Xylene	ND	0.0308		mg/Kg-dry	1	12/11/2019 12:28:53 PM
Surr: Dibromofluoromethane	94.7	78.3 - 116		%Rec	1	12/11/2019 12:28:53 PM
Surr: Toluene-d8	98.9	84.2 - 114		%Rec	1	12/11/2019 12:28:53 PM
Surr: 1-Bromo-4-fluorobenzene	100	81.9 - 115		%Rec	1	12/11/2019 12:28:53 PM
Sample Moisture (Percent Moisture)				Batch ID: R55784		Analyst: EAS
Percent Moisture	13.5	0.500		wt%	1	12/6/2019 12:08:47 PM

Analytical Report

Work Order: **1912053**
Date Reported: **12/11/2019**

Client: Fulcrum Environmental
Collection Date: 12/3/2019
Project: WA Land Mgmt R34
Lab ID: 1912053-006
Matrix: Soil
Client Sample ID: **R34-120319-06.4**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 26746		Analyst: DW
Diesel (Fuel Oil)	ND	24.0		mg/Kg-dry	1	12/10/2019 11:05:44 PM
Heavy Oil	ND	60.1		mg/Kg-dry	1	12/10/2019 11:05:44 PM
Surr: 2-Fluorobiphenyl	98.8	50 - 150		%Rec	1	12/10/2019 11:05:44 PM
Surr: o-Terphenyl	99.0	50 - 150		%Rec	1	12/10/2019 11:05:44 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 26754		Analyst: KT
Benzene	ND	0.0349		mg/Kg-dry	1	12/11/2019 12:59:38 PM
Toluene	ND	0.0349		mg/Kg-dry	1	12/11/2019 12:59:38 PM
Ethylbenzene	ND	0.0436		mg/Kg-dry	1	12/11/2019 12:59:38 PM
m,p-Xylene	ND	0.0873		mg/Kg-dry	1	12/11/2019 12:59:38 PM
o-Xylene	ND	0.0436		mg/Kg-dry	1	12/11/2019 12:59:38 PM
Surr: Dibromofluoromethane	94.4	78.3 - 116		%Rec	1	12/11/2019 12:59:38 PM
Surr: Toluene-d8	98.5	84.2 - 114		%Rec	1	12/11/2019 12:59:38 PM
Surr: 1-Bromo-4-fluorobenzene	100	81.9 - 115		%Rec	1	12/11/2019 12:59:38 PM
Sample Moisture (Percent Moisture)				Batch ID: R55784		Analyst: EAS
Percent Moisture	18.5	0.500		wt%	1	12/6/2019 12:08:47 PM

Analytical Report

Work Order: **1912053**
Date Reported: **12/11/2019**

Client: Fulcrum Environmental
Collection Date: 12/3/2019
Project: WA Land Mgmt R34
Lab ID: 1912053-007
Matrix: Soil
Client Sample ID: **R34-120319-07.4**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 26746		Analyst: DW
Diesel (Fuel Oil)	72.7	23.1		mg/Kg-dry	1	12/10/2019 11:35:58 PM
Heavy Oil	ND	57.8		mg/Kg-dry	1	12/10/2019 11:35:58 PM
Surr: 2-Fluorobiphenyl	110	50 - 150		%Rec	1	12/10/2019 11:35:58 PM
Surr: o-Terphenyl	111	50 - 150		%Rec	1	12/10/2019 11:35:58 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 26754		Analyst: KT
Benzene	ND	0.0294		mg/Kg-dry	1	12/11/2019 1:30:25 PM
Toluene	ND	0.0294		mg/Kg-dry	1	12/11/2019 1:30:25 PM
Ethylbenzene	ND	0.0367		mg/Kg-dry	1	12/11/2019 1:30:25 PM
m,p-Xylene	ND	0.0734		mg/Kg-dry	1	12/11/2019 1:30:25 PM
o-Xylene	ND	0.0367		mg/Kg-dry	1	12/11/2019 1:30:25 PM
Surr: Dibromofluoromethane	93.6	78.3 - 116		%Rec	1	12/11/2019 1:30:25 PM
Surr: Toluene-d8	98.7	84.2 - 114		%Rec	1	12/11/2019 1:30:25 PM
Surr: 1-Bromo-4-fluorobenzene	99.6	81.9 - 115		%Rec	1	12/11/2019 1:30:25 PM
Sample Moisture (Percent Moisture)				Batch ID: R55784		Analyst: EAS
Percent Moisture	20.2	0.500		wt%	1	12/6/2019 12:08:47 PM

Work Order: 1912053
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **MB-26745** SampType: **MBLK** Units: **mg/Kg** Prep Date: **12/9/2019** RunNo: **55904**
Client ID: **MBLKS** Batch ID: **26745** Analysis Date: **12/10/2019** SeqNo: **1112973**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	20.4		20.00		102	50	150				
Surr: o-Terphenyl	21.3		20.00		106	50	150				

Sample ID: **LCS-26745** SampType: **LCS** Units: **mg/Kg** Prep Date: **12/9/2019** RunNo: **55904**
Client ID: **LCSS** Batch ID: **26745** Analysis Date: **12/10/2019** SeqNo: **1112974**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	481	20.0	500.0	0	96.2	65	135				
Surr: 2-Fluorobiphenyl	21.4		20.00		107	50	150				
Surr: o-Terphenyl	20.8		20.00		104	50	150				

Sample ID: **1912050-008ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **12/9/2019** RunNo: **55904**
Client ID: **BATCH** Batch ID: **26745** Analysis Date: **12/10/2019** SeqNo: **1112976**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	19.8						0		30	
Heavy Oil	ND	49.4						0		30	
Surr: 2-Fluorobiphenyl	20.1		19.76		102	50	150		0		
Surr: o-Terphenyl	20.9		19.76		106	50	150		0		

Sample ID: **1912050-008AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **12/9/2019** RunNo: **55904**
Client ID: **BATCH** Batch ID: **26745** Analysis Date: **12/10/2019** SeqNo: **1112977**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	469	20.2	506.0	0	92.6	65	135				
Surr: 2-Fluorobiphenyl	20.2		20.24		99.9	50	150				
Surr: o-Terphenyl	19.3		20.24		95.2	50	150				

Work Order: 1912053
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **1912050-008AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **12/9/2019** RunNo: **55904**
Client ID: **BATCH** Batch ID: **26745** Analysis Date: **12/10/2019** SeqNo: **1112977**

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

Sample ID: **1912050-008AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **12/9/2019** RunNo: **55904**
Client ID: **BATCH** Batch ID: **26745** Analysis Date: **12/10/2019** SeqNo: **1112978**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	482	20.2	504.1	0	95.7	65	135	468.6	2.91	30	
Surr: 2-Fluorobiphenyl	20.2		20.16		100	50	150		0		
Surr: o-Terphenyl	19.3		20.16		95.6	50	150		0		

Sample ID: **1912052-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **12/9/2019** RunNo: **55904**
Client ID: **BATCH** Batch ID: **26745** Analysis Date: **12/10/2019** SeqNo: **1112991**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	22.4						0		30	
Heavy Oil	ND	56.0						0		30	
Surr: 2-Fluorobiphenyl	22.7		22.41		101	50	150		0		
Surr: o-Terphenyl	23.9		22.41		106	50	150		0		

Sample ID: **LCS-26746** SampType: **LCS** Units: **mg/Kg** Prep Date: **12/9/2019** RunNo: **55903**
Client ID: **LCSS** Batch ID: **26746** Analysis Date: **12/10/2019** SeqNo: **1112922**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	480	20.0	500.0	0	95.9	65	135				
Surr: 2-Fluorobiphenyl	19.0		20.00		95.2	50	150				
Surr: o-Terphenyl	17.8		20.00		89.2	50	150				

Work Order: 1912053
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **1912053-003ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **12/9/2019** RunNo: **55903**
Client ID: **R34-120319-03.4** Batch ID: **26746** Analysis Date: **12/10/2019** SeqNo: **1112924**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	24.8						0		30	
Heavy Oil	ND	62.1						0		30	
Surr: 2-Fluorobiphenyl	25.3		24.84		102	50	150		0		
Surr: o-Terphenyl	24.9		24.84		100	50	150		0		

Sample ID: **1912053-003AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **12/9/2019** RunNo: **55903**
Client ID: **R34-120319-03.4** Batch ID: **26746** Analysis Date: **12/10/2019** SeqNo: **1112925**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	576	23.2	580.6	0	99.1	65	135				
Surr: 2-Fluorobiphenyl	21.4		23.22		92.3	50	150				
Surr: o-Terphenyl	20.1		23.22		86.7	50	150				

Sample ID: **1912053-003AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **12/9/2019** RunNo: **55903**
Client ID: **R34-120319-03.4** Batch ID: **26746** Analysis Date: **12/10/2019** SeqNo: **1112926**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	552	23.1	577.9	0	95.6	65	135	575.6	4.10	30	
Surr: 2-Fluorobiphenyl	21.0		23.12		91.1	50	150		0		
Surr: o-Terphenyl	19.6		23.12		84.7	50	150		0		

Sample ID: **1912055-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **12/9/2019** RunNo: **55903**
Client ID: **BATCH** Batch ID: **26746** Analysis Date: **12/11/2019** SeqNo: **1112938**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	22.7						0		30	
Heavy Oil	ND	56.9						0		30	
Surr: 2-Fluorobiphenyl	20.7		22.74		91.0	50	150		0		
Surr: o-Terphenyl	20.7		22.74		90.8	50	150		0		

Work Order: 1912053
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **1912055-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **12/9/2019** RunNo: **55903**
Client ID: **BATCH** Batch ID: **26746** Analysis Date: **12/11/2019** SeqNo: **1112938**

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

Sample ID: **MB-26746** SampType: **MBLK** Units: **mg/Kg** Prep Date: **12/9/2019** RunNo: **55903**
Client ID: **MBLKS** Batch ID: **26746** Analysis Date: **12/11/2019** SeqNo: **1112953**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	20.2		20.00		101	50	150				
Surr: o-Terphenyl	19.9		20.00		99.5	50	150				

Work Order: 1912053
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-26754** SampType: **LCS** Units: **mg/Kg** Prep Date: **12/10/2019** RunNo: **55887**
Client ID: **LCSS** Batch ID: **26754** Analysis Date: **12/10/2019** SeqNo: **1112543**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.04	0.0200	1.000	0	104	76.4	122				
Toluene	1.03	0.0200	1.000	0	103	76.9	125				
Ethylbenzene	1.12	0.0250	1.000	0	112	80	122				
m,p-Xylene	2.13	0.0500	2.000	0	106	80.3	122				
o-Xylene	1.03	0.0250	1.000	0	103	79.7	121				
Surr: Dibromofluoromethane	1.33		1.250		106	78.3	116				
Surr: Toluene-d8	1.26		1.250		100	84.2	114				
Surr: 1-Bromo-4-fluorobenzene	1.30		1.250		104	81.9	115				

Sample ID: **MB-26754** SampType: **MBLK** Units: **mg/Kg** Prep Date: **12/10/2019** RunNo: **55887**
Client ID: **MBLKS** Batch ID: **26754** Analysis Date: **12/10/2019** SeqNo: **1112544**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0200									
Toluene	ND	0.0200									
Ethylbenzene	ND	0.0250									
m,p-Xylene	ND	0.0500									
o-Xylene	ND	0.0250									
Surr: Dibromofluoromethane	1.23		1.250		98.0	78.3	116				
Surr: Toluene-d8	1.26		1.250		101	84.2	114				
Surr: 1-Bromo-4-fluorobenzene	1.24		1.250		98.8	81.9	115				

Sample ID: **1912052-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **12/10/2019** RunNo: **55887**
Client ID: **BATCH** Batch ID: **26754** Analysis Date: **12/10/2019** SeqNo: **1112514**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0266						0		30	
Toluene	ND	0.0266						0		30	
Ethylbenzene	ND	0.0332						0		30	
m,p-Xylene	ND	0.0665						0		30	

Work Order: 1912053
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **1912052-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **12/10/2019** RunNo: **55887**
Client ID: **BATCH** Batch ID: **26754** Analysis Date: **12/10/2019** SeqNo: **1112514**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	ND	0.0332						0		30	
Surr: Dibromofluoromethane	1.63		1.662		98.3	78.3	116		0		
Surr: Toluene-d8	1.67		1.662		101	84.2	114		0		
Surr: 1-Bromo-4-fluorobenzene	1.68		1.662		101	81.9	115		0		

Sample ID: **1912052-002BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **12/10/2019** RunNo: **55887**
Client ID: **BATCH** Batch ID: **26754** Analysis Date: **12/10/2019** SeqNo: **1112516**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.20	0.0271	1.356	0	88.7	65.9	129				
Toluene	1.23	0.0271	1.356	0	90.5	71	129				
Ethylbenzene	1.38	0.0339	1.356	0	102	75.4	127				
m,p-Xylene	2.65	0.0678	2.711	0	97.7	74.1	129				
o-Xylene	1.31	0.0339	1.356	0	96.9	74	128				
Surr: Dibromofluoromethane	1.73		1.695		102	78.3	116				
Surr: Toluene-d8	1.62		1.695		95.3	84.2	114				
Surr: 1-Bromo-4-fluorobenzene	1.77		1.695		104	81.9	115				

Sample ID: **1912052-002BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **12/10/2019** RunNo: **55887**
Client ID: **BATCH** Batch ID: **26754** Analysis Date: **12/10/2019** SeqNo: **1112517**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.29	0.0271	1.356	0	95.0	65.9	129	1.202	6.91	30	
Toluene	1.32	0.0271	1.356	0	97.0	71	129	1.227	6.93	30	
Ethylbenzene	1.49	0.0339	1.356	0	110	75.4	127	1.384	7.48	30	
m,p-Xylene	2.84	0.0678	2.711	0	105	74.1	129	2.649	6.84	30	
o-Xylene	1.39	0.0339	1.356	0	103	74	128	1.314	5.70	30	
Surr: Dibromofluoromethane	1.75		1.695		103	78.3	116		0		
Surr: Toluene-d8	1.62		1.695		95.9	84.2	114		0		
Surr: 1-Bromo-4-fluorobenzene	1.78		1.695		105	81.9	115		0		

Work Order: 1912053
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **1912052-002BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **12/10/2019** RunNo: **55887**
Client ID: **BATCH** Batch ID: **26754** Analysis Date: **12/10/2019** SeqNo: **1112517**

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

Sample ID: **1912053-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **12/10/2019** RunNo: **55887**
Client ID: **R34-120319-01.2.5** Batch ID: **26754** Analysis Date: **12/11/2019** SeqNo: **1112526**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.296						0		30	D
Toluene	ND	0.296						0		30	D
Ethylbenzene	ND	0.370						0		30	D
m,p-Xylene	ND	0.740						0		30	D
o-Xylene	ND	0.370						0		30	D
Surr: Dibromofluoromethane	18.5		18.50		100	78.3	116		0		D
Surr: Toluene-d8	18.0		18.50		97.3	84.2	114		0		D
Surr: 1-Bromo-4-fluorobenzene	18.7		18.50		101	81.9	115		0		D

Sample Log-In Check List

Client Name:	**FE**	Work Order Number:	**1912053**
Logged by:	**Clare Griggs**	Date Received:	**12/4/2019 10:08:00 AM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	UPS		

Log In

3.	Coolers are present?	Yes ☑	No ☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☑	Not Required ☐
6.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
7.	Were all items received at a temperature of >0°C to 10.0°C *	Yes ☐	No ☑	NA ☐
		Refer to item information.		
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

12/5/19 - client requests BTEX only, not full list VOCs

Item Information

Item #	Temp °C
Cooler	10.9
Sample	9.7

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 12/03/19 Page: 1 of: 1

Project Name: WA Land Mgmt. R34

Project No: 192902.

Collected by: KDA / JK

Location: Ranch 34

Report To (PM): Jeremy Lynn

PM Email: Jeremy.Lynn@fulcrum.net

Laboratory Project No (internal): 192053

Special Remarks:

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 30 days)

Client: Fulcrum

Address: 406 N. 2nd Street

City, State, Zip: Yakima WA 98901

Telephone: 509-574-0839

Fax:

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
1	R34-120319-01,2,5	12/03		S	X				X									
2	R34-120319-02.2	↓		S	X				X									
3	R34-120319-03.4			S	X				X									
4	R34-120319-04.1			S	X				X									
5	R34-120319-05.2			S	X				X									
6	R34-120319-06.4			S	X				X									
7	R34-120319-07.4	12/03		S	X				X									
8																		
9																		
10																		

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

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Turn-around Time:

- ☒ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day _____ (specify)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x [signature]	12/03/19 17:00	x [signature]	~~12/3/19 1700~~ emit 12/4
Relinquished x	Date/Time	Received x	Date/Time 12/4/19 1008

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Fulcrum Environmental
Jeremy Lynn
406 N. 2nd Street
Yakima, WA 98901

RE: WA Land Mgmt R34
Work Order Number: 2003320

April 08, 2020

Attention Jeremy Lynn:

Fremont Analytical, Inc. received 5 sample(s) on 3/19/2020 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Sample Moisture (Percent Moisture)
Volatile Organic Compounds by EPA Method 8260D

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *04/08/2020*

CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34
Work Order: 2003320

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2003320-001	R34-031820-08.05	03/18/2020 8:25 AM	03/19/2020 9:47 AM
2003320-002	R34-031820-09.05	03/18/2020 8:10 AM	03/19/2020 9:47 AM
2003320-003	R34-031820-10.03	03/18/2020 8:35 AM	03/19/2020 9:47 AM
2003320-004	R34-031820-11.03	03/18/2020 8:50 AM	03/19/2020 9:47 AM
2003320-005	R34-031820-12.02	03/18/2020 10:00 AM	03/19/2020 9:47 AM

Case Narrative

WO#: **2003320**
Date: **4/8/2020**

CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

4/8/2020: Revision 1 include additional analysis requested by client.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2003320**
Date Reported: **4/8/2020**

Client: Fulcrum Environmental
Collection Date: 3/18/2020 8:25:00 AM
Project: WA Land Mgmt R34
Lab ID: 2003320-001
Matrix: Soil
Client Sample ID: **R34-031820-08.05**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 27881		Analyst: DW
Diesel (Fuel Oil)	ND	20.4		mg/Kg-dry	1	3/25/2020 1:09:54 AM
Heavy Oil	ND	50.9		mg/Kg-dry	1	3/25/2020 1:09:54 AM
Surr: 2-Fluorobiphenyl	86.0	50 - 150		%Rec	1	3/25/2020 1:09:54 AM
Surr: o-Terphenyl	90.7	50 - 150		%Rec	1	3/25/2020 1:09:54 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 27987		Analyst: SB
Naphthalene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
2-Methylnaphthalene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
1-Methylnaphthalene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Acenaphthylene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Acenaphthene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Fluorene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Phenanthrene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Anthracene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Fluoranthene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Pyrene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Benz(a)anthracene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Chrysene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Benzo(b)fluoranthene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Benzo(k)fluoranthene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Benzo(a)pyrene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Indeno(1,2,3-cd)pyrene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Dibenz(a,h)anthracene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Benzo(g,h,i)perylene	ND	41.1	H	µg/Kg-dry	1	4/7/2020 6:09:20 PM
Surr: 2-Fluorobiphenyl	51.2	24.4 - 151	H	%Rec	1	4/7/2020 6:09:20 PM
Surr: Terphenyl-d14 (surr)	73.1	31.4 - 162	H	%Rec	1	4/7/2020 6:09:20 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 27885		Analyst: CR
Benzene	ND	0.0310		mg/Kg-dry	1	3/26/2020 8:55:25 AM
Toluene	ND	0.0310		mg/Kg-dry	1	3/26/2020 8:55:25 AM
Ethylbenzene	ND	0.0388		mg/Kg-dry	1	3/26/2020 8:55:25 AM
m,p-Xylene	ND	0.0776		mg/Kg-dry	1	3/26/2020 8:55:25 AM
o-Xylene	ND	0.0388		mg/Kg-dry	1	3/26/2020 8:55:25 AM
Surr: Dibromofluoromethane	101	80 - 116		%Rec	1	3/26/2020 8:55:25 AM
Surr: Toluene-d8	101	84.8 - 113		%Rec	1	3/26/2020 8:55:25 AM
Surr: 1-Bromo-4-fluorobenzene	91.6	82.8 - 113		%Rec	1	3/26/2020 8:55:25 AM

Analytical Report

Work Order: **2003320**
Date Reported: **4/8/2020**

Client: Fulcrum Environmental
Project: WA Land Mgmt R34
Lab ID: 2003320-001
Client Sample ID: **R34-031820-08.05**

Collection Date: 3/18/2020 8:25:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R58239		Analyst: EH
Percent Moisture	8.88	0.500		wt%	1	3/24/2020 3:10:23 PM

Analytical Report

Work Order: **2003320**
Date Reported: **4/8/2020**

Client: Fulcrum Environmental
Collection Date: 3/18/2020 8:10:00 AM
Project: WA Land Mgmt R34
Lab ID: 2003320-002
Matrix: Soil
Client Sample ID: **R34-031820-09.05**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 27881		Analyst: DW
Diesel (Fuel Oil)	ND	21.5		mg/Kg-dry	1	3/25/2020 3:08:37 AM
Heavy Oil	ND	53.9		mg/Kg-dry	1	3/25/2020 3:08:37 AM
Surr: 2-Fluorobiphenyl	126	50 - 150		%Rec	1	3/25/2020 3:08:37 AM
Surr: o-Terphenyl	128	50 - 150		%Rec	1	3/25/2020 3:08:37 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 27987		Analyst: SB
Naphthalene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
2-Methylnaphthalene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
1-Methylnaphthalene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Acenaphthylene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Acenaphthene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Fluorene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Phenanthrene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Anthracene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Fluoranthene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Pyrene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Benz(a)anthracene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Chrysene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Benzo(b)fluoranthene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Benzo(k)fluoranthene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Benzo(a)pyrene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Indeno(1,2,3-cd)pyrene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Dibenz(a,h)anthracene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Benzo(g,h,i)perylene	ND	40.7	H	µg/Kg-dry	1	4/7/2020 6:30:41 PM
Surr: 2-Fluorobiphenyl	67.5	24.4 - 151	H	%Rec	1	4/7/2020 6:30:41 PM
Surr: Terphenyl-d14 (surr)	90.0	31.4 - 162	H	%Rec	1	4/7/2020 6:30:41 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 27885		Analyst: CR
Benzene	ND	0.0306		mg/Kg-dry	1	3/26/2020 9:25:35 AM
Toluene	ND	0.0306		mg/Kg-dry	1	3/26/2020 9:25:35 AM
Ethylbenzene	ND	0.0382		mg/Kg-dry	1	3/26/2020 9:25:35 AM
m,p-Xylene	ND	0.0764		mg/Kg-dry	1	3/26/2020 9:25:35 AM
o-Xylene	ND	0.0382		mg/Kg-dry	1	3/26/2020 9:25:35 AM
Surr: Dibromofluoromethane	97.4	80 - 116		%Rec	1	3/26/2020 9:25:35 AM
Surr: Toluene-d8	100	84.8 - 113		%Rec	1	3/26/2020 9:25:35 AM
Surr: 1-Bromo-4-fluorobenzene	92.0	82.8 - 113		%Rec	1	3/26/2020 9:25:35 AM

Analytical Report

Work Order: **2003320**
Date Reported: **4/8/2020**

Client: Fulcrum Environmental
Collection Date: 3/18/2020 8:10:00 AM
Project: WA Land Mgmt R34
Lab ID: 2003320-002
Matrix: Soil
Client Sample ID: **R34-031820-09.05**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R58239		Analyst: EH
Percent Moisture	11.1	0.500		wt%	1	3/24/2020 3:10:23 PM

Analytical Report

Work Order: **2003320**
Date Reported: **4/8/2020**

Client: Fulcrum Environmental
Collection Date: 3/18/2020 8:35:00 AM
Project: WA Land Mgmt R34
Lab ID: 2003320-003
Matrix: Soil
Client Sample ID: **R34-031820-10.03**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 27881		Analyst: DW
Diesel (Fuel Oil)	ND	21.8		mg/Kg-dry	1	3/25/2020 3:38:16 AM
Heavy Oil	ND	54.6		mg/Kg-dry	1	3/25/2020 3:38:16 AM
Surr: 2-Fluorobiphenyl	135	50 - 150		%Rec	1	3/25/2020 3:38:16 AM
Surr: o-Terphenyl	145	50 - 150		%Rec	1	3/25/2020 3:38:16 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 27885		Analyst: CR
Benzene	ND	0.0291		mg/Kg-dry	1	3/26/2020 9:55:44 AM
Toluene	ND	0.0291		mg/Kg-dry	1	3/26/2020 9:55:44 AM
Ethylbenzene	ND	0.0364		mg/Kg-dry	1	3/26/2020 9:55:44 AM
m,p-Xylene	ND	0.0728		mg/Kg-dry	1	3/26/2020 9:55:44 AM
o-Xylene	ND	0.0364		mg/Kg-dry	1	3/26/2020 9:55:44 AM
Surr: Dibromofluoromethane	102	80 - 116		%Rec	1	3/26/2020 9:55:44 AM
Surr: Toluene-d8	101	84.8 - 113		%Rec	1	3/26/2020 9:55:44 AM
Surr: 1-Bromo-4-fluorobenzene	92.6	82.8 - 113		%Rec	1	3/26/2020 9:55:44 AM
Sample Moisture (Percent Moisture)				Batch ID: R58239		Analyst: EH
Percent Moisture	12.0	0.500		wt%	1	3/24/2020 3:10:23 PM

Analytical Report

Work Order: **2003320**
Date Reported: **4/8/2020**

Client: Fulcrum Environmental
Collection Date: 3/18/2020 8:50:00 AM
Project: WA Land Mgmt R34
Lab ID: 2003320-004
Matrix: Soil
Client Sample ID: **R34-031820-11.03**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 27881		Analyst: DW
Diesel (Fuel Oil)	ND	23.0		mg/Kg-dry	1	3/25/2020 4:07:57 AM
Heavy Oil	ND	57.6		mg/Kg-dry	1	3/25/2020 4:07:57 AM
Surr: 2-Fluorobiphenyl	117	50 - 150		%Rec	1	3/25/2020 4:07:57 AM
Surr: o-Terphenyl	126	50 - 150		%Rec	1	3/25/2020 4:07:57 AM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 27987		Analyst: SB
Naphthalene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
2-Methylnaphthalene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
1-Methylnaphthalene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Acenaphthylene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Acenaphthene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Fluorene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Phenanthrene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Anthracene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Fluoranthene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Pyrene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Benz(a)anthracene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Chrysene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Benzo(b)fluoranthene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Benzo(k)fluoranthene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Benzo(a)pyrene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Indeno(1,2,3-cd)pyrene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Dibenz(a,h)anthracene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Benzo(g,h,i)perylene	ND	46.5	H	µg/Kg-dry	1	4/7/2020 6:52:00 PM
Surr: 2-Fluorobiphenyl	65.1	24.4 - 151	H	%Rec	1	4/7/2020 6:52:00 PM
Surr: Terphenyl-d14 (surr)	62.8	31.4 - 162	H	%Rec	1	4/7/2020 6:52:00 PM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 27885		Analyst: CR
Benzene	ND	0.0242		mg/Kg-dry	1	3/26/2020 10:25:54 AM
Toluene	ND	0.0242		mg/Kg-dry	1	3/26/2020 10:25:54 AM
Ethylbenzene	ND	0.0303		mg/Kg-dry	1	3/26/2020 10:25:54 AM
m,p-Xylene	ND	0.0605		mg/Kg-dry	1	3/26/2020 10:25:54 AM
o-Xylene	ND	0.0303		mg/Kg-dry	1	3/26/2020 10:25:54 AM
Surr: Dibromofluoromethane	101	80 - 116		%Rec	1	3/26/2020 10:25:54 AM
Surr: Toluene-d8	99.4	84.8 - 113		%Rec	1	3/26/2020 10:25:54 AM
Surr: 1-Bromo-4-fluorobenzene	94.6	82.8 - 113		%Rec	1	3/26/2020 10:25:54 AM

Analytical Report

Work Order: **2003320**
Date Reported: **4/8/2020**

Client: Fulcrum Environmental
Project: WA Land Mgmt R34
Lab ID: 2003320-004
Client Sample ID: **R34-031820-11.03**

Collection Date: 3/18/2020 8:50:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R58239		Analyst: EH
Percent Moisture	14.6	0.500		wt%	1	3/24/2020 3:10:23 PM

Analytical Report

Work Order: **2003320**
Date Reported: **4/8/2020**

Client: Fulcrum Environmental
Collection Date: 3/18/2020 10:00:00 AM
Project: WA Land Mgmt R34
Lab ID: 2003320-005
Matrix: Soil
Client Sample ID: **R34-031820-12.02**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 27881		Analyst: DW
Diesel (Fuel Oil)	ND	22.6		mg/Kg-dry	1	3/25/2020 4:37:38 AM
Heavy Oil	ND	56.5		mg/Kg-dry	1	3/25/2020 4:37:38 AM
Surr: 2-Fluorobiphenyl	119	50 - 150		%Rec	1	3/25/2020 4:37:38 AM
Surr: o-Terphenyl	125	50 - 150		%Rec	1	3/25/2020 4:37:38 AM
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 27885		Analyst: CR
Benzene	ND	0.0274		mg/Kg-dry	1	3/26/2020 10:56:02 AM
Toluene	ND	0.0274		mg/Kg-dry	1	3/26/2020 10:56:02 AM
Ethylbenzene	ND	0.0343		mg/Kg-dry	1	3/26/2020 10:56:02 AM
m,p-Xylene	ND	0.0686		mg/Kg-dry	1	3/26/2020 10:56:02 AM
o-Xylene	ND	0.0343		mg/Kg-dry	1	3/26/2020 10:56:02 AM
Surr: Dibromofluoromethane	98.7	80 - 116		%Rec	1	3/26/2020 10:56:02 AM
Surr: Toluene-d8	99.1	84.8 - 113		%Rec	1	3/26/2020 10:56:02 AM
Surr: 1-Bromo-4-fluorobenzene	93.3	82.8 - 113		%Rec	1	3/26/2020 10:56:02 AM
Sample Moisture (Percent Moisture)				Batch ID: R58239		Analyst: EH
Percent Moisture	16.9	0.500		wt%	1	3/24/2020 3:10:23 PM

Work Order: 2003320
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **MB-27881** SampType: **MBLK** Units: **mg/Kg** Prep Date: **3/24/2020** RunNo: **58265**
Client ID: **MBLKS** Batch ID: **27881** Analysis Date: **3/25/2020** SeqNo: **1164051**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	18.7		20.00		93.6	50	150				
Surr: o-Terphenyl	19.2		20.00		95.9	50	150				

Sample ID: **LCS-27881** SampType: **LCS** Units: **mg/Kg** Prep Date: **3/24/2020** RunNo: **58265**
Client ID: **LCSS** Batch ID: **27881** Analysis Date: **3/25/2020** SeqNo: **1164052**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	493	20.0	500.0	0	98.6	65	135				
Surr: 2-Fluorobiphenyl	18.4		20.00		91.9	50	150				
Surr: o-Terphenyl	17.8		20.00		88.8	50	150				

Sample ID: **2003320-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **3/24/2020** RunNo: **58265**
Client ID: **R34-031820-08.05** Batch ID: **27881** Analysis Date: **3/25/2020** SeqNo: **1164054**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	21.5						0		30	
Heavy Oil	ND	53.6						0		30	
Surr: 2-Fluorobiphenyl	23.3		21.46		109	50	150		0		
Surr: o-Terphenyl	24.2		21.46		113	50	150		0		

Sample ID: **2003320-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **3/24/2020** RunNo: **58265**
Client ID: **R34-031820-08.05** Batch ID: **27881** Analysis Date: **3/25/2020** SeqNo: **1164055**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	563	21.6	541.2	0	104	65	135				
Surr: 2-Fluorobiphenyl	21.0		21.65		97.2	50	150				
Surr: o-Terphenyl	20.2		21.65		93.1	50	150				

Work Order: 2003320
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: **2003320-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **3/24/2020** RunNo: **58265**
Client ID: **R34-031820-08.05** Batch ID: **27881** Analysis Date: **3/25/2020** SeqNo: **1164055**

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

Sample ID: **2003320-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **3/24/2020** RunNo: **58265**
Client ID: **R34-031820-08.05** Batch ID: **27881** Analysis Date: **3/25/2020** SeqNo: **1164056**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	715	21.6	540.1	0	132	65	135	563.4	23.7	30	
Surr: 2-Fluorobiphenyl	31.6		21.60		146	50	150		0		
Surr: o-Terphenyl	29.9		21.60		138	50	150		0		

Sample ID: **2003335-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **3/24/2020** RunNo: **58265**
Client ID: **BATCH** Batch ID: **27881** Analysis Date: **3/25/2020** SeqNo: **1164070**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	19.2						0		30	
Heavy Oil	ND	47.9						0		30	
Surr: 2-Fluorobiphenyl	16.1		19.17		83.9	50	150		0		
Surr: o-Terphenyl	17.1		19.17		89.0	50	150		0		

Work Order: 2003320
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **MB-27987** SampType: **MBLK** Units: **µg/Kg** Prep Date: **4/3/2020** RunNo: **58484**
Client ID: **MBLKS** Batch ID: **27987** Analysis Date: **4/7/2020** SeqNo: **1168638**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	40.0									
2-Methylnaphthalene	ND	40.0									
1-Methylnaphthalene	ND	40.0									
Acenaphthylene	ND	40.0									
Acenaphthene	ND	40.0									
Fluorene	ND	40.0									
Phenanthrene	ND	40.0									
Anthracene	ND	40.0									
Fluoranthene	ND	40.0									
Pyrene	ND	40.0									
Benz(a)anthracene	ND	40.0									
Chrysene	ND	40.0									
Benzo(b)fluoranthene	ND	40.0									
Benzo(k)fluoranthene	ND	40.0									
Benzo(a)pyrene	ND	40.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	40.0									
Benzo(g,h,i)perylene	ND	40.0									
Surr: 2-Fluorobiphenyl	311		500.0		62.2	24.4	151				
Surr: Terphenyl-d14 (surr)	439		500.0		87.8	31.4	162				

Sample ID: **LCS-27987** SampType: **LCS** Units: **µg/Kg** Prep Date: **4/3/2020** RunNo: **58484**
Client ID: **LCSS** Batch ID: **27987** Analysis Date: **4/7/2020** SeqNo: **1168639**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	860	40.0	1,000	0	86.0	63.6	135				
2-Methylnaphthalene	887	40.0	1,000	0	88.7	61.5	140				
1-Methylnaphthalene	885	40.0	1,000	0	88.5	59.6	140				
Acenaphthylene	899	40.0	1,000	0	89.9	61.2	141				
Acenaphthene	883	40.0	1,000	0	88.3	62.3	134				

Work Order: 2003320
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **LCS-27987** SampType: **LCS** Units: **µg/Kg** Prep Date: **4/3/2020** RunNo: **58484**
Client ID: **LCSS** Batch ID: **27987** Analysis Date: **4/7/2020** SeqNo: **1168639**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluorene	893	40.0	1,000	0	89.3	64.1	134				
Phenanthrene	927	40.0	1,000	0	92.7	63.2	132				
Anthracene	926	40.0	1,000	0	92.6	61.5	136				
Fluoranthene	937	40.0	1,000	0	93.7	63.1	140				
Pyrene	954	40.0	1,000	0	95.4	63.4	140				
Benz(a)anthracene	1,010	40.0	1,000	0	101	62.7	148				
Chrysene	965	40.0	1,000	0	96.5	60.5	142				
Benzo(b)fluoranthene	938	40.0	1,000	0	93.8	55.8	158				
Benzo(k)fluoranthene	1,010	40.0	1,000	0	101	64	136				
Benzo(a)pyrene	953	40.0	1,000	0	95.3	61.9	151				
Indeno(1,2,3-cd)pyrene	927	40.0	1,000	0	92.7	48.3	147				
Dibenz(a,h)anthracene	949	40.0	1,000	0	94.9	47.9	150				
Benzo(g,h,i)perylene	962	40.0	1,000	0	96.2	44.4	144				
Surr: 2-Fluorobiphenyl	298		500.0		59.5	24.4	151				
Surr: Terphenyl-d14 (surr)	435		500.0		87.0	31.4	162				

Sample ID: **2003318-001ADUP** SampType: **DUP** Units: **µg/Kg-dry** Prep Date: **4/3/2020** RunNo: **58484**
Client ID: **BATCH** Batch ID: **27987** Analysis Date: **4/7/2020** SeqNo: **1168641**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	43.3						0		30	H
2-Methylnaphthalene	ND	43.3						0		30	H
1-Methylnaphthalene	ND	43.3						0		30	H
Acenaphthylene	ND	43.3						0		30	H
Acenaphthene	ND	43.3						0		30	H
Fluorene	ND	43.3						0		30	H
Phenanthrene	ND	43.3						0		30	H
Anthracene	ND	43.3						0		30	H
Fluoranthene	ND	43.3						0		30	H
Pyrene	ND	43.3						0		30	H

Work Order: 2003320
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2003318-001ADUP** SampType: **DUP** Units: **µg/Kg-dry** Prep Date: **4/3/2020** RunNo: **58484**
Client ID: **BATCH** Batch ID: **27987** Analysis Date: **4/7/2020** SeqNo: **1168641**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	ND	43.3						0		30	H
Chrysene	ND	43.3						0		30	H
Benzo(b)fluoranthene	ND	43.3						0		30	H
Benzo(k)fluoranthene	ND	43.3						0		30	H
Benzo(a)pyrene	ND	43.3						0		30	H
Indeno(1,2,3-cd)pyrene	ND	43.3						0		30	H
Dibenz(a,h)anthracene	ND	43.3						0		30	H
Benzo(g,h,i)perylene	ND	43.3						0		30	H
Surr: 2-Fluorobiphenyl	390		541.2		72.1	24.4	151		0		H
Surr: Terphenyl-d14 (surr)	379		541.2		70.0	31.4	162		0		H

Sample ID: **2003318-001AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **4/3/2020** RunNo: **58484**
Client ID: **BATCH** Batch ID: **27987** Analysis Date: **4/7/2020** SeqNo: **1168642**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	883	46.6	1,165	0	75.8	37	127				H
2-Methylnaphthalene	1,160	46.6	1,165	0	99.4	38.9	128				H
1-Methylnaphthalene	1,220	46.6	1,165	0	104	36.2	129				H
Acenaphthylene	932	46.6	1,165	0	80.0	39	132				H
Acenaphthene	919	46.6	1,165	0	78.9	39.5	124				H
Fluorene	1,090	46.6	1,165	0	93.9	38.3	128				H
Phenanthrene	953	46.6	1,165	0	81.8	29.2	132				H
Anthracene	937	46.6	1,165	0	80.4	38.8	128				H
Fluoranthene	949	46.6	1,165	0	81.5	38.4	135				H
Pyrene	981	46.6	1,165	0	84.2	37.8	134				H
Benz(a)anthracene	745	46.6	1,165	0	64.0	39.2	143				H
Chrysene	996	46.6	1,165	0	85.5	35.9	131				H
Benzo(b)fluoranthene	1,390	46.6	1,165	0	119	36.3	148				H
Benzo(k)fluoranthene	1,310	46.6	1,165	0	112	31.2	133				H
Benzo(a)pyrene	1,310	46.6	1,165	0	113	35.9	144				H

Work Order: 2003320
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2003318-001AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **4/3/2020** RunNo: **58484**
Client ID: **BATCH** Batch ID: **27987** Analysis Date: **4/7/2020** SeqNo: **1168642**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Indeno(1,2,3-cd)pyrene	932	46.6	1,165	0	80.0	25.3	131				H
Dibenz(a,h)anthracene	945	46.6	1,165	0	81.1	27.4	132				H
Benzo(g,h,i)perylene	966	46.6	1,165	0	82.9	20.1	128				H
Surr: 2-Fluorobiphenyl	548		582.4		94.1	24.4	151				H
Surr: Terphenyl-d14 (surr)	429		582.4		73.7	31.4	162				H

Sample ID: **2003318-001AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **4/3/2020** RunNo: **58484**
Client ID: **BATCH** Batch ID: **27987** Analysis Date: **4/7/2020** SeqNo: **1168643**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	776	40.7	1,019	0	76.1	37	127	883.1	13.0	30	H
2-Methylnaphthalene	786	40.7	1,019	0	77.1	38.9	128	1,158	38.3	30	RH
1-Methylnaphthalene	802	40.7	1,019	0	78.8	36.2	129	1,216	41.0	30	RH
Acenaphthylene	1,220	40.7	1,019	0	120	39	132	931.9	26.7	30	H
Acenaphthene	874	40.7	1,019	0	85.8	39.5	124	919.2	5.01	30	H
Fluorene	869	40.7	1,019	0	85.3	38.3	128	1,094	23.0	30	H
Phenanthrene	913	40.7	1,019	0	89.6	29.2	132	953.0	4.28	30	H
Anthracene	892	40.7	1,019	0	87.6	38.8	128	937.0	4.88	30	H
Fluoranthene	909	40.7	1,019	0	89.2	38.4	135	948.7	4.30	30	H
Pyrene	934	40.7	1,019	0	91.7	37.8	134	981.0	4.90	30	H
Benz(a)anthracene	976	40.7	1,019	0	95.9	39.2	143	745.1	26.9	30	H
Chrysene	903	40.7	1,019	0	88.7	35.9	131	996.3	9.80	30	H
Benzo(b)fluoranthene	857	40.7	1,019	0	84.1	36.3	148	1,386	47.2	30	RH
Benzo(k)fluoranthene	994	40.7	1,019	0	97.6	31.2	133	1,307	27.2	30	H
Benzo(a)pyrene	697	40.7	1,019	0	68.4	35.9	144	1,312	61.2	30	RH
Indeno(1,2,3-cd)pyrene	821	40.7	1,019	0	80.6	25.3	131	931.5	12.6	30	H
Dibenz(a,h)anthracene	834	40.7	1,019	0	81.8	27.4	132	944.8	12.5	30	H
Benzo(g,h,i)perylene	871	40.7	1,019	0	85.5	20.1	128	965.9	10.4	30	H
Surr: 2-Fluorobiphenyl	295		509.3		57.9	24.4	151		0		H
Surr: Terphenyl-d14 (surr)	392		509.3		77.0	31.4	162		0		H

Work Order: 2003320
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2003318-001AMSD**	SampType: **MSD**			Units: **µg/Kg-dry**		Prep Date: **4/3/2020**			RunNo: **58484**		
Client ID: **BATCH**	Batch ID: **27987**					Analysis Date: **4/7/2020**			SeqNo: **1168643**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
R - High RPD observed, spike recovery is within range.

Work Order: 2003320
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-27885** SampType: **LCS** Units: **mg/Kg** Prep Date: **3/25/2020** RunNo: **58290**
Client ID: **LCSS** Batch ID: **27885** Analysis Date: **3/26/2020** SeqNo: **1164568**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.00	0.0200	1.000	0	100	81	116				
Toluene	1.02	0.0200	1.000	0	102	82.8	117				
Ethylbenzene	1.03	0.0250	1.000	0	103	86.3	115				
m,p-Xylene	2.05	0.0500	2.000	0	102	86.8	115				
o-Xylene	1.02	0.0250	1.000	0	102	86.2	114				
Surr: Dibromofluoromethane	1.36		1.250		109	80	116				
Surr: Toluene-d8	1.26		1.250		101	84.8	113				
Surr: 1-Bromo-4-fluorobenzene	1.30		1.250		104	82.8	113				

Sample ID: **MB-27885** SampType: **MBLK** Units: **mg/Kg** Prep Date: **3/25/2020** RunNo: **58290**
Client ID: **MBLKS** Batch ID: **27885** Analysis Date: **3/26/2020** SeqNo: **1164569**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0200									
Toluene	ND	0.0200									
Ethylbenzene	ND	0.0250									
m,p-Xylene	ND	0.0500									
o-Xylene	ND	0.0250									
Surr: Dibromofluoromethane	1.26		1.250		101	80	116				
Surr: Toluene-d8	1.26		1.250		101	84.8	113				
Surr: 1-Bromo-4-fluorobenzene	1.18		1.250		94.3	82.8	113				

Sample ID: **2003318-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **3/25/2020** RunNo: **58290**
Client ID: **BATCH** Batch ID: **27885** Analysis Date: **3/26/2020** SeqNo: **1164549**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0242						0		30	
Toluene	ND	0.0242						0		30	
Ethylbenzene	ND	0.0303						0		30	
m,p-Xylene	ND	0.0606						0		30	

Work Order: 2003320
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2003318-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **3/25/2020** RunNo: **58290**
Client ID: **BATCH** Batch ID: **27885** Analysis Date: **3/26/2020** SeqNo: **1164549**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	ND	0.0303						0		30	
Surr: Dibromofluoromethane	1.49		1.514		98.3	80	116		0		
Surr: Toluene-d8	1.51		1.514		99.9	84.8	113		0		
Surr: 1-Bromo-4-fluorobenzene	1.43		1.514		94.7	82.8	113		0		

Sample ID: **2003320-005BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **3/25/2020** RunNo: **58290**
Client ID: **R34-031820-12.02** Batch ID: **27885** Analysis Date: **3/26/2020** SeqNo: **1164565**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0274						0		30	
Toluene	ND	0.0274						0		30	
Ethylbenzene	ND	0.0343						0		30	
m,p-Xylene	ND	0.0686						0		30	
o-Xylene	ND	0.0343						0		30	
Surr: Dibromofluoromethane	1.71		1.714		100	80	116		0		
Surr: Toluene-d8	1.69		1.714		98.5	84.8	113		0		
Surr: 1-Bromo-4-fluorobenzene	1.60		1.714		93.2	82.8	113		0		

Sample ID: **2003318-002BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **3/25/2020** RunNo: **58290**
Client ID: **BATCH** Batch ID: **27885** Analysis Date: **3/26/2020** SeqNo: **1164551**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.30	0.0261	1.303	0	99.5	75.5	125				
Toluene	1.30	0.0261	1.303	0	99.6	75.3	127				
Ethylbenzene	1.30	0.0326	1.303	0	99.6	81.9	123				
m,p-Xylene	2.59	0.0651	2.606	0	99.5	82.3	122				
o-Xylene	1.27	0.0326	1.303	0	97.6	83.1	120				
Surr: Dibromofluoromethane	1.70		1.629		104	80	116				
Surr: Toluene-d8	1.64		1.629		101	84.8	113				
Surr: 1-Bromo-4-fluorobenzene	1.69		1.629		103	82.8	113				

Work Order: 2003320
CLIENT: Fulcrum Environmental
Project: WA Land Mgmt R34

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2003318-002BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **3/25/2020** RunNo: **58290**
Client ID: **BATCH** Batch ID: **27885** Analysis Date: **3/26/2020** SeqNo: **1164551**

Sample ID: **2003318-002BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **3/25/2020** RunNo: **58290**
Client ID: **BATCH** Batch ID: **27885** Analysis Date: **3/26/2020** SeqNo: **1164552**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.29	0.0261	1.303	0	99.4	75.5	125	1.296	0.0959	30	
Toluene	1.30	0.0261	1.303	0	99.9	75.3	127	1.297	0.307	30	
Ethylbenzene	1.29	0.0326	1.303	0	99.0	81.9	123	1.297	0.602	30	
m,p-Xylene	2.58	0.0651	2.606	0	98.8	82.3	122	2.592	0.663	30	
o-Xylene	1.29	0.0326	1.303	0	98.8	83.1	120	1.272	1.22	30	
Surr: Dibromofluoromethane	1.74		1.629		107	80	116		0		
Surr: Toluene-d8	1.63		1.629		100	84.8	113		0		
Surr: 1-Bromo-4-fluorobenzene	1.68		1.629		103	82.8	113		0		

Sample Log-In Check List

Client Name:	**FE**	Work Order Number:	**2003320**
Logged by:	**Carissa True**	Date Received:	**3/19/2020 9:47:00 AM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No ☐	Not Present	☐
2.	How was the sample delivered?	UPS				

Log In

3.	Coolers are present?	Yes	☑	No ☐	NA	☐
4.	Shipping container/cooler in good condition?	Yes	☑	No ☐		
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes	☐	No ☑	Not Required	☐
6.	Was an attempt made to cool the samples?	Yes	☑	No ☐	NA	☐
7.	Were all items received at a temperature of >2°C to 6°C *	Yes	☑	No ☐	NA	☐
8.	Sample(s) in proper container(s)?	Yes	☑	No ☐		
9.	Sufficient sample volume for indicated test(s)?	Yes	☑	No ☐		
10.	Are samples properly preserved?	Yes	☑	No ☐		
11.	Was preservative added to bottles?	Yes	☐	No ☑	NA	☐
12.	Is there headspace in the VOA vials?	Yes	☐	No ☐	NA	☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes	☑	No ☐		
14.	Does paperwork match bottle labels?	Yes	☑	No ☐		
15.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No ☐		
16.	Is it clear what analyses were requested?	Yes	☑	No ☐		
17.	Were all holding times able to be met?	Yes	☐	No ☑		

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes	☑	No ☐	NA	☐

Person Notified:	Jeremy Lynn	Date:	3/20/2020
By Whom:	Carissa True	Via:	☑ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:	001 label discrepancy		
Client Instructions:			

19. Additional remarks:

Clare emailed Amanda E, Jeremy L, Ryan M. on 4/2/2020 notifying that samples will be run out of hold.

Item Information

Item #	Temp ºC
Cooler 1	2.6
Sample 1	3.3

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 03/18/2020 Page: 1 of: 1

Laboratory Project No (internal): 2003320

Project Name: WA Land Mgmt R34

Special Remarks:

Client: Fulcrum Environmental

Project No: 192902.

Address: 406 N 2nd St

Collected by: Amanda Enbysk

City, State, Zip: Yakima, WA 98901

Location: Ranch 34

Telephone: 509-574-0839

Report To (PM): Jeremy Lynn

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 30 days)

Fax:

PM Email: Jeremy.Lynn@fulcrum.net

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T)	Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
1	R34-031820-08.05	3/18/20	0835	S			⊗			⊗									
2	R34-031820-09.05	↓	0810	↓			⊗			⊗									
3	R34-031820-10.03	↓	0835	↓			⊗			⊗									
4	R34-031820-11.03	↓	0850	S			⊗			⊗									
5	R34-031820-12.02	3/18/20	1000	S			⊗			⊗									
6																			
7																			
8																			
9																			
10																			

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

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x [signature]	03/18/2020; 1700	x [signature]	3/19/20 @ 0947
Relinquished x	Date/Time	Received x	Date/Time

Turn-around Time:

- ☒ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day _____ (specify)

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
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Date: 03/18/2020 Page: 1 of: 1

Laboratory Project No (internal): 2003320

Project Name: WA Land Mgmt R34

Special Remarks: Add ons CRT 4/1 per A.E.

Project No: 192902.

Client: Fulcrum Environmental

Collected by: Amanda Enbysk

Address: 406 N 2nd St

Location: Ranch 34

City, State, Zip: Yakima, WA 98901

Report To (PM): Jeremy Lynn

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 30 days)

Telephone: 509-574-0839

PM Email: Jeremy.Lynn@fulcrum.net

Fax:

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T)	Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
1	R34-031820-08.05	3/18/20	0805	S			⊗			⊗		X							
2	R34-031820-09.05		0810				⊗			⊗		X							
3	R34-031820-10.03		0835				⊗			⊗									
4	R34-031820-11.03		0850	S			⊗			⊗		X							
5	R34-031820-12.02	3/18/20	1000	S			⊗			⊗									
6																			
7																			
8																			
9																			
10																			

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

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x [signature]	03/18/2020; 1700	x [signature]	3/19/20 @ 0947
Relinquished x	Date/Time	Received x	Date/Time

Turn-around Time:
- ☒ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day (specify)