

# FOCUSED SUBSURFACE INVESTIGATION REPORT

---

WILLAMETTE FALLS RIVERWALK, PHASE 1  
OREGON CITY, OREGON



*Prepared for*  
**METRO REGIONAL GOVERNMENT**

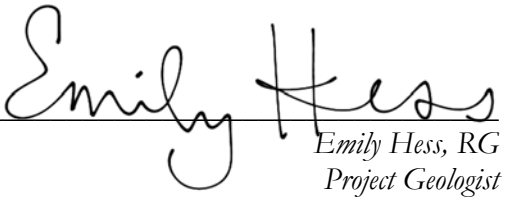
*April 2, 2018*  
*Project No. 0075.06.05*

*Prepared by*  
*Maul Foster & Alongi, Inc.*  
*2001 NW 19th Avenue, Suite 200, Portland, OR 97209*

FOCUSED SUBSURFACE INVESTIGATION REPORT  
WILLAMETTE FALLS RIVERWALK, PHASE 1  
OREGON CITY, OREGON

*The material and data in this report were prepared  
under the supervision and direction of the undersigned.*

MAUL FOSTER & ALONGI, INC.

  
Emily Hess, RG  
Project Geologist

---

Merideth D'Andrea, RG  
Senior Geologist

# CONTENTS

---

TABLES AND ILLUSTRATIONS	IV
ACRONYMS AND ABBREVIATIONS	V
1 INTRODUCTION	1
1.1 REGULATORY FRAMEWORK	1
1.2 SITE ASSESSMENT OBJECTIVES	1
2 PROJECT DESCRIPTION	2
2.1 FACILITY LOCATION HISTORY	2
2.2 POTENTIAL FEATURES OF CONCERN	3
2.3 PAST DATA-COLLECTION ACTIVITY	3
3 FIELD INVESTIGATION	4
3.1 GEOPHYSICAL SURVEY	4
3.2 SUBSURFACE SOIL AND GROUNDWATER SAMPLING	5
3.3 INVESTIGATION-DERIVED WASTE	6
4 ANALYTICAL METHODS	6
4.1 ANALYTICAL METHODS	6
4.2 SCREENING	7
4.3 DIOXINS AND FURANS	8
4.4 PAHS	8
5 RESULTS	9
5.1 SOIL ANALYTICAL RESULTS	9
5.2 RECONNAISSANCE GROUNDWATER ANALYTICAL RESULTS	11
6 CONCLUSIONS	12
LIMITATIONS	
REFERENCES	
TABLES	
FIGURES	
APPENDIX A GEOPHYSICAL SURVEY	
APPENDIX B BORING LOGS	
APPENDIX C DISPOSAL TICKET	
APPENDIX D LABORATORY ANALYTICAL REPORTS	
APPENDIX E DATA VALIDATION MEMORANDUM	

# TABLES AND ILLUSTRATIONS

---

FOLLOWING REPORT:

## TABLES

- 3-1 SAMPLE SUMMARY
- 5-1 SOIL ANALYTICAL RESULTS – HAZARDOUS MATERIALS
- 5-2 SOIL ANALYTICAL RESULTS – PETROLEUM
- 5-3 GROUNDWATER ANALYTICAL RESULTS – HAZARDOUS MATERIALS
- 5-4 GROUNDWATER ANALYTICAL RESULTS – PETROLEUM

## FIGURES

- 1-1 SITE LOCATION
- 2-1 SITE AREAS AND DEPTH TO BEDROCK IN SITE YARD
- 2-2 CURRENT AND HISTORICAL SITE FEATURES OF INTEREST
- 3-1 SAMPLE LOCATIONS AND FEATURES OF INTEREST
- 5-1 SOIL CLEAN FILL CRITERIA EXCEEDANCE
- 5-2 SOIL MOST STRINGENT RBC EXCEEDANCE
- 5-3 SOIL ARSENIC RBC EXCEEDANCE
- 5-4 SOIL LEAD RBC EXCEEDANCE
- 5-5 SOIL HEXAVALENT CHROMIUM RBC EXCEEDANCE
- 5-6 SOIL MERCURY RBC EXCEEDANCE
- 5-7 SOIL TOTAL PCB RBC EXCEEDANCE
- 5-8 SOIL CARCINOGENIC PAH TEQ RBC EXCEEDANCE
- 5-9 SOIL DIOXIN TEQ RBC EXCEEDANCE
- 5-10 OIL DIESEL/LUBE OIL RBC EXCEEDANCE
- 5-11 GROUNDWATER MOST STRINGENT RBC EXCEEDANCE
- 6-1 SOIL AND GROUNDWATER EXCEEDANCE LOCATIONS

## ACRONYMS AND ABBREVIATIONS

---

bgs	below ground surface
COI	contaminant of interest
cPAH	carcinogenic PAH
DEQ	Oregon Department of Environmental Quality
direct contact	soil ingestion, dermal contact, and inhalation
DRO	diesel-range organics
ERM	Environmental Resource Management
ESA	environmental site assessment
GPR	ground penetrating radar
GPR Data	GPR Data Inc.
GRO	gasoline-range organics
HCID	hydrocarbon identification
IDW	investigation-derived waste
Metro	Metro Regional Government in Oregon
MFA	Maul Foster & Alongi, Inc.
mg/kg	milligrams per kilogram
NWTPH	Northwest Total Petroleum Hydrocarbons
ORO	oil-range organics
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
Property	former Blue Heron Paper Factory, located at 427 Main Street in Oregon City, Oregon
PVC	polyvinyl chloride
RBCs	risk-based concentrations
SVOC	semi-volatile organic compound
TCDD	2,3,7,8-tetrachloro dibenzo-p-dioxin
TEC	toxicity equivalent concentration
TEF	toxic equivalency factor
TEQ	toxicity equivalent
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

# 1 INTRODUCTION

---

Maul Foster & Alongi, Inc. (MFA) completed a subsurface investigation on behalf of the Metro Regional Government in Oregon (Metro) for the Willamette Falls Riverwalk Phase 1 Area. The Willamette Falls Riverwalk is a portion of the former Blue Heron Paper Company, located at 427 Main Street in Oregon City, Oregon (the Property; see Figure 1-1). The Property is currently vacant but was formerly used for industrial, commercial, and residential purposes. The Property is currently owned by Falls Legacy, LLC.

## 1.1 Regulatory Framework

The investigation was conducted consistent with the work plan (MFA, 2017c) and the quality assurance project plan that MFA prepared for Metro (MFA, 2017b).

## 1.2 Site Assessment Objectives

Previous investigations conducted on the Property detected contaminants with concentrations above Oregon Department of Environmental Quality (DEQ) risk-based concentrations (RBCs) in soil and identified potential environmental conditions that may have resulted in impacts to soil on the Property. This assessment was conducted to evaluate previously identified environmental impacts and assess impacts to redevelopment of the Property. Data collection and site assessment activities have been designed to:

- Evaluate contaminant migration pathways at the Property.
- Evaluate the nature, extent, and distribution of hazardous substances in media.
- Evaluate the risk to human health and the environment from releases of hazardous substances at the Property.
- Generate data of sufficient quality for site characterization and exposure assessment at the facility.
- Support selection of source control measures or remedial actions to address contaminant releases at the Property, if deemed necessary.
- These data will also provide information to help inform a contaminated media management plan and inform development decisions (such as through identification of disposal options and potential risk to likely receptors).

Data collected for this investigation provides information to make decisions on disposal options for soil/fill. In addition, this investigation reviews soil and potential perched water or groundwater conditions for contaminants of interest (COIs) including petroleum products, metals, and hazardous

substances related to former Property uses. This review provides data to inform development decisions, and to identify potential concerns for receptors (including potential public use).

## 2 PROJECT DESCRIPTION

---

### 2.1 Facility Location History

The approximately 23-acre Property was the site of the Blue Heron Paper Company, which ceased operations in 2011. The first paper-manufacturing operation was conducted on the Property in 1888; over time, the Property has been used for other industrial, commercial, and residential purposes. For example, the Property was also the site of a woolen mill, a flour mill, a sawmill, a tannery, numerous laundries, an auto-repair garage, residences, and office and retail facilities. Because of the unique topography of the area along the shores of the Willamette River, portions of the Property have been filled to extend the buildable land. Tailraces beneath the industrial area continue to drain along natural pathways, and a labyrinth of structures with multiple layers is present.

The location of the Property, just downgradient of Willamette Falls, a unique hydrologic and historically significant natural feature, made the Property a hub for loading and unloading via the waterway. The uses of hazardous substances and petroleum products on the Property have varied over time.

The geology of the Property primarily consists of basalt bedrock, the depths to which are displayed in the Yard portion of the site in Figure 2-1. Three areas of the Property were targeted for investigation, taking into consideration Metro's proposed first phase of Riverwalk construction in addition to potential historical sources of contamination. The three main areas included in this investigation are the Yard Area, where public use and potential future redevelopment may include removal of fill soil in this area to expose the underlying bedrock surface; the upland area along Main Street; and the Petroleum Area where the presence of underground storage tanks (USTs) was investigated (see Figure 2-1). Soil is sparse and largely consists of pockets of fill, present to varying depths across the Property. Perched groundwater is intermittently encountered across the Property, present in natural basalt depressions or blasted utility corridors and footings.

While not assessed as part of this investigation, deeper groundwater is likely in contact with surface water through fractures in the native basalt. The historical use of the Willamette River as a disposal conduit for mill process water is recognized.

## 2.2 Potential Features of Concern

A Phase I environmental site assessment (ESA) was conducted by MFA at the request of Metro in 2017 (MFA, 2017a). Potential features of concern that were identified in the Phase I ESA and are (or were historically) within the Willamette Falls Phase 1 area include (see Figure 2-2):

- A tannery
- Three bleach houses
- Two dye houses
- One laundry/potential dry cleaners
- Four USTs (crude oil/diesel)
- One aboveground storage tank (crude oil)
- An electrical substation
- Fill material
- Tailrace sediment
- The rail line/roadway
- General product storage areas
- Lead paint in soil

## 2.3 Past Data-Collection Activity

The primary past data-collection activities are documented in the following reports:

- Phase II Environmental Site Assessment, Results and Recommendations (Technical Memorandum), Blue Heron Mill, Oregon City, Oregon from Environmental Resources Management (ERM) to Metro, November 6, 2012 (ERM, 2012).

The media sampled includes surface and subsurface soil, solids and water from the stormwater system, solids and water from the tailraces, groundwater and seep samples, and sediment samples from the Intake Basin. The samples were analyzed for a wide range of constituents, based on sample type and location.<sup>1</sup> Only the soil sample locations within the area of focus for this investigation are discussed below. Refer to the Phase I ESA (MFA, 2017a) for a detailed discussion of what was encountered across the Property. In general, the following observations of these data are noted:

- Arsenic in soil at F18-01 (50.2 milligrams per kilogram [mg/kg]) exceeded the construction-worker RBC. F18-01 was noted to have been collected from fill material in the crawl space below building 18.
- Lead in soil exceeded the urban residential, occupational, construction-worker, and excavation-worker RBCs for soil ingestion, dermal contact, and inhalation (direct contact) at F21-01.

---

<sup>1</sup> A subset of metals, petroleum hydrocarbons, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), PCBs, asbestos, and dioxins and furans.



- Oil-range petroleum hydrocarbons in soil was found above urban residential RBCs at F21-01.
- Results of Preliminary Soil Investigation, Blue Heron Paper Company, Bridgewater Group, Inc., May 2011 (Bridgewater Group, Inc., 2011).

Fourteen soil and four wipe samples were analyzed for polychlorinated biphenyls (PCBs). Of these, one soil sample at B7 from the South Substation (building 27, see Figure 2-2) contained the PCB Aroclor 1254 that exceeded the urban residential and occupational direct contact, at 0.892 milligrams per kilogram (mg/kg). Limited sampling from other areas did not reveal the presence of PCBs.

Additionally, the following report provided geotechnical data, including the approximate depth to bedrock throughout portions of the Yard area. Fill material atop basalt was observed in many locations. The bedrock contours provided in Figure 2-1 were the result of this investigation:

- Geotechnical Data Report, Willamette Falls Riverwalk Public Yard/Alcove Area, Northwest Geotech, Inc. Prepared for Snøhetta, May 19, 2017 (Northwest Geotech, Inc., 2017).

## 3 FIELD INVESTIGATION

---

The project scope included a geophysical survey, as well as a soil and groundwater investigation to identify potential impacts that may remain from the Property's historical use.

### 3.1 Geophysical Survey

A geophysical survey was completed using ground penetrating radar (GPR) to identify subsurface anomalies.

MFA subcontracted with GPR Data, Inc. (GPR Data) of Eugene, Oregon, to determine if USTs, and/or ancillary piping, are present in the currently open areas of the yard and, if possible, within buildings 21 and 16 (see Figure 2-2). GPR Data used a GSSI 400 Megahertz GPR to determine the location and depth of USTs. The geophysical survey was conducted on December 5, 2017. The geophysical survey report is provided as Appendix A.

One UST was identified in building 16. It was 5.5 feet below ground surface (bgs) with dimensions of 5.5 feet by 4.5 feet. Four USTs were identified in building 21. All four USTs were 2 feet bgs. Two USTs had dimensions of 4 feet by 11 feet, and two USTs had dimensions of 6 feet by 9 feet. Multiple buried objects were located in the yard near the river (in the vicinity of borings GP01, GP03, and GP06). Their depths ranged from 2 to 5 feet bgs. The area around a removed aboveground storage tank (in the vicinity of GP13) was scanned, and buried objects not indicative of USTs were encountered.

The geophysical survey informed the placement of select boring locations.

## 3.2 Subsurface Soil and Groundwater Sampling

Prior to advancing exploratory borings, MFA contacted the Oregon One Call to locate public underground utilities entering the Property. In addition, Applied Professional Services, Inc., of Hillsboro, Oregon, cleared for underground utilities in the vicinity of the geoprobe locations.

MFA subcontracted with Stratus Corporation of Gaston, Oregon, to advance borings by using a direct-push Geoprobe™ 7822 DT drill rig, enabling assessment of subsurface conditions at the Property. Eighteen borings (GP01 through GP18) were advanced on December 11, December 12, and December 14, 2017, in proximity to features of environmental concern. See Figure 3-1 for these boring locations, as well as sample locations of the previous investigations described in Section 2.3. The ERM 2012 samples collected from F16-01, F16-02, F18-01, F19-01, and F21-01 were soil samples. The remaining ERM sample locations from 2012 are other media, including stormwater, stormwater solids, tailrace water, tailrace solids, seep water, and intake basin sediment (ERM, 2012). These media were not a focus for this investigation; therefore, the results from these media are not discussed in this report. Refer to the Phase I ESA (MFA, 2017a) for a discussion of these results.

Continuous soil cores were collected from the ground surface up to depth of refusal, which varied from 7 feet bgs to 34 feet bgs. Soil from the borings was observed in 5-foot intervals to the maximum depths explored. Soil headspace was periodically screened for organic vapors, using a photoionization detector. Soil samples were collected and submitted for analysis based on the COIs and sample depths representative of the relevant feature(s) of potential concern.

Table 3-1 displays a summary of the samples collected at each boring, as well as which Property area each boring location is within, the boring refusal depth, the depth to groundwater, and a list of the chemical groups analyzed at each location. The refusal depth is inferred to be the depth to bedrock, but refusal can also be caused by coarse gravel or rock, wood, or other materials preventing advancement of the drill core.

Borings GP01, GP02, GP03, GP04, GP06, and GP09 are within the Yard Area. Borings advanced in the Petroleum Area include GP05, GP07, GP08, and GP10. Borings GP11, GP12, GP13, GP14, GP15, GP16, GP17, and GP18 are within the upland area along Main Street.

Water levels encountered during drilling activities were measured using a water-level indicator or based on the presence of wetness in the soil core if the boring caved in, preventing the use of a water-level indicator. When water was encountered at the time of drilling, depth to groundwater ranged approximately from 5 feet bgs to 32 feet bgs. Groundwater samples were collected from six borings (GP03, GP07, GP08, GP10, GP14, GP16) using a dedicated 3/4-inch polyvinyl chloride (PVC) temporary well with a 5-foot PVC machine slotted screen. The 5-foot PVC screen was placed at the bottom 5 feet of each boring, except when boring cave-in prevented the well from being placed all the way at the bottom. Groundwater samples were collected from approximately 1 foot above the bottom of the screen. All groundwater samples were submitted for analysis based on the COIs.

Generally, asphalt and gravel sub-grade were present in the top 0.5 feet of borings located in the roadways. The borings inside building 16 and building 21 generally had concrete and gravel sub-grade present in the top foot of the borings. A boring was planned for inside building 20, but when the concrete was cored at this location, a void space of greater than 25 feet bgs was encountered beneath the concrete floor.

The types of subsurface soils beneath the Property were highly variable, likely due to the historical grading that has occurred at the facility during its development and operation. Subsurface materials encountered were predominantly fill material underlain by shallow basalt bedrock. Sandy gravel with silt and silty sand was observed in the subsurface, with some sandy silts intermixed throughout. Evidence of fill material (e.g., glass, brick) was encountered in several borings. Geologic logs are included in Appendix B.

There was petroleum contamination noted in the saturated soil in the vicinity of the USTs in Building 21. Approximately 0.05 feet of measurable light nonaqueous-phase liquid was observed in the temporary well at GP08 (Appendix B).

### 3.3 Investigation-Derived Waste

Investigation-derived waste (IDW) included decontamination fluids, purged groundwater, and soil from the borings. The liquid and solid IDW was segregated and placed in two 55-gallon drums and labeled with the contents, the volume of material, the date of collection, and the origin of the material. The drums were transported off site by Stratus Corporation and disposed of as non-hazardous waste at the Waste Management Landfill in Hillsboro, Oregon (see Appendix C for disposal ticket).

## 4 ANALYTICAL METHODS

---

Laboratory reports are included in Appendix D, and a data validation memorandum is included in Appendix E. The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

### 4.1 Analytical Methods

The soil samples and groundwater samples were submitted under chain-of-custody protocols to Apex Laboratories, LLC, in Portland, Oregon. Depending on conditions encountered in the soil boring, one to four soil samples from each boring were submitted to the laboratory for analysis. Groundwater samples from six boring were submitted to the laboratory for analysis. The analyses for each soil and groundwater sample varied depending on observations noted in the field, proximity to relevant

feature(s) of potential concern, and initial analytical results. The soil and groundwater analyses included one or more of the following:

- Hydrocarbon identification (HCID) by method Northwest Total Petroleum Hydrocarbons (NWTPH)-HCID
- Diesel- and oil-range organics (DRO; ORO) by method NWTPH-Dx
- Gasoline-range organics (GRO) by method NWTPH-Gx
- Total metals by U.S. Environmental Protection Agency (USEPA) Method 6020A for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver
- PCBs by USEPA Method 8082A
- Volatile organic compounds (VOCs) by USEPA Method 8260B
- Polycyclic aromatic hydrocarbons (PAHs) by USEPA Method 8270D
- Hexavalent chromium by USEPA Method 7199
- Organochlorine pesticides by USEPA Method 8081B
- Dioxins and furans by USEPA Method 8290

## 4.2 Screening

Soil analytical results are compared to the DEQ RBCs for:

- Urban residential (direct contact)
- Occupational workers (direct contact)
- Construction workers (direct contact)
- Excavation workers (direct contact)
- Urban residential (vapor intrusion into buildings)
- Occupational (vapor intrusion into buildings)

Groundwater analytical results are compared to the DEQ RBCs for groundwater for:

- Urban residential (ingestion and inhalation from tap water)
- Occupational (ingestion and inhalation from tap water)
- Construction and excavation workers (groundwater in excavation)
- Urban residential (vapor intrusion into building)
- Occupational (vapor intrusion into building)

The soil results were also evaluated consistent with the DEQ clean fill directive (DEQ, 2014) to assess future soil management/disposal options. In addition, soil results were compared to the Portland Basin background metals concentrations (DEQ, 2013).

### 4.3 Dioxins and Furans

Consistent with the DEQ Human Health Risk Assessment guidance (DEQ, 2010), mixtures of dioxins/furans are considered as single hazardous substances when evaluating compliance with cleanup levels such that the toxicity of a particular congener is expressed relative to the most toxic congener (i.e., 2,3,7,8-tetrachloro dibenzo-p-dioxin [TCDD]). The toxicity of dioxins as groups was assessed using a toxic equivalency approach

Each congener in the group is assigned a toxic equivalency factor (TEF) describing the toxicity of that congener relative to the toxicity of the reference compound, specifically TCDD. The adjustment factors, the TEFs, are provided by the 2005 World Health Organization. For example, a congener that is equal in toxicity to TCDD would have a TEF of 1.0. Similarly, a congener that is half as toxic as TCDD would have a TEF of 0.5, and so on. Multiplying the concentration of a congener by its TEF produces the concentration of TCDD that is equivalent in toxicity to the congener concentration of concern; this is known as the toxicity equivalent concentration (TEC).

Computing the TEC for each congener ( $C_i$  in the equation below) in a sample, followed by summing the TEC values, permits expression of the congener concentrations in terms of a total TCDD toxicity equivalent (TEQ) (i.e., dioxin TEQ):

$$\text{Dioxin/Furan TEQ} = \sum_{i=1}^k C_i \times \text{TEF}_i$$

Dioxin TEQs were qualified and calculated as follows:

- Congeners qualified as non-detect and flagged with a “U” are used in the TEQ calculation at one-half the associated method reporting limit value.
- Congeners qualified as estimated and flagged with a “J” are used without modification in the TEQ calculation.
- Congeners qualified as non-detect with an estimated limit (i.e., flagged with a “UJ”) are used in the TEQ calculation at one-half the associated method reporting value.
- If all congeners in a chemical group qualify as non-detect, the group sum is reported as undetected.

### 4.4 PAHs

Consistent with DEQ guidance (DEQ, 2003), mixtures of carcinogenic PAHs (cPAHs) are considered as single hazardous substances when evaluating compliance with cleanup levels such that the toxicity of a particular congener is expressed relative to the most toxic congener (i.e., benzo(a)pyrene). The toxicity of cPAHs as groups was assessed using a toxic equivalency approach.

Each congener in the group is assigned a TEF corresponding to the toxicity of that congener relative to the toxicity of benzo(a)pyrene. For example, a congener that is equal in toxicity to benzo(a)pyrene would have a TEF of 1. Similarly, a congener that is half as toxic as benzo(a)pyrene would have a TEF of 0.5, and so on. Multiplying the concentration of a congener by its TEF produces the concentration

for that congener that is equivalent in toxicity to the benzo(a)pyrene concentration, known as the TEC. Computing the TEC for each congener ( $C_i$  in the equation below) in a sample, followed by summing all TEC values, results in a single total cPAH TEQ that can be compared to the screening value. The following formula represents the summation approach:

$$\text{cPAH TEQ} = \sum_{i=1}^k C_i \times \text{TEF}_i$$

## 5 RESULTS

---

Analytical data Tables 5-1 and 5-3 summarize soil and groundwater analytical results for the hazardous material locations, respectively, for the 2017 MFA investigation, the 2012 ERM investigation, and the 2011 Bridgewater Group, Inc., investigation. Analytical data Tables 5-2 and 5-4 summarize soil and groundwater analytical results for the petroleum area locations, respectively. The results discussed below are for the 2017 MFA investigation.

### 5.1 Soil Analytical Results

There are exceedances of DEQ Upland Clean Fill criteria across the three areas of the Property, both at shallow depths (less than 3 feet bgs) and deeper depths (see Figure 5-1). In addition, there are exceedances of soil RBCs for residential and urban direct contact, as well as construction worker direct contact in several borings at the Property (see Figure 5-2). A summary is provided below that describes the results for each chemical group.

#### 5.1.1 Metals

**Yard Area.** Lead and mercury were ubiquitous throughout the Yard Area at concentrations that exceed the DEQ Upland Clean Fill criteria, both at shallow depths (less than 3 feet bgs) and at deeper depths. There were also DEQ Upland Clean Fill criteria exceedances for barium, cadmium, chromium, and selenium, and arsenic at a few locations in the Yard Area. Arsenic exceeds the RBC for urban residential or occupational direct contact at most of the boring locations but is below the background arsenic concentration for the Portland Basin (8.8 mg/kg) for all but two samples (GP02-S-1.5 and GP09-S-2.5). Two samples (GP04-S-1.0 and GP09-S-2.5) exceed the RBC for urban residential direct contact for hexavalent chromium.

**Main Street.** Concentrations of arsenic, cadmium, chromium, lead, and mercury in the soil exceed the DEQ Upland Clean Fill criteria at three of eight boring locations in Main Street. These exceedances were at both shallow depths (less than 3 feet bgs) and at deeper depths. Arsenic exceeds the RBC for urban residential or occupational direct contact at all the boring locations but is below the background arsenic concentration for the Portland Basin (8.8 mg/kg; DEQ, 2013) for all but one sample (GP13-S-2.5). One sample (GP17-S-2.5) exceeds the RBC for urban residential direct contact for hexavalent chromium.

**Petroleum Area.** Concentrations of arsenic, cadmium, lead, and mercury in the soil exceed the DEQ Upland Clean Fill criteria at two boring locations (GP05 and GP10) inside building 21 of the Petroleum Area. These exceedances were at both shallow depths (less than 3 feet bgs) and at deeper depths. Arsenic exceeds the RBC for urban residential or occupational direct contact at all the boring locations but is below the background arsenic concentration for the Portland Basin (8.8 mg/kg) for all but two samples (GP05-S-5.5 and GP07-S-2.5).

Figures 5-3, 5-4, 5-5, and 5-6 show the locations with RBC exceedances for arsenic, lead, hexavalent chromium, and mercury, respectively.

## 5.1.2 Organochlorine Pesticides

There were no detections of organochlorine pesticides among the soil samples analyzed.

## 5.1.3 PCBs

Several soil samples had detections for PCBs, primarily Aroclors 1242, 1254, and 1260. There were detections among the soil samples analyzed from the Yard Area and the Petroleum Area, but not from Main Street. The calculated total PCBs were below the DEQ Upland Clean Fill criteria and the RBCs. The only RBC exceedance within the investigation area is from location B7, a 2011 boring location (see Figure 5-7).

## 5.1.4 VOCs

Apart from naphthalene, sec-butybenzene, and tetrachloroethene, there were no detections of VOCs among the soil samples analyzed. The soil sample collected at 8 feet bgs at GP15 (Main Street) exceeded the DEQ Upland Clean Fill criteria for naphthalene.

## 5.1.5 SVOCs

Most samples had a detection of at least one PAH. Several samples exhibited concentrations above the RBC for either urban residential direct contact or for occupational direct contact for cPAH TEQ. The distribution of samples with exceedances for the RBCs was across the Yard Area, Petroleum Area, and Main Street, as well as both shallow depths (less than 3 feet bgs) and deeper depths. In general, the cPAH TEQ concentration decreases with depth. Figure 5-8 shows the locations with RBC exceedances for cPAH TEQ.

## 5.1.6 Dioxins/Furans

All but one sample had a detection of at least one dioxin/furan. Of the 18 samples analyzed, 12 samples did not exceed DEQ Upland Clean Fill criteria or RBCs. One sample from the Yard Area (GP04 at 8 feet bgs) exceeded the RBC for construction worker direct contact (see Figure 5-9). Six samples from the Yard Area exceeded the DEQ Upland Clean Fill criteria. There were no samples with exceedances of RBCs or DEQ Upland Clean Fill criteria among the soil samples analyzed from Main Street and the Petroleum Area.

## 5.1.7 Petroleum Hydrocarbons

Three soil samples (GP01-S-7.5, GP05-S-8.0, and GP15-S-8.0) had minor detections of GRO, well below the RBC for urban residential direct contact. The remaining soil samples analyzed for GRO were non-detect.

RBC exceedances for DRO and ORO were present in all three areas of the Property (see Figure 5-10).

**Yard Area.** All the soil samples from the Yard Area were non-detect for DRO, though ORO was detected in all but two samples. One sample from the Yard Area (GP03-S-17.5) exceeded the RBC for urban residential direct contact.

**Main Street.** One soil sample from Main Street (GP15-S-8.0) had a detection for DRO. The remaining soil samples from Main Street were non-detect for DRO. While there were several samples with detections for ORO from Main Street, only one sample (GP13-S-2.5) exceeded the RBC for urban residential direct contact.

**Petroleum Area.** Within the Petroleum Area, the shallow soil sample from GP07 at 2.5 feet bgs exceeded the RBC for occupational and construction worker direct contact for ORO. The soil sample at 8.0 feet bgs at GP05 exceeded the RBC for construction worker direct contact for DRO and the RBC for urban residential direct contact. The other soil samples from the Petroleum Area did not have exceedances of RBCs.

## 5.2 Reconnaissance Groundwater Analytical Results

Each of the six groundwater samples collected had an exceedance of the groundwater RBC for occupational direct contact (see Figure 5-11). A summary is provided below that describes the results for each chemical group.

### 5.2.1 Metals

The groundwater collected from the six borings was analyzed for the Resource Conservation and Recovery Act eight heavy metals. While there were detections of each metal among the samples analyzed, the metals that exhibited concentrations above the RBC for occupational direct contact were arsenic (all six locations), lead (GP03 and GP07), and mercury (GP08).

### 5.2.2 Dioxins/Furans

Dioxins/furans were analyzed in two of the groundwater samples collected. One sample was from the Yard Area (GP03) and one sample was from the Petroleum Area (GP08). Both samples exhibited concentrations above the RBC for occupational direct contact for dioxin TEQ.



### 5.2.3 Organochlorine Pesticides

There were no detections of organochlorine pesticides among the groundwater samples analyzed.

### 5.2.4 PCBs

There were no detections of PCBs among the groundwater samples analyzed.

### 5.2.5 VOCs

There were no detections of VOCs among the groundwater samples analyzed.

### 5.2.6 PAHs

One groundwater sample collected from Main Street (GP16) did not have any detections of PAHs. All other groundwater samples exhibited concentrations above the RBC for occupational direct contact for cPAH TEQ.

### 5.2.7 Petroleum Hydrocarbons

There were no detections of gasoline in the groundwater samples.

Groundwater samples from building 21 within the petroleum area (GP08 and GP10) exhibited concentrations above the RBC for occupational direct contact for DRO and ORO. The groundwater sample from the boring in the vicinity of the UST in building 16 (GP07) did not have detections of DRO or ORO. The two groundwater samples collected from the borings along Main Street (GP14 and GP16) also did not have detections of DRO or ORO. The boring within the Yard Area (GP03) exhibited concentrations above the RBC for urban residential direct contact for ORO but did not have detections of DRO.

---

## 6 CONCLUSIONS

---

The subsurface investigation was conducted to evaluate the status of COIs in soil and groundwater at the Property, specifically in the Yard Area, Main Street, and Petroleum Area. Historical operations at the Property, including the use of fill material, have impacted the subsurface. Figure 6-1 provides an overview of the locations with soil and groundwater exceedances. There were no exceedances of screening criteria (i.e., DEQ Upland Clean Fill criteria or RBCs) for organochlorine pesticides, PCB Aroclors, and GRO for soil or groundwater from the 2017 investigation.

There were exceedances of soil and groundwater RBCs for urban residential and occupational direct contact for metals, PAHs, dioxins/furans, DRO, and ORO. DRO and ORO exceedances for occupational RBCs were limited to the Petroleum Area. The Yard Area had exceedances of the RBCs

for occupational direct contact for metals, PAHs, and dioxins/furans for soil and groundwater. Main Street had exceedances of the RBCs for occupational direct contact for arsenic and PAHs in soil and groundwater.

There were no exceedances in groundwater for excavation or construction workers. There were, however, exceedances of metals, dioxins/furans and DRO in soil for excavation or construction workers; therefore, there is a potential risk for exposure during redevelopment.

If the Property is redeveloped, it will be necessary to evaluate potential exposure pathways associated with construction and the developed use.

## LIMITATIONS

---

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

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

## REFERENCES

---

Bridgewater Group, Inc. 2011. Letter (re: Results of preliminary soil investigation, Blue Heron Paper Company, Oregon City, Oregon) to K. McCutchen, Blue Heron Paper Company, from A. St. John, Bridgewater Group, Inc. May 24.

DEQ. 2003. Risk-based decision making for the remediation of petroleum-contaminated sites. Oregon Department of Environmental Quality. September 22. Updated November 2015.

DEQ. 2010. Human health risk assessment guidance. Environmental Cleanup Program. Oregon Department of Environmental Quality. October 18.

DEQ. 2013. Development of Oregon background metals concentrations in soil. Fact sheet. Environmental Cleanup Program. Oregon Department of Environmental Quality. March 20.

DEQ. 2014. Internal management directive on clean fill determinations. Solid Waste Program, Portland, Oregon. Oregon Department of Environmental Quality. July 23.

ERM. 2012. Technical memorandum (re: Phase II environmental site assessment results and recommendations, Blue Heron Mill, Oregon City, Oregon) to H. Whitney, Metro, from M. Mudge and E. Ipsen, Environmental Resource Management. November 6.

MFA. 2017a. Draft Phase I Environmental Site Assessment, Former blue Heron Paper Factory, 419 and 427 Main Street, Oregon City, Oregon. Prepared for Metro Regional Government by Maul Foster & Alongi, Inc. June 29.

MFA. 2017b. Quality assurance project plan, Metro Regional Government, Oregon. Prepared for Metro Regional Government by Maul Foster & Alongi, Inc. July 24.

MFA. 2017c. Focused investigation work plan, Willamette Falls Riverwalk, Phase I, Oregon City, Oregon. Prepared for Metro Regional Government by Maul Foster & Alongi, Inc. October 16.

Northwest Geotech, Inc. 2017. Geotechnical data report, Willamette Falls Riverwalk Public Yard/ Alcove Area, Oregon City, Oregon. Prepared for Snøhetta by Northwest Geotech, Inc. May 17.

# TABLES



Table 3-1  
Sample Summary  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Site Area	Boring Location	Boring Refusal Depth (ft bgs)	Depth to Groundwater (ft bgs)	Sample ID	Sample Depth (ft bgs)	Media	Notes	RCRA 8 Metals	Hexavalent Chromium	Dioxins/Furans	Organochlorine Pesticides	PCBs	VOCs	PAHs	HCID	GRO	DRO/ORO	
Yard Area	GP01	18	Not encountered	GP01-S-2.5	0.3-2.5	Soil	--	X	X	X	X	X		X		X	X	
				GP01-S-7.5	5.0-7.5	Soil	--	X		X	X	X				X	X	
				GP01-S-16.0	10.0-12.5 15.0-16.0	Soil	--	X		X	X	X				X	X	
	GP02	7	Not encountered	GP02-S-1.5	0.3-1.5	Soil	Downgradient of building 22	X					X				X	X
				GP02-S-7.0	5.0-7.0	Soil		X	X			X	X		X	X		
	GP03	34	32	GP03-S-2.5	0.3-2.5	Soil	--	X	X	X	X	X	X	X	X	X		X
				GP03-S-2.5-DUP	0.3-2.5	Soil	--	X			X	X	X	X	X	X		X
				GP03-S-7.5	5.0-7.5	Soil	--	X		X	X	X	X	X	X	X		X
				GP03-S-17.5	10.0-12.5 15.0-17.5	Soil	--	X		X	X	X	X	X	X	X		X
				GP03-S-32.0	25.0-27.5 30.0-32.0	Soil	--	X		X	X	X	X	X	X	X		X
	GP03-W-33.0	32.0-34.0	Groundwater	--	X	X	X	X	X	X	X	X	X	X		X		
	GP04	13	Not encountered	GP04-S-1.0	0.5-1.0	Soil	Between building 19 and 20	X	X	X	X	X	X					X
				GP04-S-6.0	5.0-6.0	Soil		X		X	X	X				X		
				GP04-S-13.0	10.0-13.0	Soil		X		X	X	X				X		
	GP06	21	Not encountered	GP06-S-2.5	0.3-2.5	Soil	--	X		X	X	X	X	X	X		X	X
				GP06-S-7.5	5.0-7.5	Soil	--	X		X	X	X	X	X		X	X	
				GP06-S-21.0	10.0-21.0	Soil	--	X		X	X	X	X	X		X	X	
	GP09	8	5	GP09-S-2.5	0.7-2.5	Soil	--	X	X	X			X			X	X	
GP09-S-8.0				5.0-8.0	Soil	--	X		X			X		X	X			
Main Street	GP11	7.5	5.5	GP11-S-3.0	0.5-3.0	Soil	Woolen Mill	X	X				X	X		X	X	
				GP11-S-7.0	5.0-7.0	Soil		X				X	X		X	X		
	GP12	12	8.5	GP12-S-3.0	0.5-3.0	Soil	Building 11	X	X				X		X			
				GP12-S-8.0	5.0-8.0	Soil		X				X		X				
	GP13	13	8	GP13-S-2.5	1.8-2.5	Soil	--	X	X					X		X	X	
				GP13-S-7.5	5.0-7.5	Soil	--	X					X		X	X		
	GP14	11	9	GP14-S-3.0	1.0-3.0	Soil	--	X			X	X		X		X	X	
				GP14-S-8.0	5.0-8.0	Soil	--	X	X		X	X	X	X	X	X	X	
				GP14-W-10.0	9.0-10.5	Groundwater	--	X			X	X	X	X	X	X		
	GP15	10	7.5	GP15-S-3.0	1.5-3.0	Soil	--	X		X	X	X	X	X		X	X	
				GP15-S-8.0	7.5-8.0	Soil	Saturated sample	X		X	X	X	X	X	X	X		
	GP16	10	8	GP16-S-2.5	0.3-2.5	Soil	--	X	X					X		X	X	
				GP16-S-8.0	5.0-8.0	Soil	--	X						X	X	X	X	
GP16-W-9.0				8.0-10.0	Groundwater	--	X				X	X	X	X	X			
GP17	10	8	GP17-S-2.5	0.3-2.5	Soil	--	X	X				X	X		X	X		
			GP17-S-8.0	5.0-8.0	Soil	--	X	X				X	X		X	X		
GP18	10	8	GP18-S-2.5	0.5-2.5	Soil	--	X	X				X	X		X	X		

**Table 3-1  
Sample Summary  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon**

Site Area	Boring Location	Boring Refusal Depth (ft bgs)	Depth to Groundwater (ft bgs)	Sample ID	Sample Depth (ft bgs)	Media	Notes	RCRA 8 Metals	Hexavalent Chromium	Dioxins/Furans	Organochlorine Pesticides	PCBs	VOCs	PAHs	HCID	GRO	DRO/ORO	
Petroleum Area	GP05	7.8	8	GP05-S-5.5	5.0-5.5	Soil	Building 21 UST	X	X			X			X			
				GP05-S-7.5	7.0-7.5	Soil		X				X	X	X	X			
				GP05-S-8.0	7.5-8.0	Soil		X				X	X	X	X			
	GP07	17.5	14.3	GP07-S-2.5	1.4-2.5	Soil	Third Street UST	X	X			X	X	X			X	X
				GP07-S-7.5	5.0-7.5	Soil		X				X	X		X	X		
				GP07-S-7.5-DUP	5.0-7.5	Soil		X				X	X		X	X		
				GP07-W-15.0	14.3-17.5	Groundwater		X				X	X		X	X		
	GP08	9	5	GP08-S-4.0	1.0-4.0	Soil	Building 21 UST	X	X	X	X	X	X	X	X	X	X	X
				GP08-W-6.5	5.0-8.0	Groundwater		X	X	X	X	X	X	X	X	X		
	GP10	14	5	GP10-S-2.5	1.0-2.5	Soil	Building 21 UST	X	X			X		X	X	X	X	X
GP10-W-8.0				5.0-11.0	Groundwater	X					X		X	X	X	X		
GP10-W-8.0-DUP				5.0-11.0	Groundwater	X					X		X	X	X	X		

NOTES:  
 -- = not applicable.  
 DRO = diesel-range organic.  
 ft bgs = feet below ground surface.  
 GRO = gasoline-range organic.  
 HCID = petroleum hydrocarbon identification.  
 NA = not applicable.  
 ORO = oil-range organic.  
 PAHs = polycyclic aromatic hydrocarbons.  
 PCBs = polychlorinated biphenyls.  
 RCRA 8 Metals = Resource Conservation and Recovery Act metals; arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver.  
 UST = underground storage tank.  
 VOCs = volatile organic compounds.

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP01 GP01-S-2.5 12/11/2017 2.5	GP01 GP01-S-7.5 12/11/2017 7.5	GP01 GP01-S-16.0 12/11/2017 16	GP02 GP02-S-1.5 12/12/2017 1.5	GP02 GP02-S-7.0 12/12/2017 7	GP03 GP03-S-2.5 12/11/2017 2.5
<b>Metals (mg/kg)</b>														
Arsenic	8.8	8.8	1	1.9	15	420	NV	NV	2.27	2.64	3.21	9.1	3.34	1.93
Barium	790	790	31000	220000	69000	NV	NV	NV	50.6	86.6	74.4	119 J	97.6	80.7
Cadmium	0.63	0.63	160	1100	350	9700	NV	NV	0.245	0.408	0.224 J	0.774	12.8	0.304
Chromium	76	76	NV	NV	NV	NV	NV	NV	13.7	13	9.14	25.2	2350	14.7
Copper	34	34	6200	47000	14000	390000	NV	NV	--	--	--	--	--	--
Hexavalent Chromium	NV	NV	0.67	6.3	49	1400	NV	NV	0.2	--	--	--	0.2 U	0.2 U
Lead	79	28	400	800	800	800	NV	NV	158	122	69.5	327	89.9	166 J
Mercury	0.23	0.23	47	350	110	2900	NV	NV	0.524	1.95	0.636	3.2 J	0.109 J	0.424
Nickel	47	47	3100	22000	7000	190000	NV	NV	--	--	--	--	--	--
Selenium	0.71	0.71	NV	NV	NV	NV	NV	NV	0.584 U	0.567 U	0.622 U	0.645 U	0.711 U	0.563 U
Silver	0.82	4.2	780	5800	1800	49000	NV	NV	0.117 U	0.113 U	0.124 U	0.129 U	0.156 J	0.113 U
Zinc	180	180	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
<b>Dioxins/Furans (pg/g)</b>														
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	NV	NV	NV	NV	NV	68.2	120	88.8	--	--	85.1
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	45.3	135	38.8	--	--	130
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	1.03 UJK	1.33 J	0.848 UJK	--	--	1.57 J
1,2,3,4,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	0.645 J	1.68 UJK	1.64 J	--	--	0.81 J
1,2,3,4,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	1.08 J	1.95 J	0.963 J	--	--	1.73 J
1,2,3,6,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	2.86 J	7.27	5.67	--	--	5.38
1,2,3,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.655 J	0.969 J	0.784 J	--	--	0.824 J
1,2,3,7,8,9-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	1.65 UJK	5.86	5.15	--	--	2.82 J
1,2,3,7,8,9-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.314 UJ	0.507 UJK	0.325 UJ	--	--	0.569 J
1,2,3,7,8-PeCDD	NV	NV	NV	NV	NV	NV	NV	NV	0.503 J	1.43 UJK	1.47 J	--	--	0.892 J
1,2,3,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.129 U	0.292 UJK	0.192 U	--	--	0.231 J
2,3,4,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	1.01 UJK	1.62 J	1.25 J	--	--	1.28 J
2,3,4,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.695 UJK	1.03 J	1.23 J	--	--	0.856 UJK
2,3,7,8-TCDD	NV	4.4	12	16	170	4800	24000	130000	0.384 J	0.283 U	0.291 U	--	--	0.362 U
2,3,7,8-TCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.629 U	0.704 U	0.495 U	--	--	0.519 U
OCDD	NV	NV	NV	NV	NV	NV	NV	NV	865	882	638	--	--	1100
OCDF	NV	NV	NV	NV	NV	NV	NV	NV	82.2	95.4	45.9	--	--	87.3
Total HpCDDs	NV	NV	NV	NV	NV	NV	NV	NV	126	223	166	--	--	155
Total HpCDFs	NV	NV	NV	NV	NV	NV	NV	NV	112 JK	267	90.5 JK	--	--	263
Total HxCDDs	NV	NV	NV	NV	NV	NV	NV	NV	20.3 JK	58.2 JK	50.4	--	--	35.6 JK
Total HxCDFs	NV	NV	NV	NV	NV	NV	NV	NV	31.7 JK	73.3 JK	35.2	--	--	69
Total PeCDDs	NV	NV	NV	NV	NV	NV	NV	NV	4.72 JK	9.46 UK	8.46 JK	--	--	6.94 JK
Total PeCDFs	NV	NV	NV	NV	NV	NV	NV	NV	9.4 UK	15.3 JK	18.2	--	--	10.8 JK
Total TCDDs	NV	NV	NV	NV	NV	NV	NV	NV	5.79 JK	3.55 UK	3.28 UK	--	--	3.36
Total TCDFs	NV	NV	NV	NV	NV	NV	NV	NV	1.73 UK	2.94 UK	5.56 UK	--	--	1.62 UJK
Dioxin TEQ (ND = 0.5) <sup>a</sup>	NV	4.4	12	16	170	4800	24000	130000	3.12 J	5.94 J	5.06 J	--	--	5.10 J
<b>Organochlorine Pesticides (mg/kg)</b>														
4,4'-DDD	NV	0.021	6.6	12	94	2600	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
4,4'-DDE	NV	0.021	4.5	8.2	66	1800	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
4,4'-DDT	NV	0.021	4.6	8.5	66	1800	NV	NV	0.00391 U	0.0023 U	0.0021 U	--	--	0.00211 U
Aldrin	NV	0.011	0.08	0.13	1.1	30	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
alpha-BHC	NV	0.07	0.21	0.36	3	83	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
alpha-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
beta-BHC	NV	0.27	NV	NV	NV	NV	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
beta-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U



Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP01 GP01-S-2.5 12/11/2017 2.5	GP01 GP01-S-7.5 12/11/2017 7.5	GP01 GP01-S-16.0 12/11/2017 16	GP02 GP02-S-1.5 12/12/2017 1.5	GP02 GP02-S-7.0 12/12/2017 7	GP03 GP03-S-2.5 12/11/2017 2.5
Chlordane (Technical)	NV	1.3	NV	NV	NV	NV	NV	NV	0.0586 U	0.0689 U	0.0629 U	--	--	0.0633 U
delta-BHC	NV	NV	NV	NV	NV	NV	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
Dieldrin	NV	0.0049	0.085	0.14	1.2	33	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
Endosulfan I	NV	NV	760	4900	1600	45000	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
Endosulfan II (beta)	NV	NV	760	4900	1600	45000	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
Endosulfan sulfate	NV	NV	NV	NV	NV	NV	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
Endrin	NV	0.04	38	250	80	2200	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
Endrin aldehyde	NV	NV	NV	NV	NV	NV	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
Endrin ketone	NV	NV	NV	NV	NV	NV	NV	NV	0.0043 U	0.0023 U	0.0021 U	--	--	0.00211 U
Heptachlor	NV	0.1	0.28	0.45	4	110	42	230	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
Heptachlor epoxide	NV	0.053	0.14	0.24	2	56	66	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
Lindane	NV	0.38	1.2	2.1	17	470	NV	NV	0.00195 U	0.0023 U	0.0021 U	--	--	0.00211 U
Methoxychlor	NV	310	NV	NV	NV	NV	NV	NV	0.00586 U	0.00689 U	0.00629 U	--	--	0.00633 U
Toxaphene	NV	0.44	1.2	2.1	17	470	NV	NV	0.0586 U	0.0689 U	0.0629 U	--	--	0.0633 U
<b>PCBs (mg/kg)</b>														
Aroclor 1016	NV	NV	NV	NV	NV	NV	NV	NV	0.00197 U	0.00221 U	0.00207 U	--	--	0.00216 U
Aroclor 1221	NV	NV	NV	NV	NV	NV	NV	NV	0.00197 U	0.00221 U	0.00207 U	--	--	0.00216 U
Aroclor 1232	NV	NV	NV	NV	NV	NV	NV	NV	0.00197 U	0.00221 U	0.00207 U	--	--	0.00216 U
Aroclor 1242	NV	NV	NV	NV	NV	NV	NV	NV	0.00197 U	0.00221 U	0.00207 U	--	--	0.00216 U
Aroclor 1248	NV	NV	NV	NV	NV	NV	NV	NV	0.00197 U	0.00221 U	0.00207 U	--	--	0.00216 U
Aroclor 1254	NV	NV	NV	NV	NV	NV	NV	NV	<b>0.00357 J</b>	<b>0.01 J</b>	0.00414 U	--	--	<b>0.00858 J</b>
Aroclor 1260	NV	NV	NV	NV	NV	NV	NV	NV	<b>0.00401 J</b>	<b>0.0091 J</b>	<b>0.0044</b>	--	--	<b>0.00514 J</b>
Aroclor 1262	NV	NV	NV	NV	NV	NV	NV	NV	0.00197 U	0.00221 U	0.00207 U	--	--	0.00216 U
Aroclor 1268	NV	NV	NV	NV	NV	NV	NV	NV	0.00197 U	0.00221 U	0.00207 U	--	--	0.00216 U
Total PCBs (ND = 0) <sup>b</sup>	NV	0.2	0.33	0.59	4.9	140	NV	NV	<b>0.00758 J</b>	<b>0.0191 J</b>	<b>0.0044</b>	--	--	<b>0.01372 J</b>
<b>VOCs (mg/kg)</b>														
1,1,1,2-Tetrachloroethane	NV	0.0156	NV	NV	NV	NV	NV	NV	--	--	--	0.0152 U	0.021 U	0.016 U
1,1,1-Trichloroethane	NV	400	110000	870000	470000	NV	NV	NV	--	--	--	0.0152 U	0.021 U	0.016 U
1,1,2,2-Tetrachloroethane	NV	0.0024	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
1,1,2-Trichloroethane	NV	0.0046	6.3	26	54	1500	0.38	4.2	--	--	--	0.0152 U	0.021 U	0.016 U
1,1-Dichloroethane	NV	0.037	190	260	3200	89000	1.1	5.9	--	--	--	0.0152 U	0.021 U	0.016 U
1,1-Dichloroethene	NV	11	3500	29000	13000	370000	54	680	--	--	--	0.0152 U	0.021 U	0.016 U
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
1,2,3-Trichlorobenzene	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	0.152 U	0.21 U	0.16 U
1,2,3-Trichloropropane	NV	0.005	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	--	--	--	0.152 U	0.21 U	0.16 U
1,2,4-Trimethylbenzene	NV	16	220	2000	2000	54000	16	210	--	--	--	0.0305 U	0.0421 U	0.032 U
1,2-Dibromo-3-chloropropane	NV	0.000012	NV	NV	NV	NV	NV	NV	--	--	--	0.152 U	0.21 U	0.16 U
1,2-Dibromoethane	NV	0.00012	0.53	0.73	9	250	0.028	0.16	--	--	--	0.0305 U	0.0421 U	0.032 U
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	--	--	--	0.0152 U	0.021 U	0.016 U
1,2-Dichloroethane	NV	0.0014	12	16	200	5600	0.18	1	--	--	--	0.0152 U	0.021 U	0.016 U
1,2-Dichloropropane	NV	0.009	NV	NV	NV	NV	NV	NV	--	--	--	0.0152 U	0.021 U	0.016 U
1,3,5-Trimethylbenzene	NV	92	1600	12000	3500	98000	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	0.0152 U	0.021 U	0.016 U
1,3-Dichloropropane	NV	7.62	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	--	--	--	0.0152 U	0.021 U	0.016 U
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
2-Butanone	NV	27.48	NV	NV	NV	NV	NV	NV	--	--	--	0.305 U	0.421 U	0.32 U
2-Chlorotoluene	NV	21.66	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP01 GP01-S-2.5 12/11/2017 2.5	GP01 GP01-S-7.5 12/11/2017 7.5	GP01 GP01-S-16.0 12/11/2017 16	GP02 GP02-S-1.5 12/12/2017 1.5	GP02 GP02-S-7.0 12/12/2017 7	GP03 GP03-S-2.5 12/11/2017 2.5
2-Hexanone	NV	0.2982	NV	NV	NV	NV	NV	NV	--	--	--	0.305 U	0.421 U	0.64 UJ
4-Chlorotoluene	NV	22.5	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
4-Methyl-2-pentanone	NV	8.04	NV	NV	NV	NV	NV	NV	--	--	--	0.305 U	0.421 U	0.64 U
Acetone	NV	59.52	NV	NV	NV	NV	NV	NV	--	--	--	0.61 U	0.842 U	0.64 U
Acrylonitrile	NV	0.00029	2.5	4	40	1100	0.19	1	--	--	--	0.061 U	0.0842 U	0.064 U
Benzene	NV	0.0093	24	37	380	11000	0.38	2.1	--	--	--	0.0061 U	0.00842 U	0.0064 U
Bromobenzene	NV	4.068	NV	NV	NV	NV	NV	NV	--	--	--	0.0152 U	0.021 U	0.016 U
Bromodichloromethane	NV	0.0025	12	15	230	6300	0.1	0.53	--	--	--	0.0305 U	0.0421 U	0.032 U
Bromoform	NV	0.084	170	260	2700	74000	19	110	--	--	--	0.061 U	0.0842 U	0.064 U
Bromomethane	NV	0.098	92	750	370	10000	1.3	17	--	--	--	0.61 U	0.842 U	0.64 U
Carbon disulfide	NV	11.64	NV	NV	NV	NV	NV	NV	--	--	--	0.305 U	0.421 U	0.32 U
Carbon tetrachloride	NV	0.028	21	34	320	8900	0.28	1.6	--	--	--	0.0305 U	0.0421 U	0.032 U
Chlorobenzene	NV	6.5	1100	8700	4700	130000	77	NV	--	--	--	0.0152 U	0.021 U	0.016 U
Chlorobromomethane	NV	0.936	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
Chloroethane	NV	320	320000	NV	NV	NV	NV	NV	--	--	--	0.61 UJ	0.842 UJ	0.32 U
Chloroform	NV	0.0033	22	26	410	11000	0.074	0.41	--	--	--	0.0305 U	0.0421 U	0.032 U
Chloromethane	NV	2.2	2900	25000	25000	700000	24	300	--	--	--	0.152 U	0.21 U	0.16 U
cis-1,2-Dichloroethene	NV	1.2	310	2300	710	20000	NV	NV	--	--	--	0.0152 U	0.021 U	0.016 U
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
Dibromochloromethane	NV	0.0033	12	17	210	5800	0.53	2.9	--	--	--	0.061 U	0.0842 U	0.064 U
Dibromomethane	NV	0.0876	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
Dichlorodifluoromethane	NV	94	NV	NV	NV	NV	NV	NV	--	--	--	0.061 U	0.0842 U	0.064 U
Ethylbenzene	NV	0.16	110	150	1700	49000	3	17	--	--	--	0.0152 U	0.021 U	0.016 U
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	--	--	--	0.061 U	0.0842 U	0.064 U
Isopropylbenzene	NV	85.2	7000	57000	27000	750000	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
m,p-Xylene	NV	25	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
Methyl tert-butyl ether	NV	0.092	730	1100	12000	320000	20	110	--	--	--	0.0305 U	0.0421 U	0.032 U
Methylene chloride	NV	0.038	170	1600	2100	58000	48	950	--	--	--	0.152 U	0.21 U	0.16 U
Naphthalene	NV	0.087	25	23	580	16000	15	83	--	--	--	0.061 U	0.0842 U	0.064 U
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	0.0152 U	0.021 U	0.016 U
o-Xylene	NV	1	NV	NV	NV	NV	NV	NV	--	--	--	0.0152 U	0.021 U	0.016 U
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
Styrene	NV	300	16000	130000	56000	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
Tetrachloroethene	NV	2.4	540	1000	1800	50000	6.6	36	--	--	--	0.0152 U	0.021 U	0.016 U
Toluene	NV	200	12000	88000	28000	770000	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
trans-1,2-dichloroethene	NV	2.5	3100	23000	7100	200000	NV	NV	--	--	--	0.0152 U	0.021 U	0.016 U
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
Trichloroethene	NV	0.02	17	51	470	13000	0.26	2.3	--	--	--	0.0152 U	0.021 U	0.016 U
Trichlorofluoromethane	NV	190	15000	130000	69000	NV	190	NV	--	--	--	0.061 UJ	0.0842 UJ	0.064 U
Vinyl chloride	NV	0.00051	0.8	4.4	34	950	0.053	2.2	--	--	--	0.0152 U	0.021 U	0.016 U
Xylenes, Total <sup>c</sup>	NV	NV	2900	25000	20000	560000	260	NV	--	--	--	0.0305 U	0.0421 U	0.032 U
<b>SVOCs (mg/kg)</b>														
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	--	--	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP01 GP01-S-2.5 12/11/2017 2.5	GP01 GP01-S-7.5 12/11/2017 7.5	GP01 GP01-S-16.0 12/11/2017 16	GP02 GP02-S-1.5 12/12/2017 1.5	GP02 GP02-S-7.0 12/12/2017 7	GP03 GP03-S-2.5 12/11/2017 2.5
1-Methylnaphthalene	NV	0.738	NV	NV	NV	NV	NV	NV	0.143 U	--	--	--	0.153 U	0.117 U
2,4,5-Trichlorophenol	NV	4	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4,6-Trichlorophenol	NV	1.9	120	210	270	7400	NV	NV	--	--	--	--	--	--
2,4-Dichlorophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dimethylphenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrotoluene	NV	0.0354	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,6-Dinitrotoluene	NV	4.2	0.9	1.5	13	350	NV	NV	--	--	--	--	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Chlorophenol	NV	60	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Methylnaphthalene	NV	310	NV	NV	NV	NV	NV	NV	0.143 U	--	--	--	0.153 U	0.117 U
2-Methylphenol	NV	50	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Nitroaniline	NV	5.646	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
3,3-Dichlorobenzidine	NV	0.028	3	5.1	42	1200	NV	NV	--	--	--	--	--	--
3-Nitroaniline	NV	70	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	NV	0.2766	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chloroaniline	NV	0.012	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Methylphenol	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitroaniline	NV	0.1218	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Acenaphthene	NV	29	9400	70000	21000	590000	NV	NV	0.0711 U	--	--	--	0.076 U	0.0584 U
Acenaphthylene	NV	NV	NV	NV	NV	NV	NV	NV	0.0711 U	--	--	--	0.076 U	0.0584 U
Aniline	NV	0.3036	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Anthracene	NV	29	47000	350000	110000	NV	NV	NV	0.0711 U	--	--	--	0.076 U	0.0584 U
Benzo(a)anthracene	NV	0.15	0.34	2.9	24	660	NV	NV	0.0711 U	--	--	--	0.188 J	0.0624 J
Benzo(a)pyrene	NV	0.015	0.034	0.29	2.4	67	NV	NV	0.107 U	--	--	--	0.372 J	0.0916 J
Benzo(b)fluoranthene	NV	0.15	0.34	2.9	24	670	NV	NV	0.107 U	--	--	--	0.462 J	0.0877 U
Benzo(ghi)perylene	NV	NV	NV	NV	NV	NV	NV	NV	0.0886 J	--	--	--	0.581 J	0.0584 U
Benzo(k)fluoranthene	NV	1.1	3.4	29	240	6700	NV	NV	0.107 U	--	--	--	0.147 J	0.0877 U
Benzoic acid	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Benzyl alcohol	NV	16.02	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	NV	0.402	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethyl)ether	NV	0.0001	0.96	1.3	16	450	1.2	6.9	--	--	--	--	--	--
Bis(2-chloroisopropyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	NV	4.5	97	160	1300	37000	NV	NV	--	--	--	--	--	--
Butylbenzylphthalate	NV	260	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Chrysene	NV	14	34	290	2400	67000	NV	NV	0.0711 U	--	--	--	0.194 J	0.0584 U
Dibenzo(a,h)anthracene	NV	0.015	0.034	0.29	2.4	67	NV	NV	0.0711 U	--	--	--	0.076 U	0.0584 U
Dibenzofuran	NV	0.002	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Diethyl phthalate	NV	100	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dimethyl phthalate	NV	200	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Di-n-butyl phthalate	NV	0.45	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Di-n-octyl phthalate	NV	610	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Fluoranthene	NV	29	4800	30000	10000	280000	NV	NV	0.0711 U	--	--	--	0.184	0.0584 U
Fluorene	NV	29	6300	47000	14000	390000	NV	NV	0.0711 U	--	--	--	0.076 U	0.0584 U

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP01 GP01-S-2.5 12/11/2017 2.5	GP01 GP01-S-7.5 12/11/2017 7.5	GP01 GP01-S-16.0 12/11/2017 16	GP02 GP02-S-1.5 12/12/2017 1.5	GP02 GP02-S-7.0 12/12/2017 7	GP03 GP03-S-2.5 12/11/2017 2.5
Hexachlorobenzene	NV	0.26	0.67	0.93	11	320	2.4	13	--	--	--	--	--	--
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachlorocyclopentadiene	NV	10	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachloroethane	NV	0.51	24	32	180	5100	1.4	7.6	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	NV	0.15	0.34	2.9	24	670	NV	NV	0.0711 U	--	--	--	0.503 J	0.0584 U
Isophorone	NV	1.596	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Naphthalene	NV	0.087	25	23	580	16000	15	83	0.143 U	--	--	--	0.153 U	0.117 U
Nitrobenzene	NV	0.0084	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
N-Nitrosodimethylamine	NV	0.0023	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
N-Nitrosodiphenylamine	NV	4.5	280	470	3800	110000	NV	NV	--	--	--	--	--	--
N-Nitrosodipropylamine	NV	0.0012	0.19	0.33	2.7	74	NV	NV	--	--	--	--	--	--
Pentachlorophenol	NV	0.14	2.6	4	34	960	NV	NV	--	--	--	--	--	--
Phenanthrene	NV	NV	NV	NV	NV	NV	NV	NV	0.0711 U	--	--	--	0.166	0.0584 U
Phenol	NV	30	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Pyrene	NV	1700	3600	23000	7500	210000	NV	NV	0.0903 J	--	--	--	0.256	0.0584 U
cPAH TEQ (ND = 0.5)	NV	NV	0.034	0.29	2.4	67	NV	NV	0.107 U	--	--	--	0.527 J	0.135 J
<b>Hydrocarbon Identification (Presence/Absence)</b>														
Gasoline-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	ND
Diesel-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	ND
Lube Oil-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	DETECT
<b>TPH (mg/kg)</b>														
Gasoline-range Organics	NV	NV	2500	20000	9700	NV	94	NV	2.57 U	5.01 J	2.74 U	3.05 U	4.21 U	--
Diesel-range Organics	NV	NV	2200	14000	4600	NV	NV	NV	105 U	115 U	113 U	44.7 U	26.1 U	55.8 U
Lube Oil-range Organics	NV	NV	2200 <sup>d</sup>	14000 <sup>d</sup>	4600 <sup>d</sup>	NV	NV	NV	1280	963	667	318	329	867

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP03 GP03-S-2.5-DUP 12/11/2017 2.5	GP03 GP03-S-7.5 12/11/2017 7.5	GP03 GP03-S-17.5 12/11/2017 17.5	GP03 GP03-S-32.0 12/11/2017 32	GP04 GP04-S-1.0 12/12/2017 1	GP04 GP04-S-6.0 12/12/2017 6
<b>Metals (mg/kg)</b>														
Arsenic	8.8	8.8	1	1.9	15	420	NV	NV	2.47	2.58	5.51	3.03	7.03	8.15
Barium	790	790	31000	220000	69000	NV	NV	NV	82.3	93.7	67.5	96.8	67.9	81.5
Cadmium	0.63	0.63	160	1100	350	9700	NV	NV	0.314	0.433	0.205	0.33	1.14	0.961
Chromium	76	76	NV	NV	NV	NV	NV	NV	11.2	14.7	5.01	21.5	9.46	14.7
Copper	34	34	6200	47000	14000	390000	NV	NV	--	--	--	--	--	--
Hexavalent Chromium	NV	NV	0.67	6.3	49	1400	NV	NV	--	--	--	--	0.8	--
Lead	79	28	400	800	800	800	NV	NV	326 J	169	39.7	38.8	96.5	197
Mercury	0.23	0.23	47	350	110	2900	NV	NV	0.442	0.439 J	0.041 U	0.147	0.965	0.196
Nickel	47	47	3100	22000	7000	190000	NV	NV	--	--	--	--	--	--
Selenium	0.71	0.71	NV	NV	NV	NV	NV	NV	0.603 U	0.619 U	0.513 U	0.659 U	0.585 U	0.593 U
Silver	0.82	4.2	780	5800	1800	49000	NV	NV	0.121 U	0.124 U	0.103 U	0.132 U	0.117 U	0.119 U
Zinc	180	180	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
<b>Dioxins/Furans (pg/g)</b>														
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	205 J	70.3 J	2.72 J	92.7	56.8
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	114 J	60.2 J	1.46 UJK	14.4	14.9
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	3.98 J	0.651 UJ	0.151 U	1.03 J	0.799 UJK
1,2,3,4,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	1.12 J	0.986 UJK	0.197 U	0.49 J	3.38 J
1,2,3,4,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	5.38	0.589 UJK	0.122 UJ	1.13 UJ	1.26 J
1,2,3,6,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	7.43	2.91 J	0.211 U	2.51 J	8.87
1,2,3,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	1.56 J	0.543 UJ	0.123 U	0.531 J	0.687 J
1,2,3,7,8,9-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	2.41 J	2.3 UJK	0.209 U	0.908 J	6.86
1,2,3,7,8,9-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	1 UJ	0.657 UJ	0.155 U	0.316 J	0.284 UJ
1,2,3,7,8-PeCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	0.746 J	0.617 UJK	0.217 U	0.283 UJK	42.3
1,2,3,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	0.334 UJK	0.397 UJ	0.215 U	0.261 UJK	0.865 J
2,3,4,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	2.03 J	0.589 J	0.122 U	0.625 J	1.7 J
2,3,4,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	1.62 J	0.601 J	0.186 U	0.5 UJK	8.17
2,3,7,8-TCDD	NV	4.4	12	16	170	4800	24000	130000	--	0.27 U	0.607 UJ	0.287 U	0.273 U	235
2,3,7,8-TCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	0.442 U	1.22 R	0.67 J	0.436 U	4.18 J
OCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	3080 J	476 J	22.2	1120	430
OCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	264 J	44.2 J	2.78 J	51	31.3
Total HpCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	369	145 J	4.79 J	192	130
Total HpCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	344	87.5 J	4.16 UJK	54.7	44.6 JK
Total HxCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	35.3	27.1 JK	0.963 UJK	15.8 JK	849 JK
Total HxCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	80.8 JK	14.3 JK	1.43 JK	16.9 JK	42.8 JK
Total PeCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	4.58 JK	1.85 UJK	0.217 U	1.66 UJK	579 J
Total PeCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	11.8 JK	6.83 JK	0.716 UJK	5.6 UJK	34.2 JK
Total TCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	0.958 UJK	0.607 UJ	0.287 U	0.86 UJK	291 JK
Total TCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	0.84 UJK	1.57 UJK	0.67 J	0.436 U	19
Dioxin TEQ (ND = 0.5) <sup>a</sup>	NV	4.4	12	16	170	4800	24000	130000	--	7.67 J	2.99 J	0.450 J	2.41 J	283 J
<b>Organochlorine Pesticides (mg/kg)</b>														
4,4'-DDD	NV	0.021	6.6	12	94	2600	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.00439 U
4,4'-DDE	NV	0.021	4.5	8.2	66	1800	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
4,4'-DDT	NV	0.021	4.6	8.5	66	1800	NV	NV	0.0042 U	0.00452 U	0.0383 U	0.00121 U	0.0388 U	0.00439 U
Aldrin	NV	0.011	0.08	0.13	1.1	30	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
alpha-BHC	NV	0.07	0.21	0.36	3	83	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
alpha-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
beta-BHC	NV	0.27	NV	NV	NV	NV	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
beta-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP03 GP03-S-2.5-DUP 12/11/2017 2.5	GP03 GP03-S-7.5 12/11/2017 7.5	GP03 GP03-S-17.5 12/11/2017 17.5	GP03 GP03-S-32.0 12/11/2017 32	GP04 GP04-S-1.0 12/12/2017 1	GP04 GP04-S-6.0 12/12/2017 6
Chlordane (Technical)	NV	1.3	NV	NV	NV	NV	NV	NV	0.063 U	0.0678 U	1.15 U	0.0363 U	1.16 U	0.0659 U
delta-BHC	NV	NV	NV	NV	NV	NV	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
Dieldrin	NV	0.0049	0.085	0.14	1.2	33	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
Endosulfan I	NV	NV	760	4900	1600	45000	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
Endosulfan II (beta)	NV	NV	760	4900	1600	45000	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
Endosulfan sulfate	NV	NV	NV	NV	NV	NV	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
Endrin	NV	0.04	38	250	80	2200	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
Endrin aldehyde	NV	NV	NV	NV	NV	NV	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
Endrin ketone	NV	NV	NV	NV	NV	NV	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.00439 U
Heptachlor	NV	0.1	0.28	0.45	4	110	42	230	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
Heptachlor epoxide	NV	0.053	0.14	0.24	2	56	66	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
Lindane	NV	0.38	1.2	2.1	17	470	NV	NV	0.0021 U	0.00226 U	0.0383 U	0.00121 U	0.0388 U	0.0022 U
Methoxychlor	NV	310	NV	NV	NV	NV	NV	NV	0.0063 U	0.00678 U	0.115 U	0.00363 U	0.116 U	0.00659 U
Toxaphene	NV	0.44	1.2	2.1	17	470	NV	NV	0.063 U	0.0678 U	1.15 U	0.0363 U	1.16 U	0.0659 U
<b>PCBs (mg/kg)</b>														
Aroclor 1016	NV	NV	NV	NV	NV	NV	NV	NV	0.00218 U	0.00222 U	0.00518 U	0.00219 U	0.00516 U	0.00209 U
Aroclor 1221	NV	NV	NV	NV	NV	NV	NV	NV	0.00218 U	0.00444 U	0.00518 U	0.00219 U	0.00516 U	0.00209 U
Aroclor 1232	NV	NV	NV	NV	NV	NV	NV	NV	0.00218 U	0.00444 U	0.00518 U	0.00219 U	0.00516 U	0.00209 U
Aroclor 1242	NV	NV	NV	NV	NV	NV	NV	NV	0.00218 U	0.00222 U	0.00518 U	0.00219 U	<b>0.00683 J</b>	0.00209 U
Aroclor 1248	NV	NV	NV	NV	NV	NV	NV	NV	0.00218 U	0.00222 U	0.00518 U	0.00219 U	0.00516 U	0.00209 U
Aroclor 1254	NV	NV	NV	NV	NV	NV	NV	NV	<b>0.0291 J</b>	<b>0.0284 J</b>	<b>0.0224 J</b>	0.00219 U	<b>0.0229 J</b>	0.00209 U
Aroclor 1260	NV	NV	NV	NV	NV	NV	NV	NV	<b>0.00986 J</b>	<b>0.0116 J</b>	<b>0.0271 J</b>	<b>0.00343 J</b>	<b>0.0145 J</b>	0.00209 U
Aroclor 1262	NV	NV	NV	NV	NV	NV	NV	NV	0.00218 U	0.00222 U	0.00518 U	0.00219 U	0.00516 U	0.00209 U
Aroclor 1268	NV	NV	NV	NV	NV	NV	NV	NV	0.00218 U	0.00222 U	0.00518 U	0.00219 U	0.00516 U	0.00209 U
Total PCBs (ND = 0) <sup>b</sup>	NV	0.2	0.33	0.59	4.9	140	NV	NV	<b>0.03896 J</b>	<b>0.04 J</b>	<b>0.0495 J</b>	<b>0.00343 J</b>	<b>0.04423 J</b>	0.00209 U
<b>VOCs (mg/kg)</b>														
1,1,1,2-Tetrachloroethane	NV	0.0156	NV	NV	NV	NV	NV	NV	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
1,1,1-Trichloroethane	NV	400	110000	870000	470000	NV	NV	NV	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
1,1,2,2-Tetrachloroethane	NV	0.0024	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
1,1,2-Trichloroethane	NV	0.0046	6.3	26	54	1500	0.38	4.2	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
1,1-Dichloroethane	NV	0.037	190	260	3200	89000	1.1	5.9	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
1,1-Dichloroethene	NV	11	3500	29000	13000	370000	54	680	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
1,2,3-Trichlorobenzene	NV	20	NV	NV	NV	NV	NV	NV	0.126 U	0.141 U	0.135 U	0.172 U	--	--
1,2,3-Trichloropropane	NV	0.005	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	0.126 U	0.141 U	0.135 U	0.172 U	--	--
1,2,4-Trimethylbenzene	NV	16	220	2000	2000	54000	16	210	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
1,2-Dibromo-3-chloropropane	NV	0.000012	NV	NV	NV	NV	NV	NV	0.126 U	0.141 U	0.135 U	0.172 U	--	--
1,2-Dibromoethane	NV	0.00012	0.53	0.73	9	250	0.028	0.16	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
1,2-Dichloroethane	NV	0.0014	12	16	200	5600	0.18	1	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
1,2-Dichloropropane	NV	0.009	NV	NV	NV	NV	NV	NV	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
1,3,5-Trimethylbenzene	NV	92	1600	12000	3500	98000	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
1,3-Dichloropropane	NV	7.62	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
2-Butanone	NV	27.48	NV	NV	NV	NV	NV	NV	0.253 U	0.283 U	0.271 U	0.345 U	--	--
2-Chlorotoluene	NV	21.66	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP03 GP03-S-2.5-DUP 12/11/2017 2.5	GP03 GP03-S-7.5 12/11/2017 7.5	GP03 GP03-S-17.5 12/11/2017 17.5	GP03 GP03-S-32.0 12/11/2017 32	GP04 GP04-S-1.0 12/12/2017 1	GP04 GP04-S-6.0 12/12/2017 6
2-Hexanone	NV	0.2982	NV	NV	NV	NV	NV	NV	0.506 UJ	0.565 UJ	0.541 UJ	0.689 UJ	--	--
4-Chlorotoluene	NV	22.5	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
4-Methyl-2-pentanone	NV	8.04	NV	NV	NV	NV	NV	NV	0.506 U	0.565 U	0.541 U	0.689 U	--	--
Acetone	NV	59.52	NV	NV	NV	NV	NV	NV	0.506 U	0.565 U	0.541 U	0.689 U	--	--
Acrylonitrile	NV	0.00029	2.5	4	40	1100	0.19	1	0.0506 U	0.0565 U	0.0541 U	0.0689 U	--	--
Benzene	NV	0.0093	24	37	380	11000	0.38	2.1	0.00506 U	0.00565 U	0.00541 U	0.00689 U	--	--
Bromobenzene	NV	4.068	NV	NV	NV	NV	NV	NV	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
Bromodichloromethane	NV	0.0025	12	15	230	6300	0.1	0.53	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
Bromoform	NV	0.084	170	260	2700	74000	19	110	0.0506 U	0.0565 U	0.0541 U	0.0689 U	--	--
Bromomethane	NV	0.098	92	750	370	10000	1.3	17	0.506 U	0.565 U	0.541 U	0.689 U	--	--
Carbon disulfide	NV	11.64	NV	NV	NV	NV	NV	NV	0.253 U	0.283 U	0.271 U	0.345 U	--	--
Carbon tetrachloride	NV	0.028	21	34	320	8900	0.28	1.6	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
Chlorobenzene	NV	6.5	1100	8700	4700	130000	77	NV	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
Chlorobromomethane	NV	0.936	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
Chloroethane	NV	320	320000	NV	NV	NV	NV	NV	0.253 U	0.283 U	0.271 U	0.345 U	--	--
Chloroform	NV	0.0033	22	26	410	11000	0.074	0.41	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
Chloromethane	NV	2.2	2900	25000	25000	700000	24	300	0.126 U	0.141 U	0.135 U	0.172 U	--	--
cis-1,2-Dichloroethene	NV	1.2	310	2300	710	20000	NV	NV	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
Dibromochloromethane	NV	0.0033	12	17	210	5800	0.53	2.9	0.0506 U	0.0565 U	0.0541 U	0.0689 U	--	--
Dibromomethane	NV	0.0876	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
Dichlorodifluoromethane	NV	94	NV	NV	NV	NV	NV	NV	0.0506 U	0.0565 U	0.0541 U	0.0689 U	--	--
Ethylbenzene	NV	0.16	110	150	1700	49000	3	17	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	0.0506 U	0.0565 U	0.0541 U	0.0689 U	--	--
Isopropylbenzene	NV	85.2	7000	57000	27000	750000	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
m,p-Xylene	NV	25	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
Methyl tert-butyl ether	NV	0.092	730	1100	12000	320000	20	110	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
Methylene chloride	NV	0.038	170	1600	2100	58000	48	950	0.126 U	0.141 U	0.135 U	0.172 U	--	--
Naphthalene	NV	0.087	25	23	580	16000	15	83	0.0506 U	0.0565 U	0.0541 U	0.0689 U	--	--
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
o-Xylene	NV	1	NV	NV	NV	NV	NV	NV	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
Styrene	NV	300	16000	130000	56000	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
Tetrachloroethene	NV	2.4	540	1000	1800	50000	6.6	36	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
Toluene	NV	200	12000	88000	28000	770000	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
trans-1,2-dichloroethene	NV	2.5	3100	23000	7100	200000	NV	NV	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
Trichloroethene	NV	0.02	17	51	470	13000	0.26	2.3	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
Trichlorofluoromethane	NV	190	15000	130000	69000	NV	190	NV	0.0506 U	0.0565 U	0.0541 U	0.0689 U	--	--
Vinyl chloride	NV	0.00051	0.8	4.4	34	950	0.053	2.2	0.0126 U	0.0141 U	0.0135 U	0.0172 U	--	--
Xylenes, Total <sup>c</sup>	NV	NV	2900	25000	20000	560000	260	NV	0.0253 U	0.0283 U	0.0271 U	0.0345 U	--	--
<b>SVOCs (mg/kg)</b>														
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	--	--	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP03 GP03-S-2.5-DUP 12/11/2017 2.5	GP03 GP03-S-7.5 12/11/2017 7.5	GP03 GP03-S-17.5 12/11/2017 17.5	GP03 GP03-S-32.0 12/11/2017 32	GP04 GP04-S-1.0 12/12/2017 1	GP04 GP04-S-6.0 12/12/2017 6
1-Methylnaphthalene	NV	0.738	NV	NV	NV	NV	NV	NV	0.0572 U	0.0593 U	0.845 U	0.0131 U	--	--
2,4,5-Trichlorophenol	NV	4	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4,6-Trichlorophenol	NV	1.9	120	210	270	7400	NV	NV	--	--	--	--	--	--
2,4-Dichlorophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dimethylphenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrotoluene	NV	0.0354	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,6-Dinitrotoluene	NV	4.2	0.9	1.5	13	350	NV	NV	--	--	--	--	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Chlorophenol	NV	60	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Methylnaphthalene	NV	310	NV	NV	NV	NV	NV	NV	0.0572 U	0.0593 U	0.845 U	0.0131 U	--	--
2-Methylphenol	NV	50	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Nitroaniline	NV	5.646	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
3,3-Dichlorobenzidine	NV	0.028	3	5.1	42	1200	NV	NV	--	--	--	--	--	--
3-Nitroaniline	NV	70	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	NV	0.2766	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chloroaniline	NV	0.012	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Methylphenol	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitroaniline	NV	0.1218	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Acenaphthene	NV	29	9400	70000	21000	590000	NV	NV	0.0285 U	0.0296 U	0.421 U	0.00651 U	--	--
Acenaphthylene	NV	NV	NV	NV	NV	NV	NV	NV	0.0285 U	0.0296 U	0.421 U	0.00997 J	--	--
Aniline	NV	0.3036	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Anthracene	NV	29	47000	350000	110000	NV	NV	NV	0.0285 U	0.0296 U	0.421 U	0.0101 J	--	--
Benzo(a)anthracene	NV	0.15	0.34	2.9	24	660	NV	NV	0.0468 J	0.0376 J	0.421 U	0.0431	--	--
Benzo(a)pyrene	NV	0.015	0.034	0.29	2.4	67	NV	NV	0.0873	0.0624 J	0.633 U	0.0759	--	--
Benzo(b)fluoranthene	NV	0.15	0.34	2.9	24	670	NV	NV	0.0994 J	0.0444 U	0.633 U	0.0979 J	--	--
Benzo(ghi)perylene	NV	NV	NV	NV	NV	NV	NV	NV	0.0755	0.0296 U	0.421 U	0.0591	--	--
Benzo(k)fluoranthene	NV	1.1	3.4	29	240	6700	NV	NV	0.0471 J	0.0444 U	0.633 U	0.0352 J	--	--
Benzoic acid	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Benzyl alcohol	NV	16.02	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	NV	0.402	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethyl)ether	NV	0.0001	0.96	1.3	16	450	1.2	6.9	--	--	--	--	--	--
Bis(2-chloroisopropyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	NV	4.5	97	160	1300	37000	NV	NV	--	--	--	--	--	--
Butylbenzylphthalate	NV	260	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Chrysene	NV	14	34	290	2400	67000	NV	NV	0.043 J	0.0415 J	0.421 U	0.0845	--	--
Dibenzo(a,h)anthracene	NV	0.015	0.034	0.29	2.4	67	NV	NV	0.0285 U	0.0296 U	0.421 U	0.0104 J	--	--
Dibenzofuran	NV	0.002	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Diethyl phthalate	NV	100	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dimethyl phthalate	NV	200	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Di-n-butyl phthalate	NV	0.45	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Di-n-octyl phthalate	NV	610	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Fluoranthene	NV	29	4800	30000	10000	280000	NV	NV	0.0536 J	0.0452 J	0.421 U	0.126	--	--
Fluorene	NV	29	6300	47000	14000	390000	NV	NV	0.0285 U	0.0296 U	0.421 U	0.0113 J	--	--



Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP03 GP03-S-2.5-DUP 12/11/2017 2.5	GP03 GP03-S-7.5 12/11/2017 7.5	GP03 GP03-S-17.5 12/11/2017 17.5	GP03 GP03-S-32.0 12/11/2017 32	GP04 GP04-S-1.0 12/12/2017 1	GP04 GP04-S-6.0 12/12/2017 6
Hexachlorobenzene	NV	0.26	0.67	0.93	11	320	2.4	13	--	--	--	--	--	--
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachlorocyclopentadiene	NV	10	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachloroethane	NV	0.51	24	32	180	5100	1.4	7.6	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	NV	0.15	0.34	2.9	24	670	NV	NV	0.0638	0.0296 U	0.421 U	0.0537	--	--
Isophorone	NV	1.596	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Naphthalene	NV	0.087	25	23	580	16000	15	83	0.0572 U	0.0593 U	0.845 U	0.0131 U	--	--
Nitrobenzene	NV	0.0084	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
N-Nitrosodimethylamine	NV	0.0023	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
N-Nitrosodiphenylamine	NV	4.5	280	470	3800	110000	NV	NV	--	--	--	--	--	--
N-Nitrosodipropylamine	NV	0.0012	0.19	0.33	2.7	74	NV	NV	--	--	--	--	--	--
Pentachlorophenol	NV	0.14	2.6	4	34	960	NV	NV	--	--	--	--	--	--
Phenanthrene	NV	NV	NV	NV	NV	NV	NV	NV	0.0344 J	0.043 J	0.421 U	0.158	--	--
Phenol	NV	30	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Pyrene	NV	1700	3600	23000	7500	210000	NV	NV	0.0591	0.0524 J	0.421 U	0.13	--	--
cPAH TEQ (ND = 0.5)	NV	NV	0.034	0.29	2.4	67	NV	NV	0.123 J	0.0849 J	0.633 U	0.106 J	--	--
<b>Hydrocarbon Identification (Presence/Absence)</b>														
Gasoline-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	--	--
Diesel-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	--	--
Lube Oil-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	DETECT	DETECT	DETECT	DETECT	--	--
<b>TPH (mg/kg)</b>														
Gasoline-range Organics	NV	NV	2500	20000	9700	NV	94	NV	--	--	--	--	--	--
Diesel-range Organics	NV	NV	2200	14000	4600	NV	NV	NV	11.1 U	56.2 U	1030 U	12.2 U	209 U	11.1 U
Lube Oil-range Organics	NV	NV	2200 <sup>d</sup>	14000 <sup>d</sup>	4600 <sup>d</sup>	NV	NV	NV	317	944	4450	46.6 J	1880	167

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP04 GP04-S-13.0 12/12/2017 13	GP06 GP06-S-2.5 12/11/2017 2.5	GP06 GP06-S-7.5 12/11/2017 7.5	GP06 GP06-S-21.0 12/11/2017 21	GP09 GP09-S-2.5 12/12/2017 2.5	GP09 GP09-S-8.0 12/12/2017 8.0
<b>Metals (mg/kg)</b>														
Arsenic	8.8	8.8	1	1.9	15	420	NV	NV	0.652 U	3.58	1.22 J	4.01	123	3.65
Barium	790	790	31000	220000	69000	NV	NV	NV	254	89.3	140	111	1870	80.1
Cadmium	0.63	0.63	160	1100	350	9700	NV	NV	1.03	0.485	0.422	0.739	1.13	0.248
Chromium	76	76	NV	NV	NV	NV	NV	NV	27.2	20.9	7.01	16.8	72.2	25.2
Copper	34	34	6200	47000	14000	390000	NV	NV	--	--	--	--	--	--
Hexavalent Chromium	NV	NV	0.67	6.3	49	1400	NV	NV	--	0.3	--	--	1.2	--
Lead	79	28	400	800	800	800	NV	NV	5.74	95.6	5.91	163	355	78.2
Mercury	0.23	0.23	47	350	110	2900	NV	NV	0.0522 U	0.133	0.0497 U	0.478	0.371	0.0452 U
Nickel	47	47	3100	22000	7000	190000	NV	NV	--	--	--	--	--	--
Selenium	0.71	0.71	NV	NV	NV	NV	NV	NV	0.822 J	0.621 U	0.621 U	0.586 U	0.706 U	0.565 U
Silver	0.82	4.2	780	5800	1800	49000	NV	NV	0.13 U	0.124 U	0.124 U	0.117 U	0.183 J	0.113 U
Zinc	180	180	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
<b>Dioxins/Furans (pg/g)</b>														
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	NV	NV	NV	NV	NV	0.217 U	227 J	1.35 UJ	16.4	2.12 J	0.336 UJ
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.0711 U	120 J	0.373 J	7.98	1.97 J	1.14 UJK
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.108 U	3.29 J	0.0869 U	0.285 U	0.106 UJK	0.121 U
1,2,3,4,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	0.141 U	2.38 J	0.123 U	0.195 J	0.186 U	0.229 U
1,2,3,4,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.0705 U	4.12 J	0.0889 U	0.474 J	0.299 UJ	0.0946 U
1,2,3,6,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	0.14 U	8.47 J	0.221 UJK	0.63 J	0.185 U	0.229 U
1,2,3,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.0717 U	2.39 J	0.0829 U	0.235 UJK	0.337 J	0.099 U
1,2,3,7,8,9-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	0.144 U	4.49 J	0.199 UJK	0.586 J	0.19 U	0.236 U
1,2,3,7,8,9-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.0952 U	1.07 J	0.101 U	0.128 U	0.145 U	0.127 U
1,2,3,7,8-PeCDD	NV	NV	NV	NV	NV	NV	NV	NV	0.153 U	1.84 J	0.105 U	0.223 UJK	0.203 J	0.0908 U
1,2,3,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.116 U	0.853 J	0.124 U	0.132 U	0.544 J	0.115 U
2,3,4,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.0677 U	2.89 J	0.112 UJ	0.331 UJK	0.38 J	0.0928 U
2,3,4,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.0984 U	2.93 UJK	0.114 U	0.253 J	0.603 J	0.0978 U
2,3,7,8-TCDD	NV	4.4	12	16	170	4800	24000	130000	0.198 U	1.1 UJK	0.205 U	0.213 U	0.229 U	0.217 U
2,3,7,8-TCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.331 U	2.55 J	0.428 U	0.391 U	1.96	0.326 U
OCDD	NV	NV	NV	NV	NV	NV	NV	NV	0.882 UJ	2560 J	10.2	174	19.4	2.85 UJ
OCDF	NV	NV	NV	NV	NV	NV	NV	NV	0.229 U	206 J	0.957 J	17	2.1 J	0.634 J
Total HpCDDs	NV	NV	NV	NV	NV	NV	NV	NV	0.217 U	434 J	2.8 J	31.6	4.21 J	0.646 JK
Total HpCDFs	NV	NV	NV	NV	NV	NV	NV	NV	0.0711 U	301 JK	0.953 J	20.4	3.8 JK	2.18 JK
Total HxCDDs	NV	NV	NV	NV	NV	NV	NV	NV	0.14 U	63.6 JK	1.44 UJK	5.02 JK	1.59 UJK	0.229 U
Total HxCDFs	NV	NV	NV	NV	NV	NV	NV	NV	0.0677 U	91.8 JK	1.02 UJK	7.89 JK	2.98 JK	0.485 UJ
Total PeCDDs	NV	NV	NV	NV	NV	NV	NV	NV	0.153 U	14 JK	0.189 UJK	0.223 UJK	0.516 JK	0.0908 U
Total PeCDFs	NV	NV	NV	NV	NV	NV	NV	NV	0.0984 U	25.8 JK	1.05 UJK	2.92 J	6.17 JK	0.133 JK
Total TCDDs	NV	NV	NV	NV	NV	NV	NV	NV	0.198 U	3.87 UJK	0.217 UJK	0.241 UJK	0.741 UJK	0.217 U
Total TCDFs	NV	NV	NV	NV	NV	NV	NV	NV	0.331 U	9.68 UJK	0.765 J	0.803 J	14.7 JK	0.326 U
Dioxin TEQ (ND = 0.5) <sup>a</sup>	NV	4.4	12	16	170	4800	24000	130000	0.882 J	10.0 J	0.256 J	0.841 J	0.881	0.251
<b>Organochlorine Pesticides (mg/kg)</b>														
4,4'-DDD	NV	0.021	6.6	12	94	2600	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
4,4'-DDE	NV	0.021	4.5	8.2	66	1800	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
4,4'-DDT	NV	0.021	4.6	8.5	66	1800	NV	NV	0.00129 U	0.0045 U	0.00115 U	0.0023 U	--	--
Aldrin	NV	0.011	0.08	0.13	1.1	30	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
alpha-BHC	NV	0.07	0.21	0.36	3	83	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
alpha-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
beta-BHC	NV	0.27	NV	NV	NV	NV	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
beta-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP04 GP04-S-13.0 12/12/2017 13	GP06 GP06-S-2.5 12/11/2017 2.5	GP06 GP06-S-7.5 12/11/2017 7.5	GP06 GP06-S-21.0 12/11/2017 21	GP09 GP09-S-2.5 12/12/2017 2.5	GP09 GP09-S-8.0 12/12/2017 8.0
Chlordane (Technical)	NV	1.3	NV	NV	NV	NV	NV	NV	0.0388 U	0.0674 U	0.0345 U	0.0689 U	--	--
delta-BHC	NV	NV	NV	NV	NV	NV	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
Dieldrin	NV	0.0049	0.085	0.14	1.2	33	NV	NV	0.00129 U	0.0045 U	0.00115 U	0.0023 U	--	--
Endosulfan I	NV	NV	760	4900	1600	45000	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
Endosulfan II (beta)	NV	NV	760	4900	1600	45000	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
Endosulfan sulfate	NV	NV	NV	NV	NV	NV	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
Endrin	NV	0.04	38	250	80	2200	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
Endrin aldehyde	NV	NV	NV	NV	NV	NV	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
Endrin ketone	NV	NV	NV	NV	NV	NV	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
Heptachlor	NV	0.1	0.28	0.45	4	110	42	230	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
Heptachlor epoxide	NV	0.053	0.14	0.24	2	56	66	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
Lindane	NV	0.38	1.2	2.1	17	470	NV	NV	0.00129 U	0.00225 U	0.00115 U	0.0023 U	--	--
Methoxychlor	NV	310	NV	NV	NV	NV	NV	NV	0.00388 U	0.00674 U	0.00345 U	0.00689 U	--	--
Toxaphene	NV	0.44	1.2	2.1	17	470	NV	NV	0.0388 U	0.0674 U	0.0345 U	0.0689 U	--	--
<b>PCBs (mg/kg)</b>														
Aroclor 1016	NV	NV	NV	NV	NV	NV	NV	NV	0.00248 U	0.00201 U	0.00204 U	0.00561 U	--	--
Aroclor 1221	NV	NV	NV	NV	NV	NV	NV	NV	0.00248 U	0.00201 U	0.00204 U	0.00561 U	--	--
Aroclor 1232	NV	NV	NV	NV	NV	NV	NV	NV	0.00248 U	0.00201 U	0.00204 U	0.0112 U	--	--
Aroclor 1242	NV	NV	NV	NV	NV	NV	NV	NV	0.00248 U	<b>0.00864 J</b>	0.00204 U	0.00561 U	--	--
Aroclor 1248	NV	NV	NV	NV	NV	NV	NV	NV	0.00248 U	0.00201 U	0.00204 U	0.00561 U	--	--
Aroclor 1254	NV	NV	NV	NV	NV	NV	NV	NV	0.00248 U	<b>0.0682 J</b>	0.00204 U	0.0112 U	--	--
Aroclor 1260	NV	NV	NV	NV	NV	NV	NV	NV	0.00248 U	<b>0.0187 J</b>	0.00204 U	<b>0.0143</b>	--	--
Aroclor 1262	NV	NV	NV	NV	NV	NV	NV	NV	0.00248 U	0.00201 U	0.00204 U	0.00561 U	--	--
Aroclor 1268	NV	NV	NV	NV	NV	NV	NV	NV	0.00248 U	0.00201 U	0.00204 U	0.00561 U	--	--
Total PCBs (ND = 0) <sup>b</sup>	NV	0.2	0.33	0.59	4.9	140	NV	NV	0.00248 U	<b>0.09554 J</b>	0.00204 U	<b>0.0143</b>	--	--
<b>VOCs (mg/kg)</b>														
1,1,1,2-Tetrachloroethane	NV	0.0156	NV	NV	NV	NV	NV	NV	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
1,1,1-Trichloroethane	NV	400	110000	870000	470000	NV	NV	NV	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
1,1,2,2-Tetrachloroethane	NV	0.0024	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
1,1,2-Trichloroethane	NV	0.0046	6.3	26	54	1500	0.38	4.2	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
1,1-Dichloroethane	NV	0.037	190	260	3200	89000	1.1	5.9	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
1,1-Dichloroethene	NV	11	3500	29000	13000	370000	54	680	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
1,2,3-Trichlorobenzene	NV	20	NV	NV	NV	NV	NV	NV	--	0.14 U	0.128 U	0.143 U	0.186 U	0.16 U
1,2,3-Trichloropropane	NV	0.005	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	--	0.14 U	0.128 U	0.143 U	0.186 U	0.16 U
1,2,4-Trimethylbenzene	NV	16	220	2000	2000	54000	16	210	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
1,2-Dibromo-3-chloropropane	NV	0.000012	NV	NV	NV	NV	NV	NV	--	0.14 U	0.128 U	0.143 U	0.186 U	0.16 U
1,2-Dibromoethane	NV	0.00012	0.53	0.73	9	250	0.028	0.16	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
1,2-Dichloroethane	NV	0.0014	12	16	200	5600	0.18	1	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
1,2-Dichloropropane	NV	0.009	NV	NV	NV	NV	NV	NV	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
1,3,5-Trimethylbenzene	NV	92	1600	12000	3500	98000	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
1,3-Dichloropropane	NV	7.62	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
2-Butanone	NV	27.48	NV	NV	NV	NV	NV	NV	--	0.28 U	0.256 U	0.286 U	0.372 U	0.321 U
2-Chlorotoluene	NV	21.66	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP04 GP04-S-13.0 12/12/2017 13	GP06 GP06-S-2.5 12/11/2017 2.5	GP06 GP06-S-7.5 12/11/2017 7.5	GP06 GP06-S-21.0 12/11/2017 21	GP09 GP09-S-2.5 12/12/2017 2.5	GP09 GP09-S-8.0 12/12/2017 8.0
2-Hexanone	NV	0.2982	NV	NV	NV	NV	NV	NV	--	0.56 UJ	0.511 UJ	0.571 UJ	0.372 U	0.321 U
4-Chlorotoluene	NV	22.5	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
4-Methyl-2-pentanone	NV	8.04	NV	NV	NV	NV	NV	NV	--	0.56 U	0.511 U	0.571 U	0.372 U	0.321 U
Acetone	NV	59.52	NV	NV	NV	NV	NV	NV	--	0.56 U	0.511 U	0.571 U	0.744 U	0.641 U
Acrylonitrile	NV	0.00029	2.5	4	40	1100	0.19	1	--	0.056 U	0.0511 U	0.0571 U	0.0744 U	0.0641 U
Benzene	NV	0.0093	24	37	380	11000	0.38	2.1	--	0.0056 U	0.00511 U	0.00571 U	0.00744 U	0.00641 U
Bromobenzene	NV	4.068	NV	NV	NV	NV	NV	NV	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
Bromodichloromethane	NV	0.0025	12	15	230	6300	0.1	0.53	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
Bromoform	NV	0.084	170	260	2700	74000	19	110	--	0.056 U	0.0511 U	0.0571 U	0.0744 U	0.0641 U
Bromomethane	NV	0.098	92	750	370	10000	1.3	17	--	0.56 U	0.511 U	0.571 U	0.744 U	0.641 U
Carbon disulfide	NV	11.64	NV	NV	NV	NV	NV	NV	--	0.28 U	0.256 U	0.286 U	0.372 U	0.321 U
Carbon tetrachloride	NV	0.028	21	34	320	8900	0.28	1.6	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
Chlorobenzene	NV	6.5	1100	8700	4700	130000	77	NV	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
Chlorobromomethane	NV	0.936	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
Chloroethane	NV	320	320000	NV	NV	NV	NV	NV	--	0.28 U	0.256 U	0.286 U	0.744 UJ	0.641 UJ
Chloroform	NV	0.0033	22	26	410	11000	0.074	0.41	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
Chloromethane	NV	2.2	2900	25000	25000	700000	24	300	--	0.14 U	0.128 U	0.143 U	0.186 U	0.16 U
cis-1,2-Dichloroethene	NV	1.2	310	2300	710	20000	NV	NV	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
Dibromochloromethane	NV	0.0033	12	17	210	5800	0.53	2.9	--	0.056 U	0.0511 U	0.0571 U	0.0744 U	0.0641 U
Dibromomethane	NV	0.0876	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
Dichlorodifluoromethane	NV	94	NV	NV	NV	NV	NV	NV	--	0.056 U	0.0511 U	0.0571 U	0.0744 U	0.0641 U
Ethylbenzene	NV	0.16	110	150	1700	49000	3	17	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	--	0.056 U	0.0511 U	0.0571 U	0.0744 U	0.0641 U
Isopropylbenzene	NV	85.2	7000	57000	27000	750000	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
m,p-Xylene	NV	25	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
Methyl tert-butyl ether	NV	0.092	730	1100	12000	320000	20	110	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
Methylene chloride	NV	0.038	170	1600	2100	58000	48	950	--	0.14 U	0.128 U	0.143 U	0.186 U	0.16 U
Naphthalene	NV	0.087	25	23	580	16000	15	83	--	0.056 U	0.0511 U	0.0571 U	0.0744 U	0.0641 U
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
o-Xylene	NV	1	NV	NV	NV	NV	NV	NV	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
Styrene	NV	300	16000	130000	56000	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
Tetrachloroethene	NV	2.4	540	1000	1800	50000	6.6	36	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
Toluene	NV	200	12000	88000	28000	770000	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
trans-1,2-dichloroethene	NV	2.5	3100	23000	7100	200000	NV	NV	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
Trichloroethene	NV	0.02	17	51	470	13000	0.26	2.3	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
Trichlorofluoromethane	NV	190	15000	130000	69000	NV	190	NV	--	0.056 U	0.0511 U	0.0571 U	0.0744 UJ	0.0641 UJ
Vinyl chloride	NV	0.00051	0.8	4.4	34	950	0.053	2.2	--	0.014 U	0.0128 U	0.0143 U	0.0186 U	0.016 U
Xylenes, Total <sup>c</sup>	NV	NV	2900	25000	20000	560000	260	NV	--	0.028 U	0.0256 U	0.0286 U	0.0372 U	0.0321 U
<b>SVOCs (mg/kg)</b>														
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	--	--	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP04 GP04-S-13.0 12/12/2017 13	GP06 GP06-S-2.5 12/11/2017 2.5	GP06 GP06-S-7.5 12/11/2017 7.5	GP06 GP06-S-21.0 12/11/2017 21	GP09 GP09-S-2.5 12/12/2017 2.5	GP09 GP09-S-8.0 12/12/2017 8.0
1-Methylnaphthalene	NV	0.738	NV	NV	NV	NV	NV	NV	--	0.368 U	0.00313 U	0.314 U	--	--
2,4,5-Trichlorophenol	NV	4	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4,6-Trichlorophenol	NV	1.9	120	210	270	7400	NV	NV	--	--	--	--	--	--
2,4-Dichlorophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dimethylphenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrotoluene	NV	0.0354	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,6-Dinitrotoluene	NV	4.2	0.9	1.5	13	350	NV	NV	--	--	--	--	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Chlorophenol	NV	60	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Methylnaphthalene	NV	310	NV	NV	NV	NV	NV	NV	--	0.368 U	0.00313 U	0.314 U	--	--
2-Methylphenol	NV	50	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Nitroaniline	NV	5.646	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
3,3-Dichlorobenzidine	NV	0.028	3	5.1	42	1200	NV	NV	--	--	--	--	--	--
3-Nitroaniline	NV	70	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	NV	0.2766	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chloroaniline	NV	0.012	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Methylphenol	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitroaniline	NV	0.1218	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Acenaphthene	NV	29	9400	70000	21000	590000	NV	NV	--	0.183 U	0.00156 U	0.156 U	--	--
Acenaphthylene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.183 U	0.00156 U	0.156 U	--	--
Aniline	NV	0.3036	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Anthracene	NV	29	47000	350000	110000	NV	NV	NV	--	0.183 U	0.00156 U	0.156 U	--	--
Benzo(a)anthracene	NV	0.15	0.34	2.9	24	660	NV	NV	--	0.351 J	0.00201 J	0.156 U	--	--
Benzo(a)pyrene	NV	0.015	0.034	0.29	2.4	67	NV	NV	--	0.518 J	0.00349 J	0.235 U	--	--
Benzo(b)fluoranthene	NV	0.15	0.34	2.9	24	670	NV	NV	--	0.359 J	0.00325 J	0.235 U	--	--
Benzo(ghi)perylene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.241 J	0.00158 J	0.156 U	--	--
Benzo(k)fluoranthene	NV	1.1	3.4	29	240	6700	NV	NV	--	0.276 U	0.00234 U	0.235 U	--	--
Benzoic acid	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Benzyl alcohol	NV	16.02	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	NV	0.402	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethyl)ether	NV	0.0001	0.96	1.3	16	450	1.2	6.9	--	--	--	--	--	--
Bis(2-chloroisopropyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	NV	4.5	97	160	1300	37000	NV	NV	--	--	--	--	--	--
Butylbenzylphthalate	NV	260	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Chrysene	NV	14	34	290	2400	67000	NV	NV	--	0.384 J	0.00246 J	0.156 U	--	--
Dibenzo(a,h)anthracene	NV	0.015	0.034	0.29	2.4	67	NV	NV	--	0.183 U	0.00156 U	0.156 U	--	--
Dibenzofuran	NV	0.002	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Diethyl phthalate	NV	100	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dimethyl phthalate	NV	200	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Di-n-butyl phthalate	NV	0.45	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Di-n-octyl phthalate	NV	610	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Fluoranthene	NV	29	4800	30000	10000	280000	NV	NV	--	0.526 J	0.00259 J	0.156 U	--	--
Fluorene	NV	29	6300	47000	14000	390000	NV	NV	--	0.183 U	0.00156 U	0.156 U	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP04 GP04-S-13.0 12/12/2017 13	GP06 GP06-S-2.5 12/11/2017 2.5	GP06 GP06-S-7.5 12/11/2017 7.5	GP06 GP06-S-21.0 12/11/2017 21	GP09 GP09-S-2.5 12/12/2017 2.5	GP09 GP09-S-8.0 12/12/2017 8.0
Hexachlorobenzene	NV	0.26	0.67	0.93	11	320	2.4	13	--	--	--	--	--	--
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachlorocyclopentadiene	NV	10	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachloroethane	NV	0.51	24	32	180	5100	1.4	7.6	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	NV	0.15	0.34	2.9	24	670	NV	NV	--	0.202 J	0.00156 U	0.156 U	--	--
Isophorone	NV	1.596	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Naphthalene	NV	0.087	25	23	580	16000	15	83	--	0.368 U	0.00313 U	0.314 U	--	--
Nitrobenzene	NV	0.0084	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
N-Nitrosodimethylamine	NV	0.0023	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
N-Nitrosodiphenylamine	NV	4.5	280	470	3800	110000	NV	NV	--	--	--	--	--	--
N-Nitrosodipropylamine	NV	0.0012	0.19	0.33	2.7	74	NV	NV	--	--	--	--	--	--
Pentachlorophenol	NV	0.14	2.6	4	34	960	NV	NV	--	--	--	--	--	--
Phenanthrene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.381 J	0.00162 J	0.156 U	--	--
Phenol	NV	30	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Pyrene	NV	1700	3600	23000	7500	210000	NV	NV	--	0.634 J	0.00318	0.156 U	--	--
cPAH TEQ (ND = 0.5)	NV	NV	0.034	0.29	2.4	67	NV	NV	--	0.702 J	0.00489 J	0.235 U	--	--
<b>Hydrocarbon Identification (Presence/Absence)</b>														
Gasoline-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--
Diesel-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--
Lube Oil-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--
<b>TPH (mg/kg)</b>														
Gasoline-range Organics	NV	NV	2500	20000	9700	NV	94	NV	--	5.6 U	2.56 U	2.86 U	3.72 U	3.21 U
Diesel-range Organics	NV	NV	2200	14000	4600	NV	NV	NV	13.1 U	106 U	11.7 U	237 U	13.3 U	11.5 U
Lube Oil-range Organics	NV	NV	2200 <sup>d</sup>	14000 <sup>d</sup>	4600 <sup>d</sup>	NV	NV	NV	26.1 U	1460	23.5 U	2140	245	202

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP11 GP11-S-3.0 12/14/2017 3.0	GP11 GP11-S-7.0 12/14/2017 7.0	GP12 GP12-S-3.0 12/11/2017 3	GP12 GP12-S-8.0 12/11/2017 8	GP13 GP13-S-2.5 12/14/2017 2.5	GP13 GP13-S-7.5 12/14/2017 7.5
<b>Metals (mg/kg)</b>														
Arsenic	8.8	8.8	1	1.9	15	420	NV	NV	2.32	2.45	2.17	2.2	8.9	4.42
Barium	790	790	31000	220000	69000	NV	NV	NV	102	91.6	105	91.2	152	161
Cadmium	0.63	0.63	160	1100	350	9700	NV	NV	0.182 J	0.168 J	0.288	0.185 J	0.901	0.314
Chromium	76	76	NV	NV	NV	NV	NV	NV	15.9	20.6	16.1	14.4	22.6	25.9
Copper	34	34	6200	47000	14000	390000	NV	NV	--	--	--	--	--	--
Hexavalent Chromium	NV	NV	0.67	6.3	49	1400	NV	NV	0.3	--	0.3	--	0.5	--
Lead	79	28	400	800	800	800	NV	NV	9.7	3.19	9.57	3.16	145	112
Mercury	0.23	0.23	47	350	110	2900	NV	NV	0.0486 U	0.0518 U	0.0588 J	0.0493 U	0.205	0.479
Nickel	47	47	3100	22000	7000	190000	NV	NV	--	--	--	--	--	--
Selenium	0.71	0.71	NV	NV	NV	NV	NV	NV	0.607 U	0.647 U	0.626 U	0.617 U	0.617 U	0.713 U
Silver	0.82	4.2	780	5800	1800	49000	NV	NV	0.121 U	0.129 U	0.125 U	0.123 U	0.21 J	0.2 J
Zinc	180	180	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
<b>Dioxins/Furans (pg/g)</b>														
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,4,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,4,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,6,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,7,8,9-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,7,8,9-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,7,8-PeCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,3,4,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,3,4,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,3,7,8-TCDD	NV	4.4	12	16	170	4800	24000	130000	--	--	--	--	--	--
2,3,7,8-TCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
OCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
OCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total HpCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total HpCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total HxCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total HxCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total PeCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total PeCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total TCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total TCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dioxin TEQ (ND = 0.5) <sup>a</sup>	NV	4.4	12	16	170	4800	24000	130000	--	--	--	--	--	--
<b>Organochlorine Pesticides (mg/kg)</b>														
4,4'-DDD	NV	0.021	6.6	12	94	2600	NV	NV	--	--	--	--	--	--
4,4'-DDE	NV	0.021	4.5	8.2	66	1800	NV	NV	--	--	--	--	--	--
4,4'-DDT	NV	0.021	4.6	8.5	66	1800	NV	NV	--	--	--	--	--	--
Aldrin	NV	0.011	0.08	0.13	1.1	30	NV	NV	--	--	--	--	--	--
alpha-BHC	NV	0.07	0.21	0.36	3	83	NV	NV	--	--	--	--	--	--
alpha-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
beta-BHC	NV	0.27	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
beta-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP11 GP11-S-3.0 12/14/2017 3.0	GP11 GP11-S-7.0 12/14/2017 7.0	GP12 GP12-S-3.0 12/11/2017 3	GP12 GP12-S-8.0 12/11/2017 8	GP13 GP13-S-2.5 12/14/2017 2.5	GP13 GP13-S-7.5 12/14/2017 7.5
Chlordane (Technical)	NV	1.3	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
delta-BHC	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dieldrin	NV	0.0049	0.085	0.14	1.2	33	NV	NV	--	--	--	--	--	--
Endosulfan I	NV	NV	760	4900	1600	45000	NV	NV	--	--	--	--	--	--
Endosulfan II (beta)	NV	NV	760	4900	1600	45000	NV	NV	--	--	--	--	--	--
Endosulfan sulfate	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Endrin	NV	0.04	38	250	80	2200	NV	NV	--	--	--	--	--	--
Endrin aldehyde	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Endrin ketone	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Heptachlor	NV	0.1	0.28	0.45	4	110	42	230	--	--	--	--	--	--
Heptachlor epoxide	NV	0.053	0.14	0.24	2	56	66	NV	--	--	--	--	--	--
Lindane	NV	0.38	1.2	2.1	17	470	NV	NV	--	--	--	--	--	--
Methoxychlor	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Toxaphene	NV	0.44	1.2	2.1	17	470	NV	NV	--	--	--	--	--	--
<b>PCBs (mg/kg)</b>														
Aroclor 1016	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Aroclor 1221	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Aroclor 1232	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Aroclor 1242	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Aroclor 1248	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Aroclor 1254	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Aroclor 1260	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Aroclor 1262	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Aroclor 1268	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total PCBs (ND = 0) <sup>b</sup>	NV	0.2	0.33	0.59	4.9	140	NV	NV	--	--	--	--	--	--
<b>VOCs (mg/kg)</b>														
1,1,1,2-Tetrachloroethane	NV	0.0156	NV	NV	NV	NV	NV	NV	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
1,1,1-Trichloroethane	NV	400	110000	870000	470000	NV	NV	NV	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
1,1,2,2-Tetrachloroethane	NV	0.0024	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
1,1,2-Trichloroethane	NV	0.0046	6.3	26	54	1500	0.38	4.2	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
1,1-Dichloroethane	NV	0.037	190	260	3200	89000	1.1	5.9	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
1,1-Dichloroethene	NV	11	3500	29000	13000	370000	54	680	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
1,2,3-Trichlorobenzene	NV	20	NV	NV	NV	NV	NV	NV	0.189 U	0.147 U	0.162 U	0.164 U	--	--
1,2,3-Trichloropropane	NV	0.005	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	0.189 U	0.147 U	0.162 U	0.164 U	--	--
1,2,4-Trimethylbenzene	NV	16	220	2000	2000	54000	16	210	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
1,2-Dibromo-3-chloropropane	NV	0.000012	NV	NV	NV	NV	NV	NV	0.189 U	0.147 U	0.162 U	0.164 U	--	--
1,2-Dibromoethane	NV	0.00012	0.53	0.73	9	250	0.028	0.16	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
1,2-Dichloroethane	NV	0.0014	12	16	200	5600	0.18	1	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
1,2-Dichloropropane	NV	0.009	NV	NV	NV	NV	NV	NV	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
1,3,5-Trimethylbenzene	NV	92	1600	12000	3500	98000	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
1,3-Dichloropropane	NV	7.62	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
2-Butanone	NV	27.48	NV	NV	NV	NV	NV	NV	0.378 U	0.294 U	0.323 U	0.327 U	--	--
2-Chlorotoluene	NV	21.66	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--



Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP11 GP11-S-3.0 12/14/2017 3.0	GP11 GP11-S-7.0 12/14/2017 7.0	GP12 GP12-S-3.0 12/11/2017 3	GP12 GP12-S-8.0 12/11/2017 8	GP13 GP13-S-2.5 12/14/2017 2.5	GP13 GP13-S-7.5 12/14/2017 7.5
2-Hexanone	NV	0.2982	NV	NV	NV	NV	NV	NV	0.378 U	0.294 U	0.646 UJ	0.655 UJ	--	--
4-Chlorotoluene	NV	22.5	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
4-Methyl-2-pentanone	NV	8.04	NV	NV	NV	NV	NV	NV	0.378 U	0.294 U	0.646 U	0.655 U	--	--
Acetone	NV	59.52	NV	NV	NV	NV	NV	NV	0.756 U	0.589 U	0.646 U	0.655 U	--	--
Acrylonitrile	NV	0.00029	2.5	4	40	1100	0.19	1	0.0756 U	0.0589 U	0.0646 U	0.0655 U	--	--
Benzene	NV	0.0093	24	37	380	11000	0.38	2.1	0.00756 U	0.00589 U	0.00646 U	0.00655 U	--	--
Bromobenzene	NV	4.068	NV	NV	NV	NV	NV	NV	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
Bromodichloromethane	NV	0.0025	12	15	230	6300	0.1	0.53	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
Bromoform	NV	0.084	170	260	2700	74000	19	110	0.0756 U	0.0589 U	0.0646 U	0.0655 U	--	--
Bromomethane	NV	0.098	92	750	370	10000	1.3	17	0.756 U	0.589 U	0.646 U	0.655 U	--	--
Carbon disulfide	NV	11.64	NV	NV	NV	NV	NV	NV	0.378 U	0.294 U	0.323 U	0.327 U	--	--
Carbon tetrachloride	NV	0.028	21	34	320	8900	0.28	1.6	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
Chlorobenzene	NV	6.5	1100	8700	4700	130000	77	NV	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
Chlorobromomethane	NV	0.936	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
Chloroethane	NV	320	320000	NV	NV	NV	NV	NV	0.378 UJ	0.294 UJ	0.323 U	0.327 U	--	--
Chloroform	NV	0.0033	22	26	410	11000	0.074	0.41	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
Chloromethane	NV	2.2	2900	25000	25000	700000	24	300	0.189 U	0.147 U	0.162 U	0.164 U	--	--
cis-1,2-Dichloroethene	NV	1.2	310	2300	710	20000	NV	NV	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
Dibromochloromethane	NV	0.0033	12	17	210	5800	0.53	2.9	0.0756 U	0.0589 U	0.0646 U	0.0655 U	--	--
Dibromomethane	NV	0.0876	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
Dichlorodifluoromethane	NV	94	NV	NV	NV	NV	NV	NV	0.0756 U	0.0589 U	0.0646 U	0.0655 U	--	--
Ethylbenzene	NV	0.16	110	150	1700	49000	3	17	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	0.0756 U	0.0589 U	0.0646 U	0.0655 U	--	--
Isopropylbenzene	NV	85.2	7000	57000	27000	750000	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
m,p-Xylene	NV	25	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
Methyl tert-butyl ether	NV	0.092	730	1100	12000	320000	20	110	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
Methylene chloride	NV	0.038	170	1600	2100	58000	48	950	0.189 U	0.147 U	0.162 U	0.164 U	--	--
Naphthalene	NV	0.087	25	23	580	16000	15	83	0.0756 U	0.0589 U	0.0646 U	0.0655 U	--	--
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
o-Xylene	NV	1	NV	NV	NV	NV	NV	NV	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
Styrene	NV	300	16000	130000	56000	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
Tetrachloroethene	NV	2.4	540	1000	1800	50000	6.6	36	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
Toluene	NV	200	12000	88000	28000	770000	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
trans-1,2-dichloroethene	NV	2.5	3100	23000	7100	200000	NV	NV	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
Trichloroethene	NV	0.02	17	51	470	13000	0.26	2.3	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
Trichlorofluoromethane	NV	190	15000	130000	69000	NV	190	NV	0.0756 UJ	0.0589 UJ	0.0646 U	0.0655 U	--	--
Vinyl chloride	NV	0.00051	0.8	4.4	34	950	0.053	2.2	0.0189 U	0.0147 U	0.0162 U	0.0164 U	--	--
Xylenes, Total <sup>c</sup>	NV	NV	2900	25000	20000	560000	260	NV	0.0378 U	0.0294 U	0.0323 U	0.0327 U	--	--
<b>SVOCs (mg/kg)</b>														
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	--	--	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP11 GP11-S-3.0 12/14/2017 3.0	GP11 GP11-S-7.0 12/14/2017 7.0	GP12 GP12-S-3.0 12/11/2017 3	GP12 GP12-S-8.0 12/11/2017 8	GP13 GP13-S-2.5 12/14/2017 2.5	GP13 GP13-S-7.5 12/14/2017 7.5
1-Methylnaphthalene	NV	0.738	NV	NV	NV	NV	NV	NV	0.00317 U	0.00329 U	--	--	0.302 U	0.139 U
2,4,5-Trichlorophenol	NV	4	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4,6-Trichlorophenol	NV	1.9	120	210	270	7400	NV	NV	--	--	--	--	--	--
2,4-Dichlorophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dimethylphenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrotoluene	NV	0.0354	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,6-Dinitrotoluene	NV	4.2	0.9	1.5	13	350	NV	NV	--	--	--	--	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Chlorophenol	NV	60	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Methylnaphthalene	NV	310	NV	NV	NV	NV	NV	NV	0.00317 U	0.00329 U	--	--	0.302 U	0.139 U
2-Methylphenol	NV	50	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Nitroaniline	NV	5.646	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
3,3-Dichlorobenzidine	NV	0.028	3	5.1	42	1200	NV	NV	--	--	--	--	--	--
3-Nitroaniline	NV	70	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	NV	0.2766	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chloroaniline	NV	0.012	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Methylphenol	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitroaniline	NV	0.1218	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Acenaphthene	NV	29	9400	70000	21000	590000	NV	NV	--	--	--	--	0.15 U	0.0695 U
Acenaphthylene	NV	NV	NV	NV	NV	NV	NV	NV	0.00158 U	0.00164 U	--	--	0.15 U	0.0695 U
Aniline	NV	0.3036	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Anthracene	NV	29	47000	350000	110000	NV	NV	NV	0.00158 U	0.00164 U	--	--	0.15 U	0.0695 U
Benzo(a)anthracene	NV	0.15	0.34	2.9	24	660	NV	NV	0.00158 U	0.00164 U	--	--	0.15 U	0.159 J
Benzo(a)pyrene	NV	0.015	0.034	0.29	2.4	67	NV	NV	0.00237 U	0.00247 U	--	--	0.306 J	0.218
Benzo(b)fluoranthene	NV	0.15	0.34	2.9	24	670	NV	NV	0.00237 U	0.00247 U	--	--	0.226 U	0.176 J
Benzo(ghi)perylene	NV	NV	NV	NV	NV	NV	NV	NV	0.00191	0.00164 U	--	--	0.15 U	0.11 J
Benzo(k)fluoranthene	NV	1.1	3.4	29	240	6700	NV	NV	0.00237 U	0.00247 U	--	--	0.226 U	0.104 U
Benzoic acid	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Benzyl alcohol	NV	16.02	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	NV	0.402	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethyl)ether	NV	0.0001	0.96	1.3	16	450	1.2	6.9	--	--	--	--	--	--
Bis(2-chloroisopropyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	NV	4.5	97	160	1300	37000	NV	NV	--	--	--	--	--	--
Butylbenzylphthalate	NV	260	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Chrysene	NV	14	34	290	2400	67000	NV	NV	0.00158 U	0.00164 U	--	--	0.15 U	0.181 J
Dibenzo(a,h)anthracene	NV	0.015	0.034	0.29	2.4	67	NV	NV	0.00158 U	0.00164 U	--	--	0.15 U	0.0695 U
Dibenzofuran	NV	0.002	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Diethyl phthalate	NV	100	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dimethyl phthalate	NV	200	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Di-n-butyl phthalate	NV	0.45	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Di-n-octyl phthalate	NV	610	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Fluoranthene	NV	29	4800	30000	10000	280000	NV	NV	0.00158 U	0.00164 U	--	--	0.15 U	0.266
Fluorene	NV	29	6300	47000	14000	390000	NV	NV	0.00158 U	0.00164 U	--	--	0.15 U	0.0695 U

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP11 GP11-S-3.0 12/14/2017 3.0	GP11 GP11-S-7.0 12/14/2017 7.0	GP12 GP12-S-3.0 12/11/2017 3	GP12 GP12-S-8.0 12/11/2017 8	GP13 GP13-S-2.5 12/14/2017 2.5	GP13 GP13-S-7.5 12/14/2017 7.5
Hexachlorobenzene	NV	0.26	0.67	0.93	11	320	2.4	13	--	--	--	--	--	--
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachlorocyclopentadiene	NV	10	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachloroethane	NV	0.51	24	32	180	5100	1.4	7.6	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	NV	0.15	0.34	2.9	24	670	NV	NV	0.00158 U	0.00164 U	--	--	0.15 U	0.11 J
Isophorone	NV	1.596	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Naphthalene	NV	0.087	25	23	580	16000	15	83	0.00317 U	0.00329 U	--	--	0.302 U	0.139 U
Nitrobenzene	NV	0.0084	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
N-Nitrosodimethylamine	NV	0.0023	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
N-Nitrosodiphenylamine	NV	4.5	280	470	3800	110000	NV	NV	--	--	--	--	--	--
N-Nitrosodipropylamine	NV	0.0012	0.19	0.33	2.7	74	NV	NV	--	--	--	--	--	--
Pentachlorophenol	NV	0.14	2.6	4	34	960	NV	NV	--	--	--	--	--	--
Phenanthrene	NV	NV	NV	NV	NV	NV	NV	NV	0.00158 U	0.00164 U	--	--	0.15 U	0.267
Phenol	NV	30	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Pyrene	NV	1700	3600	23000	7500	210000	NV	NV	0.00158 U	0.00164 U	--	--	0.166 J	0.33
cPAH TEQ (ND = 0.5)	NV	NV	0.034	0.29	2.4	67	NV	NV	ND	ND	--	--	0.409 J	0.298 J
<b>Hydrocarbon Identification (Presence/Absence)</b>														
Gasoline-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	ND	ND	--	--
Diesel-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	ND	ND	--	--
Lube Oil-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	ND	ND	--	--
<b>TPH (mg/kg)</b>														
Gasoline-range Organics	NV	NV	2500	20000	9700	NV	94	NV	3.78 U	2.94 U	--	--	3.29 U	6.67 U
Diesel-range Organics	NV	NV	2200	14000	4600	NV	NV	NV	12 U	12.3 U	--	--	229 U	13 U
Lube Oil-range Organics	NV	NV	2200 <sup>d</sup>	14000 <sup>d</sup>	4600 <sup>d</sup>	NV	NV	NV	24.5 J	24.7 U	--	--	2370	66.7

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP14 GP14-S-3.0 12/14/2017 3	GP14 GP14-S-8.0 12/14/2017 8	GP15 GP15-S-3.0 12/14/2017 3	GP15 GP15-S-8.0 12/14/2017 8	GP16 GP16-S-2.5 12/11/2017 2.5	GP16 GP16-S-8.0 12/11/2017 8
<b>Metals (mg/kg)</b>														
Arsenic	8.8	8.8	1	1.9	15	420	NV	NV	2.29	2.32	1.09 J	1.66	1.92	1.88
Barium	790	790	31000	220000	69000	NV	NV	NV	96.5	91	39.2	37.7	92	92.4
Cadmium	0.63	0.63	160	1100	350	9700	NV	NV	0.173 J	0.173 J	0.117 U	0.188 J	0.145 J	0.172 J
Chromium	76	76	NV	NV	NV	NV	NV	NV	13.7	17	3.52	4.73	15.6	15.8
Copper	34	34	6200	47000	14000	390000	NV	NV	--	--	--	--	--	--
Hexavalent Chromium	NV	NV	0.67	6.3	49	1400	NV	NV	--	0.4	--	--	0.3	--
Lead	79	28	400	800	800	800	NV	NV	12.7 J	4.4	2.51	3.4	2.82	2.9
Mercury	0.23	0.23	47	350	110	2900	NV	NV	0.0461 U	0.0493 U	0.0467 U	0.0471 U	0.0484 U	0.0491 U
Nickel	47	47	3100	22000	7000	190000	NV	NV	--	--	--	--	--	--
Selenium	0.71	0.71	NV	NV	NV	NV	NV	NV	0.576 U	0.616 U	0.584 U	0.588 U	0.605 U	0.614 U
Silver	0.82	4.2	780	5800	1800	49000	NV	NV	0.115 U	0.123 U	0.117 U	0.118 U	0.121 U	0.123 U
Zinc	180	180	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
<b>Dioxins/Furans (pg/g)</b>														
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	2.1 J	2.34 UJK	--	--
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.639 J	0.964 UJK	--	--
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.3 U	0.508 UJ	--	--
1,2,3,4,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.17 U	1.45 UJ	--	--
1,2,3,4,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.145 U	0.452 UJ	--	--
1,2,3,6,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.156 U	1.44 UJ	--	--
1,2,3,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.134 U	0.455 UJ	--	--
1,2,3,7,8,9-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.167 U	1.48 UJ	--	--
1,2,3,7,8,9-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.179 U	0.576 UJ	--	--
1,2,3,7,8-PeCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0889 U	1.11 UJ	--	--
1,2,3,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.133 U	0.962 UJ	--	--
2,3,4,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.137 U	0.459 UJ	--	--
2,3,4,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.124 U	0.808 UJ	--	--
2,3,7,8-TCDD	NV	4.4	12	16	170	4800	24000	130000	--	--	0.15 U	2.17 UJ	--	--
2,3,7,8-TCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.238 U	3.84 UJ	--	--
OCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	23.2	11.6 UJK	--	--
OCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.787 J	1.24 UJ	--	--
Total HpCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	5.7	2.34 UJK	--	--
Total HpCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	1.28 JK	0.964 UJK	--	--
Total HxCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.539 UJK	1.44 UJ	--	--
Total HxCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.741 UJ	0.452 UJ	--	--
Total PeCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0889 U	1.11 UJ	--	--
Total PeCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.677 UJK	0.303 UJ	--	--
Total TCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.15 U	2.17 UJ	--	--
Total TCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	1.47 UK	3.84 UJ	--	--
Dioxin TEQ (ND = 0.5) <sup>a</sup>	NV	4.4	12	16	170	4800	24000	130000	--	--	0.242 J	11.6 UJ	--	--
<b>Organochlorine Pesticides (mg/kg)</b>														
4,4'-DDD	NV	0.021	6.6	12	94	2600	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00233 U	--	--
4,4'-DDE	NV	0.021	4.5	8.2	66	1800	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00233 U	--	--
4,4'-DDT	NV	0.021	4.6	8.5	66	1800	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00524 U	--	--
Aldrin	NV	0.011	0.08	0.13	1.1	30	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00117 U	--	--
alpha-BHC	NV	0.07	0.21	0.36	3	83	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00117 U	--	--
alpha-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00117 U	--	--
beta-BHC	NV	0.27	NV	NV	NV	NV	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00233 U	--	--
beta-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00233 U	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP14 GP14-S-3.0 12/14/2017 3	GP14 GP14-S-8.0 12/14/2017 8	GP15 GP15-S-3.0 12/14/2017 3	GP15 GP15-S-8.0 12/14/2017 8	GP16 GP16-S-2.5 12/11/2017 2.5	GP16 GP16-S-8.0 12/11/2017 8
Chlordane (Technical)	NV	1.3	NV	NV	NV	NV	NV	NV	0.0319 U	0.067 U	0.0309 U	0.035 U	--	--
delta-BHC	NV	NV	NV	NV	NV	NV	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00117 U	--	--
Dieldrin	NV	0.0049	0.085	0.14	1.2	33	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00233 U	--	--
Endosulfan I	NV	NV	760	4900	1600	45000	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00117 U	--	--
Endosulfan II (beta)	NV	NV	760	4900	1600	45000	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00233 U	--	--
Endosulfan sulfate	NV	NV	NV	NV	NV	NV	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00233 U	--	--
Endrin	NV	0.04	38	250	80	2200	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00233 U	--	--
Endrin aldehyde	NV	NV	NV	NV	NV	NV	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00268 U	--	--
Endrin ketone	NV	NV	NV	NV	NV	NV	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00291 U	--	--
Heptachlor	NV	0.1	0.28	0.45	4	110	42	230	0.00106 U	0.00223 U	0.00103 U	0.00117 U	--	--
Heptachlor epoxide	NV	0.053	0.14	0.24	2	56	66	NV	0.00106 U	0.00223 U	0.00103 U	0.00117 U	--	--
Lindane	NV	0.38	1.2	2.1	17	470	NV	NV	0.00106 U	0.00223 U	0.00103 U	0.00117 U	--	--
Methoxychlor	NV	310	NV	NV	NV	NV	NV	NV	0.00319 U	0.0067 U	0.00309 U	0.00699 U	--	--
Toxaphene	NV	0.44	1.2	2.1	17	470	NV	NV	0.0319 U	0.067 U	0.0309 U	0.035 U	--	--
<b>PCBs (mg/kg)</b>														
Aroclor 1016	NV	NV	NV	NV	NV	NV	NV	NV	0.00225 U	0.00219 U	0.00202 U	0.00214 U	--	--
Aroclor 1221	NV	NV	NV	NV	NV	NV	NV	NV	0.00225 U	0.00219 U	0.00202 U	0.00214 U	--	--
Aroclor 1232	NV	NV	NV	NV	NV	NV	NV	NV	0.00225 U	0.00219 U	0.00202 U	0.00214 U	--	--
Aroclor 1242	NV	NV	NV	NV	NV	NV	NV	NV	0.00225 U	0.00219 U	0.00202 U	0.00214 U	--	--
Aroclor 1248	NV	NV	NV	NV	NV	NV	NV	NV	0.00225 U	0.00219 U	0.00202 U	0.00214 U	--	--
Aroclor 1254	NV	NV	NV	NV	NV	NV	NV	NV	0.00225 U	0.00219 U	0.00202 U	0.00214 U	--	--
Aroclor 1260	NV	NV	NV	NV	NV	NV	NV	NV	0.00225 U	0.00219 U	0.00202 U	0.00214 U	--	--
Aroclor 1262	NV	NV	NV	NV	NV	NV	NV	NV	0.00225 U	0.00219 U	0.00202 U	0.00214 U	--	--
Aroclor 1268	NV	NV	NV	NV	NV	NV	NV	NV	0.00225 U	0.00219 U	0.00202 U	0.00214 U	--	--
Total PCBs (ND = 0) <sup>b</sup>	NV	0.2	0.33	0.59	4.9	140	NV	NV	0.00225 U	0.00219 U	0.00202 U	0.00214 U	--	--
<b>VOCs (mg/kg)</b>														
1,1,1,2-Tetrachloroethane	NV	0.0156	NV	NV	NV	NV	NV	NV	--	--	0.0146 U	0.0158 U	--	--
1,1,1-Trichloroethane	NV	400	110000	870000	470000	NV	NV	NV	--	--	0.0146 U	0.0158 U	--	--
1,1,2,2-Tetrachloroethane	NV	0.0024	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
1,1,2-Trichloroethane	NV	0.0046	6.3	26	54	1500	0.38	4.2	--	--	0.0146 U	0.0158 U	--	--
1,1-Dichloroethane	NV	0.037	190	260	3200	89000	1.1	5.9	--	--	0.0146 U	0.0158 U	--	--
1,1-Dichloroethene	NV	11	3500	29000	13000	370000	54	680	--	--	0.0146 U	0.0158 U	--	--
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
1,2,3-Trichlorobenzene	NV	20	NV	NV	NV	NV	NV	NV	--	--	0.146 U	0.158 U	--	--
1,2,3-Trichloropropane	NV	0.005	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	--	--	0.146 U	0.158 U	--	--
1,2,4-Trimethylbenzene	NV	16	220	2000	2000	54000	16	210	--	--	0.0292 U	0.0316 U	--	--
1,2-Dibromo-3-chloropropane	NV	0.000012	NV	NV	NV	NV	NV	NV	--	--	0.146 U	0.158 U	--	--
1,2-Dibromoethane	NV	0.00012	0.53	0.73	9	250	0.028	0.16	--	--	0.0292 U	0.0316 U	--	--
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	--	--	0.0146 U	0.0158 U	--	--
1,2-Dichloroethane	NV	0.0014	12	16	200	5600	0.18	1	--	--	0.0146 U	0.0158 U	--	--
1,2-Dichloropropane	NV	0.009	NV	NV	NV	NV	NV	NV	--	--	0.0146 U	0.0158 U	--	--
1,3,5-Trimethylbenzene	NV	92	1600	12000	3500	98000	NV	NV	--	--	0.0292 U	0.0316 U	--	--
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0146 U	0.0158 U	--	--
1,3-Dichloropropane	NV	7.62	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	--	--	0.0146 U	0.0158 U	--	--
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
2-Butanone	NV	27.48	NV	NV	NV	NV	NV	NV	--	--	0.292 U	0.316 U	--	--
2-Chlorotoluene	NV	21.66	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP14 GP14-S-3.0 12/14/2017 3	GP14 GP14-S-8.0 12/14/2017 8	GP15 GP15-S-3.0 12/14/2017 3	GP15 GP15-S-8.0 12/14/2017 8	GP16 GP16-S-2.5 12/11/2017 2.5	GP16 GP16-S-8.0 12/11/2017 8
2-Hexanone	NV	0.2982	NV	NV	NV	NV	NV	NV	--	--	0.292 U	0.316 U	--	--
4-Chlorotoluene	NV	22.5	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
4-Methyl-2-pentanone	NV	8.04	NV	NV	NV	NV	NV	NV	--	--	0.292 U	0.316 U	--	--
Acetone	NV	59.52	NV	NV	NV	NV	NV	NV	--	--	0.584 U	0.633 U	--	--
Acrylonitrile	NV	0.00029	2.5	4	40	1100	0.19	1	--	--	0.0584 U	0.0633 U	--	--
Benzene	NV	0.0093	24	37	380	11000	0.38	2.1	--	--	0.00584 U	0.00633 U	--	--
Bromobenzene	NV	4.068	NV	NV	NV	NV	NV	NV	--	--	0.0146 U	0.0158 U	--	--
Bromodichloromethane	NV	0.0025	12	15	230	6300	0.1	0.53	--	--	0.0292 U	0.0316 U	--	--
Bromoform	NV	0.084	170	260	2700	74000	19	110	--	--	0.0584 U	0.0633 U	--	--
Bromomethane	NV	0.098	92	750	370	10000	1.3	17	--	--	0.584 U	0.633 U	--	--
Carbon disulfide	NV	11.64	NV	NV	NV	NV	NV	NV	--	--	0.292 U	0.316 U	--	--
Carbon tetrachloride	NV	0.028	21	34	320	8900	0.28	1.6	--	--	0.0292 U	0.0316 U	--	--
Chlorobenzene	NV	6.5	1100	8700	4700	130000	77	NV	--	--	0.0146 U	0.0158 U	--	--
Chlorobromomethane	NV	0.936	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
Chloroethane	NV	320	320000	NV	NV	NV	NV	NV	--	--	0.292 UJ	0.316 UJ	--	--
Chloroform	NV	0.0033	22	26	410	11000	0.074	0.41	--	--	0.0292 U	0.0316 U	--	--
Chloromethane	NV	2.2	2900	25000	25000	700000	24	300	--	--	0.146 U	0.158 U	--	--
cis-1,2-Dichloroethene	NV	1.2	310	2300	710	20000	NV	NV	--	--	0.0146 U	0.0158 U	--	--
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
Dibromochloromethane	NV	0.0033	12	17	210	5800	0.53	2.9	--	--	0.0584 U	0.0633 U	--	--
Dibromomethane	NV	0.0876	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
Dichlorodifluoromethane	NV	94	NV	NV	NV	NV	NV	NV	--	--	0.0584 U	0.0633 U	--	--
Ethylbenzene	NV	0.16	110	150	1700	49000	3	17	--	--	0.0146 U	0.0158 U	--	--
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	--	--	0.0584 U	0.0633 U	--	--
Isopropylbenzene	NV	85.2	7000	57000	27000	750000	NV	NV	--	--	0.0292 U	0.0316 U	--	--
m,p-Xylene	NV	25	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
Methyl tert-butyl ether	NV	0.092	730	1100	12000	320000	20	110	--	--	0.0292 U	0.0316 U	--	--
Methylene chloride	NV	0.038	170	1600	2100	58000	48	950	--	--	0.146 U	0.158 U	--	--
Naphthalene	NV	0.087	25	23	580	16000	15	83	--	--	0.0584 U	1.31	--	--
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0146 U	0.0158 U	--	--
o-Xylene	NV	1	NV	NV	NV	NV	NV	NV	--	--	0.0146 U	0.0158 U	--	--
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
Styrene	NV	300	16000	130000	56000	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
Tetrachloroethene	NV	2.4	540	1000	1800	50000	6.6	36	--	--	0.0146 U	0.0158 U	--	--
Toluene	NV	200	12000	88000	28000	770000	NV	NV	--	--	0.0292 U	0.0316 U	--	--
trans-1,2-dichloroethene	NV	2.5	3100	23000	7100	200000	NV	NV	--	--	0.0146 U	0.0158 U	--	--
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0292 U	0.0316 U	--	--
Trichloroethene	NV	0.02	17	51	470	13000	0.26	2.3	--	--	0.0146 U	0.0158 U	--	--
Trichlorofluoromethane	NV	190	15000	130000	69000	NV	190	NV	--	--	0.0584 UJ	0.0633 UJ	--	--
Vinyl chloride	NV	0.00051	0.8	4.4	34	950	0.053	2.2	--	--	0.0146 U	0.0158 U	--	--
Xylenes, Total <sup>c</sup>	NV	NV	2900	25000	20000	560000	260	NV	--	--	0.0292 U	0.0316 U	--	--
<b>SVOCs (mg/kg)</b>														
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	--	--	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP14 GP14-S-3.0 12/14/2017 3	GP14 GP14-S-8.0 12/14/2017 8	GP15 GP15-S-3.0 12/14/2017 3	GP15 GP15-S-8.0 12/14/2017 8	GP16 GP16-S-2.5 12/11/2017 2.5	GP16 GP16-S-8.0 12/11/2017 8
1-Methylnaphthalene	NV	0.738	NV	NV	NV	NV	NV	NV	0.00306 U	0.0123 U	0.00408 J	8.11	0.00309 U	0.0131 U
2,4,5-Trichlorophenol	NV	4	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4,6-Trichlorophenol	NV	1.9	120	210	270	7400	NV	NV	--	--	--	--	--	--
2,4-Dichlorophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dimethylphenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrotoluene	NV	0.0354	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,6-Dinitrotoluene	NV	4.2	0.9	1.5	13	350	NV	NV	--	--	--	--	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Chlorophenol	NV	60	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Methylnaphthalene	NV	310	NV	NV	NV	NV	NV	NV	0.00306 U	0.0123 U	0.00746 U	15.1	0.00309 U	0.0131 U
2-Methylphenol	NV	50	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Nitroaniline	NV	5.646	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
3,3-Dichlorobenzidine	NV	0.028	3	5.1	42	1200	NV	NV	--	--	--	--	--	--
3-Nitroaniline	NV	70	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	NV	0.2766	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chloroaniline	NV	0.012	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Methylphenol	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitroaniline	NV	0.1218	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Acenaphthene	NV	29	9400	70000	21000	590000	NV	NV	0.00152 U	0.00615 U	0.00776	15.4	0.00154 U	0.00654 U
Acenaphthylene	NV	NV	NV	NV	NV	NV	NV	NV	0.00153 J	0.00615 U	0.00136 U	0.237 U	0.00154 U	0.00654 U
Aniline	NV	0.3036	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Anthracene	NV	29	47000	350000	110000	NV	NV	NV	0.00152 U	0.00615 U	0.00578	8.18	0.00154 U	0.00654 U
Benzo(a)anthracene	NV	0.15	0.34	2.9	24	660	NV	NV	0.00339 J	0.00615 U	0.00571 J	2.06	0.00154 U	0.00654 U
Benzo(a)pyrene	NV	0.015	0.034	0.29	2.4	67	NV	NV	0.00614	0.00924 U	0.00518	0.5	0.00231 U	0.00983 U
Benzo(b)fluoranthene	NV	0.15	0.34	2.9	24	670	NV	NV	0.0059 J	0.00924 U	0.00642 J	0.807 J	0.00231 U	0.00983 U
Benzo(ghi)perylene	NV	NV	NV	NV	NV	NV	NV	NV	0.00591	0.00615 U	0.0035	0.107 J	0.00154 U	0.00654 U
Benzo(k)fluoranthene	NV	1.1	3.4	29	240	6700	NV	NV	0.00229 U	0.00924 U	0.00205 U	0.252 J	0.00231 U	0.00983 U
Benzoic acid	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Benzyl alcohol	NV	16.02	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	NV	0.402	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethyl)ether	NV	0.0001	0.96	1.3	16	450	1.2	6.9	--	--	--	--	--	--
Bis(2-chloroisopropyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	NV	4.5	97	160	1300	37000	NV	NV	--	--	--	--	--	--
Butylbenzylphthalate	NV	260	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Chrysene	NV	14	34	290	2400	67000	NV	NV	0.00308 J	0.00615 U	0.00583 J	1.86	0.00154 U	0.00654 U
Dibenzo(a,h)anthracene	NV	0.015	0.034	0.29	2.4	67	NV	NV	0.00152 U	0.00615 U	0.00136 U	0.0631 U	0.00154 U	0.00654 U
Dibenzofuran	NV	0.002	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Diethyl phthalate	NV	100	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dimethyl phthalate	NV	200	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Di-n-butyl phthalate	NV	0.45	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Di-n-octyl phthalate	NV	610	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Fluoranthene	NV	29	4800	30000	10000	280000	NV	NV	0.00373	0.00615 U	0.0201	13.1	0.00154 U	0.00654 U
Fluorene	NV	29	6300	47000	14000	390000	NV	NV	0.00152 U	0.00615 U	0.00991	15.5	0.00154 U	0.00654 U

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP14 GP14-S-3.0 12/14/2017 3	GP14 GP14-S-8.0 12/14/2017 8	GP15 GP15-S-3.0 12/14/2017 3	GP15 GP15-S-8.0 12/14/2017 8	GP16 GP16-S-2.5 12/11/2017 2.5	GP16 GP16-S-8.0 12/11/2017 8
Hexachlorobenzene	NV	0.26	0.67	0.93	11	320	2.4	13	--	--	--	--	--	--
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachlorocyclopentadiene	NV	10	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachloroethane	NV	0.51	24	32	180	5100	1.4	7.6	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	NV	0.15	0.34	2.9	24	670	NV	NV	0.0049	0.00615 U	0.0036	0.148	0.00154 U	0.00654 U
Isophorone	NV	1.596	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Naphthalene	NV	0.087	25	23	580	16000	15	83	0.00306 U	0.0123 U	0.0189	34.6	0.00309 U	0.0131 U
Nitrobenzene	NV	0.0084	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
N-Nitrosodimethylamine	NV	0.0023	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
N-Nitrosodiphenylamine	NV	4.5	280	470	3800	110000	NV	NV	--	--	--	--	--	--
N-Nitrosodipropylamine	NV	0.0012	0.19	0.33	2.7	74	NV	NV	--	--	--	--	--	--
Pentachlorophenol	NV	0.14	2.6	4	34	960	NV	NV	--	--	--	--	--	--
Phenanthrene	NV	NV	NV	NV	NV	NV	NV	NV	0.00152 U	0.00615 U	0.0377	36.9	0.00154 U	0.00654 U
Phenol	NV	30	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Pyrene	NV	1700	3600	23000	7500	210000	NV	NV	0.00563	0.00615 U	0.0148	8.7	0.00154 U	0.00654 U
cPAH TEQ (ND = 0.5)	NV	NV	0.034	0.29	2.4	67	NV	NV	0.00833 J	0.00924 U	0.00745 J	0.837 J	0.00231 U	0.00983 U
<b>Hydrocarbon Identification (Presence/Absence)</b>														
Gasoline-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--
Diesel-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--
Lube Oil-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--
<b>TPH (mg/kg)</b>														
Gasoline-range Organics	NV	NV	2500	20000	9700	NV	94	NV	3.21 U	3.3 U	2.92 U	5.19 J	3.33 U	3.64 U
Diesel-range Organics	NV	NV	2200	14000	4600	NV	NV	NV	11.3 U	11.6 U	10.4 U	303	11.5 U	12.2 U
Lube Oil-range Organics	NV	NV	2200 <sup>d</sup>	14000 <sup>d</sup>	4600 <sup>d</sup>	NV	NV	NV	22.6 U	115	20.9 U	42.1 J	23 U	30.5 J



Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP17 GP17-S-2.5 12/11/2017 2.5	GP17 GP17-S-8.0 12/11/2017 8	GP18 GP18-S-2.5 12/11/2017 2.5	F16-01 F16-01-3-4 9/7/2012 3-4	F16-01 F16-01-15.5-16.5 9/7/2012 15.5-16.5	F18-01 F18-01-0-0.5 9/15/2012 0-0.5
<b>Metals (mg/kg)</b>														
Arsenic	8.8	8.8	1	1.9	15	420	NV	NV	2.17	2.63	2.96	2	0.9	50.2
Barium	790	790	31000	220000	69000	NV	NV	NV	106	127	113	--	--	--
Cadmium	0.63	0.63	160	1100	350	9700	NV	NV	0.273	0.233 J	0.234 J	0.09	0.19	0.24
Chromium	76	76	NV	NV	NV	NV	NV	NV	141	272	16.1	15.2 J+	25.8 J+	26.2
Copper	34	34	6200	47000	14000	390000	NV	NV	--	--	--	20.9	32.7	31.9
Hexavalent Chromium	NV	NV	0.67	6.3	49	1400	NV	NV	0.5	1.6	0.4	--	--	--
Lead	79	28	400	800	800	800	NV	NV	48.3	20.3	29.7	71.2	28.3	53.2
Mercury	0.23	0.23	47	350	110	2900	NV	NV	0.058 J	0.0502 J	0.267	--	--	--
Nickel	47	47	3100	22000	7000	190000	NV	NV	--	--	--	20.1	16.5	21.2
Selenium	0.71	0.71	NV	NV	NV	NV	NV	NV	0.621 U	0.614 U	0.616 U	--	--	--
Silver	0.82	4.2	780	5800	1800	49000	NV	NV	0.124 U	0.123 U	0.123 U	--	--	--
Zinc	180	180	NV	NV	NV	NV	NV	NV	--	--	--	64.6	107	118
<b>Dioxins/Furans (pg/g)</b>														
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,4,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,4,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,6,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,7,8,9-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,7,8,9-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,7,8-PeCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,3,4,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,3,4,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,3,7,8-TCDD	NV	4.4	12	16	170	4800	24000	130000	--	--	--	--	--	--
2,3,7,8-TCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
OCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
OCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total HpCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total HpCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total HxCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total HxCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total PeCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total PeCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total TCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total TCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dioxin TEQ (ND = 0.5) <sup>a</sup>	NV	4.4	12	16	170	4800	24000	130000	--	--	--	--	--	--
<b>Organochlorine Pesticides (mg/kg)</b>														
4,4'-DDD	NV	0.021	6.6	12	94	2600	NV	NV	--	--	--	--	--	--
4,4'-DDE	NV	0.021	4.5	8.2	66	1800	NV	NV	--	--	--	--	--	--
4,4'-DDT	NV	0.021	4.6	8.5	66	1800	NV	NV	--	--	--	--	--	--
Aldrin	NV	0.011	0.08	0.13	1.1	30	NV	NV	--	--	--	--	--	--
alpha-BHC	NV	0.07	0.21	0.36	3	83	NV	NV	--	--	--	--	--	--
alpha-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
beta-BHC	NV	0.27	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
beta-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP17 GP17-S-2.5 12/11/2017 2.5	GP17 GP17-S-8.0 12/11/2017 8	GP18 GP18-S-2.5 12/11/2017 2.5	F16-01 F16-01-3-4 9/7/2012 3-4	F16-01 F16-01-15.5-16.5 9/7/2012 15.5-16.5	F18-01 F18-01-0-0.5 9/15/2012 0-0.5
Chlordane (Technical)	NV	1.3	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
delta-BHC	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dieldrin	NV	0.0049	0.085	0.14	1.2	33	NV	NV	--	--	--	--	--	--
Endosulfan I	NV	NV	760	4900	1600	45000	NV	NV	--	--	--	--	--	--
Endosulfan II (beta)	NV	NV	760	4900	1600	45000	NV	NV	--	--	--	--	--	--
Endosulfan sulfate	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Endrin	NV	0.04	38	250	80	2200	NV	NV	--	--	--	--	--	--
Endrin aldehyde	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Endrin ketone	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Heptachlor	NV	0.1	0.28	0.45	4	110	42	230	--	--	--	--	--	--
Heptachlor epoxide	NV	0.053	0.14	0.24	2	56	66	NV	--	--	--	--	--	--
Lindane	NV	0.38	1.2	2.1	17	470	NV	NV	--	--	--	--	--	--
Methoxychlor	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Toxaphene	NV	0.44	1.2	2.1	17	470	NV	NV	--	--	--	--	--	--
<b>PCBs (mg/kg)</b>														
Aroclor 1016	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	0.054 U
Aroclor 1221	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	0.11 U
Aroclor 1232	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	0.054 U
Aroclor 1242	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	0.054 U
Aroclor 1248	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	0.054 U
Aroclor 1254	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	0.054 U
Aroclor 1260	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	0.054 U
Aroclor 1262	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Aroclor 1268	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total PCBs (ND = 0) <sup>b</sup>	NV	0.2	0.33	0.59	4.9	140	NV	NV	--	--	--	--	--	0.11 U
<b>VOCs (mg/kg)</b>														
1,1,1,2-Tetrachloroethane	NV	0.0156	NV	NV	NV	NV	NV	NV	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
1,1,1-Trichloroethane	NV	400	110000	870000	470000	NV	NV	NV	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
1,1,2,2-Tetrachloroethane	NV	0.0024	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
1,1,2-Trichloroethane	NV	0.0046	6.3	26	54	1500	0.38	4.2	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
1,1-Dichloroethane	NV	0.037	190	260	3200	89000	1.1	5.9	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
1,1-Dichloroethene	NV	11	3500	29000	13000	370000	54	680	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
1,2,3-Trichlorobenzene	NV	20	NV	NV	NV	NV	NV	NV	0.148 U	0.155 U	0.156 U	0.023 U	0.026 U	0.022 U
1,2,3-Trichloropropane	NV	0.005	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	0.148 U	0.155 U	0.156 U	0.023 U	0.026 U	0.022 U
1,2,4-Trimethylbenzene	NV	16	220	2000	2000	54000	16	210	0.0296 U	0.031 U	0.0312 U	0.023 U	0.026 U	0.022 U
1,2-Dibromo-3-chloropropane	NV	0.000012	NV	NV	NV	NV	NV	NV	0.148 U	0.155 U	0.156 U	0.023 U	0.026 U	0.022 U
1,2-Dibromoethane	NV	0.00012	0.53	0.73	9	250	0.028	0.16	0.0296 U	0.031 U	0.0312 U	0.023 U	0.026 U	0.022 U
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
1,2-Dichloroethane	NV	0.0014	12	16	200	5600	0.18	1	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
1,2-Dichloropropane	NV	0.009	NV	NV	NV	NV	NV	NV	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
1,3,5-Trimethylbenzene	NV	92	1600	12000	3500	98000	NV	NV	0.0296 U	0.031 U	0.0312 U	0.023 U	0.026 U	0.022 U
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
1,3-Dichloropropane	NV	7.62	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
2-Butanone	NV	27.48	NV	NV	NV	NV	NV	NV	0.296 U	0.31 U	0.312 U	0.023 U	0.026 U	0.022 U
2-Chlorotoluene	NV	21.66	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.023 U	0.026 U	0.022 U

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP17 GP17-S-2.5 12/11/2017 2.5	GP17 GP17-S-8.0 12/11/2017 8	GP18 GP18-S-2.5 12/11/2017 2.5	F16-01 F16-01-3-4 9/7/2012 3-4	F16-01 F16-01-15.5-16.5 9/7/2012 15.5-16.5	F18-01 F18-01-0-0.5 9/15/2012 0-0.5
2-Hexanone	NV	0.2982	NV	NV	NV	NV	NV	NV	0.592 UJ	0.619 UJ	0.625 UJ	0.023 U	0.026 U	0.022 U
4-Chlorotoluene	NV	22.5	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.023 U	0.026 U	0.022 U
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.023 U	0.026 U	0.022 U
4-Methyl-2-pentanone	NV	8.04	NV	NV	NV	NV	NV	NV	0.592 U	0.619 U	0.625 U	0.023 U	0.026 U	0.022 U
Acetone	NV	59.52	NV	NV	NV	NV	NV	NV	0.592 U	0.619 U	0.625 U	0.023 U	<b>0.073</b>	0.022 U
Acrylonitrile	NV	0.00029	2.5	4	40	1100	0.19	1	0.0592 U	0.0619 U	0.0625 U	--	--	--
Benzene	NV	0.0093	24	37	380	11000	0.38	2.1	0.00592 U	0.00619 U	0.00625 U	0.0056 U	0.0064 U	0.0053 U
Bromobenzene	NV	4.068	NV	NV	NV	NV	NV	NV	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
Bromodichloromethane	NV	0.0025	12	15	230	6300	0.1	0.53	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
Bromoform	NV	0.084	170	260	2700	74000	19	110	0.0592 U	0.0619 U	0.0625 U	0.0056 U	0.0064 U	0.0053 U
Bromomethane	NV	0.098	92	750	370	10000	1.3	17	0.592 U	0.619 U	0.625 U	0.0056 U	0.0064 U	0.0053 U
Carbon disulfide	NV	11.64	NV	NV	NV	NV	NV	NV	0.296 U	0.31 U	0.312 U	0.0056 U	0.0064 U	0.0053 U
Carbon tetrachloride	NV	0.028	21	34	320	8900	0.28	1.6	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
Chlorobenzene	NV	6.5	1100	8700	4700	130000	77	NV	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
Chlorobromomethane	NV	0.936	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
Chloroethane	NV	320	320000	NV	NV	NV	NV	NV	0.296 U	0.31 U	0.312 U	0.0056 U	0.0064 U	0.0053 U
Chloroform	NV	0.0033	22	26	410	11000	0.074	0.41	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
Chloromethane	NV	2.2	2900	25000	25000	700000	24	300	0.148 U	0.155 U	0.156 U	0.0056 U	0.0064 U	0.0053 U
cis-1,2-Dichloroethene	NV	1.2	310	2300	710	20000	NV	NV	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
Dibromochloromethane	NV	0.0033	12	17	210	5800	0.53	2.9	0.0592 U	0.0619 U	0.0625 U	0.0056 U	0.0064 U	0.0053 U
Dibromomethane	NV	0.0876	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
Dichlorodifluoromethane	NV	94	NV	NV	NV	NV	NV	NV	0.0592 U	0.0619 U	0.0625 U	0.0056 U	0.0064 U	0.0053 U
Ethylbenzene	NV	0.16	110	150	1700	49000	3	17	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	0.0592 U	0.0619 U	0.0625 U	0.023 U	0.026 U	0.022 U
Isopropylbenzene	NV	85.2	7000	57000	27000	750000	NV	NV	0.0296 U	0.031 U	0.0312 U	0.023 U	0.026 U	0.022 U
m,p-Xylene	NV	25	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
Methyl tert-butyl ether	NV	0.092	730	1100	12000	320000	20	110	0.0296 U	0.031 U	0.0312 U	--	--	--
Methylene chloride	NV	0.038	170	1600	2100	58000	48	950	0.148 U	0.155 U	0.156 U	0.012 U	0.013 U	0.011 U
Naphthalene	NV	0.087	25	23	580	16000	15	83	0.0592 U	0.0619 U	0.0625 U	0.023 U	0.026 U	0.022 U
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.023 U	0.026 U	0.022 U
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0148 U	0.0155 U	0.0156 U	0.023 U	0.026 U	0.022 U
o-Xylene	NV	1	NV	NV	NV	NV	NV	NV	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.023 U	0.026 U	0.022 U
Styrene	NV	300	16000	130000	56000	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.023 U	0.026 U	0.022 U
Tetrachloroethene	NV	2.4	540	1000	1800	50000	6.6	36	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
Toluene	NV	200	12000	88000	28000	770000	NV	NV	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
trans-1,2-dichloroethene	NV	2.5	3100	23000	7100	200000	NV	NV	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
Trichloroethene	NV	0.02	17	51	470	13000	0.26	2.3	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
Trichlorofluoromethane	NV	190	15000	130000	69000	NV	190	NV	0.0592 U	0.0619 U	0.0625 U	0.0056 U	0.0064 U	0.0053 U
Vinyl chloride	NV	0.00051	0.8	4.4	34	950	0.053	2.2	0.0148 U	0.0155 U	0.0156 U	0.0056 U	0.0064 U	0.0053 U
Xylenes, Total <sup>c</sup>	NV	NV	2900	25000	20000	560000	260	NV	0.0296 U	0.031 U	0.0312 U	0.0056 U	0.0064 U	0.0053 U
<b>SVOCs (mg/kg)</b>														
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	--	--	--	2.3 U	2.6 U	--
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	--	--	--	2.3 U	2.6 U	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP17 GP17-S-2.5 12/11/2017 2.5	GP17 GP17-S-8.0 12/11/2017 8	GP18 GP18-S-2.5 12/11/2017 2.5	F16-01 F16-01-3-4 9/7/2012 3-4	F16-01 F16-01-15.5-16.5 9/7/2012 15.5-16.5	F18-01 F18-01-0-0.5 9/15/2012 0-0.5
1-Methylnaphthalene	NV	0.738	NV	NV	NV	NV	NV	NV	0.0117 U	0.0124 U	0.0125 U	--	--	--
2,4,5-Trichlorophenol	NV	4	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
2,4,6-Trichlorophenol	NV	1.9	120	210	270	7400	NV	NV	--	--	--	2.3 U	2.6 U	--
2,4-Dichlorophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
2,4-Dimethylphenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
2,4-Dinitrophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	14 U	16 U	--
2,4-Dinitrotoluene	NV	0.0354	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
2,6-Dinitrotoluene	NV	4.2	0.9	1.5	13	350	NV	NV	--	--	--	2.3 U	2.6 U	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
2-Chlorophenol	NV	60	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
2-Methylnaphthalene	NV	310	NV	NV	NV	NV	NV	NV	0.0117 U	0.0124 U	0.0125 U	2.3 U	2.6 U	--
2-Methylphenol	NV	50	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
2-Nitroaniline	NV	5.646	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
2-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
3,3-Dichlorobenzidine	NV	0.028	3	5.1	42	1200	NV	NV	--	--	--	2.3 U	2.6 U	--
3-Nitroaniline	NV	70	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
4,6-Dinitro-2-methylphenol	NV	0.2766	NV	NV	NV	NV	NV	NV	--	--	--	14 U	16 U	--
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
4-Chloroaniline	NV	0.012	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
4-Methylphenol	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
4-Nitroaniline	NV	0.1218	NV	NV	NV	NV	NV	NV	--	--	--	14 U	16 U	--
4-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	14 U	16 U	--
Acenaphthene	NV	29	9400	70000	21000	590000	NV	NV	0.00583 U	0.0062 U	0.00621 U	2.3 U	2.6 U	--
Acenaphthylene	NV	NV	NV	NV	NV	NV	NV	NV	0.00853 J	0.0062 U	0.00621 U	2.3 U	2.6 U	--
Aniline	NV	0.3036	NV	NV	NV	NV	NV	NV	--	--	--	6.7 U	7.8 U	--
Anthracene	NV	29	47000	350000	110000	NV	NV	NV	0.00608 J	0.0062 U	0.00621 U	2.3 U	2.6 U	--
Benzo(a)anthracene	NV	0.15	0.34	2.9	24	660	NV	NV	0.0467	0.0062 U	0.0332	2.3 U	2.6 U	--
Benzo(a)pyrene	NV	0.015	0.034	0.29	2.4	67	NV	NV	0.0612	0.00948 J	0.0441	2.3 U	2.6 U	--
Benzo(b)fluoranthene	NV	0.15	0.34	2.9	24	670	NV	NV	0.0701 J	0.00932 U	0.0476 J	2.3 U	2.6 U	--
Benzo(ghi)perylene	NV	NV	NV	NV	NV	NV	NV	NV	0.0386	0.0062 U	0.0294	2.3 U	2.6 U	--
Benzo(k)fluoranthene	NV	1.1	3.4	29	240	6700	NV	NV	0.0231 J	0.00932 U	0.0202 J	2.3 U	2.6 U	--
Benzoic acid	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	14 U	16 U	--
Benzyl alcohol	NV	16.02	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
Bis(2-chloroethoxy)methane	NV	0.402	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
Bis(2-chloroethyl)ether	NV	0.0001	0.96	1.3	16	450	1.2	6.9	--	--	--	2.3 U	2.6 U	--
Bis(2-chloroisopropyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
Bis(2-ethylhexyl)phthalate	NV	4.5	97	160	1300	37000	NV	NV	--	--	--	2.3 U	2.6 U	--
Butylbenzylphthalate	NV	260	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
Chrysene	NV	14	34	290	2400	67000	NV	NV	0.0541	0.0062 U	0.0332	2.3 U	2.6 U	--
Dibenzo(a,h)anthracene	NV	0.015	0.034	0.29	2.4	67	NV	NV	0.00815 J	0.0062 U	0.00646 J	2.3 U	2.6 U	--
Dibenzofuran	NV	0.002	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
Diethyl phthalate	NV	100	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
Dimethyl phthalate	NV	200	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	0.11 J	--
Di-n-butyl phthalate	NV	0.45	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
Di-n-octyl phthalate	NV	610	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
Fluoranthene	NV	29	4800	30000	10000	280000	NV	NV	0.0809	0.0062 U	0.0541	0.091 J	2.6 U	--
Fluorene	NV	29	6300	47000	14000	390000	NV	NV	0.00583 U	0.0062 U	0.00621 U	2.3 U	2.6 U	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP17 GP17-S-2.5 12/11/2017 2.5	GP17 GP17-S-8.0 12/11/2017 8	GP18 GP18-S-2.5 12/11/2017 2.5	F16-01 F16-01-3-4 9/7/2012 3-4	F16-01 F16-01-15.5-16.5 9/7/2012 15.5-16.5	F18-01 F18-01-0-0.5 9/15/2012 0-0.5
Hexachlorobenzene	NV	0.26	0.67	0.93	11	320	2.4	13	--	--	--	2.3 U	2.6 U	--
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
Hexachlorocyclopentadiene	NV	10	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
Hexachloroethane	NV	0.51	24	32	180	5100	1.4	7.6	--	--	--	2.3 U	2.6 U	--
Indeno(1,2,3-cd)pyrene	NV	0.15	0.34	2.9	24	670	NV	NV	0.0378	0.0062 U	0.0284	2.3 U	2.6 U	--
Isophorone	NV	1.596	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
Naphthalene	NV	0.087	25	23	580	16000	15	83	0.0117 U	0.0124 U	0.0125 U	2.3 U	2.6 U	--
Nitrobenzene	NV	0.0084	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
N-Nitrosodimethylamine	NV	0.0023	NV	NV	NV	NV	NV	NV	--	--	--	14 U	16 U	--
N-Nitrosodiphenylamine	NV	4.5	280	470	3800	110000	NV	NV	--	--	--	2.3 U	2.6 U	--
N-Nitrosodipropylamine	NV	0.0012	0.19	0.33	2.7	74	NV	NV	--	--	--	2.3 U	2.6 U	--
Pentachlorophenol	NV	0.14	2.6	4	34	960	NV	NV	--	--	--	14 U	16 U	--
Phenanthrene	NV	NV	NV	NV	NV	NV	NV	NV	0.0205	0.0062 U	0.0153	0.085 J	2.6 U	--
Phenol	NV	30	NV	NV	NV	NV	NV	NV	--	--	--	2.3 U	2.6 U	--
Pyrene	NV	1700	3600	23000	7500	210000	NV	NV	0.0986	0.0062 U	0.0542	2.3 U	2.6 U	--
cPAH TEQ (ND = 0.5)	NV	NV	0.034	0.29	2.4	67	NV	NV	0.0851 J	0.0137 J	0.0617 J	2.3 U	2.6 U	--
<b>Hydrocarbon Identification (Presence/Absence)</b>														
Gasoline-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--
Diesel-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--
Lube Oil-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--
<b>TPH (mg/kg)</b>														
Gasoline-range Organics	NV	NV	2500	20000	9700	NV	94	NV	2.96 U	3.1 U	3.12 U	5.9 U	7.2 U	5.7 U
Diesel-range Organics	NV	NV	2200	14000	4600	NV	NV	NV	11.3 U	11.6 U	11.6 U	28 U	33 U	30 NJ
Lube Oil-range Organics	NV	NV	2200 <sup>d</sup>	14000 <sup>d</sup>	4600 <sup>d</sup>	NV	NV	NV	84.1	82.8	23.2 U	120 U	130 U	210 NJ

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	F19-01 F19-01-0.5-1.5 9/7/2012 0.5-1.5	F21-01 F21-01-0.5-2 9/7/2012 0.5-2	South Substation B3 5/2011 0-5	South Substation B4 5/2011 0-5	Transformer B5 5/2011 0.5	South Substation B6 5/2011 0.5
<b>Metals (mg/kg)</b>														
Arsenic	8.8	8.8	1	1.9	15	420	NV	NV	4.7	6.5	--	--	--	--
Barium	790	790	31000	220000	69000	NV	NV	NV	--	--	--	--	--	--
Cadmium	0.63	0.63	160	1100	350	9700	NV	NV	0.24	11.1	--	--	--	--
Chromium	76	76	NV	NV	NV	NV	NV	NV	18.8 J+	195 J+	--	--	--	--
Copper	34	34	6200	47000	14000	390000	NV	NV	45.3	225	--	--	--	--
Hexavalent Chromium	NV	NV	0.67	6.3	49	1400	NV	NV	--	--	--	--	--	--
Lead	79	28	400	800	800	800	NV	NV	38.7	1480	--	--	--	--
Mercury	0.23	0.23	47	350	110	2900	NV	NV	--	--	--	--	--	--
Nickel	47	47	3100	22000	7000	190000	NV	NV	17.6	172	--	--	--	--
Selenium	0.71	0.71	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Silver	0.82	4.2	780	5800	1800	49000	NV	NV	--	--	--	--	--	--
Zinc	180	180	NV	NV	NV	NV	NV	NV	117	3150	--	--	--	--
<b>Dioxins/Furans (pg/g)</b>														
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,4,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,4,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,6,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,7,8,9-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,7,8,9-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,7,8-PeCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,3,4,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,3,4,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,3,7,8-TCDD	NV	4.4	12	16	170	4800	24000	130000	--	--	--	--	--	--
2,3,7,8-TCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
OCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
OCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total HpCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total HpCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total HxCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total HxCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total PeCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total PeCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total TCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total TCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dioxin TEQ (ND = 0.5) <sup>a</sup>	NV	4.4	12	16	170	4800	24000	130000	--	--	--	--	--	--
<b>Organochlorine Pesticides (mg/kg)</b>														
4,4'-DDD	NV	0.021	6.6	12	94	2600	NV	NV	--	--	--	--	--	--
4,4'-DDE	NV	0.021	4.5	8.2	66	1800	NV	NV	--	--	--	--	--	--
4,4'-DDT	NV	0.021	4.6	8.5	66	1800	NV	NV	--	--	--	--	--	--
Aldrin	NV	0.011	0.08	0.13	1.1	30	NV	NV	--	--	--	--	--	--
alpha-BHC	NV	0.07	0.21	0.36	3	83	NV	NV	--	--	--	--	--	--
alpha-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
beta-BHC	NV	0.27	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
beta-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	F19-01 F19-01-0.5-1.5 9/7/2012 0.5-1.5	F21-01 F21-01-0.5-2 9/7/2012 0.5-2	South Substation B3 5/2011 0-5	South Substation B4 5/2011 0-5	Transformer B5 5/2011 0.5	South Substation B6 5/2011 0.5
Chlordane (Technical)	NV	1.3	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
delta-BHC	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dieldrin	NV	0.0049	0.085	0.14	1.2	33	NV	NV	--	--	--	--	--	--
Endosulfan I	NV	NV	760	4900	1600	45000	NV	NV	--	--	--	--	--	--
Endosulfan II (beta)	NV	NV	760	4900	1600	45000	NV	NV	--	--	--	--	--	--
Endosulfan sulfate	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Endrin	NV	0.04	38	250	80	2200	NV	NV	--	--	--	--	--	--
Endrin aldehyde	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Endrin ketone	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Heptachlor	NV	0.1	0.28	0.45	4	110	42	230	--	--	--	--	--	--
Heptachlor epoxide	NV	0.053	0.14	0.24	2	56	66	NV	--	--	--	--	--	--
Lindane	NV	0.38	1.2	2.1	17	470	NV	NV	--	--	--	--	--	--
Methoxychlor	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Toxaphene	NV	0.44	1.2	2.1	17	470	NV	NV	--	--	--	--	--	--
<b>PCBs (mg/kg)</b>														
Aroclor 1016	NV	NV	NV	NV	NV	NV	NV	NV	0.056 U	--	--	--	--	--
Aroclor 1221	NV	NV	NV	NV	NV	NV	NV	NV	0.12 U	--	--	--	--	--
Aroclor 1232	NV	NV	NV	NV	NV	NV	NV	NV	0.056 U	--	--	--	--	--
Aroclor 1242	NV	NV	NV	NV	NV	NV	NV	NV	0.056 U	--	--	--	--	--
Aroclor 1248	NV	NV	NV	NV	NV	NV	NV	NV	0.056 U	--	--	--	--	--
Aroclor 1254	NV	NV	NV	NV	NV	NV	NV	NV	0.056 U	--	--	0.03	--	--
Aroclor 1260	NV	NV	NV	NV	NV	NV	NV	NV	0.056 U	--	--	--	--	0.0375
Aroclor 1262	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Aroclor 1268	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total PCBs (ND = 0) <sup>b</sup>	NV	0.2	0.33	0.59	4.9	140	NV	NV	0.12 U	--	ND	0.03	ND	0.0375
<b>VOCs (mg/kg)</b>														
1,1,1,2-Tetrachloroethane	NV	0.0156	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
1,1,1-Trichloroethane	NV	400	110000	870000	470000	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
1,1,2,2-Tetrachloroethane	NV	0.0024	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
1,1,2-Trichloroethane	NV	0.0046	6.3	26	54	1500	0.38	4.2	0.0055 U	0.0055 U	--	--	--	--
1,1-Dichloroethane	NV	0.037	190	260	3200	89000	1.1	5.9	0.0055 U	0.0055 U	--	--	--	--
1,1-Dichloroethene	NV	11	3500	29000	13000	370000	54	680	0.0055 U	0.0055 U	--	--	--	--
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
1,2,3-Trichlorobenzene	NV	20	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
1,2,3-Trichloropropane	NV	0.005	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
1,2,4-Trimethylbenzene	NV	16	220	2000	2000	54000	16	210	0.022 U	0.022 U	--	--	--	--
1,2-Dibromo-3-chloropropane	NV	0.000012	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
1,2-Dibromoethane	NV	0.00012	0.53	0.73	9	250	0.028	0.16	0.022 U	0.022 U	--	--	--	--
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	0.0055 U	0.0055 U	--	--	--	--
1,2-Dichloroethane	NV	0.0014	12	16	200	5600	0.18	1	0.0055 U	0.0055 U	--	--	--	--
1,2-Dichloropropane	NV	0.009	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
1,3,5-Trimethylbenzene	NV	92	1600	12000	3500	98000	NV	NV	0.022 U	0.022 U	--	--	--	--
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
1,3-Dichloropropane	NV	7.62	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	0.0055 U	0.0055 U	--	--	--	--
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
2-Butanone	NV	27.48	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
2-Chlorotoluene	NV	21.66	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	F19-01 F19-01-0.5-1.5 9/7/2012 0.5-1.5	F21-01 F21-01-0.5-2 9/7/2012 0.5-2	South Substation B3 5/2011 0-5	South Substation B4 5/2011 0-5	Transformer B5 5/2011 0.5	South Substation B6 5/2011 0.5
2-Hexanone	NV	0.2982	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
4-Chlorotoluene	NV	22.5	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
4-Methyl-2-pentanone	NV	8.04	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
Acetone	NV	59.52	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
Acrylonitrile	NV	0.00029	2.5	4	40	1100	0.19	1	--	--	--	--	--	--
Benzene	NV	0.0093	24	37	380	11000	0.38	2.1	0.0055 U	0.0055 U	--	--	--	--
Bromobenzene	NV	4.068	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
Bromodichloromethane	NV	0.0025	12	15	230	6300	0.1	0.53	0.0055 U	0.0055 U	--	--	--	--
Bromoform	NV	0.084	170	260	2700	74000	19	110	0.0055 U	0.0055 U	--	--	--	--
Bromomethane	NV	0.098	92	750	370	10000	1.3	17	0.0055 U	0.0055 U	--	--	--	--
Carbon disulfide	NV	11.64	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
Carbon tetrachloride	NV	0.028	21	34	320	8900	0.28	1.6	0.0055 U	0.0055 U	--	--	--	--
Chlorobenzene	NV	6.5	1100	8700	4700	130000	77	NV	0.0055 U	0.0055 U	--	--	--	--
Chlorobromomethane	NV	0.936	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
Chloroethane	NV	320	320000	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
Chloroform	NV	0.0033	22	26	410	11000	0.074	0.41	0.0055 U	0.0055 U	--	--	--	--
Chloromethane	NV	2.2	2900	25000	25000	700000	24	300	0.0055 U	0.0055 U	--	--	--	--
cis-1,2-Dichloroethene	NV	1.2	310	2300	710	20000	NV	NV	0.0055 U	0.0055 U	--	--	--	--
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
Dibromochloromethane	NV	0.0033	12	17	210	5800	0.53	2.9	0.0055 U	0.0055 U	--	--	--	--
Dibromomethane	NV	0.0876	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
Dichlorodifluoromethane	NV	94	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
Ethylbenzene	NV	0.16	110	150	1700	49000	3	17	0.0055 U	0.0055 U	--	--	--	--
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
Isopropylbenzene	NV	85.2	7000	57000	27000	750000	NV	NV	0.022 U	0.022 U	--	--	--	--
m,p-Xylene	NV	25	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
Methyl tert-butyl ether	NV	0.092	730	1100	12000	320000	20	110	--	--	--	--	--	--
Methylene chloride	NV	0.038	170	1600	2100	58000	48	950	0.011 U	0.011 U	--	--	--	--
Naphthalene	NV	0.087	25	23	580	16000	15	83	0.022 U	0.022 U	--	--	--	--
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
o-Xylene	NV	1	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
Styrene	NV	300	16000	130000	56000	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.022 U	0.022 U	--	--	--	--
Tetrachloroethene	NV	2.4	540	1000	1800	50000	6.6	36	0.0055 U	0.0061	--	--	--	--
Toluene	NV	200	12000	88000	28000	770000	NV	NV	0.0055 U	0.0055 U	--	--	--	--
trans-1,2-dichloroethene	NV	2.5	3100	23000	7100	200000	NV	NV	0.0055 U	0.0055 U	--	--	--	--
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0055 U	--	--	--	--
Trichloroethene	NV	0.02	17	51	470	13000	0.26	2.3	0.0055 U	0.0055 U	--	--	--	--
Trichlorofluoromethane	NV	190	15000	130000	69000	NV	190	NV	0.0055 U	0.0055 U	--	--	--	--
Vinyl chloride	NV	0.00051	0.8	4.4	34	950	0.053	2.2	0.0055 U	0.0055 U	--	--	--	--
Xylenes, Total <sup>c</sup>	NV	NV	2900	25000	20000	560000	260	NV	0.0055 U	0.0055 U	--	--	--	--
<b>SVOCs (mg/kg)</b>														
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	--	--	--	--	--	--



Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	F19-01 F19-01-0.5-1.5 9/7/2012 0.5-1.5	F21-01 F21-01-0.5-2 9/7/2012 0.5-2	South Substation B3 5/2011 0-5	South Substation B4 5/2011 0-5	Transformer B5 5/2011 0.5	South Substation B6 5/2011 0.5
1-Methylnaphthalene	NV	0.738	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4,5-Trichlorophenol	NV	4	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4,6-Trichlorophenol	NV	1.9	120	210	270	7400	NV	NV	--	--	--	--	--	--
2,4-Dichlorophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dimethylphenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrotoluene	NV	0.0354	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,6-Dinitrotoluene	NV	4.2	0.9	1.5	13	350	NV	NV	--	--	--	--	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Chlorophenol	NV	60	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Methylnaphthalene	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Methylphenol	NV	50	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Nitroaniline	NV	5.646	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
3,3-Dichlorobenzidine	NV	0.028	3	5.1	42	1200	NV	NV	--	--	--	--	--	--
3-Nitroaniline	NV	70	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	NV	0.2766	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chloroaniline	NV	0.012	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Methylphenol	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitroaniline	NV	0.1218	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Acenaphthene	NV	29	9400	70000	21000	590000	NV	NV	--	--	--	--	--	--
Acenaphthylene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Aniline	NV	0.3036	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Anthracene	NV	29	47000	350000	110000	NV	NV	NV	--	--	--	--	--	--
Benzo(a)anthracene	NV	0.15	0.34	2.9	24	660	NV	NV	--	--	--	--	--	--
Benzo(a)pyrene	NV	0.015	0.034	0.29	2.4	67	NV	NV	--	--	--	--	--	--
Benzo(b)fluoranthene	NV	0.15	0.34	2.9	24	670	NV	NV	--	--	--	--	--	--
Benzo(ghi)perylene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Benzo(k)fluoranthene	NV	1.1	3.4	29	240	6700	NV	NV	--	--	--	--	--	--
Benzoic acid	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Benzyl alcohol	NV	16.02	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	NV	0.402	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethyl)ether	NV	0.0001	0.96	1.3	16	450	1.2	6.9	--	--	--	--	--	--
Bis(2-chloroisopropyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	NV	4.5	97	160	1300	37000	NV	NV	--	--	--	--	--	--
Butylbenzylphthalate	NV	260	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Chrysene	NV	14	34	290	2400	67000	NV	NV	--	--	--	--	--	--
Dibenzo(a,h)anthracene	NV	0.015	0.034	0.29	2.4	67	NV	NV	--	--	--	--	--	--
Dibenzofuran	NV	0.002	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Diethyl phthalate	NV	100	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dimethyl phthalate	NV	200	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Di-n-butyl phthalate	NV	0.45	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Di-n-octyl phthalate	NV	610	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Fluoranthene	NV	29	4800	30000	10000	280000	NV	NV	--	--	--	--	--	--
Fluorene	NV	29	6300	47000	14000	390000	NV	NV	--	--	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	F19-01 F19-01-0.5-1.5 9/7/2012 0.5-1.5	F21-01 F21-01-0.5-2 9/7/2012 0.5-2	South Substation B3 5/2011 0-5	South Substation B4 5/2011 0-5	Transformer B5 5/2011 0.5	South Substation B6 5/2011 0.5
Hexachlorobenzene	NV	0.26	0.67	0.93	11	320	2.4	13	--	--	--	--	--	--
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachlorocyclopentadiene	NV	10	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachloroethane	NV	0.51	24	32	180	5100	1.4	7.6	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	NV	0.15	0.34	2.9	24	670	NV	NV	--	--	--	--	--	--
Isophorone	NV	1.596	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Naphthalene	NV	0.087	25	23	580	16000	15	83	--	--	--	--	--	--
Nitrobenzene	NV	0.0084	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
N-Nitrosodimethylamine	NV	0.0023	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
N-Nitrosodiphenylamine	NV	4.5	280	470	3800	110000	NV	NV	--	--	--	--	--	--
N-Nitrosodipropylamine	NV	0.0012	0.19	0.33	2.7	74	NV	NV	--	--	--	--	--	--
Pentachlorophenol	NV	0.14	2.6	4	34	960	NV	NV	--	--	--	--	--	--
Phenanthrene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Phenol	NV	30	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Pyrene	NV	1700	3600	23000	7500	210000	NV	NV	--	--	--	--	--	--
cPAH TEQ (ND = 0.5)	NV	NV	0.034	0.29	2.4	67	NV	NV	--	--	--	--	--	--
<b>Hydrocarbon Identification (Presence/Absence)</b>														
Gasoline-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--
Diesel-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--
Lube Oil-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--
<b>TPH (mg/kg)</b>														
Gasoline-range Organics	NV	NV	2500	20000	9700	NV	94	NV	5.9 U	5.7 U	--	--	--	--
Diesel-range Organics	NV	NV	2200	14000	4600	NV	NV	NV	280 U	550 U	--	--	--	--
Lube Oil-range Organics	NV	NV	2200 <sup>d</sup>	14000 <sup>d</sup>	4600 <sup>d</sup>	NV	NV	NV	1700 NJ	4600 NJ	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	South Substation B7 5/2011 0.5	South Substation B7 5/2011 2.5	South Substation B8 5/2011 0.5	Building 4 B14 5/2011 1
<b>Metals (mg/kg)</b>												
Arsenic	8.8	8.8	1	1.9	15	420	NV	NV	--	--	--	--
Barium	790	790	31000	220000	69000	NV	NV	NV	--	--	--	--
Cadmium	0.63	0.63	160	1100	350	9700	NV	NV	--	--	--	--
Chromium	76	76	NV	NV	NV	NV	NV	NV	--	--	--	--
Copper	34	34	6200	47000	14000	390000	NV	NV	--	--	--	--
Hexavalent Chromium	NV	NV	0.67	6.3	49	1400	NV	NV	--	--	--	--
Lead	79	28	400	800	800	800	NV	NV	--	--	--	--
Mercury	0.23	0.23	47	350	110	2900	NV	NV	--	--	--	--
Nickel	47	47	3100	22000	7000	190000	NV	NV	--	--	--	--
Selenium	0.71	0.71	NV	NV	NV	NV	NV	NV	--	--	--	--
Silver	0.82	4.2	780	5800	1800	49000	NV	NV	--	--	--	--
Zinc	180	180	NV	NV	NV	NV	NV	NV	--	--	--	--
<b>Dioxins/Furans (pg/g)</b>												
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,3,4,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,3,4,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,3,6,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,3,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,3,7,8,9-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,3,7,8,9-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,3,7,8-PeCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,3,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
2,3,4,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
2,3,4,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
2,3,7,8-TCDD	NV	4.4	12	16	170	4800	24000	130000	--	--	--	--
2,3,7,8-TCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
OCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
OCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Total HpCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Total HpCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Total HxCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Total HxCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Total PeCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Total PeCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Total TCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Total TCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Dioxin TEQ (ND = 0.5) <sup>a</sup>	NV	4.4	12	16	170	4800	24000	130000	--	--	--	--
<b>Organochlorine Pesticides (mg/kg)</b>												
4,4'-DDD	NV	0.021	6.6	12	94	2600	NV	NV	--	--	--	--
4,4'-DDE	NV	0.021	4.5	8.2	66	1800	NV	NV	--	--	--	--
4,4'-DDT	NV	0.021	4.6	8.5	66	1800	NV	NV	--	--	--	--
Aldrin	NV	0.011	0.08	0.13	1.1	30	NV	NV	--	--	--	--
alpha-BHC	NV	0.07	0.21	0.36	3	83	NV	NV	--	--	--	--
alpha-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
beta-BHC	NV	0.27	NV	NV	NV	NV	NV	NV	--	--	--	--
beta-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	South Substation B7 5/2011 0.5	South Substation B7 5/2011 2.5	South Substation B8 5/2011 0.5	Building 4 B14 5/2011 1
Chlordane (Technical)	NV	1.3	NV	NV	NV	NV	NV	NV	--	--	--	--
delta-BHC	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Dieldrin	NV	0.0049	0.085	0.14	1.2	33	NV	NV	--	--	--	--
Endosulfan I	NV	NV	760	4900	1600	45000	NV	NV	--	--	--	--
Endosulfan II (beta)	NV	NV	760	4900	1600	45000	NV	NV	--	--	--	--
Endosulfan sulfate	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Endrin	NV	0.04	38	250	80	2200	NV	NV	--	--	--	--
Endrin aldehyde	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Endrin ketone	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Heptachlor	NV	0.1	0.28	0.45	4	110	42	230	--	--	--	--
Heptachlor epoxide	NV	0.053	0.14	0.24	2	56	66	NV	--	--	--	--
Lindane	NV	0.38	1.2	2.1	17	470	NV	NV	--	--	--	--
Methoxychlor	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--
Toxaphene	NV	0.44	1.2	2.1	17	470	NV	NV	--	--	--	--
<b>PCBs (mg/kg)</b>												
Aroclor 1016	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Aroclor 1221	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Aroclor 1232	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Aroclor 1242	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Aroclor 1248	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Aroclor 1254	NV	NV	NV	NV	NV	NV	NV	NV	0.892	0.0307	--	--
Aroclor 1260	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00573	--
Aroclor 1262	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Aroclor 1268	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Total PCBs (ND = 0) <sup>b</sup>	NV	0.2	0.33	0.59	4.9	140	NV	NV	0.892	0.0307	0.00573	--
<b>VOCs (mg/kg)</b>												
1,1,1,2-Tetrachloroethane	NV	0.0156	NV	NV	NV	NV	NV	NV	--	--	--	--
1,1,1-Trichloroethane	NV	400	110000	870000	470000	NV	NV	NV	--	--	--	--
1,1,2,2-Tetrachloroethane	NV	0.0024	NV	NV	NV	NV	NV	NV	--	--	--	--
1,1,2-Trichloroethane	NV	0.0046	6.3	26	54	1500	0.38	4.2	--	--	--	--
1,1-Dichloroethane	NV	0.037	190	260	3200	89000	1.1	5.9	--	--	--	--
1,1-Dichloroethene	NV	11	3500	29000	13000	370000	54	680	--	--	--	--
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,3-Trichlorobenzene	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,3-Trichloropropane	NV	0.005	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2,4-Trimethylbenzene	NV	16	220	2000	2000	54000	16	210	--	--	--	--
1,2-Dibromo-3-chloropropane	NV	0.000012	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2-Dibromoethane	NV	0.00012	0.53	0.73	9	250	0.028	0.16	--	--	--	--
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	--	--	--	--
1,2-Dichloroethane	NV	0.0014	12	16	200	5600	0.18	1	--	--	--	--
1,2-Dichloropropane	NV	0.009	NV	NV	NV	NV	NV	NV	--	--	--	--
1,3,5-Trimethylbenzene	NV	92	1600	12000	3500	98000	NV	NV	--	--	--	--
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
1,3-Dichloropropane	NV	7.62	NV	NV	NV	NV	NV	NV	--	--	--	--
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	--	--	--	--
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
2-Butanone	NV	27.48	NV	NV	NV	NV	NV	NV	--	--	--	--
2-Chlorotoluene	NV	21.66	NV	NV	NV	NV	NV	NV	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	South Substation B7 5/2011 0.5	South Substation B7 5/2011 2.5	South Substation B8 5/2011 0.5	Building 4 B14 5/2011 1
2-Hexanone	NV	0.2982	NV	NV	NV	NV	NV	NV	--	--	--	--
4-Chlorotoluene	NV	22.5	NV	NV	NV	NV	NV	NV	--	--	--	--
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
4-Methyl-2-pentanone	NV	8.04	NV	NV	NV	NV	NV	NV	--	--	--	--
Acetone	NV	59.52	NV	NV	NV	NV	NV	NV	--	--	--	--
Acrylonitrile	NV	0.00029	2.5	4	40	1100	0.19	1	--	--	--	--
Benzene	NV	0.0093	24	37	380	11000	0.38	2.1	--	--	--	--
Bromobenzene	NV	4.068	NV	NV	NV	NV	NV	NV	--	--	--	--
Bromodichloromethane	NV	0.0025	12	15	230	6300	0.1	0.53	--	--	--	--
Bromoform	NV	0.084	170	260	2700	74000	19	110	--	--	--	--
Bromomethane	NV	0.098	92	750	370	10000	1.3	17	--	--	--	--
Carbon disulfide	NV	11.64	NV	NV	NV	NV	NV	NV	--	--	--	--
Carbon tetrachloride	NV	0.028	21	34	320	8900	0.28	1.6	--	--	--	--
Chlorobenzene	NV	6.5	1100	8700	4700	130000	77	NV	--	--	--	--
Chlorobromomethane	NV	0.936	NV	NV	NV	NV	NV	NV	--	--	--	--
Chloroethane	NV	320	320000	NV	NV	NV	NV	NV	--	--	--	--
Chloroform	NV	0.0033	22	26	410	11000	0.074	0.41	--	--	--	--
Chloromethane	NV	2.2	2900	25000	25000	700000	24	300	--	--	--	--
cis-1,2-Dichloroethene	NV	1.2	310	2300	710	20000	NV	NV	--	--	--	--
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Dibromochloromethane	NV	0.0033	12	17	210	5800	0.53	2.9	--	--	--	--
Dibromomethane	NV	0.0876	NV	NV	NV	NV	NV	NV	--	--	--	--
Dichlorodifluoromethane	NV	94	NV	NV	NV	NV	NV	NV	--	--	--	--
Ethylbenzene	NV	0.16	110	150	1700	49000	3	17	--	--	--	--
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	--	--	--	--
Isopropylbenzene	NV	85.2	7000	57000	27000	750000	NV	NV	--	--	--	--
m,p-Xylene	NV	25	NV	NV	NV	NV	NV	NV	--	--	--	--
Methyl tert-butyl ether	NV	0.092	730	1100	12000	320000	20	110	--	--	--	--
Methylene chloride	NV	0.038	170	1600	2100	58000	48	950	--	--	--	--
Naphthalene	NV	0.087	25	23	580	16000	15	83	--	--	--	--
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
o-Xylene	NV	1	NV	NV	NV	NV	NV	NV	--	--	--	--
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Styrene	NV	300	16000	130000	56000	NV	NV	NV	--	--	--	--
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Tetrachloroethene	NV	2.4	540	1000	1800	50000	6.6	36	--	--	--	--
Toluene	NV	200	12000	88000	28000	770000	NV	NV	--	--	--	--
trans-1,2-dichloroethene	NV	2.5	3100	23000	7100	200000	NV	NV	--	--	--	--
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Trichloroethene	NV	0.02	17	51	470	13000	0.26	2.3	--	--	--	--
Trichlorofluoromethane	NV	190	15000	130000	69000	NV	190	NV	--	--	--	--
Vinyl chloride	NV	0.00051	0.8	4.4	34	950	0.053	2.2	--	--	--	--
Xylenes, Total <sup>c</sup>	NV	NV	2900	25000	20000	560000	260	NV	--	--	--	--
<b>SVOCs (mg/kg)</b>												
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	--	--	--	--
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	--	--	--	--
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	South Substation B7 5/2011 0.5	South Substation B7 5/2011 2.5	South Substation B8 5/2011 0.5	Building 4 B14 5/2011 1
1-Methylnaphthalene	NV	0.738	NV	NV	NV	NV	NV	NV	--	--	--	--
2,4,5-Trichlorophenol	NV	4	NV	NV	NV	NV	NV	NV	--	--	--	--
2,4,6-Trichlorophenol	NV	1.9	120	210	270	7400	NV	NV	--	--	--	--
2,4-Dichlorophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--
2,4-Dimethylphenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--
2,4-Dinitrophenol	NV	20	NV	NV	NV	NV	NV	NV	--	--	--	--
2,4-Dinitrotoluene	NV	0.0354	NV	NV	NV	NV	NV	NV	--	--	--	--
2,6-Dinitrotoluene	NV	4.2	0.9	1.5	13	350	NV	NV	--	--	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
2-Chlorophenol	NV	60	NV	NV	NV	NV	NV	NV	--	--	--	--
2-Methylnaphthalene	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--
2-Methylphenol	NV	50	NV	NV	NV	NV	NV	NV	--	--	--	--
2-Nitroaniline	NV	5.646	NV	NV	NV	NV	NV	NV	--	--	--	--
2-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
3,3-Dichlorobenzidine	NV	0.028	3	5.1	42	1200	NV	NV	--	--	--	--
3-Nitroaniline	NV	70	NV	NV	NV	NV	NV	NV	--	--	--	--
4,6-Dinitro-2-methylphenol	NV	0.2766	NV	NV	NV	NV	NV	NV	--	--	--	--
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
4-Chloroaniline	NV	0.012	NV	NV	NV	NV	NV	NV	--	--	--	--
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
4-Methylphenol	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--
4-Nitroaniline	NV	0.1218	NV	NV	NV	NV	NV	NV	--	--	--	--
4-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Acenaphthene	NV	29	9400	70000	21000	590000	NV	NV	--	--	--	--
Acenaphthylene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Aniline	NV	0.3036	NV	NV	NV	NV	NV	NV	--	--	--	--
Anthracene	NV	29	47000	350000	110000	NV	NV	NV	--	--	--	--
Benzo(a)anthracene	NV	0.15	0.34	2.9	24	660	NV	NV	--	--	--	--
Benzo(a)pyrene	NV	0.015	0.034	0.29	2.4	67	NV	NV	--	--	--	--
Benzo(b)fluoranthene	NV	0.15	0.34	2.9	24	670	NV	NV	--	--	--	--
Benzo(ghi)perylene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Benzo(k)fluoranthene	NV	1.1	3.4	29	240	6700	NV	NV	--	--	--	--
Benzoic acid	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Benzyl alcohol	NV	16.02	NV	NV	NV	NV	NV	NV	--	--	--	--
Bis(2-chloroethoxy)methane	NV	0.402	NV	NV	NV	NV	NV	NV	--	--	--	--
Bis(2-chloroethyl)ether	NV	0.0001	0.96	1.3	16	450	1.2	6.9	--	--	--	--
Bis(2-chloroisopropyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Bis(2-ethylhexyl)phthalate	NV	4.5	97	160	1300	37000	NV	NV	--	--	--	--
Butylbenzylphthalate	NV	260	NV	NV	NV	NV	NV	NV	--	--	--	--
Chrysene	NV	14	34	290	2400	67000	NV	NV	--	--	--	--
Dibenzo(a,h)anthracene	NV	0.015	0.034	0.29	2.4	67	NV	NV	--	--	--	--
Dibenzofuran	NV	0.002	NV	NV	NV	NV	NV	NV	--	--	--	--
Diethyl phthalate	NV	100	NV	NV	NV	NV	NV	NV	--	--	--	--
Dimethyl phthalate	NV	200	NV	NV	NV	NV	NV	NV	--	--	--	--
Di-n-butyl phthalate	NV	0.45	NV	NV	NV	NV	NV	NV	--	--	--	--
Di-n-octyl phthalate	NV	610	NV	NV	NV	NV	NV	NV	--	--	--	--
Fluoranthene	NV	29	4800	30000	10000	280000	NV	NV	--	--	--	--
Fluorene	NV	29	6300	47000	14000	390000	NV	NV	--	--	--	--

Table 5-1  
Soil Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban	RBC, Soil, Direct Contact, Occupation	RBC, Soil, Direct Contact, Construction	RBC, Soil, Direct Contact, Excavation	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	South Substation B7 5/2011 0.5	South Substation B7 5/2011 2.5	South Substation B8 5/2011 0.5	Building 4 B14 5/2011 1
Hexachlorobenzene	NV	0.26	0.67	0.93	11	320	2.4	13	--	--	--	--
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	--	--	--	--
Hexachlorocyclopentadiene	NV	10	NV	NV	NV	NV	NV	NV	--	--	--	--
Hexachloroethane	NV	0.51	24	32	180	5100	1.4	7.6	--	--	--	--
Indeno(1,2,3-cd)pyrene	NV	0.15	0.34	2.9	24	670	NV	NV	--	--	--	--
Isophorone	NV	1.596	NV	NV	NV	NV	NV	NV	--	--	--	--
Naphthalene	NV	0.087	25	23	580	16000	15	83	--	--	--	--
Nitrobenzene	NV	0.0084	NV	NV	NV	NV	NV	NV	--	--	--	--
N-Nitrosodimethylamine	NV	0.0023	NV	NV	NV	NV	NV	NV	--	--	--	--
N-Nitrosodiphenylamine	NV	4.5	280	470	3800	110000	NV	NV	--	--	--	--
N-Nitrosodipropylamine	NV	0.0012	0.19	0.33	2.7	74	NV	NV	--	--	--	--
Pentachlorophenol	NV	0.14	2.6	4	34	960	NV	NV	--	--	--	--
Phenanthrene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--
Phenol	NV	30	NV	NV	NV	NV	NV	NV	--	--	--	--
Pyrene	NV	1700	3600	23000	7500	210000	NV	NV	--	--	--	--
cPAH TEQ (ND = 0.5)	NV	NV	0.034	0.29	2.4	67	NV	NV	--	--	--	--
<b>Hydrocarbon Identification (Presence/Absence)</b>												
Gasoline-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--
Diesel-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--
Lube Oil-range Organics	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--
<b>TPH (mg/kg)</b>												
Gasoline-range Organics	NV	NV	2500	20000	9700	NV	94	NV	--	--	--	2.74
Diesel-range Organics	NV	NV	2200	14000	4600	NV	NV	NV	--	--	--	432
Lube Oil-range Organics	NV	NV	2200 <sup>d</sup>	14000 <sup>d</sup>	4600 <sup>d</sup>	NV	NV	NV	--	--	--	5010

**Table 5-1**  
**Soil Analytical Results - Hazardous Materials**  
**Willamette Falls Legacy Project**  
**Metro Regional Government**  
**Oregon City, Oregon**

NOTES:

Result values in bold font indicate a detection.

Shaded result values indicate exceedance of Oregon DEQ RBCs or Clean Fill. Non-detect results are not evaluated against screening levels.

2011 results reported in Results of Preliminary Soil Investigation, Blue Heron Paper Company, Oregon City, Oregon (Bridgewater, 2011). Data table does not provide reporting limits. Only soil samples within vicinity of assessment are displayed.

2012 results reported in Phase II Environmental Site Assessment for Blue Heron Mill (ERM, 2012). Only soil samples within vicinity of assessment are displayed.

When all cPAH or dioxin/furan TEQ constituents are non-detect, the highest non-detect value is shown. cPAH TEQ values are based on toxic equivalence factors from USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, 1993 (EPA/600/R-93/089); and USEPA Recommended Toxicity Equivalence Factors for Human Health Risk Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds, 2010 (EPA/100/R-10/005).

-- = not analyzed.

cPAH = carcinogenic PAH.

DEQ = Oregon Department of Environmental Quality.

Direct Contact = Soil Ingestion, Dermal Contact, and Inhalation.

ft bgs = feet below ground surface.

J = result is an estimated value.

mg/kg = milligrams per kilogram.

NA = not applicable.

ND = not detected.

NJ = Chromatographic pattern does not match the calibration standard.

NV = no value; value exceeds 1,000,000 mg/kg; or RBC exceeds limit of three-phase equilibrium partitioning.

OCDD = octachlorodibenzodioxin.

OCDF = octachlorodibenzofuran.

PAH = polycyclic aromatic hydrocarbon.

PCBs = polychlorinated biphenyls.

pg/g = picogram per gram.

RBCs = risk-based concentrations for individual chemicals (DEQ, November 1, 2015).

SVOC = semi-volatile organic compound.

TEQ = toxicity equivalence.

TPH = total petroleum hydrocarbons.

U = result not detected at or above method detection limit or method reporting limit.

UJ = result is non-detect and an estimated value.

USEPA = U.S. Environmental Protection Agency.

VOC = volatile organic compound.

<sup>a</sup>Where all dioxin/furan results are non-detect, the highest detection limit is used to calculate Dioxin TEQ.

<sup>b</sup>Total PCBs are the sum of detected PCB Aroclors.

<sup>c</sup>Total xylenes are sum of m,p-xylene and o-xylene. Where both results are non-detect, the higher detection limit is used.

<sup>d</sup>Value is for generic diesel/heating oil, since generic residual-range hydrocarbon values are not available.



Table 5-2  
Soil Analytical Results - Petroleum  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland Basin	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban Residential	RBC, Soil, Direct Contact, Occupational	RBC, Soil, Direct Contact, Construction Worker	RBC, Soil, Direct Contact, Excavation Worker	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP05 GP05-S-5.5 12/14/2017 5.5	GP05 GP05-S-7.5 12/14/2017 7.5	GP05 GP05-S-8.0 12/14/2017 8.0	GP07 GP07-S-2.5 12/12/2017 2.5	GP07 GP07-S-7.5 12/12/2017 7.5	GP07 GP07-S-7.5-DUP 12/12/2017 7.5	GP08 GP08-S-4.0 12/12/2017 4.0	GP10 GP10-S-2.5 12/14/2017 2.5
<b>Total Metals (mg/kg)</b>																
Arsenic	8.8	8.8	1	1.9	15	420	NV	NV	10.4	2.74	1.73	18	2.18	2.44	1.88	5.68
Barium	790	790	31000	220000	69000	NV	NV	NV	133	201	104	163	89.8	94.9	113	97.8
Cadmium	0.63	0.63	160	1100	350	9700	NV	NV	0.911	0.267 J	0.154 J	1.04	0.19 J	0.198 J	0.205 J	0.366
Chromium	76	76	NV	NV	NV	NV	NV	NV	30.9	22.4	15.6	25.5	14.2	16.1	21	19.2
Hexavalent Chromium	NV	NV	0.67	6.3	49	1400	NV	NV	0.4	--	--	0.2 U	--	--	0.5	0.3
Lead	79	28	400	800	800	800	NV	NV	706	92.4	34.5	292	20.8 J	9.65 J	11.2	70.8
Mercury	0.23	0.23	47	350	110	2900	NV	NV	1220	1.25	0.0575 J	0.833	0.0485 J	0.0467 U	0.0776 J	0.218
Selenium	0.71	0.71	NV	NV	NV	NV	NV	NV	0.632 U	0.741 U	0.64 U	0.7 U	0.593 U	0.583 U	0.604 U	0.59 U
Silver	0.82	4.2	780	5800	1800	49000	NV	NV	0.126 U	0.148 U	0.128 U	0.14 U	0.119 U	0.117 U	0.121 U	1.75
<b>Dioxins/Furans (pg/g)</b>																
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.793 J	--
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.216 UJ	--
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.181 U	--
1,2,3,4,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.133 U	--
1,2,3,4,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.0731 U	--
1,2,3,6,7,8-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.132 U	--
1,2,3,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.0763 U	--
1,2,3,7,8,9-HxCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.136 U	--
1,2,3,7,8,9-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.0977 U	--
1,2,3,7,8-PeCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.0925 U	--
1,2,3,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.0907 U	--
2,3,4,6,7,8-HxCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.0707 U	--
2,3,4,7,8-PeCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.0829 U	--
2,3,7,8-TCDD	NV	4.4	12	16	170	4800	24000	130000	--	--	--	--	--	--	0.192 U	--
2,3,7,8-TCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.328 U	--
OCDD	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	10.9	--
OCDF	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.421 UJK	--
Total HpCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	1.8 J	--
Total HpCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.575 J	--
Total HxCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.25 UJK	--
Total HxCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.246 UJ	--
Total PeCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.0925 U	--
Total PeCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.116 J	--
Total TCDDs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.192 U	--
Total TCDFs	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.328 U	--
TEQ (ND = 0.5)	NV	4.4	12	16	170	4800	24000	130000	--	--	--	--	--	--	0.222	--

Table 5-2  
Soil Analytical Results - Petroleum  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland Basin	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban Residential	RBC, Soil, Direct Contact, Occupational	RBC, Soil, Direct Contact, Construction Worker	RBC, Soil, Direct Contact, Excavation Worker	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP05 GP05-S-5.5 12/14/2017 5.5	GP05 GP05-S-7.5 12/14/2017 7.5	GP05 GP05-S-8.0 12/14/2017 8.0	GP07 GP07-S-2.5 12/12/2017 2.5	GP07 GP07-S-7.5 12/12/2017 7.5	GP07 GP07-S-7.5-DUP 12/12/2017 7.5	GP08 GP08-S-4.0 12/12/2017 4.0	GP10 GP10-S-2.5 12/14/2017 2.5
<b>Organochlorine Pesticides (mg/kg)</b>																
4,4'-DDD	NV	0.021	6.6	12	94	2600	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
4,4'-DDE	NV	0.021	4.5	8.2	66	1800	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
4,4'-DDT	NV	0.021	4.6	8.5	66	1800	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
Aldrin	NV	0.011	0.08	0.13	1.1	30	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
alpha-BHC	NV	0.07	0.21	0.36	3	83	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
alpha-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
beta-BHC	NV	0.27	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
beta-Chlordane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
Chlordane (Technical)	NV	1.3	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.0343 U	1.41 U
delta-BHC	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
Dieldrin	NV	0.0049	0.085	0.14	1.2	33	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
Endosulfan I	NV	NV	760	4900	1600	45000	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
Endosulfan II (beta)	NV	NV	760	4900	1600	45000	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
Endosulfan sulfate	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
Endrin	NV	0.04	38	250	80	2200	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
Endrin aldehyde	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
Endrin ketone	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
Heptachlor	NV	0.1	0.28	0.45	4	110	42	230	--	--	--	--	--	--	0.00114 U	0.047 U
Heptachlor epoxide	NV	0.053	0.14	0.24	2	56	66	NV	--	--	--	--	--	--	0.00114 U	0.047 U
Lindane	NV	0.38	1.2	2.1	17	470	NV	NV	--	--	--	--	--	--	0.00114 U	0.047 U
Methoxychlor	NV	310	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	0.00343 U	0.141 U
Toxaphene	NV	0.44	1.2	2.1	17	470	NV	NV	--	--	--	--	--	--	0.0343 U	1.41 U
<b>PCBs (mg/kg)</b>																
Aroclor 1016	NV	NV	NV	NV	NV	NV	NV	NV	0.00252 U	--	--	0.00603 U	--	--	0.00231 U	--
Aroclor 1221	NV	NV	NV	NV	NV	NV	NV	NV	0.00252 U	--	--	0.00603 U	--	--	0.00231 U	--
Aroclor 1232	NV	NV	NV	NV	NV	NV	NV	NV	0.00252 U	--	--	0.00603 U	--	--	0.00231 U	--
Aroclor 1242	NV	NV	NV	NV	NV	NV	NV	NV	0.00252 U	--	--	0.00603 U	--	--	0.00231 U	--
Aroclor 1248	NV	NV	NV	NV	NV	NV	NV	NV	0.00252 U	--	--	0.00603 U	--	--	0.00231 U	--
Aroclor 1254	NV	NV	NV	NV	NV	NV	NV	NV	<b>0.00775 J</b>	--	--	0.0301 U	--	--	0.00231 U	--
Aroclor 1260	NV	NV	NV	NV	NV	NV	NV	NV	<b>0.00374 J</b>	--	--	<b>0.0937 J</b>	--	--	0.00231 U	--
Aroclor 1262	NV	NV	NV	NV	NV	NV	NV	NV	0.00252 U	--	--	0.00603 U	--	--	0.00231 U	--
Aroclor 1268	NV	NV	NV	NV	NV	NV	NV	NV	0.00252 U	--	--	0.00603 U	--	--	0.00231 U	--
Total PCBs (ND = 0) <sup>a</sup>	NV	0.2	0.33	0.59	4.9	140	NV	NV	<b>0.01149 J</b>	--	--	<b>0.0937 J</b>	--	--	0.00231 U	--
<b>VOCs (mg/kg)</b>																
1,1,1,2-Tetrachloroethane	NV	0.0156	NV	NV	NV	NV	NV	NV	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
1,1,1-Trichloroethane	NV	400	110000	870000	470000	NV	NV	NV	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
1,1,2,2-Tetrachloroethane	NV	0.0024	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.183 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
1,1,2-Trichloroethane	NV	0.0046	6.3	26	54	1500	0.38	4.2	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
1,1-Dichloroethane	NV	0.037	190	260	3200	89000	1.1	5.9	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
1,1-Dichloroethene	NV	11	3500	29000	13000	370000	54	680	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
1,2,3-Trichlorobenzene	NV	20	NV	NV	NV	NV	NV	NV	--	0.267 U	0.152 U	0.2 U	0.164 U	0.161 U	0.169 U	0.148 U
1,2,3-Trichloropropane	NV	0.005	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U

Table 5-2  
Soil Analytical Results - Petroleum  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland Basin	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban Residential	RBC, Soil, Direct Contact, Occupation al	RBC, Soil, Direct Contact, Construction Worker	RBC, Soil, Direct Contact, Excavation Worker	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP05 GP05-S-5.5 12/14/2017 5.5	GP05 GP05-S-7.5 12/14/2017 7.5	GP05 GP05-S-8.0 12/14/2017 8.0	GP07 GP07-S-2.5 12/12/2017 2.5	GP07 GP07-S-7.5 12/12/2017 7.5	GP07 GP07-S-7.5-DUP 12/12/2017 7.5	GP08 GP08-S-4.0 12/12/2017 4.0	GP10 GP10-S-2.5 12/14/2017 2.5
1,2,4-Trichlorobenzene	NV	0.4074	NV	NV	NV	NV	NV	NV	--	0.267 U	0.152 U	0.2 U	0.164 U	0.161 U	0.169 U	0.148 U
1,2,4-Trimethylbenzene	NV	16	220	2000	2000	54000	16	210	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
1,2-Dibromo-3-chloropropane	NV	0.000012	NV	NV	NV	NV	NV	NV	--	0.267 U	0.152 U	0.2 U	0.164 U	0.161 U	0.169 U	0.148 U
1,2-Dibromoethane	NV	0.00012	0.53	0.73	9	250	0.028	0.16	--	0.0533 U	0.0609 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
1,2-Dichlorobenzene	NV	70	4400	36000	20000	560000	NV	NV	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
1,2-Dichloroethane	NV	0.0014	12	16	200	5600	0.18	1	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
1,2-Dichloropropane	NV	0.009	NV	NV	NV	NV	NV	NV	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
1,3,5-Trimethylbenzene	NV	92	1600	12000	3500	98000	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
1,3-Dichloropropane	NV	7.62	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
1,4-Dichlorobenzene	NV	0.081	62	64	1300	36000	2.3	13	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
2-Butanone	NV	27.48	NV	NV	NV	NV	NV	NV	--	0.533 U	0.304 U	0.4 U	0.329 U	0.322 U	0.339 U	0.297 U
2-Chlorotoluene	NV	21.66	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
2-Hexanone	NV	0.2982	NV	NV	NV	NV	NV	NV	--	0.533 U	0.304 U	0.799 UJ	0.658 UJ	0.322 U	0.339 U	0.297 U
4-Chlorotoluene	NV	22.5	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
4-Methyl-2-pentanone	NV	8.04	NV	NV	NV	NV	NV	NV	--	0.533 U	0.304 U	0.799 U	0.658 U	0.322 U	0.339 U	0.297 U
Acetone	NV	59.52	NV	NV	NV	NV	NV	NV	--	1.07 U	0.609 U	0.799 U	0.658 U	0.643 U	0.678 U	0.593 U
Acrylonitrile	NV	0.00029	2.5	4	40	1100	0.19	1	--	0.107 U	0.0609 U	0.0799 U	0.0658 U	0.0643 U	0.0678 U	0.0593 U
Benzene	NV	0.0093	24	37	380	11000	0.38	2.1	--	0.0107 U	0.00609 U	0.00799 U	0.00658 U	0.00643 U	0.00678 U	0.00593 U
Bromobenzene	NV	4.068	NV	NV	NV	NV	NV	NV	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
Bromodichloromethane	NV	0.0025	12	15	230	6300	0.1	0.53	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
Bromoform	NV	0.084	170	260	2700	74000	19	110	--	0.107 U	0.0609 U	0.0799 U	0.0658 U	0.0643 U	0.0678 U	0.0593 U
Bromomethane	NV	0.098	92	750	370	10000	1.3	17	--	1.07 U	0.609 U	0.799 U	0.658 U	0.643 U	0.678 U	0.593 U
Carbon disulfide	NV	11.64	NV	NV	NV	NV	NV	NV	--	0.533 U	0.304 U	0.4 U	0.329 U	0.322 U	0.339 U	0.297 U
Carbon tetrachloride	NV	0.028	21	34	320	8900	0.28	1.6	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
Chlorobenzene	NV	6.5	1100	8700	4700	130000	77	NV	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
Chlorobromomethane	NV	0.936	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
Chloroethane	NV	320	320000	NV	NV	NV	NV	NV	--	0.533 U	0.304 UJ	0.4 U	0.329 U	0.322 U	0.678 UJ	0.297 U
Chloroform	NV	0.0033	22	26	410	11000	0.074	0.41	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
Chloromethane	NV	2.2	2900	25000	25000	700000	24	300	--	0.267 U	0.152 U	0.2 U	0.164 U	0.161 U	0.169 U	0.148 U
cis-1,2-Dichloroethene	NV	1.2	310	2300	710	20000	NV	NV	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
Dibromochloromethane	NV	0.0033	12	17	210	5800	0.53	2.9	--	0.107 U	0.0609 U	0.0799 U	0.0658 U	0.0643 U	0.0678 U	0.0593 U
Dibromomethane	NV	0.0876	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
Dichlorodifluoromethane	NV	94	NV	NV	NV	NV	NV	NV	--	0.107 U	0.0609 U	0.0799 U	0.0658 U	0.0643 U	0.0678 U	0.0593 U
Ethylbenzene	NV	0.16	110	150	1700	49000	3	17	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
Hexachlorobutadiene	NV	0.0678	NV	NV	NV	NV	NV	NV	--	0.107 U	0.0609 U	0.0799 U	0.0658 U	0.0643 U	0.0678 U	0.0593 U
Isopropylbenzene	NV	85.2	7000	57000	27000	750000	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
m,p-Xylene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
Methyl tert-butyl ether	NV	0.092	730	1100	12000	320000	20	110	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
Methylene chloride	NV	0.038	170	1600	2100	58000	48	950	--	0.267 U	0.152 U	0.2 U	0.164 U	0.161 U	0.169 U	0.148 U
Naphthalene	NV	0.087	25	23	580	16000	15	83	--	0.107 U	0.365 U	0.0799 U	0.0658 U	0.0643 U	0.0678 U	0.0593 U

Table 5-2  
Soil Analytical Results - Petroleum  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	Oregon Background Metals, Portland Basin	DEQ Upland Clean Fill	RBC, Soil, Direct Contact, Urban Residential	RBC, Soil, Direct Contact, Occupation al	RBC, Soil, Direct Contact, Construction Worker	RBC, Soil, Direct Contact, Excavation Worker	RBC, Soil, Vapor Intrusion Into Buildings, Urban Residential	RBC, Soil, Vapor Intrusion Into Buildings, Occupational	GP05 GP05-S-5.5 12/14/2017 5.5	GP05 GP05-S-7.5 12/14/2017 7.5	GP05 GP05-S-8.0 12/14/2017 8.0	GP07 GP07-S-2.5 12/12/2017 2.5	GP07 GP07-S-7.5 12/12/2017 7.5	GP07 GP07-S-7.5-DUP 12/12/2017 7.5	GP08 GP08-S-4.0 12/12/2017 4.0	GP10 GP10-S-2.5 12/14/2017 2.5
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0533 U	<b>0.135</b>	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
o-Xylene	NV	1	NV	NV	NV	NV	NV	NV	--	0.0267 U	0.0304 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0533 U	<b>0.125</b>	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
Styrene	NV	300	16000	130000	56000	NV	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.0609 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
Tetrachloroethene	NV	2.4	540	1000	1800	50000	6.6	36	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	<b>0.0178 J</b>
Toluene	NV	200	12000	88000	28000	770000	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
trans-1,2-dichloroethene	NV	2.5	3100	23000	7100	200000	NV	NV	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
Trichloroethene	NV	0.02	17	51	470	13000	0.26	2.3	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
Trichlorofluoromethane	NV	190	15000	130000	69000	NV	190	NV	--	0.107 U	0.0609 UJ	0.0799 U	0.0658 U	0.0643 U	0.0678 UJ	0.0593 U
Vinyl chloride	NV	0.00051	0.8	4.4	34	950	0.053	2.2	--	0.0267 U	0.0152 U	0.02 U	0.0164 U	0.0161 U	0.0169 U	0.0148 U
Xylenes, Total <sup>b</sup>	NV	NV	2900	25000	20000	560000	260	NV	--	0.0533 U	0.0304 U	0.04 U	0.0329 U	0.0322 U	0.0339 U	0.0297 U
<b>PAHs (mg/kg)</b>																
1-Methylnaphthalene	NV	0.738	NV	NV	NV	NV	NV	NV	--	--	<b>11.8</b>	0.849 U	0.287 U	0.113 U	--	0.32 U
2-Methylnaphthalene	NV	310	NV	NV	NV	NV	NV	NV	--	--	0.659 U	0.849 U	0.287 U	0.113 U	--	0.32 U
Acenaphthene	NV	29	9400	70000	21000	590000	NV	NV	--	--	4.79 U	0.423 U	0.143 U	0.0563 U	--	0.159 U
Acenaphthylene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	1.06 U	0.423 U	0.143 U	0.0563 U	--	<b>0.169 J</b>
Anthracene	NV	29	47000	350000	110000	NV	NV	NV	--	--	<b>4.02</b>	0.423 U	0.143 U	0.0563 U	--	<b>0.252 J</b>
Benzo(a)anthracene	NV	0.15	0.34	2.9	24	660	NV	NV	--	--	<b>2.7</b>	<b>0.598 J</b>	0.143 U	0.0563 U	--	<b>0.782 J</b>
Benzo(a)pyrene	NV	0.015	0.034	<b>0.29</b>	2.4	67	NV	NV	--	--	<b>1.21</b>	<b>1.53</b>	0.215 U	0.0846 U	--	<b>1.06</b>
Benzo(b)fluoranthene	NV	0.15	0.34	2.9	24	670	NV	NV	--	--	<b>0.614</b>	<b>1.1 J</b>	0.215 U	0.0846 U	--	<b>1.14 J</b>
Benzo(ghi)perylene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	<b>0.398</b>	<b>1.5</b>	0.143 U	0.0563 U	--	<b>0.918</b>
Benzo(k)fluoranthene	NV	1.1	3.4	29	240	6700	NV	NV	--	--	0.247 U	0.636 U	0.215 U	0.0846 U	--	<b>0.339 J</b>
Chrysene	NV	14	34	290	2400	67000	NV	NV	--	--	<b>6</b>	<b>1.27 J</b>	0.143 U	0.0563 U	--	<b>0.916 J</b>
Dibenzo(a,h)anthracene	NV	0.015	0.034	0.29	2.4	67	NV	NV	--	--	<b>0.222 J</b>	0.423 U	0.143 U	0.0563 U	--	<b>0.204 J</b>
Fluoranthene	NV	29	4800	30000	10000	280000	NV	NV	--	--	<b>2.16</b>	<b>0.877</b>	0.143 U	0.0563 U	--	<b>1.17</b>
Fluorene	NV	29	6300	47000	14000	390000	NV	NV	--	--	<b>5.8</b>	0.423 U	0.143 U	0.0563 U	--	0.159 U
Indeno(1,2,3-cd)pyrene	NV	0.15	0.34	2.9	24	670	NV	NV	--	--	0.164 U	<b>0.7 J</b>	0.143 U	0.0563 U	--	<b>0.722</b>
Naphthalene	NV	0.087	25	23	580	16000	15	83	--	--	0.659 U	0.849 U	0.287 U	0.113 U	--	0.32 U
Phenanthrene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	<b>9</b>	<b>0.88</b>	0.143 U	0.0563 U	--	<b>1.17</b>
Pyrene	NV	1700	3600	23000	7500	210000	NV	NV	--	--	<b>6.78</b>	<b>1.75</b>	0.143 U	0.0563 U	--	<b>1.44</b>
cPAH TEQ (ND = 0.5)	NV	NV	0.034	<b>0.29</b>	2.4	67	NV	NV	--	--	<b>1.78</b>	<b>1.99 J</b>	0.215 U	0.0846 U	--	<b>1.53</b>
<b>Hydrocarbon Identification (Presence/Absence)</b>																
Gasoline-range Organics	NV	NA	NA	NA	NA	NA	NA	NA	ND	ND	DETECT	--	--	--	ND	ND
Diesel-range Organics	NV	NA	NA	NA	NA	NA	NA	NA	DETECT	DETECT	DETECT	--	--	--	ND	DETECT
Lube Oil-range Organics	NV	NA	NA	NA	NA	NA	NA	NA	DETECT	DETECT	DETECT	--	--	--	ND	DETECT
<b>IPH (mg/kg)</b>																
Gasoline-range Organics	NV	NV	2500	20000	9700	NV	94	NV	--	10.7 U	<b>187</b>	4 U	3.29 U	6.43 U	3.39 U	5.93 U
Diesel-range Organics	NV	NV	2200	14000	<b>4600</b>	NV	NV	NV	--	<b>22.1 J</b>	<b>5970 J</b>	1310 U	217 U	108 U	12.2 U	117 U
Lube Oil-range Organics	NV	NV	2200 <sup>c</sup>	14000 <sup>c</sup>	4600 <sup>c</sup>	NV	NV	NV	--	28.7 U	<b>4080 J</b>	<b>15200</b>	<b>1710</b>	<b>674</b>	24.3 U	<b>1100</b>

NOTES:

Result values in bold font indicate a detection.

Shaded result values indicate exceedance of Oregon DEQ RBCs or Clean Fill. Non-detect results are not evaluated against screening levels.

When all cPAH or dioxin/furan TEQ constituents are non-detect, the highest non-detect value is shown. cPAH TEQ values are based on toxic equivalence factors from USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, 1993 (EPA/600/R-93/089); and USEPA Recommended Toxicity Equivalence Factors for Human Health Risk Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds, 2010 (EPA/100/R-10/005).

-- = not analyzed.

cPAH = carcinogenic PAH.

DEQ = Oregon Department of Environmental Quality.

Direct Contact = Soil Ingestion, Dermal Contact, and Inhalation.

ft bgs = feet below ground surface.

J = result is an estimated value.

mg/kg = milligrams per kilogram.

NA = not applicable.

ND = not detected.

NV = no value; value exceeds 1,000,000 mg/kg; or RBC exceeds limit of three-phase equilibrium partitioning.

OCDD = octachlorodibenzodioxin.

OCDF = octachlorodibenzofuran.

PAH = polycyclic aromatic hydrocarbon.

PCB = polychlorinated biphenyls.

pg/g = picogram per gram.

RBCs = risk-based concentrations for individual chemicals (DEQ, November 1, 2015).

TEQ = toxicity equivalence.

TPH = total petroleum hydrocarbons.

U = result not detected at or above method detection limit.

UJ = result is non-detect and an estimated value.

USEPA = U.S. Environmental Protection Agency.

VOC = volatile organic compound.

<sup>a</sup>Total PCBs are the sum of detected PCB Aroclors.

<sup>b</sup>Total xylenes are sum of m,p-xylene and o-xylene. Where both results are non-detect, the higher detection limit is used.

<sup>c</sup>Value is for generic diesel/heating oil, since generic residual-range hydrocarbon values are not available.

Table 5-3  
Groundwater Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Urban Residential	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Occupational	RBC, Groundwater in Excavation, Construction and Excavation Worker	RBC, Groundwater, Vapor Intrusion Into Building, Urban Residential	RBC, Groundwater, Vapor Intrusion Into Building, Occupational	GP03 GP03-W-33.0 12/12/2017 33	GP14 GP14-W-10.0 12/14/2017 10	GP16 GP16-W-9.0 12/11/2017 9
<b>Total Metals (ug/L)</b>								
Arsenic	0.21	0.31	6300	NV	NV	5.3	6.8	0.608 J
Barium	15000	33000	NV	NV	NV	150	366	21.3
Cadmium	73	160	130000	NV	NV	0.6	0.356	0.04 U
Chromium	NV	NV	NV	NV	NV	29.7	23.8	1.21
Chromium (Hexavalent)	0.16	0.9	9400	NV	NV	0.3 U	--	--
Lead	15	15	NV	NV	NV	133	4.7	0.308
Mercury	22	49	NV	NV	NV	0.209	0.44	0.04 U
Selenium	NV	NV	NV	NV	NV	3.09	2.29	0.5 U
Silver	370	820	1100000	NV	NV	1.56	0.256	0.1 U
<b>Dioxins/Furans (pg/L)</b>								
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	NV	NV	10.9 J	--	--
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	NV	NV	7.57 UJK	--	--
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	NV	NV	2.93 U	--	--
1,2,3,4,7,8-HxCDD	NV	NV	NV	NV	NV	1.37 U	--	--
1,2,3,4,7,8-HxCDF	NV	NV	NV	NV	NV	1.03 U	--	--
1,2,3,6,7,8-HxCDD	NV	NV	NV	NV	NV	1.27 U	--	--
1,2,3,6,7,8-HxCDF	NV	NV	NV	NV	NV	0.968 U	--	--
1,2,3,7,8,9-HxCDD	NV	NV	NV	NV	NV	1.35 U	--	--
1,2,3,7,8,9-HxCDF	NV	NV	NV	NV	NV	1.33 U	--	--
1,2,3,7,8-PeCDD	NV	NV	NV	NV	NV	0.766 U	--	--
1,2,3,7,8-PeCDF	NV	NV	NV	NV	NV	0.952 U	--	--
2,3,4,6,7,8-HxCDF	NV	NV	NV	NV	NV	1.04 U	--	--
2,3,4,7,8-PeCDF	NV	NV	NV	NV	NV	0.869 U	--	--
2,3,7,8-TCDD	0.42	0.42	450	20000	110000	1.34 U	--	--
2,3,7,8-TCDF	NV	NV	NV	NV	NV	2.2 U	--	--
OCDD	NV	NV	NV	NV	NV	121	--	--
OCDF	NV	NV	NV	NV	NV	11.5 J	--	--
Total HpCDDs	NV	NV	NV	NV	NV	21.6 J	--	--
Total HpCDFs	NV	NV	NV	NV	NV	18.6 UJK	--	--
Total HxCDDs	NV	NV	NV	NV	NV	1.27 U	--	--
Total HxCDFs	NV	NV	NV	NV	NV	3.83 UJK	--	--
Total PeCDDs	NV	NV	NV	NV	NV	0.766 U	--	--
Total PeCDFs	NV	NV	NV	NV	NV	0.634 U	--	--
Total TCDDs	NV	NV	NV	NV	NV	1.34 U	--	--
Total TCDFs	NV	NV	NV	NV	NV	2.2 U	--	--
TEQ (ND = 0.5)	0.42	0.42	450	20000	110000	1.93	--	--
<b>Organochlorine Pesticides (ug/L)</b>								
4,4'-DDD	0.1	0.074	31	NV	NV	0.0115 U	0.0101 U	--
4,4'-DDE	0.21	0.21	NV	NV	NV	0.0115 U	0.0101 U	--
4,4'-DDT	0.92	1.4	NV	NV	NV	0.0115 U	0.0101 U	--
Aldrin	0.0042	0.0042	3.5	NV	NV	0.0115 U	0.0101 U	--
alpha-BHC	0.028	0.027	18	NV	NV	0.0115 U	0.0101 U	--
alpha-Chlordane	NV	NV	NV	NV	NV	0.0115 U	0.0101 U	--
beta-BHC	NV	NV	NV	NV	NV	0.0115 U	0.0101 U	--
beta-Chlordane	NV	NV	NV	NV	NV	0.0115 U	0.0101 U	--
Chlordane (Technical)	NV	NV	NV	NV	NV	0.432 U	0.38 U	--

Table 5-3  
Groundwater Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Urban Residential	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Occupational	RBC, Groundwater in Excavation, Construction and Excavation Worker	RBC, Groundwater, Vapor Intrusion Into Building, Urban Residential	RBC, Groundwater, Vapor Intrusion Into Building, Occupational	GP03 GP03-W-33.0 12/12/2017 33	GP14 GP14-W-10.0 12/14/2017 10	GP16 GP16-W-9.0 12/11/2017 9
delta-BHC	NV	NV	NV	NV	NV	0.0115 U	0.0101 U	--
Dieldrin	0.0061	0.005	2.4	NV	NV	0.0115 U	0.0101 U	--
Endosulfan I	NV	NV	NV	NV	NV	0.0115 U	0.0101 U	--
Endosulfan II (beta)	NV	NV	NV	NV	NV	0.0115 U	0.0101 U	--
Endosulfan sulfate	NV	NV	NV	NV	NV	0.0115 U	0.0101 U	--
Endrin	9.5	8.6	170	NV	NV	0.0115 U	0.0101 U	--
Endrin aldehyde	NV	NV	NV	NV	NV	0.0115 U	0.0101 U	--
Endrin ketone	NV	NV	NV	NV	NV	0.0115 U	0.0101 U	--
Heptachlor	0.0051	0.0039	1.8	NV	NV	0.0115 UJ	0.0101 U	--
Heptachlor epoxide	0.0059	0.0053	3.2	NV	NV	0.0115 U	0.0101 U	--
Lindane	0.16	0.16	100	NV	NV	0.0115 U	0.0101 U	--
Methoxychlor	NV	NV	NV	NV	NV	0.0345 U	0.0303 U	--
Toxaphene	0.053	0.04	18	NV	NV	0.432 U	0.38 U	--
<b>PCB Aroclors (ug/L)</b>								
Aroclor 1016	NV	NV	NV	NV	NV	0.0187 U	0.0222 U	--
Aroclor 1221	NV	NV	NV	NV	NV	0.0187 U	0.0222 U	--
Aroclor 1232	NV	NV	NV	NV	NV	0.0187 U	0.0222 U	--
Aroclor 1242	NV	NV	NV	NV	NV	0.0187 U	0.0222 U	--
Aroclor 1248	NV	NV	NV	NV	NV	0.0187 U	0.0222 U	--
Aroclor 1254	NV	NV	NV	NV	NV	0.0187 U	0.0222 U	--
Aroclor 1260	NV	NV	NV	NV	NV	0.0187 U	0.0222 U	--
Aroclor 1262	NV	NV	NV	NV	NV	0.0187 U	0.0222 U	--
Aroclor 1268	NV	NV	NV	NV	NV	0.0187 U	0.0222 U	--
Total PCBs (ND = 0) <sup>a</sup>	0.028	0.028	30	NV	NV	0.0187 U	0.0222 U	--
<b>VOCs (ug/L)</b>								
1,1,1,2-Tetrachloroethane	NV	NV	NV	NV	NV	0.2 U	--	0.2 U
1,1,1-Trichloroethane	30000	37000	1100000	NV	NV	0.2 U	--	0.2 U
1,1,2,2-Tetrachloroethane	NV	NV	NV	NV	NV	0.25 U	--	0.25 U
1,1,2-Trichloroethane	1.3	1.3	49	1000	11000	0.25 U	--	0.25 U
1,1-Dichloroethane	13	13	10000	2600	14000	0.2 U	--	0.2 U
1,1-Dichloroethene	1100	1400	44000	29000	360000	0.2 U	--	0.2 U
1,1-Dichloropropene	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
1,2,3-Trichlorobenzene	NV	NV	NV	NV	NV	1 U	--	1 U
1,2,3-Trichloropropane	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
1,2,4-Trichlorobenzene	NV	NV	NV	NV	NV	1 U	--	1 U
1,2,4-Trimethylbenzene	54	61	1700	5800	NV	0.5 U	--	0.5 U
1,2-Dibromo-3-chloropropane	NV	NV	NV	NV	NV	2.5 U	--	2.5 U
1,2-Dibromoethane	0.034	0.034	27	110	590	0.25 U	--	0.25 U
1,2-Dichlorobenzene	1200	1400	37000	NV	NV	0.25 U	--	0.25 U
1,2-Dichloroethane	0.78	0.78	630	700	3900	0.2 U	--	0.2 U
1,2-Dichloropropane	NV	NV	NV	NV	NV	0.25 U	--	0.25 U
1,3,5-Trimethylbenzene	500	600	15000	NV	NV	0.5 U	--	0.5 U
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	0.25 U	--	0.25 U
1,3-Dichloropropane	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
1,4-Dichlorobenzene	2.3	2.1	1500	1300	7100	0.25 U	--	0.25 U
2,2-Dichloropropane	NV	NV	NV	NV	NV	0.5 U	--	0.5 U

Table 5-3  
Groundwater Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Urban Residential	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Occupational	RBC, Groundwater in Excavation, Construction and Excavation Worker	RBC, Groundwater, Vapor Intrusion Into Building, Urban Residential	RBC, Groundwater, Vapor Intrusion Into Building, Occupational	GP03 GP03-W-33.0 12/12/2017 33	GP14 GP14-W-10.0 12/14/2017 10	GP16 GP16-W-9.0 12/11/2017 9
2-Butanone	NV	NV	NV	NV	NV	5 U	--	5 U
2-Chlorotoluene	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
2-Hexanone	NV	NV	NV	NV	NV	5 U	--	5 U
4-Chlorotoluene	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
4-Isopropyltoluene	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
4-Methyl-2-pentanone	NV	NV	NV	NV	NV	5 U	--	5 U
Acetone	NV	NV	NV	NV	NV	10 U	--	10 U
Acrylonitrile	0.23	0.25	250	1700	9200	1 U	--	1 U
Benzene	2	2.1	1800	510	2800	0.1 U	--	0.1 U
Bromobenzene	NV	NV	NV	NV	NV	0.25 U	--	0.25 U
Bromodichloromethane	0.62	0.6	450	420	2300	0.5 U	--	0.5 U
Bromoform	15	16	14000	85000	470000	0.5 U	--	0.5 U
Bromomethane	28	36	1200	2100	27000	5 U	--	5 U
Carbon disulfide	NV	NV	NV	NV	NV	5 U	--	5 U
Carbon tetrachloride	2	2.1	1800	220	1200	0.5 U	--	0.5 U
Chlorobenzene	290	350	10000	67000	NV	0.25 U	--	0.25 U
Chlorobromomethane	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
Chloroethane	76000	88000	2400000	2800000	NV	5 U	--	5 U
Chloroform	1	0.98	720	290	1600	0.5 U	--	0.5 U
Chloromethane	690	790	22000	26000	330000	2.5 U	--	2.5 U
cis-1,2-Dichloroethene	140	260	18000	NV	NV	0.2 U	--	0.2 U
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
Dibromochloromethane	0.77	0.77	610	2300	13000	0.5 U	--	0.5 U
Dibromomethane	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
Dichlorodifluoromethane	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
Ethylbenzene	6.7	6.4	4500	1500	8200	0.25 U	--	0.25 U
Hexachlorobutadiene	NV	NV	NV	NV	NV	2.5 U	--	2.5 U
Isopropylbenzene	1800	2000	51000	NV	NV	0.5 U	--	0.5 U
m,p-Xylene	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
Methyl tert-butyl ether	64	68	63000	160000	870000	0.5 U	--	0.5 U
Methylene chloride	37	200	79000	160000	3300000	1.5 U	--	1.5 U
Naphthalene	0.78	0.72	500	2000	11000	1 U	--	1 U
n-Butylbenzene	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
n-Propylbenzene	NV	NV	NV	NV	NV	0.25 U	--	0.25 U
o-Xylene	NV	NV	NV	NV	NV	0.25 U	--	0.25 U
sec-Butylbenzene	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
Styrene	4600	5700	170000	NV	NV	0.5 U	--	0.5 U
tert-Butylbenzene	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
Tetrachloroethene	49	48	5600	8700	48000	0.2 U	--	0.2 U
Toluene	4400	6300	220000	NV	NV	0.5 U	--	0.5 U
trans-1,2-dichloroethene	1400	2600	180000	NV	NV	0.2 U	--	0.2 U
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	0.5 U	--	0.5 U
Trichloroethene	2	3.3	3000	430	3700	0.2 U	--	0.2 U
Trichlorofluoromethane	4200	5200	160000	36000	460000	1 U	--	1 U
Vinyl chloride	0.066	0.49	960	21	880	0.2 U	--	0.2 U
Xylenes, Total <sup>b</sup>	710	830	23000	86000	NV	0.5 U	--	0.5 U



Table 5-3  
Groundwater Analytical Results - Hazardous Materials  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Urban Residential	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Occupational	RBC, Groundwater in Excavation, Construction and Excavation Worker	RBC, Groundwater, Vapor Intrusion Into Building, Urban Residential	RBC, Groundwater, Vapor Intrusion Into Building, Occupational	GP03 GP03-W-33.0 12/12/2017 33	GP14 GP14-W-10.0 12/14/2017 10	GP16 GP16-W-9.0 12/11/2017 9
<b>PAHs (ug/L)</b>								
1-Methylnaphthalene	NV	NV	NV	NV	NV	0.0816 U	0.0202 U	0.0244 U
2-Methylnaphthalene	NV	NV	NV	NV	NV	0.0816 U	0.0202 U	0.0244 U
Acenaphthene	2400	2500	NV	NV	NV	0.0408 U	0.0101 U	0.0122 U
Acenaphthylene	NV	NV	NV	NV	NV	0.0408 U	<b>0.0208</b>	0.0122 U
Anthracene	NV	NV	NV	NV	NV	0.0408 U	<b>0.014 J</b>	0.0122 U
Benzo(a)anthracene	0.043	0.17	NV	NV	NV	<b>0.0574 J</b>	<b>0.0523 J</b>	0.0122 U
Benzo(a)pyrene	0.011	<b>0.064</b>	NV	NV	NV	<b>0.0994 J</b>	<b>0.0858</b>	0.0183 U
Benzo(b)fluoranthene	0.11	0.64	NV	NV	NV	<b>0.0651 J</b>	<b>0.0831 J</b>	0.0183 U
Benzo(ghi)perylene	NV	NV	NV	NV	NV	0.0408 U	<b>0.0499</b>	0.0122 U
Benzo(k)fluoranthene	NV	NV	NV	NV	NV	0.0612 U	<b>0.0222 J</b>	0.0183 U
Chrysene	NV	NV	NV	NV	NV	0.0408 U	<b>0.0604 J</b>	0.0122 U
Dibenzo(a,h)anthracene	0.011	0.064	NV	NV	NV	0.0408 U	<b>0.0133 J</b>	0.0122 U
Fluoranthene	NV	NV	NV	NV	NV	<b>0.0543 J</b>	<b>0.0731</b>	0.0122 U
Fluorene	1400	1300	NV	NV	NV	0.0408 U	0.0101 U	0.0122 U
Indeno(1,2,3-cd)pyrene	0.11	NV	NV	NV	NV	0.0408 U	<b>0.0473</b>	0.0122 U
Naphthalene	0.78	0.72	500	2000	11000	0.0816 U	0.0202 U	0.0244 U
Phenanthrene	NV	NV	NV	NV	NV	<b>0.042 J</b>	<b>0.0246</b>	0.0122 U
Pyrene	NV	NV	NV	NV	NV	<b>0.0643 J</b>	<b>0.108</b>	0.0122 U
cPAH TEO (ND = 0.5)	0.011	<b>0.064</b>	NV	NV	NV	<b>0.134</b>	<b>0.118</b>	0.0183 U
<b>Hydrocarbon Identification (Presence/Absence)</b>								
Gasoline-range Organics	NA	NA	NA	NA	NA	ND	--	--
Diesel-range Organics	NA	NA	NA	NA	NA	ND	--	--
Residual Oil-range Organics	NA	NA	NA	NA	NA	<b>DETECT</b>	--	--
<b>TPH (ug/L)</b>								
Gasoline-range Organics	110	450	14000	22000	NV	--	50 U	50 U
Diesel-range Organics	100	430	NV	NV	NV	105 U	109 U	102 U
Residual Oil-range Organics	100 <sup>c</sup>	430 <sup>c</sup>	NV	NV	NV	<b>318 J</b>	217 U	204 U

**Table 5-3**  
**Groundwater Analytical Results - Hazardous Materials**  
**Willamette Falls Legacy Project**  
**Metro Regional Government**  
**Oregon City, Oregon**

NOTES:

Result values in bold font indicate a detection.

Shaded result values indicate exceedance of Oregon DEQ RBCs or Clean Fill. Non-detect results are not evaluated against screening levels.

When all cPAH or dioxin/furan TEQ constituents are non-detect, the highest non-detect value is shown. cPAH TEQ values are based on toxic equivalence factors from USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, 1993 (EPA/600/R-93/089); and USEPA Recommended Toxicity Equivalence Factors for Human Health Risk Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds, 2010 (EPA/100/R-10/005).

-- = not analyzed.

cPAH = carcinogenic PAH.

DEQ = Oregon Department of Environmental Quality.

ft bgs = feet below ground surface.

J = result is an estimated value.

NJ = chromatographic pattern does not match the calibration standard.

NA = not applicable.

ND = not detected.

NV = no value; value exceeds 1,000,000 mg/kg; or RBC exceeds limit of three-phase equilibrium partitioning.

OCDD = octachlorodibenzodioxin.

OCDF = octachlorodibenzofuran.

PAH = polycyclic aromatic hydrocarbon.

pg/L = picogram per liter.

RBCs = risk-based concentrations for individual chemicals (DEQ, November 1, 2015).

TEQ = toxicity equivalence.

TPH = total petroleum hydrocarbons.

U = result not detected at or above method detection limit or method reporting limit.

ug/L = micrograms per liter.

UJ = result is non-detect and an estimated value.

UJK = result is not detected, an estimated value, and an estimated maximum potential concentration.

USEPA = U.S. Environmental Protection Agency.

VOC = volatile organic compound.

<sup>a</sup>Total PCBs are the sum of detected PCB Aroclors.

<sup>b</sup>Total xylenes are sum of m,p-xylene and o-xylene. Where both results are non-detect, the higher detection limit is used.

<sup>c</sup>Value is for generic diesel/heating oil, since generic residual-range hydrocarbon values are not available.

Table 5-4  
Groundwater Analytical Results - Petroleum  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Urban Residential	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Occupational	RBC, Groundwater in Excavation, Construction and Excavation Worker	RBC, Groundwater, Vapor Intrusion Into Building, Urban Residential	RBC, Groundwater, Vapor Intrusion Into Building, Occupational	GP07 GP07-W-15.0 12/12/2017 15	GP08 GP08-W-6.5 12/12/2017 6.5	GP10 GP10-W-8.0 12/14/2017 8.0	GP10 GP10-W-8.0-DUP 12/14/2017 8.0
<b>Total Metals (ug/L)</b>									
Arsenic	0.21	0.31	6300	NV	NV	10.7	12.6	0.982 J	0.828 J
Barium	15000	33000	NV	NV	NV	398	485	41	40.2
Cadmium	73	160	130000	NV	NV	2.19	1.4 J	0.0407 J	0.04 U
Chromium	NV	NV	NV	NV	NV	64.7	76.4	3.36	3.02
Hexavalent Chromium	0.16	0.9	9400	NV	NV	--	0.3 U	--	--
Lead	15	15	NV	NV	NV	57.3	180	12.8	12.6
Mercury	22	49	NV	NV	NV	0.52	0.36 U	0.0403 J	0.04 U
Selenium	NV	NV	NV	NV	NV	1.57	4.5 U	0.5 U	0.5 U
Silver	370	820	1100000	NV	NV	0.432	0.9 U	0.1 U	0.1 U
<b>Dioxin/Furans (pg/L)</b>									
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	NV	NV	--	24.4 UJK	--	--
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	NV	NV	--	12.8 U	--	--
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	NV	NV	--	18.5 U	--	--
1,2,3,4,7,8-HxCDD	NV	NV	NV	NV	NV	--	12.6 U	--	--
1,2,3,4,7,8-HxCDF	NV	NV	NV	NV	NV	--	10.7 U	--	--
1,2,3,6,7,8-HxCDD	NV	NV	NV	NV	NV	--	12.5 U	--	--
1,2,3,6,7,8-HxCDF	NV	NV	NV	NV	NV	--	10 U	--	--
1,2,3,7,8,9-HxCDD	NV	NV	NV	NV	NV	--	19.1 UJK	--	--
1,2,3,7,8,9-HxCDF	NV	NV	NV	NV	NV	--	11 U	--	--
1,2,3,7,8-PeCDD	NV	NV	NV	NV	NV	--	16.3 U	--	--
1,2,3,7,8-PeCDF	NV	NV	NV	NV	NV	--	15 U	--	--
2,3,4,6,7,8-HxCDF	NV	NV	NV	NV	NV	--	9.55 U	--	--
2,3,4,7,8-PeCDF	NV	NV	NV	NV	NV	--	12.8 U	--	--
2,3,7,8-TCDD	0.42	0.42	450	20000	110000	--	27.7 UJ	--	--
2,3,7,8-TCDF	NV	NV	NV	NV	NV	--	41.8 UJ	--	--
OCDD	NV	NV	NV	NV	NV	--	64.6 J	--	--
OCDF	NV	NV	NV	NV	NV	--	41.4 U	--	--
Total HpCDDs	NV	NV	NV	NV	NV	--	24.4 UJK	--	--
Total HpCDFs	NV	NV	NV	NV	NV	--	12.8 U	--	--
Total HxCDDs	NV	NV	NV	NV	NV	--	32.1 JK	--	--
Total HxCDFs	NV	NV	NV	NV	NV	--	9.55 U	--	--
Total PeCDDs	NV	NV	NV	NV	NV	--	16.3 U	--	--
Total PeCDFs	NV	NV	NV	NV	NV	--	12.8 U	--	--
Total TCDDs	NV	NV	NV	NV	NV	--	27.7 U	--	--
Total TCDFs	NV	NV	NV	NV	NV	--	41.8 U	--	--
TEQ (ND = 0.5)	0.42	0.42	450	20000	110000	--	30.8	--	--

Table 5-4  
Groundwater Analytical Results - Petroleum  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Urban Residential	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Occupational	RBC, Groundwater in Excavation, Construction and Excavation Worker	RBC, Groundwater, Vapor Intrusion Into Building, Urban Residential	RBC, Groundwater, Vapor Intrusion Into Building, Occupational	GP07 GP07-W-15.0 12/12/2017 15	GP08 GP08-W-6.5 12/12/2017 6.5	GP10 GP10-W-8.0 12/14/2017 8.0	GP10 GP10-W-8.0-DUP 12/14/2017 8.0
<b>Organochlorine Pesticides (ug/L)</b>									
4,4'-DDD	0.1	0.074	31	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
4,4'-DDE	0.21	0.21	NV	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
4,4'-DDT	0.92	1.4	NV	NV	NV	--	0.0217 U	0.0198 U	0.0198 U
Aldrin	0.0042	0.0042	3.5	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
alpha-BHC	0.028	0.027	18	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
alpha-Chlordane	NV	NV	NV	NV	NV	--	0.0217 U	0.0198 U	0.0099 U
beta-BHC	NV	NV	NV	NV	NV	--	0.0435 U	0.0099 U	0.0099 U
beta-Chlordane	NV	NV	NV	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
Chlordane (Technical)	0.2	0.21	NV	NV	NV	--	0.817 U	0.372 U	0.372 U
delta-BHC	NV	NV	NV	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
Dieldrin	0.0061	0.005	2.4	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
Endosulfan I	NV	NV	NV	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
Endosulfan II (beta)	NV	NV	NV	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
Endosulfan sulfate	NV	NV	NV	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
Endrin	9.5	8.6	170	NV	NV	--	0.0217 U	0.0198 U	0.0198 U
Endrin aldehyde	NV	NV	NV	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
Endrin ketone	NV	NV	NV	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
Heptachlor	0.0051	0.0039	1.8	NV	NV	--	0.0217 UJ	0.0099 U	0.0099 U
Heptachlor epoxide	0.0059	0.0053	3.2	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
Lindane	0.16	0.16	100	NV	NV	--	0.0217 U	0.0099 U	0.0099 U
Methoxychlor	NV	NV	NV	NV	NV	--	0.0652 U	0.0297 U	0.0297 U
Toxaphene	0.053	0.04	18	NV	NV	--	0.817 U	0.372 U	0.372 U
<b>PCB Aroclors (ug/L)</b>									
Aroclor 1016	NV	NV	NV	NV	NV	--	0.0208 U	--	--
Aroclor 1221	NV	NV	NV	NV	NV	--	0.0208 U	--	--
Aroclor 1232	NV	NV	NV	NV	NV	--	0.0208 U	--	--
Aroclor 1242	NV	NV	NV	NV	NV	--	0.0208 U	--	--
Aroclor 1248	NV	NV	NV	NV	NV	--	0.0208 U	--	--
Aroclor 1254	NV	NV	NV	NV	NV	--	0.0208 U	--	--
Aroclor 1260	NV	NV	NV	NV	NV	--	0.0208 U	--	--
Aroclor 1262	NV	NV	NV	NV	NV	--	0.0208 U	--	--
Aroclor 1268	NV	NV	NV	NV	NV	--	0.0208 U	--	--
Total PCBs (ND = 0) <sup>a</sup>	0.028	0.028	30	NV	NV	--	0.0208 U	--	--

Table 5-4  
Groundwater Analytical Results - Petroleum  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Urban Residential	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Occupational	RBC, Groundwater in Excavation, Construction and Excavation Worker	RBC, Groundwater, Vapor Intrusion Into Building, Urban Residential	RBC, Groundwater, Vapor Intrusion Into Building, Occupational	GP07 GP07-W-15.0 12/12/2017 15	GP08 GP08-W-6.5 12/12/2017 6.5	GP10 GP10-W-8.0 12/14/2017 8.0	GP10 GP10-W-8.0-DUP 12/14/2017 8.0
<b>VOCs (ug/L)</b>									
1,1,1,2-Tetrachloroethane	NV	NV	NV	NV	NV	0.2 U	4 U	0.2 U	0.2 U
1,1,1-Trichloroethane	30000	37000	1100000	NV	NV	0.2 U	4 U	0.2 U	0.2 U
1,1,2,2-Tetrachloroethane	NV	NV	NV	NV	NV	0.25 U	5 U	0.25 U	0.25 U
1,1,2-Trichloroethane	1.3	1.3	49	1000	11000	0.25 U	5 U	0.25 U	0.25 U
1,1-Dichloroethane	13	13	10000	2600	14000	0.2 U	4 U	0.2 U	0.2 U
1,1-Dichloroethene	1100	1400	44000	29000	360000	0.2 U	4 U	0.2 U	0.2 U
1,1-Dichloropropene	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
1,2,3-Trichlorobenzene	NV	NV	NV	NV	NV	1 U	20 U	1 U	1 U
1,2,3-Trichloropropane	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
1,2,4-Trichlorobenzene	NV	NV	NV	NV	NV	1 U	20 U	1 U	1 U
1,2,4-Trimethylbenzene	54	61	1700	5800	NV	0.5 U	10 U	0.5 U	0.5 U
1,2-Dibromo-3-chloropropane	NV	NV	NV	NV	NV	2.5 U	50 U	2.5 U	2.5 U
1,2-Dibromoethane	0.034	0.034	27	110	590	0.25 U	5 U	0.25 U	0.25 U
1,2-Dichlorobenzene	1200	1400	37000	NV	NV	0.25 U	5 U	0.25 U	0.25 U
1,2-Dichloroethane	0.78	0.78	630	700	3900	0.2 U	4 U	0.2 U	0.2 U
1,2-Dichloropropane	NV	NV	NV	NV	NV	0.25 U	5 U	0.25 U	0.25 U
1,3,5-Trimethylbenzene	500	600	15000	NV	NV	0.5 U	10 U	0.5 U	0.5 U
1,3-Dichlorobenzene	NV	NV	NV	NV	NV	0.25 U	5 U	0.25 U	0.25 U
1,3-Dichloropropane	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
1,4-Dichlorobenzene	2.3	2.1	1500	1300	7100	0.25 U	5 U	0.25 U	0.25 U
2,2-Dichloropropane	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
2-Butanone	NV	NV	NV	NV	NV	5 U	100 U	5 U	5 U
2-Chlorotoluene	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
2-Hexanone	NV	NV	NV	NV	NV	5 U	100 U	5 U	5 U
4-Chlorotoluene	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
4-Isopropyltoluene	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
4-Methyl-2-pentanone	NV	NV	NV	NV	NV	5 U	100 U	5 U	5 U
Acetone	NV	NV	NV	NV	NV	10 U	200 U	10 U	10 U
Acrylonitrile	0.23	0.25	250	1700	9200	1 U	20 U	1 U	1 U
Benzene	2	2.1	1800	510	2800	0.1 U	2 U	0.1 U	0.1 U
Bromobenzene	NV	NV	NV	NV	NV	0.25 U	5 U	0.25 U	0.25 U
Bromodichloromethane	0.62	0.6	450	420	2300	0.5 U	10 U	0.5 U	0.5 U
Bromoform	15	16	14000	85000	470000	0.5 U	10 U	0.5 U	0.5 U
Bromomethane	28	36	1200	2100	27000	5 U	100 U	5 U	5 U

Table 5-4  
Groundwater Analytical Results - Petroleum  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Urban Residential	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Occupational	RBC, Groundwater in Excavation, Construction and Excavation Worker	RBC, Groundwater, Vapor Intrusion Into Building, Urban Residential	RBC, Groundwater, Vapor Intrusion Into Building, Occupational	GP07 GP07-W-15.0 12/12/2017 15	GP08 GP08-W-6.5 12/12/2017 6.5	GP10 GP10-W-8.0 12/14/2017 8.0	GP10 GP10-W-8.0-DUP 12/14/2017 8.0
Carbon disulfide	NV	NV	NV	NV	NV	5 U	100 U	5 U	5 U
Carbon tetrachloride	2	2.1	1800	220	1200	0.5 U	10 U	0.5 U	0.5 U
Chlorobenzene	290	350	10000	67000	NV	0.25 U	5 U	0.25 U	0.25 U
Chlorobromomethane	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
Chloroethane	76000	88000	2400000	2800000	NV	5 U	100 U	5 U	5 U
Chloroform	1	0.98	720	290	1600	0.5 U	10 U	0.5 U	0.5 U
Chloromethane	690	790	22000	26000	330000	2.5 U	50 U	2.5 U	2.5 U
cis-1,2-Dichloroethene	140	260	18000	NV	NV	0.2 U	4 U	0.2 U	0.2 U
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
Dibromochloromethane	0.77	0.77	610	2300	13000	0.5 U	10 U	0.5 U	0.5 U
Dibromomethane	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
Dichlorodifluoromethane	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
Ethylbenzene	6.7	6.4	4500	1500	8200	0.25 U	5 U	0.25 U	0.25 U
Hexachlorobutadiene	NV	NV	NV	NV	NV	2.5 U	50 U	2.5 U	2.5 U
Isopropylbenzene	1800	2000	51000	NV	NV	0.5 U	10 U	0.5 U	0.5 U
m,p-Xylene	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
Methyl tert-butyl ether	64	68	63000	160000	870000	0.5 U	10 U	0.5 U	0.5 U
Methylene chloride	37	200	79000	160000	3300000	1.5 U	30 U	1.5 U	1.5 U
Naphthalene	0.78	0.72	500	2000	11000	1 U	20 U	1 U	1 U
n-Butylbenzene	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
n-Propylbenzene	NV	NV	NV	NV	NV	0.25 U	5 U	0.25 U	0.25 U
o-Xylene	NV	NV	NV	NV	NV	0.25 U	5 U	0.25 U	0.25 U
sec-Butylbenzene	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
Styrene	4600	5700	170000	NV	NV	0.5 U	10 U	0.5 U	0.5 U
tert-Butylbenzene	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
Tetrachloroethene	49	48	5600	8700	48000	0.2 U	4 U	0.2 U	0.2 U
Toluene	4400	6300	220000	NV	NV	0.5 U	10 U	0.5 U	0.5 U
trans-1,2-dichloroethene	1400	2600	180000	NV	NV	0.2 U	4 U	0.2 U	0.2 U
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	0.5 U	10 U	0.5 U	0.5 U
Trichloroethene	2	3.3	3000	430	3700	0.2 U	4 U	0.2 U	0.2 U
Trichlorofluoromethane	4200	5200	160000	36000	460000	1 U	20 U	1 U	1 U
Vinyl chloride	0.066	0.49	960	21	880	0.2 U	4 U	0.2 U	0.2 U
Xylenes, Total <sup>b</sup>	710	830	23000	86000	NV	0.5 U	10 U	0.5 U	0.5 U

Table 5-4  
Groundwater Analytical Results - Petroleum  
Willamette Falls Legacy Project  
Metro Regional Government  
Oregon City, Oregon

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Urban Residential	RBC, Groundwater, Ingestion and Inhalation from Tapwater, Occupational	RBC, Groundwater in Excavation, Construction and Excavation Worker	RBC, Groundwater, Vapor Intrusion Into Building, Urban Residential	RBC, Groundwater, Vapor Intrusion Into Building, Occupational	GP07 GP07-W-15.0 12/12/2017 15	GP08 GP08-W-6.5 12/12/2017 6.5	GP10 GP10-W-8.0 12/14/2017 8.0	GP10 GP10-W-8.0-DUP 12/14/2017 8.0
<b>PAHs (ug/L)</b>									
1-Methylnaphthalene	NV	NV	NV	NV	NV	0.0769 U	<b>44.1</b>	<b>0.727</b>	<b>0.795</b>
2-Methylnaphthalene	NV	NV	NV	NV	NV	0.0769 U	1.7 U	0.2 U	0.208 U
Acenaphthene	2400	2500	NV	NV	NV	0.0385 U	6.81 U	1.2 U	1.15 U
Acenaphthylene	NV	NV	NV	NV	NV	0.0385 U	1.7 U	0.2 U	0.208 U
Anthracene	NV	NV	NV	NV	NV	0.0385 U	<b>3.69</b>	<b>0.346</b>	<b>0.336</b>
Benzo(a)anthracene	0.043	<b>0.17</b>	NV	NV	NV	<b>0.0437 J</b>	<b>2.56 J</b>	<b>0.328 J</b>	<b>0.281 J</b>
Benzo(a)pyrene	0.011	<b>0.064</b>	NV	NV	NV	<b>0.0791 J</b>	<b>1.77 J</b>	<b>0.173 J</b>	<b>0.17 J</b>
Benzo(b)fluoranthene	0.11	0.64	NV	NV	NV	0.0577 U	1.28 U	0.15 U	0.156 U
Benzo(ghi)perylene	NV	NV	NV	NV	NV	<b>0.0805</b>	0.851 U	<b>0.133 J</b>	<b>0.117 J</b>
Benzo(k)fluoranthene	NV	NV	NV	NV	NV	0.0577 U	1.28 U	0.15 U	0.156 U
Chrysene	NV	NV	NV	NV	NV	<b>0.0533 J</b>	<b>5.15</b>	<b>0.514 J</b>	<b>0.518 J</b>
Dibenzo(a,h)anthracene	0.011	0.064	NV	NV	NV	0.0385 U	0.851 U	0.1 U	0.104 U
Fluoranthene	NV	NV	NV	NV	NV	<b>0.053 J</b>	<b>1.84</b>	<b>0.235</b>	<b>0.246</b>
Fluorene	1400	1300	NV	NV	NV	0.0385 U	<b>7.21</b>	<b>0.998</b>	<b>1.01</b>
Indeno(1,2,3-cd)pyrene	0.11	NV	NV	NV	NV	<b>0.043 J</b>	0.851 U	0.1 U	0.104 U
Naphthalene	0.78	0.72	500	2000	11000	0.0769 U	1.7 U	0.2 U	0.208 U
Phenanthrene	NV	NV	NV	NV	NV	<b>0.0412 J</b>	<b>15.2</b>	<b>0.276</b>	<b>0.287</b>
Pyrene	NV	NV	NV	NV	NV	<b>0.077</b>	<b>6.14</b>	<b>0.911</b>	<b>0.862</b>
cPAH TEQ (ND = 0.5)	0.011	<b>0.064</b>	NV	NV	NV	<b>0.110</b>	<b>2.57</b>	<b>0.270</b>	<b>0.264</b>
<b>Hydrocarbon Identification (Presence/Absence)</b>									
Gasoline-range Organics	NA	NA	NA	NA	NA	--	<b>DETECT</b>	ND	ND
Diesel-range Organics	NA	NA	NA	NA	NA	--	<b>DETECT</b>	<b>DETECT</b>	<b>DETECT</b>
Residual Oil-range Organics	NA	NA	NA	NA	NA	--	<b>DETECT</b>	<b>DETECT</b>	<b>DETECT</b>
<b>TPH (ug/L)</b>									
Gasoline-range Organics	110	450	14000	22000	NV	50 U	1000 U	50 U	50 U
Diesel-range Organics	100	<b>430</b>	NV	NV	NV	108 U	<b>60500 J</b>	<b>2510 J</b>	<b>2310 J</b>
Residual Oil-range Organics	100 <sup>c</sup>	<b>430<sup>c</sup></b>	NV	NV	NV	215 U	<b>44400 J</b>	<b>1950 J</b>	<b>1700 J</b>

NOTES:

Result values in bold font indicate a detection.

Shaded result values indicate exceedance of Oregon DEQ RBCs or Clean Fill. Non-detect results are not evaluated against screening levels.

When all cPAH or dioxin/furan TEQ constituents are non-detect, the highest non-detect value is shown. cPAH TEQ values are based on toxic equivalence factors from USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, 1993 (EPA/600/R-93/089); and USEPA Recommended Toxicity Equivalence Factors for Human Health Risk Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds, 2010 (EPA/100/R-10/005).

-- = not analyzed.

cPAH = carcinogenic PAH.

DEQ = Oregon Department of Environmental Quality.

ft bgs = feet below ground surface.

J = result is an estimated value.

NA = not applicable.

ND = not detected.

NV = no value or RBC exceeds solubility limit.

OCDD = octachlorodibenzodioxin.

OCDF = octachlorodibenzofuran.

PAH = polycyclic aromatic hydrocarbon.

pg/L = picogram per liter.

RBCs = risk-based concentrations for individual chemicals (DEQ, November 1, 2015).

TEQ = toxicity equivalence.

TPH = total petroleum hydrocarbons.

U = result not detected at or above method detection limit.

ug/L = micrograms per liter.

UJ = result is non-detect and an estimated value.

USEPA = U.S. Environmental Protection Agency.

VOC = volatile organic compound.

<sup>a</sup>Total PCBs are the sum of detected PCB Aroclors.

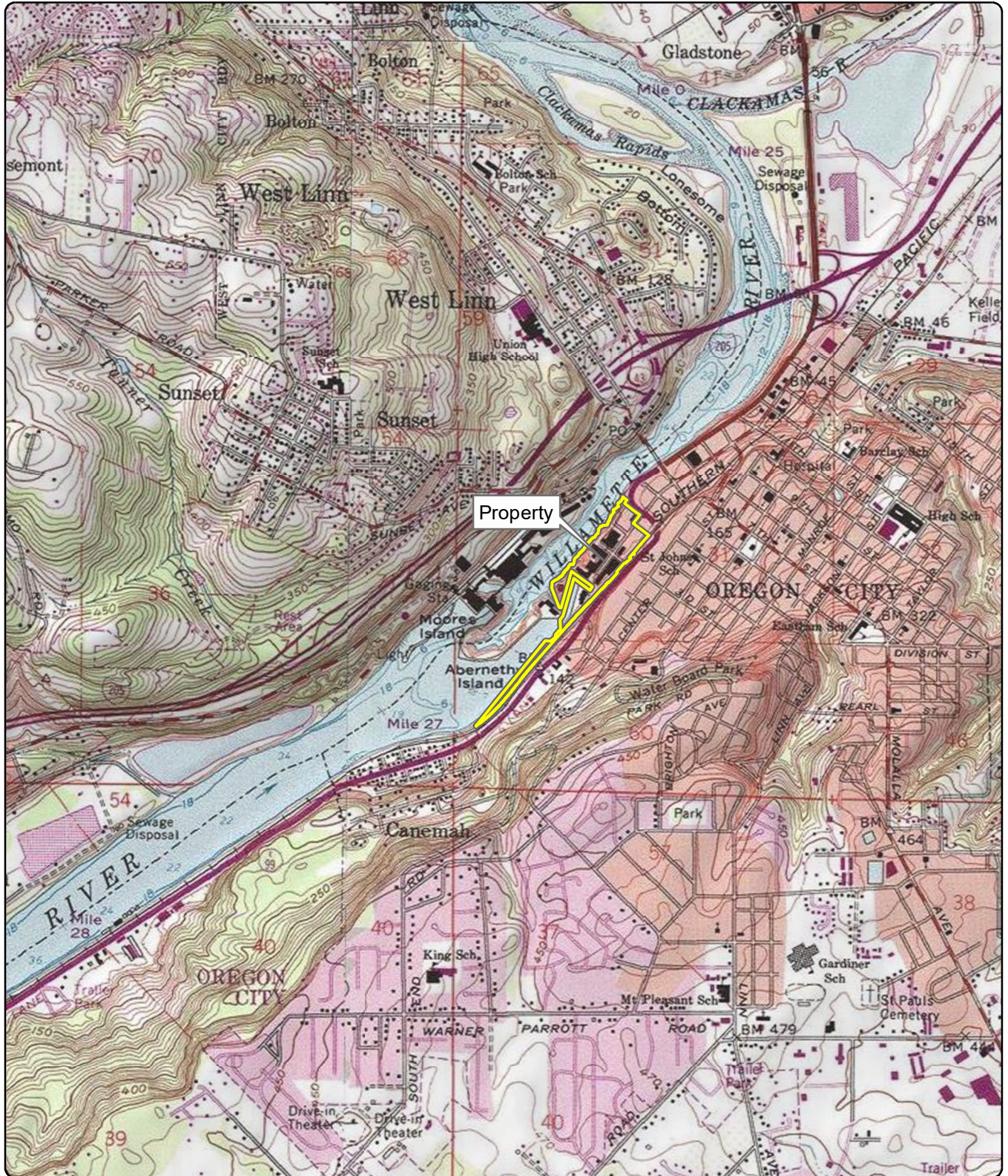
<sup>b</sup>Total xylenes are sum of m,p-xylene and o-xylene. Where both results are non-detect, the higher detection limit is used.

<sup>c</sup>Value is for generic diesel/heating oil, since generic residual-range hydrocarbon values are not available.



# FIGURES





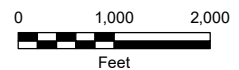
Site Address: 419 and 427 Main Street, Oregon City, Oregon 97045  
 Section 31, Township 2 South, Range 2 East of the Willamette Meridian.  
 Source: US Geological Survey (1985) 7.5-minute topographic quadrangles: Oregon City and Canby; property boundary prepared using parcels (May 2017) obtained from Metro Regional Land Information System database.

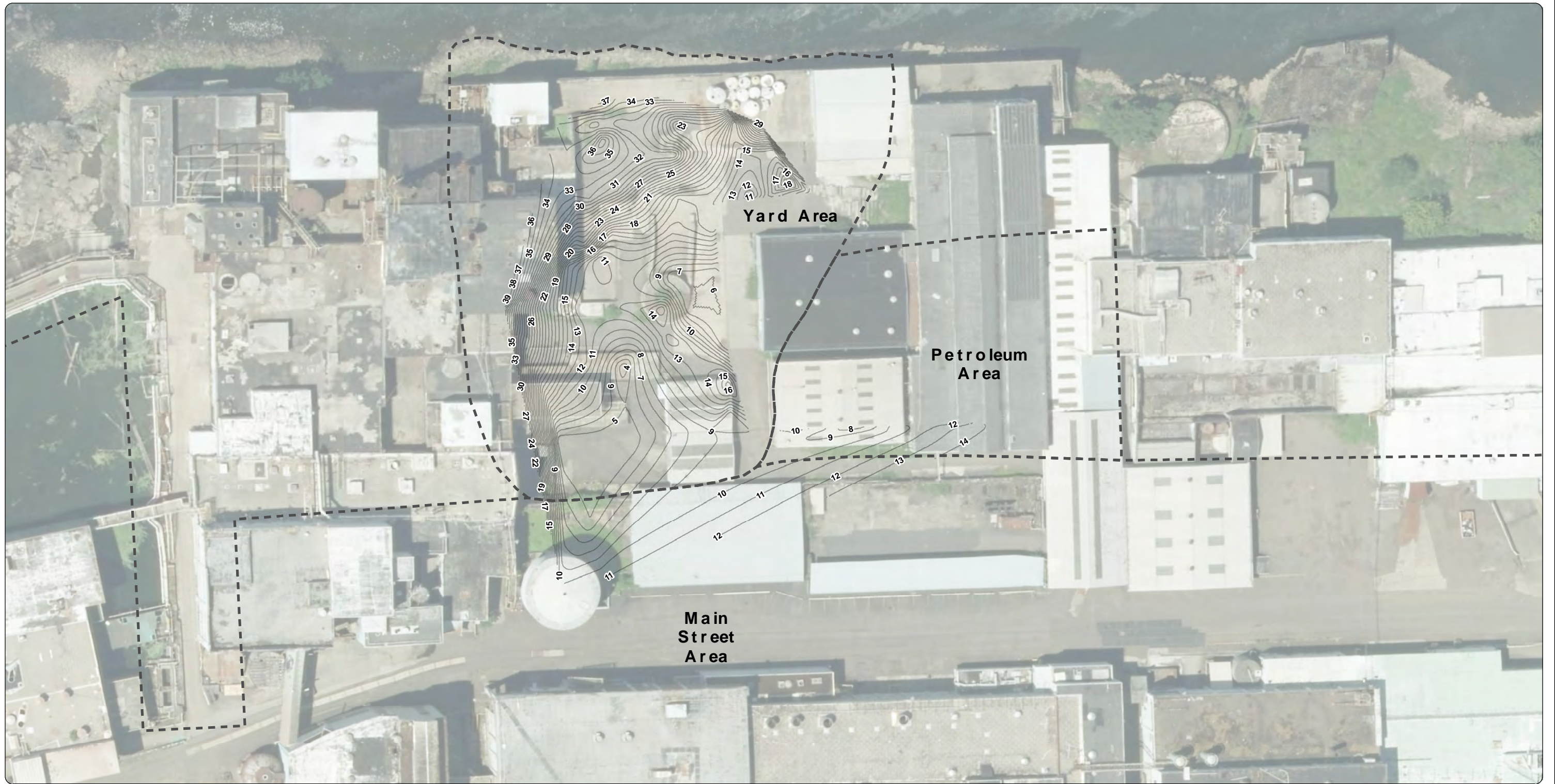


This product is for informational purposes and may not have been prepared for, or be suitable for, legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

**Figure 1-1  
Site Location**



Metro Willamette Falls Site  
Oregon City, Oregon





Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

NOTE:  
All features are approximate.

-  Site Area
-  NW Geotech Borings Depth To Bedrock Contours (1ft)

**Figure 2-1**  
**Site Areas and Depth to Bedrock in the Yard Area**

Metro Willamette Falls Site  
Oregon City, Oregon



Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

- Phase I Boundary (buildings or structures for re-use)
- Phase I Additional Demolitions Boundaries (demolition down to ground)
- Road
- Property Boundary

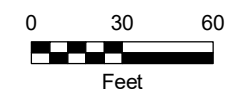
**Site Features**

- ✱ Bleach House
- + Dye House
- ⊕ Sulphite Unloading
- Garage
- L Laundry
- Odor

- Oil Storage
- AST
- UST
- Paint Shop
- Spill
- Substation
- Water Well

Bldg. Num.	Bldg. Description	Bldg. Num.	Bldg. Description
11	MILL D, WAREHOUSE NO. 2 FINISHING	22	AUTO SHOP
14	SUBSTATION - N; SUBSTATION - SW; SUBSTATION - SE, CHEMICAL & TOTE STORAGE	26	MILL "O" COVERED STORAGE (COVERED PART OF WOLLEN MILL)
16	WEST, WEST-CENTER, EAST-CENTER, EAST	27	SOUTH SUBSTATION (ELECTRIC CENTER)
19	CARPENTER SHOP	28	RECOVERY BOILER
20	PIPE SHOP	29	BOILER PLANT
21	MILLWRIGHT SHOP	31	TMP REJECT REFINING & SCREENING

**Figure 2-2**  
**Current and Historical Site Features of Interest**  
Metro Willamette Falls Site  
Oregon City, Oregon





Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

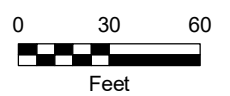
NOTES:  
All features are approximate.  
AST = aboveground storage tank.  
UST = underground storage tank.

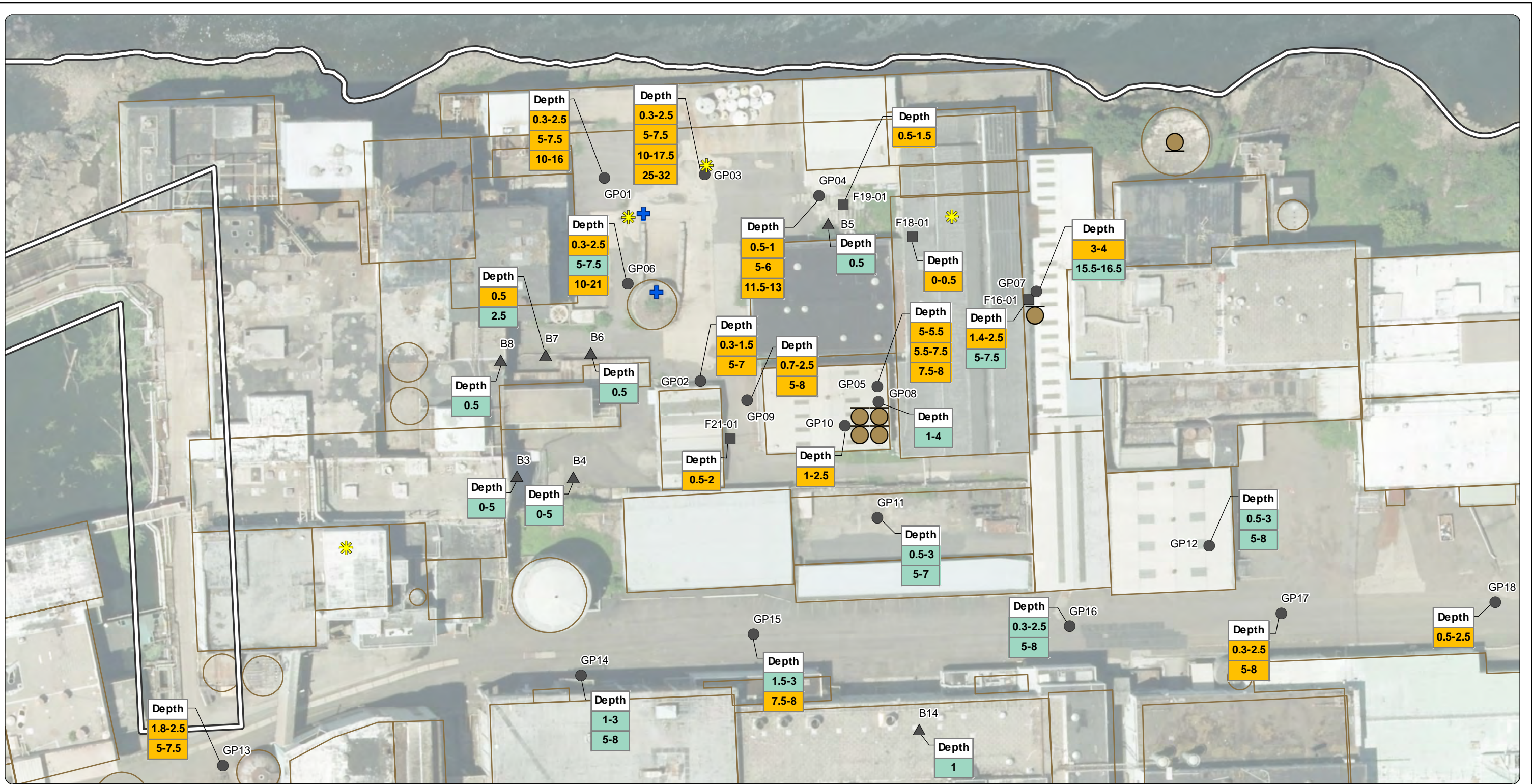
- 2017 Sample Location (MFA)
- 2012 Sample Location (ERM)
- ▲ 2011 Sample Location (Bridgewater Group, Inc.)

- |                           |               |
|---------------------------|---------------|
| ▭ Property Boundary       | ● Oil Storage |
| <b>Site Features</b>      | ● AST         |
| ☀ Bleach House            | ● UST         |
| ⊕ Dye House               | Ⓟ Paint Shop  |
| ⊕ Sulphite Unloading Area | ☑ Spill       |
| ■ Garage                  | Ⓢ Substation  |
| 🟢 Laundry                 | 🟡 Water Well  |
| 🟡 Odor                    |               |

**Figure 3-1**  
**Sample Locations and Features of Interest**

Metro Willamette Falls Site  
Oregon City, Oregon





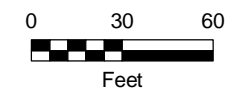
Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

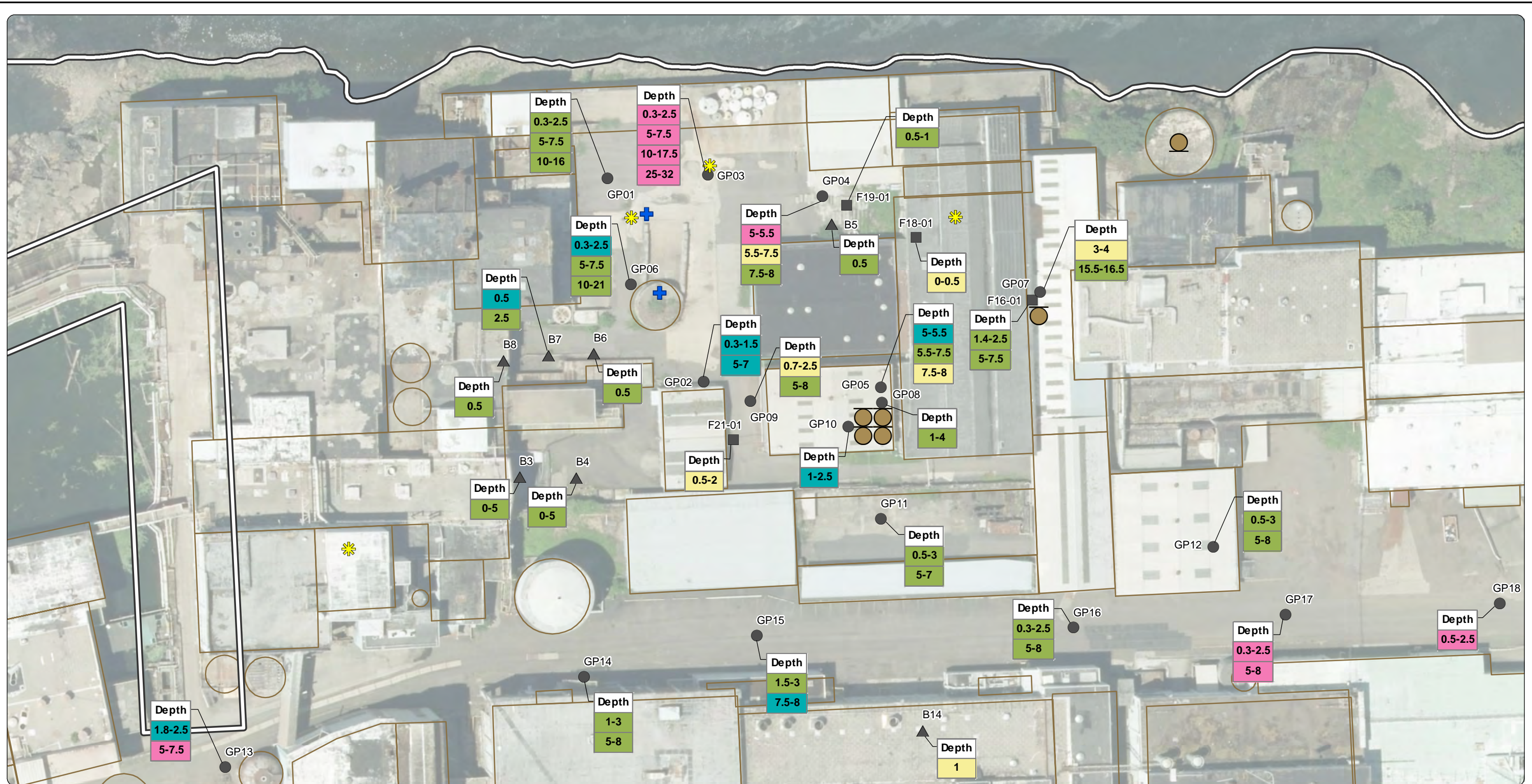
**NOTES:**  
 All features are approximate.  
 Depth intervals are measured in feet below ground surface.  
 AST = aboveground storage tank.  
 UST = underground storage tank.

- 2017 Sample Location (MFA)
- 2012 Sample Location (ERM)
- ▲ 2011 Sample Location (Bridgewater Group, Inc.)
- Clean Fill
- Exceeds Clean Fill Criteria

- Site Features
- ★ Bleach House
  - ⊕ Dye House
  - AST
  - UST

**Figure 5-1**  
**Clean Fill Criteria Exceedance in Soil**  
 Metro Willamette Falls Site  
 Oregon City, Oregon





Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

**NOTES:**  
 All features are approximate.  
 Depth intervals are measured in feet below ground surface.  
 AST = aboveground storage tank.  
 RBC = risk-based concentration for individual chemicals (DEQ, November 1, 2015).  
 UST = underground storage tank.

- 2017 Sample Location (MFA)
- 2012 Sample Location (ERM)
- ▲ 2011 Sample Location (Bridgewater Group, Inc.)

- RBC Exceedance**
- None
  - Residential
  - Occupational
  - Construction Worker

- Site Features**
- Bleach House
  - Dye House
  - AST
  - UST

**Figure 5-2**  
**Highest RBC Value Exceedance in Soil**  
 Metro Willamette Falls Site  
 Oregon City, Oregon



Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

**NOTES:**  
 All features are approximate. Only locations where arsenic was analyzed are shown.  
 AST = aboveground storage tank.  
 RBC = risk-based concentration for individual chemicals (DEQ, November 1, 2015).  
 UST = underground storage tank.

- 2017 Sample Location (MFA)
- 2012 Sample Location (ERM)
- Occupational Arsenic RBC Exceedance
- Construction Worker Arsenic RBC Exceedance

- ▭ Property Boundary
- Site Features**
- ✱ Bleach House
- ⊕ Dye House
- AST
- UST

**Figure 5-3**  
**Arsenic RBC Exceedance in Soil**  
 Metro Willamette Falls Site  
 Oregon City, Oregon





Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

**NOTES:**  
 All features are approximate. Only locations where lead was analyzed are shown.  
 AST = aboveground storage tank.  
 RBC = risk-based concentration for individual chemicals (DEQ, November 1, 2015).  
 UST = underground storage tank.

- 2017 Sample Location (MFA)
- 2012 Sample Location (ERM)
- Construction Worker RBC Lead Exceedance
- Urban Residential RBC Lead Exceedance

- Property Boundary
- Site Features**
- ✱ Bleach House
- ⊕ Dye House
- AST
- UST

**Figure 5-4**  
**Lead RBC Exceedance in Soil**  
 Metro Willamette Falls Site  
 Oregon City, Oregon



Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

**NOTES:**  
 Only locations where Hexavalent Chromium was analyzed are shown.  
 All features are approximate.  
 AST = aboveground storage tank.  
 RBC = risk-based concentration for individual chemicals (DEQ, November 1, 2015).  
 UST = underground storage tank.

- 2017 Sample Location (MFA)
- Urban Residential Hexavalent Chromium RBC Exceedance

- ▭ Property Boundary
- Site Features**
- ✱ Bleach House
- ⊕ Dye House
- AST
- UST

**Figure 5-5**  
**Hexavalent Chromium RBC in Soil**  
 Metro Willamette Falls Site  
 Oregon City, Oregon



Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

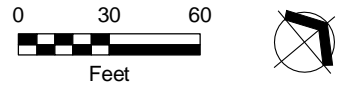
**NOTES:**  
 All features are approximate.  
 Only locations where mercury was analyzed are shown.  
 AST = aboveground storage tank.  
 RBC = risk-based concentration for individual chemicals (DEQ, November 1, 2015).  
 UST = underground storage tank.

- 2017 Sample Location (MFA)
- Occupational Mercury RBC Exceedance
- ▭ Property Boundary
- Site Features**
- ✱ Bleach House
- ⊕ Dye House
- AST
- ◌ UST

**Figure 5-6**  
**Mercury RBC Exceedance in Soil**  
 Metro Willamette Falls Site  
 Oregon City, Oregon



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.





Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

**NOTES:**  
 All features are approximate.  
 Only locations where PCBs were analyzed are shown.  
 AST = aboveground storage tank.  
 PCB = polychlorinated biphenyl.  
 RBC = risk-based concentration for individual chemicals (DEQ, November 1, 2015).  
 UST = underground storage tank.

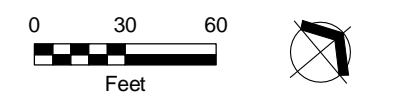
- 2017 Sample Location (MFA)
- 2012 Sample Location (ERM)
- ▲ 2011 Sample Location (Bridgewater Group, Inc.)
- Occupational PCB RBC Exceedance

- Property Boundary
- Site Features**
- ★ Bleach House
- ⊕ Dye House
- AST
- ◌ UST

**Figure 5-7**  
**Total PCB RBC Exceedance in Soil**  
 Metro Willamette Falls Site  
 Oregon City, Oregon



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.





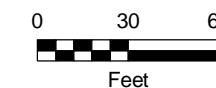
Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

**NOTES:**  
 All features are approximate. Only locations where PAHs were analyzed are shown.  
 AST = aboveground storage tank.  
 cPAH = carcinogenic PAH.  
 PAH = polycyclic aromatic hydrocarbon.  
 RBC = risk-based concentration for individual chemicals (DEQ, November 1, 2015).  
 TEQ = toxicity equivalence.  
 UST = underground storage tank.

- 2017 Sample Location (MFA)
- 2012 Sample Location (ERM)
- Occupational cPAH TEQ RBC Exceedance
- Urban Residential cPAH TEQ RBC Exceedance

- Property Boundary
- Site Features**
- ★ Bleach House
- ⊕ Dye House
- AST
- UST

**Figure 5-8**  
**Carcinogenic PAH TEQ**  
**RBC Exceedance in Soil**  
 Metro Willamette Falls Site  
 Oregon City, Oregon





Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

**NOTES:**  
 All features are approximate.  
 Only locations where dioxins were analyzed are shown.  
 AST = aboveground storage tank.  
 RBC = risk-based concentration for individual chemicals (DEQ, November 1, 2015).  
 TEQ = toxicity equivalence.  
 UST = underground storage tank.

- 2017 Sample Location (MFA)
- ★ Construction Worker Dioxin TEQ RBC Exceedance

▭ Property Boundary

**Site Features**

- ★ Bleach House
- ⊕ Dye House
- AST
- UST

**Figure 5-9**  
**Dioxin TEQ RBC Exceedance in Soil**  
 Metro Willamette Falls Site  
 Oregon City, Oregon



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.





Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

**NOTES:**  
 All features are approximate. Only locations where DRO/ORO was analyzed are shown.  
 AST = aboveground storage tank.  
 DRO = diesel-range organics.  
 ORO = oil-range organics.  
 RBC = risk-based concentration for individual chemicals (DEQ, November 1, 2015).  
 UST = underground storage tank.

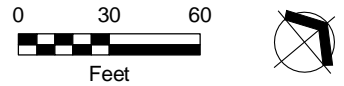
- 2017 Sample Location (MFA)
- 2012 Sample Location (ERM)
- ▲ 2011 Sample Location (Bridgewater Group, Inc.)
- Urban Residential DRO/ORO RBC Exceedance
- Construction Worker DRO/ORO RBC Exceedance

- Property Boundary
- Site Features**
- ✱ Bleach House
- ⊕ Dye House
- AST
- UST

**Figure 5-10**  
**DRO/ORO RBC Exceedance in Soil**  
 Metro Willamette Falls Site  
 Oregon City, Oregon



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.





Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

**NOTES:**  
 All features are approximate.  
 AST = aboveground storage tank.  
 RBC = risk-based concentration for individual chemicals (DEQ, November 1, 2015).  
 UST = underground storage tank.

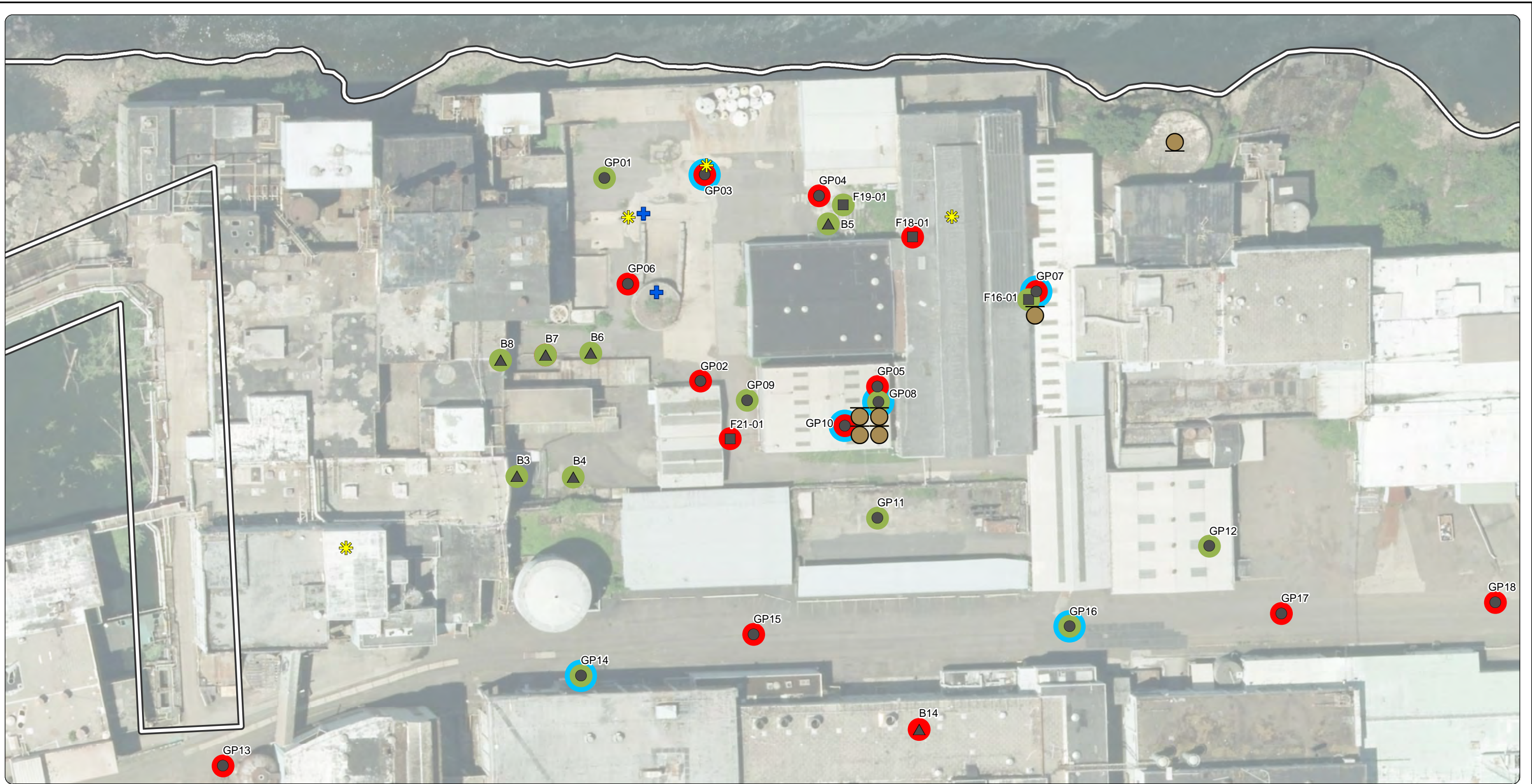
- 2017 Sample Location (MFA)
- Occupational Groundwater RBC Exceedance
- Property Boundary
- Site Features**
- ✱ Bleach House
- ⊕ Dye House
- AST
- UST

**Figure 5-11**  
**Highest RBC Value Exceedance in Groundwater**

Metro Willamette Falls Site  
 Oregon City, Oregon







Source: Aerial photograph obtained from Esri ArcGIS Online; parcel boundary (May 2017) obtained from Metro Regional Land Information System; site features obtained from Environmental Resources Management (ERM); stormwater system data obtained from maps created by ERM and City of Oregon City.

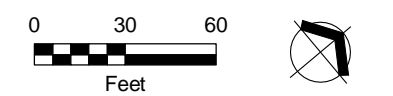
**NOTES:**  
 All features are approximate.  
 AST = aboveground storage tank.  
 RBC = risk-based concentration for individual chemicals (DEQ, November 1, 2015).  
 UST = underground storage tank.

- 2017 Sample Location (MFA)
- 2012 Sample Location (ERM)
- ▲ 2011 Sample Location (Bridgewater Group, Inc.)
- Soil RBC Exceedance
- No Soil RBC Exceedance
- Groundwater with RBC Exceedance
- ▭ Property Boundary
- Site Features**
- ✱ Bleach House
- ⊕ Dye House
- AST
- UST

**Figure 6-1**  
**Exceedance Results in**  
**Soil and Groundwater**  
 Metro Willamette Falls Site  
 Oregon City, Oregon



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



# APPENDIX A

## GEOPHYSICAL SURVEY





12/12/2017

Client: Maul Foster Engineers

Contact: Merideth D'Andrea

2001 NW 19th Avenue, Suite 200, Portland, OR 97209

Office: (971) 544-2139

Mobile: (503) 209-4582

mdandrea@maulfoster.com

Dear Merideth D'Andrea,

Below are the findings for the ground penetrating radar (GPR) investigation for the location of underground storage tanks (UST) and other underground objects at 427 Main St. Oregon City, OR. If you have any questions about our methods or results, please do not hesitate to call. We are happy to answer any questions at no extra cost to you.

**Location and Purpose:**

On Tuesday, December 5, 2017, GPR Data Inc. conducted a ground penetrating radar (GPR) site investigation at 427 Main St. Oregon City, OR. The GPR Data Inc. crew consisted of John Handy (Lead field technician) and Casey Coyle (Field technician). The purpose of the investigation was to locate USTs and other buried objects on the site. The crew was met on property by Kyle Roslund.

**Methodology:**

Use of GSSI 400 Megahertz (MHz) for locating UST within several areas on the site. Collection method was real time, i.e. no data was collected for processing. The location and depth of each UST were marked out with pink florescent paint.

The GPR is capable of detecting metallic and other nonmetallic materials present underground.

After locations were marked, GPR Data Inc. took photos of each location for documentation (see attached photos).

**Quality Control and Experience:**

With any real time surveys that GPR Data Inc. conducts, the quality of the data is based on the experience of the field technician viewing the data. The crew has extensive experience locating USTs on industrial sites.

**Findings:**

The following measurements are estimates, unless stated otherwise.

One single UST (Area 1; see attached photos) was located outside the old mill building. It was 5.5 feet deep with dimensions of 5.5 feet x 4.5 feet. Four USTs were found inside the old mill building (Area 2). All four were 2 feet deep, and two had dimensions of 4 feet x 11 feet, and two had dimensions of 6 feet x 9 feet. Multiple buried objects were located in the courtyard near the river (Area 3). Their depths ranged from 2-5 feet (see photos). The area around a removed AST (Area 4) was scanned (see photos).

Please view the attached map to see site location of each area.

**Limitations:**

The 400 MHz GPR antenna is unable to collect data within 2 feet of objects, therefore no scans occurred directly next to walls.

Sincerely,  
John Handy

John Handy | Project Manager  
GPMR Engineer | NDT Expert  
GPR Data Inc. | Concrete GPMR Inc.  
2645 Suzanne Way Ste. D Eugene, OR 97401  
Cell: (503) 528-4789



# Ground Penetrating Radar Investigation for 427 Main St. Oregon City, OR

\*The following numbers are estimates only, unless otherwise stated\*

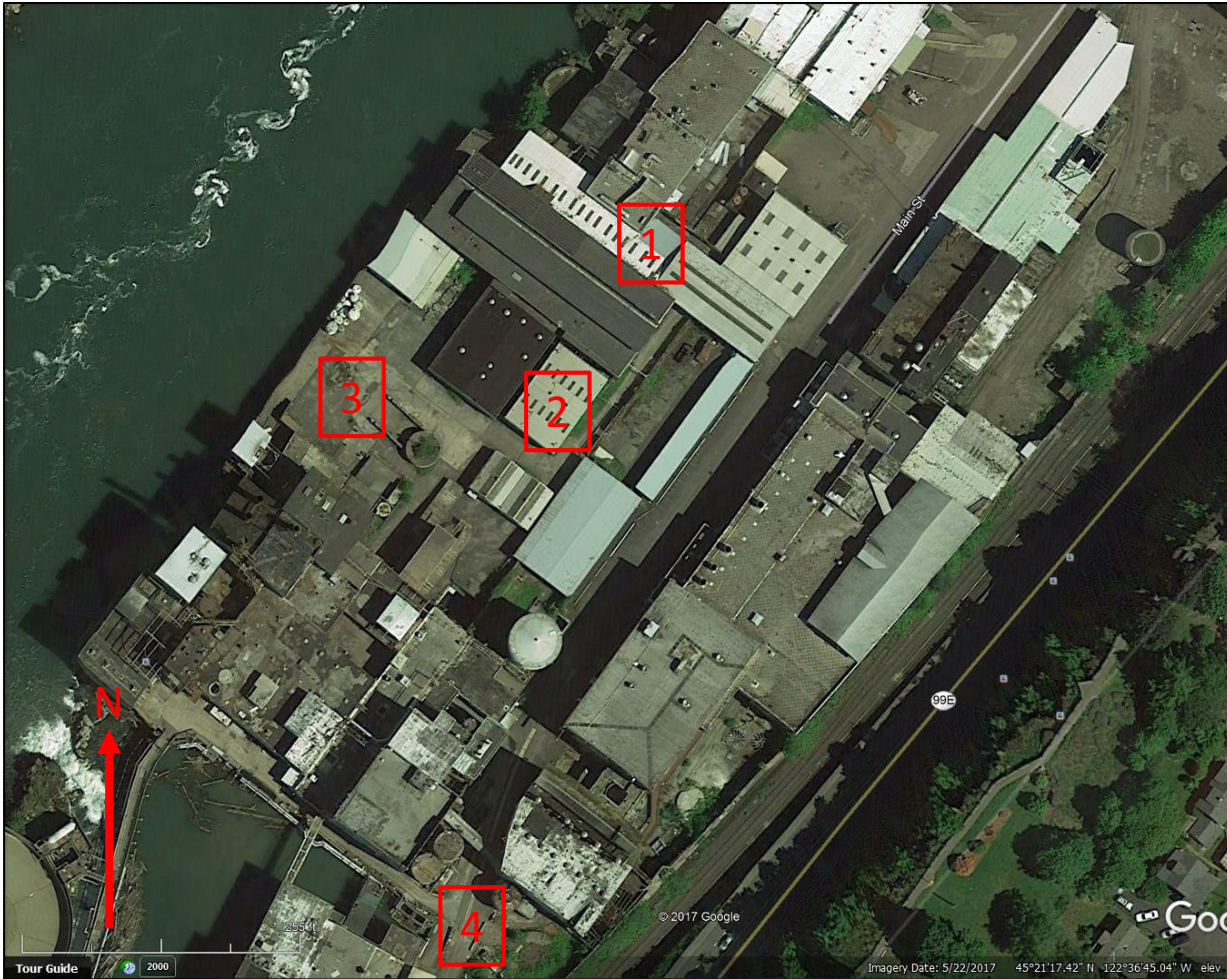


Ground Penetrating Radar Experts  
[www.GPRDATA.com](http://www.GPRDATA.com)

2580 Edgewater Drive, Eugene, OR 97401 Tel: 541-345-1075 Fax: 541-684-7865

---

# Site Overview



Location of each area:  
(1) = Area 1 (1 UST)  
(2) = Area 2 (4 UST)  
(3) = Area 3  
(4) = Area 4

# Area 1



Depth: 5.5 ft.  
Dimensions: 5.5 ft. x 4.5 ft.

# Area 2



Depth: 2 ft.  
Dimensions: 4 ft. x 11 ft.



Depth: 2 ft.  
Dimensions: 6 ft. x 9 ft.

# Area 3



Depths: 2 – 5 ft.



# Area 4



# APPENDIX B

## BORING LOGS



**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
0075.06.02

Well Number  
GP01

Sheet  
1 of 1

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/11/2017 to 12/11/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **18.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data			Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method			
1		50	GP				0.0 to 0.3 feet: ASPHALT.
2							0.3 to 0.7 feet: GRAVELLY SAND WITH SILT (SW-SM); dark brown; 10% fines; 60% sand, fine to coarse; 30% gravel; moist.
3							0.7 to 1.3 feet: GRAVEL (GW); 100% gravel, fine to coarse; moist. Appears to be pulverized basalt.
4							1.3 to 2.5 feet: SANDY GRAVEL WITH SILT (GW-GM); brown; 20% fines; 30% sand, fine to coarse; 50% gravel, fine to coarse; moist.
5							2.5 to 5.0 feet: NO RECOVERY.
6		50	GP				5.0 to 7.5 feet: SANDY GRAVEL WITH SILT (GW-GM); brown; 20% fines; 30% sand, fine to coarse; 50% gravel, fine to coarse; moist.
7							@ 6.0 feet: Brick fragment.
8							7.5 to 10.0 feet: NO RECOVERY.
9							
10		50	GP				10.0 to 12.5 feet: SANDY GRAVEL WITH SILT (GW-GM); brown; 20% fines; 30% sand, fine to coarse; 50% gravel, fine to coarse; moist.
11							
12							
13							12.5 to 15.0 feet: NO RECOVERY.
14							
15		30	GP				15.0 to 16.0 feet: SANDY GRAVEL WITH SILT (GW-GM); brown; 20% fines; 30% sand, fine to coarse; 50% gravel, fine to coarse; moist.
16							16.0 to 18.0 feet: NO RECOVERY.
17							
18							Total Depth = 18.0 feet.

Borehole Details:  
0.0 to 18.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:  
0.0 to 2.0 feet bgs: Concrete.  
2.0 to 18.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP02**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/12/2017 to 12/12/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **7.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data					Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number	Name (Type)			
1		30	GP					0.0 to 0.3 feet: ASPHALT. 0.3 to 1.5 feet: GRAVELLY SAND WITH SILT (SW-SM); dark brown; 20% fines; 50% sand; 30% gravel, fine to coarse; moist.	
2								1.5 to 5.0 feet: NO RECOVERY.	
3									
4									
5		100	GP					5.0 to 5.2 feet: WOOD; moist.	
6								5.2 to 5.7 feet: SILTY SAND (SM); dark gray; 20% fines; 80% sand, fine to medium; trace organics; slight sheen and petroleum hydrocarbon-like odor; moist to wet.	
7								5.7 to 7.0 feet: SILTY SAND (SM); grayish brown; 40% fines; 60% sand, fine; moist. @ 6.7 to 7.0 feet: Orange mottling.	

Total Depth = 7.0 feet.

Borehole Details:  
0.0 to 7.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:  
0.0 to 2.0 feet bgs: Concrete.  
2.0 to 7.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP03**

Sheet  
**1 of 2**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/11/2017 to 12/11/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **34.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data				Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Name (Type)			
1		50	GP				0.0 to 0.3 feet: ASPHALT.	
2					GP03-S-2.5 PID = 0 ppm		0.3 to 2.5 feet: SANDY GRAVEL WITH SILT (GW-GM); dark brown; 15% fines; 25% sand, fine to coarse; 60% gravel, fine to coarse; trace cobble; moist.	
3							2.5 to 5.0 feet: NO RECOVERY.	
4								
5		50	GP				5.0 to 7.5 feet: SANDY GRAVEL WITH SILT (GW-GM); dark brown; 30% fines; 20% sand; 50% gravel; trace cobble and asphalt; moist.	
6								
7					GP03-S-7.5 PID = 1.9 ppm		7.5 to 10.0 feet: NO RECOVERY.	
8								
9								
10		50	GP				10.0 to 12.5 feet: GRAVELLY SILTY SAND (SM); dark brown; 20% fines; 60% sand, fine to coarse; 20% gravel; trace cobble and asphalt; moist.	
11								
12					PID = 0.2 ppm		12.5 to 15.0 feet: NO RECOVERY.	
13								
14								
15		50	GP				15.0 to 17.5 feet: GRAVELLY SILTY SAND (SM); dark brown; 20% fines; 60% sand, fine to coarse; 20% gravel; trace cobble and asphalt; moist.	
16								
17					GP03-S-17.5 PID = 0.5 ppm		17.5 to 20.0 feet: NO RECOVERY.	
18								
19								
20								

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill. 7. GW = groundwater sample; dashed graphic in the Interval column indicates screened interval. Temporary polyvinyl chloride screen from 29.0 to 34.0 feet bgs. Groundwater parameters: pH = 6.91; Turbidity = 44.6 Nephelometric Turbidity Unit; Temperature = 13.1°C; Conductivity = 411 microSiemens per centimeter.

Water level observed at 32 feet bgs at time of drilling.

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Sample Data			Blows/6"	Lithologic Column	Soil Description	
				Collection Method	Number	Name (Type)				
21			20	GP					20.0 to 21.0 feet: SANDY GRAVEL WITH SILT (GW-GM); brown; 10% fines; 30% sand; 60% gravel; moist to wet.	
22										21.0 to 25.0 feet: NO RECOVERY.
23										
24										
25			40	GP					25.0 to 27.0 feet: SILTY SAND (SM); orange; 20% fines; 80% sand, fine to medium; moist.	
26						PID = 0.1 ppm				
27									27.0 to 30.0 feet: NO RECOVERY.	
28										
29				GW						
30			50	GP					30.0 to 32.0 feet: SILTY SAND (SM); grayish brown with orange mottling; 20% fines; 80% sand, fine to medium; moist.	
31						GP03-S-32.0 PID = 0 ppm			@ 31.0 feet: Brick fragment.	
32									@ 32.0 feet: Wood.	
33									32.0 to 34.0 feet: NO RECOVERY.	
34						GP03-W-33.0				

Total Depth = 34.0 feet.

Borehole Details:

0.0 to 34.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:

0.0 to 2.0 feet bgs: Concrete.

2.0 to 34.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill. 7. GW = groundwater sample; dashed graphic in the Interval column indicates screened interval. Temporary polyvinyl chloride screen from 29.0 to 34.0 feet bgs. Groundwater parameters: pH = 6.91; Turbidity = 44.6 Nephelometric Turbidity Unit; Temperature = 13.1°C; Conductivity = 411 microSiemens per centimeter.



Water level observed at 32 feet bgs at time of drilling.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP04**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/12/2017 to 12/12/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **13.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Lithologic Column	Soil Description											
					Number	Name (Type)	Blows/6"													
1		20	GP	GP	GP04-S-1.0 PID = 0.1 ppm			0.0 to 0.5 feet: ASPHALT.												
2								0.5 to 0.8 feet: SANDY/SILTY GRAVEL (GW-GM); brown; 30% fines; 20% sand; 50% gravel; moist.												
3								0.8 to 1.0 feet: SANDY/SILTY GRAVEL (GW-GM); gray; 20% fines; 30% sand; 50% gravel; moist. May be pulverized concrete.												
4								1.0 to 5.0 feet: NO RECOVERY. Brick in shoe.												
5								20	GP	GP	GP04-S-6.0 PID = 0 ppm			5.0 to 6.0 feet: GRAVELLY SILTY SAND (SM); orangish brown; 20% fines; 60% sand, fine to coarse; 20% gravel; moist.						
6														6.0 to 10.0 feet: NO RECOVERY.						
7														100	GP	GP	PID = 0 ppm			10.0 to 11.5 feet: SANDY/SILTY GRAVEL (GW-GM); brown; 20% fines; 30% sand; 50% gravel, fine to coarse; moist to wet.
8								GP04-S-13.0 PID = 0 ppm			11.5 to 13.0 feet: SILT WITH SAND (ML); dark reddish brown; 70% fines; 20% sand; 10% gravel; moist.									
9																				
10																				
11																				
12																				
13																				

Total Depth = 13.0 feet.

Borehole Details:

0.0 to 13.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:

0.0 to 2.0 feet bgs: Concrete.

2.0 to 13.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP05**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/14/2017 to 12/14/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **8.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Sample Data				Blows/6"	Lithologic Column	Soil Description
				Collection Method	Number	Name (Type)				
1		25	GP	GP					0.0 to 0.8 feet: CONCRETE.	
2									0.8 to 1.2 feet: SANDY/SILTY GRAVEL (GM); 20% fines; 20% sand; 60% gravel; moist. May be concrete subbase.	
3									1.2 to 5.0 feet: NO RECOVERY.	
4										
5		100	GP						5.0 to 5.5 feet: SILTY SAND (SM); orangish brown; 20% fines; 80% sand; moist. May be slough from 1.2 to 5.0 feet.	
6									5.5 to 7.0 feet: WOODY DEBRIS; dark reddish brown; moist. Similar to fluffy bark dust.	
7									7.0 to 7.5 feet: SILTY SAND (SM); dark gray; 20% fines; 80% sand, fine to medium; trace organics; moist.	
8									7.5 to 8.0 feet: SILTY SAND (SM); dark gray; 20% fines; 80% sand, fine to medium; trace organics; strong petroleum hydrocarbon-like odor and metallic sheen; wet.	

Total Depth = 8.0 feet.

Borehole Details:

0.0 to 8.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:

0.0 to 2.0 feet bgs: Concrete.

2.0 to 8.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill.



Water level observed at 7.5 feet bgs in core at time of drilling.



**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP06**

Sheet  
**1 of 2**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/11/2017 to 12/11/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **21.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data				Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Name (Type)			
1		50	GP				0.0 to 0.3 feet: ASPHALT.	
2					GP06-S-2.5 PID = 0.1 ppm		0.3 to 1.5 feet: SILTY/SANDY GRAVEL (GM); dark brown; 30% fines; 20% sand; 50% gravel, fine to coarse; moist. @ 1.3 to 1.4 feet: Brick.	
3							1.5 to 1.7 feet: ROCK.	
4							1.7 to 2.5 feet: SILTY/SANDY GRAVEL (GM); dark grayish brown; 30% fines; 20% sand; 50% gravel, fine to coarse; petroleum hydrocarbon-like odor; moist.	
5		50	GP				2.5 to 5.0 feet: NO RECOVERY.	
6							5.0 to 7.5 feet: SILT WITH GRAVEL (ML); brown; 60% fines; 10% sand; 30% gravel, fine to coarse; moist.	
7					GP06-S-7.5 PID = 0 ppm		7.5 to 10.0 feet: NO RECOVERY.	
8								
9								
10		50	GP				10.0 to 10.5 feet: SILT WITH GRAVEL (ML); dark brown; 50% fines; 10% sand; 40% gravel, fine to coarse; moist.	
11							10.5 to 10.7 feet: ROCK.	
12							10.7 to 12.5 feet: SILT WITH GRAVEL (ML); dark brown; 50% fines; 10% sand; 40% gravel, fine to coarse; moist.	
13							12.5 to 15.0 feet: NO RECOVERY.	
14								
15		50	GP		PID = 0 ppm		15.0 to 15.5 feet: SAND WITH SILT (SW-SM); dark brown; 10% fines; 90% sand, medium to coarse; moist.	
16					PID = 0 ppm		15.5 to 17.0 feet: SILTY SAND (SM); dark grayish brown; 20% fines 80% sand, medium to coarse; moist.	
17					PID = 0 ppm		17.0 to 17.5 feet: GRAVELLY SAND WITH SILT (SW-SM); light cream; 10% fines; 70% sand; 20% gravel; moist.	
18							17.5 to 20.0 feet: NO RECOVERY.	
19								
20								

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill.

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP06**

Sheet  
**2 of 2**

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Lithologic Column	Soil Description
					Number	Name (Type)	Blows/6"		

21			100	GP		GP06-S-21.0 PID = 0 ppm			20.0 to 21.0 feet: SANDY SILT (ML); brown; 60% fines; 40% sand, fine; moist.
----	---	---	-----	----	--	----------------------------	--	---	--

Total Depth = 21.0 feet.

Borehole Details:

0.0 to 21.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:

0.0 to 2.0 feet bgs: Concrete.

2.0 to 21.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
0075.06.02

Well Number  
GP07

Sheet  
1 of 1

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/12/2017 to 12/12/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **17.5-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
1		50	GP						0.0 to 1.0 feet: CONCRETE.	
2									1.0 to 1.4 feet: GRAVEL WITH SILT (GW-GM); 10% fines; 90% gravel, medium to coarse, rounded; moist.	
3									1.4 to 1.8 feet: SANDY SILT (ML); dark brown; 60% fines; 40% sand, fine to coarse; moist.	
4									1.8 to 2.5 feet: SILT WITH SAND (ML); dark brown; 80% fines; 20% sand, fine; moist.	
5									@ 2.0 to 2.5 feet: Petroleum hydrocarbon-like odor; black.	
6		60	GP						2.5 to 5.0 feet: NO RECOVERY.	
7									5.0 to 6.0 feet: SILT WITH SAND (ML); brown; 80% fines; 20% sand, fine; moist.	
8									6.0 to 7.5 feet: SILTY SAND (SM); brown; 20% fines; 80% sand, fine to medium; moist.	
9									7.5 to 10.0 feet: NO RECOVERY.	
10										
11		50	GP						10.0 to 11.5 feet: GRAVELLY SILTY SAND (SM); gray; 20% fines; 50% sand, fine to coarse; 30% gravel, fine to coarse; wet.	
12									11.5 to 12.5 feet: SILTY SAND (SM); gray; 40% fines; 50% sand; 10% gravel; moist.	
13									12.5 to 15.0 feet: NO RECOVERY.	
14										
15										
16		100	GP						15.0 to 17.5 feet: GRAVELLY SAND WITH SILT (SW-SM); gray; 20% fines; 50% sand; 30% gravel; wet.	
17									@ 17.0 feet: Color change to brown.	

Total Depth = 17.5 feet.

Borehole Details:


0.0 to 17.5 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:

0.0 to 2.0 feet bgs: Concrete.

2.0 to 17.5 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill. 7. GW = groundwater sample; dashed graphic in the Interval column indicates screened interval. Temporary polyvinyl chloride screen from 12.5 to 17.5 feet bgs. Groundwater parameters: pH = 6.68; Turbidity = 2307 Attenuation Unit; Temperature = 16.2°C; Conductivity = 369 microSiemens per centimeter.

 Water level observed at 14.3 feet bgs at time of drilling.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

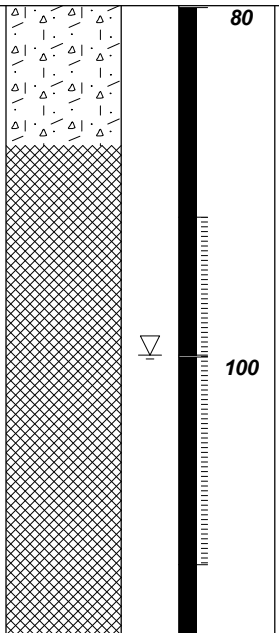
Project Number  
**0075.06.02**

Well Number  
**GP08**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/12/2017 to 12/12/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **9.0-foot**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data					Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number	Name (Type)			
1		80	GP					0.0 to 0.7 feet: CONCRETE.	
2								0.7 to 1.0 feet: GRAVELLY/SILTY SAND (SM); brown; 20% fines; 50% sand, fine to coarse; 30% gravel, fine to coarse; moist. 1.0 to 4.0 feet: SILTY SAND (SM); orangish brown; 40% fines; 60% sand, fine to medium; moist.	
3									
4			GW						
5			100	GP					4.0 to 5.0 feet: NO RECOVERY.
6									5.0 to 5.8 feet: SILTY SAND (SM); orangish brown; 40% fines; 60% sand, fine to medium; slight petroleum hydrocarbon-like odor; moist.
7									5.8 to 7.0 feet: SILTY SAND (SM); brownish gray; 40% fines; 60% sand, fine to medium; strong petroleum hydrocarbon-like odor; soil is coated with NAPL; wet.
8									7.0 to 9.0 feet: GRAVELLY/SILTY SAND (SM); brownish gray; 20% fines; 50% sand, fine to medium; 30% gravel, fine to coarse; strong petroleum hydrocarbon-like odor; wet.
9									

Total Depth = 9.0 feet.

Borehole Details:  
0.0 to 9.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:  
0.0 to 2.0 feet bgs: Concrete.  
2.0 to 9.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill. 7. NAPL = nonaqueous-phase liquid. 8. GW = groundwater sample; dashed graphic in the Interval column indicates screened interval. Temporary polyvinyl chloride screen from 3.0 to 8.0 feet bgs. Groundwater parameters: pH = 6.82; Turbidity = overrange of instrument; Temperature = 13.7°C; Conductivity = 235 microSiemens per centimeter. Approximately 0.05 feet of NAPL on water surface.

 Water level observed at 5 feet bgs at time of drilling.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP09**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/12/2017 to 12/12/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **8.0-feet**  
 Outer Hole Diam **2.25-inch**


Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Sample Data			Blows/6"	Lithologic Column	Soil Description
				Collection Method	Number	Name (Type)			
1		50		GP				0.0 to 0.3 feet: ASPHALT.	
2								0.3 to 0.5 feet: SILTY SAND (SM); brown; 30% fines; 50% sand; 20% gravel; moist.	
3								0.5 to 0.7 feet: BRICK.	
4								0.7 to 2.5 feet: SILTY SAND (SM); brown; 40% fines; 60% sand, fine; moist.	
5								2.5 to 5.0 feet: NO RECOVERY.	
6		100		GP				5.0 to 6.0 feet: SILTY SAND (SM); brown; 40% fines; 60% sand, fine; wet.	
7								6.0 to 7.0 feet: GRAVELLY SILTY SAND (SM); grayish brown; 30% fines; 40% sand, fine to coarse; 30% gravel, fine to coarse; moist to wet.	
8								7.0 to 8.0 feet: SANDY SILT (ML); yellow with black streaks; 60% fines, very stiff; 40% sand; moist.	

Total Depth = 8.0 feet.

Borehole Details:  
0.0 to 8.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:  
0.0 to 2.0 feet bgs: Concrete.  
2.0 to 8.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill.

 Water level observed at 5 feet bgs at time of drilling.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP10**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/14/2017 to 12/14/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **14.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data					Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number	Name (Type)			
1		50	GP					0.0 to 0.8 feet: CONCRETE.	
2						GP10-S-2.5 PID = 0.3 ppm		0.8 to 2.5 feet: SANDY/SILTY GRAVEL (GM); brown; 20% fines; 20% sand; 60% gravel, fine to coarse; moist.	
3								2.5 to 5.0 feet: NO RECOVERY.	
4									
5			50	GP					5.0 to 7.5 feet: SANDY/SILTY GRAVEL (GM); brown coated black with product; 20% fines; 20% sand; 60% gravel, fine to coarse, angular; strong petroleum hydrocarbon-like odor; sheen; wet.
6				GW		PID = 30 ppm			6.0 to 7.5 feet: SILTY SAND (SM); brown; 20% fines; 80% sand, fine to medium; moist.
7									
8									7.5 to 10.0 feet: NO RECOVERY.
9									
10			50	GP					10.0 to 12.0 feet: SANDY GRAVEL WITH SILT (GW-GM); black; 10% fines; 30% sand; 60% gravel, fine to coarse, angular; heavy staining; 1 centimeter in diameter NAPL pools in pockets; strong petroleum hydrocarbon-like odor; sheen; wet.
11									
12									12.0 to 14.0 feet: NO RECOVERY.
13									
14									

Total Depth = 14.0 feet.

Borehole Details:  
0.0 to 14.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:  
0.0 to 2.0 feet bgs: Concrete.  
2.0 to 14.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill. 7. NAPL = nonaqueous-phase liquid. 8. GW = groundwater sample; dashed graphic in the Interval column indicates screened interval. Temporary polyvinyl chloride screen from 6.0 to 11.0 feet bgs. Groundwater parameters: pH = 6.58; Turbidity = 27.4 Nephelometric Turbidity Unit; Temperature = 14.6°C; Conductivity = 298 microSiemens per centimeter. No indication of NAPL on water surface, though well was screened below top of water surface.

Water level observed at 5 feet bgs at time of drilling.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

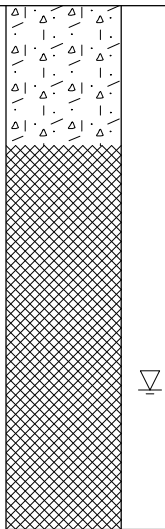

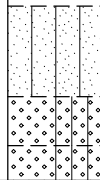
Project Number  
**0075.06.02**

Well Number  
**GP11**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/14/2017 to 12/14/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **7.5-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data				Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number			
1		60	GP	GP11-S-3.0	PID = 0 ppm		0.0 to 0.3 feet: ASPHALT.	
2							0.3 to 3.0 feet: SILTY SAND (SM); brown; 20% fines; 80% sand, fine to medium; moist.	
3		100	GP	GP11-S-7.0	PID = 0.1 ppm		3.0 to 5.0 feet: NO RECOVERY.	
4							5.0 to 6.3 feet: SILTY SAND (SM); brown; 20% fines; 80% sand, fine to medium; moist to wet.	
5							6.3 to 7.0 feet: GRAVELLY SAND WITH SILT (SW-SM); dark brown; 15% fines; 65% sand, fine to medium; 20% gravel, fine to coarse; moist to wet.	
6							7.0 to 7.5 feet: GRAVELLY SAND WITH SILT (SW-SM); light gray with orange mottling; 10% fines; 60% sand, fine to coarse; 30% gravel, fine to coarse; moist.	
7								

Total Depth = 7.5 feet.

Borehole Details:

0.0 to 7.5 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:

0.0 to 2.0 feet bgs: Concrete.

2.0 to 7.5 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill.



Water level observed at 5.5 feet bgs in core at time of drilling.

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP12**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/11/2017 to 12/11/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **12.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data				Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Name (Type)			
1		60	GP	GP12-S-3.0 PID = 0 ppm			0.0 to 0.5 feet: CONCRETE.	
2							0.5 to 3.0 feet: SILTY SAND (SM); orangish brown; 20% fines; 80% sand, fine; moist. @ 0.7 to 0.8: Brick.	
3							3.0 to 5.0 feet: NO RECOVERY.	
4		60	GP	GP12-S-8.0 PID = 0.1 ppm			5.0 to 8.0 feet: SILTY SAND (SM); orangish brown; 20% fines; 80% sand, fine; moist.	
5							8.0 to 10.0 feet: NO RECOVERY.	
6							10.0 to 10.5 feet: SILTY SAND (SM); orangish brown; 20% fines; 80% sand, fine; wet.	
7		100	GP	PID = 0 ppm	PID = 0 ppm		10.5 to 11.0 feet: SANDY/SILTY GRAVEL (GW-GM); dark brown; 30% fines; 20% sand; 50% gravel, fine to coarse; wet.	
8							11.0 to 12.0 feet: GRAVELLY SAND WITH SILT (SW-SM); light orangish brown; 15% fines; 60% sand, fine to coarse; 25% gravel, fine to medium; moist.	
9								
10								
11								
12								

Total Depth = 12.0 feet.

Borehole Details:

0.0 to 12.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:

0.0 to 2.0 feet bgs: Concrete.

2.0 to 12.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million.  
 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill.

Water level observed at 8.5 feet bgs in core at time of drilling.



**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP13**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/14/2017 to 12/14/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **13.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data				Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number			
1		50	GP				0.0 to 1.0 feet: CONCRETE.	
2							1.0 to 1.4 feet: GRAVELLY SILT (ML); grayish brown; 70% fines; 10% sand; 20% gravel; moist.	
3							1.4 to 1.8 feet: CONCRETE.	
4							1.8 to 2.5 feet: SANDY/SILTY GRAVEL (GM); dark brown; 20% fines; 30% sand, fine to coarse; 50% gravel, fine to coarse; trace brick; moist.	
5							2.5 to 5.0 feet: NO RECOVERY.	
6			60	GP			5.0 to 8.0 feet: SAND WITH SILT (SP-SM); brown; 25% fines; 60% sand, fine; 15% gravel; moist.	
7							@ 7.0 feet: Piece of glass.	
8							@ 7.5 feet: Wet.	
9							8.0 to 10.0 feet: NO RECOVERY.	
10			100	GP			10.0 to 13.0 feet: SANDY SILT (ML); dark brown; 50% fines, soft; 35% sand; 15% gravel; trace organics; wet.	
11								
12								
13							@ 12.5 feet: Piece of glass.	

Total Depth = 13.0 feet.

Borehole Details:

0.0 to 13.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:

0.0 to 2.0 feet bgs: Concrete.

2.0 to 13.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill.

Water level observed at 8 feet bgs in core at time of drilling.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP14**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/14/2017 to 12/14/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **11.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
1			60	GP						0.0 to 1.0 feet: ASPHALT.
2						PID = 0.1 ppm				1.0 to 1.7 feet: SANDY GRAVEL WITH SILT (GW-GM); brownish gray; 10% fines; 30% sand; 60% gravel; moist.
3						GP14-S-3.0 PID = 0 ppm				1.7 to 2.3 feet: SANDY SILT (ML); brown; 60% fines; 40% sand, fine; moist.
4										2.3 to 3.0 feet: SILTY SAND (SM); orangish brown; 30% fines; 70% sand, fine to medium; moist.
5										@ 2.7 to 2.8 feet: Charred wood.
6			60	GP GW						3.0 to 5.0 feet: NO RECOVERY.
7						GP14-S-8.0 PID = 0.1 ppm				5.0 to 8.0 feet: SILTY SAND (SM); orangish brown; 30% fines; 70% sand, fine to medium; moist.
8										@ 7.6 feet: Color change to dark grayish brown.
9										8.0 to 10.0 feet: NO RECOVERY.
10						GP14-W-10.0				
11			100	GP		PID = 0.1 ppm				10.0 to 10.7 feet: GRAVELLY/SILTY SAND (SM); dark brown; 20% fines; 60% sand, fine to coarse; 20% gravel, fine to coarse; wet.
										10.7 to 11.0 feet: SANDY GRAVEL WITH SILT (GW-GM); gray; 10% fines; 40% sand; 50% gravel, fine to coarse; moist.

Total Depth = 11.0 feet.

Borehole Details:

0.0 to 11.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:

0.0 to 2.0 feet bgs: Concrete.

2.0 to 11.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill. 7. GW = groundwater sample; dashed graphic in the Interval column indicates screened interval. Temporary polyvinyl chloride screen from 5.5 to 10.5 feet bgs. Groundwater parameters: pH = 7.28; Turbidity = 2130 Attenuation Unit; Temperature = 14.7°C; Conductivity = 464 microSiemens per centimeter.

 Water level observed at 9 feet bgs at time of drilling.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP15**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/14/2017 to 12/14/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **10.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
1		60		GP					0.0 to 0.5 feet: ASPHALT.	
2									0.5 to 1.5 feet: GRAVELLY/SILTY SAND (SM); grayish brown; 20% fines; 50% sand, fine to coarse; 30% gravel, fine to coarse; trace brick; moist.	
3									1.5 to 3.0 feet: SAND WITH SILT (SW-SM); light brown; 10% fines; 90% sand; faint odor; moist.	
4									3.0 to 5.0 feet: NO RECOVERY.	
5		60		GP					5.0 to 7.5 feet: SAND WITH SILT (SW-SM); light brown; 10% fines; 90% sand; odor; moist.	
6									7.5 to 8.0 feet: SAND WITH SILT (SW-SM); gray; 10% fines; 90% sand; strong odor; wet. Wood with odor and sheen in shoe.	
7									8.0 to 10.0 feet: NO RECOVERY.	
8										
9										
10										

Total Depth = 10.0 feet.

Borehole Details:

0.0 to 10.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:

0.0 to 2.0 feet bgs: Concrete.

2.0 to 10.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill.

 Water level observed at 7.5 feet bgs in core at time of drilling.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP16**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/11/2017 to 12/11/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **10.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data				Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number			
1		50		GP				0.0 to 0.3 feet: ASPHALT.
2								0.3 to 0.8 feet: SILTY GRAVEL (GM); grayish brown; 20% fines; 10% sand; 70% gravel; moist.
3								0.8 to 2.5 feet: SAND WITH SILT (SW-SM); orangish brown; 15% fines; 85% sand; moist.
4								2.5 to 5.0 feet: NO RECOVERY.
5		75		GW				5.0 to 8.5 feet: SAND WITH SILT (SW-SM); orangish brown; 15% fines; 85% sand; moist.
6				GP				
7								
8								@ 8.0 feet: Wet.
9								8.5 to 10.0 feet: NO RECOVERY.
10								

Total Depth = 10.0 feet.

Borehole Details:

0.0 to 10.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:

0.0 to 2.0 feet bgs: Concrete.

2.0 to 10.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill. 7. GW = groundwater sample; dashed graphic in the Interval column indicates screened interval. Temporary polyvinyl chloride screen from 5.0 to 10.0 feet bgs. Groundwater parameters: pH = 7.07; Turbidity = 39.5 Nephelometric Turbidity Unit; Temperature = 15.7°C; Conductivity = 410 microSiemens per centimeter.



**Water level observed at 8 feet bgs at time of drilling.**

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP17**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/11/2017 to 12/11/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **10.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
1		50		GP		PID = 0 ppm			0.0 to 0.3 feet: ASPHALT.	
2						GP17-S-2.5 PID = 0 ppm			0.3 to 1.0 feet: SILTY SAND (SM); dark gray; 20% fines; 70% sand, fine to coarse; 10% gravel; moist. 1.0 to 2.5 feet: SAND WITH SILT (SW-SM); orangish brown; 15% fines; 85% sand, fine to medium; moist.	
3									2.5 to 5.0 feet: NO RECOVERY.	
4										
5		80		GP		GP17-S-8.0 PID = 0 ppm			5.0 to 9.0 feet: SAND WITH SILT (SW-SM); orangish brown; 15% fines; 85% sand, fine to medium; moist.	
6										
7										
8									@ 8.0 feet: Wet.	
9										
10									9.0 to 10.0 feet: NO RECOVERY.	

Total Depth = 10.0 feet.

Borehole Details:

0.0 to 10.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:

0.0 to 2.0 feet bgs: Concrete.

2.0 to 10.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill.

 Water level observed at 8 feet bgs in core at time of drilling.

**Maul Foster & Alongi, Inc.**

**Geologic Borehole Log/Well Construction**

Project Number  
**0075.06.02**

Well Number  
**GP18**

Sheet  
**1 of 1**

Project Name **METRO - Willamette Falls**  
 Project Location **Oregon City, Oregon**  
 Start/End Date **12/11/2017 to 12/11/2017**  
 Driller/Equipment **Stratus, T. Tipton and C. Hudock/GeoProbe 7822DT**  
 Geologist/Engineer **Emily Hess, RG**  
 Sample Method **Macrocore**

TOC Elevation (feet)  
 Surface Elevation (feet)  
 Northing  
 Easting  
 Hole Depth **10.0-feet**  
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Sample Data			Blows/6"	Lithologic Column	Soil Description
				Collection Method	Number	Name (Type)			
1		50		GP				0.0 to 0.3 feet: ASPHALT.	
2						GP18-S-2.5 PID = 0 ppm		0.3 to 0.5 feet: SANDY GRAVEL WITH SILT (GW-GM); light gray; 10% fines; 20% sand; 70% gravel, fine to coarse, subrounded; dry.	
3								0.5 to 2.5 feet: SAND WITH SILT (SP-SM); orangish brown; 15% fines; 85% sand, fine; moist. @ 0.5: Brick.	
4								1.0 to 2.5 feet: SAND WITH SILT (SW-SM); orangish brown; 15% fines; 85% sand, fine to medium; moist.	
5								2.5 to 5.0 feet: NO RECOVERY.	
6		20		GP		PID = 0 ppm		5.0 to 6.0 feet: SAND WITH SILT (SW-SM); orangish brown; 15% fines; 85% sand, fine to medium; moist.	
7								6.0 to 10.0 feet: NO RECOVERY.	
8									
9									
10									

Total Depth = 10.0 feet.

Borehole Details:

0.0 to 10.0 feet bgs: 2.25-inch borehole.

Borehole Abandonment Details:

0.0 to 2.0 feet bgs: Concrete.

2.0 to 10.0 feet bgs: Bentonite chips hydrated with potable water.

**NOTES:** 1. bgs = below ground surface. 2. GP = Geoprobe macro-core sampler. 3. Depths are approximate and relative to feet bgs. 4. ppm = parts per million. 5. PID = photoionization detector, soil head space reading in ppm. 6. Soil is inferred to be fill.



Water level inferred to be 8 feet bgs at time of drilling. Poor recovery in soil core.

# APPENDIX C

## DISPOSAL TICKET





Hillsboro Landfill, Inc  
 3205 SE Minter Bridge  
 Hillsboro, OR, 97123  
 Ph: (503)-640-9427

Original  
 Ticket# 1475058

Customer Name STRATUSCORP STRATUS CORPORATI Carrier STRATUS CORPORATION STRATUS CORPORAT  
 Ticket Date 03/07/2018 Vehicle# 16 Volume  
 Payment Type Credit Account Container  
 Manual Ticket# Driver  
 Hauling Ticket# Check#  
 Route Billing # 0000371  
 State Waste Code Gen EPA ID  
 Manifest NA  
 Destination Grid  
 PO P17225W  
 Profile 126384OR (LF01 soil and water (WM025A))  
 Generator OR-METRO 419 MAIN METRO 419 MAIN STREET OREGON CITY OR 97045

	Time	Scale	Operator	Inbound	Gross	
In	03/07/2018 10:03:01	Inbound 1	JPRIME		14760 lb	
Out	03/07/2018 10:27:43	Outbound	BLAKE1		Tare 14420 lb	
					Net 340 lb	
					Tons 0.17	

Comments

Consumer Comments? We want to know. Please call.

Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1 Special Misc-Tons-	100	0.17	Tons				CLACK-IN
2 13% FEA-13% FEA FE	100		%				

P17225W

Total Tax  
 Total Ticket

Driver's Signature





# APPENDIX D

## LABORATORY ANALYTICAL REPORTS



# Apex Labs

12232 S.W. Garden Place  
Tigard, OR 97223  
503-718-2323 Phone  
503-718-0333 Fax

Tuesday, January 9, 2018

Merideth D'Andrea  
Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

RE: Metro-Willamette Falls / 0075.06.02

Enclosed are the results of analyses for work order A7L0317, which was received by the laboratory on 12/12/2017 at 11:30:00AM.

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

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

---

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL REPORT FOR SAMPLES

### SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GP06-S-2.5	A7L0317-01	Soil	12/11/17 09:55	12/12/17 11:30
GP06-S-7.5	A7L0317-02	Soil	12/11/17 10:05	12/12/17 11:30
GP06-S-21.0	A7L0317-03	Soil	12/11/17 10:20	12/12/17 11:30
GP01-S-2.5	A7L0317-04	Soil	12/11/17 10:35	12/12/17 11:30
GP01-S-7.5	A7L0317-05	Soil	12/11/17 10:45	12/12/17 11:30
GP01-S-16.0	A7L0317-06	Soil	12/11/17 11:00	12/12/17 11:30
GP03-S-2.5	A7L0317-07	Soil	12/11/17 11:10	12/12/17 11:30
GP03-S-7.5	A7L0317-08	Soil	12/11/17 11:30	12/12/17 11:30
GP03-S-17.5	A7L0317-09	Soil	12/11/17 11:40	12/12/17 11:30
GP03-S-32.0	A7L0317-10	Soil	12/11/17 12:15	12/12/17 11:30
GP03-S-2.5-DUP	A7L0317-11	Soil	12/11/17 11:10	12/12/17 11:30
GP16-S-2.5	A7L0317-12	Soil	12/11/17 13:15	12/12/17 11:30
GP16-S-8.0	A7L0317-13	Soil	12/11/17 13:20	12/12/17 11:30
GP17-S-2.5	A7L0317-14	Soil	12/11/17 13:40	12/12/17 11:30
GP17-S-8.0	A7L0317-15	Soil	12/11/17 13:50	12/12/17 11:30
GP18-S-2.5	A7L0317-16	Soil	12/11/17 14:00	12/12/17 11:30
GP12-S-3.0	A7L0317-17	Soil	12/11/17 14:30	12/12/17 11:30
GP12-S-8.0	A7L0317-18	Soil	12/11/17 14:45	12/12/17 11:30
GP16-W-9.0	A7L0317-19	Water	12/11/17 13:30	12/12/17 11:30
Trip Blank	A7L0317-20	Water	12/11/17 00:00	12/12/17 11:30
GP07-S-2.5	A7L0317-21	Soil	12/12/17 08:30	12/12/17 11:30
GP07-S-7.5	A7L0317-22	Soil	12/12/17 08:40	12/12/17 11:30
GP07-S-7.5-DUP	A7L0317-23	Soil	12/12/17 08:40	12/12/17 11:30
GP07-W-15.0	A7L0317-24	Water	12/12/17 09:30	12/12/17 11:30



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Hydrocarbon Identification Screen by NWTPH-HCID

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-2.5 (A7L0317-07)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120697</b>			
Gasoline Range Organics	ND	22.3	22.3	mg/kg dry	1	12/14/17 00:00	NWTPH-HCID	
Diesel Range Organics	ND	55.8	55.8	"	"	"	"	
Oil Range Organics	DET	112	112	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<b>GP03-S-7.5 (A7L0317-08)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120697</b>			
Gasoline Range Organics	ND	23.0	23.0	mg/kg dry	1	12/14/17 00:23	NWTPH-HCID	
Diesel Range Organics	ND	57.5	57.5	"	"	"	"	
Oil Range Organics	DET	115	115	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 92 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>92 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<b>GP03-S-17.5 (A7L0317-09RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120697</b>			
Gasoline Range Organics	ND	824	824	mg/kg dry	40	12/14/17 09:28	NWTPH-HCID	
Diesel Range Organics	ND	2060	2060	"	"	"	"	
Oil Range Organics	DET	4120	4120	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: %</i>		<i>Limits: 50-150 %</i>		"	"	<i>S-01</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>%</i>		<i>Limits: 50-150 %</i>		"	"	<i>S-01</i>
<b>GP03-S-32.0 (A7L0317-10RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120697</b>			
Gasoline Range Organics	ND	24.7	24.7	mg/kg dry	1	12/14/17 09:06	NWTPH-HCID	
Diesel Range Organics	ND	61.8	61.8	"	"	"	"	
Oil Range Organics	DET	124	124	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>95 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<b>GP03-S-2.5-DUP (A7L0317-11)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120697</b>			
Gasoline Range Organics	ND	22.5	22.5	mg/kg dry	1	12/14/17 01:54	NWTPH-HCID	
Diesel Range Organics	ND	56.1	56.1	"	"	"	"	
Oil Range Organics	DET	112	112	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>92 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<b>GP12-S-3.0 (A7L0317-17)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120697</b>			
Gasoline Range Organics	ND	22.2	22.2	mg/kg dry	1	12/14/17 02:17	NWTPH-HCID	
Diesel Range Organics	ND	55.5	55.5	"	"	"	"	
Oil Range Organics	ND	111	111	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>91 %</i>		<i>Limits: 50-150 %</i>		"	"	"

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Hydrocarbon Identification Screen by NWTPH-HCID

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP12-S-8.0 (A7L0317-18)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120697</b>			
Gasoline Range Organics	ND	22.5	22.5	mg/kg dry	1	12/14/17 02:39	NWTPH-HCID	
Diesel Range Organics	ND	56.2	56.2	"	"	"	"	
Oil Range Organics	ND	112	112	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>90 %</i>		<i>Limits: 50-150 %</i>		"	"	"



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP06-S-2.5 (A7L0317-01)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120787</b>			
Diesel	ND	106	211	mg/kg dry	10	12/15/17 23:39	NWTPH-Dx	
Oil	1460	211	422	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 100 %</i>		<i>Limits: 50-150 %</i>		"	S-05
<b>GP06-S-7.5 (A7L0317-02)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120691</b>			
Diesel	ND	11.7	25.0	mg/kg dry	1	12/13/17 23:37	NWTPH-Dx	
Oil	ND	23.5	50.0	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 98 %</i>		<i>Limits: 50-150 %</i>		"	
<b>GP06-S-21.0 (A7L0317-03RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120691</b>			
Diesel	ND	237	473	mg/kg dry	20	12/14/17 11:12	NWTPH-Dx	
Oil	2140	473	946	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: %</i>		<i>Limits: 50-150 %</i>		"	S-01
<b>GP01-S-2.5 (A7L0317-04)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120691</b>			
Diesel	ND	105	211	mg/kg dry	10	12/14/17 00:23	NWTPH-Dx	
Oil	1280	211	422	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		"	S-05
<b>GP01-S-7.5 (A7L0317-05)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120691</b>			
Diesel	ND	115	230	mg/kg dry	10	12/14/17 01:08	NWTPH-Dx	
Oil	963	230	459	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 96 %</i>		<i>Limits: 50-150 %</i>		"	S-05
<b>GP01-S-16.0 (A7L0317-06)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120691</b>			
Diesel	ND	113	226	mg/kg dry	10	12/14/17 01:31	NWTPH-Dx	
Oil	667	226	453	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 96 %</i>		<i>Limits: 50-150 %</i>		"	S-05
<b>GP03-S-2.5 (A7L0317-07)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120982</b>			
Diesel	ND	55.8	112	mg/kg dry	5	12/21/17 23:10	NWTPH-Dx	
Oil	867	112	223	"	"	"	"	Q-42
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 93 %</i>		<i>Limits: 50-150 %</i>		"	S-05
<b>GP03-S-7.5 (A7L0317-08)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120982</b>			
Diesel	ND	56.2	112	mg/kg dry	5	12/22/17 00:12	NWTPH-Dx	
Oil	944	112	225	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 89 %</i>		<i>Limits: 50-150 %</i>		"	S-05
<b>GP03-S-17.5 (A7L0317-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120982</b>			
Diesel	ND	1030	2070	mg/kg dry	100	12/22/17 00:33	NWTPH-Dx	
Oil	4450	2070	4130	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-17.5 (A7L0317-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120982</b>			
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: %</i>	<i>Limits: 50-150 %</i>	100	"	NWTPH-Dx	S-01
<b>GP03-S-32.0 (A7L0317-10)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120982</b>			
Diesel	ND	12.2	25.0	mg/kg dry	1	12/22/17 01:14	NWTPH-Dx	
Oil	46.6	24.4	50.0	"	"	"	"	J
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 81 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP03-S-2.5-DUP (A7L0317-11)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120982</b>			
Diesel	ND	11.1	25.0	mg/kg dry	1	12/22/17 01:34	NWTPH-Dx	
Oil	317	22.3	50.0	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 88 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP16-S-2.5 (A7L0317-12)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120691</b>			
Diesel	ND	11.5	25.0	mg/kg dry	1	12/14/17 03:25	NWTPH-Dx	
Oil	ND	23.0	50.0	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 97 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP16-S-8.0 (A7L0317-13)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120691</b>			
Diesel	ND	12.2	25.0	mg/kg dry	1	12/14/17 03:47	NWTPH-Dx	
Oil	30.5	24.4	50.0	"	"	"	"	J
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 102 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP17-S-2.5 (A7L0317-14)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120691</b>			
Diesel	ND	11.3	25.0	mg/kg dry	1	12/14/17 04:10	NWTPH-Dx	
Oil	84.1	22.7	50.0	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 97 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP17-S-8.0 (A7L0317-15)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120691</b>			
Diesel	ND	11.6	25.0	mg/kg dry	1	12/14/17 04:33	NWTPH-Dx	
Oil	82.8	23.1	50.0	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 98 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP18-S-2.5 (A7L0317-16)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120691</b>			
Diesel	ND	11.6	25.0	mg/kg dry	1	12/14/17 04:55	NWTPH-Dx	
Oil	ND	23.2	50.0	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 96 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP16-W-9.0 (A7L0317-19)</b>			<b>Matrix: Water</b>		<b>Batch: 7120777</b>			
Diesel	ND	0.102	0.204	mg/L	1	12/16/17 00:09	NWTPH-Dx	
Oil	ND	0.204	0.408	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 98 %</i>	<i>Limits: 50-150 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP07-S-2.5 (A7L0317-21)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120691</b>			
Diesel	ND	1310	2630	mg/kg dry	100	12/14/17 05:18	NWTPH-Dx	
<b>Oil</b>	<b>15200</b>	2630	5250	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: %</i>	<i>Limits: 50-150 %</i>	"	"	"	<i>S-01</i>
<b>GP07-S-7.5 (A7L0317-22)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120691</b>			
Diesel	ND	217	434	mg/kg dry	20	12/14/17 05:41	NWTPH-Dx	
<b>Oil</b>	<b>1710</b>	434	868	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: %</i>	<i>Limits: 50-150 %</i>	"	"	"	<i>S-01</i>
<b>GP07-S-7.5-DUP (A7L0317-23)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120691</b>			
Diesel	ND	108	215	mg/kg dry	10	12/14/17 06:27	NWTPH-Dx	
<b>Oil</b>	<b>674</b>	215	430	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 92 %</i>	<i>Limits: 50-150 %</i>	"	"	"	<i>S-05</i>
<b>GP07-W-15.0 (A7L0317-24)</b>			<b>Matrix: Water</b>		<b>Batch: 7120777</b>			
Diesel	ND	0.108	0.215	mg/L	1	12/16/17 00:31	NWTPH-Dx	
<b>Oil</b>	<b>ND</b>	0.215	0.430	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 95 %</i>	<i>Limits: 50-150 %</i>	"	"	"	



Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP06-S-2.5 (A7L0317-01)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120671</b>			
Gasoline Range Organics	ND	5.60	5.60	mg/kg dry	50	12/13/17 12:39	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 121 %</i>		<i>Limits: 50-150 %</i>		1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>		<i>95 %</i>		<i>Limits: 50-150 %</i>		"	"	"	
<b>GP06-S-7.5 (A7L0317-02)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120671</b>			
Gasoline Range Organics	ND	2.56	5.11	mg/kg dry	50	12/13/17 13:33	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 121 %</i>		<i>Limits: 50-150 %</i>		1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>		<i>98 %</i>		<i>Limits: 50-150 %</i>		"	"	"	
<b>GP06-S-21.0 (A7L0317-03)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120671</b>			
Gasoline Range Organics	ND	2.86	5.71	mg/kg dry	50	12/13/17 14:00	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 120 %</i>		<i>Limits: 50-150 %</i>		1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>		<i>98 %</i>		<i>Limits: 50-150 %</i>		"	"	"	
<b>GP01-S-2.5 (A7L0317-04)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120671</b>			
Gasoline Range Organics	ND	2.57	5.15	mg/kg dry	50	12/13/17 14:27	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 118 %</i>		<i>Limits: 50-150 %</i>		1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>		<i>97 %</i>		<i>Limits: 50-150 %</i>		"	"	"	
<b>GP01-S-7.5 (A7L0317-05)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120671</b>			
<b>Gasoline Range Organics</b>	<b>5.01</b>	2.69	5.38	mg/kg dry	50	12/13/17 14:54	NWTPH-Gx (MS)	J	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 118 %</i>		<i>Limits: 50-150 %</i>		1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>		<i>97 %</i>		<i>Limits: 50-150 %</i>		"	"	"	
<b>GP01-S-16.0 (A7L0317-06)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120671</b>			
Gasoline Range Organics	ND	2.74	5.49	mg/kg dry	50	12/13/17 15:21	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 120 %</i>		<i>Limits: 50-150 %</i>		1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>		<i>99 %</i>		<i>Limits: 50-150 %</i>		"	"	"	
<b>GP16-S-2.5 (A7L0317-12)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120671</b>			
Gasoline Range Organics	ND	3.33	6.66	mg/kg dry	50	12/13/17 18:31	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 119 %</i>		<i>Limits: 50-150 %</i>		1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>		<i>99 %</i>		<i>Limits: 50-150 %</i>		"	"	"	
<b>GP16-S-8.0 (A7L0317-13)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120671</b>			
Gasoline Range Organics	ND	3.64	7.28	mg/kg dry	50	12/13/17 18:57	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 120 %</i>		<i>Limits: 50-150 %</i>		1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>		<i>100 %</i>		<i>Limits: 50-150 %</i>		"	"	"	
<b>GP17-S-2.5 (A7L0317-14)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120671</b>			
Gasoline Range Organics	ND	2.96	5.92	mg/kg dry	50	12/13/17 19:24	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 118 %</i>		<i>Limits: 50-150 %</i>		1	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP17-S-2.5 (A7L0317-14)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Surrogate: 1,4-Difluorobenzene (Sur)			Recovery: 100 %	Limits: 50-150 %	1	"	NWTPH-Gx (MS)	
<b>GP17-S-8.0 (A7L0317-15)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Gasoline Range Organics	ND	3.10	6.19	mg/kg dry	50	12/13/17 19:51	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 119 %	Limits: 50-150 %	1	"	"	
1,4-Difluorobenzene (Sur)			100 %	Limits: 50-150 %	"	"	"	
<b>GP18-S-2.5 (A7L0317-16)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Gasoline Range Organics	ND	3.12	6.25	mg/kg dry	50	12/13/17 20:18	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 118 %	Limits: 50-150 %	1	"	"	
1,4-Difluorobenzene (Sur)			99 %	Limits: 50-150 %	"	"	"	
<b>GP16-W-9.0 (A7L0317-19RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120716</b>			
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	12/14/17 12:13	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 102 %	Limits: 50-150 %	"	"	"	
1,4-Difluorobenzene (Sur)			116 %	Limits: 50-150 %	"	"	"	
<b>GP07-S-2.5 (A7L0317-21)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Gasoline Range Organics	ND	4.00	7.99	mg/kg dry	50	12/13/17 21:39	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 121 %	Limits: 50-150 %	1	"	"	
1,4-Difluorobenzene (Sur)			101 %	Limits: 50-150 %	"	"	"	
<b>GP07-S-7.5 (A7L0317-22)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Gasoline Range Organics	ND	3.29	6.58	mg/kg dry	50	12/13/17 22:03	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 119 %	Limits: 50-150 %	1	"	"	
1,4-Difluorobenzene (Sur)			100 %	Limits: 50-150 %	"	"	"	
<b>GP07-S-7.5-DUP (A7L0317-23)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120763</b>			
Gasoline Range Organics	ND	6.43	6.43	mg/kg dry	50	12/15/17 14:07	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 115 %	Limits: 50-150 %	1	"	"	
1,4-Difluorobenzene (Sur)			92 %	Limits: 50-150 %	"	"	"	
<b>GP07-W-15.0 (A7L0317-24RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120716</b>			
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	12/14/17 12:41	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 104 %	Limits: 50-150 %	"	"	"	
1,4-Difluorobenzene (Sur)			116 %	Limits: 50-150 %	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP06-S-2.5 (A7L0317-01)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	560	1120	ug/kg dry	50	12/13/17 12:39	5035A/8260C	
Acrylonitrile	ND	56.0	112	"	"	"	"	
Benzene	ND	5.60	11.2	"	"	"	"	
Bromobenzene	ND	14.0	28.0	"	"	"	"	
Bromochloromethane	ND	28.0	56.0	"	"	"	"	
Bromodichloromethane	ND	28.0	56.0	"	"	"	"	
Bromoform	ND	56.0	112	"	"	"	"	
Bromomethane	ND	560	560	"	"	"	"	
2-Butanone (MEK)	ND	280	560	"	"	"	"	
n-Butylbenzene	ND	28.0	56.0	"	"	"	"	
sec-Butylbenzene	ND	28.0	56.0	"	"	"	"	
tert-Butylbenzene	ND	28.0	56.0	"	"	"	"	
Carbon disulfide	ND	280	560	"	"	"	"	
Carbon tetrachloride	ND	28.0	56.0	"	"	"	"	
Chlorobenzene	ND	14.0	28.0	"	"	"	"	
Chloroethane	ND	280	560	"	"	"	"	
Chloroform	ND	28.0	56.0	"	"	"	"	
Chloromethane	ND	140	280	"	"	"	"	
2-Chlorotoluene	ND	28.0	56.0	"	"	"	"	
4-Chlorotoluene	ND	28.0	56.0	"	"	"	"	
Dibromochloromethane	ND	56.0	112	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	140	280	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	28.0	56.0	"	"	"	"	
Dibromomethane	ND	28.0	56.0	"	"	"	"	
1,2-Dichlorobenzene	ND	14.0	28.0	"	"	"	"	
1,3-Dichlorobenzene	ND	14.0	28.0	"	"	"	"	
1,4-Dichlorobenzene	ND	14.0	28.0	"	"	"	"	
Dichlorodifluoromethane	ND	56.0	112	"	"	"	"	
1,1-Dichloroethane	ND	14.0	28.0	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	14.0	28.0	"	"	"	"	
1,1-Dichloroethene	ND	14.0	28.0	"	"	"	"	
cis-1,2-Dichloroethene	ND	14.0	28.0	"	"	"	"	
trans-1,2-Dichloroethene	ND	14.0	28.0	"	"	"	"	
1,2-Dichloropropane	ND	14.0	28.0	"	"	"	"	
1,3-Dichloropropane	ND	28.0	56.0	"	"	"	"	
2,2-Dichloropropane	ND	28.0	56.0	"	"	"	"	
1,1-Dichloropropene	ND	28.0	56.0	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP06-S-2.5 (A7L0317-01)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	28.0	56.0	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	28.0	56.0	"	"	"	"	
Ethylbenzene	ND	14.0	28.0	"	"	"	"	
Hexachlorobutadiene	ND	56.0	112	"	"	"	"	
2-Hexanone	ND	560	560	"	"	"	"	
Isopropylbenzene	ND	28.0	56.0	"	"	"	"	
4-Isopropyltoluene	ND	28.0	56.0	"	"	"	"	
Methylene chloride	ND	140	280	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	560	560	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	28.0	56.0	"	"	"	"	
Naphthalene	ND	56.0	112	"	"	"	"	
n-Propylbenzene	ND	14.0	28.0	"	"	"	"	
Styrene	ND	28.0	56.0	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	14.0	28.0	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	28.0	56.0	"	"	"	"	
Tetrachloroethene (PCE)	ND	14.0	28.0	"	"	"	"	
Toluene	ND	28.0	56.0	"	"	"	"	
1,2,3-Trichlorobenzene	ND	140	280	"	"	"	"	
1,2,4-Trichlorobenzene	ND	140	280	"	"	"	"	
1,1,1-Trichloroethane	ND	14.0	28.0	"	"	"	"	
1,1,2-Trichloroethane	ND	14.0	28.0	"	"	"	"	
Trichloroethene (TCE)	ND	14.0	28.0	"	"	"	"	
Trichlorofluoromethane	ND	56.0	112	"	"	"	"	
1,2,3-Trichloropropane	ND	28.0	56.0	"	"	"	"	
1,2,4-Trimethylbenzene	ND	28.0	56.0	"	"	"	"	
1,3,5-Trimethylbenzene	ND	28.0	56.0	"	"	"	"	
Vinyl chloride	ND	14.0	28.0	"	"	"	"	
m,p-Xylene	ND	28.0	56.0	"	"	"	"	
o-Xylene	ND	14.0	28.0	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 108 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>92 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP06-S-7.5 (A7L0317-02)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	511	1020	ug/kg dry	50	12/13/17 13:33	5035A/8260C	
Acrylonitrile	ND	51.1	102	"	"	"	"	
Benzene	ND	5.11	10.2	"	"	"	"	
Bromobenzene	ND	12.8	25.6	"	"	"	"	
Bromochloromethane	ND	25.6	51.1	"	"	"	"	
Bromodichloromethane	ND	25.6	51.1	"	"	"	"	
Bromoform	ND	51.1	102	"	"	"	"	
Bromomethane	ND	511	511	"	"	"	"	
2-Butanone (MEK)	ND	256	511	"	"	"	"	
n-Butylbenzene	ND	25.6	51.1	"	"	"	"	
sec-Butylbenzene	ND	25.6	51.1	"	"	"	"	
tert-Butylbenzene	ND	25.6	51.1	"	"	"	"	
Carbon disulfide	ND	256	511	"	"	"	"	
Carbon tetrachloride	ND	25.6	51.1	"	"	"	"	
Chlorobenzene	ND	12.8	25.6	"	"	"	"	
Chloroethane	ND	256	511	"	"	"	"	
Chloroform	ND	25.6	51.1	"	"	"	"	
Chloromethane	ND	128	256	"	"	"	"	
2-Chlorotoluene	ND	25.6	51.1	"	"	"	"	
4-Chlorotoluene	ND	25.6	51.1	"	"	"	"	
Dibromochloromethane	ND	51.1	102	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	128	256	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	25.6	51.1	"	"	"	"	
Dibromomethane	ND	25.6	51.1	"	"	"	"	
1,2-Dichlorobenzene	ND	12.8	25.6	"	"	"	"	
1,3-Dichlorobenzene	ND	12.8	25.6	"	"	"	"	
1,4-Dichlorobenzene	ND	12.8	25.6	"	"	"	"	
Dichlorodifluoromethane	ND	51.1	102	"	"	"	"	
1,1-Dichloroethane	ND	12.8	25.6	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	12.8	25.6	"	"	"	"	
1,1-Dichloroethene	ND	12.8	25.6	"	"	"	"	
cis-1,2-Dichloroethene	ND	12.8	25.6	"	"	"	"	
trans-1,2-Dichloroethene	ND	12.8	25.6	"	"	"	"	
1,2-Dichloropropane	ND	12.8	25.6	"	"	"	"	
1,3-Dichloropropane	ND	25.6	51.1	"	"	"	"	
2,2-Dichloropropane	ND	25.6	51.1	"	"	"	"	
1,1-Dichloropropene	ND	25.6	51.1	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP06-S-7.5 (A7L0317-02)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	25.6	51.1	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	25.6	51.1	"	"	"	"	
Ethylbenzene	ND	12.8	25.6	"	"	"	"	
Hexachlorobutadiene	ND	51.1	102	"	"	"	"	
2-Hexanone	ND	511	511	"	"	"	"	
Isopropylbenzene	ND	25.6	51.1	"	"	"	"	
4-Isopropyltoluene	ND	25.6	51.1	"	"	"	"	
Methylene chloride	ND	128	256	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	511	511	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	25.6	51.1	"	"	"	"	
Naphthalene	ND	51.1	102	"	"	"	"	
n-Propylbenzene	ND	12.8	25.6	"	"	"	"	
Styrene	ND	25.6	51.1	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	12.8	25.6	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	25.6	51.1	"	"	"	"	
Tetrachloroethene (PCE)	ND	12.8	25.6	"	"	"	"	
Toluene	ND	25.6	51.1	"	"	"	"	
1,2,3-Trichlorobenzene	ND	128	256	"	"	"	"	
1,2,4-Trichlorobenzene	ND	128	256	"	"	"	"	
1,1,1-Trichloroethane	ND	12.8	25.6	"	"	"	"	
1,1,2-Trichloroethane	ND	12.8	25.6	"	"	"	"	
Trichloroethene (TCE)	ND	12.8	25.6	"	"	"	"	
Trichlorofluoromethane	ND	51.1	102	"	"	"	"	
1,2,3-Trichloropropane	ND	25.6	51.1	"	"	"	"	
1,2,4-Trimethylbenzene	ND	25.6	51.1	"	"	"	"	
1,3,5-Trimethylbenzene	ND	25.6	51.1	"	"	"	"	
Vinyl chloride	ND	12.8	25.6	"	"	"	"	
m,p-Xylene	ND	25.6	51.1	"	"	"	"	
o-Xylene	ND	12.8	25.6	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 110 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP06-S-21.0 (A7L0317-03)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	571	1140	ug/kg dry	50	12/13/17 14:00	5035A/8260C	
Acrylonitrile	ND	57.1	114	"	"	"	"	
Benzene	ND	5.71	11.4	"	"	"	"	
Bromobenzene	ND	14.3	28.6	"	"	"	"	
Bromochloromethane	ND	28.6	57.1	"	"	"	"	
Bromodichloromethane	ND	28.6	57.1	"	"	"	"	
Bromoform	ND	57.1	114	"	"	"	"	
Bromomethane	ND	571	571	"	"	"	"	
2-Butanone (MEK)	ND	286	571	"	"	"	"	
n-Butylbenzene	ND	28.6	57.1	"	"	"	"	
sec-Butylbenzene	ND	28.6	57.1	"	"	"	"	
tert-Butylbenzene	ND	28.6	57.1	"	"	"	"	
Carbon disulfide	ND	286	571	"	"	"	"	
Carbon tetrachloride	ND	28.6	57.1	"	"	"	"	
Chlorobenzene	ND	14.3	28.6	"	"	"	"	
Chloroethane	ND	286	571	"	"	"	"	
Chloroform	ND	28.6	57.1	"	"	"	"	
Chloromethane	ND	143	286	"	"	"	"	
2-Chlorotoluene	ND	28.6	57.1	"	"	"	"	
4-Chlorotoluene	ND	28.6	57.1	"	"	"	"	
Dibromochloromethane	ND	57.1	114	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	143	286	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	28.6	57.1	"	"	"	"	
Dibromomethane	ND	28.6	57.1	"	"	"	"	
1,2-Dichlorobenzene	ND	14.3	28.6	"	"	"	"	
1,3-Dichlorobenzene	ND	14.3	28.6	"	"	"	"	
1,4-Dichlorobenzene	ND	14.3	28.6	"	"	"	"	
Dichlorodifluoromethane	ND	57.1	114	"	"	"	"	
1,1-Dichloroethane	ND	14.3	28.6	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	14.3	28.6	"	"	"	"	
1,1-Dichloroethene	ND	14.3	28.6	"	"	"	"	
cis-1,2-Dichloroethene	ND	14.3	28.6	"	"	"	"	
trans-1,2-Dichloroethene	ND	14.3	28.6	"	"	"	"	
1,2-Dichloropropane	ND	14.3	28.6	"	"	"	"	
1,3-Dichloropropane	ND	28.6	57.1	"	"	"	"	
2,2-Dichloropropane	ND	28.6	57.1	"	"	"	"	
1,1-Dichloropropene	ND	28.6	57.1	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP06-S-21.0 (A7L0317-03)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	28.6	57.1	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	28.6	57.1	"	"	"	"	
Ethylbenzene	ND	14.3	28.6	"	"	"	"	
Hexachlorobutadiene	ND	57.1	114	"	"	"	"	
2-Hexanone	ND	571	571	"	"	"	"	
Isopropylbenzene	ND	28.6	57.1	"	"	"	"	
4-Isopropyltoluene	ND	28.6	57.1	"	"	"	"	
Methylene chloride	ND	143	286	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	571	571	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	28.6	57.1	"	"	"	"	
Naphthalene	ND	57.1	114	"	"	"	"	
n-Propylbenzene	ND	14.3	28.6	"	"	"	"	
Styrene	ND	28.6	57.1	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	14.3	28.6	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	28.6	57.1	"	"	"	"	
Tetrachloroethene (PCE)	ND	14.3	28.6	"	"	"	"	
Toluene	ND	28.6	57.1	"	"	"	"	
1,2,3-Trichlorobenzene	ND	143	286	"	"	"	"	
1,2,4-Trichlorobenzene	ND	143	286	"	"	"	"	
1,1,1-Trichloroethane	ND	14.3	28.6	"	"	"	"	
1,1,2-Trichloroethane	ND	14.3	28.6	"	"	"	"	
Trichloroethene (TCE)	ND	14.3	28.6	"	"	"	"	
Trichlorofluoromethane	ND	57.1	114	"	"	"	"	
1,2,3-Trichloropropane	ND	28.6	57.1	"	"	"	"	
1,2,4-Trimethylbenzene	ND	28.6	57.1	"	"	"	"	
1,3,5-Trimethylbenzene	ND	28.6	57.1	"	"	"	"	
Vinyl chloride	ND	14.3	28.6	"	"	"	"	
m,p-Xylene	ND	28.6	57.1	"	"	"	"	
o-Xylene	ND	14.3	28.6	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 110 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52


## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-2.5 (A7L0317-07)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	640	1280	ug/kg dry	50	12/13/17 15:48	5035A/8260C	
Acrylonitrile	ND	64.0	128	"	"	"	"	
Benzene	ND	6.40	12.8	"	"	"	"	
Bromobenzene	ND	16.0	32.0	"	"	"	"	
Bromochloromethane	ND	32.0	64.0	"	"	"	"	
Bromodichloromethane	ND	32.0	64.0	"	"	"	"	
Bromoform	ND	64.0	128	"	"	"	"	
Bromomethane	ND	640	640	"	"	"	"	
2-Butanone (MEK)	ND	320	640	"	"	"	"	
n-Butylbenzene	ND	32.0	64.0	"	"	"	"	
sec-Butylbenzene	ND	32.0	64.0	"	"	"	"	
tert-Butylbenzene	ND	32.0	64.0	"	"	"	"	
Carbon disulfide	ND	320	640	"	"	"	"	
Carbon tetrachloride	ND	32.0	64.0	"	"	"	"	
Chlorobenzene	ND	16.0	32.0	"	"	"	"	
Chloroethane	ND	320	640	"	"	"	"	
Chloroform	ND	32.0	64.0	"	"	"	"	
Chloromethane	ND	160	320	"	"	"	"	
2-Chlorotoluene	ND	32.0	64.0	"	"	"	"	
4-Chlorotoluene	ND	32.0	64.0	"	"	"	"	
Dibromochloromethane	ND	64.0	128	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	160	320	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	32.0	64.0	"	"	"	"	
Dibromomethane	ND	32.0	64.0	"	"	"	"	
1,2-Dichlorobenzene	ND	16.0	32.0	"	"	"	"	
1,3-Dichlorobenzene	ND	16.0	32.0	"	"	"	"	
1,4-Dichlorobenzene	ND	16.0	32.0	"	"	"	"	
Dichlorodifluoromethane	ND	64.0	128	"	"	"	"	
1,1-Dichloroethane	ND	16.0	32.0	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	16.0	32.0	"	"	"	"	
1,1-Dichloroethene	ND	16.0	32.0	"	"	"	"	
cis-1,2-Dichloroethene	ND	16.0	32.0	"	"	"	"	
trans-1,2-Dichloroethene	ND	16.0	32.0	"	"	"	"	
1,2-Dichloropropane	ND	16.0	32.0	"	"	"	"	
1,3-Dichloropropane	ND	32.0	64.0	"	"	"	"	
2,2-Dichloropropane	ND	32.0	64.0	"	"	"	"	
1,1-Dichloropropene	ND	32.0	64.0	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-2.5 (A7L0317-07)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	32.0	64.0	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	32.0	64.0	"	"	"	"	
Ethylbenzene	ND	16.0	32.0	"	"	"	"	
Hexachlorobutadiene	ND	64.0	128	"	"	"	"	
2-Hexanone	ND	640	640	"	"	"	"	
Isopropylbenzene	ND	32.0	64.0	"	"	"	"	
4-Isopropyltoluene	ND	32.0	64.0	"	"	"	"	
Methylene chloride	ND	160	320	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	640	640	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	32.0	64.0	"	"	"	"	
Naphthalene	ND	64.0	128	"	"	"	"	
n-Propylbenzene	ND	16.0	32.0	"	"	"	"	
Styrene	ND	32.0	64.0	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	16.0	32.0	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	32.0	64.0	"	"	"	"	
Tetrachloroethene (PCE)	ND	16.0	32.0	"	"	"	"	
Toluene	ND	32.0	64.0	"	"	"	"	
1,2,3-Trichlorobenzene	ND	160	320	"	"	"	"	
1,2,4-Trichlorobenzene	ND	160	320	"	"	"	"	
1,1,1-Trichloroethane	ND	16.0	32.0	"	"	"	"	
1,1,2-Trichloroethane	ND	16.0	32.0	"	"	"	"	
Trichloroethene (TCE)	ND	16.0	32.0	"	"	"	"	
Trichlorofluoromethane	ND	64.0	128	"	"	"	"	
1,2,3-Trichloropropane	ND	32.0	64.0	"	"	"	"	
1,2,4-Trimethylbenzene	ND	32.0	64.0	"	"	"	"	
1,3,5-Trimethylbenzene	ND	32.0	64.0	"	"	"	"	
Vinyl chloride	ND	16.0	32.0	"	"	"	"	
m,p-Xylene	ND	32.0	64.0	"	"	"	"	
o-Xylene	ND	16.0	32.0	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 110 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-7.5 (A7L0317-08)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	565	1130	ug/kg dry	50	12/13/17 16:15	5035A/8260C	
Acrylonitrile	ND	56.5	113	"	"	"	"	
Benzene	ND	5.65	11.3	"	"	"	"	
Bromobenzene	ND	14.1	28.3	"	"	"	"	
Bromochloromethane	ND	28.3	56.5	"	"	"	"	
Bromodichloromethane	ND	28.3	56.5	"	"	"	"	
Bromoform	ND	56.5	113	"	"	"	"	
Bromomethane	ND	565	565	"	"	"	"	
2-Butanone (MEK)	ND	283	565	"	"	"	"	
n-Butylbenzene	ND	28.3	56.5	"	"	"	"	
sec-Butylbenzene	ND	28.3	56.5	"	"	"	"	
tert-Butylbenzene	ND	28.3	56.5	"	"	"	"	
Carbon disulfide	ND	283	565	"	"	"	"	
Carbon tetrachloride	ND	28.3	56.5	"	"	"	"	
Chlorobenzene	ND	14.1	28.3	"	"	"	"	
Chloroethane	ND	283	565	"	"	"	"	
Chloroform	ND	28.3	56.5	"	"	"	"	
Chloromethane	ND	141	283	"	"	"	"	
2-Chlorotoluene	ND	28.3	56.5	"	"	"	"	
4-Chlorotoluene	ND	28.3	56.5	"	"	"	"	
Dibromochloromethane	ND	56.5	113	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	141	283	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	28.3	56.5	"	"	"	"	
Dibromomethane	ND	28.3	56.5	"	"	"	"	
1,2-Dichlorobenzene	ND	14.1	28.3	"	"	"	"	
1,3-Dichlorobenzene	ND	14.1	28.3	"	"	"	"	
1,4-Dichlorobenzene	ND	14.1	28.3	"	"	"	"	
Dichlorodifluoromethane	ND	56.5	113	"	"	"	"	
1,1-Dichloroethane	ND	14.1	28.3	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	14.1	28.3	"	"	"	"	
1,1-Dichloroethene	ND	14.1	28.3	"	"	"	"	
cis-1,2-Dichloroethene	ND	14.1	28.3	"	"	"	"	
trans-1,2-Dichloroethene	ND	14.1	28.3	"	"	"	"	
1,2-Dichloropropane	ND	14.1	28.3	"	"	"	"	
1,3-Dichloropropane	ND	28.3	56.5	"	"	"	"	
2,2-Dichloropropane	ND	28.3	56.5	"	"	"	"	
1,1-Dichloropropene	ND	28.3	56.5	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea


Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-7.5 (A7L0317-08)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	28.3	56.5	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	28.3	56.5	"	"	"	"	
Ethylbenzene	ND	14.1	28.3	"	"	"	"	
Hexachlorobutadiene	ND	56.5	113	"	"	"	"	
2-Hexanone	ND	565	565	"	"	"	"	
Isopropylbenzene	ND	28.3	56.5	"	"	"	"	
4-Isopropyltoluene	ND	28.3	56.5	"	"	"	"	
Methylene chloride	ND	141	283	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	565	565	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	28.3	56.5	"	"	"	"	
Naphthalene	ND	56.5	113	"	"	"	"	
n-Propylbenzene	ND	14.1	28.3	"	"	"	"	
Styrene	ND	28.3	56.5	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	14.1	28.3	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	28.3	56.5	"	"	"	"	
Tetrachloroethene (PCE)	ND	14.1	28.3	"	"	"	"	
Toluene	ND	28.3	56.5	"	"	"	"	
1,2,3-Trichlorobenzene	ND	141	283	"	"	"	"	
1,2,4-Trichlorobenzene	ND	141	283	"	"	"	"	
1,1,1-Trichloroethane	ND	14.1	28.3	"	"	"	"	
1,1,2-Trichloroethane	ND	14.1	28.3	"	"	"	"	
Trichloroethene (TCE)	ND	14.1	28.3	"	"	"	"	
Trichlorofluoromethane	ND	56.5	113	"	"	"	"	
1,2,3-Trichloropropane	ND	28.3	56.5	"	"	"	"	
1,2,4-Trimethylbenzene	ND	28.3	56.5	"	"	"	"	
1,3,5-Trimethylbenzene	ND	28.3	56.5	"	"	"	"	
Vinyl chloride	ND	14.1	28.3	"	"	"	"	
m,p-Xylene	ND	28.3	56.5	"	"	"	"	
o-Xylene	ND	14.1	28.3	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 111 %</i>	<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>			<i>93 %</i>	<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>			<i>103 %</i>	<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-17.5 (A7L0317-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	541	1080	ug/kg dry	50	12/13/17 16:42	5035A/8260C	
Acrylonitrile	ND	54.1	108	"	"	"	"	
Benzene	ND	5.41	10.8	"	"	"	"	
Bromobenzene	ND	13.5	27.1	"	"	"	"	
Bromochloromethane	ND	27.1	54.1	"	"	"	"	
Bromodichloromethane	ND	27.1	54.1	"	"	"	"	
Bromoform	ND	54.1	108	"	"	"	"	
Bromomethane	ND	541	541	"	"	"	"	
2-Butanone (MEK)	ND	271	541	"	"	"	"	
n-Butylbenzene	ND	27.1	54.1	"	"	"	"	
sec-Butylbenzene	ND	27.1	54.1	"	"	"	"	
tert-Butylbenzene	ND	27.1	54.1	"	"	"	"	
Carbon disulfide	ND	271	541	"	"	"	"	
Carbon tetrachloride	ND	27.1	54.1	"	"	"	"	
Chlorobenzene	ND	13.5	27.1	"	"	"	"	
Chloroethane	ND	271	541	"	"	"	"	
Chloroform	ND	27.1	54.1	"	"	"	"	
Chloromethane	ND	135	271	"	"	"	"	
2-Chlorotoluene	ND	27.1	54.1	"	"	"	"	
4-Chlorotoluene	ND	27.1	54.1	"	"	"	"	
Dibromochloromethane	ND	54.1	108	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	135	271	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	27.1	54.1	"	"	"	"	
Dibromomethane	ND	27.1	54.1	"	"	"	"	
1,2-Dichlorobenzene	ND	13.5	27.1	"	"	"	"	
1,3-Dichlorobenzene	ND	13.5	27.1	"	"	"	"	
1,4-Dichlorobenzene	ND	13.5	27.1	"	"	"	"	
Dichlorodifluoromethane	ND	54.1	108	"	"	"	"	
1,1-Dichloroethane	ND	13.5	27.1	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	13.5	27.1	"	"	"	"	
1,1-Dichloroethene	ND	13.5	27.1	"	"	"	"	
cis-1,2-Dichloroethene	ND	13.5	27.1	"	"	"	"	
trans-1,2-Dichloroethene	ND	13.5	27.1	"	"	"	"	
1,2-Dichloropropane	ND	13.5	27.1	"	"	"	"	
1,3-Dichloropropane	ND	27.1	54.1	"	"	"	"	
2,2-Dichloropropane	ND	27.1	54.1	"	"	"	"	
1,1-Dichloropropene	ND	27.1	54.1	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-17.5 (A7L0317-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	27.1	54.1	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	27.1	54.1	"	"	"	"	
Ethylbenzene	ND	13.5	27.1	"	"	"	"	
Hexachlorobutadiene	ND	54.1	108	"	"	"	"	
2-Hexanone	ND	541	541	"	"	"	"	
Isopropylbenzene	ND	27.1	54.1	"	"	"	"	
4-Isopropyltoluene	ND	27.1	54.1	"	"	"	"	
Methylene chloride	ND	135	271	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	541	541	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	27.1	54.1	"	"	"	"	
Naphthalene	ND	54.1	108	"	"	"	"	
n-Propylbenzene	ND	13.5	27.1	"	"	"	"	
Styrene	ND	27.1	54.1	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	13.5	27.1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	27.1	54.1	"	"	"	"	
Tetrachloroethene (PCE)	ND	13.5	27.1	"	"	"	"	
Toluene	ND	27.1	54.1	"	"	"	"	
1,2,3-Trichlorobenzene	ND	135	271	"	"	"	"	
1,2,4-Trichlorobenzene	ND	135	271	"	"	"	"	
1,1,1-Trichloroethane	ND	13.5	27.1	"	"	"	"	
1,1,2-Trichloroethane	ND	13.5	27.1	"	"	"	"	
Trichloroethene (TCE)	ND	13.5	27.1	"	"	"	"	
Trichlorofluoromethane	ND	54.1	108	"	"	"	"	
1,2,3-Trichloropropane	ND	27.1	54.1	"	"	"	"	
1,2,4-Trimethylbenzene	ND	27.1	54.1	"	"	"	"	
1,3,5-Trimethylbenzene	ND	27.1	54.1	"	"	"	"	
Vinyl chloride	ND	13.5	27.1	"	"	"	"	
m,p-Xylene	ND	27.1	54.1	"	"	"	"	
o-Xylene	ND	13.5	27.1	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 110 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-32.0 (A7L0317-10)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	689	1380	ug/kg dry	50	12/13/17 17:37	5035A/8260C	
Acrylonitrile	ND	68.9	138	"	"	"	"	
Benzene	ND	6.89	13.8	"	"	"	"	
Bromobenzene	ND	17.2	34.5	"	"	"	"	
Bromochloromethane	ND	34.5	68.9	"	"	"	"	
Bromodichloromethane	ND	34.5	68.9	"	"	"	"	
Bromoform	ND	68.9	138	"	"	"	"	
Bromomethane	ND	689	689	"	"	"	"	
2-Butanone (MEK)	ND	345	689	"	"	"	"	
n-Butylbenzene	ND	34.5	68.9	"	"	"	"	
sec-Butylbenzene	ND	34.5	68.9	"	"	"	"	
tert-Butylbenzene	ND	34.5	68.9	"	"	"	"	
Carbon disulfide	ND	345	689	"	"	"	"	
Carbon tetrachloride	ND	34.5	68.9	"	"	"	"	
Chlorobenzene	ND	17.2	34.5	"	"	"	"	
Chloroethane	ND	345	689	"	"	"	"	
Chloroform	ND	34.5	68.9	"	"	"	"	
Chloromethane	ND	172	345	"	"	"	"	
2-Chlorotoluene	ND	34.5	68.9	"	"	"	"	
4-Chlorotoluene	ND	34.5	68.9	"	"	"	"	
Dibromochloromethane	ND	68.9	138	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	172	345	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	34.5	68.9	"	"	"	"	
Dibromomethane	ND	34.5	68.9	"	"	"	"	
1,2-Dichlorobenzene	ND	17.2	34.5	"	"	"	"	
1,3-Dichlorobenzene	ND	17.2	34.5	"	"	"	"	
1,4-Dichlorobenzene	ND	17.2	34.5	"	"	"	"	
Dichlorodifluoromethane	ND	68.9	138	"	"	"	"	
1,1-Dichloroethane	ND	17.2	34.5	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	17.2	34.5	"	"	"	"	
1,1-Dichloroethene	ND	17.2	34.5	"	"	"	"	
cis-1,2-Dichloroethene	ND	17.2	34.5	"	"	"	"	
trans-1,2-Dichloroethene	ND	17.2	34.5	"	"	"	"	
1,2-Dichloropropane	ND	17.2	34.5	"	"	"	"	
1,3-Dichloropropane	ND	34.5	68.9	"	"	"	"	
2,2-Dichloropropane	ND	34.5	68.9	"	"	"	"	
1,1-Dichloropropene	ND	34.5	68.9	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-32.0 (A7L0317-10)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	34.5	68.9	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	34.5	68.9	"	"	"	"	
Ethylbenzene	ND	17.2	34.5	"	"	"	"	
Hexachlorobutadiene	ND	68.9	138	"	"	"	"	
2-Hexanone	ND	689	689	"	"	"	"	
Isopropylbenzene	ND	34.5	68.9	"	"	"	"	
4-Isopropyltoluene	ND	34.5	68.9	"	"	"	"	
Methylene chloride	ND	172	345	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	689	689	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	34.5	68.9	"	"	"	"	
Naphthalene	ND	68.9	138	"	"	"	"	
n-Propylbenzene	ND	17.2	34.5	"	"	"	"	
Styrene	ND	34.5	68.9	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	17.2	34.5	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	34.5	68.9	"	"	"	"	
Tetrachloroethene (PCE)	ND	17.2	34.5	"	"	"	"	
Toluene	ND	34.5	68.9	"	"	"	"	
1,2,3-Trichlorobenzene	ND	172	345	"	"	"	"	
1,2,4-Trichlorobenzene	ND	172	345	"	"	"	"	
1,1,1-Trichloroethane	ND	17.2	34.5	"	"	"	"	
1,1,2-Trichloroethane	ND	17.2	34.5	"	"	"	"	
Trichloroethene (TCE)	ND	17.2	34.5	"	"	"	"	
Trichlorofluoromethane	ND	68.9	138	"	"	"	"	
1,2,3-Trichloropropane	ND	34.5	68.9	"	"	"	"	
1,2,4-Trimethylbenzene	ND	34.5	68.9	"	"	"	"	
1,3,5-Trimethylbenzene	ND	34.5	68.9	"	"	"	"	
Vinyl chloride	ND	17.2	34.5	"	"	"	"	
m,p-Xylene	ND	34.5	68.9	"	"	"	"	
o-Xylene	ND	17.2	34.5	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 112 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-2.5-DUP (A7L0317-11)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	506	1010	ug/kg dry	50	12/13/17 17:09	5035A/8260C	
Acrylonitrile	ND	50.6	101	"	"	"	"	
Benzene	ND	5.06	10.1	"	"	"	"	
Bromobenzene	ND	12.6	25.3	"	"	"	"	
Bromochloromethane	ND	25.3	50.6	"	"	"	"	
Bromodichloromethane	ND	25.3	50.6	"	"	"	"	
Bromoform	ND	50.6	101	"	"	"	"	
Bromomethane	ND	506	506	"	"	"	"	
2-Butanone (MEK)	ND	253	506	"	"	"	"	
n-Butylbenzene	ND	25.3	50.6	"	"	"	"	
sec-Butylbenzene	ND	25.3	50.6	"	"	"	"	
tert-Butylbenzene	ND	25.3	50.6	"	"	"	"	
Carbon disulfide	ND	253	506	"	"	"	"	
Carbon tetrachloride	ND	25.3	50.6	"	"	"	"	
Chlorobenzene	ND	12.6	25.3	"	"	"	"	
Chloroethane	ND	253	506	"	"	"	"	
Chloroform	ND	25.3	50.6	"	"	"	"	
Chloromethane	ND	126	253	"	"	"	"	
2-Chlorotoluene	ND	25.3	50.6	"	"	"	"	
4-Chlorotoluene	ND	25.3	50.6	"	"	"	"	
Dibromochloromethane	ND	50.6	101	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	126	253	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	25.3	50.6	"	"	"	"	
Dibromomethane	ND	25.3	50.6	"	"	"	"	
1,2-Dichlorobenzene	ND	12.6	25.3	"	"	"	"	
1,3-Dichlorobenzene	ND	12.6	25.3	"	"	"	"	
1,4-Dichlorobenzene	ND	12.6	25.3	"	"	"	"	
Dichlorodifluoromethane	ND	50.6	101	"	"	"	"	
1,1-Dichloroethane	ND	12.6	25.3	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	12.6	25.3	"	"	"	"	
1,1-Dichloroethene	ND	12.6	25.3	"	"	"	"	
cis-1,2-Dichloroethene	ND	12.6	25.3	"	"	"	"	
trans-1,2-Dichloroethene	ND	12.6	25.3	"	"	"	"	
1,2-Dichloropropane	ND	12.6	25.3	"	"	"	"	
1,3-Dichloropropane	ND	25.3	50.6	"	"	"	"	
2,2-Dichloropropane	ND	25.3	50.6	"	"	"	"	
1,1-Dichloropropene	ND	25.3	50.6	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-2.5-DUP (A7L0317-11)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	25.3	50.6	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	25.3	50.6	"	"	"	"	
Ethylbenzene	ND	12.6	25.3	"	"	"	"	
Hexachlorobutadiene	ND	50.6	101	"	"	"	"	
2-Hexanone	ND	506	506	"	"	"	"	
Isopropylbenzene	ND	25.3	50.6	"	"	"	"	
4-Isopropyltoluene	ND	25.3	50.6	"	"	"	"	
Methylene chloride	ND	126	253	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	506	506	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	25.3	50.6	"	"	"	"	
Naphthalene	ND	50.6	101	"	"	"	"	
n-Propylbenzene	ND	12.6	25.3	"	"	"	"	
Styrene	ND	25.3	50.6	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	12.6	25.3	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	25.3	50.6	"	"	"	"	
Tetrachloroethene (PCE)	ND	12.6	25.3	"	"	"	"	
Toluene	ND	25.3	50.6	"	"	"	"	
1,2,3-Trichlorobenzene	ND	126	253	"	"	"	"	
1,2,4-Trichlorobenzene	ND	126	253	"	"	"	"	
1,1,1-Trichloroethane	ND	12.6	25.3	"	"	"	"	
1,1,2-Trichloroethane	ND	12.6	25.3	"	"	"	"	
Trichloroethene (TCE)	ND	12.6	25.3	"	"	"	"	
Trichlorofluoromethane	ND	50.6	101	"	"	"	"	
1,2,3-Trichloropropane	ND	25.3	50.6	"	"	"	"	
1,2,4-Trimethylbenzene	ND	25.3	50.6	"	"	"	"	
1,3,5-Trimethylbenzene	ND	25.3	50.6	"	"	"	"	
Vinyl chloride	ND	12.6	25.3	"	"	"	"	
m,p-Xylene	ND	25.3	50.6	"	"	"	"	
o-Xylene	ND	12.6	25.3	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 112 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>99 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP17-S-2.5 (A7L0317-14)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	592	1180	ug/kg dry	50	12/13/17 19:24	5035A/8260C	
Acrylonitrile	ND	59.2	118	"	"	"	"	
Benzene	ND	5.92	11.8	"	"	"	"	
Bromobenzene	ND	14.8	29.6	"	"	"	"	
Bromochloromethane	ND	29.6	59.2	"	"	"	"	
Bromodichloromethane	ND	29.6	59.2	"	"	"	"	
Bromoform	ND	59.2	118	"	"	"	"	
Bromomethane	ND	592	592	"	"	"	"	
2-Butanone (MEK)	ND	296	592	"	"	"	"	
n-Butylbenzene	ND	29.6	59.2	"	"	"	"	
sec-Butylbenzene	ND	29.6	59.2	"	"	"	"	
tert-Butylbenzene	ND	29.6	59.2	"	"	"	"	
Carbon disulfide	ND	296	592	"	"	"	"	
Carbon tetrachloride	ND	29.6	59.2	"	"	"	"	
Chlorobenzene	ND	14.8	29.6	"	"	"	"	
Chloroethane	ND	296	592	"	"	"	"	
Chloroform	ND	29.6	59.2	"	"	"	"	
Chloromethane	ND	148	296	"	"	"	"	
2-Chlorotoluene	ND	29.6	59.2	"	"	"	"	
4-Chlorotoluene	ND	29.6	59.2	"	"	"	"	
Dibromochloromethane	ND	59.2	118	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	148	296	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	29.6	59.2	"	"	"	"	
Dibromomethane	ND	29.6	59.2	"	"	"	"	
1,2-Dichlorobenzene	ND	14.8	29.6	"	"	"	"	
1,3-Dichlorobenzene	ND	14.8	29.6	"	"	"	"	
1,4-Dichlorobenzene	ND	14.8	29.6	"	"	"	"	
Dichlorodifluoromethane	ND	59.2	118	"	"	"	"	
1,1-Dichloroethane	ND	14.8	29.6	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	14.8	29.6	"	"	"	"	
1,1-Dichloroethene	ND	14.8	29.6	"	"	"	"	
cis-1,2-Dichloroethene	ND	14.8	29.6	"	"	"	"	
trans-1,2-Dichloroethene	ND	14.8	29.6	"	"	"	"	
1,2-Dichloropropane	ND	14.8	29.6	"	"	"	"	
1,3-Dichloropropane	ND	29.6	59.2	"	"	"	"	
2,2-Dichloropropane	ND	29.6	59.2	"	"	"	"	
1,1-Dichloropropene	ND	29.6	59.2	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP17-S-2.5 (A7L0317-14)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	29.6	59.2	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	29.6	59.2	"	"	"	"	
Ethylbenzene	ND	14.8	29.6	"	"	"	"	
Hexachlorobutadiene	ND	59.2	118	"	"	"	"	
2-Hexanone	ND	592	592	"	"	"	"	
Isopropylbenzene	ND	29.6	59.2	"	"	"	"	
4-Isopropyltoluene	ND	29.6	59.2	"	"	"	"	
Methylene chloride	ND	148	296	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	592	592	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	29.6	59.2	"	"	"	"	
Naphthalene	ND	59.2	118	"	"	"	"	
n-Propylbenzene	ND	14.8	29.6	"	"	"	"	
Styrene	ND	29.6	59.2	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	14.8	29.6	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	29.6	59.2	"	"	"	"	
Tetrachloroethene (PCE)	ND	14.8	29.6	"	"	"	"	
Toluene	ND	29.6	59.2	"	"	"	"	
1,2,3-Trichlorobenzene	ND	148	296	"	"	"	"	
1,2,4-Trichlorobenzene	ND	148	296	"	"	"	"	
1,1,1-Trichloroethane	ND	14.8	29.6	"	"	"	"	
1,1,2-Trichloroethane	ND	14.8	29.6	"	"	"	"	
Trichloroethene (TCE)	ND	14.8	29.6	"	"	"	"	
Trichlorofluoromethane	ND	59.2	118	"	"	"	"	
1,2,3-Trichloropropane	ND	29.6	59.2	"	"	"	"	
1,2,4-Trimethylbenzene	ND	29.6	59.2	"	"	"	"	
1,3,5-Trimethylbenzene	ND	29.6	59.2	"	"	"	"	
Vinyl chloride	ND	14.8	29.6	"	"	"	"	
m,p-Xylene	ND	29.6	59.2	"	"	"	"	
o-Xylene	ND	14.8	29.6	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 112 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP17-S-8.0 (A7L0317-15)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	619	1240	ug/kg dry	50	12/13/17 19:51	5035A/8260C	
Acrylonitrile	ND	61.9	124	"	"	"	"	
Benzene	ND	6.19	12.4	"	"	"	"	
Bromobenzene	ND	15.5	31.0	"	"	"	"	
Bromochloromethane	ND	31.0	61.9	"	"	"	"	
Bromodichloromethane	ND	31.0	61.9	"	"	"	"	
Bromoform	ND	61.9	124	"	"	"	"	
Bromomethane	ND	619	619	"	"	"	"	
2-Butanone (MEK)	ND	310	619	"	"	"	"	
n-Butylbenzene	ND	31.0	61.9	"	"	"	"	
sec-Butylbenzene	ND	31.0	61.9	"	"	"	"	
tert-Butylbenzene	ND	31.0	61.9	"	"	"	"	
Carbon disulfide	ND	310	619	"	"	"	"	
Carbon tetrachloride	ND	31.0	61.9	"	"	"	"	
Chlorobenzene	ND	15.5	31.0	"	"	"	"	
Chloroethane	ND	310	619	"	"	"	"	
Chloroform	ND	31.0	61.9	"	"	"	"	
Chloromethane	ND	155	310	"	"	"	"	
2-Chlorotoluene	ND	31.0	61.9	"	"	"	"	
4-Chlorotoluene	ND	31.0	61.9	"	"	"	"	
Dibromochloromethane	ND	61.9	124	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	155	310	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	31.0	61.9	"	"	"	"	
Dibromomethane	ND	31.0	61.9	"	"	"	"	
1,2-Dichlorobenzene	ND	15.5	31.0	"	"	"	"	
1,3-Dichlorobenzene	ND	15.5	31.0	"	"	"	"	
1,4-Dichlorobenzene	ND	15.5	31.0	"	"	"	"	
Dichlorodifluoromethane	ND	61.9	124	"	"	"	"	
1,1-Dichloroethane	ND	15.5	31.0	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	15.5	31.0	"	"	"	"	
1,1-Dichloroethene	ND	15.5	31.0	"	"	"	"	
cis-1,2-Dichloroethene	ND	15.5	31.0	"	"	"	"	
trans-1,2-Dichloroethene	ND	15.5	31.0	"	"	"	"	
1,2-Dichloropropane	ND	15.5	31.0	"	"	"	"	
1,3-Dichloropropane	ND	31.0	61.9	"	"	"	"	
2,2-Dichloropropane	ND	31.0	61.9	"	"	"	"	
1,1-Dichloropropene	ND	31.0	61.9	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP17-S-8.0 (A7L0317-15)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	31.0	61.9	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	31.0	61.9	"	"	"	"	
Ethylbenzene	ND	15.5	31.0	"	"	"	"	
Hexachlorobutadiene	ND	61.9	124	"	"	"	"	
2-Hexanone	ND	619	619	"	"	"	"	
Isopropylbenzene	ND	31.0	61.9	"	"	"	"	
4-Isopropyltoluene	ND	31.0	61.9	"	"	"	"	
Methylene chloride	ND	155	310	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	619	619	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	31.0	61.9	"	"	"	"	
Naphthalene	ND	61.9	124	"	"	"	"	
n-Propylbenzene	ND	15.5	31.0	"	"	"	"	
Styrene	ND	31.0	61.9	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	15.5	31.0	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	31.0	61.9	"	"	"	"	
Tetrachloroethene (PCE)	ND	15.5	31.0	"	"	"	"	
Toluene	ND	31.0	61.9	"	"	"	"	
1,2,3-Trichlorobenzene	ND	155	310	"	"	"	"	
1,2,4-Trichlorobenzene	ND	155	310	"	"	"	"	
1,1,1-Trichloroethane	ND	15.5	31.0	"	"	"	"	
1,1,2-Trichloroethane	ND	15.5	31.0	"	"	"	"	
Trichloroethene (TCE)	ND	15.5	31.0	"	"	"	"	
Trichlorofluoromethane	ND	61.9	124	"	"	"	"	
1,2,3-Trichloropropane	ND	31.0	61.9	"	"	"	"	
1,2,4-Trimethylbenzene	ND	31.0	61.9	"	"	"	"	
1,3,5-Trimethylbenzene	ND	31.0	61.9	"	"	"	"	
Vinyl chloride	ND	15.5	31.0	"	"	"	"	
m,p-Xylene	ND	31.0	61.9	"	"	"	"	
o-Xylene	ND	15.5	31.0	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 112 %</i>	<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>			<i>93 %</i>	<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>			<i>101 %</i>	<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP18-S-2.5 (A7L0317-16)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	625	1250	ug/kg dry	50	12/13/17 20:18	5035A/8260C	
Acrylonitrile	ND	62.5	125	"	"	"	"	
Benzene	ND	6.25	12.5	"	"	"	"	
Bromobenzene	ND	15.6	31.2	"	"	"	"	
Bromochloromethane	ND	31.2	62.5	"	"	"	"	
Bromodichloromethane	ND	31.2	62.5	"	"	"	"	
Bromoform	ND	62.5	125	"	"	"	"	
Bromomethane	ND	625	625	"	"	"	"	
2-Butanone (MEK)	ND	312	625	"	"	"	"	
n-Butylbenzene	ND	31.2	62.5	"	"	"	"	
sec-Butylbenzene	ND	31.2	62.5	"	"	"	"	
tert-Butylbenzene	ND	31.2	62.5	"	"	"	"	
Carbon disulfide	ND	312	625	"	"	"	"	
Carbon tetrachloride	ND	31.2	62.5	"	"	"	"	
Chlorobenzene	ND	15.6	31.2	"	"	"	"	
Chloroethane	ND	312	625	"	"	"	"	
Chloroform	ND	31.2	62.5	"	"	"	"	
Chloromethane	ND	156	312	"	"	"	"	
2-Chlorotoluene	ND	31.2	62.5	"	"	"	"	
4-Chlorotoluene	ND	31.2	62.5	"	"	"	"	
Dibromochloromethane	ND	62.5	125	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	156	312	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	31.2	62.5	"	"	"	"	
Dibromomethane	ND	31.2	62.5	"	"	"	"	
1,2-Dichlorobenzene	ND	15.6	31.2	"	"	"	"	
1,3-Dichlorobenzene	ND	15.6	31.2	"	"	"	"	
1,4-Dichlorobenzene	ND	15.6	31.2	"	"	"	"	
Dichlorodifluoromethane	ND	62.5	125	"	"	"	"	
1,1-Dichloroethane	ND	15.6	31.2	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	15.6	31.2	"	"	"	"	
1,1-Dichloroethene	ND	15.6	31.2	"	"	"	"	
cis-1,2-Dichloroethene	ND	15.6	31.2	"	"	"	"	
trans-1,2-Dichloroethene	ND	15.6	31.2	"	"	"	"	
1,2-Dichloropropane	ND	15.6	31.2	"	"	"	"	
1,3-Dichloropropane	ND	31.2	62.5	"	"	"	"	
2,2-Dichloropropane	ND	31.2	62.5	"	"	"	"	
1,1-Dichloropropene	ND	31.2	62.5	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP18-S-2.5 (A7L0317-16)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	31.2	62.5	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	31.2	62.5	"	"	"	"	
Ethylbenzene	ND	15.6	31.2	"	"	"	"	
Hexachlorobutadiene	ND	62.5	125	"	"	"	"	
2-Hexanone	ND	625	625	"	"	"	"	
Isopropylbenzene	ND	31.2	62.5	"	"	"	"	
4-Isopropyltoluene	ND	31.2	62.5	"	"	"	"	
Methylene chloride	ND	156	312	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	625	625	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	31.2	62.5	"	"	"	"	
Naphthalene	ND	62.5	125	"	"	"	"	
n-Propylbenzene	ND	15.6	31.2	"	"	"	"	
Styrene	ND	31.2	62.5	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	15.6	31.2	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	31.2	62.5	"	"	"	"	
Tetrachloroethene (PCE)	ND	15.6	31.2	"	"	"	"	
Toluene	ND	31.2	62.5	"	"	"	"	
1,2,3-Trichlorobenzene	ND	156	312	"	"	"	"	
1,2,4-Trichlorobenzene	ND	156	312	"	"	"	"	
1,1,1-Trichloroethane	ND	15.6	31.2	"	"	"	"	
1,1,2-Trichloroethane	ND	15.6	31.2	"	"	"	"	
Trichloroethene (TCE)	ND	15.6	31.2	"	"	"	"	
Trichlorofluoromethane	ND	62.5	125	"	"	"	"	
1,2,3-Trichloropropane	ND	31.2	62.5	"	"	"	"	
1,2,4-Trimethylbenzene	ND	31.2	62.5	"	"	"	"	
1,3,5-Trimethylbenzene	ND	31.2	62.5	"	"	"	"	
Vinyl chloride	ND	15.6	31.2	"	"	"	"	
m,p-Xylene	ND	31.2	62.5	"	"	"	"	
o-Xylene	ND	15.6	31.2	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 111 %</i>	<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>			<i>93 %</i>	<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>			<i>101 %</i>	<i>Limits: 80-120 %</i>	"	"	"	





**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP12-S-3.0 (A7L0317-17)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	646	1290	ug/kg dry	50	12/13/17 20:45	5035A/8260C	
Acrylonitrile	ND	64.6	129	"	"	"	"	
Benzene	ND	6.46	12.9	"	"	"	"	
Bromobenzene	ND	16.2	32.3	"	"	"	"	
Bromochloromethane	ND	32.3	64.6	"	"	"	"	
Bromodichloromethane	ND	32.3	64.6	"	"	"	"	
Bromoform	ND	64.6	129	"	"	"	"	
Bromomethane	ND	646	646	"	"	"	"	
2-Butanone (MEK)	ND	323	646	"	"	"	"	
n-Butylbenzene	ND	32.3	64.6	"	"	"	"	
sec-Butylbenzene	ND	32.3	64.6	"	"	"	"	
tert-Butylbenzene	ND	32.3	64.6	"	"	"	"	
Carbon disulfide	ND	323	646	"	"	"	"	
Carbon tetrachloride	ND	32.3	64.6	"	"	"	"	
Chlorobenzene	ND	16.2	32.3	"	"	"	"	
Chloroethane	ND	323	646	"	"	"	"	
Chloroform	ND	32.3	64.6	"	"	"	"	
Chloromethane	ND	162	323	"	"	"	"	
2-Chlorotoluene	ND	32.3	64.6	"	"	"	"	
4-Chlorotoluene	ND	32.3	64.6	"	"	"	"	
Dibromochloromethane	ND	64.6	129	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	162	323	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	32.3	64.6	"	"	"	"	
Dibromomethane	ND	32.3	64.6	"	"	"	"	
1,2-Dichlorobenzene	ND	16.2	32.3	"	"	"	"	
1,3-Dichlorobenzene	ND	16.2	32.3	"	"	"	"	
1,4-Dichlorobenzene	ND	16.2	32.3	"	"	"	"	
Dichlorodifluoromethane	ND	64.6	129	"	"	"	"	
1,1-Dichloroethane	ND	16.2	32.3	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	16.2	32.3	"	"	"	"	
1,1-Dichloroethene	ND	16.2	32.3	"	"	"	"	
cis-1,2-Dichloroethene	ND	16.2	32.3	"	"	"	"	
trans-1,2-Dichloroethene	ND	16.2	32.3	"	"	"	"	
1,2-Dichloropropane	ND	16.2	32.3	"	"	"	"	
1,3-Dichloropropane	ND	32.3	64.6	"	"	"	"	
2,2-Dichloropropane	ND	32.3	64.6	"	"	"	"	
1,1-Dichloropropene	ND	32.3	64.6	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP12-S-3.0 (A7L0317-17)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	32.3	64.6	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	32.3	64.6	"	"	"	"	
Ethylbenzene	ND	16.2	32.3	"	"	"	"	
Hexachlorobutadiene	ND	64.6	129	"	"	"	"	
2-Hexanone	ND	646	646	"	"	"	"	
Isopropylbenzene	ND	32.3	64.6	"	"	"	"	
4-Isopropyltoluene	ND	32.3	64.6	"	"	"	"	
Methylene chloride	ND	162	323	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	646	646	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	32.3	64.6	"	"	"	"	
Naphthalene	ND	64.6	129	"	"	"	"	
n-Propylbenzene	ND	16.2	32.3	"	"	"	"	
Styrene	ND	32.3	64.6	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	16.2	32.3	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	32.3	64.6	"	"	"	"	
Tetrachloroethene (PCE)	ND	16.2	32.3	"	"	"	"	
Toluene	ND	32.3	64.6	"	"	"	"	
1,2,3-Trichlorobenzene	ND	162	323	"	"	"	"	
1,2,4-Trichlorobenzene	ND	162	323	"	"	"	"	
1,1,1-Trichloroethane	ND	16.2	32.3	"	"	"	"	
1,1,2-Trichloroethane	ND	16.2	32.3	"	"	"	"	
Trichloroethene (TCE)	ND	16.2	32.3	"	"	"	"	
Trichlorofluoromethane	ND	64.6	129	"	"	"	"	
1,2,3-Trichloropropane	ND	32.3	64.6	"	"	"	"	
1,2,4-Trimethylbenzene	ND	32.3	64.6	"	"	"	"	
1,3,5-Trimethylbenzene	ND	32.3	64.6	"	"	"	"	
Vinyl chloride	ND	16.2	32.3	"	"	"	"	
m,p-Xylene	ND	32.3	64.6	"	"	"	"	
o-Xylene	ND	16.2	32.3	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 112 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>94 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP12-S-8.0 (A7L0317-18)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	655	1310	ug/kg dry	50	12/13/17 21:12	5035A/8260C	
Acrylonitrile	ND	65.5	131	"	"	"	"	
Benzene	ND	6.55	13.1	"	"	"	"	
Bromobenzene	ND	16.4	32.7	"	"	"	"	
Bromochloromethane	ND	32.7	65.5	"	"	"	"	
Bromodichloromethane	ND	32.7	65.5	"	"	"	"	
Bromoform	ND	65.5	131	"	"	"	"	
Bromomethane	ND	655	655	"	"	"	"	
2-Butanone (MEK)	ND	327	655	"	"	"	"	
n-Butylbenzene	ND	32.7	65.5	"	"	"	"	
sec-Butylbenzene	ND	32.7	65.5	"	"	"	"	
tert-Butylbenzene	ND	32.7	65.5	"	"	"	"	
Carbon disulfide	ND	327	655	"	"	"	"	
Carbon tetrachloride	ND	32.7	65.5	"	"	"	"	
Chlorobenzene	ND	16.4	32.7	"	"	"	"	
Chloroethane	ND	327	655	"	"	"	"	
Chloroform	ND	32.7	65.5	"	"	"	"	
Chloromethane	ND	164	327	"	"	"	"	
2-Chlorotoluene	ND	32.7	65.5	"	"	"	"	
4-Chlorotoluene	ND	32.7	65.5	"	"	"	"	
Dibromochloromethane	ND	65.5	131	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	164	327	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	32.7	65.5	"	"	"	"	
Dibromomethane	ND	32.7	65.5	"	"	"	"	
1,2-Dichlorobenzene	ND	16.4	32.7	"	"	"	"	
1,3-Dichlorobenzene	ND	16.4	32.7	"	"	"	"	
1,4-Dichlorobenzene	ND	16.4	32.7	"	"	"	"	
Dichlorodifluoromethane	ND	65.5	131	"	"	"	"	
1,1-Dichloroethane	ND	16.4	32.7	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	16.4	32.7	"	"	"	"	
1,1-Dichloroethene	ND	16.4	32.7	"	"	"	"	
cis-1,2-Dichloroethene	ND	16.4	32.7	"	"	"	"	
trans-1,2-Dichloroethene	ND	16.4	32.7	"	"	"	"	
1,2-Dichloropropane	ND	16.4	32.7	"	"	"	"	
1,3-Dichloropropane	ND	32.7	65.5	"	"	"	"	
2,2-Dichloropropane	ND	32.7	65.5	"	"	"	"	
1,1-Dichloropropene	ND	32.7	65.5	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea


Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP12-S-8.0 (A7L0317-18)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	32.7	65.5	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	32.7	65.5	"	"	"	"	
Ethylbenzene	ND	16.4	32.7	"	"	"	"	
Hexachlorobutadiene	ND	65.5	131	"	"	"	"	
2-Hexanone	ND	655	655	"	"	"	"	
Isopropylbenzene	ND	32.7	65.5	"	"	"	"	
4-Isopropyltoluene	ND	32.7	65.5	"	"	"	"	
Methylene chloride	ND	164	327	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	655	655	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	32.7	65.5	"	"	"	"	
Naphthalene	ND	65.5	131	"	"	"	"	
n-Propylbenzene	ND	16.4	32.7	"	"	"	"	
Styrene	ND	32.7	65.5	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	16.4	32.7	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	32.7	65.5	"	"	"	"	
Tetrachloroethene (PCE)	ND	16.4	32.7	"	"	"	"	
Toluene	ND	32.7	65.5	"	"	"	"	
1,2,3-Trichlorobenzene	ND	164	327	"	"	"	"	
1,2,4-Trichlorobenzene	ND	164	327	"	"	"	"	
1,1,1-Trichloroethane	ND	16.4	32.7	"	"	"	"	
1,1,2-Trichloroethane	ND	16.4	32.7	"	"	"	"	
Trichloroethene (TCE)	ND	16.4	32.7	"	"	"	"	
Trichlorofluoromethane	ND	65.5	131	"	"	"	"	
1,2,3-Trichloropropane	ND	32.7	65.5	"	"	"	"	
1,2,4-Trimethylbenzene	ND	32.7	65.5	"	"	"	"	
1,3,5-Trimethylbenzene	ND	32.7	65.5	"	"	"	"	
Vinyl chloride	ND	16.4	32.7	"	"	"	"	
m,p-Xylene	ND	32.7	65.5	"	"	"	"	
o-Xylene	ND	16.4	32.7	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 112 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>94 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP07-S-2.5 (A7L0317-21)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	799	1600	ug/kg dry	50	12/13/17 21:39	5035A/8260C	
Acrylonitrile	ND	79.9	160	"	"	"	"	
Benzene	ND	7.99	16.0	"	"	"	"	
Bromobenzene	ND	20.0	40.0	"	"	"	"	
Bromochloromethane	ND	40.0	79.9	"	"	"	"	
Bromodichloromethane	ND	40.0	79.9	"	"	"	"	
Bromoform	ND	79.9	160	"	"	"	"	
Bromomethane	ND	799	799	"	"	"	"	
2-Butanone (MEK)	ND	400	799	"	"	"	"	
n-Butylbenzene	ND	40.0	79.9	"	"	"	"	
sec-Butylbenzene	ND	40.0	79.9	"	"	"	"	
tert-Butylbenzene	ND	40.0	79.9	"	"	"	"	
Carbon disulfide	ND	400	799	"	"	"	"	
Carbon tetrachloride	ND	40.0	79.9	"	"	"	"	
Chlorobenzene	ND	20.0	40.0	"	"	"	"	
Chloroethane	ND	400	799	"	"	"	"	
Chloroform	ND	40.0	79.9	"	"	"	"	
Chloromethane	ND	200	400	"	"	"	"	
2-Chlorotoluene	ND	40.0	79.9	"	"	"	"	
4-Chlorotoluene	ND	40.0	79.9	"	"	"	"	
Dibromochloromethane	ND	79.9	160	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	200	400	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	40.0	79.9	"	"	"	"	
Dibromomethane	ND	40.0	79.9	"	"	"	"	
1,2-Dichlorobenzene	ND	20.0	40.0	"	"	"	"	
1,3-Dichlorobenzene	ND	20.0	40.0	"	"	"	"	
1,4-Dichlorobenzene	ND	20.0	40.0	"	"	"	"	
Dichlorodifluoromethane	ND	79.9	160	"	"	"	"	
1,1-Dichloroethane	ND	20.0	40.0	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	20.0	40.0	"	"	"	"	
1,1-Dichloroethene	ND	20.0	40.0	"	"	"	"	
cis-1,2-Dichloroethene	ND	20.0	40.0	"	"	"	"	
trans-1,2-Dichloroethene	ND	20.0	40.0	"	"	"	"	
1,2-Dichloropropane	ND	20.0	40.0	"	"	"	"	
1,3-Dichloropropane	ND	40.0	79.9	"	"	"	"	
2,2-Dichloropropane	ND	40.0	79.9	"	"	"	"	
1,1-Dichloropropene	ND	40.0	79.9	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea


Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP07-S-2.5 (A7L0317-21)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	40.0	79.9	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	40.0	79.9	"	"	"	"	
Ethylbenzene	ND	20.0	40.0	"	"	"	"	
Hexachlorobutadiene	ND	79.9	160	"	"	"	"	
2-Hexanone	ND	799	799	"	"	"	"	
Isopropylbenzene	ND	40.0	79.9	"	"	"	"	
4-Isopropyltoluene	ND	40.0	79.9	"	"	"	"	
Methylene chloride	ND	200	400	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	799	799	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	40.0	79.9	"	"	"	"	
Naphthalene	ND	79.9	160	"	"	"	"	
n-Propylbenzene	ND	20.0	40.0	"	"	"	"	
Styrene	ND	40.0	79.9	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	20.0	40.0	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	40.0	79.9	"	"	"	"	
Tetrachloroethene (PCE)	ND	20.0	40.0	"	"	"	"	
Toluene	ND	40.0	79.9	"	"	"	"	
1,2,3-Trichlorobenzene	ND	200	400	"	"	"	"	
1,2,4-Trichlorobenzene	ND	200	400	"	"	"	"	
1,1,1-Trichloroethane	ND	20.0	40.0	"	"	"	"	
1,1,2-Trichloroethane	ND	20.0	40.0	"	"	"	"	
Trichloroethene (TCE)	ND	20.0	40.0	"	"	"	"	
Trichlorofluoromethane	ND	79.9	160	"	"	"	"	
1,2,3-Trichloropropane	ND	40.0	79.9	"	"	"	"	
1,2,4-Trimethylbenzene	ND	40.0	79.9	"	"	"	"	
1,3,5-Trimethylbenzene	ND	40.0	79.9	"	"	"	"	
Vinyl chloride	ND	20.0	40.0	"	"	"	"	
m,p-Xylene	ND	40.0	79.9	"	"	"	"	
o-Xylene	ND	20.0	40.0	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 112 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP07-S-7.5 (A7L0317-22)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
Acetone	ND	658	1320	ug/kg dry	50	12/13/17 22:03	5035A/8260C	
Acrylonitrile	ND	65.8	132	"	"	"	"	
Benzene	ND	6.58	13.2	"	"	"	"	
Bromobenzene	ND	16.4	32.9	"	"	"	"	
Bromochloromethane	ND	32.9	65.8	"	"	"	"	
Bromodichloromethane	ND	32.9	65.8	"	"	"	"	
Bromoform	ND	65.8	132	"	"	"	"	
Bromomethane	ND	658	658	"	"	"	"	
2-Butanone (MEK)	ND	329	658	"	"	"	"	
n-Butylbenzene	ND	32.9	65.8	"	"	"	"	
sec-Butylbenzene	ND	32.9	65.8	"	"	"	"	
tert-Butylbenzene	ND	32.9	65.8	"	"	"	"	
Carbon disulfide	ND	329	658	"	"	"	"	
Carbon tetrachloride	ND	32.9	65.8	"	"	"	"	
Chlorobenzene	ND	16.4	32.9	"	"	"	"	
Chloroethane	ND	329	658	"	"	"	"	
Chloroform	ND	32.9	65.8	"	"	"	"	
Chloromethane	ND	164	329	"	"	"	"	
2-Chlorotoluene	ND	32.9	65.8	"	"	"	"	
4-Chlorotoluene	ND	32.9	65.8	"	"	"	"	
Dibromochloromethane	ND	65.8	132	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	164	329	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	32.9	65.8	"	"	"	"	
Dibromomethane	ND	32.9	65.8	"	"	"	"	
1,2-Dichlorobenzene	ND	16.4	32.9	"	"	"	"	
1,3-Dichlorobenzene	ND	16.4	32.9	"	"	"	"	
1,4-Dichlorobenzene	ND	16.4	32.9	"	"	"	"	
Dichlorodifluoromethane	ND	65.8	132	"	"	"	"	
1,1-Dichloroethane	ND	16.4	32.9	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	16.4	32.9	"	"	"	"	
1,1-Dichloroethene	ND	16.4	32.9	"	"	"	"	
cis-1,2-Dichloroethene	ND	16.4	32.9	"	"	"	"	
trans-1,2-Dichloroethene	ND	16.4	32.9	"	"	"	"	
1,2-Dichloropropane	ND	16.4	32.9	"	"	"	"	
1,3-Dichloropropane	ND	32.9	65.8	"	"	"	"	
2,2-Dichloropropane	ND	32.9	65.8	"	"	"	"	
1,1-Dichloropropene	ND	32.9	65.8	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP07-S-7.5 (A7L0317-22)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120671</b>			
cis-1,3-Dichloropropene	ND	32.9	65.8	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	32.9	65.8	"	"	"	"	
Ethylbenzene	ND	16.4	32.9	"	"	"	"	
Hexachlorobutadiene	ND	65.8	132	"	"	"	"	
2-Hexanone	ND	658	658	"	"	"	"	
Isopropylbenzene	ND	32.9	65.8	"	"	"	"	
4-Isopropyltoluene	ND	32.9	65.8	"	"	"	"	
Methylene chloride	ND	164	329	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	658	658	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	32.9	65.8	"	"	"	"	
Naphthalene	ND	65.8	132	"	"	"	"	
n-Propylbenzene	ND	16.4	32.9	"	"	"	"	
Styrene	ND	32.9	65.8	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	16.4	32.9	"	"	"	"	
1,1,1,2,2-Tetrachloroethane	ND	32.9	65.8	"	"	"	"	
Tetrachloroethene (PCE)	ND	16.4	32.9	"	"	"	"	
Toluene	ND	32.9	65.8	"	"	"	"	
1,2,3-Trichlorobenzene	ND	164	329	"	"	"	"	
1,2,4-Trichlorobenzene	ND	164	329	"	"	"	"	
1,1,1-Trichloroethane	ND	16.4	32.9	"	"	"	"	
1,1,2-Trichloroethane	ND	16.4	32.9	"	"	"	"	
Trichloroethene (TCE)	ND	16.4	32.9	"	"	"	"	
Trichlorofluoromethane	ND	65.8	132	"	"	"	"	
1,2,3-Trichloropropane	ND	32.9	65.8	"	"	"	"	
1,2,4-Trimethylbenzene	ND	32.9	65.8	"	"	"	"	
1,3,5-Trimethylbenzene	ND	32.9	65.8	"	"	"	"	
Vinyl chloride	ND	16.4	32.9	"	"	"	"	
m,p-Xylene	ND	32.9	65.8	"	"	"	"	
o-Xylene	ND	16.4	32.9	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 112 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>94 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>	"	"	"	





**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP07-S-7.5-DUP (A7L0317-23)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120763</b>			
Acetone	ND	643	1290	ug/kg dry	50	12/15/17 14:07	5035A/8260C	
Acrylonitrile	ND	64.3	129	"	"	"	"	
Benzene	ND	6.43	12.9	"	"	"	"	
Bromobenzene	ND	16.1	32.2	"	"	"	"	
Bromochloromethane	ND	32.2	64.3	"	"	"	"	
Bromodichloromethane	ND	32.2	64.3	"	"	"	"	
Bromoform	ND	64.3	129	"	"	"	"	
Bromomethane	ND	643	643	"	"	"	"	
2-Butanone (MEK)	ND	322	643	"	"	"	"	
n-Butylbenzene	ND	32.2	64.3	"	"	"	"	
sec-Butylbenzene	ND	32.2	64.3	"	"	"	"	
tert-Butylbenzene	ND	32.2	64.3	"	"	"	"	
Carbon disulfide	ND	322	643	"	"	"	"	
Carbon tetrachloride	ND	32.2	64.3	"	"	"	"	
Chlorobenzene	ND	16.1	32.2	"	"	"	"	
Chloroethane	ND	322	643	"	"	"	"	
Chloroform	ND	32.2	64.3	"	"	"	"	
Chloromethane	ND	161	322	"	"	"	"	
2-Chlorotoluene	ND	32.2	64.3	"	"	"	"	
4-Chlorotoluene	ND	32.2	64.3	"	"	"	"	
Dibromochloromethane	ND	64.3	129	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	161	322	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	32.2	64.3	"	"	"	"	
Dibromomethane	ND	32.2	64.3	"	"	"	"	
1,2-Dichlorobenzene	ND	16.1	32.2	"	"	"	"	
1,3-Dichlorobenzene	ND	16.1	32.2	"	"	"	"	
1,4-Dichlorobenzene	ND	16.1	32.2	"	"	"	"	
Dichlorodifluoromethane	ND	64.3	129	"	"	"	"	
1,1-Dichloroethane	ND	16.1	32.2	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	16.1	32.2	"	"	"	"	
1,1-Dichloroethene	ND	16.1	32.2	"	"	"	"	
cis-1,2-Dichloroethene	ND	16.1	32.2	"	"	"	"	
trans-1,2-Dichloroethene	ND	16.1	32.2	"	"	"	"	
1,2-Dichloropropane	ND	16.1	32.2	"	"	"	"	
1,3-Dichloropropane	ND	32.2	64.3	"	"	"	"	
2,2-Dichloropropane	ND	32.2	64.3	"	"	"	"	
1,1-Dichloropropene	ND	32.2	64.3	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP07-S-7.5-DUP (A7L0317-23)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120763</b>			
cis-1,3-Dichloropropene	ND	32.2	64.3	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	32.2	64.3	"	"	"	"	
Ethylbenzene	ND	16.1	32.2	"	"	"	"	
Hexachlorobutadiene	ND	64.3	129	"	"	"	"	
2-Hexanone	ND	322	643	"	"	"	"	
Isopropylbenzene	ND	32.2	64.3	"	"	"	"	
4-Isopropyltoluene	ND	32.2	64.3	"	"	"	"	
Methylene chloride	ND	161	322	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	322	643	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	32.2	64.3	"	"	"	"	
Naphthalene	ND	64.3	129	"	"	"	"	
n-Propylbenzene	ND	16.1	32.2	"	"	"	"	
Styrene	ND	32.2	64.3	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	16.1	32.2	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	32.2	64.3	"	"	"	"	
Tetrachloroethene (PCE)	ND	16.1	32.2	"	"	"	"	
Toluene	ND	32.2	64.3	"	"	"	"	
1,2,3-Trichlorobenzene	ND	161	322	"	"	"	"	
1,2,4-Trichlorobenzene	ND	161	322	"	"	"	"	
1,1,1-Trichloroethane	ND	16.1	32.2	"	"	"	"	
1,1,2-Trichloroethane	ND	16.1	32.2	"	"	"	"	
Trichloroethene (TCE)	ND	16.1	32.2	"	"	"	"	
Trichlorofluoromethane	ND	64.3	129	"	"	"	"	
1,2,3-Trichloropropane	ND	32.2	64.3	"	"	"	"	
1,2,4-Trimethylbenzene	ND	32.2	64.3	"	"	"	"	
1,3,5-Trimethylbenzene	ND	32.2	64.3	"	"	"	"	
Vinyl chloride	ND	16.1	32.2	"	"	"	"	
m,p-Xylene	ND	32.2	64.3	"	"	"	"	
o-Xylene	ND	16.1	32.2	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 102 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>92 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP16-W-9.0 (A7L0317-19RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120716</b>			
Acetone	ND	10.0	20.0	ug/L	1	12/14/17 12:13	EPA 8260C	
Acrylonitrile	ND	1.00	2.00	"	"	"	"	
Benzene	ND	0.100	0.200	"	"	"	"	
Bromobenzene	ND	0.250	0.500	"	"	"	"	
Bromochloromethane	ND	0.500	1.00	"	"	"	"	
Bromodichloromethane	ND	0.500	1.00	"	"	"	"	
Bromoform	ND	0.500	1.00	"	"	"	"	
Bromomethane	ND	5.00	5.00	"	"	"	"	
2-Butanone (MEK)	ND	5.00	10.0	"	"	"	"	
n-Butylbenzene	ND	0.500	1.00	"	"	"	"	
sec-Butylbenzene	ND	0.500	1.00	"	"	"	"	
tert-Butylbenzene	ND	0.500	1.00	"	"	"	"	
Carbon disulfide	ND	5.00	10.0	"	"	"	"	
Carbon tetrachloride	ND	0.500	1.00	"	"	"	"	
Chlorobenzene	ND	0.250	0.500	"	"	"	"	
Chloroethane	ND	5.00	5.00	"	"	"	"	
Chloroform	ND	0.500	1.00	"	"	"	"	
Chloromethane	ND	2.50	5.00	"	"	"	"	
2-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
4-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
Dibromochloromethane	ND	0.500	1.00	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	"	"	
Dibromomethane	ND	0.500	1.00	"	"	"	"	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloroethane	ND	0.200	0.400	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	"	"	
1,1-Dichloroethene	ND	0.200	0.400	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
1,2-Dichloropropane	ND	0.250	0.500	"	"	"	"	
1,3-Dichloropropane	ND	0.500	1.00	"	"	"	"	
2,2-Dichloropropane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloropropene	ND	0.500	1.00	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP16-W-9.0 (A7L0317-19RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120716</b>			
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	"	EPA 8260C	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
Ethylbenzene	ND	0.250	0.500	"	"	"	"	
Hexachlorobutadiene	ND	2.50	5.00	"	"	"	"	
2-Hexanone	ND	5.00	10.0	"	"	"	"	
Isopropylbenzene	ND	0.500	1.00	"	"	"	"	
4-Isopropyltoluene	ND	0.500	1.00	"	"	"	"	
Methylene chloride	ND	1.50	3.00	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	"	"	
Naphthalene	ND	1.00	2.00	"	"	"	"	
n-Propylbenzene	ND	0.250	0.500	"	"	"	"	
Styrene	ND	0.500	1.00	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	"	"	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	"	"	
Toluene	ND	0.500	1.00	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Trichlorofluoromethane	ND	1.00	2.00	"	"	"	"	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
m,p-Xylene	ND	0.500	1.00	"	"	"	"	
o-Xylene	ND	0.250	0.500	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 115 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>97 %</i>		<i>Limits: 80-120 %</i>		"	"	"

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>Trip Blank (A7L0317-20)</b>			<b>Matrix: Water</b>		<b>Batch: 7120716</b>			
Acetone	ND	10.0	20.0	ug/L	1	12/14/17 11:18	EPA 8260C	
Acrylonitrile	ND	1.00	2.00	"	"	"	"	
Benzene	ND	0.100	0.200	"	"	"	"	
Bromobenzene	ND	0.250	0.500	"	"	"	"	
Bromochloromethane	ND	0.500	1.00	"	"	"	"	
Bromodichloromethane	ND	0.500	1.00	"	"	"	"	
Bromoform	ND	0.500	1.00	"	"	"	"	
Bromomethane	ND	5.00	5.00	"	"	"	"	
2-Butanone (MEK)	ND	5.00	10.0	"	"	"	"	
n-Butylbenzene	ND	0.500	1.00	"	"	"	"	
sec-Butylbenzene	ND	0.500	1.00	"	"	"	"	
tert-Butylbenzene	ND	0.500	1.00	"	"	"	"	
Carbon disulfide	ND	5.00	10.0	"	"	"	"	
Carbon tetrachloride	ND	0.500	1.00	"	"	"	"	
Chlorobenzene	ND	0.250	0.500	"	"	"	"	
Chloroethane	ND	5.00	5.00	"	"	"	"	
Chloroform	ND	0.500	1.00	"	"	"	"	
Chloromethane	ND	2.50	5.00	"	"	"	"	
2-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
4-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
Dibromochloromethane	ND	0.500	1.00	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	"	"	
Dibromomethane	ND	0.500	1.00	"	"	"	"	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloroethane	ND	0.200	0.400	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	"	"	
1,1-Dichloroethene	ND	0.200	0.400	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
1,2-Dichloropropane	ND	0.250	0.500	"	"	"	"	
1,3-Dichloropropane	ND	0.500	1.00	"	"	"	"	
2,2-Dichloropropane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloropropene	ND	0.500	1.00	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>Trip Blank (A7L0317-20)</b>			<b>Matrix: Water</b>		<b>Batch: 7120716</b>			
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	"	EPA 8260C	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
Ethylbenzene	ND	0.250	0.500	"	"	"	"	
Hexachlorobutadiene	ND	2.50	5.00	"	"	"	"	
2-Hexanone	ND	5.00	10.0	"	"	"	"	
Isopropylbenzene	ND	0.500	1.00	"	"	"	"	
4-Isopropyltoluene	ND	0.500	1.00	"	"	"	"	
Methylene chloride	ND	1.50	3.00	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	"	"	
Naphthalene	ND	1.00	2.00	"	"	"	"	
n-Propylbenzene	ND	0.250	0.500	"	"	"	"	
Styrene	ND	0.500	1.00	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	"	"	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	"	"	
Toluene	ND	0.500	1.00	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Trichlorofluoromethane	ND	1.00	2.00	"	"	"	"	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
m,p-Xylene	ND	0.500	1.00	"	"	"	"	
o-Xylene	ND	0.250	0.500	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 113 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>98 %</i>		<i>Limits: 80-120 %</i>		"	"	"

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP07-W-15.0 (A7L0317-24RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120716</b>			
Acetone	ND	10.0	20.0	ug/L	1	12/14/17 12:41	EPA 8260C	
Acrylonitrile	ND	1.00	2.00	"	"	"	"	
Benzene	ND	0.100	0.200	"	"	"	"	
Bromobenzene	ND	0.250	0.500	"	"	"	"	
Bromochloromethane	ND	0.500	1.00	"	"	"	"	
Bromodichloromethane	ND	0.500	1.00	"	"	"	"	
Bromoform	ND	0.500	1.00	"	"	"	"	
Bromomethane	ND	5.00	5.00	"	"	"	"	
2-Butanone (MEK)	ND	5.00	10.0	"	"	"	"	
n-Butylbenzene	ND	0.500	1.00	"	"	"	"	
sec-Butylbenzene	ND	0.500	1.00	"	"	"	"	
tert-Butylbenzene	ND	0.500	1.00	"	"	"	"	
Carbon disulfide	ND	5.00	10.0	"	"	"	"	
Carbon tetrachloride	ND	0.500	1.00	"	"	"	"	
Chlorobenzene	ND	0.250	0.500	"	"	"	"	
Chloroethane	ND	5.00	5.00	"	"	"	"	
Chloroform	ND	0.500	1.00	"	"	"	"	
Chloromethane	ND	2.50	5.00	"	"	"	"	
2-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
4-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
Dibromochloromethane	ND	0.500	1.00	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	"	"	
Dibromomethane	ND	0.500	1.00	"	"	"	"	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloroethane	ND	0.200	0.400	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	"	"	
1,1-Dichloroethene	ND	0.200	0.400	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
1,2-Dichloropropane	ND	0.250	0.500	"	"	"	"	
1,3-Dichloropropane	ND	0.500	1.00	"	"	"	"	
2,2-Dichloropropane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloropropene	ND	0.500	1.00	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea


Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP07-W-15.0 (A7L0317-24RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120716</b>			
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	"	EPA 8260C	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
Ethylbenzene	ND	0.250	0.500	"	"	"	"	
Hexachlorobutadiene	ND	2.50	5.00	"	"	"	"	
2-Hexanone	ND	5.00	10.0	"	"	"	"	
Isopropylbenzene	ND	0.500	1.00	"	"	"	"	
4-Isopropyltoluene	ND	0.500	1.00	"	"	"	"	
Methylene chloride	ND	1.50	3.00	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	"	"	
Naphthalene	ND	1.00	2.00	"	"	"	"	
n-Propylbenzene	ND	0.250	0.500	"	"	"	"	
Styrene	ND	0.500	1.00	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	"	"	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	"	"	
Toluene	ND	0.500	1.00	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Trichlorofluoromethane	ND	1.00	2.00	"	"	"	"	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
m,p-Xylene	ND	0.500	1.00	"	"	"	"	
o-Xylene	ND	0.250	0.500	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 115 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>96 %</i>		<i>Limits: 80-120 %</i>		"	"	"

Apex Laboratories



Philip Nerenberg, Lab Director

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



Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP06-S-2.5 (A7L0317-01)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120682</b>		<b>C-07</b>	
Aroclor 1016	ND	2.01	4.02	ug/kg dry	1	12/14/17 11:15	EPA 8082A	
Aroclor 1221	ND	2.01	4.02	"	"	"	"	
Aroclor 1232	ND	2.01	4.02	"	"	"	"	
<b>Aroclor 1242</b>	<b>8.64</b>	2.01	4.02	"	"	"	"	P-10
Aroclor 1248	ND	2.01	4.02	"	"	"	"	
<b>Aroclor 1254</b>	<b>68.2</b>	2.01	4.02	"	"	"	"	P-10
<b>Aroclor 1260</b>	<b>18.7</b>	2.01	4.02	"	"	"	"	P-10
Aroclor 1262	ND	2.01	4.02	"	"	"	"	
Aroclor 1268	ND	2.01	4.02	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<b>GP06-S-7.5 (A7L0317-02)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120682</b>		<b>C-07</b>	
Aroclor 1016	ND	2.04	4.08	ug/kg dry	1	12/14/17 13:05	EPA 8082A	
Aroclor 1221	ND	2.04	4.08	"	"	"	"	
Aroclor 1232	ND	2.04	4.08	"	"	"	"	
Aroclor 1242	ND	2.04	4.08	"	"	"	"	
Aroclor 1248	ND	2.04	4.08	"	"	"	"	
Aroclor 1254	ND	2.04	4.08	"	"	"	"	
Aroclor 1260	ND	2.04	4.08	"	"	"	"	
Aroclor 1262	ND	2.04	4.08	"	"	"	"	
Aroclor 1268	ND	2.04	4.08	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 93 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<b>GP06-S-21.0 (A7L0317-03)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120682</b>		<b>C-07</b>	
Aroclor 1016	ND	5.61	11.2	ug/kg dry	1	12/14/17 13:41	EPA 8082A	
Aroclor 1221	ND	5.61	11.2	"	"	"	"	
Aroclor 1232	ND	11.2	11.2	"	"	"	"	
Aroclor 1242	ND	5.61	11.2	"	"	"	"	
Aroclor 1248	ND	5.61	11.2	"	"	"	"	
Aroclor 1254	ND	11.2	11.2	"	"	"	"	
<b>Aroclor 1260</b>	<b>14.3</b>	5.61	11.2	"	"	"	"	
Aroclor 1262	ND	5.61	11.2	"	"	"	"	
Aroclor 1268	ND	5.61	11.2	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 96 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<b>GP01-S-2.5 (A7L0317-04)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120682</b>		<b>C-07</b>	
Aroclor 1016	ND	1.97	3.93	ug/kg dry	1	12/14/17 14:18	EPA 8082A	
Aroclor 1221	ND	1.97	3.93	"	"	"	"	
Aroclor 1232	ND	1.97	3.93	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP01-S-2.5 (A7L0317-04)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120682</b>		<b>C-07</b>	
Aroclor 1242	ND	1.97	3.93	ug/kg dry	1	"	EPA 8082A	
Aroclor 1248	ND	1.97	3.93	"	"	"	"	
<b>Aroclor 1254</b>	<b>3.57</b>	1.97	3.93	"	"	"	"	J
<b>Aroclor 1260</b>	<b>4.01</b>	1.97	3.93	"	"	"	"	P-10
Aroclor 1262	ND	1.97	3.93	"	"	"	"	
Aroclor 1268	ND	1.97	3.93	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 102 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<b>GP01-S-7.5 (A7L0317-05RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120682</b>		<b>C-07</b>	
Aroclor 1016	ND	2.21	4.41	ug/kg dry	1	12/15/17 13:38	EPA 8082A	
Aroclor 1221	ND	2.21	4.41	"	"	"	"	
Aroclor 1232	ND	2.21	4.41	"	"	"	"	
Aroclor 1242	ND	2.21	4.41	"	"	"	"	
Aroclor 1248	ND	2.21	4.41	"	"	"	"	
<b>Aroclor 1254</b>	<b>10.0</b>	2.21	4.41	"	"	"	"	P-10
<b>Aroclor 1260</b>	<b>9.10</b>	2.21	4.41	"	"	"	"	P-10
Aroclor 1262	ND	2.21	4.41	"	"	"	"	
Aroclor 1268	ND	2.21	4.41	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 97 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<b>GP01-S-16.0 (A7L0317-06RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120682</b>		<b>C-07</b>	
Aroclor 1016	ND	2.07	4.14	ug/kg dry	1	12/15/17 14:15	EPA 8082A	
Aroclor 1221	ND	2.07	4.14	"	"	"	"	
Aroclor 1232	ND	2.07	4.14	"	"	"	"	
Aroclor 1242	ND	2.07	4.14	"	"	"	"	
Aroclor 1248	ND	2.07	4.14	"	"	"	"	
Aroclor 1254	ND	4.14	4.14	"	"	"	"	
<b>Aroclor 1260</b>	<b>4.40</b>	2.07	4.14	"	"	"	"	
Aroclor 1262	ND	2.07	4.14	"	"	"	"	
Aroclor 1268	ND	2.07	4.14	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 103 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<b>GP03-S-2.5 (A7L0317-07)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>		<b>C-07</b>	
Aroclor 1016	ND	2.16	4.31	ug/kg dry	1	12/21/17 18:44	EPA 8082A	
Aroclor 1221	ND	2.16	4.31	"	"	"	"	
Aroclor 1232	ND	2.16	4.31	"	"	"	"	
Aroclor 1242	ND	2.16	4.31	"	"	"	"	
Aroclor 1248	ND	2.16	4.31	"	"	"	"	
<b>Aroclor 1254</b>	<b>8.58</b>	2.16	4.31	"	"	"	"	P-10

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-2.5 (A7L0317-07)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>		<b>C-07</b>	
Aroclor 1260	5.14	2.16	4.31	ug/kg dry	1	"	EPA 8082A	P-10
Aroclor 1262	ND	2.16	4.31	"	"	"	"	
Aroclor 1268	ND	2.16	4.31	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>			<i>Recovery: 80 %</i>		<i>Limits: 44-120 %</i>		<i>"</i>	
<b>GP03-S-7.5 (A7L0317-08)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>		<b>C-07</b>	
Aroclor 1016	ND	2.22	4.44	ug/kg dry	1	12/21/17 19:57	EPA 8082A	
Aroclor 1221	ND	4.44	4.44	"	"	"	"	
Aroclor 1232	ND	4.44	4.44	"	"	"	"	
Aroclor 1242	ND	2.22	4.44	"	"	"	"	
Aroclor 1248	ND	2.22	4.44	"	"	"	"	
Aroclor 1254	28.4	2.22	4.44	"	"	"	"	P-10
Aroclor 1260	11.6	2.22	4.44	"	"	"	"	P-10
Aroclor 1262	ND	2.22	4.44	"	"	"	"	
Aroclor 1268	ND	2.22	4.44	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>			<i>Recovery: 89 %</i>		<i>Limits: 44-120 %</i>		<i>"</i>	
<b>GP03-S-17.5 (A7L0317-09RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>		<b>C-07</b>	
Aroclor 1016	ND	5.18	10.4	ug/kg dry	1	12/27/17 08:30	EPA 8082A	
Aroclor 1221	ND	5.18	10.4	"	"	"	"	
Aroclor 1232	ND	5.18	10.4	"	"	"	"	
Aroclor 1242	ND	5.18	10.4	"	"	"	"	
Aroclor 1248	ND	5.18	10.4	"	"	"	"	
Aroclor 1254	22.4	5.18	10.4	"	"	"	"	P-10
Aroclor 1260	27.1	5.18	10.4	"	"	"	"	P-10
Aroclor 1262	ND	5.18	10.4	"	"	"	"	
Aroclor 1268	ND	5.18	10.4	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>			<i>Recovery: 92 %</i>		<i>Limits: 44-120 %</i>		<i>"</i>	
<b>GP03-S-32.0 (A7L0317-10)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>		<b>C-07</b>	
Aroclor 1016	ND	2.19	4.38	ug/kg dry	1	12/21/17 21:10	EPA 8082A	
Aroclor 1221	ND	2.19	4.38	"	"	"	"	
Aroclor 1232	ND	2.19	4.38	"	"	"	"	
Aroclor 1242	ND	2.19	4.38	"	"	"	"	
Aroclor 1248	ND	2.19	4.38	"	"	"	"	
Aroclor 1254	ND	2.19	4.38	"	"	"	"	
Aroclor 1260	3.43	2.19	4.38	"	"	"	"	J
Aroclor 1262	ND	2.19	4.38	"	"	"	"	
Aroclor 1268	ND	2.19	4.38	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-32.0 (A7L0317-10)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>		<b>C-07</b>	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>			<i>Recovery: 79 %</i>	<i>Limits: 44-120 %</i>	1	"	EPA 8082A	
<b>GP03-S-2.5-DUP (A7L0317-11)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>		<b>C-07</b>	
Aroclor 1016	ND	2.18	4.35	ug/kg dry	1	12/21/17 22:23	EPA 8082A	
Aroclor 1221	ND	2.18	4.35	"	"	"	"	
Aroclor 1232	ND	2.18	4.35	"	"	"	"	
Aroclor 1242	ND	2.18	4.35	"	"	"	"	
Aroclor 1248	ND	2.18	4.35	"	"	"	"	
<b>Aroclor 1254</b>	<b>29.1</b>	2.18	4.35	"	"	"	"	P-10
<b>Aroclor 1260</b>	<b>9.86</b>	2.18	4.35	"	"	"	"	P-10
Aroclor 1262	ND	2.18	4.35	"	"	"	"	
Aroclor 1268	ND	2.18	4.35	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>			<i>Recovery: 87 %</i>	<i>Limits: 44-120 %</i>	"	"	"	
<b>GP07-S-2.5 (A7L0317-21RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7121074</b>		<b>C-07</b>	
Aroclor 1016	ND	6.03	12.1	ug/kg dry	1	12/28/17 14:16	EPA 8082A	
Aroclor 1221	ND	6.03	12.1	"	"	"	"	
Aroclor 1232	ND	6.03	12.1	"	"	"	"	
Aroclor 1242	ND	6.03	12.1	"	"	"	"	
Aroclor 1248	ND	6.03	12.1	"	"	"	"	
Aroclor 1254	ND	30.1	30.1	"	"	"	"	R-02
<b>Aroclor 1260</b>	<b>93.7</b>	6.03	12.1	"	"	"	"	Q-42
Aroclor 1262	ND	6.03	12.1	"	"	"	"	
Aroclor 1268	ND	6.03	12.1	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>			<i>Recovery: 93 %</i>	<i>Limits: 44-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP06-S-2.5 (A7L0317-01RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>			<b>C-05</b>
Aldrin	ND	2.25	4.50	ug/kg dry	1	12/21/17 14:16	EPA 8081B	
alpha-BHC	ND	2.25	4.50	"	"	"	"	
beta-BHC	ND	2.25	4.50	"	"	"	"	
delta-BHC	ND	2.25	4.50	"	"	"	"	
gamma-BHC (Lindane)	ND	2.25	4.50	"	"	"	"	
cis-Chlordane	ND	2.25	4.50	"	"	"	"	
trans-Chlordane	ND	2.25	4.50	"	"	"	"	
4,4'-DDD	ND	2.25	4.50	"	"	"	"	
4,4'-DDE	ND	2.25	4.50	"	"	"	"	
4,4'-DDT	ND	4.50	4.50	"	"	"	"	
Dieldrin	ND	4.50	4.50	"	"	"	"	
Endosulfan I	ND	2.25	4.50	"	"	"	"	
Endosulfan II	ND	2.25	4.50	"	"	"	"	
Endosulfan sulfate	ND	2.25	4.50	"	"	"	"	
Endrin	ND	2.25	4.50	"	"	"	"	
Endrin Aldehyde	ND	2.25	4.50	"	"	"	"	
Endrin ketone	ND	2.25	4.50	"	"	"	"	
Heptachlor	ND	2.25	4.50	"	"	"	"	
Heptachlor epoxide	ND	2.25	4.50	"	"	"	"	
Methoxychlor	ND	6.74	13.5	"	"	"	"	
Chlordane (Technical)	ND	67.4	135	"	"	"	"	
Toxaphene (Total)	ND	67.4	135	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 85 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>82 %</i>	<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea


Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP06-S-7.5 (A7L0317-02RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>			<b>C-05</b>
Aldrin	ND	1.15	2.30	ug/kg dry	1	12/27/17 12:53	EPA 8081B	
alpha-BHC	ND	1.15	2.30	"	"	"	"	
beta-BHC	ND	1.15	2.30	"	"	"	"	
delta-BHC	ND	1.15	2.30	"	"	"	"	
gamma-BHC (Lindane)	ND	1.15	2.30	"	"	"	"	
cis-Chlordane	ND	1.15	2.30	"	"	"	"	
trans-Chlordane	ND	1.15	2.30	"	"	"	"	
4,4'-DDD	ND	1.15	2.30	"	"	"	"	
4,4'-DDE	ND	1.15	2.30	"	"	"	"	
4,4'-DDT	ND	1.15	2.30	"	"	"	"	
Dieldrin	ND	1.15	2.30	"	"	"	"	
Endosulfan I	ND	1.15	2.30	"	"	"	"	
Endosulfan II	ND	1.15	2.30	"	"	"	"	
Endosulfan sulfate	ND	1.15	2.30	"	"	"	"	
Endrin	ND	1.15	2.30	"	"	"	"	
Endrin Aldehyde	ND	1.15	2.30	"	"	"	"	
Endrin ketone	ND	1.15	2.30	"	"	"	"	
Heptachlor	ND	1.15	2.30	"	"	"	"	
Heptachlor epoxide	ND	1.15	2.30	"	"	"	"	
Methoxychlor	ND	3.45	6.90	"	"	"	"	
Chlordane (Technical)	ND	34.5	69.0	"	"	"	"	
Toxaphene (Total)	ND	34.5	69.0	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 56 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>64 %</i>	<i>Limits: 65-151 %</i>	"	"	"	<i>S-06</i>

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP06-S-21.0 (A7L0317-03RE2)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>			<b>C-05</b>
Aldrin	ND	2.30	4.59	ug/kg dry	1	12/27/17 15:31	EPA 8081B	
alpha-BHC	ND	2.30	4.59	"	"	"	"	
beta-BHC	ND	2.30	4.59	"	"	"	"	
delta-BHC	ND	2.30	4.59	"	"	"	"	
gamma-BHC (Lindane)	ND	2.30	4.59	"	"	"	"	
cis-Chlordane	ND	2.30	4.59	"	"	"	"	
trans-Chlordane	ND	2.30	4.59	"	"	"	"	
4,4'-DDD	ND	2.30	4.59	"	"	"	"	
4,4'-DDE	ND	2.30	4.59	"	"	"	"	
4,4'-DDT	ND	2.30	4.59	"	"	"	"	
Dieldrin	ND	2.30	4.59	"	"	"	"	
Endosulfan I	ND	2.30	4.59	"	"	"	"	
Endosulfan II	ND	2.30	4.59	"	"	"	"	
Endosulfan sulfate	ND	2.30	4.59	"	"	"	"	
Endrin	ND	2.30	4.59	"	"	"	"	
Endrin Aldehyde	ND	2.30	4.59	"	"	"	"	
Endrin ketone	ND	2.30	4.59	"	"	"	"	
Heptachlor	ND	2.30	4.59	"	"	"	"	
Heptachlor epoxide	ND	2.30	4.59	"	"	"	"	
Methoxychlor	ND	6.89	13.8	"	"	"	"	
Chlordane (Technical)	ND	68.9	138	"	"	"	"	
Toxaphene (Total)	ND	68.9	138	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 63 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>84 %</i>	<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea


Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP01-S-2.5 (A7L0317-04RE2)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>			<b>C-05</b>
Aldrin	ND	1.95	3.91	ug/kg dry	1	12/27/17 16:06	EPA 8081B	
alpha-BHC	ND	1.95	3.91	"	"	"	"	
beta-BHC	ND	1.95	3.91	"	"	"	"	
delta-BHC	ND	1.95	3.91	"	"	"	"	
gamma-BHC (Lindane)	ND	1.95	3.91	"	"	"	"	
cis-Chlordane	ND	1.95	3.91	"	"	"	"	
trans-Chlordane	ND	1.95	3.91	"	"	"	"	
4,4'-DDD	ND	1.95	3.91	"	"	"	"	
4,4'-DDE	ND	1.95	3.91	"	"	"	"	
4,4'-DDT	ND	3.91	3.91	"	"	"	"	
Dieldrin	ND	1.95	3.91	"	"	"	"	
Endosulfan I	ND	1.95	3.91	"	"	"	"	
Endosulfan II	ND	1.95	3.91	"	"	"	"	
Endosulfan sulfate	ND	1.95	3.91	"	"	"	"	
Endrin	ND	1.95	3.91	"	"	"	"	
Endrin Aldehyde	ND	1.95	3.91	"	"	"	"	
Endrin ketone	ND	4.30	4.30	"	"	"	"	R-02
Heptachlor	ND	1.95	3.91	"	"	"	"	
Heptachlor epoxide	ND	1.95	3.91	"	"	"	"	
Methoxychlor	ND	5.86	11.7	"	"	"	"	
Chlordane (Technical)	ND	58.6	117	"	"	"	"	
Toxaphene (Total)	ND	58.6	117	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 66 %</i>		<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>		<i>87 %</i>		<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP01-S-7.5 (A7L0317-05RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>			<b>C-05</b>
Aldrin	ND	2.30	4.60	ug/kg dry	1	12/27/17 14:21	EPA 8081B	
alpha-BHC	ND	2.30	4.60	"	"	"	"	
beta-BHC	ND	2.30	4.60	"	"	"	"	
delta-BHC	ND	2.30	4.60	"	"	"	"	
gamma-BHC (Lindane)	ND	2.30	4.60	"	"	"	"	
cis-Chlordane	ND	2.30	4.60	"	"	"	"	
trans-Chlordane	ND	2.30	4.60	"	"	"	"	
4,4'-DDD	ND	2.30	4.60	"	"	"	"	
4,4'-DDE	ND	2.30	4.60	"	"	"	"	
4,4'-DDT	ND	2.30	4.60	"	"	"	"	
Dieldrin	ND	2.30	4.60	"	"	"	"	
Endosulfan I	ND	2.30	4.60	"	"	"	"	
Endosulfan II	ND	2.30	4.60	"	"	"	"	
Endosulfan sulfate	ND	2.30	4.60	"	"	"	"	
Endrin	ND	2.30	4.60	"	"	"	"	
Endrin Aldehyde	ND	2.30	4.60	"	"	"	"	
Endrin ketone	ND	2.30	4.60	"	"	"	"	
Heptachlor	ND	2.30	4.60	"	"	"	"	
Heptachlor epoxide	ND	2.30	4.60	"	"	"	"	
Methoxychlor	ND	6.89	13.8	"	"	"	"	
Chlordane (Technical)	ND	68.9	138	"	"	"	"	
Toxaphene (Total)	ND	68.9	138	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 66 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>73 %</i>	<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP01-S-16.0 (A7L0317-06RE2)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>			<b>C-05</b>
Aldrin	ND	2.10	4.19	ug/kg dry	1	12/27/17 15:43	EPA 8081B	
alpha-BHC	ND	2.10	4.19	"	"	"	"	
beta-BHC	ND	2.10	4.19	"	"	"	"	
delta-BHC	ND	2.10	4.19	"	"	"	"	
gamma-BHC (Lindane)	ND	2.10	4.19	"	"	"	"	
cis-Chlordane	ND	2.10	4.19	"	"	"	"	
trans-Chlordane	ND	2.10	4.19	"	"	"	"	
4,4'-DDD	ND	2.10	4.19	"	"	"	"	
4,4'-DDE	ND	2.10	4.19	"	"	"	"	
4,4'-DDT	ND	2.10	4.19	"	"	"	"	
Dieldrin	ND	2.10	4.19	"	"	"	"	
Endosulfan I	ND	2.10	4.19	"	"	"	"	
Endosulfan II	ND	2.10	4.19	"	"	"	"	
Endosulfan sulfate	ND	2.10	4.19	"	"	"	"	
Endrin	ND	2.10	4.19	"	"	"	"	
Endrin Aldehyde	ND	2.10	4.19	"	"	"	"	
Endrin ketone	ND	2.10	4.19	"	"	"	"	
Heptachlor	ND	2.10	4.19	"	"	"	"	
Heptachlor epoxide	ND	2.10	4.19	"	"	"	"	
Methoxychlor	ND	6.29	12.6	"	"	"	"	
Chlordane (Technical)	ND	62.9	126	"	"	"	"	
Toxaphene (Total)	ND	62.9	126	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 86 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>84 %</i>	<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-2.5 (A7L0317-07RE2)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>			<b>C-05</b>
Aldrin	ND	2.11	4.22	ug/kg dry	1	12/27/17 16:18	EPA 8081B	
alpha-BHC	ND	2.11	4.22	"	"	"	"	
beta-BHC	ND	2.11	4.22	"	"	"	"	
delta-BHC	ND	2.11	4.22	"	"	"	"	
gamma-BHC (Lindane)	ND	2.11	4.22	"	"	"	"	
cis-Chlordane	ND	2.11	4.22	"	"	"	"	
trans-Chlordane	ND	2.11	4.22	"	"	"	"	
4,4'-DDD	ND	2.11	4.22	"	"	"	"	
4,4'-DDE	ND	2.11	4.22	"	"	"	"	
4,4'-DDT	ND	2.11	4.22	"	"	"	"	
Dieldrin	ND	2.11	4.22	"	"	"	"	
Endosulfan I	ND	2.11	4.22	"	"	"	"	
Endosulfan II	ND	2.11	4.22	"	"	"	"	
Endosulfan sulfate	ND	2.11	4.22	"	"	"	"	
Endrin	ND	2.11	4.22	"	"	"	"	
Endrin Aldehyde	ND	2.11	4.22	"	"	"	"	
Endrin ketone	ND	2.11	4.22	"	"	"	"	
Heptachlor	ND	2.11	4.22	"	"	"	"	
Heptachlor epoxide	ND	2.11	4.22	"	"	"	"	
Methoxychlor	ND	6.33	12.7	"	"	"	"	
Chlordane (Technical)	ND	63.3	127	"	"	"	"	
Toxaphene (Total)	ND	63.3	127	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 81 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>85 %</i>	<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-7.5 (A7L0317-08RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>			<b>C-05</b>
Aldrin	ND	2.26	4.52	ug/kg dry	1	12/27/17 14:34	EPA 8081B	
alpha-BHC	ND	2.26	4.52	"	"	"	"	
beta-BHC	ND	2.26	4.52	"	"	"	"	
delta-BHC	ND	2.26	4.52	"	"	"	"	
gamma-BHC (Lindane)	ND	2.26	4.52	"	"	"	"	
cis-Chlordane	ND	2.26	4.52	"	"	"	"	
trans-Chlordane	ND	2.26	4.52	"	"	"	"	
4,4'-DDD	ND	2.26	4.52	"	"	"	"	
4,4'-DDE	ND	2.26	4.52	"	"	"	"	
4,4'-DDT	ND	4.52	4.52	"	"	"	"	
Dieldrin	ND	2.26	4.52	"	"	"	"	
Endosulfan I	ND	2.26	4.52	"	"	"	"	
Endosulfan II	ND	2.26	4.52	"	"	"	"	
Endosulfan sulfate	ND	2.26	4.52	"	"	"	"	
Endrin	ND	2.26	4.52	"	"	"	"	
Endrin Aldehyde	ND	2.26	4.52	"	"	"	"	
Endrin ketone	ND	2.26	4.52	"	"	"	"	
Heptachlor	ND	2.26	4.52	"	"	"	"	
Heptachlor epoxide	ND	2.26	4.52	"	"	"	"	
Methoxychlor	ND	6.78	13.6	"	"	"	"	
Chlordane (Technical)	ND	67.8	136	"	"	"	"	
Toxaphene (Total)	ND	67.8	136	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 89 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>90 %</i>	<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-17.5 (A7L0317-09RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>		<b>C-05, R-04</b>	
Aldrin	ND	38.3	76.6	ug/kg dry	20	12/21/17 14:50	EPA 8081B	
alpha-BHC	ND	38.3	76.6	"	"	"	"	
beta-BHC	ND	38.3	76.6	"	"	"	"	
delta-BHC	ND	38.3	76.6	"	"	"	"	
gamma-BHC (Lindane)	ND	38.3	76.6	"	"	"	"	
cis-Chlordane	ND	38.3	76.6	"	"	"	"	
trans-Chlordane	ND	38.3	76.6	"	"	"	"	
4,4'-DDD	ND	38.3	76.6	"	"	"	"	
4,4'-DDE	ND	38.3	76.6	"	"	"	"	
4,4'-DDT	ND	38.3	76.6	"	"	"	"	
Dieldrin	ND	38.3	76.6	"	"	"	"	
Endosulfan I	ND	38.3	76.6	"	"	"	"	
Endosulfan II	ND	38.3	76.6	"	"	"	"	
Endosulfan sulfate	ND	38.3	76.6	"	"	"	"	
Endrin	ND	38.3	76.6	"	"	"	"	
Endrin Aldehyde	ND	38.3	76.6	"	"	"	"	
Endrin ketone	ND	38.3	76.6	"	"	"	"	
Heptachlor	ND	38.3	76.6	"	"	"	"	
Heptachlor epoxide	ND	38.3	76.6	"	"	"	"	
Methoxychlor	ND	115	230	"	"	"	"	
Chlordane (Technical)	ND	1150	2300	"	"	"	"	
Toxaphene (Total)	ND	1150	2300	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 78 %</i>	<i>Limits: 42-129 %</i>	"	"	"	<i>S-05</i>
<i>Decachlorobiphenyl (Surr)</i>			<i>134 %</i>	<i>Limits: 65-151 %</i>	"	"	"	<i>S-05</i>



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-32.0 (A7L0317-10RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>			<b>C-05</b>
Aldrin	ND	1.21	2.42	ug/kg dry	1	12/21/17 12:14	EPA 8081B	
alpha-BHC	ND	1.21	2.42	"	"	"	"	
beta-BHC	ND	1.21	2.42	"	"	"	"	
delta-BHC	ND	1.21	2.42	"	"	"	"	
gamma-BHC (Lindane)	ND	1.21	2.42	"	"	"	"	
cis-Chlordane	ND	1.21	2.42	"	"	"	"	
trans-Chlordane	ND	1.21	2.42	"	"	"	"	
4,4'-DDD	ND	1.21	2.42	"	"	"	"	
4,4'-DDE	ND	1.21	2.42	"	"	"	"	
4,4'-DDT	ND	1.21	2.42	"	"	"	"	
Dieldrin	ND	1.21	2.42	"	"	"	"	
Endosulfan I	ND	1.21	2.42	"	"	"	"	
Endosulfan II	ND	1.21	2.42	"	"	"	"	
Endosulfan sulfate	ND	1.21	2.42	"	"	"	"	
Endrin	ND	1.21	2.42	"	"	"	"	
Endrin Aldehyde	ND	1.21	2.42	"	"	"	"	
Endrin ketone	ND	1.21	2.42	"	"	"	"	
Heptachlor	ND	1.21	2.42	"	"	"	"	
Heptachlor epoxide	ND	1.21	2.42	"	"	"	"	
Methoxychlor	ND	3.63	7.27	"	"	"	"	
Chlordane (Technical)	ND	36.3	72.7	"	"	"	"	
Toxaphene (Total)	ND	36.3	72.7	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 77 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>86 %</i>	<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-2.5-DUP (A7L0317-11RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>			<b>C-05</b>
Aldrin	ND	2.10	4.20	ug/kg dry	1	12/21/17 13:06	EPA 8081B	
alpha-BHC	ND	2.10	4.20	"	"	"	"	
beta-BHC	ND	2.10	4.20	"	"	"	"	
delta-BHC	ND	2.10	4.20	"	"	"	"	
gamma-BHC (Lindane)	ND	2.10	4.20	"	"	"	"	
cis-Chlordane	ND	2.10	4.20	"	"	"	"	
trans-Chlordane	ND	2.10	4.20	"	"	"	"	
4,4'-DDD	ND	2.10	4.20	"	"	"	"	
4,4'-DDE	ND	2.10	4.20	"	"	"	"	
4,4'-DDT	ND	4.20	4.20	"	"	"	"	
Dieldrin	ND	2.10	4.20	"	"	"	"	
Endosulfan I	ND	2.10	4.20	"	"	"	"	
Endosulfan II	ND	2.10	4.20	"	"	"	"	
Endosulfan sulfate	ND	2.10	4.20	"	"	"	"	
Endrin	ND	2.10	4.20	"	"	"	"	
Endrin Aldehyde	ND	2.10	4.20	"	"	"	"	
Endrin ketone	ND	2.10	4.20	"	"	"	"	
Heptachlor	ND	2.10	4.20	"	"	"	"	
Heptachlor epoxide	ND	2.10	4.20	"	"	"	"	
Methoxychlor	ND	6.30	12.6	"	"	"	"	
Chlordane (Technical)	ND	63.0	126	"	"	"	"	
Toxaphene (Total)	ND	63.0	126	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 79 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>88 %</i>	<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP06-S-2.5 (A7L0317-01RE1)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120698</b>			
Acenaphthene	ND	183	368	ug/kg dry	125	12/14/17 16:26	EPA 8270D		
Acenaphthylene	ND	183	368	"	"	"	"		
Anthracene	ND	183	368	"	"	"	"		
<b>Benz(a)anthracene</b>	<b>351</b>	183	368	"	"	"	"	J, Q-42	
<b>Benzo(a)pyrene</b>	<b>518</b>	276	552	"	"	"	"	J, Q-42	
<b>Benzo(b)fluoranthene</b>	<b>359</b>	276	552	"	"	"	"	J, Q-42	
Benzo(k)fluoranthene	ND	276	552	"	"	"	"		
<b>Benzo(g,h,i)perylene</b>	<b>241</b>	183	368	"	"	"	"	J, Q-42	
<b>Chrysene</b>	<b>384</b>	183	368	"	"	"	"	M-05, Q-42	
Dibenz(a,h)anthracene	ND	183	368	"	"	"	"		
<b>Fluoranthene</b>	<b>526</b>	183	368	"	"	"	"	Q-42	
Fluorene	ND	183	368	"	"	"	"		
<b>Indeno(1,2,3-cd)pyrene</b>	<b>202</b>	183	368	"	"	"	"	J, Q-42	
1-Methylnaphthalene	ND	368	735	"	"	"	"		
2-Methylnaphthalene	ND	368	735	"	"	"	"		
Naphthalene	ND	368	735	"	"	"	"		
<b>Phenanthrene</b>	<b>381</b>	183	368	"	"	"	"	Q-42	
<b>Pyrene</b>	<b>634</b>	183	368	"	"	"	"	Q-42	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 113 %</i>		<i>Limits: 37-122 %</i>	"	"	"	<i>S-05</i>	
<i>2-Fluorobiphenyl (Surr)</i>		<i>85 %</i>		<i>Limits: 44-115 %</i>	"	"	"	<i>S-05</i>	
<i>Phenol-d6 (Surr)</i>		<i>73 %</i>		<i>Limits: 33-122 %</i>	"	"	"	<i>S-05</i>	
<i>p-Terphenyl-d14 (Surr)</i>		<i>112 %</i>		<i>Limits: 54-127 %</i>	"	"	"	<i>S-05</i>	
<i>2-Fluorophenol (Surr)</i>		<i>69 %</i>		<i>Limits: 35-115 %</i>	"	"	"	<i>S-05</i>	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>80 %</i>		<i>Limits: 39-132 %</i>	"	"	"	<i>S-05</i>	

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Date Analyzed	Method	Notes
			Limit	Units	Dilution			
<b>GP06-S-7.5 (A7L0317-02RE2)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120698</b>			
Acenaphthene	ND	1.56	3.13	ug/kg dry	1	12/15/17 20:29	EPA 8270D	
Acenaphthylene	ND	1.56	3.13	"	"	"	"	
Anthracene	ND	1.56	3.13	"	"	"	"	
<b>Benz(a)anthracene</b>	<b>2.01</b>	1.56	3.13	"	"	"	"	J
<b>Benzo(a)pyrene</b>	<b>3.49</b>	2.34	4.69	"	"	"	"	J
<b>Benzo(b)fluoranthene</b>	<b>3.25</b>	2.34	4.69	"	"	"	"	J
Benzo(k)fluoranthene	ND	2.34	4.69	"	"	"	"	
<b>Benzo(g,h,i)perylene</b>	<b>1.58</b>	1.56	3.13	"	"	"	"	J
<b>Chrysene</b>	<b>2.46</b>	1.56	3.13	"	"	"	"	J
Dibenz(a,h)anthracene	ND	1.56	3.13	"	"	"	"	
<b>Fluoranthene</b>	<b>2.59</b>	1.56	3.13	"	"	"	"	J
Fluorene	ND	1.56	3.13	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	1.56	3.13	"	"	"	"	
1-Methylnaphthalene	ND	3.13	6.25	"	"	"	"	
2-Methylnaphthalene	ND	3.13	6.25	"	"	"	"	
Naphthalene	ND	3.13	6.25	"	"	"	"	
<b>Phenanthrene</b>	<b>1.62</b>	1.56	3.13	"	"	"	"	J
<b>Pyrene</b>	<b>3.18</b>	1.56	3.13	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 37-122 %</i>		"	"	"
<i>2-Fluorobiphenyl (Surr)</i>		<i>79 %</i>		<i>Limits: 44-115 %</i>		"	"	"
<i>Phenol-d6 (Surr)</i>		<i>82 %</i>		<i>Limits: 33-122 %</i>		"	"	"
<i>p-Terphenyl-d14 (Surr)</i>		<i>82 %</i>		<i>Limits: 54-127 %</i>		"	"	"
<i>2-Fluorophenol (Surr)</i>		<i>80 %</i>		<i>Limits: 35-115 %</i>		"	"	"
<i>2,4,6-Tribromophenol (Surr)</i>		<i>94 %</i>		<i>Limits: 39-132 %</i>		"	"	"



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP06-S-21.0 (A7L0317-03RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120698</b>			<b>R-04</b>	
Acenaphthene	ND	156	314	ug/kg dry	100	12/14/17 20:01	EPA 8270D		
Acenaphthylene	ND	156	314	"	"	"	"		
Anthracene	ND	156	314	"	"	"	"		
Benz(a)anthracene	ND	156	314	"	"	"	"		
Benzo(a)pyrene	ND	235	470	"	"	"	"		
Benzo(b)fluoranthene	ND	235	470	"	"	"	"		
Benzo(k)fluoranthene	ND	235	470	"	"	"	"		
Benzo(g,h,i)perylene	ND	156	314	"	"	"	"		
Chrysene	ND	156	314	"	"	"	"		
Dibenz(a,h)anthracene	ND	156	314	"	"	"	"		
Fluoranthene	ND	156	314	"	"	"	"		
Fluorene	ND	156	314	"	"	"	"		
Indeno(1,2,3-cd)pyrene	ND	156	314	"	"	"	"		
1-Methylnaphthalene	ND	314	626	"	"	"	"		
2-Methylnaphthalene	ND	314	626	"	"	"	"		
Naphthalene	ND	314	626	"	"	"	"		
Phenanthrene	ND	156	314	"	"	"	"		
Pyrene	ND	156	314	"	"	"	"		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>			<i>Recovery: 87 %</i>	<i>Limits: 37-122 %</i>	"	"	"	<i>S-05</i>	
<i>2-Fluorobiphenyl (Surr)</i>			<i>91 %</i>	<i>Limits: 44-115 %</i>	"	"	"	<i>S-05</i>	
<i>Phenol-d6 (Surr)</i>			<i>72 %</i>	<i>Limits: 33-122 %</i>	"	"	"	<i>S-05</i>	
<i>p-Terphenyl-d14 (Surr)</i>			<i>120 %</i>	<i>Limits: 54-127 %</i>	"	"	"	<i>S-05</i>	
<i>2-Fluorophenol (Surr)</i>			<i>65 %</i>	<i>Limits: 35-115 %</i>	"	"	"	<i>S-05</i>	
<i>2,4,6-Tribromophenol (Surr)</i>			<i>36 %</i>	<i>Limits: 39-132 %</i>	"	"	"	<i>S-05</i>	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP01-S-2.5 (A7L0317-04RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120994</b>			<b>R-04</b>	
Acenaphthene	ND	71.1	143	ug/kg dry	50	12/26/17 20:39	EPA 8270D		
Acenaphthylene	ND	71.1	143	"	"	"	"		
Anthracene	ND	71.1	143	"	"	"	"		
Benz(a)anthracene	ND	71.1	143	"	"	"	"		
Benzo(a)pyrene	ND	107	214	"	"	"	"		
Benzo(b)fluoranthene	ND	107	214	"	"	"	"		
Benzo(k)fluoranthene	ND	107	214	"	"	"	"		
<b>Benzo(g,h,i)perylene</b>	<b>88.6</b>	71.1	143	"	"	"	"	J	
Chrysene	ND	71.1	143	"	"	"	"		
Dibenz(a,h)anthracene	ND	71.1	143	"	"	"	"		
Fluoranthene	ND	71.1	143	"	"	"	"		
Fluorene	ND	71.1	143	"	"	"	"		
Indeno(1,2,3-cd)pyrene	ND	71.1	143	"	"	"	"		
1-Methylnaphthalene	ND	143	285	"	"	"	"		
2-Methylnaphthalene	ND	143	285	"	"	"	"		
Naphthalene	ND	143	285	"	"	"	"		
Phenanthrene	ND	71.1	143	"	"	"	"		
<b>Pyrene</b>	<b>90.3</b>	71.1	143	"	"	"	"	J	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 102 %</i>		<i>Limits: 37-122 %</i>	"	"	"	S-05	
<i>2-Fluorobiphenyl (Surr)</i>		<i>84 %</i>		<i>Limits: 44-115 %</i>	"	"	"	S-05	
<i>Phenol-d6 (Surr)</i>		<i>84 %</i>		<i>Limits: 33-122 %</i>	"	"	"	S-05	
<i>p-Terphenyl-d14 (Surr)</i>		<i>94 %</i>		<i>Limits: 54-127 %</i>	"	"	"	S-05	
<i>2-Fluorophenol (Surr)</i>		<i>46 %</i>		<i>Limits: 35-115 %</i>	"	"	"	S-05	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>27 %</i>		<i>Limits: 39-132 %</i>	"	"	"	S-05	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP03-S-2.5 (A7L0317-07RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120698</b>			<b>R-04</b>	
Acenaphthene	ND	58.4	117	ug/kg dry	40	12/14/17 18:50	EPA 8270D		
Acenaphthylene	ND	58.4	117	"	"	"	"		
Anthracene	ND	58.4	117	"	"	"	"		
<b>Benz(a)anthracene</b>	<b>62.4</b>	58.4	117	"	"	"	"	J	
<b>Benzo(a)pyrene</b>	<b>91.6</b>	87.7	175	"	"	"	"	J	
Benzo(b)fluoranthene	ND	87.7	175	"	"	"	"		
Benzo(k)fluoranthene	ND	87.7	175	"	"	"	"		
Benzo(g,h,i)perylene	ND	58.4	117	"	"	"	"		
Chrysene	ND	58.4	117	"	"	"	"		
Dibenz(a,h)anthracene	ND	58.4	117	"	"	"	"		
Fluoranthene	ND	58.4	117	"	"	"	"		
Fluorene	ND	58.4	117	"	"	"	"		
Indeno(1,2,3-cd)pyrene	ND	58.4	117	"	"	"	"		
1-Methylnaphthalene	ND	117	234	"	"	"	"		
2-Methylnaphthalene	ND	117	234	"	"	"	"		
Naphthalene	ND	117	234	"	"	"	"		
Phenanthrene	ND	58.4	117	"	"	"	"		
Pyrene	ND	58.4	117	"	"	"	"		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>			<i>Recovery: 93 %</i>	<i>Limits: 37-122 %</i>	"	"	"	<i>S-05</i>	
<i>2-Fluorobiphenyl (Surr)</i>			<i>95 %</i>	<i>Limits: 44-115 %</i>	"	"	"	<i>S-05</i>	
<i>Phenol-d6 (Surr)</i>			<i>67 %</i>	<i>Limits: 33-122 %</i>	"	"	"	<i>S-05</i>	
<i>p-Terphenyl-d14 (Surr)</i>			<i>106 %</i>	<i>Limits: 54-127 %</i>	"	"	"	<i>S-05</i>	
<i>2-Fluorophenol (Surr)</i>			<i>74 %</i>	<i>Limits: 35-115 %</i>	"	"	"	<i>S-05</i>	
<i>2,4,6-Tribromophenol (Surr)</i>			<i>81 %</i>	<i>Limits: 39-132 %</i>	"	"	"	<i>S-05</i>	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units	Matrix: Soil				
<b>GP03-S-7.5 (A7L0317-08RE1)</b>						<b>Batch: 7120698</b>			<b>R-04</b>
Acenaphthene	ND	29.6	59.3	ug/kg dry	20	12/14/17 19:25	EPA 8270D		
Acenaphthylene	ND	29.6	59.3	"	"	"	"		
Anthracene	ND	29.6	59.3	"	"	"	"		
<b>Benz(a)anthracene</b>	<b>37.6</b>	29.6	59.3	"	"	"	"		J
<b>Benzo(a)pyrene</b>	<b>62.4</b>	44.4	88.9	"	"	"	"		J
Benzo(b)fluoranthene	ND	44.4	88.9	"	"	"	"		
Benzo(k)fluoranthene	ND	44.4	88.9	"	"	"	"		
Benzo(g,h,i)perylene	ND	29.6	59.3	"	"	"	"		
<b>Chrysene</b>	<b>41.5</b>	29.6	59.3	"	"	"	"		J
Dibenz(a,h)anthracene	ND	29.6	59.3	"	"	"	"		
<b>Fluoranthene</b>	<b>45.2</b>	29.6	59.3	"	"	"	"		J
Fluorene	ND	29.6	59.3	"	"	"	"		
Indeno(1,2,3-cd)pyrene	ND	29.6	59.3	"	"	"	"		
1-Methylnaphthalene	ND	59.3	118	"	"	"	"		
2-Methylnaphthalene	ND	59.3	118	"	"	"	"		
Naphthalene	ND	59.3	118	"	"	"	"		
<b>Phenanthrene</b>	<b>43.0</b>	29.6	59.3	"	"	"	"		J
<b>Pyrene</b>	<b>52.4</b>	29.6	59.3	"	"	"	"		J
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>			<i>Recovery: 95 %</i>	<i>Limits: 37-122 %</i>	"	"	"		
<i>2-Fluorobiphenyl (Surr)</i>			<i>93 %</i>	<i>Limits: 44-115 %</i>	"	"	"		
<i>Phenol-d6 (Surr)</i>			<i>79 %</i>	<i>Limits: 33-122 %</i>	"	"	"		
<i>p-Terphenyl-d14 (Surr)</i>			<i>111 %</i>	<i>Limits: 54-127 %</i>	"	"	"		
<i>2-Fluorophenol (Surr)</i>			<i>78 %</i>	<i>Limits: 35-115 %</i>	"	"	"		
<i>2,4,6-Tribromophenol (Surr)</i>			<i>78 %</i>	<i>Limits: 39-132 %</i>	"	"	"		



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP03-S-17.5 (A7L0317-09RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120731</b>			<b>R-04</b>	
Acenaphthene	ND	421	845	ug/kg dry	125	12/15/17 21:05	EPA 8270D		
Acenaphthylene	ND	421	845	"	"	"	"		
Anthracene	ND	421	845	"	"	"	"		
Benz(a)anthracene	ND	421	845	"	"	"	"		
Benzo(a)pyrene	ND	633	1270	"	"	"	"		
Benzo(b)fluoranthene	ND	633	1270	"	"	"	"		
Benzo(k)fluoranthene	ND	633	1270	"	"	"	"		
Benzo(g,h,i)perylene	ND	421	845	"	"	"	"		
Chrysene	ND	421	845	"	"	"	"		
Dibenz(a,h)anthracene	ND	421	845	"	"	"	"		
Fluoranthene	ND	421	845	"	"	"	"		
Fluorene	ND	421	845	"	"	"	"		
Indeno(1,2,3-cd)pyrene	ND	421	845	"	"	"	"		
1-Methylnaphthalene	ND	845	1690	"	"	"	"		
2-Methylnaphthalene	ND	845	1690	"	"	"	"		
Naphthalene	ND	845	1690	"	"	"	"		
Phenanthrene	ND	421	845	"	"	"	"		
Pyrene	ND	421	845	"	"	"	"		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 128 %</i>		<i>Limits: 37-122 %</i>	"	"	"	<i>S-05</i>	
<i>2-Fluorobiphenyl (Surr)</i>		<i>98 %</i>		<i>Limits: 44-115 %</i>	"	"	"	<i>S-05</i>	
<i>Phenol-d6 (Surr)</i>		<i>92 %</i>		<i>Limits: 33-122 %</i>	"	"	"	<i>S-05</i>	
<i>p-Terphenyl-d14 (Surr)</i>		<i>131 %</i>		<i>Limits: 54-127 %</i>	"	"	"	<i>S-05</i>	
<i>2-Fluorophenol (Surr)</i>		<i>106 %</i>		<i>Limits: 35-115 %</i>	"	"	"	<i>S-05</i>	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>97 %</i>		<i>Limits: 39-132 %</i>	"	"	"	<i>S-05</i>	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP03-S-32.0 (A7L0317-10)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120731</b>				
Acenaphthene	ND	6.51	13.1	ug/kg dry	4	12/18/17 13:23	EPA 8270D		
<b>Acenaphthylene</b>	<b>9.97</b>	6.51	13.1	"	"	"	"	J	
<b>Anthracene</b>	<b>10.1</b>	6.51	13.1	"	"	"	"	J	
<b>Benz(a)anthracene</b>	<b>43.1</b>	6.51	13.1	"	"	"	"		
<b>Benzo(a)pyrene</b>	<b>75.9</b>	9.79	19.6	"	"	"	"		
<b>Benzo(b)fluoranthene</b>	<b>97.9</b>	9.79	19.6	"	"	"	"	M-05	
<b>Benzo(k)fluoranthene</b>	<b>35.2</b>	9.79	19.6	"	"	"	"	M-05	
<b>Benzo(g,h,i)perylene</b>	<b>59.1</b>	6.51	13.1	"	"	"	"		
<b>Chrysene</b>	<b>84.5</b>	6.51	13.1	"	"	"	"		
<b>Dibenz(a,h)anthracene</b>	<b>10.4</b>	6.51	13.1	"	"	"	"	J	
<b>Fluoranthene</b>	<b>126</b>	6.51	13.1	"	"	"	"		
<b>Fluorene</b>	<b>11.3</b>	6.51	13.1	"	"	"	"	J	
<b>Indeno(1,2,3-cd)pyrene</b>	<b>53.7</b>	6.51	13.1	"	"	"	"		
1-Methylnaphthalene	ND	13.1	26.1	"	"	"	"		
2-Methylnaphthalene	ND	13.1	26.1	"	"	"	"		
Naphthalene	ND	13.1	26.1	"	"	"	"		
<b>Phenanthrene</b>	<b>158</b>	6.51	13.1	"	"	"	"		
<b>Pyrene</b>	<b>130</b>	6.51	13.1	"	"	"	"		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 99 %</i>		<i>Limits: 37-122 %</i>		"	"	"	
<i>2-Fluorobiphenyl (Surr)</i>		<i>89 %</i>		<i>Limits: 44-115 %</i>		"	"	"	
<i>Phenol-d6 (Surr)</i>		<i>87 %</i>		<i>Limits: 33-122 %</i>		"	"	"	
<i>p-Terphenyl-d14 (Surr)</i>		<i>89 %</i>		<i>Limits: 54-127 %</i>		"	"	"	
<i>2-Fluorophenol (Surr)</i>		<i>73 %</i>		<i>Limits: 35-115 %</i>		"	"	"	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>102 %</i>		<i>Limits: 39-132 %</i>		"	"	"	



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209


Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-2.5-DUP (A7L0317-11RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120731</b>			
Acenaphthene	ND	28.5	57.2	ug/kg dry	20	12/19/17 11:17	EPA 8270D	
Acenaphthylene	ND	28.5	57.2	"	"	"	"	
Anthracene	ND	28.5	57.2	"	"	"	"	
<b>Benz(a)anthracene</b>	<b>46.8</b>	28.5	57.2	"	"	"	"	J
<b>Benzo(a)pyrene</b>	<b>87.3</b>	42.8	85.7	"	"	"	"	
<b>Benzo(b)fluoranthene</b>	<b>99.4</b>	42.8	85.7	"	"	"	"	M-05
<b>Benzo(k)fluoranthene</b>	<b>47.1</b>	42.8	85.7	"	"	"	"	J
<b>Benzo(g,h,i)perylene</b>	<b>75.5</b>	28.5	57.2	"	"	"	"	
<b>Chrysene</b>	<b>43.0</b>	28.5	57.2	"	"	"	"	J
Dibenz(a,h)anthracene	ND	28.5	57.2	"	"	"	"	
<b>Fluoranthene</b>	<b>53.6</b>	28.5	57.2	"	"	"	"	J
Fluorene	ND	28.5	57.2	"	"	"	"	
<b>Indeno(1,2,3-cd)pyrene</b>	<b>63.8</b>	28.5	57.2	"	"	"	"	
1-Methylnaphthalene	ND	57.2	114	"	"	"	"	
2-Methylnaphthalene	ND	57.2	114	"	"	"	"	
Naphthalene	ND	57.2	114	"	"	"	"	
<b>Phenanthrene</b>	<b>34.4</b>	28.5	57.2	"	"	"	"	J
<b>Pyrene</b>	<b>59.1</b>	28.5	57.2	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 68 %</i>		<i>Limits: 37-122 %</i>		"	"	"
<i>2-Fluorobiphenyl (Surr)</i>		<i>80 %</i>		<i>Limits: 44-115 %</i>		"	"	"
<i>Phenol-d6 (Surr)</i>		<i>79 %</i>		<i>Limits: 33-122 %</i>		"	"	"
<i>p-Terphenyl-d14 (Surr)</i>		<i>90 %</i>		<i>Limits: 54-127 %</i>		"	"	"
<i>2-Fluorophenol (Surr)</i>		<i>64 %</i>		<i>Limits: 35-115 %</i>		"	"	"
<i>2,4,6-Tribromophenol (Surr)</i>		<i>90 %</i>		<i>Limits: 39-132 %</i>		"	"	"





**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP16-S-2.5 (A7L0317-12RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120731</b>			
Acenaphthene	ND	1.54	3.09	ug/kg dry	1	12/18/17 22:46	EPA 8270D	
Acenaphthylene	ND	1.54	3.09	"	"	"	"	
Anthracene	ND	1.54	3.09	"	"	"	"	
Benz(a)anthracene	ND	1.54	3.09	"	"	"	"	
Benzo(a)pyrene	ND	2.31	4.63	"	"	"	"	
Benzo(b)fluoranthene	ND	2.31	4.63	"	"	"	"	
Benzo(k)fluoranthene	ND	2.31	4.63	"	"	"	"	
Benzo(g,h,i)perylene	ND	1.54	3.09	"	"	"	"	
Chrysene	ND	1.54	3.09	"	"	"	"	
Dibenz(a,h)anthracene	ND	1.54	3.09	"	"	"	"	
Fluoranthene	ND	1.54	3.09	"	"	"	"	
Fluorene	ND	1.54	3.09	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	1.54	3.09	"	"	"	"	
1-Methylnaphthalene	ND	3.09	6.16	"	"	"	"	
2-Methylnaphthalene	ND	3.09	6.16	"	"	"	"	
Naphthalene	ND	3.09	6.16	"	"	"	"	
Phenanthrene	ND	1.54	3.09	"	"	"	"	
Pyrene	ND	1.54	3.09	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 68 %</i>		<i>Limits: 37-122 %</i>	"	"	"	
<i>2-Fluorobiphenyl (Surr)</i>		<i>69 %</i>		<i>Limits: 44-115 %</i>	"	"	"	
<i>Phenol-d6 (Surr)</i>		<i>76 %</i>		<i>Limits: 33-122 %</i>	"	"	"	
<i>p-Terphenyl-d14 (Surr)</i>		<i>82 %</i>		<i>Limits: 54-127 %</i>	"	"	"	
<i>2-Fluorophenol (Surr)</i>		<i>67 %</i>		<i>Limits: 35-115 %</i>	"	"	"	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>87 %</i>		<i>Limits: 39-132 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP16-S-8.0 (A7L0317-13RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120731</b>			<b>R-04</b>
Acenaphthene	ND	6.54	13.1	ug/kg dry	4	12/19/17 15:31	EPA 8270D	
Acenaphthylene	ND	6.54	13.1	"	"	"	"	
Anthracene	ND	6.54	13.1	"	"	"	"	
Benz(a)anthracene	ND	6.54	13.1	"	"	"	"	
Benzo(a)pyrene	ND	9.83	19.7	"	"	"	"	
Benzo(b)fluoranthene	ND	9.83	19.7	"	"	"	"	
Benzo(k)fluoranthene	ND	9.83	19.7	"	"	"	"	
Benzo(g,h,i)perylene	ND	6.54	13.1	"	"	"	"	
Chrysene	ND	6.54	13.1	"	"	"	"	
Dibenz(a,h)anthracene	ND	6.54	13.1	"	"	"	"	
Fluoranthene	ND	6.54	13.1	"	"	"	"	
Fluorene	ND	6.54	13.1	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	6.54	13.1	"	"	"	"	
1-Methylnaphthalene	ND	13.1	26.2	"	"	"	"	
2-Methylnaphthalene	ND	13.1	26.2	"	"	"	"	
Naphthalene	ND	13.1	26.2	"	"	"	"	
Phenanthrene	ND	6.54	13.1	"	"	"	"	
Pyrene	ND	6.54	13.1	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 93 %</i>		<i>Limits: 37-122 %</i>	"	"	"	
<i>2-Fluorobiphenyl (Surr)</i>		<i>90 %</i>		<i>Limits: 44-115 %</i>	"	"	"	
<i>Phenol-d6 (Surr)</i>		<i>83 %</i>		<i>Limits: 33-122 %</i>	"	"	"	
<i>p-Terphenyl-d14 (Surr)</i>		<i>95 %</i>		<i>Limits: 54-127 %</i>	"	"	"	
<i>2-Fluorophenol (Surr)</i>		<i>74 %</i>		<i>Limits: 35-115 %</i>	"	"	"	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>101 %</i>		<i>Limits: 39-132 %</i>	"	"	"	

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Date Analyzed	Method	Notes
			Limit	Units	Dilution			
<b>GP17-S-2.5 (A7L0317-14)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120731</b>		
Acenaphthene	ND	5.83	11.7	ug/kg dry	4	12/18/17 13:59	EPA 8270D	
<b>Acenaphthylene</b>	<b>8.53</b>	5.83	11.7	"	"	"	"	J
<b>Anthracene</b>	<b>6.08</b>	5.83	11.7	"	"	"	"	J
<b>Benz(a)anthracene</b>	<b>46.7</b>	5.83	11.7	"	"	"	"	
<b>Benzo(a)pyrene</b>	<b>61.2</b>	8.77	17.5	"	"	"	"	
<b>Benzo(b)fluoranthene</b>	<b>70.1</b>	8.77	17.5	"	"	"	"	M-05
<b>Benzo(k)fluoranthene</b>	<b>23.1</b>	8.77	17.5	"	"	"	"	M-05
<b>Benzo(g,h,i)perylene</b>	<b>38.6</b>	5.83	11.7	"	"	"	"	
<b>Chrysene</b>	<b>54.1</b>	5.83	11.7	"	"	"	"	
<b>Dibenz(a,h)anthracene</b>	<b>8.15</b>	5.83	11.7	"	"	"	"	J
<b>Fluoranthene</b>	<b>80.9</b>	5.83	11.7	"	"	"	"	
Fluorene	ND	5.83	11.7	"	"	"	"	
<b>Indeno(1,2,3-cd)pyrene</b>	<b>37.8</b>	5.83	11.7	"	"	"	"	
1-Methylnaphthalene	ND	11.7	23.4	"	"	"	"	
2-Methylnaphthalene	ND	11.7	23.4	"	"	"	"	
Naphthalene	ND	11.7	23.4	"	"	"	"	
<b>Phenanthrene</b>	<b>20.5</b>	5.83	11.7	"	"	"	"	
<b>Pyrene</b>	<b>98.6</b>	5.83	11.7	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>			<i>Recovery: 75 %</i>	<i>Limits: 37-122 %</i>	"	"	"	
<i>2-Fluorobiphenyl (Surr)</i>			<i>75 %</i>	<i>Limits: 44-115 %</i>	"	"	"	
<i>Phenol-d6 (Surr)</i>			<i>68 %</i>	<i>Limits: 33-122 %</i>	"	"	"	
<i>p-Terphenyl-d14 (Surr)</i>			<i>96 %</i>	<i>Limits: 54-127 %</i>	"	"	"	
<i>2-Fluorophenol (Surr)</i>			<i>49 %</i>	<i>Limits: 35-115 %</i>	"	"	"	
<i>2,4,6-Tribromophenol (Surr)</i>			<i>55 %</i>	<i>Limits: 39-132 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units	Matrix: Soil				
<b>GP17-S-8.0 (A7L0317-15)</b>						<b>Batch: 7120731</b>			<b>R-04</b>
Acenaphthene	ND	6.20	12.4	ug/kg dry	4	12/18/17 14:36	EPA 8270D		
Acenaphthylene	ND	6.20	12.4	"	"	"	"		
Anthracene	ND	6.20	12.4	"	"	"	"		
Benz(a)anthracene	ND	6.20	12.4	"	"	"	"		
<b>Benzo(a)pyrene</b>	<b>9.48</b>	9.32	18.6	"	"	"	"		J
Benzo(b)fluoranthene	ND	9.32	18.6	"	"	"	"		
Benzo(k)fluoranthene	ND	9.32	18.6	"	"	"	"		
Benzo(g,h,i)perylene	ND	6.20	12.4	"	"	"	"		
Chrysene	ND	6.20	12.4	"	"	"	"		
Dibenz(a,h)anthracene	ND	6.20	12.4	"	"	"	"		
Fluoranthene	ND	6.20	12.4	"	"	"	"		
Fluorene	ND	6.20	12.4	"	"	"	"		
Indeno(1,2,3-cd)pyrene	ND	6.20	12.4	"	"	"	"		
1-Methylnaphthalene	ND	12.4	24.8	"	"	"	"		
2-Methylnaphthalene	ND	12.4	24.8	"	"	"	"		
Naphthalene	ND	12.4	24.8	"	"	"	"		
Phenanthrene	ND	6.20	12.4	"	"	"	"		
Pyrene	ND	6.20	12.4	"	"	"	"		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>			<i>Recovery: 95 %</i>	<i>Limits: 37-122 %</i>	"	"	"		
<i>2-Fluorobiphenyl (Surr)</i>			<i>81 %</i>	<i>Limits: 44-115 %</i>	"	"	"		
<i>Phenol-d6 (Surr)</i>			<i>87 %</i>	<i>Limits: 33-122 %</i>	"	"	"		
<i>p-Terphenyl-d14 (Surr)</i>			<i>89 %</i>	<i>Limits: 54-127 %</i>	"	"	"		
<i>2-Fluorophenol (Surr)</i>			<i>68 %</i>	<i>Limits: 35-115 %</i>	"	"	"		
<i>2,4,6-Tribromophenol (Surr)</i>			<i>86 %</i>	<i>Limits: 39-132 %</i>	"	"	"		



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP18-S-2.5 (A7L0317-16)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120731</b>			
Acenaphthene	ND	6.21	12.5	ug/kg dry	4	12/18/17 11:35	EPA 8270D		
Acenaphthylene	ND	6.21	12.5	"	"	"	"		
Anthracene	ND	6.21	12.5	"	"	"	"		
<b>Benz(a)anthracene</b>	<b>33.2</b>	6.21	12.5	"	"	"	"		
<b>Benzo(a)pyrene</b>	<b>44.1</b>	9.34	18.7	"	"	"	"		
<b>Benzo(b)fluoranthene</b>	<b>47.6</b>	9.34	18.7	"	"	"	"	M-05	
<b>Benzo(k)fluoranthene</b>	<b>20.2</b>	9.34	18.7	"	"	"	"	M-05	
<b>Benzo(g,h,i)perylene</b>	<b>29.4</b>	6.21	12.5	"	"	"	"		
<b>Chrysene</b>	<b>33.2</b>	6.21	12.5	"	"	"	"		
<b>Dibenz(a,h)anthracene</b>	<b>6.46</b>	6.21	12.5	"	"	"	"	J	
<b>Fluoranthene</b>	<b>54.1</b>	6.21	12.5	"	"	"	"		
Fluorene	ND	6.21	12.5	"	"	"	"		
<b>Indeno(1,2,3-cd)pyrene</b>	<b>28.4</b>	6.21	12.5	"	"	"	"		
1-Methylnaphthalene	ND	12.5	24.9	"	"	"	"		
2-Methylnaphthalene	ND	12.5	24.9	"	"	"	"		
Naphthalene	ND	12.5	24.9	"	"	"	"		
<b>Phenanthrene</b>	<b>15.3</b>	6.21	12.5	"	"	"	"		
<b>Pyrene</b>	<b>54.2</b>	6.21	12.5	"	"	"	"		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 89 %</i>		<i>Limits: 37-122 %</i>	"	"	"		
<i>2-Fluorobiphenyl (Surr)</i>				<i>85 %</i>	<i>Limits: 44-115 %</i>	"	"		
<i>Phenol-d6 (Surr)</i>				<i>74 %</i>	<i>Limits: 33-122 %</i>	"	"		
<i>p-Terphenyl-d14 (Surr)</i>				<i>94 %</i>	<i>Limits: 54-127 %</i>	"	"		
<i>2-Fluorophenol (Surr)</i>				<i>67 %</i>	<i>Limits: 35-115 %</i>	"	"		
<i>2,4,6-Tribromophenol (Surr)</i>				<i>89 %</i>	<i>Limits: 39-132 %</i>	"	"		



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209


Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP16-W-9.0 (A7L0317-19RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120727</b>			
Acenaphthene	ND	0.0122	0.0244	ug/L	1	12/15/17 18:42	EPA 8270D	
Acenaphthylene	ND	0.0122	0.0244	"	"	"	"	
Anthracene	ND	0.0122	0.0244	"	"	"	"	
Benz(a)anthracene	ND	0.0122	0.0244	"	"	"	"	
Benzo(a)pyrene	ND	0.0183	0.0366	"	"	"	"	
Benzo(b)fluoranthene	ND	0.0183	0.0366	"	"	"	"	
Benzo(k)fluoranthene	ND	0.0183	0.0366	"	"	"	"	
Benzo(g,h,i)perylene	ND	0.0122	0.0244	"	"	"	"	
Chrysene	ND	0.0122	0.0244	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.0122	0.0244	"	"	"	"	
Fluoranthene	ND	0.0122	0.0244	"	"	"	"	
Fluorene	ND	0.0122	0.0244	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.0122	0.0244	"	"	"	"	
1-Methylnaphthalene	ND	0.0244	0.0488	"	"	"	"	
2-Methylnaphthalene	ND	0.0244	0.0488	"	"	"	"	
Naphthalene	ND	0.0244	0.0488	"	"	"	"	
Phenanthrene	ND	0.0122	0.0244	"	"	"	"	
Pyrene	ND	0.0122	0.0244	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 69 %</i>		<i>Limits: 44-120 %</i>	"	"	"	
<i>2-Fluorobiphenyl (Surr)</i>		<i>49 %</i>		<i>Limits: 44-120 %</i>	"	"	"	
<i>Phenol-d6 (Surr)</i>		<i>25 %</i>		<i>Limits: 10-120 %</i>	"	"	"	
<i>p-Terphenyl-d14 (Surr)</i>		<i>65 %</i>		<i>Limits: 50-133 %</i>	"	"	"	
<i>2-Fluorophenol (Surr)</i>		<i>34 %</i>		<i>Limits: 19-120 %</i>	"	"	"	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>94 %</i>		<i>Limits: 43-140 %</i>	"	"	"	



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP07-S-2.5 (A7L0317-21RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120698</b>			
Acenaphthene	ND	423	849	ug/kg dry	250	12/14/17 11:39	EPA 8270D	
Acenaphthylene	ND	423	849	"	"	"	"	
Anthracene	ND	423	849	"	"	"	"	
<b>Benz(a)anthracene</b>	<b>598</b>	423	849	"	"	"	"	J
<b>Benzo(a)pyrene</b>	<b>1530</b>	636	1270	"	"	"	"	
<b>Benzo(b)fluoranthene</b>	<b>1100</b>	636	1270	"	"	"	"	J
Benzo(k)fluoranthene	ND	636	1270	"	"	"	"	
<b>Benzo(g,h,i)perylene</b>	<b>1500</b>	423	849	"	"	"	"	
<b>Chrysene</b>	<b>1270</b>	423	849	"	"	"	"	M-05
Dibenz(a,h)anthracene	ND	423	849	"	"	"	"	
<b>Fluoranthene</b>	<b>877</b>	423	849	"	"	"	"	
Fluorene	ND	423	849	"	"	"	"	
<b>Indeno(1,2,3-cd)pyrene</b>	<b>700</b>	423	849	"	"	"	"	J
1-Methylnaphthalene	ND	849	1700	"	"	"	"	
2-Methylnaphthalene	ND	849	1700	"	"	"	"	
Naphthalene	ND	849	1700	"	"	"	"	
<b>Phenanthrene</b>	<b>880</b>	423	849	"	"	"	"	
<b>Pyrene</b>	<b>1750</b>	423	849	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 126 %</i>		<i>Limits: 37-122 %</i>	"	"	"	S-05
<i>2-Fluorobiphenyl (Surr)</i>		<i>120 %</i>		<i>Limits: 44-115 %</i>	"	"	"	S-05
<i>Phenol-d6 (Surr)</i>		<i>82 %</i>		<i>Limits: 33-122 %</i>	"	"	"	S-05
<i>p-Terphenyl-d14 (Surr)</i>		<i>113 %</i>		<i>Limits: 54-127 %</i>	"	"	"	S-05
<i>2-Fluorophenol (Surr)</i>		<i>74 %</i>		<i>Limits: 35-115 %</i>	"	"	"	S-05
<i>2,4,6-Tribromophenol (Surr)</i>		<i>80 %</i>		<i>Limits: 39-132 %</i>	"	"	"	S-05

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209


Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP07-S-7.5 (A7L0317-22RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120698</b>			<b>R-04</b>	
Acenaphthene	ND	143	287	ug/kg dry	100	12/15/17 19:53	EPA 8270D		
Acenaphthylene	ND	143	287	"	"	"	"		
Anthracene	ND	143	287	"	"	"	"		
Benz(a)anthracene	ND	143	287	"	"	"	"		
Benzo(a)pyrene	ND	215	430	"	"	"	"		
Benzo(b)fluoranthene	ND	215	430	"	"	"	"		
Benzo(k)fluoranthene	ND	215	430	"	"	"	"		
Benzo(g,h,i)perylene	ND	143	287	"	"	"	"		
Chrysene	ND	143	287	"	"	"	"		
Dibenz(a,h)anthracene	ND	143	287	"	"	"	"		
Fluoranthene	ND	143	287	"	"	"	"		
Fluorene	ND	143	287	"	"	"	"		
Indeno(1,2,3-cd)pyrene	ND	143	287	"	"	"	"		
1-Methylnaphthalene	ND	287	574	"	"	"	"		
2-Methylnaphthalene	ND	287	574	"	"	"	"		
Naphthalene	ND	287	574	"	"	"	"		
Phenanthrene	ND	143	287	"	"	"	"		
Pyrene	ND	143	287	"	"	"	"		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>			<i>Recovery: 116 %</i>	<i>Limits: 37-122 %</i>	"	"	"	<i>S-05</i>	
<i>2-Fluorobiphenyl (Surr)</i>			<i>91 %</i>	<i>Limits: 44-115 %</i>	"	"	"	<i>S-05</i>	
<i>Phenol-d6 (Surr)</i>			<i>81 %</i>	<i>Limits: 33-122 %</i>	"	"	"	<i>S-05</i>	
<i>p-Terphenyl-d14 (Surr)</i>			<i>103 %</i>	<i>Limits: 54-127 %</i>	"	"	"	<i>S-05</i>	
<i>2-Fluorophenol (Surr)</i>			<i>71 %</i>	<i>Limits: 35-115 %</i>	"	"	"	<i>S-05</i>	
<i>2,4,6-Tribromophenol (Surr)</i>			<i>85 %</i>	<i>Limits: 39-132 %</i>	"	"	"	<i>S-05</i>	





**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP07-S-7.5-DUP (A7L0317-23RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120698</b>			<b>R-04</b>	
Acenaphthene	ND	56.3	113	ug/kg dry	40	12/14/17 17:38	EPA 8270D		
Acenaphthylene	ND	56.3	113	"	"	"	"		
Anthracene	ND	56.3	113	"	"	"	"		
Benz(a)anthracene	ND	56.3	113	"	"	"	"		
Benzo(a)pyrene	ND	84.6	169	"	"	"	"		
Benzo(b)fluoranthene	ND	84.6	169	"	"	"	"		
Benzo(k)fluoranthene	ND	84.6	169	"	"	"	"		
Benzo(g,h,i)perylene	ND	56.3	113	"	"	"	"		
Chrysene	ND	56.3	113	"	"	"	"		
Dibenz(a,h)anthracene	ND	56.3	113	"	"	"	"		
Fluoranthene	ND	56.3	113	"	"	"	"		
Fluorene	ND	56.3	113	"	"	"	"		
Indeno(1,2,3-cd)pyrene	ND	56.3	113	"	"	"	"		
1-Methylnaphthalene	ND	113	225	"	"	"	"		
2-Methylnaphthalene	ND	113	225	"	"	"	"		
Naphthalene	ND	113	225	"	"	"	"		
Phenanthrene	ND	56.3	113	"	"	"	"		
Pyrene	ND	56.3	113	"	"	"	"		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>			<i>Recovery: 89 %</i>	<i>Limits: 37-122 %</i>	"	"	"	<i>S-05</i>	
<i>2-Fluorobiphenyl (Surr)</i>			<i>89 %</i>	<i>Limits: 44-115 %</i>	"	"	"	<i>S-05</i>	
<i>Phenol-d6 (Surr)</i>			<i>70 %</i>	<i>Limits: 33-122 %</i>	"	"	"	<i>S-05</i>	
<i>p-Terphenyl-d14 (Surr)</i>			<i>111 %</i>	<i>Limits: 54-127 %</i>	"	"	"	<i>S-05</i>	
<i>2-Fluorophenol (Surr)</i>			<i>72 %</i>	<i>Limits: 35-115 %</i>	"	"	"	<i>S-05</i>	
<i>2,4,6-Tribromophenol (Surr)</i>			<i>88 %</i>	<i>Limits: 39-132 %</i>	"	"	"	<i>S-05</i>	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP07-W-15.0 (A7L0317-24RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120727</b>			
Acenaphthene	ND	0.0385	0.0769	ug/L	4	12/15/17 16:54	EPA 8270D	
Acenaphthylene	ND	0.0385	0.0769	"	"	"	"	
Anthracene	ND	0.0385	0.0769	"	"	"	"	
<b>Benz(a)anthracene</b>	<b>0.0437</b>	0.0385	0.0769	"	"	"	"	J
<b>Benzo(a)pyrene</b>	<b>0.0791</b>	0.0577	0.115	"	"	"	"	J
Benzo(b)fluoranthene	ND	0.0577	0.115	"	"	"	"	
Benzo(k)fluoranthene	ND	0.0577	0.115	"	"	"	"	
<b>Benzo(g,h,i)perylene</b>	<b>0.0805</b>	0.0385	0.0769	"	"	"	"	
<b>Chrysene</b>	<b>0.0533</b>	0.0385	0.0769	"	"	"	"	J
Dibenz(a,h)anthracene	ND	0.0385	0.0769	"	"	"	"	
<b>Fluoranthene</b>	<b>0.0530</b>	0.0385	0.0769	"	"	"	"	J
Fluorene	ND	0.0385	0.0769	"	"	"	"	
<b>Indeno(1,2,3-cd)pyrene</b>	<b>0.0430</b>	0.0385	0.0769	"	"	"	"	J
1-Methylnaphthalene	ND	0.0769	0.154	"	"	"	"	
2-Methylnaphthalene	ND	0.0769	0.154	"	"	"	"	
Naphthalene	ND	0.0769	0.154	"	"	"	"	
<b>Phenanthrene</b>	<b>0.0412</b>	0.0385	0.0769	"	"	"	"	J
<b>Pyrene</b>	<b>0.0770</b>	0.0385	0.0769	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 83 %</i>		<i>Limits: 44-120 %</i>	"	"	"	
<i>2-Fluorobiphenyl (Surr)</i>		<i>65 %</i>		<i>Limits: 44-120 %</i>	"	"	"	
<i>Phenol-d6 (Surr)</i>		<i>25 %</i>		<i>Limits: 10-120 %</i>	"	"	"	
<i>p-Terphenyl-d14 (Surr)</i>		<i>50 %</i>		<i>Limits: 50-133 %</i>	"	"	"	
<i>2-Fluorophenol (Surr)</i>		<i>38 %</i>		<i>Limits: 19-120 %</i>	"	"	"	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>96 %</i>		<i>Limits: 43-140 %</i>	"	"	"	



Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP06-S-2.5 (A7L0317-01) Matrix: Soil</b>								
Batch: 7120967								
Arsenic	3.58	0.621	1.24	mg/kg dry	10	12/21/17 15:31	EPA 6020A	
Barium	89.3	0.621	1.24	"	"	"	"	
Cadmium	0.485	0.124	0.249	"	"	"	"	
Chromium	20.9	0.621	1.24	"	"	"	"	
Lead	95.6	0.124	0.249	"	"	"	"	
Mercury	0.133	0.0497	0.0994	"	"	"	"	
Selenium	ND	0.621	1.24	"	"	"	"	
Silver	ND	0.124	0.249	"	"	"	"	
<b>GP06-S-7.5 (A7L0317-02) Matrix: Soil</b>								
Batch: 7120967								
Arsenic	1.22	0.621	1.24	mg/kg dry	10	12/21/17 15:34	EPA 6020A	J
Barium	140	0.621	1.24	"	"	"	"	
Cadmium	0.422	0.124	0.248	"	"	"	"	
Chromium	7.01	0.621	1.24	"	"	"	"	
Lead	5.91	0.124	0.248	"	"	"	"	
Mercury	ND	0.0497	0.0993	"	"	"	"	
Selenium	ND	0.621	1.24	"	"	"	"	
Silver	ND	0.124	0.248	"	"	"	"	
<b>GP06-S-21.0 (A7L0317-03) Matrix: Soil</b>								
Batch: 7120967								
Arsenic	4.01	0.586	1.17	mg/kg dry	10	12/21/17 15:37	EPA 6020A	
Barium	111	0.586	1.17	"	"	"	"	
Cadmium	0.739	0.117	0.234	"	"	"	"	
Chromium	16.8	0.586	1.17	"	"	"	"	
Lead	163	0.117	0.234	"	"	"	"	
Mercury	0.478	0.0469	0.0938	"	"	"	"	
Selenium	ND	0.586	1.17	"	"	"	"	
Silver	ND	0.117	0.234	"	"	"	"	
<b>GP01-S-2.5 (A7L0317-04) Matrix: Soil</b>								
Batch: 7120967								
Arsenic	2.27	0.584	1.17	mg/kg dry	10	12/21/17 15:40	EPA 6020A	
Barium	50.6	0.584	1.17	"	"	"	"	
Cadmium	0.245	0.117	0.234	"	"	"	"	
Chromium	13.7	0.584	1.17	"	"	"	"	
Lead	158	0.117	0.234	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP01-S-2.5 (A7L0317-04) Matrix: Soil</b>								
Mercury	0.524	0.0467	0.0935	mg/kg dry	10	"	EPA 6020A	
Selenium	ND	0.584	1.17	"	"	"	"	
Silver	ND	0.117	0.234	"	"	"	"	
<b>GP01-S-7.5 (A7L0317-05) Matrix: Soil</b>								
Batch: 7120967								
Arsenic	2.64	0.567	1.13	mg/kg dry	10	12/21/17 15:43	EPA 6020A	
Barium	86.6	0.567	1.13	"	"	"	"	
Cadmium	0.408	0.113	0.227	"	"	"	"	
Chromium	13.0	0.567	1.13	"	"	"	"	
Lead	122	0.113	0.227	"	"	"	"	
Mercury	1.95	0.0454	0.0907	"	"	"	"	
Selenium	ND	0.567	1.13	"	"	"	"	
Silver	ND	0.113	0.227	"	"	"	"	
<b>GP01-S-16.0 (A7L0317-06) Matrix: Soil</b>								
Batch: 7120967								
Arsenic	3.21	0.622	1.24	mg/kg dry	10	12/21/17 16:11	EPA 6020A	
Barium	74.4	0.622	1.24	"	"	"	"	
Cadmium	0.224	0.124	0.249	"	"	"	"	J
Chromium	9.14	0.622	1.24	"	"	"	"	
Lead	69.5	0.124	0.249	"	"	"	"	
Mercury	0.636	0.0498	0.0995	"	"	"	"	
Selenium	ND	0.622	1.24	"	"	"	"	
Silver	ND	0.124	0.249	"	"	"	"	
<b>GP03-S-2.5 (A7L0317-07) Matrix: Soil</b>								
Batch: 7120967								
Arsenic	1.93	0.563	1.13	mg/kg dry	10	12/21/17 16:14	EPA 6020A	
Barium	80.7	0.563	1.13	"	"	"	"	
Cadmium	0.304	0.113	0.225	"	"	"	"	
Chromium	14.7	0.563	1.13	"	"	"	"	
Lead	166	0.113	0.225	"	"	"	"	
Mercury	0.424	0.0450	0.0901	"	"	"	"	
Selenium	ND	0.563	1.13	"	"	"	"	
Silver	ND	0.113	0.225	"	"	"	"	
<b>GP03-S-7.5 (A7L0317-08) Matrix: Soil</b>								
Batch: 7120967								
Arsenic	2.58	0.619	1.24	mg/kg dry	10	12/21/17 16:17	EPA 6020A	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-7.5 (A7L0317-08)</b>								
<b>Matrix: Soil</b>								
Barium	93.7	0.619	1.24	mg/kg dry	10	"	EPA 6020A	
Cadmium	0.433	0.124	0.248	"	"	"	"	
Chromium	14.7	0.619	1.24	"	"	"	"	
Lead	169	0.124	0.248	"	"	"	"	Q-42
Mercury	0.439	0.0495	0.0991	"	"	"	"	Q-42
Selenium	ND	0.619	1.24	"	"	"	"	
Silver	ND	0.124	0.248	"	"	"	"	
<b>GP03-S-17.5 (A7L0317-09)</b>								
<b>Matrix: Soil</b>								
Batch: 7120977								
Arsenic	5.51	0.513	1.03	mg/kg dry	10	12/26/17 17:15	EPA 6020A	
Barium	67.5	0.513	1.03	"	"	"	"	
Cadmium	0.205	0.103	0.205	"	"	"	"	
Chromium	5.01	0.513	1.03	"	"	"	"	
Lead	39.7	0.103	0.205	"	"	"	"	
Mercury	ND	0.0410	0.0821	"	"	"	"	
Selenium	ND	0.513	1.03	"	"	"	"	
Silver	ND	0.103	0.205	"	"	"	"	
<b>GP03-S-32.0 (A7L0317-10)</b>								
<b>Matrix: Soil</b>								
Batch: 7120977								
Arsenic	3.03	0.659	1.32	mg/kg dry	10	12/26/17 17:18	EPA 6020A	
Barium	96.8	0.659	1.32	"	"	"	"	
Cadmium	0.330	0.132	0.264	"	"	"	"	
Chromium	21.5	0.659	1.32	"	"	"	"	
Lead	38.8	0.132	0.264	"	"	"	"	
Mercury	0.147	0.0528	0.106	"	"	"	"	
Selenium	ND	0.659	1.32	"	"	"	"	
Silver	ND	0.132	0.264	"	"	"	"	
<b>GP03-S-2.5-DUP (A7L0317-11)</b>								
<b>Matrix: Soil</b>								
Batch: 7120977								
Arsenic	2.47	0.603	1.21	mg/kg dry	10	12/26/17 17:21	EPA 6020A	
Barium	82.3	0.603	1.21	"	"	"	"	
Cadmium	0.314	0.121	0.241	"	"	"	"	
Chromium	11.2	0.603	1.21	"	"	"	"	
Lead	326	0.121	0.241	"	"	"	"	
Mercury	0.442	0.0482	0.0965	"	"	"	"	
Selenium	ND	0.603	1.21	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-S-2.5-DUP (A7L0317-11)</b>								
<b>Matrix: Soil</b>								
Silver	ND	0.121	0.241	mg/kg dry	10	"	EPA 6020A	
<b>GP16-S-2.5 (A7L0317-12)</b>								
<b>Matrix: Soil</b>								
Batch: 7120977								
Arsenic	1.92	0.605	1.21	mg/kg dry	10	12/26/17 17:34	EPA 6020A	
Barium	92.0	0.605	1.21	"	"	"	"	
Cadmium	0.145	0.121	0.242	"	"	"	"	J
Chromium	15.6	0.605	1.21	"	"	"	"	
Lead	2.82	0.121	0.242	"	"	"	"	
Mercury	ND	0.0484	0.0967	"	"	"	"	
Selenium	ND	0.605	1.21	"	"	"	"	
Silver	ND	0.121	0.242	"	"	"	"	
<b>GP16-S-8.0 (A7L0317-13)</b>								
<b>Matrix: Soil</b>								
Batch: 7120977								
Arsenic	1.88	0.614	1.23	mg/kg dry	10	12/26/17 17:46	EPA 6020A	
Barium	92.4	0.614	1.23	"	"	"	"	
Cadmium	0.172	0.123	0.246	"	"	"	"	J
Chromium	15.8	0.614	1.23	"	"	"	"	
Lead	2.90	0.123	0.246	"	"	"	"	
Mercury	ND	0.0491	0.0983	"	"	"	"	
Selenium	ND	0.614	1.23	"	"	"	"	
Silver	ND	0.123	0.246	"	"	"	"	
<b>GP17-S-2.5 (A7L0317-14)</b>								
<b>Matrix: Soil</b>								
Batch: 7120977								
Arsenic	2.17	0.621	1.24	mg/kg dry	10	12/26/17 17:49	EPA 6020A	
Barium	106	0.621	1.24	"	"	"	"	
Cadmium	0.273	0.124	0.248	"	"	"	"	
Chromium	141	0.621	1.24	"	"	"	"	
Lead	48.3	0.124	0.248	"	"	"	"	
Mercury	0.0580	0.0496	0.0993	"	"	"	"	J
Selenium	ND	0.621	1.24	"	"	"	"	
Silver	ND	0.124	0.248	"	"	"	"	
<b>GP17-S-8.0 (A7L0317-15)</b>								
<b>Matrix: Soil</b>								
Batch: 7120977								
Arsenic	2.63	0.614	1.23	mg/kg dry	10	12/26/17 17:53	EPA 6020A	
Barium	127	0.614	1.23	"	"	"	"	
Cadmium	0.233	0.123	0.246	"	"	"	"	J

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP17-S-8.0 (A7L0317-15)</b>								
<b>Matrix: Soil</b>								
Chromium	272	0.614	1.23	mg/kg dry	10	"	EPA 6020A	
Lead	20.3	0.123	0.246	"	"	"	"	
Mercury	0.0502	0.0491	0.0982	"	"	"	"	J
Selenium	ND	0.614	1.23	"	"	"	"	
Silver	ND	0.123	0.246	"	"	"	"	
<b>GP18-S-2.5 (A7L0317-16)</b>								
<b>Matrix: Soil</b>								
Batch: 7120977								
Arsenic	2.96	0.616	1.23	mg/kg dry	10	12/26/17 17:56	EPA 6020A	
Barium	113	0.616	1.23	"	"	"	"	
Cadmium	0.234	0.123	0.247	"	"	"	"	J
Chromium	16.1	0.616	1.23	"	"	"	"	
Lead	29.7	0.123	0.247	"	"	"	"	
Mercury	0.267	0.0493	0.0986	"	"	"	"	
Selenium	ND	0.616	1.23	"	"	"	"	
Silver	ND	0.123	0.247	"	"	"	"	
<b>GP12-S-3.0 (A7L0317-17)</b>								
<b>Matrix: Soil</b>								
Batch: 7120977								
Arsenic	2.17	0.626	1.25	mg/kg dry	10	12/26/17 17:59	EPA 6020A	
Barium	105	0.626	1.25	"	"	"	"	
Cadmium	0.288	0.125	0.251	"	"	"	"	
Chromium	16.1	0.626	1.25	"	"	"	"	
Lead	9.57	0.125	0.251	"	"	"	"	
Mercury	0.0588	0.0501	0.100	"	"	"	"	J
Selenium	ND	0.626	1.25	"	"	"	"	
Silver	ND	0.125	0.251	"	"	"	"	
<b>GP12-S-8.0 (A7L0317-18)</b>								
<b>Matrix: Soil</b>								
Batch: 7120977								
Arsenic	2.20	0.617	1.23	mg/kg dry	10	12/26/17 18:02	EPA 6020A	
Barium	91.2	0.617	1.23	"	"	"	"	
Cadmium	0.185	0.123	0.247	"	"	"	"	J
Chromium	14.4	0.617	1.23	"	"	"	"	
Lead	3.16	0.123	0.247	"	"	"	"	
Mercury	ND	0.0493	0.0987	"	"	"	"	
Selenium	ND	0.617	1.23	"	"	"	"	
Silver	ND	0.123	0.247	"	"	"	"	
<b>GP16-W-9.0 (A7L0317-19)</b>								
<b>Matrix: Water</b>								

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea


Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP16-W-9.0 (A7L0317-19) Matrix: Water</b>								
Batch: 7120825								
Arsenic	0.608	0.500	1.00	ug/L	1	12/19/17 19:30	EPA 6020A	J
Barium	21.3	0.500	1.00	"	"	"	"	
Cadmium	ND	0.0400	0.200	"	"	"	"	
Chromium	1.21	0.500	1.00	"	"	"	"	
Lead	0.308	0.100	0.200	"	"	"	"	
Mercury	ND	0.0400	0.0800	"	"	"	"	
Selenium	ND	0.500	1.00	"	"	"	"	
Silver	ND	0.100	0.200	"	"	"	"	
<b>GP07-S-2.5 (A7L0317-21) Matrix: Soil</b>								
Batch: 7120977								
Arsenic	18.0	0.700	1.40	mg/kg dry	10	12/26/17 18:05	EPA 6020A	
Barium	163	0.700	1.40	"	"	"	"	
Cadmium	1.04	0.140	0.280	"	"	"	"	
Chromium	25.5	0.700	1.40	"	"	"	"	
Lead	292	0.140	0.280	"	"	"	"	
Mercury	0.833	0.0560	0.112	"	"	"	"	
Selenium	ND	0.700	1.40	"	"	"	"	
Silver	ND	0.140	0.280	"	"	"	"	
<b>GP07-S-7.5 (A7L0317-22) Matrix: Soil</b>								
Batch: 7120977								
Arsenic	2.18	0.593	1.19	mg/kg dry	10	12/26/17 18:18	EPA 6020A	
Barium	89.8	0.593	1.19	"	"	"	"	
Cadmium	0.190	0.119	0.237	"	"	"	"	J
Chromium	14.2	0.593	1.19	"	"	"	"	
Lead	20.8	0.119	0.237	"	"	"	"	
Mercury	0.0485	0.0474	0.0949	"	"	"	"	J
Selenium	ND	0.593	1.19	"	"	"	"	
Silver	ND	0.119	0.237	"	"	"	"	
<b>GP07-S-7.5-DUP (A7L0317-23) Matrix: Soil</b>								
Batch: 7120977								
Arsenic	2.44	0.583	1.17	mg/kg dry	10	12/26/17 18:21	EPA 6020A	
Barium	94.9	0.583	1.17	"	"	"	"	
Cadmium	0.198	0.117	0.233	"	"	"	"	J
Chromium	16.1	0.583	1.17	"	"	"	"	
Lead	9.65	0.117	0.233	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP07-S-7.5-DUP (A7L0317-23)</b>			<b>Matrix: Soil</b>					
Mercury	ND	0.0467	0.0934	mg/kg dry	10	"	EPA 6020A	
Selenium	ND	0.583	1.17	"	"	"	"	
Silver	ND	0.117	0.233	"	"	"	"	
<b>GP07-W-15.0 (A7L0317-24)</b>			<b>Matrix: Water</b>					
Batch: 7120825								
<b>Arsenic</b>	<b>10.7</b>	0.500	1.00	ug/L	1	12/19/17 19:34	EPA 6020A	
<b>Barium</b>	<b>398</b>	0.500	1.00	"	"	"	"	
<b>Cadmium</b>	<b>2.19</b>	0.0400	0.200	"	"	"	"	
<b>Chromium</b>	<b>64.7</b>	0.500	1.00	"	"	"	"	
<b>Lead</b>	<b>57.3</b>	0.100	0.200	"	"	"	"	
<b>Mercury</b>	<b>0.520</b>	0.0400	0.0800	"	"	"	"	
<b>Selenium</b>	<b>1.57</b>	0.500	1.00	"	"	"	"	
<b>Silver</b>	<b>0.432</b>	0.100	0.200	"	"	"	"	



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Percent Dry Weight

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP06-S-2.5 (A7L0317-01)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	87.7	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP06-S-7.5 (A7L0317-02)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	84.1	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP06-S-21.0 (A7L0317-03)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	83.3	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP01-S-2.5 (A7L0317-04)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	92.8	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP01-S-7.5 (A7L0317-05)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	85.8	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP01-S-16.0 (A7L0317-06)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	86.4	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP03-S-2.5 (A7L0317-07)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	88.6	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP03-S-7.5 (A7L0317-08)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	86.6	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP03-S-17.5 (A7L0317-09)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	94.8	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP03-S-32.0 (A7L0317-10)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	80.0	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP03-S-2.5-DUP (A7L0317-11)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	88.2	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP16-S-2.5 (A7L0317-12)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	85.8	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP16-S-8.0 (A7L0317-13)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	80.4	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP17-S-2.5 (A7L0317-14)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	87.2	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP17-S-8.0 (A7L0317-15)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	85.4	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP18-S-2.5 (A7L0317-16)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120668</b>	
% Solids	84.8	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## ANALYTICAL SAMPLE RESULTS

### Percent Dry Weight

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP12-S-3.0 (A7L0317-17)</b>				<b>Matrix: Soil</b>	<b>Batch: 7120668</b>			
% Solids	88.7	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP12-S-8.0 (A7L0317-18)</b>				<b>Matrix: Soil</b>	<b>Batch: 7120668</b>			
% Solids	88.3	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP07-S-2.5 (A7L0317-21)</b>				<b>Matrix: Soil</b>	<b>Batch: 7120668</b>			
% Solids	75.8	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP07-S-7.5 (A7L0317-22)</b>				<b>Matrix: Soil</b>	<b>Batch: 7120668</b>			
% Solids	91.0	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	
<b>GP07-S-7.5-DUP (A7L0317-23)</b>				<b>Matrix: Soil</b>	<b>Batch: 7120668</b>			
% Solids	91.0	1.00	1.00	% by Weight	1	12/14/17 08:08	EPA 8000C	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

**Reported:**  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Hydrocarbon Identification Screen by NWTPH-HCID

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120697 - NWTPH-HCID (Soil)</b>						<b>Soil</b>						
<b>Blank (7120697-BLK1)</b>						Prepared: 12/13/17 15:03 Analyzed: 12/13/17 22:52						
<b>NWTPH-HCID</b>												
Gasoline Range Organics	ND	18.2	18.2	mg/kg wet	1	---	---	---	---	---	---	---
Diesel Range Organics	ND	45.5	45.5	"	"	---	---	---	---	---	---	---
Oil Range Organics	ND	90.9	90.9	"	"	---	---	---	---	---	---	---
<i>Surr: o-Terphenyl (Surr)</i>			<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>					
<i>4-Bromofluorobenzene (Surr)</i>			<i>96 %</i>		<i>50-150 %</i>		<i>"</i>					
<b>Duplicate (7120697-DUP1)</b>						Prepared: 12/13/17 15:03 Analyzed: 12/13/17 23:37						
<b>QC Source Sample: Other (A7L0307-01)</b>												
<b>NWTPH-HCID</b>												
Gasoline Range Organics	ND	26.1	26.1	mg/kg dry	1	---	ND	---	---	---	30%	
Diesel Range Organics	ND	65.2	65.2	"	"	---	ND	---	---	---	30%	
Oil Range Organics	<b>DET</b>	130	130	"	"	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>			<i>Recovery: 99 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>					
<i>4-Bromofluorobenzene (Surr)</i>			<i>93 %</i>		<i>50-150 %</i>		<i>"</i>					
<b>Duplicate (7120697-DUP2)</b>						Prepared: 12/13/17 18:45 Analyzed: 12/14/17 06:27						
<b>QC Source Sample: Other (A7L0352-08)</b>												
<b>NWTPH-HCID</b>												
Gasoline Range Organics	ND	27.3	27.3	mg/kg dry	1	---	ND	---	---	---	30%	
Diesel Range Organics	ND	68.3	68.3	"	"	---	ND	---	---	---	30%	
Oil Range Organics	ND	137	137	"	"	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>			<i>Recovery: 100 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>					
<i>4-Bromofluorobenzene (Surr)</i>			<i>93 %</i>		<i>50-150 %</i>		<i>"</i>					



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120691 - EPA 3546 (Fuels)</b>						<b>Soil</b>						
<b>Blank (7120691-BLK1)</b>						Prepared: 12/13/17 13:44 Analyzed: 12/13/17 21:21						
<b>NWTPH-Dx</b>												
Diesel	ND	9.09	25.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	18.2	50.0	"	"	---	---	---	---	---	---	
Mineral Oil	ND	18.2	36.4	"	"	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 102 %		Limits: 50-150 %		Dilution: 1x						
<b>LCS (7120691-BS1)</b>						Prepared: 12/13/17 13:44 Analyzed: 12/13/17 21:44						
<b>NWTPH-Dx</b>												
Diesel	113	10.0	25.0	mg/kg wet	1	125	---	90	76-115	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 104 %		Limits: 50-150 %		Dilution: 1x						
<b>Duplicate (7120691-DUP1)</b>						Prepared: 12/13/17 13:44 Analyzed: 12/13/17 22:29						
<b>QC Source Sample: Other (A7L0313-01)</b>												
<b>NWTPH-Dx</b>												
Diesel	ND	12.8	25.6	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	25.6	51.2	"	"	---	ND	---	---	---	30%	
Mineral Oil	ND	25.6	51.2	"	"	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 94 %		Limits: 50-150 %		Dilution: 1x						
<b>Duplicate (7120691-DUP3)</b>						Prepared: 12/13/17 13:44 Analyzed: 12/14/17 11:53						
<b>QC Source Sample: Other (A7L0336-04RE1)</b>												
<b>NWTPH-Dx</b>												
Diesel	ND	26.3	52.6	mg/kg dry	2	---	ND	---	---	---	30%	
Oil	<b>395</b>	52.6	105	"	"	---	190	---	---	70	30%	F-03, Q-17
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 102 %		Limits: 50-150 %		Dilution: 2x						



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120777 - EPA 3510C (Fuels/Acid Ext.)</b>						<b>Water</b>						
<b>Blank (7120777-BLK1)</b>						Prepared: 12/15/17 11:39 Analyzed: 12/15/17 23:01						
<b>NWTPH-Dx</b>												
Diesel	ND	0.0909	0.182	mg/L	1	---	---	---	---	---	---	
Oil	ND	0.182	0.364	"	"	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS (7120777-BS1)</b>						Prepared: 12/15/17 11:39 Analyzed: 12/15/17 23:23						
<b>NWTPH-Dx</b>												
Diesel	1.10	0.100	0.200	mg/L	1	1.25	---	88	58-115	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS Dup (7120777-BSD1)</b>						Prepared: 12/15/17 11:39 Analyzed: 12/15/17 23:46						
<b>NWTPH-Dx</b>												
Diesel	1.19	0.100	0.200	mg/L	1	1.25	---	95	58-115	8	20%	Q-19
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 104 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120787 - EPA 3546 (Fuels)</b>						<b>Soil</b>						
<b>Blank (7120787-BLK1)</b>						Prepared: 12/15/17 14:39 Analyzed: 12/15/17 21:34						
<b>NWTPH-Dx</b>												
Diesel	ND	9.09	25.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	18.2	50.0	"	"	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 97 %		Limits: 50-150 %		Dilution: 1x						
<b>LCS (7120787-BS1)</b>						Prepared: 12/15/17 14:39 Analyzed: 12/15/17 21:55						
<b>NWTPH-Dx</b>												
Diesel	121	10.0	25.0	mg/kg wet	1	125	---	97	76-115	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 102 %		Limits: 50-150 %		Dilution: 1x						
<b>Duplicate (7120787-DUP1)</b>						Prepared: 12/15/17 14:39 Analyzed: 12/15/17 22:37						
<b>QC Source Sample: Other (A7L0305-13)</b>												
<b>NWTPH-Dx</b>												
Diesel	ND	12.3	25.0	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	24.5	50.0	"	"	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 79 %		Limits: 50-150 %		Dilution: 1x						
<b>Duplicate (7120787-DUP3)</b>						Prepared: 12/15/17 14:39 Analyzed: 12/18/17 12:19						
<b>QC Source Sample: Other (A7L0426-01RE1)</b>												
<b>NWTPH-Dx</b>												
Diesel	20500	249	499	mg/kg dry	20	---	17600	---	---	16	30%	
Oil	ND	499	998	"	"	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: %		Limits: 50-150 %		Dilution: 20x						S-01



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209


Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120982 - EPA 3546 (Fuels)</b>						<b>Soil</b>						
<b>Blank (7120982-BLK1)</b>						Prepared: 12/21/17 13:41 Analyzed: 12/21/17 22:28						
<b>NWTPH-Dx</b>												
Diesel	ND	9.09	25.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	18.2	50.0	"	"	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 88 %		Limits: 50-150 %		Dilution: 1x						
<b>LCS (7120982-BS1)</b>						Prepared: 12/21/17 13:41 Analyzed: 12/21/17 22:49						
<b>NWTPH-Dx</b>												
Diesel	118	10.0	25.0	mg/kg wet	1	125	---	94	76-115	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 92 %		Limits: 50-150 %		Dilution: 1x						
<b>Duplicate (7120982-DUP1)</b>						Prepared: 12/21/17 13:41 Analyzed: 12/21/17 23:31						
<b>QC Source Sample: GP03-S-2.5 (A7L0317-07)</b>												
<b>NWTPH-Dx</b>												
Diesel	ND	56.0	112	mg/kg dry	5	---	ND	---	---	---	30%	
Oil	539	112	224	"	"	---	867	---	---	47	30%	Q-04
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 89 %		Limits: 50-150 %		Dilution: 5x						S-05
<b>Duplicate (7120982-DUP2)</b>						Prepared: 12/21/17 13:41 Analyzed: 12/22/17 09:07						
<b>QC Source Sample: Other (A7L0639-03RE1)</b>												
<b>NWTPH-Dx</b>												
Diesel	2340	9.78	25.0	mg/kg wet	1	---	2620	---	---	11	30%	
Oil	ND	19.6	50.0	"	"	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 71 %		Limits: 50-150 %		Dilution: 1x						





Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Notes
<b>Batch 7120670 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120670-BLK1)</b>						Prepared: 12/13/17 09:26 Analyzed: 12/13/17 13:24						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	---	---	---	---	---	---	---
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 104 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 113 % 50-150 % "</i>												
<b>LCS (7120670-BS6)</b>						Prepared: 12/13/17 09:26 Analyzed: 12/13/17 12:57						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	0.495	0.0500	0.100	mg/L	1	0.500	---	99	80-120	---	---	---
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 106 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 109 % 50-150 % "</i>												
<b>Duplicate (7120670-DUP1)</b>						Prepared: 12/13/17 13:49 Analyzed: 12/13/17 15:41						
<b>QC Source Sample: GP16-W-9.0 (A7L0317-19)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	0.500	1.00	mg/L	10	---	ND	---	---	---	---	30%
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 104 % Limits: 50-150 % Dilution: 10x</i>												
<i>1,4-Difluorobenzene (Sur) 117 % 50-150 % "</i>												



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC %REC	Limit	RPD RPD	Limit	Notes
<b>Batch 7120671 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120671-BLK1)</b>						Prepared: 12/13/17 08:30 Analyzed: 12/13/17 12:12						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	1.67	3.33	mg/kg wet	50	---	---	---	---	---	---	---
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 116 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			96 %	50-150 %		"						
<b>LCS (7120671-BS3)</b>						Prepared: 12/13/17 08:30 Analyzed: 12/13/17 11:45						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	25.8	2.50	5.00	mg/kg wet	50	25.0	---	103	80-120	---	---	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 117 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			97 %	50-150 %		"						
<b>Duplicate (7120671-DUP1)</b>						Prepared: 12/11/17 09:55 Analyzed: 12/13/17 13:06						
<b>QC Source Sample: GP06-S-2.5 (A7L0317-01)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	3.00	6.00	mg/kg dry	50	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 119 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			97 %	50-150 %		"						
<b>Duplicate (7120671-DUP2)</b>						Prepared: 12/11/17 12:15 Analyzed: 12/13/17 18:04						
<b>QC Source Sample: GP03-S-32.0 (A7L0317-10)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	3.45	6.90	mg/kg dry	50	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 125 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			100 %	50-150 %		"						



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Notes	
<b>Batch 7120716 - EPA 5030B</b>						<b>Water</b>							
<b>Blank (7120716-BLK1)</b>						Prepared: 12/14/17 09:28 Analyzed: 12/14/17 10:50							
<b>NWTPH-Gx (MS)</b>													
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	---	---	---	---	---	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 105 %</i>									<i>Limits: 50-150 %</i>	<i>Dilution: 1x</i>
<i>1,4-Difluorobenzene (Sur)</i>			<i>113 %</i>									<i>50-150 %</i>	<i>"</i>
<b>LCS (7120716-BS2)</b>						Prepared: 12/14/17 09:28 Analyzed: 12/14/17 10:23							
<b>NWTPH-Gx (MS)</b>													
Gasoline Range Organics	0.493	0.0500	0.100	mg/L	1	0.500	---	99	80-120	---	---		
<i>Surr: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 105 %</i>									<i>Limits: 50-150 %</i>	<i>Dilution: 1x</i>
<i>1,4-Difluorobenzene (Sur)</i>			<i>107 %</i>									<i>50-150 %</i>	<i>"</i>
<b>Duplicate (7120716-DUP1)</b>						Prepared: 12/14/17 10:40 Analyzed: 12/14/17 15:54							
<b>QC Source Sample: Other (A7L0353-01)</b>													
<b>NWTPH-Gx (MS)</b>													
Gasoline Range Organics	7.13	0.500	1.00	mg/L	10	---	7.06	---	---	1	30%		
<i>Surr: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 102 %</i>									<i>Limits: 50-150 %</i>	<i>Dilution: 10x</i>
<i>1,4-Difluorobenzene (Sur)</i>			<i>110 %</i>									<i>50-150 %</i>	<i>"</i>



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209


Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Notes
<b>Batch 7120763 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120763-BLK1)</b>						Prepared: 12/15/17 09:00 Analyzed: 12/15/17 11:18						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	1.67	3.33	mg/kg wet	50	---	---	---	---	---	---	---
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 113 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 93 % 50-150 % "</i>												
<b>LCS (7120763-BS2)</b>						Prepared: 12/15/17 09:00 Analyzed: 12/15/17 10:51						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	24.4	2.50	5.00	mg/kg wet	50	25.0	---	98	80-120	---	---	---
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 114 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 93 % 50-150 % "</i>												
<b>Duplicate (7120763-DUP1)</b>						Prepared: 12/12/17 08:40 Analyzed: 12/15/17 14:34						
<b>QC Source Sample: Other (A7L0317-23)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	3.28	6.56	mg/kg dry	50	---	ND	---	---	---	---	30%
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 115 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 92 % 50-150 % "</i>												



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120671 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120671-BLK1)</b>						Prepared: 12/13/17 08:30 Analyzed: 12/13/17 12:12						
<b>5035A/8260C</b>												
Acetone	ND	333	667	ug/kg wet	50	---	---	---	---	---	---	---
Acrylonitrile	ND	33.3	66.7	"	"	---	---	---	---	---	---	---
Benzene	ND	3.33	6.67	"	"	---	---	---	---	---	---	---
Bromobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
Bromochloromethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Bromodichloromethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Bromoform	ND	33.3	66.7	"	"	---	---	---	---	---	---	---
Bromomethane	ND	333	333	"	"	---	---	---	---	---	---	---
2-Butanone (MEK)	ND	167	333	"	"	---	---	---	---	---	---	---
n-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
sec-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
tert-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Carbon disulfide	ND	167	333	"	"	---	---	---	---	---	---	---
Carbon tetrachloride	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Chlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
Chloroethane	ND	167	333	"	"	---	---	---	---	---	---	---
Chloroform	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Chloromethane	ND	83.3	167	"	"	---	---	---	---	---	---	---
2-Chlorotoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
4-Chlorotoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Dibromochloromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane	ND	83.3	167	"	"	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Dibromomethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
1,2-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,3-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,4-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
Dichlorodifluoromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	---
1,1-Dichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,2-Dichloroethane (EDC)	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,1-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
trans-1,2-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,2-Dichloropropane	ND	8.33	16.7	"	"	---	---	---	---	---	---	---

Apex Laboratories



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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120671 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120671-BLK1)</b>						Prepared: 12/13/17 08:30 Analyzed: 12/13/17 12:12						
<b>5035A/8260C</b>												
1,3-Dichloropropane	ND	16.7	33.3	ug/kg wet	"	---	---	---	---	---	---	
2,2-Dichloropropane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,1-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	33.3	66.7	"	"	---	---	---	---	---	---	
2-Hexanone	ND	333	333	"	"	---	---	---	---	---	---	
Isopropylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
4-Isopropyltoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Methylene chloride	ND	83.3	167	"	"	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	333	333	"	"	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Naphthalene	ND	33.3	66.7	"	"	---	---	---	---	---	---	
n-Propylbenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Styrene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Toluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	83.3	167	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	83.3	167	"	"	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Trichlorofluoromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	8.33	16.7	"	"	---	---	---	---	---	---	
m,p-Xylene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
o-Xylene	ND	8.33	16.7	"	"	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 109 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 93 % 80-120 % "

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120671 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120671-BLK1)</b>						Prepared: 12/13/17 08:30 Analyzed: 12/13/17 12:12						
<b>5035A/8260C</b>												
<i>Surr: 4-Bromofluorobenzene (Surr)</i>						<i>Recovery: 102 % Limits: 80-120 % Dilution: 1x</i>						
<b>LCS (7120671-BS2)</b>						Prepared: 12/13/17 08:30 Analyzed: 12/13/17 11:18						
<b>5035A/8260C</b>												
Acetone	1600	500	1000	ug/kg wet	50	2000	---	80	80-120	---	---	
Acrylonitrile	877	50.0	100	"	"	1000	---	88	"	---	---	
Benzene	1070	5.00	10.0	"	"	"	---	107	"	---	---	
Bromobenzene	896	12.5	25.0	"	"	"	---	90	"	---	---	
Bromochloromethane	878	25.0	50.0	"	"	"	---	88	"	---	---	
Bromodichloromethane	1040	25.0	50.0	"	"	"	---	104	"	---	---	
Bromoform	1080	50.0	100	"	"	"	---	108	"	---	---	
Bromomethane	2150	500	500	"	"	"	---	215	"	---	---	Q-56
2-Butanone (MEK)	1790	250	500	"	"	2000	---	90	"	---	---	
n-Butylbenzene	860	25.0	50.0	"	"	1000	---	86	"	---	---	
sec-Butylbenzene	902	25.0	50.0	"	"	"	---	90	"	---	---	
tert-Butylbenzene	820	25.0	50.0	"	"	"	---	82	"	---	---	
Carbon disulfide	1080	250	500	"	"	"	---	108	"	---	---	
Carbon tetrachloride	1110	25.0	50.0	"	"	"	---	111	"	---	---	
Chlorobenzene	936	12.5	25.0	"	"	"	---	94	"	---	---	
Chloroethane	1310	250	500	"	"	"	---	131	"	---	---	Q-56
Chloroform	1010	25.0	50.0	"	"	"	---	101	"	---	---	
Chloromethane	904	125	250	"	"	"	---	90	"	---	---	
2-Chlorotoluene	872	25.0	50.0	"	"	"	---	87	"	---	---	
4-Chlorotoluene	850	25.0	50.0	"	"	"	---	85	"	---	---	
Dibromochloromethane	971	50.0	100	"	"	"	---	97	"	---	---	
1,2-Dibromo-3-chloropropane	850	125	250	"	"	"	---	85	"	---	---	
1,2-Dibromoethane (EDB)	948	25.0	50.0	"	"	"	---	95	"	---	---	
Dibromomethane	1050	25.0	50.0	"	"	"	---	105	"	---	---	
1,2-Dichlorobenzene	924	12.5	25.0	"	"	"	---	92	"	---	---	
1,3-Dichlorobenzene	948	12.5	25.0	"	"	"	---	95	"	---	---	
1,4-Dichlorobenzene	910	12.5	25.0	"	"	"	---	91	"	---	---	
Dichlorodifluoromethane	984	50.0	100	"	"	"	---	98	"	---	---	
1,1-Dichloroethane	944	12.5	25.0	"	"	"	---	94	"	---	---	
1,2-Dichloroethane (EDC)	1010	12.5	25.0	"	"	"	---	101	"	---	---	
1,1-Dichloroethene	948	12.5	25.0	"	"	"	---	95	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120671 - EPA 5035A</b>												
						<b>Soil</b>						
<b>LCS (7120671-BS2)</b>				Prepared: 12/13/17 08:30 Analyzed: 12/13/17 11:18								
<b>5035A/8260C</b>												
cis-1,2-Dichloroethene	935	12.5	25.0	ug/kg wet	"	"	---	94	"	---	---	
trans-1,2-Dichloroethene	932	12.5	25.0	"	"	"	---	93	"	---	---	
1,2-Dichloropropane	1010	12.5	25.0	"	"	"	---	101	"	---	---	
1,3-Dichloropropane	898	25.0	50.0	"	"	"	---	90	"	---	---	
2,2-Dichloropropane	1190	25.0	50.0	"	"	"	---	119	"	---	---	
1,1-Dichloropropene	1060	25.0	50.0	"	"	"	---	106	"	---	---	
cis-1,3-Dichloropropene	846	25.0	50.0	"	"	"	---	85	"	---	---	
trans-1,3-Dichloropropene	898	25.0	50.0	"	"	"	---	90	"	---	---	
Ethylbenzene	938	12.5	25.0	"	"	"	---	94	"	---	---	
Hexachlorobutadiene	1070	50.0	100	"	"	"	---	107	"	---	---	
2-Hexanone	1470	500	500	"	"	2000	---	74	"	---	---	Q-55
Isopropylbenzene	1010	25.0	50.0	"	"	1000	---	101	"	---	---	
4-Isopropyltoluene	908	25.0	50.0	"	"	"	---	91	"	---	---	
Methylene chloride	994	125	250	"	"	"	---	99	"	---	---	
4-Methyl-2-pentanone (MiBK)	1590	500	500	"	"	2000	---	79	"	---	---	Q-55
Methyl tert-butyl ether (MTBE)	1090	25.0	50.0	"	"	1000	---	109	"	---	---	
Naphthalene	894	50.0	100	"	"	"	---	89	"	---	---	
n-Propylbenzene	830	12.5	25.0	"	"	"	---	83	"	---	---	
Styrene	944	25.0	50.0	"	"	"	---	94	"	---	---	
1,1,1,2-Tetrachloroethane	1050	12.5	25.0	"	"	"	---	105	"	---	---	
1,1,2,2-Tetrachloroethane	846	25.0	50.0	"	"	"	---	85	"	---	---	
Tetrachloroethene (PCE)	1070	12.5	25.0	"	"	"	---	107	"	---	---	
Toluene	916	25.0	50.0	"	"	"	---	92	"	---	---	
1,2,3-Trichlorobenzene	1030	125	250	"	"	"	---	103	"	---	---	
1,2,4-Trichlorobenzene	1010	125	250	"	"	"	---	101	"	---	---	
1,1,1-Trichloroethane	1160	12.5	25.0	"	"	"	---	116	"	---	---	
1,1,2-Trichloroethane	919	12.5	25.0	"	"	"	---	92	"	---	---	
Trichloroethene (TCE)	1160	12.5	25.0	"	"	"	---	116	"	---	---	
Trichlorofluoromethane	1130	50.0	100	"	"	"	---	113	"	---	---	
1,2,3-Trichloropropane	802	25.0	50.0	"	"	"	---	80	"	---	---	
1,2,4-Trimethylbenzene	902	25.0	50.0	"	"	"	---	90	"	---	---	
1,3,5-Trimethylbenzene	884	25.0	50.0	"	"	"	---	88	"	---	---	
Vinyl chloride	1430	12.5	25.0	"	"	"	---	143	"	---	---	Q-56
m,p-Xylene	1950	25.0	50.0	"	"	2000	---	98	"	---	---	

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120671 - EPA 5035A</b>						<b>Soil</b>						
<b>LCS (7120671-BS2)</b>						Prepared: 12/13/17 08:30 Analyzed: 12/13/17 11:18						
<b>5035A/8260C</b>												
o-Xylene	964	12.5	25.0	ug/kg wet	"	1000	---	96	"	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 108 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>					
<i>Toluene-d8 (Surr)</i>			<i>91 %</i>		<i>80-120 %</i>		<i>"</i>					
<i>4-Bromofluorobenzene (Surr)</i>			<i>99 %</i>		<i>80-120 %</i>		<i>"</i>					
<b>Duplicate (7120671-DUP1)</b>						Prepared: 12/11/17 09:55 Analyzed: 12/13/17 13:06						
<b>QC Source Sample: GP06-S-2.5 (A7L0317-01)</b>												
<b>5035A/8260C</b>												
Acetone	ND	600	1200	ug/kg dry	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	60.0	120	"	"	---	ND	---	---	---	30%	
Benzene	ND	6.00	12.0	"	"	---	ND	---	---	---	30%	
Bromobenzene	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
Bromoform	ND	60.0	120	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	600	600	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	300	600	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	300	600	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	300	600	"	"	---	ND	---	---	---	30%	
Chloroform	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	150	300	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	60.0	120	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	150	300	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120671 - EPA 5035A</b>												
<b>Soil</b>												
<b>Duplicate (7120671-DUP1)</b>						Prepared: 12/11/17 09:55 Analyzed: 12/13/17 13:06						
<b>QC Source Sample: GP06-S-2.5 (A7L0317-01)</b>												
<b>5035A/8260C</b>												
1,4-Dichlorobenzene	ND	15.0	30.0	ug/kg dry	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	60.0	120	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	60.0	120	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	600	600	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	150	300	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	600	600	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	60.0	120	"	"	---	ND	---	---	---	30%	
n-Propylbenzene	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
Styrene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
Toluene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	150	300	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	150	300	"	"	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120671 - EPA 5035A</b>												
<b>Soil</b>												
<b>Duplicate (7120671-DUP1)</b>						Prepared: 12/11/17 09:55 Analyzed: 12/13/17 13:06						
QC Source Sample: GP06-S-2.5 (A7L0317-01)												
5035A/8260C												
Trichlorofluoromethane	ND	60.0	120	ug/kg dry	"	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
Vinyl chloride	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
m,p-Xylene	ND	30.0	60.0	"	"	---	ND	---	---	---	30%	
o-Xylene	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 110 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 93 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 101 % 80-120 % "

**Duplicate (7120671-DUP2)** Prepared: 12/11/17 12:15 Analyzed: 12/13/17 18:04


QC Source Sample: GP03-S-32.0 (A7L0317-10)

5035A/8260C

Acetone	ND	690	1380	ug/kg dry	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	69.0	138	"	"	---	ND	---	---	---	30%	
Benzene	ND	6.90	13.8	"	"	---	ND	---	---	---	30%	
Bromobenzene	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
Bromoform	ND	69.0	138	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	690	690	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	345	690	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	345	690	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	345	690	"	"	---	ND	---	---	---	30%	
Chloroform	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	173	345	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120671 - EPA 5035A</b>												
<b>Soil</b>												
<b>Duplicate (7120671-DUP2)</b>						Prepared: 12/11/17 12:15 Analyzed: 12/13/17 18:04						
<b>QC Source Sample: GP03-S-32.0 (A7L0317-10)</b>												
<b>5035A/8260C</b>												
4-Chlorotoluene	ND	34.5	69.0	ug/kg dry	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	69.0	138	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	173	345	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	69.0	138	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	69.0	138	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	69.0	69.0	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	173	345	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	69.0	69.0	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	69.0	138	"	"	---	ND	---	---	---	30%	
n-Propylbenzene	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
Styrene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
1,1,1,2,2-Tetrachloroethane	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120671 - EPA 5035A</b>												
<b>Soil</b>												
<b>Duplicate (7120671-DUP2)</b>						Prepared: 12/11/17 12:15 Analyzed: 12/13/17 18:04						
QC Source Sample: GP03-S-32.0 (A7L0317-10)												
5035A/8260C												
Tetrachloroethene (PCE)	ND	17.3	34.5	ug/kg dry	"	---	ND	---	---	---	30%	
Toluene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	173	345	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	173	345	"	"	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	69.0	138	"	"	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
Vinyl chloride	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	
m,p-Xylene	ND	34.5	69.0	"	"	---	ND	---	---	---	30%	
o-Xylene	ND	17.3	34.5	"	"	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 112 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 92 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 101 % 80-120 % "

### Matrix Spike (7120671-MS1)

Prepared: 12/12/17 08:40 Analyzed: 12/13/17 22:30

QC Source Sample: GP07-S-7.5 (A7L0317-22)

5035A/8260C

Acetone	2910	658	1320	ug/kg dry	50	2630	ND	111	36-164	---	---	
Acrylonitrile	1340	65.8	132	"	"	1320	ND	102	65-134	---	---	
Benzene	1430	6.58	13.2	"	"	"	ND	109	77-121	---	---	
Bromobenzene	1140	16.4	32.9	"	"	"	ND	86	78-121	---	---	
Bromochloromethane	1280	32.9	65.8	"	"	"	ND	97	78-125	---	---	
Bromodichloromethane	1400	32.9	65.8	"	"	"	ND	107	75-127	---	---	
Bromoform	1340	65.8	132	"	"	"	ND	102	67-132	---	---	
Bromomethane	3130	658	658	"	"	"	ND	238	53-143	---	---	Q-541
2-Butanone (MEK)	2710	329	658	"	"	2630	ND	103	51-148	---	---	
n-Butylbenzene	1220	32.9	65.8	"	"	1320	ND	93	70-128	---	---	
sec-Butylbenzene	1220	32.9	65.8	"	"	"	ND	93	73-126	---	---	
tert-Butylbenzene	1070	32.9	65.8	"	"	"	ND	81	73-125	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120671 - EPA 5035A</b>						<b>Soil</b>						
<b>Matrix Spike (7120671-MS1)</b>						Prepared: 12/12/17 08:40 Analyzed: 12/13/17 22:30						
<b>QC Source Sample: GP07-S-7.5 (A7L0317-22)</b>												
<b>5035A/8260C</b>												
Carbon disulfide	1470	329	658	ug/kg dry	"	"	ND	112	63-132	---	---	
Carbon tetrachloride	1420	32.9	65.8	"	"	"	ND	108	70-135	---	---	
Chlorobenzene	1240	16.4	32.9	"	"	"	ND	94	79-120	---	---	
Chloroethane	1560	329	658	"	"	"	ND	119	59-139	---	---	Q-54a
Chloroform	1390	32.9	65.8	"	"	"	ND	106	78-123	---	---	
Chloromethane	1250	164	329	"	"	"	ND	95	50-136	---	---	
2-Chlorotoluene	1080	32.9	65.8	"	"	"	ND	82	75-122	---	---	
4-Chlorotoluene	1090	32.9	65.8	"	"	"	ND	83	72-124	---	---	
Dibromochloromethane	1220	65.8	132	"	"	"	ND	93	74-126	---	---	
1,2-Dibromo-3-chloropropane	1060	164	329	"	"	"	ND	81	61-132	---	---	
1,2-Dibromoethane (EDB)	1240	32.9	65.8	"	"	"	ND	94	78-122	---	---	
Dibromomethane	1440	32.9	65.8	"	"	"	ND	109	78-125	---	---	
1,2-Dichlorobenzene	1150	16.4	32.9	"	"	"	ND	87	78-121	---	---	
1,3-Dichlorobenzene	1220	16.4	32.9	"	"	"	ND	93	77-121	---	---	
1,4-Dichlorobenzene	1170	16.4	32.9	"	"	"	ND	89	75-120	---	---	
Dichlorodifluoromethane	1300	65.8	132	"	"	"	ND	99	29-149	---	---	
1,1-Dichloroethane	1290	16.4	32.9	"	"	"	ND	98	76-125	---	---	
1,2-Dichloroethane (EDC)	1410	16.4	32.9	"	"	"	ND	107	73-128	---	---	
1,1-Dichloroethene	1270	16.4	32.9	"	"	"	ND	96	70-131	---	---	
cis-1,2-Dichloroethene	1260	16.4	32.9	"	"	"	ND	95	77-123	---	---	
trans-1,2-Dichloroethene	1260	16.4	32.9	"	"	"	ND	96	74-125	---	---	
1,2-Dichloropropane	1360	16.4	32.9	"	"	"	ND	103	76-123	---	---	
1,3-Dichloropropane	1170	32.9	65.8	"	"	"	ND	89	77-121	---	---	
2,2-Dichloropropane	1300	32.9	65.8	"	"	"	ND	99	67-133	---	---	
1,1-Dichloropropene	1380	32.9	65.8	"	"	"	ND	105	76-125	---	---	
cis-1,3-Dichloropropene	1010	32.9	65.8	"	"	"	ND	77	74-126	---	---	
trans-1,3-Dichloropropene	1120	32.9	65.8	"	"	"	ND	85	71-130	---	---	
Ethylbenzene	1220	16.4	32.9	"	"	"	ND	93	76-122	---	---	
Hexachlorobutadiene	2140	65.8	132	"	"	"	ND	163	61-135	---	---	Q-01
2-Hexanone	2020	658	658	"	"	2630	ND	77	53-145	---	---	Q-54n
Isopropylbenzene	1270	32.9	65.8	"	"	1320	ND	97	68-134	---	---	
4-Isopropyltoluene	1200	32.9	65.8	"	"	"	ND	91	73-127	---	---	
Methylene chloride	1370	164	329	"	"	"	ND	104	70-128	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120671 - EPA 5035A</b>												
<b>Soil</b>												
<b>Matrix Spike (7120671-MS1)</b>						Prepared: 12/12/17 08:40 Analyzed: 12/13/17 22:30						
<b>QC Source Sample: GP07-S-7.5 (A7L0317-22)</b>												
<b>5035A/8260C</b>												
4-Methyl-2-pentanone (MiBK)	2240	658	658	ug/kg dry	"	2630	ND	85	65-135	---	---	Q-54m
Methyl tert-butyl ether (MTBE)	1460	32.9	65.8	"	"	1320	ND	111	73-125	---	---	
Naphthalene	1110	65.8	132	"	"	"	ND	84	62-129	---	---	
n-Propylbenzene	1080	16.4	32.9	"	"	"	ND	82	73-125	---	---	
Styrene	1220	32.9	65.8	"	"	"	ND	93	76-124	---	---	
1,1,1,2-Tetrachloroethane	1350	16.4	32.9	"	"	"	ND	103	78-125	---	---	
1,1,2,2-Tetrachloroethane	1110	32.9	65.8	"	"	"	ND	84	70-124	---	---	
Tetrachloroethene (PCE)	1340	16.4	32.9	"	"	"	ND	102	73-128	---	---	
Toluene	1180	32.9	65.8	"	"	"	ND	90	77-121	---	---	
1,2,3-Trichlorobenzene	1380	164	329	"	"	"	ND	105	66-130	---	---	
1,2,4-Trichlorobenzene	1340	164	329	"	"	"	ND	102	67-129	---	---	
1,1,1-Trichloroethane	1550	16.4	32.9	"	"	"	ND	118	73-130	---	---	
1,1,2-Trichloroethane	1220	16.4	32.9	"	"	"	ND	93	78-121	---	---	
Trichloroethene (TCE)	1500	16.4	32.9	"	"	"	ND	114	77-123	---	---	
Trichlorofluoromethane	1420	65.8	132	"	"	"	ND	108	62-140	---	---	
1,2,3-Trichloropropane	1040	32.9	65.8	"	"	"	ND	79	73-125	---	---	
1,2,4-Trimethylbenzene	1140	32.9	65.8	"	"	"	ND	87	75-123	---	---	
1,3,5-Trimethylbenzene	1120	32.9	65.8	"	"	"	ND	85	73-124	---	---	
Vinyl chloride	2120	16.4	32.9	"	"	"	ND	161	56-135	---	---	Q-54c
m,p-Xylene	2540	32.9	65.8	"	"	2630	ND	97	77-124	---	---	
o-Xylene	1210	16.4	32.9	"	"	1320	ND	92	77-123	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 110 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 91 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 97 % 80-120 % "



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120763 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120763-BLK1)</b>						Prepared: 12/15/17 09:00 Analyzed: 12/15/17 11:18						
<b>5035A/8260C</b>												
Acetone	ND	333	667	ug/kg wet	50	---	---	---	---	---	---	---
Acrylonitrile	ND	33.3	66.7	"	"	---	---	---	---	---	---	---
Benzene	ND	3.33	6.67	"	"	---	---	---	---	---	---	---
Bromobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
Bromochloromethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Bromodichloromethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Bromoform	ND	33.3	66.7	"	"	---	---	---	---	---	---	---
Bromomethane	ND	333	333	"	"	---	---	---	---	---	---	---
2-Butanone (MEK)	ND	167	333	"	"	---	---	---	---	---	---	---
n-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
sec-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
tert-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Carbon disulfide	ND	167	333	"	"	---	---	---	---	---	---	---
Carbon tetrachloride	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Chlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
Chloroethane	ND	167	333	"	"	---	---	---	---	---	---	---
Chloroform	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Chloromethane	ND	83.3	167	"	"	---	---	---	---	---	---	---
2-Chlorotoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
4-Chlorotoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Dibromochloromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane	ND	83.3	167	"	"	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Dibromomethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
1,2-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,3-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,4-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
Dichlorodifluoromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	---
1,1-Dichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,2-Dichloroethane (EDC)	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,1-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
trans-1,2-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,2-Dichloropropane	ND	8.33	16.7	"	"	---	---	---	---	---	---	---

Apex Laboratories

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



Philip Nerenberg, Lab Director



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120763 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120763-BLK1)</b>						Prepared: 12/15/17 09:00 Analyzed: 12/15/17 11:18						
<b>5035A/8260C</b>												
1,3-Dichloropropane	ND	16.7	33.3	ug/kg wet	"	---	---	---	---	---	---	
2,2-Dichloropropane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,1-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	33.3	66.7	"	"	---	---	---	---	---	---	
2-Hexanone	ND	167	333	"	"	---	---	---	---	---	---	
Isopropylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
4-Isopropyltoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Methylene chloride	ND	83.3	167	"	"	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	167	333	"	"	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Naphthalene	ND	33.3	66.7	"	"	---	---	---	---	---	---	
n-Propylbenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Styrene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Toluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	83.3	167	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	83.3	167	"	"	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Trichlorofluoromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	8.33	16.7	"	"	---	---	---	---	---	---	
m,p-Xylene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
o-Xylene	ND	8.33	16.7	"	"	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 103 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 94 % 80-120 % "

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120763 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120763-BLK1)</b>						Prepared: 12/15/17 09:00 Analyzed: 12/15/17 11:18						
<b>5035A/8260C</b>												
<i>Surr: 4-Bromofluorobenzene (Surr)</i>						<i>Recovery: 101 % Limits: 80-120 % Dilution: 1x</i>						
<b>LCS (7120763-BS1)</b>						Prepared: 12/15/17 09:00 Analyzed: 12/15/17 10:05						
<b>5035A/8260C</b>												
Acetone	2020	500	1000	ug/kg wet	50	2000	---	101	80-120	---	---	
Acrylonitrile	972	50.0	100	"	"	1000	---	97	"	---	---	
Benzene	1060	5.00	10.0	"	"	"	---	106	"	---	---	
Bromobenzene	930	12.5	25.0	"	"	"	---	93	"	---	---	
Bromochloromethane	976	25.0	50.0	"	"	"	---	98	"	---	---	
Bromodichloromethane	1080	25.0	50.0	"	"	"	---	108	"	---	---	
Bromoform	1130	50.0	100	"	"	"	---	113	"	---	---	
Bromomethane	1830	500	500	"	"	"	---	183	"	---	---	Q-56
2-Butanone (MEK)	2180	250	500	"	"	2000	---	109	"	---	---	
n-Butylbenzene	872	25.0	50.0	"	"	1000	---	87	"	---	---	
sec-Butylbenzene	911	25.0	50.0	"	"	"	---	91	"	---	---	
tert-Butylbenzene	835	25.0	50.0	"	"	"	---	84	"	---	---	
Carbon disulfide	1160	250	500	"	"	"	---	116	"	---	---	
Carbon tetrachloride	1160	25.0	50.0	"	"	"	---	116	"	---	---	
Chlorobenzene	994	12.5	25.0	"	"	"	---	99	"	---	---	
Chloroethane	1260	250	500	"	"	"	---	126	"	---	---	Q-56
Chloroform	1000	25.0	50.0	"	"	"	---	100	"	---	---	
Chloromethane	972	125	250	"	"	"	---	97	"	---	---	
2-Chlorotoluene	880	25.0	50.0	"	"	"	---	88	"	---	---	
4-Chlorotoluene	864	25.0	50.0	"	"	"	---	86	"	---	---	
Dibromochloromethane	1030	50.0	100	"	"	"	---	103	"	---	---	
1,2-Dibromo-3-chloropropane	862	125	250	"	"	"	---	86	"	---	---	
1,2-Dibromoethane (EDB)	998	25.0	50.0	"	"	"	---	100	"	---	---	
Dibromomethane	988	25.0	50.0	"	"	"	---	99	"	---	---	
1,2-Dichlorobenzene	939	12.5	25.0	"	"	"	---	94	"	---	---	
1,3-Dichlorobenzene	973	12.5	25.0	"	"	"	---	97	"	---	---	
1,4-Dichlorobenzene	929	12.5	25.0	"	"	"	---	93	"	---	---	
Dichlorodifluoromethane	893	50.0	100	"	"	"	---	89	"	---	---	
1,1-Dichloroethane	976	12.5	25.0	"	"	"	---	98	"	---	---	
1,2-Dichloroethane (EDC)	1080	12.5	25.0	"	"	"	---	108	"	---	---	
1,1-Dichloroethene	997	12.5	25.0	"	"	"	---	100	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120763 - EPA 5035A</b>												
						<b>Soil</b>						
<b>LCS (7120763-BS1)</b>			Prepared: 12/15/17 09:00 Analyzed: 12/15/17 10:05									
<b>5035A/8260C</b>												
cis-1,2-Dichloroethene	999	12.5	25.0	ug/kg wet	"	"	---	100	"	---	---	
trans-1,2-Dichloroethene	1010	12.5	25.0	"	"	"	---	101	"	---	---	
1,2-Dichloropropane	1040	12.5	25.0	"	"	"	---	104	"	---	---	
1,3-Dichloropropane	974	25.0	50.0	"	"	"	---	97	"	---	---	
2,2-Dichloropropane	1330	25.0	50.0	"	"	"	---	133	"	---	---	Q-56
1,1-Dichloropropene	1100	25.0	50.0	"	"	"	---	110	"	---	---	
cis-1,3-Dichloropropene	1030	25.0	50.0	"	"	"	---	103	"	---	---	
trans-1,3-Dichloropropene	1050	25.0	50.0	"	"	"	---	105	"	---	---	
Ethylbenzene	989	12.5	25.0	"	"	"	---	99	"	---	---	
Hexachlorobutadiene	1030	50.0	100	"	"	"	---	103	"	---	---	
2-Hexanone	1900	250	500	"	"	2000	---	95	"	---	---	
Isopropylbenzene	1050	25.0	50.0	"	"	1000	---	105	"	---	---	
4-Isopropyltoluene	934	25.0	50.0	"	"	"	---	93	"	---	---	
Methylene chloride	964	125	250	"	"	"	---	96	"	---	---	
4-Methyl-2-pentanone (MiBK)	2090	250	500	"	"	2000	---	104	"	---	---	
Methyl tert-butyl ether (MTBE)	1140	25.0	50.0	"	"	1000	---	114	"	---	---	
Naphthalene	924	50.0	100	"	"	"	---	92	"	---	---	
n-Propylbenzene	847	12.5	25.0	"	"	"	---	85	"	---	---	
Styrene	988	25.0	50.0	"	"	"	---	99	"	---	---	
1,1,1,2-Tetrachloroethane	1130	12.5	25.0	"	"	"	---	113	"	---	---	
1,1,2,2-Tetrachloroethane	845	25.0	50.0	"	"	"	---	84	"	---	---	
Tetrachloroethene (PCE)	1150	12.5	25.0	"	"	"	---	115	"	---	---	
Toluene	970	25.0	50.0	"	"	"	---	97	"	---	---	
1,2,3-Trichlorobenzene	1040	125	250	"	"	"	---	104	"	---	---	
1,2,4-Trichlorobenzene	1040	125	250	"	"	"	---	104	"	---	---	
1,1,1-Trichloroethane	1200	12.5	25.0	"	"	"	---	120	"	---	---	
1,1,2-Trichloroethane	984	12.5	25.0	"	"	"	---	98	"	---	---	
Trichloroethene (TCE)	1180	12.5	25.0	"	"	"	---	118	"	---	---	
Trichlorofluoromethane	1290	50.0	100	"	"	"	---	129	"	---	---	Q-56
1,2,3-Trichloropropane	856	25.0	50.0	"	"	"	---	86	"	---	---	
1,2,4-Trimethylbenzene	904	25.0	50.0	"	"	"	---	90	"	---	---	
1,3,5-Trimethylbenzene	900	25.0	50.0	"	"	"	---	90	"	---	---	
Vinyl chloride	1180	12.5	25.0	"	"	"	---	118	"	---	---	
m,p-Xylene	2040	25.0	50.0	"	"	2000	---	102	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120763 - EPA 5035A</b>						<b>Soil</b>						
<b>LCS (7120763-BS1)</b>						Prepared: 12/15/17 09:00 Analyzed: 12/15/17 10:05						
<b>5035A/8260C</b>												
o-Xylene	1010	12.5	25.0	ug/kg wet	"	1000	---	101	"	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 103 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>					
<i>Toluene-d8 (Surr)</i>			<i>94 %</i>		<i>80-120 %</i>		<i>"</i>					
<i>4-Bromofluorobenzene (Surr)</i>			<i>99 %</i>		<i>80-120 %</i>		<i>"</i>					
<b>Duplicate (7120763-DUP1)</b>						Prepared: 12/12/17 08:40 Analyzed: 12/15/17 14:34						
<b>QC Source Sample: Other (A7L0317-23)</b>												
<b>5035A/8260C</b>												
Acetone	ND	656	1310	ug/kg dry	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	65.6	131	"	"	---	ND	---	---	---	30%	
Benzene	ND	6.56	13.1	"	"	---	ND	---	---	---	30%	
Bromobenzene	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
Bromoform	ND	65.6	131	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	656	656	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	328	656	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	328	656	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	328	656	"	"	---	ND	---	---	---	30%	
Chloroform	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	164	328	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	65.6	131	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	164	328	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120763 - EPA 5035A</b>						<b>Soil</b>						
<b>Duplicate (7120763-DUP1)</b>						Prepared: 12/12/17 08:40 Analyzed: 12/15/17 14:34						
<b>QC Source Sample: Other (A7L0317-23)</b>												
<b>5035A/8260C</b>												
1,4-Dichlorobenzene	ND	16.4	32.8	ug/kg dry	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	65.6	131	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	65.6	131	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	328	656	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	164	328	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	328	656	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	65.6	131	"	"	---	ND	---	---	---	30%	
n-Propylbenzene	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
Styrene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
Toluene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	164	328	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	164	328	"	"	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120763 - EPA 5035A</b>												
<b>Soil</b>												
<b>Duplicate (7120763-DUP1)</b>						Prepared: 12/12/17 08:40 Analyzed: 12/15/17 14:34						
<b>QC Source Sample: Other (A7L0317-23)</b>												
<b>5035A/8260C</b>												
Trichlorofluoromethane	ND	65.6	131	ug/kg dry	"	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
Vinyl chloride	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	
m,p-Xylene	ND	32.8	65.6	"	"	---	ND	---	---	---	30%	
o-Xylene	ND	16.4	32.8	"	"	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 102 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 92 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 101 % 80-120 % "

### Matrix Spike (7120763-MS1)

Prepared: 12/14/17 18:45 Analyzed: 12/15/17 15:28

TEMP, V-16, V-21

QC Source Sample: Other (A7L0370-03)

<b>5035A/8260C</b>												
Acetone	2210	512	1020	ug/kg dry	50	2040	ND	108	36-164	---	---	
Acrylonitrile	1040	51.2	102	"	"	1020	ND	102	65-134	---	---	
Benzene	1120	5.12	10.2	"	"	"	ND	109	77-121	---	---	
Bromobenzene	987	12.8	25.6	"	"	"	ND	97	78-121	---	---	
Bromochloromethane	1020	25.6	51.2	"	"	"	ND	100	78-125	---	---	
Bromodichloromethane	1110	25.6	51.2	"	"	"	ND	108	75-127	---	---	
Bromoform	1180	51.2	102	"	"	"	ND	115	67-132	---	---	
Bromomethane	1890	512	512	"	"	"	ND	185	53-143	---	---	Q-54i
2-Butanone (MEK)	2190	256	512	"	"	2040	ND	107	51-148	---	---	
n-Butylbenzene	931	25.6	51.2	"	"	1020	ND	91	70-128	---	---	
sec-Butylbenzene	987	25.6	51.2	"	"	"	ND	97	73-126	---	---	
tert-Butylbenzene	911	25.6	51.2	"	"	"	ND	89	73-125	---	---	
Carbon disulfide	1270	256	512	"	"	"	ND	124	63-132	---	---	
Carbon tetrachloride	1210	25.6	51.2	"	"	"	ND	119	70-135	---	---	
Chlorobenzene	1060	12.8	25.6	"	"	"	ND	104	79-120	---	---	
Chloroethane	1210	256	512	"	"	"	ND	119	59-139	---	---	Q-54g
Chloroform	1070	25.6	51.2	"	"	"	ND	105	78-123	---	---	
Chloromethane	1050	128	256	"	"	"	ND	103	50-136	---	---	
2-Chlorotoluene	978	25.6	51.2	"	"	"	ND	96	75-122	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120763 - EPA 5035A</b>						<b>Soil</b>						
<b>Matrix Spike (7120763-MS1)</b>						Prepared: 12/14/17 18:45 Analyzed: 12/15/17 15:28				TEMP, V-16, V-21		
<b>QC Source Sample: Other (A7L0370-03)</b>												
<b>5035A/8260C</b>												
4-Chlorotoluene	938	25.6	51.2	ug/kg dry	"	"	ND	92	72-124	---	---	
Dibromochloromethane	1080	51.2	102	"	"	"	ND	106	74-126	---	---	
1,2-Dibromo-3-chloropropane	866	128	256	"	"	"	ND	85	61-132	---	---	
1,2-Dibromoethane (EDB)	1050	25.6	51.2	"	"	"	ND	103	78-122	---	---	
Dibromomethane	1060	25.6	51.2	"	"	"	ND	104	78-125	---	---	
1,2-Dichlorobenzene	1010	12.8	25.6	"	"	"	ND	99	78-121	---	---	
1,3-Dichlorobenzene	1050	12.8	25.6	"	"	"	ND	103	77-121	---	---	
1,4-Dichlorobenzene	976	12.8	25.6	"	"	"	ND	95	75-120	---	---	
Dichlorodifluoromethane	976	51.2	102	"	"	"	ND	96	29-149	---	---	
1,1-Dichloroethane	1050	12.8	25.6	"	"	"	ND	103	76-125	---	---	
1,2-Dichloroethane (EDC)	1140	12.8	25.6	"	"	"	ND	111	73-128	---	---	
1,1-Dichloroethene	1080	12.8	25.6	"	"	"	ND	105	70-131	---	---	
cis-1,2-Dichloroethene	1040	12.8	25.6	"	"	"	ND	102	77-123	---	---	
trans-1,2-Dichloroethene	1070	12.8	25.6	"	"	"	ND	104	74-125	---	---	
1,2-Dichloropropane	1080	12.8	25.6	"	"	"	ND	106	76-123	---	---	
1,3-Dichloropropane	1040	25.6	51.2	"	"	"	ND	101	77-121	---	---	
2,2-Dichloropropane	1400	25.6	51.2	"	"	"	ND	137	67-133	---	---	Q-54b
1,1-Dichloropropene	1180	25.6	51.2	"	"	"	ND	115	76-125	---	---	
cis-1,3-Dichloropropene	1090	25.6	51.2	"	"	"	ND	107	74-126	---	---	
trans-1,3-Dichloropropene	1090	25.6	51.2	"	"	"	ND	106	71-130	---	---	
Ethylbenzene	1050	12.8	25.6	"	"	"	ND	103	76-122	---	---	
Hexachlorobutadiene	1130	51.2	102	"	"	"	ND	111	61-135	---	---	
2-Hexanone	1970	256	512	"	"	2040	ND	96	53-145	---	---	
Isopropylbenzene	1130	25.6	51.2	"	"	1020	ND	111	68-134	---	---	
4-Isopropyltoluene	996	25.6	51.2	"	"	"	ND	98	73-127	---	---	
Methylene chloride	1080	128	256	"	"	"	ND	105	70-128	---	---	
4-Methyl-2-pentanone (MiBK)	2180	256	512	"	"	2040	ND	107	65-135	---	---	
Methyl tert-butyl ether (MTBE)	1210	25.6	51.2	"	"	1020	ND	118	73-125	---	---	
Naphthalene	1040	51.2	102	"	"	"	ND	102	62-129	---	---	
n-Propylbenzene	918	12.8	25.6	"	"	"	ND	90	73-125	---	---	
Styrene	1060	25.6	51.2	"	"	"	ND	104	76-124	---	---	
1,1,1,2-Tetrachloroethane	1180	12.8	25.6	"	"	"	ND	115	78-125	---	---	
1,1,2,2-Tetrachloroethane	891	25.6	51.2	"	"	"	ND	87	70-124	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120763 - EPA 5035A</b>												
<b>Soil</b>												
<b>Matrix Spike (7120763-MS1)</b>						Prepared: 12/14/17 18:45			Analyzed: 12/15/17 15:28		TEMP, V-16, V-21	
<b>QC Source Sample: Other (A7L0370-03)</b>												
<b>5035A/8260C</b>												
Tetrachloroethene (PCE)	1260	12.8	25.6	ug/kg dry	"	"	ND	123	73-128	---	---	
Toluene	1020	25.6	51.2	"	"	"	ND	100	77-121	---	---	
1,2,3-Trichlorobenzene	1120	128	256	"	"	"	ND	110	66-130	---	---	
1,2,4-Trichlorobenzene	1130	128	256	"	"	"	ND	111	67-129	---	---	
1,1,1-Trichloroethane	1270	12.8	25.6	"	"	"	ND	125	73-130	---	---	
1,1,2-Trichloroethane	1040	12.8	25.6	"	"	"	ND	102	78-121	---	---	
Trichloroethene (TCE)	1240	12.8	25.6	"	"	"	ND	121	77-123	---	---	
Trichlorofluoromethane	1210	51.2	102	"	"	"	ND	119	62-140	---	---	Q-54k
1,2,3-Trichloropropane	915	25.6	51.2	"	"	"	ND	90	73-125	---	---	
1,2,4-Trimethylbenzene	970	25.6	51.2	"	"	"	ND	95	75-123	---	---	
1,3,5-Trimethylbenzene	976	25.6	51.2	"	"	"	ND	95	73-124	---	---	
Vinyl chloride	1320	12.8	25.6	"	"	"	ND	130	56-135	---	---	
m,p-Xylene	2160	25.6	51.2	"	"	2040	ND	106	77-124	---	---	
o-Xylene	1080	12.8	25.6	"	"	1020	ND	106	77-123	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 101 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 93 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 101 % 80-120 % "





**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120670 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120670-BLK1)</b>						Prepared: 12/13/17 09:26 Analyzed: 12/13/17 13:24						
<b>EPA 8260C</b>												
Acetone	ND	10.0	20.0	ug/L	1	---	---	---	---	---	---	---
Benzene	ND	0.100	0.200	"	"	---	---	---	---	---	---	---
Bromobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Bromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromodichloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromoform	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromomethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	---
2-Butanone (MEK)	ND	5.00	10.0	"	"	---	---	---	---	---	---	---
n-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
sec-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
tert-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Carbon disulfide	ND	5.00	10.0	"	"	---	---	---	---	---	---	---
Carbon tetrachloride	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Chlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Chloroethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	---
Chloroform	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Chloromethane	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
2-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
4-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Dibromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Dibromomethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Dichlorodifluoromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,1-Dichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,1-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,2-Dichloropropane	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
1,3-Dichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---

Apex Laboratories



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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120670 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120670-BLK1)</b>						Prepared: 12/13/17 09:26 Analyzed: 12/13/17 13:24						
<b>EPA 8260C</b>												
2,2-Dichloropropane	ND	0.500	1.00	ug/L	"	---	---	---	---	---	---	
1,1-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
2-Hexanone	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Isopropylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
4-Isopropyltoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Methylene chloride	ND	1.50	3.00	"	"	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Naphthalene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
n-Propylbenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Styrene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Toluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Trichlorofluoromethane	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	0.200	0.400	"	"	---	---	---	---	---	---	
m,p-Xylene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
o-Xylene	ND	0.250	0.500	"	"	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 112 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 99 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 95 % 80-120 % "

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120670 - EPA 5030B</b>												
<b>Water</b>												
LCS (7120670-BS5) Prepared: 12/13/17 09:26 Analyzed: 12/13/17 12:30												
<b>EPA 8260C</b>												
Acetone	42.4	10.0	20.0	ug/L	1	40.0	---	106	80-120	---	---	
Benzene	21.9	0.100	0.200	"	"	20.0	---	110	"	---	---	
Bromobenzene	20.0	0.250	0.500	"	"	"	---	100	"	---	---	
Bromochloromethane	21.5	0.500	1.00	"	"	"	---	108	"	---	---	
Bromodichloromethane	23.9	0.500	1.00	"	"	"	---	119	"	---	---	
Bromoform	20.4	0.500	1.00	"	"	"	---	102	"	---	---	
Bromomethane	16.1	5.00	5.00	"	"	"	---	80	"	---	---	
2-Butanone (MEK)	48.4	5.00	10.0	"	"	40.0	---	121	"	---	---	Q-56
n-Butylbenzene	18.2	0.500	1.00	"	"	20.0	---	91	"	---	---	
sec-Butylbenzene	18.1	0.500	1.00	"	"	"	---	90	"	---	---	
tert-Butylbenzene	17.5	0.500	1.00	"	"	"	---	88	"	---	---	
Carbon disulfide	22.2	5.00	10.0	"	"	"	---	111	"	---	---	
Carbon tetrachloride	21.4	0.500	1.00	"	"	"	---	107	"	---	---	
Chlorobenzene	19.7	0.250	0.500	"	"	"	---	98	"	---	---	
Chloroethane	16.0	5.00	5.00	"	"	"	---	80	"	---	---	
Chloroform	22.1	0.500	1.00	"	"	"	---	110	"	---	---	
Chloromethane	24.6	2.50	5.00	"	"	"	---	123	"	---	---	Q-56
2-Chlorotoluene	19.0	0.500	1.00	"	"	"	---	95	"	---	---	
4-Chlorotoluene	21.5	0.500	1.00	"	"	"	---	108	"	---	---	
Dibromochloromethane	20.3	0.500	1.00	"	"	"	---	101	"	---	---	
1,2-Dibromo-3-chloropropane	16.4	2.50	5.00	"	"	"	---	82	"	---	---	
1,2-Dibromoethane (EDB)	18.7	0.250	0.500	"	"	"	---	94	"	---	---	
Dibromomethane	21.7	0.500	1.00	"	"	"	---	109	"	---	---	
1,2-Dichlorobenzene	20.1	0.250	0.500	"	"	"	---	101	"	---	---	
1,3-Dichlorobenzene	20.2	0.250	0.500	"	"	"	---	101	"	---	---	
1,4-Dichlorobenzene	19.0	0.250	0.500	"	"	"	---	95	"	---	---	
Dichlorodifluoromethane	17.3	0.500	1.00	"	"	"	---	86	"	---	---	
1,1-Dichloroethane	23.0	0.200	0.400	"	"	"	---	115	"	---	---	
1,2-Dichloroethane (EDC)	22.2	0.200	0.400	"	"	"	---	111	"	---	---	
1,1-Dichloroethene	20.7	0.200	0.400	"	"	"	---	104	"	---	---	
cis-1,2-Dichloroethene	21.5	0.200	0.400	"	"	"	---	107	"	---	---	
trans-1,2-Dichloroethene	21.7	0.200	0.400	"	"	"	---	109	"	---	---	
1,2-Dichloropropane	21.6	0.250	0.500	"	"	"	---	108	"	---	---	
1,3-Dichloropropane	19.9	0.500	1.00	"	"	"	---	100	"	---	---	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120670 - EPA 5030B</b>												
<b>Water</b>												
LCS (7120670-BS5) Prepared: 12/13/17 09:26 Analyzed: 12/13/17 12:30												
EPA 8260C												
2,2-Dichloropropane	23.7	0.500	1.00	ug/L	"	"	---	118	"	---	---	
1,1-Dichloropropene	22.2	0.500	1.00	"	"	"	---	111	"	---	---	
cis-1,3-Dichloropropene	19.9	0.500	1.00	"	"	"	---	100	"	---	---	
trans-1,3-Dichloropropene	21.9	0.500	1.00	"	"	"	---	109	"	---	---	
Ethylbenzene	20.6	0.250	0.500	"	"	"	---	103	"	---	---	
Hexachlorobutadiene	18.4	2.50	5.00	"	"	"	---	92	"	---	---	
2-Hexanone	34.9	5.00	10.0	"	"	40.0	---	87	"	---	---	
Isopropylbenzene	17.3	0.500	1.00	"	"	20.0	---	86	"	---	---	
4-Isopropyltoluene	17.7	0.500	1.00	"	"	"	---	89	"	---	---	
Methylene chloride	21.2	1.50	3.00	"	"	"	---	106	"	---	---	
4-Methyl-2-pentanone (MiBK)	45.4	5.00	10.0	"	"	40.0	---	113	"	---	---	
Methyl tert-butyl ether (MTBE)	22.1	0.500	1.00	"	"	20.0	---	111	"	---	---	
Naphthalene	16.0	1.00	2.00	"	"	"	---	80	"	---	---	
n-Propylbenzene	21.8	0.250	0.500	"	"	"	---	109	"	---	---	
Styrene	18.4	0.500	1.00	"	"	"	---	92	"	---	---	
1,1,1,2-Tetrachloroethane	21.2	0.200	0.400	"	"	"	---	106	"	---	---	
1,1,2,2-Tetrachloroethane	20.2	0.250	0.500	"	"	"	---	101	"	---	---	
Tetrachloroethene (PCE)	19.6	0.200	0.400	"	"	"	---	98	"	---	---	
Toluene	20.2	0.500	1.00	"	"	"	---	101	"	---	---	
1,2,3-Trichlorobenzene	20.2	1.00	2.00	"	"	"	---	101	"	---	---	
1,2,4-Trichlorobenzene	18.4	1.00	2.00	"	"	"	---	92	"	---	---	
1,1,1-Trichloroethane	21.9	0.200	0.400	"	"	"	---	109	"	---	---	
1,1,2-Trichloroethane	19.9	0.250	0.500	"	"	"	---	99	"	---	---	
Trichloroethene (TCE)	20.4	0.200	0.400	"	"	"	---	102	"	---	---	
Trichlorofluoromethane	23.8	1.00	2.00	"	"	"	---	119	"	---	---	
1,2,3-Trichloropropane	19.6	0.500	1.00	"	"	"	---	98	"	---	---	
1,2,4-Trimethylbenzene	18.9	0.500	1.00	"	"	"	---	94	"	---	---	
1,3,5-Trimethylbenzene	18.7	0.500	1.00	"	"	"	---	94	"	---	---	
Vinyl chloride	19.0	0.200	0.400	"	"	"	---	95	"	---	---	
m,p-Xylene	38.0	0.500	1.00	"	"	40.0	---	95	"	---	---	
o-Xylene	16.7	0.250	0.500	"	"	20.0	---	84	"	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 107 % Limits: 80-120 % Dilution: 1x  
Toluene-d8 (Surr) 99 % 80-120 % "  
4-Bromofluorobenzene (Surr) 96 % 80-120 % "

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120670 - EPA 5030B</b>												
<b>Water</b>												
<b>Duplicate (7120670-DUP1)</b>						Prepared: 12/13/17 13:49 Analyzed: 12/13/17 15:41						
<b>QC Source Sample: GP16-W-9.0 (A7L0317-19)</b>												
<b>EPA 8260C</b>												
Acetone	ND	100	200	ug/L	10	---	ND	---	---	---	30%	
Benzene	ND	1.00	2.00	"	"	---	ND	---	---	---	30%	
Bromobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Bromoform	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	50.0	50.0	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	50.0	100	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	50.0	100	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	50.0	50.0	"	"	---	ND	---	---	---	30%	
Chloroform	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	25.0	50.0	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	25.0	50.0	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120670 - EPA 5030B</b>												
<b>Water</b>												
<b>Duplicate (7120670-DUP1)</b>						Prepared: 12/13/17 13:49 Analyzed: 12/13/17 15:41						
QC Source Sample: GP16-W-9.0 (A7L0317-19)												
EPA 8260C												
1,3-Dichloropropane	ND	5.00	10.0	ug/L	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	25.0	50.0	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	50.0	100	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	50.0	100	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
n-Propylbenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Styrene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
Toluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Vinyl chloride	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
m,p-Xylene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
o-Xylene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr)

Recovery: 116 %

Limits: 80-120 %

Dilution: 10x

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120670 - EPA 5030B</b>												
<b>Water</b>												
<b>Duplicate (7120670-DUP1)</b>						Prepared: 12/13/17 13:49 Analyzed: 12/13/17 15:41						
QC Source Sample: GP16-W-9.0 (A7L0317-19)												
EPA 8260C												
Surr: Toluene-d8 (Surr) Recovery: 100 % Limits: 80-120 % Dilution: 10x												
4-Bromofluorobenzene (Surr) 95 % 80-120 % "												
<b>Matrix Spike (7120670-MS1)</b>						Prepared: 12/13/17 13:49 Analyzed: 12/13/17 18:26						
QC Source Sample: Other (A7L0291-05)												
EPA 8260C												
Acetone	416	100	200	ug/L	10	400	ND	104	39-160	---	---	
Benzene	245	1.00	2.00	"	"	200	ND	122	79-120	---	---	Q-01
Bromobenzene	207	2.50	5.00	"	"	"	ND	104	80-120	---	---	
Bromochloromethane	234	5.00	10.0	"	"	"	ND	117	78-123	---	---	
Bromodichloromethane	259	5.00	10.0	"	"	"	ND	130	79-125	---	---	Q-01
Bromoform	215	5.00	10.0	"	"	"	ND	107	66-130	---	---	
Bromomethane	259	50.0	50.0	"	"	"	ND	129	53-141	---	---	
2-Butanone (MEK)	465	50.0	100	"	"	400	ND	116	56-143	---	---	Q-54
n-Butylbenzene	193	5.00	10.0	"	"	200	ND	97	75-128	---	---	
sec-Butylbenzene	197	5.00	10.0	"	"	"	ND	98	77-126	---	---	
tert-Butylbenzene	188	5.00	10.0	"	"	"	ND	94	78-124	---	---	
Carbon disulfide	254	50.0	100	"	"	"	ND	127	64-133	---	---	
Carbon tetrachloride	232	5.00	10.0	"	"	"	ND	116	72-136	---	---	
Chlorobenzene	231	2.50	5.00	"	"	"	18.0	107	80-120	---	---	
Chloroethane	226	50.0	50.0	"	"	"	ND	113	60-138	---	---	Q-54d
Chloroform	242	5.00	10.0	"	"	"	ND	121	79-124	---	---	
Chloromethane	240	25.0	50.0	"	"	"	ND	120	50-139	---	---	
2-Chlorotoluene	201	5.00	10.0	"	"	"	ND	101	79-122	---	---	
4-Chlorotoluene	227	5.00	10.0	"	"	"	ND	114	78-122	---	---	
Dibromochloromethane	214	5.00	10.0	"	"	"	ND	107	74-126	---	---	
1,2-Dibromo-3-chloropropane	173	25.0	50.0	"	"	"	ND	86	62-128	---	---	
1,2-Dibromoethane (EDB)	217	2.50	5.00	"	"	"	ND	108	77-121	---	---	
Dibromomethane	257	5.00	10.0	"	"	"	ND	129	79-123	---	---	Q-01
1,2-Dichlorobenzene	462	2.50	5.00	"	"	"	238	112	80-120	---	---	
1,3-Dichlorobenzene	222	2.50	5.00	"	"	"	6.70	108	"	---	---	
1,4-Dichlorobenzene	272	2.50	5.00	"	"	"	79.0	97	79-120	---	---	
Dichlorodifluoromethane	195	5.00	10.0	"	"	"	ND	97	32-152	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120670 - EPA 5030B</b>												
<b>Water</b>												
<b>Matrix Spike (7120670-MS1)</b>						Prepared: 12/13/17 13:49 Analyzed: 12/13/17 18:26						
<b>QC Source Sample: Other (A7L0291-05)</b>												
<b>EPA 8260C</b>												
1,1-Dichloroethane	246	2.00	4.00	ug/L	"	"	ND	123	77-125	---	---	
1,2-Dichloroethane (EDC)	249	2.00	4.00	"	"	"	ND	124	73-128	---	---	
1,1-Dichloroethene	231	2.00	4.00	"	"	"	ND	115	71-131	---	---	
cis-1,2-Dichloroethene	237	2.00	4.00	"	"	"	ND	117	78-123	---	---	
trans-1,2-Dichloroethene	235	2.00	4.00	"	"	"	ND	117	75-124	---	---	
1,2-Dichloropropane	235	2.50	5.00	"	"	"	ND	118	78-122	---	---	
1,3-Dichloropropane	218	5.00	10.0	"	"	"	ND	109	80-120	---	---	
2,2-Dichloropropane	251	5.00	10.0	"	"	"	ND	125	60-139	---	---	
1,1-Dichloropropene	251	5.00	10.0	"	"	"	ND	126	79-125	---	---	Q-01
cis-1,3-Dichloropropene	189	5.00	10.0	"	"	"	ND	95	75-124	---	---	
trans-1,3-Dichloropropene	236	5.00	10.0	"	"	"	ND	118	73-127	---	---	
Ethylbenzene	225	2.50	5.00	"	"	"	ND	112	79-121	---	---	
Hexachlorobutadiene	196	25.0	50.0	"	"	"	ND	98	66-134	---	---	
2-Hexanone	344	50.0	100	"	"	400	ND	86	57-139	---	---	
Isopropylbenzene	189	5.00	10.0	"	"	200	ND	94	72-131	---	---	
4-Isopropyltoluene	192	5.00	10.0	"	"	"	ND	96	77-127	---	---	
Methylene chloride	220	15.0	30.0	"	"	"	ND	110	74-124	---	---	
4-Methyl-2-pentanone (MiBK)	466	50.0	100	"	"	400	ND	116	67-130	---	---	
Methyl tert-butyl ether (MTBE)	234	5.00	10.0	"	"	200	ND	117	71-124	---	---	
Naphthalene	162	10.0	20.0	"	"	"	ND	81	61-128	---	---	
n-Propylbenzene	234	2.50	5.00	"	"	"	ND	117	76-126	---	---	
Styrene	195	5.00	10.0	"	"	"	ND	98	78-123	---	---	
1,1,1,2-Tetrachloroethane	227	2.00	4.00	"	"	"	ND	113	78-124	---	---	
1,1,2,2-Tetrachloroethane	206	2.50	5.00	"	"	"	ND	103	71-121	---	---	
Tetrachloroethene (PCE)	218	2.00	4.00	"	"	"	ND	109	74-129	---	---	
Toluene	221	5.00	10.0	"	"	"	ND	110	80-121	---	---	
1,2,3-Trichlorobenzene	204	10.0	20.0	"	"	"	ND	102	69-129	---	---	
1,2,4-Trichlorobenzene	188	10.0	20.0	"	"	"	ND	94	69-130	---	---	
1,1,1-Trichloroethane	239	2.00	4.00	"	"	"	ND	119	74-131	---	---	
1,1,2-Trichloroethane	213	2.50	5.00	"	"	"	ND	106	80-120	---	---	
Trichloroethene (TCE)	238	2.00	4.00	"	"	"	11.4	113	79-123	---	---	
Trichlorofluoromethane	269	10.0	20.0	"	"	"	ND	134	65-141	---	---	
1,2,3-Trichloropropane	207	5.00	10.0	"	"	"	ND	104	73-122	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120670 - EPA 5030B</b>						<b>Water</b>						
<b>Matrix Spike (7120670-MS1)</b>						Prepared: 12/13/17 13:49 Analyzed: 12/13/17 18:26						
<b>QC Source Sample: Other (A7L0291-05)</b>												
<b>EPA 8260C</b>												
1,2,4-Trimethylbenzene	201	5.00	10.0	ug/L	"	"	ND	101	76-124	---	---	
1,3,5-Trimethylbenzene	205	5.00	10.0	"	"	"	ND	102	75-124	---	---	
Vinyl chloride	233	2.00	4.00	"	"	"	ND	117	58-137	---	---	
m,p-Xylene	421	5.00	10.0	"	"	400	ND	105	80-121	---	---	
o-Xylene	178	2.50	5.00	"	"	200	ND	89	78-122	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 108 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 10x</i>					
<i>Toluene-d8 (Surr)</i>			<i>97 %</i>		<i>80-120 %</i>		<i>"</i>					
<i>4-Bromofluorobenzene (Surr)</i>			<i>95 %</i>		<i>80-120 %</i>		<i>"</i>					



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120716 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120716-BLK1)</b>						Prepared: 12/14/17 09:28 Analyzed: 12/14/17 10:50						
<b>EPA 8260C</b>												
Acetone	ND	10.0	20.0	ug/L	1	---	---	---	---	---	---	---
Acrylonitrile	ND	1.00	2.00	"	"	---	---	---	---	---	---	---
Benzene	ND	0.100	0.200	"	"	---	---	---	---	---	---	---
Bromobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Bromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromodichloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromoform	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromomethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	---
2-Butanone (MEK)	ND	5.00	10.0	"	"	---	---	---	---	---	---	---
n-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
sec-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
tert-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Carbon disulfide	ND	5.00	10.0	"	"	---	---	---	---	---	---	---
Carbon tetrachloride	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Chlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Chloroethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	---
Chloroform	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Chloromethane	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
2-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
4-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Dibromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Dibromomethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Dichlorodifluoromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,1-Dichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,1-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,2-Dichloropropane	ND	0.250	0.500	"	"	---	---	---	---	---	---	---

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120716 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120716-BLK1)</b>						Prepared: 12/14/17 09:28 Analyzed: 12/14/17 10:50						
<b>EPA 8260C</b>												
1,3-Dichloropropane	ND	0.500	1.00	ug/L	"	---	---	---	---	---	---	
2,2-Dichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
2-Hexanone	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Isopropylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
4-Isopropyltoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Methylene chloride	ND	1.50	3.00	"	"	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Naphthalene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
n-Propylbenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Styrene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Toluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Trichlorofluoromethane	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	0.200	0.400	"	"	---	---	---	---	---	---	
m,p-Xylene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
o-Xylene	ND	0.250	0.500	"	"	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 112 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 99 % 80-120 % "

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120716 - EPA 5030B</b>												
<b>Water</b>												
Blank (7120716-BLK1) Prepared: 12/14/17 09:28 Analyzed: 12/14/17 10:50												
EPA 8260C												
Surr: 4-Bromofluorobenzene (Surr) Recovery: 98 % Limits: 80-120 % Dilution: 1x												
LCS (7120716-BS1) Prepared: 12/14/17 09:28 Analyzed: 12/14/17 09:56												
EPA 8260C												
Acetone	45.1	10.0	20.0	ug/L	1	40.0	---	113	80-120	---	---	
Acrylonitrile	22.7	1.00	2.00	"	"	20.0	---	114	"	---	---	
Benzene	22.8	0.100	0.200	"	"	"	---	114	"	---	---	
Bromobenzene	20.3	0.250	0.500	"	"	"	---	102	"	---	---	
Bromochloromethane	21.7	0.500	1.00	"	"	"	---	108	"	---	---	
Bromodichloromethane	25.3	0.500	1.00	"	"	"	---	126	"	---	---	Q-56
Bromoform	21.4	0.500	1.00	"	"	"	---	107	"	---	---	
Bromomethane	17.6	5.00	5.00	"	"	"	---	88	"	---	---	
2-Butanone (MEK)	49.7	5.00	10.0	"	"	40.0	---	124	"	---	---	Q-56
n-Butylbenzene	18.8	0.500	1.00	"	"	20.0	---	94	"	---	---	
sec-Butylbenzene	18.6	0.500	1.00	"	"	"	---	93	"	---	---	
tert-Butylbenzene	18.4	0.500	1.00	"	"	"	---	92	"	---	---	
Carbon disulfide	22.5	5.00	10.0	"	"	"	---	113	"	---	---	
Carbon tetrachloride	22.6	0.500	1.00	"	"	"	---	113	"	---	---	
Chlorobenzene	20.3	0.250	0.500	"	"	"	---	101	"	---	---	
Chloroethane	18.2	5.00	5.00	"	"	"	---	91	"	---	---	
Chloroform	22.6	0.500	1.00	"	"	"	---	113	"	---	---	
Chloromethane	25.8	2.50	5.00	"	"	"	---	129	"	---	---	Q-56
2-Chlorotoluene	19.7	0.500	1.00	"	"	"	---	99	"	---	---	
4-Chlorotoluene	22.0	0.500	1.00	"	"	"	---	110	"	---	---	
Dibromochloromethane	21.3	0.500	1.00	"	"	"	---	106	"	---	---	
1,2-Dibromo-3-chloropropane	17.7	2.50	5.00	"	"	"	---	88	"	---	---	
1,2-Dibromoethane (EDB)	19.4	0.250	0.500	"	"	"	---	97	"	---	---	
Dibromomethane	22.4	0.500	1.00	"	"	"	---	112	"	---	---	
1,2-Dichlorobenzene	20.5	0.250	0.500	"	"	"	---	103	"	---	---	
1,3-Dichlorobenzene	21.0	0.250	0.500	"	"	"	---	105	"	---	---	
1,4-Dichlorobenzene	19.7	0.250	0.500	"	"	"	---	98	"	---	---	
Dichlorodifluoromethane	17.8	0.500	1.00	"	"	"	---	89	"	---	---	
1,1-Dichloroethane	23.2	0.200	0.400	"	"	"	---	116	"	---	---	
1,2-Dichloroethane (EDC)	23.1	0.200	0.400	"	"	"	---	115	"	---	---	
1,1-Dichloroethene	21.0	0.200	0.400	"	"	"	---	105	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120716 - EPA 5030B</b>												
<b>Water</b>												
LCS (7120716-BS1) Prepared: 12/14/17 09:28 Analyzed: 12/14/17 09:56												
EPA 8260C												
cis-1,2-Dichloroethene	22.7	0.200	0.400	ug/L	"	"	---	114	"	---	---	
trans-1,2-Dichloroethene	22.4	0.200	0.400	"	"	"	---	112	"	---	---	
1,2-Dichloropropane	22.6	0.250	0.500	"	"	"	---	113	"	---	---	
1,3-Dichloropropane	20.9	0.500	1.00	"	"	"	---	104	"	---	---	
2,2-Dichloropropane	25.0	0.500	1.00	"	"	"	---	125	"	---	---	Q-56
1,1-Dichloropropene	23.9	0.500	1.00	"	"	"	---	119	"	---	---	
cis-1,3-Dichloropropene	20.9	0.500	1.00	"	"	"	---	105	"	---	---	
trans-1,3-Dichloropropene	22.8	0.500	1.00	"	"	"	---	114	"	---	---	
Ethylbenzene	21.2	0.250	0.500	"	"	"	---	106	"	---	---	
Hexachlorobutadiene	18.5	2.50	5.00	"	"	"	---	93	"	---	---	
2-Hexanone	36.2	5.00	10.0	"	"	40.0	---	91	"	---	---	
Isopropylbenzene	17.8	0.500	1.00	"	"	20.0	---	89	"	---	---	
4-Isopropyltoluene	18.0	0.500	1.00	"	"	"	---	90	"	---	---	
Methylene chloride	22.1	1.50	3.00	"	"	"	---	111	"	---	---	
4-Methyl-2-pentanone (MiBK)	47.4	5.00	10.0	"	"	40.0	---	118	"	---	---	
Methyl tert-butyl ether (MTBE)	22.7	0.500	1.00	"	"	20.0	---	113	"	---	---	
Naphthalene	16.9	1.00	2.00	"	"	"	---	84	"	---	---	
n-Propylbenzene	22.4	0.250	0.500	"	"	"	---	112	"	---	---	
Styrene	18.4	0.500	1.00	"	"	"	---	92	"	---	---	
1,1,1,2-Tetrachloroethane	22.3	0.200	0.400	"	"	"	---	112	"	---	---	
1,1,2,2-Tetrachloroethane	20.4	0.250	0.500	"	"	"	---	102	"	---	---	
Tetrachloroethene (PCE)	20.1	0.200	0.400	"	"	"	---	100	"	---	---	
Toluene	20.4	0.500	1.00	"	"	"	---	102	"	---	---	
1,2,3-Trichlorobenzene	20.4	1.00	2.00	"	"	"	---	102	"	---	---	
1,2,4-Trichlorobenzene	19.6	1.00	2.00	"	"	"	---	98	"	---	---	
1,1,1-Trichloroethane	22.3	0.200	0.400	"	"	"	---	111	"	---	---	
1,1,2-Trichloroethane	20.2	0.250	0.500	"	"	"	---	101	"	---	---	
Trichloroethene (TCE)	21.0	0.200	0.400	"	"	"	---	105	"	---	---	
Trichlorofluoromethane	24.1	1.00	2.00	"	"	"	---	120	"	---	---	
1,2,3-Trichloropropane	19.4	0.500	1.00	"	"	"	---	97	"	---	---	
1,2,4-Trimethylbenzene	19.2	0.500	1.00	"	"	"	---	96	"	---	---	
1,3,5-Trimethylbenzene	19.5	0.500	1.00	"	"	"	---	98	"	---	---	
Vinyl chloride	19.8	0.200	0.400	"	"	"	---	99	"	---	---	
m,p-Xylene	38.8	0.500	1.00	"	"	40.0	---	97	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120716 - EPA 5030B</b>						<b>Water</b>						
<b>LCS (7120716-BS1)</b>						Prepared: 12/14/17 09:28 Analyzed: 12/14/17 09:56						
<b>EPA 8260C</b>												
o-Xylene	17.7	0.250	0.500	ug/L	"	20.0	---	89	"	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 107 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>					
<i>Toluene-d8 (Surr)</i>			<i>98 %</i>		<i>80-120 %</i>		<i>"</i>					
<i>4-Bromofluorobenzene (Surr)</i>			<i>98 %</i>		<i>80-120 %</i>		<i>"</i>					
<b>Duplicate (7120716-DUP1)</b>						Prepared: 12/14/17 10:40 Analyzed: 12/14/17 15:54						
<b>QC Source Sample: Other (A7L0353-01)</b>												
<b>EPA 8260C</b>												
Acetone	ND	100	200	ug/L	10	---	ND	---	---	---	30%	
Acrylonitrile	ND	90.0	90.0	"	"	---	ND	---	---	---	30%	R-02
Benzene	<b>67.4</b>	1.00	2.00	"	"	---	65.0	---	---	4	30%	
Bromobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Bromoform	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	50.0	50.0	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	50.0	100	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	<b>7.30</b>	5.00	10.0	"	"	---	8.00	---	---	9	30%	J
sec-Butylbenzene	<b>10.4</b>	5.00	10.0	"	"	---	10.7	---	---	3	30%	
tert-Butylbenzene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	50.0	100	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	50.0	50.0	"	"	---	ND	---	---	---	30%	
Chloroform	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	25.0	50.0	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	25.0	50.0	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120716 - EPA 5030B</b>												
<b>Water</b>												
<b>Duplicate (7120716-DUP1)</b>						Prepared: 12/14/17 10:40 Analyzed: 12/14/17 15:54						
<b>QC Source Sample: Other (A7L0353-01)</b>												
<b>EPA 8260C</b>												
1,4-Dichlorobenzene	ND	2.50	5.00	ug/L	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Ethylbenzene	<b>219</b>	2.50	5.00	"	"	---	211	---	---	4	30%	
Hexachlorobutadiene	ND	25.0	50.0	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	50.0	100	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	<b>36.2</b>	5.00	10.0	"	"	---	35.2	---	---	3	30%	
4-Isopropyltoluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	50.0	100	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Naphthalene	<b>73.4</b>	10.0	20.0	"	"	---	68.9	---	---	6	30%	
n-Propylbenzene	<b>161</b>	2.50	5.00	"	"	---	156	---	---	3	30%	
Styrene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
Toluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120716 - EPA 5030B</b>												
<b>Water</b>												
<b>Duplicate (7120716-DUP1)</b>			Prepared: 12/14/17 10:40 Analyzed: 12/14/17 15:54									
<b>QC Source Sample: Other (A7L0353-01)</b>												
<b>EPA 8260C</b>												
Trichlorofluoromethane	ND	10.0	20.0	ug/L	"	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	<b>188</b>	5.00	10.0	"	"	---	184	---	---	2	30%	
1,3,5-Trimethylbenzene	<b>54.7</b>	5.00	10.0	"	"	---	53.2	---	---	3	30%	
Vinyl chloride	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
m,p-Xylene	<b>52.9</b>	5.00	10.0	"	"	---	53.0	---	---	0.2	30%	
o-Xylene	<b>4.20</b>	2.50	5.00	"	"	---	3.50	---	---	18	30%	J

Surr: 1,4-Difluorobenzene (Surr) Recovery: 109 % Limits: 80-120 % Dilution: 10x  
 Toluene-d8 (Surr) 100 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 98 % 80-120 % "

### Matrix Spike (7120716-MS1)


Prepared: 12/14/17 10:40 Analyzed: 12/14/17 19:34

QC Source Sample: Other (A7L0345-02)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>EPA 8260C</b>												
Acetone	438	100	200	ug/L	10	400	ND	110	39-160	---	---	
Acrylonitrile	218	10.0	20.0	"	"	200	ND	109	63-135	---	---	
Benzene	228	1.00	2.00	"	"	"	ND	114	79-120	---	---	
Bromobenzene	198	2.50	5.00	"	"	"	ND	99	80-120	---	---	
Bromochloromethane	229	5.00	10.0	"	"	"	ND	114	78-123	---	---	
Bromodichloromethane	241	5.00	10.0	"	"	"	ND	121	79-125	---	---	Q-54h
Bromoform	204	5.00	10.0	"	"	"	ND	102	66-130	---	---	
Bromomethane	211	50.0	50.0	"	"	"	ND	105	53-141	---	---	
2-Butanone (MEK)	475	50.0	100	"	"	400	ND	119	56-143	---	---	Q-54e
n-Butylbenzene	189	5.00	10.0	"	"	200	ND	95	75-128	---	---	
sec-Butylbenzene	190	5.00	10.0	"	"	"	ND	95	77-126	---	---	
tert-Butylbenzene	182	5.00	10.0	"	"	"	ND	91	78-124	---	---	
Carbon disulfide	229	50.0	100	"	"	"	ND	114	64-133	---	---	
Carbon tetrachloride	222	5.00	10.0	"	"	"	ND	111	72-136	---	---	
Chlorobenzene	202	2.50	5.00	"	"	"	ND	101	80-120	---	---	
Chloroethane	167	50.0	50.0	"	"	"	ND	84	60-138	---	---	
Chloroform	224	5.00	10.0	"	"	"	ND	112	79-124	---	---	
Chloromethane	245	25.0	50.0	"	"	"	ND	122	50-139	---	---	Q-54j
2-Chlorotoluene	197	5.00	10.0	"	"	"	ND	98	79-122	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director



Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120716 - EPA 5030B</b>						<b>Water</b>						
<b>Matrix Spike (7120716-MS1)</b>						Prepared: 12/14/17 10:40 Analyzed: 12/14/17 19:34						
<b>QC Source Sample: Other (A7L0345-02)</b>												
<b>EPA 8260C</b>												
4-Chlorotoluene	220	5.00	10.0	ug/L	"	"	ND	110	78-122	---	---	
Dibromochloromethane	206	5.00	10.0	"	"	"	ND	103	74-126	---	---	
1,2-Dibromo-3-chloropropane	172	25.0	50.0	"	"	"	ND	86	62-128	---	---	
1,2-Dibromoethane (EDB)	194	2.50	5.00	"	"	"	ND	97	77-121	---	---	
Dibromomethane	220	5.00	10.0	"	"	"	ND	110	79-123	---	---	
1,2-Dichlorobenzene	209	2.50	5.00	"	"	"	ND	105	80-120	---	---	
1,3-Dichlorobenzene	209	2.50	5.00	"	"	"	ND	104	"	---	---	
1,4-Dichlorobenzene	191	2.50	5.00	"	"	"	ND	96	79-120	---	---	
Dichlorodifluoromethane	187	5.00	10.0	"	"	"	ND	93	32-152	---	---	
1,1-Dichloroethane	233	2.00	4.00	"	"	"	ND	117	77-125	---	---	
1,2-Dichloroethane (EDC)	229	2.00	4.00	"	"	"	ND	114	73-128	---	---	
1,1-Dichloroethene	214	2.00	4.00	"	"	"	ND	107	71-131	---	---	
cis-1,2-Dichloroethene	220	2.00	4.00	"	"	"	ND	110	78-123	---	---	
trans-1,2-Dichloroethene	225	2.00	4.00	"	"	"	ND	112	75-124	---	---	
1,2-Dichloropropane	222	2.50	5.00	"	"	"	ND	111	78-122	---	---	
1,3-Dichloropropane	199	5.00	10.0	"	"	"	ND	100	80-120	---	---	
2,2-Dichloropropane	230	5.00	10.0	"	"	"	ND	115	60-139	---	---	Q-54f
1,1-Dichloropropene	234	5.00	10.0	"	"	"	ND	117	79-125	---	---	
cis-1,3-Dichloropropene	178	5.00	10.0	"	"	"	ND	89	75-124	---	---	
trans-1,3-Dichloropropene	225	5.00	10.0	"	"	"	ND	113	73-127	---	---	
Ethylbenzene	212	2.50	5.00	"	"	"	ND	106	79-121	---	---	
Hexachlorobutadiene	184	25.0	50.0	"	"	"	ND	92	66-134	---	---	
2-Hexanone	350	50.0	100	"	"	400	ND	88	57-139	---	---	
Isopropylbenzene	180	5.00	10.0	"	"	200	ND	90	72-131	---	---	
4-Isopropyltoluene	189	5.00	10.0	"	"	"	ND	94	77-127	---	---	
Methylene chloride	206	15.0	30.0	"	"	"	ND	103	74-124	---	---	
4-Methyl-2-pentanone (MiBK)	463	50.0	100	"	"	400	ND	116	67-130	---	---	
Methyl tert-butyl ether (MTBE)	217	5.00	10.0	"	"	200	ND	108	71-124	---	---	
Naphthalene	160	10.0	20.0	"	"	"	ND	80	61-128	---	---	
n-Propylbenzene	229	2.50	5.00	"	"	"	ND	115	76-126	---	---	
Styrene	189	5.00	10.0	"	"	"	ND	94	78-123	---	---	
1,1,1,2-Tetrachloroethane	212	2.00	4.00	"	"	"	ND	106	78-124	---	---	
1,1,2,2-Tetrachloroethane	199	2.50	5.00	"	"	"	ND	99	71-121	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120716 - EPA 5030B</b>						<b>Water</b>						
<b>Matrix Spike (7120716-MS1)</b>						Prepared: 12/14/17 10:40 Analyzed: 12/14/17 19:34						
<b>QC Source Sample: Other (A7L0345-02)</b>												
<b>EPA 8260C</b>												
Tetrachloroethene (PCE)	208	2.00	4.00	ug/L	"	"	ND	104	74-129	---	---	
Toluene	207	5.00	10.0	"	"	"	ND	104	80-121	---	---	
1,2,3-Trichlorobenzene	205	10.0	20.0	"	"	"	ND	103	69-129	---	---	
1,2,4-Trichlorobenzene	184	10.0	20.0	"	"	"	ND	92	69-130	---	---	
1,1,1-Trichloroethane	222	2.00	4.00	"	"	"	ND	111	74-131	---	---	
1,1,2-Trichloroethane	199	2.50	5.00	"	"	"	ND	100	80-120	---	---	
Trichloroethene (TCE)	212	2.00	4.00	"	"	"	ND	106	79-123	---	---	
Trichlorofluoromethane	248	10.0	20.0	"	"	"	ND	124	65-141	---	---	
1,2,3-Trichloropropane	195	5.00	10.0	"	"	"	ND	98	73-122	---	---	
1,2,4-Trimethylbenzene	198	5.00	10.0	"	"	"	ND	99	76-124	---	---	
1,3,5-Trimethylbenzene	203	5.00	10.0	"	"	"	ND	102	75-124	---	---	
Vinyl chloride	205	2.00	4.00	"	"	"	ND	102	58-137	---	---	
m,p-Xylene	402	5.00	10.0	"	"	400	ND	100	80-121	---	---	
o-Xylene	176	2.50	5.00	"	"	200	ND	88	78-122	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 106 % Limits: 80-120 % Dilution: 10x  
 Toluene-d8 (Surr) 96 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 96 % 80-120 % "



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
<b>Batch 7120682 - EPA 3546</b>													
<b>Soil</b>													
<b>Blank (7120682-BLK1)</b>													
						Prepared: 12/13/17 11:49	Analyzed: 12/14/17 08:49						C-07
<b>EPA 8082A</b>													
Aroclor 1016	ND	1.67	3.33	ug/kg wet	1	---	---	---	---	---	---		
Aroclor 1221	ND	1.67	3.33	"	"	---	---	---	---	---	---		
Aroclor 1232	ND	1.67	3.33	"	"	---	---	---	---	---	---		
Aroclor 1242	ND	1.67	3.33	"	"	---	---	---	---	---	---		
Aroclor 1248	ND	1.67	3.33	"	"	---	---	---	---	---	---		
Aroclor 1254	ND	1.67	3.33	"	"	---	---	---	---	---	---		
Aroclor 1260	ND	1.67	3.33	"	"	---	---	---	---	---	---		
Aroclor 1262	ND	1.67	3.33	"	"	---	---	---	---	---	---		
Aroclor 1268	ND	1.67	3.33	"	"	---	---	---	---	---	---		

Surr: Decachlorobiphenyl (Surr) Recovery: 110 % Limits: 44-120 % Dilution: 1x

<b>LCS (7120682-BS1)</b>													
						Prepared: 12/13/17 11:49	Analyzed: 12/14/17 09:07						C-07
<b>EPA 8082A</b>													
Aroclor 1016	179	2.00	4.00	ug/kg wet	1	250	---	72	47-134	---	---		
Aroclor 1260	257	2.00	4.00	"	"	"	---	103	53-140	---	---		

Surr: Decachlorobiphenyl (Surr) Recovery: 114 % Limits: 44-120 % Dilution: 1x

<b>Duplicate (7120682-DUP1)</b>													
						Prepared: 12/13/17 11:49	Analyzed: 12/14/17 11:52						C-07
<b>QC Source Sample: GP06-S-2.5 (A7L0317-01)</b>													
<b>EPA 8082A</b>													
Aroclor 1016	ND	2.01	4.03	ug/kg dry	1	---	ND	---	---	---	30%		
Aroclor 1221	ND	2.01	4.03	"	"	---	ND	---	---	---	30%		
Aroclor 1232	ND	2.01	4.03	"	"	---	ND	---	---	---	30%		
Aroclor 1242	<b>7.02</b>	2.01	4.03	"	"	---	8.64	---	---	21	30%	P-10	
Aroclor 1248	ND	2.01	4.03	"	"	---	ND	---	---	---	30%		
Aroclor 1254	<b>62.6</b>	2.01	4.03	"	"	---	68.2	---	---	9	30%	P-10	
Aroclor 1260	<b>18.4</b>	2.01	4.03	"	"	---	18.7	---	---	2	30%	P-10	
Aroclor 1262	ND	2.01	4.03	"	"	---	ND	---	---	---	30%		
Aroclor 1268	ND	2.01	4.03	"	"	---	ND	---	---	---	30%		

Surr: Decachlorobiphenyl (Surr) Recovery: 99 % Limits: 44-120 % Dilution: 1x

<b>Matrix Spike (7120682-MS2)</b>													
						Prepared: 12/13/17 11:49	Analyzed: 12/15/17 14:51						C-07
<b>QC Source Sample: GP01-S-16.0 (A7L0317-06RE1)</b>													
<b>EPA 8082A</b>													

Apex Laboratories



Philip Nerenberg, Lab Director

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

<b>Maul Foster &amp; Alongi, INC.</b> 2001 NW 19th Ave, STE 200 Portland, OR 97209	Project: <b>Metro-Willamette Falls</b> Project Number: 0075.06.02 Project Manager: Merideth D'Andrea	<b>Reported:</b> 01/09/18 23:52
--	--	------------------------------------

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120682 - EPA 3546</b>						<b>Soil</b>						
<b>Matrix Spike (7120682-MS2)</b>						Prepared: 12/13/17 11:49 Analyzed: 12/15/17 14:51						C-07
<b>QC Source Sample: GP01-S-16.0 (A7L0317-06RE1)</b>												
<b>EPA 8082A</b>												
Aroclor 1016	179	2.08	4.16	ug/kg dry	1	260	ND	69	47-134	---	---	
Aroclor 1260	245	2.08	4.16	"	"	"	4.40	92	53-140	---	---	
<i>Surr: Decachlorobiphenyl (Surr)</i>			<i>Recovery: 100 %</i>			<i>Limits: 44-120 %</i>			<i>Dilution: 1x</i>			



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120873 - EPA 3546</b>												
<b>Soil</b>												
<b>Blank (7120873-BLK1)</b>												
						Prepared: 12/19/17 13:32		Analyzed: 12/21/17 18:07				C-07
<b>EPA 8082A</b>												
Aroclor 1016	ND	1.67	3.33	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1221	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1262	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1268	ND	1.67	3.33	"	"	---	---	---	---	---	---	
<i>Surr: Decachlorobiphenyl (Surr) Recovery: 91 % Limits: 44-120 % Dilution: 1x</i>												
<b>LCS (7120873-BS1)</b>												
						Prepared: 12/19/17 13:32		Analyzed: 12/21/17 18:26				C-07
<b>EPA 8082A</b>												
Aroclor 1016	153	2.00	4.00	ug/kg wet	1	250	---	61	47-134	---	---	
Aroclor 1260	217	2.00	4.00	"	"	"	---	87	53-140	---	---	
<i>Surr: Decachlorobiphenyl (Surr) Recovery: 89 % Limits: 44-120 % Dilution: 1x</i>												
<b>Duplicate (7120873-DUP1)</b>												
						Prepared: 12/19/17 13:32		Analyzed: 12/21/17 19:21				C-07
<b>QC Source Sample: GP03-S-2.5 (A7L0317-07)</b>												
<b>EPA 8082A</b>												
Aroclor 1016	ND	2.19	4.38	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1221	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1232	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1242	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1248	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1254	<b>12.8</b>	2.19	4.38	"	"	---	8.58	---	---	39	30%	P-10, Q-05
Aroclor 1260	<b>6.39</b>	2.19	4.38	"	"	---	5.14	---	---	22	30%	P-10
Aroclor 1262	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1268	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
<i>Surr: Decachlorobiphenyl (Surr) Recovery: 88 % Limits: 44-120 % Dilution: 1x</i>												
<b>Matrix Spike (7120873-MS1)</b>												
						Prepared: 12/19/17 13:32		Analyzed: 12/22/17 00:12				C-07
<b>QC Source Sample: Other (A7L0431-19)</b>												
<b>EPA 8082A</b>												

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120873 - EPA 3546</b>						<b>Soil</b>						
<b>Matrix Spike (7120873-MS1)</b>						Prepared: 12/19/17 13:32 Analyzed: 12/22/17 00:12						C-07
<b>QC Source Sample: Other (A7L0431-19)</b>												
<b>EPA 8082A</b>												
Aroclor 1016	190	2.14	4.28	ug/kg dry	1	268	ND	71	47-134	---	---	
Aroclor 1260	242	2.14	4.28	"	"	"	ND	90	53-140	---	---	
<i>Surr: Decachlorobiphenyl (Surr)</i>			<i>Recovery: 88 %</i>			<i>Limits: 44-120 %</i>			<i>Dilution: 1x</i>			



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121074 - EPA 3546</b>												
<b>Soil</b>												
<b>Blank (7121074-BLK2)</b>			Prepared: 12/27/17 11:26 Analyzed: 12/28/17 13:02						C-07			
<b>EPA 8082A</b>												
Aroclor 1016	ND	1.67	3.33	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1221	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1262	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1268	ND	1.67	3.33	"	"	---	---	---	---	---	---	

Surr: Decachlorobiphenyl (Surr) Recovery: 110 % Limits: 44-120 % Dilution: 1x

<b>LCS (7121074-BS2)</b>			Prepared: 12/27/17 11:26 Analyzed: 12/28/17 13:21						C-07			
<b>EPA 8082A</b>												
Aroclor 1016	181	2.00	4.00	ug/kg wet	1	250	---	72	47-134	---	---	
Aroclor 1260	236	2.00	4.00	"	"	"	---	94	53-140	---	---	

Surr: Decachlorobiphenyl (Surr) Recovery: 102 % Limits: 44-120 % Dilution: 1x

<b>Duplicate (7121074-DUP2)</b>			Prepared: 12/27/17 11:26 Analyzed: 12/28/17 13:02						C-07, Q-04			
<b>QC Source Sample: GP07-S-2.5 (A7L0317-21RE1)</b>												
<b>EPA 8082A</b>												
Aroclor 1016	ND	6.06	12.1	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1221	ND	6.06	12.1	"	"	---	ND	---	---	---	30%	
Aroclor 1232	ND	6.06	12.1	"	"	---	ND	---	---	---	30%	
Aroclor 1242	ND	6.06	12.1	"	"	---	ND	---	---	---	30%	
Aroclor 1248	ND	6.06	12.1	"	"	---	ND	---	---	---	30%	
Aroclor 1254	ND	39.4	39.4	"	"	---	ND	---	---	---	30%	R-02
Aroclor 1260	143	6.06	12.1	"	"	---	93.7	---	---	42	30%	
Aroclor 1262	ND	6.06	12.1	"	"	---	ND	---	---	---	30%	
Aroclor 1268	ND	6.06	12.1	"	"	---	ND	---	---	---	30%	

Surr: Decachlorobiphenyl (Surr) Recovery: 91 % Limits: 44-120 % Dilution: 1x

<b>Matrix Spike (7121074-MS2)</b>			Prepared: 12/27/17 11:26 Analyzed: 12/28/17 13:57						C-07			
<b>QC Source Sample: GP07-S-2.5 (A7L0317-21RE1)</b>												
<b>EPA 8082A</b>												

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121074 - EPA 3546</b>						<b>Soil</b>						
<b>Matrix Spike (7121074-MS2)</b>						Prepared: 12/27/17 11:26 Analyzed: 12/28/17 13:57						C-07
<b>QC Source Sample: GP07-S-2.5 (A7L0317-21RE1)</b>												
<b>EPA 8082A</b>												
Aroclor 1016	221	6.06	12.1	ug/kg dry	1	303	ND	73	47-134	---	---	
Aroclor 1260	403	6.06	12.1	"	"	"	93.7	102	53-140	---	---	
<i>Surr: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 91 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						





**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120888 - EPA 3546/3640A (GPC)</b>						<b>Soil</b>						
<b>Blank (7120888-BLK1)</b>						Prepared: 12/18/17 14:03 Analyzed: 12/21/17 11:35						C-05
<b>EPA 8081B</b>												
Aldrin	ND	0.833	1.67	ug/kg wet	1	---	---	---	---	---	---	
alpha-BHC	ND	0.833	1.67	"	"	---	---	---	---	---	---	
beta-BHC	ND	0.833	1.67	"	"	---	---	---	---	---	---	
delta-BHC	ND	0.833	1.67	"	"	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	0.833	1.67	"	"	---	---	---	---	---	---	
cis-Chlordane	ND	0.833	1.67	"	"	---	---	---	---	---	---	
trans-Chlordane	ND	0.833	1.67	"	"	---	---	---	---	---	---	
4,4'-DDD	ND	0.833	1.67	"	"	---	---	---	---	---	---	
4,4'-DDE	ND	0.833	1.67	"	"	---	---	---	---	---	---	
4,4'-DDT	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endosulfan I	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endosulfan II	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endosulfan sulfate	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endrin	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endrin Aldehyde	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endrin ketone	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Heptachlor	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Heptachlor epoxide	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Methoxychlor	ND	2.50	5.00	"	"	---	---	---	---	---	---	
Chlordane (Technical)	ND	25.0	50.0	"	"	---	---	---	---	---	---	
Toxaphene (Total)	ND	25.0	50.0	"	"	---	---	---	---	---	---	

Surr: 2,4,5,6-TCMX (Surr)

Recovery: 66 % Limits: 42-129 % Dilution: 1x

Decachlorobiphenyl (Surr)

74 % 65-151 % "

**LCS (7120888-BS1)**

Prepared: 12/18/17 14:03 Analyzed: 12/21/17 11:52

C-05

<b>EPA 8081B</b>												
Aldrin	23.5	1.00	2.00	ug/kg wet	1	50.0	---	47	45-136	---	---	
alpha-BHC	23.4	1.00	2.00	"	"	"	---	47	45-137	---	---	
beta-BHC	29.5	1.00	2.00	"	"	"	---	59	50-136	---	---	
delta-BHC	30.0	1.00	2.00	"	"	"	---	60	47-139	---	---	
gamma-BHC (Lindane)	24.8	1.00	2.00	"	"	"	---	50	49-135	---	---	
cis-Chlordane	28.5	1.00	2.00	"	"	"	---	57	54-133	---	---	
trans-Chlordane	29.2	1.00	2.00	"	"	"	---	58	53-135	---	---	
4,4'-DDD	35.7	1.00	2.00	"	"	"	---	71	56-139	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120888 - EPA 3546/3640A (GPC)</b>												
<b>Soil</b>												
LCS (7120888-BS1) Prepared: 12/18/17 14:03 Analyzed: 12/21/17 11:52 C-05												
<b>EPA 8081B</b>												
4,4'-DDE	33.9	1.00	2.00	ug/kg wet	"	"	---	68	56-134	---	---	
4,4'-DDT	43.4	1.00	2.00	"	"	"	---	87	50-141	---	---	
Dieldrin	32.8	1.00	2.00	"	"	"	---	66	56-136	---	---	
Endosulfan I	31.0	1.00	2.00	"	"	"	---	62	52-132	---	---	
Endosulfan II	34.0	1.00	2.00	"	"	"	---	68	53-134	---	---	
Endosulfan sulfate	36.1	1.00	2.00	"	"	"	---	72	55-136	---	---	
Endrin	35.4	1.00	2.00	"	"	"	---	71	56-140	---	---	
Endrin Aldehyde	32.4	1.00	2.00	"	"	"	---	65	35-137	---	---	
Endrin ketone	36.8	1.00	2.00	"	"	"	---	74	55-136	---	---	
Heptachlor	23.7	1.00	2.00	"	"	"	---	47	47-136	---	---	
Heptachlor epoxide	28.0	1.00	2.00	"	"	"	---	56	52-136	---	---	
Methoxychlor	44.7	3.00	6.00	"	"	"	---	89	52-143	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 49 % Limits: 42-129 % Dilution: 1x  
Decachlorobiphenyl (Surr) 74 % 65-151 % "

**Duplicate (7120888-DUP1)** Prepared: 12/18/17 14:03 Analyzed: 12/21/17 12:27 C-05

QC Source Sample: Other (A7L0419-02RE1)

<b>EPA 8081B</b>												
Aldrin	ND	1.01	2.02	ug/kg dry	1	---	ND	---	---	---	30%	
alpha-BHC	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
beta-BHC	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
delta-BHC	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
gamma-BHC (Lindane)	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
cis-Chlordane	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
trans-Chlordane	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
4,4'-DDD	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
4,4'-DDE	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
4,4'-DDT	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Dieldrin	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endosulfan I	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endosulfan II	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endosulfan sulfate	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endrin	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endrin Aldehyde	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120888 - EPA 3546/3640A (GPC) Soil</b>												
<b>Duplicate (7120888-DUP1)</b> Prepared: 12/18/17 14:03 Analyzed: 12/21/17 12:27 C-05												
QC Source Sample: Other (A7L0419-02RE1)												
EPA 8081B												
Endrin ketone	ND	1.01	2.02	ug/kg dry	"	---	ND	---	---	---	30%	
Heptachlor	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Heptachlor epoxide	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Methoxychlor	ND	3.03	6.05	"	"	---	ND	---	---	---	30%	
Chlordane (Technical)	ND	30.3	60.5	"	"	---	ND	---	---	---	30%	
Toxaphene (Total)	ND	30.3	60.5	"	"	---	ND	---	---	---	30%	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 48 % Limits: 42-129 % Dilution: 1x  
 Decachlorobiphenyl (Surr) 69 % 65-151 % "

**Matrix Spike (7120888-MS1)** Prepared: 12/18/17 14:03 Analyzed: 12/21/17 12:45 C-05

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
QC Source Sample: Other (A7L0419-02RE1)												
EPA 8081B												
Aldrin	26.4	1.01	2.02	ug/kg dry	1	50.5	ND	52	45-136	---	---	
alpha-BHC	24.9	1.01	2.02	"	"	"	ND	49	45-137	---	---	
beta-BHC	31.8	1.01	2.02	"	"	"	ND	63	50-136	---	---	
delta-BHC	32.1	1.01	2.02	"	"	"	ND	64	47-139	---	---	
gamma-BHC (Lindane)	26.6	1.01	2.02	"	"	"	ND	53	49-135	---	---	
cis-Chlordane	31.8	1.01	2.02	"	"	"	ND	63	54-133	---	---	
trans-Chlordane	33.1	1.01	2.02	"	"	"	ND	66	53-135	---	---	
4,4'-DDD	37.2	1.01	2.02	"	"	"	ND	74	56-139	---	---	
4,4'-DDE	38.0	1.01	2.02	"	"	"	ND	75	56-134	---	---	
4,4'-DDT	44.6	1.01	2.02	"	"	"	ND	88	50-141	---	---	
Dieldrin	35.6	1.01	2.02	"	"	"	ND	71	56-136	---	---	
Endosulfan I	33.8	1.01	2.02	"	"	"	ND	67	52-132	---	---	
Endosulfan II	35.2	1.01	2.02	"	"	"	ND	70	53-134	---	---	
Endosulfan sulfate	38.1	1.01	2.02	"	"	"	ND	76	55-136	---	---	
Endrin	39.4	1.01	2.02	"	"	"	ND	78	56-140	---	---	
Endrin Aldehyde	33.8	1.01	2.02	"	"	"	ND	67	35-137	---	---	
Endrin ketone	37.6	1.01	2.02	"	"	"	ND	75	55-136	---	---	
Heptachlor	26.2	1.01	2.02	"	"	"	ND	52	47-136	---	---	
Heptachlor epoxide	31.1	1.01	2.02	"	"	"	ND	62	52-136	---	---	
Methoxychlor	45.2	3.03	6.05	"	"	"	ND	90	52-143	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 55 % Limits: 42-129 % Dilution: 1x

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea


Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120888 - EPA 3546/3640A (GPC)</b>						<b>Soil</b>						
<b>Matrix Spike (7120888-MS1)</b>						Prepared: 12/18/17 14:03 Analyzed: 12/21/17 12:45						C-05
QC Source Sample: Other (A7L0419-02RE1)												
EPA 8081B												
Surr: Decachlorobiphenyl (Surr)			Recovery: 75 %			Limits: 65-151 %			Dilution: 1x			
<b>Matrix Spike Dup (7120888-MSD1)</b>						Prepared: 12/18/17 14:03 Analyzed: 12/21/17 13:02						C-05
QC Source Sample: Other (A7L0419-02RE1)												
EPA 8081B												
Aldrin	31.2	1.00	2.00	ug/kg dry	1	50.1	ND	62	45-136	17	30%	
alpha-BHC	31.2	1.00	2.00	"	"	"	ND	62	45-137	23	30%	
beta-BHC	33.7	1.00	2.00	"	"	"	ND	67	50-136	7	30%	
delta-BHC	33.4	1.00	2.00	"	"	"	ND	67	47-139	5	30%	
gamma-BHC (Lindane)	32.5	1.00	2.00	"	"	"	ND	65	49-135	21	30%	
cis-Chlordane	33.8	1.00	2.00	"	"	"	ND	67	54-133	7	30%	
trans-Chlordane	34.2	1.00	2.00	"	"	"	ND	68	53-135	4	30%	
4,4'-DDD	38.5	1.00	2.00	"	"	"	ND	77	56-139	4	30%	
4,4'-DDE	37.1	1.00	2.00	"	"	"	ND	74	56-134	2	30%	
4,4'-DDT	43.3	1.00	2.00	"	"	"	ND	86	50-141	2	30%	
Dieldrin	36.4	1.00	2.00	"	"	"	ND	73	56-136	3	30%	
Endosulfan I	35.2	1.00	2.00	"	"	"	ND	70	52-132	5	30%	
Endosulfan II	35.3	1.00	2.00	"	"	"	ND	70	53-134	1	30%	
Endosulfan sulfate	36.5	1.00	2.00	"	"	"	ND	73	55-136	4	30%	
Endrin	39.2	1.00	2.00	"	"	"	ND	78	56-140	0.3	30%	
Endrin Aldehyde	33.0	1.00	2.00	"	"	"	ND	66	35-137	2	30%	
Endrin ketone	37.7	1.00	2.00	"	"	"	ND	75	55-136	0.8	30%	
Heptachlor	32.2	1.00	2.00	"	"	"	ND	64	47-136	21	30%	
Heptachlor epoxide	34.1	1.00	2.00	"	"	"	ND	68	52-136	10	30%	
Methoxychlor	44.8	3.01	6.01	"	"	"	ND	89	52-143	0.2	30%	
Surr: 2,4,5,6-TCMX (Surr)			Recovery: 68 %			Limits: 42-129 %			Dilution: 1x			
Decachlorobiphenyl (Surr)			74 %			65-151 %			"			

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120698 - EPA 3546</b>												
<b>Soil</b>												
Blank (7120698-BLK2) Prepared: 12/13/17 15:39 Analyzed: 12/14/17 09:51												
EPA 8270D												
Acenaphthene	ND	1.25	2.50	ug/kg wet	1	---	---	---	---	---	---	---
Acenaphthylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Benz(a)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Benzo(a)pyrene	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Benzo(b)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Benzo(k)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Chrysene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Dibenz(a,h)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Fluoranthene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Fluorene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
1-Methylnaphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
2-Methylnaphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
Naphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
Phenanthrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---

Surr: Nitrobenzene-d5 (Surr)	Recovery: 85 %	Limits: 37-122 %	Dilution: 1x
2-Fluorobiphenyl (Surr)	79 %	44-115 %	"
Phenol-d6 (Surr)	72 %	33-122 %	"
p-Terphenyl-d14 (Surr)	85 %	54-127 %	"
2-Fluorophenol (Surr)	71 %	35-115 %	"
2,4,6-Tribromophenol (Surr)	81 %	39-132 %	"

**LCS (7120698-BS2)** Prepared: 12/13/17 15:39 Analyzed: 12/14/17 10:27

EPA 8270D												
Acenaphthene	469	2.66	5.34	ug/kg wet	2	533	---	88	40-122	---	---	---
Acenaphthylene	443	2.66	5.34	"	"	"	---	83	32-132	---	---	---
Anthracene	458	2.66	5.34	"	"	"	---	86	47-123	---	---	---
Benz(a)anthracene	494	2.66	5.34	"	"	"	---	93	49-126	---	---	---
Benzo(a)pyrene	508	4.00	8.00	"	"	"	---	95	45-129	---	---	---
Benzo(b)fluoranthene	538	4.00	8.00	"	"	"	---	101	45-132	---	---	---
Benzo(k)fluoranthene	511	4.00	8.00	"	"	"	---	96	47-132	---	---	---
Benzo(g,h,i)perylene	510	2.66	5.34	"	"	"	---	96	43-134	---	---	---

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120698 - EPA 3546</b>												
<b>Soil</b>												
<b>LCS (7120698-BS2)</b>												
						Prepared: 12/13/17 15:39 Analyzed: 12/14/17 10:27						
<b>EPA 8270D</b>												
Chrysene	501	2.66	5.34	ug/kg wet	"	"	---	94	50-124	---	---	
Dibenz(a,h)anthracene	482	2.66	5.34	"	"	"	---	90	45-134	---	---	
Fluoranthene	471	2.66	5.34	"	"	"	---	88	50-127	---	---	
Fluorene	414	2.66	5.34	"	"	"	---	78	43-125	---	---	
Indeno(1,2,3-cd)pyrene	473	2.66	5.34	"	"	"	---	89	45-133	---	---	
1-Methylnaphthalene	465	5.34	10.7	"	"	"	---	87	40-120	---	---	
2-Methylnaphthalene	463	5.34	10.7	"	"	"	---	87	38-122	---	---	
Naphthalene	457	5.34	10.7	"	"	"	---	86	35-123	---	---	
Phenanthrene	420	2.66	5.34	"	"	"	---	79	50-121	---	---	
Pyrene	481	2.66	5.34	"	"	"	---	90	47-127	---	---	

<i>Surr: Nitrobenzene-d5 (Surr)</i>	Recovery: 94 %	Limits: 37-122 %	Dilution: 2x
<i>2-Fluorobiphenyl (Surr)</i>	88 %	44-115 %	"
<i>Phenol-d6 (Surr)</i>	92 %	33-122 %	"
<i>p-Terphenyl-d14 (Surr)</i>	101 %	54-127 %	"
<i>2-Fluorophenol (Surr)</i>	87 %	35-115 %	"
<i>2,4,6-Tribromophenol (Surr)</i>	94 %	39-132 %	"

### Duplicate (7120698-DUP2)

Prepared: 12/13/17 15:39 Analyzed: 12/14/17 17:02

QC Source Sample: GP06-S-2.5 (A7L0317-01RE1)

<b>EPA 8270D</b>												
Acenaphthene	ND	185	371	ug/kg dry	125	---	ND	---	---	---	30%	
Acenaphthylene	ND	185	371	"	"	---	ND	---	---	---	30%	
Anthracene	213	185	371	"	"	---	ND	---	---	---	30%	J
Benz(a)anthracene	1000	185	371	"	"	---	351	---	---	96	30%	M-05, Q-04
Benzo(a)pyrene	1140	278	556	"	"	---	518	---	---	75	30%	Q-04
Benzo(b)fluoranthene	1060	278	556	"	"	---	359	---	---	99	30%	M-05, Q-04
Benzo(k)fluoranthene	319	278	556	"	"	---	ND	---	---	---	30%	J
Benzo(g,h,i)perylene	433	185	371	"	"	---	241	---	---	57	30%	Q-04
Chrysene	1130	185	371	"	"	---	384	---	---	99	30%	M-05, Q-04
Dibenz(a,h)anthracene	ND	185	371	"	"	---	ND	---	---	---	30%	
Fluoranthene	1490	185	371	"	"	---	526	---	---	96	30%	Q-04
Fluorene	ND	185	371	"	"	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	487	185	371	"	"	---	202	---	---	83	30%	Q-04
1-Methylnaphthalene	ND	371	741	"	"	---	ND	---	---	---	30%	
2-Methylnaphthalene	ND	371	741	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120698 - EPA 3546</b>						<b>Soil</b>						
<b>Duplicate (7120698-DUP2)</b>						Prepared: 12/13/17 15:39 Analyzed: 12/14/17 17:02						
QC Source Sample: GP06-S-2.5 (A7L0317-01RE1)												
EPA 8270D												
Naphthalene	ND	371	741	ug/kg dry	"	---	ND	---	---	---	30%	
Phenanthrene	845	185	371	"	"	---	381	---	---	76	30%	Q-04
Pyrene	1930	185	371	"	"	---	634	---	---	101	30%	Q-04
<i>Surr: Nitrobenzene-d5 (Surr) Recovery: 85 % Limits: 37-122 % Dilution: 125x S-05</i>												
<i>2-Fluorobiphenyl (Surr) 89 % 44-115 % " S-05</i>												
<i>Phenol-d6 (Surr) 56 % 33-122 % " S-05</i>												
<i>p-Terphenyl-d14 (Surr) 108 % 54-127 % " S-05</i>												
<i>2-Fluorophenol (Surr) 60 % 35-115 % " S-05</i>												
<i>2,4,6-Tribromophenol (Surr) 78 % 39-132 % " S-05</i>												
<b>Matrix Spike (7120698-MS2)</b>						Prepared: 12/13/17 15:39 Analyzed: 12/14/17 18:14						
QC Source Sample: Other (A7L0317-23RE1)												
EPA 8270D												
Acenaphthene	544	56.4	113	ug/kg dry	40	566	ND	96	40-122	---	---	
Acenaphthylene	547	56.4	113	"	"	"	ND	97	32-132	---	---	
Anthracene	608	56.4	113	"	"	"	ND	108	47-123	---	---	
Benz(a)anthracene	574	56.4	113	"	"	"	ND	101	49-126	---	---	
Benzo(a)pyrene	603	84.8	170	"	"	"	ND	107	45-129	---	---	
Benzo(b)fluoranthene	617	84.8	170	"	"	"	ND	109	45-132	---	---	
Benzo(k)fluoranthene	577	84.8	170	"	"	"	ND	102	47-132	---	---	
Benzo(g,h,i)perylene	497	56.4	113	"	"	"	ND	88	43-134	---	---	
Chrysene	587	56.4	113	"	"	"	ND	104	50-124	---	---	
Dibenz(a,h)anthracene	578	56.4	113	"	"	"	ND	102	45-134	---	---	
Fluoranthene	542	56.4	113	"	"	"	ND	96	50-127	---	---	
Fluorene	496	56.4	113	"	"	"	ND	88	43-125	---	---	
Indeno(1,2,3-cd)pyrene	528	56.4	113	"	"	"	ND	93	45-133	---	---	
1-Methylnaphthalene	509	113	226	"	"	"	ND	90	40-120	---	---	
2-Methylnaphthalene	489	113	226	"	"	"	ND	86	38-122	---	---	
Naphthalene	527	113	226	"	"	"	ND	93	35-123	---	---	
Phenanthrene	544	56.4	113	"	"	"	ND	96	50-121	---	---	
Pyrene	561	56.4	113	"	"	"	ND	99	47-127	---	---	
<i>Surr: Nitrobenzene-d5 (Surr) Recovery: 93 % Limits: 37-122 % Dilution: 40x S-05</i>												
<i>2-Fluorobiphenyl (Surr) 99 % 44-115 % " S-05</i>												

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209


Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120698 - EPA 3546</b>						<b>Soil</b>						
<b>Matrix Spike (7120698-MS2)</b>						Prepared: 12/13/17 15:39 Analyzed: 12/14/17 18:14						
<b>QC Source Sample: Other (A7L0317-23RE1)</b>												
<b>EPA 8270D</b>												
Surr: Phenol-d6 (Surr)			Recovery: 78 %	Limits: 33-122 %		Dilution: 40x						S-05
p-Terphenyl-d14 (Surr)			111 %	54-127 %		"						S-05
2-Fluorophenol (Surr)			79 %	35-115 %		"						S-05
2,4,6-Tribromophenol (Surr)			102 %	39-132 %		"						S-05





**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120727 - EPA 3510C (Acid Extraction)</b>						<b>Water</b>						
<b>Blank (7120727-BLK2)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/15/17 11:31						
<b>EPA 8270D</b>												
Acenaphthene	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Acenaphthylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Chrysene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluorene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	<b>0.0265</b>	0.0182	0.0364	"	"	---	---	---	---	---	---	B-02, J
2-Methylnaphthalene	<b>0.0377</b>	0.0182	0.0364	"	"	---	---	---	---	---	---	B
Naphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Phenanthrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	

<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>Recovery: 84 %</i>	<i>Limits: 44-120 %</i>	<i>Dilution: 1x</i>
<i>2-Fluorobiphenyl (Surr)</i>	<i>65 %</i>	<i>44-120 %</i>	<i>"</i>
<i>Phenol-d6 (Surr)</i>	<i>25 %</i>	<i>10-120 %</i>	<i>"</i>
<i>p-Terphenyl-d14 (Surr)</i>	<i>70 %</i>	<i>50-133 %</i>	<i>"</i>
<i>2-Fluorophenol (Surr)</i>	<i>38 %</i>	<i>19-120 %</i>	<i>"</i>
<i>2,4,6-Tribromophenol (Surr)</i>	<i>81 %</i>	<i>43-140 %</i>	<i>"</i>

### LCS (7120727-BS2)

Prepared: 12/14/17 10:20 Analyzed: 12/15/17 12:07

<b>EPA 8270D</b>												
Acenaphthene	3.27	0.0200	0.0400	ug/L	2	4.00	---	82	47-122	---	---	
Acenaphthylene	3.07	0.0200	0.0400	"	"	"	---	77	41-130	---	---	
Anthracene	3.32	0.0200	0.0400	"	"	"	---	83	57-123	---	---	
Benz(a)anthracene	3.65	0.0200	0.0400	"	"	"	---	91	58-125	---	---	
Benzo(a)pyrene	3.73	0.0300	0.0600	"	"	"	---	93	54-128	---	---	
Benzo(b)fluoranthene	4.01	0.0300	0.0600	"	"	"	---	100	53-131	---	---	
Benzo(k)fluoranthene	3.75	0.0300	0.0600	"	"	"	---	94	57-129	---	---	
Benzo(g,h,i)perylene	3.84	0.0200	0.0400	"	"	"	---	96	50-134	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120727 - EPA 3510C (Acid Extraction)</b>						<b>Water</b>						
<b>LCS (7120727-BS2)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/15/17 12:07						
<b>EPA 8270D</b>												
Chrysene	3.73	0.0200	0.0400	ug/L	"	"	---	93	59-123	---	---	
Dibenz(a,h)anthracene	3.62	0.0200	0.0400	"	"	"	---	91	51-134	---	---	
Fluoranthene	3.52	0.0200	0.0400	"	"	"	---	88	57-128	---	---	
Fluorene	2.96	0.0200	0.0400	"	"	"	---	74	52-124	---	---	
Indeno(1,2,3-cd)pyrene	3.55	0.0200	0.0400	"	"	"	---	89	52-133	---	---	
1-Methylnaphthalene	3.07	0.0400	0.0800	"	"	"	---	77	41-120	---	---	B-02
2-Methylnaphthalene	3.02	0.0400	0.0800	"	"	"	---	75	40-121	---	---	B
Naphthalene	2.93	0.0400	0.0800	"	"	"	---	73	"	---	---	
Phenanthrene	3.07	0.0200	0.0400	"	"	"	---	77	59-120	---	---	
Pyrene	3.57	0.0200	0.0400	"	"	"	---	89	57-126	---	---	
<i>Surr: Nitrobenzene-d5 (Surr)</i>			Recovery: 88 %		Limits: 44-120 %		Dilution: 2x					
<i>2-Fluorobiphenyl (Surr)</i>			73 %		44-120 %		"					
<i>Phenol-d6 (Surr)</i>			30 %		10-120 %		"					
<i>p-Terphenyl-d14 (Surr)</i>			92 %		50-133 %		"					
<i>2-Fluorophenol (Surr)</i>			45 %		19-120 %		"					
<i>2,4,6-Tribromophenol (Surr)</i>			96 %		43-140 %		"					
<b>LCS Dup (7120727-BSD2)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/15/17 12:42						Q-19
<b>EPA 8270D</b>												
Acenaphthene	3.33	0.0200	0.0400	ug/L	2	4.00	---	83	47-122	2	30%	
Acenaphthylene	3.12	0.0200	0.0400	"	"	"	---	78	41-130	2	30%	
Anthracene	3.33	0.0200	0.0400	"	"	"	---	83	57-123	0.2	30%	
Benz(a)anthracene	3.71	0.0200	0.0400	"	"	"	---	93	58-125	2	30%	
Benzo(a)pyrene	3.84	0.0300	0.0600	"	"	"	---	96	54-128	3	30%	
Benzo(b)fluoranthene	4.13	0.0300	0.0600	"	"	"	---	103	53-131	3	30%	
Benzo(k)fluoranthene	3.82	0.0300	0.0600	"	"	"	---	95	57-129	2	30%	
Benzo(g,h,i)perylene	3.86	0.0200	0.0400	"	"	"	---	97	50-134	0.5	30%	
Chrysene	3.79	0.0200	0.0400	"	"	"	---	95	59-123	1	30%	
Dibenz(a,h)anthracene	3.62	0.0200	0.0400	"	"	"	---	91	51-134	0.03	30%	
Fluoranthene	3.54	0.0200	0.0400	"	"	"	---	89	57-128	0.7	30%	
Fluorene	2.96	0.0200	0.0400	"	"	"	---	74	52-124	0.1	30%	
Indeno(1,2,3-cd)pyrene	3.57	0.0200	0.0400	"	"	"	---	89	52-133	0.5	30%	
1-Methylnaphthalene	3.22	0.0400	0.0800	"	"	"	---	80	41-120	5	30%	B-02
2-Methylnaphthalene	3.23	0.0400	0.0800	"	"	"	---	81	40-121	7	30%	B
Naphthalene	3.20	0.0400	0.0800	"	"	"	---	80	"	9	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
<b>Batch 7120727 - EPA 3510C (Acid Extraction)</b>						<b>Water</b>							
<b>LCS Dup (7120727-BSD2)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/15/17 12:42						Q-19	
<b>EPA 8270D</b>													
Phenanthrene	3.06	0.0200	0.0400	ug/L	"	"	---	77	59-120	0.4	30%		
Pyrene	3.62	0.0200	0.0400	"	"	"	---	91	57-126	1	30%		

<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>Recovery: 87 %</i>	<i>Limits: 44-120 %</i>	<i>Dilution: 2x</i>
<i>2-Fluorobiphenyl (Surr)</i>	<i>75 %</i>	<i>44-120 %</i>	<i>"</i>
<i>Phenol-d6 (Surr)</i>	<i>30 %</i>	<i>10-120 %</i>	<i>"</i>
<i>p-Terphenyl-d14 (Surr)</i>	<i>91 %</i>	<i>50-133 %</i>	<i>"</i>
<i>2-Fluorophenol (Surr)</i>	<i>46 %</i>	<i>19-120 %</i>	<i>"</i>
<i>2,4,6-Tribromophenol (Surr)</i>	<i>95 %</i>	<i>43-140 %</i>	<i>"</i>

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120731 - EPA 3546</b>												
<b>Soil</b>												
Blank (7120731-BLK2) Prepared: 12/14/17 11:12 Analyzed: 12/15/17 14:30												
EPA 8270D												
Acenaphthene	ND	1.25	2.50	ug/kg wet	1	---	---	---	---	---	---	---
Acenaphthylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Benz(a)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Benzo(a)pyrene	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Benzo(b)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Benzo(k)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Chrysene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Dibenz(a,h)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Fluoranthene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Fluorene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
1-Methylnaphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
2-Methylnaphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
Naphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
Phenanthrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---

Surr: Nitrobenzene-d5 (Surr)	Recovery: 101 %	Limits: 37-122 %	Dilution: 1x
2-Fluorobiphenyl (Surr)	93 %	44-115 %	"
Phenol-d6 (Surr)	86 %	33-122 %	"
p-Terphenyl-d14 (Surr)	99 %	54-127 %	"
2-Fluorophenol (Surr)	88 %	35-115 %	"
2,4,6-Tribromophenol (Surr)	110 %	39-132 %	"

### LCS (7120731-BS2)

Prepared: 12/14/17 11:12 Analyzed: 12/15/17 15:07

EPA 8270D												
Acenaphthene	499	2.66	5.34	ug/kg wet	2	533	---	94	40-122	---	---	---
Acenaphthylene	470	2.66	5.34	"	"	"	---	88	32-132	---	---	---
Anthracene	488	2.66	5.34	"	"	"	---	91	47-123	---	---	---
Benz(a)anthracene	530	2.66	5.34	"	"	"	---	99	49-126	---	---	---
Benzo(a)pyrene	551	4.00	8.00	"	"	"	---	103	45-129	---	---	---
Benzo(b)fluoranthene	582	4.00	8.00	"	"	"	---	109	45-132	---	---	---
Benzo(k)fluoranthene	542	4.00	8.00	"	"	"	---	102	47-132	---	---	---
Benzo(g,h,i)perylene	558	2.66	5.34	"	"	"	---	105	43-134	---	---	---

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120731 - EPA 3546</b>												
<b>Soil</b>												
<b>LCS (7120731-BS2)</b>												
						Prepared: 12/14/17 11:12 Analyzed: 12/15/17 15:07						
<b>EPA 8270D</b>												
Chrysene	543	2.66	5.34	ug/kg wet	"	"	---	102	50-124	---	---	
Dibenz(a,h)anthracene	545	2.66	5.34	"	"	"	---	102	45-134	---	---	
Fluoranthene	507	2.66	5.34	"	"	"	---	95	50-127	---	---	
Fluorene	436	2.66	5.34	"	"	"	---	82	43-125	---	---	
Indeno(1,2,3-cd)pyrene	521	2.66	5.34	"	"	"	---	98	45-133	---	---	
1-Methylnaphthalene	485	5.34	10.7	"	"	"	---	91	40-120	---	---	
2-Methylnaphthalene	482	5.34	10.7	"	"	"	---	90	38-122	---	---	
Naphthalene	481	5.34	10.7	"	"	"	---	90	35-123	---	---	
Phenanthrene	448	2.66	5.34	"	"	"	---	84	50-121	---	---	
Pyrene	517	2.66	5.34	"	"	"	---	97	47-127	---	---	

<i>Surr: Nitrobenzene-d5 (Surr)</i>	Recovery: 99 %	Limits: 37-122 %	Dilution: 2x
<i>2-Fluorobiphenyl (Surr)</i>	96 %	44-115 %	"
<i>Phenol-d6 (Surr)</i>	101 %	33-122 %	"
<i>p-Terphenyl-d14 (Surr)</i>	114 %	54-127 %	"
<i>2-Fluorophenol (Surr)</i>	98 %	35-115 %	"
<i>2,4,6-Tribromophenol (Surr)</i>	106 %	39-132 %	"

### Duplicate (7120731-DUP2)

Prepared: 12/14/17 11:12 Analyzed: 12/15/17 21:41

R-04

### QC Source Sample: GP03-S-17.5 (A7L0317-09RE1)

<b>EPA 8270D</b>												
Acenaphthene	ND	421	845	ug/kg dry	125	---	ND	---	---	---	30%	
Acenaphthylene	ND	421	845	"	"	---	ND	---	---	---	30%	
Anthracene	ND	421	845	"	"	---	ND	---	---	---	30%	
Benzo(a)anthracene	ND	421	845	"	"	---	ND	---	---	---	30%	
Benzo(a)pyrene	ND	633	1270	"	"	---	ND	---	---	---	30%	
Benzo(b)fluoranthene	ND	633	1270	"	"	---	ND	---	---	---	30%	
Benzo(k)fluoranthene	ND	633	1270	"	"	---	ND	---	---	---	30%	
Chrysene	ND	421	845	"	"	---	ND	---	---	---	30%	
Fluoranthene	ND	421	845	"	"	---	ND	---	---	---	30%	
Fluorene	ND	421	845	"	"	---	ND	---	---	---	30%	
1-Methylnaphthalene	ND	845	1690	"	"	---	ND	---	---	---	30%	
2-Methylnaphthalene	ND	845	1690	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	845	1690	"	"	---	ND	---	---	---	30%	
Phenanthrene	ND	421	845	"	"	---	ND	---	---	---	30%	
Pyrene	ND	421	845	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120731 - EPA 3546</b>												
<b>Soil</b>												
<b>Duplicate (7120731-DUP2)</b>						Prepared: 12/14/17 11:12 Analyzed: 12/15/17 21:41				R-04		
QC Source Sample: GP03-S-17.5 (A7L0317-09RE1)												
EPA 8270D												
Carbazole	ND	633	1270	ug/kg dry	"	---	ND	---	---	---	30%	
Dibenzofuran	ND	421	845	"	"	---	ND	---	---	---	30%	
Surr: Nitrobenzene-d5 (Surr) Recovery: 125 % Limits: 37-122 % Dilution: 125x S-05												
2-Fluorobiphenyl (Surr) 107 % 44-115 % " S-05												
Phenol-d6 (Surr) 82 % 33-122 % " S-05												
p-Terphenyl-d14 (Surr) 145 % 54-127 % " S-05												
2-Fluorophenol (Surr) 92 % 35-115 % " S-05												
2,4,6-Tribromophenol (Surr) 114 % 39-132 % " S-05												
<b>Duplicate (7120731-DUP3)</b>						Prepared: 12/14/17 11:12 Analyzed: 12/19/17 16:44				R-04		
QC Source Sample: GP03-S-17.5 (A7L0317-09)												
EPA 8270D												
Benzo(g,h,i)perylene	ND	673	1350	ug/kg dry	200	---	ND	---	---	---	30%	
Dibenz(a,h)anthracene	ND	673	1350	"	"	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	ND	673	1350	"	"	---	ND	---	---	---	30%	
<b>Matrix Spike (7120731-MS2)</b>						Prepared: 12/14/17 11:12 Analyzed: 12/18/17 12:12						
QC Source Sample: GP18-S-2.5 (A7L0317-16)												
EPA 8270D												
Acenaphthene	599	6.23	12.5	ug/kg dry	4	625	ND	96	40-122	---	---	
Acenaphthylene	584	6.23	12.5	"	"	"	ND	93	32-132	---	---	
Anthracene	620	6.23	12.5	"	"	"	ND	99	47-123	---	---	
Benz(a)anthracene	636	6.23	12.5	"	"	"	33.2	97	49-126	---	---	
Benzo(a)pyrene	663	9.37	18.7	"	"	"	44.1	99	45-129	---	---	
Benzo(b)fluoranthene	691	9.37	18.7	"	"	"	47.6	103	45-132	---	---	
Benzo(k)fluoranthene	649	9.37	18.7	"	"	"	20.2	101	47-132	---	---	
Benzo(g,h,i)perylene	668	6.23	12.5	"	"	"	29.4	102	43-134	---	---	
Chrysene	652	6.23	12.5	"	"	"	33.2	99	50-124	---	---	
Dibenz(a,h)anthracene	628	6.23	12.5	"	"	"	6.46	99	45-134	---	---	
Fluoranthene	652	6.23	12.5	"	"	"	54.1	96	50-127	---	---	
Fluorene	555	6.23	12.5	"	"	"	ND	89	43-125	---	---	
Indeno(1,2,3-cd)pyrene	603	6.23	12.5	"	"	"	28.4	92	45-133	---	---	
1-Methylnaphthalene	588	12.5	25.0	"	"	"	ND	94	40-120	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120731 - EPA 3546</b>												
<b>Soil</b>												
<b>Matrix Spike (7120731-MS2)</b>						Prepared: 12/14/17 11:12 Analyzed: 12/18/17 12:12						
<b>QC Source Sample: GP18-S-2.5 (A7L0317-16)</b>												
<b>EPA 8270D</b>												
2-Methylnaphthalene	577	12.5	25.0	ug/kg dry	"	"	ND	92	38-122	---	---	
Naphthalene	570	12.5	25.0	"	"	"	ND	91	35-123	---	---	
Phenanthrene	569	6.23	12.5	"	"	"	15.3	89	50-121	---	---	
Pyrene	663	6.23	12.5	"	"	"	54.2	97	47-127	---	---	
Bis(2-ethylhexyl)phthalate	702	93.7	187	"	"	"	ND	112	51-133	---	---	
Butyl benzyl phthalate	722	62.3	125	"	"	"	ND	116	48-132	---	---	
Diethylphthalate	593	62.3	125	"	"	"	ND	95	50-124	---	---	
Dimethylphthalate	602	62.3	125	"	"	"	ND	96	48-124	---	---	
Di-n-butylphthalate	684	62.3	125	"	"	"	ND	110	51-128	---	---	
Di-n-octyl phthalate	703	62.3	125	"	"	"	ND	113	44-140	---	---	

<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>Recovery: 95 %</i>	<i>Limits: 37-122 %</i>	<i>Dilution: 4x</i>
<i>2-Fluorobiphenyl (Surr)</i>	<i>96 %</i>	<i>44-115 %</i>	<i>"</i>
<i>Phenol-d6 (Surr)</i>	<i>90 %</i>	<i>33-122 %</i>	<i>"</i>
<i>p-Terphenyl-d14 (Surr)</i>	<i>109 %</i>	<i>54-127 %</i>	<i>"</i>
<i>2-Fluorophenol (Surr)</i>	<i>82 %</i>	<i>35-115 %</i>	<i>"</i>
<i>2,4,6-Tribromophenol (Surr)</i>	<i>107 %</i>	<i>39-132 %</i>	<i>"</i>

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120994 - EPA 3546</b>						<b>Soil</b>						
<b>Blank (7120994-BLK2)</b>						Prepared: 12/21/17 17:25 Analyzed: 12/26/17 11:37						
<b>EPA 8270D</b>												
Acenaphthene	ND	1.25	2.50	ug/kg wet	1	---	---	---	---	---	---	---
Acenaphthylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Benz(a)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Benzo(a)pyrene	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Benzo(b)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Benzo(k)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Chrysene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Dibenz(a,h)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Fluoranthene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Fluorene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
1-Methylnaphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
2-Methylnaphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
Naphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
Phenanthrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Carbazole	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Dibenzofuran	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
4-Chloro-3-methylphenol	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
2-Chlorophenol	ND	6.25	12.5	"	"	---	---	---	---	---	---	---
2,4-Dichlorophenol	ND	6.25	12.5	"	"	---	---	---	---	---	---	---
2,4-Dimethylphenol	ND	6.25	12.5	"	"	---	---	---	---	---	---	---
2,4-Dinitrophenol	ND	31.2	62.5	"	"	---	---	---	---	---	---	---
4,6-Dinitro-2-methylphenol	ND	31.2	62.5	"	"	---	---	---	---	---	---	---
2-Methylphenol	ND	3.12	6.25	"	"	---	---	---	---	---	---	---
3+4-Methylphenol(s)	ND	3.12	6.25	"	"	---	---	---	---	---	---	---
2-Nitrophenol	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
4-Nitrophenol	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
Pentachlorophenol (PCP)	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
Phenol	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
2,3,4,6-Tetrachlorophenol	ND	6.25	12.5	"	"	---	---	---	---	---	---	---
2,3,5,6-Tetrachlorophenol	ND	6.25	12.5	"	"	---	---	---	---	---	---	---

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120994 - EPA 3546</b>												
<b>Soil</b>												
<b>Blank (7120994-BLK2)</b>												
Prepared: 12/21/17 17:25 Analyzed: 12/26/17 11:37												
<b>EPA 8270D</b>												
2,4,5-Trichlorophenol	ND	6.25	12.5	ug/kg wet	"	---	---	---	---	---	---	---
2,4,6-Trichlorophenol	ND	6.25	12.5	"	"	---	---	---	---	---	---	---
Bis(2-ethylhexyl)phthalate	ND	18.7	37.5	"	"	---	---	---	---	---	---	---
Butyl benzyl phthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
Diethylphthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
Dimethylphthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
Di-n-butylphthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
Di-n-octyl phthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
<i>Surr: Nitrobenzene-d5 (Surr) Recovery: 89 % Limits: 37-122 % Dilution: 1x</i>												
<i>2-Fluorobiphenyl (Surr) 100 % 44-115 % "</i>												
<i>Phenol-d6 (Surr) 87 % 33-122 % "</i>												
<i>p-Terphenyl-d14 (Surr) 101 % 54-127 % "</i>												
<i>2-Fluorophenol (Surr) 88 % 35-115 % "</i>												
<i>2,4,6-Tribromophenol (Surr) 107 % 39-132 % "</i>												
<b>LCS (7120994-BS2)</b>												
Prepared: 12/21/17 17:25 Analyzed: 12/26/17 12:13												
<b>EPA 8270D</b>												
Acenaphthene	531	1.33	2.67	ug/kg wet	1	533	---	100	40-122	---	---	---
Acenaphthylene	501	1.33	2.67	"	"	"	---	94	32-132	---	---	---
Anthracene	520	1.33	2.67	"	"	"	---	98	47-123	---	---	---
Benz(a)anthracene	531	1.33	2.67	"	"	"	---	99	49-126	---	---	---
Benzo(a)pyrene	594	2.00	4.00	"	"	"	---	111	45-129	---	---	---
Benzo(b)fluoranthene	604	2.00	4.00	"	"	"	---	113	45-132	---	---	---
Benzo(k)fluoranthene	583	2.00	4.00	"	"	"	---	109	47-132	---	---	---
Benzo(g,h,i)perylene	507	1.33	2.67	"	"	"	---	95	43-134	---	---	---
Chrysene	539	1.33	2.67	"	"	"	---	101	50-124	---	---	---
Dibenz(a,h)anthracene	525	1.33	2.67	"	"	"	---	99	45-134	---	---	---
Fluoranthene	543	1.33	2.67	"	"	"	---	102	50-127	---	---	---
Fluorene	518	1.33	2.67	"	"	"	---	97	43-125	---	---	---
Indeno(1,2,3-cd)pyrene	526	1.33	2.67	"	"	"	---	99	45-133	---	---	---
1-Methylnaphthalene	503	2.67	5.33	"	"	"	---	94	40-120	---	---	---
2-Methylnaphthalene	511	2.67	5.33	"	"	"	---	96	38-122	---	---	---
Naphthalene	515	2.67	5.33	"	"	"	---	96	35-123	---	---	---
Phenanthrene	512	1.33	2.67	"	"	"	---	96	50-121	---	---	---
Pyrene	541	1.33	2.67	"	"	"	---	101	47-127	---	---	---

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120994 - EPA 3546</b>												
						<b>Soil</b>						
<b>LCS (7120994-BS2)</b>												
						Prepared: 12/21/17 17:25 Analyzed: 12/26/17 12:13						
<b>EPA 8270D</b>												
Carbazole	473	2.00	4.00	ug/kg wet	"	"	---	89	50-122	---	---	
Dibenzofuran	500	1.33	2.67	"	"	"	---	94	44-120	---	---	
4-Chloro-3-methylphenol	522	13.3	26.7	"	"	"	---	98	45-122	---	---	
2-Chlorophenol	511	6.67	13.3	"	"	"	---	96	34-121	---	---	
2,4-Dichlorophenol	605	6.67	13.3	"	"	"	---	113	40-122	---	---	
2,4-Dimethylphenol	587	6.67	13.3	"	"	"	---	110	30-127	---	---	
2,4-Dinitrophenol	677	33.3	66.7	"	"	"	---	127	5-137	---	---	Q-41
4,6-Dinitro-2-methylphenol	564	33.3	66.7	"	"	"	---	106	29-132	---	---	Q-41
2-Methylphenol	492	3.33	6.67	"	"	"	---	92	32-122	---	---	
3+4-Methylphenol(s)	508	3.33	6.67	"	"	"	---	95	34-120	---	---	
2-Nitrophenol	594	13.3	26.7	"	"	"	---	111	36-123	---	---	
4-Nitrophenol	591	13.3	26.7	"	"	"	---	111	30-132	---	---	
Pentachlorophenol (PCP)	554	13.3	26.7	"	"	"	---	104	25-133	---	---	
Phenol	492	2.67	5.33	"	"	"	---	92	34-120	---	---	
2,3,4,6-Tetrachlorophenol	533	6.67	13.3	"	"	"	---	100	44-125	---	---	
2,3,5,6-Tetrachlorophenol	543	6.67	13.3	"	"	"	---	102	40-120	---	---	
2,4,5-Trichlorophenol	549	6.67	13.3	"	"	"	---	103	41-124	---	---	
2,4,6-Trichlorophenol	544	6.67	13.3	"	"	"	---	102	39-126	---	---	
Bis(2-ethylhexyl)phthalate	605	20.0	40.0	"	"	"	---	114	51-133	---	---	
Butyl benzyl phthalate	642	13.3	26.7	"	"	"	---	120	48-132	---	---	
Diethylphthalate	527	13.3	26.7	"	"	"	---	99	50-124	---	---	
Dimethylphthalate	505	13.3	26.7	"	"	"	---	95	48-124	---	---	
Di-n-butylphthalate	581	13.3	26.7	"	"	"	---	109	51-128	---	---	
Di-n-octyl phthalate	632	13.3	26.7	"	"	"	---	118	44-140	---	---	

<i>Surr:</i> Nitrobenzene-d5 (Surr)	<i>Recovery:</i> 89 %	<i>Limits:</i> 37-122 %	<i>Dilution:</i> 1x
2-Fluorobiphenyl (Surr)	99 %	44-115 %	"
Phenol-d6 (Surr)	95 %	33-122 %	"
p-Terphenyl-d14 (Surr)	98 %	54-127 %	"
2-Fluorophenol (Surr)	93 %	35-115 %	"
2,4,6-Tribromophenol (Surr)	107 %	39-132 %	"

### Duplicate (7120994-DUP2)

Prepared: 12/21/17 17:25 Analyzed: 12/27/17 19:06

R-04

QC Source Sample: GP01-S-2.5 (A7L0317-04RE1)

<b>EPA 8270D</b>											
Acenaphthene	ND	71.2	143	ug/kg dry	50	---	ND	---	---	---	30%

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120994 - EPA 3546</b>												
<b>Soil</b>												
<b>Duplicate (7120994-DUP2)</b>						Prepared: 12/21/17 17:25 Analyzed: 12/27/17 19:06				R-04		
QC Source Sample: GP01-S-2.5 (A7L0317-04RE1)												
EPA 8270D												
Acenaphthylene	ND	71.2	143	ug/kg dry	"	---	ND	---	---	---	30%	
Anthracene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
Benz(a)anthracene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
Benzo(a)pyrene	162	107	214	"	"	---	ND	---	---	---	30%	J
Benzo(b)fluoranthene	131	107	214	"	"	---	ND	---	---	---	30%	J
Benzo(k)fluoranthene	ND	107	214	"	"	---	ND	---	---	---	30%	
Benzo(g,h,i)perylene	77.1	71.2	143	"	"	---	88.6	---	---	14	30%	J
Chrysene	94.5	71.2	143	"	"	---	ND	---	---	---	30%	J
Dibenz(a,h)anthracene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
Fluoranthene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
Fluorene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
1-Methylnaphthalene	ND	143	285	"	"	---	ND	---	---	---	30%	
2-Methylnaphthalene	ND	143	285	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	143	285	"	"	---	ND	---	---	---	30%	
Phenanthrene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
Pyrene	87.0	71.2	143	"	"	---	90.3	---	---	4	30%	J

Surr: Nitrobenzene-d5 (Surr)	Recovery: 74 %	Limits: 37-122 %	Dilution: 50x
2-Fluorobiphenyl (Surr)	82 %	44-115 %	"
Phenol-d6 (Surr)	62 %	33-122 %	"
p-Terphenyl-d14 (Surr)	92 %	54-127 %	"
2-Fluorophenol (Surr)	38 %	35-115 %	"
2,4,6-Tribromophenol (Surr)	67 %	39-132 %	"

### Matrix Spike (7120994-MS2)

Prepared: 12/21/17 17:25 Analyzed: 12/26/17 16:55

QC Source Sample: Other (A7L0343-06)

EPA 8270D												
Acenaphthene	645	76.0	153	ug/kg dry	40	762	ND	85	40-122	---	---	
Acenaphthylene	577	76.0	153	"	"	"	ND	76	32-132	---	---	
Anthracene	686	76.0	153	"	"	"	ND	90	47-123	---	---	
Benz(a)anthracene	943	76.0	153	"	"	"	188	99	49-126	---	---	
Benzo(a)pyrene	1530	114	229	"	"	"	372	152	45-129	---	---	Q-04
Benzo(b)fluoranthene	1590	114	229	"	"	"	462	148	45-132	---	---	Q-04

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120994 - EPA 3546</b>						<b>Soil</b>						
<b>Matrix Spike (7120994-MS2)</b>						Prepared: 12/21/17 17:25 Analyzed: 12/26/17 16:55						
<b>QC Source Sample: Other (A7L0343-06)</b>												
<b>EPA 8270D</b>												
Benzo(k)fluoranthene	1030	114	229	ug/kg dry	"	"	147	116	47-132	---	---	
Benzo(g,h,i)perylene	1710	76.0	153	"	"	"	581	149	43-134	---	---	Q-04
Chrysene	1000	76.0	153	"	"	"	194	106	50-124	---	---	
Dibenz(a,h)anthracene	677	76.0	153	"	"	"	ND	89	45-134	---	---	
Fluoranthene	912	76.0	153	"	"	"	184	95	50-127	---	---	
Fluorene	641	76.0	153	"	"	"	ND	84	43-125	---	---	
Indeno(1,2,3-cd)pyrene	1520	76.0	153	"	"	"	503	134	45-133	---	---	Q-04
1-Methylnaphthalene	682	153	305	"	"	"	ND	89	40-120	---	---	
2-Methylnaphthalene	656	153	305	"	"	"	ND	86	38-122	---	---	
Naphthalene	695	153	305	"	"	"	ND	91	35-123	---	---	
Phenanthrene	810	76.0	153	"	"	"	166	85	50-121	---	---	
Pyrene	1000	76.0	153	"	"	"	256	98	47-127	---	---	
<b>Surr: Nitrobenzene-d5 (Surr)</b> Recovery: 90 % Limits: 37-122 % Dilution: 40x S-05												
2-Fluorobiphenyl (Surr) 77 % 44-115 % " S-05												
Phenol-d6 (Surr) 83 % 33-122 % " S-05												
p-Terphenyl-d14 (Surr) 80 % 54-127 % " S-05												
2-Fluorophenol (Surr) 72 % 35-115 % " S-05												
2,4,6-Tribromophenol (Surr) 91 % 39-132 % " S-05												



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120825 - EPA 3015A</b>												
<b>Water</b>												
<b>Blank (7120825-BLK1)</b>												
						Prepared: 12/18/17 12:13			Analyzed: 12/19/17 18:19			
<b>EPA 6020A</b>												
Arsenic	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	---
Barium	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Cadmium	ND	0.0400	0.200	"	"	---	---	---	---	---	---	---
Chromium	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Lead	ND	0.100	0.200	"	"	---	---	---	---	---	---	---
Mercury	ND	0.0400	0.0800	"	"	---	---	---	---	---	---	---
Selenium	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Silver	ND	0.100	0.200	"	"	---	---	---	---	---	---	---
<b>LCS (7120825-BS1)</b>												
						Prepared: 12/18/17 12:13			Analyzed: 12/19/17 18:24			
<b>EPA 6020A</b>												
Arsenic	52.6	0.500	1.00	ug/L	1	55.6	---	95	80-120	---	---	---
Barium	58.4	0.500	1.00	"	"	"	---	105	"	---	---	---
Cadmium	57.6	0.0400	0.200	"	"	"	---	104	"	---	---	---
Chromium	51.2	0.500	1.00	"	"	"	---	92	"	---	---	---
Lead	57.4	0.100	0.200	"	"	"	---	103	"	---	---	---
Mercury	1.09	0.0400	0.0800	"	"	1.11	---	98	"	---	---	---
Selenium	28.2	0.500	1.00	"	"	27.8	---	101	"	---	---	---
Silver	28.3	0.100	0.200	"	"	"	---	102	"	---	---	---
<b>Duplicate (7120825-DUP1)</b>												
						Prepared: 12/18/17 12:13			Analyzed: 12/19/17 18:46			
<b>QC Source Sample: Other (A7L0291-02)</b>												
<b>EPA 6020A</b>												
Arsenic	<b>1.35</b>	0.500	1.00	ug/L	1	---	1.28	---	---	6	20%	
Barium	<b>94.3</b>	0.500	1.00	"	"	---	95.6	---	---	1	20%	
Cadmium	ND	0.0400	0.200	"	"	---	ND	---	---	---	20%	
Chromium	ND	0.500	1.00	"	"	---	ND	---	---	---	20%	
Lead	ND	0.100	0.200	"	"	---	ND	---	---	---	20%	
Mercury	ND	0.0400	0.0800	"	"	---	ND	---	---	---	20%	
Selenium	ND	0.500	1.00	"	"	---	ND	---	---	---	20%	
Silver	ND	0.100	0.200	"	"	---	ND	---	---	---	20%	

### Matrix Spike (7120825-MS1)

Prepared: 12/18/17 12:13 Analyzed: 12/19/17 18:50

QC Source Sample: Other (A7L0291-02)

### EPA 6020A

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120825 - EPA 3015A</b>												
<b>Water</b>												
<b>Matrix Spike (7120825-MS1)</b>						Prepared: 12/18/17 12:13 Analyzed: 12/19/17 18:50						
QC Source Sample: Other (A7L0291-02)												
EPA 6020A												
Arsenic	54.6	0.500	1.00	ug/L	1	55.6	1.28	96	75-125	---	---	
Barium	149	0.500	1.00	"	"	"	95.6	97	"	---	---	
Cadmium	58.1	0.0400	0.200	"	"	"	ND	105	"	---	---	
Chromium	51.3	0.500	1.00	"	"	"	ND	92	"	---	---	
Lead	55.6	0.100	0.200	"	"	"	ND	100	"	---	---	
Mercury	1.04	0.0400	0.0800	"	"	1.11	ND	94	"	---	---	
Selenium	28.7	0.500	1.00	"	"	27.8	ND	103	"	---	---	
Silver	27.0	0.100	0.200	"	"	"	ND	97	"	---	---	

**Matrix Spike (7120825-MS2)**

Prepared: 12/18/17 12:13 Analyzed: 12/19/17 20:33

QC Source Sample: Other (A7L0417-25)

EPA 6020A												
Arsenic	59.1	0.500	1.00	ug/L	1	55.6	15.6	78	75-125	---	---	
Barium	495	0.500	1.00	"	"	"	441	96	"	---	---	
Cadmium	58.4	0.0400	0.200	"	"	"	1.02	103	"	---	---	
Chromium	204	0.500	1.00	"	"	"	160	79	"	---	---	
Lead	92.8	0.100	0.200	"	"	"	36.6	101	"	---	---	
Mercury	1.28	0.0400	0.0800	"	"	1.11	0.220	95	"	---	---	
Selenium	22.7	0.500	1.00	"	"	27.8	0.764	79	"	---	---	
Silver	27.5	0.100	0.200	"	"	"	0.381	98	"	---	---	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120967 - EPA 3051A</b>												
<b>Soil</b>												
<b>Blank (7120967-BLK1)</b>												
						Prepared: 12/21/17 10:21			Analyzed: 12/21/17 14:27			
<b>EPA 6020A</b>												
Arsenic	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	---
Barium	ND	0.481	0.962	"	"	---	---	---	---	---	---	---
Cadmium	ND	0.0962	0.192	"	"	---	---	---	---	---	---	---
Chromium	ND	0.481	0.962	"	"	---	---	---	---	---	---	---
Lead	ND	0.0962	0.192	"	"	---	---	---	---	---	---	---
Mercury	ND	0.0385	0.0769	"	"	---	---	---	---	---	---	---
Selenium	ND	0.481	0.962	"	"	---	---	---	---	---	---	---
Silver	ND	0.0962	0.192	"	"	---	---	---	---	---	---	---
<b>LCS (7120967-BS1)</b>												
						Prepared: 12/21/17 10:21			Analyzed: 12/21/17 14:30			
<b>EPA 6020A</b>												
Arsenic	50.6	0.500	1.00	mg/kg wet	10	50.0	---	101	80-120	---	---	---
Barium	51.8	0.500	1.00	"	"	"	---	104	"	---	---	---
Cadmium	52.4	0.100	0.200	"	"	"	---	105	"	---	---	---
Chromium	47.1	0.500	1.00	"	"	"	---	94	"	---	---	---
Lead	52.0	0.100	0.200	"	"	"	---	104	"	---	---	---
Mercury	1.04	0.0400	0.0800	"	"	1.00	---	104	"	---	---	---
Selenium	26.6	0.500	1.00	"	"	25.0	---	107	"	---	---	---
Silver	24.6	0.100	0.200	"	"	"	---	99	"	---	---	---
<b>Duplicate (7120967-DUP1)</b>												
						Prepared: 12/21/17 10:21			Analyzed: 12/21/17 14:49			
<b>QC Source Sample: Other (A7L0305-09)</b>												
<b>EPA 6020A</b>												
Arsenic	<b>8.86</b>	0.693	1.39	mg/kg dry	10	---	8.37	---	---	6	40%	---
Barium	<b>154</b>	0.693	1.39	"	"	---	156	---	---	2	40%	---
Cadmium	<b>0.333</b>	0.139	0.277	"	"	---	0.309	---	---	7	40%	---
Chromium	<b>23.3</b>	0.693	1.39	"	"	---	21.6	---	---	8	40%	---
Lead	<b>11.1</b>	0.139	0.277	"	"	---	11.5	---	---	4	40%	---
Mercury	ND	0.0555	0.111	"	"	---	ND	---	---	---	40%	---
Selenium	ND	0.693	1.39	"	"	---	ND	---	---	---	40%	---
Silver	ND	0.139	0.277	"	"	---	ND	---	---	---	40%	---

### Matrix Spike (7120967-MS1)

Prepared: 12/21/17 10:21 Analyzed: 12/21/17 14:52

QC Source Sample: Other (A7L0305-09)

### EPA 6020A

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea


Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120967 - EPA 3051A</b>												
<b>Soil</b>												
<b>Matrix Spike (7120967-MS1)</b>						Prepared: 12/21/17 10:21 Analyzed: 12/21/17 14:52						
QC Source Sample: Other (A7L0305-09)												
EPA 6020A												
Arsenic	75.1	0.680	1.36	mg/kg dry	10	68.0	8.37	98	75-125	---	---	
Barium	222	0.680	1.36	"	"	"	156	96	"	---	---	
Cadmium	72.4	0.136	0.272	"	"	"	0.309	106	"	---	---	
Chromium	82.1	0.680	1.36	"	"	"	21.6	89	"	---	---	
Lead	78.5	0.136	0.272	"	"	"	11.5	99	"	---	---	
Mercury	1.38	0.0544	0.109	"	"	1.36	ND	101	"	---	---	
Selenium	34.8	0.680	1.36	"	"	34.0	ND	102	"	---	---	
Silver	33.5	0.136	0.272	"	"	"	ND	99	"	---	---	

<b>Matrix Spike (7120967-MS2)</b>						Prepared: 12/21/17 10:21 Analyzed: 12/21/17 16:20						
QC Source Sample: GP03-S-7.5 (A7L0317-08)												
EPA 6020A												
Arsenic	60.5	0.583	1.17	mg/kg dry	10	58.3	2.58	99	75-125	---	---	
Barium	160	0.583	1.17	"	"	"	93.7	113	"	---	---	
Cadmium	61.1	0.117	0.233	"	"	"	0.433	104	"	---	---	
Chromium	67.0	0.583	1.17	"	"	"	14.7	90	"	---	---	
Lead	191	0.117	0.233	"	"	"	169	38	"	---	---	Q-04
Mercury	2.15	0.0466	0.0933	"	"	1.17	0.439	147	"	---	---	Q-04
Selenium	30.0	0.583	1.17	"	"	29.1	ND	103	"	---	---	
Silver	27.6	0.117	0.233	"	"	"	ND	95	"	---	---	





**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120977 - EPA 3051A</b>												
<b>Soil</b>												
<b>Blank (7120977-BLK1)</b>												
						Prepared: 12/21/17 13:32			Analyzed: 12/26/17 17:06			
<b>EPA 6020A</b>												
Arsenic	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Barium	ND	0.481	0.962	"	"	---	---	---	---	---	---	
Cadmium	ND	0.0962	0.192	"	"	---	---	---	---	---	---	
Chromium	ND	0.481	0.962	"	"	---	---	---	---	---	---	
Lead	ND	0.0962	0.192	"	"	---	---	---	---	---	---	
Mercury	ND	0.0385	0.0769	"	"	---	---	---	---	---	---	
Selenium	ND	0.481	0.962	"	"	---	---	---	---	---	---	
Silver	ND	0.0962	0.192	"	"	---	---	---	---	---	---	
<b>LCS (7120977-BS1)</b>												
						Prepared: 12/21/17 13:32			Analyzed: 12/26/17 17:09			
<b>EPA 6020A</b>												
Arsenic	48.0	0.500	1.00	mg/kg wet	10	50.0	---	96	80-120	---	---	
Barium	49.2	0.500	1.00	"	"	"	---	98	"	---	---	
Cadmium	50.2	0.100	0.200	"	"	"	---	100	"	---	---	
Chromium	48.6	0.500	1.00	"	"	"	---	97	"	---	---	
Lead	51.0	0.100	0.200	"	"	"	---	102	"	---	---	
Mercury	0.976	0.0400	0.0800	"	"	1.00	---	98	"	---	---	
Selenium	25.0	0.500	1.00	"	"	25.0	---	100	"	---	---	
Silver	24.4	0.100	0.200	"	"	"	---	98	"	---	---	
<b>Duplicate (7120977-DUP1)</b>												
						Prepared: 12/21/17 13:32			Analyzed: 12/26/17 17:37			
<b>QC Source Sample: GP16-S-2.5 (A7L0317-12)</b>												
<b>EPA 6020A</b>												
Arsenic	<b>1.72</b>	0.636	1.27	mg/kg dry	10	---	1.92	---	---	11	40%	
Barium	<b>87.1</b>	0.636	1.27	"	"	---	92.0	---	---	6	40%	
Cadmium	<b>0.140</b>	0.127	0.255	"	"	---	0.145	---	---	4	40%	J
Chromium	<b>14.5</b>	0.636	1.27	"	"	---	15.6	---	---	7	40%	
Lead	<b>2.72</b>	0.127	0.255	"	"	---	2.82	---	---	3	40%	
Mercury	ND	0.0509	0.102	"	"	---	ND	---	---	---	40%	
Selenium	ND	0.636	1.27	"	"	---	ND	---	---	---	40%	
Silver	ND	0.127	0.255	"	"	---	ND	---	---	---	40%	

### Matrix Spike (7120977-MS1)

Prepared: 12/21/17 13:32 Analyzed: 12/26/17 17:40

QC Source Sample: GP16-S-2.5 (A7L0317-12)

### EPA 6020A

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)


Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120977 - EPA 3051A</b>												
<b>Soil</b>												
<b>Matrix Spike (7120977-MS1)</b>						Prepared: 12/21/17 13:32 Analyzed: 12/26/17 17:40						
QC Source Sample: GP16-S-2.5 (A7L0317-12)												
EPA 6020A												
Arsenic	59.5	0.625	1.25	mg/kg dry	10	62.6	1.92	92	75-125	---	---	
Barium	147	0.625	1.25	"	"	"	92.0	88	"	---	---	
Cadmium	62.2	0.125	0.250	"	"	"	0.145	99	"	---	---	
Chromium	73.5	0.625	1.25	"	"	"	15.6	92	"	---	---	
Lead	63.3	0.125	0.250	"	"	"	2.82	97	"	---	---	
Mercury	1.22	0.0500	0.100	"	"	1.25	ND	97	"	---	---	
Selenium	29.1	0.625	1.25	"	"	31.2	ND	93	"	---	---	
Silver	30.3	0.125	0.250	"	"	"	ND	97	"	---	---	

**Matrix Spike (7120977-MS2)**

Prepared: 12/21/17 13:32 Analyzed: 12/26/17 18:46

QC Source Sample: Other (A7L0566-06)

EPA 6020A												
Arsenic	61.9	0.564	1.13	mg/kg dry	10	56.4	6.63	98	75-125	---	---	
Barium	200	0.564	1.13	"	"	"	140	107	"	---	---	
Cadmium	57.1	0.113	0.226	"	"	"	0.397	100	"	---	---	
Chromium	76.1	0.564	1.13	"	"	"	18.0	103	"	---	---	
Lead	105	0.113	0.226	"	"	"	49.2	98	"	---	---	
Mercury	1.17	0.0451	0.0902	"	"	1.13	0.135	92	"	---	---	
Selenium	28.1	0.564	1.13	"	"	28.2	ND	100	"	---	---	
Silver	27.4	0.113	0.226	"	"	"	ND	97	"	---	---	



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120668 - Total Solids (Dry Weight)</b>						<b>Soil</b>						
<b>Duplicate (7120668-DUP1)</b>						Prepared: 12/13/17 08:06		Analyzed: 12/14/17 08:08				
QC Source Sample: Other (A7L0258-05)												
EPA 8000C												
% Solids	79.4	1.00	1.00	% by Weight	1	---	83.4	---	---	5	10%	
<b>Duplicate (7120668-DUP2)</b>						Prepared: 12/13/17 08:06		Analyzed: 12/14/17 08:08				
QC Source Sample: Other (A7L0297-01)												
EPA 8000C												
% Solids	80.8	1.00	1.00	% by Weight	1	---	80.7	---	---	0.1	10%	
<b>Duplicate (7120668-DUP3)</b>						Prepared: 12/13/17 08:06		Analyzed: 12/14/17 08:08				
QC Source Sample: Other (A7L0308-01)												
EPA 8000C												
% Solids	89.0	1.00	1.00	% by Weight	1	---	88.6	---	---	0.4	10%	
<b>Duplicate (7120668-DUP4)</b>						Prepared: 12/13/17 08:06		Analyzed: 12/14/17 08:08				
QC Source Sample: GP06-S-2.5 (A7L0317-01)												
EPA 8000C												
% Solids	86.9	1.00	1.00	% by Weight	1	---	87.7	---	---	0.9	10%	
<b>Duplicate (7120668-DUP5)</b>						Prepared: 12/13/17 08:06		Analyzed: 12/14/17 08:08				
QC Source Sample: GP03-S-32.0 (A7L0317-10)												
EPA 8000C												
% Solids	76.6	1.00	1.00	% by Weight	1	---	80.0	---	---	4	10%	
<b>Duplicate (7120668-DUP6)</b>						Prepared: 12/13/17 08:06		Analyzed: 12/14/17 08:08				
QC Source Sample: Other (A7L0317-23)												
EPA 8000C												
% Solids	90.8	1.00	1.00	% by Weight	1	---	91.0	---	---	0.2	10%	
<b>Duplicate (7120668-DUP7)</b>						Prepared: 12/13/17 19:23		Analyzed: 12/14/17 08:08				
QC Source Sample: Other (A7L0336-01)												
EPA 8000C												
% Solids	72.1	1.00	1.00	% by Weight	1	---	72.1	---	---	0.08	10%	
<b>Duplicate (7120668-DUP8)</b>						Prepared: 12/13/17 19:23		Analyzed: 12/14/17 08:08				
QC Source Sample: Other (A7L0351-02)												

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:52

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120668 - Total Solids (Dry Weight)</b>						<b>Soil</b>						
<b>Duplicate (7120668-DUP8)</b>						Prepared: 12/13/17 19:23 Analyzed: 12/14/17 08:08						
QC Source Sample: Other (A7L0351-02)												
EPA 8000C												
% Solids	86.9	1.00	1.00	% by Weight	1	---	86.8	---	---	0.07	10%	
<b>Duplicate (7120668-DUP9)</b>						Prepared: 12/13/17 19:23 Analyzed: 12/14/17 08:08						
QC Source Sample: Other (A7L0357-02)												
EPA 8000C												
% Solids	77.0	1.00	1.00	% by Weight	1	---	77.2	---	---	0.3	10%	

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## SAMPLE PREPARATION INFORMATION

### Hydrocarbon Identification Screen by NWTPH-HCID

#### Prep: NWTPH-HCID (Soil)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120697</b>							
A7L0317-07	Soil	NWTPH-HCID	12/11/17 11:10	12/13/17 15:03	10.11g/10mL	10g/10mL	0.99
A7L0317-08	Soil	NWTPH-HCID	12/11/17 11:30	12/13/17 15:03	10.04g/10mL	10g/10mL	1.00
A7L0317-09REI	Soil	NWTPH-HCID	12/11/17 11:40	12/13/17 15:03	10.24g/10mL	10g/10mL	0.98
A7L0317-10REI	Soil	NWTPH-HCID	12/11/17 12:15	12/13/17 15:03	10.11g/10mL	10g/10mL	0.99
A7L0317-11	Soil	NWTPH-HCID	12/11/17 11:10	12/13/17 15:03	10.1g/10mL	10g/10mL	0.99
A7L0317-17	Soil	NWTPH-HCID	12/11/17 14:30	12/13/17 15:03	10.15g/10mL	10g/10mL	0.99
A7L0317-18	Soil	NWTPH-HCID	12/11/17 14:45	12/13/17 15:03	10.07g/10mL	10g/10mL	0.99

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

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

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120777</b>							
A7L0317-19	Water	NWTPH-Dx	12/11/17 13:30	12/15/17 11:39	980mL/5mL	1000mL/5mL	1.02
A7L0317-24	Water	NWTPH-Dx	12/12/17 09:30	12/15/17 11:39	930mL/5mL	1000mL/5mL	1.08

#### Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120691</b>							
A7L0317-02	Soil	NWTPH-Dx	12/11/17 10:05	12/13/17 13:44	10.13g/5mL	10g/5mL	0.99
A7L0317-03REI	Soil	NWTPH-Dx	12/11/17 10:20	12/13/17 13:44	10.15g/5mL	10g/5mL	0.99
A7L0317-04	Soil	NWTPH-Dx	12/11/17 10:35	12/13/17 13:44	10.22g/5mL	10g/5mL	0.98
A7L0317-05	Soil	NWTPH-Dx	12/11/17 10:45	12/13/17 13:44	10.16g/5mL	10g/5mL	0.98
A7L0317-06	Soil	NWTPH-Dx	12/11/17 11:00	12/13/17 13:44	10.22g/5mL	10g/5mL	0.98
A7L0317-12	Soil	NWTPH-Dx	12/11/17 13:15	12/13/17 13:44	10.13g/5mL	10g/5mL	0.99
A7L0317-13	Soil	NWTPH-Dx	12/11/17 13:20	12/13/17 13:44	10.17g/5mL	10g/5mL	0.98
A7L0317-14	Soil	NWTPH-Dx	12/11/17 13:40	12/13/17 13:44	10.12g/5mL	10g/5mL	0.99
A7L0317-15	Soil	NWTPH-Dx	12/11/17 13:50	12/13/17 13:44	10.14g/5mL	10g/5mL	0.99
A7L0317-16	Soil	NWTPH-Dx	12/11/17 14:00	12/13/17 13:44	10.15g/5mL	10g/5mL	0.99
A7L0317-21	Soil	NWTPH-Dx	12/12/17 08:30	12/13/17 13:44	10.05g/5mL	10g/5mL	1.00
A7L0317-22	Soil	NWTPH-Dx	12/12/17 08:40	12/13/17 13:44	10.12g/5mL	10g/5mL	0.99
A7L0317-23	Soil	NWTPH-Dx	12/12/17 08:40	12/13/17 13:44	10.22g/5mL	10g/5mL	0.98

#### Batch: 7120787

A7L0317-01	Soil	NWTPH-Dx	12/11/17 09:55	12/15/17 14:39	10.8g/5mL	10g/5mL	0.93
------------	------	----------	----------------	----------------	-----------	---------	------

#### Batch: 7120982

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

## SAMPLE PREPARATION INFORMATION

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

#### Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0317-07	Soil	NWTPH-Dx	12/11/17 11:10	12/21/17 13:41	10.11g/5mL	10g/5mL	0.99
A7L0317-08	Soil	NWTPH-Dx	12/11/17 11:30	12/21/17 13:41	10.27g/5mL	10g/5mL	0.97
A7L0317-09	Soil	NWTPH-Dx	12/11/17 11:40	12/21/17 13:41	10.21g/5mL	10g/5mL	0.98
A7L0317-10	Soil	NWTPH-Dx	12/11/17 12:15	12/21/17 13:41	10.24g/5mL	10g/5mL	0.98
A7L0317-11	Soil	NWTPH-Dx	12/11/17 11:10	12/21/17 13:41	10.18g/5mL	10g/5mL	0.98

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

#### Prep: EPA 5030B

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 7120716							
A7L0317-19RE	Water	NWTPH-Gx (MS)	12/11/17 13:30	12/14/17 10:40	5mL/5mL	5mL/5mL	1.00
A7L0317-24RE	Water	NWTPH-Gx (MS)	12/12/17 09:30	12/14/17 10:40	5mL/5mL	5mL/5mL	1.00

#### Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 7120671							
A7L0317-01	Soil	NWTPH-Gx (MS)	12/11/17 09:55	12/11/17 09:55	5.82g/5mL	5g/5mL	0.86
A7L0317-02	Soil	NWTPH-Gx (MS)	12/11/17 10:05	12/11/17 10:05	7.14g/5mL	5g/5mL	0.70
A7L0317-03	Soil	NWTPH-Gx (MS)	12/11/17 10:20	12/11/17 10:20	6.37g/5mL	5g/5mL	0.79
A7L0317-04	Soil	NWTPH-Gx (MS)	12/11/17 10:35	12/11/17 10:35	5.66g/5mL	5g/5mL	0.88
A7L0317-05	Soil	NWTPH-Gx (MS)	12/11/17 10:45	12/11/17 10:45	6.4g/5mL	5g/5mL	0.78
A7L0317-06	Soil	NWTPH-Gx (MS)	12/11/17 11:00	12/11/17 11:00	6.15g/5mL	5g/5mL	0.81
A7L0317-12	Soil	NWTPH-Gx (MS)	12/11/17 13:15	12/11/17 13:15	5g/5mL	5g/5mL	1.00
A7L0317-13	Soil	NWTPH-Gx (MS)	12/11/17 13:20	12/11/17 13:20	5.13g/5mL	5g/5mL	0.98
A7L0317-14	Soil	NWTPH-Gx (MS)	12/11/17 13:40	12/11/17 13:40	5.53g/5mL	5g/5mL	0.90
A7L0317-15	Soil	NWTPH-Gx (MS)	12/11/17 13:50	12/11/17 13:50	5.49g/5mL	5g/5mL	0.91
A7L0317-16	Soil	NWTPH-Gx (MS)	12/11/17 14:00	12/11/17 14:00	5.5g/5mL	5g/5mL	0.91
A7L0317-21	Soil	NWTPH-Gx (MS)	12/12/17 08:30	12/12/17 08:30	5.16g/5mL	5g/5mL	0.97
A7L0317-22	Soil	NWTPH-Gx (MS)	12/12/17 08:40	12/12/17 08:40	4.51g/5mL	5g/5mL	1.11

#### Batch: 7120763

A7L0317-23	Soil	NWTPH-Gx (MS)	12/12/17 08:40	12/12/17 08:40	4.63g/5mL	5g/5mL	1.08
------------	------	---------------	----------------	----------------	-----------	--------	------


### Volatile Organic Compounds by EPA 5035A/8260C

#### Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
------------	--------	--------	---------	----------	----------------------	-----------------------	----------------

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## SAMPLE PREPARATION INFORMATION

### Volatile Organic Compounds by EPA 5035A/8260C

Batch: 7120671

Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Default	RL Prep Factor
A7L0317-01	Soil	5035A/8260C	12/11/17 09:55	12/11/17 09:55	5.82g/5mL	5g/5mL	0.86
A7L0317-02	Soil	5035A/8260C	12/11/17 10:05	12/11/17 10:05	7.14g/5mL	5g/5mL	0.70
A7L0317-03	Soil	5035A/8260C	12/11/17 10:20	12/11/17 10:20	6.37g/5mL	5g/5mL	0.79
A7L0317-07	Soil	5035A/8260C	12/11/17 11:10	12/11/17 11:10	4.9g/5mL	5g/5mL	1.02
A7L0317-08	Soil	5035A/8260C	12/11/17 11:30	12/11/17 11:30	5.91g/5mL	5g/5mL	0.85
A7L0317-09	Soil	5035A/8260C	12/11/17 11:40	12/11/17 11:40	5.13g/5mL	5g/5mL	0.98
A7L0317-10	Soil	5035A/8260C	12/11/17 12:15	12/11/17 12:15	5.54g/5mL	5g/5mL	0.90
A7L0317-11	Soil	5035A/8260C	12/11/17 11:10	12/11/17 11:10	6.46g/5mL	5g/5mL	0.77
A7L0317-14	Soil	5035A/8260C	12/11/17 13:40	12/11/17 13:40	5.53g/5mL	5g/5mL	0.90
A7L0317-15	Soil	5035A/8260C	12/11/17 13:50	12/11/17 13:50	5.49g/5mL	5g/5mL	0.91
A7L0317-16	Soil	5035A/8260C	12/11/17 14:00	12/11/17 14:00	5.5g/5mL	5g/5mL	0.91
A7L0317-17	Soil	5035A/8260C	12/11/17 14:30	12/11/17 14:30	4.84g/5mL	5g/5mL	1.03
A7L0317-18	Soil	5035A/8260C	12/11/17 14:45	12/11/17 14:45	4.81g/5mL	5g/5mL	1.04
A7L0317-21	Soil	5035A/8260C	12/12/17 08:30	12/12/17 08:30	5.16g/5mL	5g/5mL	0.97
A7L0317-22	Soil	5035A/8260C	12/12/17 08:40	12/12/17 08:40	4.51g/5mL	5g/5mL	1.11

Batch: 7120763

A7L0317-23	Soil	5035A/8260C	12/12/17 08:40	12/12/17 08:40	4.63g/5mL	5g/5mL	1.08
------------	------	-------------	----------------	----------------	-----------	--------	------

### Volatile Organic Compounds by EPA 8260C

Prep: EPA 5030B

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0317-19REI	Water	EPA 8260C	12/11/17 13:30	12/14/17 10:40	5mL/5mL	5mL/5mL	1.00
A7L0317-20	Water	EPA 8260C	12/11/17 00:00	12/14/17 10:40	5mL/5mL	5mL/5mL	1.00
A7L0317-24REI	Water	EPA 8260C	12/12/17 09:30	12/14/17 10:40	5mL/5mL	5mL/5mL	1.00

### Polychlorinated Biphenyls -- EPA 8082A

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0317-01	Soil	EPA 8082A	12/11/17 09:55	12/13/17 12:04	11.36g/2mL	10g/2mL	0.88
A7L0317-02	Soil	EPA 8082A	12/11/17 10:05	12/13/17 12:04	11.67g/2mL	10g/2mL	0.86
A7L0317-03	Soil	EPA 8082A	12/11/17 10:20	12/13/17 12:04	10.69g/5mL	10g/2mL	2.34
A7L0317-04	Soil	EPA 8082A	12/11/17 10:35	12/13/17 12:04	10.96g/2mL	10g/2mL	0.91
A7L0317-05REI	Soil	EPA 8082A	12/11/17 10:45	12/13/17 12:04	10.57g/2mL	10g/2mL	0.95
A7L0317-06REI	Soil	EPA 8082A	12/11/17 11:00	12/13/17 12:04	11.18g/2mL	10g/2mL	0.89

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:52

## SAMPLE PREPARATION INFORMATION

### Polychlorinated Biphenyls -- EPA 8082A

**Prep: EPA 3546**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120873</b>							
A7L0317-07	Soil	EPA 8082A	12/11/17 11:10	12/19/17 13:32	10.46g/2mL	10g/2mL	0.96
A7L0317-08	Soil	EPA 8082A	12/11/17 11:30	12/19/17 13:32	10.4g/2mL	10g/2mL	0.96
A7L0317-09REI	Soil	EPA 8082A	12/11/17 11:40	12/19/17 13:32	10.18g/5mL	10g/2mL	2.46
A7L0317-10	Soil	EPA 8082A	12/11/17 12:15	12/19/17 13:32	11.41g/2mL	10g/2mL	0.88
A7L0317-11	Soil	EPA 8082A	12/11/17 11:10	12/19/17 13:32	10.42g/2mL	10g/2mL	0.96
<b>Batch: 7121074</b>							
A7L0317-21REI	Soil	EPA 8082A	12/12/17 08:30	12/27/17 11:30	10.95g/5mL	10g/2mL	2.28

### Organochlorine Pesticides by EPA 8081B

**Prep: EPA 3546/3640A (GPC)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120888</b>							
A7L0317-01REI	Soil	EPA 8081B	12/11/17 09:55	12/18/17 14:03	10.15g/20mL	10g/5mL	3.94
A7L0317-02REI	Soil	EPA 8081B	12/11/17 10:05	12/18/17 14:03	10.34g/10mL	10g/5mL	1.93
A7L0317-03REI	Soil	EPA 8081B	12/11/17 10:20	12/18/17 14:03	10.45g/20mL	10g/5mL	3.83
A7L0317-04REI	Soil	EPA 8081B	12/11/17 10:35	12/18/17 14:03	11.03g/20mL	10g/5mL	3.63
A7L0317-05REI	Soil	EPA 8081B	12/11/17 10:45	12/18/17 14:03	10.15g/20mL	10g/5mL	3.94
A7L0317-06REI	Soil	EPA 8081B	12/11/17 11:00	12/18/17 14:03	11.04g/20mL	10g/5mL	3.62
A7L0317-07REI	Soil	EPA 8081B	12/11/17 11:10	12/18/17 14:03	10.69g/20mL	10g/5mL	3.74
A7L0317-08REI	Soil	EPA 8081B	12/11/17 11:30	12/18/17 14:03	10.22g/20mL	10g/5mL	3.91
A7L0317-09REI	Soil	EPA 8081B	12/11/17 11:40	12/18/17 14:03	11.02g/20mL	10g/5mL	3.63
A7L0317-10REI	Soil	EPA 8081B	12/11/17 12:15	12/18/17 14:03	10.32g/10mL	10g/5mL	1.94
A7L0317-11REI	Soil	EPA 8081B	12/11/17 11:10	12/18/17 14:03	10.8g/20mL	10g/5mL	3.70

### Semivolatle Organic Compounds by EPA 8270D

**Prep: EPA 3510C (Acid Extraction)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120727</b>							
A7L0317-19REI	Water	EPA 8270D	12/11/17 13:30	12/14/17 10:20	820mL/1mL	1000mL/1mL	1.22
A7L0317-24REI	Water	EPA 8270D	12/12/17 09:30	12/14/17 10:20	1040mL/1mL	1000mL/1mL	0.96

**Prep: EPA 3546**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120698</b>							

Apex Laboratories

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



Philip Nerenberg, Lab Director



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## SAMPLE PREPARATION INFORMATION

### Semivolatile Organic Compounds by EPA 8270D

#### Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0317-01REI	Soil	EPA 8270D	12/11/17 09:55	12/13/17 15:48	15.51g/2mL	15g/2mL	0.97
A7L0317-02REI	Soil	EPA 8270D	12/11/17 10:05	12/13/17 15:48	15.22g/2mL	15g/2mL	0.99
A7L0317-03REI	Soil	EPA 8270D	12/11/17 10:20	12/13/17 15:48	15.32g/2mL	15g/2mL	0.98
A7L0317-07REI	Soil	EPA 8270D	12/11/17 11:10	12/13/17 15:48	15.43g/2mL	15g/2mL	0.97
A7L0317-08REI	Soil	EPA 8270D	12/11/17 11:30	12/13/17 15:48	15.58g/2mL	15g/2mL	0.96
A7L0317-21REI	Soil	EPA 8270D	12/12/17 08:30	12/13/17 15:48	15.56g/2mL	15g/2mL	0.96
A7L0317-22REI	Soil	EPA 8270D	12/12/17 08:40	12/13/17 15:48	15.31g/2mL	15g/2mL	0.98
A7L0317-23REI	Soil	EPA 8270D	12/12/17 08:40	12/13/17 15:48	15.59g/2mL	15g/2mL	0.96

#### Batch: 7120731

A7L0317-09REI	Soil	EPA 8270D	12/11/17 11:40	12/14/17 11:12	15.63g/5mL	15g/2mL	2.40
A7L0317-10	Soil	EPA 8270D	12/11/17 12:15	12/14/17 11:12	15.33g/2mL	15g/2mL	0.98
A7L0317-11REI	Soil	EPA 8270D	12/11/17 11:10	12/14/17 11:12	15.88g/2mL	15g/2mL	0.95
A7L0317-12REI	Soil	EPA 8270D	12/11/17 13:15	12/14/17 11:12	15.12g/2mL	15g/2mL	0.99
A7L0317-13REI	Soil	EPA 8270D	12/11/17 13:20	12/14/17 11:12	15.17g/2mL	15g/2mL	0.99
A7L0317-14	Soil	EPA 8270D	12/11/17 13:40	12/14/17 11:12	15.69g/2mL	15g/2mL	0.96
A7L0317-15	Soil	EPA 8270D	12/11/17 13:50	12/14/17 11:12	15.09g/2mL	15g/2mL	0.99
A7L0317-16	Soil	EPA 8270D	12/11/17 14:00	12/14/17 11:12	15.14g/2mL	15g/2mL	0.99

#### Batch: 7120994

A7L0317-04REI	Soil	EPA 8270D	12/11/17 10:35	12/21/17 17:25	15.11g/2mL	15g/2mL	0.99
---------------	------	-----------	----------------	----------------	------------	---------	------

### Total Metals by EPA 6020 (ICPMS)

#### Prep: EPA 3015A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0317-19	Water	EPA 6020A	12/11/17 13:30	12/18/17 12:13	45mL/50mL	45mL/50mL	1.00
A7L0317-24	Water	EPA 6020A	12/12/17 09:30	12/18/17 12:13	45mL/50mL	45mL/50mL	1.00

#### Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0317-01	Soil	EPA 6020A	12/11/17 09:55	12/21/17 10:21	0.459g/50mL	0.5g/50mL	1.09
A7L0317-02	Soil	EPA 6020A	12/11/17 10:05	12/21/17 10:21	0.479g/50mL	0.5g/50mL	1.04
A7L0317-03	Soil	EPA 6020A	12/11/17 10:20	12/21/17 10:21	0.512g/50mL	0.5g/50mL	0.98
A7L0317-04	Soil	EPA 6020A	12/11/17 10:35	12/21/17 10:21	0.461g/50mL	0.5g/50mL	1.08
A7L0317-05	Soil	EPA 6020A	12/11/17 10:45	12/21/17 10:21	0.514g/50mL	0.5g/50mL	0.97

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

## SAMPLE PREPARATION INFORMATION

### Total Metals by EPA 6020 (ICPMS)

#### Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0317-06	Soil	EPA 6020A	12/11/17 11:00	12/21/17 10:21	0.465g/50mL	0.5g/50mL	1.08
A7L0317-07	Soil	EPA 6020A	12/11/17 11:10	12/21/17 10:21	0.501g/50mL	0.5g/50mL	1.00
A7L0317-08	Soil	EPA 6020A	12/11/17 11:30	12/21/17 10:21	0.466g/50mL	0.5g/50mL	1.07

#### Batch: 7120977

A7L0317-09	Soil	EPA 6020A	12/11/17 11:40	12/21/17 13:32	0.514g/50mL	0.5g/50mL	0.97
A7L0317-10	Soil	EPA 6020A	12/11/17 12:15	12/21/17 13:32	0.474g/50mL	0.5g/50mL	1.05
A7L0317-11	Soil	EPA 6020A	12/11/17 11:10	12/21/17 13:32	0.47g/50mL	0.5g/50mL	1.06
A7L0317-12	Soil	EPA 6020A	12/11/17 13:15	12/21/17 13:32	0.482g/50mL	0.5g/50mL	1.04
A7L0317-13	Soil	EPA 6020A	12/11/17 13:20	12/21/17 13:32	0.506g/50mL	0.5g/50mL	0.99
A7L0317-14	Soil	EPA 6020A	12/11/17 13:40	12/21/17 13:32	0.462g/50mL	0.5g/50mL	1.08
A7L0317-15	Soil	EPA 6020A	12/11/17 13:50	12/21/17 13:32	0.477g/50mL	0.5g/50mL	1.05
A7L0317-16	Soil	EPA 6020A	12/11/17 14:00	12/21/17 13:32	0.478g/50mL	0.5g/50mL	1.05
A7L0317-17	Soil	EPA 6020A	12/11/17 14:30	12/21/17 13:32	0.45g/50mL	0.5g/50mL	1.11
A7L0317-18	Soil	EPA 6020A	12/11/17 14:45	12/21/17 13:32	0.459g/50mL	0.5g/50mL	1.09
A7L0317-21	Soil	EPA 6020A	12/12/17 08:30	12/21/17 13:32	0.471g/50mL	0.5g/50mL	1.06
A7L0317-22	Soil	EPA 6020A	12/12/17 08:40	12/21/17 13:32	0.463g/50mL	0.5g/50mL	1.08
A7L0317-23	Soil	EPA 6020A	12/12/17 08:40	12/21/17 13:32	0.471g/50mL	0.5g/50mL	1.06

### Percent Dry Weight

#### Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0317-01	Soil	EPA 8000C	12/11/17 09:55	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-02	Soil	EPA 8000C	12/11/17 10:05	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-03	Soil	EPA 8000C	12/11/17 10:20	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-04	Soil	EPA 8000C	12/11/17 10:35	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-05	Soil	EPA 8000C	12/11/17 10:45	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-06	Soil	EPA 8000C	12/11/17 11:00	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-07	Soil	EPA 8000C	12/11/17 11:10	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-08	Soil	EPA 8000C	12/11/17 11:30	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-09	Soil	EPA 8000C	12/11/17 11:40	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-10	Soil	EPA 8000C	12/11/17 12:15	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-11	Soil	EPA 8000C	12/11/17 11:10	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-12	Soil	EPA 8000C	12/11/17 13:15	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-13	Soil	EPA 8000C	12/11/17 13:20	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-14	Soil	EPA 8000C	12/11/17 13:40	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea


**Reported:**  
 01/09/18 23:52

## SAMPLE PREPARATION INFORMATION

### Percent Dry Weight

#### Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0317-15	Soil	EPA 8000C	12/11/17 13:50	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-16	Soil	EPA 8000C	12/11/17 14:00	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-17	Soil	EPA 8000C	12/11/17 14:30	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-18	Soil	EPA 8000C	12/11/17 14:45	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-21	Soil	EPA 8000C	12/12/17 08:30	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-22	Soil	EPA 8000C	12/12/17 08:40	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA
A7L0317-23	Soil	EPA 8000C	12/12/17 08:40	12/13/17 08:06	1N/A/1N/A	1N/A/1N/A	NA



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

**Reported:**  
01/09/18 23:52


## Notes and Definitions

### Qualifiers:

- B Analyte detected in an associated blank at a level above the MRL. (See Notes and Conventions below.)
- B-02 Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
- C-05 Extract has undergone a GPC (Gel-Permeation Chromatography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
- C-07 Extract has undergone Sulfuric Acid Cleanup by EPA 3665A, Sulfur Cleanup by EPA 3660B, and Florisil Cleanup by EPA 3620B in order to minimize matrix interference.
- F-03 The result for this hydrocarbon range is elevated due to the presence of individual analyte peaks in the quantitation range that are not representative of the fuel pattern reported.
- J Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
- M-05 Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.
- P-10 Result estimated due to the presence of multiple PCB Aroclors and/or matrix interference.
- Q-01 Spike recovery and/or RPD is outside acceptance limits.
- Q-04 Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- Q-05 Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-06 Internal Standard area outside of 50-200% limits. Data Not Reported.
- Q-17 RPD between original and duplicate sample is outside of established control limits.
- Q-19 Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
- Q-41 Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- Q-42 Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- Q-54 Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +1%. The results are reported as Estimated Values.
- Q-54a Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +11.4%. The results are reported as Estimated Values.
- Q-54b Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +13.2%. The results are reported as Estimated Values.
- Q-54c Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +23.4%. The results are reported as Estimated Values.
- Q-54d Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +3%. The results are reported as Estimated Values.
- Q-54e Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +4%. The results are reported as Estimated Values.
- Q-54f Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +5%. The results are reported as Estimated Values.

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**

2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**

Project Number: 0075.06.02

Project Manager: Merideth D'Andrea

Reported:

01/09/18 23:52

- Q-54g Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +5.6%. The results are reported as Estimated Values.
- Q-54h Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +6%. The results are reported as Estimated Values.
- Q-54i Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +62.6%. The results are reported as Estimated Values.
- Q-54j Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +9%. The results are reported as Estimated Values.
- Q-54k Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +9.4%. The results are reported as Estimated Values.
- Q-54l Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +94.7%. The results are reported as Estimated Values.
- Q-54m Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -0.6%. The results are reported as Estimated Values.
- Q-54n Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -6.5%. The results are reported as Estimated Values.
- Q-55 Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260C, however there is adequate sensitivity to ensure detection at the reporting level.
- Q-56 Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260C
- R-02 The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
- R-04 Reporting levels elevated due to dilution necessary for analysis.
- S-01 Surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference.
- S-05 Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.
- S-06 Surrogate recovery is outside of established control limits.
- TEMP Sample(s) received outside of recommended temperature. See Case Narrative.
- V-16 Sample aliquot was subsampled from the sample container in the laboratory. The subsampled aliquot was not preserved within 48 hours of sampling.
- V-21 Sample aliquot was subsampled from a sample container that had been previously opened and had sample removed for another analysis.

Notes and Conventions:

- DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit



**Maul Foster & Alongi, INC.**

2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**

Project Number: 0075.06.02

Project Manager: Merideth D'Andrea

Reported:

01/09/18 23:52

NR Not Reported

dry Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry' designation are not dry weight corrected.

RPD Relative Percent Difference

MDL If MDL is not listed, data has been evaluated to the Method Reporting Limit only.

WMSC Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.

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

Blank Apex assesses blank data for potential high bias down to a level equal to 1/2 the method reporting limit (MRL), except for conventional  
Policy chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses.

For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor.

Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.

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

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



Maul Foster & Alongi, INC.
2001 NW 19th Ave, STE 200
Portland, OR 97209

Project: Metro-Willamette Falls
Project Number: 0075.06.02
Project Manager: Merideth D'Andrea

Reported: 01/09/18 23:52

CHAIN OF CUSTODY
APEX LABS
12232 S.W. Garden Place, Tigard, OR 97223
Project Mgr: Meri D'Andrea
Project Name: Metro-Willamette Falls
Project #: 0075.06.02
Date: 12/14/17
Time: 10:55
Signature: Emily Hess
Company: MFA
Signature: Charles Hoffman
Company: Apex Labs

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

**CHAIN OF CUSTODY**

Company: **APEX LABS**      Project Mgr: **Merideth D'Andrea**      PO#      Project # **0075.06.02**  
 Address: **402 E Mill Plain Blvd #400, Vancouver, WA 98660**      Phone:      Fax:      Email: **maul@maul-foster.com**  
 Sampled by: **Emily Hecess**

Site Location: **OR**      WA  
 Other: \_\_\_\_\_

LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-BCD	NWTPH-DX	NWTPH-GX	8260 VOCs Full List	8260 HBDM VOCs	8260 HVOCs	8260 BTEX VOCs	8270 SVOC	8270 SMT-PATH SCAN	8082 PCBs	600 TIO	R CRA Metals (8)	TCLP Metals (8)	AL, Sb, As, Ba, Be, Bi, Cd, Cr, Cu, Fe, Pb, Hg, Mn, Ni, Pt, Se, Zn	TOTAL DISS. TCLP	1200-COLS	1200-Z	
GP03-S-2.5-DUP	1/11/18	1315	S	5				X					X			X						
GP16-S-2.5	1/12/18	1320	S					X					X			X						
GP16-S-8.0	1/12/18	1340	S					X					X			X						
GP17-S-2.5	1/12/18	1350	S					X					X			X						
GP17-S-8.0	1/12/18	1400	S					X					X			X						
GP18-S-2.5	1/12/18	1430	S					X					X			X						
GP12-S-3.0	1/12/18	1445	S					X					X			X						
GP12-S-8.0	1/12/18	1330	S					X					X			X						
GP16-W-9.0			W	10				X					X			X						
trap blank			W	2				X					X			X						

ANALYSIS REQUEST

RECEIVED BY: \_\_\_\_\_ Date: \_\_\_\_\_  
 Signature: \_\_\_\_\_  
 RELEASING BY: \_\_\_\_\_ Date: \_\_\_\_\_  
 Signature: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_  
 Company: \_\_\_\_\_

SPECIAL INSTRUCTIONS:

1 Day    2 Day    3 Day    NO  
 4 Day    5 Day    Other: \_\_\_\_\_

TAT Requested (circle): \_\_\_\_\_

SAMPLES ARE HELD FOR 30 DAYS

RECEIVED BY: \_\_\_\_\_ Date: 12/18/17  
 Signature: \_\_\_\_\_  
 RELEASING BY: \_\_\_\_\_ Date: 1/9/18  
 Signature: \_\_\_\_\_  
 Printed Name: **Charles Hoffman**  
 Company: **APEX**

Apex Laboratories

*Philip Nerenberg*

Philip Nerenberg, Lab Director

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



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:52

**CHAIN OF CUSTODY**

Company: **APEX LABS** Lab # **AF10214** Lab # **AF10214** COC **3** of **3**

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: **MTA** Project Mgr: **Merideth D'Andrea** Project Name: **Metro-Willamette Falls** Project # **0075.06.02**  
Address: **Vernon, WA** Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: **maul@maul-foster.com**

Sampled by: **Erin Hess**

LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	ANALYSIS REQUEST			
					TCRF Metals (8)	RCRA Metals (8)	TCRF Metals (8)	RCRA Metals (8)
1	1/11/18	8:30	5	5		X		
2	1/11/18	8:40	5	5		X		
3	1/11/18	8:40	5	5		X		
4	1/11/18	9:30	W	10		X		
5								
6								
7								
8								
9								
10								

Site Location: **WA**  
Other: \_\_\_\_\_

SAMPLE ID  
1. **GP07-S-2-S**  
2. **GP07-S-7-S**  
3. **GP07-S-7-S-DUP**  
4. **GP07-W-15.0**

Normal Turn Around Time (TAT) = 10 Business Days  YES  NO

TAT Requested (circle) **1 Day** 2 Day 3 Day 4 DAY 5 DAY Other: \_\_\_\_\_

SPECIAL INSTRUCTIONS:

SAMPLES ARE HELD FOR 30 DAYS

RELIQUISHED BY: RECEIVED BY:

Signature: **Erin Hess** Date: **1/11/18** Signature: **[Signature]** Date: **1/11/18**  
Printed Name: **Erin Hess** Time: **11:30** Printed Name: **Charles Hester** Time: **11:30**  
Company: **MTA** Company: **Apex Labs**

*Philip Nerenberg*

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:52

**APEX LABS COOLER RECEIPT FORM**

Client: MFA Element WO#: A7 W317  
 Project/Project #: Metro-Willamette Falls 0075.06.02

**Delivery info:**

Date/Time Received: 12/12/17 @ 1130 By: CFH  
 Delivered by: Apex  Client  ESS  FedEx  UPS  Swift  Senvoy  SDS  Other

**Cooler Inspection** Inspected by: CFH : 12/12/17 @ 1340  
 Chain of Custody Included? Yes  No  Custody Seals? Yes  No   
 Signed/Dated by Client? Yes  No   
 Signed/Dated by Apex? Yes  No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)							
Received on Ice? (Y/N)							
Temp. Blanks? (Y/N)	<u>1.1</u>	<u>2.1</u>	<u>1.7</u>				
Ice Type: (Gel/Real/Other)							
Condition:	<u>Good</u>						

Cooler out of temp? (Y/N) Possible reason why: \_\_\_\_\_  
 If some coolers are in temp and some out, were green dot applied to out of temperature samples? Yes/No/NA

**Samples Inspection:** Inspected by: AKK : 12/12/17 @ 1712

All Samples Intact? Yes  No  Comments: \_\_\_\_\_

Bottle Labels/COCs agree? Yes  No  Comments: GP03-S-17.5 T reads 11:30 & ID on '12 8oz jars reads GP03-S-17.6. GP16-S-2.5 no T

Containers/Volumes Received Appropriate for Analysis? Yes  No  Comments: \_\_\_\_\_

Do VOA Vials have Visible Headspace? Yes  No  NA

Comments: \_\_\_\_\_

Water Samples: pH Checked and Appropriate (except VOAs): Yes  No  NA

Comments: \_\_\_\_\_

**Additional Information:** on '12 8oz jars. 3 Trip Blanks #1688 provided, 2 on COC.

Labeled by: AKK Witness: [Signature] Cooler Inspected by: AKK See Project Contact Form: Y

# Apex Labs

12232 S.W. Garden Place  
Tigard, OR 97223  
503-718-2323 Phone  
503-718-0333 Fax

Tuesday, January 9, 2018

Merideth D'Andrea  
Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

RE: Metro-Willamette Falls / 0075.06.02

Enclosed are the results of analyses for work order A7L0343, which was received by the laboratory on 12/13/2017 at 11:09:00AM.

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

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

---

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

## ANALYTICAL REPORT FOR SAMPLES

### SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GP03-W-33.0	A7L0343-01	Water	12/12/17 11:00	12/13/17 11:09
GP04-S-1.0	A7L0343-02	Soil	12/12/17 13:25	12/13/17 11:09
GP04-S-6.0	A7L0343-03	Soil	12/12/17 13:30	12/13/17 11:09
GP04-S-13.0	A7L0343-04	Soil	12/12/17 13:40	12/13/17 11:09
GP02-S-1.5	A7L0343-05	Soil	12/12/17 13:55	12/13/17 11:09
GP02-S-7.0	A7L0343-06	Soil	12/12/17 14:05	12/13/17 11:09
GP09-S-2.5	A7L0343-07	Soil	12/12/17 14:15	12/13/17 11:09
GP09-S-8.0	A7L0343-08	Soil	12/12/17 14:25	12/13/17 11:09
GP08-S-4.0	A7L0343-09	Soil	12/12/17 15:05	12/13/17 11:09
GP08-W-6.5	A7L0343-10	Water	12/12/17 15:15	12/13/17 11:09
TRIP BLANK	A7L0343-11	Water	12/12/17 00:00	12/13/17 11:09

Apex Laboratories



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

Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Hydrocarbon Identification Screen by NWTPH-HCID

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-W-33.0 (A7L0343-01)</b>			<b>Matrix: Water</b>		<b>Batch: 7120754</b>			
Gasoline Range Organics	ND	0.105	0.105	mg/L	1	12/15/17 00:29	NWTPH-HCID	
Diesel Range Organics	ND	0.263	0.263	"	"	"	"	
Oil Range Organics	DET	0.263	0.263	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		"	"
<i>4-Bromofluorobenzene (Surr)</i>			<i>52 %</i>		<i>Limits: 10-120 %</i>		"	"
<b>GP08-S-4.0 (A7L0343-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120791</b>			
Gasoline Range Organics	ND	24.7	24.7	mg/kg dry	1	12/16/17 01:40	NWTPH-HCID	
Diesel Range Organics	ND	61.8	61.8	"	"	"	"	
Oil Range Organics	ND	124	124	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 100 %</i>		<i>Limits: 50-150 %</i>		"	"
<i>4-Bromofluorobenzene (Surr)</i>			<i>98 %</i>		<i>Limits: 50-150 %</i>		"	"
<b>GP08-W-6.5 (A7L0343-10)</b>			<b>Matrix: Water</b>		<b>Batch: 7120754</b>			
Gasoline Range Organics	DET	0.543	0.543	mg/L	5	12/15/17 00:52	NWTPH-HCID	F-09
Diesel Range Organics	DET	1.36	1.36	"	"	"	"	F-13
Oil Range Organics	DET	1.36	1.36	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 90 %</i>		<i>Limits: 50-150 %</i>		"	" S-05
<i>4-Bromofluorobenzene (Surr)</i>			<i>%</i>		<i>Limits: 10-120 %</i>		"	" S-01



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58


## ANALYTICAL SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-W-33.0 (A7L0343-01)</b>			<b>Matrix: Water</b>		<b>Batch: 7120754</b>			
Diesel	ND	0.105	0.211	mg/L	1	12/15/17 00:29	NWTPH-Dx	
<b>Oil</b>	<b>0.318</b>	0.211	0.421	"	"	"	"	J
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 93 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP04-S-1.0 (A7L0343-02RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120989</b>			
Diesel	ND	209	417	mg/kg dry	20	12/26/17 11:06	NWTPH-Dx	
<b>Oil</b>	<b>1880</b>	417	835	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: %</i>	<i>Limits: 50-150 %</i>	"	"	"	S-01
<b>GP04-S-6.0 (A7L0343-03)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120989</b>			
Diesel	ND	11.1	25.0	mg/kg dry	1	12/22/17 00:12	NWTPH-Dx	
<b>Oil</b>	<b>167</b>	22.1	50.0	"	"	"	"	F-03
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 88 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP04-S-13.0 (A7L0343-04)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120989</b>			
Diesel	ND	13.1	26.1	mg/kg dry	1	12/22/17 00:33	NWTPH-Dx	
Oil	ND	26.1	52.3	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 82 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP02-S-1.5 (A7L0343-05RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120829</b>			
Diesel	ND	44.7	89.4	mg/kg dry	4	12/19/17 11:15	NWTPH-Dx	
<b>Oil</b>	<b>318</b>	89.4	179	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 94 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP02-S-7.0 (A7L0343-06RE2)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120829</b>			
Diesel	ND	26.1	52.3	mg/kg dry	2	12/19/17 13:19	NWTPH-Dx	
<b>Oil</b>	<b>329</b>	52.3	105	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 94 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP09-S-2.5 (A7L0343-07)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120829</b>			
Diesel	ND	13.3	26.5	mg/kg dry	1	12/18/17 23:38	NWTPH-Dx	
<b>Oil</b>	<b>245</b>	26.5	53.1	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 95 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP09-S-8.0 (A7L0343-08)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120829</b>			
Diesel	ND	11.5	25.0	mg/kg dry	1	12/18/17 23:59	NWTPH-Dx	
<b>Oil</b>	<b>202</b>	22.9	50.0	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 97 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP08-S-4.0 (A7L0343-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120829</b>			
Diesel	ND	12.2	25.0	mg/kg dry	1	12/19/17 00:20	NWTPH-Dx	
Oil	ND	24.3	50.0	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP08-S-4.0 (A7L0343-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120829</b>			
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 94 %</i>	<i>Limits: 50-150 %</i>	1	"	NWTPH-Dx	
<b>GP08-W-6.5 (A7L0343-10)</b>			<b>Matrix: Water</b>		<b>Batch: 7120754</b>			
<b>Diesel</b>	<b>60.5</b>	0.543	1.09	mg/L	5	12/15/17 00:52	NWTPH-Dx	F-13, F-15
<b>Oil</b>	<b>44.4</b>	1.09	2.17	"	"	"	"	F-16
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 148 %</i>	<i>Limits: 50-150 %</i>	"	"	"	S-05



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes	
			Limit	Units					
<b>GP02-S-1.5 (A7L0343-05)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>				
Gasoline Range Organics	ND	3.05	6.10	mg/kg dry	50	12/14/17 20:15	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 98 %</i>	<i>Limits: 50-150 %</i>	1	"	"		
<i>1,4-Difluorobenzene (Sur)</i>			<i>94 %</i>	<i>Limits: 50-150 %</i>	"	"	"		
<b>GP02-S-7.0 (A7L0343-06)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>				
Gasoline Range Organics	ND	4.21	8.42	mg/kg dry	50	12/14/17 20:42	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 101 %</i>	<i>Limits: 50-150 %</i>	1	"	"		
<i>1,4-Difluorobenzene (Sur)</i>			<i>94 %</i>	<i>Limits: 50-150 %</i>	"	"	"		
<b>GP09-S-2.5 (A7L0343-07)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>				
Gasoline Range Organics	ND	3.72	7.44	mg/kg dry	50	12/14/17 21:09	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 98 %</i>	<i>Limits: 50-150 %</i>	1	"	"		
<i>1,4-Difluorobenzene (Sur)</i>			<i>93 %</i>	<i>Limits: 50-150 %</i>	"	"	"		
<b>GP09-S-8.0 (A7L0343-08)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>				
Gasoline Range Organics	ND	3.21	6.41	mg/kg dry	50	12/14/17 21:36	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 98 %</i>	<i>Limits: 50-150 %</i>	1	"	"		
<i>1,4-Difluorobenzene (Sur)</i>			<i>94 %</i>	<i>Limits: 50-150 %</i>	"	"	"		
<b>GP08-S-4.0 (A7L0343-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>				
Gasoline Range Organics	ND	3.39	6.78	mg/kg dry	50	12/14/17 22:02	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 98 %</i>	<i>Limits: 50-150 %</i>	1	"	"		
<i>1,4-Difluorobenzene (Sur)</i>			<i>95 %</i>	<i>Limits: 50-150 %</i>	"	"	"		
<b>GP08-W-6.5 (A7L0343-10RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120718</b>				<b>R-04</b>
Gasoline Range Organics	ND	1.00	2.00	mg/L	20	12/14/17 12:15	NWTPH-Gx (MS)		
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 101 %</i>	<i>Limits: 50-150 %</i>	1	"	"		
<i>1,4-Difluorobenzene (Sur)</i>			<i>104 %</i>	<i>Limits: 50-150 %</i>	"	"	"		



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP02-S-1.5 (A7L0343-05)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>			
Acetone	ND	610	1220	ug/kg dry	50	12/14/17 20:15	5035A/8260C	
Acrylonitrile	ND	61.0	122	"	"	"	"	
Benzene	ND	6.10	12.2	"	"	"	"	
Bromobenzene	ND	15.2	30.5	"	"	"	"	
Bromochloromethane	ND	30.5	61.0	"	"	"	"	
Bromodichloromethane	ND	30.5	61.0	"	"	"	"	
Bromoform	ND	61.0	122	"	"	"	"	
Bromomethane	ND	610	610	"	"	"	"	
2-Butanone (MEK)	ND	305	610	"	"	"	"	
n-Butylbenzene	ND	30.5	61.0	"	"	"	"	
sec-Butylbenzene	ND	30.5	61.0	"	"	"	"	
tert-Butylbenzene	ND	30.5	61.0	"	"	"	"	
Carbon disulfide	ND	305	610	"	"	"	"	
Carbon tetrachloride	ND	30.5	61.0	"	"	"	"	
Chlorobenzene	ND	15.2	30.5	"	"	"	"	
Chloroethane	ND	610	610	"	"	"	"	EST
Chloroform	ND	30.5	61.0	"	"	"	"	
Chloromethane	ND	152	305	"	"	"	"	
2-Chlorotoluene	ND	30.5	61.0	"	"	"	"	
4-Chlorotoluene	ND	30.5	61.0	"	"	"	"	
Dibromochloromethane	ND	61.0	122	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	152	305	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	30.5	61.0	"	"	"	"	
Dibromomethane	ND	30.5	61.0	"	"	"	"	
1,2-Dichlorobenzene	ND	15.2	30.5	"	"	"	"	
1,3-Dichlorobenzene	ND	15.2	30.5	"	"	"	"	
1,4-Dichlorobenzene	ND	15.2	30.5	"	"	"	"	
Dichlorodifluoromethane	ND	61.0	122	"	"	"	"	
1,1-Dichloroethane	ND	15.2	30.5	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	15.2	30.5	"	"	"	"	
1,1-Dichloroethene	ND	15.2	30.5	"	"	"	"	
cis-1,2-Dichloroethene	ND	15.2	30.5	"	"	"	"	
trans-1,2-Dichloroethene	ND	15.2	30.5	"	"	"	"	
1,2-Dichloropropane	ND	15.2	30.5	"	"	"	"	
1,3-Dichloropropane	ND	30.5	61.0	"	"	"	"	
2,2-Dichloropropane	ND	30.5	61.0	"	"	"	"	
1,1-Dichloropropene	ND	30.5	61.0	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP02-S-1.5 (A7L0343-05)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>			
cis-1,3-Dichloropropene	ND	30.5	61.0	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	30.5	61.0	"	"	"	"	
Ethylbenzene	ND	15.2	30.5	"	"	"	"	
Hexachlorobutadiene	ND	61.0	122	"	"	"	"	
2-Hexanone	ND	305	610	"	"	"	"	
Isopropylbenzene	ND	30.5	61.0	"	"	"	"	
4-Isopropyltoluene	ND	30.5	61.0	"	"	"	"	
Methylene chloride	ND	152	305	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	305	610	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	30.5	61.0	"	"	"	"	
Naphthalene	ND	61.0	122	"	"	"	"	
n-Propylbenzene	ND	15.2	30.5	"	"	"	"	
Styrene	ND	30.5	61.0	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	15.2	30.5	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	30.5	61.0	"	"	"	"	
Tetrachloroethene (PCE)	ND	15.2	30.5	"	"	"	"	
Toluene	ND	30.5	61.0	"	"	"	"	
1,2,3-Trichlorobenzene	ND	152	305	"	"	"	"	
1,2,4-Trichlorobenzene	ND	152	305	"	"	"	"	
1,1,1-Trichloroethane	ND	15.2	30.5	"	"	"	"	
1,1,2-Trichloroethane	ND	15.2	30.5	"	"	"	"	
Trichloroethene (TCE)	ND	15.2	30.5	"	"	"	"	
Trichlorofluoromethane	ND	61.0	122	"	"	"	"	EST
1,2,3-Trichloropropane	ND	30.5	61.0	"	"	"	"	
1,2,4-Trimethylbenzene	ND	30.5	61.0	"	"	"	"	
1,3,5-Trimethylbenzene	ND	30.5	61.0	"	"	"	"	
Vinyl chloride	ND	15.2	30.5	"	"	"	"	
m,p-Xylene	ND	30.5	61.0	"	"	"	"	
o-Xylene	ND	15.2	30.5	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>102 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>98 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP02-S-7.0 (A7L0343-06)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>			
Acetone	ND	842	1680	ug/kg dry	50	12/14/17 20:42	5035A/8260C	
Acrylonitrile	ND	84.2	168	"	"	"	"	
Benzene	ND	8.42	16.8	"	"	"	"	
Bromobenzene	ND	21.0	42.1	"	"	"	"	
Bromochloromethane	ND	42.1	84.2	"	"	"	"	
Bromodichloromethane	ND	42.1	84.2	"	"	"	"	
Bromoform	ND	84.2	168	"	"	"	"	
Bromomethane	ND	842	842	"	"	"	"	
2-Butanone (MEK)	ND	421	842	"	"	"	"	
n-Butylbenzene	ND	42.1	84.2	"	"	"	"	
sec-Butylbenzene	ND	42.1	84.2	"	"	"	"	
tert-Butylbenzene	ND	42.1	84.2	"	"	"	"	
Carbon disulfide	ND	421	842	"	"	"	"	
Carbon tetrachloride	ND	42.1	84.2	"	"	"	"	
Chlorobenzene	ND	21.0	42.1	"	"	"	"	
Chloroethane	ND	842	842	"	"	"	"	EST
Chloroform	ND	42.1	84.2	"	"	"	"	
Chloromethane	ND	210	421	"	"	"	"	
2-Chlorotoluene	ND	42.1	84.2	"	"	"	"	
4-Chlorotoluene	ND	42.1	84.2	"	"	"	"	
Dibromochloromethane	ND	84.2	168	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	210	421	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	42.1	84.2	"	"	"	"	
Dibromomethane	ND	42.1	84.2	"	"	"	"	
1,2-Dichlorobenzene	ND	21.0	42.1	"	"	"	"	
1,3-Dichlorobenzene	ND	21.0	42.1	"	"	"	"	
1,4-Dichlorobenzene	ND	21.0	42.1	"	"	"	"	
Dichlorodifluoromethane	ND	84.2	168	"	"	"	"	
1,1-Dichloroethane	ND	21.0	42.1	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	21.0	42.1	"	"	"	"	
1,1-Dichloroethene	ND	21.0	42.1	"	"	"	"	
cis-1,2-Dichloroethene	ND	21.0	42.1	"	"	"	"	
trans-1,2-Dichloroethene	ND	21.0	42.1	"	"	"	"	
1,2-Dichloropropane	ND	21.0	42.1	"	"	"	"	
1,3-Dichloropropane	ND	42.1	84.2	"	"	"	"	
2,2-Dichloropropane	ND	42.1	84.2	"	"	"	"	
1,1-Dichloropropene	ND	42.1	84.2	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea


Reported:  
01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP02-S-7.0 (A7L0343-06)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>			
cis-1,3-Dichloropropene	ND	42.1	84.2	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	42.1	84.2	"	"	"	"	
Ethylbenzene	ND	21.0	42.1	"	"	"	"	
Hexachlorobutadiene	ND	84.2	168	"	"	"	"	
2-Hexanone	ND	421	842	"	"	"	"	
Isopropylbenzene	ND	42.1	84.2	"	"	"	"	
4-Isopropyltoluene	ND	42.1	84.2	"	"	"	"	
Methylene chloride	ND	210	421	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	421	842	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	42.1	84.2	"	"	"	"	
Naphthalene	ND	84.2	168	"	"	"	"	
n-Propylbenzene	ND	21.0	42.1	"	"	"	"	
Styrene	ND	42.1	84.2	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	21.0	42.1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	42.1	84.2	"	"	"	"	
Tetrachloroethene (PCE)	ND	21.0	42.1	"	"	"	"	
Toluene	ND	42.1	84.2	"	"	"	"	
1,2,3-Trichlorobenzene	ND	210	421	"	"	"	"	
1,2,4-Trichlorobenzene	ND	210	421	"	"	"	"	
1,1,1-Trichloroethane	ND	21.0	42.1	"	"	"	"	
1,1,2-Trichloroethane	ND	21.0	42.1	"	"	"	"	
Trichloroethene (TCE)	ND	21.0	42.1	"	"	"	"	
Trichlorofluoromethane	ND	84.2	168	"	"	"	"	EST
1,2,3-Trichloropropane	ND	42.1	84.2	"	"	"	"	
1,2,4-Trimethylbenzene	ND	42.1	84.2	"	"	"	"	
1,3,5-Trimethylbenzene	ND	42.1	84.2	"	"	"	"	
Vinyl chloride	ND	21.0	42.1	"	"	"	"	
m,p-Xylene	ND	42.1	84.2	"	"	"	"	
o-Xylene	ND	21.0	42.1	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP09-S-2.5 (A7L0343-07)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>			
Acetone	ND	744	1490	ug/kg dry	50	12/14/17 21:09	5035A/8260C	
Acrylonitrile	ND	74.4	149	"	"	"	"	
Benzene	ND	7.44	14.9	"	"	"	"	
Bromobenzene	ND	18.6	37.2	"	"	"	"	
Bromochloromethane	ND	37.2	74.4	"	"	"	"	
Bromodichloromethane	ND	37.2	74.4	"	"	"	"	
Bromoform	ND	74.4	149	"	"	"	"	
Bromomethane	ND	744	744	"	"	"	"	
2-Butanone (MEK)	ND	372	744	"	"	"	"	
n-Butylbenzene	ND	37.2	74.4	"	"	"	"	
sec-Butylbenzene	ND	37.2	74.4	"	"	"	"	
tert-Butylbenzene	ND	37.2	74.4	"	"	"	"	
Carbon disulfide	ND	372	744	"	"	"	"	
Carbon tetrachloride	ND	37.2	74.4	"	"	"	"	
Chlorobenzene	ND	18.6	37.2	"	"	"	"	
Chloroethane	ND	744	744	"	"	"	"	EST
Chloroform	ND	37.2	74.4	"	"	"	"	
Chloromethane	ND	186	372	"	"	"	"	
2-Chlorotoluene	ND	37.2	74.4	"	"	"	"	
4-Chlorotoluene	ND	37.2	74.4	"	"	"	"	
Dibromochloromethane	ND	74.4	149	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	186	372	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	37.2	74.4	"	"	"	"	
Dibromomethane	ND	37.2	74.4	"	"	"	"	
1,2-Dichlorobenzene	ND	18.6	37.2	"	"	"	"	
1,3-Dichlorobenzene	ND	18.6	37.2	"	"	"	"	
1,4-Dichlorobenzene	ND	18.6	37.2	"	"	"	"	
Dichlorodifluoromethane	ND	74.4	149	"	"	"	"	
1,1-Dichloroethane	ND	18.6	37.2	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	18.6	37.2	"	"	"	"	
1,1-Dichloroethene	ND	18.6	37.2	"	"	"	"	
cis-1,2-Dichloroethene	ND	18.6	37.2	"	"	"	"	
trans-1,2-Dichloroethene	ND	18.6	37.2	"	"	"	"	
1,2-Dichloropropane	ND	18.6	37.2	"	"	"	"	
1,3-Dichloropropane	ND	37.2	74.4	"	"	"	"	
2,2-Dichloropropane	ND	37.2	74.4	"	"	"	"	
1,1-Dichloropropene	ND	37.2	74.4	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP09-S-2.5 (A7L0343-07)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>			
cis-1,3-Dichloropropene	ND	37.2	74.4	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	37.2	74.4	"	"	"	"	
Ethylbenzene	ND	18.6	37.2	"	"	"	"	
Hexachlorobutadiene	ND	74.4	149	"	"	"	"	
2-Hexanone	ND	372	744	"	"	"	"	
Isopropylbenzene	ND	37.2	74.4	"	"	"	"	
4-Isopropyltoluene	ND	37.2	74.4	"	"	"	"	
Methylene chloride	ND	186	372	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	372	744	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	37.2	74.4	"	"	"	"	
Naphthalene	ND	74.4	149	"	"	"	"	
n-Propylbenzene	ND	18.6	37.2	"	"	"	"	
Styrene	ND	37.2	74.4	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	18.6	37.2	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	37.2	74.4	"	"	"	"	
Tetrachloroethene (PCE)	ND	18.6	37.2	"	"	"	"	
Toluene	ND	37.2	74.4	"	"	"	"	
1,2,3-Trichlorobenzene	ND	186	372	"	"	"	"	
1,2,4-Trichlorobenzene	ND	186	372	"	"	"	"	
1,1,1-Trichloroethane	ND	18.6	37.2	"	"	"	"	
1,1,2-Trichloroethane	ND	18.6	37.2	"	"	"	"	
Trichloroethene (TCE)	ND	18.6	37.2	"	"	"	"	
Trichlorofluoromethane	ND	74.4	149	"	"	"	"	EST
1,2,3-Trichloropropane	ND	37.2	74.4	"	"	"	"	
1,2,4-Trimethylbenzene	ND	37.2	74.4	"	"	"	"	
1,3,5-Trimethylbenzene	ND	37.2	74.4	"	"	"	"	
Vinyl chloride	ND	18.6	37.2	"	"	"	"	
m,p-Xylene	ND	37.2	74.4	"	"	"	"	
o-Xylene	ND	18.6	37.2	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>98 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP09-S-8.0 (A7L0343-08)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>			
Acetone	ND	641	1280	ug/kg dry	50	12/14/17 21:36	5035A/8260C	
Acrylonitrile	ND	64.1	128	"	"	"	"	
Benzene	ND	6.41	12.8	"	"	"	"	
Bromobenzene	ND	16.0	32.1	"	"	"	"	
Bromochloromethane	ND	32.1	64.1	"	"	"	"	
Bromodichloromethane	ND	32.1	64.1	"	"	"	"	
Bromoform	ND	64.1	128	"	"	"	"	
Bromomethane	ND	641	641	"	"	"	"	
2-Butanone (MEK)	ND	321	641	"	"	"	"	
n-Butylbenzene	ND	32.1	64.1	"	"	"	"	
sec-Butylbenzene	ND	32.1	64.1	"	"	"	"	
tert-Butylbenzene	ND	32.1	64.1	"	"	"	"	
Carbon disulfide	ND	321	641	"	"	"	"	
Carbon tetrachloride	ND	32.1	64.1	"	"	"	"	
Chlorobenzene	ND	16.0	32.1	"	"	"	"	
Chloroethane	ND	641	641	"	"	"	"	EST
Chloroform	ND	32.1	64.1	"	"	"	"	
Chloromethane	ND	160	321	"	"	"	"	
2-Chlorotoluene	ND	32.1	64.1	"	"	"	"	
4-Chlorotoluene	ND	32.1	64.1	"	"	"	"	
Dibromochloromethane	ND	64.1	128	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	160	321	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	32.1	64.1	"	"	"	"	
Dibromomethane	ND	32.1	64.1	"	"	"	"	
1,2-Dichlorobenzene	ND	16.0	32.1	"	"	"	"	
1,3-Dichlorobenzene	ND	16.0	32.1	"	"	"	"	
1,4-Dichlorobenzene	ND	16.0	32.1	"	"	"	"	
Dichlorodifluoromethane	ND	64.1	128	"	"	"	"	
1,1-Dichloroethane	ND	16.0	32.1	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	16.0	32.1	"	"	"	"	
1,1-Dichloroethene	ND	16.0	32.1	"	"	"	"	
cis-1,2-Dichloroethene	ND	16.0	32.1	"	"	"	"	
trans-1,2-Dichloroethene	ND	16.0	32.1	"	"	"	"	
1,2-Dichloropropane	ND	16.0	32.1	"	"	"	"	
1,3-Dichloropropane	ND	32.1	64.1	"	"	"	"	
2,2-Dichloropropane	ND	32.1	64.1	"	"	"	"	
1,1-Dichloropropene	ND	32.1	64.1	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP09-S-8.0 (A7L0343-08)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>			
cis-1,3-Dichloropropene	ND	32.1	64.1	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	32.1	64.1	"	"	"	"	
Ethylbenzene	ND	16.0	32.1	"	"	"	"	
Hexachlorobutadiene	ND	64.1	128	"	"	"	"	
2-Hexanone	ND	321	641	"	"	"	"	
Isopropylbenzene	ND	32.1	64.1	"	"	"	"	
4-Isopropyltoluene	ND	32.1	64.1	"	"	"	"	
Methylene chloride	ND	160	321	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	321	641	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	32.1	64.1	"	"	"	"	
Naphthalene	ND	64.1	128	"	"	"	"	
n-Propylbenzene	ND	16.0	32.1	"	"	"	"	
Styrene	ND	32.1	64.1	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	16.0	32.1	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	32.1	64.1	"	"	"	"	
Tetrachloroethene (PCE)	ND	16.0	32.1	"	"	"	"	
Toluene	ND	32.1	64.1	"	"	"	"	
1,2,3-Trichlorobenzene	ND	160	321	"	"	"	"	
1,2,4-Trichlorobenzene	ND	160	321	"	"	"	"	
1,1,1-Trichloroethane	ND	16.0	32.1	"	"	"	"	
1,1,2-Trichloroethane	ND	16.0	32.1	"	"	"	"	
Trichloroethene (TCE)	ND	16.0	32.1	"	"	"	"	
Trichlorofluoromethane	ND	64.1	128	"	"	"	"	EST
1,2,3-Trichloropropane	ND	32.1	64.1	"	"	"	"	
1,2,4-Trimethylbenzene	ND	32.1	64.1	"	"	"	"	
1,3,5-Trimethylbenzene	ND	32.1	64.1	"	"	"	"	
Vinyl chloride	ND	16.0	32.1	"	"	"	"	
m,p-Xylene	ND	32.1	64.1	"	"	"	"	
o-Xylene	ND	16.0	32.1	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>99 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP08-S-4.0 (A7L0343-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>			
Acetone	ND	678	1360	ug/kg dry	50	12/14/17 22:02	5035A/8260C	
Acrylonitrile	ND	67.8	136	"	"	"	"	
Benzene	ND	6.78	13.6	"	"	"	"	
Bromobenzene	ND	16.9	33.9	"	"	"	"	
Bromochloromethane	ND	33.9	67.8	"	"	"	"	
Bromodichloromethane	ND	33.9	67.8	"	"	"	"	
Bromoform	ND	67.8	136	"	"	"	"	
Bromomethane	ND	678	678	"	"	"	"	
2-Butanone (MEK)	ND	339	678	"	"	"	"	
n-Butylbenzene	ND	33.9	67.8	"	"	"	"	
sec-Butylbenzene	ND	33.9	67.8	"	"	"	"	
tert-Butylbenzene	ND	33.9	67.8	"	"	"	"	
Carbon disulfide	ND	339	678	"	"	"	"	
Carbon tetrachloride	ND	33.9	67.8	"	"	"	"	
Chlorobenzene	ND	16.9	33.9	"	"	"	"	
Chloroethane	ND	678	678	"	"	"	"	EST
Chloroform	ND	33.9	67.8	"	"	"	"	
Chloromethane	ND	169	339	"	"	"	"	
2-Chlorotoluene	ND	33.9	67.8	"	"	"	"	
4-Chlorotoluene	ND	33.9	67.8	"	"	"	"	
Dibromochloromethane	ND	67.8	136	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	169	339	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	33.9	67.8	"	"	"	"	
Dibromomethane	ND	33.9	67.8	"	"	"	"	
1,2-Dichlorobenzene	ND	16.9	33.9	"	"	"	"	
1,3-Dichlorobenzene	ND	16.9	33.9	"	"	"	"	
1,4-Dichlorobenzene	ND	16.9	33.9	"	"	"	"	
Dichlorodifluoromethane	ND	67.8	136	"	"	"	"	
1,1-Dichloroethane	ND	16.9	33.9	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	16.9	33.9	"	"	"	"	
1,1-Dichloroethene	ND	16.9	33.9	"	"	"	"	
cis-1,2-Dichloroethene	ND	16.9	33.9	"	"	"	"	
trans-1,2-Dichloroethene	ND	16.9	33.9	"	"	"	"	
1,2-Dichloropropane	ND	16.9	33.9	"	"	"	"	
1,3-Dichloropropane	ND	33.9	67.8	"	"	"	"	
2,2-Dichloropropane	ND	33.9	67.8	"	"	"	"	
1,1-Dichloropropene	ND	33.9	67.8	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP08-S-4.0 (A7L0343-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120726</b>			
cis-1,3-Dichloropropene	ND	33.9	67.8	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	33.9	67.8	"	"	"	"	
Ethylbenzene	ND	16.9	33.9	"	"	"	"	
Hexachlorobutadiene	ND	67.8	136	"	"	"	"	
2-Hexanone	ND	339	678	"	"	"	"	
Isopropylbenzene	ND	33.9	67.8	"	"	"	"	
4-Isopropyltoluene	ND	33.9	67.8	"	"	"	"	
Methylene chloride	ND	169	339	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	339	678	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	33.9	67.8	"	"	"	"	
Naphthalene	ND	67.8	136	"	"	"	"	
n-Propylbenzene	ND	16.9	33.9	"	"	"	"	
Styrene	ND	33.9	67.8	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	16.9	33.9	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	33.9	67.8	"	"	"	"	
Tetrachloroethene (PCE)	ND	16.9	33.9	"	"	"	"	
Toluene	ND	33.9	67.8	"	"	"	"	
1,2,3-Trichlorobenzene	ND	169	339	"	"	"	"	
1,2,4-Trichlorobenzene	ND	169	339	"	"	"	"	
1,1,1-Trichloroethane	ND	16.9	33.9	"	"	"	"	
1,1,2-Trichloroethane	ND	16.9	33.9	"	"	"	"	
Trichloroethene (TCE)	ND	16.9	33.9	"	"	"	"	
Trichlorofluoromethane	ND	67.8	136	"	"	"	"	EST
1,2,3-Trichloropropane	ND	33.9	67.8	"	"	"	"	
1,2,4-Trimethylbenzene	ND	33.9	67.8	"	"	"	"	
1,3,5-Trimethylbenzene	ND	33.9	67.8	"	"	"	"	
Vinyl chloride	ND	16.9	33.9	"	"	"	"	
m,p-Xylene	ND	33.9	67.8	"	"	"	"	
o-Xylene	ND	16.9	33.9	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 102 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>99 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-W-33.0 (A7L0343-01RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120718</b>			
Acetone	ND	10.0	20.0	ug/L	1	12/14/17 11:48	EPA 8260C	
Acrylonitrile	ND	1.00	2.00	"	"	"	"	
Benzene	ND	0.100	0.200	"	"	"	"	
Bromobenzene	ND	0.250	0.500	"	"	"	"	
Bromochloromethane	ND	0.500	1.00	"	"	"	"	
Bromodichloromethane	ND	0.500	1.00	"	"	"	"	
Bromoform	ND	0.500	1.00	"	"	"	"	
Bromomethane	ND	5.00	5.00	"	"	"	"	
2-Butanone (MEK)	ND	5.00	10.0	"	"	"	"	
n-Butylbenzene	ND	0.500	1.00	"	"	"	"	
sec-Butylbenzene	ND	0.500	1.00	"	"	"	"	
tert-Butylbenzene	ND	0.500	1.00	"	"	"	"	
Carbon disulfide	ND	5.00	10.0	"	"	"	"	
Carbon tetrachloride	ND	0.500	1.00	"	"	"	"	
Chlorobenzene	ND	0.250	0.500	"	"	"	"	
Chloroethane	ND	5.00	5.00	"	"	"	"	
Chloroform	ND	0.500	1.00	"	"	"	"	
Chloromethane	ND	2.50	5.00	"	"	"	"	
2-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
4-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
Dibromochloromethane	ND	0.500	1.00	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	"	"	
Dibromomethane	ND	0.500	1.00	"	"	"	"	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloroethane	ND	0.200	0.400	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	"	"	
1,1-Dichloroethene	ND	0.200	0.400	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
1,2-Dichloropropane	ND	0.250	0.500	"	"	"	"	
1,3-Dichloropropane	ND	0.500	1.00	"	"	"	"	
2,2-Dichloropropane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloropropene	ND	0.500	1.00	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-W-33.0 (A7L0343-01RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120718</b>			
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	"	EPA 8260C	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
Ethylbenzene	ND	0.250	0.500	"	"	"	"	
Hexachlorobutadiene	ND	2.50	5.00	"	"	"	"	
2-Hexanone	ND	5.00	10.0	"	"	"	"	
Isopropylbenzene	ND	0.500	1.00	"	"	"	"	
4-Isopropyltoluene	ND	0.500	1.00	"	"	"	"	
Methylene chloride	ND	1.50	3.00	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	"	"	
Naphthalene	ND	1.00	2.00	"	"	"	"	
n-Propylbenzene	ND	0.250	0.500	"	"	"	"	
Styrene	ND	0.500	1.00	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	"	"	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	"	"	
Toluene	ND	0.500	1.00	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Trichlorofluoromethane	ND	1.00	2.00	"	"	"	"	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
m,p-Xylene	ND	0.500	1.00	"	"	"	"	
o-Xylene	ND	0.250	0.500	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 102 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>103 %</i>		<i>Limits: 80-120 %</i>		"	"	"

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP08-W-6.5 (A7L0343-10RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120718</b>			<b>R-04</b>
Acetone	ND	200	400	ug/L	20	12/14/17 12:15	EPA 8260C	
Acrylonitrile	ND	20.0	40.0	"	"	"	"	
Benzene	ND	2.00	4.00	"	"	"	"	
Bromobenzene	ND	5.00	10.0	"	"	"	"	
Bromochloromethane	ND	10.0	20.0	"	"	"	"	
Bromodichloromethane	ND	10.0	20.0	"	"	"	"	
Bromoform	ND	10.0	20.0	"	"	"	"	
Bromomethane	ND	100	100	"	"	"	"	
2-Butanone (MEK)	ND	100	200	"	"	"	"	
n-Butylbenzene	ND	10.0	20.0	"	"	"	"	
sec-Butylbenzene	ND	10.0	20.0	"	"	"	"	
tert-Butylbenzene	ND	10.0	20.0	"	"	"	"	
Carbon disulfide	ND	100	200	"	"	"	"	
Carbon tetrachloride	ND	10.0	20.0	"	"	"	"	
Chlorobenzene	ND	5.00	10.0	"	"	"	"	
Chloroethane	ND	100	100	"	"	"	"	
Chloroform	ND	10.0	20.0	"	"	"	"	
Chloromethane	ND	50.0	100	"	"	"	"	
2-Chlorotoluene	ND	10.0	20.0	"	"	"	"	
4-Chlorotoluene	ND	10.0	20.0	"	"	"	"	
Dibromochloromethane	ND	10.0	20.0	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	50.0	100	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.00	10.0	"	"	"	"	
Dibromomethane	ND	10.0	20.0	"	"	"	"	
1,2-Dichlorobenzene	ND	5.00	10.0	"	"	"	"	
1,3-Dichlorobenzene	ND	5.00	10.0	"	"	"	"	
1,4-Dichlorobenzene	ND	5.00	10.0	"	"	"	"	
Dichlorodifluoromethane	ND	10.0	20.0	"	"	"	"	
1,1-Dichloroethane	ND	4.00	8.00	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	4.00	8.00	"	"	"	"	
1,1-Dichloroethene	ND	4.00	8.00	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.00	8.00	"	"	"	"	
trans-1,2-Dichloroethene	ND	4.00	8.00	"	"	"	"	
1,2-Dichloropropane	ND	5.00	10.0	"	"	"	"	
1,3-Dichloropropane	ND	10.0	20.0	"	"	"	"	
2,2-Dichloropropane	ND	10.0	20.0	"	"	"	"	
1,1-Dichloropropene	ND	10.0	20.0	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP08-W-6.5 (A7L0343-10RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120718</b>			<b>R-04</b>
cis-1,3-Dichloropropene	ND	10.0	20.0	ug/L	20	"	EPA 8260C	
trans-1,3-Dichloropropene	ND	10.0	20.0	"	"	"	"	
Ethylbenzene	ND	5.00	10.0	"	"	"	"	
Hexachlorobutadiene	ND	50.0	100	"	"	"	"	
2-Hexanone	ND	100	200	"	"	"	"	
Isopropylbenzene	ND	10.0	20.0	"	"	"	"	
4-Isopropyltoluene	ND	10.0	20.0	"	"	"	"	
Methylene chloride	ND	30.0	60.0	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	100	200	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	10.0	20.0	"	"	"	"	
Naphthalene	ND	20.0	40.0	"	"	"	"	
n-Propylbenzene	ND	5.00	10.0	"	"	"	"	
Styrene	ND	10.0	20.0	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	4.00	8.00	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.00	10.0	"	"	"	"	
Tetrachloroethene (PCE)	ND	4.00	8.00	"	"	"	"	
Toluene	ND	10.0	20.0	"	"	"	"	
1,2,3-Trichlorobenzene	ND	20.0	40.0	"	"	"	"	
1,2,4-Trichlorobenzene	ND	20.0	40.0	"	"	"	"	
1,1,1-Trichloroethane	ND	4.00	8.00	"	"	"	"	
1,1,2-Trichloroethane	ND	5.00	10.0	"	"	"	"	
Trichloroethene (TCE)	ND	4.00	8.00	"	"	"	"	
Trichlorofluoromethane	ND	20.0	40.0	"	"	"	"	
1,2,3-Trichloropropane	ND	10.0	20.0	"	"	"	"	
1,2,4-Trimethylbenzene	ND	10.0	20.0	"	"	"	"	
1,3,5-Trimethylbenzene	ND	10.0	20.0	"	"	"	"	
Vinyl chloride	ND	4.00	8.00	"	"	"	"	
m,p-Xylene	ND	10.0	20.0	"	"	"	"	
o-Xylene	ND	5.00	10.0	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 102 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>TRIP BLANK (A7L0343-11)</b>			<b>Matrix: Water</b>		<b>Batch: 7120625</b>			
Acetone	ND	10.0	20.0	ug/L	1	12/13/17 19:55	EPA 8260C	
Acrylonitrile	ND	1.00	2.00	"	"	"	"	
Benzene	ND	0.100	0.200	"	"	"	"	
Bromobenzene	ND	0.250	0.500	"	"	"	"	
Bromochloromethane	ND	0.500	1.00	"	"	"	"	
Bromodichloromethane	ND	0.500	1.00	"	"	"	"	
Bromoform	ND	0.500	1.00	"	"	"	"	
Bromomethane	ND	5.00	5.00	"	"	"	"	
2-Butanone (MEK)	ND	5.00	10.0	"	"	"	"	
n-Butylbenzene	ND	0.500	1.00	"	"	"	"	
sec-Butylbenzene	ND	0.500	1.00	"	"	"	"	
tert-Butylbenzene	ND	0.500	1.00	"	"	"	"	
Carbon disulfide	ND	5.00	10.0	"	"	"	"	
Carbon tetrachloride	ND	0.500	1.00	"	"	"	"	
Chlorobenzene	ND	0.250	0.500	"	"	"	"	
Chloroethane	ND	5.00	10.0	"	"	"	"	
Chloroform	ND	0.500	1.00	"	"	"	"	
Chloromethane	ND	2.50	5.00	"	"	"	"	
2-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
4-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
Dibromochloromethane	ND	0.500	1.00	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	"	"	
Dibromomethane	ND	0.500	1.00	"	"	"	"	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloroethane	ND	0.200	0.400	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	"	"	
1,1-Dichloroethene	ND	0.200	0.400	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
1,2-Dichloropropane	ND	0.250	0.500	"	"	"	"	
1,3-Dichloropropane	ND	0.500	1.00	"	"	"	"	
2,2-Dichloropropane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloropropene	ND	0.500	1.00	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>TRIP BLANK (A7L0343-11)</b>			<b>Matrix: Water</b>		<b>Batch: 7120625</b>			
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	"	EPA 8260C	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
Ethylbenzene	ND	0.250	0.500	"	"	"	"	
Hexachlorobutadiene	ND	2.50	5.00	"	"	"	"	
2-Hexanone	ND	5.00	10.0	"	"	"	"	
Isopropylbenzene	ND	0.500	1.00	"	"	"	"	
4-Isopropyltoluene	ND	0.500	1.00	"	"	"	"	
Methylene chloride	ND	1.50	3.00	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	"	"	
Naphthalene	ND	1.00	2.00	"	"	"	"	
n-Propylbenzene	ND	0.250	0.500	"	"	"	"	
Styrene	ND	0.500	1.00	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	"	"	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	"	"	
Toluene	ND	0.500	1.00	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Trichlorofluoromethane	ND	1.00	2.00	"	"	"	"	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
m,p-Xylene	ND	0.500	1.00	"	"	"	"	
o-Xylene	ND	0.250	0.500	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 103 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>		"	"	"

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-W-33.0 (A7L0343-01)</b>			<b>Matrix: Water</b>		<b>Batch: 7121136</b>			<b>C-07</b>
Aroclor 1016	ND	0.0187	0.0374	ug/L	1	12/29/17 10:37	EPA 8082A	
Aroclor 1221	ND	0.0187	0.0374	"	"	"	"	
Aroclor 1232	ND	0.0187	0.0374	"	"	"	"	
Aroclor 1242	ND	0.0187	0.0374	"	"	"	"	
Aroclor 1248	ND	0.0187	0.0374	"	"	"	"	
Aroclor 1254	ND	0.0187	0.0374	"	"	"	"	
Aroclor 1260	ND	0.0187	0.0374	"	"	"	"	
Aroclor 1262	ND	0.0187	0.0374	"	"	"	"	
Aroclor 1268	ND	0.0187	0.0374	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 75 %</i>		<i>Limits: 39-120 %</i>		"	"	"
<b>GP08-W-6.5 (A7L0343-10)</b>			<b>Matrix: Water</b>		<b>Batch: 7121067</b>			<b>C-07</b>
Aroclor 1016	ND	0.0208	0.0417	ug/L	1	12/28/17 09:13	EPA 8082A	
Aroclor 1221	ND	0.0208	0.0417	"	"	"	"	
Aroclor 1232	ND	0.0208	0.0417	"	"	"	"	
Aroclor 1242	ND	0.0208	0.0417	"	"	"	"	
Aroclor 1248	ND	0.0208	0.0417	"	"	"	"	
Aroclor 1254	ND	0.0208	0.0417	"	"	"	"	
Aroclor 1260	ND	0.0208	0.0417	"	"	"	"	
Aroclor 1262	ND	0.0208	0.0417	"	"	"	"	
Aroclor 1268	ND	0.0208	0.0417	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 53 %</i>		<i>Limits: 39-120 %</i>		"	"	"



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP04-S-1.0 (A7L0343-02)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120743</b>		<b>C-07</b>	
Aroclor 1016	ND	5.16	10.3	ug/kg dry	1	12/14/17 20:08	EPA 8082A	
Aroclor 1221	ND	5.16	10.3	"	"	"	"	
Aroclor 1232	ND	5.16	10.3	"	"	"	"	
<b>Aroclor 1242</b>	<b>6.83</b>	5.16	10.3	"	"	"	"	J
Aroclor 1248	ND	5.16	10.3	"	"	"	"	
<b>Aroclor 1254</b>	<b>22.9</b>	5.16	10.3	"	"	"	"	P-10
<b>Aroclor 1260</b>	<b>14.5</b>	5.16	10.3	"	"	"	"	P-10
Aroclor 1262	ND	5.16	10.3	"	"	"	"	
Aroclor 1268	ND	5.16	10.3	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 88 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<b>GP04-S-6.0 (A7L0343-03)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120743</b>		<b>C-07</b>	
Aroclor 1016	ND	2.09	4.18	ug/kg dry	1	12/14/17 21:18	EPA 8082A	
Aroclor 1221	ND	2.09	4.18	"	"	"	"	
Aroclor 1232	ND	2.09	4.18	"	"	"	"	
Aroclor 1242	ND	2.09	4.18	"	"	"	"	
Aroclor 1248	ND	2.09	4.18	"	"	"	"	
Aroclor 1254	ND	2.09	4.18	"	"	"	"	
Aroclor 1260	ND	2.09	4.18	"	"	"	"	
Aroclor 1262	ND	2.09	4.18	"	"	"	"	
Aroclor 1268	ND	2.09	4.18	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 87 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<b>GP04-S-13.0 (A7L0343-04)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120743</b>		<b>C-07</b>	
Aroclor 1016	ND	2.48	4.96	ug/kg dry	1	12/14/17 21:54	EPA 8082A	
Aroclor 1221	ND	2.48	4.96	"	"	"	"	
Aroclor 1232	ND	2.48	4.96	"	"	"	"	
Aroclor 1242	ND	2.48	4.96	"	"	"	"	
Aroclor 1248	ND	2.48	4.96	"	"	"	"	
Aroclor 1254	ND	2.48	4.96	"	"	"	"	
Aroclor 1260	ND	2.48	4.96	"	"	"	"	
Aroclor 1262	ND	2.48	4.96	"	"	"	"	
Aroclor 1268	ND	2.48	4.96	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 86 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<b>GP08-S-4.0 (A7L0343-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>		<b>C-07</b>	
Aroclor 1016	ND	2.31	4.62	ug/kg dry	1	12/21/17 22:23	EPA 8082A	
Aroclor 1221	ND	2.31	4.62	"	"	"	"	
Aroclor 1232	ND	2.31	4.62	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP08-S-4.0 (A7L0343-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>			<b>C-07</b>
Aroclor 1242	ND	2.31	4.62	ug/kg dry	1	"	EPA 8082A	
Aroclor 1248	ND	2.31	4.62	"	"	"	"	
Aroclor 1254	ND	2.31	4.62	"	"	"	"	
Aroclor 1260	ND	2.31	4.62	"	"	"	"	
Aroclor 1262	ND	2.31	4.62	"	"	"	"	
Aroclor 1268	ND	2.31	4.62	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 81 %</i>		<i>Limits: 44-120 %</i>		"	"	"

Apex Laboratories



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

Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea


Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-W-33.0 (A7L0343-01RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7121056</b>			<b>C-05</b>
Aldrin	ND	0.0115	0.0230	ug/L	1	12/28/17 13:11	EPA 8081B	Q-30
alpha-BHC	ND	0.0115	0.0230	"	"	"	"	
beta-BHC	ND	0.0115	0.0230	"	"	"	"	
delta-BHC	ND	0.0115	0.0230	"	"	"	"	
gamma-BHC (Lindane)	ND	0.0115	0.0230	"	"	"	"	
cis-Chlordane	ND	0.0115	0.0230	"	"	"	"	
trans-Chlordane	ND	0.0115	0.0230	"	"	"	"	
4,4'-DDD	ND	0.0115	0.0230	"	"	"	"	
4,4'-DDE	ND	0.0115	0.0230	"	"	"	"	
4,4'-DDT	ND	0.0115	0.0230	"	"	"	"	
Dieldrin	ND	0.0115	0.0230	"	"	"	"	
Endosulfan I	ND	0.0115	0.0230	"	"	"	"	
Endosulfan II	ND	0.0115	0.0230	"	"	"	"	
Endosulfan sulfate	ND	0.0115	0.0230	"	"	"	"	
Endrin	ND	0.0115	0.0230	"	"	"	"	
Endrin Aldehyde	ND	0.0115	0.0230	"	"	"	"	
Endrin ketone	ND	0.0115	0.0230	"	"	"	"	
Heptachlor	ND	0.0115	0.0230	"	"	"	"	Q-30
Heptachlor epoxide	ND	0.0115	0.0230	"	"	"	"	
Methoxychlor	ND	0.0345	0.0690	"	"	"	"	
Chlordane (Technical)	ND	0.432	0.862	"	"	"	"	
Toxaphene (Total)	ND	0.432	0.862	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 49 %</i>		<i>Limits: 44-124 %</i>		"	"	"
<i>Decachlorobiphenyl (Surr)</i>		<i>79 %</i>		<i>Limits: 47-129 %</i>		"	"	"

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP04-S-1.0 (A7L0343-02RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>		<b>C-05, R-04</b>	
Aldrin	ND	38.8	77.6	ug/kg dry	20	12/21/17 15:25	EPA 8081B	
alpha-BHC	ND	38.8	77.6	"	"	"	"	
beta-BHC	ND	38.8	77.6	"	"	"	"	
delta-BHC	ND	38.8	77.6	"	"	"	"	
gamma-BHC (Lindane)	ND	38.8	77.6	"	"	"	"	
cis-Chlordane	ND	38.8	77.6	"	"	"	"	
trans-Chlordane	ND	38.8	77.6	"	"	"	"	
4,4'-DDD	ND	38.8	77.6	"	"	"	"	
4,4'-DDE	ND	38.8	77.6	"	"	"	"	
4,4'-DDT	ND	38.8	77.6	"	"	"	"	
Dieldrin	ND	38.8	77.6	"	"	"	"	
Endosulfan I	ND	38.8	77.6	"	"	"	"	
Endosulfan II	ND	38.8	77.6	"	"	"	"	
Endosulfan sulfate	ND	38.8	77.6	"	"	"	"	
Endrin	ND	38.8	77.6	"	"	"	"	
Endrin Aldehyde	ND	38.8	77.6	"	"	"	"	
Endrin ketone	ND	38.8	77.6	"	"	"	"	
Heptachlor	ND	38.8	77.6	"	"	"	"	
Heptachlor epoxide	ND	38.8	77.6	"	"	"	"	
Methoxychlor	ND	116	233	"	"	"	"	
Chlordane (Technical)	ND	1160	2330	"	"	"	"	
Toxaphene (Total)	ND	1160	2330	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 82 %</i>	<i>Limits: 42-129 %</i>	"	"	"	<i>S-05</i>
<i>Decachlorobiphenyl (Surr)</i>			<i>133 %</i>	<i>Limits: 65-151 %</i>	"	"	"	<i>S-05</i>



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP04-S-6.0 (A7L0343-03RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>			<b>C-05</b>
Aldrin	ND	2.20	4.39	ug/kg dry	1	12/21/17 12:31	EPA 8081B	
alpha-BHC	ND	2.20	4.39	"	"	"	"	
beta-BHC	ND	2.20	4.39	"	"	"	"	
delta-BHC	ND	2.20	4.39	"	"	"	"	
gamma-BHC (Lindane)	ND	2.20	4.39	"	"	"	"	
cis-Chlordane	ND	2.20	4.39	"	"	"	"	
trans-Chlordane	ND	2.20	4.39	"	"	"	"	
4,4'-DDD	ND	4.39	4.39	"	"	"	"	
4,4'-DDE	ND	2.20	4.39	"	"	"	"	
4,4'-DDT	ND	4.39	4.39	"	"	"	"	
Dieldrin	ND	2.20	4.39	"	"	"	"	
Endosulfan I	ND	2.20	4.39	"	"	"	"	
Endosulfan II	ND	2.20	4.39	"	"	"	"	
Endosulfan sulfate	ND	2.20	4.39	"	"	"	"	
Endrin	ND	2.20	4.39	"	"	"	"	
Endrin Aldehyde	ND	2.20	4.39	"	"	"	"	
Endrin ketone	ND	4.39	4.39	"	"	"	"	
Heptachlor	ND	2.20	4.39	"	"	"	"	
Heptachlor epoxide	ND	2.20	4.39	"	"	"	"	
Methoxychlor	ND	6.59	13.2	"	"	"	"	
Chlordane (Technical)	ND	65.9	132	"	"	"	"	
Toxaphene (Total)	ND	65.9	132	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 64 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>85 %</i>	<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP04-S-13.0 (A7L0343-04RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>			<b>C-05</b>
Aldrin	ND	1.29	2.59	ug/kg dry	1	12/21/17 11:39	EPA 8081B	
alpha-BHC	ND	1.29	2.59	"	"	"	"	
beta-BHC	ND	1.29	2.59	"	"	"	"	
delta-BHC	ND	1.29	2.59	"	"	"	"	
gamma-BHC (Lindane)	ND	1.29	2.59	"	"	"	"	
cis-Chlordane	ND	1.29	2.59	"	"	"	"	
trans-Chlordane	ND	1.29	2.59	"	"	"	"	
4,4'-DDD	ND	1.29	2.59	"	"	"	"	
4,4'-DDE	ND	1.29	2.59	"	"	"	"	
4,4'-DDT	ND	1.29	2.59	"	"	"	"	
Dieldrin	ND	1.29	2.59	"	"	"	"	
Endosulfan I	ND	1.29	2.59	"	"	"	"	
Endosulfan II	ND	1.29	2.59	"	"	"	"	
Endosulfan sulfate	ND	1.29	2.59	"	"	"	"	
Endrin	ND	1.29	2.59	"	"	"	"	
Endrin Aldehyde	ND	1.29	2.59	"	"	"	"	
Endrin ketone	ND	1.29	2.59	"	"	"	"	
Heptachlor	ND	1.29	2.59	"	"	"	"	
Heptachlor epoxide	ND	1.29	2.59	"	"	"	"	
Methoxychlor	ND	3.88	7.76	"	"	"	"	
Chlordane (Technical)	ND	38.8	77.6	"	"	"	"	
Toxaphene (Total)	ND	38.8	77.6	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 60 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>77 %</i>	<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP08-S-4.0 (A7L0343-09RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>			<b>C-05</b>
Aldrin	ND	1.14	2.28	ug/kg dry	1	12/21/17 11:57	EPA 8081B	
alpha-BHC	ND	1.14	2.28	"	"	"	"	
beta-BHC	ND	1.14	2.28	"	"	"	"	
delta-BHC	ND	1.14	2.28	"	"	"	"	
gamma-BHC (Lindane)	ND	1.14	2.28	"	"	"	"	
cis-Chlordane	ND	1.14	2.28	"	"	"	"	
trans-Chlordane	ND	1.14	2.28	"	"	"	"	
4,4'-DDD	ND	1.14	2.28	"	"	"	"	
4,4'-DDE	ND	1.14	2.28	"	"	"	"	
4,4'-DDT	ND	1.14	2.28	"	"	"	"	
Dieldrin	ND	1.14	2.28	"	"	"	"	
Endosulfan I	ND	1.14	2.28	"	"	"	"	
Endosulfan II	ND	1.14	2.28	"	"	"	"	
Endosulfan sulfate	ND	1.14	2.28	"	"	"	"	
Endrin	ND	1.14	2.28	"	"	"	"	
Endrin Aldehyde	ND	1.14	2.28	"	"	"	"	
Endrin ketone	ND	1.14	2.28	"	"	"	"	
Heptachlor	ND	1.14	2.28	"	"	"	"	
Heptachlor epoxide	ND	1.14	2.28	"	"	"	"	
Methoxychlor	ND	3.43	6.85	"	"	"	"	
Chlordane (Technical)	ND	34.3	68.5	"	"	"	"	
Toxaphene (Total)	ND	34.3	68.5	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 67 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>88 %</i>	<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP08-W-6.5 (A7L0343-10RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7121056</b>		<b>C-05, Q-04</b>	
Aldrin	ND	0.0217	0.0435	ug/L	2	12/28/17 13:29	EPA 8081B	Q-30
alpha-BHC	ND	0.0217	0.0435	"	"	"	"	
beta-BHC	ND	0.0435	0.0435	"	"	"	"	
delta-BHC	ND	0.0217	0.0435	"	"	"	"	
gamma-BHC (Lindane)	ND	0.0217	0.0435	"	"	"	"	
cis-Chlordane	ND	0.0217	0.0435	"	"	"	"	
trans-Chlordane	ND	0.0217	0.0435	"	"	"	"	
4,4'-DDD	ND	0.0217	0.0435	"	"	"	"	
4,4'-DDE	ND	0.0217	0.0435	"	"	"	"	
4,4'-DDT	ND	0.0217	0.0435	"	"	"	"	
Dieldrin	ND	0.0217	0.0435	"	"	"	"	
Endosulfan I	ND	0.0217	0.0435	"	"	"	"	
Endosulfan II	ND	0.0217	0.0435	"	"	"	"	
Endosulfan sulfate	ND	0.0217	0.0435	"	"	"	"	
Endrin	ND	0.0217	0.0435	"	"	"	"	
Endrin Aldehyde	ND	0.0217	0.0435	"	"	"	"	
Endrin ketone	ND	0.0217	0.0435	"	"	"	"	
Heptachlor	ND	0.0217	0.0435	"	"	"	"	Q-30
Heptachlor epoxide	ND	0.0217	0.0435	"	"	"	"	
Methoxychlor	ND	0.0652	0.130	"	"	"	"	
Chlordane (Technical)	ND	0.817	1.63	"	"	"	"	
Toxaphene (Total)	ND	0.817	1.63	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 62 %</i>		<i>Limits: 44-124 %</i>		"	"	"
<i>Decachlorobiphenyl (Surr)</i>		<i>73 %</i>		<i>Limits: 47-129 %</i>		"	"	"



Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-W-33.0 (A7L0343-01RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120727</b>			<b>R-04</b>
Acenaphthene	ND	0.0408	0.0816	ug/L	4	12/15/17 17:30	EPA 8270D	
Acenaphthylene	ND	0.0408	0.0816	"	"	"	"	
Anthracene	ND	0.0408	0.0816	"	"	"	"	
<b>Benz(a)anthracene</b>	<b>0.0574</b>	0.0408	0.0816	"	"	"	"	J
<b>Benzo(a)pyrene</b>	<b>0.0994</b>	0.0612	0.122	"	"	"	"	J
<b>Benzo(b)fluoranthene</b>	<b>0.0651</b>	0.0612	0.122	"	"	"	"	J
Benzo(k)fluoranthene	ND	0.0612	0.122	"	"	"	"	
Benzo(g,h,i)perylene	ND	0.0408	0.0816	"	"	"	"	
Chrysene	ND	0.0408	0.0816	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.0408	0.0816	"	"	"	"	
<b>Fluoranthene</b>	<b>0.0543</b>	0.0408	0.0816	"	"	"	"	J
Fluorene	ND	0.0408	0.0816	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.0408	0.0816	"	"	"	"	
1-Methylnaphthalene	ND	0.0816	0.163	"	"	"	"	
2-Methylnaphthalene	ND	0.0816	0.163	"	"	"	"	
Naphthalene	ND	0.0816	0.163	"	"	"	"	
<b>Phenanthrene</b>	<b>0.0420</b>	0.0408	0.0816	"	"	"	"	J
<b>Pyrene</b>	<b>0.0643</b>	0.0408	0.0816	"	"	"	"	J
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 63 %</i>		<i>Limits: 44-120 %</i>	"	"	"	
<i>2-Fluorobiphenyl (Surr)</i>		<i>61 %</i>		<i>Limits: 44-120 %</i>	"	"	"	
<i>Phenol-d6 (Surr)</i>		<i>21 %</i>		<i>Limits: 10-120 %</i>	"	"	"	
<i>p-Terphenyl-d14 (Surr)</i>		<i>84 %</i>		<i>Limits: 50-133 %</i>	"	"	"	
<i>2-Fluorophenol (Surr)</i>		<i>27 %</i>		<i>Limits: 19-120 %</i>	"	"	"	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>102 %</i>		<i>Limits: 43-140 %</i>	"	"	"	



Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP02-S-7.0 (A7L0343-06)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120994</b>			
Acenaphthene	ND	76.0	153	ug/kg dry	40	12/26/17 15:09	EPA 8270D		
Acenaphthylene	ND	76.0	153	"	"	"	"		
Anthracene	ND	76.0	153	"	"	"	"		
<b>Benz(a)anthracene</b>	<b>188</b>	76.0	153	"	"	"	"	M-05	
<b>Benzo(a)pyrene</b>	<b>372</b>	114	229	"	"	"	"	Q-42	
<b>Benzo(b)fluoranthene</b>	<b>462</b>	114	229	"	"	"	"	M-05, Q-42	
<b>Benzo(k)fluoranthene</b>	<b>147</b>	114	229	"	"	"	"	J	
<b>Benzo(g,h,i)perylene</b>	<b>581</b>	76.0	153	"	"	"	"	Q-42	
<b>Chrysene</b>	<b>194</b>	76.0	153	"	"	"	"	M-05	
Dibenz(a,h)anthracene	ND	76.0	153	"	"	"	"		
<b>Fluoranthene</b>	<b>184</b>	76.0	153	"	"	"	"		
Fluorene	ND	76.0	153	"	"	"	"		
<b>Indeno(1,2,3-cd)pyrene</b>	<b>503</b>	76.0	153	"	"	"	"	Q-42	
1-Methylnaphthalene	ND	153	305	"	"	"	"		
2-Methylnaphthalene	ND	153	305	"	"	"	"		
Naphthalene	ND	153	305	"	"	"	"		
<b>Phenanthrene</b>	<b>166</b>	76.0	153	"	"	"	"		
<b>Pyrene</b>	<b>256</b>	76.0	153	"	"	"	"		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 77 %</i>		<i>Limits: 37-122 %</i>	"	"	"	S-05	
<i>2-Fluorobiphenyl (Surr)</i>		<i>85 %</i>		<i>Limits: 44-115 %</i>	"	"	"	S-05	
<i>Phenol-d6 (Surr)</i>		<i>72 %</i>		<i>Limits: 33-122 %</i>	"	"	"	S-05	
<i>p-Terphenyl-d14 (Surr)</i>		<i>80 %</i>		<i>Limits: 54-127 %</i>	"	"	"	S-05	
<i>2-Fluorophenol (Surr)</i>		<i>26 %</i>		<i>Limits: 35-115 %</i>	"	"	"	S-05	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>105 %</i>		<i>Limits: 39-132 %</i>	"	"	"	S-05	



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP08-W-6.5 (A7L0343-10)</b>			<b>Matrix: Water</b>		<b>Batch: 7120798</b>			
Acenaphthene	ND	6.81	6.81	ug/L	40	12/18/17 17:00	EPA 8270D	R-02
Acenaphthylene	ND	1.70	1.70	"	"	"	"	
<b>Anthracene</b>	<b>3.69</b>	0.851	1.70	"	"	"	"	
<b>Benz(a)anthracene</b>	<b>2.56</b>	0.851	1.70	"	"	"	"	M-05
<b>Benzo(a)pyrene</b>	<b>1.77</b>	1.28	2.55	"	"	"	"	J
Benzo(b)fluoranthene	ND	1.28	2.55	"	"	"	"	
Benzo(k)fluoranthene	ND	1.28	2.55	"	"	"	"	
Benzo(g,h,i)perylene	ND	0.851	1.70	"	"	"	"	
<b>Chrysene</b>	<b>5.15</b>	0.851	1.70	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.851	1.70	"	"	"	"	
<b>Fluoranthene</b>	<b>1.84</b>	0.851	1.70	"	"	"	"	
<b>Fluorene</b>	<b>7.21</b>	0.851	1.70	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.851	1.70	"	"	"	"	
<b>1-Methylnaphthalene</b>	<b>44.1</b>	1.70	3.40	"	"	"	"	
2-Methylnaphthalene	ND	1.70	3.40	"	"	"	"	
Naphthalene	ND	1.70	3.40	"	"	"	"	
<b>Phenanthrene</b>	<b>15.2</b>	0.851	1.70	"	"	"	"	
<b>Pyrene</b>	<b>6.14</b>	0.851	1.70	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 89 %</i>		<i>Limits: 44-120 %</i>	"	"	"	
<i>2-Fluorobiphenyl (Surr)</i>		<i>94 %</i>		<i>Limits: 44-120 %</i>	"	"	"	
<i>Phenol-d6 (Surr)</i>		<i>31 %</i>		<i>Limits: 10-120 %</i>	"	"	"	
<i>p-Terphenyl-d14 (Surr)</i>		<i>80 %</i>		<i>Limits: 50-133 %</i>	"	"	"	
<i>2-Fluorophenol (Surr)</i>		<i>50 %</i>		<i>Limits: 19-120 %</i>	"	"	"	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>94 %</i>		<i>Limits: 43-140 %</i>	"	"	"	

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-W-33.0 (A7L0343-01) Matrix: Water</b>								
Batch: 7120917								
Arsenic	5.30	0.500	1.00	ug/L	1	12/20/17 19:55	EPA 6020A	
Barium	150	0.500	1.00	"	"	"	"	
Cadmium	0.600	0.0400	0.200	"	"	"	"	
Chromium	29.7	0.500	1.00	"	"	"	"	
Lead	133	0.100	0.200	"	"	"	"	
Mercury	0.209	0.0400	0.0800	"	"	"	"	
Selenium	3.09	0.500	1.00	"	"	"	"	
Silver	1.56	0.100	0.200	"	"	"	"	
<b>GP04-S-1.0 (A7L0343-02) Matrix: Soil</b>								
Batch: 7121045								
Arsenic	7.03	0.585	1.17	mg/kg dry	10	12/27/17 16:31	EPA 6020A	
Barium	67.9	0.585	1.17	"	"	"	"	
Cadmium	1.14	0.117	0.234	"	"	"	"	
Chromium	9.46	0.585	1.17	"	"	"	"	
Lead	96.5	0.117	0.234	"	"	"	"	
Mercury	0.965	0.0468	0.0936	"	"	"	"	
Selenium	ND	0.585	1.17	"	"	"	"	
Silver	ND	0.117	0.234	"	"	"	"	
<b>GP04-S-6.0 (A7L0343-03) Matrix: Soil</b>								
Batch: 7121045								
Arsenic	8.15	0.593	1.19	mg/kg dry	10	12/27/17 16:34	EPA 6020A	
Barium	81.5	0.593	1.19	"	"	"	"	
Cadmium	0.961	0.119	0.237	"	"	"	"	
Chromium	14.7	0.593	1.19	"	"	"	"	
Lead	197	0.119	0.237	"	"	"	"	
Mercury	0.196	0.0475	0.0949	"	"	"	"	
Selenium	ND	0.593	1.19	"	"	"	"	
Silver	ND	0.119	0.237	"	"	"	"	
<b>GP04-S-13.0 (A7L0343-04) Matrix: Soil</b>								
Batch: 7121045								
Arsenic	ND	0.652	1.30	mg/kg dry	10	12/27/17 16:38	EPA 6020A	
Barium	254	0.652	1.30	"	"	"	"	
Cadmium	1.03	0.130	0.261	"	"	"	"	
Chromium	27.2	0.652	1.30	"	"	"	"	
Lead	5.74	0.130	0.261	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58


## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting			Date Analyzed	Method	Notes
			Limit	Units	Dilution			
<b>GP04-S-13.0 (A7L0343-04)</b>			<b>Matrix: Soil</b>					
Mercury	ND	0.0522	0.104	mg/kg dry	10	"	EPA 6020A	
<b>Selenium</b>	<b>0.822</b>	0.652	1.30	"	"	"	"	J
Silver	ND	0.130	0.261	"	"	"	"	
<b>GP02-S-1.5 (A7L0343-05)</b>			<b>Matrix: Soil</b>					
Batch: 7121045								
Arsenic	<b>9.10</b>	0.645	1.29	mg/kg dry	10	12/27/17 16:41	EPA 6020A	
Barium	<b>119</b>	0.645	1.29	"	"	"	"	Q-42
Cadmium	<b>0.774</b>	0.129	0.258	"	"	"	"	
Chromium	<b>25.2</b>	0.645	1.29	"	"	"	"	
Lead	<b>327</b>	0.129	0.258	"	"	"	"	Q-42
Mercury	<b>3.20</b>	0.0516	0.103	"	"	"	"	Q-42
Selenium	ND	0.645	1.29	"	"	"	"	
Silver	ND	0.129	0.258	"	"	"	"	
<b>GP02-S-7.0 (A7L0343-06)</b>			<b>Matrix: Soil</b>					
Batch: 7121045								
Arsenic	<b>3.34</b>	0.711	1.42	mg/kg dry	10	12/27/17 17:15	EPA 6020A	
Barium	<b>97.6</b>	0.711	1.42	"	"	"	"	
Cadmium	<b>12.8</b>	0.142	0.284	"	"	"	"	
Chromium	<b>2350</b>	0.711	1.42	"	"	"	"	
Lead	<b>89.9</b>	0.142	0.284	"	"	"	"	
Mercury	<b>0.109</b>	0.0569	0.114	"	"	"	"	J
Selenium	ND	0.711	1.42	"	"	"	"	
Silver	<b>0.156</b>	0.142	0.284	"	"	"	"	J
<b>GP09-S-2.5 (A7L0343-07)</b>			<b>Matrix: Soil</b>					
Batch: 7121045								
Arsenic	<b>123</b>	0.706	1.41	mg/kg dry	10	12/27/17 17:18	EPA 6020A	
Barium	<b>1870</b>	0.706	1.41	"	"	"	"	
Cadmium	<b>1.13</b>	0.141	0.282	"	"	"	"	
Chromium	<b>72.2</b>	0.706	1.41	"	"	"	"	
Lead	<b>355</b>	0.141	0.282	"	"	"	"	
Mercury	<b>0.371</b>	0.0564	0.113	"	"	"	"	
Selenium	ND	0.706	1.41	"	"	"	"	
Silver	<b>0.183</b>	0.141	0.282	"	"	"	"	J
<b>GP09-S-8.0 (A7L0343-08)</b>			<b>Matrix: Soil</b>					
Batch: 7121045								
Arsenic	<b>3.65</b>	0.565	1.13	mg/kg dry	10	12/27/17 17:22	EPA 6020A	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP09-S-8.0 (A7L0343-08)</b>								
<b>Matrix: Soil</b>								
Barium	80.1	0.565	1.13	mg/kg dry	10	"	EPA 6020A	
Cadmium	0.248	0.113	0.226	"	"	"	"	
Chromium	25.2	0.565	1.13	"	"	"	"	
Lead	78.2	0.113	0.226	"	"	"	"	
Mercury	ND	0.0452	0.0904	"	"	"	"	
Selenium	ND	0.565	1.13	"	"	"	"	
Silver	ND	0.113	0.226	"	"	"	"	
<b>GP08-S-4.0 (A7L0343-09)</b>								
<b>Matrix: Soil</b>								
Batch: 7121045								
Arsenic	1.88	0.604	1.21	mg/kg dry	10	12/27/17 17:25	EPA 6020A	
Barium	113	0.604	1.21	"	"	"	"	
Cadmium	0.205	0.121	0.241	"	"	"	"	J
Chromium	21.0	0.604	1.21	"	"	"	"	
Lead	11.2	0.121	0.241	"	"	"	"	
Mercury	0.0776	0.0483	0.0966	"	"	"	"	J
Selenium	ND	0.604	1.21	"	"	"	"	
Silver	ND	0.121	0.241	"	"	"	"	
<b>GP08-W-6.5 (A7L0343-10)</b>								
<b>Matrix: Water</b>								
Batch: 7120917								
Arsenic	12.6	4.50	9.00	ug/L	1	12/20/17 19:58	EPA 6020A	
Barium	485	4.50	9.00	"	"	"	"	
Cadmium	1.40	0.360	1.80	"	"	"	"	J, R-04
Chromium	76.4	4.50	9.00	"	"	"	"	
Lead	180	0.900	1.80	"	"	"	"	
Mercury	ND	0.360	0.720	"	"	"	"	R-04
Selenium	ND	4.50	9.00	"	"	"	"	R-04
Silver	ND	0.900	1.80	"	"	"	"	



Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## ANALYTICAL SAMPLE RESULTS

### Percent Dry Weight

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP04-S-1.0 (A7L0343-02)</b>				<b>Matrix: Soil</b>	<b>Batch: 7120737</b>			
% Solids	92.7	1.00	1.00	% by Weight	1	12/15/17 07:52	EPA 8000C	
<b>GP04-S-6.0 (A7L0343-03)</b>				<b>Matrix: Soil</b>	<b>Batch: 7120737</b>			
% Solids	88.3	1.00	1.00	% by Weight	1	12/15/17 07:52	EPA 8000C	
<b>GP04-S-13.0 (A7L0343-04)</b>				<b>Matrix: Soil</b>	<b>Batch: 7120737</b>			
% Solids	75.5	1.00	1.00	% by Weight	1	12/15/17 07:52	EPA 8000C	
<b>GP02-S-1.5 (A7L0343-05)</b>				<b>Matrix: Soil</b>	<b>Batch: 7120737</b>			
% Solids	83.2	1.00	1.00	% by Weight	1	12/15/17 07:52	EPA 8000C	
<b>GP02-S-7.0 (A7L0343-06)</b>				<b>Matrix: Soil</b>	<b>Batch: 7120737</b>			
% Solids	69.9	1.00	1.00	% by Weight	1	12/15/17 07:52	EPA 8000C	
<b>GP09-S-2.5 (A7L0343-07)</b>				<b>Matrix: Soil</b>	<b>Batch: 7120737</b>			
% Solids	71.4	1.00	1.00	% by Weight	1	12/15/17 07:52	EPA 8000C	
<b>GP09-S-8.0 (A7L0343-08)</b>				<b>Matrix: Soil</b>	<b>Batch: 7120737</b>			
% Solids	85.3	1.00	1.00	% by Weight	1	12/15/17 07:52	EPA 8000C	
<b>GP08-S-4.0 (A7L0343-09)</b>				<b>Matrix: Soil</b>	<b>Batch: 7120737</b>			
% Solids	80.6	1.00	1.00	% by Weight	1	12/15/17 07:52	EPA 8000C	

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

**Weck Laboratories, Inc.**

**ANALYTICAL SAMPLE RESULTS (Subcontracted)**

**Hexavalent Chromium by IC**

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP03-W-33.0 (A7L0343-01)</b>			<b>Matrix: Water</b>		<b>Batch: W7L1080</b>			
Batch: W7L1080								
Chromium 6+	ND	---	0.30	ug/l	1	12/20/17 15:48	EPA 7199	
<b>GP08-W-6.5 (A7L0343-10)</b>			<b>Matrix: Water</b>		<b>Batch: W7L1080</b>			
Batch: W7L1080								
Chromium 6+	ND	---	0.30	ug/l	1	12/20/17 16:11	EPA 7199	

Apex Laboratories



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

Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Hydrocarbon Identification Screen by NWTPH-HCID

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120754 - EPA 3510C (Fuels/Acid Ext.)</b>												
<b>Water</b>												
Blank (7120754-BLK1) Prepared: 12/14/17 16:59 Analyzed: 12/14/17 23:21												
NWTPH-HCID												
Gasoline Range Organics	ND	0.100	0.100	mg/L	1	---	---	---	---	---	---	---
Diesel Range Organics	ND	0.250	0.250	"	"	---	---	---	---	---	---	---
Oil Range Organics	ND	0.250	0.250	"	"	---	---	---	---	---	---	---
Surr: <i>o</i> -Terphenyl (Surr)			Recovery: 96 %	Limits: 50-150 %		Dilution: 1x						
4-Bromofluorobenzene (Surr)			31 %	10-120 %		"						


<b>Batch 7120791 - NWTPH-HCID (Soil)</b>												
<b>Soil</b>												
Blank (7120791-BLK1) Prepared: 12/15/17 16:03 Analyzed: 12/16/17 01:17												
NWTPH-HCID												
Gasoline Range Organics	ND	18.2	18.2	mg/kg wet	1	---	---	---	---	---	---	---
Diesel Range Organics	ND	45.5	45.5	"	"	---	---	---	---	---	---	---
Oil Range Organics	ND	90.9	90.9	"	"	---	---	---	---	---	---	---
Surr: <i>o</i> -Terphenyl (Surr)			Recovery: 100 %	Limits: 50-150 %		Dilution: 1x						
4-Bromofluorobenzene (Surr)			98 %	50-150 %		"						

<b>Duplicate (7120791-DUP1)</b>												
QC Source Sample: GP08-S-4.0 (A7L0343-09)												
NWTPH-HCID												
Gasoline Range Organics	ND	24.7	24.7	mg/kg dry	1	---	ND	---	---	---	30%	
Diesel Range Organics	ND	61.9	61.9	"	"	---	ND	---	---	---	30%	
Oil Range Organics	ND	124	124	"	"	---	ND	---	---	---	30%	
Surr: <i>o</i> -Terphenyl (Surr)			Recovery: 99 %	Limits: 50-150 %		Dilution: 1x						
4-Bromofluorobenzene (Surr)			95 %	50-150 %		"						

<b>Duplicate (7120791-DUP2)</b>												
QC Source Sample: Other (A7L0435-06)												
NWTPH-HCID												
Gasoline Range Organics	ND	27.4	27.4	mg/kg dry	1	---	ND	---	---	---	30%	
Diesel Range Organics	<b>DET</b>	68.4	68.4	"	"	---	ND	---	---	---	30%	
Oil Range Organics	ND	137	137	"	"	---	ND	---	---	---	30%	
Surr: <i>o</i> -Terphenyl (Surr)			Recovery: 108 %	Limits: 50-150 %		Dilution: 1x						
4-Bromofluorobenzene (Surr)			101 %	50-150 %		"						

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120754 - EPA 3510C (Fuels/Acid Ext.)</b>						<b>Water</b>						
<b>Blank (7120754-BLK1)</b>						Prepared: 12/14/17 16:59 Analyzed: 12/14/17 23:21						
<b>NWTPH-Dx</b>												
Diesel	ND	0.100	0.200	mg/L	1	---	---	---	---	---	---	
Oil	ND	0.200	0.400	"	"	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 92 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS (7120754-BS1)</b>						Prepared: 12/14/17 16:59 Analyzed: 12/14/17 23:44						
<b>NWTPH-Dx</b>												
Diesel	0.968	0.100	0.200	mg/L	1	1.25	---	77	58-115	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 93 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS Dup (7120754-BSD1)</b>						Prepared: 12/14/17 16:59 Analyzed: 12/15/17 00:07						
<b>NWTPH-Dx</b>												
Diesel	1.04	0.100	0.200	mg/L	1	1.25	---	83	58-115	7	20%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209


Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120829 - EPA 3546 (Fuels)</b>						<b>Soil</b>						
<b>Blank (7120829-BLK1)</b>						Prepared: 12/18/17 13:16 Analyzed: 12/18/17 21:13						
<b>NWTPH-Dx</b>												
Diesel	ND	9.09	25.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	18.2	50.0	"	"	---	---	---	---	---	---	
Mineral Oil	ND	18.2	36.4	"	"	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 101 %		Limits: 50-150 %		Dilution: 1x						
<b>LCS (7120829-BS1)</b>						Prepared: 12/18/17 13:16 Analyzed: 12/18/17 21:34						
<b>NWTPH-Dx</b>												
Diesel	127	10.0	25.0	mg/kg wet	1	125	---	102	76-115	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 105 %		Limits: 50-150 %		Dilution: 1x						
<b>Duplicate (7120829-DUP1)</b>						Prepared: 12/18/17 13:16 Analyzed: 12/18/17 22:15						
<b>QC Source Sample: Other (A7L0305-13RE1)</b>												
<b>NWTPH-Dx</b>												
Diesel	ND	9.22	25.0	mg/kg wet	1	---	ND	---	---	---	30%	
Oil	ND	18.4	50.0	"	"	---	ND	---	---	---	30%	
Mineral Oil	ND	18.4	36.9	"	"	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 87 %		Limits: 50-150 %		Dilution: 1x						
<b>Duplicate (7120829-DUP2)</b>						Prepared: 12/18/17 13:16 Analyzed: 12/19/17 07:18						
<b>QC Source Sample: Other (A7L0447-04)</b>												
<b>NWTPH-Dx</b>												
Diesel	ND	11.7	25.0	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	23.5	50.0	"	"	---	ND	---	---	---	30%	
Mineral Oil	ND	23.5	47.0	"	"	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 99 %		Limits: 50-150 %		Dilution: 1x						



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209


Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120989 - EPA 3546 (Fuels)</b>						<b>Soil</b>						
<b>Blank (7120989-BLK1)</b>						Prepared: 12/21/17 17:25 Analyzed: 12/21/17 22:28						
<b>NWTPH-Dx</b>												
Diesel	ND	9.09	25.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	18.2	50.0	"	"	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 91 %		Limits: 50-150 %		Dilution: 1x						
<b>LCS (7120989-BS1)</b>						Prepared: 12/21/17 17:25 Analyzed: 12/21/17 22:49						
<b>NWTPH-Dx</b>												
Diesel	95.8	10.0	25.0	mg/kg wet	1	125	---	77	76-115	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 85 %		Limits: 50-150 %		Dilution: 1x						
<b>Duplicate (7120989-DUP2)</b>						Prepared: 12/21/17 17:25 Analyzed: 12/22/17 06:01						
<b>QC Source Sample: Other (A7L0431-15)</b>												
<b>NWTPH-Dx</b>												
Diesel	<b>3640</b>	608	1220	mg/kg dry	50	---	5970	---	---	49	30%	F-24, Q-04
Oil	<b>2460</b>	1220	2430	"	"	---	4080	---	---	49	30%	F-24, Q-04
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: %		Limits: 50-150 %		Dilution: 50x						
<b>Duplicate (7120989-DUP3)</b>						Prepared: 12/21/17 17:25 Analyzed: 12/26/17 11:26						
<b>QC Source Sample: GP04-S-1.0 (A7L0343-02RE1)</b>												
<b>NWTPH-Dx</b>												
Diesel	ND	208	416	mg/kg dry	20	---	ND	---	---	---	30%	
Oil	<b>2270</b>	416	832	"	"	---	1880	---	---	19	30%	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: %		Limits: 50-150 %		Dilution: 20x						S-01



Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209


Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Notes
<b>Batch 7120625 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120625-BLK1)</b>						Prepared: 12/13/17 12:43 Analyzed: 12/13/17 14:04						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	---	---	---	---	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 100 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 102 % 50-150 % "</i>												
<b>LCS (7120625-BS2)</b>						Prepared: 12/13/17 12:43 Analyzed: 12/13/17 13:37						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	0.539	0.0500	0.100	mg/L	1	0.500	---	108	80-120	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 100 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 99 % 50-150 % "</i>												
<b>Duplicate (7120625-DUP1)</b>						Prepared: 12/13/17 14:02 Analyzed: 12/13/17 18:34						
<b>QC Source Sample: Other (A7L0315-08)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	0.0707	0.0500	0.100	mg/L	1	---	0.0645	---	---	9	30%	J
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 102 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 104 % 50-150 % "</i>												



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Notes
<b>Batch 7120718 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120718-BLK1)</b>						Prepared: 12/14/17 09:33 Analyzed: 12/14/17 10:54						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 100 %	Limits: 50-150 %			Dilution: 1x					
1,4-Difluorobenzene (Sur)			105 %	50-150 %			"					
<b>LCS (7120718-BS2)</b>						Prepared: 12/14/17 09:33 Analyzed: 12/14/17 10:27						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	0.544	0.0500	0.100	mg/L	1	0.500	---	109	80-120	---	---	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 99 %	Limits: 50-150 %			Dilution: 1x					
1,4-Difluorobenzene (Sur)			102 %	50-150 %			"					
<b>Duplicate (7120718-DUP1)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/14/17 16:45						
<b>QC Source Sample: Other (A7L0352-01)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	109	0.500	1.00	mg/L	10	---	114	---	---	5	30%	E
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 99 %	Limits: 50-150 %			Dilution: 1x					
1,4-Difluorobenzene (Sur)			99 %	50-150 %			"					
<b>Duplicate (7120718-DUP2)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/14/17 20:48						
<b>QC Source Sample: Other (A7L0365-02)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	1.22	0.500	1.00	mg/L	10	---	1.23	---	---	1	30%	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 100 %	Limits: 50-150 %			Dilution: 1x					
1,4-Difluorobenzene (Sur)			103 %	50-150 %			"					



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209


Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC %REC	Limit	RPD RPD	Limit	Notes
<b>Batch 7120726 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120726-BLK1)</b>						Prepared: 12/14/17 10:00 Analyzed: 12/14/17 12:10						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	1.67	3.33	mg/kg wet	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 97 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			95 %	50-150 %		"						
<b>LCS (7120726-BS2)</b>						Prepared: 12/14/17 10:00 Analyzed: 12/14/17 11:44						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	24.3	2.50	5.00	mg/kg wet	50	25.0	---	97	80-120	---	---	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 101 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			100 %	50-150 %		"						
<b>Duplicate (7120726-DUP1)</b>						Prepared: 12/13/17 15:55 Analyzed: 12/14/17 13:58						
<b>QC Source Sample: Other (A7L0355-01)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	13.0	3.01	6.03	mg/kg dry	50	---	21.5	---	---	50	30%	Q-05
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 107 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			95 %	50-150 %		"						
<b>Duplicate (7120726-DUP2)</b>						Prepared: 12/14/17 13:22 Analyzed: 12/14/17 18:27						
<b>QC Source Sample: Other (A7L0370-01)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	4.18	8.36	mg/kg dry	50	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 100 %	Limits: 50-150 %		Dilution: 1x						
1,4-Difluorobenzene (Sur)			94 %	50-150 %		"						





**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120726 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120726-BLK1)</b>						Prepared: 12/14/17 10:00 Analyzed: 12/14/17 12:10						
<b>5035A/8260C</b>												
Acetone	ND	333	667	ug/kg wet	50	---	---	---	---	---	---	
Acrylonitrile	ND	33.3	66.7	"	"	---	---	---	---	---	---	
Benzene	ND	3.33	6.67	"	"	---	---	---	---	---	---	
Bromobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Bromochloromethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Bromodichloromethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Bromoform	ND	33.3	66.7	"	"	---	---	---	---	---	---	
Bromomethane	ND	333	333	"	"	---	---	---	---	---	---	
2-Butanone (MEK)	ND	167	333	"	"	---	---	---	---	---	---	
n-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
sec-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
tert-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Carbon disulfide	ND	167	333	"	"	---	---	---	---	---	---	
Carbon tetrachloride	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Chlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Chloroethane	ND	333	333	"	"	---	---	---	---	---	---	EST
Chloroform	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Chloromethane	ND	83.3	167	"	"	---	---	---	---	---	---	
2-Chlorotoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
4-Chlorotoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Dibromochloromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	83.3	167	"	"	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Dibromomethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	
1,1-Dichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,2-Dichloropropane	ND	8.33	16.7	"	"	---	---	---	---	---	---	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120726 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120726-BLK1)</b>						Prepared: 12/14/17 10:00 Analyzed: 12/14/17 12:10						
<b>5035A/8260C</b>												
1,3-Dichloropropane	ND	16.7	33.3	ug/kg wet	"	---	---	---	---	---	---	
2,2-Dichloropropane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,1-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	33.3	66.7	"	"	---	---	---	---	---	---	
2-Hexanone	ND	167	333	"	"	---	---	---	---	---	---	
Isopropylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
4-Isopropyltoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Methylene chloride	ND	83.3	167	"	"	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	167	333	"	"	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Naphthalene	ND	33.3	66.7	"	"	---	---	---	---	---	---	
n-Propylbenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Styrene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Toluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	83.3	167	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	83.3	167	"	"	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Trichlorofluoromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	EST
1,2,3-Trichloropropane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	8.33	16.7	"	"	---	---	---	---	---	---	
m,p-Xylene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
o-Xylene	ND	8.33	16.7	"	"	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 101 % Limits: 80-120 % Dilution: 1x  
Toluene-d8 (Surr) 102 % 80-120 % "

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120726 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120726-BLK1)</b>						Prepared: 12/14/17 10:00 Analyzed: 12/14/17 12:10						
<b>5035A/8260C</b>												
<i>Surr: 4-Bromofluorobenzene (Surr)</i>						<i>Recovery: 99 % Limits: 80-120 % Dilution: 1x</i>						
<b>LCS (7120726-BS1)</b>						Prepared: 12/14/17 10:00 Analyzed: 12/14/17 11:17						
<b>5035A/8260C</b>												
Acetone	2150	500	1000	ug/kg wet	50	2000	---	108	80-120	---	---	
Acrylonitrile	1170	50.0	100	"	"	1000	---	117	"	---	---	
Benzene	1050	5.00	10.0	"	"	"	---	105	"	---	---	
Bromobenzene	996	12.5	25.0	"	"	"	---	100	"	---	---	
Bromochloromethane	1120	25.0	50.0	"	"	"	---	112	"	---	---	
Bromodichloromethane	966	25.0	50.0	"	"	"	---	97	"	---	---	
Bromoform	934	50.0	100	"	"	"	---	93	"	---	---	
Bromomethane	1130	500	500	"	"	"	---	113	"	---	---	
2-Butanone (MEK)	2180	250	500	"	"	2000	---	109	"	---	---	
n-Butylbenzene	1080	25.0	50.0	"	"	1000	---	108	"	---	---	
sec-Butylbenzene	1070	25.0	50.0	"	"	"	---	107	"	---	---	
tert-Butylbenzene	1040	25.0	50.0	"	"	"	---	104	"	---	---	
Carbon disulfide	890	250	500	"	"	"	---	89	"	---	---	
Carbon tetrachloride	990	25.0	50.0	"	"	"	---	99	"	---	---	
Chlorobenzene	992	12.5	25.0	"	"	"	---	99	"	---	---	
Chloroethane	782	500	500	"	"	"	---	78	"	---	---	EST
Chloroform	1070	25.0	50.0	"	"	"	---	107	"	---	---	
Chloromethane	989	125	250	"	"	"	---	99	"	---	---	
2-Chlorotoluene	1030	25.0	50.0	"	"	"	---	103	"	---	---	
4-Chlorotoluene	1050	25.0	50.0	"	"	"	---	105	"	---	---	
Dibromochloromethane	1070	50.0	100	"	"	"	---	107	"	---	---	
1,2-Dibromo-3-chloropropane	1150	125	250	"	"	"	---	115	"	---	---	
1,2-Dibromoethane (EDB)	1080	25.0	50.0	"	"	"	---	108	"	---	---	
Dibromomethane	1040	25.0	50.0	"	"	"	---	104	"	---	---	
1,2-Dichlorobenzene	1010	12.5	25.0	"	"	"	---	101	"	---	---	
1,3-Dichlorobenzene	1020	12.5	25.0	"	"	"	---	102	"	---	---	
1,4-Dichlorobenzene	990	12.5	25.0	"	"	"	---	99	"	---	---	
Dichlorodifluoromethane	934	50.0	100	"	"	"	---	93	"	---	---	
1,1-Dichloroethane	1060	12.5	25.0	"	"	"	---	106	"	---	---	
1,2-Dichloroethane (EDC)	1040	12.5	25.0	"	"	"	---	104	"	---	---	
1,1-Dichloroethene	1040	12.5	25.0	"	"	"	---	104	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120726 - EPA 5035A</b>												
						<b>Soil</b>						
<b>LCS (7120726-BS1)</b>						Prepared: 12/14/17 10:00 Analyzed: 12/14/17 11:17						
<b>5035A/8260C</b>												
cis-1,2-Dichloroethene	1070	12.5	25.0	ug/kg wet	"	"	---	107	"	---	---	
trans-1,2-Dichloroethene	1060	12.5	25.0	"	"	"	---	106	"	---	---	
1,2-Dichloropropane	1060	12.5	25.0	"	"	"	---	106	"	---	---	
1,3-Dichloropropane	1060	25.0	50.0	"	"	"	---	106	"	---	---	
2,2-Dichloropropane	1130	25.0	50.0	"	"	"	---	113	"	---	---	
1,1-Dichloropropene	1070	25.0	50.0	"	"	"	---	107	"	---	---	
cis-1,3-Dichloropropene	1140	25.0	50.0	"	"	"	---	114	"	---	---	
trans-1,3-Dichloropropene	1010	25.0	50.0	"	"	"	---	101	"	---	---	
Ethylbenzene	1020	12.5	25.0	"	"	"	---	102	"	---	---	
Hexachlorobutadiene	1010	50.0	100	"	"	"	---	101	"	---	---	
2-Hexanone	2060	250	500	"	"	2000	---	103	"	---	---	
Isopropylbenzene	1070	25.0	50.0	"	"	1000	---	107	"	---	---	
4-Isopropyltoluene	1070	25.0	50.0	"	"	"	---	107	"	---	---	
Methylene chloride	1040	125	250	"	"	"	---	104	"	---	---	
4-Methyl-2-pentanone (MiBK)	2140	250	500	"	"	2000	---	107	"	---	---	
Methyl tert-butyl ether (MTBE)	1050	25.0	50.0	"	"	1000	---	105	"	---	---	
Naphthalene	1120	50.0	100	"	"	"	---	112	"	---	---	
n-Propylbenzene	1050	12.5	25.0	"	"	"	---	105	"	---	---	
Styrene	948	25.0	50.0	"	"	"	---	95	"	---	---	
1,1,1,2-Tetrachloroethane	950	12.5	25.0	"	"	"	---	95	"	---	---	
1,1,2,2-Tetrachloroethane	1140	25.0	50.0	"	"	"	---	114	"	---	---	
Tetrachloroethene (PCE)	1010	12.5	25.0	"	"	"	---	101	"	---	---	
Toluene	991	25.0	50.0	"	"	"	---	99	"	---	---	
1,2,3-Trichlorobenzene	1080	125	250	"	"	"	---	108	"	---	---	
1,2,4-Trichlorobenzene	1050	125	250	"	"	"	---	105	"	---	---	
1,1,1-Trichloroethane	1060	12.5	25.0	"	"	"	---	106	"	---	---	
1,1,2-Trichloroethane	1070	12.5	25.0	"	"	"	---	107	"	---	---	
Trichloroethene (TCE)	1010	12.5	25.0	"	"	"	---	101	"	---	---	
Trichlorofluoromethane	840	50.0	100	"	"	"	---	84	"	---	---	EST
1,2,3-Trichloropropane	1070	25.0	50.0	"	"	"	---	107	"	---	---	
1,2,4-Trimethylbenzene	1080	25.0	50.0	"	"	"	---	108	"	---	---	
1,3,5-Trimethylbenzene	1040	25.0	50.0	"	"	"	---	104	"	---	---	
Vinyl chloride	1120	12.5	25.0	"	"	"	---	112	"	---	---	
m,p-Xylene	2100	25.0	50.0	"	"	2000	---	105	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120726 - EPA 5035A</b>						<b>Soil</b>						
<b>LCS (7120726-BS1)</b>						Prepared: 12/14/17 10:00 Analyzed: 12/14/17 11:17						
<b>5035A/8260C</b>												
o-Xylene	1040	12.5	25.0	ug/kg wet	"	1000	---	104	"	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 101 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>					
<i>Toluene-d8 (Surr)</i>			<i>101 %</i>		<i>80-120 %</i>		<i>"</i>					
<i>4-Bromofluorobenzene (Surr)</i>			<i>99 %</i>		<i>80-120 %</i>		<i>"</i>					
<b>Duplicate (7120726-DUP1)</b>						Prepared: 12/13/17 15:55 Analyzed: 12/14/17 13:58						
<b>QC Source Sample: Other (A7L0355-01)</b>												
<b>5035A/8260C</b>												
Acetone	ND	603	1210	ug/kg dry	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	60.3	121	"	"	---	ND	---	---	---	30%	
Benzene	ND	6.03	12.1	"	"	---	ND	---	---	---	30%	
Bromobenzene	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
Bromoform	ND	60.3	121	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	603	603	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	301	603	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	301	603	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	603	603	"	"	---	ND	---	---	---	30%	EST
Chloroform	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	151	301	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	60.3	121	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	151	301	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120726 - EPA 5035A</b>						<b>Soil</b>						
<b>Duplicate (7120726-DUP1)</b>						Prepared: 12/13/17 15:55 Analyzed: 12/14/17 13:58						
<b>QC Source Sample: Other (A7L0355-01)</b>												
<b>5035A/8260C</b>												
1,4-Dichlorobenzene	ND	15.1	30.1	ug/kg dry	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	60.3	121	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	60.3	121	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	301	603	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	151	301	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	301	603	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	60.3	121	"	"	---	ND	---	---	---	30%	
n-Propylbenzene	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
Styrene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	121	121	"	"	---	ND	---	---	---	30%	R-02
Tetrachloroethene (PCE)	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
Toluene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	151	301	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	151	301	"	"	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120726 - EPA 5035A</b>												
<b>Soil</b>												
<b>Duplicate (7120726-DUP1)</b>						Prepared: 12/13/17 15:55 Analyzed: 12/14/17 13:58						
QC Source Sample: Other (A7L0355-01)												
5035A/8260C												
Trichlorofluoromethane	ND	60.3	121	ug/kg dry	"	---	ND	---	---	---	30%	EST
1,2,3-Trichloropropane	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
Vinyl chloride	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	
m,p-Xylene	ND	30.1	60.3	"	"	---	ND	---	---	---	30%	
o-Xylene	ND	15.1	30.1	"	"	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 102 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 100 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 103 % 80-120 % "

**Duplicate (7120726-DUP2)** Prepared: 12/14/17 13:22 Analyzed: 12/14/17 18:27 TEMP, V-16

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
QC Source Sample: Other (A7L0370-01)												
5035A/8260C												
Acetone	ND	836	1670	ug/kg dry	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	83.6	167	"	"	---	ND	---	---	---	30%	
Benzene	25.9	8.36	16.7	"	"	---	11.7	---	---	76	30%	Q-05
Bromobenzene	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
Bromoform	ND	83.6	167	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	836	836	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	418	836	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	418	836	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	836	836	"	"	---	ND	---	---	---	30%	EST
Chloroform	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	209	418	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120726 - EPA 5035A</b>												
						<b>Soil</b>						
<b>Duplicate (7120726-DUP2)</b>						Prepared: 12/14/17 13:22 Analyzed: 12/14/17 18:27			TEMP, V-16			
<b>QC Source Sample: Other (A7L0370-01)</b>												
<b>5035A/8260C</b>												
4-Chlorotoluene	ND	41.8	83.6	ug/kg dry	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	83.6	167	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	209	418	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	83.6	167	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	83.6	167	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	418	836	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	209	418	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	418	836	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	83.6	167	"	"	---	ND	---	---	---	30%	
n-Propylbenzene	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
Styrene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
1,1,1,2,2-Tetrachloroethane	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120726 - EPA 5035A</b>												
<b>Soil</b>												
<b>Duplicate (7120726-DUP2)</b>			Prepared: 12/14/17 13:22				Analyzed: 12/14/17 18:27				TEMP, V-16	
<b>QC Source Sample: Other (A7L0370-01)</b>												
<b>5035A/8260C</b>												
Tetrachloroethene (PCE)	ND	20.9	41.8	ug/kg dry	"	---	ND	---	---	---	30%	
Toluene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	209	418	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	209	418	"	"	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	83.6	167	"	"	---	ND	---	---	---	30%	EST
1,2,3-Trichloropropane	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
Vinyl chloride	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	
m,p-Xylene	ND	41.8	83.6	"	"	---	ND	---	---	---	30%	
o-Xylene	ND	20.9	41.8	"	"	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 102 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 100 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 101 % 80-120 % "

### Matrix Spike (7120726-MS1)

Prepared: 12/13/17 15:45 Analyzed: 12/14/17 14:52

**QC Source Sample: Other (A7L0358-03)**

#### 5035A/8260C

Acetone	2240	545	1090	ug/kg dry	50	2180	ND	103	36-164	---	---
Acrylonitrile	1230	54.5	109	"	"	1090	ND	113	65-134	---	---
Benzene	1130	5.45	10.9	"	"	"	ND	104	77-121	---	---
Bromobenzene	1080	13.6	27.2	"	"	"	ND	99	78-121	---	---
Bromochloromethane	1240	27.2	54.5	"	"	"	ND	114	78-125	---	---
Bromodichloromethane	1070	27.2	54.5	"	"	"	ND	98	75-127	---	---
Bromoform	1040	54.5	109	"	"	"	ND	95	67-132	---	---
Bromomethane	1190	545	545	"	"	"	ND	109	53-143	---	---
2-Butanone (MEK)	2230	272	545	"	"	2180	ND	102	51-148	---	---
n-Butylbenzene	1120	27.2	54.5	"	"	1090	ND	103	70-128	---	---
sec-Butylbenzene	1120	27.2	54.5	"	"	"	ND	103	73-126	---	---
tert-Butylbenzene	1080	27.2	54.5	"	"	"	ND	100	73-125	---	---

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120726 - EPA 5035A</b>												
<b>Soil</b>												
<b>Matrix Spike (7120726-MS1)</b>						Prepared: 12/13/17 15:45 Analyzed: 12/14/17 14:52						
<b>QC Source Sample: Other (A7L0358-03)</b>												
<b>5035A/8260C</b>												
Carbon disulfide	973	272	545	ug/kg dry	"	"	ND	89	63-132	---	---	
Carbon tetrachloride	1060	27.2	54.5	"	"	"	ND	98	70-135	---	---	
Chlorobenzene	1070	13.6	27.2	"	"	"	ND	98	79-120	---	---	
Chloroethane	1280	545	545	"	"	"	ND	118	59-139	---	---	EST
Chloroform	1170	27.2	54.5	"	"	"	ND	108	78-123	---	---	
Chloromethane	1060	136	272	"	"	"	ND	97	50-136	---	---	
2-Chlorotoluene	1090	27.2	54.5	"	"	"	ND	100	75-122	---	---	
4-Chlorotoluene	1120	27.2	54.5	"	"	"	ND	103	72-124	---	---	
Dibromochloromethane	1160	54.5	109	"	"	"	ND	106	74-126	---	---	
1,2-Dibromo-3-chloropropane	1150	136	272	"	"	"	ND	106	61-132	---	---	
1,2-Dibromoethane (EDB)	1190	27.2	54.5	"	"	"	ND	110	78-122	---	---	
Dibromomethane	1160	27.2	54.5	"	"	"	ND	106	78-125	---	---	
1,2-Dichlorobenzene	1100	13.6	27.2	"	"	"	ND	101	78-121	---	---	
1,3-Dichlorobenzene	1080	13.6	27.2	"	"	"	ND	99	77-121	---	---	
1,4-Dichlorobenzene	1070	13.6	27.2	"	"	"	ND	98	75-120	---	---	
Dichlorodifluoromethane	1020	54.5	109	"	"	"	ND	93	29-149	---	---	
1,1-Dichloroethane	1150	13.6	27.2	"	"	"	ND	106	76-125	---	---	
1,2-Dichloroethane (EDC)	1140	13.6	27.2	"	"	"	ND	104	73-128	---	---	
1,1-Dichloroethene	1140	13.6	27.2	"	"	"	ND	105	70-131	---	---	
cis-1,2-Dichloroethene	1140	13.6	27.2	"	"	"	ND	105	77-123	---	---	
trans-1,2-Dichloroethene	1150	13.6	27.2	"	"	"	ND	106	74-125	---	---	
1,2-Dichloropropane	1150	13.6	27.2	"	"	"	ND	106	76-123	---	---	
1,3-Dichloropropane	1140	27.2	54.5	"	"	"	ND	105	77-121	---	---	
2,2-Dichloropropane	1250	27.2	54.5	"	"	"	ND	115	67-133	---	---	
1,1-Dichloropropene	1140	27.2	54.5	"	"	"	ND	105	76-125	---	---	
cis-1,3-Dichloropropene	1220	27.2	54.5	"	"	"	ND	112	74-126	---	---	
trans-1,3-Dichloropropene	1090	27.2	54.5	"	"	"	ND	100	71-130	---	---	
Ethylbenzene	1080	13.6	27.2	"	"	"	ND	99	76-122	---	---	
Hexachlorobutadiene	1070	54.5	109	"	"	"	ND	98	61-135	---	---	
2-Hexanone	2200	272	545	"	"	2180	ND	101	53-145	---	---	
Isopropylbenzene	1140	27.2	54.5	"	"	1090	ND	105	68-134	---	---	
4-Isopropyltoluene	1110	27.2	54.5	"	"	"	ND	102	73-127	---	---	
Methylene chloride	1160	136	272	"	"	"	ND	106	70-128	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea


Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120726 - EPA 5035A</b>						<b>Soil</b>						
<b>Matrix Spike (7120726-MS1)</b>						Prepared: 12/13/17 15:45 Analyzed: 12/14/17 14:52						
<b>QC Source Sample: Other (A7L0358-03)</b>												
<b>5035A/8260C</b>												
4-Methyl-2-pentanone (MiBK)	2320	272	545	ug/kg dry	"	2180	ND	107	65-135	---	---	
Methyl tert-butyl ether (MTBE)	1140	27.2	54.5	"	"	1090	ND	105	73-125	---	---	
Naphthalene	1150	54.5	109	"	"	"	ND	105	62-129	---	---	
n-Propylbenzene	1080	13.6	27.2	"	"	"	ND	100	73-125	---	---	
Styrene	1030	27.2	54.5	"	"	"	ND	94	76-124	---	---	
1,1,1,2-Tetrachloroethane	1020	13.6	27.2	"	"	"	ND	94	78-125	---	---	
1,1,2,2-Tetrachloroethane	1240	27.2	54.5	"	"	"	ND	114	70-124	---	---	
Tetrachloroethene (PCE)	1060	13.6	27.2	"	"	"	ND	98	73-128	---	---	
Toluene	1050	27.2	54.5	"	"	"	ND	96	77-121	---	---	
1,2,3-Trichlorobenzene	1130	136	272	"	"	"	ND	104	66-130	---	---	
1,2,4-Trichlorobenzene	1120	136	272	"	"	"	ND	102	67-129	---	---	
1,1,1-Trichloroethane	1170	13.6	27.2	"	"	"	ND	107	73-130	---	---	
1,1,2-Trichloroethane	1160	13.6	27.2	"	"	"	ND	107	78-121	---	---	
Trichloroethene (TCE)	1130	13.6	27.2	"	"	"	ND	104	77-123	---	---	
Trichlorofluoromethane	1290	54.5	109	"	"	"	ND	118	62-140	---	---	EST
1,2,3-Trichloropropane	1150	27.2	54.5	"	"	"	ND	106	73-125	---	---	
1,2,4-Trimethylbenzene	1130	27.2	54.5	"	"	"	ND	103	75-123	---	---	
1,3,5-Trimethylbenzene	1080	27.2	54.5	"	"	"	ND	99	73-124	---	---	
Vinyl chloride	1170	13.6	27.2	"	"	"	ND	108	56-135	---	---	
m,p-Xylene	2220	27.2	54.5	"	"	2180	ND	102	77-124	---	---	
o-Xylene	1110	13.6	27.2	"	"	1090	ND	102	77-123	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 103 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 99 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 100 % 80-120 % "



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea


Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120625 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120625-BLK1)</b>						Prepared: 12/13/17 12:43 Analyzed: 12/13/17 14:04						
<b>EPA 8260C</b>												
Acetone	ND	10.0	20.0	ug/L	1	---	---	---	---	---	---	---
Acrylonitrile	ND	1.00	2.00	"	"	---	---	---	---	---	---	---
Benzene	ND	0.100	0.200	"	"	---	---	---	---	---	---	---
Bromobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Bromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromodichloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromoform	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromomethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	---
2-Butanone (MEK)	ND	5.00	10.0	"	"	---	---	---	---	---	---	---
n-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
sec-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
tert-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Carbon disulfide	ND	5.00	10.0	"	"	---	---	---	---	---	---	---
Carbon tetrachloride	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Chlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Chloroethane	ND	5.00	10.0	"	"	---	---	---	---	---	---	---
Chloroform	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Chloromethane	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
2-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
4-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Dibromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Dibromomethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Dichlorodifluoromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,1-Dichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,1-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,2-Dichloropropane	ND	0.250	0.500	"	"	---	---	---	---	---	---	---

Apex Laboratories



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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120625 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120625-BLK1)</b>						Prepared: 12/13/17 12:43 Analyzed: 12/13/17 14:04						
<b>EPA 8260C</b>												
1,3-Dichloropropane	ND	0.500	1.00	ug/L	"	---	---	---	---	---	---	
2,2-Dichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
n-Hexane	ND	5.00	10.0	"	"	---	---	---	---	---	---	
2-Hexanone	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Isopropylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
4-Isopropyltoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Methylene chloride	ND	1.50	3.00	"	"	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Naphthalene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
n-Propylbenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Styrene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Toluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Trichlorofluoromethane	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	0.200	0.400	"	"	---	---	---	---	---	---	
m,p-Xylene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
o-Xylene	ND	0.250	0.500	"	"	---	---	---	---	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120625 - EPA 5030B</b>												
<b>Water</b>												
<b>Blank (7120625-BLK1)</b>												
						Prepared: 12/13/17 12:43			Analyzed: 12/13/17 14:04			
<b>EPA 8260C</b>												
trans-1,4-Dichloro-2-butene	ND	5.00	10.0	ug/L	"	---	---	---	---	---	---	---
<i>Surr: 1,4-Difluorobenzene (Surr) Recovery: 100 % Limits: 80-120 % Dilution: 1x</i>												
<i>Toluene-d8 (Surr) 100 % 80-120 % "</i>												
<i>4-Bromofluorobenzene (Surr) 102 % 80-120 % "</i>												
<b>LCS (7120625-BS1)</b>												
						Prepared: 12/13/17 12:43			Analyzed: 12/13/17 13:10			
<b>EPA 8260C</b>												
Acetone	40.9	10.0	20.0	ug/L	1	40.0	---	102	80-120	---	---	---
Acrylonitrile	20.3	1.00	2.00	"	"	20.0	---	101	"	---	---	---
Benzene	19.1	0.100	0.200	"	"	"	---	95	"	---	---	---
Bromobenzene	19.9	0.250	0.500	"	"	"	---	99	"	---	---	---
Bromochloromethane	20.2	0.500	1.00	"	"	"	---	101	"	---	---	---
Bromodichloromethane	19.0	0.500	1.00	"	"	"	---	95	"	---	---	---
Bromoform	20.6	0.500	1.00	"	"	"	---	103	"	---	---	---
Bromomethane	19.7	5.00	5.00	"	"	"	---	98	"	---	---	---
2-Butanone (MEK)	40.9	5.00	10.0	"	"	40.0	---	102	"	---	---	---
n-Butylbenzene	21.6	0.500	1.00	"	"	20.0	---	108	"	---	---	---
sec-Butylbenzene	21.9	0.500	1.00	"	"	"	---	109	"	---	---	---
tert-Butylbenzene	21.5	0.500	1.00	"	"	"	---	108	"	---	---	---
Carbon disulfide	18.3	5.00	10.0	"	"	"	---	91	"	---	---	---
Carbon tetrachloride	20.7	0.500	1.00	"	"	"	---	104	"	---	---	---
Chlorobenzene	19.4	0.250	0.500	"	"	"	---	97	"	---	---	---
Chloroethane	17.4	5.00	10.0	"	"	"	---	87	"	---	---	---
Chloroform	18.6	0.500	1.00	"	"	"	---	93	"	---	---	---
Chloromethane	18.6	2.50	5.00	"	"	"	---	93	"	---	---	---
2-Chlorotoluene	20.7	0.500	1.00	"	"	"	---	104	"	---	---	---
4-Chlorotoluene	20.2	0.500	1.00	"	"	"	---	101	"	---	---	---
Dibromochloromethane	21.7	0.500	1.00	"	"	"	---	109	"	---	---	---
1,2-Dibromo-3-chloropropane	22.8	2.50	5.00	"	"	"	---	114	"	---	---	---
1,2-Dibromoethane (EDB)	20.3	0.250	0.500	"	"	"	---	101	"	---	---	---
Dibromomethane	19.1	0.500	1.00	"	"	"	---	96	"	---	---	---
1,2-Dichlorobenzene	19.5	0.250	0.500	"	"	"	---	98	"	---	---	---
1,3-Dichlorobenzene	19.5	0.250	0.500	"	"	"	---	98	"	---	---	---
1,4-Dichlorobenzene	18.9	0.250	0.500	"	"	"	---	95	"	---	---	---
Dichlorodifluoromethane	18.5	0.500	1.00	"	"	"	---	92	"	---	---	---

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120625 - EPA 5030B</b>												
<b>Water</b>												
LCS (7120625-BS1) Prepared: 12/13/17 12:43 Analyzed: 12/13/17 13:10												
EPA 8260C												
1,1-Dichloroethane	19.0	0.200	0.400	ug/L	"	"	---	95	"	---	---	
1,2-Dichloroethane (EDC)	17.4	0.200	0.400	"	"	"	---	87	"	---	---	
1,1-Dichloroethene	19.0	0.200	0.400	"	"	"	---	95	"	---	---	
cis-1,2-Dichloroethene	19.0	0.200	0.400	"	"	"	---	95	"	---	---	
trans-1,2-Dichloroethene	19.1	0.200	0.400	"	"	"	---	95	"	---	---	
1,2-Dichloropropane	19.4	0.250	0.500	"	"	"	---	97	"	---	---	
1,3-Dichloropropane	19.3	0.500	1.00	"	"	"	---	97	"	---	---	
2,2-Dichloropropane	19.6	0.500	1.00	"	"	"	---	98	"	---	---	
1,1-Dichloropropene	20.7	0.500	1.00	"	"	"	---	104	"	---	---	
cis-1,3-Dichloropropene	21.5	0.500	1.00	"	"	"	---	108	"	---	---	
trans-1,3-Dichloropropene	21.6	0.500	1.00	"	"	"	---	108	"	---	---	
Ethylbenzene	19.7	0.250	0.500	"	"	"	---	98	"	---	---	
Hexachlorobutadiene	20.7	2.50	5.00	"	"	"	---	104	"	---	---	
n-Hexane	22.9	5.00	10.0	"	"	"	---	114	"	---	---	
2-Hexanone	46.7	5.00	10.0	"	"	40.0	---	117	"	---	---	
Isopropylbenzene	22.5	0.500	1.00	"	"	20.0	---	113	"	---	---	
4-Isopropyltoluene	22.4	0.500	1.00	"	"	"	---	112	"	---	---	
Methylene chloride	18.7	1.50	3.00	"	"	"	---	93	"	---	---	
4-Methyl-2-pentanone (MiBK)	43.0	5.00	10.0	"	"	40.0	---	107	"	---	---	
Methyl tert-butyl ether (MTBE)	20.0	0.500	1.00	"	"	20.0	---	100	"	---	---	
Naphthalene	21.3	1.00	2.00	"	"	"	---	106	"	---	---	
n-Propylbenzene	19.8	0.250	0.500	"	"	"	---	99	"	---	---	
Styrene	22.8	0.500	1.00	"	"	"	---	114	"	---	---	
1,1,1,2-Tetrachloroethane	20.4	0.200	0.400	"	"	"	---	102	"	---	---	
1,1,2,2-Tetrachloroethane	19.2	0.250	0.500	"	"	"	---	96	"	---	---	
Tetrachloroethene (PCE)	19.4	0.200	0.400	"	"	"	---	97	"	---	---	
Toluene	19.5	0.500	1.00	"	"	"	---	97	"	---	---	
1,2,3-Trichlorobenzene	23.8	1.00	2.00	"	"	"	---	119	"	---	---	
1,2,4-Trichlorobenzene	22.2	1.00	2.00	"	"	"	---	111	"	---	---	
1,1,1-Trichloroethane	19.4	0.200	0.400	"	"	"	---	97	"	---	---	
1,1,2-Trichloroethane	19.7	0.250	0.500	"	"	"	---	99	"	---	---	
Trichloroethene (TCE)	19.5	0.200	0.400	"	"	"	---	97	"	---	---	
Trichlorofluoromethane	19.1	1.00	2.00	"	"	"	---	96	"	---	---	
1,2,3-Trichloropropane	20.0	0.500	1.00	"	"	"	---	100	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120625 - EPA 5030B</b>												
<b>Water</b>												
<b>LCS (7120625-BS1)</b>												
						Prepared: 12/13/17 12:43 Analyzed: 12/13/17 13:10						
<b>EPA 8260C</b>												
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	19.3	1.00	2.00	ug/L	"	"	---	97	"	---	---	
1,2,4-Trimethylbenzene	22.1	0.500	1.00	"	"	"	---	111	"	---	---	
1,3,5-Trimethylbenzene	21.5	0.500	1.00	"	"	"	---	107	"	---	---	
Vinyl chloride	19.0	0.200	0.400	"	"	"	---	95	"	---	---	
m,p-Xylene	40.5	0.500	1.00	"	"	40.0	---	101	"	---	---	
o-Xylene	21.3	0.250	0.500	"	"	20.0	---	107	"	---	---	
trans-1,4-Dichloro-2-butene	21.0	5.00	10.0	"	"	"	---	105	70-130	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 97 % Limits: 80-120 % Dilution: 1x  
Toluene-d8 (Surr) 100 % 80-120 % "  
4-Bromofluorobenzene (Surr) 102 % 80-120 % "

### Duplicate (7120625-DUP1)


Prepared: 12/13/17 14:02 Analyzed: 12/13/17 18:34

QC Source Sample: Other (A7L0315-08)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>EPA 8260C</b>												
Acetone	ND	10.0	20.0	ug/L	1	---	ND	---	---	---	30%	
Benzene	ND	0.100	0.200	"	"	---	ND	---	---	---	30%	
Bromobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Bromoform	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	5.00	5.00	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Chloroform	<b>0.699</b>	0.500	1.00	"	"	---	0.667	---	---	5	30%	J
Chloromethane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120625 - EPA 5030B</b>						<b>Water</b>						
<b>Duplicate (7120625-DUP1)</b>						Prepared: 12/13/17 14:02 Analyzed: 12/13/17 18:34						
<b>QC Source Sample: Other (A7L0315-08)</b>												
<b>EPA 8260C</b>												
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	ug/L	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	<b>2.72</b>	0.200	0.400	"	"	---	2.70	---	---	0.8	30%	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
n-Hexane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	1.50	3.00	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	1.00	2.00	"	"	---	ND	---	---	---	30%	
n-Propylbenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Styrene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	<b>30.4</b>	0.200	0.400	"	"	---	29.5	---	---	3	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC %REC	Limits RPD	RPD Limit	Notes
<b>Batch 7120625 - EPA 5030B</b>											
<b>Water</b>											
Duplicate (7120625-DUP1) Prepared: 12/13/17 14:02 Analyzed: 12/13/17 18:34											
QC Source Sample: Other (A7L0315-08)											
EPA 8260C											
Toluene	ND	0.500	1.00	ug/L	"	---	ND	---	---	---	30%
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	---	ND	---	---	---	30%
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	---	ND	---	---	---	30%
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	---	ND	---	---	---	30%
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	---	ND	---	---	---	30%
Trichloroethene (TCE)	2.92	0.200	0.400	"	"	---	2.92	---	---	0.3	30%
Trichlorofluoromethane	ND	1.00	2.00	"	"	---	ND	---	---	---	30%
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	5.37	1.00	2.00	"	"	---	5.54	---	---	3	30%
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%
Vinyl chloride	ND	0.200	0.400	"	"	---	ND	---	---	---	30%
m,p-Xylene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%
o-Xylene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%
trans-1,4-Dichloro-2-butene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%

Surr: 1,4-Difluorobenzene (Surr) Recovery: 102 % Limits: 80-120 % Dilution: 1x  
Toluene-d8 (Surr) 99 % 80-120 % "  
4-Bromofluorobenzene (Surr) 102 % 80-120 % "

### Matrix Spike (7120625-MS1)

Prepared: 12/13/17 14:02 Analyzed: 12/13/17 22:10

QC Source Sample: GP08-W-6.5 (A7L0343-10)

### EPA 8260C

Acetone	2130	500	1000	ug/L	50	2000	ND	106	39-160	---	---
Acrylonitrile	992	50.0	100	"	"	1000	ND	99	63-135	---	---
Benzene	1030	5.00	10.0	"	"	"	ND	103	79-120	---	---
Bromobenzene	1050	12.5	25.0	"	"	"	ND	105	80-120	---	---
Bromochloromethane	1070	25.0	50.0	"	"	"	ND	107	78-123	---	---
Bromodichloromethane	1030	25.0	50.0	"	"	"	ND	103	79-125	---	---
Bromoform	1080	25.0	50.0	"	"	"	ND	108	66-130	---	---
Bromomethane	898	250	250	"	"	"	ND	90	53-141	---	---
2-Butanone (MEK)	2050	250	500	"	"	2000	ND	102	56-143	---	---
n-Butylbenzene	1110	25.0	50.0	"	"	1000	ND	111	75-128	---	---

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120625 - EPA 5030B</b>												
<b>Water</b>												
Matrix Spike (7120625-MS1)						Prepared: 12/13/17 14:02 Analyzed: 12/13/17 22:10						
QC Source Sample: GP08-W-6.5 (A7L0343-10)												
EPA 8260C												
sec-Butylbenzene	1150	25.0	50.0	ug/L	"	"	ND	115	77-126	---	---	
tert-Butylbenzene	1130	25.0	50.0	"	"	"	ND	113	78-124	---	---	
Carbon disulfide	1050	250	500	"	"	"	ND	105	64-133	---	---	
Carbon tetrachloride	1190	25.0	50.0	"	"	"	ND	119	72-136	---	---	
Chlorobenzene	1040	12.5	25.0	"	"	"	ND	104	80-120	---	---	
Chloroethane	1080	250	500	"	"	"	ND	108	60-138	---	---	
Chloroform	1030	25.0	50.0	"	"	"	ND	103	79-124	---	---	
Chloromethane	1180	125	250	"	"	"	ND	118	50-139	---	---	
2-Chlorotoluene	1080	25.0	50.0	"	"	"	ND	108	79-122	---	---	
4-Chlorotoluene	1060	25.0	50.0	"	"	"	ND	106	78-122	---	---	
Dibromochloromethane	1130	25.0	50.0	"	"	"	ND	113	74-126	---	---	
1,2-Dibromo-3-chloropropane	1130	125	250	"	"	"	ND	113	62-128	---	---	
1,2-Dibromoethane (EDB)	1040	12.5	25.0	"	"	"	ND	104	77-121	---	---	
Dibromomethane	995	25.0	50.0	"	"	"	ND	99	79-123	---	---	
1,2-Dichlorobenzene	1020	12.5	25.0	"	"	"	ND	102	80-120	---	---	
1,3-Dichlorobenzene	1020	12.5	25.0	"	"	"	ND	102	"	---	---	
1,4-Dichlorobenzene	993	12.5	25.0	"	"	"	ND	99	79-120	---	---	
Dichlorodifluoromethane	1060	25.0	50.0	"	"	"	ND	106	32-152	---	---	
1,1-Dichloroethane	1040	10.0	20.0	"	"	"	ND	104	77-125	---	---	
1,2-Dichloroethane (EDC)	932	10.0	20.0	"	"	"	ND	93	73-128	---	---	
1,1-Dichloroethene	1050	10.0	20.0	"	"	"	ND	105	71-131	---	---	
cis-1,2-Dichloroethene	1000	10.0	20.0	"	"	"	ND	100	78-123	---	---	
trans-1,2-Dichloroethene	1040	10.0	20.0	"	"	"	ND	104	75-124	---	---	
1,2-Dichloropropane	1030	12.5	25.0	"	"	"	ND	103	78-122	---	---	
1,3-Dichloropropane	986	25.0	50.0	"	"	"	ND	99	80-120	---	---	
2,2-Dichloropropane	991	25.0	50.0	"	"	"	ND	99	60-139	---	---	
1,1-Dichloropropene	1140	25.0	50.0	"	"	"	ND	114	79-125	---	---	
cis-1,3-Dichloropropene	1040	25.0	50.0	"	"	"	ND	104	75-124	---	---	
trans-1,3-Dichloropropene	1120	25.0	50.0	"	"	"	ND	112	73-127	---	---	
Ethylbenzene	1050	12.5	25.0	"	"	"	ND	105	79-121	---	---	
Hexachlorobutadiene	1080	125	250	"	"	"	ND	108	66-134	---	---	
n-Hexane	1140	250	500	"	"	"	ND	114	48-143	---	---	
2-Hexanone	2250	250	500	"	"	2000	ND	113	57-139	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120625 - EPA 5030B</b>												
<b>Water</b>												
<b>Matrix Spike (7120625-MS1)</b>						Prepared: 12/13/17 14:02 Analyzed: 12/13/17 22:10						
<b>QC Source Sample: GP08-W-6.5 (A7L0343-10)</b>												
<b>EPA 8260C</b>												
Isopropylbenzene	1180	25.0	50.0	ug/L	"	1000	ND	118	72-131	---	---	
4-Isopropyltoluene	1180	25.0	50.0	"	"	"	ND	118	77-127	---	---	
Methylene chloride	1020	75.0	150	"	"	"	ND	102	74-124	---	---	
4-Methyl-2-pentanone (MiBK)	2110	250	500	"	"	2000	ND	106	67-130	---	---	
Methyl tert-butyl ether (MTBE)	1000	25.0	50.0	"	"	1000	ND	100	71-124	---	---	
Naphthalene	1130	50.0	100	"	"	"	ND	113	61-128	---	---	
n-Propylbenzene	1040	12.5	25.0	"	"	"	ND	104	76-126	---	---	
Styrene	1210	25.0	50.0	"	"	"	ND	121	78-123	---	---	
1,1,1,2-Tetrachloroethane	1080	10.0	20.0	"	"	"	ND	108	78-124	---	---	
1,1,2,2-Tetrachloroethane	1000	12.5	25.0	"	"	"	ND	100	71-121	---	---	
Tetrachloroethene (PCE)	1060	10.0	20.0	"	"	"	ND	106	74-129	---	---	
Toluene	1040	25.0	50.0	"	"	"	ND	104	80-121	---	---	
1,2,3-Trichlorobenzene	1240	50.0	100	"	"	"	ND	124	69-129	---	---	
1,2,4-Trichlorobenzene	1180	50.0	100	"	"	"	ND	118	69-130	---	---	
1,1,1-Trichloroethane	1100	10.0	20.0	"	"	"	ND	110	74-131	---	---	
1,1,2-Trichloroethane	1030	12.5	25.0	"	"	"	ND	103	80-120	---	---	
Trichloroethene (TCE)	1030	10.0	20.0	"	"	"	ND	103	79-123	---	---	
Trichlorofluoromethane	1110	50.0	100	"	"	"	ND	111	65-141	---	---	
1,2,3-Trichloropropane	1020	25.0	50.0	"	"	"	ND	102	73-122	---	---	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	1080	50.0	100	"	"	"	ND	108	70-136	---	---	
1,2,4-Trimethylbenzene	1160	25.0	50.0	"	"	"	ND	116	76-124	---	---	
1,3,5-Trimethylbenzene	1140	25.0	50.0	"	"	"	ND	114	75-124	---	---	
Vinyl chloride	1060	10.0	20.0	"	"	"	ND	106	58-137	---	---	
m,p-Xylene	2160	25.0	50.0	"	"	2000	ND	108	80-121	---	---	
o-Xylene	1120	12.5	25.0	"	"	1000	ND	112	78-122	---	---	
trans-1,4-Dichloro-2-butene	1050	250	500	"	"	"	ND	105	70-130	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 98 % Limits: 80-120 % Dilution: 1x  
Toluene-d8 (Surr) 98 % 80-120 % "  
4-Bromofluorobenzene (Surr) 99 % 80-120 % "

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120718 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120718-BLK1)</b>						Prepared: 12/14/17 09:33 Analyzed: 12/14/17 10:54						
<b>EPA 8260C</b>												
Acetone	ND	10.0	20.0	ug/L	1	---	---	---	---	---	---	---
Acrylonitrile	ND	1.00	2.00	"	"	---	---	---	---	---	---	---
Benzene	ND	0.100	0.200	"	"	---	---	---	---	---	---	---
Bromobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Bromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromodichloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromoform	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromomethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	---
2-Butanone (MEK)	ND	5.00	10.0	"	"	---	---	---	---	---	---	---
n-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
sec-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
tert-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Carbon disulfide	ND	5.00	10.0	"	"	---	---	---	---	---	---	---
Carbon tetrachloride	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Chlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Chloroethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	---
Chloroform	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Chloromethane	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
2-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
4-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Dibromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Dibromomethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Dichlorodifluoromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,1-Dichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,1-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,2-Dichloropropane	ND	0.250	0.500	"	"	---	---	---	---	---	---	---

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120718 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120718-BLK1)</b>						Prepared: 12/14/17 09:33 Analyzed: 12/14/17 10:54						
<b>EPA 8260C</b>												
1,3-Dichloropropane	ND	0.500	1.00	ug/L	"	---	---	---	---	---	---	
2,2-Dichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
2-Hexanone	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Isopropylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
4-Isopropyltoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Methylene chloride	ND	1.50	3.00	"	"	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Naphthalene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
n-Propylbenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Styrene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Toluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Trichlorofluoromethane	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	0.200	0.400	"	"	---	---	---	---	---	---	
m,p-Xylene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
o-Xylene	ND	0.250	0.500	"	"	---	---	---	---	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120718 - EPA 5030B</b>												
<b>Water</b>												
<b>Blank (7120718-BLK1)</b>												
						Prepared: 12/14/17 09:33		Analyzed: 12/14/17 10:54				
<b>EPA 8260C</b>												
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			Recovery: 103 %		Limits: 80-120 %		Dilution: 1x					
<i>Toluene-d8 (Surr)</i>			101 %		80-120 %		"					
<i>4-Bromofluorobenzene (Surr)</i>			101 %		80-120 %		"					
<b>LCS (7120718-BS1)</b>												
						Prepared: 12/14/17 09:33		Analyzed: 12/14/17 10:00				
<b>EPA 8260C</b>												
Acetone	41.3	10.0	20.0	ug/L	1	40.0	---	103	80-120	---	---	
Acrylonitrile	20.0	1.00	2.00	"	"	20.0	---	100	"	---	---	
Benzene	19.3	0.100	0.200	"	"	"	---	96	"	---	---	
Bromobenzene	20.1	0.250	0.500	"	"	"	---	101	"	---	---	
Bromochloromethane	20.4	0.500	1.00	"	"	"	---	102	"	---	---	
Bromodichloromethane	19.4	0.500	1.00	"	"	"	---	97	"	---	---	
Bromoform	21.5	0.500	1.00	"	"	"	---	108	"	---	---	
Bromomethane	18.1	5.00	5.00	"	"	"	---	91	"	---	---	
2-Butanone (MEK)	40.8	5.00	10.0	"	"	40.0	---	102	"	---	---	
n-Butylbenzene	21.4	0.500	1.00	"	"	20.0	---	107	"	---	---	
sec-Butylbenzene	22.1	0.500	1.00	"	"	"	---	110	"	---	---	
tert-Butylbenzene	21.4	0.500	1.00	"	"	"	---	107	"	---	---	
Carbon disulfide	19.0	5.00	10.0	"	"	"	---	95	"	---	---	
Carbon tetrachloride	21.7	0.500	1.00	"	"	"	---	109	"	---	---	
Chlorobenzene	19.8	0.250	0.500	"	"	"	---	99	"	---	---	
Chloroethane	18.7	5.00	5.00	"	"	"	---	94	"	---	---	
Chloroform	19.2	0.500	1.00	"	"	"	---	96	"	---	---	
Chloromethane	20.5	2.50	5.00	"	"	"	---	103	"	---	---	
2-Chlorotoluene	20.8	0.500	1.00	"	"	"	---	104	"	---	---	
4-Chlorotoluene	20.2	0.500	1.00	"	"	"	---	101	"	---	---	
Dibromochloromethane	22.5	0.500	1.00	"	"	"	---	113	"	---	---	
1,2-Dibromo-3-chloropropane	23.2	2.50	5.00	"	"	"	---	116	"	---	---	
1,2-Dibromoethane (EDB)	20.4	0.250	0.500	"	"	"	---	102	"	---	---	
Dibromomethane	19.1	0.500	1.00	"	"	"	---	95	"	---	---	
1,2-Dichlorobenzene	19.8	0.250	0.500	"	"	"	---	99	"	---	---	
1,3-Dichlorobenzene	19.8	0.250	0.500	"	"	"	---	99	"	---	---	
1,4-Dichlorobenzene	19.3	0.250	0.500	"	"	"	---	97	"	---	---	
Dichlorodifluoromethane	18.7	0.500	1.00	"	"	"	---	93	"	---	---	
1,1-Dichloroethane	19.2	0.200	0.400	"	"	"	---	96	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120718 - EPA 5030B</b>												
<b>Water</b>												
LCS (7120718-BS1) Prepared: 12/14/17 09:33 Analyzed: 12/14/17 10:00												
EPA 8260C												
1,2-Dichloroethane (EDC)	17.9	0.200	0.400	ug/L	"	"	---	90	"	---	---	
1,1-Dichloroethene	19.1	0.200	0.400	"	"	"	---	96	"	---	---	
cis-1,2-Dichloroethene	19.0	0.200	0.400	"	"	"	---	95	"	---	---	
trans-1,2-Dichloroethene	19.2	0.200	0.400	"	"	"	---	96	"	---	---	
1,2-Dichloropropane	19.5	0.250	0.500	"	"	"	---	97	"	---	---	
1,3-Dichloropropane	19.4	0.500	1.00	"	"	"	---	97	"	---	---	
2,2-Dichloropropane	20.9	0.500	1.00	"	"	"	---	104	"	---	---	
1,1-Dichloropropene	20.7	0.500	1.00	"	"	"	---	104	"	---	---	
cis-1,3-Dichloropropene	22.2	0.500	1.00	"	"	"	---	111	"	---	---	
trans-1,3-Dichloropropene	22.5	0.500	1.00	"	"	"	---	113	"	---	---	
Ethylbenzene	19.9	0.250	0.500	"	"	"	---	100	"	---	---	
Hexachlorobutadiene	21.1	2.50	5.00	"	"	"	---	106	"	---	---	
2-Hexanone	45.0	5.00	10.0	"	"	40.0	---	113	"	---	---	
Isopropylbenzene	22.2	0.500	1.00	"	"	20.0	---	111	"	---	---	
4-Isopropyltoluene	22.6	0.500	1.00	"	"	"	---	113	"	---	---	
Methylene chloride	19.2	1.50	3.00	"	"	"	---	96	"	---	---	
4-Methyl-2-pentanone (MiBK)	42.5	5.00	10.0	"	"	40.0	---	106	"	---	---	
Methyl tert-butyl ether (MTBE)	19.9	0.500	1.00	"	"	20.0	---	100	"	---	---	
Naphthalene	21.2	1.00	2.00	"	"	"	---	106	"	---	---	
n-Propylbenzene	19.9	0.250	0.500	"	"	"	---	100	"	---	---	
Styrene	23.1	0.500	1.00	"	"	"	---	116	"	---	---	
1,1,1,2-Tetrachloroethane	20.9	0.200	0.400	"	"	"	---	105	"	---	---	
1,1,2,2-Tetrachloroethane	19.5	0.250	0.500	"	"	"	---	98	"	---	---	
Tetrachloroethene (PCE)	19.7	0.200	0.400	"	"	"	---	98	"	---	---	
Toluene	19.9	0.500	1.00	"	"	"	---	99	"	---	---	
1,2,3-Trichlorobenzene	24.2	1.00	2.00	"	"	"	---	121	"	---	---	Q-56
1,2,4-Trichlorobenzene	22.0	1.00	2.00	"	"	"	---	110	"	---	---	
1,1,1-Trichloroethane	20.0	0.200	0.400	"	"	"	---	100	"	---	---	
1,1,2-Trichloroethane	20.3	0.250	0.500	"	"	"	---	101	"	---	---	
Trichloroethene (TCE)	19.1	0.200	0.400	"	"	"	---	96	"	---	---	
Trichlorofluoromethane	19.7	1.00	2.00	"	"	"	---	99	"	---	---	
1,2,3-Trichloropropane	20.2	0.500	1.00	"	"	"	---	101	"	---	---	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	19.5	1.00	2.00	"	"	"	---	97	"	---	---	
1,2,4-Trimethylbenzene	22.4	0.500	1.00	"	"	"	---	112	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120718 - EPA 5030B</b>												
<b>Water</b>												
LCS (7120718-BS1) Prepared: 12/14/17 09:33 Analyzed: 12/14/17 10:00												
EPA 8260C												
1,3,5-Trimethylbenzene	21.9	0.500	1.00	ug/L	"	"	---	110	"	---	---	
Vinyl chloride	19.0	0.200	0.400	"	"	"	---	95	"	---	---	
m,p-Xylene	41.0	0.500	1.00	"	"	40.0	---	102	"	---	---	
o-Xylene	21.4	0.250	0.500	"	"	20.0	---	107	"	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 98 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 100 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 100 % 80-120 % "

**Duplicate (7120718-DUP1)** Prepared: 12/14/17 10:20 Analyzed: 12/14/17 16:45

QC Source Sample: Other (A7L0352-01)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
EPA 8260C												
Acetone	ND	100	200	ug/L	10	---	ND	---	---	---	30%	
Acrylonitrile	ND	25.0	25.0	"	"	---	ND	---	---	---	30%	R-02
Benzene	1500	1.00	2.00	"	"	---	1570	---	---	4	30%	
Bromobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Bromoform	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	50.0	50.0	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	50.0	100	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	101	5.00	10.0	"	"	---	105	---	---	4	30%	M-02
sec-Butylbenzene	52.5	5.00	10.0	"	"	---	55.0	---	---	5	30%	
tert-Butylbenzene	49.2	5.00	10.0	"	"	---	50.7	---	---	3	30%	
Carbon disulfide	ND	50.0	100	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	50.0	50.0	"	"	---	ND	---	---	---	30%	
Chloroform	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	25.0	50.0	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	25.0	50.0	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120718 - EPA 5030B</b>												
<b>Water</b>												
<b>Duplicate (7120718-DUP1)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/14/17 16:45						
<b>QC Source Sample: Other (A7L0352-01)</b>												
<b>EPA 8260C</b>												
Dibromomethane	ND	5.00	10.0	ug/L	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	<b>7.67</b>	2.00	4.00	"	"	---	8.29	---	---	8	30%	
1,1-Dichloroethene	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Ethylbenzene	<b>1720</b>	2.50	5.00	"	"	---	1800	---	---	5	30%	
Hexachlorobutadiene	ND	25.0	50.0	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	50.0	100	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	<b>259</b>	5.00	10.0	"	"	---	267	---	---	3	30%	
4-Isopropyltoluene	<b>22.1</b>	5.00	10.0	"	"	---	22.7	---	---	3	30%	M-02
Methylene chloride	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	50.0	100	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Naphthalene	<b>867</b>	10.0	20.0	"	"	---	904	---	---	4	30%	
n-Propylbenzene	<b>534</b>	2.50	5.00	"	"	---	553	---	---	3	30%	
Styrene	<b>7.41</b>	5.00	10.0	"	"	---	8.25	---	---	11	30%	J
1,1,1,2-Tetrachloroethane	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	<b>26.3</b>	2.50	5.00	"	"	---	ND	---	---	---	30%	R-02
Tetrachloroethene (PCE)	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
Toluene	<b>4920</b>	5.00	10.0	"	"	---	5080	---	---	3	30%	E
1,2,3-Trichlorobenzene	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120718 - EPA 5030B</b>												
<b>Water</b>												
<b>Duplicate (7120718-DUP1)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/14/17 16:45						
QC Source Sample: Other (A7L0352-01)												
EPA 8260C												
1,1,1-Trichloroethane	ND	2.00	4.00	ug/L	"	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	<b>4340</b>	5.00	10.0	"	"	---	4500	---	---	4	30%	E
1,3,5-Trimethylbenzene	<b>1340</b>	5.00	10.0	"	"	---	1390	---	---	4	30%	
Vinyl chloride	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
m,p-Xylene	<b>6360</b>	5.00	10.0	"	"	---	6620	---	---	4	30%	E
o-Xylene	<b>3430</b>	2.50	5.00	"	"	---	3560	---	---	4	30%	E

Surr: 1,4-Difluorobenzene (Surr) Recovery: 97 % Limits: 80-120 % Dilution: 1x  
Toluene-d8 (Surr) 100 % 80-120 % "  
4-Bromofluorobenzene (Surr) 103 % 80-120 % "

**Duplicate (7120718-DUP2)** Prepared: 12/14/17 10:20 Analyzed: 12/14/17 20:48


QC Source Sample: Other (A7L0365-02)

EPA 8260C

Acetone	ND	100	200	ug/L	10	---	ND	---	---	---	30%	
Acrylonitrile	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
Benzene	ND	1.00	2.00	"	"	---	ND	---	---	---	30%	
Bromobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Bromoform	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	50.0	50.0	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	50.0	100	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	50.0	100	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120718 - EPA 5030B</b>							<b>Water</b>					
<b>Duplicate (7120718-DUP2)</b>							Prepared: 12/14/17 10:20 Analyzed: 12/14/17 20:48					
<b>QC Source Sample: Other (A7L0365-02)</b>												
<b>EPA 8260C</b>												
Chlorobenzene	ND	2.50	5.00	ug/L	"	---	ND	---	---	---	30%	
Chloroethane	ND	50.0	50.0	"	"	---	ND	---	---	---	30%	
Chloroform	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	25.0	50.0	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	25.0	50.0	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	2.50	5.00	"	"	---	2.65	---	---	---	30%	
Hexachlorobutadiene	ND	25.0	50.0	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	50.0	100	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	15.0	30.0	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	50.0	100	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120718 - EPA 5030B</b>												
<b>Water</b>												
<b>Duplicate (7120718-DUP2)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/14/17 20:48						
QC Source Sample: Other (A7L0365-02)												
EPA 8260C												
Naphthalene	ND	10.0	20.0	ug/L	"	---	ND	---	---	---	30%	
n-Propylbenzene	2.81	2.50	5.00	"	"	---	2.97	---	---	6	30%	J
Styrene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
Toluene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	ND	10.0	20.0	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	58.3	5.00	10.0	"	"	---	58.8	---	---	0.8	30%	
1,3,5-Trimethylbenzene	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Vinyl chloride	ND	2.00	4.00	"	"	---	ND	---	---	---	30%	
m,p-Xylene	9.17	5.00	10.0	"	"	---	9.69	---	---	6	30%	J
o-Xylene	17.2	2.50	5.00	"	"	---	16.9	---	---	2	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 102 % Limits: 80-120 % Dilution: 1x  
Toluene-d8 (Surr) 101 % 80-120 % "  
4-Bromofluorobenzene (Surr) 99 % 80-120 % "

### Matrix Spike (7120718-MS1)

Prepared: 12/14/17 10:20 Analyzed: 12/14/17 14:30

QC Source Sample: Other (A7L0354-01)

#### EPA 8260C

Acetone	44.9	10.0	20.0	ug/L	1	40.0	ND	112	39-160	---	---
Acrylonitrile	20.8	1.00	2.00	"	"	20.0	ND	104	63-135	---	---
Benzene	21.0	0.100	0.200	"	"	"	0.343	103	79-120	---	---
Bromobenzene	20.6	0.250	0.500	"	"	"	ND	103	80-120	---	---
Bromochloromethane	21.2	0.500	1.00	"	"	"	ND	106	78-123	---	---

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120718 - EPA 5030B</b>						<b>Water</b>						
<b>Matrix Spike (7120718-MS1)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/14/17 14:30						
<b>QC Source Sample: Other (A7L0354-01)</b>												
<b>EPA 8260C</b>												
Bromodichloromethane	20.6	0.500	1.00	ug/L	"	"	ND	103	79-125	---	---	
Bromoform	21.6	0.500	1.00	"	"	"	ND	108	66-130	---	---	
Bromomethane	19.8	5.00	5.00	"	"	"	ND	99	53-141	---	---	
2-Butanone (MEK)	43.0	5.00	10.0	"	"	40.0	ND	107	56-143	---	---	
n-Butylbenzene	22.4	0.500	1.00	"	"	20.0	ND	112	75-128	---	---	
sec-Butylbenzene	23.1	0.500	1.00	"	"	"	ND	116	77-126	---	---	
tert-Butylbenzene	22.7	0.500	1.00	"	"	"	ND	114	78-124	---	---	
Carbon disulfide	21.0	5.00	10.0	"	"	"	ND	105	64-133	---	---	
Carbon tetrachloride	23.7	0.500	1.00	"	"	"	ND	118	72-136	---	---	
Chlorobenzene	20.7	0.250	0.500	"	"	"	ND	104	80-120	---	---	
Chloroethane	21.4	5.00	5.00	"	"	"	ND	107	60-138	---	---	
Chloroform	20.6	0.500	1.00	"	"	"	ND	103	79-124	---	---	
Chloromethane	22.8	2.50	5.00	"	"	"	ND	114	50-139	---	---	
2-Chlorotoluene	21.5	0.500	1.00	"	"	"	ND	108	79-122	---	---	
4-Chlorotoluene	21.0	0.500	1.00	"	"	"	ND	105	78-122	---	---	
Dibromochloromethane	23.1	0.500	1.00	"	"	"	ND	116	74-126	---	---	
1,2-Dibromo-3-chloropropane	22.3	2.50	5.00	"	"	"	ND	111	62-128	---	---	
1,2-Dibromoethane (EDB)	20.8	0.250	0.500	"	"	"	ND	104	77-121	---	---	
Dibromomethane	20.0	0.500	1.00	"	"	"	ND	100	79-123	---	---	
1,2-Dichlorobenzene	20.1	0.250	0.500	"	"	"	ND	101	80-120	---	---	
1,3-Dichlorobenzene	20.3	0.250	0.500	"	"	"	ND	102	"	---	---	
1,4-Dichlorobenzene	19.7	0.250	0.500	"	"	"	ND	98	79-120	---	---	
Dichlorodifluoromethane	20.9	0.500	1.00	"	"	"	ND	104	32-152	---	---	
1,1-Dichloroethane	20.9	0.200	0.400	"	"	"	ND	105	77-125	---	---	
1,2-Dichloroethane (EDC)	19.1	0.200	0.400	"	"	"	0.302	94	73-128	---	---	
1,1-Dichloroethene	21.3	0.200	0.400	"	"	"	ND	107	71-131	---	---	
cis-1,2-Dichloroethene	20.4	0.200	0.400	"	"	"	ND	102	78-123	---	---	
trans-1,2-Dichloroethene	21.0	0.200	0.400	"	"	"	ND	105	75-124	---	---	
1,2-Dichloropropane	20.7	0.250	0.500	"	"	"	ND	104	78-122	---	---	
1,3-Dichloropropane	19.9	0.500	1.00	"	"	"	ND	99	80-120	---	---	
2,2-Dichloropropane	21.4	0.500	1.00	"	"	"	ND	107	60-139	---	---	
1,1-Dichloropropene	22.5	0.500	1.00	"	"	"	ND	113	79-125	---	---	
cis-1,3-Dichloropropene	21.0	0.500	1.00	"	"	"	ND	105	75-124	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120718 - EPA 5030B</b>												
<b>Water</b>												
<b>Matrix Spike (7120718-MS1)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/14/17 14:30						
<b>QC Source Sample: Other (A7L0354-01)</b>												
<b>EPA 8260C</b>												
trans-1,3-Dichloropropene	22.8	0.500	1.00	ug/L	"	"	ND	114	73-127	---	---	
Ethylbenzene	21.1	0.250	0.500	"	"	"	ND	105	79-121	---	---	
Hexachlorobutadiene	21.4	2.50	5.00	"	"	"	ND	107	66-134	---	---	
2-Hexanone	46.1	5.00	10.0	"	"	40.0	ND	115	57-139	---	---	
Isopropylbenzene	23.4	0.500	1.00	"	"	20.0	ND	117	72-131	---	---	
4-Isopropyltoluene	23.4	0.500	1.00	"	"	"	ND	117	77-127	---	---	
Methylene chloride	20.8	1.50	3.00	"	"	"	ND	104	74-124	---	---	
4-Methyl-2-pentanone (MiBK)	43.9	5.00	10.0	"	"	40.0	ND	110	67-130	---	---	
Methyl tert-butyl ether (MTBE)	20.3	0.500	1.00	"	"	20.0	ND	102	71-124	---	---	
Naphthalene	21.0	1.00	2.00	"	"	"	ND	105	61-128	---	---	
n-Propylbenzene	21.0	0.250	0.500	"	"	"	ND	105	76-126	---	---	
Styrene	24.0	0.500	1.00	"	"	"	ND	120	78-123	---	---	
1,1,1,2-Tetrachloroethane	21.5	0.200	0.400	"	"	"	ND	107	78-124	---	---	
1,1,2,2-Tetrachloroethane	20.3	0.250	0.500	"	"	"	ND	102	71-121	---	---	
Tetrachloroethene (PCE)	21.1	0.200	0.400	"	"	"	ND	105	74-129	---	---	
Toluene	20.7	0.500	1.00	"	"	"	ND	104	80-121	---	---	
1,2,3-Trichlorobenzene	24.2	1.00	2.00	"	"	"	ND	121	69-129	---	---	
1,2,4-Trichlorobenzene	22.1	1.00	2.00	"	"	"	ND	111	69-130	---	---	Q-54
1,1,1-Trichloroethane	21.9	0.200	0.400	"	"	"	ND	109	74-131	---	---	
1,1,2-Trichloroethane	20.7	0.250	0.500	"	"	"	ND	103	80-120	---	---	
Trichloroethene (TCE)	20.3	0.200	0.400	"	"	"	ND	102	79-123	---	---	
Trichlorofluoromethane	21.9	1.00	2.00	"	"	"	ND	109	65-141	---	---	
1,2,3-Trichloropropane	20.4	0.500	1.00	"	"	"	ND	102	73-122	---	---	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)	21.5	1.00	2.00	"	"	"	ND	108	70-136	---	---	
1,2,4-Trimethylbenzene	23.4	0.500	1.00	"	"	"	ND	117	76-124	---	---	
1,3,5-Trimethylbenzene	22.9	0.500	1.00	"	"	"	ND	114	75-124	---	---	
Vinyl chloride	21.4	0.200	0.400	"	"	"	ND	107	58-137	---	---	
m,p-Xylene	43.0	0.500	1.00	"	"	40.0	ND	108	80-121	---	---	
o-Xylene	21.9	0.250	0.500	"	"	20.0	ND	110	78-122	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 99 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 99 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 99 % 80-120 % "

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

**Reported:**  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121067 - EPA 3510C (Neutral pH)</b>						<b>Water</b>						
<b>Blank (7121067-BLK1)</b>						Prepared: 12/27/17 10:13 Analyzed: 12/28/17 08:20						C-07
<b>EPA 8082A</b>												
Aroclor 1016	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1221	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1262	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1268	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	

Surr: Decachlorobiphenyl (Surr)

Recovery: 67 % Limits: 39-120 % Dilution: 1x

#### LCS (7121067-BS1)

Prepared: 12/27/17 10:13 Analyzed: 12/28/17 08:38

C-07

<b>EPA 8082A</b>												
Aroclor 1016	0.798	0.0100	0.0200	ug/L	1	1.25	---	64	46-129	---	---	
Aroclor 1260	0.941	0.0100	0.0200	"	"	"	---	75	45-134	---	---	

Surr: Decachlorobiphenyl (Surr)

Recovery: 70 % Limits: 39-120 % Dilution: 1x

#### LCS Dup (7121067-BSD1)

Prepared: 12/27/17 10:13 Analyzed: 12/28/17 08:56

C-07, Q-19

<b>EPA 8082A</b>												
Aroclor 1016	0.808	0.0100	0.0200	ug/L	1	1.25	---	65	46-129	1	30%	
Aroclor 1260	0.965	0.0100	0.0200	"	"	"	---	77	45-134	2	30%	

Surr: Decachlorobiphenyl (Surr)

Recovery: 71 % Limits: 39-120 % Dilution: 1x

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121136 - EPA 3510C (Neutral pH)</b>						<b>Water</b>						
<b>Blank (7121136-BLK1)</b>						Prepared: 12/28/17 15:47 Analyzed: 12/29/17 09:43						C-07
<b>EPA 8082A</b>												
Aroclor 1016	ND	0.0182	0.0364	ug/L	1	---	---	---	---	---	---	
Aroclor 1221	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Aroclor 1262	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Aroclor 1268	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
<i>Surr: Decachlorobiphenyl (Surr)</i>		Recovery: 78 %		Limits: 39-120 %		Dilution: 1x						
<b>LCS (7121136-BS1)</b>						Prepared: 12/28/17 15:47 Analyzed: 12/29/17 10:01						C-07
<b>EPA 8082A</b>												
Aroclor 1016	1.63	0.0200	0.0400	ug/L	1	2.50	---	65	46-129	---	---	
Aroclor 1260	1.97	0.0200	0.0400	"	"	"	---	79	45-134	---	---	
<i>Surr: Decachlorobiphenyl (Surr)</i>		Recovery: 78 %		Limits: 39-120 %		Dilution: 1x						
<b>LCS Dup (7121136-BS1)</b>						Prepared: 12/28/17 15:47 Analyzed: 12/29/17 10:19						C-07, Q-19
<b>EPA 8082A</b>												
Aroclor 1016	1.62	0.0200	0.0400	ug/L	1	2.50	---	65	46-129	0.06	30%	
Aroclor 1260	2.03	0.0200	0.0400	"	"	"	---	81	45-134	3	30%	
<i>Surr: Decachlorobiphenyl (Surr)</i>		Recovery: 76 %		Limits: 39-120 %		Dilution: 1x						

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120743 - EPA 3546</b>												
<b>Soil</b>												
<b>Blank (7120743-BLK1)</b>												
						Prepared: 12/14/17 14:45 Analyzed: 12/14/17 19:32				C-07		
<b>EPA 8082A</b>												
Aroclor 1016	ND	1.82	3.64	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1221	ND	1.82	3.64	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	1.82	3.64	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	1.82	3.64	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	1.82	3.64	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	1.82	3.64	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	1.82	3.64	"	"	---	---	---	---	---	---	
Aroclor 1262	ND	1.82	3.64	"	"	---	---	---	---	---	---	
Aroclor 1268	ND	1.82	3.64	"	"	---	---	---	---	---	---	

Surr: Decachlorobiphenyl (Surr) Recovery: 108 % Limits: 44-120 % Dilution: 1x

<b>LCS (7120743-BS1)</b>												
						Prepared: 12/14/17 14:45 Analyzed: 12/14/17 19:50				C-07		
<b>EPA 8082A</b>												
Aroclor 1016	196	2.00	4.00	ug/kg wet	1	250	---	78	47-134	---	---	
Aroclor 1260	247	2.00	4.00	"	"	"	---	99	53-140	---	---	


Surr: Decachlorobiphenyl (Surr) Recovery: 106 % Limits: 44-120 % Dilution: 1x

<b>Duplicate (7120743-DUP1)</b>												
						Prepared: 12/14/17 14:45 Analyzed: 12/14/17 20:43				C-07		
<b>QC Source Sample: GP04-S-1.0 (A7L0343-02)</b>												
<b>EPA 8082A</b>												
Aroclor 1016	ND	5.21	10.4	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1221	ND	5.21	10.4	"	"	---	ND	---	---	---	30%	
Aroclor 1232	ND	5.21	10.4	"	"	---	ND	---	---	---	30%	
Aroclor 1242	6.25	5.21	10.4	"	"	---	6.83	---	---	9	30%	J
Aroclor 1248	ND	5.21	10.4	"	"	---	ND	---	---	---	30%	
Aroclor 1254	22.6	5.21	10.4	"	"	---	22.9	---	---	1	30%	P-10
Aroclor 1260	12.9	5.21	10.4	"	"	---	14.5	---	---	12	30%	P-10
Aroclor 1262	ND	5.21	10.4	"	"	---	ND	---	---	---	30%	
Aroclor 1268	ND	5.21	10.4	"	"	---	ND	---	---	---	30%	

Surr: Decachlorobiphenyl (Surr) Recovery: 86 % Limits: 44-120 % Dilution: 1x

<b>Matrix Spike (7120743-MS1)</b>												
						Prepared: 12/14/17 14:45 Analyzed: 12/14/17 22:29				C-07		
<b>QC Source Sample: GP04-S-13.0 (A7L0343-04)</b>												
<b>EPA 8082A</b>												

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120743 - EPA 3546</b>												
<b>Soil</b>												
<b>Matrix Spike (7120743-MS1)</b>						Prepared: 12/14/17 14:45 Analyzed: 12/14/17 22:29				C-07		
<b>QC Source Sample: GP04-S-13.0 (A7L0343-04)</b>												
<b>EPA 8082A</b>												
Aroclor 1016	216	2.48	4.97	ug/kg dry	1	311	ND	70	47-134	---	---	
Aroclor 1260	243	2.48	4.97	"	"	"	ND	78	53-140	---	---	

Surr: Decachlorobiphenyl (Surr)      Recovery: 91 %      Limits: 44-120 %      Dilution: 1x



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea


Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120873 - EPA 3546</b>												
<b>Soil</b>												
<b>Blank (7120873-BLK1)</b>												
						Prepared: 12/19/17 13:32		Analyzed: 12/21/17 18:07		C-07		
<b>EPA 8082A</b>												
Aroclor 1016	ND	1.67	3.33	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1221	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1262	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1268	ND	1.67	3.33	"	"	---	---	---	---	---	---	
<i>Surr: Decachlorobiphenyl (Surr) Recovery: 91 % Limits: 44-120 % Dilution: 1x</i>												
<b>LCS (7120873-BS1)</b>												
						Prepared: 12/19/17 13:32		Analyzed: 12/21/17 18:26		C-07		
<b>EPA 8082A</b>												
Aroclor 1016	153	2.00	4.00	ug/kg wet	1	250	---	61	47-134	---	---	
Aroclor 1260	217	2.00	4.00	"	"	"	---	87	53-140	---	---	
<i>Surr: Decachlorobiphenyl (Surr) Recovery: 89 % Limits: 44-120 % Dilution: 1x</i>												
<b>Duplicate (7120873-DUP1)</b>												
						Prepared: 12/19/17 13:32		Analyzed: 12/21/17 19:21		C-07		
<b>QC Source Sample: Other (A7L0317-07)</b>												
<b>EPA 8082A</b>												
Aroclor 1016	ND	2.19	4.38	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1221	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1232	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1242	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1248	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1254	<b>12.8</b>	2.19	4.38	"	"	---	8.58	---	---	39	30%	P-10, Q-05
Aroclor 1260	<b>6.39</b>	2.19	4.38	"	"	---	5.14	---	---	22	30%	P-10
Aroclor 1262	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1268	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
<i>Surr: Decachlorobiphenyl (Surr) Recovery: 88 % Limits: 44-120 % Dilution: 1x</i>												
<b>Matrix Spike (7120873-MS1)</b>												
						Prepared: 12/19/17 13:32		Analyzed: 12/22/17 00:12		C-07		
<b>QC Source Sample: Other (A7L0431-19)</b>												
<b>EPA 8082A</b>												

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
<b>Batch 7120873 - EPA 3546</b>						<b>Soil</b>							
<b>Matrix Spike (7120873-MS1)</b>						Prepared: 12/19/17 13:32 Analyzed: 12/22/17 00:12						C-07	
<b>QC Source Sample: Other (A7L0431-19)</b>													
<b>EPA 8082A</b>													
Aroclor 1016	190	2.14	4.28	ug/kg dry	1	268	ND	71	47-134	---	---		
Aroclor 1260	242	2.14	4.28	"	"	"	ND	90	53-140	---	---		
<i>Surr: Decachlorobiphenyl (Surr)</i>			<i>Recovery: 88 %</i>			<i>Limits: 44-120 %</i>			<i>Dilution: 1x</i>				



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120888 - EPA 3546/3640A (GPC)</b>						<b>Soil</b>						
<b>Blank (7120888-BLK1)</b>						Prepared: 12/18/17 14:03 Analyzed: 12/21/17 11:35						C-05
<b>EPA 8081B</b>												
Aldrin	ND	0.833	1.67	ug/kg wet	1	---	---	---	---	---	---	
alpha-BHC	ND	0.833	1.67	"	"	---	---	---	---	---	---	
beta-BHC	ND	0.833	1.67	"	"	---	---	---	---	---	---	
delta-BHC	ND	0.833	1.67	"	"	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	0.833	1.67	"	"	---	---	---	---	---	---	
cis-Chlordane	ND	0.833	1.67	"	"	---	---	---	---	---	---	
trans-Chlordane	ND	0.833	1.67	"	"	---	---	---	---	---	---	
4,4'-DDD	ND	0.833	1.67	"	"	---	---	---	---	---	---	
4,4'-DDE	ND	0.833	1.67	"	"	---	---	---	---	---	---	
4,4'-DDT	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endosulfan I	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endosulfan II	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endosulfan sulfate	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endrin	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endrin Aldehyde	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endrin ketone	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Heptachlor	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Heptachlor epoxide	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Methoxychlor	ND	2.50	5.00	"	"	---	---	---	---	---	---	
Chlordane (Technical)	ND	25.0	50.0	"	"	---	---	---	---	---	---	
Toxaphene (Total)	ND	25.0	50.0	"	"	---	---	---	---	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 66 % Limits: 42-129 % Dilution: 1x  
 Decachlorobiphenyl (Surr) 74 % 65-151 % "

<b>LCS (7120888-BS1)</b>						Prepared: 12/18/17 14:03 Analyzed: 12/21/17 11:52						C-05
<b>EPA 8081B</b>												
Aldrin	23.5	1.00	2.00	ug/kg wet	1	50.0	---	47	45-136	---	---	
alpha-BHC	23.4	1.00	2.00	"	"	"	---	47	45-137	---	---	
beta-BHC	29.5	1.00	2.00	"	"	"	---	59	50-136	---	---	
delta-BHC	30.0	1.00	2.00	"	"	"	---	60	47-139	---	---	
gamma-BHC (Lindane)	24.8	1.00	2.00	"	"	"	---	50	49-135	---	---	
cis-Chlordane	28.5	1.00	2.00	"	"	"	---	57	54-133	---	---	
trans-Chlordane	29.2	1.00	2.00	"	"	"	---	58	53-135	---	---	
4,4'-DDD	35.7	1.00	2.00	"	"	"	---	71	56-139	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120888 - EPA 3546/3640A (GPC) Soil</b>												
<b>LCS (7120888-BS1)</b>												
						Prepared: 12/18/17 14:03			Analyzed: 12/21/17 11:52			C-05
<b>EPA 8081B</b>												
4,4'-DDE	33.9	1.00	2.00	ug/kg wet	"	"	---	68	56-134	---	---	
4,4'-DDT	43.4	1.00	2.00	"	"	"	---	87	50-141	---	---	
Dieldrin	32.8	1.00	2.00	"	"	"	---	66	56-136	---	---	
Endosulfan I	31.0	1.00	2.00	"	"	"	---	62	52-132	---	---	
Endosulfan II	34.0	1.00	2.00	"	"	"	---	68	53-134	---	---	
Endosulfan sulfate	36.1	1.00	2.00	"	"	"	---	72	55-136	---	---	
Endrin	35.4	1.00	2.00	"	"	"	---	71	56-140	---	---	
Endrin Aldehyde	32.4	1.00	2.00	"	"	"	---	65	35-137	---	---	
Endrin ketone	36.8	1.00	2.00	"	"	"	---	74	55-136	---	---	
Heptachlor	23.7	1.00	2.00	"	"	"	---	47	47-136	---	---	
Heptachlor epoxide	28.0	1.00	2.00	"	"	"	---	56	52-136	---	---	
Methoxychlor	44.7	3.00	6.00	"	"	"	---	89	52-143	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 49 % Limits: 42-129 % Dilution: 1x  
Decachlorobiphenyl (Surr) 74 % 65-151 % "

**Duplicate (7120888-DUP1)** Prepared: 12/18/17 14:03 Analyzed: 12/21/17 12:27 C-05

**QC Source Sample: Other (A7L0419-02RE1)**

<b>EPA 8081B</b>												
Aldrin	ND	1.01	2.02	ug/kg dry	1	---	ND	---	---	---	30%	
alpha-BHC	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
beta-BHC	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
delta-BHC	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
gamma-BHC (Lindane)	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
cis-Chlordane	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
trans-Chlordane	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
4,4'-DDD	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
4,4'-DDE	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
4,4'-DDT	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Dieldrin	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endosulfan I	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endosulfan II	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endosulfan sulfate	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endrin	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endrin Aldehyde	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120888 - EPA 3546/3640A (GPC) Soil</b>												
<b>Duplicate (7120888-DUP1)</b>						Prepared: 12/18/17 14:03 Analyzed: 12/21/17 12:27			C-05			
QC Source Sample: Other (A7L0419-02RE1)												
EPA 8081B												
Endrin ketone	ND	1.01	2.02	ug/kg dry	"	---	ND	---	---	---	30%	
Heptachlor	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Heptachlor epoxide	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Methoxychlor	ND	3.03	6.05	"	"	---	ND	---	---	---	30%	
Chlordane (Technical)	ND	30.3	60.5	"	"	---	ND	---	---	---	30%	
Toxaphene (Total)	ND	30.3	60.5	"	"	---	ND	---	---	---	30%	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 48 % Limits: 42-129 % Dilution: 1x  
 Decachlorobiphenyl (Surr) 69 % 65-151 % "

**Matrix Spike (7120888-MS1)** Prepared: 12/18/17 14:03 Analyzed: 12/21/17 12:45 C-05

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
QC Source Sample: Other (A7L0419-02RE1)												
EPA 8081B												
Aldrin	26.4	1.01	2.02	ug/kg dry	1	50.5	ND	52	45-136	---	---	
alpha-BHC	24.9	1.01	2.02	"	"	"	ND	49	45-137	---	---	
beta-BHC	31.8	1.01	2.02	"	"	"	ND	63	50-136	---	---	
delta-BHC	32.1	1.01	2.02	"	"	"	ND	64	47-139	---	---	
gamma-BHC (Lindane)	26.6	1.01	2.02	"	"	"	ND	53	49-135	---	---	
cis-Chlordane	31.8	1.01	2.02	"	"	"	ND	63	54-133	---	---	
trans-Chlordane	33.1	1.01	2.02	"	"	"	ND	66	53-135	---	---	
4,4'-DDD	37.2	1.01	2.02	"	"	"	ND	74	56-139	---	---	
4,4'-DDE	38.0	1.01	2.02	"	"	"	ND	75	56-134	---	---	
4,4'-DDT	44.6	1.01	2.02	"	"	"	ND	88	50-141	---	---	
Dieldrin	35.6	1.01	2.02	"	"	"	ND	71	56-136	---	---	
Endosulfan I	33.8	1.01	2.02	"	"	"	ND	67	52-132	---	---	
Endosulfan II	35.2	1.01	2.02	"	"	"	ND	70	53-134	---	---	
Endosulfan sulfate	38.1	1.01	2.02	"	"	"	ND	76	55-136	---	---	
Endrin	39.4	1.01	2.02	"	"	"	ND	78	56-140	---	---	
Endrin Aldehyde	33.8	1.01	2.02	"	"	"	ND	67	35-137	---	---	
Endrin ketone	37.6	1.01	2.02	"	"	"	ND	75	55-136	---	---	
Heptachlor	26.2	1.01	2.02	"	"	"	ND	52	47-136	---	---	
Heptachlor epoxide	31.1	1.01	2.02	"	"	"	ND	62	52-136	---	---	
Methoxychlor	45.2	3.03	6.05	"	"	"	ND	90	52-143	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 55 % Limits: 42-129 % Dilution: 1x

Apex Laboratories

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



Philip Nerenberg, Lab Director



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209


Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120888 - EPA 3546/3640A (GPC)</b>						<b>Soil</b>						
<b>Matrix Spike (7120888-MS1)</b>						Prepared: 12/18/17 14:03 Analyzed: 12/21/17 12:45						C-05
QC Source Sample: Other (A7L0419-02RE1)												
EPA 8081B												
Surr: Decachlorobiphenyl (Surr) Recovery: 75 % Limits: 65-151 % Dilution: 1x												
<b>Matrix Spike Dup (7120888-MSD1)</b>						Prepared: 12/18/17 14:03 Analyzed: 12/21/17 13:02						C-05
QC Source Sample: Other (A7L0419-02RE1)												
EPA 8081B												
Aldrin	31.2	1.00	2.00	ug/kg dry	1	50.1	ND	62	45-136	17	30%	
alpha-BHC	31.2	1.00	2.00	"	"	"	ND	62	45-137	23	30%	
beta-BHC	33.7	1.00	2.00	"	"	"	ND	67	50-136	7	30%	
delta-BHC	33.4	1.00	2.00	"	"	"	ND	67	47-139	5	30%	
gamma-BHC (Lindane)	32.5	1.00	2.00	"	"	"	ND	65	49-135	21	30%	
cis-Chlordane	33.8	1.00	2.00	"	"	"	ND	67	54-133	7	30%	
trans-Chlordane	34.2	1.00	2.00	"	"	"	ND	68	53-135	4	30%	
4,4'-DDD	38.5	1.00	2.00	"	"	"	ND	77	56-139	4	30%	
4,4'-DDE	37.1	1.00	2.00	"	"	"	ND	74	56-134	2	30%	
4,4'-DDT	43.3	1.00	2.00	"	"	"	ND	86	50-141	2	30%	
Dieldrin	36.4	1.00	2.00	"	"	"	ND	73	56-136	3	30%	
Endosulfan I	35.2	1.00	2.00	"	"	"	ND	70	52-132	5	30%	
Endosulfan II	35.3	1.00	2.00	"	"	"	ND	70	53-134	1	30%	
Endosulfan sulfate	36.5	1.00	2.00	"	"	"	ND	73	55-136	4	30%	
Endrin	39.2	1.00	2.00	"	"	"	ND	78	56-140	0.3	30%	
Endrin Aldehyde	33.0	1.00	2.00	"	"	"	ND	66	35-137	2	30%	
Endrin ketone	37.7	1.00	2.00	"	"	"	ND	75	55-136	0.8	30%	
Heptachlor	32.2	1.00	2.00	"	"	"	ND	64	47-136	21	30%	
Heptachlor epoxide	34.1	1.00	2.00	"	"	"	ND	68	52-136	10	30%	
Methoxychlor	44.8	3.01	6.01	"	"	"	ND	89	52-143	0.2	30%	
Surr: 2,4,5,6-TCMX (Surr) Recovery: 68 % Limits: 42-129 % Dilution: 1x												
Decachlorobiphenyl (Surr) 74 % 65-151 % "												



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121056 - EPA 3510C (Neutral pH)/3630C (SG)</b>						<b>Water</b>						
<b>Blank (7121056-BLK1)</b>						Prepared: 12/19/17 05:22 Analyzed: 12/28/17 12:19						C-05
<b>EPA 8081B</b>												
Aldrin	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	Q-30
alpha-BHC	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
beta-BHC	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
delta-BHC	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
cis-Chlordane	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
trans-Chlordane	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
4,4'-DDD	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
4,4'-DDE	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
4,4'-DDT	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Endosulfan I	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Endosulfan II	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Endosulfan sulfate	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Endrin	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Endrin Aldehyde	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Endrin ketone	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Heptachlor	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	Q-30
Heptachlor epoxide	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Methoxychlor	ND	0.0273	0.0545	"	"	---	---	---	---	---	---	
Chlordane (Technical)	ND	0.342	0.682	"	"	---	---	---	---	---	---	
Toxaphene (Total)	ND	0.342	0.682	"	"	---	---	---	---	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 53 % Limits: 44-124 % Dilution: 1x  
Decachlorobiphenyl (Surr) 77 % 47-129 % "

<b>LCS (7121056-BS1)</b>						Prepared: 12/19/17 05:22 Analyzed: 12/28/17 12:36						C-05
<b>EPA 8081B</b>												
Aldrin	0.204	0.0100	0.0200	ug/L	1	0.500	---	41	45-134	---	---	Q-30
alpha-BHC	0.288	0.0100	0.0200	"	"	"	---	58	54-138	---	---	
beta-BHC	0.304	0.0100	0.0200	"	"	"	---	61	56-136	---	---	
delta-BHC	0.307	0.0100	0.0200	"	"	"	---	61	52-142	---	---	
gamma-BHC (Lindane)	0.295	0.0100	0.0200	"	"	"	---	59	59-134	---	---	
cis-Chlordane	0.308	0.0100	0.0200	"	"	"	---	62	60-129	---	---	
trans-Chlordane	0.283	0.0100	0.0200	"	"	"	---	57	56-136	---	---	
4,4'-DDD	0.352	0.0100	0.0200	"	"	"	---	70	56-143	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121056 - EPA 3510C (Netural pH)/3630C (SG) Water</b>												
<b>LCS (7121056-BS1)</b>						Prepared: 12/19/17 05:22 Analyzed: 12/28/17 12:36				C-05		
<b>EPA 8081B</b>												
4,4'-DDE	0.334	0.0100	0.0200	ug/L	"	"	---	67	57-135	---	---	
4,4'-DDT	0.357	0.0100	0.0200	"	"	"	---	71	51-143	---	---	
Dieldrin	0.353	0.0100	0.0200	"	"	"	---	71	60-136	---	---	
Endosulfan I	0.336	0.0100	0.0200	"	"	"	---	67	62-126	---	---	
Endosulfan II	0.360	0.0100	0.0200	"	"	"	---	72	52-135	---	---	
Endosulfan sulfate	0.348	0.0100	0.0200	"	"	"	---	70	62-133	---	---	
Endrin	0.382	0.0100	0.0200	"	"	"	---	76	60-138	---	---	
Endrin Aldehyde	0.307	0.0100	0.0200	"	"	"	---	61	51-132	---	---	
Endrin ketone	0.348	0.0100	0.0200	"	"	"	---	70	58-134	---	---	
Heptachlor	0.218	0.0100	0.0200	"	"	"	---	44	54-130	---	---	Q-30
Heptachlor epoxide	0.313	0.0100	0.0200	"	"	"	---	63	61-133	---	---	
Methoxychlor	0.401	0.0300	0.0600	"	"	"	---	80	54-144	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 37 % Limits: 44-124 % Dilution: 1x S-06  
 Decachlorobiphenyl (Surr) 71 % 47-129 % "

<b>LCS Dup (7121056-BSD1)</b>						Prepared: 12/19/17 05:22 Analyzed: 12/28/17 12:54				C-05, Q-19		
<b>EPA 8081B</b>												
Aldrin	0.257	0.0100	0.0200	ug/L	1	0.500	---	51	45-134	23	30%	
alpha-BHC	0.323	0.0100	0.0200	"	"	"	---	65	54-138	11	30%	
beta-BHC	0.328	0.0100	0.0200	"	"	"	---	66	56-136	8	30%	
delta-BHC	0.330	0.0100	0.0200	"	"	"	---	66	52-142	7	30%	
gamma-BHC (Lindane)	0.336	0.0100	0.0200	"	"	"	---	67	59-134	13	30%	
cis-Chlordane	0.324	0.0100	0.0200	"	"	"	---	65	60-129	5	30%	
trans-Chlordane	0.322	0.0100	0.0200	"	"	"	---	64	56-136	13	30%	
4,4'-DDD	0.366	0.0100	0.0200	"	"	"	---	73	56-143	4	30%	
4,4'-DDE	0.380	0.0100	0.0200	"	"	"	---	76	57-135	13	30%	
4,4'-DDT	0.383	0.0100	0.0200	"	"	"	---	77	51-143	7	30%	
Dieldrin	0.375	0.0100	0.0200	"	"	"	---	75	60-136	6	30%	
Endosulfan I	0.366	0.0100	0.0200	"	"	"	---	73	62-126	8	30%	
Endosulfan II	0.374	0.0100	0.0200	"	"	"	---	75	52-135	4	30%	
Endosulfan sulfate	0.353	0.0100	0.0200	"	"	"	---	71	62-133	2	30%	
Endrin	0.410	0.0100	0.0200	"	"	"	---	82	60-138	7	30%	
Endrin Aldehyde	0.322	0.0100	0.0200	"	"	"	---	64	51-132	5	30%	
Endrin ketone	0.362	0.0100	0.0200	"	"	"	---	72	58-134	4	30%	
Heptachlor	0.257	0.0100	0.0200	"	"	"	---	51	54-130	16	30%	Q-30

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121056 - EPA 3510C (Netural pH)/3630C (SG)</b>						<b>Water</b>						
<b>LCS Dup (7121056-BSD1)</b>						Prepared: 12/19/17 05:22		Analyzed: 12/28/17 12:54		C-05, Q-19		
<b>EPA 8081B</b>												
Heptachlor epoxide	0.341	0.0100	0.0200	ug/L	"	"	---	68	61-133	9	30%	
Methoxychlor	0.421	0.0300	0.0600	"	"	"	---	84	54-144	5	30%	
<i>Surr: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 48 %</i>		<i>Limits: 44-124 %</i>		<i>Dilution: 1x</i>					
<i>Decachlorobiphenyl (Surr)</i>			<i>70 %</i>		<i>47-129 %</i>		<i>"</i>					



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120727 - EPA 3510C (Acid Extraction)</b>						<b>Water</b>						
<b>Blank (7120727-BLK2)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/15/17 11:31						
<b>EPA 8270D</b>												
Acenaphthene	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Acenaphthylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Chrysene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluorene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	<b>0.0265</b>	0.0182	0.0364	"	"	---	---	---	---	---	---	B-02, J
2-Methylnaphthalene	<b>0.0377</b>	0.0182	0.0364	"	"	---	---	---	---	---	---	B
Naphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Phenanthrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	

<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>Recovery: 84 %</i>	<i>Limits: 44-120 %</i>	<i>Dilution: 1x</i>
<i>2-Fluorobiphenyl (Surr)</i>	<i>65 %</i>	<i>44-120 %</i>	<i>"</i>
<i>Phenol-d6 (Surr)</i>	<i>25 %</i>	<i>10-120 %</i>	<i>"</i>
<i>p-Terphenyl-d14 (Surr)</i>	<i>70 %</i>	<i>50-133 %</i>	<i>"</i>
<i>2-Fluorophenol (Surr)</i>	<i>38 %</i>	<i>19-120 %</i>	<i>"</i>
<i>2,4,6-Tribromophenol (Surr)</i>	<i>81 %</i>	<i>43-140 %</i>	<i>"</i>

### LCS (7120727-BS2)

Prepared: 12/14/17 10:20 Analyzed: 12/15/17 12:07

<b>EPA 8270D</b>												
Acenaphthene	3.27	0.0200	0.0400	ug/L	2	4.00	---	82	47-122	---	---	
Acenaphthylene	3.07	0.0200	0.0400	"	"	"	---	77	41-130	---	---	
Anthracene	3.32	0.0200	0.0400	"	"	"	---	83	57-123	---	---	
Benz(a)anthracene	3.65	0.0200	0.0400	"	"	"	---	91	58-125	---	---	
Benzo(a)pyrene	3.73	0.0300	0.0600	"	"	"	---	93	54-128	---	---	
Benzo(b)fluoranthene	4.01	0.0300	0.0600	"	"	"	---	100	53-131	---	---	
Benzo(k)fluoranthene	3.75	0.0300	0.0600	"	"	"	---	94	57-129	---	---	
Benzo(g,h,i)perylene	3.84	0.0200	0.0400	"	"	"	---	96	50-134	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120727 - EPA 3510C (Acid Extraction)</b>						<b>Water</b>						
<b>LCS (7120727-BS2)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/15/17 12:07						
<b>EPA 8270D</b>												
Chrysene	3.73	0.0200	0.0400	ug/L	"	"	---	93	59-123	---	---	
Dibenz(a,h)anthracene	3.62	0.0200	0.0400	"	"	"	---	91	51-134	---	---	
Fluoranthene	3.52	0.0200	0.0400	"	"	"	---	88	57-128	---	---	
Fluorene	2.96	0.0200	0.0400	"	"	"	---	74	52-124	---	---	
Indeno(1,2,3-cd)pyrene	3.55	0.0200	0.0400	"	"	"	---	89	52-133	---	---	
1-Methylnaphthalene	3.07	0.0400	0.0800	"	"	"	---	77	41-120	---	---	B-02
2-Methylnaphthalene	3.02	0.0400	0.0800	"	"	"	---	75	40-121	---	---	B
Naphthalene	2.93	0.0400	0.0800	"	"	"	---	73	"	---	---	
Phenanthrene	3.07	0.0200	0.0400	"	"	"	---	77	59-120	---	---	
Pyrene	3.57	0.0200	0.0400	"	"	"	---	89	57-126	---	---	
<i>Surr: Nitrobenzene-d5 (Surr)</i>			Recovery: 88 %		Limits: 44-120 %		Dilution: 2x					
<i>2-Fluorobiphenyl (Surr)</i>			73 %		44-120 %		"					
<i>Phenol-d6 (Surr)</i>			30 %		10-120 %		"					
<i>p-Terphenyl-d14 (Surr)</i>			92 %		50-133 %		"					
<i>2-Fluorophenol (Surr)</i>			45 %		19-120 %		"					
<i>2,4,6-Tribromophenol (Surr)</i>			96 %		43-140 %		"					
<b>LCS Dup (7120727-BSD2)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/15/17 12:42						Q-19
<b>EPA 8270D</b>												
Acenaphthene	3.33	0.0200	0.0400	ug/L	2	4.00	---	83	47-122	2	30%	
Acenaphthylene	3.12	0.0200	0.0400	"	"	"	---	78	41-130	2	30%	
Anthracene	3.33	0.0200	0.0400	"	"	"	---	83	57-123	0.2	30%	
Benz(a)anthracene	3.71	0.0200	0.0400	"	"	"	---	93	58-125	2	30%	
Benzo(a)pyrene	3.84	0.0300	0.0600	"	"	"	---	96	54-128	3	30%	
Benzo(b)fluoranthene	4.13	0.0300	0.0600	"	"	"	---	103	53-131	3	30%	
Benzo(k)fluoranthene	3.82	0.0300	0.0600	"	"	"	---	95	57-129	2	30%	
Benzo(g,h,i)perylene	3.86	0.0200	0.0400	"	"	"	---	97	50-134	0.5	30%	
Chrysene	3.79	0.0200	0.0400	"	"	"	---	95	59-123	1	30%	
Dibenz(a,h)anthracene	3.62	0.0200	0.0400	"	"	"	---	91	51-134	0.03	30%	
Fluoranthene	3.54	0.0200	0.0400	"	"	"	---	89	57-128	0.7	30%	
Fluorene	2.96	0.0200	0.0400	"	"	"	---	74	52-124	0.1	30%	
Indeno(1,2,3-cd)pyrene	3.57	0.0200	0.0400	"	"	"	---	89	52-133	0.5	30%	
1-Methylnaphthalene	3.22	0.0400	0.0800	"	"	"	---	80	41-120	5	30%	B-02
2-Methylnaphthalene	3.23	0.0400	0.0800	"	"	"	---	81	40-121	7	30%	B
Naphthalene	3.20	0.0400	0.0800	"	"	"	---	80	"	9	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120727 - EPA 3510C (Acid Extraction)</b>						<b>Water</b>						
<b>LCS Dup (7120727-BSD2)</b>						Prepared: 12/14/17 10:20 Analyzed: 12/15/17 12:42						Q-19
<b>EPA 8270D</b>												
Phenanthrene	3.06	0.0200	0.0400	ug/L	"	"	---	77	59-120	0.4	30%	
Pyrene	3.62	0.0200	0.0400	"	"	"	---	91	57-126	1	30%	

<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>Recovery: 87 %</i>	<i>Limits: 44-120 %</i>	<i>Dilution: 2x</i>
<i>2-Fluorobiphenyl (Surr)</i>	<i>75 %</i>	<i>44-120 %</i>	<i>"</i>
<i>Phenol-d6 (Surr)</i>	<i>30 %</i>	<i>10-120 %</i>	<i>"</i>
<i>p-Terphenyl-d14 (Surr)</i>	<i>91 %</i>	<i>50-133 %</i>	<i>"</i>
<i>2-Fluorophenol (Surr)</i>	<i>46 %</i>	<i>19-120 %</i>	<i>"</i>
<i>2,4,6-Tribromophenol (Surr)</i>	<i>95 %</i>	<i>43-140 %</i>	<i>"</i>

Apex Laboratories



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

Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120798 - EPA 3510C (Acid Extraction)</b>						<b>Water</b>						
<b>Blank (7120798-BLK2)</b>						Prepared: 12/18/17 05:40 Analyzed: 12/18/17 15:12						
<b>EPA 8270D</b>												
Acenaphthene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Acenaphthylene	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
Anthracene	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.0150	0.0300	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.0150	0.0300	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.0150	0.0300	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
Chrysene	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
Fluorene	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	ND	0.0200	0.0400	"	"	---	---	---	---	---	---	
2-Methylnaphthalene	ND	0.0200	0.0400	"	"	---	---	---	---	---	---	
Naphthalene	ND	0.0200	0.0400	"	"	---	---	---	---	---	---	
Phenanthrene	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
Pyrene	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
Carbazole	ND	0.0150	0.0300	"	"	---	---	---	---	---	---	
Dibenzofuran	ND	0.0100	0.0200	"	"	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Diethylphthalate	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Dimethylphthalate	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Di-n-butylphthalate	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	0.200	0.400	"	"	---	---	---	---	---	---	

Surr: Nitrobenzene-d5 (Surr)	Recovery: 83 %	Limits: 44-120 %	Dilution: 1x
2-Fluorobiphenyl (Surr)	63 %	44-120 %	"
Phenol-d6 (Surr)	25 %	10-120 %	"
p-Terphenyl-d14 (Surr)	68 %	50-133 %	"
2-Fluorophenol (Surr)	38 %	19-120 %	"
2,4,6-Tribromophenol (Surr)	93 %	43-140 %	"


### LCS (7120798-BS2)

Prepared: 12/18/17 05:40 Analyzed: 12/18/17 15:48

### EPA 8270D

Apex Laboratories

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



Philip Nerenberg, Lab Director



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120798 - EPA 3510C (Acid Extraction)</b>						<b>Water</b>						
<b>LCS (7120798-BS2)</b>						Prepared: 12/18/17 05:40 Analyzed: 12/18/17 15:48						
<b>EPA 8270D</b>												
Acenaphthene	3.36	0.0200	0.0400	ug/L	2	4.00	---	84	47-122	---	---	
Acenaphthylene	3.17	0.0200	0.0400	"	"	"	---	79	41-130	---	---	
Anthracene	3.52	0.0200	0.0400	"	"	"	---	88	57-123	---	---	
Benz(a)anthracene	3.91	0.0200	0.0400	"	"	"	---	98	58-125	---	---	
Benzo(a)pyrene	4.05	0.0300	0.0600	"	"	"	---	101	54-128	---	---	
Benzo(b)fluoranthene	4.25	0.0300	0.0600	"	"	"	---	106	53-131	---	---	
Benzo(k)fluoranthene	3.97	0.0300	0.0600	"	"	"	---	99	57-129	---	---	
Benzo(g,h,i)perylene	4.20	0.0200	0.0400	"	"	"	---	105	50-134	---	---	
Chrysene	4.06	0.0200	0.0400	"	"	"	---	102	59-123	---	---	
Dibenz(a,h)anthracene	4.05	0.0200	0.0400	"	"	"	---	101	51-134	---	---	
Fluoranthene	3.74	0.0200	0.0400	"	"	"	---	93	57-128	---	---	
Fluorene	3.02	0.0200	0.0400	"	"	"	---	76	52-124	---	---	
Indeno(1,2,3-cd)pyrene	3.88	0.0200	0.0400	"	"	"	---	97	52-133	---	---	
1-Methylnaphthalene	3.12	0.0400	0.0800	"	"	"	---	78	41-120	---	---	
2-Methylnaphthalene	3.03	0.0400	0.0800	"	"	"	---	76	40-121	---	---	
Naphthalene	3.01	0.0400	0.0800	"	"	"	---	75	"	---	---	
Phenanthrene	3.25	0.0200	0.0400	"	"	"	---	81	59-120	---	---	
Pyrene	3.82	0.0200	0.0400	"	"	"	---	96	57-126	---	---	
Carbazole	3.96	0.0300	0.0600	"	"	"	---	99	60-122	---	---	
Dibenzofuran	3.12	0.0200	0.0400	"	"	"	---	78	53-120	---	---	
Bis(2-ethylhexyl)phthalate	4.56	0.400	0.800	"	"	"	---	114	55-135	---	---	
Butyl benzyl phthalate	4.68	0.400	0.800	"	"	"	---	117	53-134	---	---	
Diethylphthalate	3.40	0.400	0.800	"	"	"	---	85	55-125	---	---	
Dimethylphthalate	3.59	0.400	0.800	"	"	"	---	90	45-127	---	---	
Di-n-butylphthalate	4.08	0.400	0.800	"	"	"	---	102	59-127	---	---	
Di-n-octyl phthalate	4.33	0.400	0.800	"	"	"	---	108	51-140	---	---	

Surr: Nitrobenzene-d5 (Surr)	Recovery: 91 %	Limits: 44-120 %	Dilution: 2x
2-Fluorobiphenyl (Surr)	74 %	44-120 %	"
Phenol-d6 (Surr)	31 %	10-120 %	"
p-Terphenyl-d14 (Surr)	93 %	50-133 %	"
2-Fluorophenol (Surr)	46 %	19-120 %	"
2,4,6-Tribromophenol (Surr)	97 %	43-140 %	"

**LCS Dup (7120798-BSD2)**

Prepared: 12/18/17 05:40 Analyzed: 12/18/17 16:24

Q-19

**EPA 8270D**

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120798 - EPA 3510C (Acid Extraction)</b>						<b>Water</b>						
<b>LCS Dup (7120798-BSD2)</b>						Prepared: 12/18/17 05:40 Analyzed: 12/18/17 16:24						Q-19
<b>EPA 8270D</b>												
Acenaphthene	3.42	0.0200	0.0400	ug/L	2	4.00	---	86	47-122	2	30%	
Acenaphthylene	3.22	0.0200	0.0400	"	"	"	---	81	41-130	2	30%	
Anthracene	3.53	0.0200	0.0400	"	"	"	---	88	57-123	0.4	30%	
Benz(a)anthracene	3.90	0.0200	0.0400	"	"	"	---	98	58-125	0.3	30%	
Benzo(a)pyrene	4.13	0.0300	0.0600	"	"	"	---	103	54-128	2	30%	
Benzo(b)fluoranthene	4.33	0.0300	0.0600	"	"	"	---	108	53-131	2	30%	
Benzo(k)fluoranthene	4.03	0.0300	0.0600	"	"	"	---	101	57-129	2	30%	
Benzo(g,h,i)perylene	4.19	0.0200	0.0400	"	"	"	---	105	50-134	0.07	30%	
Chrysene	4.08	0.0200	0.0400	"	"	"	---	102	59-123	0.3	30%	
Dibenz(a,h)anthracene	4.00	0.0200	0.0400	"	"	"	---	100	51-134	1	30%	
Fluoranthene	3.64	0.0200	0.0400	"	"	"	---	91	57-128	2	30%	
Fluorene	3.06	0.0200	0.0400	"	"	"	---	77	52-124	1	30%	
Indeno(1,2,3-cd)pyrene	3.87	0.0200	0.0400	"	"	"	---	97	52-133	0.4	30%	
1-Methylnaphthalene	3.27	0.0400	0.0800	"	"	"	---	82	41-120	5	30%	
2-Methylnaphthalene	3.22	0.0400	0.0800	"	"	"	---	81	40-121	6	30%	
Naphthalene	3.16	0.0400	0.0800	"	"	"	---	79	"	5	30%	
Phenanthrene	3.26	0.0200	0.0400	"	"	"	---	81	59-120	0.1	30%	
Pyrene	3.76	0.0200	0.0400	"	"	"	---	94	57-126	1	30%	
Carbazole	3.90	0.0300	0.0600	"	"	"	---	97	60-122	2	30%	
Dibenzofuran	3.20	0.0200	0.0400	"	"	"	---	80	53-120	3	30%	
Bis(2-ethylhexyl)phthalate	4.57	0.400	0.800	"	"	"	---	114	55-135	0.1	30%	
Butyl benzyl phthalate	4.67	0.400	0.800	"	"	"	---	117	53-134	0.3	30%	
Diethylphthalate	3.37	0.400	0.800	"	"	"	---	84	55-125	0.9	30%	
Dimethylphthalate	3.55	0.400	0.800	"	"	"	---	89	45-127	1	30%	
Di-n-butylphthalate	4.05	0.400	0.800	"	"	"	---	101	59-127	0.6	30%	
Di-n-octyl phthalate	4.38	0.400	0.800	"	"	"	---	109	51-140	1	30%	

Surr: Nitrobenzene-d5 (Surr)	Recovery: 93 %	Limits: 44-120 %	Dilution: 2x
2-Fluorobiphenyl (Surr)	76 %	44-120 %	"
Phenol-d6 (Surr)	31 %	10-120 %	"
p-Terphenyl-d14 (Surr)	92 %	50-133 %	"
2-Fluorophenol (Surr)	47 %	19-120 %	"
2,4,6-Tribromophenol (Surr)	97 %	43-140 %	"

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120994 - EPA 3546</b>						<b>Soil</b>						
<b>Blank (7120994-BLK2)</b>						Prepared: 12/21/17 17:25 Analyzed: 12/26/17 11:37						
<b>EPA 8270D</b>												
Acenaphthene	ND	1.25	2.50	ug/kg wet	1	---	---	---	---	---	---	---
Acenaphthylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Benz(a)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Benzo(a)pyrene	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Benzo(b)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Benzo(k)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Chrysene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Dibenz(a,h)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Fluoranthene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Fluorene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
1-Methylnaphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
2-Methylnaphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
Naphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
Phenanthrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
Carbazole	ND	1.87	3.75	"	"	---	---	---	---	---	---	---
Dibenzofuran	ND	1.25	2.50	"	"	---	---	---	---	---	---	---
4-Chloro-3-methylphenol	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
2-Chlorophenol	ND	6.25	12.5	"	"	---	---	---	---	---	---	---
2,4-Dichlorophenol	ND	6.25	12.5	"	"	---	---	---	---	---	---	---
2,4-Dimethylphenol	ND	6.25	12.5	"	"	---	---	---	---	---	---	---
2,4-Dinitrophenol	ND	31.2	62.5	"	"	---	---	---	---	---	---	---
4,6-Dinitro-2-methylphenol	ND	31.2	62.5	"	"	---	---	---	---	---	---	---
2-Methylphenol	ND	3.12	6.25	"	"	---	---	---	---	---	---	---
3+4-Methylphenol(s)	ND	3.12	6.25	"	"	---	---	---	---	---	---	---
2-Nitrophenol	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
4-Nitrophenol	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
Pentachlorophenol (PCP)	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
Phenol	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
2,3,4,6-Tetrachlorophenol	ND	6.25	12.5	"	"	---	---	---	---	---	---	---
2,3,5,6-Tetrachlorophenol	ND	6.25	12.5	"	"	---	---	---	---	---	---	---

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120994 - EPA 3546</b>												
<b>Soil</b>												
<b>Blank (7120994-BLK2)</b>												
Prepared: 12/21/17 17:25 Analyzed: 12/26/17 11:37												
<b>EPA 8270D</b>												
2,4,5-Trichlorophenol	ND	6.25	12.5	ug/kg wet	"	---	---	---	---	---	---	---
2,4,6-Trichlorophenol	ND	6.25	12.5	"	"	---	---	---	---	---	---	---
Bis(2-ethylhexyl)phthalate	ND	18.7	37.5	"	"	---	---	---	---	---	---	---
Butyl benzyl phthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
Diethylphthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
Dimethylphthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
Di-n-butylphthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
Di-n-octyl phthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	---
<i>Surr: Nitrobenzene-d5 (Surr)</i>			<i>Recovery: 89 %</i>		<i>Limits: 37-122 %</i>		<i>Dilution: 1x</i>					
<i>2-Fluorobiphenyl (Surr)</i>			<i>100 %</i>		<i>44-115 %</i>		<i>"</i>					
<i>Phenol-d6 (Surr)</i>			<i>87 %</i>		<i>33-122 %</i>		<i>"</i>					
<i>p-Terphenyl-d14 (Surr)</i>			<i>101 %</i>		<i>54-127 %</i>		<i>"</i>					
<i>2-Fluorophenol (Surr)</i>			<i>88 %</i>		<i>35-115 %</i>		<i>"</i>					
<i>2,4,6-Tribromophenol (Surr)</i>			<i>107 %</i>		<i>39-132 %</i>		<i>"</i>					
<b>LCS (7120994-BS2)</b>												
Prepared: 12/21/17 17:25 Analyzed: 12/26/17 12:13												
<b>EPA 8270D</b>												
Acenaphthene	531	1.33	2.67	ug/kg wet	1	533	---	100	40-122	---	---	---
Acenaphthylene	501	1.33	2.67	"	"	"	---	94	32-132	---	---	---
Anthracene	520	1.33	2.67	"	"	"	---	98	47-123	---	---	---
Benz(a)anthracene	531	1.33	2.67	"	"	"	---	99	49-126	---	---	---
Benzo(a)pyrene	594	2.00	4.00	"	"	"	---	111	45-129	---	---	---
Benzo(b)fluoranthene	604	2.00	4.00	"	"	"	---	113	45-132	---	---	---
Benzo(k)fluoranthene	583	2.00	4.00	"	"	"	---	109	47-132	---	---	---
Benzo(g,h,i)perylene	507	1.33	2.67	"	"	"	---	95	43-134	---	---	---
Chrysene	539	1.33	2.67	"	"	"	---	101	50-124	---	---	---
Dibenz(a,h)anthracene	525	1.33	2.67	"	"	"	---	99	45-134	---	---	---
Fluoranthene	543	1.33	2.67	"	"	"	---	102	50-127	---	---	---
Fluorene	518	1.33	2.67	"	"	"	---	97	43-125	---	---	---
Indeno(1,2,3-cd)pyrene	526	1.33	2.67	"	"	"	---	99	45-133	---	---	---
1-Methylnaphthalene	503	2.67	5.33	"	"	"	---	94	40-120	---	---	---
2-Methylnaphthalene	511	2.67	5.33	"	"	"	---	96	38-122	---	---	---
Naphthalene	515	2.67	5.33	"	"	"	---	96	35-123	---	---	---
Phenanthrene	512	1.33	2.67	"	"	"	---	96	50-121	---	---	---
Pyrene	541	1.33	2.67	"	"	"	---	101	47-127	---	---	---

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120994 - EPA 3546</b>												
						<b>Soil</b>						
LCS (7120994-BS2) Prepared: 12/21/17 17:25 Analyzed: 12/26/17 12:13												
<b>EPA 8270D</b>												
Carbazole	473	2.00	4.00	ug/kg wet	"	"	---	89	50-122	---	---	
Dibenzofuran	500	1.33	2.67	"	"	"	---	94	44-120	---	---	
4-Chloro-3-methylphenol	522	13.3	26.7	"	"	"	---	98	45-122	---	---	
2-Chlorophenol	511	6.67	13.3	"	"	"	---	96	34-121	---	---	
2,4-Dichlorophenol	605	6.67	13.3	"	"	"	---	113	40-122	---	---	
2,4-Dimethylphenol	587	6.67	13.3	"	"	"	---	110	30-127	---	---	
2,4-Dinitrophenol	677	33.3	66.7	"	"	"	---	127	5-137	---	---	Q-41
4,6-Dinitro-2-methylphenol	564	33.3	66.7	"	"	"	---	106	29-132	---	---	Q-41
2-Methylphenol	492	3.33	6.67	"	"	"	---	92	32-122	---	---	
3+4-Methylphenol(s)	508	3.33	6.67	"	"	"	---	95	34-120	---	---	
2-Nitrophenol	594	13.3	26.7	"	"	"	---	111	36-123	---	---	
4-Nitrophenol	591	13.3	26.7	"	"	"	---	111	30-132	---	---	
Pentachlorophenol (PCP)	554	13.3	26.7	"	"	"	---	104	25-133	---	---	
Phenol	492	2.67	5.33	"	"	"	---	92	34-120	---	---	
2,3,4,6-Tetrachlorophenol	533	6.67	13.3	"	"	"	---	100	44-125	---	---	
2,3,5,6-Tetrachlorophenol	543	6.67	13.3	"	"	"	---	102	40-120	---	---	
2,4,5-Trichlorophenol	549	6.67	13.3	"	"	"	---	103	41-124	---	---	
2,4,6-Trichlorophenol	544	6.67	13.3	"	"	"	---	102	39-126	---	---	
Bis(2-ethylhexyl)phthalate	605	20.0	40.0	"	"	"	---	114	51-133	---	---	
Butyl benzyl phthalate	642	13.3	26.7	"	"	"	---	120	48-132	---	---	
Diethylphthalate	527	13.3	26.7	"	"	"	---	99	50-124	---	---	
Dimethylphthalate	505	13.3	26.7	"	"	"	---	95	48-124	---	---	
Di-n-butylphthalate	581	13.3	26.7	"	"	"	---	109	51-128	---	---	
Di-n-octyl phthalate	632	13.3	26.7	"	"	"	---	118	44-140	---	---	

Surr: Nitrobenzene-d5 (Surr)	Recovery: 89 %	Limits: 37-122 %	Dilution: 1x
2-Fluorobiphenyl (Surr)	99 %	44-115 %	"
Phenol-d6 (Surr)	95 %	33-122 %	"
p-Terphenyl-d14 (Surr)	98 %	54-127 %	"
2-Fluorophenol (Surr)	93 %	35-115 %	"
2,4,6-Tribromophenol (Surr)	107 %	39-132 %	"

### Duplicate (7120994-DUP2)

Prepared: 12/21/17 17:25 Analyzed: 12/27/17 19:06


R-04

QC Source Sample: Other (A7L0317-04RE1)

<b>EPA 8270D</b>											
Acenaphthene	ND	71.2	143	ug/kg dry	50	---	ND	---	---	---	30%

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120994 - EPA 3546</b>												
<b>Soil</b>												
<b>Duplicate (7120994-DUP2)</b>			Prepared: 12/21/17 17:25						Analyzed: 12/27/17 19:06			R-04
<b>QC Source Sample: Other (A7L0317-04RE1)</b>												
<b>EPA 8270D</b>												
Acenaphthylene	ND	71.2	143	ug/kg dry	"	---	ND	---	---	---	30%	
Anthracene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
Benz(a)anthracene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
Benzo(a)pyrene	<b>162</b>	107	214	"	"	---	ND	---	---	---	30%	J
Benzo(b)fluoranthene	<b>131</b>	107	214	"	"	---	ND	---	---	---	30%	J
Benzo(k)fluoranthene	ND	107	214	"	"	---	ND	---	---	---	30%	
Benzo(g,h,i)perylene	<b>77.1</b>	71.2	143	"	"	---	88.6	---	---	14	30%	J
Chrysene	<b>94.5</b>	71.2	143	"	"	---	ND	---	---	---	30%	J
Dibenz(a,h)anthracene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
Fluoranthene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
Fluorene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
1-Methylnaphthalene	ND	143	285	"	"	---	ND	---	---	---	30%	
2-Methylnaphthalene	ND	143	285	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	143	285	"	"	---	ND	---	---	---	30%	
Phenanthrene	ND	71.2	143	"	"	---	ND	---	---	---	30%	
Pyrene	<b>87.0</b>	71.2	143	"	"	---	90.3	---	---	4	30%	J

<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>Recovery: 74 %</i>	<i>Limits: 37-122 %</i>	<i>Dilution: 50x</i>
<i>2-Fluorobiphenyl (Surr)</i>	<i>82 %</i>	<i>44-115 %</i>	<i>"</i>
<i>Phenol-d6 (Surr)</i>	<i>62 %</i>	<i>33-122 %</i>	<i>"</i>
<i>p-Terphenyl-d14 (Surr)</i>	<i>92 %</i>	<i>54-127 %</i>	<i>"</i>
<i>2-Fluorophenol (Surr)</i>	<i>38 %</i>	<i>35-115 %</i>	<i>"</i>
<i>2,4,6-Tribromophenol (Surr)</i>	<i>67 %</i>	<i>39-132 %</i>	<i>"</i>

### Matrix Spike (7120994-MS2)

Prepared: 12/21/17 17:25 Analyzed: 12/26/17 16:55

QC Source Sample: GP02-S-7.0 (A7L0343-06)

<b>EPA 8270D</b>												
Acenaphthene	645	76.0	153	ug/kg dry	40	762	ND	85	40-122	---	---	
Acenaphthylene	577	76.0	153	"	"	"	ND	76	32-132	---	---	
Anthracene	686	76.0	153	"	"	"	ND	90	47-123	---	---	
Benz(a)anthracene	943	76.0	153	"	"	"	188	99	49-126	---	---	
Benzo(a)pyrene	1530	114	229	"	"	"	372	152	45-129	---	---	Q-04
Benzo(b)fluoranthene	1590	114	229	"	"	"	462	148	45-132	---	---	Q-04

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
<b>Batch 7120994 - EPA 3546</b>						<b>Soil</b>							
<b>Matrix Spike (7120994-MS2)</b>						Prepared: 12/21/17 17:25 Analyzed: 12/26/17 16:55							
<b>QC Source Sample: GP02-S-7.0 (A7L0343-06)</b>													
<b>EPA 8270D</b>													
Benzo(k)fluoranthene	1030	114	229	ug/kg dry	"	"	147	116	47-132	---	---		
Benzo(g,h,i)perylene	1710	76.0	153	"	"	"	581	149	43-134	---	---	Q-04	
Chrysene	1000	76.0	153	"	"	"	194	106	50-124	---	---		
Dibenz(a,h)anthracene	677	76.0	153	"	"	"	ND	89	45-134	---	---		
Fluoranthene	912	76.0	153	"	"	"	184	95	50-127	---	---		
Fluorene	641	76.0	153	"	"	"	ND	84	43-125	---	---		
Indeno(1,2,3-cd)pyrene	1520	76.0	153	"	"	"	503	134	45-133	---	---	Q-04	
1-Methylnaphthalene	682	153	305	"	"	"	ND	89	40-120	---	---		
2-Methylnaphthalene	656	153	305	"	"	"	ND	86	38-122	---	---		
Naphthalene	695	153	305	"	"	"	ND	91	35-123	---	---		
Phenanthrene	810	76.0	153	"	"	"	166	85	50-121	---	---		
Pyrene	1000	76.0	153	"	"	"	256	98	47-127	---	---		
Surr: Nitrobenzene-d5 (Surr)			Recovery: 90 %	Limits: 37-122 %				Dilution: 40x					S-05
2-Fluorobiphenyl (Surr)			77 %	44-115 %				"					S-05
Phenol-d6 (Surr)			83 %	33-122 %				"					S-05
p-Terphenyl-d14 (Surr)			80 %	54-127 %				"					S-05
2-Fluorophenol (Surr)			72 %	35-115 %				"					S-05
2,4,6-Tribromophenol (Surr)			91 %	39-132 %				"					S-05



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120917 - EPA 3015A</b>												
<b>Water</b>												
<b>Blank (7120917-BLK1)</b>												
						Prepared: 12/20/17 12:03			Analyzed: 12/20/17 19:39			
<b>EPA 6020A</b>												
Arsenic	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Barium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Cadmium	ND	0.0400	0.200	"	"	---	---	---	---	---	---	
Chromium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Lead	ND	0.100	0.200	"	"	---	---	---	---	---	---	
Mercury	ND	0.0400	0.0800	"	"	---	---	---	---	---	---	
Selenium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Silver	ND	0.100	0.200	"	"	---	---	---	---	---	---	
<b>LCS (7120917-BS1)</b>												
						Prepared: 12/20/17 12:03			Analyzed: 12/20/17 19:42			
<b>EPA 6020A</b>												
Arsenic	57.2	0.500	1.00	ug/L	1	55.6	---	103	80-120	---	---	
Barium	57.7	0.500	1.00	"	"	"	---	104	"	---	---	
Cadmium	57.1	0.0400	0.200	"	"	"	---	103	"	---	---	
Chromium	56.8	0.500	1.00	"	"	"	---	102	"	---	---	
Lead	57.9	0.100	0.200	"	"	"	---	104	"	---	---	
Mercury	1.11	0.0400	0.0800	"	"	1.11	---	100	"	---	---	
Selenium	27.9	0.500	1.00	"	"	27.8	---	100	"	---	---	
Silver	27.7	0.100	0.200	"	"	"	---	100	"	---	---	
<b>Duplicate (7120917-DUP1)</b>												
						Prepared: 12/20/17 12:03			Analyzed: 12/20/17 20:01			
<b>QC Source Sample: GP08-W-6.5 (A7L0343-10)</b>												
<b>EPA 6020A</b>												
Arsenic	13.2	4.50	9.00	ug/L	1	---	12.6	---	---	5	20%	
Barium	489	4.50	9.00	"	"	---	485	---	---	0.9	20%	
Cadmium	1.30	0.360	1.80	"	"	---	1.40	---	---	7	20%	R-04, J
Chromium	76.3	4.50	9.00	"	"	---	76.4	---	---	0.1	20%	
Lead	179	0.900	1.80	"	"	---	180	---	---	0.6	20%	
Mercury	ND	0.360	0.720	"	"	---	ND	---	---	---	20%	R-04
Selenium	ND	4.50	9.00	"	"	---	ND	---	---	---	20%	R-04
Silver	ND	0.900	1.80	"	"	---	ND	---	---	---	20%	R-04
<b>Matrix Spike (7120917-MS1)</b>												
						Prepared: 12/20/17 12:03			Analyzed: 12/20/17 20:04			
<b>QC Source Sample: GP08-W-6.5 (A7L0343-10)</b>												
<b>EPA 6020A</b>												

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120917 - EPA 3015A</b>												
<b>Water</b>												
<b>Matrix Spike (7120917-MS1)</b>						Prepared: 12/20/17 12:03 Analyzed: 12/20/17 20:04						
QC Source Sample: GP08-W-6.5 (A7L0343-10)												
EPA 6020A												
Arsenic	518	4.50	9.00	ug/L	1	500	12.6	101	75-125	---	---	
Barium	991	4.50	9.00	"	"	"	485	101	"	---	---	
Cadmium	510	0.360	1.80	"	"	"	1.40	102	"	---	---	
Chromium	577	4.50	9.00	"	"	"	76.4	100	"	---	---	
Lead	682	0.900	1.80	"	"	"	180	100	"	---	---	
Mercury	10.1	0.360	0.720	"	"	10.0	ND	101	"	---	---	
Selenium	242	4.50	9.00	"	"	250	ND	97	"	---	---	
Silver	245	0.900	1.80	"	"	"	ND	98	"	---	---	

**Matrix Spike (7120917-MS2)**

Prepared: 12/20/17 12:03 Analyzed: 12/20/17 21:17

QC Source Sample: Other (A7L0585-06)

EPA 6020A												
Arsenic	57.3	0.500	1.00	ug/L	1	55.6	ND	103	75-125	---	---	
Barium	75.4	0.500	1.00	"	"	"	17.8	104	"	---	---	
Cadmium	58.1	0.0400	0.200	"	"	"	0.100	104	"	---	---	
Chromium	56.8	0.500	1.00	"	"	"	1.00	100	"	---	---	
Lead	61.1	0.100	0.200	"	"	"	3.00	105	"	---	---	
Mercury	1.12	0.0400	0.0800	"	"	1.11	ND	101	"	---	---	
Selenium	27.5	0.500	1.00	"	"	27.8	ND	99	"	---	---	
Silver	27.3	0.100	0.200	"	"	"	ND	98	"	---	---	



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121045 - EPA 3051A</b>												
<b>Soil</b>												
<b>Blank (7121045-BLK1)</b>												
						Prepared: 12/27/17 09:11			Analyzed: 12/27/17 15:57			
<b>EPA 6020A</b>												
Arsenic	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	---
Barium	ND	0.481	0.962	"	"	---	---	---	---	---	---	---
Cadmium	ND	0.0962	0.192	"	"	---	---	---	---	---	---	---
Chromium	ND	0.481	0.962	"	"	---	---	---	---	---	---	---
Lead	ND	0.0962	0.192	"	"	---	---	---	---	---	---	---
Mercury	ND	0.0385	0.0769	"	"	---	---	---	---	---	---	---
Selenium	ND	0.481	0.962	"	"	---	---	---	---	---	---	---
Silver	ND	0.0962	0.192	"	"	---	---	---	---	---	---	---
<b>LCS (7121045-BS1)</b>												
						Prepared: 12/27/17 09:11			Analyzed: 12/27/17 16:00			
<b>EPA 6020A</b>												
Arsenic	50.1	0.500	1.00	mg/kg wet	10	50.0	---	100	80-120	---	---	---
Barium	51.6	0.500	1.00	"	"	"	---	103	"	---	---	---
Cadmium	50.9	0.100	0.200	"	"	"	---	102	"	---	---	---
Chromium	50.4	0.500	1.00	"	"	"	---	101	"	---	---	---
Lead	51.9	0.100	0.200	"	"	"	---	104	"	---	---	---
Mercury	1.02	0.0400	0.0800	"	"	1.00	---	102	"	---	---	---
Selenium	26.1	0.500	1.00	"	"	25.0	---	104	"	---	---	---
Silver	25.3	0.100	0.200	"	"	"	---	101	"	---	---	---
<b>Duplicate (7121045-DUP1)</b>												
						Prepared: 12/27/17 09:11			Analyzed: 12/27/17 16:44			
<b>QC Source Sample: GP02-S-1.5 (A7L0343-05)</b>												
<b>EPA 6020A</b>												
Arsenic	<b>12.8</b>	0.586	1.17	mg/kg dry	10	---	9.10	---	---	34	40%	
Barium	<b>127</b>	0.586	1.17	"	"	---	119	---	---	7	40%	
Cadmium	<b>0.762</b>	0.117	0.234	"	"	---	0.774	---	---	2	40%	
Chromium	<b>22.9</b>	0.586	1.17	"	"	---	25.2	---	---	10	40%	
Lead	<b>379</b>	0.117	0.234	"	"	---	327	---	---	15	40%	
Mercury	<b>3.54</b>	0.0469	0.0938	"	"	---	3.20	---	---	10	40%	
Selenium	ND	0.586	1.17	"	"	---	ND	---	---	---	40%	
Silver	<b>0.258</b>	0.117	0.234	"	"	---	ND	---	---	---	40%	
<b>Matrix Spike (7121045-MS1)</b>												
						Prepared: 12/27/17 09:11			Analyzed: 12/27/17 16:47			
<b>QC Source Sample: GP02-S-1.5 (A7L0343-05)</b>												
<b>EPA 6020A</b>												

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121045 - EPA 3051A</b>												
<b>Soil</b>												
<b>Matrix Spike (7121045-MS1)</b>						Prepared: 12/27/17 09:11 Analyzed: 12/27/17 16:47						
QC Source Sample: GP02-S-1.5 (A7L0343-05)												
EPA 6020A												
Arsenic	70.2	0.626	1.25	mg/kg dry	10	62.7	9.10	98	75-125	---	---	
Barium	158	0.626	1.25	"	"	"	119	63	"	---	---	Q-04
Cadmium	63.5	0.125	0.251	"	"	"	0.774	100	"	---	---	
Chromium	78.6	0.626	1.25	"	"	"	25.2	85	"	---	---	
Lead	323	0.125	0.251	"	"	"	327	-6	"	---	---	Q-04
Mercury	3.70	0.0501	0.100	"	"	1.25	3.20	40	"	---	---	Q-04
Selenium	31.2	0.626	1.25	"	"	31.3	ND	100	"	---	---	
Silver	30.9	0.125	0.251	"	"	"	ND	99	"	---	---	

**Matrix Spike (7121045-MS2)**

Prepared: 12/27/17 09:11 Analyzed: 12/27/17 16:25

QC Source Sample: Other (A7L0819-03)

EPA 6020A												
Arsenic	74.8	0.738	1.48	mg/kg dry	10	73.8	5.40	94	75-125	---	---	
Barium	208	0.738	1.48	"	"	"	149	80	"	---	---	
Cadmium	70.6	0.148	0.295	"	"	"	0.847	94	"	---	---	
Chromium	257	0.738	1.48	"	"	"	152	143	"	---	---	Q-03
Lead	131	0.148	0.295	"	"	"	54.7	103	"	---	---	
Mercury	1.48	0.0590	0.118	"	"	1.48	0.124	92	"	---	---	
Selenium	34.3	0.738	1.48	"	"	36.9	ND	93	"	---	---	
Silver	35.2	0.148	0.295	"	"	"	0.439	94	"	---	---	



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120737 - Total Solids (Dry Weight)</b>						<b>Soil</b>						
<b>Duplicate (7120737-DUP1)</b>						Prepared: 12/14/17 12:05 Analyzed: 12/15/17 07:52						
QC Source Sample: Other (A7L0178-02)												
EPA 8000C												
% Solids	97.5	1.00	1.00	% by Weight	1	---	97.5	---	---	0.08	10%	
<b>Duplicate (7120737-DUP2)</b>						Prepared: 12/14/17 12:05 Analyzed: 12/15/17 07:52						
QC Source Sample: Other (A7L0179-16)												
EPA 8000C												
% Solids	98.1	1.00	1.00	% by Weight	1	---	98.2	---	---	0.09	10%	
<b>Duplicate (7120737-DUP3)</b>						Prepared: 12/14/17 12:05 Analyzed: 12/15/17 07:52						
QC Source Sample: GP02-S-7.0 (A7L0343-06)												
EPA 8000C												
% Solids	66.2	1.00	1.00	% by Weight	1	---	69.9	---	---	5	10%	
<b>Duplicate (7120737-DUP4)</b>						Prepared: 12/14/17 18:57 Analyzed: 12/15/17 07:52						
QC Source Sample: Other (A7L0394-01)												
EPA 8000C												
% Solids	82.7	1.00	1.00	% by Weight	1	---	82.7	---	---	0.05	10%	
<b>Duplicate (7120737-DUP5)</b>						Prepared: 12/14/17 18:57 Analyzed: 12/15/17 07:52						
QC Source Sample: Other (A7L0400-05)												
EPA 8000C												
% Solids	87.6	1.00	1.00	% by Weight	1	---	87.7	---	---	0.07	10%	
<b>Duplicate (7120737-DUP6)</b>						Prepared: 12/14/17 21:00 Analyzed: 12/15/17 07:52						
QC Source Sample: Other (A7L0367-01)												
EPA 8000C												
% Solids	90.1	1.00	1.00	% by Weight	1	---	91.0	---	---	0.9	10%	

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

**Reported:**  
01/09/18 23:58


## Weck Laboratories, Inc.

### QUALITY CONTROL (QC) SAMPLE RESULTS

#### Hexavalent Chromium by IC

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch W7L1080 - EPA 218.6</b>						<b>Water</b>						
<b>Blank (W7L1080-BLK1)</b>						Prepared: 12/20/17 13:16 Analyzed: 12/20/17 15:01						
<b>EPA 7199</b>												
Chromium 6+	ND	---	0.30	ug/l	1	---	---	---	---	---	---	---
<b>LCS (W7L1080-BS1)</b>						Prepared: 12/20/17 13:16 Analyzed: 12/20/17 15:12						
<b>EPA 7199</b>												
Chromium 6+	4.75	---	0.30	ug/l	1	5.00	---	95	90-110	---	---	---
<b>Duplicate (W7L1080-DUP1)</b>						Prepared: 12/20/17 13:16 Analyzed: 12/20/17 15:59						
<b>QC Source Sample: A7L0343-01 (A7L0343-01)</b>												
<b>EPA 7199</b>												
Chromium 6+	ND	---	0.30	ug/l	1	---	ND	---	---	---	---	20%
<b>Duplicate (W7L1080-DUP2)</b>						Prepared: 12/20/17 13:16 Analyzed: 12/20/17 16:23						
<b>QC Source Sample: A7L0343-10 (A7L0343-10)</b>												
<b>EPA 7199</b>												
Chromium 6+	ND	---	0.30	ug/l	1	---	ND	---	---	---	---	20%
<b>Matrix Spike (W7L1080-MS1)</b>						Prepared: 12/20/17 13:16 Analyzed: 12/20/17 15:24						
<b>QC Source Sample: A7L0343-01 (A7L0343-01)</b>												
<b>EPA 7199</b>												
Chromium 6+	4.67	---	0.30	ug/l	1	5.00	ND	93	85-113	---	---	---
<b>Matrix Spike Dup (W7L1080-MSD1)</b>						Prepared: 12/20/17 13:16 Analyzed: 12/20/17 15:36						
<b>QC Source Sample: A7L0343-01 (A7L0343-01)</b>												
<b>EPA 7199</b>												
Chromium 6+	4.68	---	0.30	ug/l	1	5.00	ND	94	85-113	0.2	---	20%

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

**Reported:**  
01/09/18 23:58

## SAMPLE PREPARATION INFORMATION

### Hydrocarbon Identification Screen by NWTPH-HCID

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

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120754</b>							
A7L0343-01	Water	NWTPH-HCID	12/12/17 11:00	12/14/17 16:59	950mL/5mL	1000mL/5mL	1.05
A7L0343-10	Water	NWTPH-HCID	12/12/17 15:15	12/14/17 16:59	920mL/5mL	1000mL/5mL	1.09

#### Prep: NWTPH-HCID (Soil)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120791</b>							
A7L0343-09	Soil	NWTPH-HCID	12/12/17 15:05	12/15/17 16:03	10.04g/10mL	10g/10mL	1.00

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

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

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120754</b>							
A7L0343-01	Water	NWTPH-Dx	12/12/17 11:00	12/14/17 16:59	950mL/5mL	1000mL/5mL	1.05
A7L0343-10	Water	NWTPH-Dx	12/12/17 15:15	12/14/17 16:59	920mL/5mL	1000mL/5mL	1.09

#### Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120829</b>							
A7L0343-05RE1	Soil	NWTPH-Dx	12/12/17 13:55	12/18/17 13:16	10.76g/5mL	10g/5mL	0.93
A7L0343-06RE2	Soil	NWTPH-Dx	12/12/17 14:05	12/18/17 13:16	10.95g/5mL	10g/5mL	0.91
A7L0343-07	Soil	NWTPH-Dx	12/12/17 14:15	12/18/17 13:16	10.55g/5mL	10g/5mL	0.95
A7L0343-08	Soil	NWTPH-Dx	12/12/17 14:25	12/18/17 13:16	10.23g/5mL	10g/5mL	0.98
A7L0343-09	Soil	NWTPH-Dx	12/12/17 15:05	12/18/17 13:16	10.21g/5mL	10g/5mL	0.98
<b>Batch: 7120989</b>							
A7L0343-02RE1	Soil	NWTPH-Dx	12/12/17 13:25	12/21/17 17:25	10.34g/5mL	10g/5mL	0.97
A7L0343-03	Soil	NWTPH-Dx	12/12/17 13:30	12/21/17 17:25	10.23g/5mL	10g/5mL	0.98
A7L0343-04	Soil	NWTPH-Dx	12/12/17 13:40	12/21/17 17:25	10.14g/5mL	10g/5mL	0.99

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

#### Prep: EPA 5030B

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120718</b>							
A7L0343-10RE1	Water	NWTPH-Gx (MS)	12/12/17 15:15	12/14/17 10:20	5mL/5mL	5mL/5mL	1.00

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## SAMPLE PREPARATION INFORMATION

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

**Prep: EPA 5030B**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Prep: EPA 5035A</b>							
Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120726</b>							
A7L0343-05	Soil	NWTPH-Gx (MS)	12/12/17 13:55	12/12/17 13:55	5.91g/5mL	5g/5mL	0.85
A7L0343-06	Soil	NWTPH-Gx (MS)	12/12/17 14:05	12/12/17 14:05	5.71g/5mL	5g/5mL	0.88
A7L0343-07	Soil	NWTPH-Gx (MS)	12/12/17 14:15	12/12/17 14:15	6.43g/5mL	5g/5mL	0.78
A7L0343-08	Soil	NWTPH-Gx (MS)	12/12/17 14:25	12/12/17 14:25	5.28g/5mL	5g/5mL	0.95
A7L0343-09	Soil	NWTPH-Gx (MS)	12/12/17 15:05	12/12/17 15:05	5.57g/5mL	5g/5mL	0.90

### Volatile Organic Compounds by EPA 5035A/8260C

**Prep: EPA 5035A**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120726</b>							
A7L0343-05	Soil	5035A/8260C	12/12/17 13:55	12/12/17 13:55	5.91g/5mL	5g/5mL	0.85
A7L0343-06	Soil	5035A/8260C	12/12/17 14:05	12/12/17 14:05	5.71g/5mL	5g/5mL	0.88
A7L0343-07	Soil	5035A/8260C	12/12/17 14:15	12/12/17 14:15	6.43g/5mL	5g/5mL	0.78
A7L0343-08	Soil	5035A/8260C	12/12/17 14:25	12/12/17 14:25	5.28g/5mL	5g/5mL	0.95
A7L0343-09	Soil	5035A/8260C	12/12/17 15:05	12/12/17 15:05	5.57g/5mL	5g/5mL	0.90

### Volatile Organic Compounds by EPA 8260C

**Prep: EPA 5030B**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120625</b>							
A7L0343-11	Water	EPA 8260C	12/12/17 00:00	12/13/17 14:02	5mL/5mL	5mL/5mL	1.00
<b>Batch: 7120718</b>							
A7L0343-01REI	Water	EPA 8260C	12/12/17 11:00	12/14/17 10:20	5mL/5mL	5mL/5mL	1.00
A7L0343-10REI	Water	EPA 8260C	12/12/17 15:15	12/14/17 10:20	5mL/5mL	5mL/5mL	1.00

### Polychlorinated Biphenyls by EPA 8082A

**Prep: EPA 3510C (Neutral pH)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7121067</b>							
A7L0343-10	Water	EPA 8082A	12/12/17 15:15	12/27/17 10:13	960mL/2mL	1000mL/2mL	1.04

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

## SAMPLE PREPARATION INFORMATION

### Polychlorinated Biphenyls by EPA 8082A

**Prep: EPA 3510C (Neutral pH)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7121136</b>							
A7L0343-01	Water	EPA 8082A	12/12/17 11:00	12/28/17 15:47	1070mL/2mL	1000mL/2mL	0.94

### Polychlorinated Biphenyls -- EPA 8082A

**Prep: EPA 3546**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120743</b>							
A7L0343-02	Soil	EPA 8082A	12/12/17 13:25	12/14/17 14:45	10.45g/5mL	10g/2mL	2.39
A7L0343-03	Soil	EPA 8082A	12/12/17 13:30	12/14/17 14:45	10.83g/2mL	10g/2mL	0.92
A7L0343-04	Soil	EPA 8082A	12/12/17 13:40	12/14/17 14:45	10.68g/2mL	10g/2mL	0.94
<b>Batch: 7120873</b>							
A7L0343-09	Soil	EPA 8082A	12/12/17 15:05	12/19/17 13:32	10.75g/2mL	10g/2mL	0.93

### Organochlorine Pesticides by EPA 8081B

**Prep: EPA 3510C (Neutral pH)/3630C (SG)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7121056</b>							
A7L0343-01REI	Water	EPA 8081B	12/12/17 11:00	12/19/17 05:22	870mL/10mL	1000mL/5mL	2.30
A7L0343-10REI	Water	EPA 8081B	12/12/17 15:15	12/19/17 05:22	920mL/10mL	1000mL/5mL	2.17

**Prep: EPA 3546/3640A (GPC)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120888</b>							
A7L0343-02REI	Soil	EPA 8081B	12/12/17 13:25	12/18/17 14:05	11.13g/20mL	10g/5mL	3.59
A7L0343-03REI	Soil	EPA 8081B	12/12/17 13:30	12/18/17 14:05	10.31g/20mL	10g/5mL	3.88
A7L0343-04REI	Soil	EPA 8081B	12/12/17 13:40	12/18/17 14:05	10.25g/10mL	10g/5mL	1.95
A7L0343-09REI	Soil	EPA 8081B	12/12/17 15:05	12/18/17 14:05	10.87g/10mL	10g/5mL	1.84

### Semivolatile Organic Compounds by EPA 8270D

**Prep: EPA 3510C (Acid Extraction)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120727</b>							

Apex Laboratories



Philip Nerenberg, Lab Director

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



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

## SAMPLE PREPARATION INFORMATION

### Semivolatile Organic Compounds by EPA 8270D

#### Prep: EPA 3510C (Acid Extraction)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0343-01REJ	Water	EPA 8270D	12/12/17 11:00	12/14/17 10:21	980mL/1mL	1000mL/1mL	1.02

#### Batch: 7120798

A7L0343-10	Water	EPA 8270D	12/12/17 15:15	12/18/17 05:40	940mL/2mL	1000mL/1mL	2.13
------------	-------	-----------	----------------	----------------	-----------	------------	------

#### Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0343-06	Soil	EPA 8270D	12/12/17 14:05	12/21/17 17:25	15.02g/2mL	15g/2mL	1.00

#### Batch: 7120994

### Total Metals by EPA 6020 (ICPMS)

#### Prep: EPA 3015A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0343-01	Water	EPA 6020A	12/12/17 11:00	12/20/17 12:03	45mL/50mL	45mL/50mL	1.00
A7L0343-10	Water	EPA 6020A	12/12/17 15:15	12/20/17 12:03	5mL/50mL	45mL/50mL	9.00

#### Batch: 7120917

#### Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0343-02	Soil	EPA 6020A	12/12/17 13:25	12/27/17 09:11	0.461g/50mL	0.5g/50mL	1.08
A7L0343-03	Soil	EPA 6020A	12/12/17 13:30	12/27/17 09:11	0.477g/50mL	0.5g/50mL	1.05
A7L0343-04	Soil	EPA 6020A	12/12/17 13:40	12/27/17 09:11	0.508g/50mL	0.5g/50mL	0.98
A7L0343-05	Soil	EPA 6020A	12/12/17 13:55	12/27/17 09:11	0.466g/50mL	0.5g/50mL	1.07
A7L0343-06	Soil	EPA 6020A	12/12/17 14:05	12/27/17 09:11	0.503g/50mL	0.5g/50mL	0.99
A7L0343-07	Soil	EPA 6020A	12/12/17 14:15	12/27/17 09:11	0.496g/50mL	0.5g/50mL	1.01
A7L0343-08	Soil	EPA 6020A	12/12/17 14:25	12/27/17 09:11	0.519g/50mL	0.5g/50mL	0.96
A7L0343-09	Soil	EPA 6020A	12/12/17 15:05	12/27/17 09:11	0.514g/50mL	0.5g/50mL	0.97

#### Batch: 7121045

### Percent Dry Weight

#### Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0343-02	Soil	EPA 8000C	12/12/17 13:25	12/14/17 12:05	1N/A/1N/A	1N/A/1N/A	NA
A7L0343-03	Soil	EPA 8000C	12/12/17 13:30	12/14/17 12:05	1N/A/1N/A	1N/A/1N/A	NA

#### Batch: 7120737

Apex Laboratories

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

## SAMPLE PREPARATION INFORMATION

### Percent Dry Weight

#### Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0343-04	Soil	EPA 8000C	12/12/17 13:40	12/14/17 12:05	1N/A/1N/A	1N/A/1N/A	NA
A7L0343-05	Soil	EPA 8000C	12/12/17 13:55	12/14/17 12:05	1N/A/1N/A	1N/A/1N/A	NA
A7L0343-06	Soil	EPA 8000C	12/12/17 14:05	12/14/17 12:05	1N/A/1N/A	1N/A/1N/A	NA
A7L0343-07	Soil	EPA 8000C	12/12/17 14:15	12/14/17 12:05	1N/A/1N/A	1N/A/1N/A	NA
A7L0343-08	Soil	EPA 8000C	12/12/17 14:25	12/14/17 12:05	1N/A/1N/A	1N/A/1N/A	NA
A7L0343-09	Soil	EPA 8000C	12/12/17 15:05	12/14/17 12:05	1N/A/1N/A	1N/A/1N/A	NA

Apex Laboratories



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

Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/09/18 23:58

## Weck Laboratories, Inc.

### SAMPLE PREPARATION INFORMATION

#### Hexavalent Chromium by IC

**Prep: EPA 218.6**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: W7L1080</b>							
A7L0343-01	Water	EPA 7199	12/12/17 11:00	12/20/17 13:16	5ml/5ml	5ml/5ml	1.00
A7L0343-10	Water	EPA 7199	12/12/17 15:15	12/20/17 13:16	5ml/5ml	5ml/5ml	1.00

Apex Laboratories



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

Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58


## Notes and Definitions

### Qualifiers:

- B Analyte detected in an associated blank at a level above the MRL. (See Notes and Conventions below.)
- B-02 Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
- C-05 Extract has undergone a GPC (Gel-Permeation Chromatography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
- C-07 Extract has undergone Sulfuric Acid Cleanup by EPA 3665A, Sulfur Cleanup by EPA 3660B, and Florisil Cleanup by EPA 3620B in order to minimize matrix interference.
- E Estimated Value. The result is above the calibration range of the instrument.
- EST Result reported as an Estimated Value. Analyte failed initial calibration criteria.
- F-03 The result for this hydrocarbon range is elevated due to the presence of individual analyte peaks in the quantitation range that are not representative of the fuel pattern reported.
- F-09 Results in the Gasoline Range are primarily due to overlap from a heavier fuel hydrocarbon product.
- F-13 The chromatographic pattern does not resemble the fuel standard used for quantitation
- F-15 Results for diesel are estimated due to overlap from the reported oil result.
- F-16 Results for oil are estimated due to overlap from the reported diesel result.
- F-24 The chromatographic pattern does not resemble the fuel standard used for quantitation. The Diesel result represents carbon range C12 to C24, and the Oil result represents >C24 to C40.
- J Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
- M-02 Due to matrix interference, this analyte cannot be accurately quantified. The reported result is estimated.
- M-05 Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.
- P-10 Result estimated due to the presence of multiple PCB Aroclors and/or matrix interference.
- Q-03 Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
- Q-04 Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- Q-05 Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-19 Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
- Q-30 Recovery for Lab Control Spike (LCS) is below the lower control limit. Data may be biased low.
- Q-41 Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- Q-42 Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- Q-54 Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +1%. The results are reported as Estimated Values.
- Q-56 Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260C
- R-02 The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**

2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**

Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**

01/09/18 23:58

- R-04 Reporting levels elevated due to dilution necessary for analysis.
- S-01 Surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference.
- S-05 Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.
- S-06 Surrogate recovery is outside of established control limits.
- TEMP Sample(s) received outside of recommended temperature. See Case Narrative.
- V-16 Sample aliquot was subsampled from the sample container in the laboratory. The subsampled aliquot was not preserved within 48 hours of sampling.

Notes and Conventions:

- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry' designation are not dry weight corrected.
- RPD Relative Percent Difference
- MDL If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
- WMSC Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
- Batch In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
- QC
- Blank Policy Apex assesses blank data for potential high bias down to a level equal to 1/2 the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses.  
  
 For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor.  
  
 Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
- QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- \*\*\* Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/09/18 23:58

**CHAIN OF CUSTODY**

**APEX LABS**      Lab # A7L0343      COC 1 of 1  
Att      PO#

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: MFA      Project Mgr: Merideth D'Andrea      Project Name: Metro-Willamette Falls      Project # 0075.06.02  
Address: 400 E Mill Plain Blvd #400, Vancouver, WA      Phone:      Email: mdandrea@mfaulfooster.com  
Sampled by: Emily Hess      Fax:      ANALYSIS REQUEST

LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-CID	NWTPH-DX	NWTPH-GX	8260 VOCs Full List	8260 RBDV VOCs	8260 HVOCs	8260 BTEX VOCs	8270 SVOC	8270 SLM PAHs Scan	8082 PCBs	600 TIO	RCPA Metals (8)	TCLP Metals (8)	AL, Sb, As, Ba, Be, Cd, Cr, Cu, Ni, Pb, Se, Si, Zn	Hg, Me, Mn, Ni, V, Zn	TOTAL DISS TCEP	1200-COLS	1200-Z	hold	chromated pesticides	dioxins/furans	hex chromium	
GP03-W-33.0	12/12/18	11:00	W	10	X			X					X			X											
GP04-S-1.0		13:25	50	5										X		X											
GP04-S-6.0		13:30		4										X		X											
GP04-S-13.0		13:40		5										X		X											
GP02-S-1.5		13:56		5											X	X											
GP02-S-7.0		14:05		5											X	X											
GP04-S-2.5		14:15		5											X	X											
GP04-S-8.0		14:25		5											X	X											
GP08-S-4.0		15:05		5											X	X											
GP08-W-6.5		15:15		10											X	X											

Normal Turn Around Time (TAT) = 10 Business Days      YES      NO

TAT Requested (circle):      1 Day      2 Day      3 Day      4 DAY      5 DAY      Other: \_\_\_\_\_

SAMPLES ARE HELD FOR 30 DAYS      RECEIVED BY:      Signature: \_\_\_\_\_      Date: 12/13/17

RELINQUISHED BY:      Signature: Emily Hess      Date: 12/13/17  
Printed Name: Emily Hess      Time: 2:56 PM      Printed Name: Quinn Rodriguez      Time: 11:01 AM

Company: MFA      Company: APEX LABS

SPECIAL INSTRUCTIONS:  
- small sample for GP04-S-6.0, unable to fill all jars.  
- Analyze trip blank for 8260 VOCs Full List.  
- Save all samples for potential follow-up analyses.

Apex Laboratories

*Philip Nerenberg*

Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/09/18 23:58

**APEX LABS COOLER RECEIPT FORM**

Client: MFA - Vancouver Element WO#: A7 L0343<sup>4</sup>  
 Project/Project #: Metro-Willamette/0075.06.02

**Delivery info:**

Date/Time Received: 12/13/17 @ 11:09 By: CR  
 Delivered by: Apex  Client  ESS  FedEx  UPS  Swift  Senvoy  SDS  Other

**Cooler Inspection** Inspected by: CR : 12/13/17 @ 12:28  
 Chain of Custody Included? Yes  No  Custody Seals? Yes  No   
 Signed/Dated by Client? Yes  No   
 Signed/Dated by Apex? Yes  No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)	<u>0.7</u>	<u>2.4</u>					
Received on Ice? (Y/N)							
Temp. Blanks? (Y/N)							
Ice Type: (Gel/Real/Other)							
Condition:	<u>good</u>	<u>good</u>					

Cooler out of temp? (Y/N) Possible reason why: \_\_\_\_\_  
 If some coolers are in temp and some out, were green dot applied to out of temperature samples? Yes/No/NA

**Samples Inspection:** Inspected by: MS : 12/13/17 @ 14:29

All Samples Intact? Yes  No  Comments: \_\_\_\_\_

Bottle Labels/COCs agree? Yes  No  Comments: \_\_\_\_\_

Containers/Volumes Received Appropriate for Analysis? Yes  No  Comments: \_\_\_\_\_

Do VOA Vials have Visible Headspace? Yes  No  NA   
 Comments: \_\_\_\_\_

Water Samples: pH Checked and Appropriate (except VOAs): Yes  No  NA   
 Comments: \_\_\_\_\_

**Additional Information:** Received trip Blanks, not listed on Col.

Labeled by: \_\_\_\_\_ Witness: \_\_\_\_\_ Cooler Inspected by: \_\_\_\_\_ See Project Contact Form: Y

*(Handwritten signatures)*

*(Handwritten signature: Philip Nerenberg)*

# Apex Labs

12232 S.W. Garden Place  
Tigard, OR 97223  
503-718-2323 Phone  
503-718-0333 Fax

Wednesday, January 10, 2018

Merideth D'Andrea  
Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

RE: Metro-Willamette Falls / 0075.06.02

Enclosed are the results of analyses for work order A7L0431, which was received by the laboratory on 12/15/2017 at 12:35:00PM.

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

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

---

Apex Laboratories



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

---

Philip Nerenberg, Lab Director



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## ANALYTICAL REPORT FOR SAMPLES

### SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GP11-S-3.0	A7L0431-01	Soil	12/14/17 08:30	12/15/17 12:35
GP11-S-7.0	A7L0431-02	Soil	12/14/17 08:40	12/15/17 12:35
GP14-S-3.0	A7L0431-03	Soil	12/14/17 09:40	12/15/17 12:35
GP14-S-8.0	A7L0431-04	Soil	12/14/17 09:50	12/15/17 12:35
GP14-W-10.0	A7L0431-05	Water	12/14/17 10:10	12/15/17 12:35
GP13-S-2.5	A7L0431-06	Soil	12/14/17 11:30	12/15/17 12:35
GP13-S-7.5	A7L0431-07	Soil	12/14/17 11:40	12/15/17 12:35
GP13-S-13.0	A7L0431-08	Soil	12/14/17 11:50	12/15/17 12:35
GP10-S-2.5	A7L0431-09	Soil	12/14/17 13:20	12/15/17 12:35
GP10-W-8.0	A7L0431-10	Water	12/14/17 14:00	12/15/17 12:35
GP10-W-8.0-DUP	A7L0431-11	Water	12/14/17 14:00	12/15/17 12:35
GP05-S-5.5	A7L0431-12	Soil	12/14/17 14:30	12/15/17 12:35
GP05-S-7.5	A7L0431-14	Soil	12/14/17 14:35	12/15/17 12:35
GP05-S-8.0	A7L0431-15	Soil	12/14/17 14:40	12/15/17 12:35
Trip Blank	A7L0431-16	Water	12/14/17 00:00	12/15/17 12:35
GP15-S-3.0	A7L0431-17	Soil	12/14/17 12:20	12/15/17 12:35
GP15-S-7.5	A7L0431-18	Soil	12/14/17 12:30	12/15/17 12:35
GP15-S-8.0	A7L0431-19	Soil	12/14/17 12:40	12/15/17 12:35



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Hydrocarbon Identification Screen by NWTPH-HCID

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-S-2.5 (A7L0431-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120880</b>			
Gasoline Range Organics	ND	23.2	23.2	mg/kg dry	1	12/19/17 23:42	NWTPH-HCID	
Diesel Range Organics	DET	57.9	57.9	"	"	"	"	
Oil Range Organics	DET	116	116	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 108 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<b>GP10-W-8.0 (A7L0431-10)</b>			<b>Matrix: Water</b>		<b>Batch: 7120879</b>			
Gasoline Range Organics	ND	0.0980	0.0980	mg/L	1	12/20/17 00:27	NWTPH-HCID	
Diesel Range Organics	DET	0.245	0.245	"	"	"	"	
Oil Range Organics	DET	0.245	0.245	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 99 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>42 %</i>		<i>Limits: 10-120 %</i>		"	"	"
<b>GP10-W-8.0-DUP (A7L0431-11)</b>			<b>Matrix: Water</b>		<b>Batch: 7120879</b>			
Gasoline Range Organics	ND	0.0971	0.0971	mg/L	1	12/20/17 00:50	NWTPH-HCID	
Diesel Range Organics	DET	0.243	0.243	"	"	"	"	
Oil Range Organics	DET	0.243	0.243	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>36 %</i>		<i>Limits: 10-120 %</i>		"	"	"
<b>GP05-S-5.5 (A7L0431-12)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120880</b>			
Gasoline Range Organics	ND	25.6	25.6	mg/kg dry	1	12/20/17 00:27	NWTPH-HCID	
Diesel Range Organics	DET	63.9	63.9	"	"	"	"	F-13
Oil Range Organics	DET	128	128	"	"	"	"	F-03
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 110 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>104 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<b>GP05-S-7.5 (A7L0431-14RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120880</b>			
Gasoline Range Organics	ND	28.0	28.0	mg/kg dry	1	12/20/17 09:12	NWTPH-HCID	
Diesel Range Organics	DET	70.0	70.0	"	"	"	"	F-13
Oil Range Organics	DET	140	140	"	"	"	"	F-13
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 109 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>108 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<b>GP05-S-8.0 (A7L0431-15)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120880</b>			
Gasoline Range Organics	DET	24.3	24.3	mg/kg dry	1	12/20/17 01:13	NWTPH-HCID	F-09
Diesel Range Organics	DET	60.7	60.7	"	"	"	"	
Oil Range Organics	DET	121	121	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 105 %</i>		<i>Limits: 50-150 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>116 %</i>		<i>Limits: 50-150 %</i>		"	"	"

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP11-S-3.0 (A7L0431-01)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120989</b>			
Diesel	ND	12.0	25.0	mg/kg dry	1	12/22/17 01:14	NWTPH-Dx	
<b>Oil</b>	<b>24.5</b>	24.0	50.0	"	"	"	"	J
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 94 %</i>		<i>Limits: 50-150 %</i>		"	"
<b>GP11-S-7.0 (A7L0431-02)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120989</b>			
Diesel	ND	12.3	25.0	mg/kg dry	1	12/22/17 01:34	NWTPH-Dx	
Oil	ND	24.7	50.0	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 89 %</i>		<i>Limits: 50-150 %</i>		"	"
<b>GP14-S-3.0 (A7L0431-03)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120989</b>			
Diesel	ND	11.3	25.0	mg/kg dry	1	12/22/17 01:55	NWTPH-Dx	
Oil	ND	22.6	50.0	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		"	"
<b>GP14-S-8.0 (A7L0431-04RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120989</b>			
Diesel	ND	11.6	25.0	mg/kg dry	1	12/26/17 12:08	NWTPH-Dx	
<b>Oil</b>	<b>115</b>	23.1	50.0	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		"	"
<b>GP14-W-10.0 (A7L0431-05)</b>			<b>Matrix: Water</b>		<b>Batch: 7120925</b>			
Diesel	ND	0.109	0.217	mg/L	1	12/21/17 08:24	NWTPH-Dx	
Oil	ND	0.217	0.435	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 96 %</i>		<i>Limits: 50-150 %</i>		"	"
<b>GP13-S-2.5 (A7L0431-06RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120989</b>			
Diesel	ND	229	458	mg/kg dry	20	12/26/17 12:50	NWTPH-Dx	
<b>Oil</b>	<b>2370</b>	458	916	"	"	"	"	S-01
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: %</i>		<i>Limits: 50-150 %</i>		"	"
<b>GP13-S-7.5 (A7L0431-07)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120989</b>			
Diesel	ND	13.0	26.0	mg/kg dry	1	12/22/17 04:18	NWTPH-Dx	
<b>Oil</b>	<b>66.7</b>	26.0	51.9	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 93 %</i>		<i>Limits: 50-150 %</i>		"	"
<b>GP10-S-2.5 (A7L0431-09RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120989</b>			
Diesel	ND	117	235	mg/kg dry	10	12/26/17 11:06	NWTPH-Dx	
<b>Oil</b>	<b>1100</b>	235	470	"	"	"	"	S-05
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 95 %</i>		<i>Limits: 50-150 %</i>		"	"
<b>GP10-W-8.0 (A7L0431-10)</b>			<b>Matrix: Water</b>		<b>Batch: 7120879</b>			
<b>Diesel</b>	<b>2.51</b>	0.0980	0.196	mg/L	1	12/20/17 00:27	NWTPH-Dx	F-11, F-15
<b>Oil</b>	<b>1.95</b>	0.196	0.392	"	"	"	"	F-16

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

**Reported:**  
01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-W-8.0 (A7L0431-10)</b>			<b>Matrix: Water</b>		<b>Batch: 7120879</b>			
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 95 %</i>	<i>Limits: 50-150 %</i>	1	"	NWTPH-Dx	
<b>GP10-W-8.0-DUP (A7L0431-11)</b>			<b>Matrix: Water</b>		<b>Batch: 7120879</b>			
<b>Diesel</b>	<b>2.31</b>	0.0971	0.194	mg/L	1	12/20/17 00:50	NWTPH-Dx	F-11, F-15
<b>Oil</b>	<b>1.70</b>	0.194	0.388	"	"	"	"	F-16
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 96 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP05-S-7.5 (A7L0431-14)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120989</b>			
<b>Diesel</b>	<b>22.1</b>	14.3	28.7	mg/kg dry	1	12/22/17 05:20	NWTPH-Dx	J
<b>Oil</b>	<b>ND</b>	28.7	57.3	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 83 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP05-S-8.0 (A7L0431-15)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120989</b>			
<b>Diesel</b>	<b>5970</b>	607	1210	mg/kg dry	50	12/22/17 05:40	NWTPH-Dx	F-24, Q-42
<b>Oil</b>	<b>4080</b>	1210	2430	"	"	"	"	F-24, Q-42
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP15-S-3.0 (A7L0431-17)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120982</b>			
<b>Diesel</b>	<b>ND</b>	10.4	25.0	mg/kg dry	1	12/22/17 01:55	NWTPH-Dx	
<b>Oil</b>	<b>ND</b>	20.9	50.0	"	"	"	"	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 90 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP15-S-8.0 (A7L0431-19)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120982</b>			
<b>Diesel</b>	<b>303</b>	11.7	25.0	mg/kg dry	1	12/22/17 02:15	NWTPH-Dx	F-17
<b>Oil</b>	<b>42.1</b>	23.4	50.0	"	"	"	"	J
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 93 %</i>	<i>Limits: 50-150 %</i>	"	"	"	

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07


## ANALYTICAL SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP11-S-3.0 (A7L0431-01)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
Gasoline Range Organics	ND	3.78	7.56	mg/kg dry	50	12/18/17 14:20	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 99 %</i>	<i>Limits: 50-150 %</i>	1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>			<i>93 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP11-S-7.0 (A7L0431-02)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
Gasoline Range Organics	ND	2.94	5.89	mg/kg dry	50	12/18/17 15:14	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 99 %</i>	<i>Limits: 50-150 %</i>	1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>			<i>94 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP14-S-3.0 (A7L0431-03)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
Gasoline Range Organics	ND	3.21	6.42	mg/kg dry	50	12/18/17 15:41	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 98 %</i>	<i>Limits: 50-150 %</i>	1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>			<i>93 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP14-S-8.0 (A7L0431-04)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
Gasoline Range Organics	ND	3.30	6.59	mg/kg dry	50	12/18/17 16:08	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 100 %</i>	<i>Limits: 50-150 %</i>	1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>			<i>94 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP14-W-10.0 (A7L0431-05)</b>			<b>Matrix: Water</b>		<b>Batch: 7120802</b>			
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	12/18/17 17:38	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 99 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<i>1,4-Difluorobenzene (Sur)</i>			<i>98 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP13-S-2.5 (A7L0431-06RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
Gasoline Range Organics	ND	3.29	6.57	mg/kg dry	50	12/18/17 20:11	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 99 %</i>	<i>Limits: 50-150 %</i>	1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>			<i>94 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP13-S-7.5 (A7L0431-07)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120807</b>			
Gasoline Range Organics	ND	6.67	6.67	mg/kg dry	50	12/18/17 17:33	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 111 %</i>	<i>Limits: 50-150 %</i>	1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>			<i>88 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP10-S-2.5 (A7L0431-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120807</b>			
Gasoline Range Organics	ND	5.93	5.93	mg/kg dry	50	12/18/17 18:00	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 110 %</i>	<i>Limits: 50-150 %</i>	1	"	"	
<i>1,4-Difluorobenzene (Sur)</i>			<i>88 %</i>	<i>Limits: 50-150 %</i>	"	"	"	
<b>GP10-W-8.0 (A7L0431-10)</b>			<b>Matrix: Water</b>		<b>Batch: 7120802</b>			
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	12/18/17 18:06	NWTPH-Gx (MS)	
<i>Surrogate: 4-Bromofluorobenzene (Sur)</i>			<i>Recovery: 102 %</i>	<i>Limits: 50-150 %</i>	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-W-8.0 (A7L0431-10)</b>			<b>Matrix: Water</b>		<b>Batch: 7120802</b>			
Surrogate: 1,4-Difluorobenzene (Sur)			Recovery: 100 %	Limits: 50-150 %	1	"	NWTPH-Gx (MS)	
<b>GP10-W-8.0-DUP (A7L0431-11)</b>			<b>Matrix: Water</b>		<b>Batch: 7120802</b>			
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	12/18/17 19:03	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 100 %	Limits: 50-150 %	"	"	"	
1,4-Difluorobenzene (Sur)			99 %	Limits: 50-150 %	"	"	"	
<b>GP05-S-7.5 (A7L0431-14)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120807</b>			
Gasoline Range Organics	ND	10.7	10.7	mg/kg dry	50	12/18/17 18:54	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 110 %	Limits: 50-150 %	1	"	"	
1,4-Difluorobenzene (Sur)			88 %	Limits: 50-150 %	"	"	"	
<b>GP05-S-8.0 (A7L0431-15RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120841</b>			
Gasoline Range Organics	187	3.04	6.09	mg/kg dry	50	12/19/17 01:10	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 137 %	Limits: 50-150 %	1	"	"	
1,4-Difluorobenzene (Sur)			103 %	Limits: 50-150 %	"	"	"	
<b>GP15-S-3.0 (A7L0431-17)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
Gasoline Range Organics	ND	2.92	5.84	mg/kg dry	50	12/18/17 17:02	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 97 %	Limits: 50-150 %	1	"	"	
1,4-Difluorobenzene (Sur)			94 %	Limits: 50-150 %	"	"	"	
<b>GP15-S-8.0 (A7L0431-19)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
Gasoline Range Organics	5.19	3.16	6.33	mg/kg dry	50	12/18/17 17:29	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			Recovery: 97 %	Limits: 50-150 %	1	"	"	
1,4-Difluorobenzene (Sur)			94 %	Limits: 50-150 %	"	"	"	

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP11-S-3.0 (A7L0431-01)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
Acetone	ND	756	1510	ug/kg dry	50	12/18/17 14:20	5035A/8260C	
Acrylonitrile	ND	75.6	151	"	"	"	"	
Benzene	ND	7.56	15.1	"	"	"	"	
Bromobenzene	ND	18.9	37.8	"	"	"	"	
Bromochloromethane	ND	37.8	75.6	"	"	"	"	
Bromodichloromethane	ND	37.8	75.6	"	"	"	"	
Bromoform	ND	75.6	151	"	"	"	"	
Bromomethane	ND	756	756	"	"	"	"	
2-Butanone (MEK)	ND	378	756	"	"	"	"	
n-Butylbenzene	ND	37.8	75.6	"	"	"	"	
sec-Butylbenzene	ND	37.8	75.6	"	"	"	"	
tert-Butylbenzene	ND	37.8	75.6	"	"	"	"	
Carbon disulfide	ND	378	756	"	"	"	"	
Carbon tetrachloride	ND	37.8	75.6	"	"	"	"	
Chlorobenzene	ND	18.9	37.8	"	"	"	"	
Chloroethane	ND	378	756	"	"	"	"	EST
Chloroform	ND	37.8	75.6	"	"	"	"	
Chloromethane	ND	189	378	"	"	"	"	
2-Chlorotoluene	ND	37.8	75.6	"	"	"	"	
4-Chlorotoluene	ND	37.8	75.6	"	"	"	"	
Dibromochloromethane	ND	75.6	151	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	189	378	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	37.8	75.6	"	"	"	"	
Dibromomethane	ND	37.8	75.6	"	"	"	"	
1,2-Dichlorobenzene	ND	18.9	37.8	"	"	"	"	
1,3-Dichlorobenzene	ND	18.9	37.8	"	"	"	"	
1,4-Dichlorobenzene	ND	18.9	37.8	"	"	"	"	
Dichlorodifluoromethane	ND	75.6	151	"	"	"	"	
1,1-Dichloroethane	ND	18.9	37.8	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	18.9	37.8	"	"	"	"	
1,1-Dichloroethene	ND	18.9	37.8	"	"	"	"	
cis-1,2-Dichloroethene	ND	18.9	37.8	"	"	"	"	
trans-1,2-Dichloroethene	ND	18.9	37.8	"	"	"	"	
1,2-Dichloropropane	ND	18.9	37.8	"	"	"	"	
1,3-Dichloropropane	ND	37.8	75.6	"	"	"	"	
2,2-Dichloropropane	ND	37.8	75.6	"	"	"	"	
1,1-Dichloropropene	ND	37.8	75.6	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP11-S-3.0 (A7L0431-01)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
cis-1,3-Dichloropropene	ND	37.8	75.6	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	37.8	75.6	"	"	"	"	
Ethylbenzene	ND	18.9	37.8	"	"	"	"	
Hexachlorobutadiene	ND	75.6	151	"	"	"	"	
2-Hexanone	ND	378	756	"	"	"	"	
Isopropylbenzene	ND	37.8	75.6	"	"	"	"	
4-Isopropyltoluene	ND	37.8	75.6	"	"	"	"	
Methylene chloride	ND	189	378	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	378	756	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	37.8	75.6	"	"	"	"	
Naphthalene	ND	75.6	151	"	"	"	"	
n-Propylbenzene	ND	18.9	37.8	"	"	"	"	
Styrene	ND	37.8	75.6	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	18.9	37.8	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	37.8	75.6	"	"	"	"	
Tetrachloroethene (PCE)	ND	18.9	37.8	"	"	"	"	
Toluene	ND	37.8	75.6	"	"	"	"	
1,2,3-Trichlorobenzene	ND	189	378	"	"	"	"	
1,2,4-Trichlorobenzene	ND	189	378	"	"	"	"	
1,1,1-Trichloroethane	ND	18.9	37.8	"	"	"	"	
1,1,2-Trichloroethane	ND	18.9	37.8	"	"	"	"	
Trichloroethene (TCE)	ND	18.9	37.8	"	"	"	"	
Trichlorofluoromethane	ND	75.6	151	"	"	"	"	EST
1,2,3-Trichloropropane	ND	37.8	75.6	"	"	"	"	
1,2,4-Trimethylbenzene	ND	37.8	75.6	"	"	"	"	
1,3,5-Trimethylbenzene	ND	37.8	75.6	"	"	"	"	
Vinyl chloride	ND	18.9	37.8	"	"	"	"	
m,p-Xylene	ND	37.8	75.6	"	"	"	"	
o-Xylene	ND	18.9	37.8	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP11-S-7.0 (A7L0431-02)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
Acetone	ND	589	1180	ug/kg dry	50	12/18/17 15:14	5035A/8260C	
Acrylonitrile	ND	58.9	118	"	"	"	"	
Benzene	ND	5.89	11.8	"	"	"	"	
Bromobenzene	ND	14.7	29.4	"	"	"	"	
Bromochloromethane	ND	29.4	58.9	"	"	"	"	
Bromodichloromethane	ND	29.4	58.9	"	"	"	"	
Bromoform	ND	58.9	118	"	"	"	"	
Bromomethane	ND	589	589	"	"	"	"	
2-Butanone (MEK)	ND	294	589	"	"	"	"	
n-Butylbenzene	ND	29.4	58.9	"	"	"	"	
sec-Butylbenzene	ND	29.4	58.9	"	"	"	"	
tert-Butylbenzene	ND	29.4	58.9	"	"	"	"	
Carbon disulfide	ND	294	589	"	"	"	"	
Carbon tetrachloride	ND	29.4	58.9	"	"	"	"	
Chlorobenzene	ND	14.7	29.4	"	"	"	"	
Chloroethane	ND	294	589	"	"	"	"	EST
Chloroform	ND	29.4	58.9	"	"	"	"	
Chloromethane	ND	147	294	"	"	"	"	
2-Chlorotoluene	ND	29.4	58.9	"	"	"	"	
4-Chlorotoluene	ND	29.4	58.9	"	"	"	"	
Dibromochloromethane	ND	58.9	118	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	147	294	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	29.4	58.9	"	"	"	"	
Dibromomethane	ND	29.4	58.9	"	"	"	"	
1,2-Dichlorobenzene	ND	14.7	29.4	"	"	"	"	
1,3-Dichlorobenzene	ND	14.7	29.4	"	"	"	"	
1,4-Dichlorobenzene	ND	14.7	29.4	"	"	"	"	
Dichlorodifluoromethane	ND	58.9	118	"	"	"	"	
1,1-Dichloroethane	ND	14.7	29.4	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	14.7	29.4	"	"	"	"	
1,1-Dichloroethene	ND	14.7	29.4	"	"	"	"	
cis-1,2-Dichloroethene	ND	14.7	29.4	"	"	"	"	
trans-1,2-Dichloroethene	ND	14.7	29.4	"	"	"	"	
1,2-Dichloropropane	ND	14.7	29.4	"	"	"	"	
1,3-Dichloropropane	ND	29.4	58.9	"	"	"	"	
2,2-Dichloropropane	ND	29.4	58.9	"	"	"	"	
1,1-Dichloropropene	ND	29.4	58.9	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP11-S-7.0 (A7L0431-02)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
cis-1,3-Dichloropropene	ND	29.4	58.9	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	29.4	58.9	"	"	"	"	
Ethylbenzene	ND	14.7	29.4	"	"	"	"	
Hexachlorobutadiene	ND	58.9	118	"	"	"	"	
2-Hexanone	ND	294	589	"	"	"	"	
Isopropylbenzene	ND	29.4	58.9	"	"	"	"	
4-Isopropyltoluene	ND	29.4	58.9	"	"	"	"	
Methylene chloride	ND	147	294	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	294	589	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	29.4	58.9	"	"	"	"	
Naphthalene	ND	58.9	118	"	"	"	"	
n-Propylbenzene	ND	14.7	29.4	"	"	"	"	
Styrene	ND	29.4	58.9	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	14.7	29.4	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	29.4	58.9	"	"	"	"	
Tetrachloroethene (PCE)	ND	14.7	29.4	"	"	"	"	
Toluene	ND	29.4	58.9	"	"	"	"	
1,2,3-Trichlorobenzene	ND	147	294	"	"	"	"	
1,2,4-Trichlorobenzene	ND	147	294	"	"	"	"	
1,1,1-Trichloroethane	ND	14.7	29.4	"	"	"	"	
1,1,2-Trichloroethane	ND	14.7	29.4	"	"	"	"	
Trichloroethene (TCE)	ND	14.7	29.4	"	"	"	"	
Trichlorofluoromethane	ND	58.9	118	"	"	"	"	EST
1,2,3-Trichloropropane	ND	29.4	58.9	"	"	"	"	
1,2,4-Trimethylbenzene	ND	29.4	58.9	"	"	"	"	
1,3,5-Trimethylbenzene	ND	29.4	58.9	"	"	"	"	
Vinyl chloride	ND	14.7	29.4	"	"	"	"	
m,p-Xylene	ND	29.4	58.9	"	"	"	"	
o-Xylene	ND	14.7	29.4	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-S-2.5 (A7L0431-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120807</b>			
Acetone	ND	593	1190	ug/kg dry	50	12/18/17 18:00	5035A/8260C	
Acrylonitrile	ND	59.3	119	"	"	"	"	
Benzene	ND	5.93	11.9	"	"	"	"	
Bromobenzene	ND	14.8	29.7	"	"	"	"	
Bromochloromethane	ND	29.7	59.3	"	"	"	"	
Bromodichloromethane	ND	29.7	59.3	"	"	"	"	
Bromoform	ND	59.3	119	"	"	"	"	
Bromomethane	ND	593	593	"	"	"	"	
2-Butanone (MEK)	ND	297	593	"	"	"	"	
n-Butylbenzene	ND	29.7	59.3	"	"	"	"	
sec-Butylbenzene	ND	29.7	59.3	"	"	"	"	
tert-Butylbenzene	ND	29.7	59.3	"	"	"	"	
Carbon disulfide	ND	297	593	"	"	"	"	
Carbon tetrachloride	ND	29.7	59.3	"	"	"	"	
Chlorobenzene	ND	14.8	29.7	"	"	"	"	
Chloroethane	ND	297	593	"	"	"	"	
Chloroform	ND	29.7	59.3	"	"	"	"	
Chloromethane	ND	148	297	"	"	"	"	
2-Chlorotoluene	ND	29.7	59.3	"	"	"	"	
4-Chlorotoluene	ND	29.7	59.3	"	"	"	"	
Dibromochloromethane	ND	59.3	119	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	148	297	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	29.7	59.3	"	"	"	"	
Dibromomethane	ND	29.7	59.3	"	"	"	"	
1,2-Dichlorobenzene	ND	14.8	29.7	"	"	"	"	
1,3-Dichlorobenzene	ND	14.8	29.7	"	"	"	"	
1,4-Dichlorobenzene	ND	14.8	29.7	"	"	"	"	
Dichlorodifluoromethane	ND	59.3	119	"	"	"	"	
1,1-Dichloroethane	ND	14.8	29.7	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	14.8	29.7	"	"	"	"	
1,1-Dichloroethene	ND	14.8	29.7	"	"	"	"	
cis-1,2-Dichloroethene	ND	14.8	29.7	"	"	"	"	
trans-1,2-Dichloroethene	ND	14.8	29.7	"	"	"	"	
1,2-Dichloropropane	ND	14.8	29.7	"	"	"	"	
1,3-Dichloropropane	ND	29.7	59.3	"	"	"	"	
2,2-Dichloropropane	ND	29.7	59.3	"	"	"	"	
1,1-Dichloropropene	ND	29.7	59.3	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209


Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-S-2.5 (A7L0431-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120807</b>			
cis-1,3-Dichloropropene	ND	29.7	59.3	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	29.7	59.3	"	"	"	"	
Ethylbenzene	ND	14.8	29.7	"	"	"	"	
Hexachlorobutadiene	ND	59.3	119	"	"	"	"	
2-Hexanone	ND	297	593	"	"	"	"	
Isopropylbenzene	ND	29.7	59.3	"	"	"	"	
4-Isopropyltoluene	ND	29.7	59.3	"	"	"	"	
Methylene chloride	ND	148	297	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	297	593	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	29.7	59.3	"	"	"	"	
Naphthalene	ND	59.3	119	"	"	"	"	
n-Propylbenzene	ND	14.8	29.7	"	"	"	"	
Styrene	ND	29.7	59.3	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	14.8	29.7	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	29.7	59.3	"	"	"	"	
<b>Tetrachloroethene (PCE)</b>	<b>17.8</b>	14.8	29.7	"	"	"	"	J
Toluene	ND	29.7	59.3	"	"	"	"	
1,2,3-Trichlorobenzene	ND	148	297	"	"	"	"	
1,2,4-Trichlorobenzene	ND	148	297	"	"	"	"	
1,1,1-Trichloroethane	ND	14.8	29.7	"	"	"	"	
1,1,2-Trichloroethane	ND	14.8	29.7	"	"	"	"	
Trichloroethene (TCE)	ND	14.8	29.7	"	"	"	"	
Trichlorofluoromethane	ND	59.3	119	"	"	"	"	
1,2,3-Trichloropropane	ND	29.7	59.3	"	"	"	"	
1,2,4-Trimethylbenzene	ND	29.7	59.3	"	"	"	"	
1,3,5-Trimethylbenzene	ND	29.7	59.3	"	"	"	"	
Vinyl chloride	ND	14.8	29.7	"	"	"	"	
m,p-Xylene	ND	29.7	59.3	"	"	"	"	
o-Xylene	ND	14.8	29.7	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 99 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>Limits: 80-120 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP05-S-7.5 (A7L0431-14)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120807</b>			
Acetone	ND	1070	2130	ug/kg dry	50	12/18/17 18:54	5035A/8260C	
Acrylonitrile	ND	107	213	"	"	"	"	
Benzene	ND	10.7	21.3	"	"	"	"	
Bromobenzene	ND	26.7	53.3	"	"	"	"	
Bromochloromethane	ND	53.3	107	"	"	"	"	
Bromodichloromethane	ND	53.3	107	"	"	"	"	
Bromoform	ND	107	213	"	"	"	"	
Bromomethane	ND	1070	1070	"	"	"	"	
2-Butanone (MEK)	ND	533	1070	"	"	"	"	
n-Butylbenzene	ND	53.3	107	"	"	"	"	
sec-Butylbenzene	ND	53.3	107	"	"	"	"	
tert-Butylbenzene	ND	53.3	107	"	"	"	"	
Carbon disulfide	ND	533	1070	"	"	"	"	
Carbon tetrachloride	ND	53.3	107	"	"	"	"	
Chlorobenzene	ND	26.7	53.3	"	"	"	"	
Chloroethane	ND	533	1070	"	"	"	"	
Chloroform	ND	53.3	107	"	"	"	"	
Chloromethane	ND	267	533	"	"	"	"	
2-Chlorotoluene	ND	53.3	107	"	"	"	"	
4-Chlorotoluene	ND	53.3	107	"	"	"	"	
Dibromochloromethane	ND	107	213	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	267	533	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	53.3	107	"	"	"	"	
Dibromomethane	ND	53.3	107	"	"	"	"	
1,2-Dichlorobenzene	ND	26.7	53.3	"	"	"	"	
1,3-Dichlorobenzene	ND	26.7	53.3	"	"	"	"	
1,4-Dichlorobenzene	ND	26.7	53.3	"	"	"	"	
Dichlorodifluoromethane	ND	107	213	"	"	"	"	
1,1-Dichloroethane	ND	26.7	53.3	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	26.7	53.3	"	"	"	"	
1,1-Dichloroethene	ND	26.7	53.3	"	"	"	"	
cis-1,2-Dichloroethene	ND	26.7	53.3	"	"	"	"	
trans-1,2-Dichloroethene	ND	26.7	53.3	"	"	"	"	
1,2-Dichloropropane	ND	26.7	53.3	"	"	"	"	
1,3-Dichloropropane	ND	53.3	107	"	"	"	"	
2,2-Dichloropropane	ND	53.3	107	"	"	"	"	
1,1-Dichloropropene	ND	53.3	107	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP05-S-7.5 (A7L0431-14)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120807</b>			
cis-1,3-Dichloropropene	ND	53.3	107	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	53.3	107	"	"	"	"	
Ethylbenzene	ND	26.7	53.3	"	"	"	"	
Hexachlorobutadiene	ND	107	213	"	"	"	"	
2-Hexanone	ND	533	1070	"	"	"	"	
Isopropylbenzene	ND	53.3	107	"	"	"	"	
4-Isopropyltoluene	ND	53.3	107	"	"	"	"	
Methylene chloride	ND	267	533	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	533	1070	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	53.3	107	"	"	"	"	
Naphthalene	ND	107	213	"	"	"	"	
n-Propylbenzene	ND	26.7	53.3	"	"	"	"	
Styrene	ND	53.3	107	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	26.7	53.3	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	53.3	107	"	"	"	"	
Tetrachloroethene (PCE)	ND	26.7	53.3	"	"	"	"	
Toluene	ND	53.3	107	"	"	"	"	
1,2,3-Trichlorobenzene	ND	267	533	"	"	"	"	
1,2,4-Trichlorobenzene	ND	267	533	"	"	"	"	
1,1,1-Trichloroethane	ND	26.7	53.3	"	"	"	"	
1,1,2-Trichloroethane	ND	26.7	53.3	"	"	"	"	
Trichloroethene (TCE)	ND	26.7	53.3	"	"	"	"	
Trichlorofluoromethane	ND	107	213	"	"	"	"	
1,2,3-Trichloropropane	ND	53.3	107	"	"	"	"	
1,2,4-Trimethylbenzene	ND	53.3	107	"	"	"	"	
1,3,5-Trimethylbenzene	ND	53.3	107	"	"	"	"	
Vinyl chloride	ND	26.7	53.3	"	"	"	"	
m,p-Xylene	ND	53.3	107	"	"	"	"	
o-Xylene	ND	26.7	53.3	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 99 %</i>	<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>			<i>92 %</i>	<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>			<i>101 %</i>	<i>Limits: 80-120 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP05-S-8.0 (A7L0431-15RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120841</b>			
Acetone	ND	609	1220	ug/kg dry	50	12/19/17 01:10	5035A/8260C	
Acrylonitrile	ND	60.9	122	"	"	"	"	
Benzene	ND	6.09	12.2	"	"	"	"	
Bromobenzene	ND	15.2	30.4	"	"	"	"	
Bromochloromethane	ND	30.4	60.9	"	"	"	"	
Bromodichloromethane	ND	30.4	60.9	"	"	"	"	
Bromoform	ND	60.9	122	"	"	"	"	
Bromomethane	ND	609	609	"	"	"	"	
2-Butanone (MEK)	ND	304	609	"	"	"	"	
<b>n-Butylbenzene</b>	<b>135</b>	30.4	60.9	"	"	"	"	
<b>sec-Butylbenzene</b>	<b>125</b>	30.4	60.9	"	"	"	"	
tert-Butylbenzene	ND	60.9	60.9	"	"	"	"	
Carbon disulfide	ND	304	609	"	"	"	"	
Carbon tetrachloride	ND	30.4	60.9	"	"	"	"	
Chlorobenzene	ND	15.2	30.4	"	"	"	"	
Chloroethane	ND	304	609	"	"	"	"	EST
Chloroform	ND	30.4	60.9	"	"	"	"	
Chloromethane	ND	152	304	"	"	"	"	
2-Chlorotoluene	ND	30.4	60.9	"	"	"	"	
4-Chlorotoluene	ND	30.4	60.9	"	"	"	"	
Dibromochloromethane	ND	60.9	122	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	152	304	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	60.9	60.9	"	"	"	"	
Dibromomethane	ND	30.4	60.9	"	"	"	"	
1,2-Dichlorobenzene	ND	15.2	30.4	"	"	"	"	
1,3-Dichlorobenzene	ND	15.2	30.4	"	"	"	"	
1,4-Dichlorobenzene	ND	15.2	30.4	"	"	"	"	
Dichlorodifluoromethane	ND	60.9	122	"	"	"	"	
1,1-Dichloroethane	ND	15.2	30.4	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	15.2	30.4	"	"	"	"	
1,1-Dichloroethene	ND	15.2	30.4	"	"	"	"	
cis-1,2-Dichloroethene	ND	15.2	30.4	"	"	"	"	
trans-1,2-Dichloroethene	ND	15.2	30.4	"	"	"	"	
1,2-Dichloropropane	ND	15.2	30.4	"	"	"	"	
1,3-Dichloropropane	ND	30.4	60.9	"	"	"	"	
2,2-Dichloropropane	ND	30.4	60.9	"	"	"	"	
1,1-Dichloropropene	ND	30.4	60.9	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP05-S-8.0 (A7L0431-15RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120841</b>			
cis-1,3-Dichloropropene	ND	30.4	60.9	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	30.4	60.9	"	"	"	"	
Ethylbenzene	ND	15.2	30.4	"	"	"	"	
Hexachlorobutadiene	ND	60.9	122	"	"	"	"	
2-Hexanone	ND	304	609	"	"	"	"	
Isopropylbenzene	ND	30.4	60.9	"	"	"	"	
4-Isopropyltoluene	ND	30.4	60.9	"	"	"	"	
Methylene chloride	ND	152	304	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	304	609	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	30.4	60.9	"	"	"	"	
Naphthalene	ND	365	365	"	"	"	"	R-02
n-Propylbenzene	ND	15.2	30.4	"	"	"	"	
Styrene	ND	30.4	60.9	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	15.2	30.4	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	183	183	"	"	"	"	R-02
Tetrachloroethene (PCE)	ND	15.2	30.4	"	"	"	"	
Toluene	ND	30.4	60.9	"	"	"	"	
1,2,3-Trichlorobenzene	ND	152	304	"	"	"	"	
1,2,4-Trichlorobenzene	ND	152	304	"	"	"	"	
1,1,1-Trichloroethane	ND	15.2	30.4	"	"	"	"	
1,1,2-Trichloroethane	ND	15.2	30.4	"	"	"	"	
Trichloroethene (TCE)	ND	15.2	30.4	"	"	"	"	
Trichlorofluoromethane	ND	60.9	122	"	"	"	"	EST
1,2,3-Trichloropropane	ND	30.4	60.9	"	"	"	"	
1,2,4-Trimethylbenzene	ND	30.4	60.9	"	"	"	"	
1,3,5-Trimethylbenzene	ND	30.4	60.9	"	"	"	"	
Vinyl chloride	ND	15.2	30.4	"	"	"	"	
m,p-Xylene	ND	30.4	60.9	"	"	"	"	
o-Xylene	ND	30.4	30.4	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 102 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>97 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>103 %</i>		<i>Limits: 80-120 %</i>	"	"	"	





**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP15-S-3.0 (A7L0431-17)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
Acetone	ND	584	1170	ug/kg dry	50	12/18/17 17:02	5035A/8260C	
Acrylonitrile	ND	58.4	117	"	"	"	"	
Benzene	ND	5.84	11.7	"	"	"	"	
Bromobenzene	ND	14.6	29.2	"	"	"	"	
Bromochloromethane	ND	29.2	58.4	"	"	"	"	
Bromodichloromethane	ND	29.2	58.4	"	"	"	"	
Bromoform	ND	58.4	117	"	"	"	"	
Bromomethane	ND	584	584	"	"	"	"	
2-Butanone (MEK)	ND	292	584	"	"	"	"	
n-Butylbenzene	ND	29.2	58.4	"	"	"	"	
sec-Butylbenzene	ND	29.2	58.4	"	"	"	"	
tert-Butylbenzene	ND	29.2	58.4	"	"	"	"	
Carbon disulfide	ND	292	584	"	"	"	"	
Carbon tetrachloride	ND	29.2	58.4	"	"	"	"	
Chlorobenzene	ND	14.6	29.2	"	"	"	"	
Chloroethane	ND	292	584	"	"	"	"	EST
Chloroform	ND	29.2	58.4	"	"	"	"	
Chloromethane	ND	146	292	"	"	"	"	
2-Chlorotoluene	ND	29.2	58.4	"	"	"	"	
4-Chlorotoluene	ND	29.2	58.4	"	"	"	"	
Dibromochloromethane	ND	58.4	117	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	146	292	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	29.2	58.4	"	"	"	"	
Dibromomethane	ND	29.2	58.4	"	"	"	"	
1,2-Dichlorobenzene	ND	14.6	29.2	"	"	"	"	
1,3-Dichlorobenzene	ND	14.6	29.2	"	"	"	"	
1,4-Dichlorobenzene	ND	14.6	29.2	"	"	"	"	
Dichlorodifluoromethane	ND	58.4	117	"	"	"	"	
1,1-Dichloroethane	ND	14.6	29.2	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	14.6	29.2	"	"	"	"	
1,1-Dichloroethene	ND	14.6	29.2	"	"	"	"	
cis-1,2-Dichloroethene	ND	14.6	29.2	"	"	"	"	
trans-1,2-Dichloroethene	ND	14.6	29.2	"	"	"	"	
1,2-Dichloropropane	ND	14.6	29.2	"	"	"	"	
1,3-Dichloropropane	ND	29.2	58.4	"	"	"	"	
2,2-Dichloropropane	ND	29.2	58.4	"	"	"	"	
1,1-Dichloropropene	ND	29.2	58.4	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP15-S-3.0 (A7L0431-17)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
cis-1,3-Dichloropropene	ND	29.2	58.4	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	29.2	58.4	"	"	"	"	
Ethylbenzene	ND	14.6	29.2	"	"	"	"	
Hexachlorobutadiene	ND	58.4	117	"	"	"	"	
2-Hexanone	ND	292	584	"	"	"	"	
Isopropylbenzene	ND	29.2	58.4	"	"	"	"	
4-Isopropyltoluene	ND	29.2	58.4	"	"	"	"	
Methylene chloride	ND	146	292	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	292	584	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	29.2	58.4	"	"	"	"	
Naphthalene	ND	58.4	117	"	"	"	"	
n-Propylbenzene	ND	14.6	29.2	"	"	"	"	
Styrene	ND	29.2	58.4	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	14.6	29.2	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	29.2	58.4	"	"	"	"	
Tetrachloroethene (PCE)	ND	14.6	29.2	"	"	"	"	
Toluene	ND	29.2	58.4	"	"	"	"	
1,2,3-Trichlorobenzene	ND	146	292	"	"	"	"	
1,2,4-Trichlorobenzene	ND	146	292	"	"	"	"	
1,1,1-Trichloroethane	ND	14.6	29.2	"	"	"	"	
1,1,2-Trichloroethane	ND	14.6	29.2	"	"	"	"	
Trichloroethene (TCE)	ND	14.6	29.2	"	"	"	"	
Trichlorofluoromethane	ND	58.4	117	"	"	"	"	EST
1,2,3-Trichloropropane	ND	29.2	58.4	"	"	"	"	
1,2,4-Trimethylbenzene	ND	29.2	58.4	"	"	"	"	
1,3,5-Trimethylbenzene	ND	29.2	58.4	"	"	"	"	
Vinyl chloride	ND	14.6	29.2	"	"	"	"	
m,p-Xylene	ND	29.2	58.4	"	"	"	"	
o-Xylene	ND	14.6	29.2	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>99 %</i>		<i>Limits: 80-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea


Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP15-S-8.0 (A7L0431-19)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
Acetone	ND	633	1270	ug/kg dry	50	12/18/17 17:29	5035A/8260C	
Acrylonitrile	ND	63.3	127	"	"	"	"	
Benzene	ND	6.33	12.7	"	"	"	"	
Bromobenzene	ND	15.8	31.6	"	"	"	"	
Bromochloromethane	ND	31.6	63.3	"	"	"	"	
Bromodichloromethane	ND	31.6	63.3	"	"	"	"	
Bromoform	ND	63.3	127	"	"	"	"	
Bromomethane	ND	633	633	"	"	"	"	
2-Butanone (MEK)	ND	316	633	"	"	"	"	
n-Butylbenzene	ND	31.6	63.3	"	"	"	"	
sec-Butylbenzene	ND	31.6	63.3	"	"	"	"	
tert-Butylbenzene	ND	31.6	63.3	"	"	"	"	
Carbon disulfide	ND	316	633	"	"	"	"	
Carbon tetrachloride	ND	31.6	63.3	"	"	"	"	
Chlorobenzene	ND	15.8	31.6	"	"	"	"	
Chloroethane	ND	316	633	"	"	"	"	EST
Chloroform	ND	31.6	63.3	"	"	"	"	
Chloromethane	ND	158	316	"	"	"	"	
2-Chlorotoluene	ND	31.6	63.3	"	"	"	"	
4-Chlorotoluene	ND	31.6	63.3	"	"	"	"	
Dibromochloromethane	ND	63.3	127	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	158	316	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	31.6	63.3	"	"	"	"	
Dibromomethane	ND	31.6	63.3	"	"	"	"	
1,2-Dichlorobenzene	ND	15.8	31.6	"	"	"	"	
1,3-Dichlorobenzene	ND	15.8	31.6	"	"	"	"	
1,4-Dichlorobenzene	ND	15.8	31.6	"	"	"	"	
Dichlorodifluoromethane	ND	63.3	127	"	"	"	"	
1,1-Dichloroethane	ND	15.8	31.6	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	15.8	31.6	"	"	"	"	
1,1-Dichloroethene	ND	15.8	31.6	"	"	"	"	
cis-1,2-Dichloroethene	ND	15.8	31.6	"	"	"	"	
trans-1,2-Dichloroethene	ND	15.8	31.6	"	"	"	"	
1,2-Dichloropropane	ND	15.8	31.6	"	"	"	"	
1,3-Dichloropropane	ND	31.6	63.3	"	"	"	"	
2,2-Dichloropropane	ND	31.6	63.3	"	"	"	"	
1,1-Dichloropropene	ND	31.6	63.3	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP15-S-8.0 (A7L0431-19)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120806</b>			
cis-1,3-Dichloropropene	ND	31.6	63.3	ug/kg dry	50	"	5035A/8260C	
trans-1,3-Dichloropropene	ND	31.6	63.3	"	"	"	"	
Ethylbenzene	ND	15.8	31.6	"	"	"	"	
Hexachlorobutadiene	ND	63.3	127	"	"	"	"	
2-Hexanone	ND	316	633	"	"	"	"	
Isopropylbenzene	ND	31.6	63.3	"	"	"	"	
4-Isopropyltoluene	ND	31.6	63.3	"	"	"	"	
Methylene chloride	ND	158	316	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	316	633	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	31.6	63.3	"	"	"	"	
<b>Naphthalene</b>	<b>1310</b>	63.3	127	"	"	"	"	
n-Propylbenzene	ND	15.8	31.6	"	"	"	"	
Styrene	ND	31.6	63.3	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	15.8	31.6	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	31.6	63.3	"	"	"	"	
Tetrachloroethene (PCE)	ND	15.8	31.6	"	"	"	"	
Toluene	ND	31.6	63.3	"	"	"	"	
1,2,3-Trichlorobenzene	ND	158	316	"	"	"	"	
1,2,4-Trichlorobenzene	ND	158	316	"	"	"	"	
1,1,1-Trichloroethane	ND	15.8	31.6	"	"	"	"	
1,1,2-Trichloroethane	ND	15.8	31.6	"	"	"	"	
Trichloroethene (TCE)	ND	15.8	31.6	"	"	"	"	
Trichlorofluoromethane	ND	63.3	127	"	"	"	"	EST
1,2,3-Trichloropropane	ND	31.6	63.3	"	"	"	"	
1,2,4-Trimethylbenzene	ND	31.6	63.3	"	"	"	"	
1,3,5-Trimethylbenzene	ND	31.6	63.3	"	"	"	"	
Vinyl chloride	ND	15.8	31.6	"	"	"	"	
m,p-Xylene	ND	31.6	63.3	"	"	"	"	
o-Xylene	ND	15.8	31.6	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 80-120 %</i>	1	"	"	
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>	"	"	"	
<i>4-Bromofluorobenzene (Surr)</i>		<i>98 %</i>		<i>Limits: 80-120 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-W-8.0 (A7L0431-10)</b>			<b>Matrix: Water</b>		<b>Batch: 7120802</b>			
Acetone	ND	10.0	20.0	ug/L	1	12/18/17 18:06	EPA 8260C	
Acrylonitrile	ND	1.00	2.00	"	"	"	"	
Benzene	ND	0.100	0.200	"	"	"	"	
Bromobenzene	ND	0.250	0.500	"	"	"	"	
Bromochloromethane	ND	0.500	1.00	"	"	"	"	
Bromodichloromethane	ND	0.500	1.00	"	"	"	"	
Bromoform	ND	0.500	1.00	"	"	"	"	
Bromomethane	ND	5.00	5.00	"	"	"	"	
2-Butanone (MEK)	ND	5.00	10.0	"	"	"	"	
n-Butylbenzene	ND	0.500	1.00	"	"	"	"	
sec-Butylbenzene	ND	0.500	1.00	"	"	"	"	
tert-Butylbenzene	ND	0.500	1.00	"	"	"	"	
Carbon disulfide	ND	5.00	10.0	"	"	"	"	
Carbon tetrachloride	ND	0.500	1.00	"	"	"	"	
Chlorobenzene	ND	0.250	0.500	"	"	"	"	
Chloroethane	ND	5.00	5.00	"	"	"	"	
Chloroform	ND	0.500	1.00	"	"	"	"	
Chloromethane	ND	2.50	5.00	"	"	"	"	
2-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
4-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
Dibromochloromethane	ND	0.500	1.00	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	"	"	
Dibromomethane	ND	0.500	1.00	"	"	"	"	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloroethane	ND	0.200	0.400	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	"	"	
1,1-Dichloroethene	ND	0.200	0.400	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
1,2-Dichloropropane	ND	0.250	0.500	"	"	"	"	
1,3-Dichloropropane	ND	0.500	1.00	"	"	"	"	
2,2-Dichloropropane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloropropene	ND	0.500	1.00	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea


Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-W-8.0 (A7L0431-10)</b>			<b>Matrix: Water</b>		<b>Batch: 7120802</b>			
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	"	EPA 8260C	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
Ethylbenzene	ND	0.250	0.500	"	"	"	"	
Hexachlorobutadiene	ND	2.50	5.00	"	"	"	"	
2-Hexanone	ND	5.00	10.0	"	"	"	"	
Isopropylbenzene	ND	0.500	1.00	"	"	"	"	
4-Isopropyltoluene	ND	0.500	1.00	"	"	"	"	
Methylene chloride	ND	1.50	3.00	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	"	"	
Naphthalene	ND	1.00	2.00	"	"	"	"	
n-Propylbenzene	ND	0.250	0.500	"	"	"	"	
Styrene	ND	0.500	1.00	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	"	"	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	"	"	
Toluene	ND	0.500	1.00	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Trichlorofluoromethane	ND	1.00	2.00	"	"	"	"	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
m,p-Xylene	ND	0.500	1.00	"	"	"	"	
o-Xylene	ND	0.250	0.500	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 102 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>		"	"	"

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-W-8.0-DUP (A7L0431-11)</b>			<b>Matrix: Water</b>		<b>Batch: 7120802</b>			
Acetone	ND	10.0	20.0	ug/L	1	12/18/17 19:03	EPA 8260C	
Acrylonitrile	ND	1.00	2.00	"	"	"	"	
Benzene	ND	0.100	0.200	"	"	"	"	
Bromobenzene	ND	0.250	0.500	"	"	"	"	
Bromochloromethane	ND	0.500	1.00	"	"	"	"	
Bromodichloromethane	ND	0.500	1.00	"	"	"	"	
Bromoform	ND	0.500	1.00	"	"	"	"	
Bromomethane	ND	5.00	5.00	"	"	"	"	
2-Butanone (MEK)	ND	5.00	10.0	"	"	"	"	
n-Butylbenzene	ND	0.500	1.00	"	"	"	"	
sec-Butylbenzene	ND	0.500	1.00	"	"	"	"	
tert-Butylbenzene	ND	0.500	1.00	"	"	"	"	
Carbon disulfide	ND	5.00	10.0	"	"	"	"	
Carbon tetrachloride	ND	0.500	1.00	"	"	"	"	
Chlorobenzene	ND	0.250	0.500	"	"	"	"	
Chloroethane	ND	5.00	5.00	"	"	"	"	
Chloroform	ND	0.500	1.00	"	"	"	"	
Chloromethane	ND	2.50	5.00	"	"	"	"	
2-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
4-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
Dibromochloromethane	ND	0.500	1.00	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	"	"	
Dibromomethane	ND	0.500	1.00	"	"	"	"	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloroethane	ND	0.200	0.400	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	"	"	
1,1-Dichloroethene	ND	0.200	0.400	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
1,2-Dichloropropane	ND	0.250	0.500	"	"	"	"	
1,3-Dichloropropane	ND	0.500	1.00	"	"	"	"	
2,2-Dichloropropane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloropropene	ND	0.500	1.00	"	"	"	"	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-W-8.0-DUP (A7L0431-11)</b>			<b>Matrix: Water</b>		<b>Batch: 7120802</b>			
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	"	EPA 8260C	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
Ethylbenzene	ND	0.250	0.500	"	"	"	"	
Hexachlorobutadiene	ND	2.50	5.00	"	"	"	"	
2-Hexanone	ND	5.00	10.0	"	"	"	"	
Isopropylbenzene	ND	0.500	1.00	"	"	"	"	
4-Isopropyltoluene	ND	0.500	1.00	"	"	"	"	
Methylene chloride	ND	1.50	3.00	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	"	"	
Naphthalene	ND	1.00	2.00	"	"	"	"	
n-Propylbenzene	ND	0.250	0.500	"	"	"	"	
Styrene	ND	0.500	1.00	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	"	"	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	"	"	
Toluene	ND	0.500	1.00	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Trichlorofluoromethane	ND	1.00	2.00	"	"	"	"	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
m,p-Xylene	ND	0.500	1.00	"	"	"	"	
o-Xylene	ND	0.250	0.500	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>Toluene-d8 (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>Limits: 80-120 %</i>		"	"	"

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>Trip Blank (A7L0431-16)</b>			<b>Matrix: Water</b>		<b>Batch: 7120802</b>			
Acetone	ND	10.0	20.0	ug/L	1	12/18/17 15:45	EPA 8260C	
Acrylonitrile	ND	1.00	2.00	"	"	"	"	
Benzene	ND	0.100	0.200	"	"	"	"	
Bromobenzene	ND	0.250	0.500	"	"	"	"	
Bromochloromethane	ND	0.500	1.00	"	"	"	"	
Bromodichloromethane	ND	0.500	1.00	"	"	"	"	
Bromoform	ND	0.500	1.00	"	"	"	"	
Bromomethane	ND	5.00	5.00	"	"	"	"	
2-Butanone (MEK)	ND	5.00	10.0	"	"	"	"	
n-Butylbenzene	ND	0.500	1.00	"	"	"	"	
sec-Butylbenzene	ND	0.500	1.00	"	"	"	"	
tert-Butylbenzene	ND	0.500	1.00	"	"	"	"	
Carbon disulfide	ND	5.00	10.0	"	"	"	"	
Carbon tetrachloride	ND	0.500	1.00	"	"	"	"	
Chlorobenzene	ND	0.250	0.500	"	"	"	"	
Chloroethane	ND	5.00	5.00	"	"	"	"	
Chloroform	ND	0.500	1.00	"	"	"	"	
Chloromethane	ND	2.50	5.00	"	"	"	"	
2-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
4-Chlorotoluene	ND	0.500	1.00	"	"	"	"	
Dibromochloromethane	ND	0.500	1.00	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	"	"	
Dibromomethane	ND	0.500	1.00	"	"	"	"	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	"	"	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloroethane	ND	0.200	0.400	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	"	"	
1,1-Dichloroethene	ND	0.200	0.400	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	"	"	
1,2-Dichloropropane	ND	0.250	0.500	"	"	"	"	
1,3-Dichloropropane	ND	0.500	1.00	"	"	"	"	
2,2-Dichloropropane	ND	0.500	1.00	"	"	"	"	
1,1-Dichloropropene	ND	0.500	1.00	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>Trip Blank (A7L0431-16)</b>			<b>Matrix: Water</b>		<b>Batch: 7120802</b>			
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	"	EPA 8260C	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	"	"	
Ethylbenzene	ND	0.250	0.500	"	"	"	"	
Hexachlorobutadiene	ND	2.50	5.00	"	"	"	"	
2-Hexanone	ND	5.00	10.0	"	"	"	"	
Isopropylbenzene	ND	0.500	1.00	"	"	"	"	
4-Isopropyltoluene	ND	0.500	1.00	"	"	"	"	
Methylene chloride	ND	1.50	3.00	"	"	"	"	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	"	"	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	"	"	
Naphthalene	ND	1.00	2.00	"	"	"	"	
n-Propylbenzene	ND	0.250	0.500	"	"	"	"	
Styrene	ND	0.500	1.00	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	"	"	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	"	"	
Toluene	ND	0.500	1.00	"	"	"	"	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	"	"	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	"	"	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	"	"	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	"	"	
Trichlorofluoromethane	ND	1.00	2.00	"	"	"	"	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	"	"	
Vinyl chloride	ND	0.200	0.400	"	"	"	"	
m,p-Xylene	ND	0.500	1.00	"	"	"	"	
o-Xylene	ND	0.250	0.500	"	"	"	"	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>Toluene-d8 (Surr)</i>		<i>100 %</i>		<i>Limits: 80-120 %</i>		"	"	"
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>Limits: 80-120 %</i>		"	"	"

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP14-W-10.0 (A7L0431-05)</b>			<b>Matrix: Water</b>		<b>Batch: 7121067</b>			<b>C-07</b>
Aroclor 1016	ND	0.0222	0.0444	ug/L	1	12/29/17 09:43	EPA 8082A	
Aroclor 1221	ND	0.0222	0.0444	"	"	"	"	
Aroclor 1232	ND	0.0222	0.0444	"	"	"	"	
Aroclor 1242	ND	0.0222	0.0444	"	"	"	"	
Aroclor 1248	ND	0.0222	0.0444	"	"	"	"	
Aroclor 1254	ND	0.0222	0.0444	"	"	"	"	
Aroclor 1260	ND	0.0222	0.0444	"	"	"	"	
Aroclor 1262	ND	0.0222	0.0444	"	"	"	"	
Aroclor 1268	ND	0.0222	0.0444	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>			<i>Recovery: 58 %</i>	<i>Limits: 39-120 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP14-S-3.0 (A7L0431-03)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>			<b>C-07</b>
Aroclor 1016	ND	2.25	4.49	ug/kg dry	1	12/21/17 22:59	EPA 8082A	
Aroclor 1221	ND	2.25	4.49	"	"	"	"	
Aroclor 1232	ND	2.25	4.49	"	"	"	"	
Aroclor 1242	ND	2.25	4.49	"	"	"	"	
Aroclor 1248	ND	2.25	4.49	"	"	"	"	
Aroclor 1254	ND	2.25	4.49	"	"	"	"	
Aroclor 1260	ND	2.25	4.49	"	"	"	"	
Aroclor 1262	ND	2.25	4.49	"	"	"	"	
Aroclor 1268	ND	2.25	4.49	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<b>GP14-S-8.0 (A7L0431-04)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>			<b>C-07</b>
Aroclor 1016	ND	2.19	4.39	ug/kg dry	1	12/21/17 23:36	EPA 8082A	
Aroclor 1221	ND	2.19	4.39	"	"	"	"	
Aroclor 1232	ND	2.19	4.39	"	"	"	"	
Aroclor 1242	ND	2.19	4.39	"	"	"	"	
Aroclor 1248	ND	2.19	4.39	"	"	"	"	
Aroclor 1254	ND	2.19	4.39	"	"	"	"	
Aroclor 1260	ND	2.19	4.39	"	"	"	"	
Aroclor 1262	ND	2.19	4.39	"	"	"	"	
Aroclor 1268	ND	2.19	4.39	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 90 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<b>GP05-S-5.5 (A7L0431-12)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>			<b>C-07</b>
Aroclor 1016	ND	2.52	5.04	ug/kg dry	1	12/22/17 00:12	EPA 8082A	
Aroclor 1221	ND	2.52	5.04	"	"	"	"	
Aroclor 1232	ND	2.52	5.04	"	"	"	"	
Aroclor 1242	ND	2.52	5.04	"	"	"	"	
Aroclor 1248	ND	2.52	5.04	"	"	"	"	
<b>Aroclor 1254</b>	<b>7.75</b>	2.52	5.04	"	"	"	"	P-10
<b>Aroclor 1260</b>	<b>3.74</b>	2.52	5.04	"	"	"	"	J
Aroclor 1262	ND	2.52	5.04	"	"	"	"	
Aroclor 1268	ND	2.52	5.04	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 86 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<b>GP15-S-3.0 (A7L0431-17)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>			<b>C-07</b>
Aroclor 1016	ND	2.02	4.03	ug/kg dry	1	12/21/17 22:59	EPA 8082A	
Aroclor 1221	ND	2.02	4.03	"	"	"	"	
Aroclor 1232	ND	2.02	4.03	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP15-S-3.0 (A7L0431-17)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>			<b>C-07</b>
Aroclor 1242	ND	2.02	4.03	ug/kg dry	1	"	EPA 8082A	
Aroclor 1248	ND	2.02	4.03	"	"	"	"	
Aroclor 1254	ND	2.02	4.03	"	"	"	"	
Aroclor 1260	ND	2.02	4.03	"	"	"	"	
Aroclor 1262	ND	2.02	4.03	"	"	"	"	
Aroclor 1268	ND	2.02	4.03	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>			<i>Recovery: 82 %</i>	<i>Limits: 44-120 %</i>	"	"	"	
<b>GP15-S-8.0 (A7L0431-19)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120873</b>			<b>C-07</b>
Aroclor 1016	ND	2.14	4.27	ug/kg dry	1	12/21/17 23:36	EPA 8082A	
Aroclor 1221	ND	2.14	4.27	"	"	"	"	
Aroclor 1232	ND	2.14	4.27	"	"	"	"	
Aroclor 1242	ND	2.14	4.27	"	"	"	"	
Aroclor 1248	ND	2.14	4.27	"	"	"	"	
Aroclor 1254	ND	2.14	4.27	"	"	"	"	
Aroclor 1260	ND	2.14	4.27	"	"	"	"	
Aroclor 1262	ND	2.14	4.27	"	"	"	"	
Aroclor 1268	ND	2.14	4.27	"	"	"	"	
<i>Surrogate: Decachlorobiphenyl (Surr)</i>			<i>Recovery: 87 %</i>	<i>Limits: 44-120 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP14-S-3.0 (A7L0431-03RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 8010291</b>			<b>C-05</b>
Aldrin	ND	1.06	2.13	ug/kg dry	1	01/03/18 15:18	EPA 8081B	
alpha-BHC	ND	1.06	2.13	"	"	"	"	
beta-BHC	ND	1.06	2.13	"	"	"	"	
delta-BHC	ND	1.06	2.13	"	"	"	"	
gamma-BHC (Lindane)	ND	1.06	2.13	"	"	"	"	
cis-Chlordane	ND	1.06	2.13	"	"	"	"	
trans-Chlordane	ND	1.06	2.13	"	"	"	"	
4,4'-DDD	ND	1.06	2.13	"	"	"	"	
4,4'-DDE	ND	1.06	2.13	"	"	"	"	
4,4'-DDT	ND	1.06	2.13	"	"	"	"	
Dieldrin	ND	1.06	2.13	"	"	"	"	
Endosulfan I	ND	1.06	2.13	"	"	"	"	
Endosulfan II	ND	1.06	2.13	"	"	"	"	
Endosulfan sulfate	ND	1.06	2.13	"	"	"	"	
Endrin	ND	1.06	2.13	"	"	"	"	
Endrin Aldehyde	ND	1.06	2.13	"	"	"	"	
Endrin ketone	ND	1.06	2.13	"	"	"	"	
Heptachlor	ND	1.06	2.13	"	"	"	"	
Heptachlor epoxide	ND	1.06	2.13	"	"	"	"	
Methoxychlor	ND	3.19	6.38	"	"	"	"	
Chlordane (Technical)	ND	31.9	63.8	"	"	"	"	
Toxaphene (Total)	ND	31.9	63.8	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 58 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>83 %</i>	<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP14-S-8.0 (A7L0431-04RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 8010291</b>			<b>C-05</b>
Aldrin	ND	2.23	4.47	ug/kg dry	1	01/03/18 15:35	EPA 8081B	
alpha-BHC	ND	2.23	4.47	"	"	"	"	
beta-BHC	ND	2.23	4.47	"	"	"	"	
delta-BHC	ND	2.23	4.47	"	"	"	"	
gamma-BHC (Lindane)	ND	2.23	4.47	"	"	"	"	
cis-Chlordane	ND	2.23	4.47	"	"	"	"	
trans-Chlordane	ND	2.23	4.47	"	"	"	"	
4,4'-DDD	ND	2.23	4.47	"	"	"	"	
4,4'-DDE	ND	2.23	4.47	"	"	"	"	
4,4'-DDT	ND	2.23	4.47	"	"	"	"	
Dieldrin	ND	2.23	4.47	"	"	"	"	
Endosulfan I	ND	2.23	4.47	"	"	"	"	
Endosulfan II	ND	2.23	4.47	"	"	"	"	
Endosulfan sulfate	ND	2.23	4.47	"	"	"	"	
Endrin	ND	2.23	4.47	"	"	"	"	
Endrin Aldehyde	ND	2.23	4.47	"	"	"	"	
Endrin ketone	ND	2.23	4.47	"	"	"	"	
Heptachlor	ND	2.23	4.47	"	"	"	"	
Heptachlor epoxide	ND	2.23	4.47	"	"	"	"	
Methoxychlor	ND	6.70	13.4	"	"	"	"	
Chlordane (Technical)	ND	67.0	134	"	"	"	"	
Toxaphene (Total)	ND	67.0	134	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 59 %</i>	<i>Limits: 42-129 %</i>	"	"	"	
<i>Decachlorobiphenyl (Surr)</i>			<i>84 %</i>	<i>Limits: 65-151 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP14-W-10.0 (A7L0431-05RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7121057</b>			<b>C-05</b>
Aldrin	ND	0.0101	0.0202	ug/L	1	12/28/17 15:32	EPA 8081B	
alpha-BHC	ND	0.0101	0.0202	"	"	"	"	Q-30
beta-BHC	ND	0.0101	0.0202	"	"	"	"	Q-30
delta-BHC	ND	0.0101	0.0202	"	"	"	"	
gamma-BHC (Lindane)	ND	0.0101	0.0202	"	"	"	"	Q-30
cis-Chlordane	ND	0.0101	0.0202	"	"	"	"	
trans-Chlordane	ND	0.0101	0.0202	"	"	"	"	
4,4'-DDD	ND	0.0101	0.0202	"	"	"	"	
4,4'-DDE	ND	0.0101	0.0202	"	"	"	"	
4,4'-DDT	ND	0.0101	0.0202	"	"	"	"	
Dieldrin	ND	0.0101	0.0202	"	"	"	"	
Endosulfan I	ND	0.0101	0.0202	"	"	"	"	
Endosulfan II	ND	0.0101	0.0202	"	"	"	"	
Endosulfan sulfate	ND	0.0101	0.0202	"	"	"	"	
Endrin	ND	0.0101	0.0202	"	"	"	"	
Endrin Aldehyde	ND	0.0101	0.0202	"	"	"	"	
Endrin ketone	ND	0.0101	0.0202	"	"	"	"	
Heptachlor	ND	0.0101	0.0202	"	"	"	"	Q-30
Heptachlor epoxide	ND	0.0101	0.0202	"	"	"	"	
Methoxychlor	ND	0.0303	0.0606	"	"	"	"	
Chlordane (Technical)	ND	0.380	0.758	"	"	"	"	
Toxaphene (Total)	ND	0.380	0.758	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 34 %</i>	<i>Limits: 44-124 %</i>	"	"	"	<i>S-06</i>
<i>Decachlorobiphenyl (Surr)</i>			<i>46 %</i>	<i>Limits: 47-129 %</i>	"	"	"	<i>S-06</i>





**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-S-2.5 (A7L0431-09RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120888</b>		<b>C-05, R-04</b>	
Aldrin	ND	47.0	94.0	ug/kg dry	20	12/21/17 16:00	EPA 8081B	
alpha-BHC	ND	47.0	94.0	"	"	"	"	
beta-BHC	ND	47.0	94.0	"	"	"	"	
delta-BHC	ND	47.0	94.0	"	"	"	"	
gamma-BHC (Lindane)	ND	47.0	94.0	"	"	"	"	
cis-Chlordane	ND	47.0	94.0	"	"	"	"	
trans-Chlordane	ND	47.0	94.0	"	"	"	"	
4,4'-DDD	ND	47.0	94.0	"	"	"	"	
4,4'-DDE	ND	47.0	94.0	"	"	"	"	
4,4'-DDT	ND	47.0	94.0	"	"	"	"	
Dieldrin	ND	47.0	94.0	"	"	"	"	
Endosulfan I	ND	47.0	94.0	"	"	"	"	
Endosulfan II	ND	47.0	94.0	"	"	"	"	
Endosulfan sulfate	ND	47.0	94.0	"	"	"	"	
Endrin	ND	47.0	94.0	"	"	"	"	
Endrin Aldehyde	ND	47.0	94.0	"	"	"	"	
Endrin ketone	ND	47.0	94.0	"	"	"	"	
Heptachlor	ND	47.0	94.0	"	"	"	"	
Heptachlor epoxide	ND	47.0	94.0	"	"	"	"	
Methoxychlor	ND	141	282	"	"	"	"	
Chlordane (Technical)	ND	1410	2820	"	"	"	"	
Toxaphene (Total)	ND	1410	2820	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 70 %</i>		<i>Limits: 42-129 %</i>	"	"	"	<i>S-05</i>
<i>Decachlorobiphenyl (Surr)</i>		<i>179 %</i>		<i>Limits: 65-151 %</i>	"	"	"	<i>S-05</i>

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-W-8.0 (A7L0431-10RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7121057</b>			<b>C-05</b>
Aldrin	ND	0.00990	0.0198	ug/L	1	12/28/17 16:08	EPA 8081B	
alpha-BHC	ND	0.00990	0.0198	"	"	"	"	Q-30
beta-BHC	ND	0.00990	0.0198	"	"	"	"	Q-30
delta-BHC	ND	0.00990	0.0198	"	"	"	"	
gamma-BHC (Lindane)	ND	0.00990	0.0198	"	"	"	"	Q-30
cis-Chlordane	ND	0.0198	0.0198	"	"	"	"	
trans-Chlordane	ND	0.00990	0.0198	"	"	"	"	
4,4'-DDD	ND	0.00990	0.0198	"	"	"	"	
4,4'-DDE	ND	0.00990	0.0198	"	"	"	"	
4,4'-DDT	ND	0.0198	0.0198	"	"	"	"	
Dieldrin	ND	0.00990	0.0198	"	"	"	"	
Endosulfan I	ND	0.00990	0.0198	"	"	"	"	
Endosulfan II	ND	0.00990	0.0198	"	"	"	"	
Endosulfan sulfate	ND	0.00990	0.0198	"	"	"	"	
Endrin	ND	0.0198	0.0198	"	"	"	"	
Endrin Aldehyde	ND	0.00990	0.0198	"	"	"	"	
Endrin ketone	ND	0.00990	0.0198	"	"	"	"	
Heptachlor	ND	0.00990	0.0198	"	"	"	"	Q-30
Heptachlor epoxide	ND	0.00990	0.0198	"	"	"	"	
Methoxychlor	ND	0.0297	0.0594	"	"	"	"	
Chlordane (Technical)	ND	0.372	0.743	"	"	"	"	
Toxaphene (Total)	ND	0.372	0.743	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 40 %</i>	<i>Limits: 44-124 %</i>	"	"	"	<i>S-06</i>
<i>Decachlorobiphenyl (Surr)</i>			<i>61 %</i>	<i>Limits: 47-129 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-W-8.0-DUP (A7L0431-11RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7121057</b>			<b>C-05</b>
Aldrin	ND	0.00990	0.0198	ug/L	1	12/28/17 16:43	EPA 8081B	
alpha-BHC	ND	0.00990	0.0198	"	"	"	"	Q-30
beta-BHC	ND	0.00990	0.0198	"	"	"	"	Q-30
delta-BHC	ND	0.00990	0.0198	"	"	"	"	
gamma-BHC (Lindane)	ND	0.00990	0.0198	"	"	"	"	Q-30
cis-Chlordane	ND	0.00990	0.0198	"	"	"	"	
trans-Chlordane	ND	0.00990	0.0198	"	"	"	"	
4,4'-DDD	ND	0.00990	0.0198	"	"	"	"	
4,4'-DDE	ND	0.00990	0.0198	"	"	"	"	
4,4'-DDT	ND	0.0198	0.0198	"	"	"	"	
Dieldrin	ND	0.00990	0.0198	"	"	"	"	
Endosulfan I	ND	0.00990	0.0198	"	"	"	"	
Endosulfan II	ND	0.00990	0.0198	"	"	"	"	
Endosulfan sulfate	ND	0.00990	0.0198	"	"	"	"	
Endrin	ND	0.0198	0.0198	"	"	"	"	
Endrin Aldehyde	ND	0.00990	0.0198	"	"	"	"	
Endrin ketone	ND	0.00990	0.0198	"	"	"	"	
Heptachlor	ND	0.00990	0.0198	"	"	"	"	Q-30
Heptachlor epoxide	ND	0.00990	0.0198	"	"	"	"	
Methoxychlor	ND	0.0297	0.0594	"	"	"	"	
Chlordane (Technical)	ND	0.372	0.743	"	"	"	"	
Toxaphene (Total)	ND	0.372	0.743	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 32 %</i>	<i>Limits: 44-124 %</i>	"	"	"	<i>S-06</i>
<i>Decachlorobiphenyl (Surr)</i>			<i>57 %</i>	<i>Limits: 47-129 %</i>	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting			Date Analyzed	Method	Notes
			Limit	Units	Dilution			
<b>GP15-S-3.0 (A7L0431-17RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 8010291</b>		<b>C-05</b>	
Aldrin	ND	1.03	2.06	ug/kg dry	1	01/03/18 15:53	EPA 8081B	
alpha-BHC	ND	1.03	2.06	"	"	"	"	
beta-BHC	ND	1.03	2.06	"	"	"	"	
delta-BHC	ND	1.03	2.06	"	"	"	"	
gamma-BHC (Lindane)	ND	1.03	2.06	"	"	"	"	
cis-Chlordane	ND	1.03	2.06	"	"	"	"	
trans-Chlordane	ND	1.03	2.06	"	"	"	"	
4,4'-DDD	ND	1.03	2.06	"	"	"	"	
4,4'-DDE	ND	1.03	2.06	"	"	"	"	
4,4'-DDT	ND	1.03	2.06	"	"	"	"	
Dieldrin	ND	1.03	2.06	"	"	"	"	
Endosulfan I	ND	1.03	2.06	"	"	"	"	
Endosulfan II	ND	1.03	2.06	"	"	"	"	
Endosulfan sulfate	ND	1.03	2.06	"	"	"	"	
Endrin	ND	1.03	2.06	"	"	"	"	
Endrin Aldehyde	ND	1.03	2.06	"	"	"	"	
Endrin ketone	ND	1.03	2.06	"	"	"	"	
Heptachlor	ND	1.03	2.06	"	"	"	"	
Heptachlor epoxide	ND	1.03	2.06	"	"	"	"	
Methoxychlor	ND	3.09	6.18	"	"	"	"	
Chlordane (Technical)	ND	30.9	61.8	"	"	"	"	
Toxaphene (Total)	ND	30.9	61.8	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 58 %</i>		<i>Limits: 42-129 %</i>		"	"	
<i>Decachlorobiphenyl (Surr)</i>		<i>90 %</i>		<i>Limits: 65-151 %</i>		"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP15-S-8.0 (A7L0431-19RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 8010291</b>			<b>C-05</b>
Aldrin	ND	1.17	2.33	ug/kg dry	1	01/03/18 16:10	EPA 8081B	
alpha-BHC	ND	1.17	2.33	"	"	"	"	
beta-BHC	ND	2.33	2.33	"	"	"	"	
delta-BHC	ND	1.17	2.33	"	"	"	"	
gamma-BHC (Lindane)	ND	1.17	2.33	"	"	"	"	
cis-Chlordane	ND	1.17	2.33	"	"	"	"	
trans-Chlordane	ND	2.33	2.33	"	"	"	"	
4,4'-DDD	ND	2.33	2.33	"	"	"	"	
4,4'-DDE	ND	2.33	2.33	"	"	"	"	
4,4'-DDT	ND	5.24	5.24	"	"	"	"	R-02
Dieldrin	ND	2.33	2.33	"	"	"	"	
Endosulfan I	ND	1.17	2.33	"	"	"	"	
Endosulfan II	ND	2.33	2.33	"	"	"	"	
Endosulfan sulfate	ND	2.33	2.33	"	"	"	"	
Endrin	ND	2.33	2.33	"	"	"	"	
Endrin Aldehyde	ND	2.68	2.68	"	"	"	"	R-02
Endrin ketone	ND	2.91	2.91	"	"	"	"	R-02
Heptachlor	ND	1.17	2.33	"	"	"	"	
Heptachlor epoxide	ND	1.17	2.33	"	"	"	"	
Methoxychlor	ND	6.99	6.99	"	"	"	"	
Chlordane (Technical)	ND	35.0	69.9	"	"	"	"	
Toxaphene (Total)	ND	35.0	69.9	"	"	"	"	
<i>Surrogate: 2,4,5,6-TCMX (Surr)</i>		<i>Recovery: 78 %</i>		<i>Limits: 42-129 %</i>		"	"	"
<i>Decachlorobiphenyl (Surr)</i>		<i>96 %</i>		<i>Limits: 65-151 %</i>		"	"	"

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP11-S-3.0 (A7L0431-01RE2)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120858</b>			
Acenaphthene	ND	1.58	3.17	ug/kg dry	1	12/20/17 12:33	EPA 8270D	
Acenaphthylene	ND	1.58	3.17	"	"	"	"	
Anthracene	ND	1.58	3.17	"	"	"	"	
Benz(a)anthracene	ND	1.58	3.17	"	"	"	"	
Benzo(a)pyrene	ND	2.37	4.75	"	"	"	"	
Benzo(b)fluoranthene	ND	2.37	4.75	"	"	"	"	Q-37
Benzo(k)fluoranthene	ND	2.37	4.75	"	"	"	"	
<b>Benzo(g,h,i)perylene</b>	<b>1.91</b>	1.58	3.17	"	"	"	"	J, Q-37, Q-42
Chrysene	ND	1.58	3.17	"	"	"	"	
Dibenz(a,h)anthracene	ND	1.58	3.17	"	"	"	"	
Fluoranthene	ND	1.58	3.17	"	"	"	"	
Fluorene	ND	1.58	3.17	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	1.58	3.17	"	"	"	"	Q-37
1-Methylnaphthalene	ND	3.17	6.33	"	"	"	"	
2-Methylnaphthalene	ND	3.17	6.33	"	"	"	"	
Naphthalene	ND	3.17	6.33	"	"	"	"	
Phenanthrene	ND	1.58	3.17	"	"	"	"	
Pyrene	ND	1.58	3.17	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 65 %</i>		<i>Limits: 37-122 %</i>		"	"	"
<i>2-Fluorobiphenyl (Surr)</i>		<i>68 %</i>		<i>Limits: 44-115 %</i>		"	"	"
<i>Phenol-d6 (Surr)</i>		<i>64 %</i>		<i>Limits: 33-122 %</i>		"	"	"
<i>p-Terphenyl-d14 (Surr)</i>		<i>73 %</i>		<i>Limits: 54-127 %</i>		"	"	"
<i>2-Fluorophenol (Surr)</i>		<i>62 %</i>		<i>Limits: 35-115 %</i>		"	"	"
<i>2,4,6-Tribromophenol (Surr)</i>		<i>79 %</i>		<i>Limits: 39-132 %</i>		"	"	"



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP11-S-7.0 (A7L0431-02RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120858</b>			
Acenaphthene	ND	1.64	3.29	ug/kg dry	1	12/20/17 14:23	EPA 8270D	
Acenaphthylene	ND	1.64	3.29	"	"	"	"	
Anthracene	ND	1.64	3.29	"	"	"	"	
Benz(a)anthracene	ND	1.64	3.29	"	"	"	"	
Benzo(a)pyrene	ND	2.47	4.94	"	"	"	"	
Benzo(b)fluoranthene	ND	2.47	4.94	"	"	"	"	
Benzo(k)fluoranthene	ND	2.47	4.94	"	"	"	"	
Benzo(g,h,i)perylene	ND	1.64	3.29	"	"	"	"	
Chrysene	ND	1.64	3.29	"	"	"	"	
Dibenz(a,h)anthracene	ND	1.64	3.29	"	"	"	"	
Fluoranthene	ND	1.64	3.29	"	"	"	"	
Fluorene	ND	1.64	3.29	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	1.64	3.29	"	"	"	"	
1-Methylnaphthalene	ND	3.29	6.58	"	"	"	"	
2-Methylnaphthalene	ND	3.29	6.58	"	"	"	"	
Naphthalene	ND	3.29	6.58	"	"	"	"	
Phenanthrene	ND	1.64	3.29	"	"	"	"	
Pyrene	ND	1.64	3.29	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 55 %</i>		<i>Limits: 37-122 %</i>	"	"	"	
<i>2-Fluorobiphenyl (Surr)</i>		<i>55 %</i>		<i>Limits: 44-115 %</i>	"	"	"	
<i>Phenol-d6 (Surr)</i>		<i>57 %</i>		<i>Limits: 33-122 %</i>	"	"	"	
<i>p-Terphenyl-d14 (Surr)</i>		<i>71 %</i>		<i>Limits: 54-127 %</i>	"	"	"	
<i>2-Fluorophenol (Surr)</i>		<i>49 %</i>		<i>Limits: 35-115 %</i>	"	"	"	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>83 %</i>		<i>Limits: 39-132 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP14-S-3.0 (A7L0431-03RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120858</b>				
Acenaphthene	ND	1.52	3.06	ug/kg dry	1	12/20/17 15:00	EPA 8270D		
<b>Acenaphthylene</b>	<b>1.53</b>	1.52	3.06	"	"	"	"	J	
Anthracene	ND	1.52	3.06	"	"	"	"		
<b>Benz(a)anthracene</b>	<b>3.39</b>	1.52	3.06	"	"	"	"	M-05	
<b>Benzo(a)pyrene</b>	<b>6.14</b>	2.29	4.58	"	"	"	"		
<b>Benzo(b)fluoranthene</b>	<b>5.90</b>	2.29	4.58	"	"	"	"	M-05	
Benzo(k)fluoranthene	ND	2.29	4.58	"	"	"	"		
<b>Benzo(g,h,i)perylene</b>	<b>5.91</b>	1.52	3.06	"	"	"	"		
<b>Chrysene</b>	<b>3.08</b>	1.52	3.06	"	"	"	"	M-05	
Dibenz(a,h)anthracene	ND	1.52	3.06	"	"	"	"		
<b>Fluoranthene</b>	<b>3.73</b>	1.52	3.06	"	"	"	"		
Fluorene	ND	1.52	3.06	"	"	"	"		
<b>Indeno(1,2,3-cd)pyrene</b>	<b>4.90</b>	1.52	3.06	"	"	"	"		
1-Methylnaphthalene	ND	3.06	6.10	"	"	"	"		
2-Methylnaphthalene	ND	3.06	6.10	"	"	"	"		
Naphthalene	ND	3.06	6.10	"	"	"	"		
Phenanthrene	ND	1.52	3.06	"	"	"	"		
<b>Pyrene</b>	<b>5.63</b>	1.52	3.06	"	"	"	"		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 74 %</i>		<i>Limits: 37-122 %</i>		"	"	"	
<i>2-Fluorobiphenyl (Surr)</i>		<i>70 %</i>		<i>Limits: 44-115 %</i>		"	"	"	
<i>Phenol-d6 (Surr)</i>		<i>74 %</i>		<i>Limits: 33-122 %</i>		"	"	"	
<i>p-Terphenyl-d14 (Surr)</i>		<i>75 %</i>		<i>Limits: 54-127 %</i>		"	"	"	
<i>2-Fluorophenol (Surr)</i>		<i>67 %</i>		<i>Limits: 35-115 %</i>		"	"	"	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>87 %</i>		<i>Limits: 39-132 %</i>		"	"	"	





**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP14-S-8.0 (A7L0431-04RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120858</b>			<b>R-04</b>	
Acenaphthene	ND	6.15	12.3	ug/kg dry	4	12/20/17 13:47	EPA 8270D		
Acenaphthylene	ND	6.15	12.3	"	"	"	"		
Anthracene	ND	6.15	12.3	"	"	"	"		
Benz(a)anthracene	ND	6.15	12.3	"	"	"	"		
Benzo(a)pyrene	ND	9.24	18.5	"	"	"	"		
Benzo(b)fluoranthene	ND	9.24	18.5	"	"	"	"		
Benzo(k)fluoranthene	ND	9.24	18.5	"	"	"	"		
Benzo(g,h,i)perylene	ND	6.15	12.3	"	"	"	"		
Chrysene	ND	6.15	12.3	"	"	"	"		
Dibenz(a,h)anthracene	ND	6.15	12.3	"	"	"	"		
Fluoranthene	ND	6.15	12.3	"	"	"	"		
Fluorene	ND	6.15	12.3	"	"	"	"		
Indeno(1,2,3-cd)pyrene	ND	6.15	12.3	"	"	"	"		
1-Methylnaphthalene	ND	12.3	24.6	"	"	"	"		
2-Methylnaphthalene	ND	12.3	24.6	"	"	"	"		
Naphthalene	ND	12.3	24.6	"	"	"	"		
Phenanthrene	ND	6.15	12.3	"	"	"	"		
Pyrene	ND	6.15	12.3	"	"	"	"		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>			<i>Recovery: 67 %</i>	<i>Limits: 37-122 %</i>	"	"	"		
<i>2-Fluorobiphenyl (Surr)</i>			<i>67 %</i>	<i>Limits: 44-115 %</i>	"	"	"		
<i>Phenol-d6 (Surr)</i>			<i>71 %</i>	<i>Limits: 33-122 %</i>	"	"	"		
<i>p-Terphenyl-d14 (Surr)</i>			<i>71 %</i>	<i>Limits: 54-127 %</i>	"	"	"		
<i>2-Fluorophenol (Surr)</i>			<i>61 %</i>	<i>Limits: 35-115 %</i>	"	"	"		
<i>2,4,6-Tribromophenol (Surr)</i>			<i>81 %</i>	<i>Limits: 39-132 %</i>	"	"	"		



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP14-W-10.0 (A7L0431-05RE2)</b>			<b>Matrix: Water</b>		<b>Batch: 7120896</b>			
Acenaphthene	ND	0.0101	0.0202	ug/L	1	12/20/17 20:26	EPA 8270D	
<b>Acenaphthylene</b>	<b>0.0208</b>	0.0101	0.0202	"	"	"	"	
<b>Anthracene</b>	<b>0.0140</b>	0.0101	0.0202	"	"	"	"	J
<b>Benz(a)anthracene</b>	<b>0.0523</b>	0.0101	0.0202	"	"	"	"	M-05
<b>Benzo(a)pyrene</b>	<b>0.0858</b>	0.0152	0.0303	"	"	"	"	
<b>Benzo(b)fluoranthene</b>	<b>0.0831</b>	0.0152	0.0303	"	"	"	"	M-05
<b>Benzo(k)fluoranthene</b>	<b>0.0222</b>	0.0152	0.0303	"	"	"	"	J
<b>Benzo(g,h,i)perylene</b>	<b>0.0499</b>	0.0101	0.0202	"	"	"	"	
<b>Chrysene</b>	<b>0.0604</b>	0.0101	0.0202	"	"	"	"	M-05
<b>Dibenz(a,h)anthracene</b>	<b>0.0133</b>	0.0101	0.0202	"	"	"	"	J
<b>Fluoranthene</b>	<b>0.0731</b>	0.0101	0.0202	"	"	"	"	
Fluorene	ND	0.0101	0.0202	"	"	"	"	
<b>Indeno(1,2,3-cd)pyrene</b>	<b>0.0473</b>	0.0101	0.0202	"	"	"	"	
1-Methylnaphthalene	ND	0.0202	0.0404	"	"	"	"	
2-Methylnaphthalene	ND	0.0202	0.0404	"	"	"	"	
Naphthalene	ND	0.0202	0.0404	"	"	"	"	
<b>Phenanthrene</b>	<b>0.0246</b>	0.0101	0.0202	"	"	"	"	
<b>Pyrene</b>	<b>0.108</b>	0.0101	0.0202	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 79 %</i>		<i>Limits: 44-120 %</i>	"	"	"	
<i>2-Fluorobiphenyl (Surr)</i>		<i>61 %</i>		<i>Limits: 44-120 %</i>	"	"	"	
<i>Phenol-d6 (Surr)</i>		<i>29 %</i>		<i>Limits: 10-120 %</i>	"	"	"	
<i>p-Terphenyl-d14 (Surr)</i>		<i>72 %</i>		<i>Limits: 50-133 %</i>	"	"	"	
<i>2-Fluorophenol (Surr)</i>		<i>40 %</i>		<i>Limits: 19-120 %</i>	"	"	"	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>95 %</i>		<i>Limits: 43-140 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP13-S-2.5 (A7L0431-06)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120858</b>			<b>R-04</b>	
Acenaphthene	ND	150	302	ug/kg dry	40	12/19/17 16:08	EPA 8270D		
Acenaphthylene	ND	150	302	"	"	"	"		
Anthracene	ND	150	302	"	"	"	"		
Benz(a)anthracene	ND	150	302	"	"	"	"		
<b>Benzo(a)pyrene</b>	<b>306</b>	226	452	"	"	"	"	J	
Benzo(b)fluoranthene	ND	226	452	"	"	"	"		
Benzo(k)fluoranthene	ND	226	452	"	"	"	"		
Benzo(g,h,i)perylene	ND	150	302	"	"	"	"		
Chrysene	ND	150	302	"	"	"	"		
Dibenz(a,h)anthracene	ND	150	302	"	"	"	"		
Fluoranthene	ND	150	302	"	"	"	"		
Fluorene	ND	150	302	"	"	"	"		
Indeno(1,2,3-cd)pyrene	ND	150	302	"	"	"	"		
1-Methylnaphthalene	ND	302	603	"	"	"	"		
2-Methylnaphthalene	ND	302	603	"	"	"	"		
Naphthalene	ND	302	603	"	"	"	"		
Phenanthrene	ND	150	302	"	"	"	"		
<b>Pyrene</b>	<b>166</b>	150	302	"	"	"	"	J	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 96 %</i>		<i>Limits: 37-122 %</i>		"	"	"	S-05
<i>2-Fluorobiphenyl (Surr)</i>		<i>95 %</i>		<i>Limits: 44-115 %</i>		"	"	"	S-05
<i>Phenol-d6 (Surr)</i>		<i>82 %</i>		<i>Limits: 33-122 %</i>		"	"	"	S-05
<i>p-Terphenyl-d14 (Surr)</i>		<i>101 %</i>		<i>Limits: 54-127 %</i>		"	"	"	S-05
<i>2-Fluorophenol (Surr)</i>		<i>69 %</i>		<i>Limits: 35-115 %</i>		"	"	"	S-05
<i>2,4,6-Tribromophenol (Surr)</i>		<i>43 %</i>		<i>Limits: 39-132 %</i>		"	"	"	S-05



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting			Dilution	Date Analyzed	Method	Notes
			Limit	Units					
<b>GP13-S-7.5 (A7L0431-07)</b>			<b>Matrix: Soil</b>			<b>Batch: 7120858</b>			
Acenaphthene	ND	69.5	139	ug/kg dry	40	12/19/17 20:20	EPA 8270D		
Acenaphthylene	ND	69.5	139	"	"	"	"		
Anthracene	ND	69.5	139	"	"	"	"		
<b>Benz(a)anthracene</b>	<b>159</b>	69.5	139	"	"	"	"	M-05	
<b>Benzo(a)pyrene</b>	<b>218</b>	104	209	"	"	"	"		
<b>Benzo(b)fluoranthene</b>	<b>176</b>	104	209	"	"	"	"	J	
Benzo(k)fluoranthene	ND	104	209	"	"	"	"		
<b>Benzo(g,h,i)perylene</b>	<b>110</b>	69.5	139	"	"	"	"	J	
<b>Chrysene</b>	<b>181</b>	69.5	139	"	"	"	"	M-05	
Dibenz(a,h)anthracene	ND	69.5	139	"	"	"	"		
<b>Fluoranthene</b>	<b>266</b>	69.5	139	"	"	"	"		
Fluorene	ND	69.5	139	"	"	"	"		
<b>Indeno(1,2,3-cd)pyrene</b>	<b>110</b>	69.5	139	"	"	"	"	J	
1-Methylnaphthalene	ND	139	278	"	"	"	"		
2-Methylnaphthalene	ND	139	278	"	"	"	"		
Naphthalene	ND	139	278	"	"	"	"		
<b>Phenanthrene</b>	<b>267</b>	69.5	139	"	"	"	"		
<b>Pyrene</b>	<b>330</b>	69.5	139	"	"	"	"		
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 83 %</i>		<i>Limits: 37-122 %</i>	"	"	"	S-05	
<i>2-Fluorobiphenyl (Surr)</i>		<i>76 %</i>		<i>Limits: 44-115 %</i>	"	"	"	S-05	
<i>Phenol-d6 (Surr)</i>		<i>64 %</i>		<i>Limits: 33-122 %</i>	"	"	"	S-05	
<i>p-Terphenyl-d14 (Surr)</i>		<i>81 %</i>		<i>Limits: 54-127 %</i>	"	"	"	S-05	
<i>2-Fluorophenol (Surr)</i>		<i>64 %</i>		<i>Limits: 35-115 %</i>	"	"	"	S-05	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>55 %</i>		<i>Limits: 39-132 %</i>	"	"	"	S-05	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-S-2.5 (A7L0431-09)</b>			<b>Matrix: Soil</b>		<b>Batch: 7121112</b>			
Acenaphthene	ND	159	320	ug/kg dry	40	12/28/17 15:11	EPA 8270D	
<b>Acenaphthylene</b>	<b>169</b>	159	320	"	"	"	"	J
<b>Anthracene</b>	<b>252</b>	159	320	"	"	"	"	J
<b>Benz(a)anthracene</b>	<b>782</b>	159	320	"	"	"	"	M-05
<b>Benzo(a)pyrene</b>	<b>1060</b>	240	480	"	"	"	"	
<b>Benzo(b)fluoranthene</b>	<b>1140</b>	240	480	"	"	"	"	M-05
<b>Benzo(k)fluoranthene</b>	<b>339</b>	240	480	"	"	"	"	J
<b>Benzo(g,h,i)perylene</b>	<b>918</b>	159	320	"	"	"	"	
<b>Chrysene</b>	<b>916</b>	159	320	"	"	"	"	M-05
<b>Dibenz(a,h)anthracene</b>	<b>204</b>	159	320	"	"	"	"	J
<b>Fluoranthene</b>	<b>1170</b>	159	320	"	"	"	"	
Fluorene	ND	159	320	"	"	"	"	
<b>Indeno(1,2,3-cd)pyrene</b>	<b>722</b>	159	320	"	"	"	"	
1-Methylnaphthalene	ND	320	639	"	"	"	"	
2-Methylnaphthalene	ND	320	639	"	"	"	"	
Naphthalene	ND	320	639	"	"	"	"	
<b>Phenanthrene</b>	<b>1170</b>	159	320	"	"	"	"	
<b>Pyrene</b>	<b>1440</b>	159	320	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 37-122 %</i>	"	"	"	<i>S-05</i>
<i>2-Fluorobiphenyl (Surr)</i>				<i>89 %</i>	<i>Limits: 44-115 %</i>	"	"	<i>S-05</i>
<i>Phenol-d6 (Surr)</i>				<i>76 %</i>	<i>Limits: 33-122 %</i>	"	"	<i>S-05</i>
<i>p-Terphenyl-d14 (Surr)</i>				<i>106 %</i>	<i>Limits: 54-127 %</i>	"	"	<i>S-05</i>
<i>2-Fluorophenol (Surr)</i>				<i>76 %</i>	<i>Limits: 35-115 %</i>	"	"	<i>S-05</i>
<i>2,4,6-Tribromophenol (Surr)</i>				<i>77 %</i>	<i>Limits: 39-132 %</i>	"	"	<i>S-05</i>



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209


Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-W-8.0 (A7L0431-10RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120896</b>			
Acenaphthene	ND	1.20	1.20	ug/L	10	12/20/17 19:15	EPA 8270D	R-02
Acenaphthylene	ND	0.200	0.200	"	"	"	"	
<b>Anthracene</b>	<b>0.346</b>	0.100	0.200	"	"	"	"	
<b>Benz(a)anthracene</b>	<b>0.328</b>	0.100	0.200	"	"	"	"	M-05
<b>Benzo(a)pyrene</b>	<b>0.173</b>	0.150	0.300	"	"	"	"	J
Benzo(b)fluoranthene	ND	0.150	0.300	"	"	"	"	
Benzo(k)fluoranthene	ND	0.150	0.300	"	"	"	"	
<b>Benzo(g,h,i)perylene</b>	<b>0.133</b>	0.100	0.200	"	"	"	"	J
<b>Chrysene</b>	<b>0.514</b>	0.100	0.200	"	"	"	"	M-05
Dibenz(a,h)anthracene	ND	0.100	0.200	"	"	"	"	
<b>Fluoranthene</b>	<b>0.235</b>	0.100	0.200	"	"	"	"	
<b>Fluorene</b>	<b>0.998</b>	0.100	0.200	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.100	0.200	"	"	"	"	
<b>1-Methylnaphthalene</b>	<b>0.727</b>	0.200	0.400	"	"	"	"	
2-Methylnaphthalene	ND	0.200	0.400	"	"	"	"	
Naphthalene	ND	0.200	0.400	"	"	"	"	
<b>Phenanthrene</b>	<b>0.276</b>	0.100	0.200	"	"	"	"	
<b>Pyrene</b>	<b>0.911</b>	0.100	0.200	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 97 %</i>		<i>Limits: 44-120 %</i>	"	"	"	
<i>2-Fluorobiphenyl (Surr)</i>		<i>79 %</i>		<i>Limits: 44-120 %</i>	"	"	"	
<i>Phenol-d6 (Surr)</i>		<i>31 %</i>		<i>Limits: 10-120 %</i>	"	"	"	
<i>p-Terphenyl-d14 (Surr)</i>		<i>87 %</i>		<i>Limits: 50-133 %</i>	"	"	"	
<i>2-Fluorophenol (Surr)</i>		<i>44 %</i>		<i>Limits: 19-120 %</i>	"	"	"	
<i>2,4,6-Tribromophenol (Surr)</i>		<i>128 %</i>		<i>Limits: 43-140 %</i>	"	"	"	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-W-8.0-DUP (A7L0431-11RE1)</b>			<b>Matrix: Water</b>		<b>Batch: 7120896</b>			
Acenaphthene	ND	1.15	1.15	ug/L	10	12/20/17 19:51	EPA 8270D	R-02
Acenaphthylene	ND	0.208	0.208	"	"	"	"	
<b>Anthracene</b>	<b>0.336</b>	0.104	0.208	"	"	"	"	
<b>Benz(a)anthracene</b>	<b>0.281</b>	0.104	0.208	"	"	"	"	M-05
<b>Benzo(a)pyrene</b>	<b>0.170</b>	0.156	0.312	"	"	"	"	J
Benzo(b)fluoranthene	ND	0.156	0.312	"	"	"	"	
Benzo(k)fluoranthene	ND	0.156	0.312	"	"	"	"	
<b>Benzo(g,h,i)perylene</b>	<b>0.117</b>	0.104	0.208	"	"	"	"	J
<b>Chrysene</b>	<b>0.518</b>	0.104	0.208	"	"	"	"	M-05
Dibenz(a,h)anthracene	ND	0.104	0.208	"	"	"	"	
<b>Fluoranthene</b>	<b>0.246</b>	0.104	0.208	"	"	"	"	
<b>Fluorene</b>	<b>1.01</b>	0.104	0.208	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.104	0.208	"	"	"	"	
<b>1-Methylnaphthalene</b>	<b>0.795</b>	0.208	0.417	"	"	"	"	
2-Methylnaphthalene	ND	0.208	0.417	"	"	"	"	
Naphthalene	ND	0.208	0.417	"	"	"	"	
<b>Phenanthrene</b>	<b>0.287</b>	0.104	0.208	"	"	"	"	
<b>Pyrene</b>	<b>0.862</b>	0.104	0.208	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<i>2-Fluorobiphenyl (Surr)</i>		<i>77 %</i>		<i>Limits: 44-120 %</i>		"	"	"
<i>Phenol-d6 (Surr)</i>		<i>33 %</i>		<i>Limits: 10-120 %</i>		"	"	"
<i>p-Terphenyl-d14 (Surr)</i>		<i>90 %</i>		<i>Limits: 50-133 %</i>		"	"	"
<i>2-Fluorophenol (Surr)</i>		<i>46 %</i>		<i>Limits: 19-120 %</i>		"	"	"
<i>2,4,6-Tribromophenol (Surr)</i>		<i>127 %</i>		<i>Limits: 43-140 %</i>		"	"	"



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP05-S-8.0 (A7L0431-15)</b>			<b>Matrix: Soil</b>		<b>Batch: 7121112</b>			
Acenaphthene	ND	4790	4790	ug/kg dry	40	12/28/17 16:23	EPA 8270D	R-02
Acenaphthylene	ND	1060	1060	"	"	"	"	R-02
<b>Anthracene</b>	<b>4020</b>	164	330	"	"	"	"	
<b>Benz(a)anthracene</b>	<b>2700</b>	164	330	"	"	"	"	
<b>Benzo(a)pyrene</b>	<b>1210</b>	247	495	"	"	"	"	
<b>Benzo(b)fluoranthene</b>	<b>614</b>	247	495	"	"	"	"	
Benzo(k)fluoranthene	ND	247	495	"	"	"	"	Q-42
<b>Benzo(g,h,i)perylene</b>	<b>398</b>	164	330	"	"	"	"	
<b>Chrysene</b>	<b>6000</b>	164	330	"	"	"	"	
<b>Dibenz(a,h)anthracene</b>	<b>222</b>	164	330	"	"	"	"	J
<b>Fluoranthene</b>	<b>2160</b>	164	330	"	"	"	"	
<b>Fluorene</b>	<b>5800</b>	164	330	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	164	330	"	"	"	"	
<b>1-Methylnaphthalene</b>	<b>11800</b>	330	659	"	"	"	"	B-02
2-Methylnaphthalene	ND	659	659	"	"	"	"	
Naphthalene	ND	659	659	"	"	"	"	
<b>Phenanthrene</b>	<b>9000</b>	164	330	"	"	"	"	
<b>Pyrene</b>	<b>6780</b>	164	330	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 256 %</i>		<i>Limits: 37-122 %</i>	"	"	"	S-05
<i>2-Fluorobiphenyl (Surr)</i>		<i>162 %</i>		<i>Limits: 44-115 %</i>	"	"	"	S-05
<i>Phenol-d6 (Surr)</i>		<i>83 %</i>		<i>Limits: 33-122 %</i>	"	"	"	S-05
<i>p-Terphenyl-d14 (Surr)</i>		<i>118 %</i>		<i>Limits: 54-127 %</i>	"	"	"	S-05
<i>2-Fluorophenol (Surr)</i>		<i>82 %</i>		<i>Limits: 35-115 %</i>	"	"	"	S-05
<i>2,4,6-Tribromophenol (Surr)</i>		<i>96 %</i>		<i>Limits: 39-132 %</i>	"	"	"	S-05



Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP15-S-3.0 (A7L0431-17RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120858</b>			
Acenaphthene	7.76	1.36	2.74	ug/kg dry	1	12/20/17 15:37	EPA 8270D	
Acenaphthylene	ND	1.36	2.74	"	"	"	"	
Anthracene	5.78	1.36	2.74	"	"	"	"	
Benz(a)anthracene	5.71	1.36	2.74	"	"	"	"	M-05
Benzo(a)pyrene	5.18	2.05	4.10	"	"	"	"	
Benzo(b)fluoranthene	6.42	2.05	4.10	"	"	"	"	M-05
Benzo(k)fluoranthene	ND	2.05	4.10	"	"	"	"	
Benzo(g,h,i)perylene	3.50	1.36	2.74	"	"	"	"	
Chrysene	5.83	1.36	2.74	"	"	"	"	M-05
Dibenz(a,h)anthracene	ND	1.36	2.74	"	"	"	"	
Fluoranthene	20.1	1.36	2.74	"	"	"	"	
Fluorene	9.91	1.36	2.74	"	"	"	"	
Indeno(1,2,3-cd)pyrene	3.60	1.36	2.74	"	"	"	"	
1-Methylnaphthalene	4.08	2.74	5.47	"	"	"	"	J
2-Methylnaphthalene	7.46	2.74	5.47	"	"	"	"	B-02
Naphthalene	18.9	2.74	5.47	"	"	"	"	
Phenanthrene	37.7	1.36	2.74	"	"	"	"	
Pyrene	14.8	1.36	2.74	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 75 %</i>		<i>Limits: 37-122 %</i>		"	"	"
<i>2-Fluorobiphenyl (Surr)</i>		<i>71 %</i>		<i>Limits: 44-115 %</i>		"	"	"
<i>Phenol-d6 (Surr)</i>		<i>76 %</i>		<i>Limits: 33-122 %</i>		"	"	"
<i>p-Terphenyl-d14 (Surr)</i>		<i>82 %</i>		<i>Limits: 54-127 %</i>		"	"	"
<i>2-Fluorophenol (Surr)</i>		<i>67 %</i>		<i>Limits: 35-115 %</i>		"	"	"
<i>2,4,6-Tribromophenol (Surr)</i>		<i>94 %</i>		<i>Limits: 39-132 %</i>		"	"	"



Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP15-S-8.0 (A7L0431-19)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120858</b>			
Acenaphthene	15400	63.1	127	ug/kg dry	40	12/20/17 13:15	EPA 8270D	
Acenaphthylene	ND	237	237	"	"	"	"	R-02
Anthracene	8180	63.1	127	"	"	"	"	
Benz(a)anthracene	2060	63.1	127	"	"	"	"	
Benzo(a)pyrene	500	95.0	190	"	"	"	"	
Benzo(b)fluoranthene	807	95.0	190	"	"	"	"	M-05
Benzo(k)fluoranthene	252	95.0	190	"	"	"	"	M-05
Benzo(g,h,i)perylene	107	63.1	127	"	"	"	"	J
Chrysene	1860	63.1	127	"	"	"	"	
Dibenz(a,h)anthracene	ND	63.1	127	"	"	"	"	
Fluoranthene	13100	63.1	127	"	"	"	"	
Fluorene	15500	63.1	127	"	"	"	"	
Indeno(1,2,3-cd)pyrene	148	63.1	127	"	"	"	"	
1-Methylnaphthalene	8110	127	253	"	"	"	"	
2-Methylnaphthalene	15100	127	253	"	"	"	"	B-02
Naphthalene	34600	127	253	"	"	"	"	
Pyrene	8700	63.1	127	"	"	"	"	
<i>Surrogate: Nitrobenzene-d5 (Surr)</i>		<i>Recovery: 78 %</i>		<i>Limits: 37-122 %</i>	"	"	"	S-05
<i>2-Fluorobiphenyl (Surr)</i>		<i>86 %</i>		<i>Limits: 44-115 %</i>	"	"	"	S-05
<i>Phenol-d6 (Surr)</i>		<i>60 %</i>		<i>Limits: 33-122 %</i>	"	"	"	S-05
<i>p-Terphenyl-d14 (Surr)</i>		<i>87 %</i>		<i>Limits: 54-127 %</i>	"	"	"	S-05
<i>2-Fluorophenol (Surr)</i>		<i>57 %</i>		<i>Limits: 35-115 %</i>	"	"	"	S-05
<i>2,4,6-Tribromophenol (Surr)</i>		<i>62 %</i>		<i>Limits: 39-132 %</i>	"	"	"	S-05



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP15-S-8.0 (A7L0431-19RE1)</b>			<b>Matrix: Soil</b>		<b>Batch: 7120858</b>			
Phenanthrene	36900	158	317	ug/kg dry	100	12/20/17 15:07	EPA 8270D	

Apex Laboratories



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

Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07


## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP11-S-3.0 (A7L0431-01)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Arsenic	2.32	0.607	1.21	mg/kg dry	10	12/28/17 22:24	EPA 6020A	
Barium	102	0.607	1.21	"	"	"	"	
Cadmium	0.182	0.121	0.243	"	"	"	"	J
Chromium	15.9	0.607	1.21	"	"	"	"	
Lead	9.70	0.121	0.243	"	"	"	"	
Selenium	ND	0.607	1.21	"	"	"	"	
Silver	ND	0.121	0.243	"	"	"	"	
<b>GP11-S-3.0 (A7L0431-01RE1)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Mercury	ND	0.0486	0.0971	mg/kg dry	10	12/29/17 17:56	EPA 6020A	
<b>GP11-S-7.0 (A7L0431-02)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Arsenic	2.45	0.647	1.29	mg/kg dry	10	12/28/17 22:27	EPA 6020A	
Barium	91.6	0.647	1.29	"	"	"	"	
Cadmium	0.168	0.129	0.259	"	"	"	"	J
Chromium	20.6	0.647	1.29	"	"	"	"	
Lead	3.19	0.129	0.259	"	"	"	"	
Selenium	ND	0.647	1.29	"	"	"	"	
Silver	ND	0.129	0.259	"	"	"	"	
<b>GP11-S-7.0 (A7L0431-02RE1)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Mercury	ND	0.0518	0.104	mg/kg dry	10	12/29/17 18:00	EPA 6020A	
<b>GP14-S-3.0 (A7L0431-03)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Arsenic	2.29	0.576	1.15	mg/kg dry	10	12/28/17 22:31	EPA 6020A	
Barium	96.5	0.576	1.15	"	"	"	"	
Cadmium	0.173	0.115	0.231	"	"	"	"	J
Chromium	13.7	0.576	1.15	"	"	"	"	
Lead	12.7	0.115	0.231	"	"	"	"	Q-42
Selenium	ND	0.576	1.15	"	"	"	"	
Silver	ND	0.115	0.231	"	"	"	"	
<b>GP14-S-3.0 (A7L0431-03RE1)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Mercury	ND	0.0461	0.0922	mg/kg dry	10	12/29/17 18:12	EPA 6020A	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP14-S-8.0 (A7L0431-04)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Arsenic	2.32	0.616	1.23	mg/kg dry	10	12/28/17 22:53	EPA 6020A	
Barium	91.0	0.616	1.23	"	"	"	"	
Cadmium	0.173	0.123	0.246	"	"	"	"	J
Chromium	17.0	0.616	1.23	"	"	"	"	
Lead	4.40	0.123	0.246	"	"	"	"	
Selenium	ND	0.616	1.23	"	"	"	"	
Silver	ND	0.123	0.246	"	"	"	"	
<b>GP14-S-8.0 (A7L0431-04RE1)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Mercury	ND	0.0493	0.0986	mg/kg dry	10	12/29/17 18:25	EPA 6020A	
<b>GP14-W-10.0 (A7L0431-05)</b>								
<b>Matrix: Water</b>								
Batch: 7121080								
Arsenic	6.80	0.500	1.00	ug/L	1	12/27/17 20:43	EPA 6020A	
Barium	366	0.500	1.00	"	"	"	"	
Cadmium	0.356	0.0400	0.200	"	"	"	"	
Chromium	23.8	0.500	1.00	"	"	"	"	
Lead	4.70	0.100	0.200	"	"	"	"	
Mercury	0.440	0.0400	0.0800	"	"	"	"	
Selenium	2.29	0.500	1.00	"	"	"	"	
Silver	0.256	0.100	0.200	"	"	"	"	
<b>GP13-S-2.5 (A7L0431-06)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Arsenic	8.90	0.617	1.23	mg/kg dry	10	12/28/17 22:56	EPA 6020A	
Barium	152	0.617	1.23	"	"	"	"	
Cadmium	0.901	0.123	0.247	"	"	"	"	
Chromium	22.6	0.617	1.23	"	"	"	"	
Lead	145	0.123	0.247	"	"	"	"	
Selenium	ND	0.617	1.23	"	"	"	"	
Silver	0.210	0.123	0.247	"	"	"	"	J
<b>GP13-S-2.5 (A7L0431-06RE1)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Mercury	0.205	0.0494	0.0987	mg/kg dry	10	12/29/17 18:28	EPA 6020A	
<b>GP13-S-7.5 (A7L0431-07)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP13-S-7.5 (A7L0431-07)</b>								
<b>Matrix: Soil</b>								
Arsenic	4.42	0.713	1.43	mg/kg dry	10	12/28/17 22:59	EPA 6020A	
Barium	161	0.713	1.43	"	"	"	"	
Cadmium	0.314	0.143	0.285	"	"	"	"	
Chromium	25.9	0.713	1.43	"	"	"	"	
Lead	112	0.143	0.285	"	"	"	"	
Selenium	ND	0.713	1.43	"	"	"	"	
Silver	0.200	0.143	0.285	"	"	"	"	J
<b>GP13-S-7.5 (A7L0431-07RE1)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Mercury	0.479	0.0570	0.114	mg/kg dry	10	12/29/17 18:31	EPA 6020A	
<b>GP10-S-2.5 (A7L0431-09)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Arsenic	5.68	0.590	1.18	mg/kg dry	10	12/28/17 23:02	EPA 6020A	
Barium	97.8	0.590	1.18	"	"	"	"	
Cadmium	0.366	0.118	0.236	"	"	"	"	
Chromium	19.2	0.590	1.18	"	"	"	"	
Lead	70.8	0.118	0.236	"	"	"	"	
Selenium	ND	0.590	1.18	"	"	"	"	
Silver	1.75	0.118	0.236	"	"	"	"	
<b>GP10-S-2.5 (A7L0431-09RE1)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Mercury	0.218	0.0472	0.0943	mg/kg dry	10	12/29/17 18:34	EPA 6020A	
<b>GP10-W-8.0 (A7L0431-10)</b>								
<b>Matrix: Water</b>								
Batch: 7121120								
Arsenic	0.982	0.500	1.00	ug/L	1	12/28/17 19:44	EPA 6020A	J
Barium	41.0	0.500	1.00	"	"	"	"	
Cadmium	0.0407	0.0400	0.200	"	"	"	"	J
Chromium	3.36	0.500	1.00	"	"	"	"	
Lead	12.8	0.100	0.200	"	"	"	"	B
Mercury	0.0403	0.0400	0.0800	"	"	"	"	J
Selenium	ND	0.500	1.00	"	"	"	"	
Silver	ND	0.100	0.200	"	"	"	"	
<b>GP10-W-8.0-DUP (A7L0431-11)</b>								
<b>Matrix: Water</b>								
Batch: 7121120								
Arsenic	0.828	0.500	1.00	ug/L	1	12/28/17 19:57	EPA 6020A	J

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP10-W-8.0-DUP (A7L0431-11) Matrix: Water</b>								
Barium	40.2	0.500	1.00	ug/L	1	"	EPA 6020A	
Cadmium	ND	0.0400	0.200	"	"	"	"	
Chromium	3.02	0.500	1.00	"	"	"	"	
Lead	12.6	0.100	0.200	"	"	"	"	B
Mercury	ND	0.0400	0.0800	"	"	"	"	
Selenium	ND	0.500	1.00	"	"	"	"	
Silver	ND	0.100	0.200	"	"	"	"	
<b>GP05-S-5.5 (A7L0431-12) Matrix: Soil</b>								
Batch: 7121111								
Arsenic	10.4	0.632	1.26	mg/kg dry	10	12/28/17 23:05	EPA 6020A	
Barium	133	0.632	1.26	"	"	"	"	
Cadmium	0.911	0.126	0.253	"	"	"	"	
Chromium	30.9	0.632	1.26	"	"	"	"	
Lead	706	0.126	0.253	"	"	"	"	
Selenium	ND	0.632	1.26	"	"	"	"	
Silver	ND	0.126	0.253	"	"	"	"	
<b>GP05-S-5.5 (A7L0431-12RE1) Matrix: Soil</b>								
Batch: 7121111								
Mercury	1220	50.6	101	mg/kg dry	10000	12/29/17 18:38	EPA 6020A	
<b>GP05-S-7.5 (A7L0431-14) Matrix: Soil</b>								
Batch: 7121111								
Arsenic	2.74	0.741	1.48	mg/kg dry	10	12/28/17 23:08	EPA 6020A	
Barium	201	0.741	1.48	"	"	"	"	
Cadmium	0.267	0.148	0.296	"	"	"	"	J
Chromium	22.4	0.741	1.48	"	"	"	"	
Lead	92.4	0.148	0.296	"	"	"	"	
Selenium	ND	0.741	1.48	"	"	"	"	
Silver	ND	0.148	0.296	"	"	"	"	
<b>GP05-S-7.5 (A7L0431-14RE1) Matrix: Soil</b>								
Batch: 7121111								
Mercury	1.25	0.0593	0.119	mg/kg dry	10	12/29/17 18:44	EPA 6020A	
<b>GP05-S-8.0 (A7L0431-15) Matrix: Soil</b>								
Batch: 7121111								
Arsenic	1.73	0.640	1.28	mg/kg dry	10	12/28/17 23:12	EPA 6020A	
Barium	104	0.640	1.28	"	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP05-S-8.0 (A7L0431-15)</b>								
<b>Matrix: Soil</b>								
Cadmium	0.154	0.128	0.256	mg/kg dry	10	"	EPA 6020A	J
Chromium	15.6	0.640	1.28	"	"	"	"	
Lead	34.5	0.128	0.256	"	"	"	"	
Selenium	ND	0.640	1.28	"	"	"	"	
Silver	ND	0.128	0.256	"	"	"	"	
<b>GP05-S-8.0 (A7L0431-15RE1)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Mercury	0.0575	0.0512	0.102	mg/kg dry	10	12/29/17 18:47	EPA 6020A	J
<b>GP15-S-3.0 (A7L0431-17)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Arsenic	1.09	0.584	1.17	mg/kg dry	10	12/28/17 23:15	EPA 6020A	J
Barium	39.2	0.584	1.17	"	"	"	"	
Cadmium	ND	0.117	0.233	"	"	"	"	
Chromium	3.52	0.584	1.17	"	"	"	"	
Lead	2.51	0.117	0.233	"	"	"	"	
Selenium	ND	0.584	1.17	"	"	"	"	
Silver	ND	0.117	0.233	"	"	"	"	
<b>GP15-S-3.0 (A7L0431-17RE1)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Mercury	ND	0.0467	0.0934	mg/kg dry	10	12/29/17 19:00	EPA 6020A	
<b>GP15-S-8.0 (A7L0431-19)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Arsenic	1.66	0.588	1.18	mg/kg dry	10	12/28/17 23:18	EPA 6020A	
Barium	37.7	0.588	1.18	"	"	"	"	
Cadmium	0.188	0.118	0.235	"	"	"	"	J
Chromium	4.73	0.588	1.18	"	"	"	"	
Lead	3.40	0.118	0.235	"	"	"	"	
Selenium	ND	0.588	1.18	"	"	"	"	
Silver	ND	0.118	0.235	"	"	"	"	
<b>GP15-S-8.0 (A7L0431-19RE1)</b>								
<b>Matrix: Soil</b>								
Batch: 7121111								
Mercury	ND	0.0471	0.0941	mg/kg dry	10	12/29/17 19:03	EPA 6020A	

Apex Laboratories



Philip Nerenberg, Lab Director

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



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## ANALYTICAL SAMPLE RESULTS

### Percent Dry Weight

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
<b>GP11-S-3.0 (A7L0431-01)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120876</b>	
% Solids	82.7	1.00	1.00	% by Weight	1	12/20/17 08:11	EPA 8000C	
<b>GP11-S-7.0 (A7L0431-02)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120876</b>	
% Solids	79.5	1.00	1.00	% by Weight	1	12/20/17 08:11	EPA 8000C	
<b>GP14-S-3.0 (A7L0431-03)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120876</b>	
% Solids	86.9	1.00	1.00	% by Weight	1	12/20/17 08:11	EPA 8000C	
<b>GP14-S-8.0 (A7L0431-04)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120876</b>	
% Solids	85.2	1.00	1.00	% by Weight	1	12/20/17 08:11	EPA 8000C	
<b>GP13-S-2.5 (A7L0431-06)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120876</b>	
% Solids	85.8	1.00	1.00	% by Weight	1	12/20/17 08:11	EPA 8000C	
<b>GP13-S-7.5 (A7L0431-07)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120876</b>	
% Solids	75.7	1.00	1.00	% by Weight	1	12/20/17 08:11	EPA 8000C	
<b>GP10-S-2.5 (A7L0431-09)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120876</b>	
% Solids	83.0	1.00	1.00	% by Weight	1	12/20/17 08:11	EPA 8000C	
<b>GP05-S-5.5 (A7L0431-12)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120876</b>	
% Solids	77.8	1.00	1.00	% by Weight	1	12/20/17 08:11	EPA 8000C	
<b>GP05-S-7.5 (A7L0431-14)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120876</b>	
% Solids	69.0	1.00	1.00	% by Weight	1	12/20/17 08:11	EPA 8000C	
<b>GP05-S-8.0 (A7L0431-15)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120862</b>	
% Solids	80.6	1.00	1.00	% by Weight	1	12/19/17 12:55	EPA 8000C	
<b>GP15-S-3.0 (A7L0431-17)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120876</b>	
% Solids	93.7	1.00	1.00	% by Weight	1	12/20/17 08:11	EPA 8000C	
<b>GP15-S-8.0 (A7L0431-19)</b>				<b>Matrix: Soil</b>			<b>Batch: 7120862</b>	
% Solids	83.5	1.00	1.00	% by Weight	1	12/19/17 12:55	EPA 8000C	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Hydrocarbon Identification Screen by NWTPH-HCID

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120879 - EPA 3510C (Fuels/Acid Ext.)</b>						<b>Water</b>						
<b>Blank (7120879-BLK1)</b>						Prepared: 12/19/17 13:50 Analyzed: 12/19/17 23:19						
<b>NWTPH-HCID</b>												
Gasoline Range Organics	ND	0.0909	0.0909	mg/L	1	---	---	---	---	---	---	
Diesel Range Organics	ND	0.227	0.227	"	"	---	---	---	---	---	---	
Oil Range Organics	ND	0.227	0.227	"	"	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>			Recovery: 99 %		Limits: 50-150 %		Dilution: 1x					
<i>4-Bromofluorobenzene (Surr)</i>			63 %		10-120 %		"					
<b>Batch 7120880 - NWTPH-HCID (Soil)</b>						<b>Soil</b>						
<b>Blank (7120880-BLK1)</b>						Prepared: 12/19/17 13:51 Analyzed: 12/19/17 23:19						
<b>NWTPH-HCID</b>												
Gasoline Range Organics	ND	18.2	18.2	mg/kg wet	1	---	---	---	---	---	---	
Diesel Range Organics	ND	45.5	45.5	"	"	---	---	---	---	---	---	
Oil Range Organics	ND	90.9	90.9	"	"	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>			Recovery: 98 %		Limits: 50-150 %		Dilution: 1x					
<i>4-Bromofluorobenzene (Surr)</i>			95 %		50-150 %		"					
<b>Duplicate (7120880-DUP1)</b>						Prepared: 12/19/17 13:51 Analyzed: 12/20/17 00:05						
<b>QC Source Sample: GP10-S-2.5 (A7L0431-09)</b>												
<b>NWTPH-HCID</b>												
Gasoline Range Organics	ND	23.2	23.2	mg/kg dry	1	---	ND	---	---	---	30%	
Diesel Range Organics	<b>DET</b>	57.9	57.9	"	"	---	ND	---	---	---	30%	
Oil Range Organics	<b>DET</b>	116	116	"	"	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>			Recovery: 106 %		Limits: 50-150 %		Dilution: 1x					
<i>4-Bromofluorobenzene (Surr)</i>			100 %		50-150 %		"					
<b>Duplicate (7120880-DUP2)</b>						Prepared: 12/19/17 13:51 Analyzed: 12/20/17 08:49						
<b>QC Source Sample: Other (A7L0471-05)</b>												
<b>NWTPH-HCID</b>												
Gasoline Range Organics	ND	21.3	21.3	mg/kg dry	1	---	ND	---	---	---	30%	
Diesel Range Organics	ND	53.3	53.3	"	"	---	ND	---	---	---	30%	
Oil Range Organics	ND	107	107	"	"	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>			Recovery: 111 %		Limits: 50-150 %		Dilution: 1x					
<i>4-Bromofluorobenzene (Surr)</i>			88 %		50-150 %		"					

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120879 - EPA 3510C (Fuels/Acid Ext.)</b>						<b>Water</b>						
<b>Blank (7120879-BLK1)</b>						Prepared: 12/19/17 13:50 Analyzed: 12/19/17 23:19						
<b>NWTPH-Dx</b>												
Diesel	ND	0.0909	0.182	mg/L	1	---	---	---	---	---	---	
Oil	ND	0.182	0.364	"	"	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS (7120879-BS1)</b>						Prepared: 12/19/17 13:50 Analyzed: 12/19/17 23:42						
<b>NWTPH-Dx</b>												
Diesel	1.05	0.100	0.200	mg/L	1	1.25	---	84	58-115	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS Dup (7120879-BSD1)</b>						Prepared: 12/19/17 13:50 Analyzed: 12/20/17 00:05						
<b>NWTPH-Dx</b>												
Diesel	0.906	0.100	0.200	mg/L	1	1.25	---	72	58-115	14	20%	Q-19
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 98 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209


Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120925 - EPA 3510C (Fuels/Acid Ext.)</b>						<b>Water</b>						
<b>Blank (7120925-BLK1)</b>						Prepared: 12/20/17 13:58 Analyzed: 12/21/17 05:58						
<b>NWTPH-Dx</b>												
Diesel	ND	0.0909	0.182	mg/L	1	---	---	---	---	---	---	
Oil	ND	0.182	0.364	"	"	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 98 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS (7120925-BS1)</b>						Prepared: 12/20/17 13:58 Analyzed: 12/21/17 06:19						
<b>NWTPH-Dx</b>												
Diesel	1.13	0.100	0.200	mg/L	1	1.25	---	90	58-115	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 99 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<b>LCS Dup (7120925-BSD1)</b>						Prepared: 12/20/17 13:58 Analyzed: 12/21/17 06:39						
<b>NWTPH-Dx</b>												
Diesel	1.20	0.100	0.200	mg/L	1	1.25	---	96	58-115	6	20%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 99 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120982 - EPA 3546 (Fuels)</b>						<b>Soil</b>						
<b>Blank (7120982-BLK1)</b>						Prepared: 12/21/17 13:41 Analyzed: 12/21/17 22:28						
<b>NWTPH-Dx</b>												
Diesel	ND	9.09	25.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	18.2	50.0	"	"	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 88 %		Limits: 50-150 %		Dilution: 1x						
<b>LCS (7120982-BS1)</b>						Prepared: 12/21/17 13:41 Analyzed: 12/21/17 22:49						
<b>NWTPH-Dx</b>												
Diesel	118	10.0	25.0	mg/kg wet	1	125	---	94	76-115	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 92 %		Limits: 50-150 %		Dilution: 1x						
<b>Duplicate (7120982-DUP1)</b>						Prepared: 12/21/17 13:41 Analyzed: 12/21/17 23:31						
<b>QC Source Sample: Other (A7L0317-07)</b>												
<b>NWTPH-Dx</b>												
Diesel	ND	56.0	112	mg/kg dry	5	---	ND	---	---	---	30%	
Oil	539	112	224	"	"	---	867	---	---	47	30%	Q-04
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 89 %		Limits: 50-150 %		Dilution: 5x						S-05
<b>Duplicate (7120982-DUP2)</b>						Prepared: 12/21/17 13:41 Analyzed: 12/22/17 09:07						
<b>QC Source Sample: Other (A7L0639-03RE1)</b>												
<b>NWTPH-Dx</b>												
Diesel	2340	9.78	25.0	mg/kg wet	1	---	2620	---	---	11	30%	
Oil	ND	19.6	50.0	"	"	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 71 %		Limits: 50-150 %		Dilution: 1x						



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209


Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120989 - EPA 3546 (Fuels)</b>						<b>Soil</b>						
<b>Blank (7120989-BLK1)</b>						Prepared: 12/21/17 17:25 Analyzed: 12/21/17 22:28						
<b>NWTPH-Dx</b>												
Diesel	ND	9.09	25.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	18.2	50.0	"	"	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 91 %		Limits: 50-150 %		Dilution: 1x						
<b>LCS (7120989-BS1)</b>						Prepared: 12/21/17 17:25 Analyzed: 12/21/17 22:49						
<b>NWTPH-Dx</b>												
Diesel	95.8	10.0	25.0	mg/kg wet	1	125	---	77	76-115	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 85 %		Limits: 50-150 %		Dilution: 1x						
<b>Duplicate (7120989-DUP2)</b>						Prepared: 12/21/17 17:25 Analyzed: 12/22/17 06:01						
<b>QC Source Sample: GP05-S-8.0 (A7L0431-15)</b>												
<b>NWTPH-Dx</b>												
Diesel	<b>3640</b>	608	1220	mg/kg dry	50	---	5970	---	---	49	30%	F-24, Q-04
Oil	<b>2460</b>	1220	2430	"	"	---	4080	---	---	49	30%	F-24, Q-04
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: %		Limits: 50-150 %		Dilution: 50x						
<b>Duplicate (7120989-DUP3)</b>						Prepared: 12/21/17 17:25 Analyzed: 12/26/17 11:26						
<b>QC Source Sample: Other (A7L0343-02RE1)</b>												
<b>NWTPH-Dx</b>												
Diesel	ND	208	416	mg/kg dry	20	---	ND	---	---	---	30%	
Oil	<b>2270</b>	416	832	"	"	---	1880	---	---	19	30%	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: %		Limits: 50-150 %		Dilution: 20x						S-01



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Notes
<b>Batch 7120802 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120802-BLK1)</b>						Prepared: 12/18/17 09:38 Analyzed: 12/18/17 11:02						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	---	---	---	---	---	---	---
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 98 %	Limits: 50-150 %			Dilution: 1x					
1,4-Difluorobenzene (Sur)			96 %	50-150 %			"					
<b>LCS (7120802-BS2)</b>						Prepared: 12/18/17 09:38 Analyzed: 12/18/17 10:34						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	0.482	0.0500	0.100	mg/L	1	0.500	---	96	80-120	---	---	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 99 %	Limits: 50-150 %			Dilution: 1x					
1,4-Difluorobenzene (Sur)			95 %	50-150 %			"					
<b>Duplicate (7120802-DUP1)</b>						Prepared: 12/18/17 11:00 Analyzed: 12/18/17 16:41						
<b>QC Source Sample: Other (A7L0454-23)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 99 %	Limits: 50-150 %			Dilution: 1x					
1,4-Difluorobenzene (Sur)			98 %	50-150 %			"					
<b>Duplicate (7120802-DUP2)</b>						Prepared: 12/18/17 11:00 Analyzed: 12/18/17 18:34						
<b>QC Source Sample: GP10-W-8.0 (A7L0431-10)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			Recovery: 100 %	Limits: 50-150 %			Dilution: 1x					
1,4-Difluorobenzene (Sur)			98 %	50-150 %			"					



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120806 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120806-BLK1)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 12:42						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	1.67	3.33	mg/kg wet	50	---	---	---	---	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 95 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 92 % 50-150 % "</i>												
<b>LCS (7120806-BS4)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 13:09						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	24.6	2.50	5.00	mg/kg wet	50	25.0	---	99	80-120	---	---	
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 97 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 96 % 50-150 % "</i>												
<b>Duplicate (7120806-DUP1)</b>						Prepared: 12/14/17 08:30 Analyzed: 12/18/17 14:47						
<b>QC Source Sample: GP11-S-3.0 (A7L0431-01)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	3.49	6.97	mg/kg dry	50	---	ND	---	---	---	30%	
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 96 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 93 % 50-150 % "</i>												





**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Notes
<b>Batch 7120807 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120807-BLK1)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 12:37						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	1.67	3.33	mg/kg wet	50	---	---	---	---	---	---	---
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 108 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>89 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>LCS (7120807-BS2)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 12:10						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	25.5	2.50	5.00	mg/kg wet	50	25.0	---	102	80-120	---	---	---
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 108 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>89 %</i>		<i>50-150 %</i>		<i>"</i>						
<b>Duplicate (7120807-DUP1)</b>						Prepared: 12/14/17 13:20 Analyzed: 12/18/17 18:27						
<b>QC Source Sample: GP10-S-2.5 (A7L0431-09)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	2.90	5.79	mg/kg dry	50	---	ND	---	---	---	---	30%
<i>Surr: 4-Bromofluorobenzene (Sur)</i>		<i>Recovery: 109 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
<i>1,4-Difluorobenzene (Sur)</i>		<i>88 %</i>		<i>50-150 %</i>		<i>"</i>						



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Notes
<b>Batch 7120841 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120841-BLK1)</b>						Prepared: 12/18/17 22:00 Analyzed: 12/18/17 23:49						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	1.67	3.33	mg/kg wet	50	---	---	---	---	---	---	---
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 96 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 94 % 50-150 % "</i>												
<b>LCS (7120841-BS2)</b>						Prepared: 12/18/17 22:00 Analyzed: 12/18/17 23:22						
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	25.3	2.50	5.00	mg/kg wet	50	25.0	---	101	80-120	---	---	---
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 99 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 98 % 50-150 % "</i>												
<b>Duplicate (7120841-DUP1)</b>						Prepared: 12/15/17 12:00 Analyzed: 12/19/17 02:31						
<b>QC Source Sample: Other (A7L0471-01)</b>												
<b>NWTPH-Gx (MS)</b>												
Gasoline Range Organics	ND	2.59	5.18	mg/kg dry	50	---	ND	---	---	---	---	30%
<i>Surr: 4-Bromofluorobenzene (Sur) Recovery: 96 % Limits: 50-150 % Dilution: 1x</i>												
<i>1,4-Difluorobenzene (Sur) 91 % 50-150 % "</i>												

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120806 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120806-BLK1)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 12:42						
<b>5035A/8260C</b>												
Acetone	ND	333	667	ug/kg wet	50	---	---	---	---	---	---	
Acrylonitrile	ND	33.3	66.7	"	"	---	---	---	---	---	---	
Benzene	ND	3.33	6.67	"	"	---	---	---	---	---	---	
Bromobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Bromochloromethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Bromodichloromethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Bromoform	ND	33.3	66.7	"	"	---	---	---	---	---	---	
Bromomethane	ND	333	333	"	"	---	---	---	---	---	---	
2-Butanone (MEK)	ND	167	333	"	"	---	---	---	---	---	---	
n-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
sec-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
tert-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Carbon disulfide	ND	167	333	"	"	---	---	---	---	---	---	
Carbon tetrachloride	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Chlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Chloroethane	ND	167	333	"	"	---	---	---	---	---	---	EST
Chloroform	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Chloromethane	ND	83.3	167	"	"	---	---	---	---	---	---	
2-Chlorotoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
4-Chlorotoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Dibromochloromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	83.3	167	"	"	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Dibromomethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	
1,1-Dichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,2-Dichloropropane	ND	8.33	16.7	"	"	---	---	---	---	---	---	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120806 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120806-BLK1)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 12:42						
<b>5035A/8260C</b>												
1,3-Dichloropropane	ND	16.7	33.3	ug/kg wet	"	---	---	---	---	---	---	
2,2-Dichloropropane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,1-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	33.3	66.7	"	"	---	---	---	---	---	---	
2-Hexanone	ND	167	333	"	"	---	---	---	---	---	---	
Isopropylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
4-Isopropyltoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Methylene chloride	ND	83.3	167	"	"	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	167	333	"	"	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Naphthalene	ND	33.3	66.7	"	"	---	---	---	---	---	---	
n-Propylbenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Styrene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Toluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	83.3	167	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	83.3	167	"	"	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Trichlorofluoromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	EST
1,2,3-Trichloropropane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	8.33	16.7	"	"	---	---	---	---	---	---	
m,p-Xylene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
o-Xylene	ND	8.33	16.7	"	"	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 100 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 102 % 80-120 % "

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120806 - EPA 5035A</b>												
						<b>Soil</b>						
<b>Blank (7120806-BLK1)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 12:42						
<b>5035A/8260C</b>												
<i>Surr: 4-Bromofluorobenzene (Surr) Recovery: 100 % Limits: 80-120 % Dilution: 1x</i>												
<b>LCS (7120806-BS3)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 12:15						
<b>5035A/8260C</b>												
Acetone	1620	500	1000	ug/kg wet	50	2000	---	81	80-120	---	---	
Acrylonitrile	966	50.0	100	"	"	1000	---	97	"	---	---	
Benzene	1040	5.00	10.0	"	"	"	---	104	"	---	---	
Bromobenzene	1010	12.5	25.0	"	"	"	---	101	"	---	---	
Bromochloromethane	1050	25.0	50.0	"	"	"	---	105	"	---	---	
Bromodichloromethane	980	25.0	50.0	"	"	"	---	98	"	---	---	
Bromoform	933	50.0	100	"	"	"	---	93	"	---	---	
Bromomethane	1060	500	500	"	"	"	---	106	"	---	---	
2-Butanone (MEK)	1830	250	500	"	"	2000	---	91	"	---	---	
n-Butylbenzene	1100	25.0	50.0	"	"	1000	---	110	"	---	---	
sec-Butylbenzene	1090	25.0	50.0	"	"	"	---	109	"	---	---	
tert-Butylbenzene	1060	25.0	50.0	"	"	"	---	106	"	---	---	
Carbon disulfide	972	250	500	"	"	"	---	97	"	---	---	
Carbon tetrachloride	1030	25.0	50.0	"	"	"	---	103	"	---	---	
Chlorobenzene	1020	12.5	25.0	"	"	"	---	102	"	---	---	
Chloroethane	1670	250	500	"	"	"	---	167	"	---	---	EST
Chloroform	1060	25.0	50.0	"	"	"	---	106	"	---	---	
Chloromethane	946	125	250	"	"	"	---	95	"	---	---	
2-Chlorotoluene	1060	25.0	50.0	"	"	"	---	106	"	---	---	
4-Chlorotoluene	1060	25.0	50.0	"	"	"	---	106	"	---	---	
Dibromochloromethane	1080	50.0	100	"	"	"	---	108	"	---	---	
1,2-Dibromo-3-chloropropane	1050	125	250	"	"	"	---	105	"	---	---	
1,2-Dibromoethane (EDB)	1050	25.0	50.0	"	"	"	---	105	"	---	---	
Dibromomethane	966	25.0	50.0	"	"	"	---	97	"	---	---	
1,2-Dichlorobenzene	1020	12.5	25.0	"	"	"	---	102	"	---	---	
1,3-Dichlorobenzene	1030	12.5	25.0	"	"	"	---	103	"	---	---	
1,4-Dichlorobenzene	1000	12.5	25.0	"	"	"	---	100	"	---	---	
Dichlorodifluoromethane	841	50.0	100	"	"	"	---	84	"	---	---	
1,1-Dichloroethane	1060	12.5	25.0	"	"	"	---	106	"	---	---	
1,2-Dichloroethane (EDC)	998	12.5	25.0	"	"	"	---	100	"	---	---	
1,1-Dichloroethene	1010	12.5	25.0	"	"	"	---	101	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120806 - EPA 5035A</b>												
						<b>Soil</b>						
<b>LCS (7120806-BS3)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 12:15						
<b>5035A/8260C</b>												
cis-1,2-Dichloroethene	1060	12.5	25.0	ug/kg wet	"	"	---	106	"	---	---	
trans-1,2-Dichloroethene	1070	12.5	25.0	"	"	"	---	107	"	---	---	
1,2-Dichloropropane	1030	12.5	25.0	"	"	"	---	103	"	---	---	
1,3-Dichloropropane	1050	25.0	50.0	"	"	"	---	105	"	---	---	
2,2-Dichloropropane	1260	25.0	50.0	"	"	"	---	126	"	---	---	Q-56
1,1-Dichloropropene	1080	25.0	50.0	"	"	"	---	108	"	---	---	
cis-1,3-Dichloropropene	1260	25.0	50.0	"	"	"	---	126	"	---	---	Q-56
trans-1,3-Dichloropropene	1080	25.0	50.0	"	"	"	---	108	"	---	---	
Ethylbenzene	1040	12.5	25.0	"	"	"	---	104	"	---	---	
Hexachlorobutadiene	1030	50.0	100	"	"	"	---	103	"	---	---	
2-Hexanone	1840	250	500	"	"	2000	---	92	"	---	---	
Isopropylbenzene	1100	25.0	50.0	"	"	1000	---	110	"	---	---	
4-Isopropyltoluene	1100	25.0	50.0	"	"	"	---	110	"	---	---	
Methylene chloride	1020	125	250	"	"	"	---	102	"	---	---	
4-Methyl-2-pentanone (MiBK)	1950	250	500	"	"	2000	---	98	"	---	---	
Methyl tert-butyl ether (MTBE)	1010	25.0	50.0	"	"	1000	---	101	"	---	---	
Naphthalene	1020	50.0	100	"	"	"	---	102	"	---	---	
n-Propylbenzene	1080	12.5	25.0	"	"	"	---	108	"	---	---	
Styrene	956	25.0	50.0	"	"	"	---	96	"	---	---	
1,1,1,2-Tetrachloroethane	974	12.5	25.0	"	"	"	---	97	"	---	---	
1,1,2,2-Tetrachloroethane	1090	25.0	50.0	"	"	"	---	109	"	---	---	
Tetrachloroethene (PCE)	1070	12.5	25.0	"	"	"	---	107	"	---	---	
Toluene	1010	25.0	50.0	"	"	"	---	101	"	---	---	
1,2,3-Trichlorobenzene	1050	125	250	"	"	"	---	105	"	---	---	
1,2,4-Trichlorobenzene	1040	125	250	"	"	"	---	104	"	---	---	
1,1,1-Trichloroethane	1080	12.5	25.0	"	"	"	---	108	"	---	---	
1,1,2-Trichloroethane	1060	12.5	25.0	"	"	"	---	106	"	---	---	
Trichloroethene (TCE)	1040	12.5	25.0	"	"	"	---	104	"	---	---	
Trichlorofluoromethane	1340	50.0	100	"	"	"	---	134	"	---	---	EST
1,2,3-Trichloropropane	1010	25.0	50.0	"	"	"	---	101	"	---	---	
1,2,4-Trimethylbenzene	1080	25.0	50.0	"	"	"	---	108	"	---	---	
1,3,5-Trimethylbenzene	1050	25.0	50.0	"	"	"	---	105	"	---	---	
Vinyl chloride	932	12.5	25.0	"	"	"	---	93	"	---	---	
m,p-Xylene	2110	25.0	50.0	"	"	2000	---	106	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120806 - EPA 5035A</b>						<b>Soil</b>						
<b>LCS (7120806-BS3)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 12:15						
<b>5035A/8260C</b>												
o-Xylene	1060	12.5	25.0	ug/kg wet	"	1000	---	106	"	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 99 %</i>			<i>Limits: 80-120 %</i>			<i>Dilution: 1x</i>			
<i>Toluene-d8 (Surr)</i>			<i>102 %</i>			<i>80-120 %</i>			<i>"</i>			
<i>4-Bromofluorobenzene (Surr)</i>			<i>100 %</i>			<i>80-120 %</i>			<i>"</i>			
<b>Duplicate (7120806-DUP1)</b>						Prepared: 12/14/17 08:30 Analyzed: 12/18/17 14:47						
<b>QC Source Sample: GP11-S-3.0 (ATL0431-01)</b>												
<b>5035A/8260C</b>												
Acetone	ND	697	1390	ug/kg dry	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	69.7	139	"	"	---	ND	---	---	---	30%	
Benzene	ND	6.97	13.9	"	"	---	ND	---	---	---	30%	
Bromobenzene	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
Bromoform	ND	69.7	139	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	697	697	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	349	697	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	349	697	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	349	697	"	"	---	ND	---	---	---	30%	EST
Chloroform	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	174	349	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	69.7	139	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	174	349	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120806 - EPA 5035A</b>												
<b>Soil</b>												
<b>Duplicate (7120806-DUP1)</b>						Prepared: 12/14/17 08:30 Analyzed: 12/18/17 14:47						
<b>QC Source Sample: GP11-S-3.0 (A7L0431-01)</b>												
<b>5035A/8260C</b>												
1,4-Dichlorobenzene	ND	17.4	34.9	ug/kg dry	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	69.7	139	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	69.7	139	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	349	697	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	174	349	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	349	697	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	69.7	139	"	"	---	ND	---	---	---	30%	
n-Propylbenzene	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
Styrene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
Toluene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	174	349	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	174	349	"	"	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director



Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120806 - EPA 5035A</b>												
<b>Soil</b>												
<b>Duplicate (7120806-DUP1)</b>						Prepared: 12/14/17 08:30 Analyzed: 12/18/17 14:47						
<b>QC Source Sample: GP11-S-3.0 (A7L0431-01)</b>												
<b>5035A/8260C</b>												
Trichlorofluoromethane	ND	69.7	139	ug/kg dry	"	---	ND	---	---	---	30%	EST
1,2,3-Trichloropropane	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
Vinyl chloride	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	
m,p-Xylene	ND	34.9	69.7	"	"	---	ND	---	---	---	30%	
o-Xylene	ND	17.4	34.9	"	"	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 101 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 101 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 99 % 80-120 % "

### Matrix Spike (7120806-MS1)

Prepared: 12/14/17 12:40 Analyzed: 12/18/17 17:56

QC Source Sample: GP15-S-8.0 (A7L0431-19)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>5035A/8260C</b>												
Acetone	2460	633	1270	ug/kg dry	50	2530	ND	97	36-164	---	---	
Acrylonitrile	1370	63.3	127	"	"	1260	ND	108	65-134	---	---	
Benzene	1410	6.33	12.7	"	"	"	ND	112	77-121	---	---	
Bromobenzene	1340	15.8	31.6	"	"	"	ND	106	78-121	---	---	
Bromochloromethane	1490	31.6	63.3	"	"	"	ND	118	78-125	---	---	
Bromodichloromethane	1320	31.6	63.3	"	"	"	ND	104	75-127	---	---	
Bromoform	1240	63.3	127	"	"	"	ND	98	67-132	---	---	
Bromomethane	1490	633	633	"	"	"	ND	118	53-143	---	---	
2-Butanone (MEK)	2440	316	633	"	"	2530	ND	96	51-148	---	---	
n-Butylbenzene	1420	31.6	63.3	"	"	1260	ND	112	70-128	---	---	
sec-Butylbenzene	1420	31.6	63.3	"	"	"	ND	112	73-126	---	---	
tert-Butylbenzene	1380	31.6	63.3	"	"	"	ND	110	73-125	---	---	
Carbon disulfide	1350	316	633	"	"	"	ND	107	63-132	---	---	
Carbon tetrachloride	1380	31.6	63.3	"	"	"	ND	109	70-135	---	---	
Chlorobenzene	1350	15.8	31.6	"	"	"	ND	106	79-120	---	---	
Chloroethane	1700	316	633	"	"	"	ND	134	59-139	---	---	EST
Chloroform	1450	31.6	63.3	"	"	"	ND	115	78-123	---	---	
Chloromethane	1280	158	316	"	"	"	ND	101	50-136	---	---	
2-Chlorotoluene	1380	31.6	63.3	"	"	"	ND	109	75-122	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120806 - EPA 5035A</b>						<b>Soil</b>						
<b>Matrix Spike (7120806-MS1)</b>						Prepared: 12/14/17 12:40 Analyzed: 12/18/17 17:56						
<b>QC Source Sample: GP15-S-8.0 (A7L0431-19)</b>												
<b>5035A/8260C</b>												
4-Chlorotoluene	1370	31.6	63.3	ug/kg dry	"	"	ND	108	72-124	---	---	
Dibromochloromethane	1420	63.3	127	"	"	"	ND	112	74-126	---	---	
1,2-Dibromo-3-chloropropane	1350	158	316	"	"	"	ND	107	61-132	---	---	
1,2-Dibromoethane (EDB)	1440	31.6	63.3	"	"	"	ND	114	78-122	---	---	
Dibromomethane	1360	31.6	63.3	"	"	"	ND	108	78-125	---	---	
1,2-Dichlorobenzene	1340	15.8	31.6	"	"	"	ND	106	78-121	---	---	
1,3-Dichlorobenzene	1350	15.8	31.6	"	"	"	ND	107	77-121	---	---	
1,4-Dichlorobenzene	1320	15.8	31.6	"	"	"	ND	104	75-120	---	---	
Dichlorodifluoromethane	1140	63.3	127	"	"	"	ND	90	29-149	---	---	
1,1-Dichloroethane	1460	15.8	31.6	"	"	"	ND	115	76-125	---	---	
1,2-Dichloroethane (EDC)	1390	15.8	31.6	"	"	"	ND	110	73-128	---	---	
1,1-Dichloroethene	1400	15.8	31.6	"	"	"	ND	111	70-131	---	---	
cis-1,2-Dichloroethene	1430	15.8	31.6	"	"	"	ND	113	77-123	---	---	
trans-1,2-Dichloroethene	1460	15.8	31.6	"	"	"	ND	115	74-125	---	---	
1,2-Dichloropropane	1420	15.8	31.6	"	"	"	ND	112	76-123	---	---	
1,3-Dichloropropane	1420	31.6	63.3	"	"	"	ND	112	77-121	---	---	
2,2-Dichloropropane	1540	31.6	63.3	"	"	"	ND	122	67-133	---	---	Q-54a
1,1-Dichloropropene	1450	31.6	63.3	"	"	"	ND	115	76-125	---	---	
cis-1,3-Dichloropropene	1630	31.6	63.3	"	"	"	ND	129	74-126	---	---	Q-54c
trans-1,3-Dichloropropene	1380	31.6	63.3	"	"	"	ND	109	71-130	---	---	
Ethylbenzene	1380	15.8	31.6	"	"	"	ND	109	76-122	---	---	
Hexachlorobutadiene	1380	63.3	127	"	"	"	ND	109	61-135	---	---	
2-Hexanone	2490	316	633	"	"	2530	ND	98	53-145	---	---	
Isopropylbenzene	1430	31.6	63.3	"	"	1260	ND	113	68-134	---	---	
4-Isopropyltoluene	1410	31.6	63.3	"	"	"	ND	111	73-127	---	---	
Methylene chloride	1390	158	316	"	"	"	ND	110	70-128	---	---	
4-Methyl-2-pentanone (MiBK)	2660	316	633	"	"	2530	ND	105	65-135	---	---	
Methyl tert-butyl ether (MTBE)	1350	31.6	63.3	"	"	1260	ND	106	73-125	---	---	
Naphthalene	2800	63.3	127	"	"	"	1310	118	62-129	---	---	
n-Propylbenzene	1390	15.8	31.6	"	"	"	ND	110	73-125	---	---	
Styrene	1260	31.6	63.3	"	"	"	ND	100	76-124	---	---	
1,1,1,2-Tetrachloroethane	1280	15.8	31.6	"	"	"	ND	101	78-125	---	---	
1,1,2,2-Tetrachloroethane	1480	31.6	63.3	"	"	"	ND	117	70-124	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120806 - EPA 5035A</b>												
<b>Soil</b>												
<b>Matrix Spike (7120806-MS1)</b>						Prepared: 12/14/17 12:40 Analyzed: 12/18/17 17:56						
<b>QC Source Sample: GP15-S-8.0 (A7L0431-19)</b>												
<b>5035A/8260C</b>												
Tetrachloroethene (PCE)	1420	15.8	31.6	ug/kg dry	"	"	ND	112	73-128	---	---	
Toluene	1330	31.6	63.3	"	"	"	ND	105	77-121	---	---	
1,2,3-Trichlorobenzene	1380	158	316	"	"	"	ND	109	66-130	---	---	
1,2,4-Trichlorobenzene	1350	158	316	"	"	"	ND	106	67-129	---	---	
1,1,1-Trichloroethane	1470	15.8	31.6	"	"	"	ND	117	73-130	---	---	
1,1,2-Trichloroethane	1430	15.8	31.6	"	"	"	ND	113	78-121	---	---	
Trichloroethene (TCE)	1420	15.8	31.6	"	"	"	ND	112	77-123	---	---	
Trichlorofluoromethane	1540	63.3	127	"	"	"	ND	122	62-140	---	---	EST
1,2,3-Trichloropropane	1360	31.6	63.3	"	"	"	ND	107	73-125	---	---	
1,2,4-Trimethylbenzene	1400	31.6	63.3	"	"	"	ND	111	75-123	---	---	
1,3,5-Trimethylbenzene	1350	31.6	63.3	"	"	"	ND	107	73-124	---	---	
Vinyl chloride	1300	15.8	31.6	"	"	"	ND	103	56-135	---	---	
m,p-Xylene	2800	31.6	63.3	"	"	2530	ND	111	77-124	---	---	
o-Xylene	1380	15.8	31.6	"	"	1260	ND	110	77-123	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 101 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 100 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 99 % 80-120 % "



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120807 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120807-BLK1)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 12:37						
<b>5035A/8260C</b>												
Acetone	ND	333	667	ug/kg wet	50	---	---	---	---	---	---	---
Acrylonitrile	ND	33.3	66.7	"	"	---	---	---	---	---	---	---
Benzene	ND	3.33	6.67	"	"	---	---	---	---	---	---	---
Bromobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
Bromochloromethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Bromodichloromethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Bromoform	ND	33.3	66.7	"	"	---	---	---	---	---	---	---
Bromomethane	ND	333	333	"	"	---	---	---	---	---	---	---
2-Butanone (MEK)	ND	167	333	"	"	---	---	---	---	---	---	---
n-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
sec-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
tert-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Carbon disulfide	ND	167	333	"	"	---	---	---	---	---	---	---
Carbon tetrachloride	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Chlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
Chloroethane	ND	167	333	"	"	---	---	---	---	---	---	---
Chloroform	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Chloromethane	ND	83.3	167	"	"	---	---	---	---	---	---	---
2-Chlorotoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
4-Chlorotoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Dibromochloromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane	ND	83.3	167	"	"	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
Dibromomethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	---
1,2-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,3-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,4-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
Dichlorodifluoromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	---
1,1-Dichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,2-Dichloroethane (EDC)	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,1-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
trans-1,2-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	---
1,2-Dichloropropane	ND	8.33	16.7	"	"	---	---	---	---	---	---	---

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS


### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120807 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120807-BLK1)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 12:37						
<b>5035A/8260C</b>												
1,3-Dichloropropane	ND	16.7	33.3	ug/kg wet	"	---	---	---	---	---	---	
2,2-Dichloropropane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,1-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	33.3	66.7	"	"	---	---	---	---	---	---	
2-Hexanone	ND	167	333	"	"	---	---	---	---	---	---	
Isopropylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
4-Isopropyltoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Methylene chloride	ND	83.3	167	"	"	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	167	333	"	"	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Naphthalene	ND	33.3	66.7	"	"	---	---	---	---	---	---	
n-Propylbenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Styrene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Toluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	83.3	167	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	83.3	167	"	"	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Trichlorofluoromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	8.33	16.7	"	"	---	---	---	---	---	---	
m,p-Xylene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
o-Xylene	ND	8.33	16.7	"	"	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 100 % Limits: 80-120 % Dilution: 1x  
Toluene-d8 (Surr) 93 % 80-120 % "

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120807 - EPA 5035A</b>												
						<b>Soil</b>						
<b>Blank (7120807-BLK1)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 12:37						
<b>5035A/8260C</b>												
<i>Surr: 4-Bromofluorobenzene (Surr) Recovery: 103 % Limits: 80-120 % Dilution: 1x</i>												
<b>LCS (7120807-BS1)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 11:43						
<b>5035A/8260C</b>												
Acetone	1630	500	1000	ug/kg wet	50	2000	---	81	80-120	---	---	
Acrylonitrile	880	50.0	100	"	"	1000	---	88	"	---	---	
Benzene	1000	5.00	10.0	"	"	"	---	100	"	---	---	
Bromobenzene	928	12.5	25.0	"	"	"	---	93	"	---	---	
Bromochloromethane	856	25.0	50.0	"	"	"	---	86	"	---	---	
Bromodichloromethane	1030	25.0	50.0	"	"	"	---	103	"	---	---	
Bromoform	1160	50.0	100	"	"	"	---	116	"	---	---	
Bromomethane	1740	500	500	"	"	"	---	174	"	---	---	Q-56
2-Butanone (MEK)	1800	250	500	"	"	2000	---	90	"	---	---	
n-Butylbenzene	889	25.0	50.0	"	"	1000	---	89	"	---	---	
sec-Butylbenzene	939	25.0	50.0	"	"	"	---	94	"	---	---	
tert-Butylbenzene	860	25.0	50.0	"	"	"	---	86	"	---	---	
Carbon disulfide	1160	250	500	"	"	"	---	116	"	---	---	
Carbon tetrachloride	1100	25.0	50.0	"	"	"	---	110	"	---	---	
Chlorobenzene	980	12.5	25.0	"	"	"	---	98	"	---	---	
Chloroethane	1030	250	500	"	"	"	---	103	"	---	---	
Chloroform	964	25.0	50.0	"	"	"	---	96	"	---	---	
Chloromethane	850	125	250	"	"	"	---	85	"	---	---	
2-Chlorotoluene	907	25.0	50.0	"	"	"	---	91	"	---	---	
4-Chlorotoluene	878	25.0	50.0	"	"	"	---	88	"	---	---	
Dibromochloromethane	1050	50.0	100	"	"	"	---	105	"	---	---	
1,2-Dibromo-3-chloropropane	892	125	250	"	"	"	---	89	"	---	---	
1,2-Dibromoethane (EDB)	996	25.0	50.0	"	"	"	---	100	"	---	---	
Dibromomethane	981	25.0	50.0	"	"	"	---	98	"	---	---	
1,2-Dichlorobenzene	933	12.5	25.0	"	"	"	---	93	"	---	---	
1,3-Dichlorobenzene	984	12.5	25.0	"	"	"	---	98	"	---	---	
1,4-Dichlorobenzene	921	12.5	25.0	"	"	"	---	92	"	---	---	
Dichlorodifluoromethane	852	50.0	100	"	"	"	---	85	"	---	---	
1,1-Dichloroethane	918	12.5	25.0	"	"	"	---	92	"	---	---	
1,2-Dichloroethane (EDC)	970	12.5	25.0	"	"	"	---	97	"	---	---	
1,1-Dichloroethene	930	12.5	25.0	"	"	"	---	93	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120807 - EPA 5035A</b>												
<b>Soil</b>												
LCS (7120807-BS1) Prepared: 12/18/17 09:30 Analyzed: 12/18/17 11:43												
5035A/8260C												
cis-1,2-Dichloroethene	922	12.5	25.0	ug/kg wet	"	"	---	92	"	---	---	
trans-1,2-Dichloroethene	932	12.5	25.0	"	"	"	---	93	"	---	---	
1,2-Dichloropropane	984	12.5	25.0	"	"	"	---	98	"	---	---	
1,3-Dichloropropane	932	25.0	50.0	"	"	"	---	93	"	---	---	
2,2-Dichloropropane	1150	25.0	50.0	"	"	"	---	115	"	---	---	
1,1-Dichloropropene	1050	25.0	50.0	"	"	"	---	105	"	---	---	
cis-1,3-Dichloropropene	996	25.0	50.0	"	"	"	---	100	"	---	---	
trans-1,3-Dichloropropene	996	25.0	50.0	"	"	"	---	100	"	---	---	
Ethylbenzene	969	12.5	25.0	"	"	"	---	97	"	---	---	
Hexachlorobutadiene	1070	50.0	100	"	"	"	---	107	"	---	---	
2-Hexanone	1680	250	500	"	"	2000	---	84	"	---	---	
Isopropylbenzene	1050	25.0	50.0	"	"	1000	---	105	"	---	---	
4-Isopropyltoluene	962	25.0	50.0	"	"	"	---	96	"	---	---	
Methylene chloride	929	125	250	"	"	"	---	93	"	---	---	
4-Methyl-2-pentanone (MiBK)	1790	250	500	"	"	2000	---	89	"	---	---	
Methyl tert-butyl ether (MTBE)	1060	25.0	50.0	"	"	1000	---	106	"	---	---	
Naphthalene	938	50.0	100	"	"	"	---	94	"	---	---	
n-Propylbenzene	868	12.5	25.0	"	"	"	---	87	"	---	---	
Styrene	1020	25.0	50.0	"	"	"	---	102	"	---	---	
1,1,1,2-Tetrachloroethane	1090	12.5	25.0	"	"	"	---	109	"	---	---	
1,1,2,2-Tetrachloroethane	842	25.0	50.0	"	"	"	---	84	"	---	---	
Tetrachloroethene (PCE)	1140	12.5	25.0	"	"	"	---	114	"	---	---	
Toluene	946	25.0	50.0	"	"	"	---	95	"	---	---	
1,2,3-Trichlorobenzene	1010	125	250	"	"	"	---	101	"	---	---	
1,2,4-Trichlorobenzene	1040	125	250	"	"	"	---	104	"	---	---	
1,1,1-Trichloroethane	1130	12.5	25.0	"	"	"	---	113	"	---	---	
1,1,2-Trichloroethane	960	12.5	25.0	"	"	"	---	96	"	---	---	
Trichloroethene (TCE)	1130	12.5	25.0	"	"	"	---	113	"	---	---	
Trichlorofluoromethane	946	50.0	100	"	"	"	---	95	"	---	---	
1,2,3-Trichloropropane	808	25.0	50.0	"	"	"	---	81	"	---	---	
1,2,4-Trimethylbenzene	924	25.0	50.0	"	"	"	---	92	"	---	---	
1,3,5-Trimethylbenzene	904	25.0	50.0	"	"	"	---	90	"	---	---	
Vinyl chloride	1120	12.5	25.0	"	"	"	---	112	"	---	---	
m,p-Xylene	2000	25.0	50.0	"	"	2000	---	100	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120807 - EPA 5035A</b>						<b>Soil</b>						
<b>LCS (7120807-BS1)</b>						Prepared: 12/18/17 09:30 Analyzed: 12/18/17 11:43						
<b>5035A/8260C</b>												
o-Xylene	1020	12.5	25.0	ug/kg wet	"	1000	---	102	"	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 100 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>					
<i>Toluene-d8 (Surr)</i>			<i>93 %</i>		<i>80-120 %</i>		<i>"</i>					
<i>4-Bromofluorobenzene (Surr)</i>			<i>101 %</i>		<i>80-120 %</i>		<i>"</i>					
<b>Duplicate (7120807-DUP1)</b>						Prepared: 12/14/17 13:20 Analyzed: 12/18/17 18:27						
<b>QC Source Sample: GP10-S-2.5 (A7L0431-09)</b>												
<b>5035A/8260C</b>												
Acetone	ND	579	1160	ug/kg dry	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	57.9	116	"	"	---	ND	---	---	---	30%	
Benzene	ND	5.79	11.6	"	"	---	ND	---	---	---	30%	
Bromobenzene	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
Bromoform	ND	57.9	116	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	579	579	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	290	579	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	290	579	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	290	579	"	"	---	ND	---	---	---	30%	
Chloroform	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	145	290	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	57.9	116	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	145	290	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120807 - EPA 5035A</b>												
<b>Soil</b>												
<b>Duplicate (7120807-DUP1)</b>						Prepared: 12/14/17 13:20 Analyzed: 12/18/17 18:27						
<b>QC Source Sample: GP10-S-2.5 (A7L0431-09)</b>												
<b>5035A/8260C</b>												
1,4-Dichlorobenzene	ND	14.5	29.0	ug/kg dry	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	57.9	116	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	57.9	116	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	290	579	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	145	290	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	290	579	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	57.9	116	"	"	---	ND	---	---	---	30%	
n-Propylbenzene	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
Styrene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	<b>22.6</b>	14.5	29.0	"	"	---	17.8	---	---	24	30%	J
Toluene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	145	290	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	145	290	"	"	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120807 - EPA 5035A</b>												
<b>Soil</b>												
<b>Duplicate (7120807-DUP1)</b>						Prepared: 12/14/17 13:20 Analyzed: 12/18/17 18:27						
QC Source Sample: GP10-S-2.5 (A7L0431-09)												
5035A/8260C												
Trichlorofluoromethane	ND	57.9	116	ug/kg dry	"	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
Vinyl chloride	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	
m,p-Xylene	ND	29.0	57.9	"	"	---	ND	---	---	---	30%	
o-Xylene	ND	14.5	29.0	"	"	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 99 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 92 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 102 % 80-120 % "

### Matrix Spike (7120807-MS1)

Prepared: 12/14/17 14:40 Analyzed: 12/18/17 19:48

QC Source Sample: GP05-S-8.0 (A7L0431-15)

5035A/8260C

Acetone	22100	6090	12200	ug/kg dry	500	24300	ND	91	36-164	---	---	
Acrylonitrile	11200	609	1220	"	"	12200	ND	92	65-134	---	---	
Benzene	12300	60.9	122	"	"	"	ND	101	77-121	---	---	
Bromobenzene	11300	152	304	"	"	"	ND	93	78-121	---	---	
Bromochloromethane	10500	304	609	"	"	"	ND	86	78-125	---	---	
Bromodichloromethane	12300	304	609	"	"	"	ND	101	75-127	---	---	
Bromoform	13800	609	1220	"	"	"	ND	114	67-132	---	---	
Bromomethane	21000	6090	6090	"	"	"	ND	173	53-143	---	---	Q-54b
2-Butanone (MEK)	23400	3040	6090	"	"	24300	ND	96	51-148	---	---	
n-Butylbenzene	11600	304	609	"	"	12200	ND	96	70-128	---	---	
sec-Butylbenzene	12000	304	609	"	"	"	ND	99	73-126	---	---	
tert-Butylbenzene	10700	304	609	"	"	"	ND	88	73-125	---	---	
Carbon disulfide	13900	3040	6090	"	"	"	ND	115	63-132	---	---	
Carbon tetrachloride	13200	304	609	"	"	"	ND	109	70-135	---	---	
Chlorobenzene	12500	152	304	"	"	"	ND	103	79-120	---	---	
Chloroethane	11200	3040	6090	"	"	"	ND	92	59-139	---	---	
Chloroform	11700	304	609	"	"	"	ND	96	78-123	---	---	
Chloromethane	10500	1520	3040	"	"	"	ND	86	50-136	---	---	
2-Chlorotoluene	11300	304	609	"	"	"	ND	93	75-122	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120807 - EPA 5035A</b>						<b>Soil</b>						
<b>Matrix Spike (7120807-MS1)</b>						Prepared: 12/14/17 14:40 Analyzed: 12/18/17 19:48						
<b>QC Source Sample: GP05-S-8.0 (A7L0431-15)</b>												
<b>5035A/8260C</b>												
4-Chlorotoluene	10800	304	609	ug/kg dry	"	"	ND	88	72-124	---	---	
Dibromochloromethane	12600	609	1220	"	"	"	ND	104	74-126	---	---	
1,2-Dibromo-3-chloropropane	10900	1520	3040	"	"	"	ND	90	61-132	---	---	
1,2-Dibromoethane (EDB)	12600	304	609	"	"	"	ND	104	78-122	---	---	
Dibromomethane	11700	304	609	"	"	"	ND	96	78-125	---	---	
1,2-Dichlorobenzene	11600	152	304	"	"	"	ND	95	78-121	---	---	
1,3-Dichlorobenzene	12200	152	304	"	"	"	ND	100	77-121	---	---	
1,4-Dichlorobenzene	11200	152	304	"	"	"	ND	92	75-120	---	---	
Dichlorodifluoromethane	10400	609	1220	"	"	"	ND	85	29-149	---	---	
1,1-Dichloroethane	11500	152	304	"	"	"	ND	94	76-125	---	---	
1,2-Dichloroethane (EDC)	12100	152	304	"	"	"	ND	100	73-128	---	---	
1,1-Dichloroethene	11500	152	304	"	"	"	ND	94	70-131	---	---	
cis-1,2-Dichloroethene	11400	152	304	"	"	"	ND	94	77-123	---	---	
trans-1,2-Dichloroethene	11600	152	304	"	"	"	ND	96	74-125	---	---	
1,2-Dichloropropane	12200	152	304	"	"	"	ND	100	76-123	---	---	
1,3-Dichloropropane	12000	304	609	"	"	"	ND	99	77-121	---	---	
2,2-Dichloropropane	13400	304	609	"	"	"	ND	110	67-133	---	---	
1,1-Dichloropropene	13100	304	609	"	"	"	ND	108	76-125	---	---	
cis-1,3-Dichloropropene	12500	304	609	"	"	"	ND	102	74-126	---	---	
trans-1,3-Dichloropropene	12300	304	609	"	"	"	ND	101	71-130	---	---	
Ethylbenzene	12200	152	304	"	"	"	ND	101	76-122	---	---	
Hexachlorobutadiene	14600	609	1220	"	"	"	ND	120	61-135	---	---	
2-Hexanone	22400	3040	6090	"	"	24300	ND	92	53-145	---	---	
Isopropylbenzene	13400	304	609	"	"	12200	ND	110	68-134	---	---	
4-Isopropyltoluene	12200	304	609	"	"	"	ND	100	73-127	---	---	
Methylene chloride	11500	1520	3040	"	"	"	ND	94	70-128	---	---	
4-Methyl-2-pentanone (MiBK)	24700	3040	6090	"	"	24300	ND	101	65-135	---	---	
Methyl tert-butyl ether (MTBE)	13100	304	609	"	"	12200	ND	108	73-125	---	---	
Naphthalene	12500	609	1220	"	"	"	ND	103	62-129	---	---	
n-Propylbenzene	10700	152	304	"	"	"	ND	88	73-125	---	---	
Styrene	13000	304	609	"	"	"	ND	107	76-124	---	---	
1,1,1,2-Tetrachloroethane	13700	152	304	"	"	"	ND	113	78-125	---	---	
1,1,2,2-Tetrachloroethane	10400	304	609	"	"	"	ND	83	70-124	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120807 - EPA 5035A</b>												
<b>Soil</b>												
<b>Matrix Spike (7120807-MS1)</b>						Prepared: 12/14/17 14:40 Analyzed: 12/18/17 19:48						
<b>QC Source Sample: GP05-S-8.0 (A7L0431-15)</b>												
<b>5035A/8260C</b>												
Tetrachloroethene (PCE)	14300	152	304	ug/kg dry	"	"	ND	118	73-128	---	---	
Toluene	11900	304	609	"	"	"	ND	97	77-121	---	---	
1,2,3-Trichlorobenzene	12000	1520	3040	"	"	"	ND	99	66-130	---	---	
1,2,4-Trichlorobenzene	12200	1520	3040	"	"	"	ND	101	67-129	---	---	
1,1,1-Trichloroethane	13900	152	304	"	"	"	ND	114	73-130	---	---	
1,1,2-Trichloroethane	12400	152	304	"	"	"	ND	102	78-121	---	---	
Trichloroethene (TCE)	14000	152	304	"	"	"	ND	115	77-123	---	---	
Trichlorofluoromethane	10800	609	1220	"	"	"	ND	89	62-140	---	---	
1,2,3-Trichloropropane	9970	304	609	"	"	"	ND	82	73-125	---	---	
1,2,4-Trimethylbenzene	11100	304	609	"	"	"	ND	92	75-123	---	---	
1,3,5-Trimethylbenzene	11100	304	609	"	"	"	ND	91	73-124	---	---	
Vinyl chloride	13900	152	304	"	"	"	ND	114	56-135	---	---	
m,p-Xylene	25200	304	609	"	"	24300	ND	104	77-124	---	---	
o-Xylene	12900	152	304	"	"	12200	ND	106	77-123	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 99 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 94 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 99 % 80-120 % "



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120841 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120841-BLK1)</b>						Prepared: 12/18/17 22:00 Analyzed: 12/18/17 23:49						
<b>5035A/8260C</b>												
Acetone	ND	333	667	ug/kg wet	50	---	---	---	---	---	---	
Acrylonitrile	ND	33.3	66.7	"	"	---	---	---	---	---	---	
Benzene	ND	3.33	6.67	"	"	---	---	---	---	---	---	
Bromobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Bromochloromethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Bromodichloromethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Bromoform	ND	33.3	66.7	"	"	---	---	---	---	---	---	
Bromomethane	ND	333	333	"	"	---	---	---	---	---	---	
2-Butanone (MEK)	ND	167	333	"	"	---	---	---	---	---	---	
n-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
sec-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
tert-Butylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Carbon disulfide	ND	167	333	"	"	---	---	---	---	---	---	
Carbon tetrachloride	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Chlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Chloroethane	ND	167	333	"	"	---	---	---	---	---	---	EST
Chloroform	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Chloromethane	ND	83.3	167	"	"	---	---	---	---	---	---	
2-Chlorotoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
4-Chlorotoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Dibromochloromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	83.3	167	"	"	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Dibromomethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	
1,1-Dichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,2-Dichloropropane	ND	8.33	16.7	"	"	---	---	---	---	---	---	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120841 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120841-BLK1)</b>						Prepared: 12/18/17 22:00 Analyzed: 12/18/17 23:49						
<b>5035A/8260C</b>												
1,3-Dichloropropane	ND	16.7	33.3	ug/kg wet	"	---	---	---	---	---	---	
2,2-Dichloropropane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,1-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	33.3	66.7	"	"	---	---	---	---	---	---	
2-Hexanone	ND	167	333	"	"	---	---	---	---	---	---	
Isopropylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
4-Isopropyltoluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Methylene chloride	ND	83.3	167	"	"	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	167	333	"	"	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Naphthalene	ND	33.3	66.7	"	"	---	---	---	---	---	---	
n-Propylbenzene	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Styrene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Toluene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	83.3	167	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	83.3	167	"	"	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	8.33	16.7	"	"	---	---	---	---	---	---	
Trichlorofluoromethane	ND	33.3	66.7	"	"	---	---	---	---	---	---	EST
1,2,3-Trichloropropane	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	8.33	16.7	"	"	---	---	---	---	---	---	
m,p-Xylene	ND	16.7	33.3	"	"	---	---	---	---	---	---	
o-Xylene	ND	8.33	16.7	"	"	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 101 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 101 % 80-120 % "

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120841 - EPA 5035A</b>						<b>Soil</b>						
<b>Blank (7120841-BLK1)</b>						Prepared: 12/18/17 22:00 Analyzed: 12/18/17 23:49						
<b>5035A/8260C</b>												
<i>Surr: 4-Bromofluorobenzene (Surr)</i>						<i>Recovery: 97 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>		
<b>LCS (7120841-BS1)</b>						Prepared: 12/18/17 22:00 Analyzed: 12/18/17 22:55						
<b>5035A/8260C</b>												
Acetone	2240	500	1000	ug/kg wet	50	2000	---	112	80-120	---	---	
Acrylonitrile	1190	50.0	100	"	"	1000	---	119	"	---	---	
Benzene	1060	5.00	10.0	"	"	"	---	106	"	---	---	
Bromobenzene	1000	12.5	25.0	"	"	"	---	100	"	---	---	
Bromochloromethane	1170	25.0	50.0	"	"	"	---	117	"	---	---	
Bromodichloromethane	1020	25.0	50.0	"	"	"	---	102	"	---	---	
Bromoform	966	50.0	100	"	"	"	---	97	"	---	---	
Bromomethane	1290	500	500	"	"	"	---	129	"	---	---	Q-56
2-Butanone (MEK)	2260	250	500	"	"	2000	---	113	"	---	---	
n-Butylbenzene	1030	25.0	50.0	"	"	1000	---	103	"	---	---	
sec-Butylbenzene	1020	25.0	50.0	"	"	"	---	102	"	---	---	
tert-Butylbenzene	979	25.0	50.0	"	"	"	---	98	"	---	---	
Carbon disulfide	1030	250	500	"	"	"	---	103	"	---	---	
Carbon tetrachloride	1010	25.0	50.0	"	"	"	---	101	"	---	---	
Chlorobenzene	1040	12.5	25.0	"	"	"	---	104	"	---	---	
Chloroethane	1060	250	500	"	"	"	---	106	"	---	---	EST
Chloroform	1090	25.0	50.0	"	"	"	---	109	"	---	---	
Chloromethane	1080	125	250	"	"	"	---	108	"	---	---	
2-Chlorotoluene	1010	25.0	50.0	"	"	"	---	101	"	---	---	
4-Chlorotoluene	1030	25.0	50.0	"	"	"	---	103	"	---	---	
Dibromochloromethane	1070	50.0	100	"	"	"	---	107	"	---	---	
1,2-Dibromo-3-chloropropane	1070	125	250	"	"	"	---	107	"	---	---	
1,2-Dibromoethane (EDB)	1090	25.0	50.0	"	"	"	---	109	"	---	---	
Dibromomethane	1070	25.0	50.0	"	"	"	---	107	"	---	---	
1,2-Dichlorobenzene	1020	12.5	25.0	"	"	"	---	102	"	---	---	
1,3-Dichlorobenzene	1020	12.5	25.0	"	"	"	---	102	"	---	---	
1,4-Dichlorobenzene	1000	12.5	25.0	"	"	"	---	100	"	---	---	
Dichlorodifluoromethane	1040	50.0	100	"	"	"	---	104	"	---	---	
1,1-Dichloroethane	1100	12.5	25.0	"	"	"	---	110	"	---	---	
1,2-Dichloroethane (EDC)	1080	12.5	25.0	"	"	"	---	108	"	---	---	
1,1-Dichloroethene	1060	12.5	25.0	"	"	"	---	106	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120841 - EPA 5035A</b>												
<b>Soil</b>												
LCS (7120841-BS1) Prepared: 12/18/17 22:00 Analyzed: 12/18/17 22:55												
5035A/8260C												
cis-1,2-Dichloroethene	1050	12.5	25.0	ug/kg wet	"	"	---	105	"	---	---	
trans-1,2-Dichloroethene	1090	12.5	25.0	"	"	"	---	109	"	---	---	
1,2-Dichloropropane	1060	12.5	25.0	"	"	"	---	106	"	---	---	
1,3-Dichloropropane	1060	25.0	50.0	"	"	"	---	106	"	---	---	
2,2-Dichloropropane	1190	25.0	50.0	"	"	"	---	119	"	---	---	
1,1-Dichloropropene	1060	25.0	50.0	"	"	"	---	106	"	---	---	
cis-1,3-Dichloropropene	1140	25.0	50.0	"	"	"	---	114	"	---	---	
trans-1,3-Dichloropropene	1050	25.0	50.0	"	"	"	---	105	"	---	---	
Ethylbenzene	1030	12.5	25.0	"	"	"	---	103	"	---	---	
Hexachlorobutadiene	956	50.0	100	"	"	"	---	96	"	---	---	
2-Hexanone	2080	250	500	"	"	2000	---	104	"	---	---	
Isopropylbenzene	1060	25.0	50.0	"	"	1000	---	106	"	---	---	
4-Isopropyltoluene	1030	25.0	50.0	"	"	"	---	103	"	---	---	
Methylene chloride	1100	125	250	"	"	"	---	110	"	---	---	
4-Methyl-2-pentanone (MiBK)	2120	250	500	"	"	2000	---	106	"	---	---	
Methyl tert-butyl ether (MTBE)	1030	25.0	50.0	"	"	1000	---	103	"	---	---	
Naphthalene	1010	50.0	100	"	"	"	---	101	"	---	---	
n-Propylbenzene	1030	12.5	25.0	"	"	"	---	103	"	---	---	
Styrene	967	25.0	50.0	"	"	"	---	97	"	---	---	
1,1,1,2-Tetrachloroethane	958	12.5	25.0	"	"	"	---	96	"	---	---	
1,1,2,2-Tetrachloroethane	1130	25.0	50.0	"	"	"	---	113	"	---	---	
Tetrachloroethene (PCE)	1030	12.5	25.0	"	"	"	---	103	"	---	---	
Toluene	995	25.0	50.0	"	"	"	---	100	"	---	---	
1,2,3-Trichlorobenzene	1010	125	250	"	"	"	---	101	"	---	---	
1,2,4-Trichlorobenzene	994	125	250	"	"	"	---	99	"	---	---	
1,1,1-Trichloroethane	1090	12.5	25.0	"	"	"	---	109	"	---	---	
1,1,2-Trichloroethane	1080	12.5	25.0	"	"	"	---	108	"	---	---	
Trichloroethene (TCE)	1050	12.5	25.0	"	"	"	---	105	"	---	---	
Trichlorofluoromethane	1140	50.0	100	"	"	"	---	114	"	---	---	EST
1,2,3-Trichloropropane	1050	25.0	50.0	"	"	"	---	105	"	---	---	
1,2,4-Trimethylbenzene	1040	25.0	50.0	"	"	"	---	104	"	---	---	
1,3,5-Trimethylbenzene	996	25.0	50.0	"	"	"	---	100	"	---	---	
Vinyl chloride	1220	12.5	25.0	"	"	"	---	122	"	---	---	Q-56
m,p-Xylene	2110	25.0	50.0	"	"	2000	---	106	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120841 - EPA 5035A</b>						<b>Soil</b>						
<b>LCS (7120841-BS1)</b>						Prepared: 12/18/17 22:00 Analyzed: 12/18/17 22:55						
<b>5035A/8260C</b>												
o-Xylene	1040	12.5	25.0	ug/kg wet	"	1000	---	104	"	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 99 %</i>			<i>Limits: 80-120 %</i>			<i>Dilution: 1x</i>			
<i>Toluene-d8 (Surr)</i>			<i>99 %</i>			<i>80-120 %</i>			<i>"</i>			
<i>4-Bromofluorobenzene (Surr)</i>			<i>96 %</i>			<i>80-120 %</i>			<i>"</i>			
<b>Duplicate (7120841-DUP1)</b>						Prepared: 12/15/17 12:00 Analyzed: 12/19/17 02:31						
<b>QC Source Sample: Other (A7L0471-01)</b>												
<b>5035A/8260C</b>												
Acetone	ND	518	1040	ug/kg dry	50	---	ND	---	---	---	30%	
Acrylonitrile	ND	51.8	104	"	"	---	ND	---	---	---	30%	
Benzene	ND	5.18	10.4	"	"	---	ND	---	---	---	30%	
Bromobenzene	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
Bromoform	ND	51.8	104	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	51.8	51.8	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	EST
Chloroform	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	51.8	104	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120841 - EPA 5035A</b>												
<b>Soil</b>												
<b>Duplicate (7120841-DUP1)</b>						Prepared: 12/15/17 12:00 Analyzed: 12/19/17 02:31						
<b>QC Source Sample: Other (A7L0471-01)</b>												
<b>5035A/8260C</b>												
1,4-Dichlorobenzene	ND	12.9	25.9	ug/kg dry	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	51.8	104	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	51.8	104	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	259	518	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	129	259	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	259	518	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	51.8	104	"	"	---	ND	---	---	---	30%	
n-Propylbenzene	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
Styrene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
Toluene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	129	259	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	129	259	"	"	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120841 - EPA 5035A</b>												
<b>Soil</b>												
<b>Duplicate (7120841-DUP1)</b>						Prepared: 12/15/17 12:00 Analyzed: 12/19/17 02:31						
<b>QC Source Sample: Other (A7L0471-01)</b>												
<b>5035A/8260C</b>												
Trichlorofluoromethane	ND	51.8	104	ug/kg dry	"	---	ND	---	---	---	30%	EST
1,2,3-Trichloropropane	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
Vinyl chloride	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	
m,p-Xylene	ND	25.9	51.8	"	"	---	ND	---	---	---	30%	
o-Xylene	ND	12.9	25.9	"	"	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 98 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 100 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 100 % 80-120 % "

### Matrix Spike (7120841-MS1)


Prepared: 12/15/17 14:30 Analyzed: 12/19/17 04:46

QC Source Sample: Other (A7L0471-05)

<b>5035A/8260C</b>												
Acetone	2250	555	1110	ug/kg dry	50	2060	ND	109	36-164	---	---	
Acrylonitrile	1200	55.5	111	"	"	1030	ND	116	65-134	---	---	
Benzene	1180	5.55	11.1	"	"	"	ND	114	77-121	---	---	
Bromobenzene	1150	13.9	27.7	"	"	"	ND	112	78-121	---	---	
Bromochloromethane	1240	27.7	55.5	"	"	"	ND	121	78-125	---	---	
Bromodichloromethane	1100	27.7	55.5	"	"	"	ND	107	75-127	---	---	
Bromoform	1030	55.5	111	"	"	"	ND	100	67-132	---	---	
Bromomethane	1300	555	555	"	"	"	ND	126	53-143	---	---	Q-54d
2-Butanone (MEK)	2170	277	555	"	"	2060	ND	105	51-148	---	---	
n-Butylbenzene	1150	27.7	55.5	"	"	1030	ND	112	70-128	---	---	
sec-Butylbenzene	1150	27.7	55.5	"	"	"	ND	112	73-126	---	---	
tert-Butylbenzene	1140	27.7	55.5	"	"	"	ND	110	73-125	---	---	
Carbon disulfide	1070	277	555	"	"	"	ND	103	63-132	---	---	
Carbon tetrachloride	1110	27.7	55.5	"	"	"	ND	108	70-135	---	---	
Chlorobenzene	1140	13.9	27.7	"	"	"	ND	110	79-120	---	---	
Chloroethane	1490	277	555	"	"	"	ND	144	59-139	---	---	EST
Chloroform	1220	27.7	55.5	"	"	"	ND	118	78-123	---	---	
Chloromethane	1140	139	277	"	"	"	ND	111	50-136	---	---	
2-Chlorotoluene	1150	27.7	55.5	"	"	"	ND	112	75-122	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120841 - EPA 5035A</b>												
<b>Soil</b>												
<b>Matrix Spike (7120841-MS1)</b>						Prepared: 12/15/17 14:30 Analyzed: 12/19/17 04:46						
<b>QC Source Sample: Other (A7L0471-05)</b>												
<b>5035A/8260C</b>												
4-Chlorotoluene	1160	27.7	55.5	ug/kg dry	"	"	ND	113	72-124	---	---	
Dibromochloromethane	1160	55.5	111	"	"	"	ND	113	74-126	---	---	
1,2-Dibromo-3-chloropropane	1170	139	277	"	"	"	ND	114	61-132	---	---	
1,2-Dibromoethane (EDB)	1210	27.7	55.5	"	"	"	ND	118	78-122	---	---	
Dibromomethane	1170	27.7	55.5	"	"	"	ND	113	78-125	---	---	
1,2-Dichlorobenzene	1140	13.9	27.7	"	"	"	ND	111	78-121	---	---	
1,3-Dichlorobenzene	1140	13.9	27.7	"	"	"	ND	111	77-121	---	---	
1,4-Dichlorobenzene	1120	13.9	27.7	"	"	"	ND	109	75-120	---	---	
Dichlorodifluoromethane	1110	55.5	111	"	"	"	ND	108	29-149	---	---	
1,1-Dichloroethane	1220	13.9	27.7	"	"	"	ND	118	76-125	---	---	
1,2-Dichloroethane (EDC)	1190	13.9	27.7	"	"	"	ND	116	73-128	---	---	
1,1-Dichloroethene	1150	13.9	27.7	"	"	"	ND	111	70-131	---	---	
cis-1,2-Dichloroethene	1180	13.9	27.7	"	"	"	ND	114	77-123	---	---	
trans-1,2-Dichloroethene	1210	13.9	27.7	"	"	"	ND	117	74-125	---	---	
1,2-Dichloropropane	1190	13.9	27.7	"	"	"	ND	115	76-123	---	---	
1,3-Dichloropropane	1190	27.7	55.5	"	"	"	ND	115	77-121	---	---	
2,2-Dichloropropane	1180	27.7	55.5	"	"	"	ND	115	67-133	---	---	
1,1-Dichloropropene	1190	27.7	55.5	"	"	"	ND	115	76-125	---	---	
cis-1,3-Dichloropropene	1250	27.7	55.5	"	"	"	ND	121	74-126	---	---	
trans-1,3-Dichloropropene	1150	27.7	55.5	"	"	"	ND	111	71-130	---	---	
Ethylbenzene	1150	13.9	27.7	"	"	"	ND	111	76-122	---	---	
Hexachlorobutadiene	1110	55.5	111	"	"	"	ND	108	61-135	---	---	
2-Hexanone	2190	277	555	"	"	2060	ND	106	53-145	---	---	
Isopropylbenzene	1160	27.7	55.5	"	"	1030	ND	113	68-134	---	---	
4-Isopropyltoluene	1160	27.7	55.5	"	"	"	ND	112	73-127	---	---	
Methylene chloride	1180	139	277	"	"	"	ND	114	70-128	---	---	
4-Methyl-2-pentanone (MiBK)	2320	277	555	"	"	2060	ND	113	65-135	---	---	
Methyl tert-butyl ether (MTBE)	1160	27.7	55.5	"	"	1030	ND	112	73-125	---	---	
Naphthalene	1160	55.5	111	"	"	"	ND	112	62-129	---	---	
n-Propylbenzene	1150	13.9	27.7	"	"	"	ND	111	73-125	---	---	
Styrene	1070	27.7	55.5	"	"	"	ND	104	76-124	---	---	
1,1,1,2-Tetrachloroethane	1040	13.9	27.7	"	"	"	ND	101	78-125	---	---	
1,1,2,2-Tetrachloroethane	1310	27.7	55.5	"	"	"	ND	127	70-124	---	---	Q-01

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 5035A/8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120841 - EPA 5035A</b>						<b>Soil</b>						
<b>Matrix Spike (7120841-MS1)</b>						Prepared: 12/15/17 14:30 Analyzed: 12/19/17 04:46						
<b>QC Source Sample: Other (A7L0471-05)</b>												
<b>5035A/8260C</b>												
Tetrachloroethene (PCE)	1160	13.9	27.7	ug/kg dry	"	"	ND	112	73-128	---	---	
Toluene	1100	27.7	55.5	"	"	"	ND	107	77-121	---	---	
1,2,3-Trichlorobenzene	1150	139	277	"	"	"	ND	111	66-130	---	---	
1,2,4-Trichlorobenzene	1140	139	277	"	"	"	ND	111	67-129	---	---	
1,1,1-Trichloroethane	1220	13.9	27.7	"	"	"	ND	118	73-130	---	---	
1,1,2-Trichloroethane	1200	13.9	27.7	"	"	"	ND	116	78-121	---	---	
Trichloroethene (TCE)	1170	13.9	27.7	"	"	"	ND	114	77-123	---	---	
Trichlorofluoromethane	1340	55.5	111	"	"	"	ND	130	62-140	---	---	EST
1,2,3-Trichloropropane	1190	27.7	55.5	"	"	"	ND	116	73-125	---	---	
1,2,4-Trimethylbenzene	1170	27.7	55.5	"	"	"	ND	114	75-123	---	---	
1,3,5-Trimethylbenzene	1130	27.7	55.5	"	"	"	ND	109	73-124	---	---	
Vinyl chloride	1140	13.9	27.7	"	"	"	ND	111	56-135	---	---	Q-54
m,p-Xylene	2300	27.7	55.5	"	"	2060	ND	111	77-124	---	---	
o-Xylene	1140	13.9	27.7	"	"	1030	ND	110	77-123	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 100 %</i>	<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>			<i>98 %</i>	<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>			<i>100 %</i>	<i>80-120 %</i>		<i>"</i>						



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120802 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120802-BLK1)</b>						Prepared: 12/18/17 09:38 Analyzed: 12/18/17 11:02						
<b>EPA 8260C</b>												
Acetone	ND	10.0	20.0	ug/L	1	---	---	---	---	---	---	---
Acrylonitrile	ND	1.00	2.00	"	"	---	---	---	---	---	---	---
Benzene	ND	0.100	0.200	"	"	---	---	---	---	---	---	---
Bromobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Bromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromodichloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromoform	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Bromomethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	---
2-Butanone (MEK)	ND	5.00	10.0	"	"	---	---	---	---	---	---	---
n-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
sec-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
tert-Butylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Carbon disulfide	ND	5.00	10.0	"	"	---	---	---	---	---	---	---
Carbon tetrachloride	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Chlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Chloroethane	ND	5.00	5.00	"	"	---	---	---	---	---	---	---
Chloroform	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Chloromethane	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
2-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
4-Chlorotoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Dibromochloromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Dibromomethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	---
Dichlorodifluoromethane	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
1,1-Dichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,1-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	---	---	---	---	---	---
1,2-Dichloropropane	ND	0.250	0.500	"	"	---	---	---	---	---	---	---

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120802 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120802-BLK1)</b>						Prepared: 12/18/17 09:38 Analyzed: 12/18/17 11:02						
<b>EPA 8260C</b>												
1,3-Dichloropropane	ND	0.500	1.00	ug/L	"	---	---	---	---	---	---	
2,2-Dichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Hexachlorobutadiene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
2-Hexanone	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Isopropylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
4-Isopropyltoluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Methylene chloride	ND	1.50	3.00	"	"	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Naphthalene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
n-Propylbenzene	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Styrene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Toluene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	---	---	---	---	---	---	
Trichlorofluoromethane	ND	1.00	2.00	"	"	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Vinyl chloride	ND	0.200	0.400	"	"	---	---	---	---	---	---	
m,p-Xylene	ND	0.500	1.00	"	"	---	---	---	---	---	---	
o-Xylene	ND	0.250	0.500	"	"	---	---	---	---	---	---	

Surr: 1,4-Difluorobenzene (Surr)  
Toluene-d8 (Surr)

Recovery: 99 %  
100 %

Limits: 80-120 %  
80-120 %

Dilution: 1x  
"

Apex Laboratories



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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120802 - EPA 5030B</b>						<b>Water</b>						
<b>Blank (7120802-BLK1)</b>						Prepared: 12/18/17 09:38 Analyzed: 12/18/17 11:02						
<b>EPA 8260C</b>												
<i>Surr: 4-Bromofluorobenzene (Surr)</i>						<i>Recovery: 103 % Limits: 80-120 % Dilution: 1x</i>						
<b>LCS (7120802-BS1)</b>						Prepared: 12/18/17 09:38 Analyzed: 12/18/17 10:06						
<b>EPA 8260C</b>												
Acetone	38.8	10.0	20.0	ug/L	1	40.0	---	97	80-120	---	---	
Acrylonitrile	21.6	1.00	2.00	"	"	20.0	---	108	"	---	---	
Benzene	18.7	0.100	0.200	"	"	"	---	94	"	---	---	
Bromobenzene	19.2	0.250	0.500	"	"	"	---	96	"	---	---	
Bromochloromethane	18.6	0.500	1.00	"	"	"	---	93	"	---	---	
Bromodichloromethane	18.9	0.500	1.00	"	"	"	---	95	"	---	---	
Bromoform	20.6	0.500	1.00	"	"	"	---	103	"	---	---	
Bromomethane	17.9	5.00	5.00	"	"	"	---	89	"	---	---	
2-Butanone (MEK)	41.3	5.00	10.0	"	"	40.0	---	103	"	---	---	
n-Butylbenzene	22.2	0.500	1.00	"	"	20.0	---	111	"	---	---	
sec-Butylbenzene	21.3	0.500	1.00	"	"	"	---	106	"	---	---	
tert-Butylbenzene	21.5	0.500	1.00	"	"	"	---	108	"	---	---	
Carbon disulfide	19.0	5.00	10.0	"	"	"	---	95	"	---	---	
Carbon tetrachloride	19.8	0.500	1.00	"	"	"	---	99	"	---	---	
Chlorobenzene	19.5	0.250	0.500	"	"	"	---	97	"	---	---	
Chloroethane	18.8	5.00	5.00	"	"	"	---	94	"	---	---	
Chloroform	18.5	0.500	1.00	"	"	"	---	93	"	---	---	
Chloromethane	21.5	2.50	5.00	"	"	"	---	107	"	---	---	
2-Chlorotoluene	20.6	0.500	1.00	"	"	"	---	103	"	---	---	
4-Chlorotoluene	21.8	0.500	1.00	"	"	"	---	109	"	---	---	
Dibromochloromethane	19.9	0.500	1.00	"	"	"	---	100	"	---	---	
1,2-Dibromo-3-chloropropane	20.8	2.50	5.00	"	"	"	---	104	"	---	---	
1,2-Dibromoethane (EDB)	20.1	0.250	0.500	"	"	"	---	101	"	---	---	
Dibromomethane	18.9	0.500	1.00	"	"	"	---	95	"	---	---	
1,2-Dichlorobenzene	20.0	0.250	0.500	"	"	"	---	100	"	---	---	
1,3-Dichlorobenzene	20.7	0.250	0.500	"	"	"	---	103	"	---	---	
1,4-Dichlorobenzene	19.6	0.250	0.500	"	"	"	---	98	"	---	---	
Dichlorodifluoromethane	20.2	0.500	1.00	"	"	"	---	101	"	---	---	
1,1-Dichloroethane	20.0	0.200	0.400	"	"	"	---	100	"	---	---	
1,2-Dichloroethane (EDC)	18.6	0.200	0.400	"	"	"	---	93	"	---	---	
1,1-Dichloroethene	20.5	0.200	0.400	"	"	"	---	103	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120802 - EPA 5030B</b>												
<b>Water</b>												
LCS (7120802-BS1) Prepared: 12/18/17 09:38 Analyzed: 12/18/17 10:06												
EPA 8260C												
cis-1,2-Dichloroethene	19.7	0.200	0.400	ug/L	"	"	---	98	"	---	---	
trans-1,2-Dichloroethene	19.5	0.200	0.400	"	"	"	---	97	"	---	---	
1,2-Dichloropropane	19.2	0.250	0.500	"	"	"	---	96	"	---	---	
1,3-Dichloropropane	20.1	0.500	1.00	"	"	"	---	101	"	---	---	
2,2-Dichloropropane	23.0	0.500	1.00	"	"	"	---	115	"	---	---	
1,1-Dichloropropene	20.0	0.500	1.00	"	"	"	---	100	"	---	---	
cis-1,3-Dichloropropene	21.0	0.500	1.00	"	"	"	---	105	"	---	---	
trans-1,3-Dichloropropene	21.3	0.500	1.00	"	"	"	---	107	"	---	---	
Ethylbenzene	20.3	0.250	0.500	"	"	"	---	102	"	---	---	
Hexachlorobutadiene	21.8	2.50	5.00	"	"	"	---	109	"	---	---	
2-Hexanone	46.8	5.00	10.0	"	"	40.0	---	117	"	---	---	
Isopropylbenzene	19.6	0.500	1.00	"	"	20.0	---	98	"	---	---	
4-Isopropyltoluene	19.9	0.500	1.00	"	"	"	---	100	"	---	---	
Methylene chloride	17.7	1.50	3.00	"	"	"	---	88	"	---	---	
4-Methyl-2-pentanone (MiBK)	42.1	5.00	10.0	"	"	40.0	---	105	"	---	---	
Methyl tert-butyl ether (MTBE)	20.7	0.500	1.00	"	"	20.0	---	104	"	---	---	
Naphthalene	18.5	1.00	2.00	"	"	"	---	93	"	---	---	
n-Propylbenzene	20.8	0.250	0.500	"	"	"	---	104	"	---	---	
Styrene	19.0	0.500	1.00	"	"	"	---	95	"	---	---	
1,1,1,2-Tetrachloroethane	20.5	0.200	0.400	"	"	"	---	103	"	---	---	
1,1,2,2-Tetrachloroethane	19.4	0.250	0.500	"	"	"	---	97	"	---	---	
Tetrachloroethene (PCE)	21.2	0.200	0.400	"	"	"	---	106	"	---	---	
Toluene	19.4	0.500	1.00	"	"	"	---	97	"	---	---	
1,2,3-Trichlorobenzene	20.8	1.00	2.00	"	"	"	---	104	"	---	---	
1,2,4-Trichlorobenzene	21.4	1.00	2.00	"	"	"	---	107	"	---	---	
1,1,1-Trichloroethane	19.4	0.200	0.400	"	"	"	---	97	"	---	---	
1,1,2-Trichloroethane	20.0	0.250	0.500	"	"	"	---	100	"	---	---	
Trichloroethene (TCE)	19.6	0.200	0.400	"	"	"	---	98	"	---	---	
Trichlorofluoromethane	20.2	1.00	2.00	"	"	"	---	101	"	---	---	
1,2,3-Trichloropropane	20.2	0.500	1.00	"	"	"	---	101	"	---	---	
1,2,4-Trimethylbenzene	19.8	0.500	1.00	"	"	"	---	99	"	---	---	
1,3,5-Trimethylbenzene	21.6	0.500	1.00	"	"	"	---	108	"	---	---	
Vinyl chloride	19.6	0.200	0.400	"	"	"	---	98	"	---	---	
m,p-Xylene	39.5	0.500	1.00	"	"	40.0	---	99	"	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120802 - EPA 5030B</b>						<b>Water</b>						
<b>LCS (7120802-BS1)</b>						Prepared: 12/18/17 09:38 Analyzed: 12/18/17 10:06						
<b>EPA 8260C</b>												
o-Xylene	19.3	0.250	0.500	ug/L	"	20.0	---	97	"	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>			<i>Recovery: 96 %</i>			<i>Limits: 80-120 %</i>			<i>Dilution: 1x</i>			
<i>Toluene-d8 (Surr)</i>			<i>99 %</i>			<i>80-120 %</i>			<i>"</i>			
<i>4-Bromofluorobenzene (Surr)</i>			<i>102 %</i>			<i>80-120 %</i>			<i>"</i>			
<b>Duplicate (7120802-DUP1)</b>						Prepared: 12/18/17 11:00 Analyzed: 12/18/17 16:41						
<b>QC Source Sample: Other (A7L0454-23)</b>												
<b>EPA 8260C</b>												
Acetone	ND	10.0	20.0	ug/L	1	---	10.5	---	---	---	30%	
Acrylonitrile	ND	1.00	2.00	"	"	---	ND	---	---	---	30%	
Benzene	ND	0.100	0.200	"	"	---	ND	---	---	---	30%	
Bromobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Bromoform	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	5.00	5.00	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	5.00	5.00	"	"	---	ND	---	---	---	30%	
Chloroform	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120802 - EPA 5030B</b>												
<b>Water</b>												
<b>Duplicate (7120802-DUP1)</b>						Prepared: 12/18/17 11:00 Analyzed: 12/18/17 16:41						
<b>QC Source Sample: Other (A7L0454-23)</b>												
<b>EPA 8260C</b>												
1,4-Dichlorobenzene	ND	0.250	0.500	ug/L	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	1.50	3.00	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	1.00	2.00	"	"	---	ND	---	---	---	30%	
n-Propylbenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Styrene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
Toluene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	<b>0.350</b>	0.200	0.400	"	"	---	0.390	---	---	11	30%	J
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120802 - EPA 5030B</b>												
<b>Water</b>												
<b>Duplicate (7120802-DUP1)</b>						Prepared: 12/18/17 11:00 Analyzed: 12/18/17 16:41						
QC Source Sample: Other (A7L0454-23)												
EPA 8260C												
Trichlorofluoromethane	ND	1.00	2.00	ug/L	"	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Vinyl chloride	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
m,p-Xylene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
o-Xylene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 99 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 102 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 101 % 80-120 % "

**Duplicate (7120802-DUP2)** Prepared: 12/18/17 11:00 Analyzed: 12/18/17 18:34


QC Source Sample: GP10-W-8.0 (A7L0431-10)

EPA 8260C

Acetone	ND	10.0	20.0	ug/L	1	---	ND	---	---	---	30%	
Acrylonitrile	ND	1.00	2.00	"	"	---	ND	---	---	---	30%	
Benzene	ND	0.100	0.200	"	"	---	ND	---	---	---	30%	
Bromobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Bromochloromethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Bromodichloromethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Bromoform	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Bromomethane	ND	5.00	5.00	"	"	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
n-Butylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Carbon disulfide	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Chlorobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Chloroethane	ND	5.00	5.00	"	"	---	ND	---	---	---	30%	
Chloroform	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Chloromethane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07


## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120802 - EPA 5030B</b>												
<b>Water</b>												
<b>Duplicate (7120802-DUP2)</b>						Prepared: 12/18/17 11:00 Analyzed: 12/18/17 18:34						
<b>QC Source Sample: GP10-W-8.0 (A7L0431-10)</b>												
<b>EPA 8260C</b>												
4-Chlorotoluene	ND	0.500	1.00	ug/L	"	---	ND	---	---	---	30%	
Dibromochloromethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Dibromomethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	2.50	5.00	"	"	---	ND	---	---	---	30%	
2-Hexanone	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Isopropylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Methylene chloride	ND	1.50	3.00	"	"	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	"	"	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	1.00	2.00	"	"	---	ND	---	---	---	30%	
n-Propylbenzene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Styrene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
1,1,1,2,2-Tetrachloroethane	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120802 - EPA 5030B</b>												
<b>Water</b>												
<b>Duplicate (7120802-DUP2)</b>						Prepared: 12/18/17 11:00 Analyzed: 12/18/17 18:34						
QC Source Sample: GP10-W-8.0 (A7L0431-10)												
EPA 8260C												
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	"	---	ND	---	---	---	30%	
Toluene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	1.00	2.00	"	"	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	1.00	2.00	"	"	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	1.00	2.00	"	"	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
Vinyl chloride	ND	0.200	0.400	"	"	---	ND	---	---	---	30%	
m,p-Xylene	ND	0.500	1.00	"	"	---	ND	---	---	---	30%	
o-Xylene	ND	0.250	0.500	"	"	---	ND	---	---	---	30%	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 100 % Limits: 80-120 % Dilution: 1x  
Toluene-d8 (Surr) 100 % 80-120 % "  
4-Bromofluorobenzene (Surr) 102 % 80-120 % "

### Matrix Spike (7120802-MS1)

Prepared: 12/18/17 11:00 Analyzed: 12/18/17 20:56

QC Source Sample: Other (A7L0437-01)

#### EPA 8260C

Acetone	60.5	10.0	20.0	ug/L	1	40.0	17.4	108	39-160	---	---	
Acrylonitrile	21.3	1.00	2.00	"	"	20.0	ND	107	63-135	---	---	
Benzene	20.1	0.100	0.200	"	"	"	ND	100	79-120	---	---	
Bromobenzene	19.6	0.250	0.500	"	"	"	ND	98	80-120	---	---	
Bromochloromethane	19.8	0.500	1.00	"	"	"	ND	99	78-123	---	---	
Bromodichloromethane	20.3	0.500	1.00	"	"	"	ND	102	79-125	---	---	
Bromoform	22.0	0.500	1.00	"	"	"	ND	110	66-130	---	---	
Bromomethane	18.8	5.00	5.00	"	"	"	ND	94	53-141	---	---	
2-Butanone (MEK)	46.2	5.00	10.0	"	"	40.0	ND	115	56-143	---	---	
n-Butylbenzene	22.1	0.500	1.00	"	"	20.0	ND	110	75-128	---	---	
sec-Butylbenzene	21.8	0.500	1.00	"	"	"	ND	109	77-126	---	---	
tert-Butylbenzene	21.9	0.500	1.00	"	"	"	ND	110	78-124	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120802 - EPA 5030B</b>						<b>Water</b>						
<b>Matrix Spike (7120802-MS1)</b>						Prepared: 12/18/17 11:00 Analyzed: 12/18/17 20:56						
<b>QC Source Sample: Other (A7L0437-01)</b>												
<b>EPA 8260C</b>												
Carbon disulfide	20.4	5.00	10.0	ug/L	"	"	ND	102	64-133	---	---	
Carbon tetrachloride	21.0	0.500	1.00	"	"	"	ND	105	72-136	---	---	
Chlorobenzene	20.8	0.250	0.500	"	"	"	ND	104	80-120	---	---	
Chloroethane	20.6	5.00	5.00	"	"	"	ND	103	60-138	---	---	
Chloroform	20.2	0.500	1.00	"	"	"	0.500	99	79-124	---	---	
Chloromethane	19.0	2.50	5.00	"	"	"	ND	95	50-139	---	---	
2-Chlorotoluene	21.0	0.500	1.00	"	"	"	ND	105	79-122	---	---	
4-Chlorotoluene	22.3	0.500	1.00	"	"	"	ND	111	78-122	---	---	
Dibromochloromethane	21.5	0.500	1.00	"	"	"	0.520	105	74-126	---	---	
1,2-Dibromo-3-chloropropane	21.1	2.50	5.00	"	"	"	ND	105	62-128	---	---	
1,2-Dibromoethane (EDB)	21.4	0.250	0.500	"	"	"	ND	107	77-121	---	---	
Dibromomethane	20.2	0.500	1.00	"	"	"	ND	101	79-123	---	---	
1,2-Dichlorobenzene	20.6	0.250	0.500	"	"	"	ND	103	80-120	---	---	
1,3-Dichlorobenzene	21.3	0.250	0.500	"	"	"	ND	106	"	---	---	
1,4-Dichlorobenzene	20.4	0.250	0.500	"	"	"	ND	102	79-120	---	---	
Dichlorodifluoromethane	21.4	0.500	1.00	"	"	"	ND	107	32-152	---	---	
1,1-Dichloroethane	19.9	0.200	0.400	"	"	"	ND	100	77-125	---	---	
1,2-Dichloroethane (EDC)	20.0	0.200	0.400	"	"	"	ND	100	73-128	---	---	
1,1-Dichloroethene	22.0	0.200	0.400	"	"	"	ND	110	71-131	---	---	
cis-1,2-Dichloroethene	20.1	0.200	0.400	"	"	"	ND	101	78-123	---	---	
trans-1,2-Dichloroethene	20.8	0.200	0.400	"	"	"	ND	104	75-124	---	---	
1,2-Dichloropropane	20.0	0.250	0.500	"	"	"	ND	100	78-122	---	---	
1,3-Dichloropropane	20.9	0.500	1.00	"	"	"	ND	104	80-120	---	---	
2,2-Dichloropropane	18.3	0.500	1.00	"	"	"	ND	92	60-139	---	---	
1,1-Dichloropropene	20.9	0.500	1.00	"	"	"	ND	104	79-125	---	---	
cis-1,3-Dichloropropene	20.7	0.500	1.00	"	"	"	ND	103	75-124	---	---	
trans-1,3-Dichloropropene	21.3	0.500	1.00	"	"	"	ND	106	73-127	---	---	
Ethylbenzene	21.6	0.250	0.500	"	"	"	ND	108	79-121	---	---	
Hexachlorobutadiene	22.7	2.50	5.00	"	"	"	ND	114	66-134	---	---	
2-Hexanone	47.9	5.00	10.0	"	"	40.0	ND	120	57-139	---	---	
Isopropylbenzene	20.4	0.500	1.00	"	"	20.0	ND	102	72-131	---	---	
4-Isopropyltoluene	20.2	0.500	1.00	"	"	"	ND	101	77-127	---	---	
Methylene chloride	18.8	1.50	3.00	"	"	"	ND	94	74-124	---	---	

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120802 - EPA 5030B</b>						<b>Water</b>						
<b>Matrix Spike (7120802-MS1)</b>						Prepared: 12/18/17 11:00 Analyzed: 12/18/17 20:56						
<b>QC Source Sample: Other (A7L0437-01)</b>												
<b>EPA 8260C</b>												
4-Methyl-2-pentanone (MiBK)	43.7	5.00	10.0	ug/L	"	40.0	ND	109	67-130	---	---	
Methyl tert-butyl ether (MTBE)	21.0	0.500	1.00	"	"	20.0	ND	105	71-124	---	---	
Naphthalene	19.0	1.00	2.00	"	"	"	ND	95	61-128	---	---	
n-Propylbenzene	21.7	0.250	0.500	"	"	"	ND	108	76-126	---	---	
Styrene	20.2	0.500	1.00	"	"	"	ND	101	78-123	---	---	
1,1,1,2-Tetrachloroethane	21.5	0.200	0.400	"	"	"	ND	108	78-124	---	---	
1,1,2,2-Tetrachloroethane	19.2	0.250	0.500	"	"	"	ND	96	71-121	---	---	
Tetrachloroethene (PCE)	22.3	0.200	0.400	"	"	"	ND	111	74-129	---	---	
Toluene	20.8	0.500	1.00	"	"	"	ND	104	80-121	---	---	
1,2,3-Trichlorobenzene	21.4	1.00	2.00	"	"	"	ND	107	69-129	---	---	
1,2,4-Trichlorobenzene	21.2	1.00	2.00	"	"	"	ND	106	69-130	---	---	
1,1,1-Trichloroethane	21.1	0.200	0.400	"	"	"	ND	105	74-131	---	---	
1,1,2-Trichloroethane	21.0	0.250	0.500	"	"	"	ND	105	80-120	---	---	
Trichloroethene (TCE)	21.8	0.200	0.400	"	"	"	ND	109	79-123	---	---	
Trichlorofluoromethane	20.9	1.00	2.00	"	"	"	ND	104	65-141	---	---	
1,2,3-Trichloropropane	21.5	0.500	1.00	"	"	"	ND	108	73-122	---	---	
1,2,4-Trimethylbenzene	20.5	0.500	1.00	"	"	"	ND	103	76-124	---	---	
1,3,5-Trimethylbenzene	22.3	0.500	1.00	"	"	"	ND	112	75-124	---	---	
Vinyl chloride	21.0	0.200	0.400	"	"	"	ND	105	58-137	---	---	
m,p-Xylene	41.6	0.500	1.00	"	"	40.0	ND	104	80-121	---	---	
o-Xylene	19.8	0.250	0.500	"	"	20.0	ND	99	78-122	---	---	

Surr: 1,4-Difluorobenzene (Surr) Recovery: 96 % Limits: 80-120 % Dilution: 1x  
 Toluene-d8 (Surr) 100 % 80-120 % "  
 4-Bromofluorobenzene (Surr) 99 % 80-120 % "

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

**Reported:**  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121067 - EPA 3510C (Neutral pH)</b>						<b>Water</b>						
<b>Blank (7121067-BLK1)</b>						Prepared: 12/27/17 10:13 Analyzed: 12/28/17 08:20						C-07
<b>EPA 8082A</b>												
Aroclor 1016	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1221	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1262	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Aroclor 1268	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
<i>Surr: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 67 %</i>		<i>Limits: 39-120 %</i>		<i>Dilution: 1x</i>						
<b>LCS (7121067-BS1)</b>						Prepared: 12/27/17 10:13 Analyzed: 12/28/17 08:38						C-07
<b>EPA 8082A</b>												
Aroclor 1016	0.798	0.0100	0.0200	ug/L	1	1.25	---	64	46-129	---	---	
Aroclor 1260	0.941	0.0100	0.0200	"	"	"	---	75	45-134	---	---	
<i>Surr: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 70 %</i>		<i>Limits: 39-120 %</i>		<i>Dilution: 1x</i>						
<b>LCS Dup (7121067-BSD1)</b>						Prepared: 12/27/17 10:13 Analyzed: 12/28/17 08:56						C-07, Q-19
<b>EPA 8082A</b>												
Aroclor 1016	0.808	0.0100	0.0200	ug/L	1	1.25	---	65	46-129	1	30%	
Aroclor 1260	0.965	0.0100	0.0200	"	"	"	---	77	45-134	2	30%	
<i>Surr: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 71 %</i>		<i>Limits: 39-120 %</i>		<i>Dilution: 1x</i>						



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120873 - EPA 3546</b>						<b>Soil</b>						
<b>Blank (7120873-BLK1)</b>						Prepared: 12/19/17 13:32 Analyzed: 12/21/17 18:07						C-07
<b>EPA 8082A</b>												
Aroclor 1016	ND	1.67	3.33	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1221	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1262	ND	1.67	3.33	"	"	---	---	---	---	---	---	
Aroclor 1268	ND	1.67	3.33	"	"	---	---	---	---	---	---	
<i>Surr: Decachlorobiphenyl (Surr)</i>		Recovery: 91 %		Limits: 44-120 %		Dilution: 1x						
<b>LCS (7120873-BS1)</b>						Prepared: 12/19/17 13:32 Analyzed: 12/21/17 18:26						C-07
<b>EPA 8082A</b>												
Aroclor 1016	153	2.00	4.00	ug/kg wet	1	250	---	61	47-134	---	---	
Aroclor 1260	217	2.00	4.00	"	"	"	---	87	53-140	---	---	
<i>Surr: Decachlorobiphenyl (Surr)</i>		Recovery: 89 %		Limits: 44-120 %		Dilution: 1x						
<b>Duplicate (7120873-DUP1)</b>						Prepared: 12/19/17 13:32 Analyzed: 12/21/17 19:21						C-07
<b>QC Source Sample: Other (A7L0317-07)</b>												
<b>EPA 8082A</b>												
Aroclor 1016	ND	2.19	4.38	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1221	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1232	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1242	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1248	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1254	<b>12.8</b>	2.19	4.38	"	"	---	8.58	---	---	39	30%	P-10, Q-05
Aroclor 1260	<b>6.39</b>	2.19	4.38	"	"	---	5.14	---	---	22	30%	P-10
Aroclor 1262	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
Aroclor 1268	ND	2.19	4.38	"	"	---	ND	---	---	---	30%	
<i>Surr: Decachlorobiphenyl (Surr)</i>		Recovery: 88 %		Limits: 44-120 %		Dilution: 1x						
<b>Matrix Spike (7120873-MS1)</b>						Prepared: 12/19/17 13:32 Analyzed: 12/22/17 00:12						C-07
<b>QC Source Sample: GP15-S-8.0 (A7L0431-19)</b>												
<b>EPA 8082A</b>												

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120873 - EPA 3546</b>						<b>Soil</b>						
<b>Matrix Spike (7120873-MS1)</b>						Prepared: 12/19/17 13:32 Analyzed: 12/22/17 00:12						C-07
<b>QC Source Sample: GP15-S-8.0 (A7L0431-19)</b>												
<b>EPA 8082A</b>												
Aroclor 1016	190	2.14	4.28	ug/kg dry	1	268	ND	71	47-134	---	---	
Aroclor 1260	242	2.14	4.28	"	"	"	ND	90	53-140	---	---	
<i>Surr: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 88 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120888 - EPA 3546/3640A (GPC)</b>						<b>Soil</b>						
<b>Blank (7120888-BLK1)</b>						Prepared: 12/18/17 14:03 Analyzed: 12/21/17 11:35						C-05
<b>EPA 8081B</b>												
Aldrin	ND	0.833	1.67	ug/kg wet	1	---	---	---	---	---	---	
alpha-BHC	ND	0.833	1.67	"	"	---	---	---	---	---	---	
beta-BHC	ND	0.833	1.67	"	"	---	---	---	---	---	---	
delta-BHC	ND	0.833	1.67	"	"	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	0.833	1.67	"	"	---	---	---	---	---	---	
cis-Chlordane	ND	0.833	1.67	"	"	---	---	---	---	---	---	
trans-Chlordane	ND	0.833	1.67	"	"	---	---	---	---	---	---	
4,4'-DDD	ND	0.833	1.67	"	"	---	---	---	---	---	---	
4,4'-DDE	ND	0.833	1.67	"	"	---	---	---	---	---	---	
4,4'-DDT	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endosulfan I	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endosulfan II	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endosulfan sulfate	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endrin	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endrin Aldehyde	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endrin ketone	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Heptachlor	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Heptachlor epoxide	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Methoxychlor	ND	2.50	5.00	"	"	---	---	---	---	---	---	
Chlordane (Technical)	ND	25.0	50.0	"	"	---	---	---	---	---	---	
Toxaphene (Total)	ND	25.0	50.0	"	"	---	---	---	---	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 66 % Limits: 42-129 % Dilution: 1x  
 Decachlorobiphenyl (Surr) 74 % 65-151 % "

<b>LCS (7120888-BS1)</b>						Prepared: 12/18/17 14:03 Analyzed: 12/21/17 11:52						C-05
<b>EPA 8081B</b>												
Aldrin	23.5	1.00	2.00	ug/kg wet	1	50.0	---	47	45-136	---	---	
alpha-BHC	23.4	1.00	2.00	"	"	"	---	47	45-137	---	---	
beta-BHC	29.5	1.00	2.00	"	"	"	---	59	50-136	---	---	
delta-BHC	30.0	1.00	2.00	"	"	"	---	60	47-139	---	---	
gamma-BHC (Lindane)	24.8	1.00	2.00	"	"	"	---	50	49-135	---	---	
cis-Chlordane	28.5	1.00	2.00	"	"	"	---	57	54-133	---	---	
trans-Chlordane	29.2	1.00	2.00	"	"	"	---	58	53-135	---	---	
4,4'-DDD	35.7	1.00	2.00	"	"	"	---	71	56-139	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120888 - EPA 3546/3640A (GPC) Soil</b>												
LCS (7120888-BS1) Prepared: 12/18/17 14:03 Analyzed: 12/21/17 11:52 C-05												
<b>EPA 8081B</b>												
4,4'-DDE	33.9	1.00	2.00	ug/kg wet	"	"	---	68	56-134	---	---	
4,4'-DDT	43.4	1.00	2.00	"	"	"	---	87	50-141	---	---	
Dieldrin	32.8	1.00	2.00	"	"	"	---	66	56-136	---	---	
Endosulfan I	31.0	1.00	2.00	"	"	"	---	62	52-132	---	---	
Endosulfan II	34.0	1.00	2.00	"	"	"	---	68	53-134	---	---	
Endosulfan sulfate	36.1	1.00	2.00	"	"	"	---	72	55-136	---	---	
Endrin	35.4	1.00	2.00	"	"	"	---	71	56-140	---	---	
Endrin Aldehyde	32.4	1.00	2.00	"	"	"	---	65	35-137	---	---	
Endrin ketone	36.8	1.00	2.00	"	"	"	---	74	55-136	---	---	
Heptachlor	23.7	1.00	2.00	"	"	"	---	47	47-136	---	---	
Heptachlor epoxide	28.0	1.00	2.00	"	"	"	---	56	52-136	---	---	
Methoxychlor	44.7	3.00	6.00	"	"	"	---	89	52-143	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 49 % Limits: 42-129 % Dilution: 1x  
Decachlorobiphenyl (Surr) 74 % 65-151 % "

**Duplicate (7120888-DUP1)** Prepared: 12/18/17 14:03 Analyzed: 12/21/17 12:27 C-05

QC Source Sample: Other (A7L0419-02RE1)

<b>EPA 8081B</b>												
Aldrin	ND	1.01	2.02	ug/kg dry	1	---	ND	---	---	---	30%	
alpha-BHC	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
beta-BHC	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
delta-BHC	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
gamma-BHC (Lindane)	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
cis-Chlordane	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
trans-Chlordane	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
4,4'-DDD	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
4,4'-DDE	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
4,4'-DDT	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Dieldrin	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endosulfan I	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endosulfan II	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endosulfan sulfate	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endrin	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Endrin Aldehyde	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120888 - EPA 3546/3640A (GPC) Soil</b>												
<b>Duplicate (7120888-DUP1)</b>						Prepared: 12/18/17 14:03 Analyzed: 12/21/17 12:27			C-05			
QC Source Sample: Other (A7L0419-02RE1)												
<b>EPA 8081B</b>												
Endrin ketone	ND	1.01	2.02	ug/kg dry	"	---	ND	---	---	---	30%	
Heptachlor	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Heptachlor epoxide	ND	1.01	2.02	"	"	---	ND	---	---	---	30%	
Methoxychlor	ND	3.03	6.05	"	"	---	ND	---	---	---	30%	
Chlordane (Technical)	ND	30.3	60.5	"	"	---	ND	---	---	---	30%	
Toxaphene (Total)	ND	30.3	60.5	"	"	---	ND	---	---	---	30%	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 48 % Limits: 42-129 % Dilution: 1x  
 Decachlorobiphenyl (Surr) 69 % 65-151 % "

**Matrix Spike (7120888-MS1)** Prepared: 12/18/17 14:03 Analyzed: 12/21/17 12:45 C-05

QC Source Sample: Other (A7L0419-02RE1)												
<b>EPA 8081B</b>												
Aldrin	26.4	1.01	2.02	ug/kg dry	1	50.5	ND	52	45-136	---	---	
alpha-BHC	24.9	1.01	2.02	"	"	"	ND	49	45-137	---	---	
beta-BHC	31.8	1.01	2.02	"	"	"	ND	63	50-136	---	---	
delta-BHC	32.1	1.01	2.02	"	"	"	ND	64	47-139	---	---	
gamma-BHC (Lindane)	26.6	1.01	2.02	"	"	"	ND	53	49-135	---	---	
cis-Chlordane	31.8	1.01	2.02	"	"	"	ND	63	54-133	---	---	
trans-Chlordane	33.1	1.01	2.02	"	"	"	ND	66	53-135	---	---	
4,4'-DDD	37.2	1.01	2.02	"	"	"	ND	74	56-139	---	---	
4,4'-DDE	38.0	1.01	2.02	"	"	"	ND	75	56-134	---	---	
4,4'-DDT	44.6	1.01	2.02	"	"	"	ND	88	50-141	---	---	
Dieldrin	35.6	1.01	2.02	"	"	"	ND	71	56-136	---	---	
Endosulfan I	33.8	1.01	2.02	"	"	"	ND	67	52-132	---	---	
Endosulfan II	35.2	1.01	2.02	"	"	"	ND	70	53-134	---	---	
Endosulfan sulfate	38.1	1.01	2.02	"	"	"	ND	76	55-136	---	---	
Endrin	39.4	1.01	2.02	"	"	"	ND	78	56-140	---	---	
Endrin Aldehyde	33.8	1.01	2.02	"	"	"	ND	67	35-137	---	---	
Endrin ketone	37.6	1.01	2.02	"	"	"	ND	75	55-136	---	---	
Heptachlor	26.2	1.01	2.02	"	"	"	ND	52	47-136	---	---	
Heptachlor epoxide	31.1	1.01	2.02	"	"	"	ND	62	52-136	---	---	
Methoxychlor	45.2	3.03	6.05	"	"	"	ND	90	52-143	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 55 % Limits: 42-129 % Dilution: 1x

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120888 - EPA 3546/3640A (GPC)</b>						<b>Soil</b>						
<b>Matrix Spike (7120888-MS1)</b>						Prepared: 12/18/17 14:03 Analyzed: 12/21/17 12:45						C-05
QC Source Sample: Other (A7L0419-02RE1)												
EPA 8081B												
Surr: Decachlorobiphenyl (Surr)			Recovery: 75 %			Limits: 65-151 %			Dilution: 1x			
<b>Matrix Spike Dup (7120888-MSD1)</b>						Prepared: 12/18/17 14:03 Analyzed: 12/21/17 13:02						C-05
QC Source Sample: Other (A7L0419-02RE1)												
EPA 8081B												
Aldrin	31.2	1.00	2.00	ug/kg dry	1	50.1	ND	62	45-136	17	30%	
alpha-BHC	31.2	1.00	2.00	"	"	"	ND	62	45-137	23	30%	
beta-BHC	33.7	1.00	2.00	"	"	"	ND	67	50-136	7	30%	
delta-BHC	33.4	1.00	2.00	"	"	"	ND	67	47-139	5	30%	
gamma-BHC (Lindane)	32.5	1.00	2.00	"	"	"	ND	65	49-135	21	30%	
cis-Chlordane	33.8	1.00	2.00	"	"	"	ND	67	54-133	7	30%	
trans-Chlordane	34.2	1.00	2.00	"	"	"	ND	68	53-135	4	30%	
4,4'-DDD	38.5	1.00	2.00	"	"	"	ND	77	56-139	4	30%	
4,4'-DDE	37.1	1.00	2.00	"	"	"	ND	74	56-134	2	30%	
4,4'-DDT	43.3	1.00	2.00	"	"	"	ND	86	50-141	2	30%	
Dieldrin	36.4	1.00	2.00	"	"	"	ND	73	56-136	3	30%	
Endosulfan I	35.2	1.00	2.00	"	"	"	ND	70	52-132	5	30%	
Endosulfan II	35.3	1.00	2.00	"	"	"	ND	70	53-134	1	30%	
Endosulfan sulfate	36.5	1.00	2.00	"	"	"	ND	73	55-136	4	30%	
Endrin	39.2	1.00	2.00	"	"	"	ND	78	56-140	0.3	30%	
Endrin Aldehyde	33.0	1.00	2.00	"	"	"	ND	66	35-137	2	30%	
Endrin ketone	37.7	1.00	2.00	"	"	"	ND	75	55-136	0.8	30%	
Heptachlor	32.2	1.00	2.00	"	"	"	ND	64	47-136	21	30%	
Heptachlor epoxide	34.1	1.00	2.00	"	"	"	ND	68	52-136	10	30%	
Methoxychlor	44.8	3.01	6.01	"	"	"	ND	89	52-143	0.2	30%	
Surr: 2,4,5,6-TCMX (Surr)			Recovery: 68 %			Limits: 42-129 %			Dilution: 1x			
Decachlorobiphenyl (Surr)			74 %			65-151 %			"			

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121057 - EPA 3510C (Neutral pH)/3640A (GPC) Water</b>												
<b>Blank (7121057-BLK1)</b>						Prepared: 12/19/17 13:25 Analyzed: 12/28/17 14:39					C-05	
<b>EPA 8081B</b>												
Aldrin	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
alpha-BHC	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	Q-30
beta-BHC	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	Q-30
delta-BHC	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	Q-30
cis-Chlordane	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
trans-Chlordane	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
4,4'-DDD	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
4,4'-DDE	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
4,4'-DDT	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Endosulfan I	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Endosulfan II	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Endosulfan sulfate	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Endrin	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Endrin Aldehyde	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Endrin ketone	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Heptachlor	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	Q-30
Heptachlor epoxide	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Methoxychlor	ND	0.0273	0.0545	"	"	---	---	---	---	---	---	
Chlordane (Technical)	ND	0.342	0.682	"	"	---	---	---	---	---	---	
Toxaphene (Total)	ND	0.342	0.682	"	"	---	---	---	---	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 69 % Limits: 44-124 % Dilution: 1x  
Decachlorobiphenyl (Surr) 64 % 47-129 % "

<b>LCS (7121057-BS1)</b>						Prepared: 12/19/17 13:25 Analyzed: 12/28/17 14:56					C-05	
<b>EPA 8081B</b>												
Aldrin	0.294	0.0100	0.0200	ug/L	1	0.500	---	59	45-134	---	---	
alpha-BHC	0.296	0.0100	0.0200	"	"	"	---	59	54-138	---	---	
beta-BHC	0.310	0.0100	0.0200	"	"	"	---	62	56-136	---	---	
delta-BHC	0.332	0.0100	0.0200	"	"	"	---	66	52-142	---	---	
gamma-BHC (Lindane)	0.311	0.0100	0.0200	"	"	"	---	62	59-134	---	---	
cis-Chlordane	0.355	0.0100	0.0200	"	"	"	---	71	60-129	---	---	
trans-Chlordane	0.337	0.0100	0.0200	"	"	"	---	67	56-136	---	---	
4,4'-DDD	0.399	0.0100	0.0200	"	"	"	---	80	56-143	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director



Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121057 - EPA 3510C (Neutral pH)/3640A (GPC) Water</b>												
LCS (7121057-BS1) Prepared: 12/19/17 13:25 Analyzed: 12/28/17 14:56 C-05												
<b>EPA 8081B</b>												
4,4'-DDE	0.389	0.0100	0.0200	ug/L	"	"	---	78	57-135	---	---	
4,4'-DDT	0.428	0.0100	0.0200	"	"	"	---	86	51-143	---	---	
Dieldrin	0.398	0.0100	0.0200	"	"	"	---	80	60-136	---	---	
Endosulfan I	0.369	0.0100	0.0200	"	"	"	---	74	62-126	---	---	
Endosulfan II	0.386	0.0100	0.0200	"	"	"	---	77	52-135	---	---	
Endosulfan sulfate	0.380	0.0100	0.0200	"	"	"	---	76	62-133	---	---	
Endrin	0.428	0.0100	0.0200	"	"	"	---	86	60-138	---	---	
Endrin Aldehyde	0.372	0.0100	0.0200	"	"	"	---	74	51-132	---	---	
Endrin ketone	0.398	0.0100	0.0200	"	"	"	---	80	58-134	---	---	
Heptachlor	0.278	0.0100	0.0200	"	"	"	---	56	54-130	---	---	
Heptachlor epoxide	0.354	0.0100	0.0200	"	"	"	---	71	61-133	---	---	
Methoxychlor	0.445	0.0300	0.0600	"	"	"	---	89	54-144	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 49 % Limits: 44-124 % Dilution: 1x  
 Decachlorobiphenyl (Surr) 65 % 47-129 % "

<b>LCS Dup (7121057-BSD1) Prepared: 12/19/17 13:25 Analyzed: 12/28/17 15:14 C-05, Q-19</b>												
<b>EPA 8081B</b>												
Aldrin	0.247	0.0100	0.0200	ug/L	1	0.500	---	49	45-134	17	30%	
alpha-BHC	0.261	0.0100	0.0200	"	"	"	---	52	54-138	13	30%	Q-30
beta-BHC	0.277	0.0100	0.0200	"	"	"	---	55	56-136	11	30%	Q-30
delta-BHC	0.305	0.0100	0.0200	"	"	"	---	61	52-142	8	30%	
gamma-BHC (Lindane)	0.276	0.0100	0.0200	"	"	"	---	55	59-134	12	30%	Q-30
cis-Chlordane	0.307	0.0100	0.0200	"	"	"	---	61	60-129	15	30%	
trans-Chlordane	0.304	0.0100	0.0200	"	"	"	---	61	56-136	10	30%	
4,4'-DDD	0.390	0.0100	0.0200	"	"	"	---	78	56-143	2	30%	
4,4'-DDE	0.372	0.0100	0.0200	"	"	"	---	74	57-135	4	30%	
4,4'-DDT	0.415	0.0100	0.0200	"	"	"	---	83	51-143	3	30%	
Dieldrin	0.388	0.0100	0.0200	"	"	"	---	78	60-136	3	30%	
Endosulfan I	0.362	0.0100	0.0200	"	"	"	---	72	62-126	2	30%	
Endosulfan II	0.391	0.0100	0.0200	"	"	"	---	78	52-135	1	30%	
Endosulfan sulfate	0.376	0.0100	0.0200	"	"	"	---	75	62-133	1	30%	
Endrin	0.420	0.0100	0.0200	"	"	"	---	84	60-138	2	30%	
Endrin Aldehyde	0.361	0.0100	0.0200	"	"	"	---	72	51-132	3	30%	
Endrin ketone	0.399	0.0100	0.0200	"	"	"	---	80	58-134	0.4	30%	
Heptachlor	0.239	0.0100	0.0200	"	"	"	---	48	54-130	15	30%	Q-30

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121057 - EPA 3510C (Neutral pH)/3640A (GPC)</b>						<b>Water</b>						
<b>LCS Dup (7121057-BSD1)</b>						Prepared: 12/19/17 13:25 Analyzed: 12/28/17 15:14		C-05, Q-19				
<b>EPA 8081B</b>												
Heptachlor epoxide	0.316	0.0100	0.0200	ug/L	"	"	---	63	61-133	11	30%	
Methoxychlor	0.446	0.0300	0.0600	"	"	"	---	89	54-144	0.3	30%	
<i>Surr: 2,4,5,6-TCMX (Surr)</i>			<i>Recovery: 43 %</i>		<i>Limits: 44-124 %</i>		<i>Dilution: 1x</i>			<i>S-06</i>		
<i>Decachlorobiphenyl (Surr)</i>			<i>68 %</i>		<i>47-129 %</i>		<i>"</i>					



**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 8010291 - EPA 3546/3640A (GPC)</b>						<b>Soil</b>						
<b>Blank (8010291-BLK1)</b>						Prepared: 12/20/17 11:15 Analyzed: 01/03/18 14:26						C-05
<b>EPA 8081B</b>												
Aldrin	ND	0.833	1.67	ug/kg wet	1	---	---	---	---	---	---	
alpha-BHC	ND	0.833	1.67	"	"	---	---	---	---	---	---	
beta-BHC	ND	0.833	1.67	"	"	---	---	---	---	---	---	
delta-BHC	ND	0.833	1.67	"	"	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	0.833	1.67	"	"	---	---	---	---	---	---	
cis-Chlordane	ND	0.833	1.67	"	"	---	---	---	---	---	---	
trans-Chlordane	ND	0.833	1.67	"	"	---	---	---	---	---	---	
4,4'-DDD	ND	0.833	1.67	"	"	---	---	---	---	---	---	
4,4'-DDE	ND	0.833	1.67	"	"	---	---	---	---	---	---	
4,4'-DDT	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endosulfan I	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endosulfan II	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endosulfan sulfate	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endrin	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endrin Aldehyde	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Endrin ketone	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Heptachlor	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Heptachlor epoxide	ND	0.833	1.67	"	"	---	---	---	---	---	---	
Methoxychlor	ND	2.50	5.00	"	"	---	---	---	---	---	---	
Chlordane (Technical)	ND	25.0	50.0	"	"	---	---	---	---	---	---	
Toxaphene (Total)	ND	25.0	50.0	"	"	---	---	---	---	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 78 % Limits: 42-129 % Dilution: 1x  
Decachlorobiphenyl (Surr) 114 % 65-151 % "

<b>LCS (8010291-BS1)</b>						Prepared: 12/20/17 11:15 Analyzed: 01/03/18 14:43						C-05
<b>EPA 8081B</b>												
Aldrin	35.6	1.00	2.00	ug/kg wet	1	50.0	---	71	45-136	---	---	Q-41
alpha-BHC	35.3	1.00	2.00	"	"	"	---	71	45-137	---	---	Q-41
beta-BHC	37.9	1.00	2.00	"	"	"	---	76	50-136	---	---	
delta-BHC	39.7	1.00	2.00	"	"	"	---	79	47-139	---	---	
gamma-BHC (Lindane)	37.1	1.00	2.00	"	"	"	---	74	49-135	---	---	
cis-Chlordane	40.9	1.00	2.00	"	"	"	---	82	54-133	---	---	
trans-Chlordane	38.7	1.00	2.00	"	"	"	---	77	53-135	---	---	
4,4'-DDD	47.0	1.00	2.00	"	"	"	---	94	56-139	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 8010291 - EPA 3546/3640A (GPC)</b>						<b>Soil</b>						
<b>LCS (8010291-BS1)</b>						Prepared: 12/20/17 11:15 Analyzed: 01/03/18 14:43						C-05
<b>EPA 8081B</b>												
4,4'-DDE	46.7	1.00	2.00	ug/kg wet	"	"	---	93	56-134	---	---	
4,4'-DDT	53.2	1.00	2.00	"	"	"	---	106	50-141	---	---	
Dieldrin	45.6	1.00	2.00	"	"	"	---	91	56-136	---	---	
Endosulfan I	45.2	1.00	2.00	"	"	"	---	90	52-132	---	---	
Endosulfan II	45.8	1.00	2.00	"	"	"	---	92	53-134	---	---	
Endosulfan sulfate	47.5	1.00	2.00	"	"	"	---	95	55-136	---	---	
Endrin	48.7	1.00	2.00	"	"	"	---	97	56-140	---	---	
Endrin Aldehyde	42.2	1.00	2.00	"	"	"	---	84	35-137	---	---	
Endrin ketone	52.1	1.00	2.00	"	"	"	---	104	55-136	---	---	Q-41
Heptachlor	36.0	1.00	2.00	"	"	"	---	72	47-136	---	---	Q-41
Heptachlor epoxide	42.4	1.00	2.00	"	"	"	---	85	52-136	---	---	Q-41
Methoxychlor	53.7	3.00	6.00	"	"	"	---	107	52-143	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 65 % Limits: 42-129 % Dilution: 1x  
 Decachlorobiphenyl (Surr) 91 % 65-151 % "

**Duplicate (8010291-DUP2)** Prepared: 12/20/17 11:15 Analyzed: 01/04/18 13:43 C-05, R-04

QC Source Sample: Other (A7L0547-01RE2)

<b>EPA 8081B</b>												
Aldrin	ND	10.6	21.3	ug/kg dry	5	---	ND	---	---	---	30%	
alpha-BHC	ND	10.6	21.3	"	"	---	ND	---	---	---	30%	
beta-BHC	ND	10.6	21.3	"	"	---	ND	---	---	---	30%	
delta-BHC	ND	10.6	21.3	"	"	---	ND	---	---	---	30%	
gamma-BHC (Lindane)	ND	10.6	21.3	"	"	---	ND	---	---	---	30%	
cis-Chlordane	ND	10.6	21.3	"	"	---	ND	---	---	---	30%	
trans-Chlordane	ND	21.3	21.3	"	"	---	ND	---	---	---	30%	
4,4'-DDD	ND	28.7	28.7	"	"	---	ND	---	---	---	30%	
4,4'-DDE	ND	10.6	21.3	"	"	---	ND	---	---	---	30%	
4,4'-DDT	ND	35.1	35.1	"	"	---	ND	---	---	---	30%	
Dieldrin	ND	21.3	21.3	"	"	---	ND	---	---	---	30%	
Endosulfan I	ND	10.6	21.3	"	"	---	ND	---	---	---	30%	
Endosulfan II	ND	10.6	21.3	"	"	---	ND	---	---	---	30%	
Endosulfan sulfate	ND	10.6	21.3	"	"	---	ND	---	---	---	30%	
Endrin	ND	22.4	22.4	"	"	---	ND	---	---	---	30%	
Endrin Aldehyde	ND	10.6	21.3	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 8010291 - EPA 3546/3640A (GPC) Soil</b>												
<b>Duplicate (8010291-DUP2)</b>						Prepared: 12/20/17 11:15 Analyzed: 01/04/18 13:43			C-05, R-04			
QC Source Sample: Other (A7L0547-01RE2)												
<b>EPA 8081B</b>												
Endrin ketone	ND	21.3	21.3	ug/kg dry	"	---	ND	---	---	---	30%	
Heptachlor	ND	10.6	21.3	"	"	---	ND	---	---	---	30%	
Heptachlor epoxide	ND	10.6	21.3	"	"	---	ND	---	---	---	30%	
Methoxychlor	ND	31.9	63.9	"	"	---	ND	---	---	---	30%	
Chlordane (Technical)	ND	319	639	"	"	---	ND	---	---	---	30%	
Toxaphene (Total)	ND	319	639	"	"	---	ND	---	---	---	30%	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 59 % Limits: 42-129 % Dilution: 5x  
 Decachlorobiphenyl (Surr) 75 % 65-151 % "

**Matrix Spike (8010291-MS1)** Prepared: 12/20/17 11:15 Analyzed: 01/03/18 20:48 C-05

QC Source Sample: Other (A7L0547-07RE1)												
<b>EPA 8081B</b>												
Aldrin	40.0	1.03	2.06	ug/kg dry	1	51.4	ND	78	45-136	---	---	
alpha-BHC	39.1	1.03	2.06	"	"	"	ND	76	45-137	---	---	
beta-BHC	42.7	1.03	2.06	"	"	"	ND	83	50-136	---	---	
delta-BHC	44.1	1.03	2.06	"	"	"	ND	86	47-139	---	---	
gamma-BHC (Lindane)	40.7	1.03	2.06	"	"	"	ND	79	49-135	---	---	
cis-Chlordane	48.9	1.03	2.06	"	"	"	3.40	89	54-133	---	---	
trans-Chlordane	47.2	1.03	2.06	"	"	"	3.39	85	53-135	---	---	
4,4'-DDD	49.0	1.03	2.06	"	"	"	1.81	92	56-139	---	---	
4,4'-DDE	51.4	1.03	2.06	"	"	"	3.65	93	56-134	---	---	
4,4'-DDT	99.9	1.03	2.06	"	"	"	34.9	127	50-141	---	---	
Dieldrin	45.3	1.03	2.06	"	"	"	ND	86	56-136	---	---	
Endosulfan I	44.9	1.03	2.06	"	"	"	ND	87	52-132	---	---	
Endosulfan II	47.8	1.03	2.06	"	"	"	ND	90	53-134	---	---	
Endosulfan sulfate	51.3	1.03	2.06	"	"	"	ND	96	55-136	---	---	
Endrin	50.0	1.03	2.06	"	"	"	ND	93	56-140	---	---	
Endrin Aldehyde	46.5	1.03	2.06	"	"	"	ND	86	35-137	---	---	
Endrin ketone	53.6	1.03	2.06	"	"	"	ND	102	55-136	---	---	Q-41
Heptachlor	43.4	1.03	2.06	"	"	"	ND	84	47-136	---	---	Q-41
Heptachlor epoxide	43.3	1.03	2.06	"	"	"	ND	84	52-136	---	---	
Methoxychlor	58.0	3.08	6.17	"	"	"	ND	113	52-143	---	---	

Surr: 2,4,5,6-TCMX (Surr) Recovery: 67 % Limits: 42-129 % Dilution: 1x

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209


Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 8010291 - EPA 3546/3640A (GPC)</b>						<b>Soil</b>						
<b>Matrix Spike (8010291-MS1)</b>						Prepared: 12/20/17 11:15 Analyzed: 01/03/18 20:48						C-05
<b>QC Source Sample: Other (A7L0547-07RE1)</b>												
<b>EPA 8081B</b>												
<i>Surr: Decachlorobiphenyl (Surr)</i>			<i>Recovery: 86 %</i>			<i>Limits: 65-151 %</i>			<i>Dilution: 1x</i>			



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120858 - EPA 3546</b>						<b>Soil</b>						
<b>Blank (7120858-BLK2)</b>						Prepared: 12/19/17 10:13 Analyzed: 12/19/17 13:43						
<b>EPA 8270D</b>												
Acenaphthene	ND	1.25	2.50	ug/kg wet	1	---	---	---	---	---	---	
Acenaphthylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	1.87	3.75	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Chrysene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Fluoranthene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Fluorene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
2-Methylnaphthalene	<b>3.75</b>	2.50	5.00	"	"	---	---	---	---	---	---	B-02, J
Naphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
Phenanthrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Carbazole	ND	1.87	3.75	"	"	---	---	---	---	---	---	
Dibenzofuran	ND	1.25	2.50	"	"	---	---	---	---	---	---	

<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>Recovery: 85 %</i>	<i>Limits: 37-122 %</i>	<i>Dilution: 1x</i>
<i>2-Fluorobiphenyl (Surr)</i>	<i>76 %</i>	<i>44-115 %</i>	<i>"</i>
<i>Phenol-d6 (Surr)</i>	<i>73 %</i>	<i>33-122 %</i>	<i>"</i>
<i>p-Terphenyl-d14 (Surr)</i>	<i>81 %</i>	<i>54-127 %</i>	<i>"</i>
<i>2-Fluorophenol (Surr)</i>	<i>69 %</i>	<i>35-115 %</i>	<i>"</i>
<i>2,4,6-Tribromophenol (Surr)</i>	<i>96 %</i>	<i>39-132 %</i>	<i>"</i>

### LCS (7120858-BS2)

Prepared: 12/19/17 10:13 Analyzed: 12/19/17 14:19

<b>EPA 8270D</b>												
Acenaphthene	438	2.66	5.34	ug/kg wet	2	533	---	82	40-122	---	---	
Acenaphthylene	415	2.66	5.34	"	"	"	---	78	32-132	---	---	
Anthracene	427	2.66	5.34	"	"	"	---	80	47-123	---	---	
Benz(a)anthracene	463	2.66	5.34	"	"	"	---	87	49-126	---	---	
Benzo(a)pyrene	481	4.00	8.00	"	"	"	---	90	45-129	---	---	
Benzo(b)fluoranthene	510	4.00	8.00	"	"	"	---	96	45-132	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120858 - EPA 3546</b>						<b>Soil</b>						
<b>LCS (7120858-BS2)</b>						Prepared: 12/19/17 10:13 Analyzed: 12/19/17 14:19						
<b>EPA 8270D</b>												
Benzo(k)fluoranthene	483	4.00	8.00	ug/kg wet	"	"	---	91	47-132	---	---	
Benzo(g,h,i)perylene	475	2.66	5.34	"	"	"	---	89	43-134	---	---	
Chrysene	475	2.66	5.34	"	"	"	---	89	50-124	---	---	
Dibenz(a,h)anthracene	479	2.66	5.34	"	"	"	---	90	45-134	---	---	
Fluoranthene	432	2.66	5.34	"	"	"	---	81	50-127	---	---	
Fluorene	384	2.66	5.34	"	"	"	---	72	43-125	---	---	
Indeno(1,2,3-cd)pyrene	449	2.66	5.34	"	"	"	---	84	45-133	---	---	
1-Methylnaphthalene	424	5.34	10.7	"	"	"	---	80	40-120	---	---	
2-Methylnaphthalene	418	5.34	10.7	"	"	"	---	78	38-122	---	---	B-02
Naphthalene	422	5.34	10.7	"	"	"	---	79	35-123	---	---	
Phenanthrene	396	2.66	5.34	"	"	"	---	74	50-121	---	---	
Pyrene	444	2.66	5.34	"	"	"	---	83	47-127	---	---	
Carbazole	454	4.00	8.00	"	"	"	---	85	50-122	---	---	
Dibenzofuran	404	2.66	5.34	"	"	"	---	76	44-120	---	---	

<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>Recovery: 89 %</i>	<i>Limits: 37-122 %</i>	<i>Dilution: 2x</i>
<i>2-Fluorobiphenyl (Surr)</i>	<i>84 %</i>	<i>44-115 %</i>	<i>"</i>
<i>Phenol-d6 (Surr)</i>	<i>88 %</i>	<i>33-122 %</i>	<i>"</i>
<i>p-Terphenyl-d14 (Surr)</i>	<i>95 %</i>	<i>54-127 %</i>	<i>"</i>
<i>2-Fluorophenol (Surr)</i>	<i>87 %</i>	<i>35-115 %</i>	<i>"</i>
<i>2,4,6-Tribromophenol (Surr)</i>	<i>90 %</i>	<i>39-132 %</i>	<i>"</i>

### Duplicate (7120858-DUP3)


Prepared: 12/19/17 10:13 Analyzed: 12/20/17 13:10

#### QC Source Sample: GP11-S-3.0 (A7L0431-01RE2)

<b>EPA 8270D</b>												
Acenaphthene	ND	1.59	3.18	ug/kg dry	1	---	ND	---	---	---	30%	
Acenaphthylene	ND	1.59	3.18	"	"	---	ND	---	---	---	30%	
Anthracene	ND	1.59	3.18	"	"	---	ND	---	---	---	30%	
Benz(a)anthracene	<b>1.61</b>	1.59	3.18	"	"	---	ND	---	---	---	30%	Q-05, J
Benzo(a)pyrene	<b>3.86</b>	2.39	4.77	"	"	---	ND	---	---	---	30%	Q-05, J
Benzo(b)fluoranthene	<b>8.60</b>	2.39	4.77	"	"	---	ND	---	---	---	30%	Q-05
Benzo(k)fluoranthene	ND	2.39	4.77	"	"	---	ND	---	---	---	30%	
Benzo(g,h,i)perylene	<b>20.1</b>	1.59	3.18	"	"	---	1.91	---	---	165	30%	Q-04
Chrysene	ND	1.59	3.18	"	"	---	ND	---	---	---	30%	
Dibenz(a,h)anthracene	ND	1.59	3.18	"	"	---	ND	---	---	---	30%	
Fluoranthene	<b>1.72</b>	1.59	3.18	"	"	---	ND	---	---	---	30%	Q-05, J

Apex Laboratories

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



Philip Nerenberg, Lab Director



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120858 - EPA 3546</b>												
<b>Soil</b>												
<b>Duplicate (7120858-DUP3)</b>						Prepared: 12/19/17 10:13 Analyzed: 12/20/17 13:10						
<b>QC Source Sample: GP11-S-3.0 (A7L0431-01RE2)</b>												
<b>EPA 8270D</b>												
Fluorene	ND	1.59	3.18	ug/kg dry	"	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	<b>13.5</b>	1.59	3.18	"	"	---	ND	---	---	---	30%	Q-05
1-Methylnaphthalene	ND	3.18	6.36	"	"	---	ND	---	---	---	30%	
2-Methylnaphthalene	ND	3.18	6.36	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	3.18	6.36	"	"	---	ND	---	---	---	30%	
Phenanthrene	ND	1.59	3.18	"	"	---	ND	---	---	---	30%	
Pyrene	<b>1.81</b>	1.59	3.18	"	"	---	ND	---	---	---	30%	Q-05, J
Carbazole	ND	2.39	4.77	"	"	---	ND	---	---	---	30%	
Dibenzofuran	ND	1.59	3.18	"	"	---	ND	---	---	---	30%	

<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>Recovery: 50 %</i>	<i>Limits: 37-122 %</i>	<i>Dilution: 1x</i>
<i>2-Fluorobiphenyl (Surr)</i>	<i>56 %</i>	<i>44-115 %</i>	<i>"</i>
<i>Phenol-d6 (Surr)</i>	<i>53 %</i>	<i>33-122 %</i>	<i>"</i>
<i>p-Terphenyl-d14 (Surr)</i>	<i>67 %</i>	<i>54-127 %</i>	<i>"</i>
<i>2-Fluorophenol (Surr)</i>	<i>47 %</i>	<i>35-115 %</i>	<i>"</i>
<i>2,4,6-Tribromophenol (Surr)</i>	<i>74 %</i>	<i>39-132 %</i>	<i>"</i>

### Matrix Spike (7120858-MS2)

Prepared: 12/19/17 10:13 Analyzed: 12/20/17 13:55

**QC Source Sample: GP15-S-8.0 (A7L0431-19RE1)**

<b>EPA 8270D</b>												
Acenaphthene	16600	158	317	ug/kg dry	100	633	18300	-278	40-122	---	---	Q-03
Acenaphthylene	822	158	317	"	"	"	243	91	32-132	---	---	
Anthracene	8340	158	317	"	"	"	9490	-181	47-123	---	---	Q-03
Benz(a)anthracene	2530	158	317	"	"	"	2150	61	49-126	---	---	
Benzo(a)pyrene	1220	238	475	"	"	"	571	102	45-129	---	---	
Benzo(b)fluoranthene	1390	238	475	"	"	"	821	89	45-132	---	---	
Benzo(k)fluoranthene	955	238	475	"	"	"	323	100	47-132	---	---	
Benzo(g,h,i)perylene	712	158	317	"	"	"	ND	112	43-134	---	---	
Chrysene	2480	158	317	"	"	"	1890	92	50-124	---	---	
Dibenz(a,h)anthracene	655	158	317	"	"	"	ND	103	45-134	---	---	
Fluoranthene	15900	158	317	"	"	"	15800	12	50-127	---	---	Q-03
Fluorene	17000	158	317	"	"	"	18900	-290	43-125	---	---	Q-03
Indeno(1,2,3-cd)pyrene	714	158	317	"	"	"	ND	113	45-133	---	---	
1-Methylnaphthalene	8860	317	633	"	"	"	9580	-113	40-120	---	---	Q-03

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120858 - EPA 3546</b>						<b>Soil</b>						
<b>Matrix Spike (7120858-MS2)</b>						Prepared: 12/19/17 10:13 Analyzed: 12/20/17 13:55						
<b>QC Source Sample: GP15-S-8.0 (A7L0431-19RE1)</b>												
<b>EPA 8270D</b>												
2-Methylnaphthalene	16400	317	633	ug/kg dry	"	"	18500	-330	38-122	---	---	B-02, Q-03
Naphthalene	39200	317	633	"	"	"	48500	-1460	35-123	---	---	Q-03
Phenanthrene	32700	158	317	"	"	"	36900	-655	50-121	---	---	Q-03
Pyrene	10500	158	317	"	"	"	9980	79	47-127	---	---	
Carbazole	4110	238	475	"	"	"	4960	-134	50-122	---	---	Q-03
Dibenzofuran	12700	158	317	"	"	"	15100	-375	44-120	---	---	Q-03
<i>Surr: Nitrobenzene-d5 (Surr)</i>			<i>Recovery: 110 %</i>		<i>Limits: 37-122 %</i>		<i>Dilution: 100x</i>		<i>S-05</i>			
<i>2-Fluorobiphenyl (Surr)</i>			<i>99 %</i>		<i>44-115 %</i>		<i>"</i>		<i>S-05</i>			
<i>Phenol-d6 (Surr)</i>			<i>76 %</i>		<i>33-122 %</i>		<i>"</i>		<i>S-05</i>			
<i>p-Terphenyl-d14 (Surr)</i>			<i>96 %</i>		<i>54-127 %</i>		<i>"</i>		<i>S-05</i>			
<i>2-Fluorophenol (Surr)</i>			<i>64 %</i>		<i>35-115 %</i>		<i>"</i>		<i>S-05</i>			
<i>2,4,6-Tribromophenol (Surr)</i>			<i>94 %</i>		<i>39-132 %</i>		<i>"</i>		<i>S-05</i>			



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120896 - EPA 3510C (Acid Extraction)</b>						<b>Water</b>						
<b>Blank (7120896-BLK2)</b>						Prepared: 12/20/17 04:59 Analyzed: 12/20/17 11:28						
<b>EPA 8270D</b>												
Acenaphthene	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Acenaphthylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Chrysene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluoranthene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Fluorene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
2-Methylnaphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Naphthalene	ND	0.0182	0.0364	"	"	---	---	---	---	---	---	
Phenanthrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Pyrene	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Carbazole	ND	0.0136	0.0273	"	"	---	---	---	---	---	---	
Dibenzofuran	ND	0.00909	0.0182	"	"	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	0.182	0.364	"	"	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	0.182	0.364	"	"	---	---	---	---	---	---	
Diethylphthalate	ND	0.182	0.364	"	"	---	---	---	---	---	---	
Dimethylphthalate	ND	0.182	0.364	"	"	---	---	---	---	---	---	
Di-n-butylphthalate	ND	0.182	0.364	"	"	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	0.182	0.364	"	"	---	---	---	---	---	---	

<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>Recovery: 80 %</i>	<i>Limits: 44-120 %</i>	<i>Dilution: 1x</i>
<i>2-Fluorobiphenyl (Surr)</i>	<i>61 %</i>	<i>44-120 %</i>	<i>"</i>
<i>Phenol-d6 (Surr)</i>	<i>24 %</i>	<i>10-120 %</i>	<i>"</i>
<i>p-Terphenyl-d14 (Surr)</i>	<i>67 %</i>	<i>50-133 %</i>	<i>"</i>
<i>2-Fluorophenol (Surr)</i>	<i>36 %</i>	<i>19-120 %</i>	<i>"</i>
<i>2,4,6-Tribromophenol (Surr)</i>	<i>72 %</i>	<i>43-140 %</i>	<i>"</i>

### LCS (7120896-BS2)

Prepared: 12/20/17 04:59 Analyzed: 12/20/17 12:04

### EPA 8270D

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120896 - EPA 3510C (Acid Extraction)</b>						<b>Water</b>						
<b>LCS (7120896-BS2)</b>						Prepared: 12/20/17 04:59 Analyzed: 12/20/17 12:04						
<b>EPA 8270D</b>												
Acenaphthene	3.01	0.0200	0.0400	ug/L	2	4.00	---	75	47-122	---	---	
Acenaphthylene	2.82	0.0200	0.0400	"	"	"	---	71	41-130	---	---	
Anthracene	3.28	0.0200	0.0400	"	"	"	---	82	57-123	---	---	
Benz(a)anthracene	3.71	0.0200	0.0400	"	"	"	---	93	58-125	---	---	
Benzo(a)pyrene	3.87	0.0300	0.0600	"	"	"	---	97	54-128	---	---	
Benzo(b)fluoranthene	4.11	0.0300	0.0600	"	"	"	---	103	53-131	---	---	
Benzo(k)fluoranthene	3.79	0.0300	0.0600	"	"	"	---	95	57-129	---	---	
Benzo(g,h,i)perylene	3.95	0.0200	0.0400	"	"	"	---	99	50-134	---	---	
Chrysene	3.82	0.0200	0.0400	"	"	"	---	96	59-123	---	---	
Dibenz(a,h)anthracene	3.72	0.0200	0.0400	"	"	"	---	93	51-134	---	---	
Fluoranthene	3.48	0.0200	0.0400	"	"	"	---	87	57-128	---	---	
Fluorene	2.82	0.0200	0.0400	"	"	"	---	71	52-124	---	---	
Indeno(1,2,3-cd)pyrene	3.62	0.0200	0.0400	"	"	"	---	91	52-133	---	---	
1-Methylnaphthalene	2.61	0.0400	0.0800	"	"	"	---	65	41-120	---	---	
2-Methylnaphthalene	2.52	0.0400	0.0800	"	"	"	---	63	40-121	---	---	
Naphthalene	2.56	0.0400	0.0800	"	"	"	---	64	"	---	---	
Phenanthrene	3.01	0.0200	0.0400	"	"	"	---	75	59-120	---	---	
Pyrene	3.55	0.0200	0.0400	"	"	"	---	89	57-126	---	---	
Carbazole	3.66	0.0300	0.0600	"	"	"	---	92	60-122	---	---	
Dibenzofuran	2.89	0.0200	0.0400	"	"	"	---	72	53-120	---	---	
Bis(2-ethylhexyl)phthalate	4.17	0.400	0.800	"	"	"	---	104	55-135	---	---	
Butyl benzyl phthalate	4.25	0.400	0.800	"	"	"	---	106	53-134	---	---	
Diethylphthalate	3.27	0.400	0.800	"	"	"	---	82	55-125	---	---	
Dimethylphthalate	3.35	0.400	0.800	"	"	"	---	84	45-127	---	---	
Di-n-butylphthalate	3.77	0.400	0.800	"	"	"	---	94	59-127	---	---	
Di-n-octyl phthalate	4.02	0.400	0.800	"	"	"	---	101	51-140	---	---	

Surr: Nitrobenzene-d5 (Surr)	Recovery: 85 %	Limits: 44-120 %	Dilution: 2x
2-Fluorobiphenyl (Surr)	71 %	44-120 %	"
Phenol-d6 (Surr)	28 %	10-120 %	"
p-Terphenyl-d14 (Surr)	89 %	50-133 %	"
2-Fluorophenol (Surr)	43 %	19-120 %	"
2,4,6-Tribromophenol (Surr)	91 %	43-140 %	"

**LCS Dup (7120896-BSD2)**


Prepared: 12/20/17 04:59 Analyzed: 12/20/17 12:40

Q-19

**EPA 8270D**

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120896 - EPA 3510C (Acid Extraction)</b>						<b>Water</b>						
<b>LCS Dup (7120896-BSD2)</b>						Prepared: 12/20/17 04:59 Analyzed: 12/20/17 12:40						Q-19
<b>EPA 8270D</b>												
Acenaphthene	3.04	0.0200	0.0400	ug/L	2	4.00	---	76	47-122	1	30%	
Acenaphthylene	2.85	0.0200	0.0400	"	"	"	---	71	41-130	1	30%	
Anthracene	3.24	0.0200	0.0400	"	"	"	---	81	57-123	1	30%	
Benz(a)anthracene	3.69	0.0200	0.0400	"	"	"	---	92	58-125	0.5	30%	
Benzo(a)pyrene	3.87	0.0300	0.0600	"	"	"	---	97	54-128	0.09	30%	
Benzo(b)fluoranthene	4.07	0.0300	0.0600	"	"	"	---	102	53-131	1	30%	
Benzo(k)fluoranthene	3.85	0.0300	0.0600	"	"	"	---	96	57-129	2	30%	
Benzo(g,h,i)perylene	3.91	0.0200	0.0400	"	"	"	---	98	50-134	0.9	30%	
Chrysene	3.83	0.0200	0.0400	"	"	"	---	96	59-123	0.2	30%	
Dibenz(a,h)anthracene	3.78	0.0200	0.0400	"	"	"	---	94	51-134	2	30%	
Fluoranthene	3.52	0.0200	0.0400	"	"	"	---	88	57-128	1	30%	
Fluorene	2.77	0.0200	0.0400	"	"	"	---	69	52-124	2	30%	
Indeno(1,2,3-cd)pyrene	3.64	0.0200	0.0400	"	"	"	---	91	52-133	0.5	30%	
1-Methylnaphthalene	2.92	0.0400	0.0800	"	"	"	---	73	41-120	11	30%	
2-Methylnaphthalene	2.83	0.0400	0.0800	"	"	"	---	71	40-121	12	30%	
Naphthalene	2.79	0.0400	0.0800	"	"	"	---	70	"	9	30%	
Phenanthrene	2.99	0.0200	0.0400	"	"	"	---	75	59-120	0.7	30%	
Pyrene	3.61	0.0200	0.0400	"	"	"	---	90	57-126	2	30%	
Carbazole	3.70	0.0300	0.0600	"	"	"	---	92	60-122	1	30%	
Dibenzofuran	2.88	0.0200	0.0400	"	"	"	---	72	53-120	0.3	30%	
Bis(2-ethylhexyl)phthalate	4.15	0.400	0.800	"	"	"	---	104	55-135	0.5	30%	
Butyl benzyl phthalate	4.27	0.400	0.800	"	"	"	---	107	53-134	0.5	30%	
Diethylphthalate	3.17	0.400	0.800	"	"	"	---	79	55-125	3	30%	
Dimethylphthalate	3.24	0.400	0.800	"	"	"	---	81	45-127	3	30%	
Di-n-butylphthalate	3.78	0.400	0.800	"	"	"	---	95	59-127	0.5	30%	
Di-n-octyl phthalate	4.05	0.400	0.800	"	"	"	---	101	51-140	0.7	30%	

Surr: Nitrobenzene-d5 (Surr)	Recovery: 78 %	Limits: 44-120 %	Dilution: 2x
2-Fluorobiphenyl (Surr)	69 %	44-120 %	"
Phenol-d6 (Surr)	25 %	10-120 %	"
p-Terphenyl-d14 (Surr)	86 %	50-133 %	"
2-Fluorophenol (Surr)	40 %	19-120 %	"
2,4,6-Tribromophenol (Surr)	85 %	43-140 %	"

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121112 - EPA 3546</b>						<b>Soil</b>						
<b>Blank (7121112-BLK2)</b>						Prepared: 12/28/17 10:20 Analyzed: 12/28/17 14:00						
<b>EPA 8270D</b>												
Acenaphthene	ND	1.25	2.50	ug/kg wet	1	---	---	---	---	---	---	
Acenaphthylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	1.87	3.75	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	1.87	3.75	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Chrysene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Fluoranthene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Fluorene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	<b>4.89</b>	2.50	5.00	"	"	---	---	---	---	---	---	J, B-02
2-Methylnaphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
Naphthalene	ND	2.50	5.00	"	"	---	---	---	---	---	---	
Phenanthrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	
Pyrene	ND	1.25	2.50	"	"	---	---	---	---	---	---	

<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>Recovery: 81 %</i>	<i>Limits: 37-122 %</i>	<i>Dilution: 1x</i>	<i>Q-41</i>
<i>2-Fluorobiphenyl (Surr)</i>	<i>69 %</i>	<i>44-115 %</i>	<i>"</i>	
<i>Phenol-d6 (Surr)</i>	<i>69 %</i>	<i>33-122 %</i>	<i>"</i>	
<i>p-Terphenyl-d14 (Surr)</i>	<i>85 %</i>	<i>54-127 %</i>	<i>"</i>	
<i>2-Fluorophenol (Surr)</i>	<i>64 %</i>	<i>35-115 %</i>	<i>"</i>	
<i>2,4,6-Tribromophenol (Surr)</i>	<i>86 %</i>	<i>39-132 %</i>	<i>"</i>	

### LCS (7121112-BS2)

Prepared: 12/28/17 10:20 Analyzed: 12/28/17 14:36

<b>EPA 8270D</b>												
Acenaphthene	475	2.66	5.34	ug/kg wet	2	533	---	89	40-122	---	---	
Acenaphthylene	448	2.66	5.34	"	"	"	---	84	32-132	---	---	
Anthracene	473	2.66	5.34	"	"	"	---	89	47-123	---	---	
Benz(a)anthracene	515	2.66	5.34	"	"	"	---	96	49-126	---	---	
Benzo(a)pyrene	531	4.00	8.00	"	"	"	---	100	45-129	---	---	
Benzo(b)fluoranthene	554	4.00	8.00	"	"	"	---	104	45-132	---	---	
Benzo(k)fluoranthene	520	4.00	8.00	"	"	"	---	97	47-132	---	---	
Benzo(g,h,i)perylene	528	2.66	5.34	"	"	"	---	99	43-134	---	---	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121112 - EPA 3546</b>												
<b>Soil</b>												
<b>LCS (7121112-BS2)</b>												
						Prepared: 12/28/17 10:20 Analyzed: 12/28/17 14:36						
<b>EPA 8270D</b>												
Chrysene	520	2.66	5.34	ug/kg wet	"	"	---	98	50-124	---	---	
Dibenz(a,h)anthracene	505	2.66	5.34	"	"	"	---	95	45-134	---	---	
Fluoranthene	491	2.66	5.34	"	"	"	---	92	50-127	---	---	
Fluorene	425	2.66	5.34	"	"	"	---	80	43-125	---	---	
Indeno(1,2,3-cd)pyrene	495	2.66	5.34	"	"	"	---	93	45-133	---	---	
1-Methylnaphthalene	464	5.34	10.7	"	"	"	---	87	40-120	---	---	B-02
2-Methylnaphthalene	455	5.34	10.7	"	"	"	---	85	38-122	---	---	
Naphthalene	469	5.34	10.7	"	"	"	---	88	35-123	---	---	
Phenanthrene	435	2.66	5.34	"	"	"	---	82	50-121	---	---	
Pyrene	492	2.66	5.34	"	"	"	---	92	47-127	---	---	

<i>Surr: Nitrobenzene-d5 (Surr)</i>	Recovery: 94 %	Limits: 37-122 %	Dilution: 2x	Q-41
<i>2-Fluorobiphenyl (Surr)</i>	85 %	44-115 %	"	
<i>Phenol-d6 (Surr)</i>	88 %	33-122 %	"	
<i>p-Terphenyl-d14 (Surr)</i>	99 %	54-127 %	"	
<i>2-Fluorophenol (Surr)</i>	84 %	35-115 %	"	
<i>2,4,6-Tribromophenol (Surr)</i>	95 %	39-132 %	"	

### Duplicate (7121112-DUP2)


Prepared: 12/28/17 10:20 Analyzed: 12/28/17 15:47

QC Source Sample: GP10-S-2.5 (A7L0431-09)

<b>EPA 8270D</b>												
Acenaphthene	ND	159	320	ug/kg dry	40	---	ND	---	---	---	30%	
Acenaphthylene	ND	159	320	"	"	---	169	---	---	---	30%	
Anthracene	242	159	320	"	"	---	252	---	---	4	30%	J
Benz(a)anthracene	724	159	320	"	"	---	782	---	---	8	30%	M-05
Benzo(a)pyrene	893	240	480	"	"	---	1060	---	---	17	30%	
Benzo(b)fluoranthene	965	240	480	"	"	---	1140	---	---	17	30%	M-05
Benzo(k)fluoranthene	385	240	480	"	"	---	339	---	---	13	30%	J
Benzo(g,h,i)perylene	719	159	320	"	"	---	918	---	---	24	30%	
Chrysene	1000	159	320	"	"	---	916	---	---	9	30%	M-05
Dibenz(a,h)anthracene	172	159	320	"	"	---	204	---	---	17	30%	J
Fluoranthene	1240	159	320	"	"	---	1170	---	---	5	30%	
Fluorene	ND	159	320	"	"	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	617	159	320	"	"	---	722	---	---	16	30%	
1-Methylnaphthalene	ND	320	639	"	"	---	ND	---	---	---	30%	
2-Methylnaphthalene	ND	320	639	"	"	---	ND	---	---	---	30%	

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121112 - EPA 3546</b>												
<b>Soil</b>												
<b>Duplicate (7121112-DUP2)</b>						Prepared: 12/28/17 10:20 Analyzed: 12/28/17 15:47						
QC Source Sample: GP10-S-2.5 (A7L0431-09)												
EPA 8270D												
Naphthalene	ND	320	639	ug/kg dry	"	---	ND	---	---	---	30%	
Phenanthrene	1400	159	320	"	"	---	1170	---	---	18	30%	
Pyrene	1500	159	320	"	"	---	1440	---	---	4	30%	
Surr: Nitrobenzene-d5 (Surr) Recovery: 105 % Limits: 37-122 % Dilution: 40x S-05												
2-Fluorobiphenyl (Surr) 92 % 44-115 % " S-05												
Phenol-d6 (Surr) 86 % 33-122 % " S-05												
p-Terphenyl-d14 (Surr) 109 % 54-127 % " S-05												
2-Fluorophenol (Surr) 81 % 35-115 % " S-05												
2,4,6-Tribromophenol (Surr) 105 % 39-132 % " S-05												
<b>Matrix Spike (7121112-MS2)</b>						Prepared: 12/28/17 10:20 Analyzed: 12/28/17 16:58						
QC Source Sample: GP05-S-8.0 (A7L0431-15)												
EPA 8270D												
Acenaphthene	5070	164	330	ug/kg dry	40	659	ND	50	40-122	---	---	
Acenaphthylene	1630	164	330	"	"	"	ND	94	32-132	---	---	
Anthracene	4400	164	330	"	"	"	4020	57	47-123	---	---	
Benz(a)anthracene	3180	164	330	"	"	"	2700	72	49-126	---	---	
Benzo(a)pyrene	1950	247	494	"	"	"	1210	112	45-129	---	---	
Benzo(b)fluoranthene	1310	247	494	"	"	"	614	105	45-132	---	---	
Benzo(k)fluoranthene	922	247	494	"	"	"	ND	140	47-132	---	---	Q-01
Benzo(g,h,i)perylene	943	164	330	"	"	"	398	83	43-134	---	---	
Chrysene	6380	164	330	"	"	"	6000	58	50-124	---	---	
Dibenz(a,h)anthracene	941	164	330	"	"	"	222	109	45-134	---	---	
Fluoranthene	2720	164	330	"	"	"	2160	84	50-127	---	---	
Fluorene	6100	164	330	"	"	"	5800	47	43-125	---	---	
Indeno(1,2,3-cd)pyrene	754	164	330	"	"	"	ND	114	45-133	---	---	
1-Methylnaphthalene	11800	330	659	"	"	"	11800	0.2	40-120	---	---	B-02, Q-03
2-Methylnaphthalene	1050	330	659	"	"	"	ND	98	38-122	---	---	
Naphthalene	1160	330	659	"	"	"	ND	113	35-123	---	---	
Phenanthrene	8700	164	330	"	"	"	9000	-45	50-121	---	---	Q-03
Pyrene	7080	164	330	"	"	"	6780	45	47-127	---	---	Q-03
Surr: Nitrobenzene-d5 (Surr) Recovery: 224 % Limits: 37-122 % Dilution: 40x S-05												
2-Fluorobiphenyl (Surr) 147 % 44-115 % " S-05												

Apex Laboratories



Philip Nerenberg, Lab Director

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



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121112 - EPA 3546</b>						<b>Soil</b>						
<b>Matrix Spike (7121112-MS2)</b>						Prepared: 12/28/17 10:20 Analyzed: 12/28/17 16:58						
<b>QC Source Sample: GP05-S-8.0 (A7L0431-15)</b>												
<b>EPA 8270D</b>												
<i>Surr: Phenol-d6 (Surr)</i>												
			<i>Recovery: 91 %</i>	<i>Limits: 33-122 %</i>		<i>Dilution: 40x</i>						S-05
			<i>119 %</i>	<i>54-127 %</i>		"						S-05
			<i>78 %</i>	<i>35-115 %</i>		"						S-05
			<i>86 %</i>	<i>39-132 %</i>		"						S-05



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121080 - EPA 3015A</b>												
<b>Water</b>												
<b>Blank (7121080-BLK1)</b>												
						Prepared: 12/27/17 11:36			Analyzed: 12/27/17 19:54			
<b>EPA 6020A</b>												
Arsenic	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	---
Barium	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Cadmium	ND	0.0400	0.200	"	"	---	---	---	---	---	---	---
Chromium	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Lead	ND	0.100	0.200	"	"	---	---	---	---	---	---	---
Mercury	ND	0.0400	0.0800	"	"	---	---	---	---	---	---	---
Selenium	ND	0.500	1.00	"	"	---	---	---	---	---	---	---
Silver	ND	0.100	0.200	"	"	---	---	---	---	---	---	---
<b>LCS (7121080-BS1)</b>												
						Prepared: 12/27/17 11:36			Analyzed: 12/27/17 19:58			
<b>EPA 6020A</b>												
Arsenic	54.8	0.500	1.00	ug/L	1	55.6	---	99	80-120	---	---	---
Barium	54.7	0.500	1.00	"	"	"	---	98	"	---	---	---
Cadmium	56.2	0.0400	0.200	"	"	"	---	101	"	---	---	---
Chromium	53.3	0.500	1.00	"	"	"	---	96	"	---	---	---
Lead	55.9	0.100	0.200	"	"	"	---	101	"	---	---	---
Mercury	1.10	0.0400	0.0800	"	"	1.11	---	99	"	---	---	---
Selenium	28.5	0.500	1.00	"	"	27.8	---	103	"	---	---	---
Silver	28.2	0.100	0.200	"	"	"	---	101	"	---	---	---
<b>Duplicate (7121080-DUP1)</b>												
						Prepared: 12/27/17 11:36			Analyzed: 12/27/17 20:24			
<b>QC Source Sample: Other (A7L0414-03)</b>												
<b>EPA 6020A</b>												
Arsenic	<b>43.4</b>	0.500	1.00	ug/L	1	---	40.6	---	---	7	20%	
Cadmium	<b>5.21</b>	0.0400	0.200	"	"	---	5.26	---	---	0.8	20%	
Chromium	<b>149</b>	0.500	1.00	"	"	---	140	---	---	6	20%	
Selenium	<b>3.98</b>	0.500	1.00	"	"	---	4.03	---	---	1	20%	
Silver	<b>0.911</b>	0.100	0.200	"	"	---	0.922	---	---	1	20%	
<b>Duplicate (7121080-DUP3)</b>												
						Prepared: 12/27/17 11:36			Analyzed: 12/28/17 14:44			
<b>QC Source Sample: Other (A7L0414-03RE2)</b>												
<b>EPA 6020A</b>												
Barium	<b>3000</b>	10.0	20.0	ug/L	20	---	3300	---	---	10	20%	Q-16
Lead	<b>146</b>	2.00	4.00	"	"	---	159	---	---	9	20%	Q-16
Mercury	ND	0.800	1.60	"	"	---	ND	---	---	---	20%	Q-16, R-04

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121080 - EPA 3015A</b>												
<b>Water</b>												
<b>Matrix Spike (7121080-MS1)</b>						Prepared: 12/27/17 11:36 Analyzed: 12/27/17 20:27						
QC Source Sample: Other (A7L0414-03)												
EPA 6020A												
Arsenic	94.7	0.500	1.00	ug/L	1	55.6	40.6	97	75-125	---	---	
Cadmium	61.9	0.0400	0.200	"	"	"	5.26	102	"	---	---	
Chromium	223	0.500	1.00	"	"	"	140	150	"	---	---	Q-03
Selenium	21.4	0.500	1.00	"	"	27.8	4.03	62	"	---	---	Q-02
Silver	28.1	0.100	0.200	"	"	"	0.922	98	"	---	---	
<b>Matrix Spike (7121080-MS2)</b>						Prepared: 12/27/17 11:36 Analyzed: 12/27/17 21:35						
QC Source Sample: Other (A7L0800-01)												
EPA 6020A												
Arsenic	56.8	0.500	1.00	ug/L	1	55.6	1.68	99	75-125	---	---	
Barium	56.7	0.500	1.00	"	"	"	1.68	99	"	---	---	
Cadmium	56.2	0.0400	0.200	"	"	"	ND	101	"	---	---	
Chromium	52.1	0.500	1.00	"	"	"	0.789	92	"	---	---	
Lead	50.7	0.100	0.200	"	"	"	ND	91	"	---	---	
Mercury	1.06	0.0400	0.0800	"	"	1.11	ND	96	"	---	---	
Selenium	29.4	0.500	1.00	"	"	27.8	0.978	102	"	---	---	
Silver	26.7	0.100	0.200	"	"	"	ND	96	"	---	---	
<b>Matrix Spike (7121080-MS5)</b>						Prepared: 12/27/17 11:36 Analyzed: 12/28/17 14:47						
QC Source Sample: Other (A7L0414-03RE2)												
EPA 6020A												
Barium	3180	10.0	20.0	ug/L	20	55.6	3300	-208	75-125	---	---	Q-03, Q-16
Lead	211	2.00	4.00	"	"	"	159	94	"	---	---	Q-16
Mercury	1.50	0.800	1.60	"	"	1.11	ND	135	"	---	---	J, Q-11, Q-16



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121111 - EPA 3051A</b>												
<b>Soil</b>												
<b>Blank (7121111-BLK1)</b>												
						Prepared: 12/28/17 10:10			Analyzed: 12/28/17 22:12			
<b>EPA 6020A</b>												
Arsenic	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Barium	ND	0.481	0.962	"	"	---	---	---	---	---	---	
Cadmium	ND	0.0962	0.192	"	"	---	---	---	---	---	---	
Chromium	ND	0.481	0.962	"	"	---	---	---	---	---	---	
Lead	ND	0.0962	0.192	"	"	---	---	---	---	---	---	
Selenium	ND	0.481	0.962	"	"	---	---	---	---	---	---	
Silver	ND	0.0962	0.192	"	"	---	---	---	---	---	---	
<b>Blank (7121111-BLK2)</b>												
						Prepared: 12/28/17 10:10			Analyzed: 12/29/17 17:24			
<b>EPA 6020A</b>												
Arsenic	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	Q-16
Barium	ND	0.481	0.962	"	"	---	---	---	---	---	---	Q-16
Cadmium	ND	0.0962	0.192	"	"	---	---	---	---	---	---	Q-16
Chromium	ND	0.481	0.962	"	"	---	---	---	---	---	---	Q-16
Lead	ND	0.0962	0.192	"	"	---	---	---	---	---	---	Q-16
Mercury	ND	0.0385	0.0769	"	"	---	---	---	---	---	---	Q-16
Selenium	ND	0.481	0.962	"	"	---	---	---	---	---	---	Q-16
Silver	ND	0.0962	0.192	"	"	---	---	---	---	---	---	Q-16
<b>LCS (7121111-BS1)</b>												
						Prepared: 12/28/17 10:10			Analyzed: 12/28/17 22:15			
<b>EPA 6020A</b>												
Arsenic	49.4	0.500	1.00	mg/kg wet	10	50.0	---	99	80-120	---	---	
Barium	49.4	0.500	1.00	"	"	"	---	99	"	---	---	
Cadmium	50.0	0.100	0.200	"	"	"	---	100	"	---	---	
Chromium	48.4	0.500	1.00	"	"	"	---	97	"	---	---	
Lead	49.4	0.100	0.200	"	"	"	---	99	"	---	---	
Selenium	26.4	0.500	1.00	"	"	25.0	---	106	"	---	---	
Silver	24.0	0.100	0.200	"	"	"	---	96	"	---	---	
<b>LCS (7121111-BS2)</b>												
						Prepared: 12/28/17 10:10			Analyzed: 12/29/17 17:27			
<b>EPA 6020A</b>												
Arsenic	53.4	0.500	1.00	mg/kg wet	10	50.0	---	107	80-120	---	---	Q-16
Barium	53.5	0.500	1.00	"	"	"	---	107	"	---	---	Q-16
Cadmium	52.6	0.100	0.200	"	"	"	---	105	"	---	---	Q-16
Chromium	53.9	0.500	1.00	"	"	"	---	108	"	---	---	Q-16

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121111 - EPA 3051A</b>												
<b>Soil</b>												
<b>LCS (7121111-BS2)</b>												
						Prepared: 12/28/17 10:10 Analyzed: 12/29/17 17:27						
<b>EPA 6020A</b>												
Lead	52.8	0.100	0.200	mg/kg wet	"	"	---	106	"	---	---	Q-16
Mercury	1.07	0.0400	0.0800	"	"	1.00	---	107	"	---	---	Q-16
Selenium	28.0	0.500	1.00	"	"	25.0	---	112	"	---	---	Q-16
Silver	26.2	0.100	0.200	"	"	"	---	105	"	---	---	Q-16
<b>Duplicate (7121111-DUP1)</b>												
						Prepared: 12/28/17 10:10 Analyzed: 12/28/17 22:34						
<b>QC Source Sample: GP14-S-3.0 (A7L0431-03)</b>												
<b>EPA 6020A</b>												
Arsenic	2.21	0.634	1.27	mg/kg dry	10	---	2.29	---	---	4	40%	
Barium	96.5	0.634	1.27	"	"	---	96.5	---	---	0.04	40%	
Cadmium	0.177	0.127	0.253	"	"	---	0.173	---	---	3	40%	J
Chromium	13.9	0.634	1.27	"	"	---	13.7	---	---	0.9	40%	
Lead	8.40	0.127	0.253	"	"	---	12.7	---	---	41	40%	Q-17
Selenium	ND	0.634	1.27	"	"	---	ND	---	---	---	40%	
Silver	ND	0.127	0.253	"	"	---	ND	---	---	---	40%	
<b>Duplicate (7121111-DUP2)</b>												
						Prepared: 12/28/17 10:10 Analyzed: 12/29/17 18:15						
<b>QC Source Sample: GP14-S-3.0 (A7L0431-03RE1)</b>												
<b>EPA 6020A</b>												
Mercury	ND	0.0507	0.101	mg/kg dry	10	---	ND	---	---	---	40%	Q-16
<b>Matrix Spike (7121111-MS1)</b>												
						Prepared: 12/28/17 10:10 Analyzed: 12/28/17 22:37						
<b>QC Source Sample: GP14-S-3.0 (A7L0431-03)</b>												
<b>EPA 6020A</b>												
Arsenic	59.9	0.621	1.24	mg/kg dry	10	62.2	2.29	93	75-125	---	---	
Barium	159	0.621	1.24	"	"	"	96.5	101	"	---	---	
Cadmium	60.4	0.124	0.249	"	"	"	0.173	97	"	---	---	
Chromium	72.4	0.621	1.24	"	"	"	13.7	94	"	---	---	
Lead	76.1	0.124	0.249	"	"	"	12.7	102	"	---	---	
Selenium	30.8	0.621	1.24	"	"	31.0	ND	99	"	---	---	
Silver	28.5	0.124	0.249	"	"	"	ND	92	"	---	---	
<b>Matrix Spike (7121111-MS2)</b>												
						Prepared: 12/28/17 10:10 Analyzed: 12/28/17 23:40						
<b>QC Source Sample: Other (A7L0452-06)</b>												
<b>EPA 6020A</b>												

Apex Laboratories



Philip Nerenberg, Lab Director

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

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121111 - EPA 3051A</b>												
<b>Soil</b>												
<b>Matrix Spike (7121111-MS2)</b>						Prepared: 12/28/17 10:10 Analyzed: 12/28/17 23:40						
QC Source Sample: Other (A7L0452-06)												
EPA 6020A												
Arsenic	59.3	0.591	1.18	mg/kg dry	10	59.2	3.67	94	75-125	---	---	
Barium	113	0.591	1.18	"	"	"	62.1	85	"	---	---	
Cadmium	57.3	0.118	0.237	"	"	"	0.380	96	"	---	---	
Chromium	75.1	0.591	1.18	"	"	"	21.4	91	"	---	---	
Lead	229	0.118	0.237	"	"	"	51.8	299	"	---	---	Q-04
Selenium	29.2	0.591	1.18	"	"	29.5	ND	99	"	---	---	
Silver	27.3	0.118	0.237	"	"	"	ND	92	"	---	---	
<b>Matrix Spike (7121111-MS3)</b>						Prepared: 12/28/17 10:10 Analyzed: 12/29/17 18:19						
QC Source Sample: GP14-S-3.0 (A7L0431-03RE1)												
EPA 6020A												
Mercury	1.24	0.0497	0.0994	mg/kg dry	10	1.24	ND	100	75-125	---	---	Q-16
<b>Matrix Spike (7121111-MS4)</b>						Prepared: 12/28/17 10:10 Analyzed: 12/29/17 19:15						
QC Source Sample: Other (A7L0452-06RE1)												
EPA 6020A												
Mercury	1.25	0.0473	0.0946	mg/kg dry	10	1.18	0.116	96	75-125	---	---	Q-16



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: Metro-Willamette Falls  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121120 - EPA 3015A</b>												
<b>Water</b>												
<b>Blank (7121120-BLK1)</b>			Prepared: 12/28/17 11:31 Analyzed: 12/28/17 18:49									
<b>EPA 6020A</b>												
Arsenic	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Barium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Cadmium	ND	0.0400	0.200	"	"	---	---	---	---	---	---	
Chromium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Lead	<b>0.308</b>	0.100	0.200	"	"	---	---	---	---	---	---	B
Mercury	ND	0.0400	0.0800	"	"	---	---	---	---	---	---	
Selenium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Silver	ND	0.100	0.200	"	"	---	---	---	---	---	---	
<b>LCS (7121120-BS1)</b>			Prepared: 12/28/17 11:31 Analyzed: 12/28/17 19:40									
<b>EPA 6020A</b>												
Arsenic	59.4	0.500	1.00	ug/L	1	55.6	---	107	80-120	---	---	
Barium	54.3	0.500	1.00	"	"	"	---	98	"	---	---	
Cadmium	56.9	0.0400	0.200	"	"	"	---	102	"	---	---	
Chromium	59.8	0.500	1.00	"	"	"	---	108	"	---	---	
Lead	56.3	0.100	0.200	"	"	"	---	101	"	---	---	B
Mercury	1.09	0.0400	0.0800	"	"	1.11	---	98	"	---	---	
Selenium	27.1	0.500	1.00	"	"	27.8	---	98	"	---	---	
Silver	27.0	0.100	0.200	"	"	"	---	97	"	---	---	
<b>Duplicate (7121120-DUP1)</b>			Prepared: 12/28/17 11:31 Analyzed: 12/28/17 20:10									
<b>QC Source Sample: Other (A7L0444-02)</b>												
<b>EPA 6020A</b>												
Mercury	ND	0.720	1.44	ug/L	10	---	ND	---	---	---	20%	R-04
<b>Duplicate (7121120-DUP2)</b>			Prepared: 12/28/17 11:31 Analyzed: 01/02/18 22:44									
<b>QC Source Sample: Other (A7L0444-02RE1)</b>												
<b>EPA 6020A</b>												
Arsenic	<b>1.70</b>	0.900	1.80	ug/L	1	---	1.86	---	---	9	20%	J, Q-16
Barium	<b>430</b>	0.900	1.80	"	"	---	426	---	---	0.7	20%	Q-16
Cadmium	<b>0.115</b>	0.0720	0.360	"	"	---	0.0937	---	---	21	20%	J, Q-05, Q-16
Chromium	<b>1.97</b>	0.900	1.80	"	"	---	2.47	---	---	23	20%	Q-05, Q-16
Selenium	<b>1.13</b>	0.900	1.80	"	"	---	1.29	---	---	14	20%	J, Q-16
Silver	ND	0.180	0.360	"	"	---	ND	---	---	---	20%	Q-16

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7121120 - EPA 3015A</b>												
<b>Water</b>												
<b>Matrix Spike (7121120-MS1)</b>						Prepared: 12/28/17 11:31 Analyzed: 12/28/17 20:15						
QC Source Sample: Other (A7L0444-02)												
EPA 6020A												
Lead	96.4	1.80	3.60	ug/L	10	100	ND	96	75-125	---	---	B
Mercury	1.74	0.720	1.44	"	"	2.00	ND	87	"	---	---	
<b>Matrix Spike (7121120-MS2)</b>						Prepared: 12/28/17 11:31 Analyzed: 12/28/17 21:43						
QC Source Sample: Other (A7L0454-13)												
EPA 6020A												
Arsenic	72.6	0.500	1.00	ug/L	1	55.6	11.8	109	75-125	---	---	
Barium	222	0.500	1.00	"	"	"	165	102	"	---	---	
Cadmium	59.4	0.0400	0.200	"	"	"	ND	107	"	---	---	
Chromium	57.9	0.500	1.00	"	"	"	0.563	103	"	---	---	
Lead	57.6	0.100	0.200	"	"	"	0.157	103	"	---	---	B
Mercury	1.16	0.0400	0.0800	"	"	1.11	ND	105	"	---	---	
Selenium	28.3	0.500	1.00	"	"	27.8	ND	102	"	---	---	
Silver	27.6	0.100	0.200	"	"	"	ND	99	"	---	---	
<b>Matrix Spike (7121120-MS3)</b>						Prepared: 12/28/17 11:31 Analyzed: 01/02/18 22:48						
QC Source Sample: Other (A7L0444-02RE1)												
EPA 6020A												
Arsenic	96.7	0.900	1.80	ug/L	1	100	1.86	95	75-125	---	---	Q-16
Barium	506	0.900	1.80	"	"	"	426	80	"	---	---	Q-16
Cadmium	98.2	0.0720	0.360	"	"	"	0.0937	98	"	---	---	Q-16
Chromium	94.4	0.900	1.80	"	"	"	2.47	92	"	---	---	Q-16
Selenium	51.3	0.900	1.80	"	"	50.0	1.29	100	"	---	---	Q-16
Silver	47.9	0.180	0.360	"	"	"	ND	96	"	---	---	Q-16





Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120862 - Total Solids (Dry Weight)</b>						<b>Soil</b>						
<b>Duplicate (7120862-DUP1)</b>						Prepared: 12/19/17 10:45 Analyzed: 12/19/17 12:55						
QC Source Sample: GP05-S-8.0 (A7L0431-15)												
EPA 8000C												
% Solids	77.8	1.00	1.00	% by Weight	1	---	80.6	---	---	3	10%	
<b>Batch 7120876 - Total Solids (Dry Weight)</b>						<b>Soil</b>						
<b>Duplicate (7120876-DUP1)</b>						Prepared: 12/19/17 13:33 Analyzed: 12/20/17 08:11						
QC Source Sample: GP11-S-7.0 (A7L0431-02)												
EPA 8000C												
% Solids	78.1	1.00	1.00	% by Weight	1	---	79.5	---	---	2	10%	
<b>Duplicate (7120876-DUP2)</b>						Prepared: 12/19/17 13:33 Analyzed: 12/20/17 08:11						
QC Source Sample: Other (A7L0432-03)												
EPA 8000C												
% Solids	79.5	1.00	1.00	% by Weight	1	---	79.8	---	---	0.4	10%	
<b>Duplicate (7120876-DUP3)</b>						Prepared: 12/19/17 13:33 Analyzed: 12/20/17 08:11						
QC Source Sample: Other (A7L0439-22)												
EPA 8000C												
% Solids	89.1	1.00	1.00	% by Weight	1	---	89.6	---	---	0.6	10%	
<b>Duplicate (7120876-DUP5)</b>						Prepared: 12/19/17 19:52 Analyzed: 12/20/17 08:11						
QC Source Sample: GP15-S-3.0 (A7L0431-17)												
EPA 8000C												
% Solids	93.6	1.00	1.00	% by Weight	1	---	93.7	---	---	0.1	10%	
<b>Duplicate (7120876-DUP6)</b>						Prepared: 12/19/17 19:52 Analyzed: 12/20/17 08:11						
QC Source Sample: Other (A7L0582-03)												
EPA 8000C												
% Solids	85.3	1.00	1.00	% by Weight	1	---	85.6	---	---	0.3	10%	
<b>Duplicate (7120876-DUP7)</b>						Prepared: 12/19/17 19:52 Analyzed: 12/20/17 08:11						
QC Source Sample: Other (A7L0573-01)												
EPA 8000C												

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209


Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 7120876 - Total Solids (Dry Weight)</b>						<b>Soil</b>						
<b>Duplicate (7120876-DUP7)</b>						Prepared: 12/19/17 19:52 Analyzed: 12/20/17 08:11						
QC Source Sample: Other (A7L0573-01)												
EPA 8000C												
% Solids	83.7	1.00	1.00	% by Weight	1	---	83.9	---	---	0.3	10%	



**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## SAMPLE PREPARATION INFORMATION

### Hydrocarbon Identification Screen by NWTPH-HCID

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

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120879</b>							
A7L0431-10	Water	NWTPH-HCID	12/14/17 14:00	12/19/17 13:50	1020mL/5mL	1000mL/5mL	0.98
A7L0431-11	Water	NWTPH-HCID	12/14/17 14:00	12/19/17 13:50	1030mL/5mL	1000mL/5mL	0.97

#### Prep: NWTPH-HCID (Soil)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120880</b>							
A7L0431-09	Soil	NWTPH-HCID	12/14/17 13:20	12/19/17 13:51	10.4g/10mL	10g/10mL	0.96
A7L0431-12	Soil	NWTPH-HCID	12/14/17 14:30	12/19/17 13:51	10.06g/10mL	10g/10mL	0.99
A7L0431-14REI	Soil	NWTPH-HCID	12/14/17 14:35	12/19/17 13:51	10.35g/10mL	10g/10mL	0.97
A7L0431-15	Soil	NWTPH-HCID	12/14/17 14:40	12/19/17 13:51	10.23g/10mL	10g/10mL	0.98

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

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

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120879</b>							
A7L0431-10	Water	NWTPH-Dx	12/14/17 14:00	12/19/17 13:50	1020mL/5mL	1000mL/5mL	0.98
A7L0431-11	Water	NWTPH-Dx	12/14/17 14:00	12/19/17 13:50	1030mL/5mL	1000mL/5mL	0.97

#### Batch: 7120925

A7L0431-05	Water	NWTPH-Dx	12/14/17 10:10	12/20/17 13:58	920mL/5mL	1000mL/5mL	1.09
------------	-------	----------	----------------	----------------	-----------	------------	------

#### Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120982</b>							
A7L0431-17	Soil	NWTPH-Dx	12/14/17 12:20	12/21/17 13:41	10.21g/5mL	10g/5mL	0.98
A7L0431-19	Soil	NWTPH-Dx	12/14/17 12:40	12/21/17 13:41	10.22g/5mL	10g/5mL	0.98
<b>Batch: 7120989</b>							
A7L0431-01	Soil	NWTPH-Dx	12/14/17 08:30	12/21/17 17:25	10.07g/5mL	10g/5mL	0.99
A7L0431-02	Soil	NWTPH-Dx	12/14/17 08:40	12/21/17 17:25	10.2g/5mL	10g/5mL	0.98
A7L0431-03	Soil	NWTPH-Dx	12/14/17 09:40	12/21/17 17:25	10.17g/5mL	10g/5mL	0.98
A7L0431-04REI	Soil	NWTPH-Dx	12/14/17 09:50	12/21/17 17:25	10.15g/5mL	10g/5mL	0.99
A7L0431-06REI	Soil	NWTPH-Dx	12/14/17 11:30	12/21/17 17:25	10.18g/5mL	10g/5mL	0.98
A7L0431-07	Soil	NWTPH-Dx	12/14/17 11:40	12/21/17 17:25	10.17g/5mL	10g/5mL	0.98
A7L0431-09REI	Soil	NWTPH-Dx	12/14/17 13:20	12/21/17 17:25	10.26g/5mL	10g/5mL	0.98
A7L0431-14	Soil	NWTPH-Dx	12/14/17 14:35	12/21/17 17:25	10.11g/5mL	10g/5mL	0.99

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## SAMPLE PREPARATION INFORMATION

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

**Prep: EPA 3546 (Fuels)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0431-15	Soil	NWTPH-Dx	12/14/17 14:40	12/21/17 17:25	10.23g/5mL	10g/5mL	0.98

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

**Prep: EPA 5030B**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120802</b>							
A7L0431-05	Water	NWTPH-Gx (MS)	12/14/17 10:10	12/18/17 11:00	5mL/5mL	5mL/5mL	1.00
A7L0431-10	Water	NWTPH-Gx (MS)	12/14/17 14:00	12/18/17 11:00	5mL/5mL	5mL/5mL	1.00
A7L0431-11	Water	NWTPH-Gx (MS)	12/14/17 14:00	12/18/17 11:00	5mL/5mL	5mL/5mL	1.00

**Prep: EPA 5035A**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120806</b>							
A7L0431-01	Soil	NWTPH-Gx (MS)	12/14/17 08:30	12/14/17 08:30	4.64g/5mL	5g/5mL	1.08
A7L0431-02	Soil	NWTPH-Gx (MS)	12/14/17 08:40	12/14/17 08:40	6.85g/5mL	5g/5mL	0.73
A7L0431-03	Soil	NWTPH-Gx (MS)	12/14/17 09:40	12/14/17 09:40	5.08g/5mL	5g/5mL	0.98
A7L0431-04	Soil	NWTPH-Gx (MS)	12/14/17 09:50	12/14/17 09:50	5.12g/5mL	5g/5mL	0.98
A7L0431-06REI	Soil	NWTPH-Gx (MS)	12/14/17 11:30	12/14/17 11:30	5.07g/5mL	5g/5mL	0.99
A7L0431-17	Soil	NWTPH-Gx (MS)	12/14/17 12:20	12/14/17 12:20	4.84g/5mL	5g/5mL	1.03
A7L0431-19	Soil	NWTPH-Gx (MS)	12/14/17 12:40	12/14/17 12:40	5.61g/5mL	5g/5mL	0.89
<b>Batch: 7120807</b>							
A7L0431-07	Soil	NWTPH-Gx (MS)	12/14/17 11:40	12/14/17 11:40	6.52g/5mL	5g/5mL	0.77
A7L0431-09	Soil	NWTPH-Gx (MS)	12/14/17 13:20	12/14/17 13:20	6.14g/5mL	5g/5mL	0.81
A7L0431-14	Soil	NWTPH-Gx (MS)	12/14/17 14:35	12/14/17 14:35	4.3g/5mL	5g/5mL	1.16
<b>Batch: 7120841</b>							
A7L0431-15REI	Soil	NWTPH-Gx (MS)	12/14/17 14:40	12/14/17 14:40	6.36g/5mL	5g/5mL	0.79

### Volatile Organic Compounds by EPA 5035A/8260C

**Prep: EPA 5035A**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120806</b>							
A7L0431-01	Soil	5035A/8260C	12/14/17 08:30	12/14/17 08:30	4.64g/5mL	5g/5mL	1.08
A7L0431-02	Soil	5035A/8260C	12/14/17 08:40	12/14/17 08:40	6.85g/5mL	5g/5mL	0.73
A7L0431-17	Soil	5035A/8260C	12/14/17 12:20	12/14/17 12:20	4.84g/5mL	5g/5mL	1.03

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## SAMPLE PREPARATION INFORMATION

### Volatle Organic Compounds by EPA 5035A/8260C

**Prep: EPA 5035A**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0431-19	Soil	5035A/8260C	12/14/17 12:40	12/14/17 12:40	5.61g/5mL	5g/5mL	0.89
<b>Batch: 7120807</b>							
A7L0431-09	Soil	5035A/8260C	12/14/17 13:20	12/14/17 13:20	6.14g/5mL	5g/5mL	0.81
A7L0431-14	Soil	5035A/8260C	12/14/17 14:35	12/14/17 14:35	4.3g/5mL	5g/5mL	1.16
<b>Batch: 7120841</b>							
A7L0431-15REI	Soil	5035A/8260C	12/14/17 14:40	12/14/17 14:40	6.36g/5mL	5g/5mL	0.79

### Volatle Organic Compounds by EPA 8260C

**Prep: EPA 5030B**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120802</b>							
A7L0431-10	Water	EPA 8260C	12/14/17 14:00	12/18/17 11:00	5mL/5mL	5mL/5mL	1.00
A7L0431-11	Water	EPA 8260C	12/14/17 14:00	12/18/17 11:00	5mL/5mL	5mL/5mL	1.00
A7L0431-16	Water	EPA 8260C	12/14/17 00:00	12/18/17 11:00	5mL/5mL	5mL/5mL	1.00

### Polychlorinated Biphenyls by EPA 8082A

**Prep: EPA 3510C (Neutral pH)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7121067</b>							
A7L0431-05	Water	EPA 8082A	12/14/17 10:10	12/27/17 10:13	900mL/2mL	1000mL/2mL	1.11

### Polychlorinated Biphenyls -- EPA 8082A

**Prep: EPA 3546**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120873</b>							
A7L0431-03	Soil	EPA 8082A	12/14/17 09:40	12/19/17 13:32	10.24g/2mL	10g/2mL	0.98
A7L0431-04	Soil	EPA 8082A	12/14/17 09:50	12/19/17 13:32	10.7g/2mL	10g/2mL	0.94
A7L0431-12	Soil	EPA 8082A	12/14/17 14:30	12/19/17 13:32	10.21g/2mL	10g/2mL	0.98
A7L0431-17	Soil	EPA 8082A	12/14/17 12:20	12/19/17 13:32	10.58g/2mL	10g/2mL	0.95
A7L0431-19	Soil	EPA 8082A	12/14/17 12:40	12/19/17 13:32	11.22g/2mL	10g/2mL	0.89

### Organochlorine Pesticides by EPA 8081B

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

**Reported:**  
 01/10/18 00:07

## SAMPLE PREPARATION INFORMATION

### Organochlorine Pesticides by EPA 8081B

#### Prep: EPA 3510C (Neutral pH)/3640A (GPC)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 7121057							
A7L0431-05REI	Water	EPA 8081B	12/14/17 10:10	12/19/17 13:25	990mL/10mL	1000mL/5mL	2.02
A7L0431-10REI	Water	EPA 8081B	12/14/17 14:00	12/19/17 13:25	1010mL/10mL	1000mL/5mL	1.98
A7L0431-11REI	Water	EPA 8081B	12/14/17 14:00	12/19/17 13:25	1010mL/10mL	1000mL/5mL	1.98

#### Prep: EPA 3546/3640A (GPC)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 7120888							
A7L0431-09REI	Soil	EPA 8081B	12/14/17 13:20	12/18/17 14:05	10.26g/20mL	10g/5mL	3.90
Batch: 8010291							
A7L0431-03REI	Soil	EPA 8081B	12/14/17 09:40	12/20/17 15:06	10.82g/10mL	10g/5mL	1.85
A7L0431-04REI	Soil	EPA 8081B	12/14/17 09:50	12/20/17 15:06	10.5g/20mL	10g/5mL	3.81
A7L0431-17REI	Soil	EPA 8081B	12/14/17 12:20	12/20/17 15:06	10.35g/10mL	10g/5mL	1.93
A7L0431-19REI	Soil	EPA 8081B	12/14/17 12:40	12/20/17 15:06	10.28g/10mL	10g/5mL	1.95

### Semivolatile Organic Compounds by EPA 8270D

#### Prep: EPA 3510C (Acid Extraction)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 7120896							
A7L0431-05REI	Water	EPA 8270D	12/14/17 10:10	12/20/17 04:59	990mL/1mL	1000mL/1mL	1.01
A7L0431-10REI	Water	EPA 8270D	12/14/17 14:00	12/20/17 04:59	1000mL/1mL	1000mL/1mL	1.00
A7L0431-11REI	Water	EPA 8270D	12/14/17 14:00	12/20/17 04:59	960mL/1mL	1000mL/1mL	1.04

#### Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 7120858							
A7L0431-01REI	Soil	EPA 8270D	12/14/17 08:30	12/19/17 10:14	15.28g/2mL	15g/2mL	0.98
A7L0431-02REI	Soil	EPA 8270D	12/14/17 08:40	12/19/17 10:14	15.3g/2mL	15g/2mL	0.98
A7L0431-03REI	Soil	EPA 8270D	12/14/17 09:40	12/19/17 10:14	15.08g/2mL	15g/2mL	1.00
A7L0431-04REI	Soil	EPA 8270D	12/14/17 09:50	12/19/17 10:14	15.23g/2mL	15g/2mL	0.99
A7L0431-06	Soil	EPA 8270D	12/14/17 11:30	12/19/17 10:14	15.46g/5mL	15g/2mL	2.43
A7L0431-07	Soil	EPA 8270D	12/14/17 11:40	12/19/17 10:14	15.17g/2mL	15g/2mL	0.99
A7L0431-17REI	Soil	EPA 8270D	12/14/17 12:20	12/19/17 10:14	15.6g/2mL	15g/2mL	0.96
A7L0431-19	Soil	EPA 8270D	12/14/17 12:40	12/19/17 10:14	15.14g/2mL	15g/2mL	0.99
A7L0431-19REI	Soil	EPA 8270D	12/14/17 12:40	12/19/17 10:14	15.14g/2mL	15g/2mL	0.99

Apex Laboratories

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



Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## SAMPLE PREPARATION INFORMATION

### Semivolatile Organic Compounds by EPA 8270D

**Prep: EPA 3546**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7121112</b>							
A7L0431-09	Soil	EPA 8270D	12/14/17 13:20	12/28/17 10:22	15.08g/5mL	15g/2mL	2.49
A7L0431-15	Soil	EPA 8270D	12/14/17 14:40	12/28/17 10:22	15.06g/5mL	15g/2mL	2.49

### Total Metals by EPA 6020 (ICPMS)

**Prep: EPA 3015A**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7121080</b>							
A7L0431-05	Water	EPA 6020A	12/14/17 10:10	12/27/17 11:36	45mL/50mL	45mL/50mL	1.00
<b>Batch: 7121120</b>							
A7L0431-10	Water	EPA 6020A	12/14/17 14:00	12/28/17 11:31	45mL/50mL	45mL/50mL	1.00
A7L0431-11	Water	EPA 6020A	12/14/17 14:00	12/28/17 11:31	45mL/50mL	45mL/50mL	1.00

**Prep: EPA 3051A**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7121111</b>							
A7L0431-01	Soil	EPA 6020A	12/14/17 08:30	12/28/17 10:10	0.498g/50mL	0.5g/50mL	1.00
A7L0431-01REI	Soil	EPA 6020A	12/14/17 08:30	12/28/17 10:10	0.498g/50mL	0.5g/50mL	1.00
A7L0431-02	Soil	EPA 6020A	12/14/17 08:40	12/28/17 10:10	0.486g/50mL	0.5g/50mL	1.03
A7L0431-02REI	Soil	EPA 6020A	12/14/17 08:40	12/28/17 10:10	0.486g/50mL	0.5g/50mL	1.03
A7L0431-03	Soil	EPA 6020A	12/14/17 09:40	12/28/17 10:10	0.499g/50mL	0.5g/50mL	1.00
A7L0431-03REI	Soil	EPA 6020A	12/14/17 09:40	12/28/17 10:10	0.499g/50mL	0.5g/50mL	1.00
A7L0431-04	Soil	EPA 6020A	12/14/17 09:50	12/28/17 10:10	0.476g/50mL	0.5g/50mL	1.05
A7L0431-04REI	Soil	EPA 6020A	12/14/17 09:50	12/28/17 10:10	0.476g/50mL	0.5g/50mL	1.05
A7L0431-06	Soil	EPA 6020A	12/14/17 11:30	12/28/17 10:10	0.472g/50mL	0.5g/50mL	1.06
A7L0431-06REI	Soil	EPA 6020A	12/14/17 11:30	12/28/17 10:10	0.472g/50mL	0.5g/50mL	1.06
A7L0431-07	Soil	EPA 6020A	12/14/17 11:40	12/28/17 10:10	0.463g/50mL	0.5g/50mL	1.08
A7L0431-07REI	Soil	EPA 6020A	12/14/17 11:40	12/28/17 10:10	0.463g/50mL	0.5g/50mL	1.08
A7L0431-09	Soil	EPA 6020A	12/14/17 13:20	12/28/17 10:10	0.511g/50mL	0.5g/50mL	0.98
A7L0431-09REI	Soil	EPA 6020A	12/14/17 13:20	12/28/17 10:10	0.511g/50mL	0.5g/50mL	0.98
A7L0431-12	Soil	EPA 6020A	12/14/17 14:30	12/28/17 10:10	0.508g/50mL	0.5g/50mL	0.98
A7L0431-12REI	Soil	EPA 6020A	12/14/17 14:30	12/28/17 10:10	0.508g/50mL	0.5g/50mL	0.98
A7L0431-14	Soil	EPA 6020A	12/14/17 14:35	12/28/17 10:10	0.489g/50mL	0.5g/50mL	1.02
A7L0431-14REI	Soil	EPA 6020A	12/14/17 14:35	12/28/17 10:10	0.489g/50mL	0.5g/50mL	1.02
A7L0431-15	Soil	EPA 6020A	12/14/17 14:40	12/28/17 10:10	0.485g/50mL	0.5g/50mL	1.03
A7L0431-15REI	Soil	EPA 6020A	12/14/17 14:40	12/28/17 10:10	0.485g/50mL	0.5g/50mL	1.03

Apex Laboratories

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



Philip Nerenberg, Lab Director

**Maul Foster & Alongi, INC.**  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: **Metro-Willamette Falls**  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

## SAMPLE PREPARATION INFORMATION

### Total Metals by EPA 6020 (ICPMS)

**Prep: EPA 3051A**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A7L0431-17	Soil	EPA 6020A	12/14/17 12:20	12/28/17 10:10	0.457g/50mL	0.5g/50mL	1.09
A7L0431-17REI	Soil	EPA 6020A	12/14/17 12:20	12/28/17 10:10	0.457g/50mL	0.5g/50mL	1.09
A7L0431-19	Soil	EPA 6020A	12/14/17 12:40	12/28/17 10:10	0.509g/50mL	0.5g/50mL	0.98
A7L0431-19REI	Soil	EPA 6020A	12/14/17 12:40	12/28/17 10:10	0.509g/50mL	0.5g/50mL	0.98

### Percent Dry Weight

**Prep: Total Solids (Dry Weight)**

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<b>Batch: 7120862</b>							
A7L0431-15	Soil	EPA 8000C	12/14/17 14:40	12/19/17 10:45	1N/A/1N/A	1N/A/1N/A	NA
A7L0431-19	Soil	EPA 8000C	12/14/17 12:40	12/19/17 10:45	1N/A/1N/A	1N/A/1N/A	NA
<b>Batch: 7120876</b>							
A7L0431-01	Soil	EPA 8000C	12/14/17 08:30	12/19/17 19:52	1N/A/1N/A	1N/A/1N/A	NA
A7L0431-02	Soil	EPA 8000C	12/14/17 08:40	12/19/17 13:33	1N/A/1N/A	1N/A/1N/A	NA
A7L0431-03	Soil	EPA 8000C	12/14/17 09:40	12/19/17 19:52	1N/A/1N/A	1N/A/1N/A	NA
A7L0431-04	Soil	EPA 8000C	12/14/17 09:50	12/19/17 19:52	1N/A/1N/A	1N/A/1N/A	NA
A7L0431-06	Soil	EPA 8000C	12/14/17 11:30	12/19/17 13:33	1N/A/1N/A	1N/A/1N/A	NA
A7L0431-07	Soil	EPA 8000C	12/14/17 11:40	12/19/17 13:33	1N/A/1N/A	1N/A/1N/A	NA
A7L0431-09	Soil	EPA 8000C	12/14/17 13:20	12/19/17 13:33	1N/A/1N/A	1N/A/1N/A	NA
A7L0431-12	Soil	EPA 8000C	12/14/17 14:30	12/19/17 19:52	1N/A/1N/A	1N/A/1N/A	NA
A7L0431-14	Soil	EPA 8000C	12/14/17 14:35	12/19/17 13:33	1N/A/1N/A	1N/A/1N/A	NA
A7L0431-17	Soil	EPA 8000C	12/14/17 12:20	12/19/17 19:52	1N/A/1N/A	1N/A/1N/A	NA





**Maul Foster & Alongi, INC.**  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

## Notes and Definitions

### Qualifiers:

- B Analyte detected in an associated blank at a level above the MRL. (See Notes and Conventions below.)
- B-02 Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
- C-05 Extract has undergone a GPC (Gel-Permeation Chromatography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
- C-07 Extract has undergone Sulfuric Acid Cleanup by EPA 3665A, Sulfur Cleanup by EPA 3660B, and Florisil Cleanup by EPA 3620B in order to minimize matrix interference.
- EST Result reported as an Estimated Value. Analyte failed initial calibration criteria.
- F-03 The result for this hydrocarbon range is elevated due to the presence of individual analyte peaks in the quantitation range that are not representative of the fuel pattern reported.
- F-09 Results in the Gasoline Range are primarily due to overlap from a heavier fuel hydrocarbon product.
- F-11 The hydrocarbon pattern indicates possible weathered diesel, or a contribution from a related component.
- F-13 The chromatographic pattern does not resemble the fuel standard used for quantitation
- F-15 Results for diesel are estimated due to overlap from the reported oil result.
- F-16 Results for oil are estimated due to overlap from the reported diesel result.
- F-17 No fuel pattern detected. The Diesel result represents carbon range C12 to C24, and the Oil result represents >C24 to C40.
- F-24 The chromatographic pattern does not resemble the fuel standard used for quantitation. The Diesel result represents carbon range C12 to C24, and the Oil result represents >C24 to C40.
- J Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
- M-05 Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.
- P-10 Result estimated due to the presence of multiple PCB Aroclors and/or matrix interference.
- Q-01 Spike recovery and/or RPD is outside acceptance limits.
- Q-02 Spike recovery is outside of established control limits due to matrix interference.
- Q-03 Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
- Q-04 Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- Q-05 Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-11 Spike recovery cannot be accurately quantified due to sample dilution required for high analyte concentration and/or matrix interference.
- Q-16 Reanalysis of an original Batch QC sample.
- Q-17 RPD between original and duplicate sample is outside of established control limits.
- Q-19 Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
- Q-30 Recovery for Lab Control Spike (LCS) is below the lower control limit. Data may be biased low.
- Q-37 Sample is non-homogenous. Sample results are less than MRL and duplicate results have hits greater than the MRL. See Duplicate results.

Apex Laboratories



Philip Nerenberg, Lab Director

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

**Maul Foster & Alongi, INC.**

2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**

Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

- Q-41 Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- Q-42 Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- Q-54 Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +1.7%. The results are reported as Estimated Values.
- Q-54a Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +5.8%. The results are reported as Estimated Values.
- Q-54b Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +53.5%. The results are reported as Estimated Values.
- Q-54c Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +6.0%. The results are reported as Estimated Values.
- Q-54d Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +9.1%. The results are reported as Estimated Values.
- Q-56 Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260C
- R-02 The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
- R-04 Reporting levels elevated due to dilution necessary for analysis.
- S-01 Surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference.
- S-05 Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.
- S-06 Surrogate recovery is outside of established control limits.

Notes and Conventions:

- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry' designation are not dry weight corrected.
- RPD Relative Percent Difference
- MDL If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
- WMSC Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
- Batch QC In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
- Blank Policy Apex assesses blank data for potential high bias down to a level equal to 1/2 the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses.  
  
For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor.



**Maul Foster & Alongi, INC.**

2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**

Project Number: 0075.06.02

Project Manager: Merideth D'Andrea

**Reported:**

01/10/18 00:07

Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.

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

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



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

**CHAIN OF CUSTODY**

APEX LABS Lab # A770431 COC 1 of 2

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: <b>MFA</b>	Project Mgr: <b>Men D'Andrea</b>	Project Name: <b>Metro - willamette falls</b>	Project #: <b>0075.06.02</b>	PO#			
Address: <b>400 E Mill Plain Blvd #400, Vancouver WA</b>		Phone: <b>503-718-2323</b>		Email: <b>mdandrea@maulfooster.com</b>			
Sampled by: <b>Emily Hess</b>							
Site Location: <b>OR WA</b>	ANALYSIS REQUEST						
Other:	TC1P Metals (8) <input type="checkbox"/> RCRA Metals (8) <input type="checkbox"/> 600 TTO <input type="checkbox"/> 8082 PCBs <input type="checkbox"/> 8270 SVOC <input type="checkbox"/> 8260 BTEX VOCs <input type="checkbox"/> 8260 HVOCS <input type="checkbox"/> 8260 RBDM VOCs <input type="checkbox"/> 8260 VOCs Full List <input type="checkbox"/> NWTPH-CX <input type="checkbox"/> NWTPH-DX <input type="checkbox"/> NWTPH-CID <input type="checkbox"/>						
SAMPLE ID	LAB ID #	DATE	TIME	# OF CONTAINERS	MATRIX	RELINQUISHED BY:	RECEIVED BY:
1 GP11-S-3.0		2/14/17	8:30	5	S	Signature: <i>Emily Hess</i> Date: <u>12/12/17</u>	Signature: _____ Date: _____
2 GP11-S-7.0			8:40	5	S	Printed Name: <b>Emily Hess</b> Time: <u>11:15</u>	Printed Name: _____ Time: _____
3 GP14-S-3.0			9:40	5	S	Signature: <i>Merideth D'Andrea</i> Date: <u>12/12/17</u>	Signature: _____ Date: _____
4 GP14-S-8.0			9:50	5	S	Printed Name: <b>Merideth D'Andrea</b> Time: <u>12:35</u>	Printed Name: _____ Time: _____
5 GP14-W-10.0			10:10	1	W	Signature: _____ Date: _____	Signature: _____ Date: _____
6 GP13-S-2.5			11:30	5	S	Signature: _____ Date: _____	Signature: _____ Date: _____
7 GP13-S-7.5			11:40	5	S	Signature: _____ Date: _____	Signature: _____ Date: _____
8 GP13-S-13.0			11:50	5	S	Signature: _____ Date: _____	Signature: _____ Date: _____
9 GP10-S-3.5			13:20	5	S	Signature: _____ Date: _____	Signature: _____ Date: _____
10 GP10-W-8.0			14:00	1	W	Signature: _____ Date: _____	Signature: _____ Date: _____

Normal Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): **1 Day**    2 Day    3 Day    4 DAY    5 DAY    Other: \_\_\_\_\_

SPECIAL INSTRUCTIONS: **hold**

RELINQUISHED BY: **Emily Hess**    RECEIVED BY: \_\_\_\_\_

Signature: *Emily Hess*    Date: 12/12/17    Signature: \_\_\_\_\_    Date: \_\_\_\_\_

Printed Name: **Emily Hess**    Time: 11:15    Printed Name: \_\_\_\_\_    Time: \_\_\_\_\_

Company: **MFA**    Company: **Apex Labs**

*Philip Nerenberg*



Maul Foster & Alongi, INC.  
2001 NW 19th Ave, STE 200  
Portland, OR 97209

Project: **Metro-Willamette Falls**  
Project Number: 0075.06.02  
Project Manager: Merideth D'Andrea

Reported:  
01/10/18 00:07

**CHAIN OF CUSTODY**

Lab # A7L0431 PO# 0075.06.02  
 \*Pensed\*  
 Project Name: Metro-Willamette Falls Project # 0075.06.02

Company: MEFA Project Mgr: Merideth D'Andrea Phone: \_\_\_\_\_ Email: \_\_\_\_\_  
 Address: \_\_\_\_\_

Sampled by: Emily Hess  
 Site Location:  OR  WA  
 Other: \_\_\_\_\_

DATE: 01/17/18 TIME: 14:30 MATRIX: \_\_\_\_\_  
 LAB ID #: GPO5-5-5-5 # OF CONTAINERS: 1

Normal Turn Around Time (TAT) = 10 Business Days. **DES** NO

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: \_\_\_\_\_

SAMPLES ARE HELD FOR 30 DAYS

RECEIVED BY: Emily Hess Date: 12/18/17 Signature: \_\_\_\_\_  
 Signature: \_\_\_\_\_ Date: 12/18/17 Signature: \_\_\_\_\_  
 Printed Name: Emily Hess Printed Name: M. Alongi Time: 11:30 Time: 1:00  
 Company: Maul Foster Alongi Company: Apex Labs

ANALYSIS REQUEST	PKS	EMPH
1200-Z		
1200-COLS		
TOTAL DISS TCLP		
56 Ag, Na, TL, V, Zn		
86 Mg, Mn, Ni, Sr, Pb		
14 Cr, Cu, Cd, Fe, PC		
41 Sb, As, Ba, Be, Ca		
TCLP Metals (8)		
RCRA Metals (8)	X	
600 TIO		
8082 PCBs	X	
8170 SWI PATH		
8270 SVOC		
8260 BTEX VOCs		
8260 HVOCS		
8260 RBDV VOCs		
8260 RBDV VOCs		
8260 VOCs/PAHs		
NMTH-GC		
NMTH-D		
NMTH-CID		
# OF CONTAINERS		
MATRIX		
DATE		
TIME		
LAB ID #		
SAMPLE ID		

SPECIAL INSTRUCTIONS:

*Philip Nerenberg*

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

**APEX LABS COOLER RECEIPT FORM**

Client: MFA Element WO#: A7 L0431  
 Project/Project #: Metro-Willamette Falls / 0075.06.02

**Delivery info:**

Date/Time Received: 12-15-17 @ 1235 By: MJK  
 Delivered by: Apex  Client  ESS  FedEx  UPS  Swift  Senvoy  SDS  Other   
**Cooler Inspection** Inspected by: MJK : 12-15-17 @ 1325  
 Chain of Custody Included? Yes  No  Custody Seals? Yes  No   
 Signed/Dated by Client? Yes  No   
 Signed/Dated by Apex? Yes  No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)	-	-					
Received on Ice? (Y/N)							
Temp. Blanks? (Y/N)	<u>2.2</u>	<u>0.3</u>					
Ice Type: (Gel/Real/Other)							
Condition:	<u>good</u>	"					

Cooler out of temp? (Y/N) Possible reason why: \_\_\_\_\_  
 If some coolers are in temp and some out, were green dot applied to out of temperature samples? Yes/No/NA

**Samples Inspection:** Inspected by: MJK : 12/15/17 @ 15:14  
 All Samples Intact? Yes  No  Comments: \_\_\_\_\_

Bottle Labels/COCs agree? Yes  No  Comments: \_\_\_\_\_

Containers/Volumes Received Appropriate for Analysis? Yes  No  Comments: \_\_\_\_\_

Do VOA Vials have Visible Headspace? Yes  No  NA

Comments: Sediment in 4/4 VOAs. on GP14-W-10.0

Water Samples: pH Checked and Appropriate (except VOAs): Yes  No  NA

Comments: \_\_\_\_\_

Additional Information: \_\_\_\_\_

Labeled by: \_\_\_\_\_ Witness: \_\_\_\_\_ Cooler Inspected by: \_\_\_\_\_ See Project Contact Form: Y

MJK MJK MJK

*Philip Nerenberg*

Maul Foster & Alongi, INC.  
 2001 NW 19th Ave, STE 200  
 Portland, OR 97209

Project: Metro-Willamette Falls  
 Project Number: 0075.06.02  
 Project Manager: Merideth D'Andrea

Reported:  
 01/10/18 00:07

**APEX LABS COOLER RECEIPT FORM**

Client: MFA Element WO#: A7

Project/Project #: METRO-Willamette Falls / 0075.06.02

**Delivery info:**

Date/Time Received: 12-18-17 @ 11:30 By: MK

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

**Cooler Inspection** Inspected by: MK : 12-18-17 @ 1200

Chain of Custody Included? Yes  No  Custody Seals? Yes  No

Signed/Dated by Client? Yes  No

Signed/Dated by Apex? Yes  No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)	<u>3.9</u>						
Received on Ice? <input checked="" type="checkbox"/> <input type="checkbox"/>							
Temp. Blanks? <input checked="" type="checkbox"/> <input type="checkbox"/>							
Ice Type: (Gel/Real/Other)							
Condition:	<u>good</u>						

Cooler out of temp?   Possible reason why: \_\_\_\_\_

If some coolers are in temp and some out, were green dot applied to out of temperature samples? Yes/No/NA

**Samples Inspection:** Inspected by: MK : 12/18/17 @ 13:55

All Samples Intact? Yes  No  Comments: \_\_\_\_\_

Bottle Labels/COCs agree? Yes  No  Comments: \_\_\_\_\_

Containers/Volumes Received Appropriate for Analysis? Yes  No  Comments: \_\_\_\_\_

Do VOA Vials have Visible Headspace? Yes  No  NA

Comments: \_\_\_\_\_

Water Samples: pH Checked and Appropriate (except VOAs): Yes  No  NA

Comments: \_\_\_\_\_

**Additional Information:** \_\_\_\_\_

Labeled by: \_\_\_\_\_ Witness: \_\_\_\_\_ Cooler Inspected by: \_\_\_\_\_ See Project Contact Form: Y

MS

[Signature]

AKK

Philip Nerenberg





Your Project #: A7L0431  
Your C.O.C. #: A7L0431

**Attention: Philip Nerenberg**

Apex Laboratories  
12232 SW Garden Place  
Tigard, OR  
USA 97223

**Report Date: 2018/01/18**  
Report #: R4941404  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B807180**

**Received: 2018/01/11, 14:40**

Sample Matrix: Soil  
# Samples Received: 5

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Hexavalent Chromium in Soil by IC (1)	5	2018/01/11	2018/01/17	CAM SOP-00436	EPA 3060/7199 m
Moisture	5	N/A	2018/01/12	CAM SOP-00445	Carter 2nd ed 51.2 m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Soils are reported on a dry weight basis unless otherwise specified.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Stephanie Pollen, Project Manager

Email: SPollen@maxxam.ca

Phone# (905) 817-5700

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

**RESULTS OF ANALYSES OF SOIL**

Maxxam ID		FWW480	FWW481	FWW482	FWW483	FWW484			
Sampling Date		2017/12/14 08:30	2017/12/14 09:50	2017/12/14 11:30	2017/12/14 13:20	2017/12/14 14:30			
COC Number		A7L0431	A7L0431	A7L0431	A7L0431	A7L0431			
	UNITS	GP11-S-3.0	GP14-S-8.0	GP13-S-2.5	GP10-S-2.5	GP05-S-5.5	RDL	MDL	QC Batch
Moisture	%	16	28	11	17	21	1.0	0.50	5350486
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									

**ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)**

Maxxam ID		FWW480	FWW481	FWW482	FWW483	FWW484			
Sampling Date		2017/12/14 08:30	2017/12/14 09:50	2017/12/14 11:30	2017/12/14 13:20	2017/12/14 14:30			
COC Number		A7L0431	A7L0431	A7L0431	A7L0431	A7L0431			
	UNITS	GP11-S-3.0	GP14-S-8.0	GP13-S-2.5	GP10-S-2.5	GP05-S-5.5	RDL	MDL	QC Batch
Chromium (VI)	ug/g	0.3	0.4	0.5	0.3	0.4	0.2	0.05	5349770
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									

### TEST SUMMARY

**Maxxam ID:** FWW480  
**Sample ID:** GP11-S-3.0  
**Matrix:** Soil

**Collected:** 2017/12/14  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW481  
**Sample ID:** GP14-S-8.0  
**Matrix:** Soil

**Collected:** 2017/12/14  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW482  
**Sample ID:** GP13-S-2.5  
**Matrix:** Soil

**Collected:** 2017/12/14  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW483  
**Sample ID:** GP10-S-2.5  
**Matrix:** Soil

**Collected:** 2017/12/14  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW484  
**Sample ID:** GP05-S-5.5  
**Matrix:** Soil

**Collected:** 2017/12/14  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**GENERAL COMMENTS**

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.1°C
-----------	-------

**Results relate only to the items tested.**

### QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
5349770	LLE	Matrix Spike	Chromium (VI)	2018/01/17		81	%	75 - 125
5349770	LLE	Spiked Blank	Chromium (VI)	2018/01/17		87	%	80 - 120
5349770	LLE	Method Blank	Chromium (VI)	2018/01/17	<0.2		ug/g	
5349770	LLE	RPD - Sample/Sample Dup	Chromium (VI)	2018/01/17	6.9		%	35
5350486	NB3	RPD - Sample/Sample Dup	Moisture	2018/01/12	2.6		%	20

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

*Cristina Carriere*

---

Cristina Carriere, Scientific Service Specialist

---

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



SUBCONTRACT ORDER

Apex Laboratories

A7L0431


1/10/18 LAD

**SENDING LABORATORY:**

Apex Laboratories  
12232 S.W. Garden Place  
Tigard, OR 97223  
Phone: (503) 718-2323  
Fax: (503) 718-0333  
Project Manager: Philip Nerenberg

**RECEIVING LABORATORY:**

Maxxam Analytics  
C/O FEDEX DEPOT 299 Cayuga Rd  
Cheektowaga, NY 14225  
Phone: (800) 668-0639  
Fax: (905) 332-9169

11-Jan-18 14:40  
Stephanie Pollen  
  
**B807180**  
URE ENV-1215

Sample Name: GP11-S-3.0 Soil Sampled: 12/14/17 08:30 (A7L0431-01)

Analysis Due Expires Comments

Hex. Chromium (Cr6)- EPA 7199 (SUB) 01/12/18 17:00 01/13/18 08:30 added 1/10/18 lad

Containers Supplied:  
(B)8 oz Glass Jar

Sample Name: GP14-S-8.0 Soil Sampled: 12/14/17 09:50 (A7L0431-04)

Analysis Due Expires Comments

Hex. Chromium (Cr6)- EPA 7199 (SUB) 01/12/18 17:00 01/13/18 09:50 added 1/10/18 lad

Containers Supplied:  
~~(B)8-oz Glass Jar~~ 4oz Jar

Sample Name: GP13-S-2.5 Soil Sampled: 12/14/17 11:30 (A7L0431-06)

Analysis Due Expires Comments

Hex. Chromium (Cr6)- EPA 7199 (SUB) 01/12/18 17:00 01/13/18 11:30 added 1/10/18 lad

Containers Supplied:  
(B)8 oz Glass Jar

Sample Name: GP10-S-2.5 Soil Sampled: 12/14/17 13:20 (A7L0431-09)

Analysis Due Expires Comments

Hex. Chromium (Cr6)- EPA 7199 (SUB) 01/12/18 17:00 01/13/18 13:20 added 1/10/19 lad

Containers Supplied:  
(F)8 oz Glass Jar



Watch Hold  
RUSH TAT

Released By:  Date: 1/10/18

Fed Ex (Shipper)

Received By:  Date: 2018/01/10 14:40

Received By:  Date: 2-01-2020

#427095 Page 1 of 2





Your Project #: A7L0343  
Your C.O.C. #: A7L0343

**Attention: Philip Nerenberg**

Apex Laboratories  
12232 SW Garden Place  
Tigard, OR  
USA 97223

**Report Date: 2018/01/18**  
Report #: R4941396  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B807188**

**Received: 2018/01/11, 14:40**

Sample Matrix: Soil  
# Samples Received: 4

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Hexavalent Chromium in Soil by IC (1)	4	2018/01/11	2018/01/17	CAM SOP-00436	EPA 3060/7199 m
Moisture	4	N/A	2018/01/12	CAM SOP-00445	Carter 2nd ed 51.2 m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Soils are reported on a dry weight basis unless otherwise specified.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Stephanie Pollen, Project Manager

Email: SPollen@maxxam.ca

Phone# (905) 817-5700

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

**RESULTS OF ANALYSES OF SOIL**

Maxxam ID		FWW507	FWW508	FWW509	FWW510	FWW510			
Sampling Date		2017/12/12 13:25	2017/12/12 14:05	2017/12/12 14:15	2017/12/12 15:05	2017/12/12 15:05			
COC Number		A7L0343	A7L0343	A7L0343	A7L0343	A7L0343			
	UNITS	GP04-S-1.0	GP02-S-7.0	GP09-S-2.5	GP08-S-4.0	GP08-S-4.0 Lab-Dup	RDL	MDL	QC Batch
Moisture	%	7.5	22	24	19	19	1.0	0.50	5350486
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									

**ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)**

Maxxam ID		FWW507	FWW508	FWW509	FWW510			
Sampling Date		2017/12/12 13:25	2017/12/12 14:05	2017/12/12 14:15	2017/12/12 15:05			
COC Number		A7L0343	A7L0343	A7L0343	A7L0343			
	UNITS	GP04-S-1.0	GP02-S-7.0	GP09-S-2.5	GP08-S-4.0	RDL	MDL	QC Batch
Chromium (VI)	ug/g	0.8	<0.2	1.2	0.5	0.2	0.05	5349770
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								

### TEST SUMMARY

**Maxxam ID:** FWW507  
**Sample ID:** GP04-S-1.0  
**Matrix:** Soil

**Collected:** 2017/12/12  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW508  
**Sample ID:** GP02-S-7.0  
**Matrix:** Soil

**Collected:** 2017/12/12  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW509  
**Sample ID:** GP09-S-2.5  
**Matrix:** Soil

**Collected:** 2017/12/12  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW510  
**Sample ID:** GP08-S-4.0  
**Matrix:** Soil

**Collected:** 2017/12/12  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW510 Dup  
**Sample ID:** GP08-S-4.0  
**Matrix:** Soil

**Collected:** 2017/12/12  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**GENERAL COMMENTS**

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.1°C
-----------	-------

**Results relate only to the items tested.**

### QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
5349770	LLE	Matrix Spike	Chromium (VI)	2018/01/17		81	%	75 - 125
5349770	LLE	Spiked Blank	Chromium (VI)	2018/01/17		87	%	80 - 120
5349770	LLE	Method Blank	Chromium (VI)	2018/01/17	<0.2		ug/g	
5349770	LLE	RPD - Sample/Sample Dup	Chromium (VI)	2018/01/17	6.9		%	35
5350486	NB3	RPD - Sample/Sample Dup	Moisture	2018/01/12	2.6		%	20

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

*Cristina Carriere*

---

Cristina Carriere, Scientific Service Specialist

---

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



SUBCONTRACT ORDER

Apex Laboratories  
A7L0343

1/10/18

SENDING LABORATORY:

Apex Laboratories  
12232 S.W. Garden Place  
Tigard, OR 97223  
Phone: (503) 718-2323  
Fax: (503) 718-0333  
Project Manager: Philip Nerenberg

RECEIVING LABORATORY:

Maxxam Analytics  
C/O FEDEX DEPOT 299 Cayuga Rd  
Cheektowaga, NY 14225  
Phone : (800) 668-0639  
Fax: (905) 332-9169

11-Jan-18 14:40  
Stephanie Pollen  
B807188  
URE ENV-1215

Sample Name: GP04-S-1.0 Soil Sampled: 12/12/17 13:25 (A7L0343-02)

Analysis	Due	Expires	Comments
Hex. Chromium (Cr6)- EPA 7199 (SUB)	01/12/18 17:00	01/11/18 13:25	
Containers Supplied: (B)8 oz Glass Jar			

Sample Name: GP02-S-7.0 Soil Sampled: 12/12/17 14:05 (A7L0343-06)

Analysis	Due	Expires	Comments
Hex. Chromium (Cr6)- EPA 7199 (SUB)	01/12/18 17:00	01/11/18 14:05	
Containers Supplied: (B)8 oz Glass Jar			

Sample Name: GP09-S-2.5 Soil Sampled: 12/12/17 14:15 (A7L0343-07)

Analysis	Due	Expires	Comments
Hex. Chromium (Cr6)- EPA 7199 (SUB)	01/12/18 17:00	01/11/18 14:15	
Containers Supplied: (B)8 oz Glass Jar			

Sample Name: GP08-S-4.0 Soil Sampled: 12/12/17 15:05 (A7L0343-09)

Analysis	Due	Expires	Comments
Hex. Chromium (Cr6)- EPA 7199 (SUB)	01/12/18 17:00	01/11/18 15:05	
Containers Supplied: (B)8 oz Glass Jar			

International Solid Sample  
Heat Treat Required  
High Risk material  
Controlled Storage and Disposal

WATCH HOLD TIME - RUSA

Released By: [Signature] Date: 1/10/18  
 Received By: [Signature] Date: 2018/01/11 14:40  
 Released By: [Signature] Date: 2018/01/11 14:40  
 Received By: [Signature] Date: 2018/01/11 14:40

Fed Ex (Shipper)

Fed Ex (Shipper)



Your Project #: A7L0317  
Your C.O.C. #: A7L0317

**Attention: Philip Nerenberg**

Apex Laboratories  
12232 SW Garden Place  
Tigard, OR  
USA 97223

**Report Date: 2018/01/18**  
Report #: R4941407  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B807196**

**Received: 2018/01/11, 14:40**

Sample Matrix: Soil  
# Samples Received: 9

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Hexavalent Chromium in Soil by IC (1)	9	2018/01/11	2018/01/17	CAM SOP-00436	EPA 3060/7199 m
Moisture	9	N/A	2018/01/12	CAM SOP-00445	Carter 2nd ed 51.2 m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Soils are reported on a dry weight basis unless otherwise specified.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Stephanie Pollen, Project Manager

Email: SPollen@maxxam.ca

Phone# (905) 817-5700

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

**RESULTS OF ANALYSES OF SOIL**

Maxxam ID		FWW533	FWW534	FWW535	FWW536	FWW537	FWW538	FWW539			
Sampling Date		2017/12/11 13:40	2017/12/11 13:50	2017/12/11 14:00	2017/12/11 14:30	2017/12/12 08:30	2017/12/11 09:55	2017/12/11 10:35			
COC Number		A7L0317	A7L0317	A7L0317	A7L0317	A7L0317	A7L0317	A7L0317			
	UNITS	GP17-S-2.5	GP17-S-8.0	GP18-S-2.5	GP12-S-3.0	GP07-S-2.5	GP06-S-2.5	GP01-S-2.5	RDL	MDL	QC Batch
Moisture	%	9.6	15	20	11	18	13	7.4	1.0	0.50	5350486
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batch											

Maxxam ID		FWW540	FWW541			
Sampling Date		2017/12/11 11:10	2017/12/11 13:15			
COC Number		A7L0317	A7L0317			
	UNITS	GP03-S-2.5	GP16-S-2.5	RDL	MDL	QC Batch
Moisture	%	13	14	1.0	0.50	5350486
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						

**ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)**

Maxxam ID		FWW533	FWW534	FWW535	FWW536	FWW536	FWW537	FWW538			
Sampling Date		2017/12/11 13:40	2017/12/11 13:50	2017/12/11 14:00	2017/12/11 14:30	2017/12/11 14:30	2017/12/12 08:30	2017/12/11 09:55			
COC Number		A7L0317	A7L0317	A7L0317	A7L0317	A7L0317	A7L0317	A7L0317			
	UNITS	GP17-S-2.5	GP17-S-8.0	GP18-S-2.5	GP12-S-3.0	GP12-S-3.0 Lab-Dup	GP07-S-2.5	GP06-S-2.5	RDL	MDL	QC Batch
Chromium (VI)	ug/g	0.5	1.6	0.4	0.3	0.3	<0.2	0.3	0.2	0.05	5349770

RDL = Reportable Detection Limit  
QC Batch = Quality Control Batch  
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		FWW539	FWW540	FWW541			
Sampling Date		2017/12/11 10:35	2017/12/11 11:10	2017/12/11 13:15			
COC Number		A7L0317	A7L0317	A7L0317			
	UNITS	GP01-S-2.5	GP03-S-2.5	GP16-S-2.5	RDL	MDL	QC Batch
Chromium (VI)	ug/g	0.2	<0.2	0.3	0.2	0.05	5349770

RDL = Reportable Detection Limit  
QC Batch = Quality Control Batch

### TEST SUMMARY

**Maxxam ID:** FWW533  
**Sample ID:** GP17-S-2.5  
**Matrix:** Soil

**Collected:** 2017/12/11  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW534  
**Sample ID:** GP17-S-8.0  
**Matrix:** Soil

**Collected:** 2017/12/11  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW535  
**Sample ID:** GP18-S-2.5  
**Matrix:** Soil

**Collected:** 2017/12/11  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW536  
**Sample ID:** GP12-S-3.0  
**Matrix:** Soil

**Collected:** 2017/12/11  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW536 Dup  
**Sample ID:** GP12-S-3.0  
**Matrix:** Soil

**Collected:** 2017/12/11  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le

**Maxxam ID:** FWW537  
**Sample ID:** GP07-S-2.5  
**Matrix:** Soil

**Collected:** 2017/12/12  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

### TEST SUMMARY

**Maxxam ID:** FWW538  
**Sample ID:** GP06-S-2.5  
**Matrix:** Soil

**Collected:** 2017/12/11  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW539  
**Sample ID:** GP01-S-2.5  
**Matrix:** Soil

**Collected:** 2017/12/11  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW540  
**Sample ID:** GP03-S-2.5  
**Matrix:** Soil

**Collected:** 2017/12/11  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**Maxxam ID:** FWW541  
**Sample ID:** GP16-S-2.5  
**Matrix:** Soil

**Collected:** 2017/12/11  
**Shipped:**  
**Received:** 2018/01/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	5349770	2018/01/11	2018/01/17	Lang Le
Moisture	BAL	5350486	N/A	2018/01/12	Gurpreet Kaur

**GENERAL COMMENTS**

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.1°C
-----------	-------

Samples received past hold time. Client consented to proceed with analysis.

**Results relate only to the items tested.**

### QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
5349770	LLE	Matrix Spike(FWW536)	Chromium (VI)	2018/01/17		81	%	75 - 125
5349770	LLE	Spiked Blank	Chromium (VI)	2018/01/17		87	%	80 - 120
5349770	LLE	Method Blank	Chromium (VI)	2018/01/17	<0.2		ug/g	
5349770	LLE	RPD - Sample/Sample Dup	Chromium (VI)	2018/01/17	6.9		%	35
5350486	NB3	RPD - Sample/Sample Dup	Moisture	2018/01/12	2.6		%	20

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

*Cristina Carriere*

---

Cristina Carriere, Scientific Service Specialist

---

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.





SUBCONTRACT ORDER

Apex Laboratories  
A7L0317

**RUSH!**

DA  
1/10/18

SENDING LABORATORY:

Apex Laboratories  
12232 S.W. Garden Place  
Tigard, OR 97223  
Phone: (503) 718-2323  
Fax: (503) 718-0333  
Project Manager: Philip Nerenberg

RECEIVING LABORATORY:

Maxxam Analytics  
C/O FEDEX DEPOT 299 Cayuga R.  
Cheektowaga, NY 14225  
Phone : (800) 668-0639  
Fax: (905) 332-9169

11-Jan-18 14:40

Stephanie Pollen



**B807196**

URE ENV-1215

Sample Name: GP06-S-2.5 Soil Sampled: 12/11/17 09:55 (A7L0317-01)

Analysis	Due	Expires	Comments
Hex. Chromium (Cr6)- EPA 7199 (SUB)	01/12/18 17:00	01/10/18 09:55	Maxxam, OK to run past hold time. ; +1/10
Containers Supplied: (B)8 oz Glass Jar			

Sample Name: GP01-S-2.5 Soil Sampled: 12/11/17 10:35 (A7L0317-04)

Analysis	Due	Expires	Comments
Hex. Chromium (Cr6)- EPA 7199 (SUB)	01/12/18 17:00	01/10/18 10:35	Maxxam, OK to run past hold time. ; +1/10
Containers Supplied: (B)8 oz Glass Jar			

Sample Name: GP03-S-2.5 Soil Sampled: 12/11/17 11:10 (A7L0347-07)

Analysis	Due	Expires	Comments
Hex. Chromium (Cr6)- EPA 7199 (SUB)	01/12/18 17:00	01/10/18 11:10	Maxxam, OK to run past hold time. ; +1/10
Containers Supplied: (B)8 oz Glass Jar			

No T 1/2 8oz jars.

Sample Name: GP16-S-2.5 Soil Sampled: 12/11/17 13:15 (A7L0317-12)

Analysis	Due	Expires	Comments
Hex. Chromium (Cr6)- EPA 7199 (SUB)	01/12/18 17:00	01/10/18 13:15	Maxxam, OK to run past hold time. ; +1/10
Containers Supplied: (B)8 oz Glass Jar			

Rush please  
OK to run past hold time.

*[Signature]*

1/10/18



Released By: [Signature] Date: [Blank]

Fed Ex (Shipper)

Received By: [Signature] Date: 2018/01/11 14:40

Released By: [Blank] Date: [Blank]

Received By: [Blank] Date: 2018/01/20

#42295



SUBCONTRACT ORDER

Apex Laboratories

A7L0317



DA  
1/10/18

Sample Name: GP17-S-2.5 Soil Sampled: 12/11/17 13:40 (A7L0317-14)

Analysis	Due	Expires	Comments
Hex. Chromium (Cr6)- EPA 7199 (SUB)	01/12/18 17:00	01/10/18 13:40	Maxxam, OK to run past hold time. ; +1/10
Containers Supplied: (B)8 oz Glass Jar			

Sample Name: GP17-S-8.0 Soil Sampled: 12/11/17 13:50 (A7L0317-15)

Analysis	Due	Expires	Comments
Hex. Chromium (Cr6)- EPA 7199 (SUB)	01/12/18 17:00	01/10/18 13:50	Maxxam, OK to run past hold time. ; +1/10
Containers Supplied: (B)8 oz Glass Jar			

Sample Name: GP18-S-2.5 Soil Sampled: 12/11/17 14:00 (A7L0317-16)

Analysis	Due	Expires	Comments
Hex. Chromium (Cr6)- EPA 7199 (SUB)	01/12/18 17:00	01/10/18 14:00	Maxxam, OK to run past hold time. ; +1/10
Containers Supplied: (B)8 oz Glass Jar			

Sample Name: GP12-S-3.0 Soil Sampled: 12/11/17 14:30 (A7L0317-17)

Analysis	Due	Expires	Comments
Hex. Chromium (Cr6)- EPA 7199 (SUB)	01/12/18 17:00	01/10/18 14:30	Maxxam, OK to run past hold time. ; +1/10
Containers Supplied: (B)8 oz Glass Jar			

Sample Name: GP07-S-2.5 Soil Sampled: 12/12/17 08:30 (A7L0317-21)

Analysis	Due	Expires	Comments
Hex. Chromium (Cr6)- EPA 7199 (SUB)	01/12/18 17:00	01/11/18 08:30	ok out of hold. Maxxam +1/10
Containers Supplied: (B)8 oz Glass Jar			

Rush please  
OK out of hold.

Released By: Date: 1/10/18  
 Received By: Date: 201/11 14:40  
 Released By: Fed Ex (Shipper) Date: 202/2/20  
 Received By: Date: 202/2/20

Fed Ex (Shipper)

# 42291

January 25, 2018

Mr. Darwin Thomas  
Apex Laboratories  
12232 S.W. Garden Place  
Portland, Oregon 97223

Re: Dioxin & PCB's subcontract  
Work Order: 11774  
SDG: A7L0317

Dear Mr. Thomas:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on December 14, 2017. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynde Larkins  
Project Manager

Enclosures

SUBCONTRACT ORDER

Apex Laboratories

A7L0317

CFA WO # 1177d

SENDING LABORATORY:

Apex Laboratories  
12232 S.W. Garden Place  
Tigard, OR 97223  
Phone: (503) 718-2323  
Fax: (503) 718-0333  
Project Manager: Philip Nerenberg

RECEIVING LABORATORY:

Cape Fear Analytical, LLC  
3306 Kitty Hawk Rd Suite 120  
Wilmington, NC 28405  
Phone : (910) 795-0421  
Fax: -

Sample Name: GP06-S-2.5 Soil Sampled: 12/11/17 09:55 (A7L0317-01)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB) Containers Supplied: (C)4 oz Glass Jar	12/26/17 17:00	06/09/18 09:55	

Sample Name: GP06-S-7.5 Soil Sampled: 12/11/17 10:05 (A7L0317-02)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB) Containers Supplied: (C)4 oz Glass Jar	12/26/17 17:00	06/09/18 10:05	

Sample Name: GP06-S-21.0 Soil Sampled: 12/11/17 10:20 (A7L0317-03)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB) Containers Supplied: (C)4 oz Glass Jar	12/26/17 17:00	06/09/18 10:20	

Sample Name: GP01-S-2.5 Soil Sampled: 12/11/17 10:35 (A7L0317-04)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB) Containers Supplied: (C)4 oz Glass Jar	12/26/17 17:00	06/09/18 10:35	

Standard TAT

temp. = 2.6°C

12/13/17

Fed Ex (Shipper)

Released By	Date	Received By	Date
Fed Ex (Shipper)	14 DEC 17	Cynde Larkins	14 DEC 17 10:13

SUBCONTRACT ORDER

Apex Laboratories

A7L0317

CFA WO#11774

Sample Name: GP01-S-7.5 Soil Sampled: 12/11/17 10:45 (A7L0317-05)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB) Containers Supplied: (C)4 oz Glass Jar	12/26/17 17:00	06/09/18 10:45	

Sample Name: GP01-S-16.0 Soil Sampled: 12/11/17 11:00 (A7L0317-06)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB) Containers Supplied: (C)4 oz Glass Jar	12/26/17 17:00	06/09/18 11:00	

Sample Name: GP03-S-2.5 Soil Sampled: 12/11/17 11:10 (A7L0317-07)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB) Containers Supplied: (C)4 oz Glass Jar	12/26/17 17:00	06/09/18 11:10	

Sample Name: GP03-S-7.5 Soil Sampled: 12/11/17 11:30 (A7L0317-08)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB) Containers Supplied: (C)4 oz Glass Jar	12/26/17 17:00	06/09/18 11:30	

T reads 1130. ID on 1/2 8oz jars reads GP03-S-

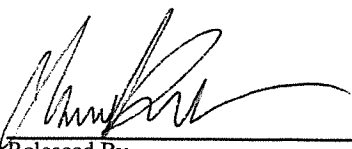
Sample Name: GP03-S-17.5 Soil Sampled: 12/11/17 11:40 (A7L0317-09)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB) Containers Supplied: (C)4 oz Glass Jar	12/26/17 17:00	06/09/18 11:40	

Sample Name: GP03-S-32.0 Soil Sampled: 12/11/17 12:15 (A7L0317-10)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB) Containers Supplied: (C)4 oz Glass Jar	12/26/17 17:00	06/09/18 12:15	

Standard TAT

Released By:  Date: 12/13/17  
 Received By: Fed Ex (Shipper) Date:   
 Released By: Fed Ex (Shipper) Date: 14 Dec 17  
 Received By: Cynde Larkins Date: 14 Dec 17 1013

**SAMPLE RECEIPT CHECKLIST**  
Cape Fear Analytical

Client: <b>APEX</b>	Work Order: <b>11774</b>
Shipping Company: <b>FedEx</b>	Date/Time Received: <b>14 DEC 17 10:3</b>

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?		✓	
Samples < 2x background?		✓	

\* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: \_\_\_\_\_

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken    damaged container    leaking container    other(describe)
2	Chain of Custody documents included with shipment?	✓			
3	Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: (ice bags) (blue ice) dry ice none other (describe) <b>4.8° - 2.2 = 2.6°C</b>
4	Aqueous samples found to have visible solids?		✓		Sample IDs, containers affected:
5	Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?		✓		Sample IDs, containers affected: If preservative added, Lot#:
7	Samples received within holding time?	✓			Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?	✓			List type and number of containers / Sample IDs, containers affected: <b>1 - 4oz clear jar per sample      10 total</b>
11	COC form is properly signed in relinquished/received sections?	✓			

Comments:

Checklist performed by: Initials: CS      Date: 14 DEC 17

# **High Resolution Dioxins and Furans Analysis**

# Case Narrative



**HDOX Case Narrative  
Apex Laboratories (APEX)  
SDG A7L0317  
Work Order 11774**

**Method/Analysis Information**

**Product:** Dioxins/Furans by EPA Method 1613B in Solids  
Analytical Method: EPA Method 1613B  
Extraction Method: SW846 3540C  
Analytical Batch Number: 36651  
Clean Up Batch Number: 36650  
Extraction Batch Number: 36649

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in Method 1613B:

<b>Sample ID</b>	<b>Client ID</b>
11774001	GP06-S-2.5
11774002	GP06-S-7.5
11774003	GP06-S-21.0
11774004	GP01-S-2.5
11774005	GP01-S-7.5
11774006	GP01-S-16.0
11774007	GP03-S-2.5
11774008	GP03-S-7.5
11774009	GP03-S-17.5
11774010	GP03-S-32.0
12020427	Method Blank (MB)
12020428	Laboratory Control Sample (LCS)
12020429	Laboratory Control Sample Duplicate (LCSD)
12020435	11774008(GP03-S-7.5) Matrix Spike (MS)
12020436	11774008(GP03-S-7.5) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 14.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

### **Calibration Information**

#### **Initial Calibration**

All initial calibration requirements have been met for this sample delivery group (SDG).

#### **Continuing Calibration Verification (CCV) Requirements**

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

### **Quality Control (QC) Information**

#### **Certification Statement**

The test results presented in this document are certified to meet all requirements of the 2009 TNI Standard.

#### **Method Blank (MB) Statement**

The MB(s) analyzed with this SDG met the acceptance criteria.

#### **Surrogate Recoveries**

Two surrogates recovered outside the acceptance limits. Recoveries were >10% and ion ratio and signal to noise criteria were met. In some instances EDLs may be higher than the PQLs.  
11774001 (GP06-S-2.5)- Batch 36651.

Four surrogates recovered outside the acceptance limits. One recovery was <10%; ion ratio and signal to noise criteria were met. In some instances EDLs may be higher than the PQLs.

#### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recoveries met the acceptance limits.

#### **Laboratory Control Sample Duplicate (LCSD) Recovery**

The LCSD spike recoveries met the acceptance limits.

#### **LCS/LCSD Relative Percent Difference (RPD) Statement**

The RPD(s) between the LCS and LCSD met the acceptance limits.

#### **QC Sample Designation**

Sample 11774008 (GP03-S-7.5)- Batch 36651 was selected for analysis as the matrix spike and matrix spike duplicate.

#### **Matrix Spike/Duplicate (MS/MSD) Recovery Statement**

The MS recoveries for this SDG were not within the acceptance limits. The failures confirm in the matrix spike duplicate and are attributed to matrix interference. 12020435 (GP03-S-7.5) and 12020436 (GP03-S-7.5)- Batch 36651.

### **MS/MSD Relative Percent Difference (RPD) Statement**

Two relative percent differences (RPD) between each MS and MSD were not within the required acceptance limits. Sample data is validated based on acceptable LCS/LCSD results. 12020436 (GP03-S-7.5)- Batch 36651.

### **Technical Information**

#### **Holding Time Specifications**

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

#### **Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

#### **Sample Dilutions**

The samples in this SDG did not require dilutions.

#### **Sample Re-extraction/Re-analysis**

The samples were re-extracted due to surrogate failures. The issue was traced to a failing laboratory reagent. Batch 36651.

### **Miscellaneous Information**

#### **Nonconformance (NCR) Documentation**

A NCR was not required for this SDG.

#### **Manual Integrations**

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

#### **Sample preparation**

No difficulties were encountered during sample preparation.

### **Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also

includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

# **Sample Data Summary**

# Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

## Qualifier Definition Report for

APEX001 Apex Laboratories

Client SDG: A7L0317 CFA Work Order: 11774

### The Qualifiers in this report are defined as follows:

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- E Value is estimated - Concentration of the target analyte exceeds the instrument calibration range
- J Value is estimated
- K Estimated Maximum Possible Concentration
- Q Quantitative Interference; value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.
  
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

### Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Heather Patterson

Date: 25 JAN 2018

Title: Group Leader

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774001	<b>Date Collected:</b> 12/11/2017 09:55	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 17.1
<b>Client ID:</b> GP06-S-2.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 22:57	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-4		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 12.07 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	K	1.10	pg/g	0.664	0.999
40321-76-4	1,2,3,7,8-PeCDD	J	1.84	pg/g	0.284	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	J	2.38	pg/g	0.472	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		8.47	pg/g	0.470	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	J	4.49	pg/g	0.482	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		227	pg/g	0.833	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2560	pg/g	1.01	9.99
51207-31-9	2,3,7,8-TCDF	K	2.40	pg/g	1.38	0.999
57117-41-6	1,2,3,7,8-PeCDF	J	0.853	pg/g	0.171	5.00
57117-31-4	2,3,4,7,8-PeCDF	JK	2.93	pg/g	0.176	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	4.12	pg/g	0.250	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	J	2.39	pg/g	0.278	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	J	2.89	pg/g	0.260	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	JQ	1.07	pg/g	0.378	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		120	pg/g	0.262	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	3.29	pg/g	0.396	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		206	pg/g	0.284	9.99
41903-57-5	Total TeCDD	K	3.87	pg/g	0.664	0.999
36088-22-9	Total PeCDD	KQ	14.0	pg/g	0.284	5.00
34465-46-8	Total HxCDD	K	63.6	pg/g	0.470	5.00
37871-00-4	Total HpCDD		434	pg/g	0.833	5.00
30402-14-3	Total TeCDF	K	9.68	pg/g	1.38	0.999
30402-15-4	Total PeCDF	KQ	25.8	pg/g	0.0442	5.00
55684-94-1	Total HxCDF	K	91.8	pg/g	0.250	5.00
38998-75-3	Total HpCDF	K	301	pg/g	0.262	5.00
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		11.0	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		11.0	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		59.1	200	pg/g	29.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		152	200	pg/g	76.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		173	200	pg/g	86.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		155	200	pg/g	77.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		214	200	pg/g	107	(23%-140%)
13C-OCDD		477	400	pg/g	119	(17%-157%)
13C-2,3,7,8-TCDF		34.8	200	pg/g	17.4	*(24%-169%)
13C-1,2,3,7,8-PeCDF		118	200	pg/g	59.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		131	200	pg/g	65.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		163	200	pg/g	81.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		137	200	pg/g	68.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		165	200	pg/g	82.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF	Q	102	200	pg/g	51.2	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 2 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774001	<b>Date Collected:</b> 12/11/2017 09:55	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 17.1
<b>Client ID:</b> GP06-S-2.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 22:57	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-4		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 12.07 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%      Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			199	200	pg/g	99.5      (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			200	200	pg/g	100      (26%-138%)
37Cl-2,3,7,8-TCDD			5.44	20.0	pg/g	27.2 *      (35%-197%)

**Comments:**

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- Q** Quantitative Interference; value is estimated
- U** Analyte was analyzed for, but not detected above the specified detection limit.



**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774001	<b>Date Collected:</b> 12/11/2017 09:55	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 17.1
<b>Client ID:</b> GP06-S-2.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/24/2018 16:17	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A24JAN18B-4		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 12.07 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		2.55	pg/g	1.36	0.999

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	------	--------	---------	-------	-----------	-------------------

**Comments:**

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- Q** Quantitative Interference; value is estimated
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774002	<b>Date Collected:</b> 12/11/2017 10:05	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 17.4
<b>Client ID:</b> GP06-S-7.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 23:45	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-5		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 12.07 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.205	pg/g	0.205	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	0.105	pg/g	0.105	5.02
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.123	pg/g	0.123	5.02
57653-85-7	1,2,3,6,7,8-HxCDD	JK	0.221	pg/g	0.121	5.02
19408-74-3	1,2,3,7,8,9-HxCDD	JK	0.199	pg/g	0.125	5.02
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	1.35	pg/g	0.117	5.02
3268-87-9	1,2,3,4,6,7,8,9-OCDD		10.2	pg/g	0.265	10.0
51207-31-9	2,3,7,8-TCDF	U	0.428	pg/g	0.428	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	0.124	pg/g	0.124	5.02
57117-31-4	2,3,4,7,8-PeCDF	U	0.114	pg/g	0.114	5.02
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.0889	pg/g	0.0889	5.02
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.0829	pg/g	0.0829	5.02
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.112	pg/g	0.0863	5.02
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.101	pg/g	0.101	5.02
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.373	pg/g	0.0572	5.02
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.0869	pg/g	0.0869	5.02
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.957	pg/g	0.428	10.0
41903-57-5	Total TeCDD	JK	0.217	pg/g	0.205	1.00
36088-22-9	Total PeCDD	JK	0.189	pg/g	0.105	5.02
34465-46-8	Total HxCDD	JK	1.44	pg/g	0.121	5.02
37871-00-4	Total HpCDD	J	2.80	pg/g	0.117	5.02
30402-14-3	Total TeCDF	J	0.765	pg/g	0.428	1.00
30402-15-4	Total PeCDF	JK	1.05	pg/g	0.0341	5.02
55684-94-1	Total HxCDF	JK	1.02	pg/g	0.0829	5.02
38998-75-3	Total HpCDF	J	0.953	pg/g	0.0572	5.02
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0738	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.289	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		113	201	pg/g	56.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		201	201	pg/g	100	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		172	201	pg/g	85.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		161	201	pg/g	80.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		179	201	pg/g	89.0	(23%-140%)
13C-OCDD		363	401	pg/g	90.4	(17%-157%)
13C-2,3,7,8-TCDF		77.2	201	pg/g	38.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		187	201	pg/g	93.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		188	201	pg/g	93.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		162	201	pg/g	80.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		154	201	pg/g	76.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		167	201	pg/g	83.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		178	201	pg/g	88.5	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 2 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774002	<b>Date Collected:</b> 12/11/2017 10:05	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 17.4
<b>Client ID:</b> GP06-S-7.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 23:45	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-5		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 12.07 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			168	201	pg/g	83.5 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			172	201	pg/g	85.8 (26%-138%)
37Cl-2,3,7,8-TCDD			11.0	20.1	pg/g	54.6 (35%-197%)

**Comments:**

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774003	<b>Date Collected:</b> 12/11/2017 10:20	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 13.1
<b>Client ID:</b> GP06-S-21.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/20/2018 00:33	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-6		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 11.47 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.213	pg/g	0.213	1.00
40321-76-4	1,2,3,7,8-PeCDD	JK	0.223	pg/g	0.187	5.02
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.195	pg/g	0.153	5.02
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.630	pg/g	0.150	5.02
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.586	pg/g	0.155	5.02
35822-46-9	1,2,3,4,6,7,8-HpCDD		16.4	pg/g	0.319	5.02
3268-87-9	1,2,3,4,6,7,8,9-OCDD		174	pg/g	0.405	10.0
51207-31-9	2,3,7,8-TCDF	U	0.391	pg/g	0.391	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	0.132	pg/g	0.132	5.02
57117-31-4	2,3,4,7,8-PeCDF	J	0.253	pg/g	0.118	5.02
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.474	pg/g	0.100	5.02
57117-44-9	1,2,3,6,7,8-HxCDF	JK	0.235	pg/g	0.106	5.02
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.331	pg/g	0.0978	5.02
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.128	pg/g	0.128	5.02
67562-39-4	1,2,3,4,6,7,8-HpCDF		7.98	pg/g	0.177	5.02
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.285	pg/g	0.285	5.02
39001-02-0	1,2,3,4,6,7,8,9-OCDF		17.0	pg/g	0.717	10.0
41903-57-5	Total TeCDD	JK	0.241	pg/g	0.213	1.00
36088-22-9	Total PeCDD	JK	0.223	pg/g	0.187	5.02
34465-46-8	Total HxCDD	K	5.02	pg/g	0.150	5.02
37871-00-4	Total HpCDD		31.6	pg/g	0.319	5.02
30402-14-3	Total TeCDF	J	0.803	pg/g	0.391	1.00
30402-15-4	Total PeCDF	J	2.92	pg/g	0.0279	5.02
55684-94-1	Total HxCDF	K	7.89	pg/g	0.0978	5.02
38998-75-3	Total HpCDF		20.4	pg/g	0.177	5.02
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.844	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.980	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		115	201	pg/g	57.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		212	201	pg/g	106	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		176	201	pg/g	87.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		168	201	pg/g	83.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		181	201	pg/g	90.3	(23%-140%)
13C-OCDD		352	401	pg/g	87.7	(17%-157%)
13C-2,3,7,8-TCDF		72.6	201	pg/g	36.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		202	201	pg/g	101	(24%-185%)
13C-2,3,4,7,8-PeCDF		200	201	pg/g	99.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		166	201	pg/g	82.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		160	201	pg/g	79.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		175	201	pg/g	87.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		180	201	pg/g	89.6	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774003	<b>Date Collected:</b> 12/11/2017 10:20	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 13.1
<b>Client ID:</b> GP06-S-21.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/20/2018 00:33	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-6		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 11.47 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			171	201	pg/g	85.0 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			171	201	pg/g	85.0 (26%-138%)
37Cl-2,3,7,8-TCDD			11.0	20.1	pg/g	54.8 (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774004	<b>Date Collected:</b> 12/11/2017 10:35	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 16.7
<b>Client ID:</b> GP01-S-2.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/20/2018 01:21	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-7		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 12.02 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	J	0.384	pg/g	0.288	0.999
40321-76-4	1,2,3,7,8-PeCDD	J	0.503	pg/g	0.141	4.99
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.645	pg/g	0.181	4.99
57653-85-7	1,2,3,6,7,8-HxCDD	J	2.86	pg/g	0.177	4.99
19408-74-3	1,2,3,7,8,9-HxCDD	JK	1.65	pg/g	0.183	4.99
35822-46-9	1,2,3,4,6,7,8-HpCDD		68.2	pg/g	0.659	4.99
3268-87-9	1,2,3,4,6,7,8,9-OCDD		865	pg/g	0.863	9.99
51207-31-9	2,3,7,8-TCDF	U	0.629	pg/g	0.629	0.999
57117-41-6	1,2,3,7,8-PeCDF	U	0.129	pg/g	0.129	4.99
57117-31-4	2,3,4,7,8-PeCDF	JK	0.695	pg/g	0.113	4.99
70648-26-9	1,2,3,4,7,8-HxCDF	J	1.08	pg/g	0.193	4.99
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.655	pg/g	0.204	4.99
60851-34-5	2,3,4,6,7,8-HxCDF	JK	1.01	pg/g	0.195	4.99
72918-21-9	1,2,3,7,8,9-HxCDF	JK	0.314	pg/g	0.238	4.99
67562-39-4	1,2,3,4,6,7,8-HpCDF		45.3	pg/g	0.191	4.99
55673-89-7	1,2,3,4,7,8,9-HpCDF	JK	1.03	pg/g	0.282	4.99
39001-02-0	1,2,3,4,6,7,8,9-OCDF		82.2	pg/g	0.468	9.99
41903-57-5	Total TeCDD	K	5.79	pg/g	0.288	0.999
36088-22-9	Total PeCDD	JK	4.72	pg/g	0.141	4.99
34465-46-8	Total HxCDD	K	20.3	pg/g	0.177	4.99
37871-00-4	Total HpCDD		126	pg/g	0.659	4.99
30402-14-3	Total TeCDF	K	1.73	pg/g	0.629	0.999
30402-15-4	Total PeCDF	K	9.40	pg/g	0.0314	4.99
55684-94-1	Total HxCDF	K	31.7	pg/g	0.193	4.99
38998-75-3	Total HpCDF	K	112	pg/g	0.191	4.99
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		3.35	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		3.38	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		108	200	pg/g	53.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		202	200	pg/g	101	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		166	200	pg/g	83.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		164	200	pg/g	82.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		182	200	pg/g	91.0	(23%-140%)
13C-OCDD		372	400	pg/g	93.1	(17%-157%)
13C-2,3,7,8-TCDF		67.3	200	pg/g	33.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		184	200	pg/g	92.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		185	200	pg/g	92.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		162	200	pg/g	81.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		148	200	pg/g	73.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		167	200	pg/g	83.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		170	200	pg/g	85.2	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774004	<b>Date Collected:</b> 12/11/2017 10:35	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 16.7
<b>Client ID:</b> GP01-S-2.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/20/2018 01:21	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-7		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 12.02 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			168	200	pg/g	84.0 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			173	200	pg/g	86.7 (26%-138%)
37Cl-2,3,7,8-TCDD			10.9	20.0	pg/g	54.5 (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774005	<b>Date Collected:</b> 12/11/2017 10:45	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 14.8
<b>Client ID:</b> GP01-S-7.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/20/2018 02:09	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-8		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 11.67 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.283	pg/g	0.283	1.01
40321-76-4	1,2,3,7,8-PeCDD	JK	1.43	pg/g	0.161	5.03
39227-28-6	1,2,3,4,7,8-HxCDD	JK	1.68	pg/g	0.322	5.03
57653-85-7	1,2,3,6,7,8-HxCDD		7.27	pg/g	0.324	5.03
19408-74-3	1,2,3,7,8,9-HxCDD		5.86	pg/g	0.332	5.03
35822-46-9	1,2,3,4,6,7,8-HpCDD		120	pg/g	0.680	5.03
3268-87-9	1,2,3,4,6,7,8,9-OCDD		882	pg/g	0.788	10.1
51207-31-9	2,3,7,8-TCDF	U	0.704	pg/g	0.704	1.01
57117-41-6	1,2,3,7,8-PeCDF	JK	0.292	pg/g	0.133	5.03
57117-31-4	2,3,4,7,8-PeCDF	J	1.03	pg/g	0.117	5.03
70648-26-9	1,2,3,4,7,8-HxCDF	J	1.95	pg/g	0.186	5.03
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.969	pg/g	0.176	5.03
60851-34-5	2,3,4,6,7,8-HxCDF	J	1.62	pg/g	0.170	5.03
72918-21-9	1,2,3,7,8,9-HxCDF	JK	0.507	pg/g	0.215	5.03
67562-39-4	1,2,3,4,6,7,8-HpCDF		135	pg/g	0.257	5.03
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	1.33	pg/g	0.384	5.03
39001-02-0	1,2,3,4,6,7,8,9-OCDF		95.4	pg/g	0.380	10.1
41903-57-5	Total TeCDD	K	3.55	pg/g	0.283	1.01
36088-22-9	Total PeCDD	K	9.46	pg/g	0.161	5.03
34465-46-8	Total HxCDD	K	58.2	pg/g	0.322	5.03
37871-00-4	Total HpCDD		223	pg/g	0.680	5.03
30402-14-3	Total TeCDF	K	2.94	pg/g	0.704	1.01
30402-15-4	Total PeCDF	K	15.3	pg/g	0.0326	5.03
55684-94-1	Total HxCDF	K	73.3	pg/g	0.170	5.03
38998-75-3	Total HpCDF		267	pg/g	0.257	5.03
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		6.59	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		6.76	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		96.8	201	pg/g	48.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		197	201	pg/g	97.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		173	201	pg/g	85.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		163	201	pg/g	81.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		183	201	pg/g	91.2	(23%-140%)
13C-OCDD		381	402	pg/g	94.7	(17%-157%)
13C-2,3,7,8-TCDF		62.0	201	pg/g	30.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		167	201	pg/g	82.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		179	201	pg/g	89.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		160	201	pg/g	79.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		154	201	pg/g	76.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		168	201	pg/g	83.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		172	201	pg/g	85.6	(29%-147%)



**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774005	<b>Date Collected:</b> 12/11/2017 10:45	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 14.8
<b>Client ID:</b> GP01-S-7.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/20/2018 02:09	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-8		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 11.67 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			169	201	pg/g	84.3 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			175	201	pg/g	86.8 (26%-138%)
37Cl-2,3,7,8-TCDD			9.79	20.1	pg/g	48.7 (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774006	<b>Date Collected:</b> 12/11/2017 11:00	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 14.4
<b>Client ID:</b> GP01-S-16.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/20/2018 02:56	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-9		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 11.71 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.291	pg/g	0.291	0.997
40321-76-4	1,2,3,7,8-PeCDD	J	1.47	pg/g	0.188	4.99
39227-28-6	1,2,3,4,7,8-HxCDD	J	1.64	pg/g	0.235	4.99
57653-85-7	1,2,3,6,7,8-HxCDD		5.67	pg/g	0.229	4.99
19408-74-3	1,2,3,7,8,9-HxCDD		5.15	pg/g	0.237	4.99
35822-46-9	1,2,3,4,6,7,8-HpCDD		88.8	pg/g	0.582	4.99
3268-87-9	1,2,3,4,6,7,8,9-OCDD		638	pg/g	0.914	9.97
51207-31-9	2,3,7,8-TCDF	U	0.495	pg/g	0.495	0.997
57117-41-6	1,2,3,7,8-PeCDF	U	0.192	pg/g	0.192	4.99
57117-31-4	2,3,4,7,8-PeCDF	J	1.23	pg/g	0.174	4.99
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.963	pg/g	0.196	4.99
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.784	pg/g	0.187	4.99
60851-34-5	2,3,4,6,7,8-HxCDF	J	1.25	pg/g	0.189	4.99
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.325	pg/g	0.261	4.99
67562-39-4	1,2,3,4,6,7,8-HpCDF		38.8	pg/g	0.162	4.99
55673-89-7	1,2,3,4,7,8,9-HpCDF	JK	0.848	pg/g	0.239	4.99
39001-02-0	1,2,3,4,6,7,8,9-OCDF		45.9	pg/g	0.365	9.97
41903-57-5	Total TeCDD	K	3.28	pg/g	0.291	0.997
36088-22-9	Total PeCDD	K	8.46	pg/g	0.188	4.99
34465-46-8	Total HxCDD		50.4	pg/g	0.229	4.99
37871-00-4	Total HpCDD		166	pg/g	0.582	4.99
30402-14-3	Total TeCDF	K	5.56	pg/g	0.495	0.997
30402-15-4	Total PeCDF		18.2	pg/g	0.0439	4.99
55684-94-1	Total HxCDF		35.2	pg/g	0.187	4.99
38998-75-3	Total HpCDF	K	90.5	pg/g	0.162	4.99
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		4.91	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		5.08	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		101	199	pg/g	50.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		189	199	pg/g	94.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		174	199	pg/g	87.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		159	199	pg/g	79.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		184	199	pg/g	92.2	(23%-140%)
13C-OCDD		381	399	pg/g	95.5	(17%-157%)
13C-2,3,7,8-TCDF		65.4	199	pg/g	32.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		169	199	pg/g	84.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		174	199	pg/g	87.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		160	199	pg/g	80.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		149	199	pg/g	74.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		167	199	pg/g	83.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		166	199	pg/g	83.1	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774006	<b>Date Collected:</b> 12/11/2017 11:00	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 14.4
<b>Client ID:</b> GP01-S-16.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/20/2018 02:56	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-9		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 11.71 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			167	199	pg/g	83.9 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			171	199	pg/g	85.7 (26%-138%)
37Cl-2,3,7,8-TCDD			9.74	19.9	pg/g	48.9 (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774007	<b>Date Collected:</b> 12/11/2017 11:10	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 23.6
<b>Client ID:</b> GP03-S-2.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/20/2018 03:44	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-10		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 13.15 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.362	pg/g	0.362	0.995
40321-76-4	1,2,3,7,8-PeCDD	J	0.892	pg/g	0.149	4.98
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.810	pg/g	0.243	4.98
57653-85-7	1,2,3,6,7,8-HxCDD		5.38	pg/g	0.237	4.98
19408-74-3	1,2,3,7,8,9-HxCDD	J	2.82	pg/g	0.247	4.98
35822-46-9	1,2,3,4,6,7,8-HpCDD		85.1	pg/g	0.683	4.98
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1100	pg/g	1.03	9.95
51207-31-9	2,3,7,8-TCDF	U	0.519	pg/g	0.519	0.995
57117-41-6	1,2,3,7,8-PeCDF	J	0.231	pg/g	0.123	4.98
57117-31-4	2,3,4,7,8-PeCDF	JK	0.856	pg/g	0.101	4.98
70648-26-9	1,2,3,4,7,8-HxCDF	J	1.73	pg/g	0.217	4.98
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.824	pg/g	0.215	4.98
60851-34-5	2,3,4,6,7,8-HxCDF	J	1.28	pg/g	0.195	4.98
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.569	pg/g	0.253	4.98
67562-39-4	1,2,3,4,6,7,8-HpCDF		130	pg/g	0.289	4.98
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	1.57	pg/g	0.420	4.98
39001-02-0	1,2,3,4,6,7,8,9-OCDF		87.3	pg/g	0.368	9.95
41903-57-5	Total TeCDD		3.36	pg/g	0.362	0.995
36088-22-9	Total PeCDD	K	6.94	pg/g	0.149	4.98
34465-46-8	Total HxCDD	K	35.6	pg/g	0.237	4.98
37871-00-4	Total HpCDD		155	pg/g	0.683	4.98
30402-14-3	Total TeCDF	K	1.62	pg/g	0.519	0.995
30402-15-4	Total PeCDF	K	10.8	pg/g	0.032	4.98
55684-94-1	Total HxCDF		69.0	pg/g	0.195	4.98
38998-75-3	Total HpCDF		263	pg/g	0.289	4.98
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		5.03	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		5.23	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		87.6	199	pg/g	44.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		180	199	pg/g	90.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		171	199	pg/g	85.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		155	199	pg/g	77.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		182	199	pg/g	91.6	(23%-140%)
13C-OCDD		375	398	pg/g	94.3	(17%-157%)
13C-2,3,7,8-TCDF		55.3	199	pg/g	27.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		151	199	pg/g	76.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		164	199	pg/g	82.5	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		154	199	pg/g	77.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		145	199	pg/g	72.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		166	199	pg/g	83.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		165	199	pg/g	82.8	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 2 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774007	<b>Date Collected:</b> 12/11/2017 11:10	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 23.6
<b>Client ID:</b> GP03-S-2.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/20/2018 03:44	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-10		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 13.15 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
	13C-1,2,3,4,6,7,8-HpCDF		168	199	pg/g	84.4 (28%-143%)
	13C-1,2,3,4,7,8,9-HpCDF		171	199	pg/g	85.9 (26%-138%)
	37Cl-2,3,7,8-TCDD		8.69	19.9	pg/g	43.7 (35%-197%)

**Comments:**

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774008	<b>Date Collected:</b> 12/11/2017 11:30	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 14.6
<b>Client ID:</b> GP03-S-7.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/20/2018 04:33	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-11		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 11.7 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.27	pg/g	0.270	1.00
40321-76-4	1,2,3,7,8-PeCDD	J	0.746	pg/g	0.188	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	J	1.12	pg/g	0.240	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		7.43	pg/g	0.228	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	J	2.41	pg/g	0.240	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		205	pg/g	1.14	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		3080	pg/g	1.61	10.0
51207-31-9	2,3,7,8-TCDF	U	0.442	pg/g	0.442	1.00
57117-41-6	1,2,3,7,8-PeCDF	JK	0.334	pg/g	0.174	5.00
57117-31-4	2,3,4,7,8-PeCDF	J	1.62	pg/g	0.141	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		5.38	pg/g	0.220	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	J	1.56	pg/g	0.214	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	J	2.03	pg/g	0.218	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	J	1.00	pg/g	0.284	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		114	pg/g	0.384	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	3.98	pg/g	0.536	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		264	pg/g	0.452	10.0
41903-57-5	Total TeCDD	JK	0.958	pg/g	0.270	1.00
36088-22-9	Total PeCDD	JK	4.58	pg/g	0.188	5.00
34465-46-8	Total HxCDD		35.3	pg/g	0.228	5.00
37871-00-4	Total HpCDD		369	pg/g	1.14	5.00
30402-14-3	Total TeCDF	JK	0.840	pg/g	0.442	1.00
30402-15-4	Total PeCDF	K	11.8	pg/g	0.0354	5.00
55684-94-1	Total HxCDF	K	80.8	pg/g	0.214	5.00
38998-75-3	Total HpCDF		344	pg/g	0.384	5.00
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		7.57	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		7.73	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		95.3	200	pg/g	47.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		176	200	pg/g	87.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		168	200	pg/g	83.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		152	200	pg/g	75.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		180	200	pg/g	90.1	(23%-140%)
13C-OCDD		388	400	pg/g	96.8	(17%-157%)
13C-2,3,7,8-TCDF		60.2	200	pg/g	30.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		140	200	pg/g	70.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		158	200	pg/g	79.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		154	200	pg/g	77.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		140	200	pg/g	70.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		161	200	pg/g	80.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		156	200	pg/g	78.1	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 2 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774008	<b>Date Collected:</b> 12/11/2017 11:30	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 14.6
<b>Client ID:</b> GP03-S-7.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/20/2018 04:33	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-11		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 11.7 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
	13C-1,2,3,4,6,7,8-HpCDF		163	200	pg/g	81.2 (28%-143%)
	13C-1,2,3,4,7,8,9-HpCDF		170	200	pg/g	85.0 (26%-138%)
	37Cl-2,3,7,8-TCDD		9.14	20.0	pg/g	45.7 (35%-197%)

**Comments:**

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774009	<b>Date Collected:</b> 12/11/2017 11:40	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 18.1
<b>Client ID:</b> GP03-S-17.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 17:16	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 12.24 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.607	pg/g	0.607	0.998
40321-76-4	1,2,3,7,8-PeCDD	JK	0.617	pg/g	0.537	4.99
39227-28-6	1,2,3,4,7,8-HxCDD	JK	0.986	pg/g	0.639	4.99
57653-85-7	1,2,3,6,7,8-HxCDD	J	2.91	pg/g	0.625	4.99
19408-74-3	1,2,3,7,8,9-HxCDD	JK	2.30	pg/g	0.647	4.99
35822-46-9	1,2,3,4,6,7,8-HpCDD		70.3	pg/g	0.968	4.99
3268-87-9	1,2,3,4,6,7,8,9-OCDD		476	pg/g	1.66	9.98
51207-31-9	2,3,7,8-TCDF	U	1.22	pg/g	1.22	0.998
57117-41-6	1,2,3,7,8-PeCDF	U	0.397	pg/g	0.397	4.99
57117-31-4	2,3,4,7,8-PeCDF	J	0.601	pg/g	0.329	4.99
70648-26-9	1,2,3,4,7,8-HxCDF	JK	0.589	pg/g	0.515	4.99
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.543	pg/g	0.543	4.99
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.589	pg/g	0.433	4.99
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.657	pg/g	0.657	4.99
67562-39-4	1,2,3,4,6,7,8-HpCDF		60.2	pg/g	0.391	4.99
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.651	pg/g	0.651	4.99
39001-02-0	1,2,3,4,6,7,8,9-OCDF		44.2	pg/g	0.761	9.98
41903-57-5	Total TeCDD	U	0.607	pg/g	0.607	0.998
36088-22-9	Total PeCDD	JK	1.85	pg/g	0.537	4.99
34465-46-8	Total HxCDD	K	27.1	pg/g	0.625	4.99
37871-00-4	Total HpCDD		145	pg/g	0.968	4.99
30402-14-3	Total TeCDF	K	1.57	pg/g	1.22	0.998
30402-15-4	Total PeCDF	K	6.83	pg/g	0.127	4.99
55684-94-1	Total HxCDF	K	14.3	pg/g	0.433	4.99
38998-75-3	Total HpCDF		87.5	pg/g	0.391	4.99
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		2.99	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		3.43	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		23.6	200	pg/g	11.8 *	(25%-164%)
13C-1,2,3,7,8-PeCDD		55.2	200	pg/g	27.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		71.6	200	pg/g	35.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		74.4	200	pg/g	37.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		96.1	200	pg/g	48.1	(23%-140%)
13C-OCDD		120	399	pg/g	30.1	(17%-157%)
13C-2,3,7,8-TCDF		16.0	200	pg/g	8.00 *	(24%-169%)
13C-1,2,3,7,8-PeCDF		43.6	200	pg/g	21.9 *	(24%-185%)
13C-2,3,4,7,8-PeCDF		45.8	200	pg/g	22.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		70.8	200	pg/g	35.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		63.7	200	pg/g	31.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		85.6	200	pg/g	42.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		72.1	200	pg/g	36.1	(29%-147%)



**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 2 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774009	<b>Date Collected:</b> 12/11/2017 11:40	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 18.1
<b>Client ID:</b> GP03-S-17.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 17:16	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 12.24 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%      Acceptable Limits</b>
	13C-1,2,3,4,6,7,8-HpCDF		90.2	200	pg/g	45.2      (28%-143%)
	13C-1,2,3,4,7,8,9-HpCDF		86.5	200	pg/g	43.3      (26%-138%)
	37Cl-2,3,7,8-TCDD		3.02	20.0	pg/g	15.1 *      (35%-197%)

**Comments:**

- J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774010	<b>Date Collected:</b> 12/11/2017 12:15	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 24.9
<b>Client ID:</b> GP03-S-32.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 18:04	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-4		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 13.28 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.287	pg/g	0.287	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	0.217	pg/g	0.217	5.01
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.197	pg/g	0.197	5.01
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.211	pg/g	0.211	5.01
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.209	pg/g	0.209	5.01
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	2.72	pg/g	0.313	5.01
3268-87-9	1,2,3,4,6,7,8,9-OCDD		22.2	pg/g	0.319	10.0
51207-31-9	2,3,7,8-TCDF	J	0.670	pg/g	0.578	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	0.215	pg/g	0.215	5.01
57117-31-4	2,3,4,7,8-PeCDF	U	0.186	pg/g	0.186	5.01
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.122	pg/g	0.122	5.01
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.123	pg/g	0.123	5.01
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.122	pg/g	0.122	5.01
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.155	pg/g	0.155	5.01
67562-39-4	1,2,3,4,6,7,8-HpCDF	JK	1.46	pg/g	0.104	5.01
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.151	pg/g	0.151	5.01
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	2.78	pg/g	0.495	10.0
41903-57-5	Total TeCDD	U	0.287	pg/g	0.287	1.00
36088-22-9	Total PeCDD	U	0.217	pg/g	0.217	5.01
34465-46-8	Total HxCDD	JK	0.963	pg/g	0.197	5.01
37871-00-4	Total HpCDD	J	4.79	pg/g	0.313	5.01
30402-14-3	Total TeCDF	J	0.670	pg/g	0.578	1.00
30402-15-4	Total PeCDF	JK	0.716	pg/g	0.0483	5.01
55684-94-1	Total HxCDF	JK	1.43	pg/g	0.122	5.01
38998-75-3	Total HpCDF	JK	4.16	pg/g	0.104	5.01
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.128	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.463	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		98.9	201	pg/g	49.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		156	201	pg/g	77.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		161	201	pg/g	80.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		152	201	pg/g	76.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		183	201	pg/g	91.4	(23%-140%)
13C-OCDD		368	401	pg/g	91.6	(17%-157%)
13C-2,3,7,8-TCDF		69.8	201	pg/g	34.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		133	201	pg/g	66.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		144	201	pg/g	71.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		155	201	pg/g	77.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		141	201	pg/g	70.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		155	201	pg/g	77.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		160	201	pg/g	79.9	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 11774010	<b>Date Collected:</b> 12/11/2017 12:15	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613 Soil	<b>Date Received:</b> 12/14/2017 10:13	<b>%Moisture:</b> 24.9
<b>Client ID:</b> GP03-S-32.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 18:04	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-4		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 13.28 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
	13C-1,2,3,4,6,7,8-HpCDF		162	201	pg/g	80.6 (28%-143%)
	13C-1,2,3,4,7,8,9-HpCDF		174	201	pg/g	86.6 (26%-138%)
	37Cl-2,3,7,8-TCDD		10.0	20.1	pg/g	50.0 (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

# **Quality Control Summary**

**Hi-Res Dioxins/Furans**  
**Surrogate Recovery Report**

SDG Number: A7L0317

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12020428	LCS for batch 36649	13C-2,3,7,8-TCDD		46.5	(20%-175%)
		13C-1,2,3,7,8-PeCDD		91.1	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		78.5	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		75.6	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		84.6	(22%-166%)
		13C-OCDD		83.9	(13%-199%)
		13C-2,3,7,8-TCDF		32.8	(22%-152%)
		13C-1,2,3,7,8-PeCDF		82.0	(21%-192%)
		13C-2,3,4,7,8-PeCDF		85.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		72.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		69.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		78.0	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		77.2	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		79.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		79.2	(20%-186%)
		37Cl-2,3,7,8-TCDD		47.8	(31%-191%)
12020429	LCSD for batch 36649	13C-2,3,7,8-TCDD		56.3	(20%-175%)
		13C-1,2,3,7,8-PeCDD		106	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		87.9	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		82.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		90.2	(22%-166%)
		13C-OCDD		88.7	(13%-199%)
		13C-2,3,7,8-TCDF		37.3	(22%-152%)
		13C-1,2,3,7,8-PeCDF		98.7	(21%-192%)
		13C-2,3,4,7,8-PeCDF		101	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		83.4	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		76.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		84.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		86.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		84.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		86.3	(20%-186%)
		37Cl-2,3,7,8-TCDD		58.7	(31%-191%)
12020427	MB for batch 36649	13C-2,3,7,8-TCDD		54.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		98.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		78.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		78.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.2	(23%-140%)
		13C-OCDD		81.9	(17%-157%)
		13C-2,3,7,8-TCDF		36.3	(24%-169%)
		13C-1,2,3,7,8-PeCDF		94.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		94.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		72.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		56.4	(35%-197%)
11774001	GP06-S-2.5	13C-2,3,7,8-TCDD		29.5	(25%-164%)

**Hi-Res Dioxins/Furans**  
**Surrogate Recovery Report**

SDG Number: A7L0317

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
11774001	GP06-S-2.5	13C-1,2,3,7,8-PeCDD		76.3	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		86.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		77.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		107	(23%-140%)
		13C-OCDD		119	(17%-157%)
		13C-2,3,7,8-TCDF		17.4 *	(24%-169%)
		13C-1,2,3,7,8-PeCDF		59.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		65.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		68.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		82.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF	Q	51.2	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		99.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		100	(26%-138%)
		37Cl-2,3,7,8-TCDD		27.2 *	(35%-197%)
11774002	GP06-S-7.5	13C-2,3,7,8-TCDD		56.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		100	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		85.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		80.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		89.0	(23%-140%)
		13C-OCDD		90.4	(17%-157%)
		13C-2,3,7,8-TCDF		38.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		93.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		93.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		76.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		83.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		88.5	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		83.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		85.8	(26%-138%)
37Cl-2,3,7,8-TCDD		54.6	(35%-197%)		
11774003	GP06-S-21.0	13C-2,3,7,8-TCDD		57.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		106	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		87.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		90.3	(23%-140%)
		13C-OCDD		87.7	(17%-157%)
		13C-2,3,7,8-TCDF		36.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		101	(24%-185%)
		13C-2,3,4,7,8-PeCDF		99.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		82.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		79.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		87.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		89.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		85.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		85.0	(26%-138%)
37Cl-2,3,7,8-TCDD		54.8	(35%-197%)		
11774004	GP01-S-2.5	13C-2,3,7,8-TCDD		53.9	(25%-164%)
		13C-1,2,3,7,8-PeCDD		101	(25%-181%)

**Hi-Res Dioxins/Furans**  
**Surrogate Recovery Report**

SDG Number: A7L0317

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
11774004	GP01-S-2.5	13C-1,2,3,4,7,8-HxCDD		83.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		82.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		91.0	(23%-140%)
		13C-OCDD		93.1	(17%-157%)
		13C-2,3,7,8-TCDF		33.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		92.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		92.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		73.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		83.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		85.2	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		86.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		54.5	(35%-197%)
		11774005	GP01-S-7.5	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				97.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				85.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				81.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				91.2	(23%-140%)
13C-OCDD				94.7	(17%-157%)
13C-2,3,7,8-TCDF				30.8	(24%-169%)
13C-1,2,3,7,8-PeCDF				82.9	(24%-185%)
13C-2,3,4,7,8-PeCDF				89.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				79.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				76.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				83.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				85.6	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				84.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF				86.8	(26%-138%)
37Cl-2,3,7,8-TCDD		48.7	(35%-197%)		
11774006	GP01-S-16.0	13C-2,3,7,8-TCDD		50.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		94.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		87.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		79.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		92.2	(23%-140%)
		13C-OCDD		95.5	(17%-157%)
		13C-2,3,7,8-TCDF		32.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		87.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		74.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		83.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		83.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		83.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		85.7	(26%-138%)
37Cl-2,3,7,8-TCDD		48.9	(35%-197%)		
11774007	GP03-S-2.5	13C-2,3,7,8-TCDD		44.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		90.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		85.9	(32%-141%)

**Hi-Res Dioxins/Furans**  
**Surrogate Recovery Report**

SDG Number: A7L0317

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
11774007	GP03-S-2.5	13C-1,2,3,6,7,8-HxCDD		77.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		91.6	(23%-140%)
		13C-OCDD		94.3	(17%-157%)
		13C-2,3,7,8-TCDF		27.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		76.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		82.5	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		72.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		83.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		85.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		43.7	(35%-197%)
11774008	GP03-S-7.5	13C-2,3,7,8-TCDD		47.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		87.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		83.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		75.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		90.1	(23%-140%)
		13C-OCDD		96.8	(17%-157%)
		13C-2,3,7,8-TCDF		30.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		70.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		79.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		70.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		80.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		81.2	(28%-143%)		
13C-1,2,3,4,7,8,9-HpCDF		85.0	(26%-138%)		
37Cl-2,3,7,8-TCDD		45.7	(35%-197%)		
12020435	GP03-S-7.5(11774008MS)	13C-2,3,7,8-TCDD		47.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		89.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		79.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		74.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		87.8	(23%-140%)
		13C-OCDD		98.4	(17%-157%)
		13C-2,3,7,8-TCDF		30.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		76.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		81.4	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		73.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		67.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		78.9	(28%-143%)		
13C-1,2,3,4,7,8,9-HpCDF		81.5	(26%-138%)		
37Cl-2,3,7,8-TCDD		47.7	(35%-197%)		
12020436	GP03-S-7.5(11774008MSD)	13C-2,3,7,8-TCDD		51.9	(25%-164%)
		13C-1,2,3,7,8-PeCDD		94.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		84.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		79.0	(28%-130%)



**Hi-Res Dioxins/Furans**  
**Surrogate Recovery Report**

SDG Number: A7L0317

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12020436	GP03-S-7.5(11774008MSD)	13C-1,2,3,4,6,7,8-HpCDD		89.7	(23%-140%)
		13C-OCDD		98.2	(17%-157%)
		13C-2,3,7,8-TCDF		32.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		81.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		85.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		73.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		81.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		84.5	(26%-138%)
		37Cl-2,3,7,8-TCDD		49.5	(35%-197%)
		11774009	GP03-S-17.5	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				27.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				35.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				37.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				48.1	(23%-140%)
13C-OCDD				30.1	(17%-157%)
13C-2,3,7,8-TCDF				8.00 *	(24%-169%)
13C-1,2,3,7,8-PeCDF				21.9 *	(24%-185%)
13C-2,3,4,7,8-PeCDF				22.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				35.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				31.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				42.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				36.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		45.2	(28%-143%)		
13C-1,2,3,4,7,8,9-HpCDF		43.3	(26%-138%)		
37Cl-2,3,7,8-TCDD		15.1 *	(35%-197%)		
11774010	GP03-S-32.0	13C-2,3,7,8-TCDD		49.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		77.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		76.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		91.4	(23%-140%)
		13C-OCDD		91.6	(17%-157%)
		13C-2,3,7,8-TCDF		34.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		66.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		71.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		70.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		79.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		80.6	(28%-143%)		
13C-1,2,3,4,7,8,9-HpCDF		86.6	(26%-138%)		
37Cl-2,3,7,8-TCDD		50.0	(35%-197%)		

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

**SDG Number:** A7L0317  
**Client ID:** LCS for batch 36649  
**Lab Sample ID:** 12020428  
**Instrument:** HRP750  
**Analyst:** MJC

**Sample Type:** Laboratory Control Sample  
**Matrix:** SOIL  
**Analysis Date:** 01/19/2018 20:33  
**Prep Batch ID:** 36649  
**Batch ID:** 36651  
**Dilution:** 1

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	
1746-01-6	LCS	2,3,7,8-TCDD	20.0	20.9	105	67-158
40321-76-4	LCS	1,2,3,7,8-PeCDD	100	100	100	70-142
39227-28-6	LCS	1,2,3,4,7,8-HxCDD	100	95.7	95.7	70-164
57653-85-7	LCS	1,2,3,6,7,8-HxCDD	100	97.2	97.2	76-134
19408-74-3	LCS	1,2,3,7,8,9-HxCDD	100	105	105	64-162
35822-46-9	LCS	1,2,3,4,6,7,8-HpCDD	100	94.5	94.5	70-140
3268-87-9	LCS	1,2,3,4,6,7,8,9-OCDD	200	198	98.9	78-144
51207-31-9	LCS	2,3,7,8-TCDF	20.0	17.3	86.4	75-158
57117-41-6	LCS	1,2,3,7,8-PeCDF	100	93.3	93.3	80-134
57117-31-4	LCS	2,3,4,7,8-PeCDF	100	91.2	91.2	68-160
70648-26-9	LCS	1,2,3,4,7,8-HxCDF	100	95.8	95.8	72-134
57117-44-9	LCS	1,2,3,6,7,8-HxCDF	100	99.1	99.1	84-130
60851-34-5	LCS	2,3,4,6,7,8-HxCDF	100	95.9	95.9	70-156
72918-21-9	LCS	1,2,3,7,8,9-HxCDF	100	94.8	94.8	78-130
67562-39-4	LCS	1,2,3,4,6,7,8-HpCDF	100	94.5	94.5	82-122
55673-89-7	LCS	1,2,3,4,7,8,9-HpCDF	100	96.4	96.4	78-138
39001-02-0	LCS	1,2,3,4,6,7,8,9-OCDF	200	181	90.7	63-170

**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

SDG Number: A7L0317

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 36649

Matrix: SOIL

Lab Sample ID: 12020429

Instrument: HRP750

Analysis Date: 01/19/2018 21:21

Dilution: 1

Analyst: MJC

Prep Batch ID: 36649

Batch ID: 36651

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.3	101	67-158	3.13	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	101	101	70-142	1.18	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	95.2	95.2	70-164	0.503	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	97.1	97.1	76-134	0.115	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	102	102	64-162	2.47	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	96.0	96	70-140	1.57	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	196	97.9	78-144	1.04	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	17.3	86.7	75-158	0.347	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	93.7	93.7	80-134	0.426	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	92.6	92.6	68-160	1.50	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	92.7	92.7	72-134	3.22	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	98.5	98.5	84-130	0.619	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	94.9	94.9	70-156	1.02	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	94.5	94.5	78-130	0.287	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	92.6	92.6	82-122	2.02	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	94.3	94.3	78-138	2.24	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	181	90.7	63-170	0.00221	0-20

**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

**SDG Number:** A7L0317  
**Client ID:** GP03-S-7.5(11774008MS)  
**Lab Sample ID:** 12020435  
**Instrument:** HRP750  
**Analyst:** MJC

**Sample Type:** Matrix Spike  
**Matrix:** SOIL  
**%Moisture:** 14.6  
**Analysis Date:** 01/20/2018 05:21  
**Prep Batch ID:** 36649  
**Batch ID:** 36651  
**Dilution:** 1

CAS No.	Parmname	Amount Added		Spike Conc.	Recovery %	Acceptance Limits	
		pg/g		pg/g			
1746-01-6	MS	2,3,7,8-TCDD	20.0	U	19.9	99.5	70-130
40321-76-4	MS	1,2,3,7,8-PeCDD	100	J	102	101	70-130
39227-28-6	MS	1,2,3,4,7,8-HxCDD	100	J	98.6	97.3	70-130
57653-85-7	MS	1,2,3,6,7,8-HxCDD	100		108	100	70-130
19408-74-3	MS	1,2,3,7,8,9-HxCDD	100	J	111	108	70-130
35822-46-9	MS	1,2,3,4,6,7,8-HpCDD	100		435	230 *	70-130
3268-87-9	MS	1,2,3,4,6,7,8,9-OCDD	200		5310	1110 *	70-130
51207-31-9	MS	2,3,7,8-TCDF	20.0	U	18.7	93.1	70-130
57117-41-6	MS	1,2,3,7,8-PeCDF	100	JK	93.4	92.9	70-130
57117-31-4	MS	2,3,4,7,8-PeCDF	100	J	97.2	95.4	70-130
70648-26-9	MS	1,2,3,4,7,8-HxCDF	100		106	101	70-130
57117-44-9	MS	1,2,3,6,7,8-HxCDF	100	J	101	98.8	70-130
60851-34-5	MS	2,3,4,6,7,8-HxCDF	100	J	96.4	94.2	70-130
72918-21-9	MS	1,2,3,7,8,9-HxCDF	100	J	95.0	93.8	70-130
67562-39-4	MS	1,2,3,4,6,7,8-HpCDF	100		295	181 *	70-130
55673-89-7	MS	1,2,3,4,7,8,9-HpCDF	100	J	102	97.7	70-130
39001-02-0	MS	1,2,3,4,6,7,8,9-OCDF	200		640	188 *	70-130

**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

SDG Number: A7L0317

Sample Type: Matrix Spike Duplicate

Client ID: GP03-S-7.5(11774008MSD)

Matrix: SOIL

Lab Sample ID: 12020436

%Moisture: 14.6

Instrument: HRP750

Analysis Date: 01/20/2018 06:09

Dilution: 1

Analyst: MJC

Prep Batch ID:36649

Batch ID: 36651

CAS No.	Parmname	Amount Added		Spike Conc.	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
		pg/g	U					
1746-01-6	MSD 2,3,7,8-TCDD	20.0	U	21.2	106	70-130	5.97	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	99.8	J	103	102	70-130	1.04	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	99.8	J	102	101	70-130	3.21	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	99.8		107	99.8	70-130	0.829	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	99.8	J	109	107	70-130	1.55	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	99.8		355	151 *	70-130	20.2 *	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	200		3890	404 *	70-130	30.9 *	0-20
51207-31-9	MSD 2,3,7,8-TCDF	20.0	U	18.2	91.1	70-130	2.66	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	99.8	JK	94.8	94.6	70-130	1.48	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	99.8	J	96.2	94.8	70-130	1.01	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	99.8		104	98.5	70-130	2.61	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	99.8	J	99.7	98.4	70-130	0.880	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	99.8	J	100	98.2	70-130	3.66	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	99.8	J	96.8	96	70-130	1.86	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	99.8		277	163 *	70-130	6.42	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	99.8	J	102	97.9	70-130	0.199	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	200		544	140 *	70-130	16.3	0-20

## Method Blank Summary

Page 1 of 1

SDG Number: A7L0317  
 Client ID: MB for batch 36649  
 Lab Sample ID: 12020427  
 Column:

Client: APEX001  
 Instrument ID: HRP750  
 Prep Date: 11-JAN-18

Matrix: SOIL  
 Data File: A19JAN18A\_2-3  
 Analyzed: 01/19/18 22:09

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 36649	12020428	A19JAN18A_2-1	01/19/18	2033
02 LCSD for batch 36649	12020429	A19JAN18A_2-2	01/19/18	2121
03 GP06-S-2.5	11774001	A19JAN18A_2-4	01/19/18	2257
04 GP06-S-7.5	11774002	A19JAN18A_2-5	01/19/18	2345
05 GP06-S-21.0	11774003	A19JAN18A_2-6	01/20/18	0033
06 GP01-S-2.5	11774004	A19JAN18A_2-7	01/20/18	0121
07 GP01-S-7.5	11774005	A19JAN18A_2-8	01/20/18	0209
08 GP01-S-16.0	11774006	A19JAN18A_2-9	01/20/18	0256
09 GP03-S-2.5	11774007	A19JAN18A_2-10	01/20/18	0344
10 GP03-S-7.5	11774008	A19JAN18A_2-11	01/20/18	0433
11 GP03-S-7.5(11774008MS)	12020435	A19JAN18A_2-12	01/20/18	0521
12 GP03-S-7.5(11774008MSD)	12020436	A19JAN18A_2-13	01/20/18	0609
13 GP03-S-17.5	11774009	A21JAN18A-3	01/21/18	1716
14 GP03-S-32.0	11774010	A21JAN18A-4	01/21/18	1804
15 GP06-S-2.5	11774001	A24JAN18B-4	01/24/18	1617

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 12020427		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> MB for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 22:09	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.173	pg/g	0.173	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	0.0632	pg/g	0.0632	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.0842	pg/g	0.0842	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.0834	pg/g	0.0834	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.0858	pg/g	0.0858	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.116	pg/g	0.0934	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.766	pg/g	0.214	10.0
51207-31-9	2,3,7,8-TCDF	U	0.238	pg/g	0.238	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	0.0658	pg/g	0.0658	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	0.059	pg/g	0.059	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.060	pg/g	0.0536	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.0552	pg/g	0.0552	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.060	pg/g	0.0536	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	JK	0.082	pg/g	0.069	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	JK	0.066	pg/g	0.0502	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.0784	pg/g	0.0784	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	0.187	pg/g	0.187	10.0
41903-57-5	Total TeCDD	U	0.173	pg/g	0.173	1.00
36088-22-9	Total PeCDD	U	0.0632	pg/g	0.0632	5.00
34465-46-8	Total HxCDD	U	0.0834	pg/g	0.0834	5.00
37871-00-4	Total HpCDD	JK	0.116	pg/g	0.0934	5.00
30402-14-3	Total TeCDF	U	0.238	pg/g	0.238	1.00
30402-15-4	Total PeCDF	U	0.059	pg/g	0.059	5.00
55684-94-1	Total HxCDF	JK	0.202	pg/g	0.0536	5.00
38998-75-3	Total HpCDF	JK	0.066	pg/g	0.0502	5.00
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0222	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.178	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		108	200	pg/g	54.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		197	200	pg/g	98.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		156	200	pg/g	78.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		156	200	pg/g	78.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		168	200	pg/g	84.2	(23%-140%)
13C-OCDD		327	400	pg/g	81.9	(17%-157%)
13C-2,3,7,8-TCDF		72.5	200	pg/g	36.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		189	200	pg/g	94.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		189	200	pg/g	94.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		155	200	pg/g	77.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		145	200	pg/g	72.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		155	200	pg/g	77.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		165	200	pg/g	82.3	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 2 of 2

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 12020427		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> MB for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 22:09	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			159	200	pg/g	79.4 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			158	200	pg/g	78.9 (26%-138%)
37Cl-2,3,7,8-TCDD			11.3	20.0	pg/g	56.4 (35%-197%)

**Comments:**

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.



**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 12020428		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> LCS for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 20:33	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-1		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.9	pg/g	0.288	1.00
40321-76-4	1,2,3,7,8-PeCDD		100	pg/g	0.138	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.7	pg/g	0.222	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		97.2	pg/g	0.224	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		105	pg/g	0.230	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		94.5	pg/g	0.386	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		198	pg/g	0.546	10.0
51207-31-9	2,3,7,8-TCDF		17.3	pg/g	0.336	1.00
57117-41-6	1,2,3,7,8-PeCDF		93.3	pg/g	0.256	5.00
57117-31-4	2,3,4,7,8-PeCDF		91.2	pg/g	0.214	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		95.8	pg/g	0.344	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		99.1	pg/g	0.358	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		95.9	pg/g	0.350	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		94.8	pg/g	0.460	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		94.5	pg/g	0.250	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		96.4	pg/g	0.404	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		181	pg/g	0.470	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		93.0	200	pg/g	46.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		182	200	pg/g	91.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		157	200	pg/g	78.5	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		151	200	pg/g	75.6	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		169	200	pg/g	84.6	(22%-166%)
13C-OCDD		336	400	pg/g	83.9	(13%-199%)
13C-2,3,7,8-TCDF		65.6	200	pg/g	32.8	(22%-152%)
13C-1,2,3,7,8-PeCDF		164	200	pg/g	82.0	(21%-192%)
13C-2,3,4,7,8-PeCDF		170	200	pg/g	85.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		145	200	pg/g	72.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		138	200	pg/g	69.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		156	200	pg/g	78.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		154	200	pg/g	77.2	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		160	200	pg/g	79.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		158	200	pg/g	79.2	(20%-186%)
37Cl-2,3,7,8-TCDD		9.55	20.0	pg/g	47.8	(31%-191%)

**Comments:**

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

<b>SDG Number:</b> A7L0317	<b>Client:</b> APEX001	<b>Project:</b> APEX00111
<b>Lab Sample ID:</b> 12020429		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> LCSD for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 21:21	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-2		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.3	pg/g	0.248	1.00
40321-76-4	1,2,3,7,8-PeCDD		101	pg/g	0.121	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.2	pg/g	0.193	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		97.1	pg/g	0.181	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		102	pg/g	0.192	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		96.0	pg/g	0.430	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		196	pg/g	0.620	10.0
51207-31-9	2,3,7,8-TCDF		17.3	pg/g	0.288	1.00
57117-41-6	1,2,3,7,8-PeCDF		93.7	pg/g	0.232	5.00
57117-31-4	2,3,4,7,8-PeCDF		92.6	pg/g	0.210	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		92.7	pg/g	0.292	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		98.5	pg/g	0.286	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		94.9	pg/g	0.300	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		94.5	pg/g	0.376	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		92.6	pg/g	0.274	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		94.3	pg/g	0.404	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		181	pg/g	0.474	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		113	200	pg/g	56.3	(20%-175%)
13C-1,2,3,7,8-PeCDD		212	200	pg/g	106	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		176	200	pg/g	87.9	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		164	200	pg/g	82.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		180	200	pg/g	90.2	(22%-166%)
13C-OCDD		355	400	pg/g	88.7	(13%-199%)
13C-2,3,7,8-TCDF		74.7	200	pg/g	37.3	(22%-152%)
13C-1,2,3,7,8-PeCDF		197	200	pg/g	98.7	(21%-192%)
13C-2,3,4,7,8-PeCDF		202	200	pg/g	101	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		167	200	pg/g	83.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		153	200	pg/g	76.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		169	200	pg/g	84.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		174	200	pg/g	86.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		170	200	pg/g	84.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		173	200	pg/g	86.3	(20%-186%)
37Cl-2,3,7,8-TCDD		11.7	20.0	pg/g	58.7	(31%-191%)

**Comments:**

**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

SDG Number: A7L0317	Client: APEX001	Project: APEX00111
Lab Sample ID: 12020435	Date Collected: 12/11/2017 11:30	Matrix: SOIL
Client Sample: QC for batch 36649	Date Received: 12/14/2017 10:13	%Moisture: 14.6
Client ID: GP03-S-7.5(11774008MS)		Prep Basis: Dry Weight
Batch ID: 36651	Method: EPA Method 1613B	
Run Date: 01/20/2018 05:21	Analyst: MJC	Instrument: HRP750
Data File: A19JAN18A_2-12		Dilution: 1
Prep Batch: 36649	Prep Method: SW846 3540C	
Prep Date: 11-JAN-18	Prep Aliquot: 11.68 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		19.9	pg/g	0.397	1.00
40321-76-4	1,2,3,7,8-PeCDD		102	pg/g	0.202	5.01
39227-28-6	1,2,3,4,7,8-HxCDD		98.6	pg/g	0.351	5.01
57653-85-7	1,2,3,6,7,8-HxCDD		108	pg/g	0.337	5.01
19408-74-3	1,2,3,7,8,9-HxCDD		111	pg/g	0.353	5.01
35822-46-9	1,2,3,4,6,7,8-HpCDD		435	pg/g	1.33	5.01
3268-87-9	1,2,3,4,6,7,8,9-OCDD	E	5310	pg/g	1.72	10.0
51207-31-9	2,3,7,8-TCDF		18.7	pg/g	0.523	1.00
57117-41-6	1,2,3,7,8-PeCDF		93.4	pg/g	0.323	5.01
57117-31-4	2,3,4,7,8-PeCDF		97.2	pg/g	0.279	5.01
70648-26-9	1,2,3,4,7,8-HxCDF		106	pg/g	0.471	5.01
57117-44-9	1,2,3,6,7,8-HxCDF		101	pg/g	0.469	5.01
60851-34-5	2,3,4,6,7,8-HxCDF		96.4	pg/g	0.441	5.01
72918-21-9	1,2,3,7,8,9-HxCDF		95.0	pg/g	0.573	5.01
67562-39-4	1,2,3,4,6,7,8-HpCDF		295	pg/g	0.523	5.01
55673-89-7	1,2,3,4,7,8,9-HpCDF		102	pg/g	0.802	5.01
39001-02-0	1,2,3,4,6,7,8,9-OCDF		640	pg/g	0.792	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		94.8	200	pg/g	47.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		179	200	pg/g	89.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		159	200	pg/g	79.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		149	200	pg/g	74.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		176	200	pg/g	87.8	(23%-140%)
13C-OCDD		395	401	pg/g	98.4	(17%-157%)
13C-2,3,7,8-TCDF		60.6	200	pg/g	30.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		153	200	pg/g	76.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		163	200	pg/g	81.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		146	200	pg/g	73.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		136	200	pg/g	67.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		157	200	pg/g	78.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		157	200	pg/g	78.2	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		158	200	pg/g	78.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		163	200	pg/g	81.5	(26%-138%)
37Cl-2,3,7,8-TCDD		9.56	20.0	pg/g	47.7	(35%-197%)

**Comments:****E** Value is estimated - Concentration of the target analyte exceeds the instrument calibration range**K** Estimated Maximum Possible Concentration

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

SDG Number: A7L0317	Client: APEX001	Project: APEX00111
Lab Sample ID: 12020436	Date Collected: 12/11/2017 11:30	Matrix: SOIL
Client Sample: QC for batch 36649	Date Received: 12/14/2017 10:13	%Moisture: 14.6
Client ID: GP03-S-7.5(11774008MSD)		Prep Basis: Dry Weight
Batch ID: 36651	Method: EPA Method 1613B	
Run Date: 01/20/2018 06:09	Analyst: MJC	Instrument: HRP750
Data File: A19JAN18A_2-13		Dilution: 1
Prep Batch: 36649	Prep Method: SW846 3540C	
Prep Date: 11-JAN-18	Prep Aliquot: 11.73 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		21.2	pg/g	0.239	0.998
40321-76-4	1,2,3,7,8-PeCDD		103	pg/g	0.363	4.99
39227-28-6	1,2,3,4,7,8-HxCDD		102	pg/g	0.371	4.99
57653-85-7	1,2,3,6,7,8-HxCDD		107	pg/g	0.343	4.99
19408-74-3	1,2,3,7,8,9-HxCDD		109	pg/g	0.367	4.99
35822-46-9	1,2,3,4,6,7,8-HpCDD		355	pg/g	1.30	4.99
3268-87-9	1,2,3,4,6,7,8,9-OCDD		3890	pg/g	1.31	9.98
51207-31-9	2,3,7,8-TCDF		18.2	pg/g	0.609	0.998
57117-41-6	1,2,3,7,8-PeCDF		94.8	pg/g	0.307	4.99
57117-31-4	2,3,4,7,8-PeCDF		96.2	pg/g	0.257	4.99
70648-26-9	1,2,3,4,7,8-HxCDF		104	pg/g	0.457	4.99
57117-44-9	1,2,3,6,7,8-HxCDF		99.7	pg/g	0.465	4.99
60851-34-5	2,3,4,6,7,8-HxCDF		100	pg/g	0.449	4.99
72918-21-9	1,2,3,7,8,9-HxCDF		96.8	pg/g	0.619	4.99
67562-39-4	1,2,3,4,6,7,8-HpCDF		277	pg/g	0.577	4.99
55673-89-7	1,2,3,4,7,8,9-HpCDF		102	pg/g	0.836	4.99
39001-02-0	1,2,3,4,6,7,8,9-OCDF		544	pg/g	0.627	9.98

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		104	200	pg/g	51.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		188	200	pg/g	94.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		168	200	pg/g	84.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		158	200	pg/g	79.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		179	200	pg/g	89.7	(23%-140%)
13C-OCDD		392	399	pg/g	98.2	(17%-157%)
13C-2,3,7,8-TCDF		64.8	200	pg/g	32.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		163	200	pg/g	81.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		171	200	pg/g	85.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		157	200	pg/g	78.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		147	200	pg/g	73.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		162	200	pg/g	81.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		162	200	pg/g	81.0	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		161	200	pg/g	80.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		169	200	pg/g	84.5	(26%-138%)
37Cl-2,3,7,8-TCDD		9.88	20.0	pg/g	49.5	(35%-197%)

**Comments:****K Estimated Maximum Possible Concentration**



January 24, 2018

Mr. Philip Nerenberg  
Apex Laboratories  
12232 S.W. Garden Place  
Portland, Oregon 97223

Re: 2018 DXN & PCB IDIQ  
Work Order: 11780  
SDG: A7L0343

Dear Mr. Nerenberg:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on December 15, 2017. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,

Cynde Larkins  
Project Manager

Enclosures

SUBCONTRACT ORDER

Apex Laboratories

A7L0343

CFA WO#11780

OK  
DN

SENDING LABORATORY:

Apex Laboratories  
12232 S.W. Garden Place  
Tigard, OR 97223  
Phone: (503) 718-2323  
Fax: (503) 718-0333  
Project Manager: Philip Nerenberg

RECEIVING LABORATORY:

Cape Fear Analytical, LLC  
3306 Kitty Hawk Rd Suite 120  
Wilmington, NC 28405  
Phone : (910) 795-0421  
Fax: -

Sample Name: GP03-W-33.0 Water Sampled: 12/12/17 11:00 (A7L0343-01)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB)	12/27/17 17:00	06/10/18 11:00	
<i>Containers Supplied:</i>			
(I) 1 L Amber Glass - Non Preserved			
(J) 1 L Amber Glass - Non Preserved			

Sample Name: GP04-S-1.0 Soil Sampled: 12/12/17 13:25 (A7L0343-02)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB)	12/27/17 17:00	06/10/18 13:25	
<i>Containers Supplied:</i>			
(C) 4 oz Glass Jar			

Sample Name: GP04-S-6.0 Soil Sampled: 12/12/17 13:30 (A7L0343-03)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB)	12/27/17 17:00	06/10/18 13:30	
<i>Containers Supplied:</i>			
(B) 4 oz Glass Jar			

Sample Name: GP04-S-13.0 Soil Sampled: 12/12/17 13:40 (A7L0343-04)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB)	12/27/17 17:00	06/10/18 13:40	
<i>Containers Supplied:</i>			
(C) 4 oz Glass Jar			

Temp. = 2.4°C

12/14/17

Fed Ex (Shipper)

Released By

Date

Received By

Date

Fed Ex (Shipper)

15 DEC 17

Cyrde Larkins

15 DEC 17 @ 1045

Released By

Date

Received By

Date

SUBCONTRACT ORDER

Apex Laboratories

A7L0343

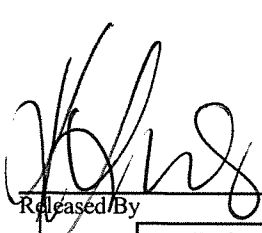
CFA WO#11780

Sample Name: GP09-S-2.5 Soil Sampled: 12/12/17 14:15 (A7L0343-07)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB)	12/27/17 17:00	06/10/18 14:15	
Containers Supplied: (C)4 oz Glass Jar			

Sample Name: GP09-S-8.0 Soil Sampled: 12/12/17 14:25 (A7L0343-08)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB)	12/27/17 17:00	06/10/18 14:25	
Containers Supplied: (C)4 oz Glass Jar			

Released By:  Date: 12/14/17  
Received By: Fed Ex (Shipper) Date: 15 DEC 17 @ 1045  
Released By: Fed Ex (Shipper) Date: 15 DEC 17  
Received By: Cynde Parkins Date: 15 DEC 17 @ 1045

**SAMPLE RECEIPT CHECKLIST**  
Cape Fear Analytical

Client: <b>APEX</b>	Work Order: <b>11780</b>
Shipping Company: <b>FedEx</b>	Date/Time Received: <b>15 DEC 17 1045</b>

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples < 2x background?			<input checked="" type="checkbox"/>

\* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: \_\_\_\_\_

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken    damaged container    leaking container    other(describe)
2 Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3 Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags    blue ice    dry ice    none    other (describe) <b>4.3° - 1.9° = 2.4°C</b>
4 Aqueous samples found to have visible solids?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
5 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: <b>pH = 7 on both water containers</b> If preservative added, Lot#:
6 Samples requiring preservation have no residual chlorine?	<input checked="" type="checkbox"/>			Sample IDs, containers affected: If preservative added, Lot#:
7 Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			List type and number of containers / Sample IDs, containers affected: <b>2 - 1L NMA and 5 clean 4oz jars</b>
11 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials:   CJ   Date:   15 DEC 17



# **High Resolution Dioxins and Furans Analysis**

# Case Narrative

**HDOX Case Narrative  
Apex Laboratories (APEX)  
SDG A7L0343  
Work Order 11780**

**Method/Analysis Information**

**Product:** Dioxins/Furans by EPA Method 1613B  
Analytical Method: EPA Method 1613B  
Extraction Method: SW846 3520C, 3540C  
Analytical Batch Number: 36481, 36651  
Clean Up Batch Number: 36478, 36650  
Extraction Batch Number: 36477, 36649

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

<b>Sample ID</b>	<b>Client ID</b>
11780001	GP03-W-33.0
11780002	GP04-S-1.0
11780003	GP04-S-6.0
11780004	GP04-S-13.0
11780005	GP09-S-2.5
11780006	GP09-S-8.0
12020292	Method Blank (MB)
12020293	Laboratory Control Sample (LCS)
12020294	Laboratory Control Sample Duplicate (LCSD)
12020427	Method Blank (MB)
12020428	Laboratory Control Sample (LCS)
12020429	Laboratory Control Sample Duplicate (LCSD)

Samples 11780 002, 003, 004, 005 and 006 in this SDG were analyzed on a "dry weight" basis. Sample 11780 001 in this SDG was analyzed on an "as received" basis.

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 14.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

### **Calibration Information**

#### **Initial Calibration**

All initial calibration requirements have been met for this sample delivery group (SDG).

#### **Continuing Calibration Verification (CCV) Requirements**

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

### **Quality Control (QC) Information**

#### **Certification Statement**

The test results presented in this document are certified to meet all requirements of the 2009 TNI Standard.

#### **Method Blank (MB) Statement**

The MB(s) analyzed with this SDG met the acceptance criteria.

#### **Surrogate Recoveries**

Two surrogates recovered outside the acceptance limits. Recoveries were >10% and ion ratio and signal to noise criteria were met. In some instances, EDLs may be higher than the PQLs. 11780003 (GP04-S-6.0)- Batch 36651.

#### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recoveries met the acceptance limits.

#### **Laboratory Control Sample Duplicate (LCSD) Recovery**

The LCSD spike recoveries met the acceptance limits.

#### **LCS/LCSD Relative Percent Difference (RPD) Statement**

The RPD(s) between the LCS and LCSD met the acceptance limits.

#### **QC Sample Designation**

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

### **Technical Information**

#### **Holding Time Specifications**

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

#### **Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

### **Sample Dilutions**

The samples in this SDG did not require dilutions.

### **Sample Re-extraction/Re-analysis**

The samples were re-extracted due to surrogate failures. The issue was traced to a failing laboratory reagent. Batch 36651.

### **Miscellaneous Information**

#### **Nonconformance (NCR) Documentation**

A NCR was not required for this SDG.

#### **Manual Integrations**

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

#### **Sample preparation**

No difficulties were encountered during sample preparation.

### **Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

# **Sample Data Summary**

## Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

### Qualifier Definition Report for

APEX001 Apex Laboratories

Client SDG: A7L0343 CFA Work Order: 11780

**The Qualifiers in this report are defined as follows:**

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- Q Quantitative Interference; value is estimated
- U Analyte was analyzed for, but not detected above the specified detection limit.
  
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

**Review/Validation**

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

**Signature:** 

**Name:** Heather Patterson

**Date:** 24 JAN 2018

**Title:** Group Leader

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780001	<b>Date Collected:</b> 12/12/2017 11:00	<b>Matrix:</b> WATER
<b>Client Sample:</b> 1613B Water	<b>Date Received:</b> 12/15/2017 10:45	
<b>Client ID:</b> GP03-W-33.0		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36481	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 12/20/2017 23:47	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A18DEC17A_6-11		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36477	<b>Prep Method:</b> SW846 3520C	
<b>Prep Date:</b> 18-DEC-17	<b>Prep Aliquot:</b> 909.2 mL	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	1.34	pg/L	1.34	11.0
40321-76-4	1,2,3,7,8-PeCDD	U	0.766	pg/L	0.766	55.0
39227-28-6	1,2,3,4,7,8-HxCDD	U	1.37	pg/L	1.37	55.0
57653-85-7	1,2,3,6,7,8-HxCDD	U	1.27	pg/L	1.27	55.0
19408-74-3	1,2,3,7,8,9-HxCDD	U	1.35	pg/L	1.35	55.0
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	10.9	pg/L	3.54	55.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		121	pg/L	7.17	110
51207-31-9	2,3,7,8-TCDF	U	2.2	pg/L	2.20	11.0
57117-41-6	1,2,3,7,8-PeCDF	U	0.952	pg/L	0.952	55.0
57117-31-4	2,3,4,7,8-PeCDF	U	0.869	pg/L	0.869	55.0
70648-26-9	1,2,3,4,7,8-HxCDF	U	1.03	pg/L	1.03	55.0
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.968	pg/L	0.968	55.0
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.04	pg/L	1.04	55.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.33	pg/L	1.33	55.0
67562-39-4	1,2,3,4,6,7,8-HpCDF	JK	7.57	pg/L	1.82	55.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	2.93	pg/L	2.93	55.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	11.5	pg/L	4.47	110
41903-57-5	Total TeCDD	U	1.34	pg/L	1.34	11.0
36088-22-9	Total PeCDD	U	0.766	pg/L	0.766	55.0
34465-46-8	Total HxCDD	U	1.27	pg/L	1.27	55.0
37871-00-4	Total HpCDD	J	21.6	pg/L	3.54	55.0
30402-14-3	Total TeCDF	U	2.2	pg/L	2.20	11.0
30402-15-4	Total PeCDF	U	0.634	pg/L	0.634	55.0
55684-94-1	Total HxCDF	JK	3.83	pg/L	0.968	55.0
38998-75-3	Total HpCDF	JK	18.6	pg/L	1.82	55.0
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.224	pg/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		1.96	pg/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1970	2200	pg/L	89.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		2090	2200	pg/L	95.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1730	2200	pg/L	78.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1760	2200	pg/L	80.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1720	2200	pg/L	78.3	(23%-140%)
13C-OCDD		3120	4400	pg/L	70.8	(17%-157%)
13C-2,3,7,8-TCDF		1720	2200	pg/L	78.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		2130	2200	pg/L	96.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		2140	2200	pg/L	97.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1680	2200	pg/L	76.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1700	2200	pg/L	77.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1710	2200	pg/L	77.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1820	2200	pg/L	82.7	(29%-147%)



**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780001	<b>Date Collected:</b> 12/12/2017 11:00	<b>Matrix:</b> WATER
<b>Client Sample:</b> 1613B Water	<b>Date Received:</b> 12/15/2017 10:45	
<b>Client ID:</b> GP03-W-33.0		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36481	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 12/20/2017 23:47	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A18DEC17A_6-11		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36477	<b>Prep Method:</b> SW846 3520C	
<b>Prep Date:</b> 18-DEC-17	<b>Prep Aliquot:</b> 909.2 mL	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			1680	2200	pg/L	76.4 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			1710	2200	pg/L	77.6 (26%-138%)
37Cl-2,3,7,8-TCDD			208	220	pg/L	94.7 (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780002	<b>Date Collected:</b> 12/12/2017 13:25	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/15/2017 10:45	<b>%Moisture:</b> 8.1
<b>Client ID:</b> GP04-S-1.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 18:52	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-5		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10.93 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.273	pg/g	0.273	0.995
40321-76-4	1,2,3,7,8-PeCDD	JK	0.283	pg/g	0.271	4.98
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.490	pg/g	0.247	4.98
57653-85-7	1,2,3,6,7,8-HxCDD	J	2.51	pg/g	0.241	4.98
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.908	pg/g	0.251	4.98
35822-46-9	1,2,3,4,6,7,8-HpCDD		92.7	pg/g	0.683	4.98
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1120	pg/g	1.36	9.95
51207-31-9	2,3,7,8-TCDF	U	0.436	pg/g	0.436	0.995
57117-41-6	1,2,3,7,8-PeCDF	JK	0.261	pg/g	0.178	4.98
57117-31-4	2,3,4,7,8-PeCDF	JK	0.500	pg/g	0.163	4.98
70648-26-9	1,2,3,4,7,8-HxCDF	JK	1.13	pg/g	0.166	4.98
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.531	pg/g	0.168	4.98
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.625	pg/g	0.154	4.98
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.316	pg/g	0.199	4.98
67562-39-4	1,2,3,4,6,7,8-HpCDF		14.4	pg/g	0.141	4.98
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	1.03	pg/g	0.205	4.98
39001-02-0	1,2,3,4,6,7,8,9-OCDF		51.0	pg/g	0.462	9.95
41903-57-5	Total TeCDD	JK	0.860	pg/g	0.273	0.995
36088-22-9	Total PeCDD	JK	1.66	pg/g	0.271	4.98
34465-46-8	Total HxCDD	K	15.8	pg/g	0.241	4.98
37871-00-4	Total HpCDD		192	pg/g	0.683	4.98
30402-14-3	Total TeCDF	U	0.436	pg/g	0.436	0.995
30402-15-4	Total PeCDF	K	5.60	pg/g	0.0458	4.98
55684-94-1	Total HxCDF	K	16.9	pg/g	0.154	4.98
38998-75-3	Total HpCDF		54.7	pg/g	0.141	4.98
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		2.52	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		2.68	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		79.7	199	pg/g	40.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		159	199	pg/g	79.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		164	199	pg/g	82.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		154	199	pg/g	77.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		189	199	pg/g	95.1	(23%-140%)
13C-OCDD		357	398	pg/g	89.6	(17%-157%)
13C-2,3,7,8-TCDF		51.2	199	pg/g	25.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		133	199	pg/g	66.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		140	199	pg/g	70.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		151	199	pg/g	75.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		141	199	pg/g	70.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		161	199	pg/g	81.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		159	199	pg/g	80.1	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780002	<b>Date Collected:</b> 12/12/2017 13:25	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/15/2017 10:45	<b>%Moisture:</b> 8.1
<b>Client ID:</b> GP04-S-1.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 18:52	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-5		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10.93 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			170	199	pg/g	85.2 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			175	199	pg/g	87.9 (26%-138%)
37Cl-2,3,7,8-TCDD			7.69	19.9	pg/g	38.7 (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780003	<b>Date Collected:</b> 12/12/2017 13:30	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/15/2017 10:45	<b>%Moisture:</b> 12.3
<b>Client ID:</b> GP04-S-6.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 19:40	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-6		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 11.39 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		235	pg/g	0.611	1.00
40321-76-4	1,2,3,7,8-PeCDD		42.3	pg/g	0.366	5.01
39227-28-6	1,2,3,4,7,8-HxCDD	J	3.38	pg/g	0.364	5.01
57653-85-7	1,2,3,6,7,8-HxCDD		8.87	pg/g	0.346	5.01
19408-74-3	1,2,3,7,8,9-HxCDD		6.86	pg/g	0.364	5.01
35822-46-9	1,2,3,4,6,7,8-HpCDD		56.8	pg/g	0.489	5.01
3268-87-9	1,2,3,4,6,7,8,9-OCDD		430	pg/g	0.805	10.0
51207-31-9	2,3,7,8-TCDF		3.14	pg/g	1.45	1.00
57117-41-6	1,2,3,7,8-PeCDF	J	0.865	pg/g	0.388	5.01
57117-31-4	2,3,4,7,8-PeCDF		8.17	pg/g	0.278	5.01
70648-26-9	1,2,3,4,7,8-HxCDF	J	1.26	pg/g	0.218	5.01
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.687	pg/g	0.214	5.01
60851-34-5	2,3,4,6,7,8-HxCDF	J	1.70	pg/g	0.206	5.01
72918-21-9	1,2,3,7,8,9-HxCDF	JK	0.284	pg/g	0.236	5.01
67562-39-4	1,2,3,4,6,7,8-HpCDF		14.9	pg/g	0.196	5.01
55673-89-7	1,2,3,4,7,8,9-HpCDF	JK	0.799	pg/g	0.276	5.01
39001-02-0	1,2,3,4,6,7,8,9-OCDF		31.3	pg/g	0.396	10.0
41903-57-5	Total TeCDD	K	291	pg/g	0.611	1.00
36088-22-9	Total PeCDD	Q	579	pg/g	0.366	5.01
34465-46-8	Total HxCDD	K	849	pg/g	0.346	5.01
37871-00-4	Total HpCDD		130	pg/g	0.489	5.01
30402-14-3	Total TeCDF		19.0	pg/g	1.45	1.00
30402-15-4	Total PeCDF	KQ	34.2	pg/g	0.0629	5.01
55684-94-1	Total HxCDF	K	42.8	pg/g	0.206	5.01
38998-75-3	Total HpCDF	K	44.6	pg/g	0.196	5.01
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		283	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		283	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		75.4	200	pg/g	37.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		158	200	pg/g	79.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		165	200	pg/g	82.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		151	200	pg/g	75.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		188	200	pg/g	93.8	(23%-140%)
13C-OCDD		364	400	pg/g	90.8	(17%-157%)
13C-2,3,7,8-TCDF		46.4	200	pg/g	23.2	* (24%-169%)
13C-1,2,3,7,8-PeCDF		107	200	pg/g	53.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		135	200	pg/g	67.5	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		144	200	pg/g	72.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		137	200	pg/g	68.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		158	200	pg/g	78.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		157	200	pg/g	78.4	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780003	<b>Date Collected:</b> 12/12/2017 13:30	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/15/2017 10:45	<b>%Moisture:</b> 12.3
<b>Client ID:</b> GP04-S-6.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 19:40	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-6		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 11.39 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
	13C-1,2,3,4,6,7,8-HpCDF		166	200	pg/g	82.7 (28%-143%)
	13C-1,2,3,4,7,8,9-HpCDF		175	200	pg/g	87.6 (26%-138%)
	37Cl-2,3,7,8-TCDD		7.49	20.0	pg/g	37.4 (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**Q** Quantitative Interference; value is estimated  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780003	<b>Date Collected:</b> 12/12/2017 13:30	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/15/2017 10:45	<b>%Moisture:</b> 12.3
<b>Client ID:</b> GP04-S-6.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/23/2018 17:17	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A23JAN18B_2-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 11.39 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		4.18	pg/g	1.01	1.00

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	------	--------	---------	-------	-----------	-------------------

**Comments:**

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- Q** Quantitative Interference; value is estimated
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780004	<b>Date Collected:</b> 12/12/2017 13:40	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/15/2017 10:45	<b>%Moisture:</b> 24.4
<b>Client ID:</b> GP04-S-13.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 20:28	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-7		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 13.17 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.198	pg/g	0.198	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	0.153	pg/g	0.153	5.02
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.141	pg/g	0.141	5.02
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.14	pg/g	0.140	5.02
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.144	pg/g	0.144	5.02
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	0.217	pg/g	0.217	5.02
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.882	pg/g	0.313	10.0
51207-31-9	2,3,7,8-TCDF	U	0.331	pg/g	0.331	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	0.116	pg/g	0.116	5.02
57117-31-4	2,3,4,7,8-PeCDF	U	0.0984	pg/g	0.0984	5.02
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.0705	pg/g	0.0705	5.02
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.0717	pg/g	0.0717	5.02
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.0677	pg/g	0.0677	5.02
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.0952	pg/g	0.0952	5.02
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	0.0711	pg/g	0.0711	5.02
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.108	pg/g	0.108	5.02
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	0.229	pg/g	0.229	10.0
41903-57-5	Total TeCDD	U	0.198	pg/g	0.198	1.00
36088-22-9	Total PeCDD	U	0.153	pg/g	0.153	5.02
34465-46-8	Total HxCDD	U	0.14	pg/g	0.140	5.02
37871-00-4	Total HpCDD	U	0.217	pg/g	0.217	5.02
30402-14-3	Total TeCDF	U	0.331	pg/g	0.331	1.00
30402-15-4	Total PeCDF	U	0.0984	pg/g	0.0984	5.02
55684-94-1	Total HxCDF	U	0.0677	pg/g	0.0677	5.02
38998-75-3	Total HpCDF	U	0.0711	pg/g	0.0711	5.02
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000264	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.248	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		96.9	201	pg/g	48.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		167	201	pg/g	83.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		161	201	pg/g	80.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		152	201	pg/g	75.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		174	201	pg/g	86.6	(23%-140%)
13C-OCDD		334	402	pg/g	83.3	(17%-157%)
13C-2,3,7,8-TCDF		69.6	201	pg/g	34.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		141	201	pg/g	70.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		157	201	pg/g	78.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		148	201	pg/g	73.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		140	201	pg/g	69.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		155	201	pg/g	77.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		157	201	pg/g	78.4	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780004	<b>Date Collected:</b> 12/12/2017 13:40	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/15/2017 10:45	<b>%Moisture:</b> 24.4
<b>Client ID:</b> GP04-S-13.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 20:28	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-7		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 13.17 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			157	201	pg/g	78.2 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			168	201	pg/g	83.4 (26%-138%)
37Cl-2,3,7,8-TCDD			9.78	20.1	pg/g	48.7 (35%-197%)

**Comments:**  
**J** Value is estimated  
**U** Analyte was analyzed for, but not detected above the specified detection limit.



**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780005	<b>Date Collected:</b> 12/12/2017 14:15	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/15/2017 10:45	<b>%Moisture:</b> 26.7
<b>Client ID:</b> GP09-S-2.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 21:16	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-8		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 13.71 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.229	pg/g	0.229	0.996
40321-76-4	1,2,3,7,8-PeCDD	J	0.203	pg/g	0.184	4.98
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.186	pg/g	0.186	4.98
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.185	pg/g	0.185	4.98
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.19	pg/g	0.190	4.98
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	2.12	pg/g	0.177	4.98
3268-87-9	1,2,3,4,6,7,8,9-OCDD		19.4	pg/g	0.307	9.96
51207-31-9	2,3,7,8-TCDF		1.55	pg/g	0.908	0.996
57117-41-6	1,2,3,7,8-PeCDF	J	0.544	pg/g	0.233	4.98
57117-31-4	2,3,4,7,8-PeCDF	J	0.603	pg/g	0.205	4.98
70648-26-9	1,2,3,4,7,8-HxCDF	JK	0.299	pg/g	0.116	4.98
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.337	pg/g	0.116	4.98
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.380	pg/g	0.116	4.98
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.145	pg/g	0.145	4.98
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	1.97	pg/g	0.0623	4.98
55673-89-7	1,2,3,4,7,8,9-HpCDF	JK	0.106	pg/g	0.090	4.98
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	2.10	pg/g	0.345	9.96
41903-57-5	Total TeCDD	JK	0.741	pg/g	0.229	0.996
36088-22-9	Total PeCDD	JK	0.516	pg/g	0.184	4.98
34465-46-8	Total HxCDD	JK	1.59	pg/g	0.185	4.98
37871-00-4	Total HpCDD	J	4.21	pg/g	0.177	4.98
30402-14-3	Total TeCDF	K	14.7	pg/g	0.908	0.996
30402-15-4	Total PeCDF	K	6.17	pg/g	0.0225	4.98
55684-94-1	Total HxCDF	JK	2.98	pg/g	0.116	4.98
38998-75-3	Total HpCDF	JK	3.80	pg/g	0.0623	4.98
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.705	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.855	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		112	199	pg/g	56.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		200	199	pg/g	100	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		166	199	pg/g	83.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		163	199	pg/g	82.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		189	199	pg/g	94.8	(23%-140%)
13C-OCDD		378	398	pg/g	94.8	(17%-157%)
13C-2,3,7,8-TCDF		72.1	199	pg/g	36.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		180	199	pg/g	90.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		187	199	pg/g	93.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		157	199	pg/g	79.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		151	199	pg/g	75.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		162	199	pg/g	81.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		166	199	pg/g	83.4	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780005	<b>Date Collected:</b> 12/12/2017 14:15	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/15/2017 10:45	<b>%Moisture:</b> 26.7
<b>Client ID:</b> GP09-S-2.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 21:16	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-8		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 13.71 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			169	199	pg/g	84.6 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			181	199	pg/g	90.8 (26%-138%)
37Cl-2,3,7,8-TCDD			11.0	19.9	pg/g	55.1 (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780005	<b>Date Collected:</b> 12/12/2017 14:15	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/15/2017 10:45	<b>%Moisture:</b> 26.7
<b>Client ID:</b> GP09-S-2.5		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/23/2018 17:37	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A23JAN18B_2-4		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 13.71 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		1.96	pg/g	0.719	0.996

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	------	--------	---------	-------	-----------	-------------------

**Comments:**

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780006	<b>Date Collected:</b> 12/12/2017 14:25	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/15/2017 10:45	<b>%Moisture:</b> 17.8
<b>Client ID:</b> GP09-S-8.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 22:04	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-9		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 12.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.217	pg/g	0.217	1.01
40321-76-4	1,2,3,7,8-PeCDD	U	0.0908	pg/g	0.0908	5.03
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.229	pg/g	0.229	5.03
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.229	pg/g	0.229	5.03
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.236	pg/g	0.236	5.03
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.336	pg/g	0.188	5.03
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	2.85	pg/g	0.550	10.1
51207-31-9	2,3,7,8-TCDF	U	0.326	pg/g	0.326	1.01
57117-41-6	1,2,3,7,8-PeCDF	U	0.115	pg/g	0.115	5.03
57117-31-4	2,3,4,7,8-PeCDF	U	0.0978	pg/g	0.0978	5.03
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.0946	pg/g	0.0946	5.03
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.099	pg/g	0.099	5.03
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.0928	pg/g	0.0928	5.03
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.127	pg/g	0.127	5.03
67562-39-4	1,2,3,4,6,7,8-HpCDF	JK	1.14	pg/g	0.0829	5.03
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.121	pg/g	0.121	5.03
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.634	pg/g	0.324	10.1
41903-57-5	Total TeCDD	U	0.217	pg/g	0.217	1.01
36088-22-9	Total PeCDD	U	0.0908	pg/g	0.0908	5.03
34465-46-8	Total HxCDD	U	0.229	pg/g	0.229	5.03
37871-00-4	Total HpCDD	JK	0.646	pg/g	0.188	5.03
30402-14-3	Total TeCDF	U	0.326	pg/g	0.326	1.01
30402-15-4	Total PeCDF	JK	0.133	pg/g	0.036	5.03
55684-94-1	Total HxCDF	JK	0.485	pg/g	0.0928	5.03
38998-75-3	Total HpCDF	JK	2.18	pg/g	0.0829	5.03
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0158	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.259	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		126	201	pg/g	62.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		203	201	pg/g	101	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		165	201	pg/g	82.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		162	201	pg/g	80.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		183	201	pg/g	90.7	(23%-140%)
13C-OCDD		363	403	pg/g	90.3	(17%-157%)
13C-2,3,7,8-TCDF		85.6	201	pg/g	42.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		189	201	pg/g	94.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		197	201	pg/g	97.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		159	201	pg/g	78.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		147	201	pg/g	73.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		160	201	pg/g	79.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		167	201	pg/g	83.1	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11780006	<b>Date Collected:</b> 12/12/2017 14:25	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/15/2017 10:45	<b>%Moisture:</b> 17.8
<b>Client ID:</b> GP09-S-8.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 22:04	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-9		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 12.08 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
	13C-1,2,3,4,6,7,8-HpCDF		165	201	pg/g	81.9 (28%-143%)
	13C-1,2,3,4,7,8,9-HpCDF		171	201	pg/g	84.9 (26%-138%)
	37Cl-2,3,7,8-TCDD		12.1	20.1	pg/g	59.9 (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

# **Quality Control Summary**

**Hi-Res Dioxins/Furans**  
**Surrogate Recovery Report**

SDG Number: A7L0343

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12020293	LCS for batch 36477	13C-2,3,7,8-TCDD		85.1	(20%-175%)
		13C-1,2,3,7,8-PeCDD		94.4	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		77.7	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		84.9	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		82.0	(22%-166%)
		13C-OCDD		77.3	(13%-199%)
		13C-2,3,7,8-TCDF		79.1	(22%-152%)
		13C-1,2,3,7,8-PeCDF		95.5	(21%-192%)
		13C-2,3,4,7,8-PeCDF		98.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		78.5	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		77.4	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		80.0	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		85.2	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		78.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		81.7	(20%-186%)
37Cl-2,3,7,8-TCDD		98.2	(31%-191%)		
12020294	LCSD for batch 36477	13C-2,3,7,8-TCDD		86.7	(20%-175%)
		13C-1,2,3,7,8-PeCDD		96.5	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		78.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		84.0	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		81.4	(22%-166%)
		13C-OCDD		77.8	(13%-199%)
		13C-2,3,7,8-TCDF		77.6	(22%-152%)
		13C-1,2,3,7,8-PeCDF		96.5	(21%-192%)
		13C-2,3,4,7,8-PeCDF		97.3	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		77.7	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		79.1	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		78.9	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		84.6	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		78.4	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		81.7	(20%-186%)
37Cl-2,3,7,8-TCDD		99.8	(31%-191%)		
12020292	MB for batch 36477	13C-2,3,7,8-TCDD		93.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		103	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		84.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		86.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		85.7	(23%-140%)
		13C-OCDD		76.5	(17%-157%)
		13C-2,3,7,8-TCDF		85.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		102	(24%-185%)
		13C-2,3,4,7,8-PeCDF		100	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		82.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		85.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		89.5	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		84.9	(26%-138%)
37Cl-2,3,7,8-TCDD		104	(35%-197%)		
11780001	GP03-W-33.0	13C-2,3,7,8-TCDD		89.6	(25%-164%)

**Hi-Res Dioxins/Furans  
Surrogate Recovery Report**

SDG Number: A7L0343

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
11780001	GP03-W-33.0	13C-1,2,3,7,8-PeCDD		95.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		78.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		80.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		78.3	(23%-140%)
		13C-OCDD		70.8	(17%-157%)
		13C-2,3,7,8-TCDF		78.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		96.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		97.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		76.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		77.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		76.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		77.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		94.7	(35%-197%)

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted



**Hi-Res Dioxins/Furans  
Surrogate Recovery Report**

SDG Number: A7L0343

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12020428	LCS for batch 36649	13C-2,3,7,8-TCDD		46.5	(20%-175%)
		13C-1,2,3,7,8-PeCDD		91.1	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		78.5	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		75.6	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		84.6	(22%-166%)
		13C-OCDD		83.9	(13%-199%)
		13C-2,3,7,8-TCDF		32.8	(22%-152%)
		13C-1,2,3,7,8-PeCDF		82.0	(21%-192%)
		13C-2,3,4,7,8-PeCDF		85.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		72.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		69.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		78.0	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		77.2	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		79.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		79.2	(20%-186%)
		37Cl-2,3,7,8-TCDD		47.8	(31%-191%)
12020429	LCSD for batch 36649	13C-2,3,7,8-TCDD		56.3	(20%-175%)
		13C-1,2,3,7,8-PeCDD		106	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		87.9	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		82.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		90.2	(22%-166%)
		13C-OCDD		88.7	(13%-199%)
		13C-2,3,7,8-TCDF		37.3	(22%-152%)
		13C-1,2,3,7,8-PeCDF		98.7	(21%-192%)
		13C-2,3,4,7,8-PeCDF		101	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		83.4	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		76.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		84.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		86.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		84.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		86.3	(20%-186%)
		37Cl-2,3,7,8-TCDD		58.7	(31%-191%)
12020427	MB for batch 36649	13C-2,3,7,8-TCDD		54.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		98.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		78.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		78.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.2	(23%-140%)
		13C-OCDD		81.9	(17%-157%)
		13C-2,3,7,8-TCDF		36.3	(24%-169%)
		13C-1,2,3,7,8-PeCDF		94.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		94.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		72.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		56.4	(35%-197%)
11780002	GP04-S-1.0	13C-2,3,7,8-TCDD		40.1	(25%-164%)

**Hi-Res Dioxins/Furans  
Surrogate Recovery Report**

SDG Number: A7L0343

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
11780002	GP04-S-1.0	13C-1,2,3,7,8-PeCDD		79.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		82.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		77.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		95.1	(23%-140%)
		13C-OCDD		89.6	(17%-157%)
		13C-2,3,7,8-TCDF		25.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		66.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		70.4	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		75.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		70.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		80.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		85.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		87.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		38.7	(35%-197%)
11780003	GP04-S-6.0	13C-2,3,7,8-TCDD		37.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		79.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		82.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		75.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		93.8	(23%-140%)
		13C-OCDD		90.8	(17%-157%)
		13C-2,3,7,8-TCDF		23.2 *	(24%-169%)
		13C-1,2,3,7,8-PeCDF		53.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		67.5	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		72.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		68.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		82.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		87.6	(26%-138%)
37Cl-2,3,7,8-TCDD		37.4	(35%-197%)		
11780004	GP04-S-13.0	13C-2,3,7,8-TCDD		48.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		83.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		75.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		86.6	(23%-140%)
		13C-OCDD		83.3	(17%-157%)
		13C-2,3,7,8-TCDF		34.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		70.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		78.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		73.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		69.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		78.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		83.4	(26%-138%)
37Cl-2,3,7,8-TCDD		48.7	(35%-197%)		
11780005	GP09-S-2.5	13C-2,3,7,8-TCDD		56.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		100	(25%-181%)

**Hi-Res Dioxins/Furans  
Surrogate Recovery Report**

SDG Number: A7L0343

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
11780005	GP09-S-2.5	13C-1,2,3,4,7,8-HxCDD		83.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		82.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		94.8	(23%-140%)
		13C-OCDD		94.8	(17%-157%)
		13C-2,3,7,8-TCDF		36.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		90.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		93.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		75.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		83.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		90.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		55.1	(35%-197%)
		11780006	GP09-S-8.0	13C-2,3,7,8-TCDD	
13C-1,2,3,7,8-PeCDD				101	(25%-181%)
13C-1,2,3,4,7,8-HxCDD				82.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD				80.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD				90.7	(23%-140%)
13C-OCDD				90.3	(17%-157%)
13C-2,3,7,8-TCDF				42.5	(24%-169%)
13C-1,2,3,7,8-PeCDF				94.0	(24%-185%)
13C-2,3,4,7,8-PeCDF				97.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF				78.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF				73.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF				79.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF				83.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF				81.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF				84.9	(26%-138%)
37Cl-2,3,7,8-TCDD		59.9	(35%-197%)		

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

**SDG Number:** A7L0343  
**Client ID:** LCS for batch 36477  
**Lab Sample ID:** 12020293  
**Instrument:** HRP750  
**Analyst:** MJC

**Sample Type:** Laboratory Control Sample  
**Matrix:** WATER  
**Analysis Date:** 12/20/2017 15:47  
**Prep Batch ID:** 36477  
**Batch ID:** 36481

**Dilution:** 1

CAS No.	Parmname	Amount Added pg/L	Spike Conc. pg/L	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	200	224	112	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	1000	1050	105	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	1000	1030	103	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	1000	997	99.7	74-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	1000	1050	105	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	1000	1000	100	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	2000	2050	103	78-144
51207-31-9	LCS 2,3,7,8-TCDF	200	186	93	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	1000	1010	101	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	1000	1000	100	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	1000	1040	104	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	1000	1090	109	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	1000	1040	104	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	1000	1020	102	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	1000	998	99.8	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	1000	1010	101	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	2000	2100	105	63-170

**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

SDG Number: A7L0343

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 36477

Matrix: WATER

Lab Sample ID: 12020294

Instrument: HRP750

Analysis Date: 12/20/2017 16:35

Dilution: 1

Analyst: MJC

Prep Batch ID: 36477

Batch ID: 36481

CAS No.	Parmname	Amount Added pg/L	Spike Conc. pg/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	200	226	113	67-158	0.737	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	1000	1040	104	70-142	0.702	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	1000	1040	104	70-164	0.530	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	1000	982	98.2	74-134	1.49	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	1000	1010	101	64-162	4.02	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	1000	1020	102	70-140	1.92	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	2000	2030	101	78-144	1.31	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	200	184	92	75-158	1.09	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	1000	992	99.2	80-134	1.79	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	1000	999	99.9	68-160	0.318	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	1000	1020	102	72-134	1.79	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	1000	1070	107	84-130	1.83	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	1000	1040	104	70-156	0.279	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	1000	985	98.5	78-130	3.92	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	1000	1000	100	82-122	0.194	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	1000	1010	101	78-138	0.150	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	2000	2080	104	63-170	0.684	0-20

**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

SDG Number: A7L0343

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 36649

Matrix: SOIL

Lab Sample ID: 12020428

Instrument: HRP750

Analysis Date: 01/19/2018 20:33

Dilution: 1

Analyst: MJC

Prep Batch ID:36649

Batch ID: 36651

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.9	105	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	100	100	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	95.7	95.7	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	97.2	97.2	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	105	105	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	94.5	94.5	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	198	98.9	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	17.3	86.4	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	93.3	93.3	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	91.2	91.2	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	95.8	95.8	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	99.1	99.1	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	95.9	95.9	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	94.8	94.8	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	94.5	94.5	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	96.4	96.4	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	181	90.7	63-170

**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

SDG Number: A7L0343

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 36649

Matrix: SOIL

Lab Sample ID: 12020429

Instrument: HRP750

Analysis Date: 01/19/2018 21:21

Dilution: 1

Analyst: MJC

Prep Batch ID: 36649

Batch ID: 36651

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.3	101	67-158	3.13	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	101	101	70-142	1.18	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	95.2	95.2	70-164	0.503	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	97.1	97.1	76-134	0.115	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	102	102	64-162	2.47	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	96.0	96	70-140	1.57	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	196	97.9	78-144	1.04	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	17.3	86.7	75-158	0.347	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	93.7	93.7	80-134	0.426	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	92.6	92.6	68-160	1.50	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	92.7	92.7	72-134	3.22	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	98.5	98.5	84-130	0.619	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	94.9	94.9	70-156	1.02	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	94.5	94.5	78-130	0.287	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	92.6	92.6	82-122	2.02	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	94.3	94.3	78-138	2.24	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	181	90.7	63-170	0.00221	0-20

## Method Blank Summary

Page 1 of 1

SDG Number: A7L0343  
Client ID: MB for batch 36477  
Lab Sample ID: 12020292  
Column:

Client: APEX001  
Instrument ID: HRP750  
Prep Date: 18-DEC-17

Matrix: WATER  
Data File: A18DEC17A\_6-3  
Analyzed: 12/20/17 17:23

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 36477	12020293	A18DEC17A_6-1	12/20/17	1547
02 LCSD for batch 36477	12020294	A18DEC17A_6-2	12/20/17	1635
03 GP03-W-33.0	11780001	A18DEC17A_6-11	12/20/17	2347



## Method Blank Summary

Page 1 of 1

SDG Number: A7L0343  
Client ID: MB for batch 36649  
Lab Sample ID: 12020427  
Column:

Client: APEX001  
Instrument ID: HRP750  
Prep Date: 11-JAN-18

Matrix: SOIL  
Data File: A19JAN18A\_2-3  
Analyzed: 01/19/18 22:09

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 36649	12020428	A19JAN18A_2-1	01/19/18	2033
02 LCSD for batch 36649	12020429	A19JAN18A_2-2	01/19/18	2121
03 GP04-S-1.0	11780002	A21JAN18A-5	01/21/18	1852
04 GP04-S-6.0	11780003	A21JAN18A-6	01/21/18	1940
05 GP04-S-13.0	11780004	A21JAN18A-7	01/21/18	2028
06 GP09-S-2.5	11780005	A21JAN18A-8	01/21/18	2116
07 GP09-S-8.0	11780006	A21JAN18A-9	01/21/18	2204
08 GP04-S-6.0	11780003	A23JAN18B_2-3	01/23/18	1717
09 GP09-S-2.5	11780005	A23JAN18B_2-4	01/23/18	1737

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020292		<b>Matrix:</b> WATER
<b>Client Sample:</b> QC for batch 36477		
<b>Client ID:</b> MB for batch 36477		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36481	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 12/20/2017 17:23	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A18DEC17A_6-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36477	<b>Prep Method:</b> SW846 3520C	
<b>Prep Date:</b> 18-DEC-17	<b>Prep Aliquot:</b> 1000 mL	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	1.2	pg/L	1.20	10.0
40321-76-4	1,2,3,7,8-PeCDD	U	1.05	pg/L	1.05	50.0
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.992	pg/L	0.992	50.0
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.93	pg/L	0.930	50.0
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.984	pg/L	0.984	50.0
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	1.66	pg/L	1.66	50.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	2.54	pg/L	2.54	100
51207-31-9	2,3,7,8-TCDF	U	1.8	pg/L	1.80	10.0
57117-41-6	1,2,3,7,8-PeCDF	U	0.874	pg/L	0.874	50.0
57117-31-4	2,3,4,7,8-PeCDF	U	0.768	pg/L	0.768	50.0
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.926	pg/L	0.926	50.0
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.93	pg/L	0.930	50.0
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.952	pg/L	0.952	50.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.23	pg/L	1.23	50.0
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	0.756	pg/L	0.756	50.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	1.09	pg/L	1.09	50.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	2.68	pg/L	2.68	100
41903-57-5	Total TeCDD	U	1.2	pg/L	1.20	10.0
36088-22-9	Total PeCDD	U	1.05	pg/L	1.05	50.0
34465-46-8	Total HxCDD	U	0.93	pg/L	0.930	50.0
37871-00-4	Total HpCDD	U	1.66	pg/L	1.66	50.0
30402-14-3	Total TeCDF	U	1.8	pg/L	1.80	10.0
30402-15-4	Total PeCDF	U	0.576	pg/L	0.576	50.0
55684-94-1	Total HxCDF	U	0.926	pg/L	0.926	50.0
38998-75-3	Total HpCDF	U	0.756	pg/L	0.756	50.0
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00	pg/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		1.71	pg/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1870	2000	pg/L	93.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		2050	2000	pg/L	103	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1700	2000	pg/L	84.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1740	2000	pg/L	86.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1710	2000	pg/L	85.7	(23%-140%)
13C-OCDD		3060	4000	pg/L	76.5	(17%-157%)
13C-2,3,7,8-TCDF		1710	2000	pg/L	85.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		2050	2000	pg/L	102	(24%-185%)
13C-2,3,4,7,8-PeCDF		2000	2000	pg/L	100	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1660	2000	pg/L	82.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1670	2000	pg/L	83.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1700	2000	pg/L	85.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1790	2000	pg/L	89.5	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020292		<b>Matrix:</b> WATER
<b>Client Sample:</b> QC for batch 36477		
<b>Client ID:</b> MB for batch 36477		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36481	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 12/20/2017 17:23	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A18DEC17A_6-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36477	<b>Prep Method:</b> SW846 3520C	
<b>Prep Date:</b> 18-DEC-17	<b>Prep Aliquot:</b> 1000 mL	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			1620	2000	pg/L	80.9 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			1700	2000	pg/L	84.9 (26%-138%)
37Cl-2,3,7,8-TCDD			208	200	pg/L	104 (35%-197%)

**Comments:**  
 U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020293		<b>Matrix:</b> WATER
<b>Client Sample:</b> QC for batch 36477		
<b>Client ID:</b> LCS for batch 36477		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36481	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 12/20/2017 15:47	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A18DEC17A_6-1		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36477	<b>Prep Method:</b> SW846 3520C	
<b>Prep Date:</b> 18-DEC-17	<b>Prep Aliquot:</b> 1000 mL	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		224	pg/L	1.79	10.0
40321-76-4	1,2,3,7,8-PeCDD		1050	pg/L	2.60	50.0
39227-28-6	1,2,3,4,7,8-HxCDD		1030	pg/L	5.86	50.0
57653-85-7	1,2,3,6,7,8-HxCDD		997	pg/L	5.46	50.0
19408-74-3	1,2,3,7,8,9-HxCDD		1050	pg/L	5.78	50.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		1000	pg/L	7.04	50.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2050	pg/L	19.1	100
51207-31-9	2,3,7,8-TCDF		186	pg/L	3.02	10.0
57117-41-6	1,2,3,7,8-PeCDF		1010	pg/L	3.42	50.0
57117-31-4	2,3,4,7,8-PeCDF		1000	pg/L	3.12	50.0
70648-26-9	1,2,3,4,7,8-HxCDF		1040	pg/L	6.82	50.0
57117-44-9	1,2,3,6,7,8-HxCDF		1090	pg/L	7.00	50.0
60851-34-5	2,3,4,6,7,8-HxCDF		1040	pg/L	7.24	50.0
72918-21-9	1,2,3,7,8,9-HxCDF		1020	pg/L	9.28	50.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		998	pg/L	6.56	50.0
55673-89-7	1,2,3,4,7,8,9-HpCDF		1010	pg/L	9.70	50.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2100	pg/L	15.2	100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1700	2000	pg/L	85.1	(20%-175%)
13C-1,2,3,7,8-PeCDD		1890	2000	pg/L	94.4	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		1550	2000	pg/L	77.7	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		1700	2000	pg/L	84.9	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		1640	2000	pg/L	82.0	(22%-166%)
13C-OCDD		3090	4000	pg/L	77.3	(13%-199%)
13C-2,3,7,8-TCDF		1580	2000	pg/L	79.1	(22%-152%)
13C-1,2,3,7,8-PeCDF		1910	2000	pg/L	95.5	(21%-192%)
13C-2,3,4,7,8-PeCDF		1960	2000	pg/L	98.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		1570	2000	pg/L	78.5	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		1550	2000	pg/L	77.4	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		1600	2000	pg/L	80.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		1700	2000	pg/L	85.2	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		1580	2000	pg/L	78.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		1630	2000	pg/L	81.7	(20%-186%)
37Cl-2,3,7,8-TCDD		196	200	pg/L	98.2	(31%-191%)

**Comments:**

**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020294		<b>Matrix:</b> WATER
<b>Client Sample:</b> QC for batch 36477		
<b>Client ID:</b> LCSDD for batch 36477		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36481	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 12/20/2017 16:35	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A18DEC17A_6-2		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36477	<b>Prep Method:</b> SW846 3520C	
<b>Prep Date:</b> 18-DEC-17	<b>Prep Aliquot:</b> 1000 mL	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		226	pg/L	2.04	10.0
40321-76-4	1,2,3,7,8-PeCDD		1040	pg/L	2.08	50.0
39227-28-6	1,2,3,4,7,8-HxCDD		1040	pg/L	7.50	50.0
57653-85-7	1,2,3,6,7,8-HxCDD		982	pg/L	6.94	50.0
19408-74-3	1,2,3,7,8,9-HxCDD		1010	pg/L	7.38	50.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		1020	pg/L	6.60	50.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2030	pg/L	18.2	100
51207-31-9	2,3,7,8-TCDF		184	pg/L	3.02	10.0
57117-41-6	1,2,3,7,8-PeCDF		992	pg/L	4.26	50.0
57117-31-4	2,3,4,7,8-PeCDF		999	pg/L	4.08	50.0
70648-26-9	1,2,3,4,7,8-HxCDF		1020	pg/L	7.68	50.0
57117-44-9	1,2,3,6,7,8-HxCDF		1070	pg/L	7.46	50.0
60851-34-5	2,3,4,6,7,8-HxCDF		1040	pg/L	7.54	50.0
72918-21-9	1,2,3,7,8,9-HxCDF		985	pg/L	10.6	50.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		1000	pg/L	6.56	50.0
55673-89-7	1,2,3,4,7,8,9-HpCDF		1010	pg/L	9.62	50.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2080	pg/L	12.5	100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1730	2000	pg/L	86.7	(20%-175%)
13C-1,2,3,7,8-PeCDD		1930	2000	pg/L	96.5	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		1560	2000	pg/L	78.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		1680	2000	pg/L	84.0	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		1630	2000	pg/L	81.4	(22%-166%)
13C-OCDD		3110	4000	pg/L	77.8	(13%-199%)
13C-2,3,7,8-TCDF		1550	2000	pg/L	77.6	(22%-152%)
13C-1,2,3,7,8-PeCDF		1930	2000	pg/L	96.5	(21%-192%)
13C-2,3,4,7,8-PeCDF		1950	2000	pg/L	97.3	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		1550	2000	pg/L	77.7	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		1580	2000	pg/L	79.1	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		1580	2000	pg/L	78.9	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		1690	2000	pg/L	84.6	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		1570	2000	pg/L	78.4	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		1630	2000	pg/L	81.7	(20%-186%)
37Cl-2,3,7,8-TCDD		200	200	pg/L	99.8	(31%-191%)

**Comments:**

**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020427		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> MB for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 22:09	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.173	pg/g	0.173	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	0.0632	pg/g	0.0632	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.0842	pg/g	0.0842	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.0834	pg/g	0.0834	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.0858	pg/g	0.0858	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.116	pg/g	0.0934	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.766	pg/g	0.214	10.0
51207-31-9	2,3,7,8-TCDF	U	0.238	pg/g	0.238	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	0.0658	pg/g	0.0658	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	0.059	pg/g	0.059	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.060	pg/g	0.0536	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.0552	pg/g	0.0552	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.060	pg/g	0.0536	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	JK	0.082	pg/g	0.069	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	JK	0.066	pg/g	0.0502	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.0784	pg/g	0.0784	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	0.187	pg/g	0.187	10.0
41903-57-5	Total TeCDD	U	0.173	pg/g	0.173	1.00
36088-22-9	Total PeCDD	U	0.0632	pg/g	0.0632	5.00
34465-46-8	Total HxCDD	U	0.0834	pg/g	0.0834	5.00
37871-00-4	Total HpCDD	JK	0.116	pg/g	0.0934	5.00
30402-14-3	Total TeCDF	U	0.238	pg/g	0.238	1.00
30402-15-4	Total PeCDF	U	0.059	pg/g	0.059	5.00
55684-94-1	Total HxCDF	JK	0.202	pg/g	0.0536	5.00
38998-75-3	Total HpCDF	JK	0.066	pg/g	0.0502	5.00
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0222	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.178	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		108	200	pg/g	54.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		197	200	pg/g	98.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		156	200	pg/g	78.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		156	200	pg/g	78.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		168	200	pg/g	84.2	(23%-140%)
13C-OCDD		327	400	pg/g	81.9	(17%-157%)
13C-2,3,7,8-TCDF		72.5	200	pg/g	36.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		189	200	pg/g	94.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		189	200	pg/g	94.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		155	200	pg/g	77.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		145	200	pg/g	72.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		155	200	pg/g	77.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		165	200	pg/g	82.3	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020427		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> MB for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 22:09	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%      Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			159	200	pg/g	79.4      (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			158	200	pg/g	78.9      (26%-138%)
37Cl-2,3,7,8-TCDD			11.3	20.0	pg/g	56.4      (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020428		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> LCS for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 20:33	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-1		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.9	pg/g	0.288	1.00
40321-76-4	1,2,3,7,8-PeCDD		100	pg/g	0.138	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.7	pg/g	0.222	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		97.2	pg/g	0.224	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		105	pg/g	0.230	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		94.5	pg/g	0.386	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		198	pg/g	0.546	10.0
51207-31-9	2,3,7,8-TCDF		17.3	pg/g	0.336	1.00
57117-41-6	1,2,3,7,8-PeCDF		93.3	pg/g	0.256	5.00
57117-31-4	2,3,4,7,8-PeCDF		91.2	pg/g	0.214	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		95.8	pg/g	0.344	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		99.1	pg/g	0.358	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		95.9	pg/g	0.350	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		94.8	pg/g	0.460	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		94.5	pg/g	0.250	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		96.4	pg/g	0.404	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		181	pg/g	0.470	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		93.0	200	pg/g	46.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		182	200	pg/g	91.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		157	200	pg/g	78.5	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		151	200	pg/g	75.6	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		169	200	pg/g	84.6	(22%-166%)
13C-OCDD		336	400	pg/g	83.9	(13%-199%)
13C-2,3,7,8-TCDF		65.6	200	pg/g	32.8	(22%-152%)
13C-1,2,3,7,8-PeCDF		164	200	pg/g	82.0	(21%-192%)
13C-2,3,4,7,8-PeCDF		170	200	pg/g	85.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		145	200	pg/g	72.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		138	200	pg/g	69.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		156	200	pg/g	78.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		154	200	pg/g	77.2	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		160	200	pg/g	79.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		158	200	pg/g	79.2	(20%-186%)
37Cl-2,3,7,8-TCDD		9.55	20.0	pg/g	47.8	(31%-191%)

**Comments:**

**U** Analyte was analyzed for, but not detected above the specified detection limit.



**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

<b>SDG Number:</b> A7L0343	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020429		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> LCSD for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 21:21	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-2		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.3	pg/g	0.248	1.00
40321-76-4	1,2,3,7,8-PeCDD		101	pg/g	0.121	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.2	pg/g	0.193	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		97.1	pg/g	0.181	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		102	pg/g	0.192	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		96.0	pg/g	0.430	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		196	pg/g	0.620	10.0
51207-31-9	2,3,7,8-TCDF		17.3	pg/g	0.288	1.00
57117-41-6	1,2,3,7,8-PeCDF		93.7	pg/g	0.232	5.00
57117-31-4	2,3,4,7,8-PeCDF		92.6	pg/g	0.210	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		92.7	pg/g	0.292	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		98.5	pg/g	0.286	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		94.9	pg/g	0.300	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		94.5	pg/g	0.376	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		92.6	pg/g	0.274	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		94.3	pg/g	0.404	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		181	pg/g	0.474	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		113	200	pg/g	56.3	(20%-175%)
13C-1,2,3,7,8-PeCDD		212	200	pg/g	106	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		176	200	pg/g	87.9	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		164	200	pg/g	82.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		180	200	pg/g	90.2	(22%-166%)
13C-OCDD		355	400	pg/g	88.7	(13%-199%)
13C-2,3,7,8-TCDF		74.7	200	pg/g	37.3	(22%-152%)
13C-1,2,3,7,8-PeCDF		197	200	pg/g	98.7	(21%-192%)
13C-2,3,4,7,8-PeCDF		202	200	pg/g	101	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		167	200	pg/g	83.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		153	200	pg/g	76.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		169	200	pg/g	84.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		174	200	pg/g	86.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		170	200	pg/g	84.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		173	200	pg/g	86.3	(20%-186%)
37Cl-2,3,7,8-TCDD		11.7	20.0	pg/g	58.7	(31%-191%)

**Comments:**

U Analyte was analyzed for, but not detected above the specified detection limit.

January 24, 2018

Mr. Philip Nerenberg  
Apex Laboratories  
12232 S.W. Garden Place  
Portland, Oregon 97223

Re: 2018 DXN & PCB IDIQ  
Work Order: 11797  
SDG: A7L0431

Dear Mr. Nerenberg:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on December 19, 2017. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynde Larkins  
Project Manager

Enclosures

SUBCONTRACT ORDER

MF 12-18-17

Apex Laboratories

A7L0431

CFA WO#11797

SENDING LABORATORY:

RECEIVING LABORATORY:

Apex Laboratories  
12232 S.W. Garden Place  
Tigard, OR 97223  
Phone: (503) 718-2323  
Fax: (503) 718-0333  
Project Manager: Philip Nerenberg

Cape Fear Analytical, LLC  
3306 Kitty Hawk Rd Suite 120  
Wilmington, NC 28405  
Phone : (910) 795-0421  
Fax: -

Sample Name: GP15-S-3.0 Soil Sampled: 12/14/17 12:20 (A7L0431-17)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB)	12/29/17 17:00	06/12/18 12:20	
<i>Containers Supplied:</i> (C)4 oz Glass Jar			

Sample Name: GP15-S-8.0 Soil Sampled: 12/14/17 12:40 (A7L0431-19)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB)	12/29/17 17:00	06/12/18 12:40	
<i>Containers Supplied:</i> (B)2 oz Glass Jar			

Std TAT

3.0  
-1.9  
---  
1.1

12/18/17

Fed Ex (Shipper)

Released By	Date	Received By	Date
	12/18/17	W.M.C CFA	19 Dec 17 10:45
Released By	Date	Received By	Date
Fed Ex (Shipper)			

**SAMPLE RECEIPT CHECKLIST**  
Cape Fear Analytical

Client: <b>APEX</b>	Work Order: <b>11797</b>
Shipping Company: <b>FedEx</b>	Date/Time Received: <b>19 DEC 17 1045</b>

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?			<input checked="" type="checkbox"/>
Samples < 2x background?			<input checked="" type="checkbox"/>

\* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: \_\_\_\_\_

#	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken    damaged container    leaking container    other(describe)
2	Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3	Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags    blue ice    dry ice    none    other (describe) <b>3.0° - 1.9 = 1.1°C</b>
4	Aqueous samples found to have visible solids?		<input checked="" type="checkbox"/>		Sample IDs, containers affected:
5	Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed:  If preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected:  If preservative added, Lot#:
7	Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			List type and number of containers / Sample IDs, containers affected: <b>1 - 4oz clear and 1 - 2oz clear</b>
11	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:

Checklist performed by: Initials: CF Date: 19 DEC 17

# **High Resolution Dioxins and Furans Analysis**

# Case Narrative

**HDOX Case Narrative  
Apex Laboratories (APEX)  
SDG A7L0431  
Work Order 11797**

**Method/Analysis Information**

**Product:** Dioxins/Furans by EPA Method 1613B in Solids  
Analytical Method: EPA Method 1613B  
Extraction Method: SW846 3540C  
Analytical Batch Number: 36651  
Clean Up Batch Number: 36650  
Extraction Batch Number: 36649

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in Method 1613B:

<b>Sample ID</b>	<b>Client ID</b>
11797001	GP15-S-3.0
11797002	GP15-S-8.0
12020427	Method Blank (MB)
12020428	Laboratory Control Sample (LCS)
12020429	Laboratory Control Sample Duplicate (LCSD)

The samples in this SDG were analyzed on a "dry weight" basis.

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 14.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

**Calibration Information**

**Initial Calibration**

All initial calibration requirements have been met for this sample delivery group (SDG).

**Continuing Calibration Verification (CCV) Requirements**

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

## **Quality Control (QC) Information**

### **Certification Statement**

The test results presented in this document are certified to meet all requirements of the 2009 TNI Standard.

### **Method Blank (MB) Statement**

The MB(s) analyzed with this SDG met the acceptance criteria.

### **Surrogate Recoveries**

Two surrogates recovered outside the acceptance limits. Recoveries were >10% and ion ratio and signal to noise criteria were met. In some instances, EDLs may be higher than the PQLs. 11797002 (GP15-S-8.0)- Batch 36651.

### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recoveries met the acceptance limits.

### **Laboratory Control Sample Duplicate (LCSD) Recovery**

The LCSD spike recoveries met the acceptance limits.

### **LCS/LCSD Relative Percent Difference (RPD) Statement**

The RPD(s) between the LCS and LCSD met the acceptance limits.

### **QC Sample Designation**

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

## **Technical Information**

### **Holding Time Specifications**

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

### **Preparation/Analytical Method Verification**

The sample was extracted using a 1g aliquot due to an oily odor. 11797002 (GP15-S-8.0)- Batch 36651.

### **Sample Dilutions**

The samples in this SDG did not require dilutions.

### **Sample Re-extraction/Re-analysis**

The samples were re-extracted due to surrogate failures. The issue was traced to a failing laboratory reagent. Batch 36651.



## **Miscellaneous Information**

### **Nonconformance (NCR) Documentation**

A NCR was not required for this SDG.

### **Manual Integrations**

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

### **Sample preparation**

No difficulties were encountered during sample preparation.

## **Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

# **Sample Data Summary**

## Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

### Qualifier Definition Report for

APEX001 Apex Laboratories

Client SDG: A7L0431 CFA Work Order: 11797

#### The Qualifiers in this report are defined as follows:

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- U Analyte was analyzed for, but not detected above the specified detection limit.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

#### Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Heather Patterson

Date: 24 JAN 2018

Title: Group Leader

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0431	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11797001	<b>Date Collected:</b> 12/14/2017 12:20	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/19/2017 10:45	<b>%Moisture:</b> 7.2
<b>Client ID:</b> GP15-S-3.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 22:52	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-10		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10.79 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.15	pg/g	0.150	0.999
40321-76-4	1,2,3,7,8-PeCDD	U	0.0889	pg/g	0.0889	4.99
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.17	pg/g	0.170	4.99
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.156	pg/g	0.156	4.99
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.167	pg/g	0.167	4.99
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	2.10	pg/g	0.142	4.99
3268-87-9	1,2,3,4,6,7,8,9-OCDD		23.2	pg/g	0.294	9.99
51207-31-9	2,3,7,8-TCDF	U	0.238	pg/g	0.238	0.999
57117-41-6	1,2,3,7,8-PeCDF	U	0.133	pg/g	0.133	4.99
57117-31-4	2,3,4,7,8-PeCDF	U	0.124	pg/g	0.124	4.99
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.145	pg/g	0.145	4.99
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.134	pg/g	0.134	4.99
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.137	pg/g	0.137	4.99
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.179	pg/g	0.179	4.99
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.639	pg/g	0.200	4.99
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.3	pg/g	0.300	4.99
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.787	pg/g	0.240	9.99
41903-57-5	Total TeCDD	U	0.15	pg/g	0.150	0.999
36088-22-9	Total PeCDD	U	0.0889	pg/g	0.0889	4.99
34465-46-8	Total HxCDD	JK	0.539	pg/g	0.156	4.99
37871-00-4	Total HpCDD		5.70	pg/g	0.142	4.99
30402-14-3	Total TeCDF	K	1.47	pg/g	0.238	0.999
30402-15-4	Total PeCDF	JK	0.677	pg/g	0.026	4.99
55684-94-1	Total HxCDF	J	0.741	pg/g	0.134	4.99
38998-75-3	Total HpCDF	JK	1.28	pg/g	0.200	4.99
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0346	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.242	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		111	200	pg/g	55.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		197	200	pg/g	98.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		159	200	pg/g	79.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		150	200	pg/g	75.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		168	200	pg/g	84.2	(23%-140%)
13C-OCDD		327	400	pg/g	81.8	(17%-157%)
13C-2,3,7,8-TCDF		73.5	200	pg/g	36.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		183	200	pg/g	91.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		184	200	pg/g	91.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		149	200	pg/g	74.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		141	200	pg/g	70.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		151	200	pg/g	75.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		163	200	pg/g	81.6	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0431	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11797001	<b>Date Collected:</b> 12/14/2017 12:20	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/19/2017 10:45	<b>%Moisture:</b> 7.2
<b>Client ID:</b> GP15-S-3.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 22:52	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-10		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10.79 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			155	200	pg/g	77.7 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			161	200	pg/g	80.8 (26%-138%)
37Cl-2,3,7,8-TCDD			11.3	20.0	pg/g	56.5 (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0431	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11797002	<b>Date Collected:</b> 12/14/2017 12:40	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/19/2017 10:45	<b>%Moisture:</b> 15.4
<b>Client ID:</b> GP15-S-8.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/21/2018 23:40	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-11		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 1.03 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	2.17	pg/g	2.17	11.5
40321-76-4	1,2,3,7,8-PeCDD	U	1.11	pg/g	1.11	57.4
39227-28-6	1,2,3,4,7,8-HxCDD	U	1.45	pg/g	1.45	57.4
57653-85-7	1,2,3,6,7,8-HxCDD	U	1.44	pg/g	1.44	57.4
19408-74-3	1,2,3,7,8,9-HxCDD	U	1.48	pg/g	1.48	57.4
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	2.34	pg/g	1.78	57.4
3268-87-9	1,2,3,4,6,7,8,9-OCDD	JK	11.6	pg/g	4.02	115
51207-31-9	2,3,7,8-TCDF	U	3.84	pg/g	3.84	11.5
57117-41-6	1,2,3,7,8-PeCDF	U	0.962	pg/g	0.962	57.4
57117-31-4	2,3,4,7,8-PeCDF	U	0.808	pg/g	0.808	57.4
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.452	pg/g	0.452	57.4
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.455	pg/g	0.455	57.4
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.459	pg/g	0.459	57.4
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.576	pg/g	0.576	57.4
67562-39-4	1,2,3,4,6,7,8-HpCDF	JK	0.964	pg/g	0.331	57.4
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.508	pg/g	0.508	57.4
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	1.24	pg/g	1.24	115
41903-57-5	Total TeCDD	U	2.17	pg/g	2.17	11.5
36088-22-9	Total PeCDD	U	1.11	pg/g	1.11	57.4
34465-46-8	Total HxCDD	U	1.44	pg/g	1.44	57.4
37871-00-4	Total HpCDD	JK	2.34	pg/g	1.78	57.4
30402-14-3	Total TeCDF	U	3.84	pg/g	3.84	11.5
30402-15-4	Total PeCDF	U	0.303	pg/g	0.303	57.4
55684-94-1	Total HxCDF	U	0.452	pg/g	0.452	57.4
38998-75-3	Total HpCDF	JK	0.964	pg/g	0.331	57.4
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0365	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		2.32	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		793	2300	pg/g	34.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		2030	2300	pg/g	88.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1760	2300	pg/g	76.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1780	2300	pg/g	77.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		2030	2300	pg/g	88.3	(23%-140%)
13C-OCDD		3880	4590	pg/g	84.5	(17%-157%)
13C-2,3,7,8-TCDF		463	2300	pg/g	20.2	* (24%-169%)
13C-1,2,3,7,8-PeCDF		1700	2300	pg/g	73.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		1800	2300	pg/g	78.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1720	2300	pg/g	75.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1630	2300	pg/g	71.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1810	2300	pg/g	78.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1920	2300	pg/g	83.6	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 2 of 2

SDG Number: A7L0431	Client: APEX001	Project: APEX00217
Lab Sample ID: 11797002	Date Collected: 12/14/2017 12:40	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 12/19/2017 10:45	%Moisture: 15.4
Client ID: GP15-S-8.0		Prep Basis: Dry Weight
Batch ID: 36651	Method: EPA Method 1613B	
Run Date: 01/21/2018 23:40	Analyst: MJC	Instrument: HRP750
Data File: A21JAN18A-11		Dilution: 1
Prep Batch: 36649	Prep Method: SW846 3540C	
Prep Date: 11-JAN-18	Prep Aliquot: 1.03 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		Qual	Result	Nominal	Units	Recovery%      Acceptable Limits
	13C-1,2,3,4,6,7,8-HpCDF		1850	2300	pg/g	80.8      (28%-143%)
	13C-1,2,3,4,7,8,9-HpCDF		1920	2300	pg/g	83.8      (26%-138%)
	37Cl-2,3,7,8-TCDD		79.8	230	pg/g	34.8 *      (35%-197%)

**Comments:**

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

# **Quality Control Summary**



**Hi-Res Dioxins/Furans**  
**Surrogate Recovery Report**

SDG Number: A7L0431

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12020428	LCS for batch 36649	13C-2,3,7,8-TCDD		46.5	(20%-175%)
		13C-1,2,3,7,8-PeCDD		91.1	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		78.5	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		75.6	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		84.6	(22%-166%)
		13C-OCDD		83.9	(13%-199%)
		13C-2,3,7,8-TCDF		32.8	(22%-152%)
		13C-1,2,3,7,8-PeCDF		82.0	(21%-192%)
		13C-2,3,4,7,8-PeCDF		85.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		72.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		69.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		78.0	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		77.2	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		79.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		79.2	(20%-186%)
		37Cl-2,3,7,8-TCDD		47.8	(31%-191%)
12020429	LCSD for batch 36649	13C-2,3,7,8-TCDD		56.3	(20%-175%)
		13C-1,2,3,7,8-PeCDD		106	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		87.9	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		82.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		90.2	(22%-166%)
		13C-OCDD		88.7	(13%-199%)
		13C-2,3,7,8-TCDF		37.3	(22%-152%)
		13C-1,2,3,7,8-PeCDF		98.7	(21%-192%)
		13C-2,3,4,7,8-PeCDF		101	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		83.4	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		76.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		84.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		86.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		84.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		86.3	(20%-186%)
		37Cl-2,3,7,8-TCDD		58.7	(31%-191%)
12020427	MB for batch 36649	13C-2,3,7,8-TCDD		54.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		98.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		78.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		78.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.2	(23%-140%)
		13C-OCDD		81.9	(17%-157%)
		13C-2,3,7,8-TCDF		36.3	(24%-169%)
		13C-1,2,3,7,8-PeCDF		94.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		94.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		72.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		56.4	(35%-197%)
11797001	GP15-S-3.0	13C-2,3,7,8-TCDD		55.7	(25%-164%)

**Hi-Res Dioxins/Furans  
Surrogate Recovery Report**

SDG Number: A7L0431

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
11797001	GP15-S-3.0	13C-1,2,3,7,8-PeCDD		98.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		79.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		75.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.2	(23%-140%)
		13C-OCDD		81.8	(17%-157%)
		13C-2,3,7,8-TCDF		36.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		91.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		91.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		74.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		70.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		75.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		81.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		77.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		80.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		56.5	(35%-197%)
11797002	GP15-S-8.0	13C-2,3,7,8-TCDD		34.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		88.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		76.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		77.6	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		88.3	(23%-140%)
		13C-OCDD		84.5	(17%-157%)
		13C-2,3,7,8-TCDF		20.2 *	(24%-169%)
		13C-1,2,3,7,8-PeCDF		73.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		78.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		75.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		71.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		83.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		83.8	(26%-138%)
37Cl-2,3,7,8-TCDD		34.8 *	(35%-197%)		

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

**SDG Number:** A7L0431  
**Client ID:** LCS for batch 36649  
**Lab Sample ID:** 12020428  
**Instrument:** HRP750  
**Analyst:** MJC

**Sample Type:** Laboratory Control Sample  
**Matrix:** SOIL  
**Analysis Date:** 01/19/2018 20:33  
**Prep Batch ID:** 36649  
**Batch ID:** 36651  
**Dilution:** 1

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.9	105	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	100	100	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	95.7	95.7	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	97.2	97.2	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	105	105	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	94.5	94.5	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	198	98.9	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	17.3	86.4	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	93.3	93.3	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	91.2	91.2	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	95.8	95.8	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	99.1	99.1	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	95.9	95.9	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	94.8	94.8	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	94.5	94.5	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	96.4	96.4	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	181	90.7	63-170

**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

SDG Number: A7L0431

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 36649

Matrix: SOIL

Lab Sample ID: 12020429

Instrument: HRP750

Analysis Date: 01/19/2018 21:21

Dilution: 1

Analyst: MJC

Prep Batch ID: 36649

Batch ID: 36651

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.3	101	67-158	3.13	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	101	101	70-142	1.18	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	95.2	95.2	70-164	0.503	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	97.1	97.1	76-134	0.115	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	102	102	64-162	2.47	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	96.0	96	70-140	1.57	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	196	97.9	78-144	1.04	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	17.3	86.7	75-158	0.347	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	93.7	93.7	80-134	0.426	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	92.6	92.6	68-160	1.50	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	92.7	92.7	72-134	3.22	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	98.5	98.5	84-130	0.619	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	94.9	94.9	70-156	1.02	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	94.5	94.5	78-130	0.287	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	92.6	92.6	82-122	2.02	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	94.3	94.3	78-138	2.24	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	181	90.7	63-170	0.00221	0-20

## Method Blank Summary

Page 1 of 1

SDG Number: A7L0431  
Client ID: MB for batch 36649  
Lab Sample ID: 12020427  
Column:

Client: APEX001  
Instrument ID: HRP750  
Prep Date: 11-JAN-18

Matrix: SOIL  
Data File: A19JAN18A\_2-3  
Analyzed: 01/19/18 22:09

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 36649	12020428	A19JAN18A_2-1	01/19/18	2033
02 LCSD for batch 36649	12020429	A19JAN18A_2-2	01/19/18	2121
03 GP15-S-3.0	11797001	A21JAN18A-10	01/21/18	2252
04 GP15-S-8.0	11797002	A21JAN18A-11	01/21/18	2340

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0431	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020427		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> MB for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 22:09	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.173	pg/g	0.173	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	0.0632	pg/g	0.0632	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.0842	pg/g	0.0842	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.0834	pg/g	0.0834	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.0858	pg/g	0.0858	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.116	pg/g	0.0934	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.766	pg/g	0.214	10.0
51207-31-9	2,3,7,8-TCDF	U	0.238	pg/g	0.238	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	0.0658	pg/g	0.0658	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	0.059	pg/g	0.059	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.060	pg/g	0.0536	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.0552	pg/g	0.0552	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.060	pg/g	0.0536	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	JK	0.082	pg/g	0.069	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	JK	0.066	pg/g	0.0502	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.0784	pg/g	0.0784	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	0.187	pg/g	0.187	10.0
41903-57-5	Total TeCDD	U	0.173	pg/g	0.173	1.00
36088-22-9	Total PeCDD	U	0.0632	pg/g	0.0632	5.00
34465-46-8	Total HxCDD	U	0.0834	pg/g	0.0834	5.00
37871-00-4	Total HpCDD	JK	0.116	pg/g	0.0934	5.00
30402-14-3	Total TeCDF	U	0.238	pg/g	0.238	1.00
30402-15-4	Total PeCDF	U	0.059	pg/g	0.059	5.00
55684-94-1	Total HxCDF	JK	0.202	pg/g	0.0536	5.00
38998-75-3	Total HpCDF	JK	0.066	pg/g	0.0502	5.00
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0222	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.178	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		108	200	pg/g	54.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		197	200	pg/g	98.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		156	200	pg/g	78.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		156	200	pg/g	78.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		168	200	pg/g	84.2	(23%-140%)
13C-OCDD		327	400	pg/g	81.9	(17%-157%)
13C-2,3,7,8-TCDF		72.5	200	pg/g	36.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		189	200	pg/g	94.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		189	200	pg/g	94.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		155	200	pg/g	77.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		145	200	pg/g	72.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		155	200	pg/g	77.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		165	200	pg/g	82.3	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0431	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020427		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> MB for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 22:09	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%      Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			159	200	pg/g	79.4      (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			158	200	pg/g	78.9      (26%-138%)
37Cl-2,3,7,8-TCDD			11.3	20.0	pg/g	56.4      (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

<b>SDG Number:</b> A7L0431	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020428		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> LCS for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 20:33	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-1		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.9	pg/g	0.288	1.00
40321-76-4	1,2,3,7,8-PeCDD		100	pg/g	0.138	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.7	pg/g	0.222	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		97.2	pg/g	0.224	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		105	pg/g	0.230	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		94.5	pg/g	0.386	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		198	pg/g	0.546	10.0
51207-31-9	2,3,7,8-TCDF		17.3	pg/g	0.336	1.00
57117-41-6	1,2,3,7,8-PeCDF		93.3	pg/g	0.256	5.00
57117-31-4	2,3,4,7,8-PeCDF		91.2	pg/g	0.214	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		95.8	pg/g	0.344	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		99.1	pg/g	0.358	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		95.9	pg/g	0.350	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		94.8	pg/g	0.460	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		94.5	pg/g	0.250	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		96.4	pg/g	0.404	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		181	pg/g	0.470	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		93.0	200	pg/g	46.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		182	200	pg/g	91.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		157	200	pg/g	78.5	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		151	200	pg/g	75.6	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		169	200	pg/g	84.6	(22%-166%)
13C-OCDD		336	400	pg/g	83.9	(13%-199%)
13C-2,3,7,8-TCDF		65.6	200	pg/g	32.8	(22%-152%)
13C-1,2,3,7,8-PeCDF		164	200	pg/g	82.0	(21%-192%)
13C-2,3,4,7,8-PeCDF		170	200	pg/g	85.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		145	200	pg/g	72.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		138	200	pg/g	69.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		156	200	pg/g	78.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		154	200	pg/g	77.2	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		160	200	pg/g	79.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		158	200	pg/g	79.2	(20%-186%)
37Cl-2,3,7,8-TCDD		9.55	20.0	pg/g	47.8	(31%-191%)

**Comments:**

U Analyte was analyzed for, but not detected above the specified detection limit.



**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

<b>SDG Number:</b> A7L0431	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020429		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> LCSD for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 21:21	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-2		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.3	pg/g	0.248	1.00
40321-76-4	1,2,3,7,8-PeCDD		101	pg/g	0.121	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.2	pg/g	0.193	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		97.1	pg/g	0.181	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		102	pg/g	0.192	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		96.0	pg/g	0.430	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		196	pg/g	0.620	10.0
51207-31-9	2,3,7,8-TCDF		17.3	pg/g	0.288	1.00
57117-41-6	1,2,3,7,8-PeCDF		93.7	pg/g	0.232	5.00
57117-31-4	2,3,4,7,8-PeCDF		92.6	pg/g	0.210	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		92.7	pg/g	0.292	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		98.5	pg/g	0.286	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		94.9	pg/g	0.300	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		94.5	pg/g	0.376	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		92.6	pg/g	0.274	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		94.3	pg/g	0.404	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		181	pg/g	0.474	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		113	200	pg/g	56.3	(20%-175%)
13C-1,2,3,7,8-PeCDD		212	200	pg/g	106	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		176	200	pg/g	87.9	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		164	200	pg/g	82.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		180	200	pg/g	90.2	(22%-166%)
13C-OCDD		355	400	pg/g	88.7	(13%-199%)
13C-2,3,7,8-TCDF		74.7	200	pg/g	37.3	(22%-152%)
13C-1,2,3,7,8-PeCDF		197	200	pg/g	98.7	(21%-192%)
13C-2,3,4,7,8-PeCDF		202	200	pg/g	101	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		167	200	pg/g	83.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		153	200	pg/g	76.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		169	200	pg/g	84.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		174	200	pg/g	86.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		170	200	pg/g	84.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		173	200	pg/g	86.3	(20%-186%)
37Cl-2,3,7,8-TCDD		11.7	20.0	pg/g	58.7	(31%-191%)

**Comments:**

**U** Analyte was analyzed for, but not detected above the specified detection limit.

January 25, 2018

Mr. Philip Nerenberg  
Apex Laboratories  
12232 S.W. Garden Place  
Portland, Oregon 97223

Re: 2018 DXN & PCB IDIQ  
Work Order: 11798  
SDG: A7L0343\_2

Dear Mr. Nerenberg:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on December 19, 2017. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynde Larkins  
Project Manager

Enclosures

**SUBCONTRACT ORDER**

Apex Laboratories

A7L0343

CFA NO #11798

**Sample Name: GP09-S-2.5** Soil Sampled: 12/12/17 14:15 (A7L0343-07)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB)	12/27/17 17:00	06/10/18 14:15	
<i>Containers Supplied:</i> (C)4 oz Glass Jar			

**Sample Name: GP09-S-8.0** Soil Sampled: 12/12/17 14:25 (A7L0343-08)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB)	12/27/17 17:00	06/10/18 14:25	
<i>Containers Supplied:</i> (C)4 oz Glass Jar			
<i>Already Sent</i>			

**Sample Name: GP08-S-4.0** Soil Sampled: 12/12/17 15:05 (A7L0343-09)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB)	12/27/17 17:00	06/10/18 15:05	Added 12/15
<i>Containers Supplied:</i> (C)4 oz Glass Jar			

**Sample Name: GP08-W-6.5** Water Sampled: 12/12/17 15:15 (A7L0343-10)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB)	12/27/17 17:00	06/10/18 15:15	Added 12/15
<i>Containers Supplied:</i> (J)1 L Amber Glass - Non Preserved			

STD TAT

3.0  
1.9  
1.1

*[Signature]* 12/18/17

Fed Ex (Shipper)

Released By Date Received By Date

Fed Ex (Shipper)

*Mike CFA* 19 Dec 17 10:45

Released By Date Received By Date

SUBCONTRACT ORDER

Apex Laboratories

A7L0343

LD  
12/15/17  
WO# 11798

SENDING LABORATORY:

Apex Laboratories  
12232 S.W. Garden Place  
Tigard, OR 97223  
Phone: (503) 718-2323  
Fax: (503) 718-0333  
Project Manager: Philip Nerenberg

RECEIVING LABORATORY:

Cape Fear Analytical, LLC  
3306 Kitty Hawk Rd Suite 120  
Wilmington, NC 28405  
Phone : (910) 795-0421  
Fax: -

**Sample Name: GP03-W-33.0** **Water** **Sampled: 12/12/17 11:00** (A7L0343-01)

Analysis	Due	Expires	Comments
<b>1613B Dioxins and Furans (SUB)</b>	12/27/17 17:00	06/10/18 11:00	
<i>Containers Supplied:</i>			
(I) 1 L Amber Glass - Non Preserved			
(J) 1 L Amber Glass - Non Preserved			

**Sample Name: GP04-S-1.0** **Soil** **Sampled: 12/12/17 13:25** (A7L0343-02)

Analysis	Due	Expires	Comments
<b>1613B Dioxins and Furans (SUB)</b>	12/27/17 17:00	06/10/18 13:25	
<i>Containers Supplied:</i>			
(C) 4 oz Glass Jar			

**Sample Name: GP04-S-6.0** **Soil** **Sampled: 12/12/17 13:30** (A7L0343-03)

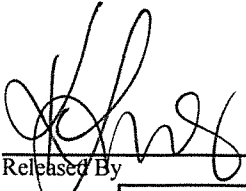
Analysis	Due	Expires	Comments
<b>1613B Dioxins and Furans (SUB)</b>	12/27/17 17:00	06/10/18 13:30	
<i>Containers Supplied:</i>			
(B) 4 oz Glass Jar			

Already Sent

**Sample Name: GP04-S-13.0** **Soil** **Sampled: 12/12/17 13:40** (A7L0343-04)

Analysis	Due	Expires	Comments
<b>1613B Dioxins and Furans (SUB)</b>	12/27/17 17:00	06/10/18 13:40	
<i>Containers Supplied:</i>			
(C) 4 oz Glass Jar			

3.0  
1.9  
1.1

Released By:  Date: 12/18/17  
 Received By: Fed Ex (Shipper) Date: 19 Dec 17 10:45  
 Released By: Fed Ex (Shipper) Date: \_\_\_\_\_  
 Received By: U.W. (CFA) Date: \_\_\_\_\_

**SAMPLE RECEIPT CHECKLIST**  
Cape Fear Analytical

Client: <b>APEX</b>	Work Order: <b>11798</b>
Shipping Company: <b>FedEx</b>	Date/Time Received: <b>19 Dec 17 1045</b>

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?		✓	
Samples < 2x background?		✓	

\* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: \_\_\_\_\_

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	✓			
3 Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: ice bags blue ice dry ice none other (describe) <b>30°-1.9 = 1.1°C</b>
4 Aqueous samples found to have visible solids?		✓		Sample IDs, containers affected: <b>OILY sample</b>
5 Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: <b>pH = 7</b> If preservative added, Lot#:
6 Samples requiring preservation have no residual chlorine?	✓			Sample IDs, containers affected:  If preservative added, Lot#:
7 Samples received within holding time?	✓			Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
10 Number of containers received match number indicated on COC?	✓			List type and number of containers / Sample IDs, containers affected: <b>1- 1LNMA and 1- 4oz clear jar</b>
11 COC form is properly signed in relinquished/received sections?	✓			

Comments:

Checklist performed by: Initials: CP Date: 19 Dec 17

# **High Resolution Dioxins and Furans Analysis**

# Case Narrative

**HDOX Case Narrative  
Apex Laboratories (APEX)  
SDG A7L0343\_2  
Work Order 11798**

**Method/Analysis Information**

**Product:** Dioxins/Furans by EPA Method 1613B  
**Analytical Method:** EPA Method 1613B  
**Extraction Method:** SW846 3520C, 3540C  
**Analytical Batch Number:** 36545, 36651  
**Clean Up Batch Number:** 36542, 36650  
**Extraction Batch Number:** 36541, 36649

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in Method 1613B:

<b>Sample ID</b>	<b>Client ID</b>
11798001	GP08-S-4.0
11798002	GP08-W-6.5
12020338	Method Blank (MB)
12020339	Laboratory Control Sample (LCS)
12020340	Laboratory Control Sample Duplicate (LCSD)
12020427	Method Blank (MB)
12020428	Laboratory Control Sample (LCS)
12020429	Laboratory Control Sample Duplicate (LCSD)

Sample 11798 001 in this SDG was analyzed on a "dry weight" basis. Sample 11798 002 in this SDG was analyzed on an "as received" basis.

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 14.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

**Calibration Information**

**Initial Calibration**



All initial calibration requirements have been met for this sample delivery group (SDG).

### **Continuing Calibration Verification (CCV) Requirements**

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

### **Quality Control (QC) Information**

#### **Certification Statement**

The test results presented in this document are certified to meet all requirements of the 2009 TNI Standard.

#### **Method Blank (MB) Statement**

The MB(s) analyzed with this SDG met the acceptance criteria.

#### **Surrogate Recoveries**

The 13C-TCDD and 13C-TCDF surrogates did not meet acceptance criteria. This may be attributed to matrix interference. 2378-TCDF EDL is greater than the PQL due to this recovery issue. 11798002 (GP08-W-6.5)- Batch 36545.

#### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recoveries met the acceptance limits.

#### **Laboratory Control Sample Duplicate (LCSD) Recovery**

The LCSD spike recoveries met the acceptance limits.

#### **LCS/LCSD Relative Percent Difference (RPD) Statement**

The RPD(s) between the LCS and LCSD met the acceptance limits.

#### **QC Sample Designation**

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

### **Technical Information**

#### **Holding Time Specifications**

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

#### **Preparation/Analytical Method Verification**

The sample was dark and oily in appearance. The sample was spiked with four times the normal amount of surrogate, then split after extraction. 25% of the extract was cleaned up and analyzed. 11798002 (GP08-W-6.5)- Batch 36545.

#### **Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-extraction/Re-analysis**

The soil samples were re-extracted due to surrogate failures. The issue was traced to a failing laboratory reagent. Batch 36651.

**Miscellaneous Information****Nonconformance (NCR) Documentation**

A NCR was not required for this SDG.

**Manual Integrations**

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

**Sample preparation**

No difficulties were encountered during sample preparation.

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

# **Sample Data Summary**

## Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

### Qualifier Definition Report for

APEX001 Apex Laboratories

Client SDG: A7L0343\_2 CFA Work Order: 11798

**The Qualifiers in this report are defined as follows:**

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- U Analyte was analyzed for, but not detected above the specified detection limit.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

**Review/Validation**

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Heather Patterson

Date: 25 JAN 2018

Title: Group Leader

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0343_2	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11798001	<b>Date Collected:</b> 12/12/2017 15:05	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/19/2017 10:45	<b>%Moisture:</b> 22.9
<b>Client ID:</b> GP08-S-4.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/22/2018 00:28	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-12		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 12.99 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.192	pg/g	0.192	0.999
40321-76-4	1,2,3,7,8-PeCDD	U	0.0925	pg/g	0.0925	4.99
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.133	pg/g	0.133	4.99
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.132	pg/g	0.132	4.99
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.136	pg/g	0.136	4.99
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.793	pg/g	0.379	4.99
3268-87-9	1,2,3,4,6,7,8,9-OCDD		10.9	pg/g	0.328	9.99
51207-31-9	2,3,7,8-TCDF	U	0.328	pg/g	0.328	0.999
57117-41-6	1,2,3,7,8-PeCDF	U	0.0907	pg/g	0.0907	4.99
57117-31-4	2,3,4,7,8-PeCDF	U	0.0829	pg/g	0.0829	4.99
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.0731	pg/g	0.0731	4.99
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.0763	pg/g	0.0763	4.99
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.0707	pg/g	0.0707	4.99
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.0977	pg/g	0.0977	4.99
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.216	pg/g	0.118	4.99
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.181	pg/g	0.181	4.99
39001-02-0	1,2,3,4,6,7,8,9-OCDF	JK	0.421	pg/g	0.160	9.99
41903-57-5	Total TeCDD	U	0.192	pg/g	0.192	0.999
36088-22-9	Total PeCDD	U	0.0925	pg/g	0.0925	4.99
34465-46-8	Total HxCDD	JK	0.250	pg/g	0.132	4.99
37871-00-4	Total HpCDD	J	1.80	pg/g	0.379	4.99
30402-14-3	Total TeCDF	U	0.328	pg/g	0.328	0.999
30402-15-4	Total PeCDF	J	0.116	pg/g	0.0356	4.99
55684-94-1	Total HxCDF	J	0.246	pg/g	0.0707	4.99
38998-75-3	Total HpCDF	J	0.575	pg/g	0.118	4.99
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0135	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.223	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		98.5	200	pg/g	49.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		192	200	pg/g	96.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		160	200	pg/g	80.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		162	200	pg/g	81.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		178	200	pg/g	89.1	(23%-140%)
13C-OCDD		342	399	pg/g	85.6	(17%-157%)
13C-2,3,7,8-TCDF		70.4	200	pg/g	35.2	(24%-169%)
13C-1,2,3,7,8-PeCDF		182	200	pg/g	91.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		180	200	pg/g	90.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		154	200	pg/g	77.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		147	200	pg/g	73.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		161	200	pg/g	80.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		164	200	pg/g	82.2	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343_2	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11798001	<b>Date Collected:</b> 12/12/2017 15:05	<b>Matrix:</b> SOIL
<b>Client Sample:</b> 1613B Soil	<b>Date Received:</b> 12/19/2017 10:45	<b>%Moisture:</b> 22.9
<b>Client ID:</b> GP08-S-4.0		<b>Prep Basis:</b> Dry Weight
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/22/2018 00:28	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A21JAN18A-12		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 12.99 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			164	200	pg/g	82.3 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			167	200	pg/g	83.7 (26%-138%)
37Cl-2,3,7,8-TCDD			9.98	20.0	pg/g	50.0 (35%-197%)

**Comments:**

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

**SDG Number:** A7L0343\_2  
**Lab Sample ID:** 11798002  
**Client Sample:** 1613B Water  
**Client ID:** GP08-W-6.5  
**Batch ID:** 36545  
**Run Date:** 12/28/2017 09:47  
**Data File:** A27DEC17A\_3-2  
**Prep Batch:** 36541  
**Prep Date:** 22-DEC-17

**Client:** APEX001  
**Date Collected:** 12/12/2017 15:15  
**Date Received:** 12/19/2017 10:45  
**Method:** EPA Method 1613B  
**Analyst:** MJC  
**Prep Method:** SW846 3520C  
**Prep Aliquot:** 1005.7 mL

**Project:** APEX00217  
**Matrix:** WATER  
**Prep Basis:** As Received  
**Instrument:** HRP750  
**Dilution:** 1

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	27.7	pg/L	27.7	39.8
40321-76-4	1,2,3,7,8-PeCDD	U	16.3	pg/L	16.3	199
39227-28-6	1,2,3,4,7,8-HxCDD	U	12.6	pg/L	12.6	199
57653-85-7	1,2,3,6,7,8-HxCDD	U	12.5	pg/L	12.5	199
19408-74-3	1,2,3,7,8,9-HxCDD	JK	19.1	pg/L	12.9	199
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	24.4	pg/L	17.7	199
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	64.6	pg/L	45.3	398
51207-31-9	2,3,7,8-TCDF	U	41.8	pg/L	41.8	39.8
57117-41-6	1,2,3,7,8-PeCDF	U	15	pg/L	15.0	199
57117-31-4	2,3,4,7,8-PeCDF	U	12.8	pg/L	12.8	199
70648-26-9	1,2,3,4,7,8-HxCDF	U	10.7	pg/L	10.7	199
57117-44-9	1,2,3,6,7,8-HxCDF	U	10	pg/L	10.0	199
60851-34-5	2,3,4,6,7,8-HxCDF	U	9.55	pg/L	9.55	199
72918-21-9	1,2,3,7,8,9-HxCDF	U	11	pg/L	11.0	199
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	12.8	pg/L	12.8	199
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	18.5	pg/L	18.5	199
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	41.4	pg/L	41.4	398
41903-57-5	Total TeCDD	U	27.7	pg/L	27.7	39.8
36088-22-9	Total PeCDD	U	16.3	pg/L	16.3	199
34465-46-8	Total HxCDD	JK	32.1	pg/L	12.5	199
37871-00-4	Total HpCDD	JK	24.4	pg/L	17.7	199
30402-14-3	Total TeCDF	U	41.8	pg/L	41.8	39.8
30402-15-4	Total PeCDF	U	12.8	pg/L	12.8	199
55684-94-1	Total HxCDF	U	9.55	pg/L	9.55	199
38998-75-3	Total HpCDF	U	12.8	pg/L	12.8	199
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		2.17	pg/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		2.34	pg/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1490	7950	pg/L	18.7 *	(25%-164%)
13C-1,2,3,7,8-PeCDD		4870	7950	pg/L	61.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		5760	7950	pg/L	72.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		5820	7950	pg/L	73.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		7040	7950	pg/L	88.5	(23%-140%)
13C-OCDD		10700	15900	pg/L	67.3	(17%-157%)
13C-2,3,7,8-TCDF		1310	7950	pg/L	16.4 *	(24%-169%)
13C-1,2,3,7,8-PeCDF		3480	7950	pg/L	43.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		3510	7950	pg/L	44.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		5240	7950	pg/L	65.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		4960	7950	pg/L	62.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		5640	7950	pg/L	70.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		5550	7950	pg/L	69.8	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343_2	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 11798002	<b>Date Collected:</b> 12/12/2017 15:15	<b>Matrix:</b> WATER
<b>Client Sample:</b> 1613B Water	<b>Date Received:</b> 12/19/2017 10:45	
<b>Client ID:</b> GP08-W-6.5		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36545	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 12/28/2017 09:47	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A27DEC17A_3-2		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36541	<b>Prep Method:</b> SW846 3520C	
<b>Prep Date:</b> 22-DEC-17	<b>Prep Aliquot:</b> 1005.7 mL	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			6400	7950	pg/L	80.4 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			6940	7950	pg/L	87.2 (26%-138%)
37Cl-2,3,7,8-TCDD			150	199	pg/L	75.4 (35%-197%)

**Comments:**  
**J** Value is estimated  
**K** Estimated Maximum Possible Concentration  
**U** Analyte was analyzed for, but not detected above the specified detection limit.



# **Quality Control Summary**

**Hi-Res Dioxins/Furans  
Surrogate Recovery Report**

SDG Number: A7L0343\_2

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12020339	LCS for batch 36541	13C-2,3,7,8-TCDD		87.2	(20%-175%)
		13C-1,2,3,7,8-PeCDD		105	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		80.8	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		89.6	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		83.3	(22%-166%)
		13C-OCDD		79.4	(13%-199%)
		13C-2,3,7,8-TCDF		70.5	(22%-152%)
		13C-1,2,3,7,8-PeCDF		107	(21%-192%)
		13C-2,3,4,7,8-PeCDF		105	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		81.2	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		83.8	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		83.7	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		88.0	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		82.7	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		83.0	(20%-186%)
		37Cl-2,3,7,8-TCDD		92.0	(31%-191%)
12020340	LCSD for batch 36541	13C-2,3,7,8-TCDD		58.5	(20%-175%)
		13C-1,2,3,7,8-PeCDD		99.1	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		84.9	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		92.8	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		94.0	(22%-166%)
		13C-OCDD		86.6	(13%-199%)
		13C-2,3,7,8-TCDF		46.8	(22%-152%)
		13C-1,2,3,7,8-PeCDF		95.8	(21%-192%)
		13C-2,3,4,7,8-PeCDF		94.8	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		81.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		89.4	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		90.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		94.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		89.3	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		87.0	(20%-186%)
		37Cl-2,3,7,8-TCDD		62.0	(31%-191%)
12020338	MB for batch 36541	13C-2,3,7,8-TCDD		66.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		90.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		73.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		83.8	(23%-140%)
		13C-OCDD		78.9	(17%-157%)
		13C-2,3,7,8-TCDF		52.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		86.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		70.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		79.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		79.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		73.0	(35%-197%)
11798002	GP08-W-6.5	13C-2,3,7,8-TCDD		18.7 *	(25%-164%)

**Hi-Res Dioxins/Furans  
Surrogate Recovery Report**

SDG Number: A7L0343\_2

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
11798002	GP08-W-6.5	13C-1,2,3,7,8-PeCDD		61.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		72.4	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		73.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		88.5	(23%-140%)
		13C-OCDD		67.3	(17%-157%)
		13C-2,3,7,8-TCDF		16.4 *	(24%-169%)
		13C-1,2,3,7,8-PeCDF		43.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		44.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		65.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		62.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		70.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		69.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		87.2	(26%-138%)
		37Cl-2,3,7,8-TCDD		75.4	(35%-197%)

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

**Hi-Res Dioxins/Furans**  
**Surrogate Recovery Report**

SDG Number: A7L0343\_2

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12020428	LCS for batch 36649	13C-2,3,7,8-TCDD		46.5	(20%-175%)
		13C-1,2,3,7,8-PeCDD		91.1	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		78.5	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		75.6	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		84.6	(22%-166%)
		13C-OCDD		83.9	(13%-199%)
		13C-2,3,7,8-TCDF		32.8	(22%-152%)
		13C-1,2,3,7,8-PeCDF		82.0	(21%-192%)
		13C-2,3,4,7,8-PeCDF		85.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		72.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		69.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		78.0	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		77.2	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		79.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		79.2	(20%-186%)
		37Cl-2,3,7,8-TCDD		47.8	(31%-191%)
12020429	LCSD for batch 36649	13C-2,3,7,8-TCDD		56.3	(20%-175%)
		13C-1,2,3,7,8-PeCDD		106	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		87.9	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		82.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		90.2	(22%-166%)
		13C-OCDD		88.7	(13%-199%)
		13C-2,3,7,8-TCDF		37.3	(22%-152%)
		13C-1,2,3,7,8-PeCDF		98.7	(21%-192%)
		13C-2,3,4,7,8-PeCDF		101	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		83.4	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		76.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		84.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		86.8	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		84.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		86.3	(20%-186%)
		37Cl-2,3,7,8-TCDD		58.7	(31%-191%)
12020427	MB for batch 36649	13C-2,3,7,8-TCDD		54.1	(25%-164%)
		13C-1,2,3,7,8-PeCDD		98.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		78.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		78.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		84.2	(23%-140%)
		13C-OCDD		81.9	(17%-157%)
		13C-2,3,7,8-TCDF		36.3	(24%-169%)
		13C-1,2,3,7,8-PeCDF		94.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		94.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		72.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		77.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		56.4	(35%-197%)
11798001	GP08-S-4.0	13C-2,3,7,8-TCDD		49.3	(25%-164%)

**Hi-Res Dioxins/Furans  
Surrogate Recovery Report**

SDG Number: A7L0343\_2

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
11798001	GP08-S-4.0	13C-1,2,3,7,8-PeCDD		96.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		81.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		89.1	(23%-140%)
		13C-OCDD		85.6	(17%-157%)
		13C-2,3,7,8-TCDF		35.2	(24%-169%)
		13C-1,2,3,7,8-PeCDF		91.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		90.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		73.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		80.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.2	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		82.3	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		83.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		50.0	(35%-197%)

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

SDG Number: A7L0343\_2

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 36541

Matrix: WATER

Lab Sample ID: 12020339

Instrument: HRP750

Analysis Date: 12/27/2017 21:41

Dilution: 1

Analyst: MJC

Prep Batch ID:36541

Batch ID: 36545

CAS No.	Parmname	Amount Added pg/L	Spike Conc. pg/L	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	200	228	114	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	1000	1090	109	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	1000	991	99.1	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	1000	1010	101	74-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	1000	1060	106	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	1000	1050	105	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	2000	1940	97	78-144
51207-31-9	LCS 2,3,7,8-TCDF	200	189	94.6	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	1000	974	97.4	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	1000	1020	102	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	1000	1020	102	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	1000	1050	105	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	1000	1020	102	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	1000	1020	102	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	1000	1020	102	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	1000	1030	103	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	2000	1970	98.3	63-170

**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

SDG Number: A7L0343\_2

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 36541

Matrix: WATER

Lab Sample ID: 12020340

Instrument: HRP750

Analysis Date: 12/27/2017 22:28

Dilution: 1

Analyst: MJC

Prep Batch ID: 36541

Batch ID: 36545

CAS No.	Parmname	Amount Added pg/L	Spike Conc. pg/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	200	226	113	67-158	0.853	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	1000	1090	109	70-142	0.811	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	1000	1030	103	70-164	3.88	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	1000	1040	104	74-134	2.80	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	1000	1080	108	64-162	2.40	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	1000	978	97.8	70-140	7.22	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	2000	2040	102	78-144	5.13	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	200	193	96.5	75-158	2.03	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	1000	980	98	80-134	0.602	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	1000	1000	100	68-160	1.53	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	1000	1030	103	72-134	0.898	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	1000	1050	105	84-130	0.152	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	1000	1050	105	70-156	2.89	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	1000	1010	101	78-130	1.18	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	1000	1030	103	82-122	1.45	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	1000	1040	104	78-138	1.79	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	2000	2040	102	63-170	3.47	0-20

**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

SDG Number: A7L0343\_2

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 36649

Matrix: SOIL

Lab Sample ID: 12020428

Instrument: HRP750

Analysis Date: 01/19/2018 20:33

Dilution: 1

Analyst: MJC

Prep Batch ID:36649

Batch ID: 36651

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.9	105	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	100	100	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	95.7	95.7	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	97.2	97.2	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	105	105	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	94.5	94.5	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	198	98.9	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	17.3	86.4	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	93.3	93.3	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	91.2	91.2	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	95.8	95.8	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	99.1	99.1	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	95.9	95.9	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	94.8	94.8	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	94.5	94.5	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	96.4	96.4	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	181	90.7	63-170



**Hi-Res Dioxins/Furans**  
**Quality Control Summary**  
**Spike Recovery Report**

SDG Number: A7L0343\_2

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 36649

Matrix: SOIL

Lab Sample ID: 12020429

Instrument: HRP750

Analysis Date: 01/19/2018 21:21

Dilution: 1

Analyst: MJC

Prep Batch ID: 36649

Batch ID: 36651

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	20.3	101	67-158	3.13	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	101	101	70-142	1.18	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	95.2	95.2	70-164	0.503	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	97.1	97.1	76-134	0.115	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	102	102	64-162	2.47	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	96.0	96	70-140	1.57	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	196	97.9	78-144	1.04	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	17.3	86.7	75-158	0.347	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	93.7	93.7	80-134	0.426	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	92.6	92.6	68-160	1.50	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	92.7	92.7	72-134	3.22	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	98.5	98.5	84-130	0.619	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	94.9	94.9	70-156	1.02	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	94.5	94.5	78-130	0.287	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	92.6	92.6	82-122	2.02	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	94.3	94.3	78-138	2.24	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	181	90.7	63-170	0.00221	0-20

## Method Blank Summary

Page 1 of 1

SDG Number: A7L0343\_2  
Client ID: MB for batch 36541  
Lab Sample ID: 12020338  
Column:

Client: APEX001  
Instrument ID: HRP750  
Prep Date: 22-DEC-17

Matrix: WATER  
Data File: A27DEC17A\_2-3  
Analyzed: 12/27/17 23:16

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 36541	12020339	A27DEC17A_2-1	12/27/17	2141
02 LCSD for batch 36541	12020340	A27DEC17A_2-2	12/27/17	2228
03 GP08-W-6.5	11798002	A27DEC17A_3-2	12/28/17	0947

## Method Blank Summary

Page 1 of 1

SDG Number: A7L0343\_2  
Client ID: MB for batch 36649  
Lab Sample ID: 12020427  
Column:

Client: APEX001  
Instrument ID: HRP750  
Prep Date: 11-JAN-18

Matrix: SOIL  
Data File: A19JAN18A\_2-3  
Analyzed: 01/19/18 22:09

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 36649	12020428	A19JAN18A_2-1	01/19/18	2033
02 LCSD for batch 36649	12020429	A19JAN18A_2-2	01/19/18	2121
03 GP08-S-4.0	11798001	A21JAN18A-12	01/22/18	0028

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0343_2	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020338		<b>Matrix:</b> WATER
<b>Client Sample:</b> QC for batch 36541		
<b>Client ID:</b> MB for batch 36541		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36545	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 12/27/2017 23:16	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A27DEC17A_2-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36541	<b>Prep Method:</b> SW846 3520C	
<b>Prep Date:</b> 22-DEC-17	<b>Prep Aliquot:</b> 1000 mL	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	2.84	pg/L	2.84	10.0
40321-76-4	1,2,3,7,8-PeCDD	U	1.23	pg/L	1.23	50.0
39227-28-6	1,2,3,4,7,8-HxCDD	U	2	pg/L	2.00	50.0
57653-85-7	1,2,3,6,7,8-HxCDD	U	1.87	pg/L	1.87	50.0
19408-74-3	1,2,3,7,8,9-HxCDD	U	1.98	pg/L	1.98	50.0
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	2.38	pg/L	2.38	50.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	3.86	pg/L	3.86	100
51207-31-9	2,3,7,8-TCDF	U	3.66	pg/L	3.66	10.0
57117-41-6	1,2,3,7,8-PeCDF	U	1.69	pg/L	1.69	50.0
57117-31-4	2,3,4,7,8-PeCDF	U	1.53	pg/L	1.53	50.0
70648-26-9	1,2,3,4,7,8-HxCDF	U	1.58	pg/L	1.58	50.0
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.49	pg/L	1.49	50.0
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.46	pg/L	1.46	50.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	2.02	pg/L	2.02	50.0
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	1.08	pg/L	1.08	50.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	1.75	pg/L	1.75	50.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	5.5	pg/L	5.50	100
41903-57-5	Total TeCDD	U	2.84	pg/L	2.84	10.0
36088-22-9	Total PeCDD	U	1.23	pg/L	1.23	50.0
34465-46-8	Total HxCDD	U	1.87	pg/L	1.87	50.0
37871-00-4	Total HpCDD	U	2.38	pg/L	2.38	50.0
30402-14-3	Total TeCDF	U	3.66	pg/L	3.66	10.0
30402-15-4	Total PeCDF	U	1.53	pg/L	1.53	50.0
55684-94-1	Total HxCDF	U	1.46	pg/L	1.46	50.0
38998-75-3	Total HpCDF	U	1.08	pg/L	1.08	50.0
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00	pg/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		3.12	pg/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1330	2000	pg/L	66.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1820	2000	pg/L	90.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1470	2000	pg/L	73.4	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1670	2000	pg/L	83.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1680	2000	pg/L	83.8	(23%-140%)
13C-OCDD		3150	4000	pg/L	78.9	(17%-157%)
13C-2,3,7,8-TCDF		1060	2000	pg/L	52.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		1720	2000	pg/L	86.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1790	2000	pg/L	89.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1410	2000	pg/L	70.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1600	2000	pg/L	79.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1620	2000	pg/L	81.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1640	2000	pg/L	82.0	(29%-147%)

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343_2	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020338		<b>Matrix:</b> WATER
<b>Client Sample:</b> QC for batch 36541		
<b>Client ID:</b> MB for batch 36541		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36545	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 12/27/2017 23:16	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A27DEC17A_2-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36541	<b>Prep Method:</b> SW846 3520C	
<b>Prep Date:</b> 22-DEC-17	<b>Prep Aliquot:</b> 1000 mL	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			1600	2000	pg/L	79.8 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			1600	2000	pg/L	79.9 (26%-138%)
37Cl-2,3,7,8-TCDD			146	200	pg/L	73.0 (35%-197%)

**Comments:**  
 U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

<b>SDG Number:</b> A7L0343_2	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020339		<b>Matrix:</b> WATER
<b>Client Sample:</b> QC for batch 36541		
<b>Client ID:</b> LCS for batch 36541		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36545	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 12/27/2017 21:41	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A27DEC17A_2-1		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36541	<b>Prep Method:</b> SW846 3520C	
<b>Prep Date:</b> 22-DEC-17	<b>Prep Aliquot:</b> 1000 mL	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		228	pg/L	2.64	10.0
40321-76-4	1,2,3,7,8-PeCDD		1090	pg/L	4.26	50.0
39227-28-6	1,2,3,4,7,8-HxCDD		991	pg/L	7.12	50.0
57653-85-7	1,2,3,6,7,8-HxCDD		1010	pg/L	6.20	50.0
19408-74-3	1,2,3,7,8,9-HxCDD		1060	pg/L	6.78	50.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		1050	pg/L	11.1	50.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1940	pg/L	28.6	100
51207-31-9	2,3,7,8-TCDF		189	pg/L	4.86	10.0
57117-41-6	1,2,3,7,8-PeCDF		974	pg/L	5.92	50.0
57117-31-4	2,3,4,7,8-PeCDF		1020	pg/L	5.22	50.0
70648-26-9	1,2,3,4,7,8-HxCDF		1020	pg/L	12.6	50.0
57117-44-9	1,2,3,6,7,8-HxCDF		1050	pg/L	13.2	50.0
60851-34-5	2,3,4,6,7,8-HxCDF		1020	pg/L	13.8	50.0
72918-21-9	1,2,3,7,8,9-HxCDF		1020	pg/L	18.5	50.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		1020	pg/L	8.94	50.0
55673-89-7	1,2,3,4,7,8,9-HpCDF		1030	pg/L	14.4	50.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		1970	pg/L	21.0	100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1740	2000	pg/L	87.2	(20%-175%)
13C-1,2,3,7,8-PeCDD		2090	2000	pg/L	105	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		1620	2000	pg/L	80.8	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		1790	2000	pg/L	89.6	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		1670	2000	pg/L	83.3	(22%-166%)
13C-OCDD		3180	4000	pg/L	79.4	(13%-199%)
13C-2,3,7,8-TCDF		1410	2000	pg/L	70.5	(22%-152%)
13C-1,2,3,7,8-PeCDF		2150	2000	pg/L	107	(21%-192%)
13C-2,3,4,7,8-PeCDF		2110	2000	pg/L	105	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		1620	2000	pg/L	81.2	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		1680	2000	pg/L	83.8	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		1670	2000	pg/L	83.7	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		1760	2000	pg/L	88.0	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		1650	2000	pg/L	82.7	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		1660	2000	pg/L	83.0	(20%-186%)
37Cl-2,3,7,8-TCDD		184	200	pg/L	92.0	(31%-191%)

**Comments:**

**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

<b>SDG Number:</b> A7L0343_2	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020340		<b>Matrix:</b> WATER
<b>Client Sample:</b> QC for batch 36541		
<b>Client ID:</b> LCSD for batch 36541		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36545	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 12/27/2017 22:28	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A27DEC17A_2-2		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36541	<b>Prep Method:</b> SW846 3520C	
<b>Prep Date:</b> 22-DEC-17	<b>Prep Aliquot:</b> 1000 mL	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		226	pg/L	4.60	10.0
40321-76-4	1,2,3,7,8-PeCDD		1090	pg/L	5.08	50.0
39227-28-6	1,2,3,4,7,8-HxCDD		1030	pg/L	11.8	50.0
57653-85-7	1,2,3,6,7,8-HxCDD		1040	pg/L	11.1	50.0
19408-74-3	1,2,3,7,8,9-HxCDD		1080	pg/L	11.7	50.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		978	pg/L	15.5	50.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2040	pg/L	29.4	100
51207-31-9	2,3,7,8-TCDF		193	pg/L	7.34	10.0
57117-41-6	1,2,3,7,8-PeCDF		980	pg/L	6.58	50.0
57117-31-4	2,3,4,7,8-PeCDF		1000	pg/L	5.48	50.0
70648-26-9	1,2,3,4,7,8-HxCDF		1030	pg/L	10.7	50.0
57117-44-9	1,2,3,6,7,8-HxCDF		1050	pg/L	10.0	50.0
60851-34-5	2,3,4,6,7,8-HxCDF		1050	pg/L	10.0	50.0
72918-21-9	1,2,3,7,8,9-HxCDF		1010	pg/L	14.4	50.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		1030	pg/L	11.0	50.0
55673-89-7	1,2,3,4,7,8,9-HpCDF		1040	pg/L	17.1	50.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2040	pg/L	28.0	100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1170	2000	pg/L	58.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		1980	2000	pg/L	99.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		1700	2000	pg/L	84.9	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		1860	2000	pg/L	92.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		1880	2000	pg/L	94.0	(22%-166%)
13C-OCDD		3460	4000	pg/L	86.6	(13%-199%)
13C-2,3,7,8-TCDF		936	2000	pg/L	46.8	(22%-152%)
13C-1,2,3,7,8-PeCDF		1920	2000	pg/L	95.8	(21%-192%)
13C-2,3,4,7,8-PeCDF		1900	2000	pg/L	94.8	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		1630	2000	pg/L	81.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		1790	2000	pg/L	89.4	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		1810	2000	pg/L	90.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		1880	2000	pg/L	94.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		1790	2000	pg/L	89.3	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		1740	2000	pg/L	87.0	(20%-186%)
37Cl-2,3,7,8-TCDD		124	200	pg/L	62.0	(31%-191%)

**Comments:**

**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 2

<b>SDG Number:</b> A7L0343_2	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020427		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> MB for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 22:09	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.173	pg/g	0.173	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	0.0632	pg/g	0.0632	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.0842	pg/g	0.0842	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.0834	pg/g	0.0834	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.0858	pg/g	0.0858	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.116	pg/g	0.0934	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.766	pg/g	0.214	10.0
51207-31-9	2,3,7,8-TCDF	U	0.238	pg/g	0.238	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	0.0658	pg/g	0.0658	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	0.059	pg/g	0.059	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.060	pg/g	0.0536	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.0552	pg/g	0.0552	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.060	pg/g	0.0536	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	JK	0.082	pg/g	0.069	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	JK	0.066	pg/g	0.0502	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.0784	pg/g	0.0784	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	0.187	pg/g	0.187	10.0
41903-57-5	Total TeCDD	U	0.173	pg/g	0.173	1.00
36088-22-9	Total PeCDD	U	0.0632	pg/g	0.0632	5.00
34465-46-8	Total HxCDD	U	0.0834	pg/g	0.0834	5.00
37871-00-4	Total HpCDD	JK	0.116	pg/g	0.0934	5.00
30402-14-3	Total TeCDF	U	0.238	pg/g	0.238	1.00
30402-15-4	Total PeCDF	U	0.059	pg/g	0.059	5.00
55684-94-1	Total HxCDF	JK	0.202	pg/g	0.0536	5.00
38998-75-3	Total HpCDF	JK	0.066	pg/g	0.0502	5.00
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0222	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.178	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		108	200	pg/g	54.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		197	200	pg/g	98.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		156	200	pg/g	78.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		156	200	pg/g	78.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		168	200	pg/g	84.2	(23%-140%)
13C-OCDD		327	400	pg/g	81.9	(17%-157%)
13C-2,3,7,8-TCDF		72.5	200	pg/g	36.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		189	200	pg/g	94.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		189	200	pg/g	94.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		155	200	pg/g	77.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		145	200	pg/g	72.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		155	200	pg/g	77.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		165	200	pg/g	82.3	(29%-147%)



**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> A7L0343_2	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020427		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> MB for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 22:09	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-3		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
<b>Surrogate/Tracer recovery</b>						
		<b>Qual</b>	<b>Result</b>	<b>Nominal</b>	<b>Units</b>	<b>Recovery%</b>
						<b>Acceptable Limits</b>
13C-1,2,3,4,6,7,8-HpCDF			159	200	pg/g	79.4 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			158	200	pg/g	78.9 (26%-138%)
37Cl-2,3,7,8-TCDD			11.3	20.0	pg/g	56.4 (35%-197%)

**Comments:**

- J** Value is estimated
- K** Estimated Maximum Possible Concentration
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

<b>SDG Number:</b> A7L0343_2	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020428		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> LCS for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 20:33	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-1		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.9	pg/g	0.288	1.00
40321-76-4	1,2,3,7,8-PeCDD		100	pg/g	0.138	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.7	pg/g	0.222	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		97.2	pg/g	0.224	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		105	pg/g	0.230	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		94.5	pg/g	0.386	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		198	pg/g	0.546	10.0
51207-31-9	2,3,7,8-TCDF		17.3	pg/g	0.336	1.00
57117-41-6	1,2,3,7,8-PeCDF		93.3	pg/g	0.256	5.00
57117-31-4	2,3,4,7,8-PeCDF		91.2	pg/g	0.214	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		95.8	pg/g	0.344	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		99.1	pg/g	0.358	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		95.9	pg/g	0.350	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		94.8	pg/g	0.460	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		94.5	pg/g	0.250	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		96.4	pg/g	0.404	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		181	pg/g	0.470	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		93.0	200	pg/g	46.5	(20%-175%)
13C-1,2,3,7,8-PeCDD		182	200	pg/g	91.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		157	200	pg/g	78.5	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		151	200	pg/g	75.6	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		169	200	pg/g	84.6	(22%-166%)
13C-OCDD		336	400	pg/g	83.9	(13%-199%)
13C-2,3,7,8-TCDF		65.6	200	pg/g	32.8	(22%-152%)
13C-1,2,3,7,8-PeCDF		164	200	pg/g	82.0	(21%-192%)
13C-2,3,4,7,8-PeCDF		170	200	pg/g	85.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		145	200	pg/g	72.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		138	200	pg/g	69.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		156	200	pg/g	78.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		154	200	pg/g	77.2	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		160	200	pg/g	79.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		158	200	pg/g	79.2	(20%-186%)
37Cl-2,3,7,8-TCDD		9.55	20.0	pg/g	47.8	(31%-191%)

**Comments:**

**U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans  
Certificate of Analysis  
Sample Summary**

Page 1 of 1

<b>SDG Number:</b> A7L0343_2	<b>Client:</b> APEX001	<b>Project:</b> APEX00217
<b>Lab Sample ID:</b> 12020429		<b>Matrix:</b> SOIL
<b>Client Sample:</b> QC for batch 36649		
<b>Client ID:</b> LCSD for batch 36649		<b>Prep Basis:</b> As Received
<b>Batch ID:</b> 36651	<b>Method:</b> EPA Method 1613B	
<b>Run Date:</b> 01/19/2018 21:21	<b>Analyst:</b> MJC	<b>Instrument:</b> HRP750
<b>Data File:</b> A19JAN18A_2-2		<b>Dilution:</b> 1
<b>Prep Batch:</b> 36649	<b>Prep Method:</b> SW846 3540C	
<b>Prep Date:</b> 11-JAN-18	<b>Prep Aliquot:</b> 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.3	pg/g	0.248	1.00
40321-76-4	1,2,3,7,8-PeCDD		101	pg/g	0.121	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.2	pg/g	0.193	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		97.1	pg/g	0.181	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		102	pg/g	0.192	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		96.0	pg/g	0.430	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		196	pg/g	0.620	10.0
51207-31-9	2,3,7,8-TCDF		17.3	pg/g	0.288	1.00
57117-41-6	1,2,3,7,8-PeCDF		93.7	pg/g	0.232	5.00
57117-31-4	2,3,4,7,8-PeCDF		92.6	pg/g	0.210	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		92.7	pg/g	0.292	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		98.5	pg/g	0.286	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		94.9	pg/g	0.300	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		94.5	pg/g	0.376	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		92.6	pg/g	0.274	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		94.3	pg/g	0.404	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		181	pg/g	0.474	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		113	200	pg/g	56.3	(20%-175%)
13C-1,2,3,7,8-PeCDD		212	200	pg/g	106	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		176	200	pg/g	87.9	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		164	200	pg/g	82.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		180	200	pg/g	90.2	(22%-166%)
13C-OCDD		355	400	pg/g	88.7	(13%-199%)
13C-2,3,7,8-TCDF		74.7	200	pg/g	37.3	(22%-152%)
13C-1,2,3,7,8-PeCDF		197	200	pg/g	98.7	(21%-192%)
13C-2,3,4,7,8-PeCDF		202	200	pg/g	101	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		167	200	pg/g	83.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		153	200	pg/g	76.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		169	200	pg/g	84.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		174	200	pg/g	86.8	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		170	200	pg/g	84.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		173	200	pg/g	86.3	(20%-186%)
37Cl-2,3,7,8-TCDD		11.7	20.0	pg/g	58.7	(31%-191%)

**Comments:**

**U** Analyte was analyzed for, but not detected above the specified detection limit.

# APPENDIX E

## DATA VALIDATION MEMORANDUM



# DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 0075.06.02 | APRIL 25, 2018 | METRO REGIONAL GOVERNMENT

Maul Foster & Alongi, Inc. (MFA) conducted an independent review of the quality of analytical results for reconnaissance soil and groundwater samples collected at the former Willamette Falls Legacy Project site located in Oregon City, Oregon. The samples were collected on December 11, 12, and 14, 2017.

Apex Laboratories, LLC (Apex), Cape Fear Analytical, LLC (CFA), Maxxam Analytics International Corporation (Maxxam), and Weck Laboratories, Inc. (Weck) performed the analyses. Apex report numbers A7L0317, A7L0343, and A7L0431; CFA reports WO11774, WO11780, WO11797, and WO11798; and Maxxam reports B807180V1, B807188V1, and B807196V1 were reviewed. Portions of samples submitted with A7L0343 were subcontracted to Weck for analysis, and the subcontracted results are appended to A7L0343. Some samples were subcontracted by Apex to Maxxam for hexavalent chromium analysis and to CFA for dioxins and furans analysis, and results are reported in separate CFA or Maxxam laboratory reports. The analyses performed and samples analyzed are listed below. Samples submitted to Apex on hold are also indicated below.

Analysis	Reference
Diesel- and Oil-range Hydrocarbons	NWTPH-Dx
Dioxins and Furans	USEPA 1613B
Gasoline-range Hydrocarbons	NWTPH-Gx
Hexavalent Chromium	USEPA 7199
Hydrocarbon Identification (HCID)	NWTPH-HCID
Organochlorine Pesticides	USEPA 8081B
Percent Dry Weight	USEPA 8000C
Polychlorinated Biphenyls	USEPA 8082A
Polycyclic Aromatic Hydrocarbons	USEPA 8270D
Total Metals and Mercury	USEPA 6020A
Volatile Organic Compounds	USEPA 8260C

NWTPH = northwest total petroleum hydrocarbons.  
USEPA = U.S. Environmental Protection Agency.

Samples Analyzed				
Report A7L0317 (Apex)		Report A7L0343 (Apex)	Report A7L0431 (Apex)	
GP06-S-2.5	GP16-S-8.0	GP03-W-33.0	GP11-S-3.0	GP05-S-5.5
GP06-S-7.5	GP17-S-2.5	GP04-S-1.0	GP11-S-7.0	GP05-S-7.0 (hold)
GP06-S-21.0	GP17-S-8.0	GP04-S-6.0	GP14-S-3.0	GP05-S-7.5

Samples Analyzed				
Report A7L0317 (Apex)		Report A7L0343 (Apex)	Report A7L0431 (Apex)	
GP01-S-2.5	GP18-S-2.5	GP04-S-13.0	GP14-S-8.0	GP05-S-8.0
GP01-S-7.5	GP12-S-3.0	GP02-S-1.5	GP14-W-10.0	Trip Blank
GP01-S-16.0	GP12-S-8.0	GP02-S-7.0	GP13-S-2.5	GP15-S-3.0
GP03-S-2.5	GP16-W-9.0	GP09-S-2.5	GP13-S-7.5	GP15-S-7.5
GP03-S-7.5	Trip Blank	GP09-S-8.0	GP13-S-13.0	GP15-S-8.0
GP03-S-17.5	GP07-S-2.5	GP08-S-4.0	GP10-S-2.5	-
GP03-S-32.0	GP07-S-7.5	GP08-W-6.5	GP10-W-8.0	-
GP03-S-2.5-DUP	GP07-S-7.5-DUP	Trip Blank	GP10-W-8.0-DUP	-
GP16-S-2.5	GP07-W-15.0	-	-	-
Report WO11774 (CFA)	Report WO11780 (CFA)	Report WO11797 (CFA)	Report B807180V1 (Maxxam)	B807196V1 (Maxxam)
GP06-S-2.5	GP03-W-33.0	GP15-S-3.0	GP11-S-3.0	GP17-S-2.5
GP06-S-7.5	GP04-S-1.0	GP15-S-8.0	GP14-S-8.0	GP17-S-8.0
GP06-S-21.0	GP04-S-6.0	<b>Report WO11798</b>	GP13-S-2.5	GP18-S-2.5
GP01-S-2.5	GP04-S-13.0	GP08-S-4.0	GP10-S-2.5	GP12-S-3.0
GP01-S-7.5	GP09-S-2.5	GP08-W-6.5	GP05-S-5.5	GP07-S-2.5
GP01-S-16.0	GP09-S-8.0	-	<b>Report B807188V1 (Maxxam)</b>	GP06-S-2.5
GP03-S-2.5	-	-	GP04-S-1.0	GP01-S-2.5
GP03-S-7.5	-	-	GP02-S-7.0	GP03-S-2.5
GP03-S-17.5	-	-	GP09-S-2.5	GP16-S-2.5
GP03-S-32.0	-	-	GP08-S-4.0	-

## DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2014, 2016, 2017a,b) and appropriate laboratory and method-specific guidelines (Apex, 2016; CFA, 2016; Maxxam, 2015; Weck, 2015; USEPA, 1986).

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

Apex noted that USEPA Method 8082A samples and associated batch quality control samples were processed with sulfuric acid cleanup by USEPA Method 3665A, sulfur cleanup by USEPA Method 3660B, and florisis cleanup by USEPA Method 3620B. No action was required.

In reports A7L0317 and A7L0343, some USEPA Method 8082A results were flagged by Apex as estimated in response to the presence of overlapping Aroclor chromatographic results. The results have been qualified by the reviewer with “J” as estimated.

Report	Sample	Component	Original Result (ug/kg)	Qualified Result (ug/kg)
A7L0317	GP06-S-2.5	Aroclor 1242	8.64	8.64 J
		Aroclor 1254	68.2	68.2 J
		Aroclor 1260	18.7	18.7 J
	GP01-S-2.5	Aroclor 1260	4.01	4.01 J
	GP01-S-7.5	Aroclor 1254	10.0	10.0 J
		Aroclor 1260	9.10	9.10 J
	GP03-S-2.5	Aroclor 1254	8.58	8.58 J
		Aroclor 1260	5.14	5.14 J
	GP03-S-7.5	Aroclor 1254	28.4	28.4 J
		Aroclor 1260	11.6	11.6 J
	GP03-S-17.5	Aroclor 1254	22.4	22.4 J
		Aroclor 1260	27.1	27.1 J
	GP03-S-2.5-DUP	Aroclor 1254	29.1	29.1 J
Aroclor 1260		9.86	9.86 J	
A7L0343	GP04-S-1.0	Aroclor 1254	22.9	22.9 J
		Aroclor 1260	14.5	14.5 J

J = result estimated.  
ug/kg = micrograms per kilogram.

Apex noted that USEPA Method 8081B samples and associated batch quality control samples were processed with gel-permeation chromatography by USEPA Method 3640A, and associated method detection limits (MDLs)/method reporting limits (MRLs) may be raised due to dilutions necessary for the cleanup. No action was required.

In reports A7L0317 and A7L0431, some USEPA Method 8270D results were flagged by Apex due to insufficient chromatographic peak separation. Results are considered estimated and have been qualified by the reviewer with “J” in the following table:

Report	Sample	Component	Units	Original Result	Qualified Result
A7L0317	GP06-S-2.5	Chrysene	ug/kg	384	384 J
	GP03-S-32.0	Benzo(b)fluoranthene	ug/kg	97.9	97.9 J
		Benzo(k)fluoranthene	ug/kg	35.2	35.2 J
	GP03-S-2.5-DUP	Benzo(b)fluoranthene	ug/kg	99.4	99.4 J
	GP17-S-2.5	Benzo(b)fluoranthene	ug/kg	70.1	70.1 J
		Benzo(k)fluoranthene	ug/kg	23.1	23.1 J
	GP18-S-2.5	Benzo(b)fluoranthene	ug/kg	47.6	47.6 J
Benzo(k)fluoranthene		ug/kg	20.2	20.2 J	
GP07-S-2.5	Chrysene	ug/kg	1270	1270 J	
A7L0343	GP02-S-7.0	Benz(a)anthracene	ug/kg	188	188 J
		Benzo(b)fluoranthene	ug/kg	462	462 J
		Chrysene	ug/kg	194	194 J
	GP08-W-6.5	Benz(a)anthracene	ug/L	2.56	2.56 J
A7L0431	GP14-S-3.0	Benz(a)anthracene	ug/kg	3.39	3.39 J
		Benzo(b)fluoranthene	ug/kg	5.90	5.90 J

Report	Sample	Component	Units	Original Result	Qualified Result
		Chrysene	ug/kg	3.08	3.08 J
	GP14-W-10.0	Benz(a)anthracene	ug/L	0.0523	0.0523 J
		Benzo(b)fluoranthene	ug/L	0.0831	0.0831 J
		Chrysene	ug/L	0.0604	0.0604 J
	GP13-S-7.5	Benz(a)anthracene	ug/kg	159	159 J
		Chrysene	ug/kg	181	181 J
	GP10-S-2.5	Benz(a)anthracene	ug/kg	782	782 J
		Benzo(b)fluoranthene	ug/kg	1140	1140 J
		Chrysene	ug/kg	916	916 J
	GP10-W-8.0	Benz(a)anthracene	ug/L	0.328	0.328 J
		Chrysene	ug/L	0.514	0.514 J
	GP10-W-8.0-DUP	Benz(a)anthracene	ug/L	0.281	0.281 J
		Chrysene	ug/L	0.518	0.518 J
	GP15-S-3.0	Benz(a)anthracene	ug/kg	5.71	5.71 J
		Benzo(b)fluoranthene	ug/kg	6.42	6.42 J
		Chrysene	ug/kg	5.83	5.83 J
	GP15-S-8.0	Benzo(b)fluoranthene	ug/kg	807	807 J
		Benzo(k)fluoranthene	ug/kg	252	252 J

ug/L = micrograms per liter.

In reports A7L0431 and A7L0343, Apex noted that some NWTPH-HCID detected results did not represent standard fuel chromatographic patterns or were impacted by heavier hydrocarbon results. No action was required, as NWTPH-HCID results are considered qualitative.

In report A7L0343, Apex noted that the NWTPH-Dx oil-range hydrocarbon result for sample GP04-S-6.0 did not represent a chromatographic fuel pattern. Qualification was not required.

In report A7L0343, the NWTPH-Dx diesel- and oil-range hydrocarbon results for sample GP08-W-6.5 were flagged by Apex due to overlap from hydrocarbons present in both the diesel and the oil range. The results have been qualified by the reviewer with “J” as estimated, in the following table:

Report	Sample	Component	Original Result (mg/L)	Qualified Result (mg/L)
A7L0343	GP08-W-6.5	Diesel-range Hydrocarbons	60.5	60.5 J
		Oil-range Hydrocarbons	44.4	44.4 J

mg/L = micrograms per liter.

In report A7L0431, the NWTPH-Dx diesel- and oil-range hydrocarbon results for samples GP10-W-8.0 and GP10-W-8.0-DUP were flagged by Apex due to overlap from hydrocarbons present in both the diesel and the oil range. The results have been qualified by the reviewer with “J” as estimated, in the following table. Apex also noted that the diesel results had chromatographic patterns similar to that of weathered diesel; no qualification based on weathered diesel pattern was required.



Report	Sample	Component	Original Result (mg/L)	Qualified Result (mg/L)
A7L0431	GP10-W-8.0	Diesel-range Hydrocarbons	2.51	2.51 J
		Oil-range Hydrocarbons	1.95	1.95 J
	GP10-W-8.0-DUP	Diesel-range Hydrocarbons	2.31	2.31 J
		Oil-range Hydrocarbons	1.70	1.70 J

In report A7L0431, Apex noted that the NWTPH-Dx diesel-range hydrocarbon result for sample GP15-S-8.0 and both the diesel- and oil-range hydrocarbon results for GP05-S-8.0 did not represent chromatographic fuel patterns. Qualification was not required.

In reports A7L0343 and A7L0431, USEPA Method 8260C chloroethane and trichlorofluoromethane results associated with batch 7120726, analysis date 12/14/2017; 7120806, analysis date 12/18/2017; and batch 7120841, analysis date 12/19/2017 were flagged by Apex as estimated due to being associated with initial calibration criteria exceedances. The reviewer confirmed with Apex that calibration correlation coefficients for chloroethane and trichlorofluoromethane were below 0.99 percent, and the reviewer confirmed that USEPA Method 8260C allows the analytes to be reported as estimated. Apex also confirmed that recalculated chloroethane and trichlorofluoromethane low calibration standards were not within 30 percent of the true concentration. The associated sample results were non-detect and have been qualified by the reviewer with “J” as estimated.

Report	Sample	Component	Original Result (ug/kg)	Qualified Result (ug/kg)
A7L0343	GP02-S-1.5	Chloroethane	610 U	610 UJ
		Trichlorofluoromethane	61.0 U	61.0 UJ
	GP02-S-7.0	Chloroethane	842 U	842 UJ
		Trichlorofluoromethane	84.2 U	84.2 UJ
	GP09-S-2.5	Chloroethane	744 U	744 UJ
		Trichlorofluoromethane	74.4 U	74.4 UJ
	GP09-S-8.0	Chloroethane	641 U	641 UJ
		Trichlorofluoromethane	64.1 U	64.1 UJ
	GP08-S-4.0	Chloroethane	678 U	678 UJ
		Trichlorofluoromethane	67.8 U	67.8 UJ
A7L0431	GP11-S-3.0	Chloroethane	378 U	378 UJ
		Trichlorofluoromethane	75.6 U	75.6 UJ
	GP11-S-7.0	Chloroethane	294 U	294 UJ
		Trichlorofluoromethane	58.9 U	58.9 UJ
	GP05-S-8.0	Chloroethane	304 U	304 UJ
		Trichlorofluoromethane	60.9 U	60.9 UJ
	GP15-S-3.0	Chloroethane	292 U	292 UJ
		Trichlorofluoromethane	58.4 U	58.4 UJ
	GP15-S-8.0	Chloroethane	316 U	316 UJ
		Trichlorofluoromethane	63.3 U	63.3 UJ

UJ = result is non-detect and an estimated value.

In report A7L0431, the USEPA Method 8082A sample GP05-S-5.5 result for Aroclor 1254 was flagged by Apex as estimated to matrix interference and the presence of overlapping Aroclors. The result has been qualified by the reviewer with “J” as estimated.

Report	Sample	Component	Original Result (ug/kg)	Qualified Result (ug/kg)
A7L0431	GP05-S-5.5	Aroclor 1254	7.75	7.75 J

In report A7L0431, USEPA Method 8270D acenaphthene results for samples GP10-W-8.0, GP10-W-8.0-DUP, and GP05-S-8.0 and the acenaphthylene results for samples GP05-S-8.0 and GP15-S-8.0 were non-detect, and the MDL/MRL were raised by Apex due to matrix interference. No additional action was required.

In reports WO11780, USEPA Method 1613B TCDF detected results were confirmed by a second column confirmation analysis. The confirmation analysis results are to be considered the best measured concentration. The final 2,3,7,8-TCDF detected results for samples GP06-S-2.5 and GP04-S-6.0 are qualified as estimated, as discussed in the surrogate/labeled analog results section below.

Report	Sample	Component	Initial Result (pg/g)	Confirmation Result (pg/g)	Result of Record (pg/g)
WO11774	GP06-S-2.5	2,3,7,8-TCDF	2.40 K	2.55	2.55 J
WO11780	GP04-S-6.0	2,3,7,8-TCDF	3.14	4.18	4.18 J
	GP09-S-2.5	2,3,7,8-TCDF	1.55	1.96	1.96

K = result is an EMPC.

pg/g = picograms per gram.

USEPA Method 1613B laboratory-qualified estimated maximum potential concentrations (EMPCs) congener results were qualified by the reviewer as estimated and not detected at the reported concentration, in accordance with USEPA Region 10 guidance for data validation of polychlorinated dibenzodioxins and polychlorinated dibenzo-furans (PCDDs/PCDFs) (USEPA, 2014) and USEPA national functional guidelines for high-resolution superfund methods data review (USEPA, 2016).

USEPA Method 1613B results reported by CFA as EMPCs that were also associated with method blank detections requiring qualification are discussed in the method blank section of this validation report and were not qualified due to EMPCs.

Laboratory EMPC-qualified USEPA Method 1613B total homolog results were qualified by the reviewer as estimated, not detected, at the reported concentration when all associated congeners were reported by CFA as EMPCs or non-detected results. However, when one or more associated congeners was reported as a detection without an EMPC qualifier, the total homolog result was qualified by the reviewer with “J” as estimated where the result was detected above the reporting limit and not additionally qualified where the result was detected below the reporting limit.

USEPA Method 1613B EMPC results were qualified by the reviewer in the following table. Results that were also flagged due to quantitative interference are validated in the following section.

Report	Sample	Component	Original Result (pg/L)	Qualified Result (pg/L)
WO11780	GP03-W-33.0	1,2,3,4,6,7,8-HpCDF	7.57 JK	7.57 UJK
		Total HxCDF	3.83 JK	3.83 UJK
		Total HpCDF	18.6 JK	18.6 UJK
WO11798	GP08-W-6.5	1,2,3,7,8,9-HxCDD	19.1 JK	19.1 UJK
		1,2,3,4,6,7,8-HpCDD	24.4 JK	24.4 UJK
		Total HxCDD	32.1 JK	32.1 JK
		Total HpCDD	24.4 JK	24.4 UJK

JK = result is estimated value (detected below the MRL) and an EMPC.

pg/L = picograms per liter.

UJK = result is not detected, an estimated value, and an EMPC.

Report	Sample	Component	Original Result (pg/g)	Qualified Result (pg/g)	
	GP04-S-1.0	1,2,3,7,8-PeCDD	0.283 JK	0.283 UJK	
		1,2,3,7,8-PeCDF	0.261 JK	0.261 UJK	
		2,3,4,7,8-PeCDF	0.500 JK	0.500 UJK	
		Total TeCDD	0.860 JK	0.860 UJK	
		Total PeCDD	1.66 JK	1.66 UJK	
		Total HxCDD	15.8 K	15.8 JK	
		Total PeCDF	5.60 K	5.60 UK	
		Total HxCDF	16.9 K	16.9 JK	
	GP04-S-6.0	1,2,3,4,7,8,9-HpCDF	0.799 JK	0.799 UJK	
		Total TeCDD	291 K	291 JK	
		Total HxCDD	849 K	849 JK	
		Total PeCDF	42.8 K	42.8 JK	
		Total HpCDF	44.6 K	44.6 JK	
	GP09-S-2.5	1,2,3,4,7,8,9-HpCDF	0.106 JK	0.106 UJK	
		Total TeCDD	0.741 JK	0.741 UJK	
		Total PeCDD	0.516 JK	0.516 JK	
		Total HxCDD	1.59 JK	1.59 UJK	
		Total TeCDF	14.7 K	14.7 JK	
		Total PeCDF	6.17 K	6.17 JK	
		Total HxCDF	2.98 JK	2.98 JK	
	GP09-S-8.0	Total HpCDF	3.80 JK	3.80 JK	
		1,2,3,4,6,7,8-HpCDF	1.14 JK	1.14 UJK	
		Total HpCDD	0.646 JK	0.646 JK	
		Total PeCDF	0.133 JK	0.133 JK	
	WO11774	GP06-S-2.5	Total HpCDF	2.18 JK	2.18 JK
			2,3,7,8-TCDD	1.10 K	1.10 UK

Report	Sample	Component	Original Result (pg/g)	Qualified Result (pg/g)
		2,3,7,8-TCDF	2.40 K	2.40 UK
		2,3,4,7,8-PeCDF	2.93 JK	2.93 UJK
		Total TeCDD	3.87 K	3.87 UK
		Total HxCDD	63.6 K	63.6 JK
		Total TeCDF	9.68 K	9.68 UK
		Total HxCDF	91.8 K	91.8 JK
		Total HpCDF	301 K	301 JK
	GP06-S-7.5	1,2,3,6,7,8-HxCDD	0.221 JK	0.221 UJK
		1,2,3,7,8,9-HxCDD	0.199 JK	0.199 UJK
		Total TeCDD	0.217 JK	0.217 UJK
		Total PeCDD	0.189 JK	0.189 UJK
		Total HxCDD	1.44 JK	1.44 UJK
		Total PeCDF	1.05 JK	1.05 UJK
		Total HxCDF	1.02 JK	1.02 UJK
	GP06-S-21.0	1,2,3,7,8-PeCDD	0.223 JK	0.223 UJK
		1,2,3,6,7,8-HxCDF	0.235 JK	0.235 UJK
		2,3,4,6,7,8-HxCDF	0.331 JK	0.331 UJK
		Total TeCDD	0.241 JK	0.241 UJK
		Total PeCDD	0.223 JK	0.223 UJK
		Total HxCDD	5.02 K	5.02 JK
		Total HxCDF	7.89 K	7.89 JK
	GP01-S-2.5	1,2,3,7,8,9-HxCDD	1.65 JK	1.65 UJK
		2,3,4,7,8-PeCDF	0.695 JK	0.695 UJK
		2,3,4,6,7,8-HxCDF	1.01 JK	1.01 UJK
		1,2,3,4,7,8,9-HpCDF	1.03 JK	1.03 UJK
		Total TeCDD	5.79 K	5.79 JK
		Total PeCDD	4.72 JK	4.72 JK
		Total HxCDD	20.3 K	20.3 JK
		Total TeCDF	1.73 K	1.73 UK
		Total PeCDF	9.40 K	9.40 UK
		Total HxCDF	31.7 K	31.7 JK
		Total HpCDF	112 K	112 JK
	GP01-S-7.5	1,2,3,7,8-PeCDD	1.43 JK	1.43 UJK
		1,2,3,4,7,8-HxCDD	1.68 JK	1.68 UJK
		1,2,3,7,8-PeCDF	0.292 JK	0.292 UJK
		1,2,3,7,8,9-HxCDF	0.507 JK	0.507 UJK
		Total TeCDD	3.55 K	3.55 UK
		Total PeCDD	9.46 K	9.46 UK
		Total HxCDD	58.2 K	58.2 JK
		Total TeCDF	2.94 K	2.94 UK
		Total PeCDF	15.3 K	15.3 JK
		Total HxCDF	73.3 K	73.3 JK

Report	Sample	Component	Original Result (pg/g)	Qualified Result (pg/g)
	GP01-S-16.0	1,2,3,4,7,8,9-HpCDF	0.848 JK	0.848 UJK
		Total TeCDD	3.28 K	3.28 UK
		Total PeCDD	8.46 K	8.46 JK
		Total TeCDF	5.56 K	5.56 UK
		Total HpCDF	90.5 K	90.5 JK
	GP03-S-2.5	2,3,4,7,8-PeCDF	0.856 JK	0.856 UJK
		Total PeCDD	6.94 K	6.94 JK
		Total HxCDD	35.6 K	35.6 JK
		Total TeCDF	1.62 K	1.62 UK
		Total PeCDF	10.8 K	10.8 JK
	GP03-S-7.5	1,2,3,7,8-PeCDF	0.334 JK	0.334 UJK
		Total TeCDD	0.958 JK	0.958 UJK
		Total PeCDD	4.58 JK	4.58 JK
		Total TeCDF	0.840 JK	0.840 UJK
		Total PeCDF	11.8 K	11.8 JK
		Total HxCDF	80.8 K	80.8 JK
	GP03-S-17.5	1,2,3,7,8-PeCDD	0.617 JK	0.617 UJK
		1,2,3,4,7,8-HxCDD	0.986 JK	0.986 UJK
		1,2,3,7,8,9-HxCDD	2.30 JK	2.30 UJK
		1,2,3,4,7,8-HxCDF	0.589 JK	0.589 UJK
		Total PeCDD	1.85 JK	1.85 UJK
		Total HxCDD	27.1 K	27.1 JK
		Total TeCDF	1.57 K	1.57 UK
		Total PeCDF	6.83 K	6.83 JK
Total HxCDF		14.3 K	14.3 JK	
GP03-S-32.0	1,2,3,4,6,7,8-HpCDF	1.46 JK	1.46 UJK	
	Total HxCDD	0.963 JK	0.963 UJK	
	Total PeCDF	0.716 JK	0.716 UJK	
	Total HxCDF	1.43 JK	1.43 JK	
	Total HpCDF	4.16 JK	4.16 UJK	
WO11797	GP15-S-3.0	Total HxCDD	0.539 JK	0.539 UJK
		Total TeCDF	1.47 K	1.47 UK
		Total PeCDF	0.677 JK	0.677 UJK
		Total HpCDF	1.28 JK	1.28 JK
	GP15-S-8.0	1,2,3,4,6,7,8-HpCDD	2.34 JK	2.34 UJK
		1,2,3,4,6,7,8,9-OCDD	11.6 JK	11.6 UJK
		1,2,3,4,6,7,8-HpCDF	0.964 JK	0.964 UJK
		Total HpCDD	2.34 JK	2.34 UJK
WO11798	GP08-S-4.0	OCDF	0.421 JK	0.421 UJK
		Total HxCDD	0.250 JK	0.250 UJK

UK = result is not detected and an EMPC.

In reports WO11774 and WO11780, CFA reported some USEPA Method 1613B dioxin and furan results flagged with “Q” due to quantitative interference. The results have been qualified by the reviewer with “J” as estimated. Results detected below the MRL were already considered estimated and were not additionally qualified. Total homolog results that were also flagged due to EMPCs were qualified with “J” as estimated when associated dioxin and furan congeners had detected results.

Report	Sample	Component	Original Result (pg/g)	Qualified Result (pg/g)
WO11780	GP04-S-6.0	Total PeCDD	579 Q	579 J
		Total PeCDF	34.2 KQ	34.2 JK
WO11774	GP06-S-2.5	1,2,3,7,8,9-HxCDF	1.07 JQ	1.07 J
		Total PeCDD	14.0 KQ	14.0 JK
		Total PeCDF	25.8 KQ	25.8 JK

KQ = result is an EMPC and has quantitative interference.  
Q = result has quantitative interference.

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

## HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

### Holding Times

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

Water samples analyzed by USEPA Method 7199 for hexavalent chromium were preserved with an ammonium sulfate buffer at the time of collection to extend the holding time from 24 hours to 28 days, as specified by footnote 20 in 40 CFR part 136.3, table II.

### Preservation and Sample Storage

The samples were preserved and stored appropriately.

## BLANKS

### Method Blanks

Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the method blanks were associated with all samples prepared in the analytical batch. Where an analyte was detected in a sample and in the associated method blank, the sample result was qualified if the concentration was less than ten times the method blank concentration for metals results, less than five times the method blank concentration for all remaining results, or if both the method blank and associated sample result were below the MRL (for all methods). MRLs were elevated to the concentration detected in the samples, and results were qualified as not detected “U” at the elevated MRL.

USEPA Method 1613B sample results were qualified by the reviewer with “U” as not detected at the sample result value when the result was less than five times the associated method blank EMPC concentration.

In reports A7L0317 and A7L0343, the USEPA Method 8270D water batch 7120727 laboratory method blank had a detection of 1-methylnaphthalene between the MDL and MRL at 0.0265 ug/L and a detection of 2-methylnaphthalene 0.0377 ug/L above the MRL. Associated samples were either non-detect or greater than five times the method blank concentration; thus, no results were qualified.

In report A7L0431, the USEPA Method 8270D soil batch 7120858 laboratory method blank had a detection of 2-methylnaphthalene between the MDL and MRL at 3.75 ug/kg. Associated samples were non-detect or had detections significantly greater than five times the method blank concentration, with the following exception, which was qualified by the reviewer with “U” as non-detect at the reported concentration:

Report	Sample	Component	Method Blank Result (ug/kg)	Original Result (ug/kg)	Qualified Result (ug/kg)
A7L0431	GP15-S-3.0	2-Methylnaphthalene	3.75	7.46	7.46 U

In report A7L0431, the USEPA Method 8270D soil batch 7121112 laboratory method blank had a detection of 1-methylnaphthalene between the MDL and MRL at 4.89 ug/kg. Associated samples were either non-detect or significantly greater than five times the method blank concentration; thus, no results were qualified.

In report A7L0431, the USEPA Method 6020A water batch 7121120 laboratory method blank had a detection of total lead above the MRL of 0.200 ug/L, at 0.308 ug/L. The associated sample result was greater than ten times the method blank detection; thus, no results were qualified.

In reports WO11774, WO11780, WO11797, and WO11798, USEPA Method 1613B soil batch 36649 method blank had detections between the EDL and MRL. Associated sample results were qualified as follows:

Report	Sample	Component	Method Blank Result (pg/g)	Original Result (pg/g)	Qualified Result (pg/g)
WO11774	GP06-S-7.5	1,2,3,4,6,7,8-HpCDD	0.116 JK	1.35 J	1.35 UJ
		2,3,4,6,7,8-HxCDF	0.060 JK	0.112 JK	0.112 UJ
	GP01-S-2.5	1,2,3,7,8,9-HxCDF	0.082 JK	0.314 JK	0.314 UJ
	GP01-S-16.0	1,2,3,7,8,9-HxCDF	0.082 JK	0.325 J	0.325 UJ
	GP03-S-7.5	1,2,3,7,8,9-HxCDF	0.082 JK	1.00 J	1.00 UJ
	GP03-S-32.0	1,2,3,4,7,8-HxCDF	0.060 J	0.122 J	0.122 UJ
WO11780	GP04-S-1.0	1,2,3,4,7,8-HxCDF	0.060 J	1.13 JK	1.13 UJ
		1,2,3,7,8,9-HxCDF	0.082 JK	0.316 J	0.316 UJ
	GP04-S-6.0	1,2,3,7,8,9-HxCDF	0.082 JK	0.284 JK	0.284 UJ
	GP04-S-13.0	1,2,3,4,6,7,8,9-OCDD	0.766 J	0.882 J	0.882 UJ

Report	Sample	Component	Method Blank Result (pg/g)	Original Result (pg/g)	Qualified Result (pg/g)
	GP09-S-2.5	1,2,3,4,7,8-HxCDF	0.060 J	0.299 JK	0.299 UJ
	GP09-S-8.0	1,2,3,4,6,7,8-HpCDD	0.116 JK	0.336 JK	0.336 UJ
		1,2,3,4,6,7,8,9-OCDD	0.766 J	2.85 J	2.85 UJ
		Total HxCDF	0.202 JK	0.485 JK	0.485 UJ
WO11797	GP15-S-3.0	Total HxCDF	0.202 JK	0.741 J	0.741 UJ
WO11798	GP08-S-4.0	1,2,3,4,6,7,8-HpCDF	0.066 JK	0.216 J	0.216 UJ
		Total HxCDF	0.202 JK	0.246 J	0.246 UJ

### Trip Blanks

Trip blanks were submitted with reports A7L0317, A7L0343, and A7L0431 for analysis by USEPA Method 8260C. The trip blanks were non-detect to MDLs for all target analytes.

### Equipment Rinsate Blanks

Equipment rinsate blanks were not submitted for this sampling event.

## SURROGATE/LABELED ANALOG RECOVERY RESULTS

The samples were spiked with surrogate compounds or labeled analogs to evaluate laboratory performance on individual samples. The laboratory appropriately documented and qualified surrogate or labeled analog outliers.

The reviewer took no action on surrogate percent recoveries outside of acceptance limits where samples or quality control samples were diluted to quantify high concentrations of target analytes present in the sample. The laboratory appropriately documented and qualified surrogate outliers.

USEPA Method 8081B surrogates 2,4,5,6-tetrachloro-m-xylene and decachlorobiphenyl were below lower percent recovery acceptance limits for some samples and batch quality control samples in reports A7L0317 and A7L0431. Additionally, in report A7L0431, the decachlorobiphenyl result for sample GP10-S-2.5 exceeded the upper percent recovery acceptance limit of 151 percent, at 179 percent. All surrogate results that were below lower percent recovery acceptance limits had percent recoveries greater than 30 percent. The surrogate result that was above the upper percent recovery acceptance limit was less than 200 percent and was associated with non-detect result. Based on recommendations for pesticide data review (USEPA, 2017b), no results have been qualified.

In reports WO11774 and WO11780, the USEPA Method 1613B samples GP06-S-2.5 and GP04-S-6.0 labeled analog 13C-2,3,7,8-TCDF results were below the lower percent recovery acceptance limit of 24 percent, at 17.4 percent and 23.2 percent, respectively. The detected 2,3,7,8-TCDF results for both samples were confirmed by secondary analysis; however, because labeled analog results are not reported for confirmation analysis, both sets of results were qualified by the reviewer with "J" as estimated. The 2,3,7,8-TCDF results that were flagged with "K" due to EMPCs were also qualified by the reviewer with "U" as non-detect.



Report	Sample	Component	Original Result (pg/g)	Qualified Result (pg/g)
WO11774	GP06-S-2.5	2,3,7,8-TCDF - primary	2.40 K	2.40 JK
		2,3,7,8-TCDF - confirmation	2.55	2.55 J
WO11780	GP04-S-6.0	2,3,7,8-TCDF - primary	3.14	3.14 J
		2,3,7,8-TCDF - confirmation	4.18	4.18 J

In report WO11774, the USEPA Method 1613B sample GP06-S-2.5 labeled analog cleanup surrogate 37Cl-1,2,7,8-TCDD result was below the lower percent recovery acceptance limit of 35 percent at 27.2 percent. All USEPA Method 1613B results for sample GP06-S-2.5 have been qualified by the reviewer with “J” as estimated. Results already reported as estimated due to detection below the MRL were not additionally qualified. Besides 2,3,7,8-TCDF, results reported as EMPC or with quantitative interference are already qualified in the data qualifications section above.

Report	Sample	Component	Original Result (pg/g)	Qualified Result (pg/g)
WO11774	GP06-S-2.5	2,3,7,8-TCDD	1.10 K	1.10 JK
		1,2,3,6,7,8-HxCDD	8.47	8.47 J
		1,2,3,4,6,7,8-HpCDD	227	227 J
		1,2,3,4,6,7,8,9-OCDD	2560	2560 J
		1,2,3,4,6,7,8-HpCDF	120	120 J
		OCDF	206	206 J
		Total HpCDD	434	434 J

In report WO11774, the USEPA Method 1613B sample GP06-S-2.5 surrogate 13C-1,2,3,7,8,9-HxCDF labeled analog surrogate result was flagged due to quantitative interference. The percent recovery was within control limits; thus, no results were qualified.

In report WO11774, the USEPA Method 1613B sample GP03-S-17.5 labeled analog surrogates 12C-2,3,7,8-TCDD, 13C-2,3,7,8-TCDF, and 13C-1,2,3,7,8-PeCDF were below lower percent recovery limits at 11.8, 8.00, and 21.9 percent, respectively. The labeled analog cleanup surrogate 37Cl-1,2,7,8-TCDD result was also below the lower percent recovery acceptance limit of 35 percent at 15.1 percent. The non-detect result (2,3,7,8-TCDF) associated with surrogate recoveries less than 10 percent were qualified by the reviewer with “R” as rejected, based on recommendations for dioxin and furan data review (USEPA, 2016). All remaining results were qualified by the reviewer with “J” as estimated, based on the cleanup surrogate recovery. Results already reported as estimated due to detection below the MRL were not additionally qualified. Results reported as EMPCs are qualified in the data qualifications section above. The reviewer confirmed that the sample was not reanalyzed due to insufficient sample volume.

Report	Sample	Component	Original Result (pg/g)	Qualified Result (pg/g)
WO11774	GP03-S-17.5	2,3,7,8-TCDD	0.607 U	0.607 UJ
		1,2,3,4,6,7,8-HpCDD	70.3	70.3 J

Report	Sample	Component	Original Result (pg/g)	Qualified Result (pg/g)
		1,2,3,4,6,7,8,9-OCDD	476	476 J
		2,3,7,8-TCDF	1.22 U	1.22 R
		1,2,3,7,8-PeCDF	0.397 U	0.397 UJ
		1,2,3,6,7,8-HxCDF	0.543 U	0.543 UJ
		1,2,3,7,8,9-HxCDF	0.657 U	0.657 UJ
		1,2,3,4,6,7,8-HpCDF	60.2	60.2 J
		1,2,3,4,7,8,9-HpCDF	0.651 U	0.651 UJ
		OCDF	44.2	44.2 J
		Total TeCDD	0.607 U	0.607 UJ
		Total HpCDD	145	145 J
		Total HpCDF	87.5	87.5 J

In report WO11797, the USEPA Method 1613B sample GP15-S-8.0 labeled analog 13C-2,3,7,8-TCDF results were below the lower percent recovery acceptance limit of 24 percent, at 20.2 percent. Additionally, the labeled analog cleanup surrogate 37Cl-1,2,7,8-TCDD result was below the lower percent recovery acceptance limit of 35 percent at 34.8 percent. All USEPA Method 1613B results for sample GP15-S-8.0 were non-detect and were qualified by the reviewer with “J” as estimated. Results flagged due to EMPCs are qualified in the data qualifications section above.

Report	Sample	Component	Original Result (pg/g)	Qualified Result (pg/g)
WO11797	GP15-S-8.0	2,3,7,8-TCDD	2.17 U	2.17 UJ
		1,2,3,7,8-PeCDD	1.11 U	1.11 UJ
		1,2,3,4,7,8-HxCDD	1.45 U	1.45 UJ
		1,2,3,6,7,8-HxCDD	1.44 U	1.44 UJ
		1,2,3,7,8,9-HxCDD	1.48 U	1.48 UJ
		2,3,7,8-TCDF	3.84 U	3.84 UJ
		1,2,3,7,8-PeCDF	0.962 U	0.962 UJ
		2,3,4,7,8-PeCDF	0.808 U	0.808 UJ
		1,2,3,4,7,8-HxCDF	0.452 U	0.452 UJ
		1,2,3,6,7,8-HxCDF	0.455 U	0.455 UJ
		2,3,4,6,7,8-HxCDF	0.459 U	0.459 UJ
		1,2,3,7,8,9-HxCDF	0.576 U	0.576 UJ
		1,2,3,4,7,8,9-HpCDF	0.508 U	0.508 UJ
		OCDF	1.24 U	1.24 UJ
		Total TeCDD	2.17 U	2.17 UJ
		Total PeCDD	1.11 U	1.11 UJ
		Total HxCDD	1.44 U	1.44 UJ
		Total TeCDF	3.84 U	3.84 UJ
		Total PeCDF	0.30 U	0.30 UJ
Total HxCDF	0.452 U	0.452 UJ		

In report WO11798, the USEPA Method 1613B sample GP08-W-6.5 labeled analog 13C-2,3,7,8-TCDD and 13C-2,3,7,8-TCDF results were below the lower percent recovery acceptance limit of 25 percent and 24 percent, respectively, at 18.7 percent and 16.4 percent, respectively, due to matrix interference. Associated USEPA Method 1613B results were non-detect and were qualified by the reviewer with “J” as estimated.

Report	Sample	Component	Original Result (pg/g)	Qualified Result (pg/g)
WO11798	GP08-W-6.5	2,3,7,8-TCDD	27.7 U	27.7 UJ
		2,3,7,8-TCDF	41.8 U	41.8 UJ

All remaining surrogate results were within percent recovery acceptance limits.

## LABORATORY DUPLICATE RESULTS

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

In report A7L0317, the USEPA Method 8082A soil batch 7121074 laboratory duplicate (7121074-DUP2) exceeded the relative percent difference (RPD) control limit of 30 percent for Aroclor 1260, at 42 percent. The sample used to prepare the laboratory duplicate was qualified by the reviewer with “J” as estimated.

Report	Sample	Component	Original Result (ug/kg)	Qualified Result (ug/kg)
A7L0317	GP07-S-2.5	Aroclor 1260	93.7	93.7 J

In report A7L0317, the USEPA Method 8270D soil batch 7120698 laboratory duplicate (7120698-DUP2) exceeded most RPD control limits of 30 percent, ranging from 57 percent to 101 percent. Apex noted that the exceedances were likely due to a heterogenous sample matrix. The laboratory duplicate results were less than five times the MRL, apart from pyrene, which was detected at less than five times the MRL in the sample but greater than five times the MRL in the laboratory duplicate. However, as the sample was significantly diluted, at 1:125, the results exceeding RPD control limits have been qualified by the reviewer with “J” as estimated. Some results were also qualified in the data qualifications section due to insufficient chromatographic peak separation. Results detected below the MRL are already considered estimated and were not additionally qualified by the reviewer.

Report	Sample	Component	Original Result (ug/kg)	Qualified Result (ug/kg)
A7L0317	GP06-S-2.5	Chrysene	384	384 J
		Fluoranthene	526	526 J
		Phenanthrene	381	381 J
		Pyrene	634	634 J

In report A7L0431, the NWTPH-HCID soil batch 7120880 laboratory duplicate (7120880-DUP1) source results for diesel- and oil-range hydrocarbons were reported as non-detect;

however, both results were reported as “detect.” The reviewer confirmed that the detected results for the source sample could not be reported due to the qualitative nature of the results. The reviewer also confirmed that the laboratory duplicate results met acceptance criteria for NWTPH-HCID. No additional action was required.

In reports A7L0343 and A7L0431, the NWTPH-Dx soil batch 7120989 laboratory duplicate (7120989-DUP2) exceeded RPD control limits for both diesel- and oil-range hydrocarbons due to a heterogenous sample matrix. The sample used to prepare the laboratory duplicate has been qualified by the reviewer with “J” as estimated.

Report	Sample	Component	Original Result (mg/kg)	Qualified Result (mg/kg)
A7L0431	GP05-S-8.0	Diesel-range Hydrocarbons	5970	5970 J
		Oil-range Hydrocarbons	4080	4080 J

mg/kg = milligrams per kilogram.

In report A7L0343, the NWTPH-Gx soil batch 7120726 (7120726-DUP2) was flagged due to receipt outside of recommended storage temperature. An additional laboratory duplicate was also analyzed; thus, no action was required.

In report A7L0431, the USEPA Method 8270D soil batch 7120858 laboratory duplicate exceeded the RPD control limit of 30 percent for benzo(g,h,i)perylene, at 165 percent, due to sample heterogeneity. The associated sample result was already reported as estimated due to detection below the MRL; thus, no additional qualification was required.

In report A7L0431, the USEPA Method 6020A soil batch 7121111 laboratory duplicate (7121111-DUP1) exceeded the RPD control limit of 40 percent for lead, at 41 percent. The sample used to prepare the laboratory duplicate was qualified by the reviewer with “J” as estimated.

Report	Sample	Component	Original Result (mg/kg)	Qualified Result (mg/kg)
A7L0431	GP14-S-3.0	Total Lead	12.7	12.7 J

All laboratory duplicate RPDs were within acceptance limits.

## LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

A laboratory control sample/laboratory control sample duplicate (LCS/LCSD) is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS/LCSD samples were extracted and analyzed at the required frequency.

In report A7L0317, the USEPA Method 8260C soil batch 7120671 LCS exceeded upper percent recovery acceptance limits of 120 percent for bromomethane, at 215 percent; for chloroethane, at 131 percent; and for vinyl chloride, at 143 percent. The associated samples were non-detect; thus, no results were qualified. The LCS also had results for 2-hexanone and 4-methyl-2-pentanone below the lower percent recovery acceptance limit of 80 percent, at 74

percent and 79 percent, respectively. The 4-methyl-2-pentanone percent recovery exceedance was considered minor and was not qualified. Apex raised the 4-methyl-2-pentanone and 2-hexanone MDLs to the MRLs. The associated 2-hexanone results were qualified by the reviewer with “J” as estimated.

Report	Sample	Component	Original Result (ug/kg)	Qualified Result (ug/kg)
A7L0317	GP06-S-2.5	2-Hexanone	560 U	560 UJ
	GP06-S-7.5	2-Hexanone	511 U	511 UJ
	GP06-S-21.0	2-Hexanone	571 U	571 UJ
	GP03-S-2.5	2-Hexanone	640 U	640 UJ
	GP03-S-7.5	2-Hexanone	565 U	565 UJ
	GP03-S-17.5	2-Hexanone	541 U	541 UJ
	GP03-S-32.0	2-Hexanone	689 U	689 UJ
	GP03-S-2.5-DUP	2-Hexanone	506 U	506 UJ
	GP17-S-2.5	2-Hexanone	592 U	592 UJ
	GP17-S-8.0	2-Hexanone	619 U	619 UJ
	GP18-S-2.5	2-Hexanone	625 U	625 UJ
	GP12-S-3.0	2-Hexanone	646 U	646 UJ
	GP12-S-8.0	2-Hexanone	655 U	655 UJ
	GP07-S-2.5	2-Hexanone	799 U	799 UJ
	GP07-S-7.5	2-Hexanone	658 U	658 UJ

In report A7L0317, the USEPA Method 8260C soil batch 7120763 LCS exceeded upper percent recovery acceptance limits of 120 percent for bromomethane, at 183 percent; for chloroethane, at 126 percent; for 2,2-dichloropropane, at 133 percent; and for trichlorofluoromethane, at 129 percent. The associated samples were non-detect; thus, no results were qualified.

In report A7L0317, the USEPA Method 8260C water batch 7120670 LCS exceeded upper percent recovery acceptance limits of 120 percent for 2-butanone, at 121 percent, and for chloromethane, at 123 percent. The associated samples were non-detect; thus, no results were qualified.

In report A7L0317, the USEPA Method 8260C water batch 7120716 LCS exceeded upper percent recovery acceptance limits of 120 percent for bromodichloromethane, at 126 percent; for 2-butanone, at 124 percent; for chloromethane, at 129 percent; and for 2,2-dichloropropane, at 125 percent. The associated samples were non-detect; thus, no results were qualified.

In report A7L0343, the USEPA Method 8260C soil batch 7120726 LCS results for chloroethane were below the lower percent recovery acceptance limit of 80 percent, at 78 percent. Apex raised chloroethane MDLs to the MRL. The chloroethane percent recovery exceedance was considered minor; thus, no results were qualified by the reviewer.

In report A7L0343, the USEPA Method 8260C water batch 7120718 LCS exceeded the upper percent recovery acceptance limit of 120 percent for 1,2,3-trichloroethene, at 121 percent.

Apex raised chloroethane MDLs to the MRL. The exceedance was considered minor; thus, no results were qualified by the reviewer.

In report A7L0343, the USEPA Method 8081B water batch 7121056 LCS/LCSD results for heptachlor were below the lower percent recovery acceptance limit of 54 percent, at 44 percent and 51 percent, respectively. The LCS result for aldrin was also below the lower percent recovery acceptance limit of 45 percent, at 41 percent. The LCSD result for aldrin was within percent recovery acceptance limits; thus, associated sample results for aldrin were not qualified. The associated sample results for heptachlor were non-detect and have been qualified by the reviewer with “J” as estimated.

Report	Sample	Component	Original Result (ug/L)	Qualified Result (ug/L)
A7L0343	GP03-W-33.0	Heptachlor	0.0115 U	0.0115 UJ
	GP08-W-6.5		0.0217 U	0.0217 UJ

In report A7L0431, the USEPA Method 8260C soil batch 7120806 LCS chloroethane result exceeded the upper percent recovery acceptance limit of 120 percent, at 167 percent. The result was also qualified by Apex as estimated due to exceedances associated with instrument calibration. All associated sample results are qualified in the data qualifications section above due to instrument calibration exceedances. No additional qualification was required. The LCS also exceeded upper percent recovery acceptance limits of 120 percent for 2,2-dichloropropane and cis-1,3-dichloropropane, both at 126 percent. All associated sample results were non-detect; thus, no results were qualified.

In report A7L0431, USEPA Method 8260C soil batch 7120807 and 7120841 LCSs exceeded the upper percent recovery acceptance limit of 120 percent for bromomethane, at 174 percent and 129 percent, respectively. The matrix spike (MS) associated with batch 7120807 also exceeded the upper percent recovery acceptance limit. Associated samples were non-detect; thus, no results were qualified.

In report A7L0431, the USEPA Method 8081B water batch 7121057 LCSD results for alpha-BHC, beta-BHC, gamma-BHC, and heptachlor were below lower percent recovery acceptance limits, at 52, 55, 55, and 48 percent, respectively. The associated LCS had acceptable percent recoveries and the LCS/LCSD RPDs were within control limits; thus, no results were qualified.

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

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

MS/matrix spike duplicate (MSD) results are used to evaluate laboratory precision and accuracy. All MS/MSD samples were extracted and analyzed at the required frequency, with the following exceptions. Where MS/MSDs were not included for NWTPH-Dx or USEPA Method 8270D quality control batches due to limited sample volume, batch precision and accuracy was evaluated with an LCS/LCSD pair and/or a laboratory duplicate.

When MS/MSD percent recoveries and RPDs were outside acceptance limits because of high concentrations of analyte in the sample, and MS/MSD exceedances were flagged by the laboratory because of high concentrations of analyte, no qualifications were made by the reviewer.

In report A7L0317, the USEPA Method 8260C batch soil 7120671 MS exceeded upper percent recovery acceptance limits of 143 percent, 135 percent, and 135 percent, for bromomethane, at 238 percent; for hexachlorobutadiene, at 163 percent; and for vinyl chloride, at 161 percent, respectively. The associated samples were non-detect; thus, no results were qualified.

In report A7L0317, the USEPA Method 8260C soil batch 7120763 MS exceeded upper percent recovery acceptance limits of 143 percent and 133 percent, for bromomethane, at 185 percent, and for 2,2-dichloropropane, at 137 percent, respectively. The associated samples were non-detect; thus, no results were qualified.

In report A7L0317, the USEPA Method 8260C water batch 7120670 MS exceeded some upper percent recovery acceptance limits, ranging from 122 percent to 130 percent. The associated samples were non-detect; thus, no results were qualified.

In reports A7L0317 and A7L0343, the USEPA Method 8270D soil batch 7120994 MS exceeded upper percent recovery acceptance limits for benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, and indeno(1,2,3-cd)pyrene, ranging from 134 to 152 percent. The associated sample results in the sample used to prepare the MS were qualified by the reviewer with “J” as estimated. Result benzo(g,h,i)perylene was detected below the MRL and, so, already considered estimated and reported with “J” qualifier and was not additionally qualified.

Report	Sample	Component	Original Result (ug/kg)	Qualified Result (ug/kg)
A7L0343	GP02-S-7.0	Benzo(a)pyrene	372	372 J
		Benzo(b)fluoranthene	462	462 J
		Benzo(g,h,i)perylene	581	581 J
		Indeno(1,2,3-cd)pyrene	503	503 J

In report A7L0317, the USEPA Method 6020A soil batch 7120967 MS (7120967-MS2) exceeded the upper percent recovery acceptance limit of 125 percent for total mercury, at 147 percent, and exceeded the lower percent recovery acceptance limit of 75 percent, for total lead, at 38 percent. Apex indicated that the sample had a heterogenous sample matrix and that for this reason a post-digestion spike was not performed. The sample used to prepare the MS had high concentrations of total lead; thus, the total lead results were not qualified. The sample result for total mercury was qualified by the reviewer with “J” as estimated.

Report	Sample	Component	Original Result (ug/kg)	Qualified Result (ug/kg)
A7L0317	GP03-S-7.5	Total Mercury	0.439	0.439 J

In report A7L0343, the USEPA Method 6020A soil batch 7121045 MS (7121045-MS1) exceeded percent recovery acceptance limits for total barium, total lead, and total mercury. Apex noted that the sample had a heterogenous matrix; however, the batch laboratory

duplicate prepared with the same sample had acceptable RPDs. The total lead result in the sample used to prepare the MS was greater than five times the spike concentration; thus, total lead was not qualified. Remaining associated sample results were qualified by the reviewer with “J” as estimated. The same soil batch had a second MS (7121045-MS2) with a percent recovery exceedance for total chromium. The second MS was prepared with a sample from an unrelated project; thus, no results were qualified based on the total chromium exceedance.

Report	Sample	Component	Original Result (mg/kg)	Qualified Result (mg/kg)
A7L0343	GP02-S-1.5	Total Barium	119	119 J
		Total Mercury	3.20	3.20 J

In report A7L0431, the USEPA Method 8260C batch 7120806 MS exceeded the upper percent recovery acceptance limit of 126 percent for cis-1,3-dichloropropene, at 129 percent. The associated batch LCS also exceeded the upper percent recovery acceptance limit. The MS result was also associated with a calibration verification standard exceedance. The associated sample was non-detect; thus, no results were qualified.

In report A7L0431, the USEPA Method 8260C batch 7120807 MS exceeded the upper percent recovery acceptance limit of 143 percent for bromomethane, at 173 percent. The MS result was also flagged by Apex due to association with a continuing calibration verification standard that exceeded acceptance criteria for bromomethane. The LCSs associated with batch 7120807 also exceeded the upper percent recovery acceptance limit for bromomethane. The associated sample results were non-detect; thus, no results were qualified.

In report A7L0431, the USEPA Method 8270D soil batch 7120858 MS exceeded several percent recovery acceptance limits due to high concentrations of analytes present in the sample used to prepare the MS. No qualification was required.

In report A7L0431, the USEPA Method 8270D soil batch 7121112 MS exceeded the benzo(k)fluoranthene upper percent recovery acceptance limit of 132 percent, at 140 percent. The sample was diluted for analysis, and the associated sample result was non-detect; thus, no results were qualified. The MS also exceeded some percent recovery acceptance limits due to high concentrations of analytes present in the sample used to prepare the MS. No qualification was required.

In report A7L0431, the USEPA Method 6020A water batch 7121080 MS (7121080-MS1) exceeded percent recovery acceptance limits for chromium and selenium, and an additional MS (7121080-MS5) exceeded percent recovery acceptance limits for barium and mercury. The MS were prepared with samples from an unrelated project, and an additional MS had acceptable percent recoveries; thus, no results were qualified.

In report A7L0431, the USEPA Method 6020A soil batch 7121111 MS (7121111-MS2) exceeded the upper percent recovery acceptance limit of 125 percent for total lead, at 299 percent. Apex noted that that the exceedance was likely due to sample heterogeneity. The MS was prepared with a sample from an unrelated project; thus, no results were qualified.

In report WO1174, the USEPA Method 1613B MS/MSD prepared with sample GP03-S-7.5 exceeded upper percent recovery acceptance limits for 1,2,3,4,6,7,8-HpCDD, OCDD,



1,2,3,4,6,7,8-HpCDF, and OCDF due to matrix interference. The MS/MSD also exceeded RPD control limits of 20 percent for 1,2,3,4,6,7,8-HpCDD and OCDD, at 20.2 percent and 30.9 percent, respectively. The associated batch LCS/LCSD had acceptable percent recovery and RPD. The sample used to prepare the MS/MSD was qualified by the reviewer as estimated as follows:

Report	Sample	Component	Original Result (pg/g)	Qualified Result (pg/g)
WO11774	GP03-S-7.5	1,2,3,4,6,7,8-HpCDD	205	205 J
		1,2,3,4,6,7,8-HpCDF	114	114 J
		OCDD	3080	3080 J
		OCDF	264	264 J

All recoveries were within acceptance limits for percent recovery and RPDs.

## FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. Field duplicates were submitted for analysis in reports A7L0317 (GP03-S-2.5/GP03-S-2.5-DUP and GP07-S-7.5/GP07-S-7.5-DUP) and A7L0431 (GP10-W-8.0/GP10-W-8.0-DUP). MFA uses acceptance criteria of 100 percent RPD for results that are less than five times the MRL or 50 percent RPD for results that are greater than five times the MRL. Non-detect data are not used in the evaluation of field duplicate results. The following analytes were qualified due to RPD exceedances:

Report	Sample	Component	RPD (%)	Units	Original Result	Qualified Result
A7L0317	GP03-S-2.5	Total Lead	65.0	mg/kg	166	166 J
	GP03-S-2.5-DUP			mg/kg	326	326 J
	GP03-S-2.5	Aroclor 1254	109	ug/kg	8.58	8.58 J
	GP03-S-2.5-DUP			ug/kg	29.1	29.1 J
	GP07-S-7.5	Total Lead	73.2	mg/kg	20.8	20.8 J
	GP07-S-7.5-DUP			mg/kg	9.65	9.65 J

All remaining field duplicate analytes were within the acceptance criteria.

## CONTINUING CALIBRATION VERIFICATION RESULTS

Continuing calibration verification (CCV) results are used to demonstrate instrument precision and accuracy through the end of the sample batch. CCV results were not reported. The reviewer took no action based on quality control sample flags for CCV exceedances when quality control results met acceptance criteria.

## REPORTING LIMITS

Apex reported all results to MDLs. Weck reported results to MRLs. Samples requiring dilutions because of high analyte concentrations and/or matrix interferences were reported

with raised MDLs and MRLs. Results between the MDL and MRL were qualified by Apex with “J” as estimated.

The reviewer confirmed that all NWTPH-Gx and USEPA Method 8260C soil results were reported with a dilution factor of 50, due to a dilution required by the method.

In report A7L0317, USEPA Method 8260C MDLs were raised to MRLs when associated batch LCS results were below lower percent recovery acceptance limits. Associated sample results were qualified in the LCS results section above.

In report A7L0317, the USEPA Method 8082A Aroclor 1254 MDL and MRL for sample GP07-S-2.5 were raised due to interference from coeluting organic compounds. No additional action was required.

In report A7L0317, USEPA Method 8081B endrin ketone MDL and MRL for sample GP01-S-2.5 were raised due to interference from coeluting organic compounds. Additionally, sample GP03-S-17.5 was diluted 1:20 and non-detect for all target analytes. The reviewer confirmed that the dilution was required due to the sample matrix. No additional action was required.

In report A7L0317, USEPA Method 8270D results were reported from dilutions, for samples GP06-S-21.0, GP01-S-2.5, GP03-S-2.5, GP03-S-7.5, GP03-S-17.5, GP16-S-8.0, GP17-S-8.0, GP07-S-7.5, and GP07-S-7.5-DUP. In report A7L0343, USEPA Method 8270D results for sample GP03-W-33.0 were also reported from a dilution. Some samples had detections below the MRL while others were non-detect for all target analytes. The reviewer confirmed that dilutions were required due to impacts from hydrocarbons in the sample matrix. No additional action was required.

In report A7L0343, the NWTPH-Gx gasoline-range organics result and USEPA Method 8260C results for GP08-W-6.5 were non-detect and reported from dilutions due to the sample matrix. The reviewer confirmed that the sample matrix was impacted by heavier hydrocarbons. No additional action was required.

In report A7L0431, USEPA Method 8260C naphthalene and 1,1,2,2-tetrachloroethane results for sample GP05-S-8.0 were non-detect and MDL and MRL were raised by Apex due to matrix interference. No additional action was required.

In reports A7L0343 and A7L0431, USEPA Method 8081B results for samples GP04-S-1.0, GP08-W-6.5, and GP10-S-2.5 were non-detect and reported from sample dilutions. The reviewer confirmed that dilutions were performed based on presence of hydrocarbons in the sample matrix. No action was required.

In report A7L0343, the USEPA Method 8270D MDL and MRL for acenaphthene were raised for sample GP08-W-6.5 due to matrix interference. No action was required.

In report A7L0343, the USEPA Method 6020A MDLs and MRLs were raised for sample GP08-W-6.5 due to a smaller sample volume used in the analysis. The reviewer confirmed that a smaller sample volume was selected due to significant observable hydrocarbon material impacting the sample matrix.

In report A7L0431, USEPA Method 8270D results were reported from dilutions for sample GP14-S-8.0 and GP13-S-2.5. Samples either were non-detect for all target analytes or only had detections below the MRL. The reviewer confirmed that dilutions were required due to impacts from hydrocarbons in the sample matrix. No additional action was required.

In CFA report WO11797, sample GP15-S-8.0 was extracted from 1 gram of sample instead of 10 grams due to “an oily odor.”

In CFA report WO11798, sample GP08-S-6.5 was noted to have an oily matrix and dark color. The sample was prepared for a dilution by fortifying with four times the standard volume of surrogate. A 1:4 dilution of the extract was processed for extract cleanup and analyzed.

## DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies.

The reviewer confirmed that NWIPH-Gx and USEPA Method 8260C soil results were reported with a base dilution factor of 1:50 due to a method-required dilution for preparation for analysis.

In report A7L0317, Apex noted on the cooler receipt form that the sample collection time recorded on the sample container label for GP03-S-17.5 was 11:30 a.m., while the chain of custody (COC) was recorded with 11:40 a.m. The reviewer confirmed that the time recorded on the COC was correct and was included in the final report. Apex noted that one of the GP03-S-17.5 sample container labels was incorrectly recorded with GP03-S-17.6 instead of GP03-S-17.5. No action was required. Additionally, Apex noted that one of the two 8-ounce containers submitted for GP16-S-2.5 did not contain a sample name. The reviewer confirmed that the unlabeled container was submitted in a bag along with the labeled container, and Apex identified the container correctly. No additional action was required.

In report A7L0317, Apex noted on the cooler receipt form that two trip blank containers were recorded on the COC, while three containers were received by the laboratory. The reviewer confirmed trip blank COC and container protocol with the sampler. No additional action was required.

In report A7L0343, a trip blank was submitted for analysis but was not recorded on the COC. The reviewer informed the sampling staff. No additional action was required.

In report A7L0431, sample GP05-S-5.5 collected on December 14, 2017, was submitted to Apex on December 15 and 18, on two separate COCs. The reviewer confirmed that the second submittal represented additional containers of GP05-S-5.5 that were omitted from the initial sample delivery group. The reviewer confirmed that the sample containers associated with the second submittal were properly stored at 4 degrees Celsius until receipt by Apex. No action was required.

In reports A7L0317 and A7L0431, additional analyses were requested by the MFA project manager after samples were received by Apex. A record of the additional requests was not included with final reports.

No additional issues were found.

## REFERENCES

---

- Apex. 2016. Quality systems manual. Revision 5. Apex Laboratories, LLC., Tigard, Oregon. April 1.
- CFA. 2016. Quality Assurance Plan. Revision 14. Cape Fear Analytical, LLC., Wilmington, North Carolina. April.
- Maxxam. 2015. Corporate quality manual. Maxxam Analytics International Corporation. Mississauga, Ontario, Canada. March.
- USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. EPA-530/SW-846. Update V. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September (revision 1, July 2014).
- USEPA. 2014. R10 data validation and review guidelines for polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran data (PCDD/PCDF) using Method 1613B and SW846 Method 8290A. EPA-910-R-14-003. U.S. Environmental Protection Agency, Office of Environmental Assessment. May.
- USEPA. 2016. USEPA contract laboratory program, national functional guidelines for high resolution Superfund methods data review. EPA 542-B-16-001. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. April.
- USEPA. 2017a. USEPA contract laboratory program, national functional guidelines for inorganic Superfund methods data review. EPA 540-R-2017-001. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.
- USEPA. 2017b. USEPA contract laboratory program, national functional guidelines for Superfund organic methods data review. EPA 540-R-2017-002. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.
- Weck. 2015. Quality assurance manual. Revision 20. Weck Laboratories, Inc., City of Industry, California. March 2.