

SITE-SPECIFIC ASSESSMENT REPORT

CATHEDRAL PARK SITE
DEQ TASK ORDER 73-18-25



Prepared for
OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

June 24, 2022
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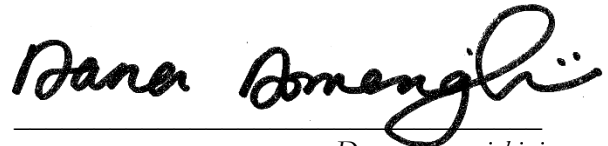
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*The material and data in this report were prepared
under the supervision and direction of the undersigned.*

MAUL FOSTER & ALONGI, INC.



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EXPIRES: 1/1/2023

This digital seal certifies the signatory
and document content.

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ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
the City	City of Portland
CMIST	Cold Regions Research Engineering Laboratory Multi Increment Sampling Tool
DEQ	Department of Environmental Quality (Oregon)
DU	decision unit
HASP	health and safety plan
ISM	incremental sampling methodology
MFA	Maul Foster & Alongi, Inc.
mg/kg	milligram per kilogram
PCB	polychlorinated biphenyl
ROW	right-of-way
RSD	relative standard deviation
the Site	Cathedral Park Site, Portland, Oregon
UPRR	Union Pacific Railroad
Work Plan	Site-Specific Assessment Work Plan

1 INTRODUCTION

Maul Foster & Alongi, Inc. (MFA) prepared this report to present the results of the site-specific assessment conducted at the Cathedral Park site in Portland, Oregon (the Site). Cathedral Park is associated with the address 6635 North sBaltimore Avenue and is located between North Baltimore Avenue (to the north) and North Pittsburg Avenue (to the south) and is bound to the east and west by North Crawford Street and the Willamette River, respectively, with North Bradford Street and the Union Pacific Railroad (UPRR) railroad tracks bisecting the Site (Figure 1-1). The work was completed for and funded by the Oregon Department of Environmental Quality (DEQ) “State Response” Cooperative Agreement with the U.S. Environmental Protection Agency. This site-specific assessment report was prepared for DEQ under Task 7 of Task Order 73-18-25.

1.1 Purpose

The purpose of this project was to evaluate surface soils in specific park areas identified by DEQ and local community groups to determine if further investigation or cleanup action is required at the Site.

1.2 Scope of Work

To accomplish the above objectives, the scope of work described in the Site-Specific Assessment Work Plan (the “Work Plan,” MFA 2022) was followed. The scope of work included the following general tasks:

- Assessment of surface soil conditions at the Site.
- Manage investigation-derived waste.
- Preparation of this report discussing the above activities and the analytical results.

2 BACKGROUND

2.1 Site Location, History, and Description

The Site is located in section 12, township 1 north, range 1 west of the Willamette Meridian in Portland, Oregon (Figure 1-1). The Site is a portion of the approximately 21.85-acre Cathedral Park located beneath the St. Johns Bridge. The portions of Cathedral Park that comprise the Site and are the focus of the assessment activities include areas of eight tax lots (100, 200, 300, 600, 700, 900, 5700, and 5900) totaling approximately 4 acres (see Figure 2-1).

2.2 Geology and Hydrogeology

The City of Portland's (the City) boring logs from 2011 indicate that silty sand was encountered at the Site down to a depth of 20 feet below ground surface (bgs). Groundwater was not encountered during the previous investigations. A review of nearby sites indicated that groundwater in the area may be encountered at approximately 5 to 10 feet bgs.

MFA encountered silt and silty sand during the site assessment. Groundwater was not encountered during the assessment.

Topography at the Site and the vicinity slopes down to the west toward the Willamette River; site elevation is approximately 35 feet above mean sea level. The Willamette River is located approximately 300 feet west of the Site and flows northwest. Based on proximity to the Willamette River and the flow direction of the river, groundwater is expected to flow to the west-northwest.

2.3 Previous Environmental Activities

Between 2008 and 2010, the City conducted source investigations and source control activities for Outfall Basin 52 in order to identify potential sources of polychlorinated biphenyl (PCB) contamination in the basin. These activities included sampling catch basin and inline solids and storm line and catch basin cleaning. Results from these activities indicated the presence of a previously unidentified source of PCBs within Outfall Basin 52.

In 2011, to determine the source of PCB contamination identified in catch basin and inline solids, the City sampled erodible surface soils along the North Bradford Street/UPRR right-of-way (ROW) and areas of Cathedral Park, as well as subsurface soils from the City-owned parking lot adjacent to the Peninsula Iron Works site. Total PCBs in the top two inches of soil ranged from 147 to 21,700 micrograms per kilogram, while concentrations in subsurface soils ranged from non-detect to 1,050 micrograms per kilogram. The City determined that these results indicated that contaminated erodible surface soils in the vicinity of the Peninsula Iron Works site are a source of PCB contamination, and that off-site migration of contaminants from Peninsula Iron Works operations may have resulted in observed contamination in the adjacent ROW and City property. A figure showing previous sampling locations and results (City of Portland 2011) is included in Appendix A.

In a letter dated September 14, 2021, a coalition of community groups expressed concerns related to PCB contamination in soil adjacent and possibly within Cathedral Park, primarily in the areas around

North Bradford Street/UPRR railroad tracks and the Peninsula Iron Works property. As a result, DEQ is assessing portions of the park that are a concern to these community groups.

3 SITE ASSESSMENT ACTIVITIES

Site assessment activities performed to complete the scope of work identified in Section 1.2 included collection of surface soil samples (via Incremental Sampling Methodology [ISM]) for chemical analysis. This section presents the scope of work conducted to accomplish these activities.

3.1 Preparatory Activities

Site Health and Safety Plan. MFA prepared a site-specific health and safety plan (HASP) for the proposed activities. The HASP was prepared in general accordance with the Occupational Safety and Health Act and the Oregon Administrative Rules. A copy of the HASP was maintained on site for use by MFA staff during the field activities.

Underground Utility Location. Prior to beginning the field investigation work, underground utilities were located and marked using the Oregon Utility Notification Center.

Property Access and Work Notification. MFA notified DEQ of the work schedule. DEQ coordinated access with UPRR and obtained the required City permit prior to commencement of field activities.

3.2 Assessment Activities

Representatives of MFA collected surface soil samples for chemical analysis. A photograph log is included as Appendix B. The assessment activities were performed in general accordance with the Work Plan and DEQ's Brownfield Program Quality Assurance Project Plan (DEQ 2016).

3.2.1 Surface Soils Assessment

On May 16 through 18, 2022, an ISM approach (DEQ 2020) was used to collect representative surface soil samples at the Site. The Site was divided into 12 decision units (DUs) to assess surface soils (see Figure 3-1). The boundaries of the following DUs were adjusted from the Work Plan based on communication with DEQ:

- DU01 and DU05: DEQ's access agreement with UPRR did not allow MFA to work within 25 feet from the centerline of the railroad tracks. Portions of the original boundaries of these DUs fell within the 25-foot UPRR ROW and, therefore, were adjusted to exclude this area.
- DU06 and DU11: Portions of these DUs fell within the 25-foot UPRR ROW and were adjusted to exclude this area. In addition, portions of the original DU06 and DU11 were

not included in the adjusted boundaries because the distance between the UPRR ROW and the boundaries of the adjacent DUs were determined by DEQ to be an insignificant area that could be excluded.

- DU09: The majority of this DU fell within the 25-foot UPRR (only a distance of less than 1 foot remained between the UPRR ROW and the boundary of the adjacent DU) and was adjusted to exclude this area. However, because DU09 was a relatively small area, as presented in the Work Plan, the boundaries could not be adjusted to accommodate an ISM approach. Because this DU was located immediately downgradient of the highest concentration of PCBs identified during previous investigations, DEQ determined that a composite soil sample should be collected. Therefore, one 50-point composite sample (COMP09) was collected within the area between the UPRR ROW and the boundary of DU10.

Samples (called increments) were manually collected from each DU and the composite sample using the following protocol:

- Each ISM sample consisted of 50 soil increment locations selected using a systematic random sampling scheme in each DU. The one composite sample consisted of 50 soil aliquots that were placed in a straight line approximately every 2 feet. Figures 3-2 through 3-13 present the ISM increment locations for each DU and the composite sample location. The increment locations were marked in the field prior to sampling with a high-accuracy global positioning system device. If increment locations were adjusted based on field conditions (i.e., when an obstruction such as a hard surface was encountered), the increment was moved to the nearest location clear of the obstruction (maximum of one foot in any direction).
- A target mass of 30 grams ($\pm$ approximately 20 percent) for each increment was collected to achieve the overall target sample mass of 1.5 kilograms per sampling area.
- Sample increments were retrieved using the Cold Regions Research Engineering Laboratory Multi Increment Sampling Tool (CMIST) that was advanced to a depth of 2 inches bgs, following removal of wood chips. When surface vegetation was encountered, it was removed following the advancement of the CMIST tool. As discussed with DEQ at the time of sampling, approximately 10 increments from DU02 were in an area of compacted gravel that was subsequently sampled using a stainless-steel soil core sampler. The soil core was advanced to a depth of 2 inches bgs, following removal of the surface gravel, and each increment within the gravel area was weighed to ensure the target mass was collected.
- Visual observations were also documented during sampling. No visual impacts (e.g., staining representative of petroleum hydrocarbons) were detected in the surface soil samples collected.
- The increments were combined into one ISM sample by placing soil from each increment in a dedicated laboratory-provided, 1-gallon glass jar, with the other increments from that

DU. The ISM samples were then processed by the laboratory (see Section 4) and analyzed to obtain a representative average contamination concentration for each DU.

- An ISM duplicate and triplicate sample was collected from DU02 to evaluate for uncertainty in the ISM DU concentrations and for quality control. These replicate increment locations are shown on Figure 3-3. The relative standard deviation (RSD) between the triplicate concentrations was calculated as 21.2 and 22.3% for detected PCB Aroclors (see data validation memorandum in Appendix F). Because the calculated RSD is below the action level, which is 30%, the RSD indicates appropriate precision in the sampling methodology.
- Decontamination of the non-disposable field equipment (i.e., the CMIST and stainless-steel soil core sampler) were performed to prevent cross-contamination between DUs. Decontamination was completed in accordance with Standard Operating Procedure 1 (Appendix C).

3.3 Waste Handling and Disposal

Wastes generated during assessment activities consisted of excess soil following sampling and decontamination water. Excess soil was replaced at the sampling location and covered with vegetation removed, if any, and decontamination liquid was land-applied. Disposable sampling equipment and personal protective equipment was disposed of as solid waste.

4 CHEMICAL ANALYSES AND RESULTS

The composite and ISM samples were submitted to Apex Laboratories LLC in Tigard, Oregon, and dried and processed following the site-specific sampling and analysis plan (Appendix D). Processing included air drying at room temperature, disaggregation, and sieving (using a No. 10 sieve with a 2-millimeter sieve size). The entire less than 2-millimeter size fraction was divided into representative processing aliquots of at least 200 grams using a rotary sectorial splitter. The representative aliquot was processed for further particle size reduction to fine powder before analytical aliquots were taken. In addition to mass analytical requirements, sufficient mass of the processed sample was archived for follow-up analysis, if necessary.

Copies of the analytical laboratory reports are included in Appendix E. A data validation memorandum presents the quality assurance/quality control review of the data and is included in Appendix F. The results of the data quality review indicate that the data are of acceptable quality and are suitable for their intended purpose.

4.1 Analyses Performed

Surface soil samples were analyzed for PCBs by U.S Environmental Protection Agency Method 8082A.

4.2 Laboratory Analytical Results

The soil analytical results are presented in Table 4-1.

4.2.1 Surface Soil Samples

PCBs were detected above laboratory reporting limits in the ISM and composite soil samples analyzed. PCB Aroclors 1242, 1254, and 1260 were detected at concentrations ranging from 0.00825 (estimated concentration) to 2.47 milligrams per kilogram (mg/kg) (estimated) in all surface soil samples, with concentrations of total PCBs ranging from 0.0374 (estimated) to 3.45 mg/kg (estimated).

5 SUMMARY

The site assessment included an ISM approach to collect surface soil samples for chemical analysis from 11 DUs throughout the Site. In addition, one composite soil sample was collected within the area between the UPRR ROW and the boundary of DU10. Chemical data from this assessment identified concentrations of PCBs in each DU and the composite soil sample as presented in the attached table.

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

City of Portland. 2011. Linda Scheffler, City of Portland, Portland Harbor Program. *Request for DEQ Site Assessment of Peninsula Iron Works Property at 6618 N Alta Avenue*. Letter to Alex Liverman of Oregon Department of Environmental Quality. December 13.

DEQ. 2016. *Quality Assurance Project Plan, Brownfield Program*. Oregon Department of Environmental Quality. November.

DEQ. 2020. *Decision Unit Characterization*. Oregon Department of Environmental Quality. September 14.

MFA. 2022. *Site-Specific Assessment Work Plan—Cathedral Park Site*. Maul Foster & Alongi, Inc., Portland, Oregon. May 12.

TABLE

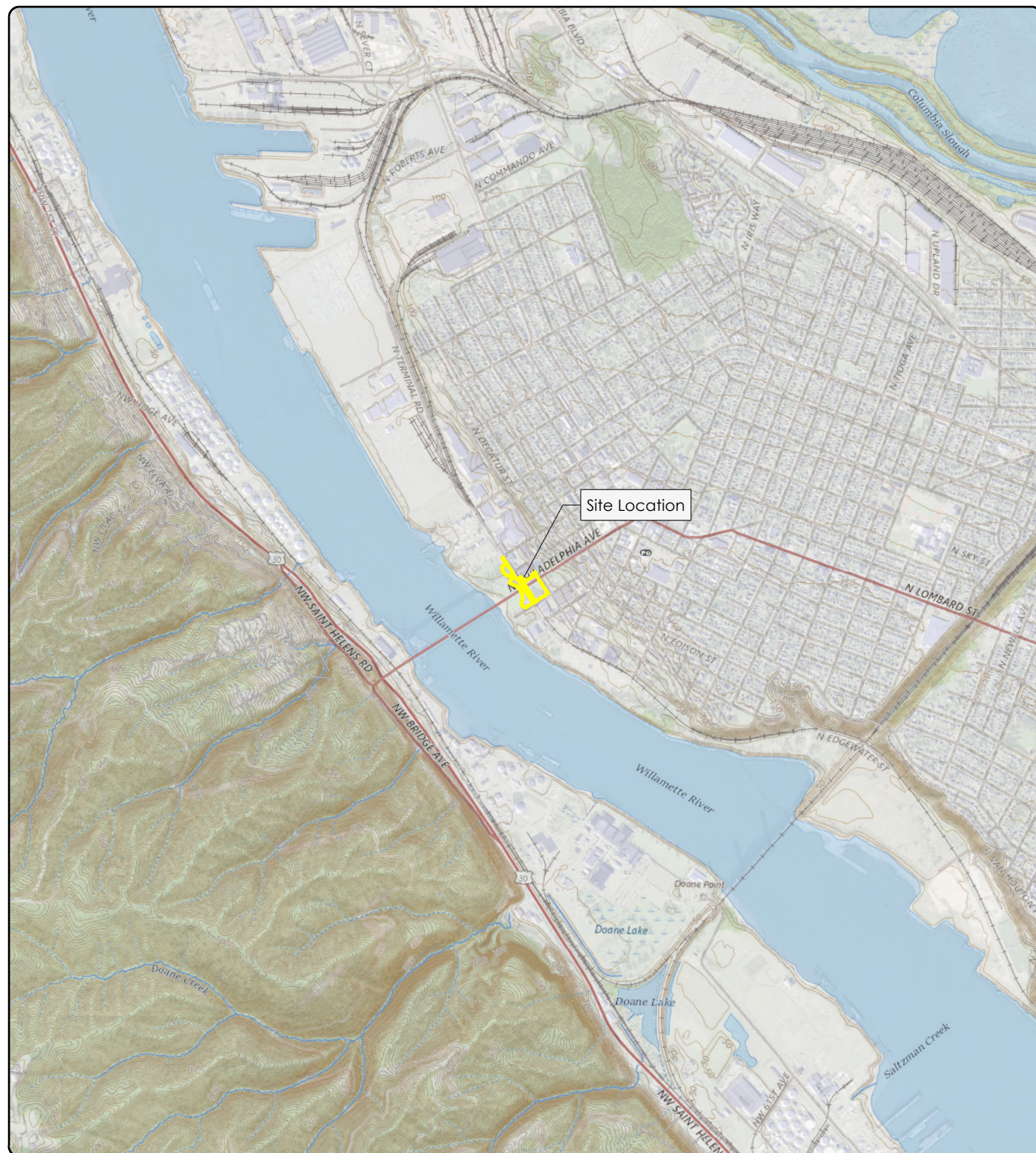


Table 4-1
ISM Soil Analytical Results
Cathedral Park, Portland, Oregon
Oregon Department of Environmental Quality

Location:	DU01	DU02			DU03	DU04	DU05	DU06	DU07	DU08	COMP09	DU10	DU11	DU12
Sample Name:	DU01	DU02	DU02-DUP	DU02-TRIP	DU03	DU04	DU05	DU06	DU07	DU08	COMP09	DU10	DU11	DU12
Sample Date:	05/18/2022	05/17/2022	05/17/2022	05/17/2022	05/16/2022	05/16/2022	05/17/2022	05/18/2022	05/16/2022	05/16/2022	05/18/2022	05/17/2022	05/18/2022	05/17/2022
Sample Depth (inches bgs):	0-2	0-2	0-2	0-2	0-2	0-2	0-2	0-2	0-2	0-2	0-2	0-2	0-2	0-2
PCB Aroclors (mg/kg)														
Aroclor 1016	0.00514 U	0.00497 U	0.00479 U	0.00516 U	0.00508 U	0.0102 U	0.0105 U	0.00514 U	0.00502 U	0.00521 U	0.0509 U	0.0524 U	0.00517 U	0.00516 U
Aroclor 1221	0.00514 U	0.00497 U	0.00479 U	0.00516 U	0.00508 U	0.0102 U	0.0105 U	0.00514 U	0.00502 U	0.00521 U	0.0509 U	0.0524 U	0.00517 U	0.00516 U
Aroclor 1232	0.00514 U	0.00994 U	0.00958 U	0.0119 U	0.00508 U	0.0102 U	0.0105 U	0.00514 U	0.00502 U	0.00521 U	0.0509 U	0.0524 U	0.00517 U	0.0103 U
Aroclor 1242	0.00514 U	0.00497 U	0.00479 U	0.00516 U	0.00825 J	0.0102 U	0.0105 U	0.00514 U	0.00502 U	0.014 J	0.0509 U	0.0524 U	0.00517 U	0.00516 U
Aroclor 1248	0.00514 U	0.00497 U	0.00479 U	0.00516 U	0.00508 U	0.0102 U	0.0105 U	0.00514 U	0.00502 U	0.00521 U	0.0509 U	0.0524 U	0.00517 U	0.00516 U
Aroclor 1254	0.00514 U	0.0171 J	0.0139 J	0.0217 J	0.046 J	0.0102 U	0.0105 U	0.0198 J	0.0161 J	0.104 J	0.49 J	0.975 J	0.0251 J	0.0279 J
Aroclor 1260	0.101 J	0.0327 J	0.0272 J	0.0414 J	0.102 J	0.357	0.452	0.0444 J	0.0213 J	0.177 J	2.18 J	2.47 J	0.0636 J	0.0863 J
Aroclor 1262	0.00514 U	0.00497 U	0.00479 U	0.00516 U	0.00508 U	0.0102 U	0.0105 U	0.00514 U	0.00502 U	0.00521 U	0.0509 U	0.0524 U	0.00517 U	0.00516 U
Aroclor 1268	0.00514 U	0.00497 U	0.00479 U	0.00516 U	0.00508 U	0.0102 U	0.0105 U	0.00514 U	0.00502 U	0.00521 U	0.0509 U	0.0524 U	0.00517 U	0.00516 U
Total PCBs ^(a)	0.101 J	0.0498 J	0.0411 J	0.0631 J	0.156 J	0.357	0.452	0.0642 J	0.0374 J	0.295 J	2.67 J	3.45 J	0.0887 J	0.114 J
Notes bgs = below ground surface. ISM = incremental sampling methodology. J = result is estimated. mg/kg = milligrams per kilogram. PCB = polychlorinated biphenyl. U = result is non-detect at the laboratory detection limit. ^(a) Total PCBs is the sum of all detected PCB Aroclors. Non-detect results are not included in the sum.														

FIGURES





Source:
U.S. Geological Survey (2021) 7.5-minute
topographic quadrangle: Linton;
Township 1 north, range 1 west, section 12;
Property boundary obtained from Metro RLIS.



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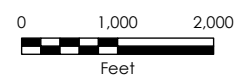
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Site Boundary

Figure 1-1 Site Location

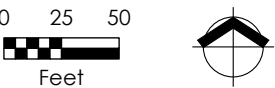
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Environmental Quality
Cathedral Park
Site-Specific Assessment
Portland, Oregon





**Figure 2-1
Site Overview**
Oregon Department of
Environmental Quality
Cathedral Park
Site-Specific Assessment
Portland, Oregon

- Legend**
-  Site Boundary
 -  Tax Lot



Source:
Aerial photograph obtained from ESRI ArcGIS Online.
Tax lot data obtained from Metro RLIS.

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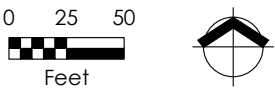


Figure 3-1 Decision Unit Locations

Oregon Department of
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Cathedral Park
Site-Specific
Assessment Portland,
Oregon

Legend

- Composite Sample
- Decision Unit (DU)



Source:
Aerial photograph obtained from ESRI ArcGIS Online.

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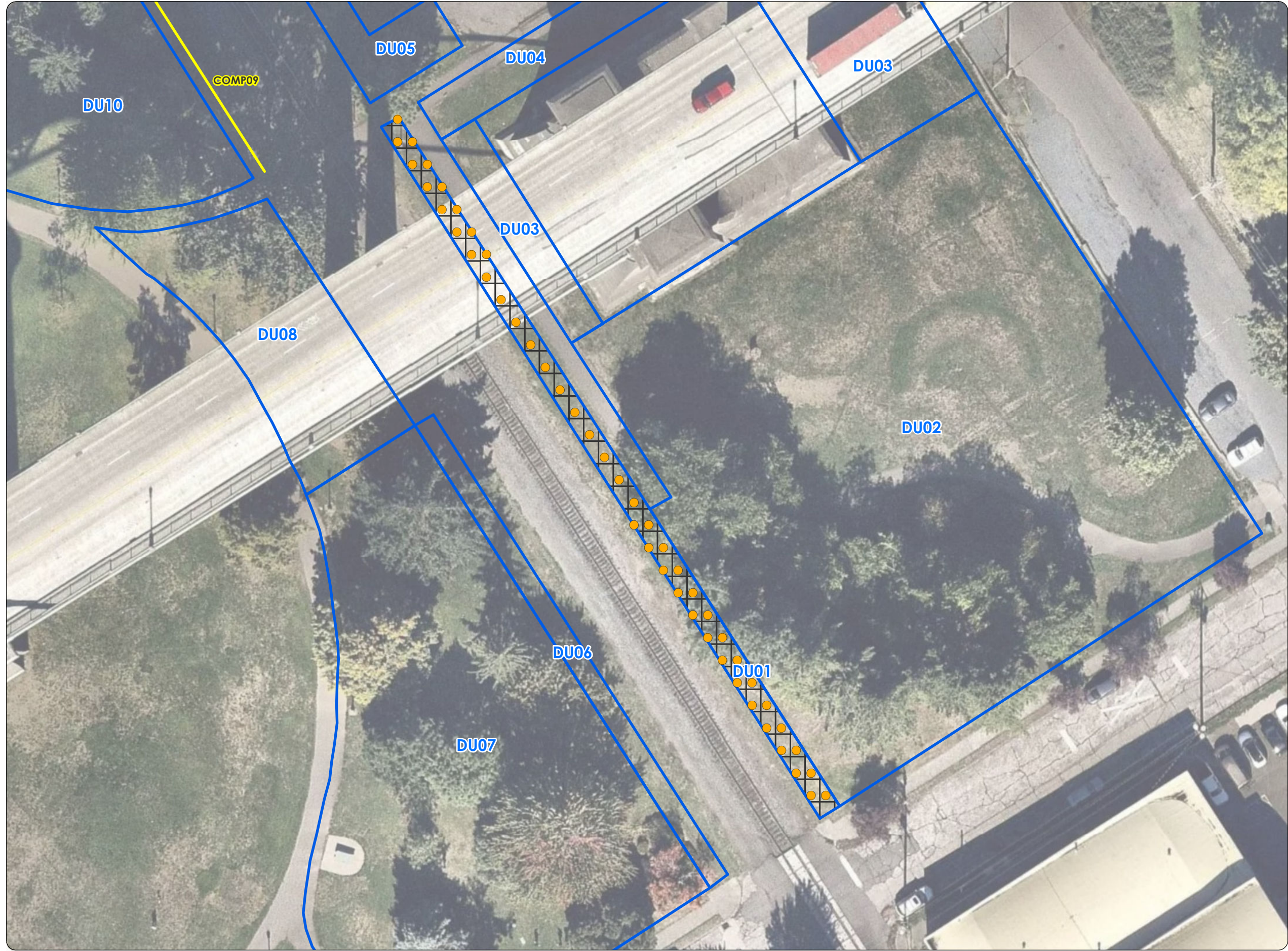


Figure 3-2
DU01 Increment
Sampling Locations
Oregon Department of
Environmental Quality
Cathedral Park Site-Specific
Assessment
Portland, Oregon

- Legend**
- Increment Location
 - Decision Unit (DU)
 - Increment Grid
 - Composite Sample

01530

Feet

Source:
Aerial photograph obtained from Mapbox.

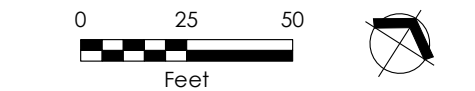
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Figure 3-3
DU02 Increment
Sampling Locations
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Cathedral Park Site-Specific
Assessment
Portland, Oregon

- Legend**
- Increment Location
 - Duplicate Increment Location
 - Triplicate Increment Location
 - Decision Unit (DU)
 - Increment Grid
 - Composite Sample



Source:
Aerial photograph obtained from Mapbox.

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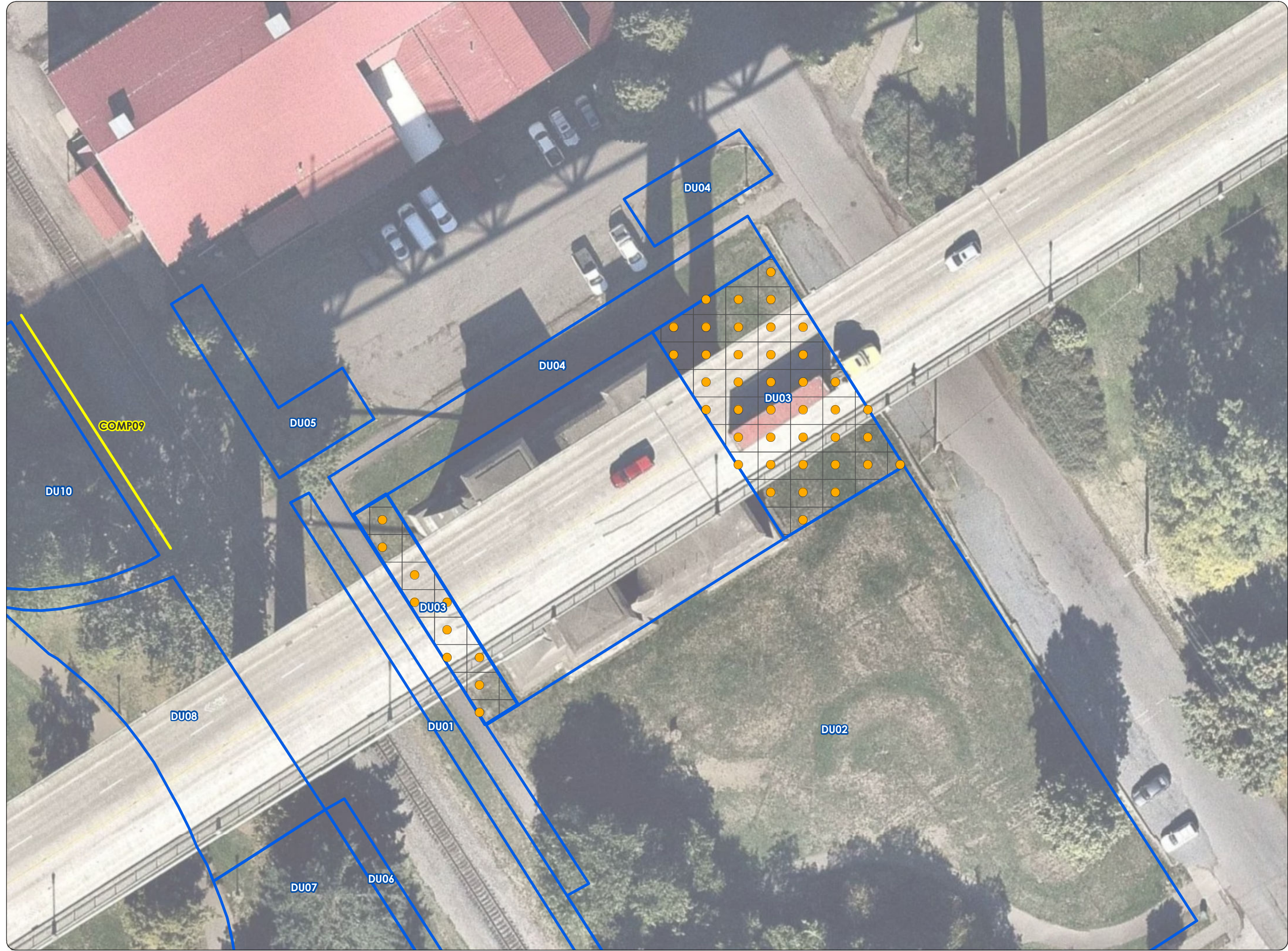


Figure 3-4
DU03 Increment
Sampling Locations
Oregon Department of
Environmental Quality
Cathedral Park Site-Specific
Assessment
Portland, Oregon

- Legend**
- Increment Location
 - Decision Unit (DU)
 - Increment Grid
 - Composite Sample

0 15 30
Feet

Source:
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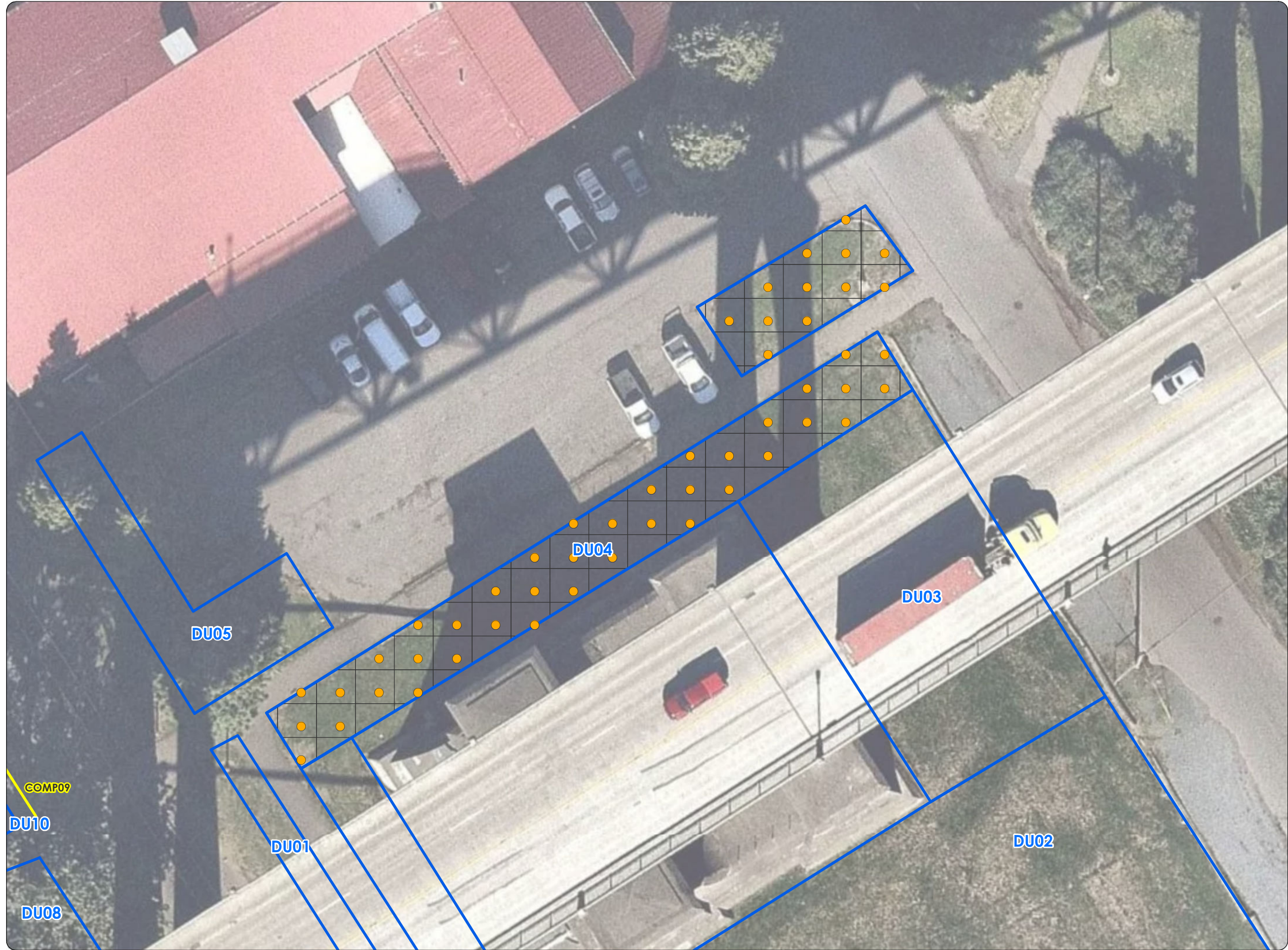
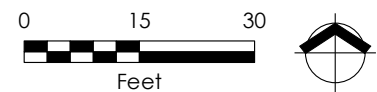


Figure 3-5
DU04 Increment
Sampling Locations
Oregon Department of
Environmental Quality
Cathedral Park Site-Specific
Assessment
Portland, Oregon

- Legend**
- Increment Location
 - Decision Unit (DU)
 - Increment Grid
 - Composite Sample



Source:
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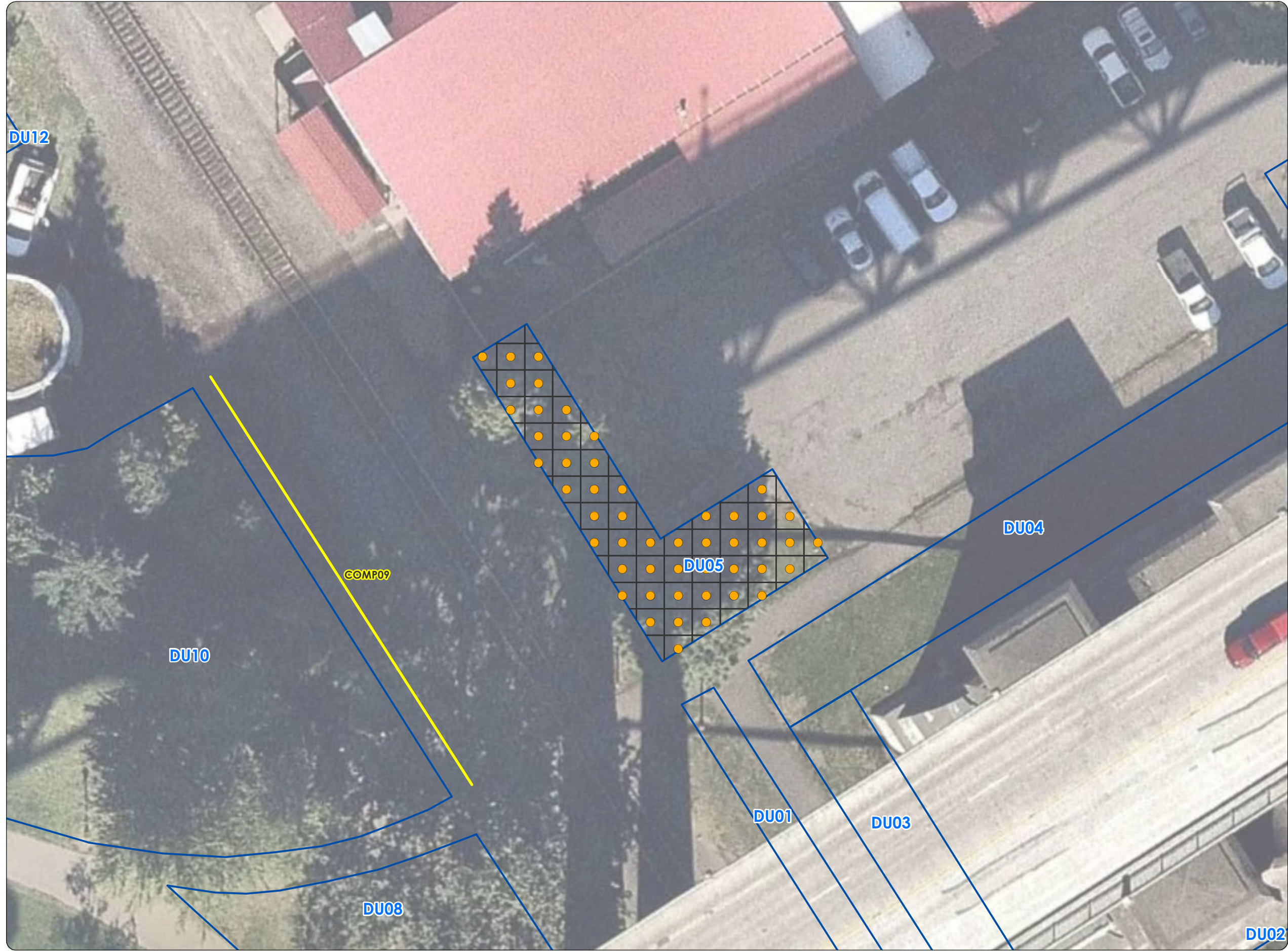
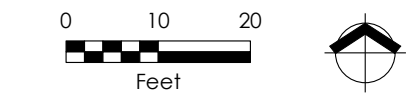


Figure 3-6
DU05 Increment
Sampling Locations
Oregon Department of
Environmental Quality
Cathedral Park Site-Specific
Assessment
Portland, Oregon

- Legend**
- Increment Location
 - Decision Unit (DU)
 - Increment Grid
 - Composite Sample



Source:
Aerial photograph obtained from Mapbox.

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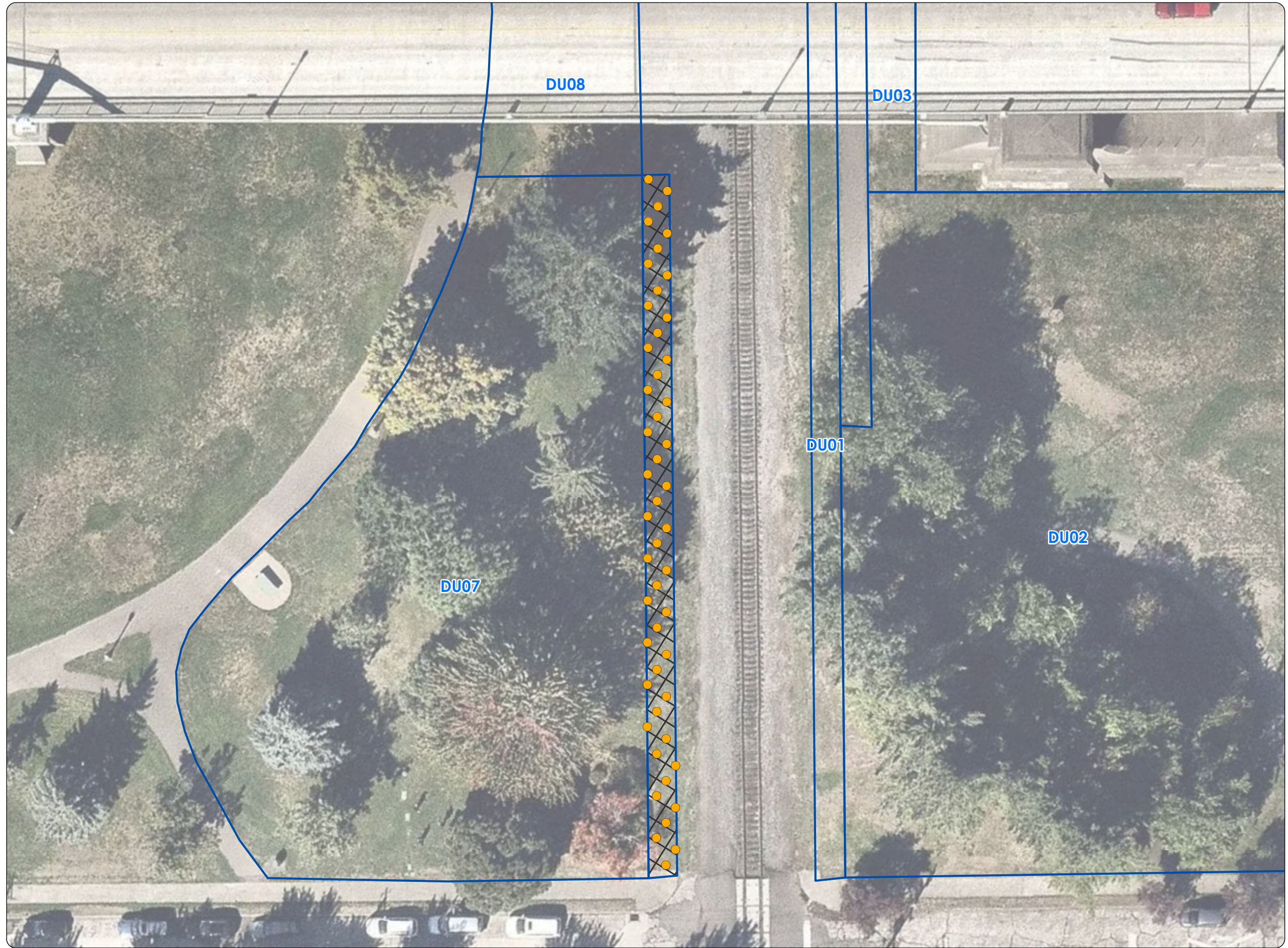
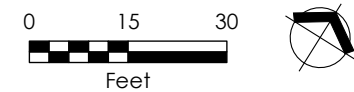


Figure 3-7
DU06 Increment
Sampling Locations
Oregon Department of
Environmental Quality
Cathedral Park Site-Specific
Assessment
Portland, Oregon

- Legend**
- Increment Location
 - Decision Unit (DU)
 - Increment Grid



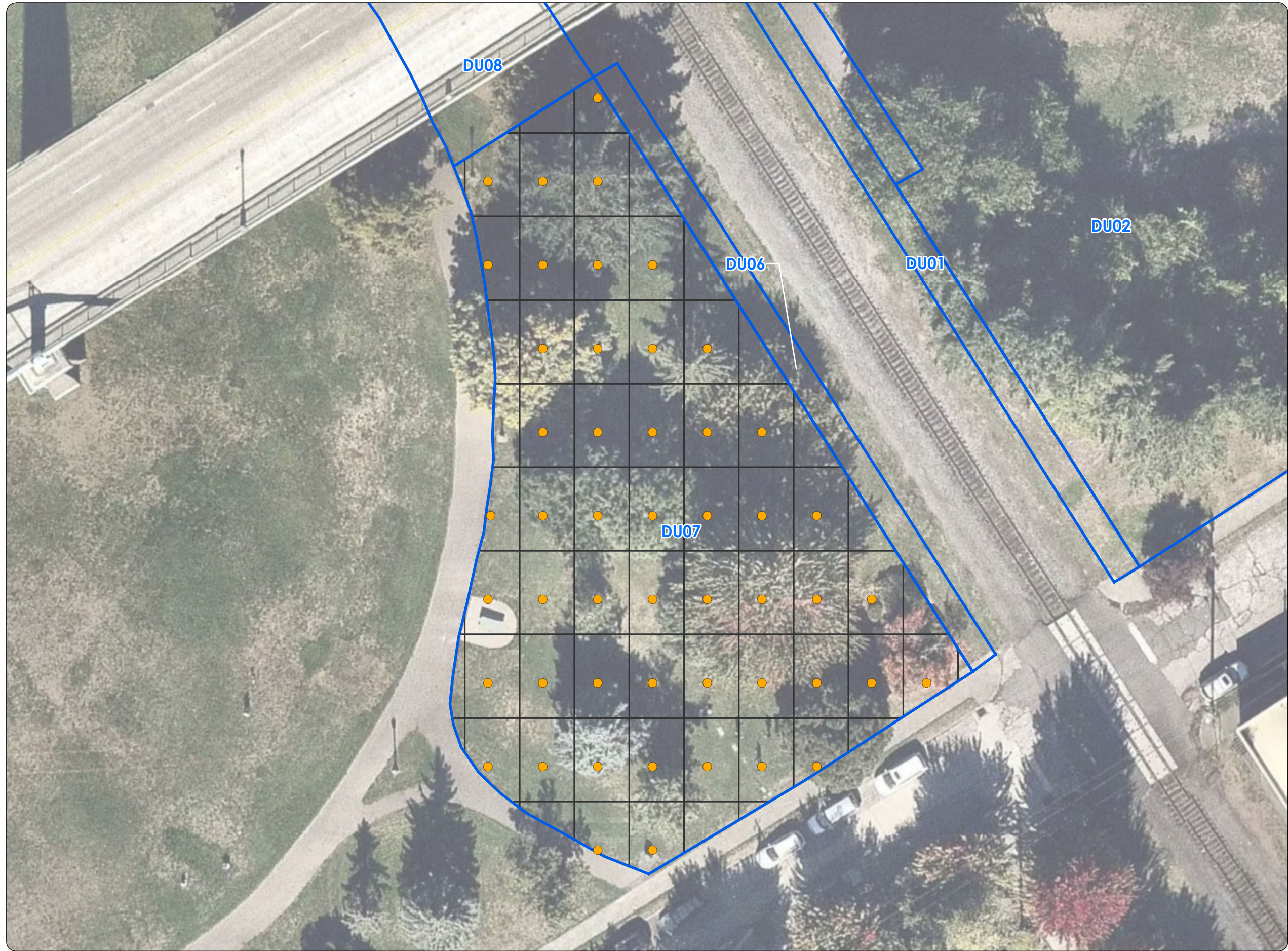
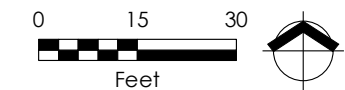


Figure 3-8
DU07 Increment
Sampling Locations
Oregon Department of
Environmental Quality
Cathedral Park Site-Specific
Assessment
Portland, Oregon

- Legend**
- Increment Location
 - Decision Unit (DU)
 - Increment Grid



Source:
Aerial photograph obtained from Mapbox.

 MAUL FOSTER LONGI
p. 971 544 2139 | www.maulfooster.com

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.

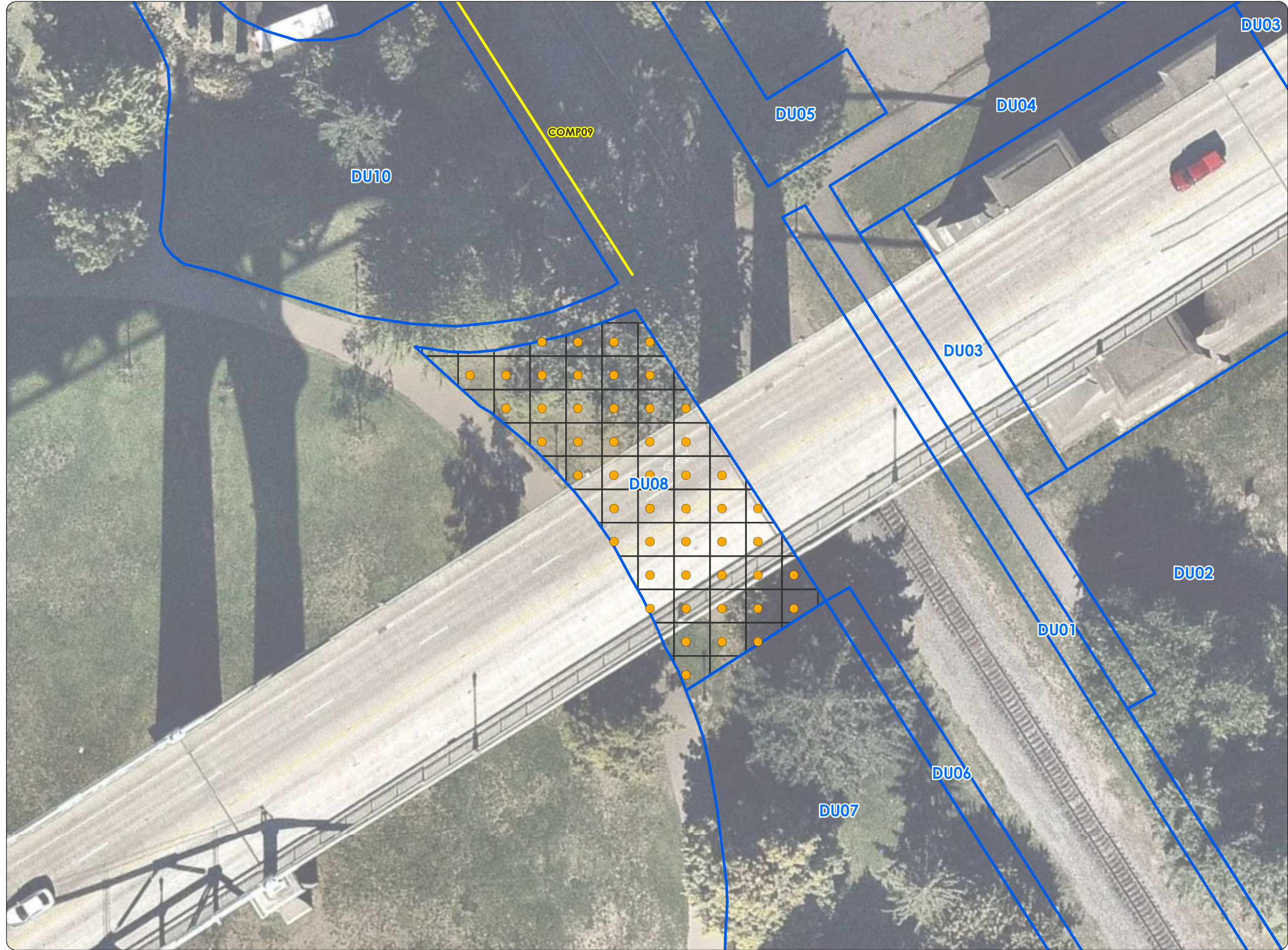


Figure 3-9
DU08 Increment
Sampling Locations
Oregon Department of
Environmental Quality
Cathedral Park Site-Specific
Assessment
Portland, Oregon

- Legend**
- Increment Location
 - Decision Unit (DU)
 - Increment Grid
 - Composite Sample

0 15 30
Feet

Source:
Aerial photograph obtained from Mapbox.

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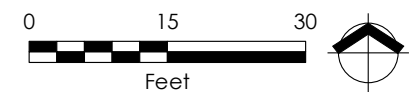
This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Path: X:\0785.22\003\Fig2-11_Proposed_DU09_Locations.mxd
Print Date: 6/13/2022
Reviewed By:
Produced By: apulse
Project: W0785.22\001-003



Figure 3-10
COMP09
Sampling Location
Oregon Department of
Environmental Quality
Cathedral Park Site-Specific
Assessment
Portland, Oregon

- Legend**
-  Decision Unit (DU)
 -  Composite Sample



Source:
Aerial photograph obtained from Mapbox.

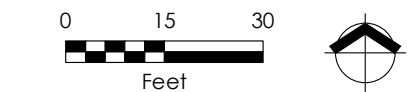
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This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the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



Figure 3-11
DU10 Increment
Sampling Locations
Oregon Department of
Environmental Quality
Cathedral Park Site-Specific
Assessment
Portland, Oregon

- Legend**
- Increment Location
 - Decision Unit (DU)
 - Increment Grid
 - Composite Sample



Source:
Aerial photograph obtained from Mapbox.

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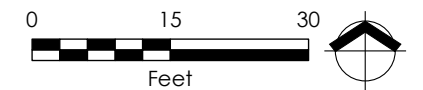


Figure 3-12
DU11 Increment
Sampling Locations

Oregon Department of
Environmental Quality
Cathedral Park Site-Specific
Assessment
Portland, Oregon

Legend

- Increment Location
- Decision Unit (DU)
- Increment Grid



Source:
Aerial photograph obtained from Mapbox.

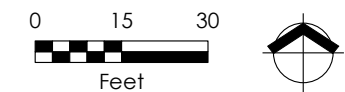
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This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the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



Figure 3-13
DU12 Increment
Sampling Locations
Oregon Department of
Environmental Quality
Cathedral Park Site-Specific
Assessment
Portland, Oregon

- Legend**
- Increment Location
 - Decision Unit (DU)
 - Increment Grid
 - Composite Sample



Source:
Aerial photograph obtained from Mapbox.

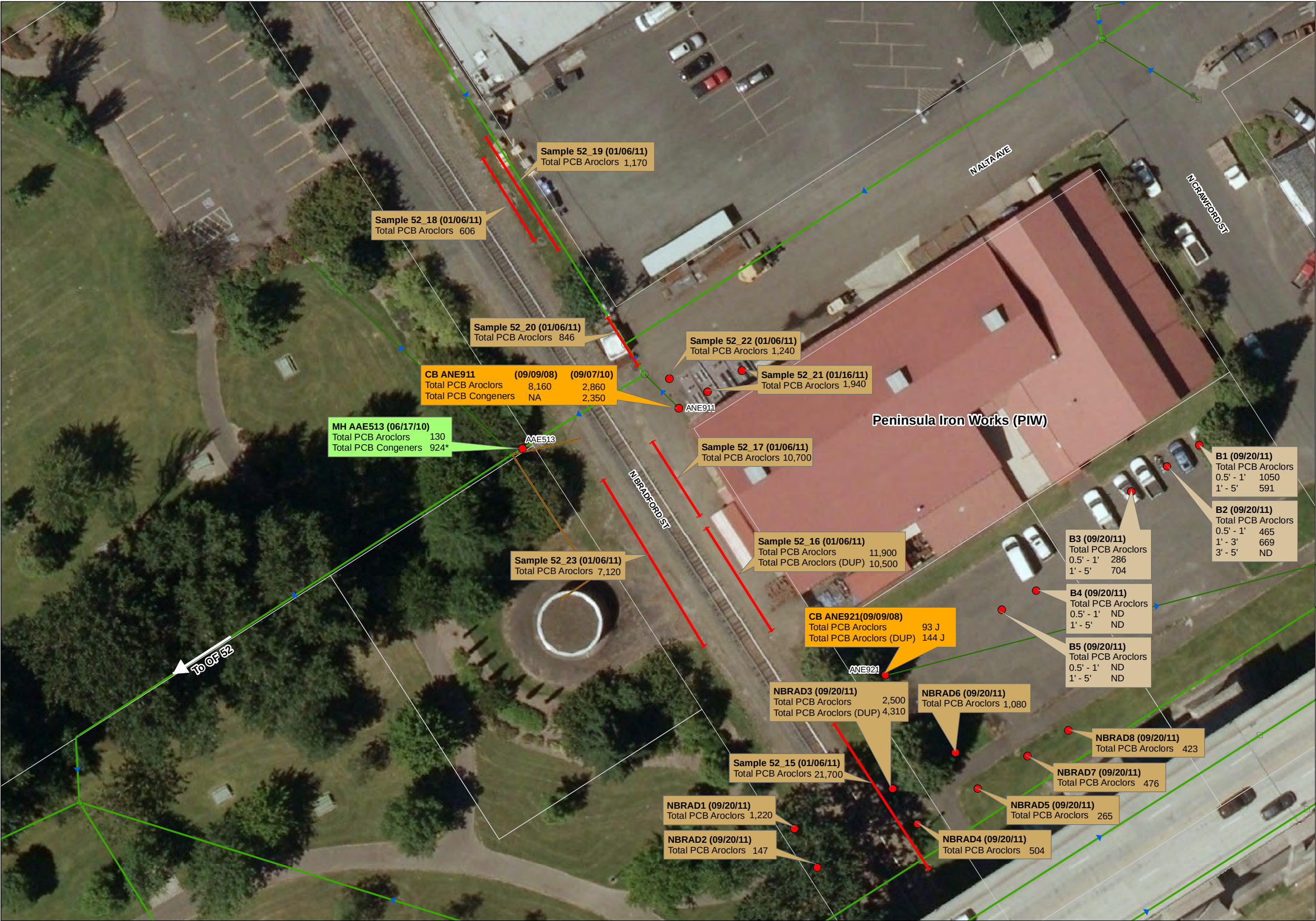
 MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfooster.com

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

PREVIOUS INVESTIGATION FIGURE





LEGEND

- Outfall Basin 52
- Sample Locations
- Sample Type**
 - Surface Soil Sample
 - Subsurface Soil Sample
 - Inline Solids Sample
 - Sediment Trap Sample
- Composite Sample
- All Other Features**
 - Storm Line
 - Manhole (MH)
 - Catch Basin (CB)
 - Tax Lot

NOTE:
NA = Not analyzed
ND = Not detected
J = Estimated
Total PCBs Aroclor and congener results in µg/Kg.
*Total PCBs concentration includes one or more estimated value(s). Because estimated values are not significant relative to the total concentration (i.e. <1%), the PCBs concentration is only slightly biased.

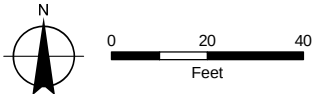


FIGURE 1
Total PCBs Concentrations in Vicinity of Peninsula Iron Works

Disclaimer:
Information contained on this map is accurate according to available records, however the City of Portland makes no warranty, expressed or implied, as to the completeness or accuracy of the information published.
Prepared By:
GSI, October 28, 2011
005_SCIR/IOF_Basin_52
Source:
City of Portland BES,
Aerial Photo 2010



APPENDIX B

PHOTOGRAPH LOG





PHOTOGRAPHS

Project Name: Cathedral Park Site-Specific Assessment
Project Number: M0785.22.001
Location: Portland, Oregon

Photo No. 1.

Description

View of decision unit (DU) DU01 with flags placed at increment locations. Looking northwest.



Photo No. 2.

Description

Looking east across DU02. Flags placed at increment locations represent primary sample (red arrow), duplicate (yellow arrow), and triplicate (orange arrow).





PHOTOGRAPHS

Project Name: Cathedral Park Site-Specific Assessment
Project Number: M0785.22.001
Location: Portland, Oregon

Photo No. 3.

Description

View of the eastern portion of DU03 with flags placed at increment locations. Looking southeast.



Photo No. 4.

Description

Looking generally southeast across the western portion of DU03 with flags placed at increment locations.





PHOTOGRAPHS

Project Name: Cathedral Park Site-Specific Assessment
Project Number: M0785.22.001
Location: Portland, Oregon

Photo No. 5.

Description

Looking generally east along DU04 with flags placed at increment locations.



Photo No. 6.

Description

View of northern portion of DU04 with flags placed at increment locations. Looking northwest.



PHOTOGRAPHS

Project Name: Cathedral Park Site-Specific Assessment
Project Number: M0785.22.001
Location: Portland, Oregon

Photo No. 7.

Description

Flags placed at increment locations in DU05. Looking north.



Photo No. 8.

Description

Looking generally north toward DU06. Flags placed at increment locations are visible.



PHOTOGRAPHS

Project Name: Cathedral Park Site-Specific Assessment
Project Number: M0785.22.001
Location: Portland, Oregon

Photo No. 9.

Description

Flags placed at increment locations in DU07. Looking generally south.



Photo No. 10.

Description

View of DU08 with flags placed at increment locations. Looking generally north.



PHOTOGRAPHS

Project Name: Cathedral Park Site-Specific Assessment
Project Number: M0785.22.001
Location: Portland, Oregon

Photo No. 11.

Description

View of 50-point composite sample (COMP09). Looking generally north. Flags were placed at each location that comprised the composite sample.



Photo No. 12.

Description

Flags placed at increment locations in DU10. Looking generally south.



PHOTOGRAPHS

Project Name: Cathedral Park Site-Specific Assessment
Project Number: M0785.22.001
Location: Portland, Oregon

Photo No. 13.

Description

Looking generally south toward DU11. Flags placed at increment locations are visible.



Photo No. 14.

Description

View of DU12 with flags placed at increment locations. Looking generally north.



PHOTOGRAPHS

Project Name: Cathedral Park Site-Specific Assessment
Project Number: M0785.22.001
Location: Portland, Oregon

Photo No. 15.

Description

View of representative increment sample being collected.



Photo No. 16.

Description

View of representative increment sample size collected.



APPENDIX C

STANDARD OPERATING PROCEDURES





STANDARD OPERATING PROCEDURE

Decontamination of Field Equipment

SOP Number: 1

Date: 3/9/2021

Revision Number: 0.1

SCOPE AND APPLICATION

This standard operating procedure (SOP) describes the decontamination procedure for field equipment that may come in contact with contaminated media and that Maul Foster & Alongi, Inc. (MFA) staff may reuse at multiple sample locations or sites. Decontamination is performed to reduce the potential for cross-contamination of samples that will be collected with multiuse equipment and that will undergo physical or chemical analyses. Other equipment that is multiuse—not used specifically for sample collection (e.g., water level meter, pump used for well development)—also requires decontamination. Finally, decontamination is necessary to minimize the potential for MFA staff's exposure to chemicals.

Typically, decontamination is not necessary for field equipment that is disposable and intended to be used only once (e.g., disposable bailer). Additionally, this SOP does not apply to equipment used by subcontractors, such as drilling equipment. However, MFA staff should confirm that subcontractors are implementing appropriate decontamination procedures to minimize the potential for cross-contamination of samples or MFA staff's exposure to chemicals.

EQUIPMENT AND MATERIALS REQUIRED

The following materials are necessary for this procedure:

- Nonphosphate detergent solution (e.g., Alconox, Liquinox)
- Distilled and potable water
- Personal protective equipment (as specified in the site-specific health and safety plan)
- Buckets to contain rinsate, brushes, paper towels

Depending on the site conditions and the types of contaminants that may be present, the use of other decontamination materials, such as deionized water, methanol, hexane, or isopropyl alcohol, may be necessary. The need for other materials should be determined prior to fieldwork. The decontamination procedures using other materials should be described in a site-specific sampling and analysis plan (SAP).

METHODOLOGY

When the site-specific SAP specifies additional or different requirements for decontamination, it takes precedence over this SOP. In the absence of a SAP, the following procedures shall be used.

General Sampling Procedure:

1. Rinse the equipment with potable water to remove visible soil, petroleum sheen, or contamination.
2. Scrub the equipment with a brush and solution of distilled water and nonphosphate detergent.
3. Rinse the equipment with distilled water.
4. Allow equipment to air dry, or dry it with paper towels.
5. At all times, ensure that the decontaminated equipment is stored so as to prevent it from becoming contaminated while not in use. Depending on the size of the equipment, it can be wrapped with new aluminum foil or placed in a new plastic bag.

Rinsate Storage:

All fluids resulting from equipment decontamination shall initially be contained in a bucket and then transferred to a Department of Transportation-approved container (e.g., 55-gallon drum) stored on site at a location that

does not interfere with on-site activities (e.g., vehicle traffic, pedestrian areas). Place a label on each container and include the following information:

- The date on which fluids were placed in the container
- Contents (e.g., “water from equipment decontamination”)
- Contact information, including MFA staff or client phone number

Note that labels on containers exposed to sunlight or precipitation are prone to fading. Use a waterproof, indelible ink pen (e.g., Sharpie®) whenever possible. In the field notebook, keep a detailed inventory of all containers, including the number of containers, the approximate quantity of liquids generated, and a description of the source of the fluids. Provide this information to the MFA project manager. For future reference, take photographs of (1) each drum label, (2) the drum(s), and (3) the drum storage vicinity on site.

Note that some clients and site owners have specific requirements for labeling and storage of containers. The requirements should be determined in advance of the fieldwork.

APPENDIX D

ISM LABORATORY SITE-SPECIFIC SAMPLING AND ANALYSIS PLAN



Apex Laboratories LLC Site Specific RSM SAP for MFA Cathedral Park DU Sampling.

It is understood that due to differences between sites and project objectives a site specific RSM SAP should be developed for each project where representative sampling methodology is being used.

For the 2022 sampling at the Cathedral Park Project Site, the contaminants of concern for multiple decision units (DUs) is polychlorinated biphenyls (PCBs). Surface and near surface sample mean concentration is of concern at the site. One DU will be collected as three specific replicate DU samples at a depth 0-2 inches. Mass of each increment will depend on diameter of coring device but estimated for SAP at 40-60 grams per increment. The samples were collected in one-gallon jar composed of 50 field increments. Target processing mass is 2-3 kg

Apex Labs Sample control will provide Apex RSM group with (1) 16 oz jar to place processed sample for the testing of PCBs.

Apex Laboratories Sample Processing Outline Samples for PCBs by EPA Method 8082

When processing the samples from the Cathedral Park DUs, Apex Laboratories, LLC will use the entire sample volume from each one-gallon jar. The ISM sample for each DU will be processed following the procedures of using Apex Laboratories SOP G-105 RSM. This SOP is consistent with the ITRC ISM Update October 2020. The process for this project is summarized below:

- The DU sample composite including any interstitial water will be air-dried at room temperature inside a low humidity-controlled room that is kept dark and supplied with filtered air. The samples will be dried on baking sheets covered with Teflon sheeting to protect the sample from both metals and phthalate contamination.
- Wet soil will be worked and turned following Apex SOP G-105 RSM during drying to prevent sediments from hardening into “bricks.” This processing will also decrease the sample drying time. To speed drying soil should be turned regularly during business hours.
- Below is an example of typical soil sample after drying.



- If trash or unique non-soil material is observed in sample, photographs will be taken for archival.
- Once air dried, all of the DU sample from the pans will be disaggregated with a stainless-steel flail mill, reducing agglomerations of caked soil to individual grains while preserving true grain size. All particles will be run through #10 sieve (<2 mm dia). Under ITRC guidelines, soil is defined as particles < 2mm. All soil particles will be loaded into hopper of rotary sectorial splitter for representative mass reduction.
- Approximately 200-250 grams split will be of soil <2mm dia. particles of soil will be ground using a cool grinding technique until soil is a fine powder (60 to 70-micron diameter). Since no metals will be testing in soil milling can be accomplished in zirconia, tungsten or stainless-steel puck mills.
- Entire ground sample is placed in 16 oz jar and placed in Paul Schatz Inversina powder mixer and thoroughly re-mixed. Due to the small uniform size of particles, sampling and segregation errors are significantly reduced while maintaining standard sample masses for the PCB method proposed.
- The blank matrix is borosilicate 2 mm glass beads that are processed with samples from time of drying through grinding.
- Laboratory processing blanks will be placed on hold with exception of metals.
- The remaining ground sample will be returned to an RSM container for archiving.
- Unprocessed bulk sample remaining will be stored at ambient temperature in RSM lab until disposal.
- Sufficient sample volume will be representatively subsampled by the laboratory to create laboratory QA/QC samples.

Site-Specific Quality Control (QC)

For each batch of 20 RSM soil samples, Apex shall perform standard method and laboratory batch QC and the following site-specific QC:

Source Specific QC Cathedral Park sample will be selected at random from samples submitted.

For PCBs : Batch QC Select site sample will include DUP1, DUP2 and MS

APPENDIX E

LABORATORY ANALYTICAL REPORT





ANALYTICAL REPORT

AMENDED REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Wednesday, June 8, 2022

Dana Domenighini

Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

RE: A2E0659 - Cathedral Park ISM - M0785.22.001

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

Enclosed are the results of analyses for work order A2E0659, which was received by the laboratory on 5/18/2022 at 5:10:00PM.

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, or by phone at 503-718-2323.

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

Cooler Receipt Information

(See Cooler Receipt Form for details)

Cooler #1	4.0 degC	Cooler #2	4.3 degC
Cooler #3	3.6 degC		

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

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.



ANALYTICAL REPORT

AMENDED REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: Cathedral Park ISM

Project Number: M0785.22.001

Project Manager: Dana Domenighini

Report ID:

A2E0659 - 06 08 22 0827

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DU01	A2E0659-01	Soil	05/18/22 14:25	05/18/22 17:10
DU01	A2E0659-02	Soil	05/18/22 14:25	05/18/22 17:10
DU02	A2E0659-03	Soil	05/17/22 12:10	05/18/22 17:10
DU02	A2E0659-04	Soil	05/17/22 12:10	05/18/22 17:10
DU02-DUP	A2E0659-05	Soil	05/17/22 12:10	05/18/22 17:10
DU02-DUP	A2E0659-06	Soil	05/17/22 12:10	05/18/22 17:10
DU02-TRIP	A2E0659-07	Soil	05/17/22 12:10	05/18/22 17:10
DU02-TRIP	A2E0659-08	Soil	05/17/22 12:10	05/18/22 17:10
DU03	A2E0659-09	Soil	05/16/22 13:35	05/18/22 17:10
DU03	A2E0659-10	Soil	05/16/22 13:35	05/18/22 17:10
DU04	A2E0659-11	Soil	05/16/22 12:40	05/18/22 17:10
DU04	A2E0659-12	Soil	05/16/22 12:40	05/18/22 17:10
DU05	A2E0659-13	Soil	05/17/22 15:25	05/18/22 17:10
DU05	A2E0659-14	Soil	05/17/22 15:25	05/18/22 17:10
DU06	A2E0659-15	Soil	05/18/22 10:50	05/18/22 17:10
DU06	A2E0659-16	Soil	05/18/22 10:50	05/18/22 17:10
DU07	A2E0659-17	Soil	05/16/22 15:20	05/18/22 17:10
DU07	A2E0659-18	Soil	05/16/22 15:20	05/18/22 17:10
DU08	A2E0659-19	Soil	05/16/22 16:30	05/18/22 17:10
DU08	A2E0659-20	Soil	05/16/22 16:30	05/18/22 17:10
COMP09	A2E0659-21	Soil	05/18/22 09:50	05/18/22 17:10
COMP09	A2E0659-22	Soil	05/18/22 09:50	05/18/22 17:10
DU10	A2E0659-23	Soil	05/17/22 13:25	05/18/22 17:10
DU10	A2E0659-24	Soil	05/17/22 13:25	05/18/22 17:10
DU11	A2E0659-25	Soil	05/18/22 15:00	05/18/22 17:10
DU11	A2E0659-26	Soil	05/18/22 15:00	05/18/22 17:10
DU12	A2E0659-27	Soil	05/17/22 14:10	05/18/22 17:10
DU12	A2E0659-28	Soil	05/17/22 14:10	05/18/22 17:10
051822 EB	A2E0659-29	Water	05/18/22 11:45	05/18/22 17:10

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.



ANALYTICAL REPORT

AMENDED REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

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ORELAP ID: OR100062

Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: Cathedral Park ISM

Project Number: M0785.22.001

Project Manager: Dana Domenighini

Report ID:

A2E0659 - 06 08 22 0827

ANALYTICAL CASE NARRATIVE

Work Order: A2E0659

Amended Report Revision 1:

EPA Method 8082 PCBs Data Correction

This report supersedes all previous reports.

Aroclor 1262 and Aroclor 1268 were omitted from the original report. They are now reported and all results are non-detect.

Mark Zehr
Organics Manager
6/8/2022

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.



ANALYTICAL REPORT

AMENDED REPORT

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ORELAP ID: OR100062

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3140 NE Broadway Street

Portland, OR 97232

Project: Cathedral Park ISM

Project Number: M0785.22.001

Project Manager: Dana Domenighini

Report ID:

A2E0659 - 06 08 22 0827

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU01 (A2E0659-02)		Matrix: Soil		Batch: 22F0136		C-07, PRO		
Aroclor 1016	ND	5.14	10.3	ug/kg dry	1	06/06/22 09:53	EPA 8082A	
Aroclor 1221	ND	5.14	10.3	ug/kg dry	1	06/06/22 09:53	EPA 8082A	
Aroclor 1232	ND	5.14	10.3	ug/kg dry	1	06/06/22 09:53	EPA 8082A	
Aroclor 1242	ND	5.14	10.3	ug/kg dry	1	06/06/22 09:53	EPA 8082A	
Aroclor 1248	ND	5.14	10.3	ug/kg dry	1	06/06/22 09:53	EPA 8082A	
Aroclor 1254	ND	5.14	10.3	ug/kg dry	1	06/06/22 09:53	EPA 8082A	
Aroclor 1260	101	5.14	10.3	ug/kg dry	1	06/06/22 09:53	EPA 8082A	P-09
Aroclor 1262	ND	5.14	10.3	ug/kg dry	1	06/06/22 09:53	EPA 8082A	AMEND
Aroclor 1268	ND	5.14	10.3	ug/kg dry	1	06/06/22 09:53	EPA 8082A	AMEND
Surrogate: Decachlorobiphenyl (Surr)		Recovery: 80 %		Limits: 60-125 %	1	06/06/22 09:53	EPA 8082A	
DU02 (A2E0659-04RE1)		Matrix: Soil		Batch: 22F0093		C-07, PRO		
Aroclor 1016	ND	4.97	9.94	ug/kg dry	1	06/06/22 19:13	EPA 8082A	
Aroclor 1221	ND	4.97	9.94	ug/kg dry	1	06/06/22 19:13	EPA 8082A	
Aroclor 1232	ND	9.94	9.94	ug/kg dry	1	06/06/22 19:13	EPA 8082A	
Aroclor 1242	ND	4.97	9.94	ug/kg dry	1	06/06/22 19:13	EPA 8082A	
Aroclor 1248	ND	4.97	9.94	ug/kg dry	1	06/06/22 19:13	EPA 8082A	
Aroclor 1254	17.1	4.97	9.94	ug/kg dry	1	06/06/22 19:13	EPA 8082A	P-12
Aroclor 1260	32.7	4.97	9.94	ug/kg dry	1	06/06/22 19:13	EPA 8082A	P-12
Aroclor 1262	ND	4.97	9.94	ug/kg dry	1	06/06/22 19:13	EPA 8082A	AMEND
Aroclor 1268	ND	4.97	9.94	ug/kg dry	1	06/06/22 19:13	EPA 8082A	AMEND
Surrogate: Decachlorobiphenyl (Surr)		Recovery: 90 %		Limits: 60-125 %	1	06/06/22 19:13	EPA 8082A	
DU02-DUP (A2E0659-06RE1)		Matrix: Soil		Batch: 22F0093		C-07, PRO		
Aroclor 1016	ND	4.79	9.58	ug/kg dry	1	06/06/22 20:24	EPA 8082A	
Aroclor 1221	ND	4.79	9.58	ug/kg dry	1	06/06/22 20:24	EPA 8082A	
Aroclor 1232	ND	9.58	9.58	ug/kg dry	1	06/06/22 20:24	EPA 8082A	
Aroclor 1242	ND	4.79	9.58	ug/kg dry	1	06/06/22 20:24	EPA 8082A	
Aroclor 1248	ND	4.79	9.58	ug/kg dry	1	06/06/22 20:24	EPA 8082A	
Aroclor 1254	13.9	4.79	9.58	ug/kg dry	1	06/06/22 20:24	EPA 8082A	P-12
Aroclor 1260	27.2	4.79	9.58	ug/kg dry	1	06/06/22 20:24	EPA 8082A	P-12
Aroclor 1262	ND	4.79	9.58	ug/kg dry	1	06/06/22 20:24	EPA 8082A	AMEND
Aroclor 1268	ND	4.79	9.58	ug/kg dry	1	06/06/22 20:24	EPA 8082A	AMEND

Apex Laboratories

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

AMENDED REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: Cathedral Park ISMProject Number: **M0785.22.001**Project Manager: **Dana Domenighini****Report ID:****A2E0659 - 06 08 22 0827**

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU02-DUP (A2E0659-06RE1)				Matrix: Soil		Batch: 22F0093		C-07, PRO
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 88 %</i>		<i>Limits: 60-125 %</i>	<i>1</i>	<i>06/06/22 20:24</i>	<i>EPA 8082A</i>	
DU02-TRIP (A2E0659-08RE1)				Matrix: Soil		Batch: 22F0093		C-07, PRO
Aroclor 1016	ND	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	
Aroclor 1221	ND	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	
Aroclor 1232	ND	11.9	11.9	ug/kg dry	1	06/06/22 20:59	EPA 8082A	R-02
Aroclor 1242	ND	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	
Aroclor 1248	ND	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	
Aroclor 1254	21.7	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	P-12
Aroclor 1260	41.4	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	P-12
Aroclor 1262	ND	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	AMEND
Aroclor 1268	ND	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	AMEND
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 85 %</i>		<i>Limits: 60-125 %</i>	<i>1</i>	<i>06/06/22 20:59</i>	<i>EPA 8082A</i>	
DU03 (A2E0659-10RE1)				Matrix: Soil		Batch: 22F0093		C-07, PRO
Aroclor 1016	ND	5.08	10.2	ug/kg dry	1	06/06/22 22:10	EPA 8082A	
Aroclor 1221	ND	5.08	10.2	ug/kg dry	1	06/06/22 22:10	EPA 8082A	
Aroclor 1232	ND	5.08	10.2	ug/kg dry	1	06/06/22 22:10	EPA 8082A	
Aroclor 1242	8.25	5.08	10.2	ug/kg dry	1	06/06/22 22:10	EPA 8082A	J
Aroclor 1248	ND	5.08	10.2	ug/kg dry	1	06/06/22 22:10	EPA 8082A	
Aroclor 1254	46.0	5.08	10.2	ug/kg dry	1	06/06/22 22:10	EPA 8082A	P-12
Aroclor 1260	102	5.08	10.2	ug/kg dry	1	06/06/22 22:10	EPA 8082A	P-12
Aroclor 1262	ND	5.08	10.2	ug/kg dry	1	06/06/22 22:10	EPA 8082A	AMEND
Aroclor 1268	ND	5.08	10.2	ug/kg dry	1	06/06/22 22:10	EPA 8082A	AMEND
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 89 %</i>		<i>Limits: 60-125 %</i>	<i>1</i>	<i>06/06/22 22:10</i>	<i>EPA 8082A</i>	
DU04 (A2E0659-12RE1)				Matrix: Soil		Batch: 22F0093		C-07, PRO
Aroclor 1016	ND	10.2	20.4	ug/kg dry	2	06/06/22 22:45	EPA 8082A	
Aroclor 1221	ND	10.2	20.4	ug/kg dry	2	06/06/22 22:45	EPA 8082A	
Aroclor 1232	ND	10.2	20.4	ug/kg dry	2	06/06/22 22:45	EPA 8082A	
Aroclor 1242	ND	10.2	20.4	ug/kg dry	2	06/06/22 22:45	EPA 8082A	
Aroclor 1248	ND	10.2	20.4	ug/kg dry	2	06/06/22 22:45	EPA 8082A	
Aroclor 1254	ND	10.2	20.4	ug/kg dry	2	06/06/22 22:45	EPA 8082A	
Aroclor 1260	357	10.2	20.4	ug/kg dry	2	06/06/22 22:45	EPA 8082A	

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

AMENDED REPORT

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Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: Cathedral Park ISMProject Number: **M0785.22.001**Project Manager: **Dana Domenighini****Report ID:****A2E0659 - 06 08 22 0827**

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU04 (A2E0659-12RE1)				Matrix: Soil		Batch: 22F0093		C-07, PRO
Aroclor 1262	ND	10.2	20.4	ug/kg dry	2	06/06/22 22:45	EPA 8082A	AMEND
Aroclor 1268	ND	10.2	20.4	ug/kg dry	2	06/06/22 22:45	EPA 8082A	AMEND
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 77 %</i>		<i>Limits: 60-125 %</i>	<i>2</i>	<i>06/06/22 22:45</i>	<i>EPA 8082A</i>	
DU05 (A2E0659-14RE1)				Matrix: Soil		Batch: 22F0093		C-07, PRO
Aroclor 1016	ND	10.5	20.9	ug/kg dry	2	06/06/22 23:20	EPA 8082A	
Aroclor 1221	ND	10.5	20.9	ug/kg dry	2	06/06/22 23:20	EPA 8082A	
Aroclor 1232	ND	10.5	20.9	ug/kg dry	2	06/06/22 23:20	EPA 8082A	
Aroclor 1242	ND	10.5	20.9	ug/kg dry	2	06/06/22 23:20	EPA 8082A	
Aroclor 1248	ND	10.5	20.9	ug/kg dry	2	06/06/22 23:20	EPA 8082A	
Aroclor 1254	ND	10.5	20.9	ug/kg dry	2	06/06/22 23:20	EPA 8082A	
Aroclor 1260	452	10.5	20.9	ug/kg dry	2	06/06/22 23:20	EPA 8082A	
Aroclor 1262	ND	10.5	20.9	ug/kg dry	2	06/06/22 23:20	EPA 8082A	AMEND
Aroclor 1268	ND	10.5	20.9	ug/kg dry	2	06/06/22 23:20	EPA 8082A	AMEND
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 77 %</i>		<i>Limits: 60-125 %</i>	<i>2</i>	<i>06/06/22 23:20</i>	<i>EPA 8082A</i>	
DU06 (A2E0659-16RE1)				Matrix: Soil		Batch: 22F0093		C-07, PRO
Aroclor 1016	ND	5.14	10.3	ug/kg dry	1	06/06/22 23:55	EPA 8082A	
Aroclor 1221	ND	5.14	10.3	ug/kg dry	1	06/06/22 23:55	EPA 8082A	
Aroclor 1232	ND	5.14	10.3	ug/kg dry	1	06/06/22 23:55	EPA 8082A	
Aroclor 1242	ND	5.14	10.3	ug/kg dry	1	06/06/22 23:55	EPA 8082A	
Aroclor 1248	ND	5.14	10.3	ug/kg dry	1	06/06/22 23:55	EPA 8082A	
Aroclor 1254	19.8	5.14	10.3	ug/kg dry	1	06/06/22 23:55	EPA 8082A	P-12
Aroclor 1260	44.4	5.14	10.3	ug/kg dry	1	06/06/22 23:55	EPA 8082A	P-12
Aroclor 1262	ND	5.14	10.3	ug/kg dry	1	06/06/22 23:55	EPA 8082A	AMEND
Aroclor 1268	ND	5.14	10.3	ug/kg dry	1	06/06/22 23:55	EPA 8082A	AMEND
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 91 %</i>		<i>Limits: 60-125 %</i>	<i>1</i>	<i>06/06/22 23:55</i>	<i>EPA 8082A</i>	
DU07 (A2E0659-18RE1)				Matrix: Soil		Batch: 22F0093		C-07, PRO
Aroclor 1016	ND	5.02	10.0	ug/kg dry	1	06/07/22 00:48	EPA 8082A	
Aroclor 1221	ND	5.02	10.0	ug/kg dry	1	06/07/22 00:48	EPA 8082A	
Aroclor 1232	ND	5.02	10.0	ug/kg dry	1	06/07/22 00:48	EPA 8082A	
Aroclor 1242	ND	5.02	10.0	ug/kg dry	1	06/07/22 00:48	EPA 8082A	

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

AMENDED REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: Cathedral Park ISMProject Number: **M0785.22.001**Project Manager: **Dana Domenighini****Report ID:****A2E0659 - 06 08 22 0827**

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU07 (A2E0659-18RE1)				Matrix: Soil		Batch: 22F0093		C-07, PRO
Aroclor 1248	ND	5.02	10.0	ug/kg dry	1	06/07/22 00:48	EPA 8082A	
Aroclor 1254	16.1	5.02	10.0	ug/kg dry	1	06/07/22 00:48	EPA 8082A	P-12
Aroclor 1260	21.3	5.02	10.0	ug/kg dry	1	06/07/22 00:48	EPA 8082A	P-12
Aroclor 1262	ND	5.02	10.0	ug/kg dry	1	06/07/22 00:48	EPA 8082A	AMEND
Aroclor 1268	ND	5.02	10.0	ug/kg dry	1	06/07/22 00:48	EPA 8082A	AMEND
Surrogate: Decachlorobiphenyl (Surr)		Recovery: 83 %	Limits: 60-125 %	1	06/07/22 00:48	EPA 8082A		
DU08 (A2E0659-20RE1)				Matrix: Soil		Batch: 22F0093		C-07, PRO
Aroclor 1016	ND	5.21	10.4	ug/kg dry	1	06/06/22 18:38	EPA 8082A	
Aroclor 1221	ND	5.21	10.4	ug/kg dry	1	06/06/22 18:38	EPA 8082A	
Aroclor 1232	ND	5.21	10.4	ug/kg dry	1	06/06/22 18:38	EPA 8082A	
Aroclor 1242	14.0	5.21	10.4	ug/kg dry	1	06/06/22 18:38	EPA 8082A	P-12
Aroclor 1248	ND	5.21	10.4	ug/kg dry	1	06/06/22 18:38	EPA 8082A	
Aroclor 1254	104	5.21	10.4	ug/kg dry	1	06/06/22 18:38	EPA 8082A	P-12
Aroclor 1260	177	5.21	10.4	ug/kg dry	1	06/06/22 18:38	EPA 8082A	P-12
Aroclor 1262	ND	5.21	10.4	ug/kg dry	1	06/06/22 18:38	EPA 8082A	AMEND
Aroclor 1268	ND	5.21	10.4	ug/kg dry	1	06/06/22 18:38	EPA 8082A	AMEND
Surrogate: Decachlorobiphenyl (Surr)		Recovery: 84 %	Limits: 60-125 %	1	06/06/22 18:38	EPA 8082A		
COMP09 (A2E0659-22RE1)				Matrix: Soil		Batch: 22F0093		C-07, PRO
Aroclor 1016	ND	50.9	102	ug/kg dry	10	06/06/22 19:13	EPA 8082A	
Aroclor 1221	ND	50.9	102	ug/kg dry	10	06/06/22 19:13	EPA 8082A	
Aroclor 1232	ND	50.9	102	ug/kg dry	10	06/06/22 19:13	EPA 8082A	
Aroclor 1242	ND	50.9	102	ug/kg dry	10	06/06/22 19:13	EPA 8082A	
Aroclor 1248	ND	50.9	102	ug/kg dry	10	06/06/22 19:13	EPA 8082A	
Aroclor 1254	490	50.9	102	ug/kg dry	10	06/06/22 19:13	EPA 8082A	P-12
Aroclor 1260	2180	50.9	102	ug/kg dry	10	06/06/22 19:13	EPA 8082A	P-12
Aroclor 1262	ND	50.9	102	ug/kg dry	10	06/06/22 19:13	EPA 8082A	AMEND
Aroclor 1268	ND	50.9	102	ug/kg dry	10	06/06/22 19:13	EPA 8082A	AMEND
Surrogate: Decachlorobiphenyl (Surr)		Recovery: 95 %	Limits: 60-125 %	10	06/06/22 19:13	EPA 8082A	S-05	
DU10 (A2E0659-24RE1)				Matrix: Soil		Batch: 22F0093		C-07, PRO
Aroclor 1016	ND	52.4	105	ug/kg dry	10	06/06/22 19:49	EPA 8082A	

Apex Laboratories

Philip Nerenberg, Lab Director

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503-718-2323

ORELAP ID: OR100062

Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: Cathedral Park ISMProject Number: **M0785.22.001**Project Manager: **Dana Domenighini****Report ID:****A2E0659 - 06 08 22 0827**

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU10 (A2E0659-24RE1)		Matrix: Soil		Batch: 22F0093		C-07, PRO		
Aroclor 1221	ND	52.4	105	ug/kg dry	10	06/06/22 19:49	EPA 8082A	
Aroclor 1232	ND	52.4	105	ug/kg dry	10	06/06/22 19:49	EPA 8082A	
Aroclor 1242	ND	52.4	105	ug/kg dry	10	06/06/22 19:49	EPA 8082A	
Aroclor 1248	ND	52.4	105	ug/kg dry	10	06/06/22 19:49	EPA 8082A	
Aroclor 1254	975	52.4	105	ug/kg dry	10	06/06/22 19:49	EPA 8082A	P-12
Aroclor 1260	2470	52.4	105	ug/kg dry	10	06/06/22 19:49	EPA 8082A	P-12
Aroclor 1262	ND	52.4	105	ug/kg dry	10	06/06/22 19:49	EPA 8082A	AMEND
Aroclor 1268	ND	52.4	105	ug/kg dry	10	06/06/22 19:49	EPA 8082A	AMEND
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 60-125 %</i>	<i>10</i>	<i>06/06/22 19:49</i>	<i>EPA 8082A</i>	<i>S-05</i>
DU11 (A2E0659-26RE1)		Matrix: Soil		Batch: 22F0093		C-07, PRO		
Aroclor 1016	ND	5.17	10.3	ug/kg dry	1	06/06/22 20:24	EPA 8082A	
Aroclor 1221	ND	5.17	10.3	ug/kg dry	1	06/06/22 20:24	EPA 8082A	
Aroclor 1232	ND	5.17	10.3	ug/kg dry	1	06/06/22 20:24	EPA 8082A	
Aroclor 1242	ND	5.17	10.3	ug/kg dry	1	06/06/22 20:24	EPA 8082A	
Aroclor 1248	ND	5.17	10.3	ug/kg dry	1	06/06/22 20:24	EPA 8082A	
Aroclor 1254	25.1	5.17	10.3	ug/kg dry	1	06/06/22 20:24	EPA 8082A	P-12
Aroclor 1260	63.6	5.17	10.3	ug/kg dry	1	06/06/22 20:24	EPA 8082A	P-12
Aroclor 1262	ND	5.17	10.3	ug/kg dry	1	06/06/22 20:24	EPA 8082A	AMEND
Aroclor 1268	ND	5.17	10.3	ug/kg dry	1	06/06/22 20:24	EPA 8082A	AMEND
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 96 %</i>		<i>Limits: 60-125 %</i>	<i>1</i>	<i>06/06/22 20:24</i>	<i>EPA 8082A</i>	
DU12 (A2E0659-28RE1)		Matrix: Soil		Batch: 22F0093		C-07, PRO		
Aroclor 1016	ND	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	
Aroclor 1221	ND	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	
Aroclor 1232	ND	10.3	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	
Aroclor 1242	ND	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	
Aroclor 1248	ND	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	
Aroclor 1254	27.9	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	P-12
Aroclor 1260	86.3	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	P-12
Aroclor 1262	ND	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	AMEND
Aroclor 1268	ND	5.16	10.3	ug/kg dry	1	06/06/22 20:59	EPA 8082A	AMEND
<i>Surrogate: Decachlorobiphenyl (Surr)</i>		<i>Recovery: 88 %</i>		<i>Limits: 60-125 %</i>	<i>1</i>	<i>06/06/22 20:59</i>	<i>EPA 8082A</i>	

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Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: **Cathedral Park ISM**Project Number: **M0785.22.001**Project Manager: **Dana Domenighini****Report ID:****A2E0659 - 06 08 22 0827**

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
051822 EB (A2E0659-29)		Matrix: Water			Batch: 22F0145		C-07	
Aroclor 1016	ND	0.0490	0.0980	ug/L	1	06/06/22 09:58	EPA 8082A	
Aroclor 1221	ND	0.0490	0.0980	ug/L	1	06/06/22 09:58	EPA 8082A	
Aroclor 1232	ND	0.0490	0.0980	ug/L	1	06/06/22 09:58	EPA 8082A	
Aroclor 1242	ND	0.0490	0.0980	ug/L	1	06/06/22 09:58	EPA 8082A	
Aroclor 1248	ND	0.0490	0.0980	ug/L	1	06/06/22 09:58	EPA 8082A	
Aroclor 1254	ND	0.0490	0.0980	ug/L	1	06/06/22 09:58	EPA 8082A	
Aroclor 1260	ND	0.0490	0.0980	ug/L	1	06/06/22 09:58	EPA 8082A	
Aroclor 1262	ND	0.0490	0.0980	ug/L	1	06/06/22 09:58	EPA 8082A	AMEND
Aroclor 1268	ND	0.0490	0.0980	ug/L	1	06/06/22 09:58	EPA 8082A	AMEND
Surrogate: Decachlorobiphenyl (Surr)		Recovery: 54 %		Limits: 40-135 %	1	06/06/22 09:58	EPA 8082A	

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Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: Cathedral Park ISM

Project Number: M0785.22.001

Project Manager: Dana Domenighini

Report ID:

A2E0659 - 06 08 22 0827

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU01 (A2E0659-02)				Matrix: Soil		Batch: 22F0045		PRO
% Solids	96.1	---	1.00	%	1	06/02/22 08:19	EPA 8000D	
DU02 (A2E0659-04)				Matrix: Soil		Batch: 22E1019		PRO
% Solids	96.7	---	1.00	%	1	05/27/22 10:15	EPA 8000D	
DU02-DUP (A2E0659-06)				Matrix: Soil		Batch: 22E1019		PRO
% Solids	96.7	---	1.00	%	1	05/27/22 10:15	EPA 8000D	
DU02-TRIP (A2E0659-08)				Matrix: Soil		Batch: 22E1019		PRO
% Solids	96.8	---	1.00	%	1	05/27/22 10:15	EPA 8000D	
DU03 (A2E0659-10)				Matrix: Soil		Batch: 22E1019		PRO
% Solids	96.9	---	1.00	%	1	05/27/22 10:15	EPA 8000D	
DU04 (A2E0659-12)				Matrix: Soil		Batch: 22E1019		PRO
% Solids	96.8	---	1.00	%	1	05/27/22 10:15	EPA 8000D	
DU05 (A2E0659-14)				Matrix: Soil		Batch: 22E1019		PRO
% Solids	94.6	---	1.00	%	1	05/27/22 10:15	EPA 8000D	
DU06 (A2E0659-16)				Matrix: Soil		Batch: 22F0068		H-01, PRO
% Solids	95.5	---	1.00	%	1	06/02/22 08:33	EPA 8000D	
DU07 (A2E0659-18)				Matrix: Soil		Batch: 22E1019		PRO
% Solids	96.8	---	1.00	%	1	05/27/22 10:15	EPA 8000D	
DU08 (A2E0659-20)				Matrix: Soil		Batch: 22E1019		PRO
% Solids	95.9	---	1.00	%	1	05/27/22 10:15	EPA 8000D	
COMP09 (A2E0659-22)				Matrix: Soil		Batch: 22F0045		PRO
% Solids	96.9	---	1.00	%	1	06/02/22 08:19	EPA 8000D	
DU10 (A2E0659-24)				Matrix: Soil		Batch: 22E1019		PRO
% Solids	95.4	---	1.00	%	1	05/27/22 10:15	EPA 8000D	
DU11 (A2E0659-26)				Matrix: Soil		Batch: 22F0045		PRO

Apex Laboratories

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

AMENDED REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: Cathedral Park ISM

Project Number: M0785.22.001

Project Manager: Dana Domenighini

Report ID:

A2E0659 - 06 08 22 0827

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU11 (A2E0659-26)				Matrix: Soil		Batch: 22F0045		PRO
% Solids	96.0	---	1.00	%	1	06/02/22 08:19	EPA 8000D	
DU12 (A2E0659-28)				Matrix: Soil		Batch: 22E1019		PRO
% Solids	96.4	---	1.00	%	1	05/27/22 10:15	EPA 8000D	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 22F0093 - EPA 3546						Soil						
Blank (22F0093-BLK2)				Prepared: 06/02/22 11:38		Analyzed: 06/06/22 18:38					C-07	
EPA 8082A												
Aroclor 1016	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1221	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1232	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1242	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1248	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1254	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1260	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1262	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1268	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Surr: Decachlorobiphenyl (Surr)		Recovery: 108 %		Limits: 60-125 %		Dilution: 1x						
LCS (22F0093-BS2)				Prepared: 06/02/22 11:38		Analyzed: 06/06/22 18:56					C-07	
EPA 8082A												
Aroclor 1016	188	5.00	10.0	ug/kg wet	1	250	---	75	47-134%	---	---	
Aroclor 1260	219	5.00	10.0	ug/kg wet	1	250	---	88	53-140%	---	---	
Surr: Decachlorobiphenyl (Surr)		Recovery: 113 %		Limits: 60-125 %		Dilution: 1x						
Duplicate (22F0093-DUP2)				Prepared: 06/02/22 11:38		Analyzed: 06/06/22 19:49					C-07, PRO	
QC Source Sample: DU02 (A2E0659-04RE1)												
EPA 8082A												
Aroclor 1016	ND	5.15	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1221	ND	5.15	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1232	ND	10.3	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1242	ND	5.15	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1248	ND	5.15	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1254	19.3	5.15	10.3	ug/kg dry	1	---	17.1	---	---	12	30%	P-12
Aroclor 1260	37.3	5.15	10.3	ug/kg dry	1	---	32.7	---	---	13	30%	P-12
Aroclor 1262	ND	5.15	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1268	ND	5.15	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Surr: Decachlorobiphenyl (Surr)		Recovery: 79 %		Limits: 60-125 %		Dilution: 1x						
Matrix Spike (22F0093-MS2)				Prepared: 06/02/22 11:38		Analyzed: 06/07/22 00:30					C-07	

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Project Number: M0785.22.001

Project Manager: Dana Domenighini

Report ID:

A2E0659 - 06 08 22 0827

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 22F0093 - EPA 3546						Soil						
Matrix Spike (22F0093-MS2)			Prepared: 06/02/22 11:38 Analyzed: 06/07/22 00:30									C-07
<u>QC Source Sample: Non-SDG (A2E0823-03RE1)</u>												
<u>EPA 8082A</u>												
Aroclor 1016	192	5.34	10.7	ug/kg dry	1	267	ND	72	47-134%	---	---	
Aroclor 1260	230	5.34	10.7	ug/kg dry	1	267	ND	86	53-140%	---	---	
Surr: Decachlorobiphenyl (Surr)		Recovery: 107 %		Limits: 60-125 %		Dilution: 1x						

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 22F0136 - EPA 3546						Soil						
Blank (22F0136-BLK1)			Prepared: 06/03/22 11:41			Analyzed: 06/06/22 09:18			C-07			
EPA 8082A												
Aroclor 1016	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1221	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1232	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1242	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1248	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1254	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1260	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1262	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1268	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Surr: Decachlorobiphenyl (Surr)		Recovery: 116 %		Limits: 60-125 %		Dilution: 1x						
LCS (22F0136-BS1)			Prepared: 06/03/22 11:41			Analyzed: 06/06/22 09:36			C-07			
EPA 8082A												
Aroclor 1016	225	5.00	10.0	ug/kg wet	1	250	---	90	47-134%	---	---	
Aroclor 1260	252	5.00	10.0	ug/kg wet	1	250	---	101	53-140%	---	---	
Surr: Decachlorobiphenyl (Surr)		Recovery: 122 %		Limits: 60-125 %		Dilution: 1x						
Duplicate (22F0136-DUP1)			Prepared: 06/03/22 11:41			Analyzed: 06/06/22 10:29			C-07, PRO			
QC Source Sample: DU01 (A2E0659-02)												
EPA 8082A												
Aroclor 1016	ND	5.17	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1221	ND	5.17	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1232	ND	5.17	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1242	ND	5.17	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1248	ND	5.17	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1254	ND	5.17	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1260	101	5.17	10.3	ug/kg dry	1	---	101	---	---	0.1	30%	P-09
Aroclor 1262	ND	5.17	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1268	ND	5.17	10.3	ug/kg dry	1	---	ND	---	---	---	30%	
Surr: Decachlorobiphenyl (Surr)		Recovery: 84 %		Limits: 60-125 %		Dilution: 1x						
Duplicate (22F0136-DUP2)			Prepared: 06/03/22 11:41			Analyzed: 06/06/22 11:04			C-07, PRO			

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Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: **Cathedral Park ISM**Project Number: **M0785.22.001**Project Manager: **Dana Domenighini****Report ID:****A2E0659 - 06 08 22 0827**

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 22F0136 - EPA 3546						Soil						
Duplicate (22F0136-DUP2)				Prepared: 06/03/22 11:41		Analyzed: 06/06/22 11:04				C-07, PRO		
QC Source Sample: DU01 (A2E0659-02)												
EPA 8082A												
Aroclor 1016	ND	5.10	10.2	ug/kg dry	1	---	ND	---	---	---	30%	P-09
Aroclor 1221	ND	5.10	10.2	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1232	ND	5.10	10.2	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1242	ND	5.10	10.2	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1248	ND	5.10	10.2	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1254	ND	5.10	10.2	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1260	120	5.10	10.2	ug/kg dry	1	---	101	---	---	18	30%	
Aroclor 1262	ND	5.10	10.2	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1268	ND	5.10	10.2	ug/kg dry	1	---	ND	---	---	---	30%	
Surr: Decachlorobiphenyl (Surr)		Recovery: 89 %		Limits: 60-125 %		Dilution: 1x						
Matrix Spike (22F0136-MS1)				Prepared: 06/03/22 11:41		Analyzed: 06/06/22 11:40				C-07, PRO		
QC Source Sample: DU01 (A2E0659-02)												
EPA 8082A												
Aroclor 1016	169	5.16	10.3	ug/kg dry	1	258	ND	65	47-134%	---	---	
Aroclor 1260	277	5.16	10.3	ug/kg dry	1	258	101	68	53-140%	---	---	
Surr: Decachlorobiphenyl (Surr)		Recovery: 76 %		Limits: 60-125 %		Dilution: 1x						
Matrix Spike Dup (22F0136-MSD1)				Prepared: 06/03/22 11:41		Analyzed: 06/06/22 12:15				C-07, PRO		
QC Source Sample: DU01 (A2E0659-02)												
EPA 8082A												
Aroclor 1016	207	5.10	10.2	ug/kg dry	1	255	ND	81	47-134%	20	30%	
Aroclor 1260	320	5.10	10.2	ug/kg dry	1	255	101	86	53-140%	14	30%	
Surr: Decachlorobiphenyl (Surr)		Recovery: 85 %		Limits: 60-125 %		Dilution: 1x						

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls by EPA 8082A

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 22F0145 - EPA 3510C (Neutral pH)						Water						
Blank (22F0145-BLK1)			Prepared: 06/03/22 13:47 Analyzed: 06/06/22 09:06									C-07
EPA 8082A												
Aroclor 1016	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1221	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1232	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1242	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1248	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1254	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1260	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1262	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Aroclor 1268	ND	0.00909	0.0182	ug/L	1	---	---	---	---	---	---	
Surr: Decachlorobiphenyl (Surr)		Recovery: 72 %		Limits: 40-135 %		Dilution: 1x						
LCS (22F0145-BS1)			Prepared: 06/03/22 13:47 Analyzed: 06/06/22 09:23									C-07
EPA 8082A												
Aroclor 1016	0.859	0.0100	0.0200	ug/L	1	1.25	---	69	46-129%	---	---	
Aroclor 1260	0.996	0.0100	0.0200	ug/L	1	1.25	---	80	45-134%	---	---	
Surr: Decachlorobiphenyl (Surr)		Recovery: 60 %		Limits: 40-135 %		Dilution: 1x						
LCS Dup (22F0145-BSD1)			Prepared: 06/03/22 13:47 Analyzed: 06/06/22 09:41									C-07
EPA 8082A												
Aroclor 1016	0.939	0.0100	0.0200	ug/L	1	1.25	---	75	46-129%	9	30%	
Aroclor 1260	1.09	0.0100	0.0200	ug/L	1	1.25	---	87	45-134%	9	30%	
Surr: Decachlorobiphenyl (Surr)		Recovery: 69 %		Limits: 40-135 %		Dilution: 1x						

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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 22E1019 - Total Solids (Dry Weight)							Soil					
Duplicate (22E1019-DUP1)			Prepared: 05/26/22 16:01 Analyzed: 05/27/22 10:15									
QC Source Sample: Non-SDG (A2E0888-04)												
% Solids	80.6	---	1.00	%	1	---	80.0	---	---	0.8	10%	
Duplicate (22E1019-DUP2)			Prepared: 05/26/22 16:01 Analyzed: 05/27/22 10:15									
QC Source Sample: Non-SDG (A2E0907-01)												
% Solids	78.0	---	1.00	%	1	---	77.5	---	---	0.7	10%	
Duplicate (22E1019-DUP3)			Prepared: 05/26/22 20:16 Analyzed: 05/27/22 10:15									
QC Source Sample: DU02 (A2E0659-04)												
EPA 8000D												
% Solids	96.7	---	1.00	%	1	---	96.7	---	---	0.03	10%	PRO
Duplicate (22E1019-DUP4)			Prepared: 05/26/22 20:16 Analyzed: 05/27/22 10:15									
QC Source Sample: Non-SDG (A2E0710-03)												
% Solids	79.0	---	1.00	%	1	---	79.5	---	---	0.7	10%	
Duplicate (22E1019-DUP5)			Prepared: 05/26/22 20:16 Analyzed: 05/27/22 10:15									
QC Source Sample: Non-SDG (A2E0964-01)												
% Solids	81.9	---	1.00	%	1	---	81.8	---	---	0.2	10%	
Duplicate (22E1019-DUP6)			Prepared: 05/26/22 20:16 Analyzed: 05/27/22 10:15									
QC Source Sample: Non-SDG (A2E0965-02)												
% Solids	71.1	---	1.00	%	1	---	68.7	---	---	3	10%	

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 22F0045 - Total Solids (Dry Weight)							Soil					
Duplicate (22F0045-DUP1)			Prepared: 06/01/22 13:21			Analyzed: 06/02/22 08:19						
QC Source Sample: Non-SDG (A1G0691-34)												
% Solids	94.4	---	1.00	%	1	---	94.7	---	---	0.3	10%	
Duplicate (22F0045-DUP2)			Prepared: 06/01/22 13:21			Analyzed: 06/02/22 08:19			PRO			
QC Source Sample: Non-SDG (A2E0420-04)												
% Solids	98.5	---	1.00	%	1	---	98.9	---	---	0.4	10%	
Duplicate (22F0045-DUP3)			Prepared: 06/01/22 13:21			Analyzed: 06/02/22 08:19			PRO			
QC Source Sample: Non-SDG (A2E0420-06)												
% Solids	98.1	---	1.00	%	1	---	98.5	---	---	0.4	10%	
Duplicate (22F0045-DUP4)			Prepared: 06/01/22 13:21			Analyzed: 06/02/22 08:19			PRO			
QC Source Sample: DU01 (A2E0659-02)												
EPA 8000D												
% Solids	95.5	---	1.00	%	1	---	96.1	---	---	0.6	10%	
Duplicate (22F0045-DUP6)			Prepared: 06/01/22 19:17			Analyzed: 06/02/22 08:19						
QC Source Sample: Non-SDG (A2F0037-01)												
% Solids	88.2	---	1.00	%	1	---	88.5	---	---	0.4	10%	
Duplicate (22F0045-DUP7)			Prepared: 06/01/22 19:17			Analyzed: 06/02/22 08:19						
QC Source Sample: Non-SDG (A2F0038-01)												
% Solids	90.9	---	1.00	%	1	---	91.2	---	---	0.3	10%	
Duplicate (22F0045-DUP8)			Prepared: 06/01/22 19:17			Analyzed: 06/02/22 08:19						
QC Source Sample: Non-SDG (A2F0041-02)												
% Solids	79.4	---	1.00	%	1	---	79.2	---	---	0.3	10%	

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3140 NE Broadway Street

Portland, OR 97232

Project: Cathedral Park ISM

Project Number: M0785.22.001

Project Manager: Dana Domenighini

Report ID:

A2E0659 - 06 08 22 0827

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 22F0068 - Total Solids (Dry Weight)							Soil					
Duplicate (22F0068-DUP1)			Prepared: 06/02/22 06:10 Analyzed: 06/02/22 08:30									
QC Source Sample: Non-SDG (A2F0036-01)												
% Solids	82.6	---	1.00	%	1	---	82.6	---	---	0.04	10%	

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

Apex Laboratories

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

AMENDED REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: **Cathedral Park ISM**Project Number: **M0785.22.001**Project Manager: **Dana Domenighini****Report ID:****A2E0659 - 06 08 22 0827**

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
Batch: 22F0145							
A2E0659-29	Water	EPA 8082A	05/18/22 11:45	06/03/22 13:47	1020mL/5mL	1000mL/5mL	0.98

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 22F0093							
A2E0659-04RE1	Soil	EPA 8082A	05/17/22 12:10	06/02/22 11:38	10.41g/5mL	10g/5mL	0.96
A2E0659-06RE1	Soil	EPA 8082A	05/17/22 12:10	06/02/22 11:38	10.8g/5mL	10g/5mL	0.93
A2E0659-08RE1	Soil	EPA 8082A	05/17/22 12:10	06/02/22 11:38	10.01g/5mL	10g/5mL	1.00
A2E0659-10RE1	Soil	EPA 8082A	05/16/22 13:35	06/02/22 11:38	10.16g/5mL	10g/5mL	0.98
A2E0659-12RE1	Soil	EPA 8082A	05/16/22 12:40	06/02/22 11:38	10.13g/5mL	10g/5mL	0.99
A2E0659-14RE1	Soil	EPA 8082A	05/17/22 15:25	06/02/22 11:38	10.11g/5mL	10g/5mL	0.99
A2E0659-16RE1	Soil	EPA 8082A	05/18/22 10:50	06/02/22 11:38	10.18g/5mL	10g/5mL	0.98
A2E0659-18RE1	Soil	EPA 8082A	05/16/22 15:20	06/02/22 11:38	10.28g/5mL	10g/5mL	0.97
A2E0659-20RE1	Soil	EPA 8082A	05/16/22 16:30	06/02/22 11:38	10.01g/5mL	10g/5mL	1.00
A2E0659-22RE1	Soil	EPA 8082A	05/18/22 09:50	06/02/22 11:38	10.13g/5mL	10g/5mL	0.99
A2E0659-24RE1	Soil	EPA 8082A	05/17/22 13:25	06/02/22 11:38	10.01g/5mL	10g/5mL	1.00
A2E0659-26RE1	Soil	EPA 8082A	05/18/22 15:00	06/02/22 11:38	10.08g/5mL	10g/5mL	0.99
A2E0659-28RE1	Soil	EPA 8082A	05/17/22 14:10	06/02/22 11:38	10.05g/5mL	10g/5mL	1.00
Batch: 22F0136							
A2E0659-02	Soil	EPA 8082A	05/18/22 14:25	06/03/22 11:41	10.12g/5mL	10g/5mL	0.99

Percent Dry Weight

Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 22E1019							
A2E0659-04	Soil	EPA 8000D	05/17/22 12:10	05/26/22 20:16			NA
A2E0659-06	Soil	EPA 8000D	05/17/22 12:10	05/26/22 20:16			NA
A2E0659-08	Soil	EPA 8000D	05/17/22 12:10	05/26/22 20:16			NA
A2E0659-10	Soil	EPA 8000D	05/16/22 13:35	05/26/22 20:16			NA
A2E0659-12	Soil	EPA 8000D	05/16/22 12:40	05/26/22 20:16			NA
A2E0659-14	Soil	EPA 8000D	05/17/22 15:25	05/26/22 20:16			NA
A2E0659-18	Soil	EPA 8000D	05/16/22 15:20	05/26/22 20:16			NA
A2E0659-20	Soil	EPA 8000D	05/16/22 16:30	05/26/22 20:16			NA
A2E0659-24	Soil	EPA 8000D	05/17/22 13:25	05/26/22 20:16			NA

Apex Laboratories

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Philip Nerenberg, Lab Director

**ANALYTICAL REPORT****AMENDED REPORT****Apex Laboratories, LLC**

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: **Cathedral Park ISM**Project Number: **M0785.22.001**Project Manager: **Dana Domenighini****Report ID:****A2E0659 - 06 08 22 0827****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
A2E0659-28	Soil	EPA 8000D	05/17/22 14:10	05/26/22 20:16			NA
<u>Batch: 22F0045</u>							
A2E0659-02	Soil	EPA 8000D	05/18/22 14:25	06/01/22 13:21			NA
A2E0659-22	Soil	EPA 8000D	05/18/22 09:50	06/01/22 13:21			NA
A2E0659-26	Soil	EPA 8000D	05/18/22 15:00	06/01/22 13:21			NA
<u>Batch: 22F0068</u>							
A2E0659-16	Soil	EPA 8000D	05/18/22 10:50	06/02/22 08:33			NA

Apex Laboratories

Philip Nerenberg, Lab Director

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Portland, OR 97232

Project: **Cathedral Park ISM**Project Number: **M0785.22.001**Project Manager: **Dana Domenighini****Report ID:****A2E0659 - 06 08 22 0827****QUALIFIER DEFINITIONS****Client Sample and Quality Control (QC) Sample Qualifier Definitions:****Apex Laboratories**

- AMEND** Result for this sample or analyte has been amended from the original report. See Case Narrative 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.
- H-01** This sample was analyzed outside the recommended holding time.
- J** Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
- P-09** Due to weathering and/or the presence of an unknown mixture of PCB Congeners, the pattern does not match the standard used for calibration. Results are Estimated and based on the closest matching Aroclor.
- P-12** Result estimated due to the presence of multiple PCB Aroclors and/or PCB congeners not defined as Aroclors.
- PRO** Sample has undergone sample processing prior to extraction and analysis.
- R-02** The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
- S-05** Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.

Apex Laboratories

Philip Nerenberg, Lab Director

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3140 NE Broadway Street

Portland, OR 97232

Project: **Cathedral Park ISM**Project Number: **M0785.22.001**Project Manager: **Dana Domenighini****Report ID:****A2E0659 - 06 08 22 0827****REPORTING NOTES AND CONVENTIONS:****Abbreviations:**

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).

If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.

The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.

"dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")

See Percent Solids section for details of dry weight analysis.

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

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

QC Source:

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

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

Miscellaneous Notes:

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

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

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to ½ the Reporting Limit (RL).

-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.

-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.

For further details, please request a copy of this document.

Apex Laboratories

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Philip Nerenberg, Lab Director

**ANALYTICAL REPORT****AMENDED REPORT****Apex Laboratories, LLC**

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503-718-2323

ORELAP ID: OR100062

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3140 NE Broadway Street

Portland, OR 97232

Project: **Cathedral Park ISM**Project Number: **M0785.22.001**Project Manager: **Dana Domenighini****Report ID:****A2E0659 - 06 08 22 0827****REPORTING NOTES AND CONVENTIONS (Cont.):****Blanks (Cont.):**

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

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

Preparation Notes:**Mixed Matrix Samples:****Water Samples:**

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

Apex Laboratories

Philip Nerenberg, Lab Director

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**ANALYTICAL REPORT**

AMENDED REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: **Cathedral Park ISM**Project Number: **M0785.22.001**Project Manager: **Dana Domenighini****Report ID:****A2E0659 - 06 08 22 0827****LABORATORY ACCREDITATION INFORMATION****ORELAP Certification ID: OR100062 (Primary Accreditation)** -**EPA ID: OR01039**

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
<u>All reported analytes are included in Apex Laboratories' current ORELAP scope.</u>					

Secondary Accreditations

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

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation.

Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

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

Apex Laboratories

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Philip Nerenberg, Lab Director

Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: Cathedral Park ISM

Project Number: M0785.22.001

Project Manager: Dana Domenighini

Report ID:

A2E0659 - 06 08 22 0827

APEX LABS		CHAIN OF CUSTODY		Lab # <u>A2E0659</u> COC <u>1</u> of <u>2</u>																			
Company: <u>Maul Foster</u>	Project Mgr: <u>Dana Domenighini</u>	Project Name: <u>Cathedral Park ISM</u>	Project #: <u>M0785.22.001</u>																				
Address: <u>3140 NE Broadway, Portland, OR</u>	Phone: <u>503-316-0823</u>	Email: <u>ddomenighini@maul-foster.com</u>	PO #																				
Sampled by: <u>B. Paul & C. Anderson</u>		ANALYSIS REQUEST																					
Site Location: <u>OR</u> <u>WA</u> <u>CA</u>	AK ID <u>---</u>																						
SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-DX	NWTPH-CX	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (9)	Priority Metals (13)	Al, Sp, As, Ba, Be, Bi, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Ti, V, Zn	TOTAL DISS, TCLP	TCLP Metals (9)	Hold Sample	Frozen Archive	
Du01	5/16	1425	S	1																			
Du02	5/17	1210	S	1																			
Du02 - Dup	5/17	1210	S	1																			
Du02 - TEIP	5/17	1210	S	1																			
Du03	5/16	1335	S	1																			
Du04	5/16	1240	S	1																			
Du05	5/17	1525	S	1																			
Du06	5/18	1050	S	1																			
Du07	5/16	1520	S	1																			
Du08	5/16	1630	S	1																			
Standard Turn Around Time (TAT) = 10 Business Days																							
TAT Requested (circle)		1 Day	2 Day	3 Day	Other: _____																		
SPECIAL INSTRUCTIONS: Prepare all samples using ISM procedure. See Kent Patton for site-specific SAP.																							
RECEIVED BY: Signature: <u>[Signature]</u> Date: <u>5/18/22</u>		RECEIVED BY: Signature: <u>[Signature]</u> Date: <u>5/18/22</u>		RECEIVED BY: Signature: <u>[Signature]</u> Date: <u>5/18/22</u>																			
Printed Name: <u>Conner Anderson</u>		Printed Name: <u>Conner Anderson</u>		Printed Name: <u>Conner Anderson</u>																			
Company: <u>MFA</u>		Company: <u>MFA</u>		Company: <u>MFA</u>																			



ANALYTICAL REPORT

AMENDED REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Maul Foster & Alongi, INC.

3140 NE Broadway Street

Portland, OR 97232

Project: Cathedral Park ISMProject Number: M0785.22.001Project Manager: Dana DomenighiniReport ID:

A2E0659 - 06 08 22 0827

APEX LABS COOLER RECEIPT FORM

Client: Maul Foster Element WO#: A2 E0659
Project/Project #: Cathedral Park ISM M0785.22.001

Delivery Info:

Date/time received: 5/18/22 @ 1710 By: JS
Delivered by: Apex ☐ Client ☒ ESS ☐ FedEx ☐ UPS ☐ Swift ☐ Senvoy ☐ SDS ☐ Other ☐

Cooler Inspection Date/time inspected: 5/18/22 @ 1712 By: JD

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 (°C)	<u>4.0</u>	<u>4.3</u>	<u>3.6</u>				
Received on ice? (Y/N)	<u>Y</u>	<u>Y</u>	<u>Y</u>				
Temp. blanks? (Y/N)	<u>N</u>	<u>N</u>	<u>N</u>				
Ice type: (Gel/Real/Other)	<u>real</u>	<u>real</u>	<u>real</u>				
Condition:	<u>good</u>	<u>good</u>	<u>good</u>				

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

Green dots applied to out of temperature samples? Yes ☒ No ☐

Out of temperature samples form initiated? Yes ☒ No ☐

Sample Inspection: Date/time inspected: 5/18/22 @ 1700 By: JS

All samples intact? Yes ☒ No ☐ Comments: _____

Bottle labels/COCs agree? Yes ☒ No ☐ Comments: _____

COC/container discrepancies form initiated? Yes ☐ No ☒

Containers/volumes received appropriate for analysis? Yes ☒ No ☐ Comments: _____

Do VOA vials have visible headspace? Yes ☐ No ☐ NA ☒

Comments: _____

Water samples: pH checked: Yes ☐ No ☐ NA ☒ pH appropriate? Yes ☐ No ☐ NA ☒

Comments: _____

Additional information: _____

Labeled by: S Witness: AKK Cooler Inspected by: B

Apex Laboratories

Philip Nerenberg, Lab Director

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APPENDIX F

DATA VALIDATION MEMORANDUM



DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. M0785.22.001 | JUNE 13, 2022 | OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

Maul Foster & Alongi, Inc. (MFA), conducted an independent stage 2A review of the quality of analytical results for soil samples and associated quality control samples collected at the Cathedral Park site in Portland, Oregon. Samples were collected in May 2022.

Apex Laboratories, LLC (Apex), performed the analyses. Apex report number A2E0659 was reviewed. The analyses performed and samples analyzed are listed below.

Analysis	Reference
Percent dry weight	EPA 8000D
Polychlorinated biphenyls as Aroclors	EPA 8082A
Notes EPA = U.S. Environmental Protection Agency.	

Samples Analyzed		
Report A2E0659		
DU01	DU04	COMP09
DU02	DU05	DU10
DU02-DUP	DU06	DU11
DU02-TRIP	DU07	DU12
DU03	DU08	051822 EB

DATA QUALIFICATION

Analytical results were evaluated according to applicable sections of U.S. Environmental Protection Agency (EPA) guidelines for data review (EPA 2020) and appropriate laboratory- and method-specific guidelines (Apex 2021, EPA 1986).

Based on the results of the data quality review procedures described below, the data are considered acceptable for their intended use, with the appropriate final data qualifiers assigned. Final data qualifiers represent qualifiers originating from the laboratory and accepted by the reviewer, as well as data qualifiers assigned by the reviewer during validation. Final data qualifiers include:

- J = result is estimated.
- U = result is non-detect at the laboratory detection limit (LDL).

Apex noted that, to minimize matrix interference, EPA Method 8082A samples and associated batch quality control samples were processed with sulfuric acid cleanup by EPA Method

3665A, sulfur cleanup by EPA Method 3660B, and Florisil cleanup by EPA Method 3620B. No qualification or action by the reviewer was required.

According to report A2E0659, some detected EPA Method 8082A results are considered estimated due to weathering and/or the presence of unknown mixtures of polychlorinated biphenyl (PCB) congeners, or estimated due to the presence of multiple PCB Aroclors and/or PCB congeners not defined as Aroclors. The reviewer confirmed with Apex that all results qualified with the combined statement “estimated due to the presence of multiple PCB Aroclors and/or PCB congeners not defined as Aroclors,” were qualified based on the presence of multiple PCB Aroclors. Associated quality control sample results prepared with these samples were also flagged. The reviewer qualified associated sample results with “J,” as shown in the table below.

Report	Sample	Component	Original Result (ug/kg)	Qualified Result (ug/kg)
A2E0659	DU01	Aroclor 1260	101	101 J
	DU02	Aroclor 1254	17.1	17.1 J
		Aroclor 1260	32.7	32.7 J
	DU-02-DUP	Aroclor 1254	13.9	13.9 J
		Aroclor 1260	27.2	27.2 J
	DU02-TRIP	Aroclor 1254	21.7	21.7 J
		Aroclor 1260	41.4	41.4 J
	DU03	Aroclor 1254	46.0	46.0 J
		Aroclor 1260	102	102 J
	DU06	Aroclor 1254	19.8	19.8 J
		Aroclor 1260	44.4	44.4 J
	DU07	Aroclor 1254	16.1	16.1 J
		Aroclor 1260	21.3	21.3 J
	DU08	Aroclor 1242	14.0	14.0 J
		Aroclor 1254	104	104 J
		Aroclor 1260	177	177 J
	COMP09	Aroclor 1254	490	490 J
		Aroclor 1260	2,180	2,180 J
	DU10	Aroclor 1254	975	975 J
		Aroclor 1260	2,470	2,470 J
	DU11	Aroclor 1254	25.1	25.1 J
		Aroclor 1260	63.6	63.6 J
	DU12	Aroclor 1254	27.9	27.9 J

Report	Sample	Component	Original Result (ug/kg)	Qualified Result (ug/kg)
		Aroclor 1260	86.3	86.3 J
Notes J = result is estimated. ug/kg = micrograms per kilogram.				

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

According to report A2E0659, the EPA 8000D analysis for sample DU06 was performed outside the method-recommended holding time of 14 days, at 15 days. Qualification of percent dry weight results was not required. Qualification of EPA Method 8082A results based on the dry weight results was not required.

The remaining extractions and analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

BLANKS

Method Blanks

Laboratory method blanks are used to assess whether laboratory contamination was introduced during sample preparation and analysis. Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the laboratory method blanks were associated with all samples prepared in the analytical batch.

All laboratory method blank results were non-detect to LDLs.

Equipment Rinsate Blanks

Equipment rinsate blanks are used to evaluate field equipment decontamination.

An equipment rinsate blank (051822 EB) was submitted for EPA Method 8082A analysis and is associated with all samples in sample delivery group A2E0659.

The equipment rinsate blank was non-detect to LDLs for all target analytes.

Trip Blanks

Trip blanks are used to evaluate whether volatile organic compound contamination was introduced during sample storage and shipment between the sampling location and the laboratory. Trip blank samples were not required for this sampling event because samples were not analyzed for volatile organic compounds.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

A laboratory control sample (LCS) and a laboratory control sample duplicate (LCSD) are spiked with target analytes to provide information about laboratory precision and accuracy.

Apex did not report LCSD results for EPA Method 8082A batch 22F0093 and 22F0136. Batch precision was evaluated using laboratory duplicate and/or matrix spike (MS) and matrix spike duplicate (MSD) results for these batches. The remaining LCS and LCSD were extracted and analyzed at the required frequency.

All LCS and LCSD results were within acceptance limits for percent recovery and relative percent difference (RPD).

LABORATORY DUPLICATE RESULTS

Laboratory duplicate results are used to evaluate laboratory precision. Laboratory duplicate results within five times the method reporting limit (MRL) were not evaluated for precision.

Apex did not report laboratory duplicate results for EPA Method 8082A batch 22F0145; laboratory precision was evaluated using LCS and LCSD results for this batch. All remaining laboratory duplicate samples were extracted and analyzed at the required frequency.

All laboratory duplicate results met RPD acceptance criteria.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

MS and MSD results are used to evaluate laboratory precision and accuracy as well as the effect of the sample matrix on sample preparation and analysis.

Apex did not report MSD results for EPA Method 8082A batch 22F0093; laboratory precision was evaluated using laboratory duplicate results for this batch. Apex did not report MS or MSD results for batch 22F0145; laboratory accuracy and precision were evaluated using LCS and LCSD results for this batch. All remaining MS and MSD samples were prepared and analyzed at the required frequency.

All MS and MSD results were within acceptance limits for percent recovery and RPD.

SURROGATE RECOVERY RESULTS

The samples were spiked with surrogate compounds to evaluate laboratory performance for individual samples.

All surrogate results were within percent recovery acceptance limits.

INCREMENTAL SAMPLING METHODOLOGY RESULTS

According to report A2E0659, incremental sampling methodology (ISM) samples were collected and named according to decision units (DUs). Apex processed and composited ISM samples prior to analysis consistent with industry standard procedures, and flagged all results associated with processed samples.

One DU was collected in triplicate and includes samples DU02, DU02-DUP, and DU02-TRIP. MFA uses acceptance criteria of 30 percent relative standard deviation (RSD) for results that are greater than five times the MRL. RSD was not calculated for non-detect results. All detected results were within five times the MRL but had RSD below 30 percent, as shown in the table below.

Analyte	DU02 Results (ug/kg)	DU02-DUP Results (ug/kg)	DU02-TRIP Results (ug/kg)	RSD (%)
Aroclor 1254	17.1	13.9	21.7	22.3
Aroclor 1260	32.7	27.2	41.4	21.2
Notes ug/kg = micrograms per kilogram. RSD = relative standard deviation.				

REPORTING LIMITS

Apex used LDL limits for non-detect results, except for samples requiring dilutions because of high concentrations and/or matrix interferences. Results between the LDL and the MRL were qualified by Apex with “J,” as estimated.

Apex noted that the EPA Method 8082A detection and reporting limits for Aroclor 1232 on sample DU02-TRIP was raised to account for interference from coeluting organic compounds present in the sample. No qualification or action by the reviewer was required.

DATA PACKAGE

The data package was reviewed for transcription errors, omissions, and anomalies.

According to the case narrative accompanying report A2E0659, a revised report was released on June 8, 2022, to include Aroclor 1262 and Aroclor 1268 in the reported analyte list. Associated results are flagged by Apex. No qualification or action by the reviewer was required.

On the chain of custody form accompanying report A2E0659, sample collection dates are listed without the year of collection. The reviewer confirmed that samples were collected in May 2022. Apex reported the samples with the correct collection dates.

No other issues were found.

REFERENCES

Apex. 2021. *Quality Systems Manual*. Rev. 9. Apex Laboratories, LLC: Tigard, OR. January 1.

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EPA. 2020. *EPA Contract Laboratory Program, National Functional Guidelines for Organic Superfund Methods Data Review*. EPA 540-R-20-005. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. November.