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Technical Memorandum

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Date: August 7, 2017

Project No: BP2-BOE17 CMI Uplands, Task 3

Re: **Data Summary for Polychlorinated Biphenyl Soil Characterization on Jorgensen Forge Adjoining OA-11**

This technical memorandum summarizes the data collection and results for a subsurface investigation conducted in April 2017 to further define the horizontal and vertical limits of polychlorinated biphenyl (PCB)-impacted soil identified on the Jorgensen Forge (Jorgensen) property south of the Other Area 11 (OA-11) interim measure excavation that was completed in September 2016. Soil samples were collected in accordance with the *Work Plan for PCB Soil Characterization on Jorgensen Forge Adjoining OA-11*, a technical memorandum submitted to the U.S. Environmental Protection Agency (USEPA) in February 2017 (Floyd|Snider 2017).

1.0 INTRODUCTION

The Boeing Company (Boeing) is conducting an uplands Corrective Measures Study (CMS) at Boeing Plant 2 pursuant to the Administrative Order on Consent (Resource Conservation and Recovery Act [RCRA] Docket No. 1092-01-22-3008(h)) issued to Boeing in 1994 by the USEPA under authority of RCRA Section 3008(h), as amended (42 USC 6928(h)).

As part of the uplands work, Boeing completed an interim measure that consisted of soil remediation via excavation for OA-11 in the summer of 2016, in accordance with the *Interim Measure Work Plan for OA-11* (hereafter referred to as the IMWP) submitted to and approved by USEPA in August 2016 (Floyd|Snider 2016a). As outlined in the CMS, Plant 2 has been divided into nine Remediation Areas (RAs), and OA-11 is within the boundaries of RA 9. The OA-11 excavation consisted primarily of the removal of PCB-impacted soil with some co-located total petroleum hydrocarbon (TPH)-impacted soil and inactive stormwater conveyance pipes and structures. Excavation was completed as an interim measure jointly with RCRA and the Toxic

Substances Control Act (TSCA) programs under a Risk-Based Disposal Approval (RBDA) issued on August 31, 2016.

The interim measure for OA-11 was completed in September and October 2016, as documented in the *Interim Measure Construction Completion Report for OA-11* submitted to USEPA on November 30, 2016 (Floyd|Snider 2016b). The proposed final media cleanup level (FMCL) for soil within the Plant 2 industrial area of 10 milligrams per kilogram (mg/kg) or parts per million (ppm) was achieved for PCB-contaminated soil between 0 and 11 feet below ground surface (bgs) on Plant 2 property. The proposed industrial area soil FMCL is based on protection of workers at an industrial site from the direct contact exposure pathway, with a point of compliance between 0 and 11 feet bgs. A small portion of the OA-11 interim measure excavation extended onto the south-adjacent Jorgensen property, as planned in the IMWP. During completion of the planned southern excavation extent of the 8-foot-deep excavation area on the adjacent Jorgensen property, an unanticipated increase in PCB concentrations was discovered in samples from the southern sidewall of the excavation, with concentrations greater than the TSCA threshold of 50 ppm for Subtitle C disposal. Refer to Figure 1 for the general location of OA-11 at Plant 2, a depiction of the OA-11 (RA 9) boundary, and the final limits of the OA-11 interim measure excavation area, including the planned 8-foot-deep portion of the excavation area that extended slightly onto Jorgensen property.

2.0 REASON FOR ADDITIONAL INVESTIGATION ON JORGENSEN PROPERTY

The horizontal and vertical limits of the OA-11 excavation area were defined in the IMWP based on PCB and TPH data collected prior to excavation. Along the south side of the 8-foot-deep excavation area, the planned excavation extended south of the Jorgensen and Boeing property line by several feet to remove source-area contamination adjacent to the former transformer pad. Because the PCB source in OA-11 was very close to the property line, an administrative decision coordinated by USEPA established that cleanup of the release would proceed onto the Jorgensen property, as needed, to reach cleanup levels. Based on available data, this was estimated to be the northern-most property line outfall pipe (the 12-inch-diameter property line pipe), which is identified as the "*12" CL Pipe*" on Figure 1, roughly corresponding to the location of the concrete curb on the Jorgensen side of the property line. However, during completion of the planned southern excavation extent of the 8-foot-deep excavation area on the adjacent Jorgensen property, an unexpected increase in PCB concentrations was discovered in samples from the southern sidewall of the excavation. An administrative decision was made by USEPA and Boeing to cease the excavation where planned, as additional data were needed to define the lateral and vertical extent of PCB-impacted soil on the Jorgensen property.

A subsurface investigation was subsequently proposed in the *Work Plan for PCB Soil Characterization on Jorgensen Forge Adjoining OA-11* (Floyd|Snider 2017; hereafter referred to as Work Plan) to further define the horizontal and vertical limits of PCB-contaminated soil identified on the Jorgensen property south of the OA-11 interim measure excavation. The results of this April 2017 subsurface investigation are summarized in the following sections.

3.0 SUMMARY OF POLYCHLORINATED BIPHENYL SOIL DATA COLLECTION AND RESULTS

Additional data collection was proposed to supplement existing data in support of future remedial design for additional excavation of PCB-contaminated soil. The data collection field work was conducted in accordance with the USEPA-approved Work Plan and the Quality Assurance Project Plan (QAPP), included as Section 5.0 of the Work Plan (Floyd|Snider 2017). The TSCA RBDA was issued to Boeing on April 3, 2017; RCRA approval of this field work was provided in a letter dated April 13, 2017. Copies of the USEPA approval letters are included in Attachment 1.

3.1 Data Collection and Analysis

On April 19 and 20, 2017, a total of 13 soil borings were advanced on the Jorgensen property to a depth of 14 feet bgs by Cascade Drilling using direct-push probe methods under Floyd|Snider oversight. Soil cores were collected using a 5-foot-long, lined sampler, and soil samples were collected from more discrete intervals within each 5-foot core, as described below. Soil borings were identified as either Tier 1 or Tier 2 borings, as shown on Figure 2.

Soil samples were collected continuously in 2-foot depth intervals from both Tier 1 and Tier 2 borings, from the ground surface to 14 feet bgs. Samples were analyzed using a tiered-approach, as described below. Refer to Table 1 for a generalized summary of total PCB data collected by location and interval, and Table 2 for a summary of total PCB sample results. The data results are described in the following subsections. Soil boring logs are included in Attachment 2 and copies of laboratory analytical reports are included in Attachment 3.

3.1.1 Tier 1 Soil Borings

The PCB concentrations encountered at the southern extent of the OA-11 excavation in 2016 were greater than the TSCA disposal segregation threshold of 50 ppm. Specifically, three sample locations on the Jorgensen property exhibited PCB soil concentrations greater than 50 ppm, with a maximum of 762 ppm (OA-11-ex-S7) at a depth of 6 feet bgs. To define the vertical and horizontal extent of contamination greater than the proposed FMCL of 10 ppm, and greater than 50 ppm for purposes of soil segregation for Subtitle C landfill disposal, the plan specified soil samples to be collected continuously (in 2-foot depth intervals) in each boring from the ground surface to 14 feet bgs. Of the 13 soil borings advanced in April 2017, six were designated Tier 1 locations (JF-DP02 through JF-DP07). Tier 1 locations were installed closest to the southern extent of the OA-11 excavation, generally within 10 feet of the excavation limits and in the immediate vicinity of both the 12-inch-diameter and 24-inch-diameter property line pipes. Refer to Figure 2 for the Tier 1 sample locations. All borings were advanced to the planned depth except for location JF-DP03, which appeared to have hit refusal at a pipe. In this location, a second boring was installed approximately 6-inches to the north to collect the deeper samples.

Initially, only samples from the shallow intervals (i.e., 0 to 8 feet bgs) of Tier 1 borings were analyzed; soil samples from the deeper intervals (i.e., 8 to 14 feet bgs) were archived at the laboratory. After initial review of Tier 1 sample results, archived samples from deeper interval(s) in soil borings JF-DP02 and JF-DP07 were analyzed for PCBs to provide a more complete vertical concentration profile.

3.1.2 Tier 2 Soil Borings

Of the 13 soil borings advanced in April 2017, seven were considered Tier 2 locations (JF-DP01 and JF-DP08 through JF-DP013). Tier 2 locations were installed in an outer ring, approximately 10-feet beyond the Tier 1 locations. Initially, soil samples collected from each Tier 2 interval were archived at the laboratory. After a review of Tier 1 sample results indicated that additional lateral characterization was needed, archived samples from all Tier 2 borings (except JF-DP13) at relevant depth interval(s) were analyzed to determine the lateral and vertical extents of PCB-impacted soil. Refer to Figure 2 for the Tier 1 and Tier 2 sample locations.

3.2 Data Summary

Total PCB data were compared to the TSCA 50 ppm criterion to determine the as-found concentrations of PCBs to establish the appropriate disposal pathway (i.e., Subtitle C landfill versus Subtitle D landfill), and the proposed FMCL (10 ppm) to confirm the depth and lateral extent of additional excavation necessary to meet the proposed Plant 2 cleanup criteria. PCB data are also compared to 1 ppm for reference; 1 ppm is the TSCA cleanup level for PCB remediation waste in high occupancy areas, without further restrictions (e.g., a cap or deed restriction).

Total PCB sample results for Tier 1 soil borings are summarized as follows.

- Total PCBs were greater than the TSCA threshold for Subtitle C segregation concentration of 50 ppm in soil samples collected between 2 and 6 feet bgs from borings JF-DP03 and JF-DP04. Total PCBs were also greater than 50 ppm in samples collected between 6 and 10 feet bgs from boring JF-DP02.
- Total PCBs were greater than the FMCL of 10 ppm in soil samples collected from each of the Tier 1 borings.
- PCB concentrations were less than 1 ppm in soil samples collected from the 6 to 8 foot interval in the area adjacent to the OA-11 excavation (borings JF-DP-03 through JF-DP06). PCBs greater than 1 ppm but less than 10 ppm extended deeper, at 8 to 10 and 10 and 12 feet bgs in soil borings JF-DP-07 and JF-DP02, respectively.
- The vertical extent of PCB contamination greater than the FMCL in Tier 1 locations has been adequately defined. However, the horizontal extent was not defined on the basis of Tier 1 soil borings; therefore, archived Tier 2 soil sample analyses were requested from selected intervals.

Total PCB sample results for Tier 2 soil borings are summarized as follows:

- Soil samples collected from soil boring JF-DP01 on the western extent of this soil investigation indicated that PCBs were less than 1 ppm in samples collected between 0 and 4 feet bgs, but PCBs were present at concentrations greater than 50 ppm in the 4 to 6 foot bgs interval and greater than 10 ppm in the 6 to 8 foot interval. PCBs were less than 10 ppm (2.59 ppm) in the 8 to 10 foot interval. Although the vertical extent is defined at that location, the horizontal extent of PCBs both greater than the FMCL of 10 ppm and the TSCA threshold of 50 ppm were exceeded on the western extent of this soil investigation. As such, additional data are necessary to define the western extent.
- Soil samples collected from soil boring JF-DP08 on the eastern extent of this soil investigation indicated that PCBs were less than 1 ppm in samples collected between 0 and 2 feet bgs, but PCBs were present at concentrations greater than 10 ppm between 2 and 6 feet bgs. PCBs were 0.034 ppm in the 6 to 8 foot interval. Although the vertical extent is defined at that location, the horizontal extent of PCBs greater than the FMCL of 10 ppm was exceeded on the eastern extent of this soil investigation. As such, additional data are necessary to define the eastern extent.
- PCB concentrations in soil samples collected south of the 24-inch pipe (JF-DP09 through JF-DP12) were either not detected or less than 1 ppm, with the highest concentration being 0.35 ppm. Therefore, the southern extent is well defined.
- Soil samples from soil boring JF-DP13 were collected and archived at the laboratory. These samples were not analyzed due to low level concentrations in soil samples collected from other nearby borings locations, JF-DP09 through JF-DP12.

Refer to Tables 1 and 2, and Figure 3, for a summary of the PCB results collected during this investigation. For reference, Figure 4 shows the PCB results of this investigation in addition to previous PCB data collected in the vicinity.

3.3 Data Validation

Floyd|Snider performed a Level 1 Compliance Screening data quality review on PCB data resulting from laboratory analysis from the April 2017 sampling event. The analytical data were validated in accordance with the USEPA *National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA 2016). Based on the data quality review, data were determined to be of acceptable quality for use as reported by the laboratory unless specifically qualified in the Data Validation Report, which is included as Attachment 4. The data are suitable for their intended project-specific use and were evaluated with respect to project-specific decision criteria and data quality objectives.

4.0 NATURE AND EXTENT OF POLYCHLORINATED BIPHENYL CONTAMINATION ADJACENT TO OA-11 ON JORGENSEN

There have been numerous soil samples collected for PCB analysis in the OA-11 area and adjacent to OA-11 on the Jorgensen property over the years as part of multiple investigations. Figure 4 shows the PCB results of this current investigation in addition to previous PCB data collected in the vicinity, including from OA-11. Data from OA-11 (pre-excavation) is presented for reference, including to show PCB data from sample intervals that were removed as part of the OA-11 excavation. Figure 4 also shows the locations of two cross sections that depict PCB concentrations in soil: A–A' (Figure 5) runs north/south through OA-11 and onto the Jorgensen property, and B–B' (Figure 6) runs west/east along the 12-inch property line pipe on the Jorgensen property. Figure 7 shows the distribution of total PCBs in soil (at all depths) and Figure 8 shows the distribution of PCBs in soil in 2-foot depth intervals.

A summary of the Plant 2 southern property line history, the property line pipes, and OA-11 features was included in the IMWP (Floyd|Snider 2016a). The history and analytical data collected for OA-11 were used to develop the conceptual site model (CSM) for OA-11. Based on the sample results of this current investigation, the CSM developed after the completion of the OA-11 excavation appears to be incomplete. The following discussion outlines inconsistencies that have been identified during this current investigation that warrant further evaluation.

There appears to have been at least two distinct sources of PCB contamination in the OA-11 vicinity: one near the ground surface south of the former transformer pad, with the greatest concentrations of PCBs located at depths between 2 and 6 feet bgs, and a second distinct source of deeper PCB contamination from former stormwater features, specifically SDMH 36-83, present within OA-11, with maximum PCB concentrations at depths between 8 and 12 feet bgs.

The concentrations detected in OA-11 excavation confirmation samples on the Jorgensen property indicate increasing concentrations to the south, uphill and away from OA-11, and at levels significantly greater than were expected based on the existing CSM for OA-11 (which indicated that concentrations should decrease within a short distance south from the Area of Discovery).

Based on a review of the most recent and previously collected data in the vicinity of OA-11, it now appears most likely that the bulk of the PCBs are associated with the same surface release that impacted OA-11, first noted in the Area of Discovery between the former transformer pad and the property line. The area of impact is bounded on Jorgensen property to the south, but is not fully delineated to the west or east on Jorgensen property (several feet south of the property line, refer to Figure 8). Based on PCB distributions in soil relative to the depth of the underlying 12-inch and 24-inch property line pipes, the PCB release in question is not associated with the pipe(s). This is evident based on the fact that the PCB release and source were found in soil at shallower depths (i.e., above the pipes that pass through the impacted area).

5.0 INVESTIGATION-DERIVED WASTE DISPOSAL

There was one drum of investigation-derived waste (IDW) generated during this investigation. PCB-contaminated soil and decontamination water generated from direct-push activities were contained in one 55-gallon drum that was lined with a heavy-duty plastic bag for temporary storage in a secure location on Jorgensen property. The decontamination water was placed with the soil in the same drum, due to the small volume of decontamination water that was generated. In accordance with USEPA/TSCA verbal approval, the soil was removed from the drum, kept in the plastic liner, and disposed of with the PCB-contaminated soil excavated as part of the Jorgensen Forge Outfall Site (JFOS) project, which was initiated a few weeks after this subsurface investigation. Because PCBs were detected at concentrations greater than 50 ppm during this investigation (the TCSA threshold for disposal at a Subtitle C landfill), the IDW was co-mingled on-site with stockpiled soil from the JFOS project. This soil was subsequently transported off-site for disposal at US Ecology, Inc., in Grand View, Idaho, a RCRA-permitted Subtitle C landfill facility. Hauling of Subtitle C soil from the JFOS project was completed on June 29, 2017.

All miscellaneous solid waste that had the potential to be contaminated with PCBs, such as personal protective equipment, disposable coveralls, and disposable sampling equipment, were bagged in heavy-duty plastic bags, placed in two 55-gallon drums, and temporarily stored in a secure location on the Jorgensen property pending off-site disposal. The bags were subsequently removed from the drums and co-mingled with a load of JFOS PCB-impacted soil that was hauled off-site on May 15, 2017, for disposal at Republic Services Roosevelt Regional Landfill, a RCRA-permitted Subtitle D landfill.

6.0 NEXT STEPS

Coordination with other affected parties, including Earle M. Jorgensen and Star Forge should be completed to jointly assess and agree to appropriate revisions to the CSM for the OA-11 vicinity based on the results of the most recent investigation. After coordination has been completed and revisions to the CSM made, it will be necessary to determine how to proceed (e.g., appropriate regulatory pathway and additional investigation to complete characterization of PCB contamination), and then to plan and conduct excavation work that is necessary to remediate the remaining PCB-impacted soil in this area.

7.0 REFERENCES

Floyd|Snider. 2016a. *Interim Measure Work Plan for OA-11.* Prepared for The Boeing Company. August.

Floyd|Snider. 2016b. *Interim Measure Construction Completion Report for OA-11*. Prepared for The Boeing Company. November.

Floyd|Snider. 2017. *Work Plan for PCB Soil Characterization on Jorgensen Forge Adjoining OA-11*. Prepared for The Boeing Company. February.

U.S. Environmental Protection Agency (USEPA). 2016. *National Functional Guidelines for Superfund Organic Methods Data Review.* Prepared by the Office of Superfund Remediation and Technology Innovation. EPA-540-R-2016-002/OLEM 9355.0-134. September.

LIST OF ATTACHMENTS

Table 1	Generalized Total PCB Results Summary by Location and Depth
Table 2	Total PCBs in Soil Adjoining OA-11 on Jorgensen, April 2017
Figure 1	OA-11 and Limits of Interim Measure Excavation
Figure 2	Tier 1 and Tier 2 Soil Boring Locations on Jorgensen Forge
Figure 3	Soil Characterization Data (Total PCBs), April 2017
Figure 4	Total PCBs In and Adjacent to OA-11 Area of Discovery
Figure 5	Cross Section A–A’
Figure 6	Cross Section B–B’
Figure 7	Total PCB Concentration Ranges in Soil (All Depths)
Figure 8	Total PCB Distribution in Soil by Depth Interval
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Attachment 2	Soil Boring Logs
Attachment 3	Analytical Reports
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Tables

Table 1

Generalized Total PCB Results Summary by Location and Depth[1, 2]

Soil Boring		JF-DP01	JF-DP02	JF-DP03	JF-DP04	JF-DP05	JF-DP06	JF-DP07	JF-DP08	JF-DP09	JF-DP10	JF-DP11	JF-DP12	JF-DP13
Sample Interval (feet bgs)[3]	0–2									NA	NA	NA	NA	NA
	2–4									NA			NA	NA
	4–6													NA
	6–8										NA	NA		NA
	8–10			NA	NA	NA	NA		NA		NA	NA	NA	NA
	10–12	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12–14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

1 PCB analysis was for Aroclors (summed as total) by USEPA Method 8082, consistent with the ongoing Corrective Measures Study for Plant 2.

2 Total PCB concentrations in soil in milligrams per killogram (mg/kg):

- Not detected
- Detected concentration less than 1 mg/kg
- Detected concentration between 1 mg/kg and 10 mg/kg
- Detected concentration between 10 mg/kg (proposed FMCL) and 50 mg/kg (TSCA threshold)
- Detected concentration > 50 mg/kg (TSCA threshold for Subtitle C Disposal)

3 PCB samples are presented in the sample intervals where they were collected (e.g., 8 to 10 feet bgs).

Abbreviations:

bgs Below ground surface
FMCL Final media cleanup level
NA Sample collected and archived, but not analyzed
PCB Polychlorinated biphenyl
TSCA Toxic Substances Control Act

Table 2
Total PCBs in Soil Adjoining OA-11 on Jorgensen
April 2017

Location	Sample Date	Sample Depth (feet bgs)	Total PCBs (mg/kg)
JF-DP01	4/19/2017	0-2	0.626
JF-DP01	4/19/2017	2-4	0.045
JF-DP01	4/19/2017	4-6	**57.5**
JF-DP01	4/19/2017	6-8	**28.6**
JF-DP01	4/19/2017	8-10	2.59
JF-DP02	4/19/2017	0-2	0.841
JF-DP02	4/19/2017	2-4	0.181
JF-DP02	4/19/2017	4-6	7.51 J
JF-DP02	4/19/2017	6-8	**70.5**
JF-DP02	4/19/2017	8-10	**137**
JF-DP02	4/19/2017	10-12	7.04
JF-DP03	4/19/2017	0-2	0.417
JF-DP03	4/19/2017	2-4	**114**
JF-DP03	4/19/2017	4-6	**193**
JF-DP03	4/19/2017	6-8	0.889
JF-DP04	4/19/2017	0-2	**24.9**
JF-DP04	4/19/2017	2-4	**202**
JF-DP04	4/19/2017	4-6	**131**
JF-DP04	4/19/2017	6-8	0.337
JF-DP05	4/19/2017	0-2	0.406
JF-DP05	4/19/2017	2-4	**20.1** J
JF-DP05	4/19/2017	4-6	6.57 J
JF-DP05	4/19/2017	6-8	0.0179
JF-DP06	4/19/2017	0-2	1.03
JF-DP06	4/19/2017	2-4	0.0393
JF-DP06	4/19/2017	4-6	**13.6**
JF-DP06	4/19/2017	6-8	0.0123 J
JF-DP07	4/19/2017	0-2	2.0
JF-DP07	4/19/2017	2-4	5.97
JF-DP07	4/19/2017	4-6	**35.5**
JF-DP07	4/19/2017	6-8	**14.2**
JF-DP07	4/19/2017	8-10	1.58
JF-DP08	4/19/2017	0-2	0.194
JF-DP08	4/19/2017	2-4	**28.7**
JF-DP08	4/19/2017	4-6	**20.9** J
JF-DP08	4/19/2017	6-8	0.034 J
JF-DP09	4/20/2017	4-6	0.0778 U
JF-DP09	4/20/2017	6-8	0.0193 U
JF-DP09	4/20/2017	8-10	0.0136 J
JF-DP10	4/20/2017	2-4	0.0163 J
JF-DP10	4/20/2017	4-6	0.349 U
JF-DP11	4/20/2017	2-4	0.0177
JF-DP11	4/20/2017	4-6	0.0482
JF-DP12	4/20/2017	4-6	0.103 U
JF-DP12	4/20/2017	6-8	0.0182

Notes:

Bold/Red Results were at or greater than 10 mg/kg.

Bold/Red Results were at or greater than 50 mg/kg.

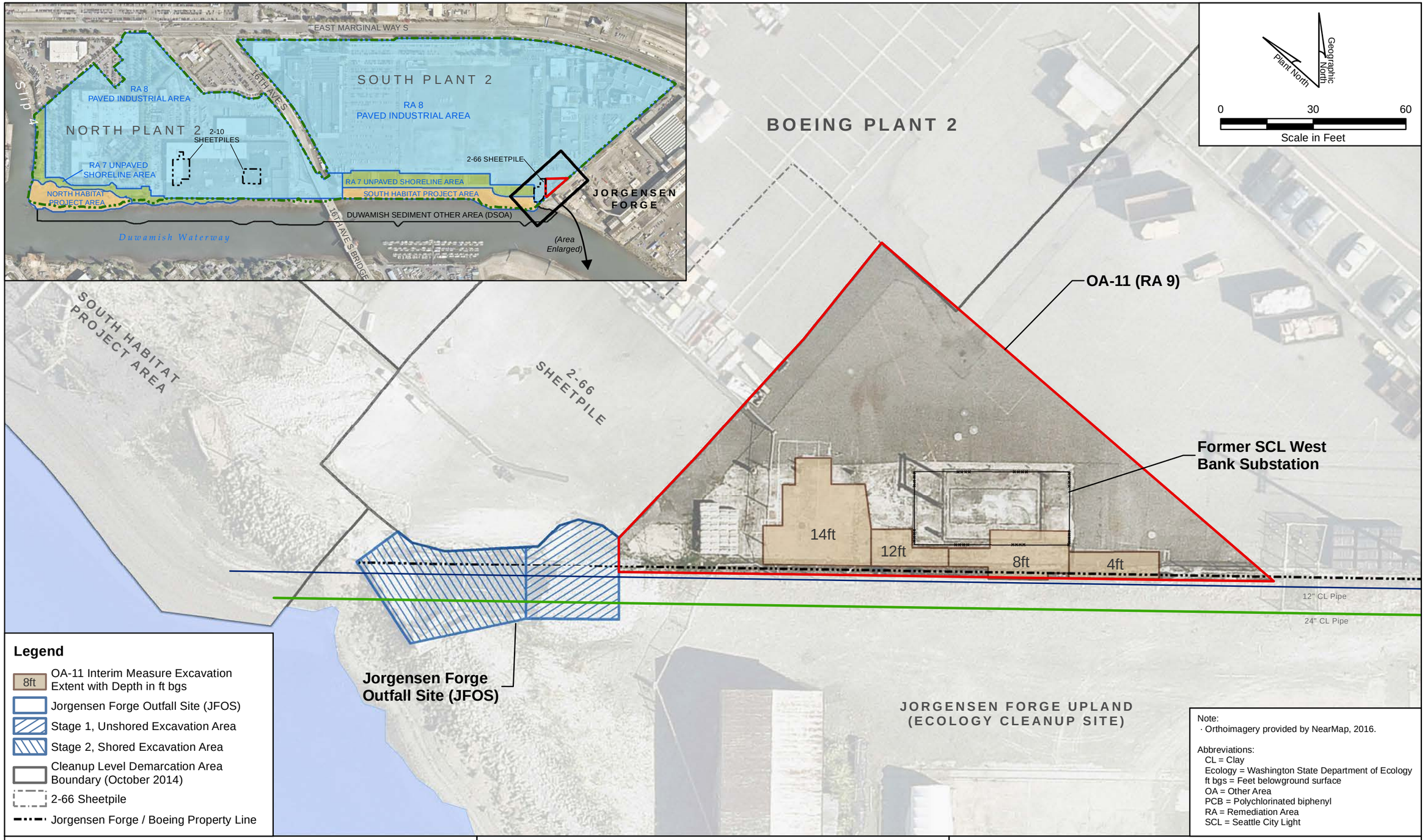
Abbreviations:

bgs Below ground surface
mg/kg Milligrams per kilogram
OA-11 Other Area 11
PCB Polychlorinated biphenyl

Qualifiers:

J Estimated value.
U Not detected at concentration equal to the laboratory reporting limit.

Figures



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Data Summary for PCB Soil Characterization on Jorgensen Forge Adjoining OA-11 Boeing Plant 2 Seattle/Tukwila, Washington

Figure 1
OA-11 and Limits of Interim Measure Excavation

I:\GIS\Projects\BOE-PL2\MXD\PCB Soil for JF-OA-11\Data Summary\Figure 1 OA-11 and Limits of Interim Measure Excavation.mxd
8/2/2017

BOEING
PLANT 2

Former Transformer Pad

OA -11 Area of Discovery

Plant North
Geographic North

0 6 12
Scale in Feet

JF-DP01
JF-DP02
JF-DP04
JF-DP07
JF-DP08
JF-DP03
JF-DP05
JF-DP06

12" CL Pipe

24" CL Pipe

JF-DP09
JF-DP10
JF-DP11
JF-DP12

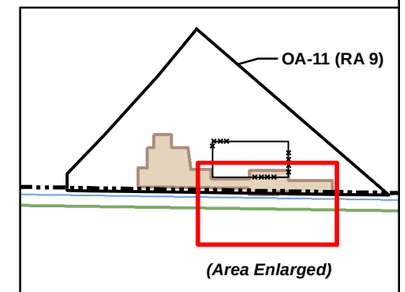
JF-DP13

Legend

- Tier 1 Soil Boring
- Tier 2 Soil Boring
- Final Extent of OA-11 Excavation
- OA-11 Area of Discovery
- Jorgensen Forge / Boeing Property Line
- Inactive Rail Line (Beneath Ground Surface)
- Curb
- Former Transformer Pad

Abbreviations:
CL = Clay
ft bgs = Feet below ground surface
mg/kg= Milligrams per kilogram
OA = Other Area
PCB = Polychlorinated biphenyl
RA = Remediation Area

JORGENSEN FORGE



(Area Enlarged)

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Data Summary for PCB Soil Characterization on Jorgensen Forge Adjoining OA-11 Boeing Plant 2 Seattle/Tukwila, Washington

Figure 2
Tier 1 and Tier 2 Soil Boring Locations on Jorgensen Forge

I:\GIS\Projects\BOE-PL2\MXD\PCB Soil for JF-OA-11\Data Summary\Figure 2 Tier 1 and Tier 2 Soil Boring Locations on Jorgensen Forge.mxd
8/2/2017

BOEING PLANT 2

Former Transformer Pad

Plant North

Geographic North

0 6 12

Scale in Feet

JF-DP01 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	0.626
2 – 4	0.045
4 – 6	57.5
6 – 8	28.6
8 – 10	2.59

JF-DP02 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	0.841
2 – 4	0.181
4 – 6	7.51 J
6 – 8	70.5
8 – 10	137
10 – 12	7.04

JF-DP03 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	0.417
2 – 4	114
4 – 6	193
6 – 8	0.889

JF-DP04 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	24.9
2 – 4	202
4 – 6	131
6 – 8	0.337

JF-DP05 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	0.406
2 – 4	20.1 J
4 – 6	6.57 J
6 – 8	0.0179

JF-DP06 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	1.03
2 – 4	0.0393
4 – 6	13.6
6 – 8	0.0123 J

JF-DP07 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	2.00
2 – 4	5.97
4 – 6	35.5
6 – 8	14.2
8 – 10	1.58

JF-DP08 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	0.194
2 – 4	28.7
4 – 6	20.9
6 – 8	0.034 J

12" CL Pipe

24" CL Pipe

JF-DP09 Collected 4/20/17	
Depth (ft. bgs)	Concentration (mg/kg)
4 – 6	0.0778 J
6 – 8	0.0193 U
8 – 10	0.0136 U

JF-DP10 Collected 4/20/17	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 4	0.0163 J
4 – 6	0.349

JF-DP11 Collected 4/20/17	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 4	0.0177 U
4 – 6	0.0482

JF-DP12 Collected 4/20/17	
Depth (ft. bgs)	Concentration (mg/kg)
4 – 6	0.103
6 – 8	0.0182 U

JF-DP13 Collected 4/19/17
Soil Samples Collected, but Not Analyzed

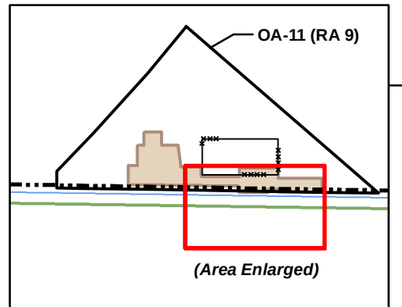
Legend

- Tier 1 Soil Boring
- Tier 2 Soil Boring
- Final Extent of OA-11 Excavation
- Jorgensen Forge / Boeing Property Line
- Curb
- Former Transformer Pad

Total PCB Concentration in Soil in mg/kg:

- Analysis Performed, Not Detected
- Detected Concentration ≤ 1.0 mg/kg
- Detected Concentration between 1.0 and 10.0 mg/kg
- Detected Concentration between 10.0 and 50.0 mg/kg
- Detected Concentration ≥ 50.0 mg/kg

JORGENSEN FORGE



(Area Enlarged)

Abbreviations:
CL = Clay
ft bgs = Feet below ground surface
mg/kg= Milligrams per kilogram
OA = Other Area
PCB = Polychlorinated biphenyl
RA = Remediation Area

Qualifiers:
J Concentration is estimated but acceptable for most uses.
U Analyte is not detected at the associated reporting limit.

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Data Summary for PCB Soil Characterization on Jorgensen Forge Adjoining OA-11 Boeing Plant 2 Seattle/Tukwila, Washington

Figure 3
Soil Characterization Data (Total PCBs)
April 2017

I:\GIS\Projects\BOE-PL2\MXD\PCB Soil for JF-OA-11\Data Summary\Figure 3 Soil Characterization Data (Total PCBs) April 2017.mxd
8/2/2017

OA11-DP04 Collected 6/14/16	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 4	7.49
6 – 8	0.0296 J
8 – 10	0.0463 J

OA11-DP09 Collected 6/14/16	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 4	630
4 – 6	344
6 – 8	0.143
8 – 10	0.0611

JF-DP02 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	0.841
2 – 4	0.181
4 – 6	7.51 J
6 – 8	70.5
8 – 10	137
10 – 12	7.04

SB-07205 Collected 7/20/95	
Depth (ft. bgs)	Concentration (mg/kg)
1 – 2	1.5
6.5 – 7.5	0.48
10 – 11	0.04 J

OA11-DP18 Collected 6/15/16	
Depth (ft. bgs)	Concentration (mg/kg)
4 – 6	2.79
6 – 8	0.0455 J
8 – 10	0.0195 U
12 – 13	0.684

JF-DP04 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	24.9
2 – 4	202
4 – 6	131
6 – 8	0.337

JF-DP03 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	0.417
2 – 4	114
4 – 6	193
6 – 8	0.889

SB-07221 Collected 6/4/03	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 1.5	1.5
1.5 – 2	0.89
2 – 4	140
4 – 6	2.5
6 – 6.5	0.47
6.5 – 8	660
8 – 10	0.71
10 – 12	0.56
12 – 14	0.14
14 – 16	0.088

OA11-DP06 Collected 6/14/16	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 4	0.378
6 – 8	0.309
8 – 10	0.0106 J

OA11-exS11 9/13/2016	
Depth (ft. bgs)	Concentration (mg/kg)
4	0.088

OA11-DP05 Collected 6/14/16	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 4	48.6
4 – 6	122
6 – 8	0.892
8 – 10	0.0484

OA11-DP10 Collected 6/14/16	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 4	599
6 – 8	38.8
8 – 10	0.0406 J

OA11-DP08 Collected 6/14/16	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 4	129
4 – 6	199
6 – 8	0.506
8 – 10	0.047 J

SB-07204 Collected 2/27/95	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 2.5	0.13
6 – 6.5	0.045 U
11 – 11.5	0.045 U

OA11-DP07 Collected 6/14/16	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 4	162
6 – 8	210
8 – 10	10.8 J
10 – 12	0.171

OA11-DP11 Collected 6/14/16	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 4	183
6 – 8	826
8 – 10	7.02
10 – 12	3.5

OA11-DP12 Collected 6/14/16	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 4	56
4 – 6	1.61
6 – 8	0.0103 J
8 – 10	0.0099 J

SB-07224 Collected 6/5/03	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	1.5
2 – 4	9.9 J
4 – 6	8.6 J
6 – 8	0.19
8 – 10	0.054
10 – 12	0.34
12 – 14	0.087 U
14 – 16	0.089 U

SB-07207 Collected 7/20/95	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 3	22 D
7 – 8	0.23
10.5 – 11.5	0.14

OA11-exS1 9/6/2016	
Depth (ft. bgs)	Concentration (mg/kg)
4.25	64.6

OA11-exS04 9/9/2016	
Depth (ft. bgs)	Concentration (mg/kg)
2	5.62

OA11-exS10 9/13/2016	
Depth (ft. bgs)	Concentration (mg/kg)
2	0.278

JF-DP01 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	0.626
2 – 4	0.045
4 – 6	57.5
6 – 8	28.6
8 – 10	2.59

OA11-exS7 9/12/2016	
Depth (ft. bgs)	Concentration (mg/kg)
3.6	486
6	762

OA11-exS2 9/6/2016	
Depth (ft. bgs)	Concentration (mg/kg)
4	91.4

JF-DP08 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	0.194
2 – 4	28.7
4 – 6	20.9
6 – 8	0.034 J

JF-DP07 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	2.00
2 – 4	5.97
4 – 6	35.5
6 – 8	14.2
8 – 10	1.58

SB-07250 2/14/2005	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	1.14 J
2 – 4	3
4 – 6	0.11
6 – 8	0.045 U
8 – 10	0.5
10 – 12	0.04 U
12 – 14	0.043 U
14 – 16	0.044 U

SB-07247 6/10/2003	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	0.195
2 – 4	0.078 UJ
4 – 6	0.082 U
6 – 8	0.02 J
8 – 10	0.078 U
10 – 12	0.093 U
12 – 14	0.091 U
14 – 16	0.086 U

JF-DP09 Collected 4/20/17	
Depth (ft. bgs)	Concentration (mg/kg)
4 – 6	0.0778 J
6 – 8	0.0193 U
8 – 10	0.0136 U

JF-DP05 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	0.406
2 – 4	20.1 J
4 – 6	6.57 J
6 – 8	0.0179

JF-DP10 Collected 4/20/17	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 4	0.0163 J
4 – 6	0.349

JF-DP13 Collected 4/19/17 Soil Samples Collected, but Not Analyzed

SB-07220 6/10/2003	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	0.22
2 – 4	0.085 U
4 – 6	0.086 U
6 – 8	0.083 J
8 – 10	0.132
10 – 12	0.024 J
12 – 14	0.088 U
14 – 16	0.086 U

JF-DP06 Collected 4/19/17	
Depth (ft. bgs)	Concentration (mg/kg)
0 – 2	1.03
2 – 4	0.0393
4 – 6	13.6
6 – 8	0.0123 J

SB-07206 9/21/1995	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 3	0.045 U
8 – 9	0.045 U
12.5 – 13.5	0.049 U

JF-DP11 Collected 4/20/17	
Depth (ft. bgs)	Concentration (mg/kg)
2 – 4	0.0177 U
4 – 6	0.0482

OA11-exS8 9/12/2016	
Depth (ft. bgs)	Concentration (mg/kg)
3	21.9
6	22.4

JF-DP12 Collected 4/20/17	
Depth (ft. bgs)	Concentration (mg/kg)
4 – 6	0.103
6 – 8	0.0182 U

Geographic North
Plant North
0 10 20
Scale in Feet

BOEING PLANT 2

JORGENSEN FORGE

A A'

B B'

12" CL Pipe

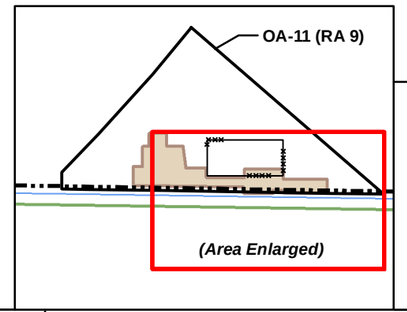
24" CL Pipe

Legend

- Soil Sample (Floyd|Snider 2017)
- Previous Soil Sample
- Final Extent of OA-11 Excavation
- A — A' Cross Section Location
- Jorgensen Forge / Boeing Property Line
- Curb
- Former Transformer Pad

Total PCB Concentration in Soil in mg/kg:

- Analysis Performed, Not Detected
- Detected Concentration ≤ 1.0 mg/kg
- Detected Concentration between 1.0 and 10.0 mg/kg
- Detected Concentration between 10.0 and 50.0 mg/kg
- Detected Concentration ≥ 50.0 mg/kg
- Depth Interval Removed in 2016 as Part of OA-11 Excavation



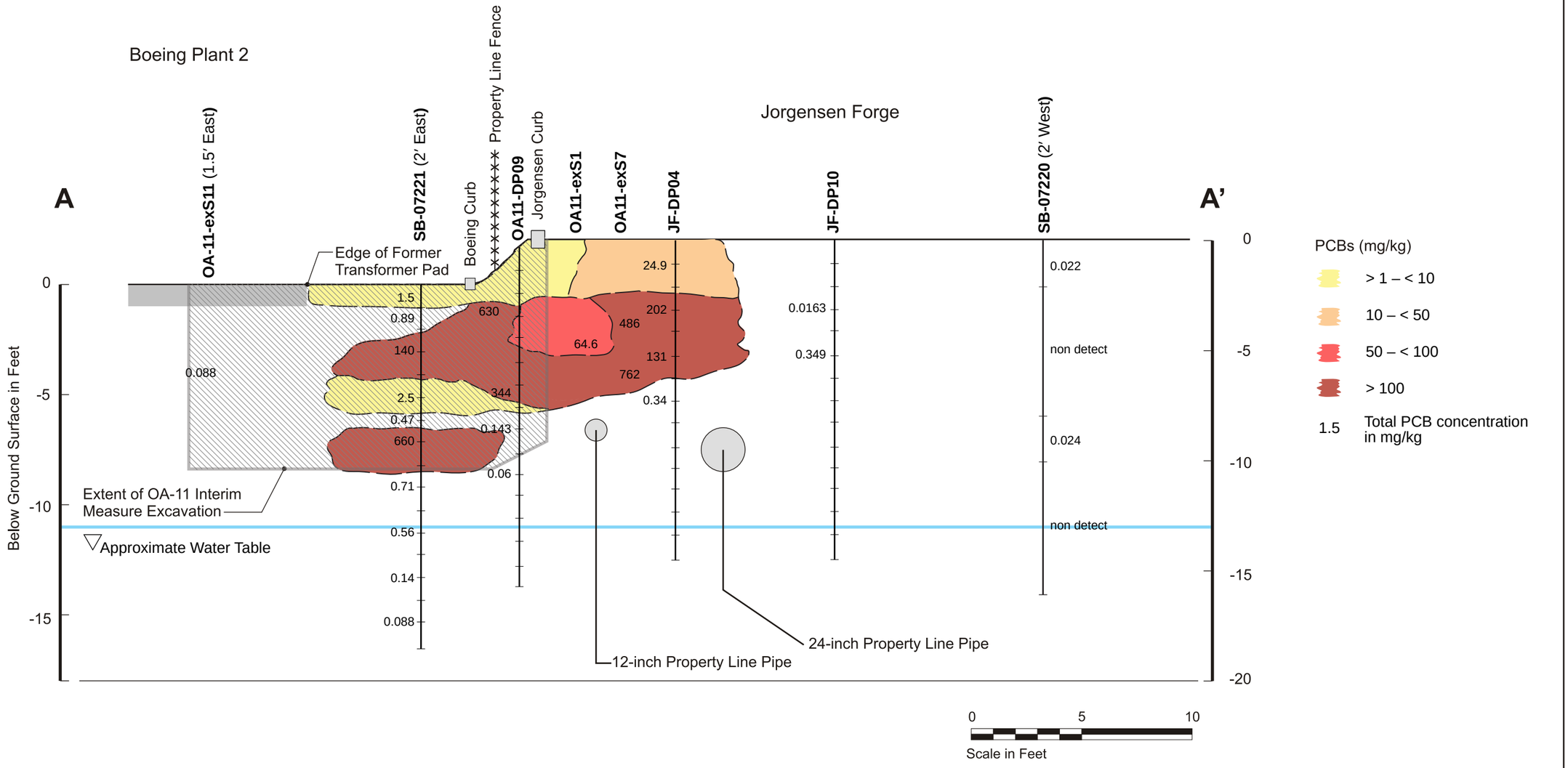
Abbreviations:
CL = Clay
ft bgs = Feet below ground surface
mg/kg= Milligrams per kilogram
OA = Other Area
PCB = Polychlorinated biphenyl
RA = Remediation Area

Qualifiers:
D Concentration reported from a dilution
J Concentration is estimated but acceptable for most uses.
U Analyte is not detected at the associated reporting limit.

Data Summary for PCB Soil Characterization on Jorgensen Forge Adjoining OA-11 Boeing Plant 2 Seattle/Tukwila, Washington

Figure 4
Total PCBs In and Adjacent to OA-11 Area of Discovery

I:\GIS\Projects\BOE-PL2\MXD\PCB Soil for JF-OA-11\Data Summary\Figure 4 Total PCBs In and Adjacent to OA-11 Area of Discovery.mxd
8/2/2017



Abbreviations:
mg/kg = Milligrams per kilogram
OA = Other Area
PCB = Polychlorinated biphenyl

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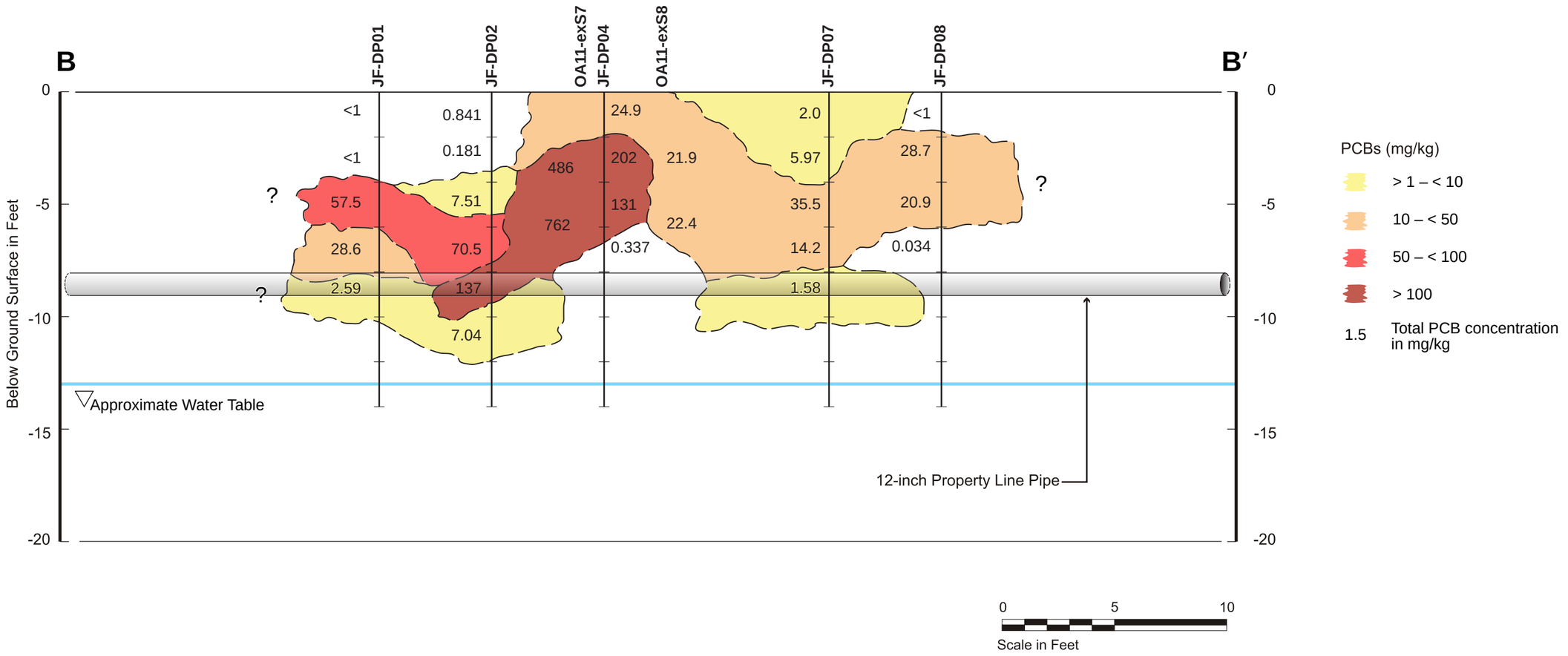
Data Summary for PCB Soil Characterization on Jorgensen Forge Adjoining OA-11 Boeing Plant 2 Seattle/Tukwila, Washington

Figure 5
Cross Section A–A'

I:\GIS\Projects\BOE-PL2\AI\JFOS\Data Summary for PCB Soil Characterization\Cross Section for A-A.ai
07/14/2017

Jorgensen Forge



Abbreviations:
mg/kg = Milligrams per kilogram
OA = Other Area
PCB = Polychlorinated biphenyl

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Data Summary for PCB Soil Characterization
on Jorgensen Forge Adjoining OA-11
Boeing Plant 2
Seattle/Tukwila, Washington

Figure 6
Cross Section B–B’

I:\GIS\Projects\BOE-PL2\AI\JFOS\Data Summary for PCB Soil Characterization\Cross Section B-B.ai
07/14/2017

BOEING PLANT 2

Former Transformer Pad

Plant North
Geographic North

0 10 20
Scale in Feet

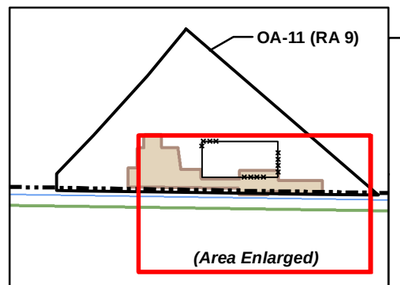
OA11-exS11
OA11-DP04
OA11-DP05
OA11-DP08
SB-07221
SB-07204
SB-07224
SB-07205
OA11-DP06
OA11-DP07
OA11-DP12
OA11-exS4
OA11-DP18
SB-07207
OA11-DP09
OA11-DP10
OA11-DP11
OA11-exS10
OA11-exS1
OA11-exS2
JF-DP01
JF-DP02
OA11-exS7
OA11-exS8
JF-DP07
JF-DP08
JF-DP04
JF-DP06
JF-DP03
JF-DP05
12" CL Pipe
24" CL Pipe
SB-07250
JF-DP09
JF-DP10
JF-DP11
JF-DP12
SB-07206
SB-07247
JF-DP13
SB-07220

JORGENSEN FORGE

Legend

PCB Concentration (mg/kg)
- >1 – 10
- >10 – 50
- >50 – 100
- >100

- Soil Sample (Floyd|Snider 2017)
- Previous Soil Sample
- Final Extent of OA-11 Excavation
- Jorgensen Forge / Boeing Property Line
- Curb
- Former Transformer Pad



Note:
· Concentration ranges of PCBs within the OA-11 excavation limits are from prior to excavation and are presented for reference only. The PCBs were removed as a part of the OA-11 excavation in September 2016.

Abbreviations:
CL = Clay
ft bgs = Feet below ground surface
mg/kg= Milligrams per kilogram
OA = Other Area
PCB = Polychlorinated biphenyl
RA = Remediation Area

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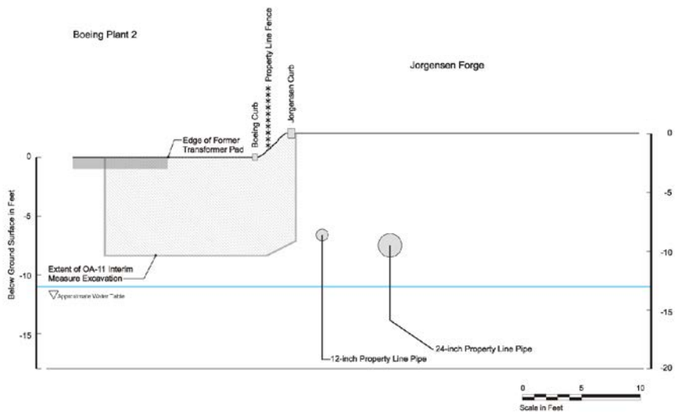
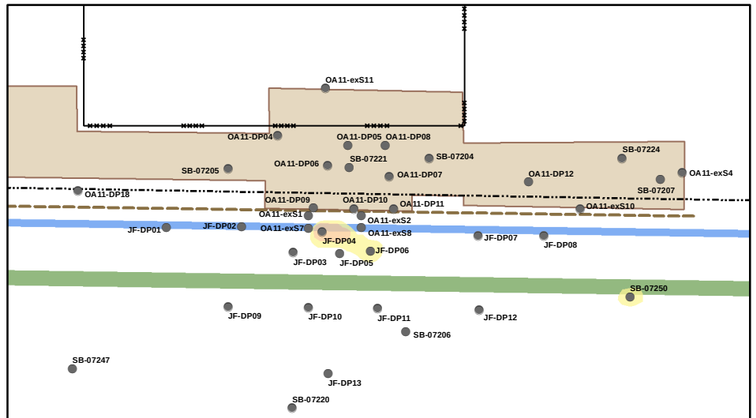
Data Summary for PCB Soil Characterization on Jorgensen Forge Adjoining OA-11 Boeing Plant 2 Seattle/Tukwila, Washington

Figure 7
Total PCB Concentration Ranges in Soil (All Depths)

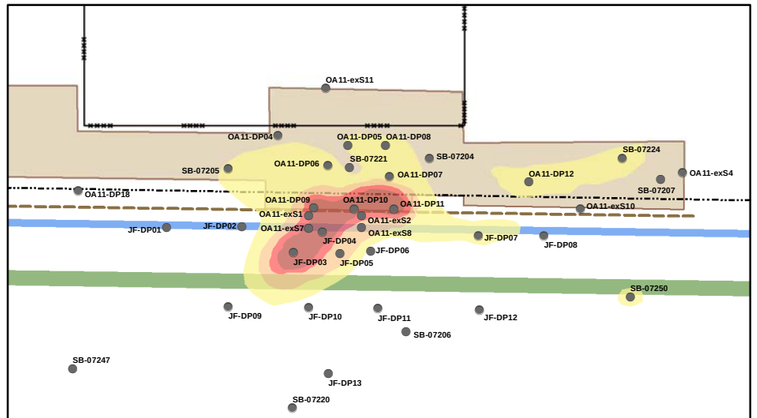
I:\GIS\Projects\BOE-PL2\MXD\PCB Soil for JF-OA-11\Data Summary\Figure 7 Total PCB Concentration Ranges in Soil (All Depths).mxd
8/2/2017



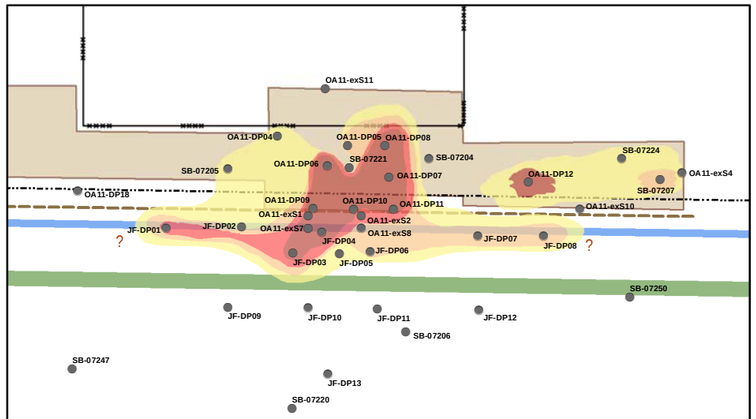
Elevation Profile From OA-11 Excavation Area to Jorgensen Forge Property



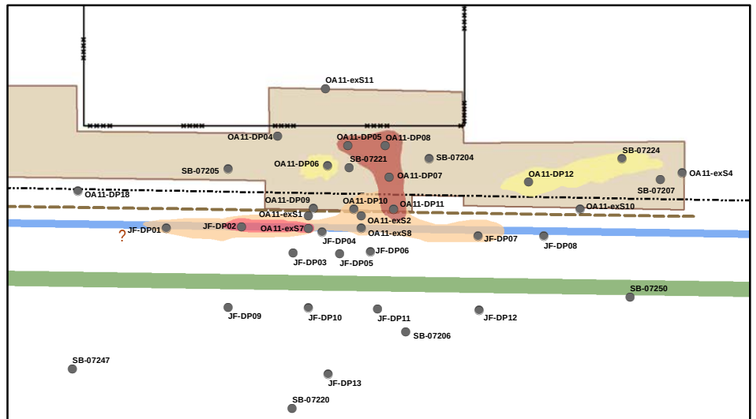
0–2 ft bgs (Jorgensen)



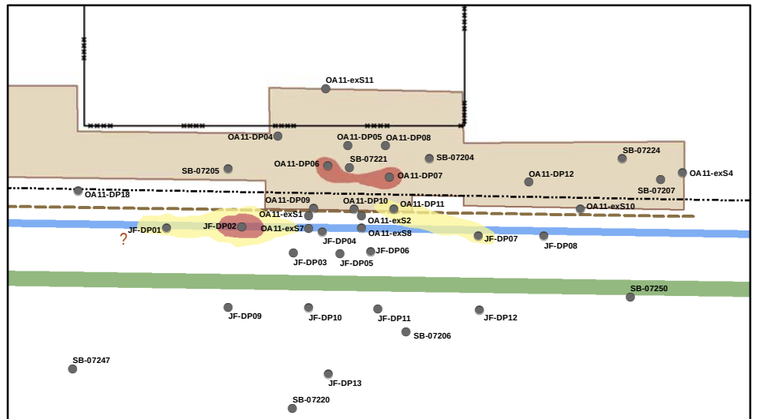
2–4 ft bgs (Jorgensen) / 0–2 ft bgs (OA-11)



4–6 ft bgs (Jorgensen) / 2–4 ft (OA-11)



6-8 ft bgs (Jorgensen) / 4-6 ft bgs (OA-11)



8-10 ft bgs (Jorgensen) / 6-8 ft bgs (OA-11)

Legend

PCB Concentration (mg/kg)

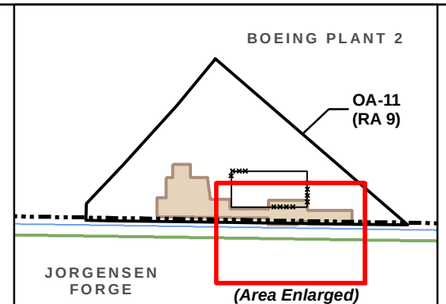
- >1 – 10
- >10 – 50
- >50 – 100
- >100

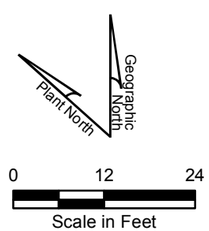
- Soil Sample
- Final Extent of OA-11 Excavation
- Jorgensen Forge / Boeing Property Line
- Former West Bank Substation
- Curb
- 12-inch Property Line Pipe
- 24-inch Property Line Pipe

Notes:

- Jorgensen Forge property is approximately 2 feet higher than Boeing property. Depth intervals were adjusted accordingly (i.e., 2–4 foot interval on Jorgensen is 0–2 foot interval on OA-11.
- Concentration ranges of PCBs within the OA-11 excavation limits are from prior to excavation and are presented for reference only. The PCBs were removed as a part of the OA-11 interim action excavation in September 2016.

Abbreviations:
ft bgs = Feet below ground surface
mg/kg= Milligrams per kilogram
OA = Other Area
PCB = Polychlorinated biphenyl
RA = Remediation Area





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Data Summary for PCB Soil Characterization on Jorgensen Forge Adjoining OA-11 Boeing Plant 2 Seattle/Tukwila, Washington

Figure 8
Total PCB Distribution in Soil by Depth Interval

I:\GIS\Projects\BOE-PL2\MXD\PCB Soil for JF-OA-11\Data Summary\Figure 8 Total PCB Distribution in Soil by Depth Interval.mxd
8/2/2017

Attachment 1
USEPA Approval Letters

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

APR - 3 2017

OFFICE OF
AIR AND WASTE

Reply to: AWT-150

Mr. Brian Anderson
Company Energy & Environmental Affairs
The Boeing Company
P.O. Box 3707, M/C 2R96
Seattle, Washington 98124-2207

Re: Risk-based Disposal Approval for the Boeing Plant 2 Other Area 11 (OA-11) Jorgensen Forge Additional Characterization, TSCA ID No. WAD 00925 6819

Dear Mr. Anderson:

This letter constitutes approval under the authority of 40 Code of Federal Regulations (C.F.R.) § 761.61(c) for the sampling and analysis of certain polychlorinated biphenyl (PCB) remediation waste associated with The Boeing Company (Boeing) Plant 2 facility in Seattle, Washington. More specifically, this approval authorizes Boeing, with respect to the requirements for sampling of PCB remediation waste at 40 C.F.R. § 761.61(c), to conduct additional characterization sampling and analysis of bulk PCB remediation waste on property owned by Star Forge dba Jorgensen Forge (Jorgensen Forge) and located immediately south of and adjoining the OA-11 Interim Measure located at the Boeing Plant 2 facility. Under this approval, Boeing is the operator responsible for conducting the approved work. This letter also documents the U.S. Environmental Protection Agency, Region 10 (EPA)'s evaluation of those project elements which will be conducted under requirements of 40 C.F.R. Part 761 other than § 761.61(c). This approval and the EPA's evaluation of the project under the Toxic Substance Control Act (TSCA) is wholly contingent upon the EPA written approval of all phases and aspects of the project pursuant to the Resource Conservation and Recovery Act (RCRA) corrective action Administrative Order on Consent, EPA Docket No. 1092-01-22-3008(h) (Boeing Order, Reference 1[1]).

Background

Boeing is conducting Uplands Corrective Measures at Boeing Plant 2, located in Seattle and Tukwila, Washington, pursuant to the Boeing Order. As outlined in the draft Upland Corrective Measures Study Volume X (CMS) submitted under the Boeing Order, Plant 2 has been divided into nine Remediation Areas (RAs). Other Area-11 (OA-11), an area of surface and subsurface soil contamination located near the southwest corner of the Plant 2 facility, is within the boundaries of RA 9. A Draft Focused Corrective Measure Study (FCMS) for OA-11 was submitted to the EPA in October 2014 (Reference 2) as required under the Boeing Order.

[1] All references are documented in Enclosure 1.

Development and implementation of the OA-11 Interim Measure is being conducted in a phased process. Previously, the EPA issued a written risk-based disposal approval (RBDA) to conduct additional characterization sampling to supplement historical characterization data (Reference 3). This work was performed to refine the anticipated scope of cleanup and to obtain data to be used for purposes of segregating contaminated soils for purposes of disposal. This work was also performed to obtain data that could be used to demonstrate compliance with proposed Final Media Cleanup Levels (FMCLs) where anticipated construction methods would preclude excavation sidewall sampling following Interim Measures construction. Based on the October 2014 FCMS noted above and results of work conducted under the additional characterization approval, Boeing developed an Interim Measures work plan for OA-11 (References 4 and 5)[2]. Interim measures field work was conducted pursuant to a risk-based disposal approval dated August 31, 2016 (Reference 6) and a corresponding RCRA approval under the Boeing Order.

During interim measures construction, Boeing obtained verification sampling data that indicated additional contamination remained above proposed FCMLs south of a portion of OA-11 at the Boeing facility on the neighboring property owned by Jorgensen Forge. Consultation at the project manager level between Boeing and the EPA during interim measure field work concluded that the nature and extent of these additional PCBs was not known and did not appear to be consistent with the conceptual site model (CSM) upon which the OA-11 interim measures approval was based. Therefore, Boeing and the EPA mutually agreed to defer further cleanup work until additional field sampling activities have been completed under this approval to provide a basis for those additional cleanup measures that may be necessary. Boeing provided the EPA with a request for a RBDA for this additional field sampling on February 10, 2017 (Reference 7). Once characterization data under this approval is available, Boeing is expected to propose such additional cleanup activities as may be necessary to achieve compliance with proposed FMCLs in a subsequent RBDA application.

The EPA's Office of Land and Emergency Management (OLEM) policy states that all cleanups should be protective of human health and the environment, which extends to the environmental footprint of cleanup activities. Accordingly, the EPA requests that Boeing review Section 6 of the ASTM Standard Guide for Greener Cleanups (Active Standard ASTM E2893-16e1) to identify Best Management Practices (BMPs) which may be applicable to the OA-11 cleanup and implement those practices which Boeing identifies as being feasible to implement. The cleanup completion report required by Condition 5 of this approval should include a section on BMP Documentation, as described in Section 6.6.5 of the ASTM Standard.

This written decision for a risk-based method for the cleanup, sampling and disposal of PCB remediation waste is based on Boeing's application for an RBDA and the documentation identified in Enclosure 1. This written decision is issued to Boeing, the owner and operator of the Plant 2 facility and the operator conducting work under this approval, who has overall responsibility for implementation of this authorized work. All sections of the RBDA application, including those referenced in this approval, are incorporated by reference. In granting this approval, the EPA finds that the proposed sampling of PCB remediation waste, subject to the conditions below, will not pose an unreasonable risk of injury to

[2] The Interim Measures work plan included a discussion of the nature and extent of certain PCB contamination at the Jorgensen Forge Outfall Site (JFOS) adjoining the Boeing OA-11 area. This discussion was included for purposes of differentiating between PCB contamination associated with the OA-11 area subject to this approval and unrelated PCB contamination associated with the JFOS. Nothing in the interim measures risk-based disposal or elements from the Interim Measure work plan incorporated into it is to be construed as establishing a decision related to any aspect of JFOS work that has been or may be made pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

health or the environment. Boeing shall ensure that activities conducted pursuant to this approval are in full compliance with conditions of the approval. The terms and conditions of this approval are established pursuant to 40 C.F.R. § 761.61(c) and are enforceable under TSCA. Any actions which deviate from the terms and conditions of this approval may result in administrative, civil, or criminal enforcement in accordance with Sections 16 and 17 of TSCA, 15 U.S.C. §§ 2615 and 2616.

Conditions

1. Boeing is authorized to perform sampling and analysis of bulk PCB remediation waste adjoining Other Area-11 (OA-11) on Jorgensen Forge property, as documented in Boeing's February 10, 2017, RBDA application and as approved by the EPA under the Boeing Order (Reference 1). Work under this approval must be completed within six (6) months of the date of the approval. Boeing may request an extension to these dates pursuant to Condition 11. This authorization is contingent on receipt by the EPA of a copy of the access agreement between Boeing and Star Forge dba Jorgensen Forge under which work on Jorgensen Forge property will be conducted. This requirement may be satisfied by a submittal to the EPA of an access agreement under Section XIII paragraph 13.1 of the Boeing Order.

2. Boeing is authorized to dispose of bulk PCB remediation waste, including debris, with PCB concentrations < 50 ppm, as well as cleanup wastes as described at 40 C.F.R. § 761.61(a)(5)(v), in a facility permitted, licensed or registered by a State to manage municipal solid waste subject to 40 C.F.R. Part 258, or municipal non-hazardous waste subject to 40 C.F.R. §§ 257.5 through 257.30, as applicable.

3. Boeing is authorized to dispose of bulk PCB remediation waste, including debris, with as-found PCB concentrations ≥ 50 ppm in a hazardous waste landfill permitted by the EPA under section 3004 of RCRA, or by a State authorized under section 3006 of RCRA, or a PCB disposal facility approved under 40 C.F.R. § 761.75.

4. All equipment that has been in contact with liquid or non-liquid PCB remediation waste subject to this approval must be disposed of or decontaminated following the completion of work under this approval. All disposable equipment or materials must be disposed of in a facility permitted, licensed or registered by a State to manage municipal solid waste subject to 40 C.F.R. Part 258, or municipal non-hazardous waste subject to 40 C.F.R. §§ 257.5 through 257.30, as applicable. Non-disposable equipment must be decontaminated using mechanical means or pressure washing to achieve a "clean debris surface" as defined in 40 C.F.R. § 268.45, Table 1, footnote 3, or according to the applicable decontamination standards of 40 C.F.R. §761.79.

   Boeing will ensure that any decontamination conducted pursuant to this approval will be in compliance with the requirements of 40 C.F.R. § 761.79(e)-(g).

5. No later than 60 days following completion of field work, Boeing must provide the EPA with a written project completion report documenting compliance with requirements of this approval. This requirement may be satisfied in whole or part with reporting requirements applicable under the Boeing Order (Reference 1).

6. Boeing will ensure that all field work associated with this project conducted by Boeing or its contractors is conducted under written site-specific health and safety plans. Boeing will ensure that these plans document appropriate training and personal protective equipment required for all

personnel that may be exposed to PCBs during work associated with this project. Boeing will make available copies of such plans to the EPA upon request.

7. Boeing will ensure that a copy of this approval is provided to contractors responsible for conducting work subject to requirements of the approval. Boeing will ensure that any contracts it issues are consistent with the requirements of this approval. Boeing is responsible for ensuring compliance with this TSCA RBDA and all applicable requirements of 40 C.F.R. Part 761.

8. Nothing in this approval relieves Boeing of any obligation to comply with the Boeing Order, any other EPA or Ecology administrative action, or any statutory requirements, or rules or regulations applicable to the activities subject to this approval.

9. Within seven (7) days following the effective date of this approval, Boeing will provide the EPA with written or e-mail notice of its project manager responsible for overall implementation of work subject to this approval. The initial EPA TSCA project manager is identified in Condition 12. The respective project managers will be responsible for timely and routine communication regarding implementation of this approval, including notification pursuant to Condition 10. For matters otherwise reportable to the EPA RCRA project manager under the Boeing Order, concurrent notification via e-mail is acceptable and encouraged.

10. If at any time before, during, or after conduct of activities subject to this approval, Boeing possesses or is otherwise made aware of any data or information (including but not limited to site conditions that differ from those presented in the application) that activities approved herein may pose an unreasonable risk of injury to health or the environment, Boeing must report such data or information via facsimile or e-mail to the EPA within five (5) working days at the project manager level, and in writing to the Regional Administrator within thirty (30) calendar days of first possessing or becoming aware of such data or information. At his or her sole discretion, the EPA project manager may waive the written reporting requirement for those issues that are determined to be minor, or can be timely resolved without modification of this Approval. Boeing shall also report in the same manner, new or different information related to a condition or any element of the approved activities if the information is relevant to this approval. The EPA may direct Boeing to take such actions it finds necessary to ensure the approved activities do not pose an unreasonable risk of injury to health or the environment. Boeing shall follow such direction until written approval is obtained from the EPA that finds the condition(s) requiring such direction no longer poses an unreasonable risk of injury to health or the environment.

11. The EPA reserves the right to modify or revoke this approval based on information provided pursuant to Condition 10, or any other information available to the EPA that provides a basis to conclude that activities covered by this approval pose an unreasonable risk of injury to health or the environment. Boeing may request modification of this approval by providing a written request to the EPA. If the EPA agrees with a request for modification, the EPA will provide written approval to Boeing. Prior to obtaining written approval of a modification request, Boeing shall comply with the existing approval conditions.

12. Submissions required by this approval shall be provided to the EPA as follows:

    Mr. Timothy B. Hamlin
    Director
    Office of Air and Waste

U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900, MS OAW-150
Seattle, Washington 98101
E-mail: hamlin.tim@epa.gov
Facsimile: (206) 553-8509

With copies to the EPA Project Manager:

Dr. Dave Bartus
Office of Air and Waste
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900, MS OAW-150
Seattle, Washington 98101
E-mail: bartus.dave@epa.gov
Facsimile: (206) 553-8509

Should you have any questions or comments, please contact Dave Bartus at (206) 553-2804 or bartus.dave@epa.gov.

Sincerely,

Tim Hamlin

Timothy B. Hamlin
Director

Enclosures

1. References
2. Statement of Basis

cc: Mr. Will Ernst
The Boeing Company

Mr. Miles Dyer
Jorgensen Forge

Mr. Hideo Fujita
Ecology Northwest Regional Office

Enclosure 1
References

1) Resource Conservation and Recovery Act (RCRA) Administrative Order on Consent, EPA Docket No. 1092-01-22-3008(h).
2) Draft Work Plan, "Uplands Corrective Measures Study Volume X: Corrective Measures Study Report – Plant 2, Attachment 1B, Focused Corrective Measure Study for OA-11", Floyd|Snider, dated October, 2014.
3) Letter, "Risk-based Disposal Approval for the Boeing Plant 2 Other Area 11 (OA-11), Additional Characterization for OA-11 Interim Measures, TSCA ID No. WAD 00925 6819," Edward J. Kowalski, Director, EPA Region 10 Office of Compliance and Enforcement to Brian Anderson, The Boeing Company, dated July 6, 2016.
4) Letter, "Plant 2 - OA-11 Interim Measure, 40 CFR 761.61(c) Risk-Based Disposal Approval Application and Interim Measure Work Plan Submittal, Boeing Plant 2, WAD 00925 6819, RCRA Docket #1092-01-22-3008(h)," Brian Anderson, The Boeing Company to Edward Kowalski, EPA, dated August 16, 2016.
5) Work Plan, "Boeing Plant 2, Interim Action Work Plan for OA-11," FloydlSnider, dated August, 2016.
6) Letter, "Risk-based Disposal Approval for the Boeing Plant 2 Other Area 11 (OA-11) Interim Measures, TSCA ID No. WAD 00925 6819," Timothy Hamlin, Director, EPA Region 10 Office of Air and Waste to Brian Anderson, The Boeing Company, dated August 31, 2016.
7) Letter, "Boeing Plant 2, Technical Memorandum Work Plan, Boeing Plant 2, WAD 00925 6819, RCRA Docket #1092-01-22-3008(h)," Brian Anderson, The Boeing Company to Tim Hamlin, EPA, dated February 10, 2017.
8) Work plan, "Work Plan for Polychlorinated Biphenyl Soil Characterization on Jorgensen Forge Adjoining OA-11," Floyd|Snider, dated February 10, 2017.

Enclosure 2
Statement of Basis

Introduction

Boeing is conducting Uplands Corrective Measures at Boeing Plant 2, located in Seattle and Tukwila, Washington, pursuant to the Boeing Order. As outlined in the draft Upland Corrective Measures Study Volume X (CMS) submitted under the Boeing Order, Plant 2 has been divided into nine Remediation Areas (RAs). Other Area-11 (OA-11), an area of surface and subsurface soil contamination located near the southwest corner of the Plant 2 facility, is within the boundaries of RA 9. A Draft Focused Corrective Measure Study (FCMS) for OA-11 was submitted to the EPA in October 2014 (Reference 2) as required under the Boeing Order.

Development and implementation of the OA-11 Interim Measure is being conducted in a phased process. Previously, the EPA issued a written (RBDA) to conduct additional characterization sampling to supplement historical characterization data (Reference 3). This work was performed to refine the anticipated scope of cleanup and to obtain data to be used for purposes of segregating contaminated soils for purposes of disposal. This work was also performed to obtain data that could be used to demonstrate compliance with proposed Final Media Cleanup Levels (FMCLs) where anticipated construction methods would preclude excavation sidewall sampling following Interim Measures construction. Based on the October 2014 Draft FCMS noted above and results of work conducted under the additional characterization approval, Boeing developed an Interim Measures work plan for OA-11 (References 4 and 5)[3]. Interim measures field work was conducted pursuant to an RBDA approval dated August 31, 2016, (Reference 6) and a corresponding RCRA approval under the Boeing Order.

During work under interim measures construction, Boeing obtained verification sampling data that indicated additional contamination remained above proposed FMCLs south of a portion of OA-11 at the Boeing facility on the neighboring property owned by Star Forge dba Jorgensen Forge (Jorgensen Forge). Consultation at the project manager level between Boeing and the EPA during interim measure field work concluded that the nature and extent of these additional PCBs was not known and did not appear to be consistent with the conceptual site model (CSM) upon which the OA-11 interim measures approval was based. Therefore, Boeing and the EPA mutually agreed to defer further cleanup work until additional field sampling activities have been completed under this approval to provide a basis for those additional cleanup measures that may be necessary. Boeing provide the EPA with a request for an RBDA for this additional field sampling on February 10, 2017 (Reference 7).

The EPA's Evaluation of Boeings Risk-Based Disposal Approval Application

In evaluating Boeing's request for an RBDA, the EPA has considered the following issues:

- Relationship to the RCRA corrective action process;
- Summary of TSCA Requirements;

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[3] The Interim Measures work plan included a discussion of the nature and extent of certain PCB contamination at the Jorgensen Forge Outfall Site (JFOS) adjoining the Boeing OA-11 area. This discussion was included for purposes of differentiating between PCB contamination associated with the OA-11 area subject to this approval and unrelated PCB contamination associated with the JFOS. Nothing in the interim measures risk-based disposal or elements from the Interim Measure work plan incorporated into it is to be construed as establishing a decision related to any aspect of JFOS work that has been or may be made pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

- Scope of the requested approval;
- Specific elements of the cleanup project.

Relationship to the RCRA Corrective Action Process

As noted in the Introduction section, all aspects of cleanup at the Boeing Plant 2 facility are being managed as corrective actions under RCRA through the Boeing Order. Pursuant to this authority, Boeing has performed site characterization as necessary to document the nature and extent of contamination in the project area and identified OA-11 interim measures necessary to protect human health and the environment. Corrective action under the Boeing Order addresses any hazardous waste as defined in Section 1004(5) of RCRA, which includes PCBs.

Summary of TSCA requirements

As discussed in the section "Scope of the Requested Approval," soils within the project area are generally considered to meet the definition of PCB remediation waste and are subject to the requirements for sampling, cleanup and disposal of PCB remediation waste at 40 C.F.R. § 761.61. Under 40 C.F.R. § 761.61, spills or releases of PCBs may be cleaned up using the self-implementing procedures of 40 C.F.R. § 761.61(a), PCB remediation waste may be disposed of (or in some cases, managed) under the performance-based standards of 40 C.F.R. § 761.61(b), or the sampling, cleanup, storage and disposal of PCB remediation waste may be conducted under a risk-based disposal approval issued by the EPA pursuant to 40 C.F.R. § 761.61(c). With respect to the OA-11 additional characterization work and expected interim measures, the self-implementing authority of 40 C.F.R. §761.61(a) is applicable. However, for purposes of optimizing work requirements and to assist in fully harmonizing the requirements under RCRA and TSCA applicable to this project, Boeing is electing to seek approval of more practicable requirements under the risk-based disposal authority of 40 C.F.R. §761.61(c). In some instances, decontamination of PCB remediation waste and water that has been in contact with PCB remediation waste may be accomplished according to decontamination standards and authorization at 40 C.F.R. § 761.79.

Scope of the requested approval

Under TSCA, soils within the project scope that have been impacted by PCBs satisfy the definition of "PCB Remediation Waste" at 40 C.F.R. § 761.3. This definition includes the following elements:

- Materials disposed of prior to April 18, 1978, that are currently at concentrations ≥ 50 ppm PCBs, regardless of the concentration of the original spill;

- Materials which are currently at any volume or concentration where the original source was ≥ 500 ppm PCBs beginning on April 18, 1978, or ≥ 50 ppm PCBs beginning on July 2, 1979; and

- Materials which are currently at any concentration if the PCBs are spilled or released from a source not authorized for use under [40 C.F.R Part 761].

The TSCA regulations include a provision at 40 C.F.R. 761.50(b)(3)(iii) that states:

> "The owner or operator of a site containing PCB remediation waste has the burden of proving the date that the waste was placed in a land disposal facility, spilled, or otherwise released into the environment, and the concentration of the original spill."

Boeing's RBDA application does not provide documentation of either the source concentration or the date(s) of spills or releases that have impacted the OA-11 project area. In these circumstances, the EPA conservatively assumes that all media/materials affected by a spill or release meet the definition of PCB remediation waste and must be cleaned up and disposed of according to the requirements of 40 C.F.R. § 761.61. On this basis, the EPA considers all soils subject to cleanup under the Boeing Order within the OA-11 project area and extending onto the adjoining Jorgensen Forge property to meet the definition of PCB remediation waste and subject to requirements of this approval.

As part of the OA-11 excavation, two soil samples were collected immediately prior to excavation from approximately four feet below grade surface (bgs) on the south side of the 8-foot-deep excavation area. Both samples had PCB concentrations greater than 50 ppm. After excavation to the planned extents, additional samples were collected approximately two feet south of the first set of sidewall samples to determine the amount of over-excavation that would be necessary to achieve the proposed FMCL. Samples were collected at approximately 3 feet and 6 feet bgs at each location. These samples also exceeded the FMCL, with a maximum PCB concentration of 762 ppm on the southwest side of the excavation. These data were not consistent with the CSM that served as the basis for the approved interim measures, which projected that soil PCB concentrations would decrease, not increase, on the south side of the 8-foot-deep excavation area. Therefore, the EPA and Boeing project managers agreed to terminate the 8-foot-deep excavation at its planned southern extent on the neighboring Jorgensen Forge property according to the approved soil excavation interim measures and to conduct additional nature and extent characterization as necessary to plan the horizontal and vertical limits of additional excavation on the Jorgensen property that would be necessary to achieve proposed FMCLs. This RBDA, the third element of the phased approach to OA-11 interim measures, addresses Boeing's proposal to obtain these data.

Specific elements of the requested approval

A general discussion of the overall scope and elements of the OA-11 interim measures projects is documented in the two previous RBDAs issued to Boeing (References 3 and 6). The EPA considered the following specific elements of Boeing's requested approval:

- Intended use of additional characterization data
- Sampling design
- Relationship between Boeing and Jorgensen Forge

The EPA analysis of each of these specific elements is documented in the following sections.

Intended use of additional characterization data

As noted in the statement of basis Introduction, the purpose of this additional characterization work is to define the vertical and horizontal limits of additional PCB contamination adjacent to the OA-11 area on Jorgensen Forge property for purposes of defining the anticipated scope of cleanup and to obtain data to be used for purposes of segregating contaminated soils for purposes of disposal during subsequent cleanup. Based on its review of Boeing's application for an RBDA, the EPA has determined that the proposed sampling, including the sampling design discussed below, is consistent with this intended use of the resulting data.

Sampling design

Boeing has proposed to advance a total of 13 soil borings, as documented in Figure 6 of the RBDA application, to be advanced on the Jorgensen property to a target depth of 14 feet bgs. Soil samples will be collected from discrete intervals within each core.

One boring is proposed adjacent to sample OA-11-ex-S7, which has the greatest PCB concentrations, to further define the vertical profile of PCB concentrations greater than 50 ppm and to better define the area that will require soil segregation for Subtitle C landfill disposal in accordance with TSCA. This soil boring will be collected adjacent to, but outside, the area that was previously sampled, to allow undisturbed soil sample collection. Soil samples will be collected continuously (in 2-foot intervals) from this boring, from the ground surface to a terminal depth of 14 feet bgs. Initially, only samples from the shallow intervals (0 to 8 feet bgs) will be analyzed; deeper soil samples from the deeper intervals (i.e., 8 to 14 feet bgs) will be archived at the laboratory. If results from the initial four analyses do not clearly indicate that PCB concentrations are less than 50 ppm or if additional vertical delineation is warranted (i.e., concentrations remain greater than the FMCL), archived samples from the deeper interval(s) will also be analyzed for PCBs to provide a more complete vertical concentration profile. Total PCB data will be compared to the TSCA disposal segregation criterion of 50 ppm to establish the disposal pathway (i.e., Subtitle C landfill versus Subtitle D landfill) and the proposed FMCL (10 ppm) to confirm the necessary depth of additional excavation.

Twelve additional soil borings will be advanced on the Jorgensen property to determine the lateral and vertical extent of PCBs beyond the southern extent of the OA-11 interim measure excavation to verify that future proposed excavation will ensure all soils with PCB concentrations greater than the proposed FMCL will be excavated. These data will also help further define the lateral extent of PCB concentrations greater than 50 ppm to better define the area that will require segregation as Subtitle C in accordance with TSCA. Soil samples will be collected from each soil boring, consistent with the soil sampling scheme described in Section 3.2 of the RBDA application at proposed locations shown on Figure 6 in the application. The proposed borings are in the immediate vicinity of both the 12-inch-diameter and 24-inch-diameter property line pipes, which are also shown on Figure 6.

Based on its review of Boeing's application, the EPA has determined that this sampling design is defensible and is expected to provide data of sufficient quality and quantity for their intended use. Because the CSM associated with additional PCBs found on Jorgensen Forge property adjacent to the OA-11 interim measures area is not fully understood, it is possible that the approved sampling will not fully delineate the extent of PCB contamination for purposes of developing a subsequent cleanup action. If this is the case, the EPA will require Boeing to request a modification to this approval as necessary and appropriate.

Relationship between Boeing and Jorgensen Forge

As the owner and operator of the Plant 2 facility, Boeing has been responsible for conducting cleanup at the OA-11 portion of the facility under the Boeing Order and the corresponding series of RBDAs under TSCA. This work has included limited cleanup under the approved OA-11 interim measures (Reference 6) on Jorgensen Forge property.

Work under this approval will similarly be conducted by Boeing, although Boeing is not the owner of the property. This approach is consistent with the requirements of 40 C.F.R. § 761.61(c), which allow:

"Any person wishing to sample, cleanup, or dispose of PCB remediation waste..."

to apply for an RBDA. The EPA interprets this language to allow Boeing to apply to the EPA for approval of this RBDA. To ensure that this work is fully coordinated with Star Forge dba Jorgensen Forge (Jorgensen Forge), the property owner, the EPA has requested that Boeing provide documentation that an access agreement is in place that covers the scope of the additional characterization work. This documentation is cited in Reference 9.

The Jorgensen Forge facility, located south of the Boeing Plant 2 facility, is subject to cleanup requirements under the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the state of Washington Model Toxics Control Act (MTCA). The EPA intends that work under this RBDA and as approved under the Boeing Order will be consistent with these other cleanup programs. The EPA has determined that information from the characterization work under this approval will be adequate to establish subsequent cleanup requirements that are appropriately coordinated with CERLCA and MTCA. The EPA will document specifics of how subsequent cleanup work will be integrated with CERCLA and MTCA in an expected future RBDA.

Work under previous OA-11 RBDAs involving work on Jorgensen Forge has been conducted under an existing access agreement between Boeing and Jorgensen Forge. The EPA understands that Boeing and Jorgensen Forge are negotiating a new access agreement. Boeing has advised the EPA that if the new access agreement is not in place as of the start of work under this approval, the existing access agreement will be adequate to provide the necessary access to conduct the approved activities.

Discussion of Conditions

1. Boeing is authorized to perform sampling and analysis of bulk PCB remediation waste adjoining Other Area-11 (OA-11) on Jorgensen Forge property, as documented in Boeing's February 10, 2017, RBDA application and as approved by the EPA under the Boeing Order (Reference 1). Work under this approval must be completed within six (6) months of the date of the approval. Boeing may request an extension to these dates pursuant to Condition 11. This authorization is contingent on receipt by the EPA of a copy of the access agreement between Boeing and Star Forge dba Jorgensen Forge under which work on Jorgensen Forge property will be conducted. This requirement may be satisfied by a submittal to the EPA of an access agreement under Section XIII paragraph 13.1 of the Boeing Order.

This condition provides overall authorization for the additional sampling work on Jorgensen property, and establishes a time frame for completion of work. This condition also ensures that work does not begin until Boeing has secured an access agreement with Star Forge dba Jorgensen Forge, the current owner of the facility.

2. Boeing is authorized to dispose of bulk PCB remediation waste, including debris, with PCB concentrations < 50 ppm, as well as cleanup wastes as described at 40 C.F.R. § 761.61(a)(5)(v), in a facility permitted, licensed or registered by a State to manage municipal solid waste subject to 40 C.F.R. Part 258, or municipal non-hazardous waste subject to 40 C.F.R. §§ 257.5 through 257.30, as applicable.

3. Boeing is authorized to dispose of bulk PCB remediation waste, including debris, with as-found PCB concentrations ≥ 50 ppm in a hazardous waste landfill permitted by the EPA under section 3004 of

RCRA, or by a State authorized under section 3006 of RCRA, or a PCB disposal facility approved under 40 C.F.R. § 761.75.

These conditions establish disposal requirements for any PCB remediation waste, such as excess soils from soil probes, and cleanup wastes, such as discarded sampling equipment and personal protective equipment. Although 40 C.F.R. § 761.61(a) provides similar authorizations for bulk PCB remediation waste generated from self-implementing cleanups, this project is not being conducted under the authority of 40 C.F.R. § 761.61(a). Nevertheless, these methods of final disposal are appropriate for PCB remediation waste to be generated by this project, so the EPA is establishing the disposal authorizations in these Conditions under the risk-based disposal approval authority of 40 C.F.R. § 761.61(c). This condition also includes authorization for disposal of cleanup wastes, such as decontamination liquids, personal protective equipment and other contaminated equipment associated with sampling activities.

4. All equipment that has been in contact with liquid or non-liquid PCB remediation waste subject to this approval must be disposed of or decontaminated following the completion of work under this approval. All disposable equipment or materials must be disposed of in a facility permitted, licensed or registered by a State to manage municipal solid waste subject to 40 C.F.R. Part 258, or municipal non-hazardous waste subject to 40 C.F.R. §§ 257.5 through 257.30, as applicable. Non-disposable equipment must be decontaminated using mechanical means or pressure washing to achieve a "clean debris surface" as defined in 40 C.F.R. § 268.45, Table 1, footnote 3, or according to the applicable decontamination standards of 40 C.F.R. §761.79.

   Boeing will ensure that any decontamination conducted pursuant to this approval will be in compliance with the requirements of 40 C.F.R. § 761.79(e)-(g).

This condition ensures that all equipment, such as drilling and sampling equipment are appropriately managed during and following completion of approved characterization sampling activities.

5. No later than 60 days following completion of field work, Boeing must provide the EPA with a written project completion report documenting compliance with requirements of this approval. This requirement may be satisfied in whole or part with reporting requirements applicable under the Boeing Order (Reference 1).

This condition ensures that documentation is available that provides a record for the EPA to evaluate compliance with requirements of this approval.

6. Boeing will ensure that all field work associated with this project conducted by Boeing or its contractors is conducted under written site-specific health and safety plans. Boeing will ensure that these plans document appropriate training and personal protective equipment required for all personnel that may be exposed to PCBs during work associated with this project. Boeing will make available copies of such plans to the EPA upon request.

This condition ensures that work will be conducted in a safe manner that meets the no unreasonable risk standard of 40 C.F.R. § 761.61(c).

7. Boeing will ensure that a copy of this approval is provided to contractors responsible for conducting work subject to requirements of the approval. Boeing will ensure that any contracts it issues are

consistent with the requirements of this approval. Boeing is responsible for ensuring compliance with this TSCA RBDA and all applicable requirements of 40 C.F.R. Part 761.

This condition emphasizes Boeing's responsibility for acts or omissions of its contractors and that work conducted by Boeing's contractors is consistent with requirements of this approval.

8. Nothing in this approval relieves Boeing of any obligation to comply with the Boeing Order, any other EPA or Ecology administrative action, or any statutory requirements, or rules or regulations applicable to the activities subject to this approval.

This condition establishes that this approval under TSCA does not relieve Boeing of any other obligation that it may have with respect to the approved activities.

9. Within seven (7) days following the effective date of this approval, Boeing will provide the EPA with written or e-mail notice of its project manager responsible for overall implementation of work subject to this approval. The initial EPA TSCA project manager is identified in Condition 12. The respective project managers will be responsible for timely and routine communication regarding implementation of this approval, including notification pursuant to Condition 10. For matters otherwise reportable to the EPA RCRA project manager under the Boeing Order, concurrent notification via e-mail is acceptable and encouraged.

Based on experience during the first construction season for the Duwamish Sediments Other Areas (DSOA) project previously completed by Boeing under a separate RBDA, the EPA and Boeing recognized the need for enhanced communication with respect to this approval based on a project management approach. The EPA is establishing this condition, as well as related language in Condition 11 below, to reflect this objective.

10. If at any time before, during, or after conduct of activities subject to this approval, Boeing possesses or is otherwise made aware of any data or information (including but not limited to site conditions that differ from those presented in the application) that activities approved herein may pose an unreasonable risk of injury to health or the environment, Boeing must report such data or information via facsimile or e-mail to the EPA within five (5) working days at the project manager level, and in writing to the Regional Administrator within thirty (30) calendar days of first possessing or becoming aware of such data or information. At his or her sole discretion, the EPA project manager may waive the written reporting requirement for those issues that are determined to be minor, or can be timely resolved without modification of this Approval. Boeing shall also report in the same manner, new or different information related to a condition or any element of the approved activities if the information is relevant to this approval. The EPA may direct Boeing to take such actions it finds necessary to ensure the approved activities do not pose an unreasonable risk of injury to health or the environment. Boeing shall follow such direction until written approval is obtained from the EPA that finds the condition(s) requiring such direction no longer poses an unreasonable risk of injury to health or the environment.

This condition ensures that if any information not available to the EPA at the time this approval is issued becomes known, it will be promptly made available to the EPA for purposes of ensuring that activities subject to this approval continue to pose no unreasonable risk of injury to health or the environment. This condition also ensures the EPA's ability to make changes to the approved activities, including withdrawing the approval, as necessary to ensure no unreasonable risk of injury to health or the environment.

11. The EPA reserves the right to modify or revoke this approval based on information provided pursuant to Condition 10, or any other information available to the EPA that provides a basis to conclude that activities covered by this approval pose an unreasonable risk of injury to health or the environment. Boeing may request modification of this approval by providing a written request to the EPA. If the EPA agrees with a request for modification, the EPA will provide written approval to Boeing. Prior to obtaining written approval of a modification request, Boeing shall comply with the existing approval conditions.

This condition establishes a mechanism whereby this approval may be modified either independently by the EPA or upon request by Boeing.

Condition 12, not restated here, is self-explanatory.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
AIR AND WASTE

April 13, 2017

Mr. Brian Anderson
Company Energy & Environmental Affairs
The Boeing Company
P.O. Box 3707, M/C 2R96
Seattle, Washington 98124-2207

Re: Approval of the *Boeing Plant 2 Other Area 11 (OA-11) Jorgensen Forge Additional Characterization Work Plan*, Boeing Plant 2, Seattle/Tukwila, Washington (Work Plan)
Administrative Order on Consent RCRA Docket No. 1092-01-22-3008(h)
EPA ID No. WAD 00925 6819 (The Order)

Dear Mr. Anderson:

Development and implementation of the OA-11 Interim Measure is being conducted in phases due to the nature, extent and circumstances surrounding this portion of the corrective action work at Boeing Plant 2. In July 2016, the EPA issued a written approval under the Order to conduct additional characterization sampling to supplement historical characterization data for the OA-11 area. The work was performed to refine the projected scope of the cleanup and to obtain data for the purposes of assuring appropriate segregation of contaminated soils for disposal. This work was also performed to obtain data that can be used to demonstrate compliance with proposed Final Media Cleanup Levels (FMCLs). Based on the October 2014 Focused Draft Corrective Measures Study for OA-11 and data obtained during additional characterization sampling, Boeing developed an Interim Measures Work Plan for OA-11 field work/construction, including the excavation and disposal of Polychlorinated Biphenyl (PCB) contaminated soils. The Interim Measures Work Plan for field work/construction was approved on August 31, 2016.

During the field work/construction, Boeing obtained verification sampling data that showed additional contamination remained above proposed soil FMCL for PCBs south of a portion of OA-11 on the neighboring property owned by Star Forge, LLC dba Jorgensen Forge. Consultation at the project manager level occurred between Boeing and the EPA during the interim measure field work/construction and it was determined that the nature and extent of the additional PCB contamination was not known and did not appear to be consistent with the conceptual site model upon which the OA-11 interim measures approval was based. Therefore, Boeing and the EPA mutually agreed to defer further cleanup work until additional field sampling activities/characterization has been completed to provide a basis for any additional interim cleanup measures that may be necessary.

The above-referenced Work Plan was submitted to conduct additional characterization work on the Star Forge, LLC dba Jorgensen Forge property. The EPA has reviewed the Work Plan. Pursuant to Section X of the Order, the Work Plan is approved. Be advised, that work can only begin when an access agreement between Boeing and Star Forge, LLC that is compliant with paragraph 13.1 of the Order is in

place that covers the field work under the approved Work Plan. A copy of that access agreement must also be provided to the EPA as prescribed by paragraph 13.1 of the Order. The EPA notes that this work is concurrently subject to a risk-based disposal approval under the Toxic Substances Control Act, issued April 3, 2017.

Please contact me by e-mail at blankenship.melissa@epa.gov or by phone at (503) 326-5020 with any questions.

Sincerely,

Melissa Blankenship
RCRA Project Coordinator
Office of Air and Waste

cc: Mr. Will Ernst
The Boeing Company

Mr. Hideo Fujita
Ecology NWRO

Ms. Lynn Grochala
Floyd Snider

Attachment 2
Soil Boring Logs

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PROJECT: BP2- Upland CMS/OA-11 Additional Characterization on Jorgensen		**LOCATION:** Adjoining OA-11 on Jorgensen	**BORING ID:** JF-DP01
		BORING LOCATION: Tier 2 (approximately 20-ft from OA-11 excavation extents)	
DRILLED BY: Cascade- Jeremiah Jenkins	**LOGGED BY:** K.Anderson	**NORTHING:** 195801.6	**EASTING:** 1275963.9
DRILLING EQUIPMENT: Geoprobe 7822DT		**SURFACE ELEVATION:**	**COORDINATE SYSTEM:** NAD83 State Plane North HARN (ft)
DRILLING METHOD: Direct Push		**TOTAL DEPTH (ft bgs):** 14	**DEPTH TO WATER (ft bgs):** 13
SAMPLING METHOD/SAMPLER LENGTH: 5' Disposable Liner		**BORING DIAMETER:** 2"	**DRILL DATE:** 4/19/2017

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, **MAJOR CONSTITUENT**, odor, staining, sheen, debris, moisture, etc.)	Drive/ Recovery	Sample ID
0	SP-SW	Black-brown **SAND** with silt, angular gravel and asphalt fragments; moist.		
1		At 1 ft bgs, no asphalt fragments.		JF-DP01-0-2 @0943
2				
3	SP	At 2.5 ft bgs, trace silt.		JF-DP01-2-4 @0946
4				
5	SP/SM	At 5 ft bgs, gray silty lenses present.		JF-DP01-4-6 @0949 / JF-DP01-4-6-D @0950
6	SM	Gray, silty, fine **SAND**; petroleum odor.		
7	ML	Gray, soft, sandy **SILT**; petroleum odor.		JF-DP01-6-8 @0953
8				
9				JF-DP01-8-10 @0955
10		At 10 ft bgs, some sandy lenses present.		
11		No odor.		JF-DP01-10-12 @0958
12		At 12 ft bgs, silt becomes firm.		
13 ▼	SP	Dark gray, poorly-graded fine **SAND**, wet.		JF-DP01-12-14 @1000
14		Bottom of boring = 14 ft bgs.		

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES:

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PROJECT: BP2- Upland CMS/OA-11 Additional Characterization on Jorgensen		**LOCATION:** Adjoining OA-11 on Jorgensen	**BORING ID:** JF-DP02
		BORING LOCATION: Tier 1 (south of OA-11, within 10-ft of excavation limits)	
DRILLED BY: Cascade- Jeremiah Jenkins	**LOGGED BY:** K.Anderson	**NORTHING:** 195801.7	**EASTING:** 1275973.8
DRILLING EQUIPMENT: Geoprobe 7822DT		**SURFACE ELEVATION:**	**COORDINATE SYSTEM:** NAD83 State Plane North HARN (ft)
DRILLING METHOD: Direct Push		**TOTAL DEPTH (ft bgs):** 14	**DEPTH TO WATER (ft bgs):** 13.5
SAMPLING METHOD/SAMPLER LENGTH: 5' Disposable Liner		**BORING DIAMETER:** 2"	**DRILL DATE:** 4/19/2017

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, **MAJOR CONSTITUENT**, odor, staining, sheen, debris, moisture, etc.)	Drive/ Recovery	Sample ID
0	SP-SM	Black-brown **SAND** with silt, gravel and asphalt fragments; moist.		
1				JF-DP02-0-2 @1012
2		At 1.5 ft bgs, becomes brown.		
3		At 3 ft bgs, wood fragments.		JF-DP02-2-4 @1015
4	SM	Brown, silty **SAND**; moist.		
5				JF-DP02-4-6 @1018
6		At 5.5 ft bgs, additional asphalt and wood fragments; no odor.		
7				JF-DP02-6-8 @1021
8	ML	Brown, sandy **SILT**; no odor; moist.		
9				JF-DP02-8-10 @1024
10		At 10 ft bgs, brick fragments present and becomes more firm.		
11				JF-DP02-10-12 @1027
12				
13				JF-DP02-12-14 @1030
▼ 14	SP	Dark gray-brown, poorly-graded fine **SAND**; wet. Bottom of boring = 14 ft bgs.		

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
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NOTES:
Driller reported that hole took 2 bags of bentonite chips to decommission. Possible pipe breach? If so, pipe would not be filled w/ concrete in this area contrary to closure report.

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PROJECT: BP2- Upland CMS/OA-11 Additional Characterization on Jorgensen	**LOCATION:** Adjoining OA-11 on Jorgensen	**BORING ID:** JF-DP03	
	BORING LOCATION: Tier 1 (south of OA-11, within 10-ft of excavation limits)		
DRILLED BY: Cascade- Jeremiah Jenkins	**LOGGED BY:** K.Anderson	**NORTHING:** 195798.3	**EASTING:** 1275980.6
DRILLING EQUIPMENT: Geoprobe 7822DT		**SURFACE ELEVATION:**	**COORDINATE SYSTEM:** NAD83 State Plane North HARN (ft)
DRILLING METHOD: Direct Push		**TOTAL DEPTH (ft bgs):** 14	**DEPTH TO WATER (ft bgs):** 13
SAMPLING METHOD/SAMPLER LENGTH: 5' Disposable Liner		**BORING DIAMETER:** 2"	**DRILL DATE:** 4/19/2017

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, **MAJOR CONSTITUENT**, odor, staining, sheen, debris, moisture, etc.)	Drive/ Recovery	Sample ID
0	SP-SM	Brown, fine **SAND** with silt, gravel and asphalt fragments.		
1		No asphalt fragments at 1 ft bgs.		JF-DP03-0-2 @1048
2	SP	At 2 ft bgs, less silt.		
3				JF-DP03-2-4 @1051 / JF-DP03-2-4-D @1052
4	SP-SM	At 4 ft bgs, gray silt lenses present.		
5				JF-DP03-4-6 @1055
6		At 6.25 ft bgs, asphalt fragments present.		
7	ML	Gray, sandy **SILT**; moist.		JF-DP03-6-8 @1058
8				
9				JF-DP03-8-10 @1101
10		At 9.5 ft bgs, becomes brown. At 10 ft bgs, clay fragments underlain by wood fragments (likely edge of pipe). Gray, sandy **SILT** below.		
11		Driller reported refusal at 11 ft bgs and clay fragments on sampler. Rig moved 6-inches north to collect 10-14 ft bgs sample.		JF-DP03-10-12 @1130
12				
13 ▼	SP	Dark gray-brown, poorly-graded, fine **SAND**; wet.		JF-DP03-12-14 @1133
14		Bottom of boring = 14 ft bgs.		

ABBREVIATIONS:
ft bgs = feet below ground surface
USCS = Unified Soil Classification System
ppm = parts per million
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NOTES:
Moved 6" north to avoid 24" clay pipe after 8-10 ft bgs sample.

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PROJECT: BP2- Upland CMS/OA-11 Additional Characterization on Jorgensen	**LOCATION:** Adjoining OA-11 on Jorgensen	**BORING ID:** JF-DP04
	BORING LOCATION: Tier 1 (south of OA-11, within 10-ft of excavation limits)	
DRILLED BY: Cascade- Jeremiah Jenkins	**LOGGED BY:** K.Anderson	**NORTHING:** 195801.1	**EASTING:** 1275984.4
DRILLING EQUIPMENT: Geoprobe 7822DT		**SURFACE ELEVATION:**	**COORDINATE SYSTEM:** NAD83 State Plane North HARN (ft)
DRILLING METHOD: Direct Push		**TOTAL DEPTH (ft bgs):** 14	**DEPTH TO WATER (ft bgs):** 13
SAMPLING METHOD/SAMPLER LENGTH: 5' Disposable Liner		**BORING DIAMETER:** 2"	**DRILL DATE:** 4/19/2017

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, **MAJOR CONSTITUENT**, odor, staining, sheen, debris, moisture, etc.)	Drive/ Recovery	Sample ID
0	SP-SM	Gravel ground surface, then dark brown, poorly-graded fine **SAND** with silt lenses; moist.		JF-DP04-0-2 @1240
1				
2				JF-DP04-2-4 @1243
3				
4		At 4 ft bgs, 2-inch lens of gray, plastic silt.		JF-DP04-4-6 @1246
5				
6	ML	Dark gray, sandy **SILT** with few decayed wood fragments.		JF-DP04-6-8 @1250
7				
8				JF-DP04-8-10 @1253
9				
10				JF-DP04-10-12 @1256
11	ML/SP	At 11 ft bgs, silt becomes interbedded with fine sand lenses.		
12				JF-DP04-12-14 @1259
13 ▼	SP	Dark gray, poorly-graded fine **SAND**; wet.		
14		Bottom of boring = 14 ft bgs.		

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES:

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PROJECT: BP2- Upland CMS/OA-11 Additional Characterization on Jorgensen	**LOCATION:** Adjoining OA-11 on Jorgensen	**BORING ID:** JF-DP05	
	BORING LOCATION: Tier 1 (south of OA-11, within 10-ft of excavation limits)		
DRILLED BY: Cascade- Jeremiah Jenkins	**LOGGED BY:** K.Anderson	**NORTHING:** 195798.2	**EASTING:** 1275986.7
DRILLING EQUIPMENT: Geoprobe 7822DT		**SURFACE ELEVATION:**	**COORDINATE SYSTEM:** NAD83 State Plane North HARN (ft)
DRILLING METHOD: Direct Push		**TOTAL DEPTH (ft bgs):** 14	**DEPTH TO WATER (ft bgs):** 13.5
SAMPLING METHOD/SAMPLER LENGTH: 5' Disposable Liner		**BORING DIAMETER:** 2"	**DRILL DATE:** 4/19/2017

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, **MAJOR CONSTITUENT**, odor, staining, sheen, debris, moisture, etc.)	Drive/ Recovery	Sample ID
0	SP-SM	Brown, fine **SAND** with silt, gravel, and asphalt fragments; moist.		
1				JF-DP05-0-2 @1305
2				
3	SP	Brown, poorly-graded fine **SAND**; moist.		JF-DP05-2-4 @1308
4	ML/SP	Gray, sandy **SILT** interbedded with **SAND**.		
5				JF-DP05-4-6 @1311 / JF-DP05-4-6-D @1312
6				
7				JF-DP05-6-8 @1321
8				
9				JF-DP05-8-10 @1324
10		At 10 ft bgs, loose and wet.		
11		At 10.75 ft bgs, clay fragments present.		JF-DP05-10-12 @1328
12				
13				JF-DP05-12-14 @1330
14	SP	Dark gray-brown, poorly-graded, fine **SAND**; wet. Bottom of boring = 14 ft bgs.		

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
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NOTES:
Moved 9" north to avoid 24" pipe after 0-5 ft bgs sample.

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PROJECT: BP2- Upland CMS/OA-11 Additional Characterization on Jorgensen		**LOCATION:** Adjoining OA-11 on Jorgensen	**BORING ID:** **JF-DP06**
		BORING LOCATION: Tier 1 (south of OA-11, within 10-ft of excavation limits)	
DRILLED BY: Cascade- Jeremiah Jenkins	**LOGGED BY:** K.Anderson	**NORTHING:** 195798.5	**EASTING:** 1275990.8
DRILLING EQUIPMENT: Geoprobe 7822DT		**SURFACE ELEVATION:**	**COORDINATE SYSTEM:** NAD83 State Plane North HARN (ft)
DRILLING METHOD: Direct Push		**TOTAL DEPTH (ft bgs):** 14	**DEPTH TO WATER (ft bgs):** 13.5
SAMPLING METHOD/SAMPLER LENGTH: 5' Disposable Liner		**BORING DIAMETER:** 2"	**DRILL DATE:** 4/19/2017

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, **MAJOR CONSTITUENT**, odor, staining, sheen, debris, moisture, etc.)	Drive/ Recovery	Sample ID
0	SP-SM	Gray-brown, fine **SAND** with silt, gravel, and asphalt fragments.		
1		No asphalt below 1 ft bgs.		JF-DP06-0-2 @1345
2				
3				JF-DP06-2-4 @1348
4				
5	ML/SP	At 4.5 ft bgs, gray silt lens. At 5 ft bgs, **SILT** continues to be interbedded with **SAND**.		JF-DP06-4-6 @1351
6				
7		At 7 ft bgs, becomes gray.		JF-DP06-6-8 @1355
8				
9				JF-DP06-8-10 @1358
10		At 10 ft bgs, some brown lenses.		
11	ML/SM	At 11 ft bgs, sand lenses become more silty.		JF-DP06-10-12 @1400
12				
13				JF-DP06-12-14 @1403
14	SP	Gray, poorly-graded fine **SAND**, wet. Bottom of boring = 14 ft bgs.		

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
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▼ = denotes groundwater table

NOTES:

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PROJECT: BP2- Upland CMS/OA-11 Additional Characterization on Jorgensen	**LOCATION:** Adjoining OA-11 on Jorgensen	**BORING ID:** JF-DP07
	BORING LOCATION: Tier 1 (south of OA-11, within 10-ft of excavation limits)	
DRILLED BY: Cascade- Jeremiah Jenkins	**LOGGED BY:** K.Anderson	**NORTHING:** 195800.5	**EASTING:** 1276005
DRILLING EQUIPMENT: Geoprobe 7822DT		**SURFACE ELEVATION:**	**COORDINATE SYSTEM:** NAD83 State Plane North HARN (ft)
DRILLING METHOD: Direct Push		**TOTAL DEPTH (ft bgs):** 14	**DEPTH TO WATER (ft bgs):** 13.5
SAMPLING METHOD/SAMPLER LENGTH: 5' Disposable Liner		**BORING DIAMETER:** 2"	**DRILL DATE:** 4/19/2017

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, **MAJOR CONSTITUENT**, odor, staining, sheen, debris, moisture, etc.)	Drive/ Recovery	Sample ID
0	SP-SM	Brown **SAND** with silt, gravel and asphalt fragments; moist.		
1		No asphalt below 1 ft bgs.		JF-DP07-0-2 @1412
2				
3				JF-DP07-2-4 @1415
4				
5		At 4.5 ft bgs, silt lens. At 5 ft bgs, few asphalt fragments.		JF-DP07-4-6 @1418
6				
7	ML/SM	Brown **SILT** interbedded with silty **SAND**.		JF-DP07-6-8 @1421
8		At 7.5 ft bgs, becomes gray.		
9				JF-DP07-8-10 @1424
10				
11				JF-DP07-10-12 @1427
12	ML	Gray, sandy **SILT**; very moist.		
13				JF-DP07-12-14 @1430
14	SP	Dark gray, poorly-graded, fine **SAND**; wet. Bottom of boring = 14 ft bgs.		

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

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PROJECT: BP2- Upland CMS/OA-11 Additional Characterization on Jorgensen		**LOCATION:** Adjoining OA-11 on Jorgensen	**BORING ID:** **JF-DP08**
		BORING LOCATION: Tier 2 (approximately 20-ft from OA-11 excavation extents)	
DRILLED BY: Cascade- Jeremiah Jenkins	**LOGGED BY:** K.Anderson	**NORTHING:** 195800.5	**EASTING:** 1276013.6
DRILLING EQUIPMENT: Geoprobe 7822DT		**SURFACE ELEVATION:**	**COORDINATE SYSTEM:** NAD83 State Plane North HARN (ft)
DRILLING METHOD: Direct Push		**TOTAL DEPTH (ft bgs):** 14	**DEPTH TO WATER (ft bgs):** 13
SAMPLING METHOD/SAMPLER LENGTH: 5' Disposable Liner		**BORING DIAMETER:** 2"	**DRILL DATE:** 4/19/2017

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, **MAJOR CONSTITUENT**, odor, staining, sheen, debris, moisture, etc.)	Drive/ Recovery	Sample ID
0	SP-SM	Gray-brown **SAND** with silt, gravel and asphalt fragments; moist.		
1		No asphalt below 1 ft bgs.		JF-DP08-0-2 @1440
2				
3	SP	At 2.5 ft bgs, trace to no silt.		JF-DP08-2-4 @1443
4	ML/SP	At 4 ft bgs, silt lens.		
5				JF-DP08-4-6 @1446
6				
7	SM	Brown, silty **SAND**.		JF-DP08-6-8 @1450
8	ML	Gray **SILT** with some wood fragments; moist.		
9				JF-DP08-8-10 @1453
		At 9.5 ft bgs, becomes brown.		
10		At 10 ft bgs, becomes soft and very moist to wet with sandy lenses. Expansive soils filling core.		
11				JF-DP08-10-12 @1454
12		At 12 ft bgs, becomes gray.		
13 ▼				JF-DP08-12-14 @1456
	SP	Gray-brown, poorly-graded fine **SAND**; wet.		
14		Bottom of boring = 14 ft bgs.		

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

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PROJECT: BP2- Upland CMS/OA-11 Additional Characterization on Jorgensen	**LOCATION:** Adjoining OA-11 on Jorgensen	**BORING ID:** JF-DP09
	BORING LOCATION: Tier 2 (approximately 20-ft from OA-11 excavation extents)	
DRILLED BY: Cascade- Jeremiah Jenkins	**LOGGED BY:** P.Osterhout	**NORTHING:** 195791.1	**EASTING:** 1275972
DRILLING EQUIPMENT: Geoprobe 7822DT		**SURFACE ELEVATION:**	**COORDINATE SYSTEM:** NAD83 State Plane North HARN (ft)
DRILLING METHOD: Direct Push		**TOTAL DEPTH (ft bgs):** 14	**DEPTH TO WATER (ft bgs):** 11
SAMPLING METHOD/SAMPLER LENGTH: 5' Disposable Liner		**BORING DIAMETER:** 2"	**DRILL DATE:** 4/20/2017

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, **MAJOR CONSTITUENT**, odor, staining, sheen, debris, moisture, etc.)	Drive/ Recovery	Sample ID
0	SW-SM	Dark brown **SAND** with silt and gravel; some organic fragments; no odor.		JF-DP09-0-2 @0916
1				
2				
3	SP	At 3.25 ft bgs, perched wet layer, then 6-inches of brown, poorly-graded medium **SAND**.		JF-DP09-2-4 @0919
4	ML/SP	Then interbedded **SILT** and poorly-graded **SAND**, grades to fine-grained silty **SAND**.		
5	SW	From 5 to 5.5 ft bgs, grades to well-graded **SAND** with gravel and silt.		JF-DP09-4-6 @0922
6	SM	Then, grades back to silty **SAND**.		
7	ML	Grades to **SILT**.		JF-DP09-6-8 @0925
8		At 8 ft bgs, becomes dark gray and stiff.		
9	SP	Brown fine to medium, poorly-graded **SAND** with some silt; medium dense.		JF-DP09-8-10 @0928
10		From 10 to 11 ft bgs, sand is loose and wet (sluff?).		
11 ▼	ML	At 11 ft bgs, 2" layer of copper-colored silt, then gray **SILT** with peaty fragments, mild hydrocarbon odor; moist.		JF-DP09-10-12 @0931
12	SP	At 12 ft bgs, grades to gray, clean poorly-graded **SAND**; no odor; wet.		JF-DP09-12-14 @0934
13				
14		Bottom of boring = 14 ft bgs.		

ABBREVIATIONS:
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NOTES:
Moved 6" west after hitting buried rail tie.

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PROJECT: BP2- Upland CMS/OA-11 Additional Characterization on Jorgensen	**LOCATION:** Adjoining OA-11 on Jorgensen	**BORING ID:** JF-DP10	
	BORING LOCATION: Tier 2 (approximately 20-ft from OA-11 excavation extents)		
DRILLED BY: Cascade- Jeremiah Jenkins	**LOGGED BY:** P.Osterhout	**NORTHING:** 195791	**EASTING:** 1275982.6
DRILLING EQUIPMENT: Geoprobe 7822DT		**SURFACE ELEVATION:**	**COORDINATE SYSTEM:** NAD83 State Plane North HARN (ft)
DRILLING METHOD: Direct Push		**TOTAL DEPTH (ft bgs):** 14	**DEPTH TO WATER (ft bgs):** 11.5
SAMPLING METHOD/SAMPLER LENGTH: 5' Disposable Liner		**BORING DIAMETER:** 2"	**DRILL DATE:** 4/20/2017

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, **MAJOR CONSTITUENT**, odor, staining, sheen, debris, moisture, etc.)	Drive/ Recovery	Sample ID
0	SW-SM	Brown, medium dense, well-graded fine to medium **SAND** with gravel, silt, and cobbles (railroad ballast?); no odor.		JF-DP10-0-2 @0950
2	SP	At 2 ft bgs, 6-inch layer of medium dense, poorly-graded **SAND** with fine, silt layers.		
3	ML	Gray-brown, mottled firm **SILT** with fine sand.		JF-DP10-2-4 @0953
4	SM	At 3.75 ft bgs, grades to brown, fine silty **SAND**.		
5		At 4.5 ft bgs, becomes dark gray; no odor.		JF-DP10-4-6 @0956 / JF-DP10-4-6D @0957
6	SP	Dark brown, poorly-graded fine to medium **SAND** with angular gravels; moist.		
7	ML	Grades to dark gray, firm **SILT** with wood fragments; no odor.		JF-DP10-6-8 @1000
9	SP-SM	Brown and grades to poorly-graded, fine **SAND** with silt; moist.		JF-DP10-8-10 @1003
11	SM	At 10.5 ft bgs, becomes gray-brown, loose, poorly-graded silty **SAND**; moist.		JF-DP10-10-12 @1006
	SW	Brown, well-graded **SAND** with small to large subangular gravels; wet.		
12	SM	At 12 ft bgs, copper-colored, loose, fine, silty **SAND** with some organics; wet.		
13	ML	Gray **SILT** with some peat and roots.		JF-DP10-12-14 @1009
14	SP	Grades to dark gray clean, poorly-graded **SAND**. Bottom of boring = 14 ft bgs.		

ABBREVIATIONS:
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NOTES:

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PROJECT: BP2- Upland CMS/OA-11 Additional Characterization on Jorgensen		**LOCATION:** Adjoining OA-11 on Jorgensen	**BORING ID:** JF-DP11
		BORING LOCATION: Tier 2 (approximately 20-ft from OA-11 excavation extents)	
DRILLED BY: Cascade- Jeremiah Jenkins	**LOGGED BY:** P.Osterhout	**NORTHING:** 195790.9	**EASTING:** 1275991.7
DRILLING EQUIPMENT: Geoprobe 7822DT		**SURFACE ELEVATION:**	**COORDINATE SYSTEM:** NAD83 State Plane North HARN (ft)
DRILLING METHOD: Direct Push		**TOTAL DEPTH (ft bgs):** 14	**DEPTH TO WATER (ft bgs):** 11
SAMPLING METHOD/SAMPLER LENGTH: 5' Disposable Liner		**BORING DIAMETER:** 2"	**DRILL DATE:** 4/20/2017

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, **MAJOR CONSTITUENT**, odor, staining, sheen, debris, moisture, etc.)	Drive/ Recovery	Sample ID
0	SW	Brown, medium dense **SAND** with angular gravels and silt.		
1	SP	6-inch layer of clean, dense, medium **SAND**. Then same as above with cobbles and metal scraps.		JF-DP11-0-2 @1030
	SW			
2	SP	Clean, medium dense, medium **SAND**; damp.		
3	ML	At 2 ft bgs, grades to gray and brown **SILT** with fine sand.		JF-DP11-2-4 @1033
4		At 4 ft bgs, becomes dark gray; no odor.		
5	SP	Brown, poorly-graded, fine **SAND**; damp.		JF-DP11-4-6 @1036 / JF-DP11-4-6D @1037
	SW	Well-graded **SAND** with sub-angular to sub-rounded small gravels.		
6	SM	Brown, firm, silty fine **SAND**; moist.		
7	ML	Fine sand grades and softens to dark gray **SILT**; no odor.		JF-DP11-6-8 @1040
8				
9	SM	At 8.5 ft bgs, lens of gravel, then 2-inch layer of mottled silt and silty **SAND**.		JF-DP11-8-10 @1043
10	ML	Grades to gray **SILT** with black peaty pockets.		
11 ▼		At 11 ft bgs, outside of core becomes wet.		JF-DP11-10-12 @1046
12	SM	Coppery/brown silty **SAND**.		
13	SP	Grades to clean, poorly-graded, medium **SAND**.		JF-DP11-12-14 @1049
14		Bottom of boring = 14 ft bgs.		

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

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strategy ▪ science ▪ engineering

PROJECT: BP2- Upland CMS/OA-11 Additional Characterization on Jorgensen		**LOCATION:** Adjoining OA-11 on Jorgensen	**BORING ID:** JF-DP12
		BORING LOCATION: Tier 2 (approximately 20-ft from OA-11 excavation extents)	
DRILLED BY: Cascade- Jeremiah Jenkins	**LOGGED BY:** P.Osterhout	**NORTHING:** 195790.7	**EASTING:** 1276005.1
DRILLING EQUIPMENT: Geoprobe 7822DT		**SURFACE ELEVATION:**	**COORDINATE SYSTEM:** NAD83 State Plane North HARN (ft)
DRILLING METHOD: Direct Push		**TOTAL DEPTH (ft bgs):** 14	**DEPTH TO WATER (ft bgs):** 11
SAMPLING METHOD/SAMPLER LENGTH: 5' Disposable Liner		**BORING DIAMETER:** 2"	**DRILL DATE:** 4/20/2017

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, **MAJOR CONSTITUENT**, odor, staining, sheen, debris, moisture, etc.)	Drive/ Recovery	Sample ID
0	SW	Dark brown, well-graded **SAND** with round and angular gravels and cobbles; damp.		JF-DP12-0-2 @1105
2	SP	Dark brown, poorly-graded medium **SAND**; trace fines, no odor.		JF-DP12-2-4 @1108
3	SM	Grades to silty, fine **SAND** with some coppery discoloration; moist.		
5	ML	Gray **SILT** with fine sand; trace organics.		JF-DP12-4-6 @1111
	SW	Well-graded **SAND** with angular gravel and wood fragments.		
6	ML/SP	2-inch layer of poorly-graded **SAND**, then grades to dark gray **SILT** with fine sand.		JF-DP12-6-8 @1114
8	ML/SM	Interbedded brown, sandy **SILT** and silty **SAND** with few organic fragments throughout; no odor; moist.		JF-DP12-8-10 @1117
11 ▼	SM	At 10.5 ft bgs, silty **SAND**, then 3-inch layer of well-graded **SAND** with gravel.		JF-DP12-10-12 @1120
	ML/SM	At 11 ft bgs, becomes softer, silty **SAND** and sandy **SILT** with some coppery discoloration; trace organics.		
13	SP	Grades to brown/gray, clean, poorly-graded, fine to medium **SAND**; saturated.		JF-DP12-12-14 @1123
14		Bottom of boring = 14 ft bgs.		

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES:

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PROJECT: BP2- Upland CMS/OA-11 Additional Characterization on Jorgensen	**LOCATION:** Adjoining OA-11 on Jorgensen	**BORING ID:** JF-DP13
	BORING LOCATION: Tier 2 (approximately 20-ft from OA-11 excavation extents)	
DRILLED BY: Cascade- Jeremiah Jenkins	**LOGGED BY:** P.Osterhout	**NORTHING:** 195778.3	**EASTING:** 1275985.2
DRILLING EQUIPMENT: Geoprobe 7822DT		**SURFACE ELEVATION:**	**COORDINATE SYSTEM:** NAD83 State Plane North HARN (ft)
DRILLING METHOD: Direct Push		**TOTAL DEPTH (ft bgs):** 14	**DEPTH TO WATER (ft bgs):** 11.5
SAMPLING METHOD/SAMPLER LENGTH: 5' Disposable Liner		**BORING DIAMETER:** 2"	**DRILL DATE:** 4/20/2017

Depth (feet)	USCS Symbol	Soil Description and Observations (color, texture, **MAJOR CONSTITUENT**, odor, staining, sheen, debris, moisture, etc.)	Drive/ Recovery	Sample ID
0–2	GW	Black, sandy **GRAVEL** with asphalt and slag; damp.		JF-DP13-0-2 @1140
2–5	SP	Dark brown, poorly-graded, fine to medium **SAND** with trace fines and gravel; no odor; damp.		JF-DP13-2-4 @1143 JF-DP13-4-6 @1146
6	GW	Black **GRAVEL** slag and asphalt, then 2-inches of brown well-graded **SAND** with gravel.		
7	ML	Brown and coppery **SILT**; moist.		JF-DP13-6-8 @1149
7–10	SP	Dark brown/gray, poorly-graded, clean, medium **SAND**; no odor; moist.		JF-DP13-8-10 @1152
11	SM	Dark gray, silty, fine **SAND**.		JF-DP13-10-12 @1155
11	▼	At 11.5 ft bgs, core becomes wet.		
12	ML	At 12 ft bgs, 3-inch chunk of wood, then grades to dark gray **SILT** with peat and wood fragments throughout.		
13	SM	Silty **SAND** grades to fine, clean sand; moist.		JF-DP13-12-14 @1158
14	SP	Clean, fine **SAND**; wet. Bottom of boring = 14 ft bgs.		

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES:

Attachment 3
Analytical Reports

Analytical Resources, Incorporated
Analytical Chemists and Consultants

16 May 2017

Will Ernst
The Boeing Company [Plant II]
PO Box 3707 MS 1W-12
Seattle, WA 98124

RE: Boeing Plant 2 Characterization on Jorgenson

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
17D0349	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the reqirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

Kelly Bottem, Client Services Manager

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

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 17D0349	Turn-around Requested: Std	Page: 1 of 5	
ARI Client Company: Floyd | Snider + Boeing	Phone: 206-292-2078	Date: 4/20/17	Ice Present?
Client Contact: Lynn Grodahl + Will Ernst		No. of Coolers:	Cooler Temps:
Client Project Name: Boeing Plant 2 Characterization on Jorgensen			
Client Project #: 66 PLZ CMI	Samplers: K Anderson		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: GPH	Notes/Comments
JF-DP09-0-2	4/20/17	~~0914~~ 0916	Soil	1	X	1Boeing list
JF-DP09-2-4	"	0919 ~~0922~~	"	1	X	
JF-DP09-4-6	"	0922 ~~0925~~	"	1	X	
JF-DP09-6-8	"	0925 ~~0928~~	"	1	X	
JF-DP10-4-6D	4/20/17	0957	Soil	1	X	
JF-DP11-4-6D	4/20/17	1037	Soil	1	X	

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Gabe Cisneros	Printed Name: Brittney Hall	Printed Name:	Printed Name:
	Company: Floyd|Snider	Company: ARI	Company:	Company:
	Date & Time: 4/20/17 1405	Date & Time: 4/20/17 1405	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 17D0349	Turn-around Requested: Std	Page: 2 of ~~10~~ 5 (KA)	
ARI Client Company: Floyd | Snider + Boeing	Phone: 206-292-2078	Date: 4/20/17	Ice Present?
Client Contact: Lynn Grochala + Will Ernst		No. of Coolers:	Cooler Temps:
Client Project Name: Boeing Plant 2 Characterization on Jorgensen			
Client Project #: 66 PLZ CMI	Samplers: K Anderson		

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Sample ID	Date	Time	Matrix	No. Containers	PCBs (8082)	HOLD							Notes/Comments
JF-DP09-8-10	4/20/17	0928	soil	1		X							* Boeing 1,5
JF-DP09-10-12		0931		1		X							
JF-DP09-12-14		0934		1		X							
JF-DP10-0-2		0950		1		X							
JF-DP10-2-4		0953		1		X							
JF-DP10-4-6		0956		1		X							
JF-DP10-6-8		1000		1		X							
JF-DP10-8-10		1003		1		X							
JF-DP10-10-12		1006		1		X							
JF-DP10-12-14		1009		1		X							

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Gabriel Cisneros	Printed Name: Brittney Hall	Printed Name:	Printed Name:
	Company: Floyd|Snider	Company: ARI	Company:	Company:
	Date & Time: 4/20/17 1405	Date & Time: 4/20/17 1405	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

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Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 17D0349	Turn-around Requested: Std	Page: ~~3~~ 3 of ~~10~~ 5	
ARI Client Company: Floyd|Snider + Boeing	Phone:	Date: 4/20/17	Ice Present?
Client Contact: Lynn Grabeka + Will Ernst		No. of Coolers:	Cooler Temps:
Client Project Name: Boeing Plant 2 Characterization on Jorgensen			
Client Project #: 66 PLZ CMI	Samplers: K Anderson		

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206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: PCBs * (8082)	HOLD							Notes/Comments
JF-DP11-0-2	4/20/17	1030	soil	1		X							* Boeing list
JF-DP11-2-4		1033		1		X							
JF-DP11-4-6		1036		1		X							
JF-DP11-6-8		1040		1		X							
JF-DP11-8-10		1043		1		X							
JF-DP11-10-12		1046		1		X							
JF-DP11-12-14		1049		1		X							
JF-DP12-0-2		1105		1		X							
JF-DP12-2-4		1108		1		X							
JF-DP12-4-6		1111		1		X							

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Gabriel Cisneros	Printed Name: Brittney Hall	Printed Name:	Printed Name:
	Company: Floyd|Snider	Company: ARI	Company:	Company:
	Date & Time: 4/20/17 1405	Date & Time: 4/20/17 1405	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

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Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 17D0349	Turn-around Requested: Std.	Page: 4 of 5	
ARI Client Company: Floyd | Snider + Boeing	Phone: 206-292-2078	Date: 4/20/17	Ice Present?
Client Contact: Lynn Grochala + Will Ernst		No. of Coolers:	Cooler Temps:
Client Project Name: Boeing Plant 2 Characterization on Jagensen			
Client Project #: 66PL2 CMI	Samplers: K Anderson		

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www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: * PCBs (8082)	HOLD							Notes/Comments
JF-DP12-6-8	4/20/17	1114	soil	1		X							* Boeing list
JF-DP12-8-10		1117		1		X							
JF-DP12-10-12		1120		1		X							
JF-DP12-12-14		1123		1		X							
JF-DP13-0-2		1140		1		X							
JF-DP13-2-4		1143		1		X							
JF-DP13-4-6		1146		1		X							
JF-DP13-6-8		1149		1		X							
JF-DP13-8-10		1152		1		X							
JF-DP13-10-12		1155		1		X							

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Gabe Cisneros	Printed Name: Brittney Hall	Printed Name:	Printed Name:
	Company: Floyd|Snider	Company: ARI	Company:	Company:
	Date & Time: 4/20/17 1405	Date & Time: 4/20/17 1405	Date & Time:	Date & Time:

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Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 17D0349	Turn-around Requested: Std.	Page: ~~4~~ ~~10~~ 5 of ~~10~~ 5	
ARI Client Company: Floyd| Snider + Boeing	Phone: 206-292-2078	Date: 4/20/17	Ice Present?
Client Contact: Lynn Grochala + Will Ernst		No. of Coolers:	Cooler Temps:
Client Project Name: Boeing Plant 2 Characterization on Jorgensen			
Client Project #: GG PL2 CMI	Samplers: K Anderson		

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Sample ID	Date	Time	Matrix	No. Containers	* PCBs (8082)	HCLA							Notes/Comments
					Analysis Requested								* Boeing list
JF-DP13-12-14	1158	4/20/17	soil	1		X							
~~JF-DP01-4-6-D~~	~~4/19/17~~	~~0950~~		~~1~~		~~X~~							
~~JF-DP03-2-4-D~~	↓	~~1052~~		~~1~~	~~X~~								
~~JF-DP05-4-6-D~~	↓	~~1312~~		~~1~~	~~X~~								

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Gabe Cisneros	Printed Name: Brittney Hall	Printed Name:	Printed Name:
	Company: Floyd|Snider	Company: ART	Company:	Company:
	Date & Time: 4/20/17 1405	Date & Time: 4/20/17 1405	Date & Time:	Date & Time:

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Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Boeing (Floyd Snider) Project Name: Boeing Plant 2 Characterization

COC No(s): _____ NA Delivered by: Fed-Ex UPS Courier Hand Delivered Other: Jorgensen

Assigned ARI Job No: 17D0349 Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) #1 #2

Time: 14:05 3.4 0.8

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: D00520le

Cooler Accepted by: B. H. Date: 4/20/17 Time: 14:05

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	YES	NO
Were all bottles sealed in individual plastic bags?		YES	NO
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI	NA		

Was Sample Split by ARI : NA YES Date/Time: _____ Equipment: _____ Split by: _____

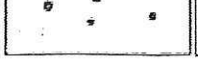
Samples Logged by: PM Date: 4/21/2017 Time: _____

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Small Air Bubbles < 2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
		

Small → "sm" (< 2 mm)	
Peabubbles → "pb" (2 to < 4 mm)	
Large → "lg" (4 to < 6 mm)	
Headspace → "hs" (> 6 mm)	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Temperature Compliance Form

Cooler#: 2	Temperature(°C): 6.8°C	
Sample ID	Bottle Count	Bottle Type
Samples had temp above 6°C.		

Cooler#:	Temperature(°C):	
Sample ID	Bottle Count	Bottle Type

Cooler#:	Temperature(°C):	
Sample ID	Bottle Count	Bottle Type

Cooler#:	Temperature(°C):	
Sample ID	Bottle Count	Bottle Type

Completed by: B. H. Date: 4/20/17 Time: 14:05

The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
JF-DP09-0-2	17D0349-01	Solid	20-Apr-2017 09:16	20-Apr-2017 14:05
JF-DP09-2-4	17D0349-02	Solid	20-Apr-2017 09:19	20-Apr-2017 14:05
JF-DP09-4-6	17D0349-03	Solid	20-Apr-2017 09:22	20-Apr-2017 14:05
JF-DP09-6-8	17D0349-04	Solid	20-Apr-2017 09:25	20-Apr-2017 14:05
JF-DP10-4-6D	17D0349-05	Solid	20-Apr-2017 09:57	20-Apr-2017 14:05
JF-DP11-4-6D	17D0349-06	Solid	20-Apr-2017 10:37	20-Apr-2017 14:05
JF-DP09-8-10	17D0349-07	Solid	20-Apr-2017 09:28	20-Apr-2017 14:05
JF-DP09-10-12	17D0349-08	Solid	20-Apr-2017 09:31	20-Apr-2017 14:05
JF-DP09-12-14	17D0349-09	Solid	20-Apr-2017 09:34	20-Apr-2017 14:05
JF-DP10-0-2	17D0349-10	Solid	20-Apr-2017 09:50	20-Apr-2017 14:05
JF-DP10-2-4	17D0349-11	Solid	20-Apr-2017 09:53	20-Apr-2017 14:05
JF-DP10-4-6	17D0349-12	Solid	20-Apr-2017 09:56	20-Apr-2017 14:05
JF-DP10-6-8	17D0349-13	Solid	20-Apr-2017 10:00	20-Apr-2017 14:05
JF-DP10-8-10	17D0349-14	Solid	20-Apr-2017 10:03	20-Apr-2017 14:05
JF-DP10-10-12	17D0349-15	Solid	20-Apr-2017 10:06	20-Apr-2017 14:05
JF-DP10-12-14	17D0349-16	Solid	20-Apr-2017 10:09	20-Apr-2017 14:05
JF-DP11-0-2	17D0349-17	Solid	20-Apr-2017 10:30	20-Apr-2017 14:05
JF-DP11-2-4	17D0349-18	Solid	20-Apr-2017 10:33	20-Apr-2017 14:05
JF-DP11-4-6	17D0349-19	Solid	20-Apr-2017 10:36	20-Apr-2017 14:05
JF-DP11-6-8	17D0349-20	Solid	20-Apr-2017 10:40	20-Apr-2017 14:05
JF-DP11-8-10	17D0349-21	Solid	20-Apr-2017 10:43	20-Apr-2017 14:05
JF-DP11-10-12	17D0349-22	Solid	20-Apr-2017 10:46	20-Apr-2017 14:05
JF-DP11-12-14	17D0349-23	Solid	20-Apr-2017 10:49	20-Apr-2017 14:05
JF-DP12-0-2	17D0349-24	Solid	20-Apr-2017 11:05	20-Apr-2017 14:05
JF-DP12-2-4	17D0349-25	Solid	20-Apr-2017 11:08	20-Apr-2017 14:05
JF-DP12-4-6	17D0349-26	Solid	20-Apr-2017 11:11	20-Apr-2017 14:05
JF-DP12-6-8	17D0349-27	Solid	20-Apr-2017 11:14	20-Apr-2017 14:05
JF-DP12-8-10	17D0349-28	Solid	20-Apr-2017 11:17	20-Apr-2017 14:05
JF-DP12-10-12	17D0349-29	Solid	20-Apr-2017 11:20	20-Apr-2017 14:05
JF-DP12-12-14	17D0349-30	Solid	20-Apr-2017 11:23	20-Apr-2017 14:05
JF-DP13-0-2	17D0349-31	Solid	20-Apr-2017 11:40	20-Apr-2017 14:05
JF-DP13-2-4	17D0349-32	Solid	20-Apr-2017 11:43	20-Apr-2017 14:05
JF-DP13-4-6	17D0349-33	Solid	20-Apr-2017 11:46	20-Apr-2017 14:05
JF-DP13-6-8	17D0349-34	Solid	20-Apr-2017 11:49	20-Apr-2017 14:05
JF-DP13-8-10	17D0349-35	Solid	20-Apr-2017 11:52	20-Apr-2017 14:05
JF-DP13-10-12	17D0349-36	Solid	20-Apr-2017 11:55	20-Apr-2017 14:05
JF-DP13-12-14	17D0349-37	Solid	20-Apr-2017 11:58	20-Apr-2017 14:05

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

Case Narrative

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

Several samples were placed on hold pending further instructions.

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP09-4-6

17D0349-03 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/20/2017 09:22

Instrument: ECD5 — Analyzed: 09-May-2017 19:22

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 6.32 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	6.3	15.8	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	6.3	15.8	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	6.3	15.8	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	6.3	15.8	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	6.3	15.8	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	6.3	15.8	**10.2**	ug/kg	J
Aroclor 1260	11096-82-5	1	7.3	15.8	**53.2**	ug/kg	P1
Surrogate: Decachlorobiphenyl				*40-133 %*	*76.6*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*88.6*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*78.6*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*85.7*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP09-4-6

17D0349-03 (Solid)

Extractions

Method: PSEP 1986 — Sampled: 04/20/2017 09:22

Instrument: N/A — Analyzed: 04-May-2017 08:07

Sample Preparation: Preparation Method: No Prep-Organics
Preparation Batch: BFE0129 — Sample Size: 1 g (wet)
Prepared: 04-May-2017 — Final Volume: 1 g

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Total Solids		1	0.01	**81.52**	%	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP09-6-8

17D0349-04 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/20/2017 09:25

Instrument: ECD5 — Analyzed: 09-May-2017 19:42

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 7.09 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	5.6	14.1	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	5.6	14.1	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	5.6	14.1	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	5.6	14.1	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	5.6	14.1	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	5.6	14.1	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	6.5	14.1	ND	ug/kg	U
Surrogate: Decachlorobiphenyl				*40-133 %*	*76.7*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*87.1*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*80.2*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*87.0*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP09-6-8

17D0349-04 (Solid)

Extractions

Method: PSEP 1986 — Sampled: 04/20/2017 09:25
Instrument: N/A — Analyzed: 04-May-2017 08:07

Sample Preparation: Preparation Method: No Prep-Organics
Preparation Batch: BFE0129 — Sample Size: 1 g (wet)
Prepared: 04-May-2017 — Final Volume: 1 g

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Total Solids		1	0.01	**73.19**	%	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP10-4-6D

17D0349-05 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/20/2017 09:57

Instrument: ECD5 — Analyzed: 09-May-2017 20:03

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 6.33 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	6.3	15.8	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	6.3	15.8	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	6.3	15.8	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	6.3	15.8	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	6.3	15.8	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	6.3	15.8	**163**	ug/kg	
Aroclor 1260	11096-82-5	1	7.3	15.8	**186**	ug/kg	
Surrogate: Decachlorobiphenyl				*40-133 %*	*85.9*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*89.8*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*87.4*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*89.4*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP10-4-6D

17D0349-05 (Solid)

Extractions

Method: PSEP 1986 — Sampled: 04/20/2017 09:57
Instrument: N/A — Analyzed: 04-May-2017 08:07

Sample Preparation: Preparation Method: No Prep-Organics
Preparation Batch: BFE0129 — Sample Size: 1 g (wet)
Prepared: 04-May-2017 — Final Volume: 1 g

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Total Solids		1	0.01	**81.13**	%	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP09-8-10

17D0349-07 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/20/2017 09:28

Instrument: ECD5 — Analyzed: 09-May-2017 20:23

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 7.35 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	5.4	13.6	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	5.4	13.6	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	5.4	13.6	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	5.4	13.6	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	5.4	13.6	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	5.4	13.6	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	6.3	13.6	ND	ug/kg	U
Surrogate: Decachlorobiphenyl				*40-133 %*	*79.2*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*88.5*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*80.4*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*87.9*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP09-8-10

17D0349-07 (Solid)

Extractions

Method: PSEP 1986 — Sampled: 04/20/2017 09:28
Instrument: N/A — Analyzed: 04-May-2017 08:07

Sample Preparation: Preparation Method: No Prep-Organics
Preparation Batch: BFE0129 — Sample Size: 1 g (wet)
Prepared: 04-May-2017 — Final Volume: 1 g

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Total Solids		1	0.01	**78.43**	%	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP10-2-4

17D0349-11 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/20/2017 09:53

Instrument: ECD5 — Analyzed: 09-May-2017 20:43

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 6.33 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	6.3	15.8	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	6.3	15.8	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	6.3	15.8	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	6.3	15.8	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	6.3	15.8	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	6.3	15.8	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	7.3	15.8	**13.2**	ug/kg	J
Surrogate: Decachlorobiphenyl				*40-133 %*	*78.7*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*86.4*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*80.6*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*87.2*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP10-2-4

17D0349-11 (Solid)

Extractions

Method: PSEP 1986 — Sampled: 04/20/2017 09:53
Instrument: N/A — Analyzed: 04-May-2017 08:07

Sample Preparation: Preparation Method: No Prep-Organics
Preparation Batch: BFE0129 — Sample Size: 1 g (wet)
Prepared: 04-May-2017 — Final Volume: 1 g

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Total Solids		1	0.01	**80.86**	%	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP10-4-6

17D0349-12 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/20/2017 09:56

Instrument: ECD5 — Analyzed: 09-May-2017 21:04

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 7.21 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	5.5	13.9	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	5.5	13.9	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	5.5	13.9	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	5.5	13.9	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	5.5	13.9	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	5.5	13.9	**29.6**	ug/kg	
Aroclor 1260	11096-82-5	1	6.4	13.9	**69.6**	ug/kg	P1
Surrogate: Decachlorobiphenyl				*40-133 %*	*88.5*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*85.0*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*91.7*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*85.5*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP10-4-6

17D0349-12 (Solid)

Extractions

Method: PSEP 1986 — Sampled: 04/20/2017 09:56
Instrument: N/A — Analyzed: 04-May-2017 08:07

Sample Preparation: Preparation Method: No Prep-Organics
Preparation Batch: BFE0129 — Sample Size: 1 g (wet)
Prepared: 04-May-2017 — Final Volume: 1 g

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Total Solids		1	0.01	**79.58**	%	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP11-2-4

17D0349-18 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/20/2017 10:33

Instrument: ECD5 — Analyzed: 09-May-2017 21:24

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 7.19 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	5.6	13.9	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	5.6	13.9	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	5.6	13.9	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	5.6	13.9	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	5.6	13.9	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	5.6	13.9	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	6.5	13.9	ND	ug/kg	U
Surrogate: Decachlorobiphenyl				*40-133 %*	*73.4*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*82.3*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*76.8*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*83.4*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP11-2-4

17D0349-18 (Solid)

Extractions

Method: PSEP 1986 — Sampled: 04/20/2017 10:33

Instrument: N/A — Analyzed: 04-May-2017 08:07

Sample Preparation: Preparation Method: No Prep-Organics
Preparation Batch: BFE0129 — Sample Size: 1 g (wet)
Prepared: 04-May-2017 — Final Volume: 1 g

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Total Solids		1	0.01	**78.53**	%	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP11-4-6

17D0349-19 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/20/2017 10:36

Instrument: ECD5 — Analyzed: 09-May-2017 22:25

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 7.06 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	5.7	14.2	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	5.7	14.2	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	5.7	14.2	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	5.7	14.2	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	5.7	14.2	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	5.7	14.2	**17.3**	ug/kg	
Aroclor 1260	11096-82-5	1	6.6	14.2	**21.2**	ug/kg	
Surrogate: Decachlorobiphenyl				*40-133 %*	*81.3*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*81.4*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*83.7*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*89.1*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP11-4-6

17D0349-19 (Solid)

Extractions

Method: PSEP 1986 — Sampled: 04/20/2017 10:36
Instrument: N/A — Analyzed: 04-May-2017 08:07

Sample Preparation: Preparation Method: No Prep-Organics
Preparation Batch: BFE0129 — Sample Size: 1 g (wet)
Prepared: 04-May-2017 — Final Volume: 1 g

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Total Solids		1	0.01	**80.05**	%	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP12-4-6

17D0349-26 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/20/2017 11:11

Instrument: ECD5 — Analyzed: 09-May-2017 22:45

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 7.31 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	5.5	13.7	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	5.5	13.7	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	5.5	13.7	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	5.5	13.7	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	5.5	13.7	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	5.5	13.7	**46.0**	ug/kg	
Aroclor 1260	11096-82-5	1	6.3	13.7	**35.6**	ug/kg	
Surrogate: Decachlorobiphenyl				*40-133 %*	*72.9*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*83.3*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*78.7*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*84.2*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP12-4-6

17D0349-26 (Solid)

Extractions

Method: PSEP 1986 — Sampled: 04/20/2017 11:11

Instrument: N/A — Analyzed: 04-May-2017 08:07

Sample Preparation: Preparation Method: No Prep-Organics
Preparation Batch: BFE0129 — Sample Size: 1 g (wet)
Prepared: 04-May-2017 — Final Volume: 1 g

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Total Solids		1	0.01	**78.95**	%	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP12-6-8

17D0349-27 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 04/20/2017 11:14
Analyzed: 09-May-2017 23:05

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 7.14 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	5.6	14.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	5.6	14.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	5.6	14.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	5.6	14.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	5.6	14.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	5.6	14.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	6.5	14.0	ND	ug/kg	U
Surrogate: Decachlorobiphenyl				*40-133 %*	*76.9*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*87.6*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*81.5*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*87.7*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

JF-DP12-6-8

17D0349-27 (Solid)

Extractions

Method: PSEP 1986 — Sampled: 04/20/2017 11:14
Instrument: N/A — Analyzed: 04-May-2017 08:07

Sample Preparation: Preparation Method: No Prep-Organics
Preparation Batch: BFE0129 — Sample Size: 1 g (wet)
Prepared: 04-May-2017 — Final Volume: 1 g

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Total Solids		1	0.01	**76.87**	%	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

Aroclor PCB - Quality Control

Batch BFE0157 - EPA 3546 (Microwave)

Instrument: ECD5

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFE0157-BLK1)				Prepared: 05-May-2017 Analyzed: 09-May-2017 14:59							
Aroclor 1016	ND	8.0	20.0	ug/kg							U
Aroclor 1221	ND	8.0	20.0	ug/kg							U
Aroclor 1232	ND	8.0	20.0	ug/kg							U
Aroclor 1242	ND	8.0	20.0	ug/kg							U
Aroclor 1248	ND	8.0	20.0	ug/kg							U
Aroclor 1254	ND	8.0	20.0	ug/kg							U
Aroclor 1260	ND	9.3	20.0	ug/kg							U
Surrogate: Decachlorobiphenyl	33.6			ug/kg	*40.0*		*84.0*	*40-133*			
Surrogate: Tetrachlorometaxylene	35.7			ug/kg	*40.0*		*89.3*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	36.8			ug/kg	*40.0*		*91.9*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	36.8			ug/kg	*40.0*		*91.9*	*53-120*			

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

Aroclor PCB - Quality Control

Batch BFE0157 - EPA 3546 (Microwave)

Instrument: ECD5

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BFE0157-BS1)					Prepared: 05-May-2017 Analyzed: 09-May-2017 15:19						
Aroclor 1016	448	8.0	20.0	ug/kg	500		89.6	52-120			
Aroclor 1260	411	9.3	20.0	ug/kg	500		82.2	57-120			
Surrogate: Decachlorobiphenyl	34.7			ug/kg	*40.0*		*86.8*	*40-133*			
Surrogate: Tetrachlorometaxylene	38.1			ug/kg	*40.0*		*95.3*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	37.7			ug/kg	*40.0*		*94.3*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	36.6			ug/kg	*40.0*		*91.5*	*53-120*			

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

Certified Analyses included in this Report

Analyte	Certifications
EPA 8082A in Solid	
Aroclor 1016	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1016 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1221	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1221 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1232	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1232 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1242	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1242 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1248	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1248 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1254	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1254 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1260	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1260 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1262	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1262 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1268	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1268 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	UST-033	05/06/2017
CALAP	California Department of Public Health CAELAP	2748	02/28/2018
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	03/30/2017
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006	05/11/2017
WADOE	WA Dept of Ecology	C558	06/30/2017
WA-DW	Ecology - Drinking Water	C558	06/30/2017

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: 66PL2CMI	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	16-May-2017 15:25

Notes and Definitions

U	This analyte is not detected above the applicable reporting or detection limit.
P1	The reported value is greater than 40% difference between the concentrations determined on two GC columns where applicable.
NRS	This surrogate not reported due to chromatographic interference
J	Estimated concentration value detected below the reporting limit.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
D	The reported value is from a dilution
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

05 June 2017

Will Ernst
The Boeing Company [Plant II]
PO Box 3707 MS 1W-12
Seattle, WA 98124

RE: Boeing Plant 2 Characterization on Jorgenson

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
17D0305	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the reqirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

Kelly Bottem, Client Services Manager

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

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 17D0305	Turn-around Requested: Std	Page: 1 of ~~10~~ 12	
ARI Client Company: Floyd Snider + Boeing	Phone: 206-292-2078	Date: 4/19/17	Ice Present?
Client Contact: Lynn Grochala + Will Ernst		No. of Coolers:	Cooler Temps:
Client Project Name: Boeing Plant 2 Characterization on Jorgensen			
Client Project #: ~~BPM~~ GGPL2 CMI	Samplers: K. Anderson		

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Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
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Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: * PCBs (8082)	HOLD							Notes/Comments
													* Boeing List
JF-DP01-0-2	4/19/17	0943	soil	1		X							
JF-DP01-2-4		0946		1		X							
JF-DP01-4-6		0949		1		X							
JF-DP01-6-8		0953		1		X							
JF-DP01-8-10		0955		1		X							
JF-DP01-10-12		0958		1		X							
JF-DP01-12-14		1000		1		X							
JF-DP02-0-2		1012		1	X								
JF-DP02-2-4		1015		1	X								
JF-DP02-4-6		1018		1	X								

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Kristin Anderson	Printed Name: Brian Waves	Printed Name:	Printed Name:
	Company: Floyd Snider	Company: ARI	Company:	Company:
	Date & Time: 4/19/17 1543	Date & Time: 4/19/17 1543	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 17D0305	Turn-around Requested: Std	Page: 2 of ~~10~~ 7	
ARI Client Company: Floyd | Snider + Boeing	Phone: 206-292-2078	Date: 4/19/17	Ice Present?
Client Contact: Lynn Grochalat Will Ernst		No. of Coolers:	Cooler Temps:
Client Project Name: Boeing Plant 2 Characterization on Jorgensen			
Client Project #: 66 PL2 CME	Samplers: K Anderson		

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Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: PCBs (8082) *	Analysis Requested: HOLD	Notes/Comments
JF-DP02-6-8	4/19/17	1021	soil	1	X		* Boeing 113+
JF-DP02-8-10		1024		1		X	
JF-DP02-10-12		1027		1		X	
JF-DP02-12-14		1030		1		X	
JF-DP03-0-2		1048		1	X		
JF-DP03-2-4		1051		1	X		
JF-DP03-4-6		1055		1	X		
JF-DP03-6-8		1058		1	X		
JF-DP03-8-10		1101		1		X	
JF-DP03-10-12		1130		1		X	

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Gabe Cisneros	Printed Name: Brian Wann	Printed Name:	Printed Name:
	Company: Floyd/Snider	Company: ARI	Company:	Company:
	Date & Time: 4/19/17 1543	Date & Time: 4/19/17 1543	Date & Time:	Date & Time:

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 17D0305	Turn-around Requested: Std	Page: 3 of ~~10~~ 7	
ARI Client Company: Floyd | Snider + Boeing	Phone: 206-292-2078	Date: 4/19/17	Ice Present?
Client Contact: Lynn Grochala + Will Ernst		No. of Coolers:	Cooler Temps:
Client Project Name: Boeing Plant 2 ~~Addit~~ Characterization on Jorgensen			
Client Project #: GGPL2CMI	Samplers: K Anderson		

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Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: PCBs 4 (8082)	Analysis Requested: HOLD	Notes/Comments
JF-DP03-12-14	4/19/17	1133	soil	1		X	★ Boeing list
JF-DP04-0-2		1240		1	X		
JF-DP04-2-4		1243		1	X		
JF-DP04-4-6		1246		1	X		
JF-DP04-6-8		1250		1	X		
JF-DP04-8-10		1253		1		X	
JF-DP04-10-12		1256		1		X	
JF-DP04-12-14		1259		1		X	
JF-DP05-0-2		1305		1	X		
JF-DP05-2-4		1308		1	X		

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Kristin Anderson	Printed Name: Brian Olson	Printed Name:	Printed Name:
	Company: Floyd Snider	Company: ARI	Company:	Company:
	Date & Time: 4/19/17 1543	Date & Time: 4/19/17 1543	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 17D0305	Turn-around Requested: Std	Page: 4 of ~~10~~ 7 (1A)	
ARI Client Company: Floyd|Snider Boeing	Phone: 206-292-2078	Date: 4/19/17	Ice Present?
Client Contact: Lynn Grochalat Will Ernst		No. of Coolers:	Cooler Temps:
Client Project Name: Boeing Plant 2 Characterization on Jorgensen			
Client Project #: GGPLZCMI	Samplers: K Anderson		

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Analytical Chemists and Consultants
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Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: PCBs (8082)	Analysis Requested: HOLD	Notes/Comments
JF-DP05-4-6	4/19/17	1311	soil	1	X		* Boeing 1.3.1
JF-DP05-6-8		1321		1	X		
JF-DP05-8-10		1324		1		X	
JF-DP05-10-12		1328		1		X	
JF-DP05-12-14		1330		1		X	
JF-DP06-0-2		1345		1	X		
JF-DP06-2-4		1348		1	X		
JF-DP06-4-6		1351		1	X		
JF-DP06-6-8		1355		1	X		
JF-DP06-8-10		1358		1		X	

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Gabe Cisneros	Printed Name: Brian Adams	Printed Name:	Printed Name:
	Company: Floyd|Snider	Company: ARI	Company:	Company:
	Date & Time: 4/19/17 1543	Date & Time: 4/19/17 1543	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 17D0305	Turn-around Requested: Std	Page: 5 of ~~10~~ 7 (KA)	
ARI Client Company: Floyd | Snider + Boeing	Phone: 206-292-2078	Date: 4/19/17	Ice Present?
Client Contact: Lynn Grochala + Will Ernst		No. of Coolers:	Cooler Temps:
Client Project Name: Boeing Plant 2 Characterization on Jorgensen			
Client Project #: GGPL2CMI	Samplers: K Anderson		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: PCBs * (8082)	HOLD							Notes/Comments
JF-DP06-10-12	4/19/17	1400	soil	1		X							* Boeing list
JF-DP06-12-14		1403		1		X							
JF-DP07-0-2		1412		1	X								
JF-DP07-2-4		1415		1	X								
JF-DP07-4-6		1418		1	X								
JF-DP07-6-8		1421		1	X								
JF-DP07-8-10		1424		1		X							
JF-DP07-10-12		1427		1		X							
JF-DP07-12-14		1430		1		X							
JF-DP08-0-2		1440		1		X							

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Kristin Anderson	Printed Name: Brian Warner	Printed Name:	Printed Name:
	Company: Floyd Snider	Company: ARI	Company:	Company:
	Date & Time: 4/19/17 1543	Date & Time: 4/19/17 1543	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 17D0305	Turn-around Requested: Std	Page: 6 of ~~10~~ 7	
ARI Client Company: Floyd | Snider + Boeing	Phone: 206-292-2078	Date: 4/19/17	Ice Present?
Client Contact: Lynn Grochala + Will Ernst		No. of Coolers:	Cooler Temps:
Client Project Name: Boeing Plant 2 Characterization on Jorgensen			
Client Project #: 66PL2 CMI	Samplers: K Anderson		

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www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: PCBs* (8082)	Analysis Requested: HOLD	Notes/Comments
JF-DP08-2-4	↓	1443	Soil	1		X	* Boeing list
JF-DP08-4-6		1446		1		X	
JF-DP08-6-8		1450		1		X	
JF-DP08-8-10		1453		1		X	
JF-DP08-10-12		1454		1		X	
JF-DP08-12-14	↓	1456		1		X	
KA ~~JF-DP09-0-2~~				1			
KA ~~JF-DP09-2-4~~				1			
KA ~~JF-DP09-4-6~~				1			
KA ~~JF-DP09-6-8~~			↓	1			

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Gabe Cisneros	Printed Name: Brian Warn	Printed Name:	Printed Name:
	Company: Floyd|Snider	Company: ARI	Company:	Company:
	Date & Time: 4/19/17 1543	Date & Time: 4/19/17 1543	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 17D0305	Turn-around Requested: Std	Page: 7 of 7	
ARI Client Company: Floyd|Snider + Boeing	Phone: 206-292-2078	Date: 4/19/17	Ice Present?
Client Contact: Lynn Grochala + Will Ernst		No. of Coolers:	Cooler Temps:
Client Project Name: Boeing Plant 2 characterization on Jorgensen			
Client Project #: GGPLZ CMI	Samplers: K Anderson		

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www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: * CBS (8082)	Analysis Requested: PCB	Notes/Comments
JF [redacted] - DP01-4-6-D	4/19/17	0950	Soil	1		X	* Boeing list
JF [redacted] - DP03-2-4-D	↓	1052	↓	1	X		
JF [redacted] - DP05-4-6-D	↓	1312	↓	1	X		

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Kristin Anderson	Printed Name: Brian Warren	Printed Name:	Printed Name:
	Company: Floyd|Snider	Company: ARI	Company:	Company:
	Date & Time: 4/19/17 1543	Date & Time: 4/19/17 1543	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

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Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: ~~Floyd Snider~~ Boeing

COC No(s): _____ NA

Assigned ARI Job No: 17D0305

Project Name: Boeing Plant 2 Characterization

Delivered by: Fed-Ex UPS (Courier) Hand Delivered Other: on Jorgensen

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	(YES)	NO
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 2.2 0.8

Time: 1545

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: DOC5206

Cooler Accepted by: _____ Date: 4/19/17 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other:			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		(YES)	NO
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		YES	(NO)
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		YES	(NO)
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI : (NA) YES Date/Time:_____ Equipment:_____ Split by:_____

Samples Logged by: B. H. Date: 4/20/17 Time: 6:52

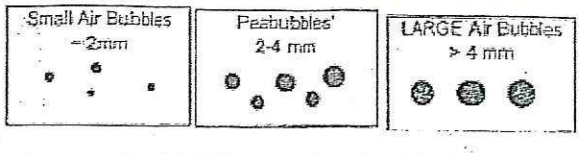
*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC
JP-DP01-4-6	JF-DP01-4-6-D		
JF-DP03-2-4D	JF-DP03-2-4-D		
JF-DP05-4-6D	JF-DP05-4-6-D		

Additional Notes, Discrepancies, & Resolutions:

All samples that have the prefix of JF-DP02 is missing the sampling day. Samples JF-DP03 ~~-0-2~~ -2-4 B.H. through JF-DP03-12-14 missing sampling day.

By: B.H. Date: 4/20/17



Small → "sm"	(< 2 mm)
Peabubbles → "pb"	(2 to < 4 mm)
Large → "lg"	(4 to < 6 mm)
Headspace → "hs"	(> 6 mm)

The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
JF-DP01-0-2	17D0305-01	Solid	19-Apr-2017 09:43	19-Apr-2017 15:43
JF-DP01-2-4	17D0305-02	Solid	19-Apr-2017 09:46	19-Apr-2017 15:43
JF-DP01-4-6	17D0305-03	Solid	19-Apr-2017 09:49	19-Apr-2017 15:43
JF-DP01-6-8	17D0305-04	Solid	19-Apr-2017 09:53	19-Apr-2017 15:43
JF-DP01-8-10	17D0305-05	Solid	19-Apr-2017 09:55	19-Apr-2017 15:43
JF-DP01-10-12	17D0305-06	Solid	19-Apr-2017 09:58	19-Apr-2017 15:43
JF-DP01-12-14	17D0305-07	Solid	19-Apr-2017 10:00	19-Apr-2017 15:43
JF-DP02-0-2	17D0305-08	Solid	19-Apr-2017 10:12	19-Apr-2017 15:43
JF-DP02-2-4	17D0305-09	Solid	19-Apr-2017 10:15	19-Apr-2017 15:43
JF-DP02-4-6	17D0305-10	Solid	19-Apr-2017 10:18	19-Apr-2017 15:43
JF-DP02-6-8	17D0305-11	Solid	19-Apr-2017 10:21	19-Apr-2017 15:43
JF-DP02-8-10	17D0305-12	Solid	19-Apr-2017 10:24	19-Apr-2017 15:43
JF-DP02-10-12	17D0305-13	Solid	19-Apr-2017 10:27	19-Apr-2017 15:43
JF-DP02-12-14	17D0305-14	Solid	19-Apr-2017 10:30	19-Apr-2017 15:43
JF-DP03-0-2	17D0305-15	Solid	19-Apr-2017 10:48	19-Apr-2017 15:43
JF-DP03-2-4	17D0305-16	Solid	19-Apr-2017 10:51	19-Apr-2017 15:43
JF-DP03-4-6	17D0305-17	Solid	19-Apr-2017 10:55	19-Apr-2017 15:43
JF-DP03-6-8	17D0305-18	Solid	19-Apr-2017 10:58	19-Apr-2017 15:43
JF-DP03-8-10	17D0305-19	Solid	19-Apr-2017 11:01	19-Apr-2017 15:43
JF-DP03-10-12	17D0305-20	Solid	19-Apr-2017 11:30	19-Apr-2017 15:43
JF-DP03-12-14	17D0305-21	Solid	19-Apr-2017 11:33	19-Apr-2017 15:43
JF-DP04-0-2	17D0305-22	Solid	19-Apr-2017 12:40	19-Apr-2017 15:43
JF-DP04-2-4	17D0305-23	Solid	19-Apr-2017 12:43	19-Apr-2017 15:43
JF-DP04-4-6	17D0305-24	Solid	19-Apr-2017 12:46	19-Apr-2017 15:43
JF-DP04-6-8	17D0305-25	Solid	19-Apr-2017 12:50	19-Apr-2017 15:43
JF-DP04-8-10	17D0305-26	Solid	19-Apr-2017 12:53	19-Apr-2017 15:43
JF-DP04-10-12	17D0305-27	Solid	19-Apr-2017 12:56	19-Apr-2017 15:43
JF-DP04-12-14	17D0305-28	Solid	19-Apr-2017 12:59	19-Apr-2017 15:43
JF-DP05-0-2	17D0305-29	Solid	19-Apr-2017 13:05	19-Apr-2017 15:43
JF-DP05-2-4	17D0305-30	Solid	19-Apr-2017 13:08	19-Apr-2017 15:43
JF-DP05-4-6	17D0305-31	Solid	19-Apr-2017 13:11	19-Apr-2017 15:43
JF-DP05-6-8	17D0305-32	Solid	19-Apr-2017 13:21	19-Apr-2017 15:43
JF-DP05-8-10	17D0305-33	Solid	19-Apr-2017 13:24	19-Apr-2017 15:43
JF-DP05-10-12	17D0305-34	Solid	19-Apr-2017 13:28	19-Apr-2017 15:43
JF-DP05-12-14	17D0305-35	Solid	19-Apr-2017 13:30	19-Apr-2017 15:43
JF-DP06-0-2	17D0305-36	Solid	19-Apr-2017 13:45	19-Apr-2017 15:43
JF-DP06-2-4	17D0305-37	Solid	19-Apr-2017 13:48	19-Apr-2017 15:43
JF-DP06-4-6	17D0305-38	Solid	19-Apr-2017 13:51	19-Apr-2017 15:43

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP06-6-8	17D0305-39	Solid	19-Apr-2017 13:55	19-Apr-2017 15:43
JF-DP06-8-10	17D0305-40	Solid	19-Apr-2017 13:58	19-Apr-2017 15:43
JF-DP06-10-12	17D0305-41	Solid	19-Apr-2017 14:00	19-Apr-2017 15:43
JF-DP06-12-14	17D0305-42	Solid	19-Apr-2017 14:03	19-Apr-2017 15:43
JF-DP07-0-2	17D0305-43	Solid	19-Apr-2017 14:12	19-Apr-2017 15:43
JF-DP07-2-4	17D0305-44	Solid	19-Apr-2017 14:15	19-Apr-2017 15:43
JF-DP07-4-6	17D0305-45	Solid	19-Apr-2017 14:18	19-Apr-2017 15:43
JF-DP07-6-8	17D0305-46	Solid	19-Apr-2017 14:21	19-Apr-2017 15:43
JF-DP07-8-10	17D0305-47	Solid	19-Apr-2017 14:24	19-Apr-2017 15:43
JF-DP07-10-12	17D0305-48	Solid	19-Apr-2017 14:27	19-Apr-2017 15:43
JF-DP07-12-14	17D0305-49	Solid	19-Apr-2017 14:30	19-Apr-2017 15:43
JF-DP08-0-2	17D0305-50	Solid	19-Apr-2017 14:40	19-Apr-2017 15:43
JF-DP08-2-4	17D0305-51	Solid	19-Apr-2017 14:43	19-Apr-2017 15:43
JF-DP08-4-6	17D0305-52	Solid	19-Apr-2017 14:46	19-Apr-2017 15:43
JF-DP08-6-8	17D0305-53	Solid	19-Apr-2017 14:50	19-Apr-2017 15:43
JF-DP08-8-10	17D0305-54	Solid	19-Apr-2017 14:53	19-Apr-2017 15:43
JF-DP08-10-12	17D0305-55	Solid	19-Apr-2017 14:54	19-Apr-2017 15:43
JF-DP08-12-14	17D0305-56	Solid	19-Apr-2017 14:56	19-Apr-2017 15:43
JF-DP01-4-6-D	17D0305-57	Solid	19-Apr-2017 09:50	19-Apr-2017 15:43
JF-DP03-2-4-D	17D0305-58	Solid	19-Apr-2017 10:52	19-Apr-2017 15:43
JF-DP05-4-6-D	17D0305-59	Solid	19-Apr-2017 13:12	19-Apr-2017 15:43

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Case Narrative

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The LCS percent recoveries were within control limits.

The Matrix Spike and/or Matrix Spike duplicate recoveries and/ or RPDs are out of control for aroclor 1016 and/or aroclor 1260 and flagged on the associated forms in association with samples 17D0305-11, 17D0305-13 and 17D0305-51.

Select samples have been placed on frozen hold pending further instructions.

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP01-4-6

17D0305-03 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 09:49

Instrument: ECD7 — Analyzed: 26-May-2017 16:43

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFE0575	Sample Size: 7.06 g (wet)	Dry Weight:5.73 g
	Prepared: 24-May-2017	Final Volume: 5 mL	% Solids: 81.22
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFE0170	Initial Volume: 5 mL	
	Cleaned: 25-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFE0171	Initial Volume: 5 mL	
	Cleaned: 25-May-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.0	17.4	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.0	17.4	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.0	17.4	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.0	17.4	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.0	17.4	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.0	17.4	**6460**	ug/kg	E
Aroclor 1260	11096-82-5	1	8.1	17.4	**42700**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*	*95.5*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*78.9*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*84.2*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*74.2*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP01-4-6
17D0305-03 (Solid)

JF-DP01-4-6
17D0305-03RE1 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 09:49
Instrument: ECD7 — Analyzed: 30-May-2017 12:29

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFE0575	Sample Size: 7.06 g (wet)	Dry Weight:5.73 g
	Prepared: 24-May-2017	Final Volume: 5 mL	% Solids: 81.22
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 5/30/2017 by JGR
	Cleanup Batch: CFE0170	Initial Volume: 5 mL	
	Cleaned: 25-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 5/30/2017 by JGR
	Cleanup Batch: CFE0171	Initial Volume: 5 mL	
	Cleaned: 25-May-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	100	698	1740	ND	ug/kg	U
Aroclor 1221	11104-28-2	100	698	1740	ND	ug/kg	U
Aroclor 1232	11141-16-5	100	698	1740	ND	ug/kg	U
Aroclor 1242	53469-21-9	100	698	1740	ND	ug/kg	U
Aroclor 1248	12672-29-6	100	698	1740	ND	ug/kg	U
Aroclor 1254	11097-69-1	100	698	1740	**12700**	ug/kg	D
Aroclor 1260	11096-82-5	100	809	1740	**44800**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene				*53-120 %*		*D1*	D1
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*		*D1*	D1

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP01-6-8

17D0305-04 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 04/19/2017 09:53
Analyzed: 09-May-2017 15:39

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 7.05 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	5	28.4	70.9	ND	ug/kg	U
Aroclor 1221	11104-28-2	5	28.4	70.9	ND	ug/kg	U
Aroclor 1232	11141-16-5	5	28.4	70.9	ND	ug/kg	U
Aroclor 1242	53469-21-9	5	28.4	70.9	ND	ug/kg	U
Aroclor 1248	12672-29-6	5	28.4	70.9	ND	ug/kg	U
Aroclor 1254	11097-69-1	5	28.4	70.9	**3490**	ug/kg	D
Aroclor 1260	11096-82-5	5	32.9	70.9	**8580**	ug/kg	D, E
Surrogate: Decachlorobiphenyl				*40-133 %*	*84.1*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*81.7*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*90.3*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*77.1*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP01-6-8
17D0305-04 (Solid)

JF-DP01-6-8
17D0305-04RE1 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 09:53
Instrument: ECD5 — Analyzed: 10-May-2017 11:50

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFE0157	Sample Size: 7.05 g (wet)	
	Prepared: 05-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 5/10/2017 by JGR
	Cleanup Batch: CFE0065	Initial Volume: 5 mL	
	Cleaned: 09-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 5/10/2017 by JGR
	Cleanup Batch: CFE0066	Initial Volume: 5 mL	
	Cleaned: 09-May-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	125	709	1770	ND	ug/kg	U
Aroclor 1221	11104-28-2	125	709	1770	ND	ug/kg	U
Aroclor 1232	11141-16-5	125	709	1770	ND	ug/kg	U
Aroclor 1242	53469-21-9	125	709	1770	ND	ug/kg	U
Aroclor 1248	12672-29-6	125	709	1770	ND	ug/kg	U
Aroclor 1254	11097-69-1	125	709	1770	**7860**	ug/kg	D
Aroclor 1260	11096-82-5	125	823	1770	**13900**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*		*D1*	D1, P1
Surrogate: Tetrachlorometaxylene				*53-120 %*		*D1*	D1
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*		*D1*	D1, P1
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*		*D1*	D1

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP01-8-10

17D0305-05 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 04/19/2017 09:55
Analyzed: 09-May-2017 16:00

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 7.29 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	5.5	13.7	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	5.5	13.7	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	5.5	13.7	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	5.5	13.7	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	5.5	13.7	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	5.5	13.7	**350**	ug/kg	
Aroclor 1260	11096-82-5	1	6.4	13.7	**994**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*	*80.3*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*76.0*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*80.1*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*75.7*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP01-8-10
17D0305-05 (Solid)

JF-DP01-8-10
17D0305-05RE1 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 04/19/2017 09:55
Analyzed: 10-May-2017 12:10

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFE0157	Sample Size: 7.29 g (wet)	
	Prepared: 05-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 5/10/2017 by JGR
	Cleanup Batch: CFE0065	Initial Volume: 5 mL	
	Cleaned: 09-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 5/10/2017 by JGR
	Cleanup Batch: CFE0066	Initial Volume: 5 mL	
	Cleaned: 09-May-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	10	54.9	137	ND	ug/kg	U
Aroclor 1221	11104-28-2	10	54.9	137	ND	ug/kg	U
Aroclor 1232	11141-16-5	10	54.9	137	ND	ug/kg	U
Aroclor 1242	53469-21-9	10	54.9	137	ND	ug/kg	U
Aroclor 1248	12672-29-6	10	54.9	137	ND	ug/kg	U
Aroclor 1254	11097-69-1	10	54.9	137	**572**	ug/kg	D
Aroclor 1260	11096-82-5	10	63.6	137	**1280**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*	*105*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*96.7*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*91.1*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*81.4*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP02-0-2

17D0305-08 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 10:12

Instrument: ECD7 — Analyzed: 01-May-2017 08:57

Sample Preparation:	Preparation Method: EPA 3580A (Vortex)		
	Preparation Batch: BFD0619	Sample Size: 6.05 g (wet)	Dry Weight:5.53 g
	Prepared: 26-Apr-2017	Final Volume: 40 mL	% Solids: 91.35
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0194	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0195	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7	145	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7	145	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7	145	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7	145	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7	145	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7	145	**217**	ug/kg	
Aroclor 1260	11096-82-5	1	13	145	**624**	ug/kg	
Surrogate: Decachlorobiphenyl				*67-145 %*	*93.9*	*%*	
Surrogate: Tetrachlorometaxylene				*69-120 %*	*89.2*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*67-145 %*	*91.1*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*69-120 %*	*85.8*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP02-2-4

17D0305-09 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 10:15

Instrument: ECD7 — Analyzed: 26-Apr-2017 21:27

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.06 g (wet)	Dry Weight:5.06 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 83.51
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.9	19.8	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.9	19.8	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.9	19.8	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.9	19.8	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.9	19.8	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.9	19.8	**66.3**	ug/kg	
Aroclor 1260	11096-82-5	1	9.2	19.8	**115**	ug/kg	
Surrogate: Decachlorobiphenyl				*40-133 %*	*92.1*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*88.3*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*91.2*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*87.5*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP02-4-6

17D0305-10 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 10:18

Instrument: ECD7 — Analyzed: 26-Apr-2017 21:49

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.34 g (wet)	Dry Weight:5.19 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 81.91
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.7	19.3	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.7	19.3	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.7	19.3	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.7	19.3	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.7	19.3	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.7	19.3	**931**	ug/kg	
Aroclor 1260	11096-82-5	1	8.9	19.3	**5470**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*	*94.1*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*85.9*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*89.8*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*83.3*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP02-4-6
17D0305-10 (Solid)

JF-DP02-4-6
17D0305-10RE1 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 10:18
Instrument: ECD7 — Analyzed: 28-Apr-2017 12:12

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.34 g (wet)	Dry Weight:5.19 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 81.91
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	10	77.0	193	ND	ug/kg	U
Aroclor 1221	11104-28-2	10	77.0	193	ND	ug/kg	U
Aroclor 1232	11141-16-5	10	77.0	193	ND	ug/kg	U
Aroclor 1242	53469-21-9	10	77.0	193	ND	ug/kg	U
Aroclor 1248	12672-29-6	10	77.0	193	ND	ug/kg	U
Aroclor 1254	11097-69-1	10	77.0	193	**1950**	ug/kg	P1, D
Aroclor 1260	11096-82-5	10	89.3	193	**5560**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*	*104*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*89.8*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*117*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*98.0*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP02-6-8

17D0305-11 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 10:21

Instrument: ECD7 — Analyzed: 28-Apr-2017 19:34

Sample Preparation:	Preparation Method: EPA 3580A (Vortex)		
	Preparation Batch: BFD0619	Sample Size: 7.12 g (wet)	Dry Weight:5.50 g
	Prepared: 26-Apr-2017	Final Volume: 40 mL	% Solids: 77.19
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0194	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0195	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	10	70	1460	ND	ug/kg	U
Aroclor 1221	11104-28-2	10	70	1460	ND	ug/kg	U
Aroclor 1232	11141-16-5	10	70	1460	ND	ug/kg	U
Aroclor 1242	53469-21-9	10	70	1460	ND	ug/kg	U
Aroclor 1248	12672-29-6	10	70	1460	ND	ug/kg	U
Aroclor 1254	11097-69-1	10	70	1460	**16200**	ug/kg	D
Aroclor 1260	11096-82-5	10	133	1460	**54300**	ug/kg	D
Surrogate: Decachlorobiphenyl				*67-145 %*	*101*	*%*	
Surrogate: Tetrachlorometaxylene				*69-120 %*	*86.0*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*67-145 %*	*117*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*69-120 %*	*94.1*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP02-8-10

17D0305-12 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 04/19/2017 10:24
Analyzed: 09-May-2017 16:20

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 7.15 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	10	55.9	140	ND	ug/kg	U
Aroclor 1221	11104-28-2	10	55.9	140	ND	ug/kg	U
Aroclor 1232	11141-16-5	10	55.9	140	ND	ug/kg	U
Aroclor 1242	53469-21-9	10	55.9	140	ND	ug/kg	U
Aroclor 1248	12672-29-6	10	55.9	140	ND	ug/kg	U
Aroclor 1254	11097-69-1	10	55.9	140	**24400**	ug/kg	D, E
Aroclor 1260	11096-82-5	10	64.9	140	**52100**	ug/kg	D, E
Surrogate: Decachlorobiphenyl				*40-133 %*	*108*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*93.8*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*111*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*83.9*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP02-8-10
17D0305-12 (Solid)

JF-DP02-8-10
17D0305-12RE1 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 04/19/2017 10:24
Analyzed: 10-May-2017 12:30

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFE0157	Sample Size: 7.15 g (wet)	
	Prepared: 05-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 5/10/2017 by JGR
	Cleanup Batch: CFE0065	Initial Volume: 5 mL	
	Cleaned: 09-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 5/10/2017 by JGR
	Cleanup Batch: CFE0066	Initial Volume: 5 mL	
	Cleaned: 09-May-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	250	1400	3500	ND	ug/kg	U
Aroclor 1221	11104-28-2	250	1400	3500	ND	ug/kg	U
Aroclor 1232	11141-16-5	250	1400	3500	ND	ug/kg	U
Aroclor 1242	53469-21-9	250	1400	3500	ND	ug/kg	U
Aroclor 1248	12672-29-6	250	1400	3500	ND	ug/kg	U
Aroclor 1254	11097-69-1	250	1400	3500	**37500**	ug/kg	D
Aroclor 1260	11096-82-5	250	1620	3500	**64200**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*		*D1*	D1, P1
Surrogate: Tetrachlorometaxylene				*53-120 %*		*D1*	D1
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*		*D1*	D1, P1
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*		*D1*	D1

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP02-10-12

17D0305-13 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 10:27

Instrument: ECD5 — Analyzed: 09-May-2017 16:40

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 7.18 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	5.6	13.9	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	5.6	13.9	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	5.6	13.9	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	5.6	13.9	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	5.6	13.9	**1020**	ug/kg	E
Aroclor 1254	11097-69-1	1	5.6	13.9	**1970**	ug/kg	E
Aroclor 1260	11096-82-5	1	6.5	13.9	**810**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*		*NRS*	NRS, P1
Surrogate: Tetrachlorometaxylene				*53-120 %*	*85.3*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*79.4*	*%*	P1
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*83.4*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP02-10-12
17D0305-13 (Solid)

JF-DP02-10-12
17D0305-13RE1 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 04/19/2017 10:27
Analyzed: 10-May-2017 12:51

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFE0157	Sample Size: 7.18 g (wet)	
	Prepared: 05-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 5/10/2017 by JGR
	Cleanup Batch: CFE0065	Initial Volume: 5 mL	
	Cleaned: 09-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 5/10/2017 by JGR
	Cleanup Batch: CFE0066	Initial Volume: 5 mL	
	Cleaned: 09-May-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	10	55.7	139	ND	ug/kg	U
Aroclor 1221	11104-28-2	10	55.7	139	ND	ug/kg	U
Aroclor 1232	11141-16-5	10	55.7	139	ND	ug/kg	U
Aroclor 1242	53469-21-9	10	55.7	139	ND	ug/kg	U
Aroclor 1248	12672-29-6	10	55.7	139	**1300**	ug/kg	D
Aroclor 1254	11097-69-1	10	55.7	139	**2830**	ug/kg	D
Aroclor 1260	11096-82-5	10	64.6	139	**1050**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*	*112*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*92.5*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*91.8*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*83.7*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP03-0-2

17D0305-15 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 10:48

Instrument: ECD7 — Analyzed: 26-Apr-2017 22:56

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.06 g (wet)	Dry Weight:5.62 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 92.66
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.1	17.8	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.1	17.8	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.1	17.8	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.1	17.8	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.1	17.8	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.1	17.8	**81.2**	ug/kg	
Aroclor 1260	11096-82-5	1	8.3	17.8	**336**	ug/kg	
Surrogate: Decachlorobiphenyl				*40-133 %*	*87.6*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*80.7*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*84.0*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*80.0*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP03-2-4

17D0305-16 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 10:51

Instrument: ECD7 — Analyzed: 28-Apr-2017 20:41

Sample Preparation:	Preparation Method: EPA 3580A (Vortex)		
	Preparation Batch: BFD0619	Sample Size: 6.03 g (wet)	Dry Weight:5.35 g
	Prepared: 26-Apr-2017	Final Volume: 40 mL	% Solids: 88.80
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0194	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0195	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	10	71	1490	ND	ug/kg	U
Aroclor 1221	11104-28-2	10	71	1490	ND	ug/kg	U
Aroclor 1232	11141-16-5	10	71	1490	ND	ug/kg	U
Aroclor 1242	53469-21-9	10	71	1490	ND	ug/kg	U
Aroclor 1248	12672-29-6	10	71	1490	ND	ug/kg	U
Aroclor 1254	11097-69-1	10	71	1490	**24600**	ug/kg	D
Aroclor 1260	11096-82-5	10	137	1490	**87100**	ug/kg	D, E
Surrogate: Decachlorobiphenyl				*67-145 %*	*109*	*%*	
Surrogate: Tetrachlorometaxylene				*69-120 %*	*91.4*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*67-145 %*	*123*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*69-120 %*	*101*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP03-2-4
17D0305-16 (Solid)

JF-DP03-2-4
17D0305-16RE1 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD7

Sampled: 04/19/2017 10:51
Analyzed: 01-May-2017 09:20

Sample Preparation:	Preparation Method: EPA 3580A (Vortex)		
	Preparation Batch: BFD0619	Sample Size: 6.03 g (wet)	Dry Weight:5.35 g
	Prepared: 26-Apr-2017	Final Volume: 40 mL	% Solids: 88.80
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 5/1/2017 by JGR
	Cleanup Batch: CFD0194	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 5/1/2017 by JGR
	Cleanup Batch: CFD0195	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	50	357	7470	ND	ug/kg	U
Aroclor 1221	11104-28-2	50	357	7470	ND	ug/kg	U
Aroclor 1232	11141-16-5	50	357	7470	ND	ug/kg	U
Aroclor 1242	53469-21-9	50	357	7470	ND	ug/kg	U
Aroclor 1248	12672-29-6	50	357	7470	ND	ug/kg	U
Aroclor 1254	11097-69-1	50	357	7470	**26800**	ug/kg	D
Aroclor 1260	11096-82-5	50	683	7470	**87100**	ug/kg	D
Surrogate: Decachlorobiphenyl				*67-145 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene				*69-120 %*		*D1*	D1
Surrogate: Decachlorobiphenyl [2C]				*67-145 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene [2C]				*69-120 %*		*D1*	D1

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP03-4-6

17D0305-17 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 10:55

Instrument: ECD7 — Analyzed: 28-Apr-2017 21:03

Sample Preparation:	Preparation Method: EPA 3580A (Vortex)		
	Preparation Batch: BFD0619	Sample Size: 7.17 g (wet)	Dry Weight:5.40 g
	Prepared: 26-Apr-2017	Final Volume: 40 mL	% Solids: 75.32
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0194	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0195	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	25	177	3700	ND	ug/kg	U
Aroclor 1221	11104-28-2	25	177	3700	ND	ug/kg	U
Aroclor 1232	11141-16-5	25	177	3700	ND	ug/kg	U
Aroclor 1242	53469-21-9	25	177	3700	ND	ug/kg	U
Aroclor 1248	12672-29-6	25	177	3700	ND	ug/kg	U
Aroclor 1254	11097-69-1	25	177	3700	**44000**	ug/kg	D
Aroclor 1260	11096-82-5	25	338	3700	**149000**	ug/kg	D
Surrogate: Decachlorobiphenyl				*67-145 %*	*108*	*%*	
Surrogate: Tetrachlorometaxylene				*69-120 %*	*81.8*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*67-145 %*	*108*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*69-120 %*	*88.5*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP03-6-8

17D0305-18 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 10:58

Instrument: ECD7 — Analyzed: 26-Apr-2017 23:18

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 7.05 g (wet)	Dry Weight:5.53 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 78.41
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.2	18.1	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.2	18.1	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.2	18.1	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.2	18.1	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.2	18.1	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.2	18.1	**171**	ug/kg	
Aroclor 1260	11096-82-5	1	8.4	18.1	**718**	ug/kg	
Surrogate: Decachlorobiphenyl				*40-133 %*	*89.1*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*85.8*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*90.0*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*84.5*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP04-0-2

17D0305-22 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 12:40

Instrument: ECD7 — Analyzed: 26-Apr-2017 23:40

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.19 g (wet)	Dry Weight:5.53 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 89.34
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.2	18.1	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.2	18.1	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.2	18.1	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.2	18.1	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.2	18.1	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.2	18.1	**5820**	ug/kg	E
Aroclor 1260	11096-82-5	1	8.4	18.1	**18400**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*	*93.8*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*84.8*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*89.2*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*79.6*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP04-0-2
17D0305-22 (Solid)

JF-DP04-0-2
17D0305-22RE1 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 12:40
Instrument: ECD7 — Analyzed: 28-Apr-2017 12:35

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.19 g (wet)	Dry Weight:5.53 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 89.34
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	100	723	1810	ND	ug/kg	U
Aroclor 1221	11104-28-2	100	723	1810	ND	ug/kg	U
Aroclor 1232	11141-16-5	100	723	1810	ND	ug/kg	U
Aroclor 1242	53469-21-9	100	723	1810	ND	ug/kg	U
Aroclor 1248	12672-29-6	100	723	1810	ND	ug/kg	U
Aroclor 1254	11097-69-1	100	723	1810	**8000**	ug/kg	D
Aroclor 1260	11096-82-5	100	839	1810	**16900**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene				*53-120 %*		*D1*	D1
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*		*D1*	D1

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP04-2-4

17D0305-23 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 12:43

Instrument: ECD7 — Analyzed: 28-Apr-2017 21:26

Sample Preparation:	Preparation Method: EPA 3580A (Vortex)		
	Preparation Batch: BFD0619	Sample Size: 6.31 g (wet)	Dry Weight:5.19 g
	Prepared: 26-Apr-2017	Final Volume: 40 mL	% Solids: 82.30
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0194	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0195	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	10	74	1540	ND	ug/kg	U
Aroclor 1221	11104-28-2	10	74	1540	ND	ug/kg	U
Aroclor 1232	11141-16-5	10	74	1540	ND	ug/kg	U
Aroclor 1242	53469-21-9	10	74	1540	ND	ug/kg	U
Aroclor 1248	12672-29-6	10	74	1540	ND	ug/kg	U
Aroclor 1254	11097-69-1	10	74	1540	**41800**	ug/kg	D
Aroclor 1260	11096-82-5	10	141	1540	**150000**	ug/kg	D, E
Surrogate: Decachlorobiphenyl				*67-145 %*	*112*	*%*	
Surrogate: Tetrachlorometaxylene				*69-120 %*	*88.7*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*67-145 %*	*117*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*69-120 %*	*97.4*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP04-2-4
17D0305-23 (Solid)

JF-DP04-2-4
17D0305-23RE1 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD7

Sampled: 04/19/2017 12:43
Analyzed: 01-May-2017 09:42

Sample Preparation:	Preparation Method: EPA 3580A (Vortex)		
	Preparation Batch: BFD0619	Sample Size: 6.31 g (wet)	Dry Weight:5.19 g
	Prepared: 26-Apr-2017	Final Volume: 40 mL	% Solids: 82.30
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 5/1/2017 by JGR
	Cleanup Batch: CFD0194	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 5/1/2017 by JGR
	Cleanup Batch: CFD0195	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	50	368	7700	ND	ug/kg	U
Aroclor 1221	11104-28-2	50	368	7700	ND	ug/kg	U
Aroclor 1232	11141-16-5	50	368	7700	ND	ug/kg	U
Aroclor 1242	53469-21-9	50	368	7700	ND	ug/kg	U
Aroclor 1248	12672-29-6	50	368	7700	ND	ug/kg	U
Aroclor 1254	11097-69-1	50	368	7700	**48100**	ug/kg	D
Aroclor 1260	11096-82-5	50	704	7700	**154000**	ug/kg	D
Surrogate: Decachlorobiphenyl				*67-145 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene				*69-120 %*		*D1*	D1
Surrogate: Decachlorobiphenyl [2C]				*67-145 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene [2C]				*69-120 %*		*D1*	D1

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP04-4-6

17D0305-24 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD7

Sampled: 04/19/2017 12:46
Analyzed: 28-Apr-2017 21:48

Sample Preparation:	Preparation Method: EPA 3580A (Vortex)		
	Preparation Batch: BFD0619	Sample Size: 6.01 g (wet)	Dry Weight:5.28 g
	Prepared: 26-Apr-2017	Final Volume: 40 mL	% Solids: 87.90
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0194	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0195	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	10	72	1510	ND	ug/kg	U
Aroclor 1221	11104-28-2	10	72	1510	ND	ug/kg	U
Aroclor 1232	11141-16-5	10	72	1510	ND	ug/kg	U
Aroclor 1242	53469-21-9	10	72	1510	ND	ug/kg	U
Aroclor 1248	12672-29-6	10	72	1510	ND	ug/kg	U
Aroclor 1254	11097-69-1	10	72	1510	**28800**	ug/kg	D
Aroclor 1260	11096-82-5	10	138	1510	**98600**	ug/kg	D, E
Surrogate: Decachlorobiphenyl				*67-145 %*	*97.2*	*%*	
Surrogate: Tetrachlorometaxylene				*69-120 %*	*80.5*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*67-145 %*	*112*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*69-120 %*	*88.9*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP04-4-6
17D0305-24 (Solid)

JF-DP04-4-6
17D0305-24RE1 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD7

Sampled: 04/19/2017 12:46
Analyzed: 01-May-2017 10:05

Sample Preparation:	Preparation Method: EPA 3580A (Vortex)		
	Preparation Batch: BFD0619	Sample Size: 6.01 g (wet)	Dry Weight:5.28 g
	Prepared: 26-Apr-2017	Final Volume: 40 mL	% Solids: 87.90
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 5/1/2017 by JGR
	Cleanup Batch: CFD0194	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 5/1/2017 by JGR
	Cleanup Batch: CFD0195	Initial Volume: 40 mL	
	Cleaned: 27-Apr-2017	Final Volume: 40 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	50	362	7570	ND	ug/kg	U
Aroclor 1221	11104-28-2	50	362	7570	ND	ug/kg	U
Aroclor 1232	11141-16-5	50	362	7570	ND	ug/kg	U
Aroclor 1242	53469-21-9	50	362	7570	ND	ug/kg	U
Aroclor 1248	12672-29-6	50	362	7570	ND	ug/kg	U
Aroclor 1254	11097-69-1	50	362	7570	**32100**	ug/kg	D
Aroclor 1260	11096-82-5	50	692	7570	**98900**	ug/kg	D
Surrogate: Decachlorobiphenyl				*67-145 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene				*69-120 %*		*D1*	D1
Surrogate: Decachlorobiphenyl [2C]				*67-145 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene [2C]				*69-120 %*		*D1*	D1

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP04-6-8

17D0305-25 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 12:50

Instrument: ECD7 — Analyzed: 27-Apr-2017 00:02

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 7.12 g (wet)	Dry Weight:5.40 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 75.81
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.4	18.5	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.4	18.5	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.4	18.5	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.4	18.5	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.4	18.5	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.4	18.5	**87.9**	ug/kg	
Aroclor 1260	11096-82-5	1	8.6	18.5	**249**	ug/kg	
Surrogate: Decachlorobiphenyl				*40-133 %*	*81.5*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*82.2*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*81.8*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*82.0*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP05-0-2

17D0305-29 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 13:05

Instrument: ECD7 — Analyzed: 27-Apr-2017 00:24

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.17 g (wet)	Dry Weight:5.58 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 90.39
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.2	17.9	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.2	17.9	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.2	17.9	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.2	17.9	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.2	17.9	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.2	17.9	**133**	ug/kg	
Aroclor 1260	11096-82-5	1	8.3	17.9	**273**	ug/kg	
Surrogate: Decachlorobiphenyl				*40-133 %*	*90.0*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*84.6*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*86.8*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*84.1*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP05-2-4

17D0305-30 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 13:08

Instrument: ECD7 — Analyzed: 27-Apr-2017 00:46

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.14 g (wet)	Dry Weight:5.30 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 86.24
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.6	18.9	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.6	18.9	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.6	18.9	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.6	18.9	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.6	18.9	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.6	18.9	**2870**	ug/kg	P1, E
Aroclor 1260	11096-82-5	1	8.8	18.9	**15400**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*	*84.0*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*67.5*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*79.3*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*71.2*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP05-2-4
17D0305-30 (Solid)

JF-DP05-2-4
17D0305-30RE1 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD7

Sampled: 04/19/2017 13:08
Analyzed: 28-Apr-2017 12:57

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.14 g (wet)	Dry Weight:5.30 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 86.24
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	100	755	1890	ND	ug/kg	U
Aroclor 1221	11104-28-2	100	755	1890	ND	ug/kg	U
Aroclor 1232	11141-16-5	100	755	1890	ND	ug/kg	U
Aroclor 1242	53469-21-9	100	755	1890	ND	ug/kg	U
Aroclor 1248	12672-29-6	100	755	1890	ND	ug/kg	U
Aroclor 1254	11097-69-1	100	755	1890	**5510**	ug/kg	P1, D
Aroclor 1260	11096-82-5	100	876	1890	**14600**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene				*53-120 %*		*D1*	D1
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*		*D1*	D1

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP05-4-6

17D0305-31 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 13:11

Instrument: ECD7 — Analyzed: 27-Apr-2017 01:08

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 7.31 g (wet)	Dry Weight:5.33 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 72.94
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.5	18.8	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.5	18.8	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.5	18.8	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.5	18.8	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.5	18.8	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.5	18.8	**626**	ug/kg	
Aroclor 1260	11096-82-5	1	8.7	18.8	**2940**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*	*93.5*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*79.5*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*91.4*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*78.6*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP05-4-6
17D0305-31 (Solid)

JF-DP05-4-6
17D0305-31RE1 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 13:11
Instrument: ECD7 — Analyzed: 28-Apr-2017 13:20

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 7.31 g (wet)	Dry Weight:5.33 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 72.94
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	10	75.0	188	ND	ug/kg	U
Aroclor 1221	11104-28-2	10	75.0	188	ND	ug/kg	U
Aroclor 1232	11141-16-5	10	75.0	188	ND	ug/kg	U
Aroclor 1242	53469-21-9	10	75.0	188	ND	ug/kg	U
Aroclor 1248	12672-29-6	10	75.0	188	ND	ug/kg	U
Aroclor 1254	11097-69-1	10	75.0	188	**855**	ug/kg	D
Aroclor 1260	11096-82-5	10	87.0	188	**2730**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*	*91.9*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*74.8*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*112*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*82.8*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP05-6-8

17D0305-32 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 13:21

Instrument: ECD7 — Analyzed: 27-Apr-2017 01:30

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 7.39 g (wet)	Dry Weight:5.70 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 77.17
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.0	17.5	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.0	17.5	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.0	17.5	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.0	17.5	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.0	17.5	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.0	17.5	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	8.1	17.5	**17.9**	ug/kg	
Surrogate: Decachlorobiphenyl				*40-133 %*	*85.1*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*86.2*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*88.1*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*85.0*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP06-0-2

17D0305-36 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 13:45

Instrument: ECD7 — Analyzed: 27-Apr-2017 03:20

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.14 g (wet)	Dry Weight:5.58 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 90.84
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.2	17.9	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.2	17.9	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.2	17.9	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.2	17.9	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.2	17.9	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.2	17.9	**474**	ug/kg	
Aroclor 1260	11096-82-5	1	8.3	17.9	**553**	ug/kg	
Surrogate: Decachlorobiphenyl				*40-133 %*	*91.5*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*81.2*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*88.6*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*78.2*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP06-2-4

17D0305-37 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 13:48

Instrument: ECD7 — Analyzed: 27-Apr-2017 03:42

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.25 g (wet)	Dry Weight:5.50 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 87.98
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.3	18.2	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.3	18.2	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.3	18.2	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.3	18.2	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.3	18.2	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.3	18.2	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	8.4	18.2	**39.3**	ug/kg	
Surrogate: Decachlorobiphenyl				*40-133 %*	*93.6*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*88.7*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*91.8*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*88.6*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP06-4-6

17D0305-38 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 13:51

Instrument: ECD7 — Analyzed: 27-Apr-2017 04:04

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 7.26 g (wet)	Dry Weight:5.69 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 78.36
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.0	17.6	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.0	17.6	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.0	17.6	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.0	17.6	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.0	17.6	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.0	17.6	**2500**	ug/kg	E
Aroclor 1260	11096-82-5	1	8.2	17.6	**9960**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*	*86.3*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*79.0*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*81.4*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*78.6*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP06-4-6
17D0305-38 (Solid)

JF-DP06-4-6
17D0305-38RE1 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD7

Sampled: 04/19/2017 13:51
Analyzed: 28-Apr-2017 13:42

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 7.26 g (wet)	Dry Weight:5.69 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 78.36
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	25	176	439	ND	ug/kg	U
Aroclor 1221	11104-28-2	25	176	439	ND	ug/kg	U
Aroclor 1232	11141-16-5	25	176	439	ND	ug/kg	U
Aroclor 1242	53469-21-9	25	176	439	ND	ug/kg	U
Aroclor 1248	12672-29-6	25	176	439	ND	ug/kg	U
Aroclor 1254	11097-69-1	25	176	439	**3690**	ug/kg	D
Aroclor 1260	11096-82-5	25	204	439	**9880**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*	*102*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*84.0*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*107*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*91.6*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP06-6-8

17D0305-39 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 13:55

Instrument: ECD7 — Analyzed: 27-Apr-2017 04:26

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 7.25 g (wet)	Dry Weight:5.42 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 74.74
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.4	18.5	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.4	18.5	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.4	18.5	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.4	18.5	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.4	18.5	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.4	18.5	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	8.6	18.5	**12.3**	ug/kg	J
Surrogate: Decachlorobiphenyl				*40-133 %*	*81.8*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*84.0*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*84.8*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*82.7*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP07-0-2

17D0305-43 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 14:12

Instrument: ECD7 — Analyzed: 27-Apr-2017 04:48

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.13 g (wet)	Dry Weight:5.57 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 90.86
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.2	18.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.2	18.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.2	18.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.2	18.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.2	18.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.2	18.0	**545**	ug/kg	
Aroclor 1260	11096-82-5	1	8.3	18.0	**770**	ug/kg	
Surrogate: Decachlorobiphenyl				*40-133 %*	*105*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*84.0*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*102*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*82.4*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP07-0-2
17D0305-43 (Solid)

JF-DP07-0-2
17D0305-43RE1 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 14:12
Instrument: ECD7 — Analyzed: 28-Apr-2017 14:04

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.13 g (wet)	Dry Weight:5.57 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 90.86
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	5	35.9	89.8	ND	ug/kg	U
Aroclor 1221	11104-28-2	5	35.9	89.8	ND	ug/kg	U
Aroclor 1232	11141-16-5	5	35.9	89.8	ND	ug/kg	U
Aroclor 1242	53469-21-9	5	35.9	89.8	ND	ug/kg	U
Aroclor 1248	12672-29-6	5	35.9	89.8	ND	ug/kg	U
Aroclor 1254	11097-69-1	5	35.9	89.8	**681**	ug/kg	D
Aroclor 1260	11096-82-5	5	41.7	89.8	**1320**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*	*112*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*85.5*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*125*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*91.1*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP07-2-4

17D0305-44 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 14:15

Instrument: ECD7 — Analyzed: 27-Apr-2017 05:10

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.07 g (wet)	Dry Weight:5.27 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 86.87
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.6	19.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.6	19.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.6	19.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.6	19.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.6	19.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.6	19.0	**900**	ug/kg	
Aroclor 1260	11096-82-5	1	8.8	19.0	**4530**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*	*84.6*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*68.2*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*78.6*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*73.2*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP07-2-4
17D0305-44 (Solid)

JF-DP07-2-4
17D0305-44RE1 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 14:15
Instrument: ECD7 — Analyzed: 28-Apr-2017 14:26

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.07 g (wet)	Dry Weight:5.27 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 86.87
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	10	75.9	190	ND	ug/kg	U
Aroclor 1221	11104-28-2	10	75.9	190	ND	ug/kg	U
Aroclor 1232	11141-16-5	10	75.9	190	ND	ug/kg	U
Aroclor 1242	53469-21-9	10	75.9	190	ND	ug/kg	U
Aroclor 1248	12672-29-6	10	75.9	190	ND	ug/kg	U
Aroclor 1254	11097-69-1	10	75.9	190	**1410**	ug/kg	D
Aroclor 1260	11096-82-5	10	88.0	190	**4560**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*	*98.9*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*86.3*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*115*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*96.0*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP07-4-6

17D0305-45 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 14:18

Instrument: ECD7 — Analyzed: 27-Apr-2017 05:32

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.31 g (wet)	Dry Weight:5.16 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 81.72
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.8	19.4	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.8	19.4	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.8	19.4	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.8	19.4	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.8	19.4	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.8	19.4	**5680**	ug/kg	E
Aroclor 1260	11096-82-5	1	9.0	19.4	**33900**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*	*101*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*63.0*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*84.4*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*61.7*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP07-4-6
17D0305-45 (Solid)

JF-DP07-4-6
17D0305-45RE1 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD7

Sampled: 04/19/2017 14:18
Analyzed: 28-Apr-2017 14:48

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.31 g (wet)	Dry Weight:5.16 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 81.72
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	100	776	1940	ND	ug/kg	U
Aroclor 1221	11104-28-2	100	776	1940	ND	ug/kg	U
Aroclor 1232	11141-16-5	100	776	1940	ND	ug/kg	U
Aroclor 1242	53469-21-9	100	776	1940	ND	ug/kg	U
Aroclor 1248	12672-29-6	100	776	1940	ND	ug/kg	U
Aroclor 1254	11097-69-1	100	776	1940	**8220**	ug/kg	D
Aroclor 1260	11096-82-5	100	900	1940	**27300**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*		*D1*	D1, P1
Surrogate: Tetrachlorometaxylene				*53-120 %*		*D1*	D1
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*		*D1*	D1, P1
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*		*D1*	D1

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP07-6-8

17D0305-46 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 14:21

Instrument: ECD7 — Analyzed: 27-Apr-2017 05:54

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 7.18 g (wet)	Dry Weight:5.71 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 79.58
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.0	17.5	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.0	17.5	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.0	17.5	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.0	17.5	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.0	17.5	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.0	17.5	**1490**	ug/kg	P1, E
Aroclor 1260	11096-82-5	1	8.1	17.5	**12500**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*	*90.2*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*81.2*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*85.1*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*77.5*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP07-6-8
17D0305-46 (Solid)

JF-DP07-6-8
17D0305-46RE1 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 14:21
Instrument: ECD7 — Analyzed: 28-Apr-2017 15:10

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 7.18 g (wet)	Dry Weight:5.71 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 79.58
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	100	700	1750	ND	ug/kg	U
Aroclor 1221	11104-28-2	100	700	1750	ND	ug/kg	U
Aroclor 1232	11141-16-5	100	700	1750	ND	ug/kg	U
Aroclor 1242	53469-21-9	100	700	1750	ND	ug/kg	U
Aroclor 1248	12672-29-6	100	700	1750	ND	ug/kg	U
Aroclor 1254	11097-69-1	100	700	1750	**2820**	ug/kg	D
Aroclor 1260	11096-82-5	100	812	1750	**11400**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*		*D1*	D1, P1
Surrogate: Tetrachlorometaxylene				*53-120 %*		*D1*	D1
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*		*D1*	D1, P1
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*		*D1*	D1

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP07-8-10

17D0305-47 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 04/19/2017 14:24
Analyzed: 09-May-2017 17:41

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 7.18 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	5.6	13.9	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	5.6	13.9	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	5.6	13.9	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	5.6	13.9	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	5.6	13.9	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	5.6	13.9	**255**	ug/kg	
Aroclor 1260	11096-82-5	1	6.5	13.9	**745**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*	*73.1*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*64.3*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*72.5*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*68.5*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP07-8-10
17D0305-47 (Solid)

JF-DP07-8-10
17D0305-47RE1 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 04/19/2017 14:24
Analyzed: 10-May-2017 13:11

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFE0157	Sample Size: 7.18 g (wet)	
	Prepared: 05-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 5/10/2017 by JGR
	Cleanup Batch: CFE0065	Initial Volume: 5 mL	
	Cleaned: 09-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 5/10/2017 by JGR
	Cleanup Batch: CFE0066	Initial Volume: 5 mL	
	Cleaned: 09-May-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	5	27.9	69.6	ND	ug/kg	U
Aroclor 1221	11104-28-2	5	27.9	69.6	ND	ug/kg	U
Aroclor 1232	11141-16-5	5	27.9	69.6	ND	ug/kg	U
Aroclor 1242	53469-21-9	5	27.9	69.6	ND	ug/kg	U
Aroclor 1248	12672-29-6	5	27.9	69.6	ND	ug/kg	U
Aroclor 1254	11097-69-1	5	27.9	69.6	**377**	ug/kg	D
Aroclor 1260	11096-82-5	5	32.3	69.6	**816**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*	*83.3*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*73.6*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*78.4*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*73.5*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP08-2-4

17D0305-51 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 14:43

Instrument: ECD7 — Analyzed: 26-May-2017 17:06

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFE0575	Sample Size: 6.04 g (wet)	Dry Weight:5.33 g
	Prepared: 24-May-2017	Final Volume: 5 mL	% Solids: 88.27
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFE0170	Initial Volume: 5 mL	
	Cleaned: 25-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFE0171	Initial Volume: 5 mL	
	Cleaned: 25-May-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.5	18.8	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.5	18.8	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.5	18.8	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.5	18.8	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.5	18.8	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.5	18.8	**4000**	ug/kg	E
Aroclor 1260	11096-82-5	1	8.7	18.8	**25700**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*	*93.0*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*73.1*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*82.8*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*75.4*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP08-2-4
17D0305-51 (Solid)

JF-DP08-2-4
17D0305-51RE1 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 14:43
Instrument: ECD7 — Analyzed: 30-May-2017 12:51

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFE0575	Sample Size: 6.04 g (wet)	Dry Weight:5.33 g
	Prepared: 24-May-2017	Final Volume: 5 mL	% Solids: 88.27
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 5/30/2017 by JGR
	Cleanup Batch: CFE0170	Initial Volume: 5 mL	
	Cleaned: 25-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 5/30/2017 by JGR
	Cleanup Batch: CFE0171	Initial Volume: 5 mL	
	Cleaned: 25-May-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	100	750	1880	ND	ug/kg	U
Aroclor 1221	11104-28-2	100	750	1880	ND	ug/kg	U
Aroclor 1232	11141-16-5	100	750	1880	ND	ug/kg	U
Aroclor 1242	53469-21-9	100	750	1880	ND	ug/kg	U
Aroclor 1248	12672-29-6	100	750	1880	ND	ug/kg	U
Aroclor 1254	11097-69-1	100	750	1880	**6690**	ug/kg	D
Aroclor 1260	11096-82-5	100	870	1880	**22000**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene				*53-120 %*		*D1*	D1
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*		*D1*	D1
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*		*D1*	D1

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP08-4-6

17D0305-52 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 14:46

Instrument: ECD5 — Analyzed: 09-May-2017 18:42

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 6.06 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	10	66.0	165	ND	ug/kg	U
Aroclor 1221	11104-28-2	10	66.0	165	ND	ug/kg	U
Aroclor 1232	11141-16-5	10	66.0	165	ND	ug/kg	U
Aroclor 1242	53469-21-9	10	66.0	165	ND	ug/kg	U
Aroclor 1248	12672-29-6	10	66.0	165	ND	ug/kg	U
Aroclor 1254	11097-69-1	10	66.0	165	**5600**	ug/kg	D
Aroclor 1260	11096-82-5	10	76.6	165	**9350**	ug/kg	D, E
Surrogate: Decachlorobiphenyl				*40-133 %*	*98.8*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*90.0*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*116*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*83.2*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP08-4-6
17D0305-52 (Solid)

JF-DP08-4-6
17D0305-52RE1 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 14:46
Instrument: ECD5 — Analyzed: 10-May-2017 13:31

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFE0157	Sample Size: 6.06 g (wet)	
	Prepared: 05-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 5/10/2017 by JGR
	Cleanup Batch: CFE0065	Initial Volume: 5 mL	
	Cleaned: 09-May-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 5/10/2017 by JGR
	Cleanup Batch: CFE0066	Initial Volume: 5 mL	
	Cleaned: 09-May-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	50	330	825	ND	ug/kg	U
Aroclor 1221	11104-28-2	50	330	825	ND	ug/kg	U
Aroclor 1232	11141-16-5	50	330	825	ND	ug/kg	U
Aroclor 1242	53469-21-9	50	330	825	ND	ug/kg	U
Aroclor 1248	12672-29-6	50	330	825	ND	ug/kg	U
Aroclor 1254	11097-69-1	50	330	825	**6740**	ug/kg	D
Aroclor 1260	11096-82-5	50	383	825	**11100**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*		*D1*	D1, P1
Surrogate: Tetrachlorometaxylene				*53-120 %*		*D1*	D1
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*		*D1*	D1, P1
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*		*D1*	D1

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP08-6-8

17D0305-53 (Solid)

Aroclor PCB

Method: EPA 8082A
Instrument: ECD5

Sampled: 04/19/2017 14:50
Analyzed: 09-May-2017 19:02

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	
	Preparation Batch: BFE0157	Sample Size: 7.05 g (wet)
	Prepared: 05-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CFE0065	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL
Sample Cleanup:	Cleanup Method: Sulfur	
	Cleanup Batch: CFE0066	Initial Volume: 5 mL
	Cleaned: 09-May-2017	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	5.7	14.2	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	5.7	14.2	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	5.7	14.2	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	5.7	14.2	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	5.7	14.2	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	5.7	14.2	**11.2**	ug/kg	J
Aroclor 1260	11096-82-5	1	6.6	14.2	**14.6**	ug/kg	
Surrogate: Decachlorobiphenyl				*40-133 %*	*75.8*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*80.7*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*77.3*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*77.5*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP03-2-4-D

17D0305-58 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 10:52

Instrument: ECD7 — Analyzed: 27-Apr-2017 06:17

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.18 g (wet)	Dry Weight:5.49 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 88.89
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.3	18.2	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.3	18.2	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.3	18.2	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.3	18.2	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.3	18.2	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.3	18.2	**13100**	ug/kg	E
Aroclor 1260	11096-82-5	1	8.4	18.2	**42200**	ug/kg	P1, E
Surrogate: Decachlorobiphenyl				*40-133 %*	*98.5*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*74.5*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*91.1*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*77.5*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP03-2-4-D
17D0305-58 (Solid)

JF-DP03-2-4-D
17D0305-58RE1 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 10:52
Instrument: ECD7 — Analyzed: 28-Apr-2017 15:32

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 6.18 g (wet)	Dry Weight:5.49 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 88.89
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	250	1820	4550	ND	ug/kg	U
Aroclor 1221	11104-28-2	250	1820	4550	ND	ug/kg	U
Aroclor 1232	11141-16-5	250	1820	4550	ND	ug/kg	U
Aroclor 1242	53469-21-9	250	1820	4550	ND	ug/kg	U
Aroclor 1248	12672-29-6	250	1820	4550	ND	ug/kg	U
Aroclor 1254	11097-69-1	250	1820	4550	**26500**	ug/kg	D
Aroclor 1260	11096-82-5	250	2110	4550	**82100**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*		*D1*	P1, D1
Surrogate: Tetrachlorometaxylene				*53-120 %*		*D1*	D1
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*		*D1*	D1, P1
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*		*D1*	D1

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP05-4-6-D

17D0305-59 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 13:12

Instrument: ECD7 — Analyzed: 27-Apr-2017 06:40

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 7.12 g (wet)	Dry Weight:5.11 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 71.76
Sample Cleanup:	Cleanup Method: Sulfuric Acid		
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	7.8	19.6	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	7.8	19.6	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	7.8	19.6	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	7.8	19.6	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	7.8	19.6	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	7.8	19.6	**1050**	ug/kg	E
Aroclor 1260	11096-82-5	1	9.1	19.6	**4970**	ug/kg	E
Surrogate: Decachlorobiphenyl				*40-133 %*	*87.8*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*78.6*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*82.9*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*79.1*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

JF-DP05-4-6-D
17D0305-59 (Solid)

JF-DP05-4-6-D
17D0305-59RE1 (Solid)

Aroclor PCB

Method: EPA 8082A — Sampled: 04/19/2017 13:12
Instrument: ECD7 — Analyzed: 28-Apr-2017 15:54

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)		
	Preparation Batch: BFD0542	Sample Size: 7.12 g (wet)	Dry Weight:5.11 g
	Prepared: 24-Apr-2017	Final Volume: 5 mL	% Solids: 71.76
Sample Cleanup:	Cleanup Method: Sulfuric Acid		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0173	Initial Volume: 5 mL	
	Cleaned: 25-Apr-2017	Final Volume: 5 mL	
Sample Cleanup:	Cleanup Method: Sulfur		Added 4/27/2017 by JGR
	Cleanup Batch: CFD0179	Initial Volume: 5 mL	
	Cleaned: 26-Apr-2017	Final Volume: 5 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	10	78.3	196	ND	ug/kg	U
Aroclor 1221	11104-28-2	10	78.3	196	ND	ug/kg	U
Aroclor 1232	11141-16-5	10	78.3	196	ND	ug/kg	U
Aroclor 1242	53469-21-9	10	78.3	196	ND	ug/kg	U
Aroclor 1248	12672-29-6	10	78.3	196	ND	ug/kg	U
Aroclor 1254	11097-69-1	10	78.3	196	**1540**	ug/kg	P1, D
Aroclor 1260	11096-82-5	10	90.8	196	**5030**	ug/kg	D
Surrogate: Decachlorobiphenyl				*40-133 %*	*96.1*	*%*	
Surrogate: Tetrachlorometaxylene				*53-120 %*	*85.2*	*%*	
Surrogate: Decachlorobiphenyl [2C]				*40-133 %*	*105*	*%*	
Surrogate: Tetrachlorometaxylene [2C]				*53-120 %*	*92.5*	*%*	

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFD0542 - EPA 3546 (Microwave)

Instrument: ECD7

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFD0542-BLK1)				Prepared: 24-Apr-2017 Analyzed: 26-Apr-2017 20:43							
Aroclor 1016	ND	8.0	20.0	ug/kg							U
Aroclor 1221	ND	8.0	20.0	ug/kg							U
Aroclor 1232	ND	8.0	20.0	ug/kg							U
Aroclor 1242	ND	8.0	20.0	ug/kg							U
Aroclor 1248	ND	8.0	20.0	ug/kg							U
Aroclor 1254	ND	8.0	20.0	ug/kg							U
Aroclor 1260	ND	9.3	20.0	ug/kg							U
Surrogate: Decachlorobiphenyl	35.3			ug/kg	*40.0*		*88.3*	*40-133*			
Surrogate: Tetrachlorometaxylene	32.6			ug/kg	*40.0*		*81.6*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	36.5			ug/kg	*40.0*		*91.2*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	32.2			ug/kg	*40.0*		*80.6*	*53-120*			

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFD0542 - EPA 3546 (Microwave)

Instrument: ECD7

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BFD0542-BS1)					Prepared: 24-Apr-2017 Analyzed: 26-Apr-2017 21:05						
Aroclor 1016	419	8.0	20.0	ug/kg	500		83.8	52-120			
Aroclor 1260	512	9.3	20.0	ug/kg	500		102	57-120			
Surrogate: Decachlorobiphenyl	36.3			ug/kg	*40.0*		*90.8*	*40-133*			
Surrogate: Tetrachlorometaxylene	34.4			ug/kg	*40.0*		*86.1*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	36.1			ug/kg	*40.0*		*90.1*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	33.8			ug/kg	*40.0*		*84.5*	*53-120*			

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFD0542 - EPA 3546 (Microwave)

Instrument: ECD7

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BFD0542-MS1)	**Source: 17D0305-32**		Prepared: 24-Apr-2017 Analyzed: 27-Apr-2017 01:52								
Aroclor 1016	368	7.1	17.8	ug/kg	446	ND	82.6	52-120			
Aroclor 1260	437	8.3	17.8	ug/kg	446	17.9	94.1	57-120			
Surrogate: Decachlorobiphenyl	29.7			ug/kg	*35.6*	*29.9*	*83.2*	*40-133*			
Surrogate: Tetrachlorometaxylene	31.2			ug/kg	*35.6*	*30.2*	*87.6*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	31.4			ug/kg	*35.6*	*30.9*	*88.0*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	30.4			ug/kg	*35.6*	*29.8*	*85.2*	*53-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFD0542 - EPA 3546 (Microwave)

Instrument: ECD7

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BFD0542-MSD1)	**Source: 17D0305-32**			Prepared: 24-Apr-2017 Analyzed: 27-Apr-2017 02:14							
Aroclor 1016	369	7.1	17.8	ug/kg	446	ND	82.7	52-120	0.09	30	
Aroclor 1260	445	8.3	17.8	ug/kg	446	17.9	95.7	57-120	1.64	30	
Surrogate: Decachlorobiphenyl	30.0			ug/kg	*35.6*	*29.9*	*84.2*	*40-133*			
Surrogate: Tetrachlorometaxylene	30.7			ug/kg	*35.6*	*30.2*	*86.1*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	31.5			ug/kg	*35.6*	*30.9*	*88.3*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	30.4			ug/kg	*35.6*	*29.8*	*85.2*	*53-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFD0619 - EPA 3580A (Vortex)

Instrument: ECD7

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFD0619-BLK1)				Prepared: 26-Apr-2017 Analyzed: 28-Apr-2017 18:06							
Aroclor 1016	ND	8	160	ug/kg							U
Aroclor 1221	ND	8	160	ug/kg							U
Aroclor 1232	ND	8	160	ug/kg							U
Aroclor 1242	ND	8	160	ug/kg							U
Aroclor 1248	ND	8	160	ug/kg							U
Aroclor 1254	ND	8	160	ug/kg							U
Aroclor 1260	ND	15	160	ug/kg							U
Surrogate: Decachlorobiphenyl	321			ug/kg	*320*		*100*	*67-145*			
Surrogate: Tetrachlorometaxylene	298			ug/kg	*320*		*93.2*	*69-120*			
Surrogate: Decachlorobiphenyl [2C]	314			ug/kg	*320*		*98.2*	*67-145*			
Surrogate: Tetrachlorometaxylene [2C]	297			ug/kg	*320*		*92.8*	*69-120*			

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFD0619 - EPA 3580A (Vortex)

Instrument: ECD7

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BFD0619-BS1)					Prepared: 26-Apr-2017 Analyzed: 28-Apr-2017 18:28						
Aroclor 1016	3710	8	160	ug/kg	4000		92.7	59-120			
Aroclor 1260	4580	15	160	ug/kg	4000		114	59-120			
Surrogate: Decachlorobiphenyl	340			ug/kg	*320*		*106*	*67-145*			
Surrogate: Tetrachlorometaxylene	317			ug/kg	*320*		*99.0*	*69-120*			
Surrogate: Decachlorobiphenyl [2C]	339			ug/kg	*320*		*106*	*67-145*			
Surrogate: Tetrachlorometaxylene [2C]	310			ug/kg	*320*		*97.0*	*69-120*			

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFD0619 - EPA 3580A (Vortex)

Instrument: ECD7

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BFD0619-MS1)	**Source: 17D0305-11**		Prepared: 26-Apr-2017 Analyzed: 28-Apr-2017 19:57								
Aroclor 1016	34000	70	1460	ug/kg	36600	ND	92.9	59-120			D
Aroclor 1260	118000	134	1460	ug/kg	36600	54300	173	59-120			*, D, E
Surrogate: Decachlorobiphenyl	321			ug/kg	*293*	*295*	*109*	*67-145*			
Surrogate: Tetrachlorometaxylene	304			ug/kg	*293*	*250*	*104*	*69-120*			
Surrogate: Decachlorobiphenyl [2C]	366			ug/kg	*293*	*340*	*125*	*67-145*			
Surrogate: Tetrachlorometaxylene [2C]	273			ug/kg	*293*	*274*	*93.2*	*69-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFD0619 - EPA 3580A (Vortex)

Instrument: ECD7

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BFD0619-MSD1)	**Source: 17D0305-11**			Prepared: 26-Apr-2017 Analyzed: 28-Apr-2017 20:19							
Aroclor 1016	32300	70	1460	ug/kg	36500	ND	88.5	59-120	5.17	30	D
Aroclor 1260	97900	133	1460	ug/kg	36500	54300	120	59-120	18.20	30	D, E
Surrogate: Decachlorobiphenyl	309			ug/kg	*292*	*295*	*106*	*67-145*			
Surrogate: Tetrachlorometaxylene	296			ug/kg	*292*	*250*	*101*	*69-120*			
Surrogate: Decachlorobiphenyl [2C]	358			ug/kg	*292*	*340*	*123*	*67-145*			
Surrogate: Tetrachlorometaxylene [2C]	268			ug/kg	*292*	*274*	*91.8*	*69-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFE0157 - EPA 3546 (Microwave)

Instrument: ECD5

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFE0157-BLK1)				Prepared: 05-May-2017 Analyzed: 09-May-2017 14:59							
Aroclor 1016	ND	8.0	20.0	ug/kg							U
Aroclor 1221	ND	8.0	20.0	ug/kg							U
Aroclor 1232	ND	8.0	20.0	ug/kg							U
Aroclor 1242	ND	8.0	20.0	ug/kg							U
Aroclor 1248	ND	8.0	20.0	ug/kg							U
Aroclor 1254	ND	8.0	20.0	ug/kg							U
Aroclor 1260	ND	9.3	20.0	ug/kg							U
Surrogate: Decachlorobiphenyl	33.6			ug/kg	*40.0*		*84.0*	*40-133*			
Surrogate: Tetrachlorometaxylene	35.7			ug/kg	*40.0*		*89.3*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	36.8			ug/kg	*40.0*		*91.9*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	36.8			ug/kg	*40.0*		*91.9*	*53-120*			

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFE0157 - EPA 3546 (Microwave)

Instrument: ECD5

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BFE0157-BS1)					Prepared: 05-May-2017 Analyzed: 09-May-2017 15:19						
Aroclor 1016	466	8.0	20.0	ug/kg	500		93.2	52-120			
Aroclor 1260	424	9.3	20.0	ug/kg	500		84.8	57-120			
Surrogate: Decachlorobiphenyl	34.7			ug/kg	*40.0*		*86.8*	*40-133*			
Surrogate: Tetrachlorometaxylene	38.1			ug/kg	*40.0*		*95.3*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	37.7			ug/kg	*40.0*		*94.3*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	36.6			ug/kg	*40.0*		*91.5*	*53-120*			

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFE0157 - EPA 3546 (Microwave)

Instrument: ECD5

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BFE0157-MS1)	**Source: 17D0305-13**		Prepared: 05-May-2017 Analyzed: 09-May-2017 17:00								
Aroclor 1016	1080	5.6	13.9	ug/kg	348	ND	310	52-120			*, P1, E
Aroclor 1260	1140	6.5	13.9	ug/kg	348	761	109	57-120			E
Surrogate: Decachlorobiphenyl	23.2			ug/kg	*27.8*	*84.2*	*83.3*	*40-133*			
Surrogate: Tetrachlorometaxylene	25.0			ug/kg	*27.8*	*23.8*	*90.0*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	23.0			ug/kg	*27.8*	*22.1*	*82.5*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	23.9			ug/kg	*27.8*	*23.2*	*86.0*	*53-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFE0157 - EPA 3546 (Microwave)

Instrument: ECD5

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BFE0157-MSD1)	**Source: 17D0305-13**			Prepared: 05-May-2017 Analyzed: 09-May-2017 17:21							
Aroclor 1016	1000	5.6	13.9	ug/kg	347	ND	288	52-120	7.60	30	*, P1, E
Aroclor 1260	1150	6.4	13.9	ug/kg	347	761	111	57-120	0.75	30	E
Surrogate: Decachlorobiphenyl	22.1			ug/kg	*27.8*	*84.2*	*79.4*	*40-133*			
Surrogate: Tetrachlorometaxylene	23.0			ug/kg	*27.8*	*23.8*	*82.9*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	21.8			ug/kg	*27.8*	*22.1*	*78.6*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	22.8			ug/kg	*27.8*	*23.2*	*82.0*	*53-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFE0575 - EPA 3546 (Microwave)

Instrument: ECD7

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BFE0575-BLK1)				Prepared: 24-May-2017 Analyzed: 26-May-2017 15:37							
Aroclor 1016	ND	8.0	20.0	ug/kg							U
Aroclor 1221	ND	8.0	20.0	ug/kg							U
Aroclor 1232	ND	8.0	20.0	ug/kg							U
Aroclor 1242	ND	8.0	20.0	ug/kg							U
Aroclor 1248	ND	8.0	20.0	ug/kg							U
Aroclor 1254	ND	8.0	20.0	ug/kg							U
Aroclor 1260	ND	9.3	20.0	ug/kg							U
Surrogate: Decachlorobiphenyl	36.5			ug/kg	*40.0*		*91.2*	*40-133*			
Surrogate: Tetrachlorometaxylene	37.9			ug/kg	*40.0*		*94.7*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	34.8			ug/kg	*40.0*		*86.9*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	37.4			ug/kg	*40.0*		*93.5*	*53-120*			

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFE0575 - EPA 3546 (Microwave)

Instrument: ECD7

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BFE0575-BS1)					Prepared: 24-May-2017 Analyzed: 26-May-2017 15:59						
Aroclor 1016	485	8.0	20.0	ug/kg	500		97.1	52-120			
Aroclor 1260	485	9.3	20.0	ug/kg	500		97.0	57-120			
Surrogate: Decachlorobiphenyl	38.1			ug/kg	*40.0*		*95.2*	*40-133*			
Surrogate: Tetrachlorometaxylene	38.8			ug/kg	*40.0*		*97.0*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	37.0			ug/kg	*40.0*		*92.4*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	37.7			ug/kg	*40.0*		*94.2*	*53-120*			

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFE0575 - EPA 3546 (Microwave)

Instrument: ECD7

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BFE0575-MS1)	**Source: 17D0305-51**		Prepared: 24-May-2017 Analyzed: 26-May-2017 17:28								
Aroclor 1016	1180	7.5	18.8	ug/kg	1880	ND	62.9	52-120			E
Aroclor 1260	34600	8.7	18.8	ug/kg	1880	25700	472	57-120			*, E
Surrogate: Decachlorobiphenyl	35.3			ug/kg	*37.6*	*34.9*	*93.9*	*40-133*			
Surrogate: Tetrachlorometaxylene	28.6			ug/kg	*37.6*	*27.4*	*75.9*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	31.4			ug/kg	*37.6*	*31.1*	*83.4*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	27.1			ug/kg	*37.6*	*28.3*	*72.0*	*53-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFE0575 - EPA 3546 (Microwave)

Instrument: ECD7

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BFE0575-MSD1)	**Source: 17D0305-51**			Prepared: 24-May-2017 Analyzed: 26-May-2017 17:50							
Aroclor 1016	1240	7.5	18.8	ug/kg	1880	ND	66.0	52-120	4.65	30	E
Aroclor 1260	20300	8.7	18.8	ug/kg	1880	25700	NR	57-120	52.00	30	*, E
Surrogate: Decachlorobiphenyl	35.9			ug/kg	*37.6*	*34.9*	*95.5*	*40-133*			
Surrogate: Tetrachlorometaxylene	29.7			ug/kg	*37.6*	*27.4*	*78.9*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	31.9			ug/kg	*37.6*	*31.1*	*84.9*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	28.2			ug/kg	*37.6*	*28.3*	*75.0*	*53-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor PCB - Quality Control

Batch BFE0575 - EPA 3546 (Microwave)

Instrument: ECD7

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Reference (BFE0575-SRM1)					Prepared: 24-May-2017 Analyzed: 26-May-2017 16:21						
Aroclor 1260	125	9.3	20.0	ug/kg	108		116	38-167			
Surrogate: Decachlorobiphenyl	35.7			ug/kg	*40.0*		*89.2*	*40-133*			
Surrogate: Tetrachlorometaxylene	32.6			ug/kg	*40.0*		*81.6*	*53-120*			
Surrogate: Decachlorobiphenyl [2C]	29.8			ug/kg	*40.0*		*74.6*	*40-133*			
Surrogate: Tetrachlorometaxylene [2C]	32.5			ug/kg	*40.0*		*81.3*	*53-120*			

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Certified Analyses included in this Report

Analyte	Certifications
EPA 8082A in Solid	
Aroclor 1016	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1016 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1221	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1221 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1232	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1232 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1242	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1242 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1248	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1248 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1254	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1254 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1260	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1260 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1262	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1262 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1268	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1268 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1016	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1016 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1221	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1221 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1232	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1232 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1242	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1242 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1248	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1248 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1254	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1254 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1260	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1260 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1262	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1262 [2C]	WADOE,DoD-ELAP,NELAP,CALAP,ADEC
Aroclor 1268	WADOE,DoD-ELAP,NELAP,CALAP,ADEC

The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Aroclor 1268 [2C] WADOE,DoD-ELAP,NELAP,CALAP,ADEC

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	UST-033	05/06/2017
CALAP	California Department of Public Health CAELAP	2748	02/28/2018
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	03/30/2017
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006	05/11/2017
WADOE	WA Dept of Ecology	C558	06/30/2017
WA-DW	Ecology - Drinking Water	C558	06/30/2017

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The Boeing Company [Plant II]	Project: Boeing Plant 2 Characterization on Jorgenson	
PO Box 3707 MS 1W-12	Project Number: [none]	**Reported:**
Seattle WA, 98124	Project Manager: Will Ernst	05-Jun-2017 13:15

Notes and Definitions

Y1	Raised reporting limit due to interference
U	This analyte is not detected above the applicable reporting or detection limit.
P1	The reported value is greater than 40% difference between the concentrations determined on two GC columns where applicable.
NRS	This surrogate not reported due to chromatographic interference
J	Estimated concentration value detected below the reporting limit.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
D1	Surrogate was not detected due to sample extract dilution
D	The reported value is from a dilution
*	Flagged value is not within established control limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Attachment 4
Data Validation Report

The Boeing Company
OA-11 Post-Excavation Sampling
Boeing Plant 2
Seattle/Tukwila, Washington

Data Validation Report

Prepared for

The Boeing Company

Prepared by

Floyd|Snider
601 Union Street
Suite 600
Seattle, Washington 98101

July 2017

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List of Attachments

List of Abbreviations and Acronyms

Abbreviation/ Acronym	Definition
ARI	Analytical Resources, Inc. Laboratory
LCS	Laboratory control sample
MS	Matrix spike
MSD	Matrix spike duplicate
OA-11	Other Area 11
PCB	Polychlorinated biphenyl
QC	Quality control
RPD	Relative percent difference
SDG	Sample delivery group

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1.0 Project Narrative

1.1 OVERVIEW OF DATA VALIDATION

This report summarizes the results of the Compliance Screening (Stages 1 & 2A) performed on the soil sample data for the Other Area 11 (OA-11) Soil Characterization on Jorgensen Property Sampling Event. The Jorgensen Forge property is adjoining to The Boeing Company Plant 2. Soil samples were collected, analyzed, and validated in accordance with the technical memorandum, *Work Plan for PCB Soil Characterization on Jorgensen Forge Adjoining OA-11* (Floyd|Snider 2017).

A complete list of the samples analyzed and archived is provided in Table 1.

The chemical analyses were performed by Analytical Resources, Inc. (ARI) of Tukwila, Washington. Soil samples were collected April 19 and 20, 2017, and submitted to ARI for chemical analyses in two sample delivery groups (SDGs; 17D0305 and 17D0349) for analysis of polychlorinated biphenyls (PCBs) by USEPA Method 8082A.

The data were reviewed using guidance and quality control (QC) criteria documented in the analytical methods described in the *Work Plan for PCB Soil Characterization on Jorgensen Forge Adjoining OA-11* (Floyd|Snider 2017) and the *National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA 2016).

Floyd|Snider's goal in assigning data assessment qualifiers is to assist in proper data interpretation. If values are estimated (J or UJ), data may be used for site evaluation and risk assessment purposes, but reasons for data qualification should be taken into consideration when interpreting sample concentrations. If values are assigned an R, the data are to be rejected and should not be used for any site evaluation purposes. When compounds are analyzed at multiple dilutions or by multiple analysis methods, select results will be assigned a Do Not Report (DNR) qualification as a more appropriate result is reported from another dilution or analysis method. If values have no data qualifier assigned, then the data meet the data quality objectives as stated in the documents and methods referenced above.

Data qualifier definitions, reasons, and validation criteria are included as Attachment 1. The Qualified Data Summary Table is included in Attachment 2. Data validation worksheets (excel worksheets) will be kept on file at Floyd|Snider.

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2.0 Data Validation Report
Polychlorinated Biphenyls (Aroclors) by USEPA Method 8082A

This report documents the review of analytical data from the analyses of soil samples and the associated laboratory QC samples. Samples were analyzed by ARI. Compliance Screening (Stages 1 & 2A) was performed on all analytical results by Chell Black as the primary data reviewer, and secondary review was performed by Gretchen Heavner.

2.1 DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

2.2 TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

QC Requirements

Cooler temperature and preservation	[2] Matrix spike (MS) and matrix spike duplicate (MSD) recoveries and relative percent differences (RPDs)
Extraction and analysis holding times	Field duplicates
Blank contamination	[1] Reporting limits and reported results
Surrogate recoveries	Target analyte list
Laboratory control sample (LCS) recoveries	

Notes:
1 QC outliers that impact the reported data were noted. Data qualifiers were issued, as discussed below.
2 QC results are discussed below, but no data were qualified.

Attachment 1 presents data validation criteria tables for organic compound analysis. QC requirements that were met without exception are not discussed below. QC requirements that required further evaluation and had exceptions to the validation criteria are discussed below.

2.2.1 Matrix Spike and Matrix Spike Duplicate Recoveries and Relative Percent Differences

SDG 17D0305

Three of the samples run for MS/MSD were flagged by the laboratory as having recoveries outside of laboratory control limits for Aroclor 1016 and/or Aroclor 1260. For sample JF-DP02-6-8, only the MS recovery for Aroclor 1260 was outside control limits, and flagged as exceeding the calibration range of the detector. Additionally the spike amount was less than half

of the original concentration in the sample. The MSD and RPD were within control limits. For sample JF-DP02-10-12, the MS and MSD for Aroclor 1016 were outside control limits and flagged as exceeding the calibration range of the detector. For sample JF-DP08-2-4, the MS and MSD recoveries for Aroclor 1260 were outside control limits and flagged as exceeding the calibration range of the detector. Additionally, the original concentration was greater than 200 times the spike amount. All LCS recoveries were within control limits; therefore, it is with professional judgment that no results be flagged based on these MS/MSD recoveries as they were based on concentrations that were estimated due to exceeding the calibration range of the detector, and the final reported concentrations for all of the samples will be from analysis at a different dilution factor than what was used for the MS/MSD analysis.

2.2.2 Reporting Limits and Reported Results

SDGs 17D0305 and 17D0349

The laboratory qualified detected results P1 when the reported value had a greater than 40-percent RPD between concentrations determined on two gas chromatography columns. These have been updated to J for report data tables and database entry. Please refer to Attachment 2 for qualifier details.

The laboratory reported detected concentrations between the reporting limit and method detection limit for some analytes and qualified them J. These have been updated to JQ for report data tables and database entry. Please refer to Attachment 2 for qualifier details.

SDG 17D0305

Multiple samples had detected concentrations that exceeded the range of the detector during initial analysis. The samples were all analyzed at a dilution and the most appropriate result between the dilutions was chosen for each analyte. Please refer to Attachment 2 for qualifier details.

2.3 OVERALL ASSESSMENT

As was determined by this evaluation, the laboratory followed the specified analytical method. Accuracy was acceptable, as demonstrated by the majority of the surrogate, MS, MSD, and LCS percent recovery values as discussed above. Precision was acceptable, as demonstrated by the MS/MSD RPDs.

Based on the completion of the Compliance Screening (Stages 1 & 2A) performed by Floyd|Snider, the data are suitable for their intended project-specific use and were evaluated with respect to project-specific decision criteria and data quality objectives. All data are acceptable for use as qualified. Refer to Attachment 2 for details.

3.0 References

Floyd|Snider. 2017. *Work Plan for PCB Soil Characterization on Jorgensen Forge Adjoining OA-11*. Prepared for The Boeing Company. February.

U.S. Environmental Protection Agency (USEPA). 2016. *National Functional Guidelines for Superfund Organic Methods Data Review*. Prepared by the Office of Superfund Remediation and Technology Innovation. EPA-540-R-2016-002/OLEM 9355.0-134. September.

The Boeing Company
OA-11 Post-Excavation Sampling
Boeing Plant 2
Seattle/Tukwila, Washington

Data Validation Report

Table

Table 1
Project Sample Index

SDG (Batch)	Sample Identification Number	Laboratory Identification Number	USEPA Method 8082A
17D0305	JF-DP01-0-2	17D0305-001	X
17D0305	JF-DP01-2-4	17D0305-002	X
17D0305	JF-DP01-4-6	17D0305-003	X
17D0305	JF-DP01-6-8	17D0305-004	X
17D0305	JF-DP01-8-10	17D0305-005	X
17D0305	JF-DP01-10-12	17D0305-006	Archived
17D0305	JF-DP01-12-14	17D0305-007	Archived
17D0305	JF-DP02-0-2	17D0305-008	X
17D0305	JF-DP02-2-4	17D0305-009	X
17D0305	JF-DP02-4-6	17D0305-010	X
17D0305	JF-DP02-6-8	17D0305-011	X
17D0305	JF-DP02-8-10	17D0305-012	X
17D0305	JF-DP02-10-12	17D0305-013	X
17D0305	JF-DP012-12-14	17D0305-014	Archived
17D0305	JF-DP03-0-2	17D0305-015	X
17D0305	JF-DP03-2-4	17D0305-016	X
17D0305	JF-DP03-4-6	17D0305-017	X
17D0305	JF-DP03-6-8	17D0305-018	X
17D0305	JF-DP03-8-10	17D0305-019	Archived
17D0305	JF-DP03-10-12	17D0305-020	Archived
17D0305	JF-DP03-12-14	17D0305-021	Archived
17D0305	JF-DP04-0-2	17D0305-022	X
17D0305	JF-DP04-2-4	17D0305-023	X
17D0305	JF-DP04-4-6	17D0305-024	X
17D0305	JF-DP04-6-8	17D0305-025	X
17D0305	JF-DP04-8-10	17D0305-026	Archived
17D0305	JF-DP04-10-12	17D0305-027	Archived
17D0305	JF-DP04-12-14	17D0305-028	Archived
17D0305	JF-DP05-0-2	17D0305-029	X
17D0305	JF-DP05-2-4	17D0305-030	X
17D0305	JF-DP05-4-6	17D0305-031	X
17D0305	JF-DP05-6-8	17D0305-032	X
17D0305	JF-DP05-8-10	17D0305-033	Archived
17D0305	JF-DP05-10-12	17D0305-034	Archived
17D0305	JF-DP05-12-14	17D0305-035	Archived
17D0305	JF-DP06-0-2	17D0305-036	X
17D0305	JF-DP06-2-4	17D0305-037	X
17D0305	JF-DP06-4-6	17D0305-038	X
17D0305	JF-DP06-6-8	17D0305-039	X
17D0305	JF-DP06-8-10	17D0305-040	Archived
17D0305	JF-DP06-10-12	17D0305-041	Archived
17D0305	JF-DP06-12-14	17D0305-042	Archived
17D0305	JF-DP07-0-2	17D0305-043	X
17D0305	JF-DP07-2-4	17D0305-044	X
17D0305	JF-DP07-4-6	17D0305-045	X
17D0305	JF-DP07-6-8	17D0305-046	X
17D0305	JF-DP07-8-10	17D0305-047	X
17D0305	JF-DP07-10-12	17D0305-048	Archived
17D0305	JF-DP07-12-14	17D0305-049	Archived
17D0305	JF-DP08-0-2	17D0305-050	X
17D0305	JF-DP08-2-4	17D0305-051	X
17D0305	JF-DP08-4-6	17D0305-052	X
17D0305	JF-DP08-6-8	17D0305-053	X
17D0305	JF-DP08-8-10	17D0305-054	Archived
17D0305	JF-DP08-10-12	17D0305-055	Archived
17D0305	JF-DP08-12-14	17D0305-056	Archived
17D0305	JF-DP01-4-6-D	17D0305-057	X
17D0305	JF-DP03-2-4-D	17D0305-058	X
17D0305	JF-DP05-4-6-D	17D0305-059	X
17D0349	JF-DP09-0-2	17D0349-01	Archived
17D0349	JF-DP09-2-4	17D0349-02	Archived
17D0349	JF-DP09-4-6	17D0349-03	X
17D0349	JF-DP09-6-8	17D0349-04	X
17D0349	JF-DP10-4-6D	17D0349-05	X
17D0349	JF-DP11-4-6D	17D0349-06	Archived
17D0349	JF-DP09-8-10	17D0349-07	X
17D0349	JF-DP09-10-12	17D0349-08	Archived
17D0349	JF-DP09-12-14	17D0349-09	Archived
17D0349	JF-DP10-0-2	17D0349-10	Archived
17D0349	JF-DP10-2-4	17D0349-11	X
17D0349	JF-DP10-4-6	17D0349-12	X
17D0349	JF-DP10-6-8	17D0349-13	Archived
17D0349	JF-DP10-8-10	17D0349-14	Archived
17D0349	JF-DP10-10-12	17D0349-15	Archived
17D0349	JF-DP10-12-14	17D0349-16	Archived
17D0349	JF-DP11-0-2	17D0349-17	Archived
17D0349	JF-DP11-2-4	17D0349-18	X
17D0349	JF-DP11-4-6	17D0349-19	X
17D0349	JF-DP11-6-8	17D0349-20	Archived
17D0349	JF-DP11-8-10	17D0349-21	Archived
17D0349	JF-DP11-10-12	17D0349-22	Archived
17D0349	JF-DP11-12-14	17D0349-23	Archived
17D0349	JF-DP12-0-2	17D0349-24	Archived
17D0349	JF-DP12-2-4	17D0349-25	Archived
17D0349	JF-DP12-4-6	17D0349-26	X
17D0349	JF-DP12-6-8	17D0349-27	X
17D0349	JF-DP12-8-10	17D0349-28	Archived
17D0349	JF-DP12-10-12	17D0349-29	Archived
17D0349	JF-DP12-12-14	17D0349-30	Archived
17D0349	JF-DP13-0-2	17D0349-31	Archived
17D0349	JF-DP13-2-4	17D0349-32	Archived
17D0349	JF-DP13-4-6	17D0349-33	Archived
17D0349	JF-DP13-6-8	17D0349-34	Archived
17D0349	JF-DP13-8-10	17D0349-35	Archived
17D0349	JF-DP13-10-12	17D0349-36	Archived
17D0349	JF-DP13-12-14	17D0349-37	Archived

Abbreviation:
SDG Sample delivery group

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Data Validation Report

Attachment 1
Data Qualifier Definitions and Criteria Tables

DATA VALIDATION QUALIFIER CODES
National Functional Guidelines

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents the approximate concentration.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

The following is a Floyd|Snider qualifier that may also be assigned during the data review process:

DNR Do not report; a more appropriate result is reported from another analysis or dilution.

Floyd|Snider Validation Guidelines for Semivolatile Analysis by GC/MS
(Based on Organic NFG 1999)

Validation QC Element	Acceptance Criteria	Action
Cooler Temperature	4°C ± 2°	J/UJ if greater than 6 deg. C (Floyd|Snider PJ)
Holding Time	Water: 7 days from collection Soil: 14 days from collection Analysis: 40 days from extraction	Water: J/UJ if ext. > 7 and < 21 days J/R if ext > 21 days (Floyd|Snider PJ) Solids/Wastes: J/UJ if ext. > 14 and < 42 days J/R if ext. > 42 days (Floyd|Snider PJ) J/UJ if analysis >40 days
Tuning	DFTPP Beginning of each 12 hour period Method acceptance criteria	R all analytes in all samples associated with the tune
Initial Calibration (Minimum 5 stds.)	RRF > 0.05	(Floyd|Snider PJ) If MDL= reporting limit: J/R if RRF < 0.05 If reporting limit > MDL: note in worksheet if RRF <0.05
	%RSD < 30%	(Floyd|Snider PJ) J if %RSD > 30%
Continuing Calibration (Prior to each 12 hr. shift)	RRF > 0.05	(Floyd|Snider PJ) If MDL= reporting limit: J/R if RRF < 0.05 If reporting limit > MDL: note in worksheet if RRF < 0.05
	%D <25%	(Floyd|Snider PJ) If > +/-90%: J/RIf -90% to -26%: J (high bias) If 26% to 90%: J/UJ (low bias)

Validation QC Element	Acceptance Criteria	Action
Method Blank	One per matrix per batch No results > CRQL	U if sample result is less than CRQL and less than appropriate 5X or 10X rule (raise sample value to CRQL)
		U if sample result is greater than or equal to CRQL and less than appropriate 5X and 10X rule (at reported sample value)
Method Blank (continued)	No TICs present	RTICs using 10X rule
Field Blanks (Not Required)	No results > CRQL	Apply 5X/10X rule; U < action level
MS/MSD (recovery)	One per matrix per batch Use method acceptance criteria	Qualify parent only unless other QC indicates systematic problems: J if both %R > UCL J/UJ if both %R < LCL J/R if both %R < 10% Floyd|Snider PJ if only one %R outlier
MS/MSD (RPD)	One per matrix per batch Use method acceptance criteria	J in parent sample if RPD > CL
LCS CLP low conc. H2O only	One per lab batch Within method control limits	J assoc. cmpd if > UCL J/R assoc. cmpd if < LCL J/R all cmpds if half are < LCL
LCS regular SVOA (H2O & solid)	One per lab batch Lab or method control limits	J if %R > UCL J/UJ if %R <LCL J /R if %R < 10% (Floyd|Snider PJ)
LCS/LCSD (if required)	One set per matrix and batch of 20 samples RPD < 35%	J/UJ associated compounds in all samples

Validation QC Element	Acceptance Criteria	Action
Surrogates	Minimum of 3 acid and 3 base/neutral compounds Use method acceptance criteria	Do not qualify if only 1 acid and/or 1 B/N surrogate is out unless <10% J if %R > UCL J/UJ if %R < LCL J/R if %R < 10%
Internal Standards	Added to all samples Acceptable Range: IS area 50% to 200% of CCAL area RT within 30 seconds of CC RT	J if > 200% J/UJ if < 50% J/R if < 25% RT>30 seconds, narrate and Notify PM
Field Duplicates	Use QAPP limits. If no QAPP: Solids: RPD <50% OR absolute diff. < 2X RL (for results < 5X RL) Aqueous: RPD <35% OR absolute diff. < 1X RL (for results < 5X RL)	Narrate and qualify if required by project (Floyd|Snider PJ)
TICs	Major ions (>10%) in reference must be present in sample; intensities agree within 20%; check identification	NJ the TIC unless: R common laboratory contaminants See Technical Director for ID issues
Quantitation/ Identification	RRT within 0.06 of standard RRT Ion relative intensity within 20% of standard All ions in std. at > 10% intensity must be present in sample	See Technical Director if outliers

Abbreviation:
PJ Professional judgment

The Boeing Company
OA-11 Post-Excavation Sampling
Boeing Plant 2
Seattle/Tukwila, Washington

Data Validation Report

Attachment 2
Qualified Data Summary Table

Attachment 2
Qualified Data Summary Table

SDG (Batch)	Sample ID	Lab ID	Analytical Method	Analyte	Value	Units	Lab Qualifier	Validation Qualifier
17D0305	JF-DP01-4-6	17D0305-03	8082A	Aroclor 1254	6,460	µg/kg	E	DNR
17D0305	JF-DP01-4-6	17D0305-03	8082A	Aroclor 1260	42,700	µg/kg	E	DNR
17D0305	JF-DP01-4-6	17D0305-03RE1	8082A	Aroclor 1016	1,740	µg/kg	U	DNR
17D0305	JF-DP01-4-6	17D0305-03RE1	8082A	Aroclor 1221	1,740	µg/kg	U	DNR
17D0305	JF-DP01-4-6	17D0305-03RE1	8082A	Aroclor 1232	1,740	µg/kg	U	DNR
17D0305	JF-DP01-4-6	17D0305-03RE1	8082A	Aroclor 1242	1,740	µg/kg	U	DNR
17D0305	JF-DP01-4-6	17D0305-03RE1	8082A	Aroclor 1248	1,740	µg/kg	U	DNR
17D0305	JF-DP01-6-8	17D0305-04	8082A	Aroclor 1254	4,570	µg/kg	D	DNR
17D0305	JF-DP01-6-8	17D0305-04	8082A	Aroclor 1260	11,200	µg/kg	D, E	DNR
17D0305	JF-DP01-6-8	17D0305-04RE1	8082A	Aroclor 1016	2,320	µg/kg	U	DNR
17D0305	JF-DP01-6-8	17D0305-04RE1	8082A	Aroclor 1221	2,320	µg/kg	U	DNR
17D0305	JF-DP01-6-8	17D0305-04RE1	8082A	Aroclor 1232	2,320	µg/kg	U	DNR
17D0305	JF-DP01-6-8	17D0305-04RE1	8082A	Aroclor 1242	2,320	µg/kg	U	DNR
17D0305	JF-DP01-6-8	17D0305-04RE1	8082A	Aroclor 1248	2,320	µg/kg	U	DNR
17D0305	JF-DP01-8-10	17D0305-05	8082A	Aroclor 1254	491	µg/kg		DNR
17D0305	JF-DP01-8-10	17D0305-05	8082A	Aroclor 1260	1,390	µg/kg	E	DNR
17D0305	JF-DP01-8-10	17D0305-05RE1	8082A	Aroclor 1016	192	µg/kg	U	DNR
17D0305	JF-DP01-8-10	17D0305-05RE1	8082A	Aroclor 1221	192	µg/kg	U	DNR
17D0305	JF-DP01-8-10	17D0305-05RE1	8082A	Aroclor 1232	192	µg/kg	U	DNR
17D0305	JF-DP01-8-10	17D0305-05RE1	8082A	Aroclor 1242	192	µg/kg	U	DNR
17D0305	JF-DP01-8-10	17D0305-05RE1	8082A	Aroclor 1248	192	µg/kg	U	DNR
17D0305	JF-DP02-4-6	17D0305-10	8082A	Aroclor 1254	931	µg/kg		DNR
17D0305	JF-DP02-4-6	17D0305-10	8082A	Aroclor 1260	5,470	µg/kg	E	DNR
17D0305	JF-DP02-4-6	17D0305-10RE1	8082A	Aroclor 1016	193	µg/kg	U	DNR
17D0305	JF-DP02-4-6	17D0305-10RE1	8082A	Aroclor 1221	193	µg/kg	U	DNR
17D0305	JF-DP02-4-6	17D0305-10RE1	8082A	Aroclor 1232	193	µg/kg	U	DNR
17D0305	JF-DP02-4-6	17D0305-10RE1	8082A	Aroclor 1242	193	µg/kg	U	DNR
17D0305	JF-DP02-4-6	17D0305-10RE1	8082A	Aroclor 1248	193	µg/kg	U	DNR
17D0305	JF-DP02-4-6	17D0305-10RE1	8082A	Aroclor 1254	1,950	µg/kg	P1, D	J
17D0305	JF-DP02-8-10	17D0305-12	8082A	Aroclor 1254	32,900	µg/kg	D, E	DNR
17D0305	JF-DP02-8-10	17D0305-12	8082A	Aroclor 1260	70,300	µg/kg	D, E	DNR
17D0305	JF-DP02-8-10	17D0305-12RE1	8082A	Aroclor 1016	4,720	µg/kg	U	DNR
17D0305	JF-DP02-8-10	17D0305-12RE1	8082A	Aroclor 1221	4,720	µg/kg	U	DNR
17D0305	JF-DP02-8-10	17D0305-12RE1	8082A	Aroclor 1232	4,720	µg/kg	U	DNR
17D0305	JF-DP02-8-10	17D0305-12RE1	8082A	Aroclor 1242	4,720	µg/kg	U	DNR
17D0305	JF-DP02-8-10	17D0305-12RE1	8082A	Aroclor 1248	4,720	µg/kg	U	DNR
17D0305	JF-DP02-10-12	17D0305-13	8082A	Aroclor 1248	1,380	µg/kg	E	DNR
17D0305	JF-DP02-10-12	17D0305-13	8082A	Aroclor 1254	2,680	µg/kg	E	DNR
17D0305	JF-DP02-10-12	17D0305-13	8082A	Aroclor 1260	1,100	µg/kg	E	DNR
17D0305	JF-DP02-10-12	17D0305-13RE1	8082A	Aroclor 1016	189	µg/kg	U	DNR
17D0305	JF-DP02-10-12	17D0305-13RE1	8082A	Aroclor 1221	189	µg/kg	U	DNR
17D0305	JF-DP02-10-12	17D0305-13RE1	8082A	Aroclor 1232	189	µg/kg	U	DNR
17D0305	JF-DP02-10-12	17D0305-13RE1	8082A	Aroclor 1242	189	µg/kg	U	DNR
17D0305	JF-DP03-2-4	17D0305-16	8082A	Aroclor 1254	24,600	µg/kg	D	DNR
17D0305	JF-DP03-2-4	17D0305-16	8082A	Aroclor 1260	87,100	µg/kg	D, E	DNR
17D0305	JF-DP03-2-4	17D0305-16RE1	8082A	Aroclor 1016	7,470	µg/kg	U	DNR
17D0305	JF-DP03-2-4	17D0305-16RE1	8082A	Aroclor 1221	7,470	µg/kg	U	DNR
17D0305	JF-DP03-2-4	17D0305-16RE1	8082A	Aroclor 1232	7,470	µg/kg	U	DNR
17D0305	JF-DP03-2-4	17D0305-16RE1	8082A	Aroclor 1242	7,470	µg/kg	U	DNR
17D0305	JF-DP03-2-4	17D0305-16RE1	8082A	Aroclor 1248	7,470	µg/kg	U	DNR
17D0305	JF-DP04-0-2	17D0305-22	8082A	Aroclor 1254	5,820	µg/kg	E	DNR
17D0305	JF-DP04-0-2	17D0305-22	8082A	Aroclor 1260	18,400	µg/kg	E	DNR
17D0305	JF-DP04-0-2	17D0305-22RE1	8082A	Aroclor 1016	1,810	µg/kg	U	DNR
17D0305	JF-DP04-0-2	17D0305-22RE1	8082A	Aroclor 1221	1,810	µg/kg	U	DNR
17D0305	JF-DP04-0-2	17D0305-22RE1	8082A	Aroclor 1232	1,810	µg/kg	U	DNR
17D0305	JF-DP04-0-2	17D0305-22RE1	8082A	Aroclor 1242	1,810	µg/kg	U	DNR
17D0305	JF-DP04-0-2	17D0305-22RE1	8082A	Aroclor 1248	1,810	µg/kg	U	DNR
17D0305	JF-DP04-2-4	17D0305-23	8082A	Aroclor 1254	41,800	µg/kg	D	DNR
17D0305	JF-DP04-2-4	17D0305-23	8082A	Aroclor 1260	150,000	µg/kg	D, E	DNR
17D0305	JF-DP04-2-4	17D0305-23RE1	8082A	Aroclor 1016	7,700	µg/kg	U	DNR
17D0305	JF-DP04-2-4	17D0305-23RE1	8082A	Aroclor 1221	7,700	µg/kg	U	DNR
17D0305	JF-DP04-2-4	17D0305-23RE1	8082A	Aroclor 1232	7,700	µg/kg	U	DNR
17D0305	JF-DP04-2-4	17D0305-23RE1	8082A	Aroclor 1242	7,700	µg/kg	U	DNR
17D0305	JF-DP04-2-4	17D0305-23RE1	8082A	Aroclor 1248	7,700	µg/kg	U	DNR
17D0305	JF-DP04-4-6	17D0305-24	8082A	Aroclor 1254	28,800	µg/kg	D	DNR
17D0305	JF-DP04-4-6	17D0305-24	8082A	Aroclor 1260	98,600	µg/kg	D, E	DNR
17D0305	JF-DP04-4-6	17D0305-24RE1	8082A	Aroclor 1016	7,570	µg/kg	U	DNR
17D0305	JF-DP04-4-6	17D0305-24RE1	8082A	Aroclor 1221	7,570	µg/kg	U	DNR
17D0305	JF-DP04-4-6	17D0305-24RE1	8082A	Aroclor 1232	7,570	µg/kg	U	DNR

Attachment 2
Qualified Data Summary Table

SDG (Batch)	Sample ID	Lab ID	Analytical Method	Analyte	Value	Units	Lab Qualifier	Validation Qualifier
17D0305	JF-DP04-4-6	17D0305-24RE1	8082A	Aroclor 1242	7,570	µg/kg	U	DNR
17D0305	JF-DP04-4-6	17D0305-24RE1	8082A	Aroclor 1248	7,570	µg/kg	U	DNR
17D0305	JF-DP05-2-4	17D0305-30	8082A	Aroclor 1254	2,870	µg/kg	P1, E	DNR
17D0305	JF-DP05-2-4	17D0305-30	8082A	Aroclor 1260	15,400	µg/kg	E	DNR
17D0305	JF-DP05-2-4	17D0305-30RE1	8082A	Aroclor 1016	1,890	µg/kg	U	DNR
17D0305	JF-DP05-2-4	17D0305-30RE1	8082A	Aroclor 1221	1,890	µg/kg	U	DNR
17D0305	JF-DP05-2-4	17D0305-30RE1	8082A	Aroclor 1232	1,890	µg/kg	U	DNR
17D0305	JF-DP05-2-4	17D0305-30RE1	8082A	Aroclor 1242	1,890	µg/kg	U	DNR
17D0305	JF-DP05-2-4	17D0305-30RE1	8082A	Aroclor 1248	1,890	µg/kg	U	DNR
17D0305	JF-DP05-2-4	17D0305-30RE1	8082A	Aroclor 1254	5,510	µg/kg	P1, D	J
17D0305	JF-DP05-4-6	17D0305-31	8082A	Aroclor 1254	626	µg/kg		DNR
17D0305	JF-DP05-4-6	17D0305-31	8082A	Aroclor 1260	2,940	µg/kg	E	DNR
17D0305	JF-DP05-4-6	17D0305-31RE1	8082A	Aroclor 1016	188	µg/kg	U	DNR
17D0305	JF-DP05-4-6	17D0305-31RE1	8082A	Aroclor 1221	188	µg/kg	U	DNR
17D0305	JF-DP05-4-6	17D0305-31RE1	8082A	Aroclor 1232	188	µg/kg	U	DNR
17D0305	JF-DP05-4-6	17D0305-31RE1	8082A	Aroclor 1242	188	µg/kg	U	DNR
17D0305	JF-DP05-4-6	17D0305-31RE1	8082A	Aroclor 1248	188	µg/kg	U	DNR
17D0305	JF-DP06-4-6	17D0305-38	8082A	Aroclor 1254	2,500	µg/kg	E	DNR
17D0305	JF-DP06-4-6	17D0305-38	8082A	Aroclor 1260	9,960	µg/kg	E	DNR
17D0305	JF-DP06-4-6	17D0305-38RE1	8082A	Aroclor 1016	439	µg/kg	U	DNR
17D0305	JF-DP06-4-6	17D0305-38RE1	8082A	Aroclor 1221	439	µg/kg	U	DNR
17D0305	JF-DP06-4-6	17D0305-38RE1	8082A	Aroclor 1232	439	µg/kg	U	DNR
17D0305	JF-DP06-4-6	17D0305-38RE1	8082A	Aroclor 1242	439	µg/kg	U	DNR
17D0305	JF-DP06-4-6	17D0305-38RE1	8082A	Aroclor 1248	439	µg/kg	U	DNR
17D0305	JF-DP06-6-8	17D0305-39	8082A	Aroclor 1260	12.3	µg/kg	J	JQ
17D0305	JF-DP07-0-2	17D0305-43	8082A	Aroclor 1254	545	µg/kg		DNR
17D0305	JF-DP07-0-2	17D0305-43	8082A	Aroclor 1260	770	µg/kg		DNR
17D0305	JF-DP07-0-2	17D0305-43RE1	8082A	Aroclor 1016	89.8	µg/kg	U	DNR
17D0305	JF-DP07-0-2	17D0305-43RE1	8082A	Aroclor 1221	89.8	µg/kg	U	DNR
17D0305	JF-DP07-0-2	17D0305-43RE1	8082A	Aroclor 1232	89.8	µg/kg	U	DNR
17D0305	JF-DP07-0-2	17D0305-43RE1	8082A	Aroclor 1242	89.8	µg/kg	U	DNR
17D0305	JF-DP07-0-2	17D0305-43RE1	8082A	Aroclor 1248	89.8	µg/kg	U	DNR
17D0305	JF-DP07-2-4	17D0305-44	8082A	Aroclor 1254	900	µg/kg		DNR
17D0305	JF-DP07-2-4	17D0305-44	8082A	Aroclor 1260	4,530	µg/kg	E	DNR
17D0305	JF-DP07-2-4	17D0305-44RE1	8082A	Aroclor 1016	190	µg/kg	U	DNR
17D0305	JF-DP07-2-4	17D0305-44RE1	8082A	Aroclor 1221	190	µg/kg	U	DNR
17D0305	JF-DP07-2-4	17D0305-44RE1	8082A	Aroclor 1232	190	µg/kg	U	DNR
17D0305	JF-DP07-2-4	17D0305-44RE1	8082A	Aroclor 1242	190	µg/kg	U	DNR
17D0305	JF-DP07-2-4	17D0305-44RE1	8082A	Aroclor 1248	190	µg/kg	U	DNR
17D0305	JF-DP07-4-6	17D0305-45	8082A	Aroclor 1254	5,680	µg/kg	E	DNR
17D0305	JF-DP07-4-6	17D0305-45	8082A	Aroclor 1260	33,900	µg/kg	E	DNR
17D0305	JF-DP07-4-6	17D0305-45RE1	8082A	Aroclor 1016	1,940	µg/kg	U	DNR
17D0305	JF-DP07-4-6	17D0305-45RE1	8082A	Aroclor 1221	1,940	µg/kg	U	DNR
17D0305	JF-DP07-4-6	17D0305-45RE1	8082A	Aroclor 1232	1,940	µg/kg	U	DNR
17D0305	JF-DP07-4-6	17D0305-45RE1	8082A	Aroclor 1242	1,940	µg/kg	U	DNR
17D0305	JF-DP07-4-6	17D0305-45RE1	8082A	Aroclor 1248	1,940	µg/kg	U	DNR
17D0305	JF-DP07-6-8	17D0305-46	8082A	Aroclor 1254	1,490	µg/kg	P1, E	DNR
17D0305	JF-DP07-6-8	17D0305-46	8082A	Aroclor 1260	12,500	µg/kg	E	DNR
17D0305	JF-DP07-6-8	17D0305-46RE1	8082A	Aroclor 1016	1,750	µg/kg	U	DNR
17D0305	JF-DP07-6-8	17D0305-46RE1	8082A	Aroclor 1221	1,750	µg/kg	U	DNR
17D0305	JF-DP07-6-8	17D0305-46RE1	8082A	Aroclor 1232	1,750	µg/kg	U	DNR
17D0305	JF-DP07-6-8	17D0305-46RE1	8082A	Aroclor 1242	1,750	µg/kg	U	DNR
17D0305	JF-DP07-6-8	17D0305-46RE1	8082A	Aroclor 1248	1,750	µg/kg	U	DNR
17D0305	JF-DP07-8-10	17D0305-47	8082A	Aroclor 1254	336	µg/kg		DNR
17D0305	JF-DP07-8-10	17D0305-47	8082A	Aroclor 1260	984	µg/kg	E	DNR
17D0305	JF-DP07-8-10	17D0305-47RE1	8082A	Aroclor 1016	91.9	µg/kg	U	DNR
17D0305	JF-DP07-8-10	17D0305-47RE1	8082A	Aroclor 1221	91.9	µg/kg	U	DNR
17D0305	JF-DP07-8-10	17D0305-47RE1	8082A	Aroclor 1232	91.9	µg/kg	U	DNR
17D0305	JF-DP07-8-10	17D0305-47RE1	8082A	Aroclor 1242	91.9	µg/kg	U	DNR
17D0305	JF-DP07-8-10	17D0305-47RE1	8082A	Aroclor 1248	91.9	µg/kg	U	DNR
17D0305	JF-DP08-2-4	17D03050-51	8082A	Aroclor 1254	4,000	µg/kg	E	DNR
17D0305	JF-DP08-2-4	17D03050-51	8082A	Aroclor 1260	25,700	µg/kg	E	DNR
17D0305	JF-DP08-2-4	17D03050-51RE1	8082A	Aroclor 1016	1,880	µg/kg	U	DNR
17D0305	JF-DP08-2-4	17D03050-51RE1	8082A	Aroclor 1221	1,880	µg/kg	U	DNR
17D0305	JF-DP08-2-4	17D03050-51RE1	8082A	Aroclor 1232	1,880	µg/kg	U	DNR
17D0305	JF-DP08-2-4	17D03050-51RE1	8082A	Aroclor 1242	1,880	µg/kg	U	DNR
17D0305	JF-DP08-2-4	17D03050-51RE1	8082A	Aroclor 1248	1,880	µg/kg	U	DNR
17D0305	JF-DP08-4-6	17D03050-52	8082A	Aroclor 1254	6,570	µg/kg	D	DNR
17D0305	JF-DP08-4-6	17D03050-52	8082A	Aroclor 1260	11,000	µg/kg	D, E	DNR

Attachment 2
Qualified Data Summary Table

SDG (Batch)	Sample ID	Lab ID	Analytical Method	Analyte	Value	Units	Lab Qualifier	Validation Qualifier
17D0305	JF-DP08-4-6	17D03050-52RE1	8082A	Aroclor 1016	968	µg/kg	U	DNR
17D0305	JF-DP08-4-6	17D03050-52RE1	8082A	Aroclor 1221	968	µg/kg	U	DNR
17D0305	JF-DP08-4-6	17D03050-52RE1	8082A	Aroclor 1232	968	µg/kg	U	DNR
17D0305	JF-DP08-4-6	17D03050-52RE1	8082A	Aroclor 1242	968	µg/kg	U	DNR
17D0305	JF-DP08-4-6	17D03050-52RE1	8082A	Aroclor 1248	968	µg/kg	U	DNR
17D0305	JF-DP08-6-8	17D03050-53	8082A	Aroclor 1254	14.8	µg/kg	J	JQ
17D0305	JF-DP03-2-4-D	17D0305-58	8082A	Aroclor 1254	13,100	µg/kg	E	DNR
17D0305	JF-DP03-2-4-D	17D0305-58	8082A	Aroclor 1260	42,200	µg/kg	P1, E	DNR
17D0305	JF-DP03-2-4-D	17D0305-58RE1	8082A	Aroclor 1016	4,550	µg/kg	U	DNR
17D0305	JF-DP03-2-4-D	17D0305-58RE1	8082A	Aroclor 1221	4,550	µg/kg	U	DNR
17D0305	JF-DP03-2-4-D	17D0305-58RE1	8082A	Aroclor 1232	4,550	µg/kg	U	DNR
17D0305	JF-DP03-2-4-D	17D0305-58RE1	8082A	Aroclor 1242	4,550	µg/kg	U	DNR
17D0305	JF-DP03-2-4-D	17D0305-58RE1	8082A	Aroclor 1248	4,550	µg/kg	U	DNR
17D0305	JF-DP05-4-6-D	17D0305-59	8082A	Aroclor 1254	1,050	µg/kg	E	DNR
17D0305	JF-DP05-4-6-D	17D0305-59	8082A	Aroclor 1260	4,970	µg/kg	E	DNR
17D0305	JF-DP05-4-6-D	17D0305-59RE1	8082A	Aroclor 1016	196	µg/kg	U	DNR
17D0305	JF-DP05-4-6-D	17D0305-59RE1	8082A	Aroclor 1221	196	µg/kg	U	DNR
17D0305	JF-DP05-4-6-D	17D0305-59RE1	8082A	Aroclor 1232	196	µg/kg	U	DNR
17D0305	JF-DP05-4-6-D	17D0305-59RE1	8082A	Aroclor 1242	196	µg/kg	U	DNR
17D0305	JF-DP05-4-6-D	17D0305-59RE1	8082A	Aroclor 1248	196	µg/kg	U	DNR
17D0305	JF-DP05-4-6-D	17D0305-59RE1	8082A	Aroclor 1254	1,540	µg/kg	P1, D	J
17D0349	JF-DP09-4-6	17D0349-03	8082A	Aroclor 1254	10.2	µg/kg	J	JQ
17D0349	JF-DP09-4-6	17D0349-03	8082A	Aroclor 1260	53.2	µg/kg	P1	J
17D0349	JF-DP10-2-4	17D0349-11	8082A	Aroclor 1260	13.2	µg/kg	J	JQ
17D0349	JF-DP10-4-6	17D0349-12	8082A	Aroclor 1260	69.6	µg/kg	P1	J

Lab Qualifiers:

D The analyte concentration is reported from a dilution analysis.
E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration.
J Estimated concentration value detected below the reporting limit.
P1 The reported value is greater than 40% difference between the concnetrations determined on two GC columns where applicable.
U This analyte is not detected above the applicable reporting or detection limit.

Validation Qualifiers:

DNR Do not report.
J Analyte was detected, concentration is considered an estimate.
JQ Analyte was detected between the reporting limit and method detection limit, concentration is considered an estimate.